

MAY, 1917

PRICE 20 CENTS

AMERICAN BUILDER

THE WORLD'S GREATEST BUILDING PAPER



Permanent Construction
Number

Contents, Page 35—Advertiser's Index Page 201

Our New Color Stucco —an opportunity for you

There is a new development in home building, full of possibilities for you—stucco toned with exposed colored aggregates—a stucco, at last, with tints that are warm, mellow, permanent and variegated instead of flat tones.

This new stucco doesn't cost much to build—the aggregates are mostly quarry waste, and only two cubic yards are needed for the finish coat of the average house. It is easier to mix and apply than any other kind of color stucco.

Atlas-White Portland Cement

has made this new color stucco possible. Being non-staining, it shows the true color values of the aggregates. It was used in the series of experiments we have just completed to show the possibilities of aggregate-toned stucco.

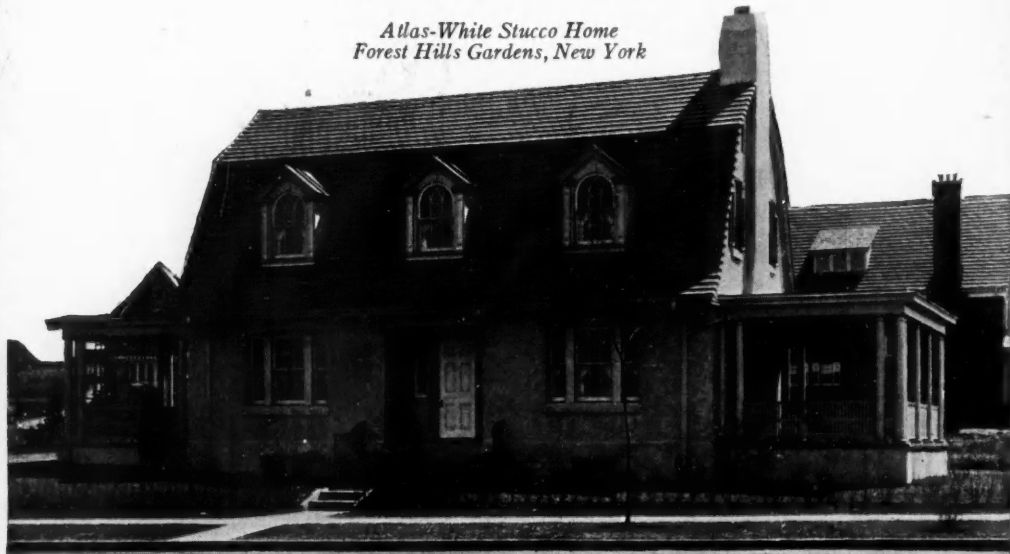
We have prepared a booklet describing the new stucco and illustrating some of the sample panels in full scale and colors. It also includes a list of aggregates and a convenient guide to color stucco specifications. Send the coupon for a copy.

The Atlas Portland Cement Company

Members of the Portland Cement Association

New York Chicago Philadelphia Boston St. Louis Minneapolis
Des Moines Dayton Savannah

*Atlas-White Stucco Home
Forest Hills Gardens, New York*



ATLAS



WHITE

The Atlas Portland Cement Company,
30 Broad Street, New York, or Corn Exchange Bank Building, Chicago

Send me information and specifications on the new color stucco—also the Contractor's Atlas and special information on the subjects checked:

New Stucco Homes Remodeling in Stucco Stucco Garages Stucco Bungalows

NAME ADDRESS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Testimonials Tell the Tale

You are more likely to be convinced of the real merit of our Eveready Saw Rig when you read what our customers say about them.

One man says: "I am able to save two men on the job and the men are able to do more work, as they don't get tired out sawing and lifting. For instance, before I bought your saw rig my time set to build a seventy-foot barn was 21 days for 6 men. Now 4 men in 18 days do the work. And, besides this saving, all lumber that used to be wasted is now used. I saved the price of the saw rig on the first job."

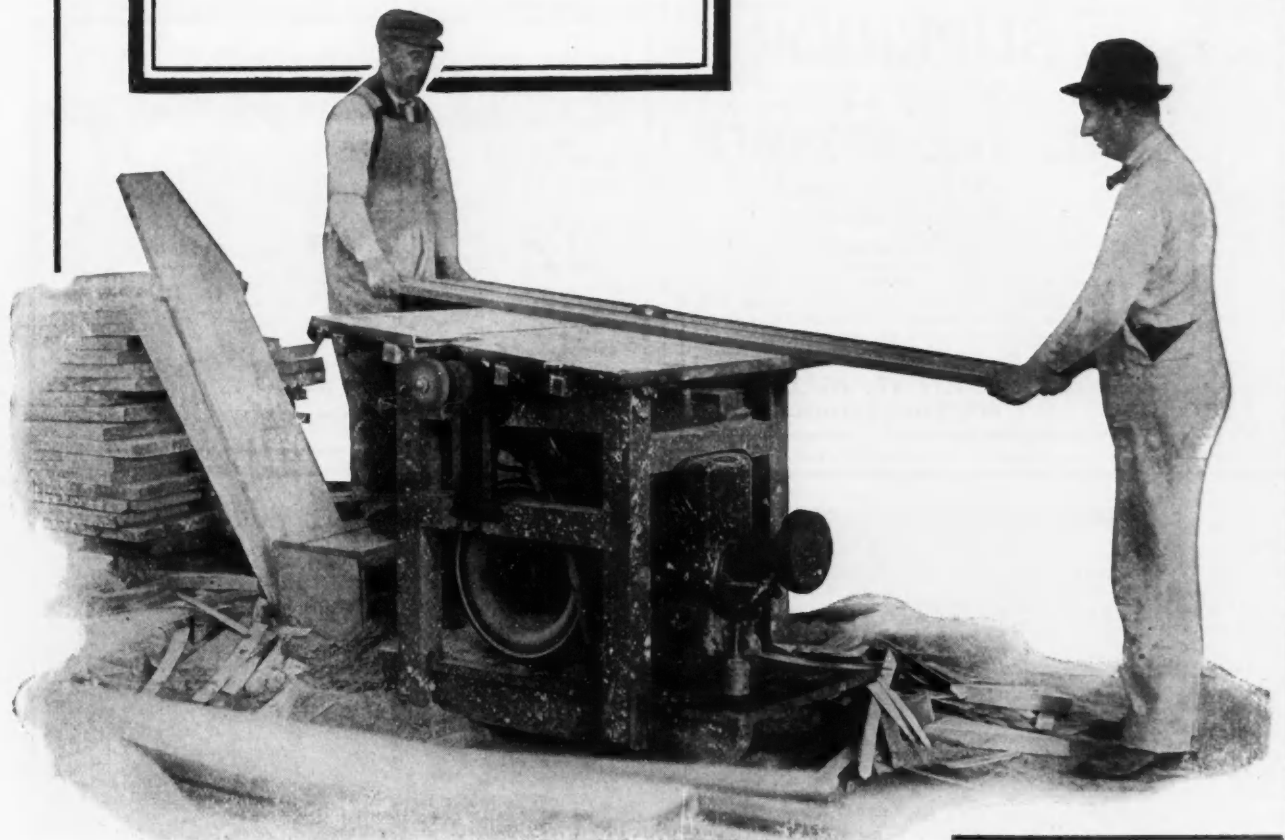
Another: "If one has an EVEREADY there is nothing wasted. I make use of every piece of wood that will make a strip 2 inches wide and a foot long. Only last fall I sold \$42.00 worth of crates which I make from pieces which would have gone into kindling wood had it not been for my 'mill,' as I call it."

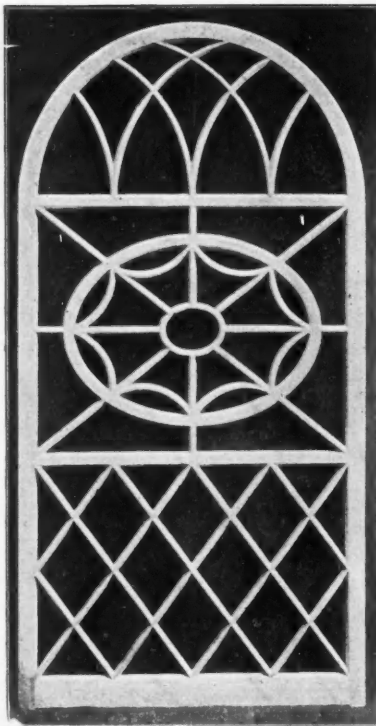
And again: "I have found the Eveready Saw Rig to be of great assistance in my business and I can frankly say that I would not like to be without it. The initial cost has been paid for time and again in the quickness that I can turn out work."

The above is the written word of but **three of two thousand Eveready users**. Many carpenters, builders and contractors have found their way to bigger profits and greater economy by purchasing this high-grade equipment. Let us send you the "Book of Evidence," telling what success Eveready Saw Rigs have encountered in the building field.

"Ever ready — and always busy"

Oshkosh Mfg. Co. 57 Amber Street Oshkosh, Wis.





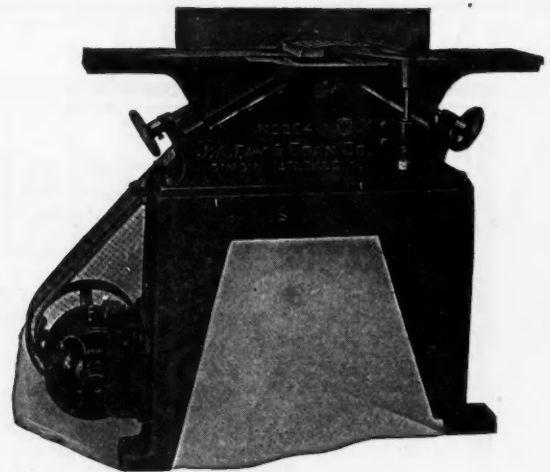
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If You
Make
Plain or
Fancy
Sash You
Need Our
Machine
to Do the
Trimming

==

Send for Literature

MANN CORPORATION
KANKAKEE, ILLINOIS



—a really practical
Carpenter's Hand Planer

—bench or pedestal—with or without motor

DON'T buy a toy, get a real machine: 6½-inch safety head, thin air hardened steel knives, adjustable bevel fence, removable steel lips, rabbeting arm, pedestal that gives your feet clearance; easy to keep clean under the machine; a practical time-saver and money-maker. *Write for Bulletin H-7.*

J. A. Fay & Egan Company
545-565 W. Front St., Cincinnati, O.



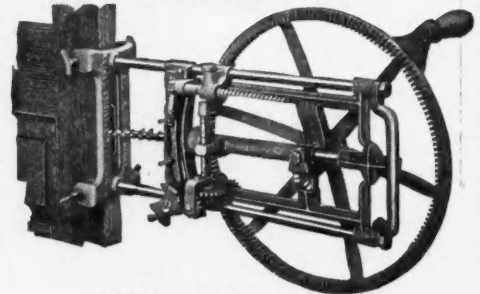
**SUPERIOR
HOLLOW CHISEL
ELECTRIC MORTISER**
and Multiple Speed
Boring Machine

Made in three styles, also belt drive. Just the machine for the general jobbing shop, as well as sash and door mills, cabinet and furniture work. For fast work, quick and accurate adjustments and cheapness of power, these machines can't be beat. Address all inquiries to

WARREN W. MORSE
Hopkins, Minn.

THE NATIONAL

Makes perfect mortise in three minutes, ready for lock or tenon, without brace and bit, or chisel. Fully guaranteed.



Address the Co.
362 Lexington Ave. - Columbus, Ohio

Write for catalogue showing full line of Wood Working Machinery for Carpenters and Builders. Also Bargains in second hand Machinery.



CHICAGO MACHINERY EXCHANGE

1215-1223 WASHINGTON BOULEVARD
CHICAGO, ILLINOIS



Uncle Sam says:

When I buy, I buy the best, and when I order, I want the goods quick.

Read this from headquarters:

C. H. & E. MANUFACTURING Co., Inc.

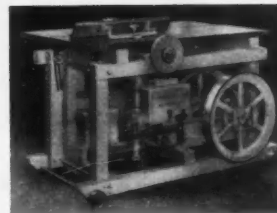
"Your proposal to deliver six of your No. 8 Portable Saw Rigs complete with gasoline engine and attachments, immediate shipment, is hereby accepted."

(Signed) MAJOR HARTMANN.

Ordered Monday, shipped Thursday.

C. H. & E. Portable Saw Rigs

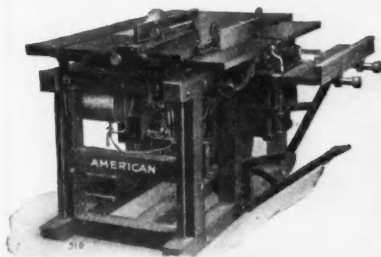
We are the pioneers in the manufacture of Portable Saw Rigs, with power built in and directly under the table. We manufacture six different sizes. We know and Uncle Sam knows that we make the best. Don't be fooled into buying cheap rigs—buy a C.H.&E. rig that is manufactured complete by us—engine, table and all attachments. Immediate shipment.



C. H. & E. Manufacturing Co., Inc.
322 Mineral Street
MILWAUKEE, WIS.

PUT AN

"AMERICAN"



ON YOUR PAY ROLL
It will prove to be a steady, reliable, profitable worker — always ready, always in first-class condition, equal to the hardest jobs—a money-maker for you from start to finish. *Send for Bulletin 67.*

American Saw Mill Machinery Co.
1360 Hudson Terminal
NEW YORK

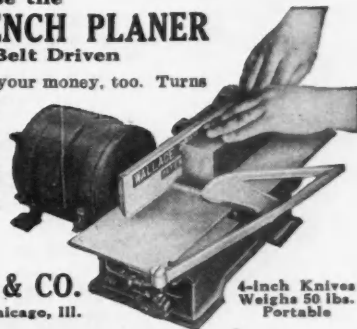
Good Business or Good Exercise?

Choose the WALLACE BENCH PLANER Motor or Belt Driven

It saves your back and your money, too. Turns out planing jobs faster, cheaper and better than you can do them by hand. Takes heaviest cuts in hardwood. No sanding necessary after a finish cut. Perfectly safe. Operates from electric light socket.

Send for Folder.

J. D. WALLACE & CO.
1405 W. Jackson Blvd., Chicago, Ill.



4-inch Knives Weighs 50 lbs. Portable

HOISTS

Attention Contractors & Builders



Labor is getting scarcer and more expensive every day. It will be to your advantage to get **A RELIABLE ERIE HOIST** to do your heavy lifting. Not an expense but a good investment.

Write for booklet.

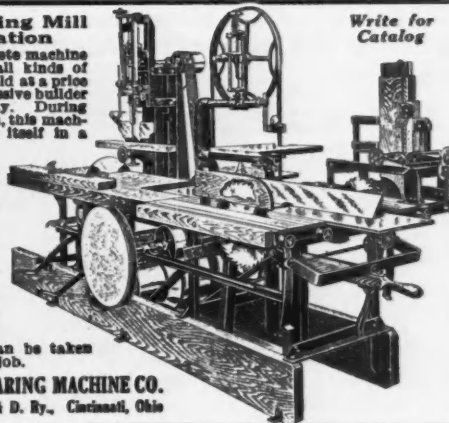
Erie Clutch & Pulley Co.
26th & Holland St., Erie, Penna.

Parks Planing Mill Combination

The most complete machine for getting out all kinds of mill work, and sold at a price which any progressive builder can afford to pay. During the scum season, this machine will pay for itself in a couple weeks.

Big saw, 12" jointer, 22" band saw, Swing cut off saw, Shaper, Upright mortise, Tenoner, Sand disk. All ready for instant use without having to make any changes. Machine can be furnished with long base with engine mounted in rear so it can be taken right out on the job.

PARKS BALL BEARING MACHINE CO.
Fergus St. & C. H. & D. Ry., Cincinnati, Ohio



Write for Catalog

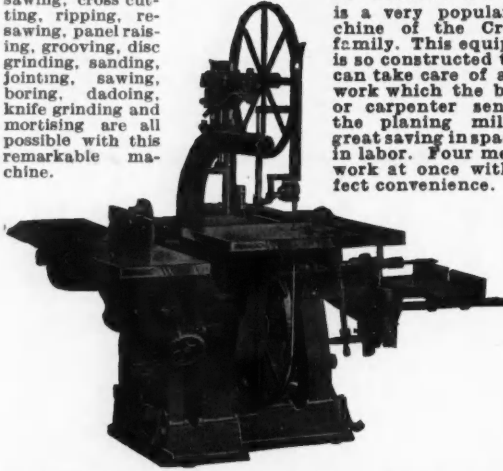
You Will Be Interested In Our Catalogue

Even though you may not be in the market right now for any of the Crescent Woodworking Machinery you will find this compact little catalogue of interest to you.

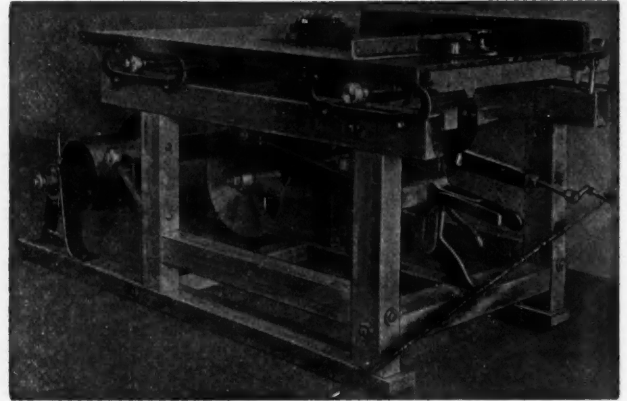
Every carpenter or builder who takes an interest in high grade machinery will find our 1916 catalogue well worth reading. It is a small book of 143 pages, convenient in size for filing or slipping into one's pocket. There are 143 pages replete with splendid illustrations and practical information on the use of various types of Crescent Woodworking Machines. Let us send you this catalogue.

Such work as band sawing, cross cutting, ripping, re-sawing, panel raising, grooving, disc grinding, sanding, jointing, sawing, boring, dadoing, knife grinding and mortising are all possible with this remarkable machine.

Our Universal Woodworker is a very popular machine of the Crescent family. This equipment is so constructed that it can take care of all the work which the builder or carpenter sends to the planing mill — at great saving in space and in labor. Four men can work at once with perfect convenience.



The Crescent Machine Co.
224 Main St. Leetonia, Ohio

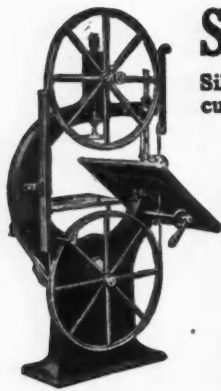
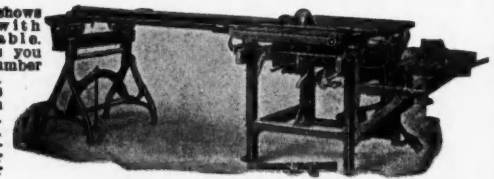


NOW IS THE TIME TO GET A BEACH DOUBLE ARBOR RIP AND CUT-OFF MACHINE

Get this money-maker on the job. This portable woodworker will handle all your fine sawing, as well as your dimension stuff. Either gasoline engine or electric motor drive. Has our patented rolling table, making it the most efficient machine on the market. Don't delay—make this year the most profitable and successful of your career. Write for descriptive catalogue.

BEACH MFG. CO., Montrose, Pa.

This view shows extension with rolling table. This allows you to handle lumber up to 20 ft. and slides easily with 1000 lbs. weight in it. Locks instantly for ripping or beveling.



Saws, Tables, Jointers, Swing Saws and Band Saws

Silver's New Woodworking Machines are the newest, most improved tools on the market. The cuts give a slight suggestion of their neatness of design and construction.

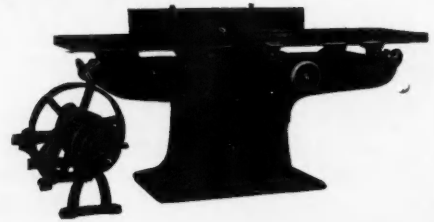
In rigidity, in ease and convenience of operation, in moderate price, they beat all others to a frazzle.

Jointers: 8, 12, 16, 20, 24-in. Band Saws: 20, 26, 32, 36-in. Swing Saws: 6½, 7, 7½, 8-ft.

Silver's Machines are high-pressure machines. They will do your work to the limit and do it well.

Get our printed matter at once and look into it.

The Silver Mfg. Co. 345 BROADWAY SALEM, OHIO

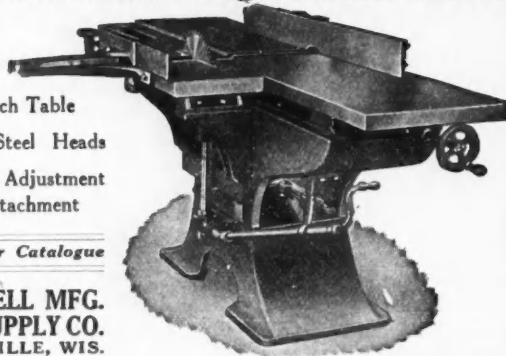


Bicknell's Combination Jointer, Saw, Sticker and Rabbeting Machine No. 105

84 Inch Table
Slotted Steel Heads
Instant Adjustment of Attachment

Write for Catalogue

BICKNELL MFG. AND SUPPLY CO.
JANESVILLE, WIS.



Miller's Lock Mortiser TWO MINUTES

Will cut an opening in a door for a mortise lock IMPROVED AND UP-TO-DATE

Cuts true, in any kind of wood for any size lock from ½" to 1½" thick. Easy to operate; durable in construction. Builders use it everywhere.

Sent subject to trial.

A. W. Miller Mfg. Co.
Riverside, Calif. 1-1 Cincinnati, Ohio
Our Butt Mortiser and Rule Gauge for 75c, Postpaid



"Nail it" now, with

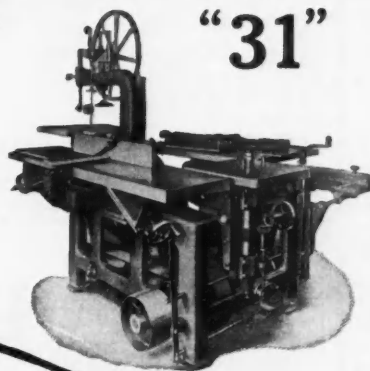


equipment

You can nail down more profit for yourself right now by buying and operating one or more

"Famous" Woodworkers.

It is most decidedly a move in the right direction to mail the coupon!



"31"

No. "31" (shown above) is but one of our very extensive line of all sorts of quality wood-working machines. You can find just the machine you want and need, if you have never before used power woodworkers and are starting a small shop or buying a machine for outside jobs. You can find THE COMPLETE EQUIPMENT required to start a large first-class shop.

Why delay? Why not nail this profit now by starting the coupon right away? How many nails would you drive if you hesitated over each one as you have over this important matter? Strike for more profit today!



It is true that skilled men can work like lightning. They can turn off an immense amount of work.

Which reminds us of the man whose wife could drive nails like lightning. He said so himself! And then he remarked: "Lightning never strikes twice in the same place, you know."

We have no scrap to pick with the fast hand worker. Success to him!

But what's the use of so much of it when you can get better results — at a lot less cost — with power equipment?

You can nail down "More Profit" and clinch it for a good many years to come by purchasing "Famous" equipment to fit your special requirements.

The Sidney Tool Co.
Sidney, Ohio

COUPON

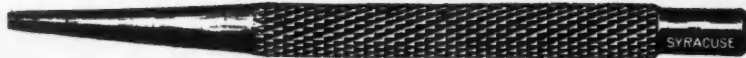
THE SIDNEY TOOL CO.,
Sidney, Ohio

Gentlemen:—Send Catalog No. 12.

Name.....

Address.....

This fine, well-made nail set costs but a dime



"Norol" is another nail set we make. It is square shaped to prevent its rolling away—price, 12c.
Either of these sent postpaid if dealers cannot supply you.

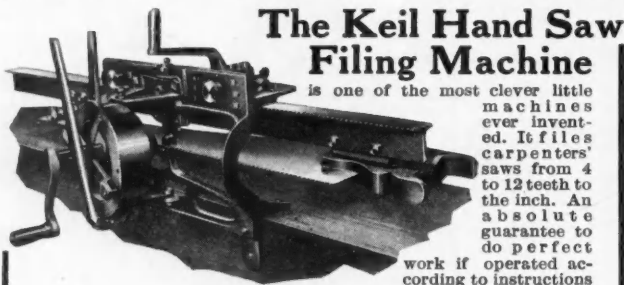
THE "SYRACUSE" NAIL SET is made of the best steel obtainable. It is carefully tempered, accurately cupped and tested on steel—a nail set that gives lasting service.

**Syracuse Twist Drill Company
Syracuse, N. Y.**

WHAT ARE YOU DOING TO MAKE YOUR PRODUCT KNOWN ?

Forty thousand building contractors, dealers in building materials, architects and carpenters are reading these advertising pages every month. Make your products better known to these buyers by continuous, persistent, memory-refreshing advertising.

KEEP YOUR FLAG FLYING!



The Keil Hand Saw Filing Machine

is one of the most clever little machines ever invented. It files carpenters' saws from 4 to 12 teeth to the inch. An absolute guarantee to do perfect work if operated according to instructions.

We also manufacture a Butcher's Saw Filing Machine.

Please write for our descriptive circular and complete details of our easy payment terms.

Patented in United States and Canada

KEIL-DEDLOW MFG. CO., Plainview, Nebr.

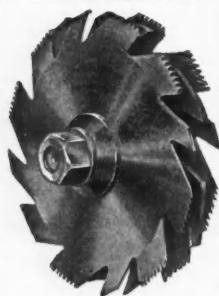
**COMPLETE OUTFIT PRICE \$15.00
HAND AND FOOT-POWER
MACHINERY**

Our No. 7 Scroll Saw is warranted to be made of good material and workmanship, and to saw pine 3 inches thick at the rate of one foot a minute.

SEND FOR CATALOGUE

W. F. & Ino. Barnes Co.

74 Ruby St. ROCKFORD, ILL.



**For Your Saw Rig
Huther Bros. Dado Head**

will cut perfect grooves, any width, with or across grain. It consists of two outside cutters and enough inside cutters to make the desired cut.

The Head comes to you ready to use and guaranteed to do your work satisfactorily.

Ten days' free trial at our expense.

This cutter head can be used on the saw table. Knives are adjusted by headless set screws and are held by dovetailed slides and bolts. Runs like a solid cutter. Any shape knives made to order.



Patented Dec. 30, 1913.



Showing position of cutters on mandril.

Our No. 34 Catalog sent on request, describes full line of tools for saw rig.



Grooves cut with Huther Dado Head.

HUTHER BROS. SAW MFG. CO.
1101 University Ave. Rochester, N. Y., U. S. A.



**DIETZGEN
Measuring
Tapes**

embody superior accuracy, dependability and perfect workmanship.

Leather cases are hand sewed and steel lined. Steel cases are heavy steel, with knurled band that insures firm grip.

The handles are easily opened, the division lines on upper edge of ribbon convenient to read, the simplified reading—foot number in front of each inch number—saves delays and mistakes.

EUGENE DIETZGEN CO.

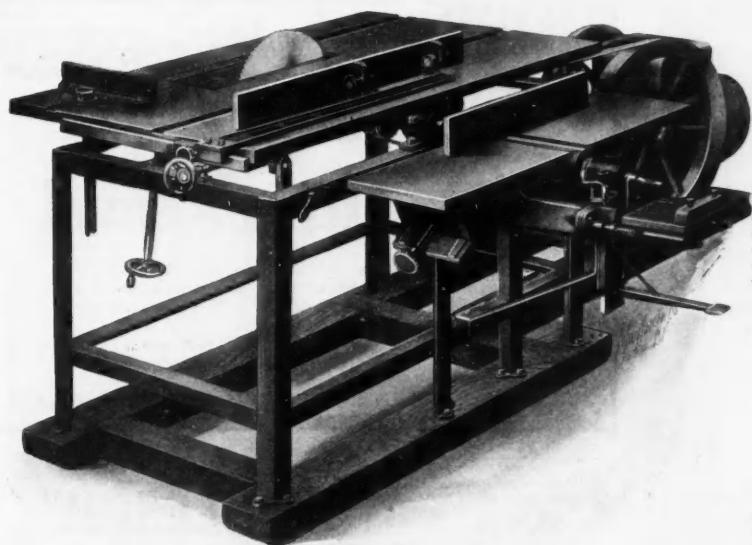
Manufacturers

Chicago New York San Francisco New Orleans
Pittsburgh Philadelphia

Tape Catalog "A" on request



The Reliance and Admiral Tapes are two of our popular sellers



Let Us Tell You About the New Patented Features of the Hercules Portable Woodworker

We would like to show you an entirely new method of construction in woodworking machinery.

We will show you how it is possible to operate the saw and jointer independent of each other at their proper relative speeds, i. e., 2500 R. P. M. for the saw, and 3500 R. P. M. for the jointer, and at the same time revolving each machine in its proper direction.

A Right-Handed Machine

Something you have always wished for. There is nothing in the way—it is always ready for you when you want to run—no part of the machine to remove, as on other machines—no time wasted.

Seven Days' Trial

After this length of time if the machine is found not as represented, or not a profitable investment, it may be returned at our expense.

REMEMBER, this machine is entirely new and different from anything you have ever seen. You get four separate and distinct machines combined, working independently of each other, AND AT THE PRICE OF ONE.

Write for full description.

Manufactured by

Hercules Machine Company

Machinery Merchants, Inc., Distributors
1560 Hudson Terminal Bldg. - - - New York City

HERCULES

Local Agents Wanted

STARRETT TOOLS

A Good Equipment is the Best Aid to Accuracy

Every carpenter and builder who wants to do better and more efficient work should add all of these tools to his kit. No matter how complicated the measurement is he will find that a good equipment of

Starrett Tools

will enable him to work faster and more accurately and with less effort. The deeply etched graduations stand out clearly and permit very accurate readings. Some Starrett Tools include many tools in one. There are many tools for the carpenter described in our free catalog No. 216. Write for a copy today.

For Sale at All Good Hardware Stores

The L. S. Starrett Co.
The World's Greatest Toolmakers
 Athol, Mass. 42-656

Builder's Level

A high grade instrument especially designed for contractors and architects. Excellent equipment for leveling walls, laying out angles, giving lines and levels for buildings, grading streets, drains, etc. Made of best phosphor-bronze and bell metal. Write for our booklet describing Beckmann Levels.

THE L. BECKMANN COMPANY, 500 Adams St., Toledo, Ohio

"KOLESCH" TILTING LEVEL

is designed especially for Builders in leveling walls, laying out angles, grading streets, sewers, drains, sidewalks, etc.

Complete in polished box with plumb bob, adjusting pins, metal trivet, book of instructions, and tripod..... **\$57.50**

You can save its cost on a single job by avoiding expensive mistakes

Kolesch & Co., 138 Fulton St. NEW YORK

"YANKEE" Plain Screw Drivers

STANDARD No. 90
 CABINET - No. 95

They cannot loosen in the handle, in use or abuse. You have our guarantee.

They are durable as the high grade steel that composes them, and will render faithful service for generations. The comfortable handle and various lengths of blades make them suitable for all classes of work.

Your Dealer Can Supply

Let us send you a "YANKEE" Tool Book.

North Bros. Mfg. Co.
 Dept. A, Philadelphia, Pa.



Showing Sun-Shade Attachment

Try This Aloe Level 10 DAYS—FREE

Easy Monthly Payments If You Buy

Prove the superior quality of the Aloe Convertible Level by testing it out for 10 days. Use it on your every day work laying out buildings, locating foundation piers, leveling up foundations, walls and floors, aligning, shafting walls, piers, etc., for getting angles, or levels anywhere and the hundred and one other things for which you would use a level or transit. Then, if you decide to keep it, you may pay for it in easy monthly payments so small that you will scarcely feel them.

Aloe Convertible Level

is more than a mere level. It is a modified transit permitting double the range of work possible with an ordinary architect's level. Its construction is such that sights above or below the horizontal can be taken, making it the finest instrument ever offered at anywhere near the price. For taking vertical sights the instrument is provided with a special convertible bracket rigidly and permanently attached to the cross-bar thus eliminating the extra time that other instruments require for changing the telescope in position to take vertical readings. The telescope which is fitted with a permanent axis, rests in the bracket bearings and owing to our special constructed clips the instrument can be used for leveling while in

this position if desired, although the bracket clips are easily and quickly released from the telescope axis when levels only are to be taken. The telescope is then set in its normal position in the wyes and you have overcome the old method of attaching and detaching the convertible bracket.

Your Own Time To Pay—No Interest

Remember, you are under no obligation whatever to keep the Aloe Convertible Level. We do not even ask you to promise to buy. But you owe it to yourself to see and try it. If it isn't all you expect you may return it at our expense. If you do keep it, you will find the small monthly payments easier than paying rent for an instrument—and at the end of a few months you will own it—absolutely. There's no red tape about this offer—we ask no embarrassing questions—everything is confidential—we charge no interest. You have practically your own time to pay.

Mail Coupon for Descriptive Circular

It explains the Aloe Convertible Level in detail and shows how easily the man without the training of the engineer or surveyor may secure the same accurate results as the expert. Send your name on coupon or postal for free copy and full particulars of our original, unique and popular selling plan.

A. S. ALOE CO., 621 Olive St., St. Louis, Mo.

Mail Coupon NOW

**A. S. ALOE COMPANY,
621 Olive St., St. Louis, Mo.**

Please send free descriptive circular about the Aloe Convertible Level and complete details of your easy payment plan. This request in no way obligates me.

Name.....

Occupation.....

City.....State.....



Builders-Transit

G & B

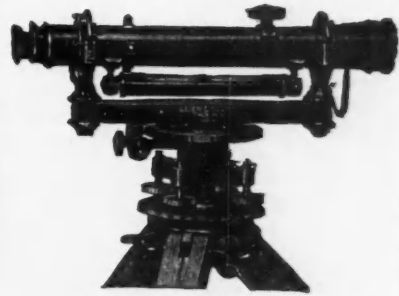
Transit-Level

The only instrument on the market with all the features of a

Builders Transit and Architects Level

It is THE ONE INSTRUMENT FOR ALL JOBS. Durable, accurate and economical. The price is \$67.50 F. O. B. Troy, N. Y.—not a big price after you have seen the instrument. Consider well before buying your instrument. A few dollars more on the first outlay will save you much disappointment and worry later. Have us mail you our Circular "B." You want quality and service, an instrument which you can use under all kinds of conditions and which is easy to operate. Write today.

GEIER & BLUHM, Troy, N. Y.



Architects-Level

ORDER-MADE SCREENS LAST LONGER---LOOK BETTER

Contractors, builders and material dealers make money—order from factory. Quick shipments. All kinds of door and window screens made-to-order. Our special facilities insure better quality at lowest possible prices.

Write for Illustrated Catalog and Prices

STANDARD SCREEN CO.
1848-58 Hastings Street, Chicago, Illinois



No. 2020

Either Level or Transit

Change in Ten Seconds

Here is a convertible level without any loose parts. You are always instantly ready for either lines or levels. **Change from level to transit in ten seconds.** A thoroughly dependable and practical level for the practical contractor. Built correctly of best materials and will stand years of hard knocks and usage. **Not high priced.** Send for circular and trial offer.

DAVID WHITE CO., Inc.
419 E. Water St., Milwaukee, Wis.

Are you with the big majority?

A recent canvass of hardware stores again verified the fact that by far the greatest number of saws sold to mechanics are

DISSTON SAWS



This means that most of the men who are in a position to *know*—whose reputation and success demand that they use the best—are using the saw that has been acknowledged best for three-quarters of a century. Are you one of these men?

As a mechanic our Handbook "S" will interest you. Send for it; it's free.

Henry Disston & Sons, Inc.



Philadelphia, U. S. A.

The **Floor Scraper Blades**

Cut faster, hold their edge longer than any other scraper blade in the world—*money back guarantee.*

FOX **Fox Supply Co.**
Dept. A Brooklyn, Wis.

We make blades for any make of scraper

SOLVE YOUR LABOR PROBLEMS
By Surfacing Your Floors

"The American Universal Way"

The American Universal will cut at least **FIVE MEN** off of your pay roll. Let us tell you all about this wonderful machine and our **FIVE DAYS' TRIAL**

American Floor Surfacing Machine Co.
515 S. St. Clair St.
Toledo, Ohio
The Oldest Concern in the Business

EFFICIENCY WINS!

What kind of efficiency do you believe in?
Three men do the work of one, or, one man capable of doing the work of three?
In floor scraping the Triple "A" SPRING DRIVEN Floor Smoother is "A Three To One Proposition."

Wherever the Triple "A" can be used Two-Thirds of the cost is saved.

If you are an efficiency contractor, you will lose no time in ordering a Triple "A."

Write us today, and we will tell you how the Triple "A" will treble your profits in its particular line of service.

TRIPLE "A" MACHINE CO., Room 318, 4101 Ravenswood Ave., Chicago, Ill.

Stop Making "Borderwork"

around your baseboards—which results when you use a narrow edge roll attachment, as its work is uneven and looks different from the rest of the room when finished. Get the same uniform work right up to baseboards that you do throughout the room by using

The Improved Type Automatic Ball-Bearing Electric Floor-Surfacing Machine

The sanding roller is mounted so one end extends just beyond the side of the machine—easily adjustable to either side so that the wall all around the room can be reached. And the Little Automatic Electric Surfacing Machine (shown below) is a wonder for removing old varnish from desk tops, tables, counters, etc., as well as for dressing up new work.

FREE TRIAL OFFER on either of these machines. Write today for full information.

Wayvell Chappell & Company
356-358 W. Madison Street Dept. D Chicago, Illinois
Phone Franklin 4160

OVER 3000
Universal Floor Scrapers
• In Use Daily •



Every enterprising builder should have an efficient floor scraper on hand. The finishing touches on your job should be as important as scooping out the first dirt load.

Buy this high grade Universal Scraper. It is efficient—does all kinds of work—smoothes joints and warped edges—never leaves any irregularities. It is equipped with a special sharpening device.

3000 satisfied users.

Let us send further information.

UNIVERSAL
Floor Scraper Co.
 166 Union St., Worcester, Mass.

What Does It Mean To Own A Weber Floor Scraper?

More Value For Your Money **Better Results**



The Weber Double Acting Floor Scraper does quick work on all kinds of hardwood floors. If better floor scrapers are built Weber will build them.

Order NOW for delivery in 15 to 20 days.

WEBER MFG. CO. Office: 684-686 73rd Ave.
 WEST ALLIS, WIS.
 FACTORY: 670 71st Ave.

The IMPROVED Rapid Floor Surfer

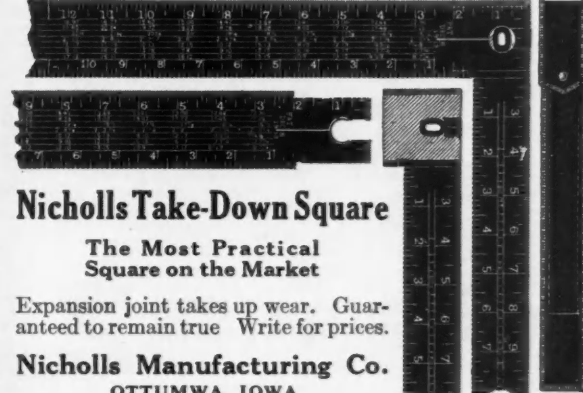


will surface right up to the wall or base-board without the use of Edge Roller. Just the machine you would want for surfacing all kinds of wood floors, whether old or new. Will smooth down rapidly and easily all joints or warped edges. Perfect results guaranteed. More than 20,000 of our machines now in use. Guaranteed against defect in material and workmanship for five years.

Send for our Free Trial Offer. It will interest you.

M. L. Schlueter
 225-27 W. Illinois St., Chicago, Ill.

Made in several sizes



Nicholls Take-Down Square

The Most Practical Square on the Market

Expansion joint takes up wear. Guaranteed to remain true Write for prices.

Nicholls Manufacturing Co.
 OTTUMWA, IOWA



When you want tools of any kind — tools that you can bank on to be just the kind and quality you want them to be, insist on the Swan Trade Mark.



It's a plain guide to all that is best in carpenters' tools and your assurance that you are dealing with an old, reliable firm that makes tools as good and solid as its reputation.

Awarded the Medal of Honor at the Panama-Pacific Exposition, in the Manufacturer's Building.

ASK FOR CATALOG
 The **JAMES SWAN CO.**
 Seymour, Conn.

Send No Money—Not a Penny

I don't want it unless you want this machine.

But, let me ship you the complete outfit on **FREE TRIAL**—Scraper, Six Blades, Burnisher, Wrench and the Sander Attachment. Use it five days and then decide. If you want to keep it, send me \$24.50. Otherwise return it at **MY EXPENSE**. You run **NO RISK**. You are under **NO OBLIGATION** to buy.

Guaranty

If at any time or for any reason through fault of the machine you are not well pleased, you may have your money back if you want it.

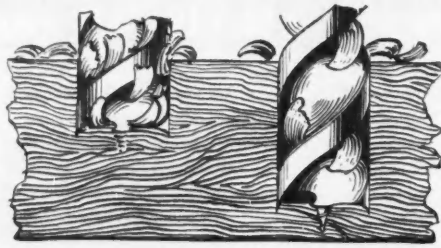


H. P. Didriksen,
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For this coupon and \$22.00 enclosed, ship your complete outfit. It is understood that if I am not well pleased at ANY TIME, I may return it and you will refund the money.

Name.....
 Address.....

This Coupon is Worth \$22.50



COMPARE!

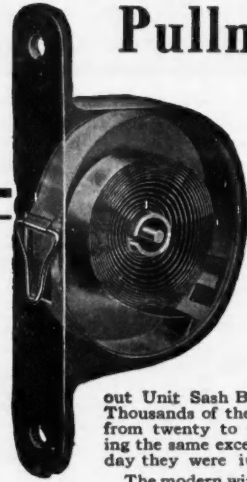
First: The speed of Lebanon "Z" Twist Auger Bits—40 turns of this bit carry it deeper than 100 turns with the ordinary bit.

Second: How easy it is for the famous "Z" Twist to bring out the chips. Lebanon Bits cannot clog or hold back.

Third: The special Lebanon double-point enters the wood without pressure and leads the bit rapidly in. This means clean cut holes with little effort.

When you compare Lebanon "Z" Twist Bits with any others you can quickly see their worth. Let us send you our catalog which explains this new bit.

LEBANON MACHINE COMPANY
LEBANON, NEW HAMPSHIRE



Pullman ^{All} Steel Unit Sash Balance

PULLMAN Unit Sash Balances are used in prominent buildings in cities in all parts of the country. There are over 5,000,000 of these balances in use today—convincing proof of their superior qualities.

We have never seen a worn out Unit Sash Balance—they don't wear out! Thousands of them have been in constant use from twenty to twenty-five years and are giving the same excellent service they gave the first day they were installed.

The modern window is a Unit balanced window.

The Unit Sash Balance installed in your next building means this—elimination of bothersome cords, pulleys and weights—a plain plank frame instead of expensive box frame—saving in space means narrow mullions and more lighting area—sash perfectly balanced—can be used in fire or ordinary construction—fully guaranteed for ten years.

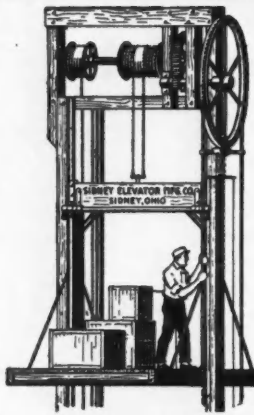
You will use Pullman Unit Sash Balances if you believe in PERMANENT CONSTRUCTION.

Send for our catalog with full description and prices. Also blue-print showing installation.

Pullman Mfg. Company

10 Industrial St. Rochester, New York

Pullmanize Your Windows



SIDNEY ELEVATORS

Will reduce your handling expense, and speed up your work.

Our machines are easily installed from our complete plans and instructions which are sent with each elevator.

The Reasonable Cost Will Interest You

Write us today, stating requirements, giving style of machine wanted, size of platform and number of feet travel, and we will quote a money saving price on equipment to serve you well.

SIDNEY ELEVATOR MFG. WORKS
SIDNEY, OHIO

DUMBWAITER COMPLETE \$19.50 READY TO INSTALL

Includes all necessary material, not knocked down—machine, machine timbers, bolts, boxes, car, counterweight, ropes, guide ways, etc., all ready to set in hatchway and erection instructions. Length up to 20 feet. All material guaranteed. Money back if not satisfactory. Write for further particulars.

Highwood Dumbwaiter Co., Grand Ave., Leonia, N. J.



CARPENTERS WANTED AS AGENTS
New is the time to act. Big Money. Ready Seller. **SANITARY AUTOMATIC DUMBWAITER** saves carrying food to and from cellar. Perfectly ventilated, screened openings; finished inside with durable white enamel. Keeps food perfectly. Top lies flush with kitchen floor. You can walk over it. Operates with push button or lever. Also furnished as a Refrigerated dumbwaiter. Assembled complete ready to install. Three hours' time places them in actual operation. In old and new homes. \$15.00 apiece; \$15.75 apiece in one-third dozen lots. Write for complete information. York Automatic Dumbwaiter Works, 639-645 W. Market St., York, Pa.

NO FALLING WINDOWS
SMASHING GLASS
POCKET FRAMES
SASH WEIGHTS
RATTLING
BINDING
CORDS with

AUTOMATIC SASH HOLDERS

SPECIFY
USE
DEMAND

Automatic Sash Holders
and save labor, lumber and money. Send for trial set (\$1 prepaid) stating approximate weight of sash, or our circular
Hardware Sales Co., Inc.,
52 Church St., New York.



KIMBALL ELEVATORS PASSENGER AND FREIGHT

We manufacture an improved line of Electric, Hand or Belt Power Elevators, Dumbwaiters, Hatch Gates, etc. Send for full information.

Address: **KIMBALL BROS. CO.**, 1000 2nd Street, Council Bluffs, Iowa

HOISTS & ELEVATORS

Columbia Dumb-Waiters
Pavement or Cellar Hoists
Jumper Disappearing Dumb-Waiters
Chain Blocks, Cranes and Trolleys

Send for Catalog

J. Q. SPEIDEL Reading, Pa.

Sedgwick Hand-Power Dumbwaiters and Elevators

Manufactured by Specialists and guaranteed. Send for Catalog and information.

SEDGWICK MACHINE WORKS 132 LIBERTY ST. NEW YORK

From the Raw Steel to the Finished Saw—

Every step in the manufacture is handled by men skilled in their Art. Each process is handled by experts. Every saw is carefully inspected and tested before being forwarded to the next department. When the final test and inspection has been made, Geo. H. Bishop & Co. place their seal of warranty on the saw and you have the Product of the Greatest Saw-Making Organization in the World.

The Greyhound

A saw that will run fast and cut easy. A saw finely adjusted, tough and flexible.

Good Mechanics appreciate good tools. We offer these Saws, confident that they will please you, recommend them to your fellow builders. They are a superior Saw and will serve you long and well.

We refund money if 30-day trial does not prove our guarantee.

Geo. H. Bishop & Co.
Lawrenceburg, Ind.



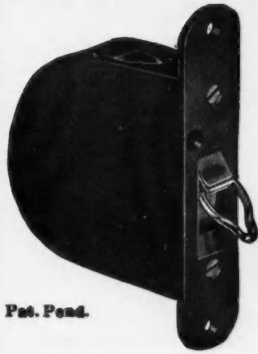
Prices

Made in both Straight and Skew Back, also Ship Carpenters Pattern.

Length, 18 in.	\$2.85
Length, 10 in.	3.00
Length, 22 in.	3.15
Length, 24 in.	3.30
Length, 26 in.	3.50
Length, 28 in.	3.85

Packed one in a box.

Caldwell Sash Balances Uniform Mortises



Pat. Pend.

For use in all classes of new work. Box frames unnecessary. Mortises cut at mill reduces cost of installing. Counterbalance sashes perfectly unaffected by atmospheric conditions. Cheapest method for modernising old window, as alterations in sashes and frames are not necessary. Sashes should be weighed before ordering.

Write for Circular
CALDWELL MFG. CO.
2 Jones St. Rochester, N. Y.

Patented 1907 and 1910

Removing the Brick

THE LITTLE GIANT BRICK MACHINE

The Brick Machine that is being sold everywhere. REASON it makes good all the time. You make the brick with a saving of one-fifth of your material. You save cost of lumber for pallets. REASON brick are removed on level ground or any level surface, without breaking a brick. You make the brick with wetter material. REASON brick are pushed out of machine, instead of being pulled out. You make the rock face brick so perfect you can lay up porch columns without mortar. Special prices to mail order buyers.

LAGRANGE SPECIALTY CO. - LAGRANGE, IND.

O. R. BARTON
1832
ROCHESTER N. Y.

BARTON TOOLS

The steel capped double plane iron illustrated is one of the celebrated Barton Tools. For many years these tools have been known for their unequalled, keen, hard, smooth-cutting edges. Barton Tools last a lifetime and give satisfaction to the end. Ask your dealer to show you our tools or send direct for catalogs and free story book—True Stories. Specify "Carpenters Catalog."

**MACK & COMPANY 100 BROWNS RACE
ROCHESTER, N. Y.**

WHY not use the particular size, shape and grade of pencil or crayon suited to your work? You will find it among

Dixon's Pencils

Send us the name of your dealer from whom you purchase pencils and crayons together with sixteen cents (\$0.16) in stamps and we will send our liberal sample assortment No. 183-J, as illustrated.

Made in Jersey City, N. J.
by the
Joseph Dixon Crucible Co.

LUMBER
CITY N. J.
K No 997
1802
N'S 410
ERS, 538



A No-Lost-Motion mixer for the efficient product plant

The Frank Mixer is the logical equipment for the busy plant that must have a mixer which requires a minimum of attention and which produces a mix of uniform quality in a short time.

The Frank Mixer can be located conveniently near the forms where the mix can be discharged onto a platform where it can be shovelled directly into the form. The open drum makes loading easy and also enables the foreman to watch the batch mix—to see it and feel it so he find out, quickly, when the batch is thoroughly mixed.

Frank Mixers used on any job

Frank Mixers are not confined to product plant work. They are designed to handle all kinds of work; mortar and plaster as well as concrete; sidewalk and floor construction; general farm work, country road building,—in fact, any job where a dependable, easily operated efficient mixer is required.

And the cost! The extreme simplicity in the construction of the Frank Mixer—the few working parts are made of the best material—enables us to place this machine on the market at a price much lower than most mixing equipments. You can see for yourself, in studying the accompanying illustrations, the perfect simplicity and sound practicability of this mixer. It never gets out of order—easy to clean as a pail.

Let us send you Particulars

Frank Manufacturing Company

241 Century Building

Des Moines, Iowa



DUNN CONCRETE MIXERS

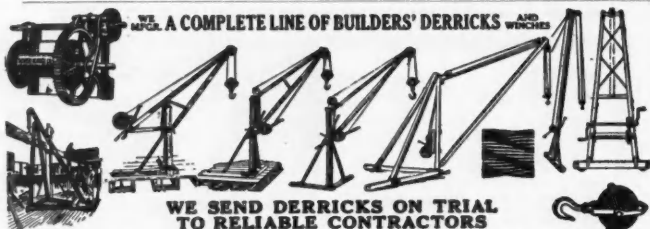
The Big Labor Scarcity

in concrete work makes hand mixing a big handicap to profits. Rising costs must be counteracted by increased production; machine mixing becomes absolutely necessary.

Because of five distinctive features, the Dunn is the one medium sized, moderate priced mixer of 100% efficiency. In the quality of the mix—in labor-saving operation—in rapid production—in durability—and in price, Dunn Mixers are the kind you want. Different styles and sizes are described in our Mixer Bulletin; get a copy. **Agents wanted.**

W. E. DUNN MFG. CO., 415 24th Street, Holland, Mich.

SOLD ON 15 DAYS' TRIAL



WE HAVE A COMPLETE LINE OF BUILDERS' DERRICKS AND WINCHES

WE SEND DERRICKS ON TRIAL TO RELIABLE CONTRACTORS

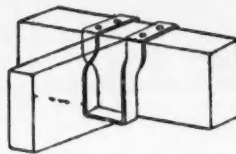
Our Motto is SATISFACTION OR DERRICK RETURNED

Write for circular No. 2 with illustrations, descriptions and best prices on our complete line. The Sagen Builders' Derricks are built of best Crucible Steel and Malleable Iron Fittings, which makes them light, strong, safe and durable. The derricks will please you and probably more than pay for themselves on the first job. Get one on trial.

SAGEN DERRICK CO., 3101 GRAND AVE. CHICAGO, ILL.

STANDARD BUILDING ANCHORS

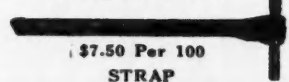
JOIST HANGERS



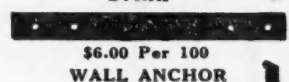
POPULAR SIZE PRICES	
2x8.....	\$0.28
2x10.....	.31
2x12.....	.35
2x14.....	.39
3x8.....	.31
3x10.....	.34
3x12.....	.39
3x14.....	.42
4x8.....	.35
4x10.....	.37
4x12.....	.41
4x14.....	.53
4x18.....	.62
6x8.....	.44
6x10.....	.49
6x12.....	.57
6x14.....	.77
6x18.....	.88

ANY SIZE ON REQUEST

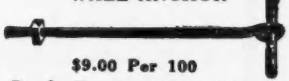
TEE ANCHOR



\$7.50 Per 100 STRAP



\$6.00 Per 100 WALL ANCHOR



\$9.00 Per 100

Ready For Immediate Shipment.

Chas. Mulvey Mfg. Co.
1844 Carroll Ave.
CHICAGO ILLINOIS



Registered U. S. Patent Office

Well Mixed Concrete for Permanence—Ransome for better mixing

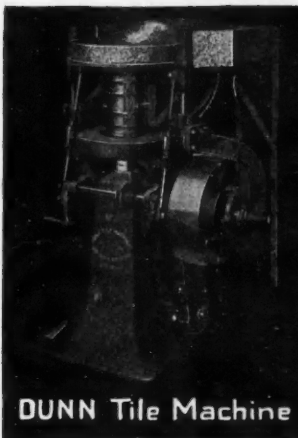
(Member National Association Mixer Manufacturers)

The construction season and road building comes in with a rush this year—Remember the Ransome Concrete Machinery Co. manufactures everything in concrete mixing machinery and equipment. You should know about the Ransome Bantam Line. No contractor can afford a lack of knowledge in this direction. Road builders should know all about the Good Roads Builder and the Ransome Bantam Paver, a revelation in efficiency.

RANSOME CONCRETE MACHINERY CO., 115 Broadway, New York City

Agents in every large City. Write for literature

Factories: Dunellen, New Jersey and Reading, Pa.



MAKE MONEY MAKING TILE

Tile Makers Are Swamped With Orders

Coal shortage, transportation difficulties and high labor costs have sent *clay* tile prices skyward. **CEMENT tile is demanded by farmers everywhere.** The biggest opportunity of the age in the cement products industry is making drain tile. Get into it NOW.

We sell complete equipment. Our machines make the highest grade tile. Our prices are the lowest for profit-capacity machines. Our experience makes our advisory service unequalled in value. We are ready to analyze conditions in your locality and give you honest reports on whether you should—or should not—get in the tile business. Write for our proposition and the book "Cement Drain Tile."

W. E. DUNN MFG. CO., 415 24th Street, Holland, Mich.

DUNN Tile Machine **SOLD ON 15 DAYS' TRIAL.**

AUSTIN puts *Quality* in Drum Mixer Construction

- ¶ Drum mixers are not new.
- ¶ Drum mixer design permits of no particularly useful novelties.
- ¶ Drum mixer merit is measured by quality of construction.
- ¶ Austin drum mixers have the life and work producing quality distinctive of every product of the Austin factories.
- ¶ Austin made mixers on the Panama canal showed an output life record never surpassed.
- ¶ Some of them mixed over 225,000 cubic yards each and were still going strong when the work stopped.
- ¶ You can't wear out an Austin drum with work. Its purchase is a permanent investment. It will sell second-hand for a maximum price.

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Main Office: Railway Exchange Bldg., Chicago

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 Howard Cooper Corp'n., . . . Portland
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MEMBER OF NATIONAL ASSOCIATION MIXER MFRS.

"Concrete for Permanence"

Austin makes a Complete Line of Mixers — Large and small — Standard and special — Road mixers and building mixers — A mixer for every size and kind of job.

Municipal Engineering and Contracting Co.
 Railway Exchange Chicago

Gentlemen:—Please send me Book No. 7 D, showing the Austin Drum Mixer and giving full particulars.

Name.....

Address.....

SIGN, CLIP HERE AND MAIL

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

COSTS SO LITTLE!

Pays For Itself On First Small Job.

Stop letting the profit on foundations and other concrete work go to somebody else!

When you can buy a good, reliable, time-tried concrete mixer for such a small price as we ask for the Sheldon—when you can even build it yourself with the iron parts and free blue print plans we furnish—every builder should do the concreting on all his own jobs. It simply means bidding on the whole job, doing all the work and reaping all the profits.

SHELDON BATCH MIXER



\$11.50 up

Grab This Extra Profit!

The Sheldon Mixer does work equal to \$400 machines, yet costs only a small fraction as much. With it you can do the foundation and basement floor work, mix your own plaster at low cost, lay sidewalks, build the garden wall, etc. It will keep six men busy, but one can operate it. Hand or power, mounted on frame, skids or truck. Continuous drive, tilting dump. Steel or oak mixing barrel. Dumping and tilting lever is in easy reach of operator from in front of machine. Power machine can be turned by hand at proper speed. Slips into an ordinary wagon bed.

All parts guaranteed. Sold direct to user.

Get Our Free Book—Write for free book which tells how builders are making money with the Sheldon, and all about the machine. The printed letters prove it. Also learn how we help you build your own mixer, if you wish, and about our **Co-operative Offer** which will help you get your mixer at little or no cost. Write today.

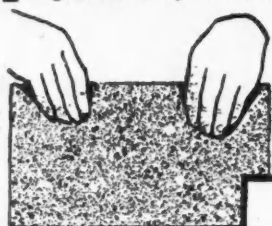
Sheldon Manufacturing Co., Box 9003, Nehawka, Neb.

GRANITE FACE YOUR CEMENT BLOCKS

WITH the Gibler Sheet Facing Process you can put new life and greater profits into your cement block business. Cost of production but slightly more.

The Gibler Process of Granite Facing is simple but effective—a patented process. The Gibler Facing Machine makes it easy—insures success—pays back its cost first month in crushed granite saved. Machine is strong, well built—will last a lifetime.

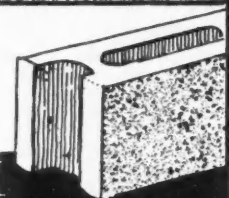
Right to use this wonderful glue-paper-granite facing method goes with every machine. Full working directions furnished.



As a special introductory offer we will ship this \$18.00 machine to you for only \$15.00. Terms \$5.00 down—balance C. O. D. 10 days. This gives you a ten-day trial. Money returned if not fully satisfied.

Send your order today to

**B. F. GIBLER
MAUSTON, WISCONSIN**



**SPECIAL
30 DAY PRICE
\$15.00**

Northwest BUILDING MATERIAL EXHIBIT

1917

What are you going to build this year?

- A Garage?
 - A Bungalow?
 - A House?
 - Apartments?
 - A Church?
 - A Hotel?
 - A School?
 - A Hospital?
 - A Factory?
 - A Skyscraper?
- LOOK
Before You Build**
- EVERYTHING**
- that enters into building construction, including heat, light, ventilation, decoration—as well as the materials that make the structure and the methods of application—for a little job or the biggest building—is on free view at the

Permanent Building Exhibit

whether you are owner, architect, contractor or sub-contractor for all or any part of any building, you can't afford to build without inspection of the world's latest and best as shown in the

200 Exhibits on One Big Floor

It's FREE to See

Northwest Building Material Exhibit
Entire Fourth Floor, First National Soo Line Bldg.
Minneapolis, Minnesota

Look before you build

THE NON-SLOP

We have a distributor in every large city in the United States with

“Northwestern” Mixers

They never stop with the regular charge

ready for immediate delivery to contractors. Do you want one?



Write for Bulletin No. 4 giving sizes and prices.

NORTHWESTERN STEEL & IRON WORKS

Capital Stock, \$200,000 Eau Claire, Wis.

“The House of Good Service”

Also ask for Bulletin No. 36 on Tile Moulds and Culverts

“NORTHWESTERN”

Why am I happy? Ask me!



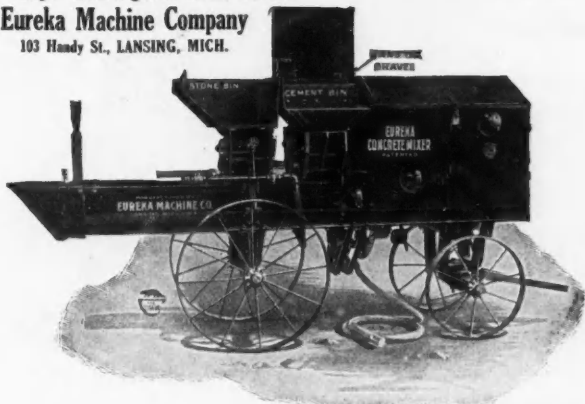
I am a contractor. Most of my work is sidewalk construction, curbs, floors, gutters and small foundations. Up to a short time ago all my concrete was handmixed. Somebody told me I would save lots of time by using the Eureka Mixer.

Well! I had been having no end of trouble with my concrete. It was poorly mixed. I fired the mixer and hired another and he was almost as bad. I was losing time.

So, I took a chance! Now I have three of them and I sure am making money off of them, too. They are just the kind of outfit for my work and

Easy to move too! You run them in anywhere and they are ready for business. Ready to turn out from 50 to 80 cubic yards a day. It's a great little outfit.

Eureka Machine Company
103 Handy St., LANSING, MICH.



Get the Price

It's not the cheapest mixer made, but it is the biggest value in the whole history of the industry.

It is a reliable, strong, long service mixer, first of all—and the price is low enough to make it the **remarkable value**.

To send back the coupon today is to make a start in money-saving.

DANDIE MIXER

5 cu. ft. and 10 cu. ft. capacities. May be equipped with low charging platform, power loading bucket, feed spout, batch hopper, automatic water-measuring tank, and light duty hoist.

The Dandie Mixer is built by the largest manufacturers of mixers in the world—in big volume—and absolutely standardized. This keeps **quality up and price down**.

All-steel constructions—universal joint bearings—fast, easily regulated discharge—liberal power—double drum drive—and the strong, railroad truck principle of drum roller construction.

Send back the coupon today—before you forget it.

Koehring Machine Co.
Milwaukee, Wisconsin

KOEHRING MACHINE CO.,
Milwaukee, Wis.

Please send me Dandie Mixer Catalog E42, and price on Dandie Mixer of.....capacity, equipped as follows:

Name.....
Address.....
City..... State.....



Thirty-five yards per day at a cost of three cents per hour

EFFICIENCY and ECONOMY are prominent features of the Jaeger "Big and Little."

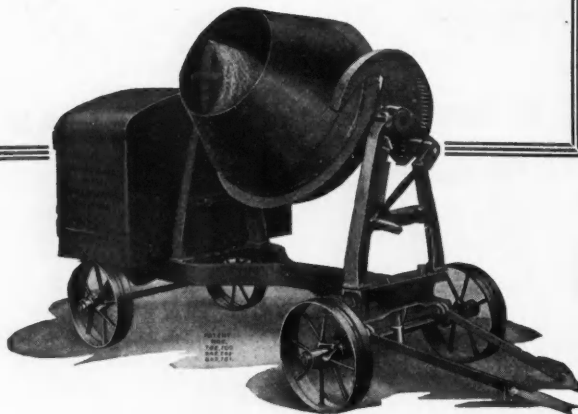
This mixer is so constructed that one man can complete the whole operation of loading, mixing, and dumping a batch in one minute; one batch being mixed while another is being dumped. Each batch is turned from fifteen to twenty times every minute.

The drum discharge is placed at the most convenient height for either wheelbarrow or form work.

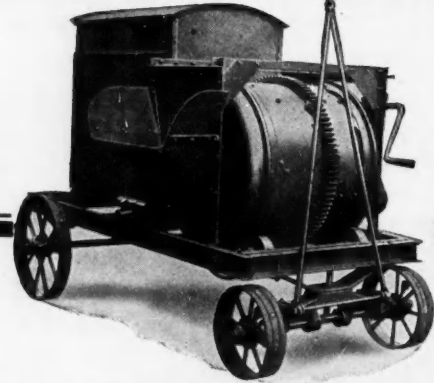
The Big and Little is mounted on trucks, strongly built and is especially suited to the work of the all around contractor.

We will gladly send you the Jaeger catalog, giving prices and complete descriptions. Write for it today.

Jaeger Machine Co.
318 W. Rich Street Columbus, Ohio



LANSING No 5



Designed for the Average Builder

This "half sack" batch mixer does the work of an all around contractor, such as sidewalk curbing and foundation work with the least possible expense. The first cost is small, it costs but little to run and is easily moved from job to job. Don't fail to investigate the No. 5 before buying. Send for our catalogue No. 202. Many other sizes.



22 Cedar Street, Lansing, Mich.

- CHICAGO 167-169 West Lake Street
- NEW YORK 288-289 West Street
- BOSTON 78 Cambridge (Charlestown District)
- PHILADELPHIA Corner North American and Willow
- MINNEAPOLIS 517-519 North Third Street
- KANSAS CITY 1413-1415 West Tenth Street
- SAN FRANCISCO 338-348 Brannan Street

NO LOST MOTION with the Blystone mixer

They are charged or discharged while in full motion—no stoppage—no loss of time—no lost motion.

The best recommendation for an equipment comes from the user. Does it do the work well? Has it lasting qualities? Is it easy to run? Does it pay for the investment? These are questions that determine the practicability of any equipment. Use is the real test.

What of the Blystone?

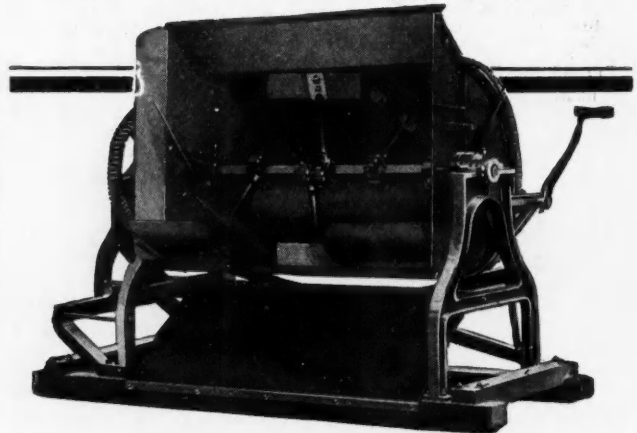
The Blystone is doing its work well—there are over 2500 in operation (in a field that is overcrowded with different makes of mixers, good and bad). We are getting repeat orders constantly from contractors who have tried out the Blystone.

The Blystone lasts—it is built of the best materials and its simplicity in construction eliminates useless wear of many complicated parts.

The rapid shovel action of the Blystone is the secret of its widespread success in the field. Back and forth goes the batch in the drum—forty-four times each minute and you have a thorough mix.

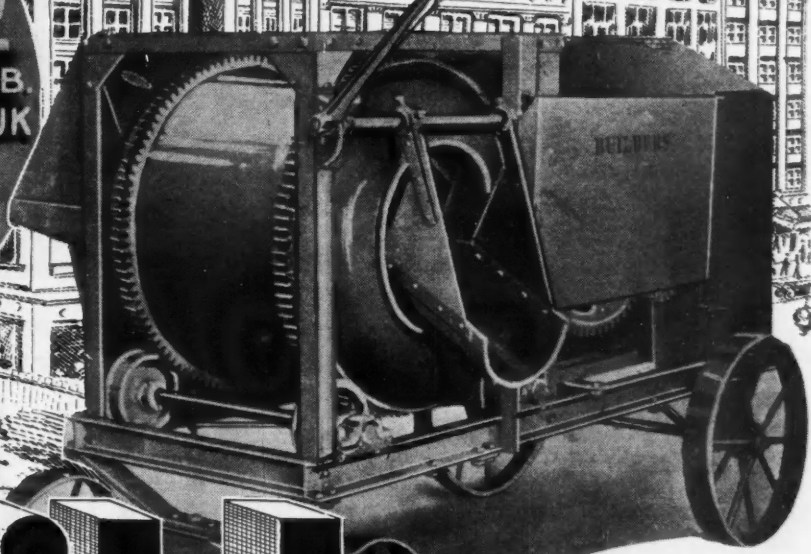
Write for our descriptive literature and price stating your requirements.

BLYSTONE MFG. CO., 417 Carpenter St., Cambridge Springs, Pa.



\$185⁰⁰
 F.O.B. KEOKUK
 FOR "HALF SACK" SIZE
 ALSO BIG "ONE SACK" LOWCHARGER
 AT CORRESPONDINGLY LOW PRICE

OR GET ONE FREE
 If You Can Match It for The Price

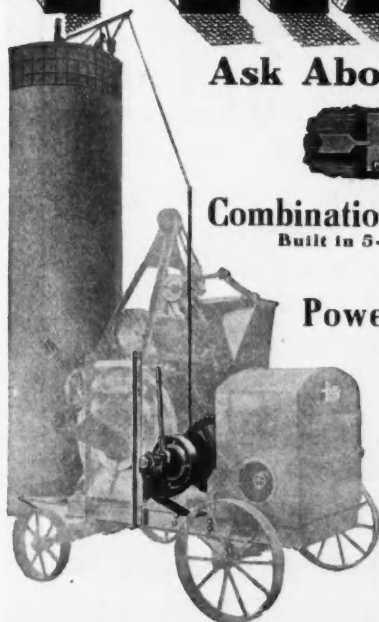
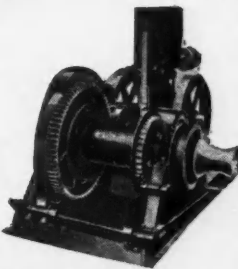


Builders MIXER

Ask About the Famous



Combination Mixer and Hoist
 Built in 5-8-11-15-22 Ft. Sizes



Powerful, Heavy Duty
CONTRACTORS' HOISTS
 Sold at Astonishing Low Prices

Write nearest office for Catalog, Prices and Terms

THE AMERICAN CEMENT MACHINE CO., INC.

HOME OFFICE AND FACTORY
Keokuk, IOWA, USA
 THE 300,000 H.P. ELECTRIC CITY

New York
 Philadelphia
 Baltimore
 Richmond
 Pittsburgh
 Indianapolis
 Cleveland

Chicago
 Minneapolis
 Seattle
 Spokane
 Los Angeles
 San Francisco
 New Orleans

Break the Backbone of High Prices

The new, popular sized, popular priced special Builders' Mixer. A big sensation wherever shown. Hundreds already in use—recommended by every user. A real Low Charger with all modern improvements. Patented High Speed Mixing and Discharge Action—Hyatt Flexible Roller Bearings—Frost and Dust-Proof, Gasoline or Kerosene Engine with Steel Engine Housing. Light Weight Steel construction. **Double Gear Drive** eliminates all wobbling of the drum.

Get full information about this mixer before you buy. Write, phone or wire our nearest office today.

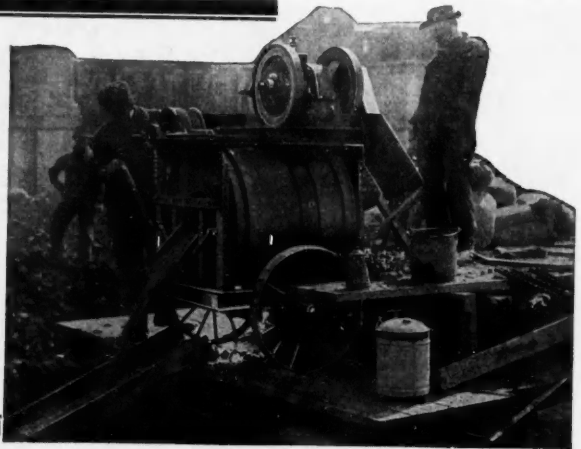


You'll Find Men Hard to Get

Unless you are equipped with labor saving **Archer Mixers**. Archers, the original end discharge mixers, will enable you to do more work this summer with 3 or 4 less men in each gang. **Archers** deliver the wet mix direct into the forms, so no wheelers needed. And one man can move an Archer anywhere.

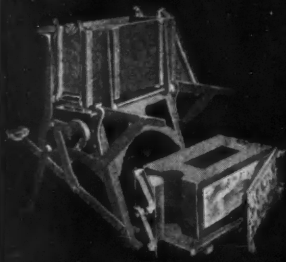
Time's short before opening work, so you better send your order in now. Write today for prices and facts about the half- and one-bag **Archers**.

ARCHER IRON WORKS 2435 W. 34th Place
CHICAGO



CEMENT BLOCK MACHINE

SOLD ON
15 DAYS' TRIAL



Complete

block making facilities for a small investment are offered by the Dunn machine, which has a capacity of 150 per day of all sizes used in standard building construction. Remarkable ease of operation. Simple, sturdy and highly efficient. The most desirable machine for the contractor of moderate means. Get our Block Machine Bulletin.

W. E. DUNN MFG. CO.
415 24th Street, Holland, Mich.

HELPER MIXERS

MAKE CEMENT WORK EASY



Just the machine for putting in sidewalk, curb, foundations, barn floors, etc. Built strong, mixes perfectly, and lasts years. Run by hand or power. Sold on trial. Write for free literature and prices.

Superior Manufacturing Company
1001 Concrete Avenue - Waterloo, Iowa



Sterling No. 15

*King of
Concrete
Barrows*

*Built
to
Last*

Sterling

*Easy
to
Wheel*

Sterling Wheelbarrows

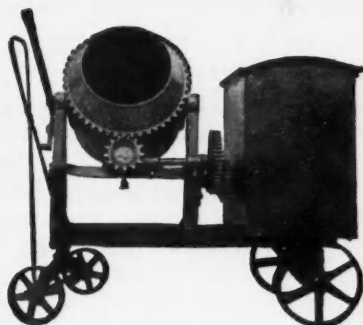
are made to please the contractor. They stand the hard knocks in contractor's service, and are designed to lighten the load on the wheeler.

Sterling Wheelbarrows are not made to sell cheap, but they are priced as low as their quality will permit. Our catalogue gives complete information on a complete line of wheelbarrows.

Write for Catalogue No. 19

STERLING WHEELBARROW CO., Milwaukee, Wis.

Republic "3"
America's Greatest Small Mixer



\$50 and Up

Hand or Power

Cash or Time

Just the Thing for the Small Contractor and Builder

So light a couple of men can move it most anywhere. A great mixer for any class of concrete from a very wet to a very dry mix, including mortar—fine for sidewalk, curb, gutter, foundation, floor and silo work, or for block, brick and tile plants, or brick mortar.

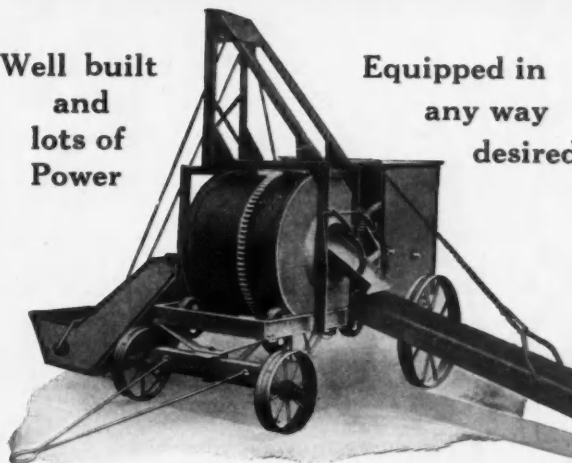
Small enough for the little jobs, or will handle a large one in short order. Well built and exceptionally low in price.

Get posted today.

Republic "6"
A Splendid Medium Size Outfit

Well built and lots of Power

Equipped in any way desired



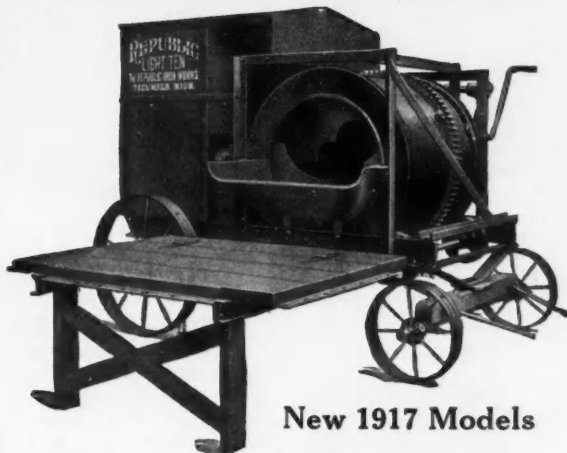
For real genuine satisfaction in all around work you can't beat this mixer.

Splendid power, large, wide wheels for easy hauling, self cleaning drum, a rapid mixer and quick discharger.

Fool-proof and absolutely the strongest medium size mixer built. Write for full information and prices.

BUY FROM US AND SAVE MONEY

Republic "10"
Low - Charging Outfit

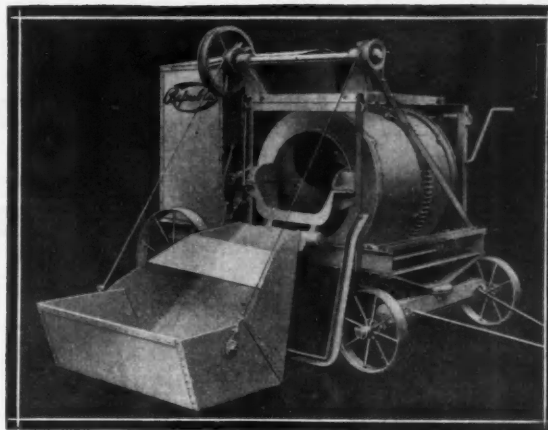


New 1917 Models

The very latest and most improved in concrete mixer construction. Combines the advantage of both large and small mixers, namely—sack size capacity and good sturdy construction, but light weight and low price.

You can't duplicate this mixer for at least \$100.00 above our prices. Get catalog today.

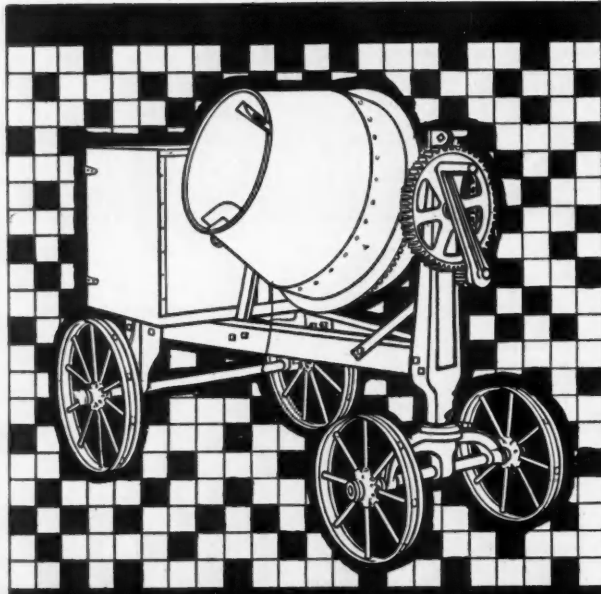
Republic "10"
Power Loader Outfit



Notice the low overhead, the wide loading hopper, the big drum, opening—all the very latest improvements—including sack size and light weight. This is 1917's newest and best moderate price sack size outfit.

Write for price and catalog today.

Republic Iron Works Box 445 or 112 Patterson St. **Tecumseh, Mich.**



IN the concrete machinery industry, the makers of Winner Mixers have been real trail-makers. They have blazed the way time after time with new ideas, new ways and new methods.

The big WINNER LINE, from the Two to the Nine, shows the effects of experience, efficiency, inventive genius and workmanship.

If you want a concrete mixer that's BUILT on the square from the ground up, a concrete mixer that's sold on a fair square kind of plan, and a mixer that will turn out the biggest, squarest day's work you ever heard of—buy the Winner.

Write for literature and prices, let us tell you WHY Winner Mixers make good.

The Cement Tile Machinery Co.
45 Rath St. Waterloo, Iowa

Write STEWART MFG. CO., 127 Rath Street, Waterloo, Iowa, for a copy of literature describing the STEWART UNI-TRUCK

THE *Atlas* MIXER

A FEW REASONS WHY

YOU Should Own An Atlas Mixer

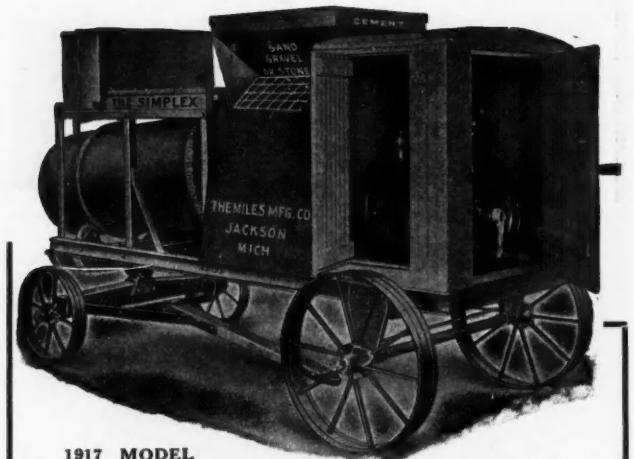
- BECAUSE:** It represents the best established practice in concrete mixer construction—
- BECAUSE:** It gives the best mix in the least possible time, and at less expense—
- BECAUSE:** It has fewer working parts than any other mixer of the same size, and therefore will give less trouble—
- BECAUSE:** It enables the small contractor, the sidewalk builder and the cement block manufacturer to own a mixer that will do as good work as the larger and more expensive machine—
- BECAUSE:** Its large capacity adapts it for large work as well—
- BECAUSE:** It is sold at a price you can afford to pay. Made in 5, 8, 12-foot capacity.

SEND FOR BULLETIN

A Postal will bring the new circular "Concrete Facts"

ATLAS ENGINEERING COMPANY
MANUFACTURERS

3009 Lisbon Avenue - Milwaukee, Wisconsin



1917 MODEL

The SIMPLEX Improved Mixer

Continuous Batch Mix, Low Down, Steel Frame, Heavy Construction, Positive Feed

"THE MILES"
No. 5, Down Face
Wet Concrete Block
Machine

Makes Stone

In Lengths 4, 6, 8, 10, 12, 16,
18, 20, 22, 24 inches.
In Widths 4, 6, 8, 10, 12 inches.
In Height 4, 6, 8 inches.

Also Angle Stone, Circle Stone, Gable
Stone, Hollow or Solid Stone

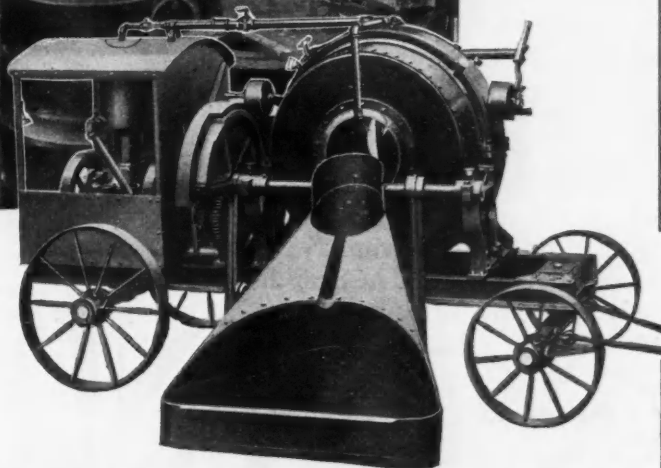
THE CONTRACTORS' FRIEND
Simple, Strong and Rapid
LOWEST IN PRICE

Write for New 1917 Catalog

THE MILES COMPANY, 309 E. Franklin St., Jackson, Mich.



**Quantity Building
Insures Prompt
Shipments of**



SMITH MIXERETTES

"I must have the mixer immediately. How soon can you ship?" This is the question that makes the salesman sit up and take notice these days. How will he answer **you** when **you** ask him? If he is a Smith representative the answer is easy—"I can ship Smith Mixerettes **immediately** for I have them in stock."

The Smith plan enables you to get what you want—when you want it.

Our agents at various distributing points throughout the United States carry machines in stock and are in position to ship the type of equipment you select, at a moment's notice.

When you land that job you are figuring on, write or telegraph us and the machine you select can be on the way the same day. Smith service in this respect is unexcelled by any other mixer manufacturer. Smith agents are prepared to answer calls for immediate shipment or future rush orders.

The 1917 model Smith Mixerette is even better than the previous ones. The capacity has been increased to 4 cu. ft. mixed concrete per batch. The drum speed is now 14 R. P. M. and the engine is now 3 H. P. The new design embodies all the quality and refinement of the old design, with the addition of some strictly new and exclusive features.

The demand for these machines is the greatest in history. Don't wait until it's too late. Fill in the coupon and mail it today.

THE T. L. SMITH CO.

**3123-F Hadley Street
MILWAUKEE, WIS.**

**P. D. Q.
MAILING COUPON**

Send me catalog checked, no obligation on my part.

- Mixerette Catalog No. 116-F.
- Mixerette Low-Charger Catalog No. LC-12-F.
- Mixerette with Hoist Catalog No. 160-F.

Name

St. Address

City

State

Covers the Country

"The Standard" Low Charging Concrete Mixer

CONTRACTORS all over the country have found that "The Standard" Mixer actually cuts the cost of their concrete work one-third. This is due to the low charging principle, its simplicity of construction and the absence of mechanical loading devices which get out of order so often.

"The Standard" is a double-value machine. It delivers perfectly mixed concrete at a minimum cost. It is also used for mixing plaster and mortar. It produces smooth, thoroughly mixed mortar and permits high-priced bricklayers to spend all their time laying brick—and none of their time tempering mortar. No matter what sort of work you have "The Standard" will save you money.

STANDARD

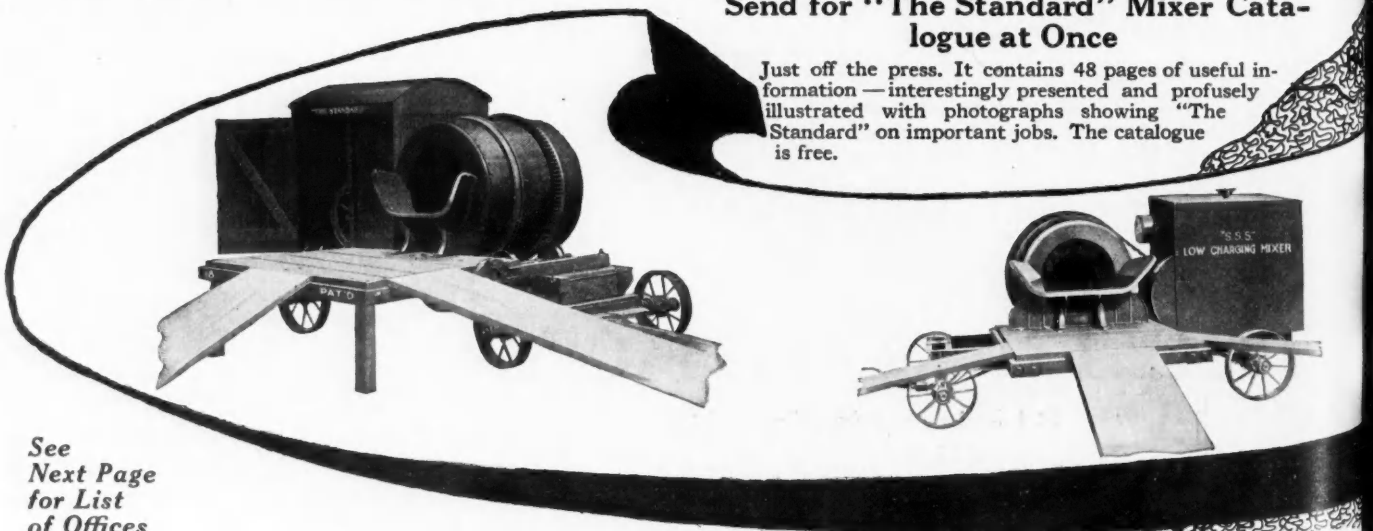
Judge
a Concrete Mixer by
Performance—Not by Price

Judged on the basis of results—of profits earned—"The Standard" is the cheapest mixer you can buy. There are imitations of "The Standard" which may be obtained at slightly lower prices, but when it comes to performance and efficiency season after season, "The Standard" is years ahead of its competitors.

"The Standard" Low Charging Concrete Mixer is known wherever concrete is mixed under the most severe work. Think what this means to you in dollars and satisfaction. Mixers with mechanical loading devices are always getting out of order—something breaks—the crew is held up, and the contractor loses time and money. No mechanical loading device is needed with "The Standard"—the simple low charging platform never gets out of order.

Send for "The Standard" Mixer Catalogue at Once

Just off the press. It contains 48 pages of useful information—interestingly presented and profusely illustrated with photographs showing "The Standard" on important jobs. The catalogue is free.



See
Next Page
for List
of Offices



THE STANDARD LINE

Contractors' Equipment

"The Standard" Line of contractors' equipment includes Gasoline Hoists, both single and double drum, reversible, etc., suitable for all classes of work; Pumping Outfits, Material Elevators, Wood and Steel Concrete Distributing Towers, Derricks—almost everything needed by the contractor in the line of machinery.

Full information on any item in which you may be interested. Write to our nearest office and ask for our latest Equipment Catalogue 44E, and mention the item you are interested in.

"The Standard" Line of equipment is used everywhere. They stand for quality—and are backed by the company best equipped to serve you. Whether it is a concrete mixer, gasoline engine, hoist or pump, or some other piece of contractors' machinery, be sure that you get "The Standard." That name on any piece of equipment is a guarantee of quality.

THE STANDARD SCALE and SUPPLY COMPANY

- Pittsburgh:** 1631 Liberty Avenue
- New York:** 145 Chambers Street
- Philadelphia:** 523 Arch Street
- Baltimore:** 409 N. Gay Street
- Chicago:** 163-171 N. May Street
- Cleveland:** 1547 Columbus Road

Write to our nearest office today and ask for Catalogue No. 44 E

IDEAL CINCINNATUS #5 BATCH MIXER


MR. THOMPSON—of the firm of Dickman & Thompson, large contracting builders—put in over twenty foundations last summer with a No. 5 mixer. He says:

"It is the handiest mixer for foundations I ever used. It's always ready for work and mixes the concrete thoroughly and quickly. The large, roomy loading platform is a great convenience and the mixer is so light and easily handled that I also used it profitably on sidewalks and cisterns."

**WRITE IN FOR FULL INFORMATION ABOUT THIS MIXER
IT IS REASONABLE IN PRICE**



Ideal Concrete Machinery Co.
1308 Monmouth Ave., Cincinnati, O.
WINDSOR, CANADA



It's Free!

—This big twenty-four page book with an answer to all your concrete problems—is free.
—The Concrete Dope Book tells you—oh! send for your copy today, then you can see for yourself.

*Just say, send me the Dope Book—
and we will do the rest.*

The Cement Tile Machinery Co.
44 Rath Street Waterloo, Iowa

KELLY

**ORDER
DIRECT**
and save
50 to 100
\$\$\$

By dealing direct with the contractor and builder we can sell you the Kelly mixer at a saving of \$50 to \$100 without cheapening the machine in any way.

The Kelly is a first-class machine, complete in every detail. Engine is equipped with a magneto that does away with batteries, wiring, spark coils and plugs. Engine is guaranteed for five years.

Write for Our Illustrated Matter Giving Prices and Trial Proposition.

F. H. CLARKE MFG. CO.
10719 Superior Ave., Cleveland, O.



REX MIXER

For PERMANENCE
in CONCRETE



The Rex 4-S—Capacity 4 cu. ft. wet mix. Equipped with 3 H. P. Novo Gasoline Engine. Geo. A. Fuller Co. operated 13 Rex 4-S mixers on the new Curtis Bay Chemical Plant, Baltimore, Md.

Right in Your Own Home Town

There are many jobs that can be handled at a good profit if you have the right kind of mixer. The Rex 4-S may be moved from place to place with ease. The power plant is a 3 H. P. Novo Gasoline Engine. The running expense is low and the simplicity of construction reduces upkeep to a minimum.

The Rex 7-S—a larger model of this same mixer—has a capacity of 7 cu. ft. wet mix. Equipped with Power Loader and Automatic Water Tank if you wish. The prices of the Rex 4-S and the Rex 7-S are within reach of every contractor. Send for Rex Mixer Catalog describing these and the other Rex Mixers and Pavers.

Ask for Rex Mixer Catalog No. 71-D.

Chain Belt Company, 730 Park Street, Milwaukee, Wis.

Established 1891

Chain Belt Company - 30 Church St., New York City
W. B. Lauer Company - Old Colony Building, Chicago
Edelen and Company - Philadelphia, Pa.



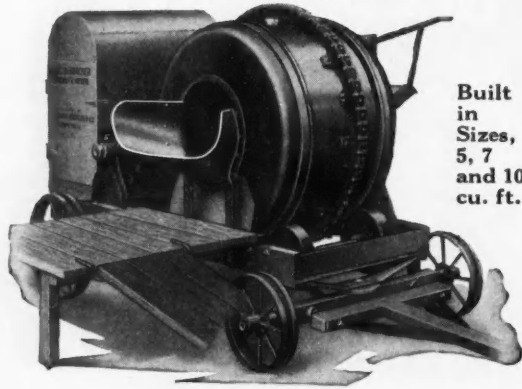
Makers of

Rex Chains for elevating, conveying and transmission
 Sprocket Wheels—Gears
 Shaft Couplings and Collars
 Malleable Elevator Buckets
 Rex Paving Mixers
 Rex Concrete Mixers
 Traveling Water Screens

Write for interesting booklet on any of these

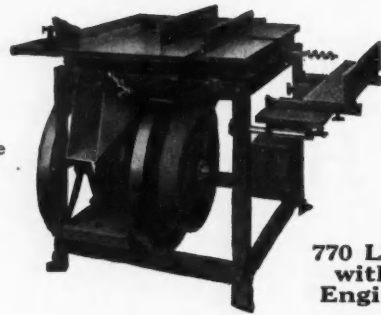
KNICKERBOCKER

QUALITY COUNTS



Built in Sizes, 5, 7 and 10 cu. ft.

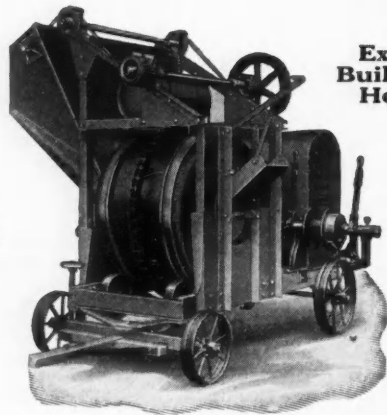
Fast Loading—because of large drum opening
Large Capacity—because of big drum. **No Slopping**—notice slop guards. **Fast Discharge**—surplus power—compact and sturdy.



Portable Wood Worker

770 Lbs. with Engine

We build concrete mixers in twenty styles and sizes; also Woodworkers and Mortar Mixers.



Extra Builder's Hoist

Built in Sizes, 5, 7, 10 and 20 cu. ft.

The Knickerbocker Co.
 525 Liberty St. Jackson, Mich.

WE STAND BACK OF IT

GRAND N°1

ACCURACY, Strength and Simplicity. Three prominent features of the Grand mixer that are absolutely necessary to the all around contractor. The Grand Automatic Force Feed Proportioning Device guarantees absolutely accurate proportions whether the material be wet or dry. This eliminates the expensive mistakes of careless labor.

The mixer is solidly and rigidly built of metal construction to stand up under the hardest usage.

It is a machine of few parts and so simple that the most ordinary laborer can operate it.

If you are looking for an all around mixer, send a postal today for our catalog.

Hall-Holmes Mfg. Co.

465 Oak Street
 Jackson, Mich.



Hercules Stone--Sells on Sight

Stone made with the Hercules is true to size, attractive and bonds perfectly. The Hercules equipments contain the necessary plates for making corner blocks of the proper shape and size, also fractional plates, etc.

The Hercules is a face down machine, strongly built of iron and steel and is low set to make tamping more effective and easy. It is built in 3 sizes.

Write Today for Complete Catalog of Cement Block Machinery

CENTURY CEMENT MACHINE CO.
 55 Browns Race - Rochester, New York



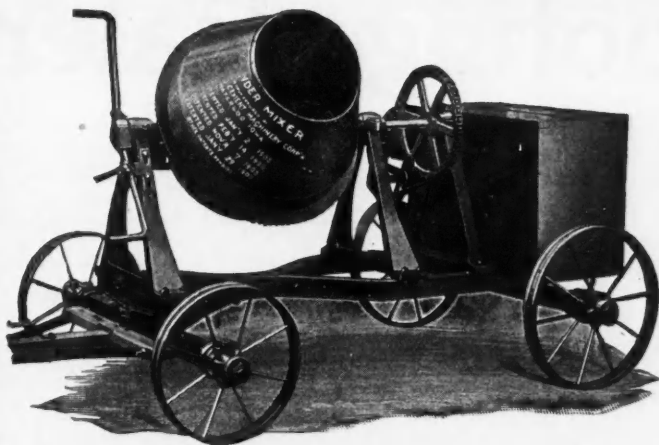
CEMENT SEWER PIPE MOLDS

Simplify Pipe Making

Sewer pipe is about 1½-in. thick. To tamp a semi-dry mixture into such space is impossible—if you want a dense, uniform product. The easiest, quickest, most satisfactory method is to pour a wet mixture into Dunn Molds to make any size of sewer pipe from 6-in. to 36-in. diameter. Big profits in such a product, and always a good demand. Ask for our Pipe Mold Bulletin.

W. E. DUNN MFG. CO.
 415 24th Street Holland, Mich.

SOLD ON 15 DAYS' TRIAL



MODEL 15—The mixer for light work—capacity 5 to 6 cubic feet per batch. Can be equipped with auxiliary hoist. Mixes mortar as well as concrete. 3 H. P. Wonder Gas Engine requires least attention of any ever designed for mixer service. Equipped with Gear Tilt if desired.

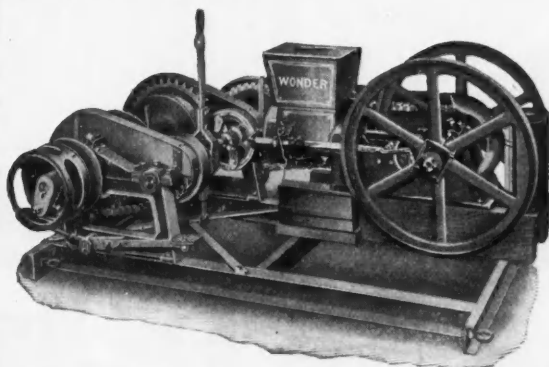
Cut below shows same machine with Folding Track loader and Water Measuring Tank. Mixer same capacity as above, but side loader doubles output and equips you for all work.



Track folded up for moving about. Note perfect balance of machine in this position.

REVERSIBLE BUILDERS' HOIST

A strong, moderate priced Single Drum Reversible Hoist with reversible Elevator Sheave. Drum and Sheave operate independently or together in both directions. Winch Head independent of drum or sheave. Interchangeable sprockets give two line speeds and load capacities. One lever control. 5, 7 and 9 H. P.



Get Next to this if you want Real Hoist Value

The Right Answer to the Mixer Question is **WONDER**

"The Mixer that Makes the Money"

CONSIDER the endorsement of thousands of Builders—many standardizing on the **WONDER**, if you want more than our word for this. There's no better guide than their experience. They show that for

**SPEED AND QUALITY OF MIX
EASE OF OPERATION
STRENGTH AND DURABILITY**

all the real money-making, satisfaction-giving things, the **WONDER** outclasses all mixers they've ever used. Naturally this vast experience covers every make.

Now when you can buy "certified" **WONDER** efficiency for the same and often for less money than the kind you must prove at your own risk, why not take the mixer that originated for you a new field of profit—the foremost mixer of the world.

Send for New Catalogue TODAY and see Why "**WONDER**" is the Right Answer

WATERLOO CEMENT MACH'Y CORPORAT'N
103 Vinton Street, Waterloo, Iowa
*Mixers, Pavers, Hoists, Pumps
Backfillers and Contractors' Equipment*

NEW YORK PHILADELPHIA INDIANAPOLIS
CHICAGO KANSAS CITY SAN FRANCISCO

Facts for roofing dealers

HERE is a genuine opportunity for builders to cash in on their experience and business ability by handling Johns-Manville Asbestos Roofings.

There are several ways to prove it—but the surest is to give you the facts and let you convince yourself. When you've studied our proposition thoroughly—have noted the completeness of the line, the strong selling features the liberal sales policy, the size of the market that lies at your doors—you'll appreciate its possibilities for profits. You'll become a Johns-Manville booster because you believe in the line—and that's the kind of dealer we want.

The booklets shown here are part of a series designed for progressive builders. Ask us to send them to you—*now*, while the season is young.



JOHNS-MANVILLE SERVICE
COVERS THE CONTINENT

JOHNS-

—and for their customers

GIVING you the facts is but part of the plan. In addition we tell your customers about Johns-Manville Asbestos Roofings—through another series of booklets.

Over your signature, but at our expense, we send out advertising matter to prospects in your territory, and turn over the resulting business to you.

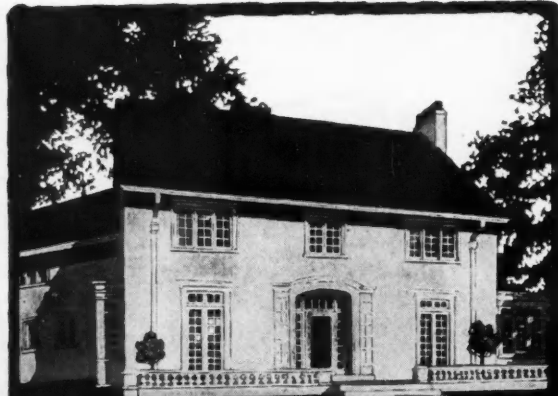
This makes your sales problems easy, especially when backed up by nation-wide advertising and by the principle of Johns-Manville Roofing Responsibility, which vouches for the service the roofings will give.

Transite Asbestos Shingles for homes, Asbestos Ready Roofing for sloping roofs—there's an all-mineral Johns-Manville Roofing, tight, durable, and fire-resistant, for every roofing requirement you meet in your selling work.

H. W. JOHNS-MANVILLE CO.
 NEW YORK CITY
10 Factories—Branches in 55 Large Cities



MANVILLE



STUCCO is the ideal finish for the artistic home. It is also an economical finish, if properly compounded and rightly applied on a *background that will hold it securely*—that will *not* allow it to break away from its fastenings and crack.

Bishopric Board is the *one* background that, *in actual use*, has fully met these requirements—and it *cuts the cost* twenty-five per cent. It's a scientific combination of building principles as old as the pyramids.

Bishopric Board is made of dove-tailed lath that *clinches the stucco*; the lath are creosoted to preserve them, imbedded in asphalt-mastic, which is a perfect protection against vermin and dampness, and backed by heavy fibre-board through which neither sound, heat nor cold can penetrate.



Let us send you free samples and our book "Built on the Wisdom of Ages." It illustrates homes, apartments and buildings of all kinds using Bishopric Board. It contains scientific tests with letters from architects, builders and users; and it gives facts and figures to prove that Bishopric Board is both the best and the most economical background made for the stucco-finished house.

The Bishopric Manufacturing Co.
903 Este Ave. - Cincinnati, O.

Residence of W. P. Rogers,
Dean, Cincinnati Law School
Lowe & Bollenbacher, Architects,
14 E. Jackson St., Chicago, Ill.

Short Talks With Our Subscribers

Proof That Advertising Lowers Selling Cost

THE rising cost of living is the great universal hardship of the present day. So great and so many have these rises been that few people stop to realize that there have been any exceptions to the general rule. But the fact is that there have been numerous exceptions and all of these exceptions belong to the same great class—that of nationally advertised goods.

The old idea that the cost of advertising raises prices dies hard. But the business man knows better. He knows that selling goods is costly business—no matter what the goods or what the selling methods. And he knows that anything which creates demand on a large scale, and thus makes selling easier, is bound to reduce selling costs and thus helps to reduce prices.

But evidence is better than arguments; facts are better than theories. The Association of National Advertisers, an organization of 260 of the leading advertisers of the country, has been at great pains to collect the facts. It has secured an immense body of data from its members which proves that advertising does reduce selling costs and thus tends to reduce the selling price of advertised goods. "The proof of the pudding" is the argument that settles everything.

To present all the evidence, instance by instance, is impossible within these limits. A few representative cases will suffice.

The makers of a famous photographic camera, when they began advertising 28 years ago, made one camera which took a 2½-inch picture and which sold at \$25. Today they make a far better camera which sells for \$10. Another, which took a 4 by 5 picture, sold for \$60. Today they sell a far better one for \$20. And so on thru the line.

A prominent hat manufacturer has, by means of advertising, reduced his selling cost seven cents per hat. Result—the

buyer gets a hat of better quality at no increase in price, this despite increased cost of raw material and workmanship.

When the manufacturer of a famous breakfast food specialty began advertising his goods sold at 15 cents a package. Today the package is 50 per cent larger and the price has been reduced to 10 cents. Again advertising did it, the same causes producing the same results.

The producer of another well-known food specialty is selling his goods at 25 per cent less to the wholesale grocery trade than four years ago.

Twenty years ago a nationally advertised shaving stick was sold in a cheap metal leatherette-covered box. Today a stick containing 20 per cent more soap is sold in a handsome nickel box at the same price.

Then take the most conspicuous example of them all—the automobile business; and compare the \$5,000 or \$10,000 cars of ten years ago with the equally good cars of today, selling for a fraction of the money.

And so on thru a long list. In every case the manufacturer either has been able to lower the price or improve the quality at no increase in price.

How has he done it? By means of advertising, which has created demand on a larger scale and thus permitted production and distribution on a large scale. Result—improved manufacturing efficiency and reduced selling costs. And all of this in the face of a steady increase in the cost of labor and raw materials which, with advertising eliminated, might in many cases have fairly doubled the price of the goods.

"A triumph of economical marketing" is the only possible verdict for advertising in the face of these facts.

Cordially yours,
EDITOR AMERICAN BUILDER.

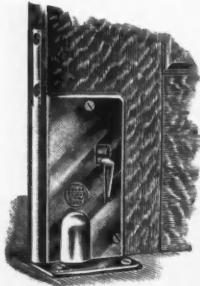
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TRADE
CHICAGO
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**SPRING HINGES
REPUTATION**

Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?



**Chicago "Relax"
Spring Hinges**

are in great demand. They are substantial in construction and readily applied. The EXCLUSIVE FEATURE of spring action release, allowing the door to be placed at any desired position and automatically re-engaging when the door is closed, is of recognized merit and utility.

Send for Catalogue C32. It fully illustrates and describes the most complete line of Spring Hinges manufactured

Chicago Spring-Bull Company,

CHICAGO

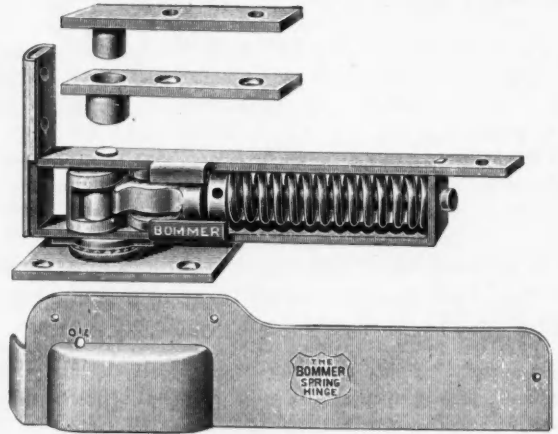


NEW YORK

BOMMER

Floor Surface Spring Hinge

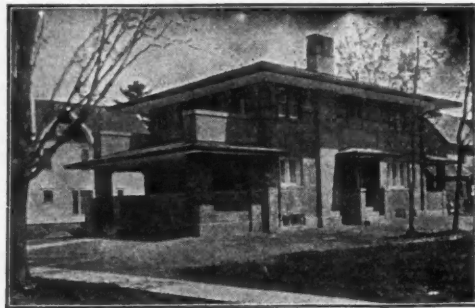
Double or Single Action, Holdback, Ball Bearing. Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side

Your Hardware Merchant Can Supply Them

Bommer Bros., Manufacturers, Brooklyn, N.Y.



Stained with Cabot's Stucco Stain
Percy D. Bentley, Architect, La Crosse, Wis.

Smoky, Dusty Stucco Houses

look dirty and discouraging. They can be transformed into cheerful and attractive habitations at small expense by tinting them with

Cabot's Stucco Stains

(Waterproof)

The tints are rich and natural—don't look "painty"—and they are easily and quickly applied, and lasting. Anyone can put them on. They are not like the thick and heavy coatings, and therefore spread farther, go on easier and cannot crack or peel off. They make the stucco rainproof, so that it is protected from dampness, freezing and crumbling. Artistic coloring is the one thing needed to make stucco houses good to look at, and Cabot's Stucco Stains do the work perfectly. Send for Color-card and Catalog—Free.

Samuel Cabot, Inc., Manfg. Chemists, Boston
1133 Broadway, New York 24 W. Kinzie St., Chicago

Cabot's Shingle Stains, Heat and Cold-proof "Quilt", Old Virginia White, Waterproofings, etc.

Worth Much to You

Morrill

Saw Set

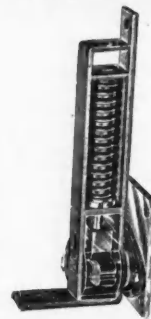


All master carpenters are using this Saw Set. In one operation it takes out the wrong set and puts in the right one. Write for FREE booklet "Saw Points". It tells how to properly joint, set and file hand saws.

CHAS. MORRILL

84 Lafayette Street
NEW YORK

BUILDERS' HARDWARE



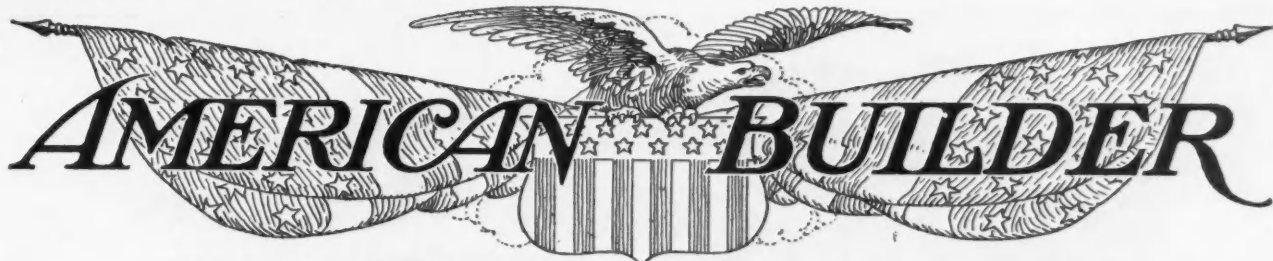
No. 546—1½ in. Ant. Cop. Fin. Spring Hinge. Per set.....\$1.10
Weight per set, 4 lbs.

No. 6—Builders' Hardware Catalog sent free. On account of market conditions, we are unable to issue net price list. Send us your hardware list for quotation.

We do not sell to carpenters or contractors in Cook County, Ill.

Rehm Hardware Company
1501 Blue Island Ave. Chicago, Ill.

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VOL. XXIII

May, 1917

No. 2

"Mobilizing Machinery for Every Possible Job is as Patriotic as Mobilizing Men"

—THE MAN FROM THE LUMBER YARD

Every thinking man recognizes the crisis that faces the world because of the destruction of its resources of MEN. The ideas given in this article are worthy the consideration of every reader. EDITOR.

YOUR father may have worn the gray; mine wore the blue. You may have been born under the Prussian eagle, or the Union Jack. I was born under the Stars and Stripes. But that does not make more of a patriot of me than you. Patriotism is not a matter of birth nor yet of what a man says, but what he DOES. Actions count more than words.

Every reader of the daily press knows the crisis that faces us.

Brains Plus Brawn not Brawn vs. Brain

America has a big job ahead of her. Not only must she build an armada of sea-going vessels the like of which was never seen before, but she must raise, clothe and equip an army. She must feed her hundred million mouths and many in Europe, who will otherwise go hungry. All this must be done when her population is a million short of normal.

If American brain and American brawn can pull together and not against each other, great things will be done.

We dare not stop. The wheels of agriculture and commerce must be more active than ever before. Every doer who reads this must forge ahead as a great ship, regardless of buffeting waves.

The Bear and Forbear in Business

Shortly after my marriage I met a minister who was an old friend of the family. After extending congratulations, he said: "Always keep two bears around the house, BEAR and forBEAR."

Nineteen hundred and seventeen will have more of stress and strain in the building line than any previous year. Everybody's nerves will be stretched to the breaking point.

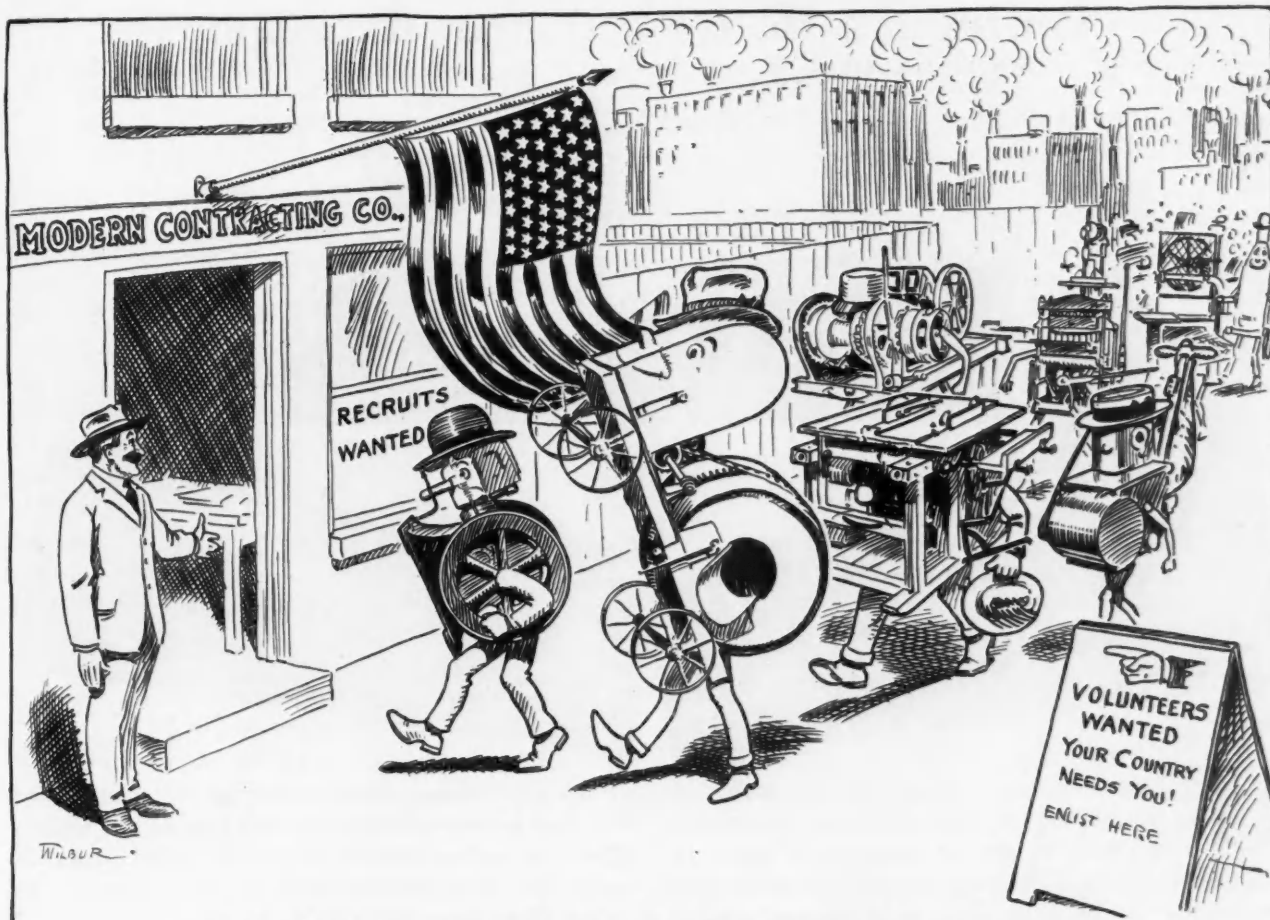
That is the time when the wise man keeps sweet. Associates, employer or employe have all to lose and nothing to gain by fireworks of temper.

Let each one introduce my two bears into their system.

We read that a thousand years are as a day in the sight of the Lord. If you can't look at your troubles



Our Three Lines of Defense—Soldier, Farmer, Builder.



Patriotism and Profit Demand that Every Builder Open a Recruiting Office for Machines.

and grievances from the distance of a thousand years, set them off at least ten days. Wait ten days until you say that sharp thing to your helper. Wait ten days before blowing up the boss. If you do you will not be like little Johnny, who began crying when his mother returned from a visit. "Why, what is the matter?" the anxious mother inquired. Johnny sobbed out that he had hurt himself yesterday. "But why do you cry now?" "You weren't at home yesterday," was the reply.

In the office of a Chicago contractor there hangs a sign reading:

"This Too Will Pass"

When I asked an explanation, he said that he had discovered that his greatest troubles eventually passed away. He reasoned that if all of his old problems had been solved undoubtedly his new ones would be. He had had the sign made to remind him of this fact.

Us and Uncle Sam

If your Uncle Sam has need of YOU in any particular job, take it and give all that is in you, even at a sacrifice. All, whether employer or employe, should stand on that platform.

The producers of copper have shown the proper spirit when they supplied the government with copper at about half the market. Ship-contracting firms

are taking government work at a 10% margin when they can get 50% from private corporations or foreign buyers.

That man sees best that doesn't look too closely at TODAY.

It may be possible that another employer will pay you today a higher wage than yours can see daylight on, but consider the future.

It may be possible, Mr. Employer, that you can skimp on the wage, but consider the losing of a worker trained to your way of doing.

Without detracting any from my reverence for the Almighty, and my belief in His supreme power, He is unable to think ahead for us. He can't grow a field of corn for the farmer unless the farmer plants it.

Prayers will not give light to help you in your work in the basement, but if you will run the wire in, properly attaching a bulb on one end and connect the other end to the feed wire, God's law will never go back on you. You have got to take the initiative.

A blessing often comes in disguise.

Where One Good Arm Earned More Than Two

In the automobile belt where building has been phenomenal for the last several years is a contractor who has erected all types of buildings. He had in his employ a man who was a whirlwind on mortises. He could beat out any two others at that job. To see him

(Continued to page 126.)

Building a House a Day in Kenosha

HOME BUILDING ON WHOLESALE LINES IN THIS BUSY MANUFACTURING TOWN—400 DWELLINGS BEING PUT UP UNDER ONE CONTRACT

By Albert M. Larson

Of Larson Bros., Contractors Acting as Superintendents of Construction for the Kenosha House Building Co.



ON July 1, 1916, a prominent lumber dealer and a member of a leading Kenosha real estate firm, came to us and asked us if we could build a house a day, stating that the Manufacturers' Association of Kenosha were in immediate need of 400 houses, one of the requirements being speed in construction. This, however, was not the only stipulation that had to be met; plans were to be submitted and cost per house was to be a big factor in keeping the business among local contractors.

We were at that time at work on ten houses of five and six rooms each, which we were building for the market. Each house was a little different in design from the others, one being a bungalow with five rooms and bath on one floor; the next a story and a half

cottage with parlor, dining room, and kitchen on the first floor and three bed rooms and bath on the second floor; the next a square house two full stories in height with six rooms and bath, etc.

Our plans were not very elaborate. Each one of these ten styles of houses we had built before, so that the floor plans were all that we required. These, together with photographs of the finished house, to serve as elevations, specifications for each house, and the cost per house, which ranged from \$1,700 to \$1,900, were submitted to the Manufacturers' Association, and with a few changes, were accepted.

In the meantime we secured prices from different sub-contractors on foundation, plumbing, heating, plastering, etc., for 200 houses at the rate of a house



Part of the Men Working Under the Supervision of Larson Bros. at Kenosha, Wisconsin; and View of One of the Streets

a day. No doubt the size of the contract had a great deal to do with keeping the cost within the required limits.

How the Job was Handled

The foundation walls were concrete, 4 feet 6 inches below grade—8-inch wall on 4 by 16-inch footings. Above grade on all houses not stuccoed on outside were four courses rock-faced cement blocks. Chimneys were built of common brick with pressed brick top and lined with 8 by 8-inch flue lining. The cost of excavating, foundation, chimney and cement floor was figured in groups of twelve, at an average cost of \$165.00 each. Crushed rock and gravel were ordered by carload, also 30 yards per day were hauled from the beach at Lake Michigan. On July 15 our concrete contractor had one foundation ready for us, and was turning them out at the rate of one every day.

The next step was to get material on the job. At about the center of the tract, which contained 188 lots, we erected two warehouses, each one 32 by 80 feet. Racks were made to store interior trim, doors, etc. Kitchen cases were bought by the carload and provision was made for storing one carload at a time (52 cases)

To the Editor:

I read in your last issue an article by John Nolan on the Housing Problem. We are the superintendents of construction on this work here in Kenosha and we have at present about one hundred and fifteen houses finished and under the course of construction.

We are very much interested in the success of the "American Builder" and we can safely say that at least twelve of our men are also subscribers of your valuable magazine.

Yours very truly,

LARSON BROS., Contractors.

Per Albert M. Larson.

Kenosha, Wis.

with deliveries on the balance two months apart. Nails were scarce at the time, but by use of the long distance telephone we were able to secure for immediate shipment 647 kegs, made up of 16d, 10d, 8d, 6d common, and 10d, 8d, 6d, and 4d finish. We would like to add right here that within 48 hours after the order

half a carload of trim hardware was bought and placed on shelves in the warehouses, and a space 30 by 32 feet was set aside for window sash, which were arranged in groups according to size for easy distribution.

A tool house, which was also used as a dining room, 24 by 30 feet, was erected near the warehouses, and an office 14 by 18 feet was erected at the entrance of the subdivision.

A list of dimension stuff was made out for each job and numbered—Job No. —, Lot No.—, and four teams hauled lumber steadily, piling each job on the lot designated. Stock patterns were then made of all studding, rafters, etc., marked plainly with style of house and lot number. A force of men were put cutting rafters and studding. Others were put placing

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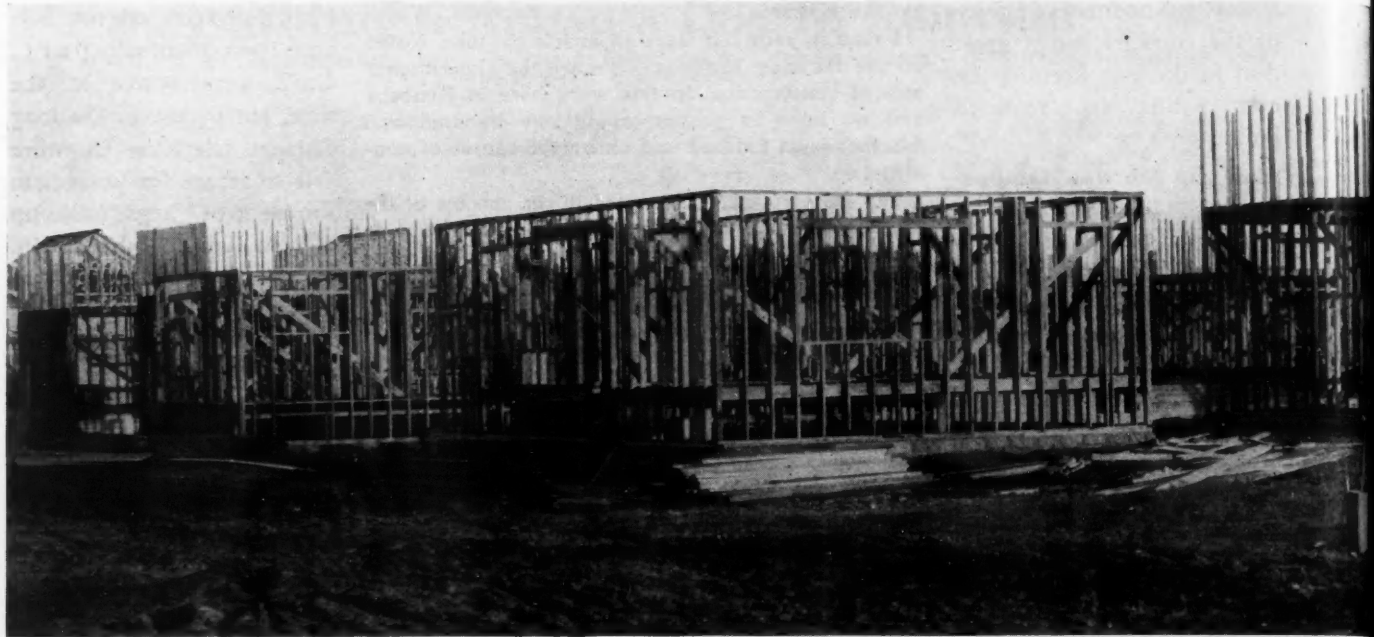
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Well-Planned Homes Being Built by Them. 400 New Houses of This Type Are Being Built Under This Contract at Kenosha.



Framework Up for a Group of Bungalows and Two-Story Dwellings at Kenosha, Where 400 Houses Are Being Erected Under

8 by 8-inch beams and 6 by 6-inch supports and bolting plates to foundations. Other men followed them placing joists and raising walls; others laying floor lining; others sheathing; others cutting window openings. In fact each man had a certain class of work and according to his aptitude in that line was kept at it.

The average number of carpenters from August first to December first was about 35. The scale of wages ranged from 40c to 60c an hour. The open shop system was adopted for this job.

Materials and Costs

The material used on these jobs was first class in every respect. Items such as firestopping, floor lining, waterproof sheathing paper, patent lath nailed over sheathing for outside stucco, special waterproof stucco, No. 1 hemlock or No. 2 yellow pine sheathing, best grade red cedar 5/2 shingles, white pine or cypress outside trim lumber, 1½ resawed cypress wide siding, fir porch flooring, best brand white lead, pure linseed oil, high grade plumbing goods, and high grade furnaces with hot water connections, will give an idea of the character of the materials.

The accompanying photos show the outside appearance and grouping of some of these houses.

The average cost per house can be roughly figured as follows:

Lumber and mill work.....	\$650.00
Foundation (inc. chimney and cement floor) ..	165.00
Plastering (two coat sand finish).....	150.00
Plumbing (complete, 3 fixtures in bath room, sink in kitchen and tank in basement)....	210.00
Electric wiring	25.00
Painting (2 coats outside and 3 inside).....	95.00
Furnace	120.00
Tinwork	20.00
Hardware	50.00
Carpenter Labor	280.00
Supervision	50.00

Total\$1,815.00

Several of the plainer styles of houses cost considerably less than the above figures, and on the stucco finished houses the cost runs a little more. These houses were inspected from time to time by an architect employed by the Manufacturers' Association, and an earnest effort was made to give the greatest possible value for the money expended.

Freezing weather put a stop to outside work about the first week in December. At that time about 110 houses were under roof, of which 84 were plastered, 62 were trimmed and 48 were occupied.

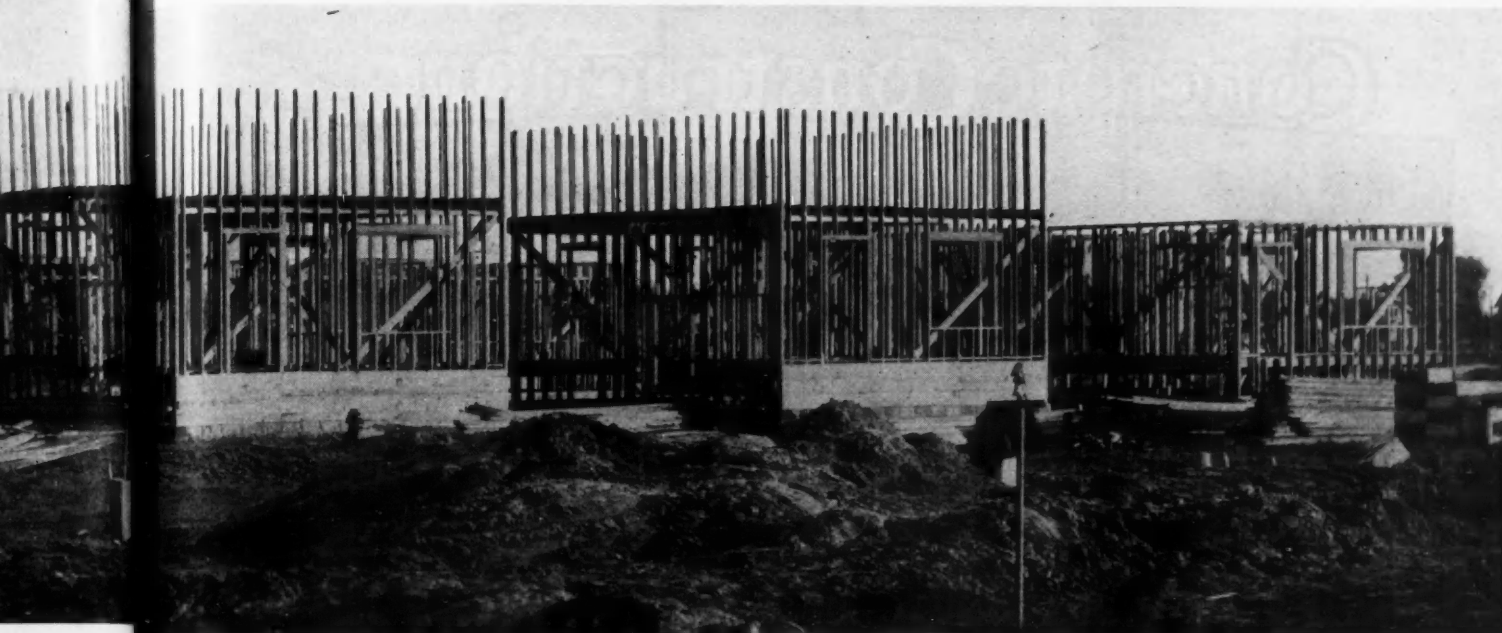
Line Up With Nation-Wide "Buy a Home" Campaign

THE attached letter from Fred Reed of Oakland, Calif., to Tom Ingersoll of Minneapolis—which was not intended for publication—is just about the most spontaneous and enthusiastic letter on Home Ownership we have ever read.

It proves that Home Ownership is something far greater than a real estate transaction, for the benefit of an agent or broker. It shows how all classes of

people, all the trades, businesses and professions endorse the idea and work for it. It shows how this Buy-a-Home idea is the dominating influence of our American life.

President Henry P. Haas, of the National Association of Real Estate Boards, has appointed a strong committee to encourage a series of "Buy a Home" campaigns to be conducted in cities and towns thruout



Contract. Many Economies, Both in Material and Labor Cost, Can Be Practiced When Building by the Wholesale Like This.

the United States, the suggestion being to set aside some one week during the month of May, 1917, as a "Buy a Home Week."

Campaigns similar to this have been put on in Birmingham, Indianapolis, Denver and other cities, and are found wonderfully effective in getting the public interested in real estate purchases, particularly after periods of depression.

Remember that the phrase "Buy a Home" is the one most applicable to all phases of real estate sales, and can very easily be turned into an argument for the purchase of a lot, or the building of a residence, or almost any other real estate sale.

Oakland took the Buy-a-Home suggestion, developed and enlarged upon it, and is putting on a remarkable three months' campaign. We haven't room to print the enthusiastic reports that are coming in from campaigns in progress or in preparation in Indianapolis, Denver, Portland, Des Moines, Sioux City, Lansing, Memphis, Birmingham and South Bend.

You can do the same. We'll be glad to help if you want us, but you don't need it. Get the Buy-a-Home idea started in your city and it will go like wild. Try it.

From Fred and Tom—A Real Estate Classic on Home Ownership

Oakland, Cal., March 10, 1917.

My Dear Tom:

Am sending you, under separate cover, copies of the last two Sunday issues of our Oakland Tribune in order that you may see how we *wild Californians* tear into a thing once we decide to go.

This "Buy-a-Home-First" which we have grabbed, we've just decided to be the biggest thing ever put over in real estate

circles in California, and we don't even stop there.

By the time we'd been at work a week, we knew that we had the *big issue* for 1917 for the National Association.

Birmingham's Buy-a-Home Campaign gave us the idea. Harry Lafter, of Wickham-Havens Co. of our city, changed it to "Buy-a-Home First" and gave us the inspirations. And I tell you, Tom, our town is wild about it today.

We've got all the *school children competing for prizes* for the best essays handed into the teacher, every one of them going home to Daddy and saying: "Daddy, *why don't we own our own home?*" The school teachers are correcting essays written by every pupil in the city on the subject, and if our present fathers don't buy homes, believe me the next generation will.

We've got every man, woman and child in the town who owns a camera, or who can borrow one, *taking pictures of homes* competing in the "Most Beautiful Picture of an Oakland Home" Contest.

We've got the *professionals sending in all the photographs* they have taken that they think are especially artistic, for the prize for professionals.

We've got the *backyard garden ladies* rubbing their sides with glee because of the prizes for the most artistic backyard vegetable garden.

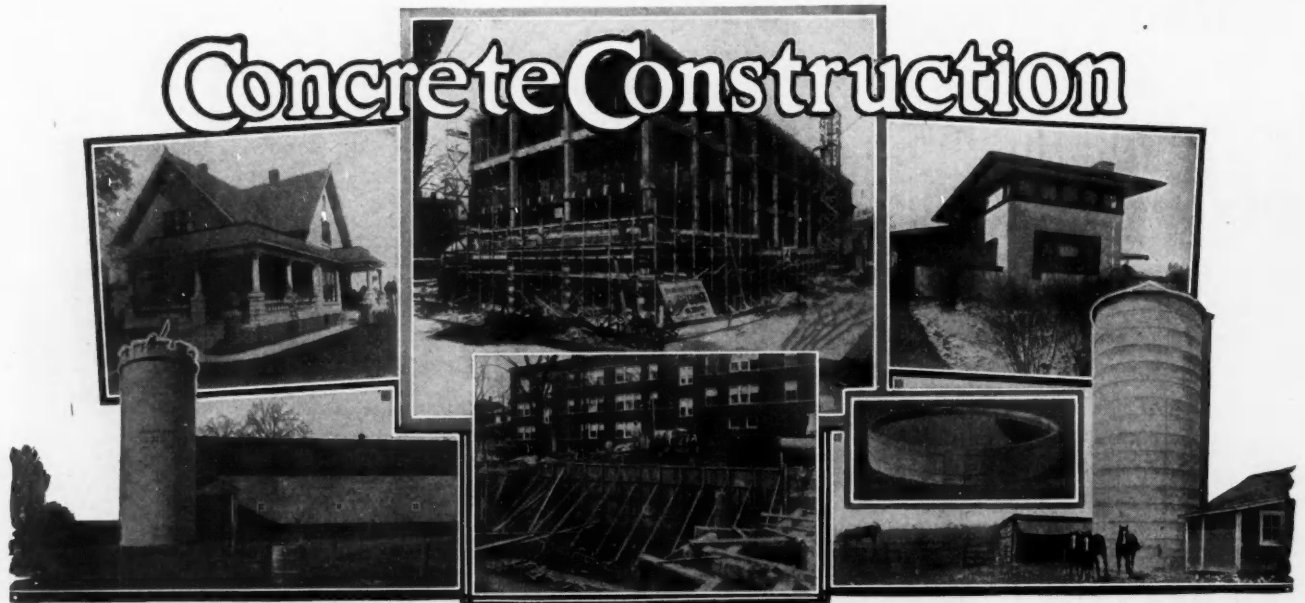
Get this, Tom! Every improvement club in our city appoints its *committees to select the winner* of this contest for that particular district and the Federation of all the Improvement Clubs appoints a committee to select the "winner among the winners." Can you see it, man?

The *Ad Club of the Chamber of Commerce* is writing advertisements and hunting up copy for the leading evening paper of the Pacific Coast, our Oakland Tribune, which has taken hold of the thing as though it was the only thing on earth they were interested in.

Can you picture a *joint conference* held last Tuesday by the *Oakland Real Estate Board, the Chamber of Commerce, and the Ministerial Union?* A lunch with its theme of "Buy-a-Home-First" with crowds being turned away and the room as still as

(Continued to page 134.)

A HOME OWNER'S CREED
BUY A HOME FIRST, before you buy booze, before you buy sealskins or diamonds, before you buy automobiles.
BUY A HOME FIRST, before you ask the girl to marry you. Bring her fruit-blossoms from her backyard-to-be, and make that offering against the other fellow's record of good intentions in her behalf.



The Development of Reinforced Concrete for Factories and Warehouses

By Albert M. Wolf*

Associate M. Am., Soc. C. E.

NOT many years ago structural steel, brick and timber were the main structural materials used in the construction of factories and warehouses. The buildings so constructed did not always give the best of satisfaction and unless fireproofed, as in the case of structural steel, were particularly subject to damage and destruction by fire. It is therefore not at all surprising that the use of reinforced concrete in building construction grew very rapidly after a few applications of the new material convinced the more advanced engineers, architects and owners of its particular advantages over the old types, as hereafter set forth.

Reinforced concrete is not necessarily limited to use on large buildings, as some may believe, but the same advantages and almost the same economy are gained

*Prin. Ass't Eng. Condon Co., Industrial and Structural Engineers, Chicago.

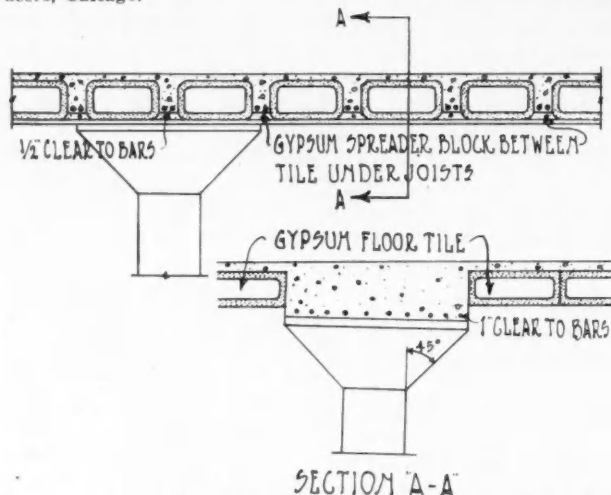


Fig. 2. Cross-Section of Concrete Joist and Gypsum Tile Filler Design for Concrete Roof.

in the construction of smaller buildings costing from \$30,000 to \$50,000 as in those costing several times these amounts. The purpose of this article is to set forth briefly the history of the development of reinforced concrete building construction, the particular

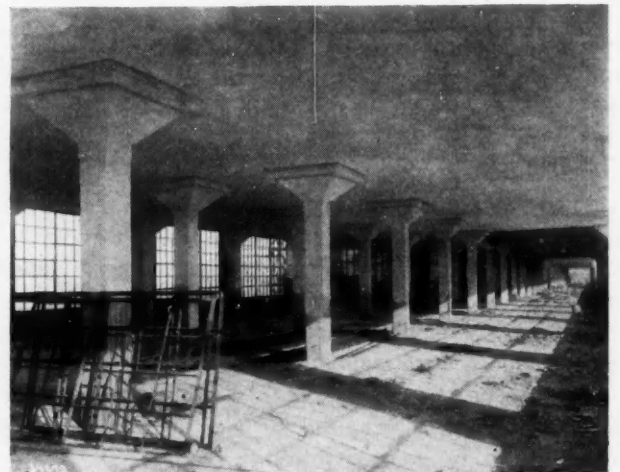


Fig. 3. Flat Slab Building. No Spandrel Beams. Windows Carried Up to Ceiling Level. Note Excellent Lighting Effect.

advantages of different types, comparative cost data, and notes on the design of such buildings.

As was but natural, the first buildings built of reinforced concrete were modeled very closely after the other types of construction then in use, viz., timber and structural steel (Fig. 1a). As a result the monolithic character of concrete construction was ignored almost altogether and all possible economy was therefore not effected and the structures otherwise rendered unsightly by cracks developing in the members. After a time the principles of reinforced concrete became more

widely known and more clearly interpreted and engineers began gradually to depart from the beaten paths of practice in other types and to treat reinforced concrete as a building material of an entirely different character from the then prevailing types, wood and steel.

The monolithic character of the material was soon recognized and advantage taken thereof in design of slabs, beams and girders, with resulting saving in concrete and steel. This done, the next step was the endeavor to eliminate some of the many beams or joists to cut down on the cost of formwork and placement of

capitals to act as supports for the slab, thus forming what is known as "flat slab" construction. The first building of this type built was the Johnson Bovey Co.'s Building, at Minneapolis, in 1906. This growth toward a more economical use of concrete and steel has been gradual and there still remain a few engineers and builders who have not been convinced that the flat slab type is as economical, strong and otherwise desirable as the old type of beam and girder construction; but they are becoming fewer every day.

Description of Flat Slab Types

As is usually the case in any field enjoying a rapid



Fig. 1. Group Showing Development of Concrete Building Types. 1a (Upper Left), Beam and Girder Floor; 1b (Upper Right), Girder and Slab Floors; 1c (Lower Left), Flat Slab Floor; 1d (Lower Right), Later Type of Flat Slab Floor with Drop Panel Over Column.

steel. This marks the beginning of the decline of the beam and girder type in reinforced concrete construction; the intermediate beams so prevalent in the early designs were decreased in number, until in some cases the construction consisted of girders supported on columns with one or two intermediate beams in one direction with the slab reinforced transverse to the beams. In other cases where the spans were not so great, the beams were omitted entirely and the slabs carried directly on the girders framing into the columns (Fig. 1b). The next step was the elimination of the deep girders and providing the columns with flaring

growth, there have been devised several systems, some being modifications of others, or differing from them in minor details only, and for this reason only the two main types will be described here. The first system evolved was the multiple-way reinforced slab or "mushroom system," consisting essentially of a concrete slab carried on columns with flaring capitals, the belts of bars in the bottom of the slab in the regions between columns' capitals, being carried up into the top portion over the columns without bending by passing them over a heavy framework of radial and circular bars formed in part by the bending down of the projecting ends of

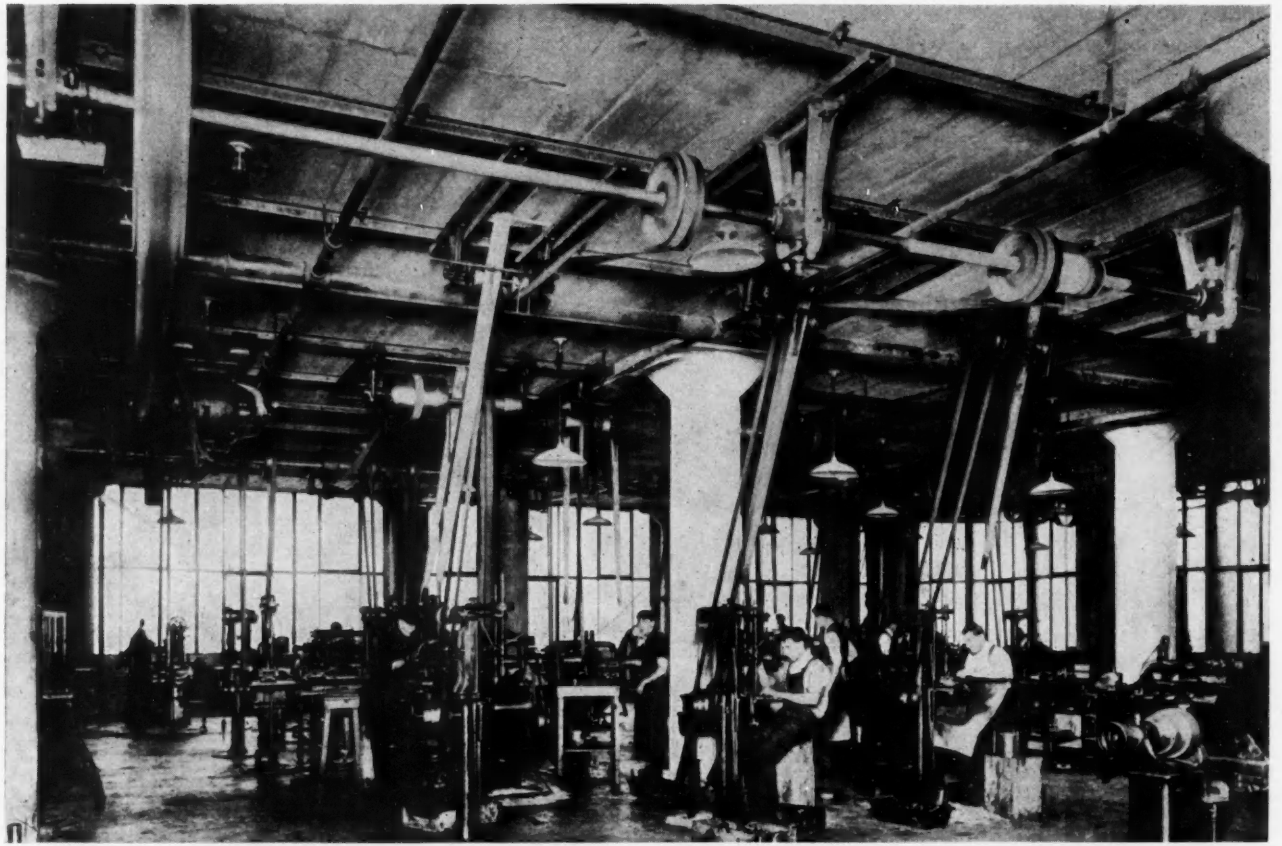


Fig. 4. Interior of Flat Slab Building, Showing Ease of Attachment of Shafting and Piping to Ceiling.

the column bars. In this type with all belts of bars passing over the column head in lines directly and diagonally between columns there are four layers of

bars over the columns. The next system devised, which is essentially different from the first, is the two-way reinforced or Akme System flat slab (Figs. 1c and 1d). This system employs the flaring column capital, but the radial cantilever and circular hoop head frame used in the mushroom system is not used, or required. The reinforcement consists of rectangular belts of bars in two directions only, the main belts between columns being bent so as to be in the top portion of the slab over the columns and in the lower part of the slab between the column heads. The bars in the portion of the slab enclosed between the main bands are placed parallel to them and similarly bent, thus reinforcing the upper portion of the slab over the middle portion of the main belts in transverse direction. The bars are bent previous to placing and held rigidly in place by supporting bars resting on concrete blocks, thus insuring their proper position in the finished slab. In this system there are only two layers of bars over the column heads, at right angles to each other. The first building built on this system was for the Hirsch, Stein & Co., at Hammond, Ind., in 1908, designed for a live load of 400 lbs. per square foot.

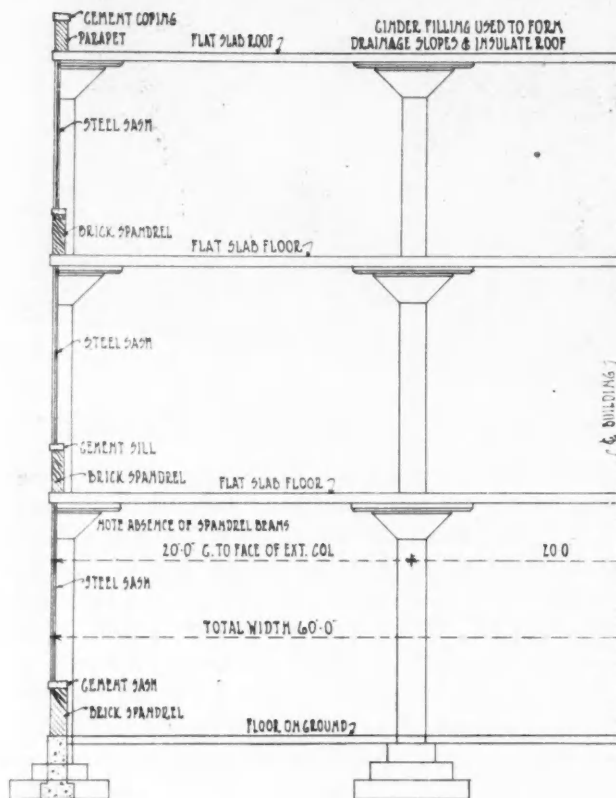


Fig. 5. Half Typical Section of Concrete Flat Slab Factory.

Joist and Slab Type

Along with the development of the flat slab came that of what is commonly known as the joist type of concrete floor construction (see Fig. 2), consisting in general of concrete joists 4 or 5 in. wide and about 2 ft.

(Continued to page 140.)

Fundamentals of Reinforced Concrete Design

In Three Parts—Part 2

A TREATISE PREPARED AS A SHORT COURSE FOR MANUAL TRAINING AND VOCATIONAL TEACHERS

By Ernest McCullough

Chief Engineer, Fireproof Construction Bureau, Portland Cement Association.

Shear

Figure 10 shows a beam with typical shear cracks. A beam may fail by crushing of the concrete in the top, by the stretching or slipping of the steel or by shear, which is manifested by the appearance of shearing cracks. These cracks are an indication of tension in the concrete and stirrups are used to prevent shearing (diagonal tension) failures.

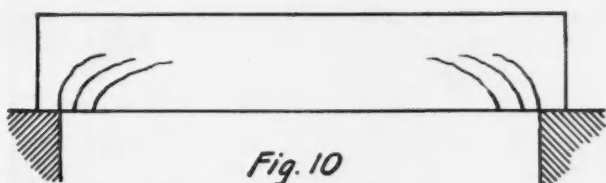
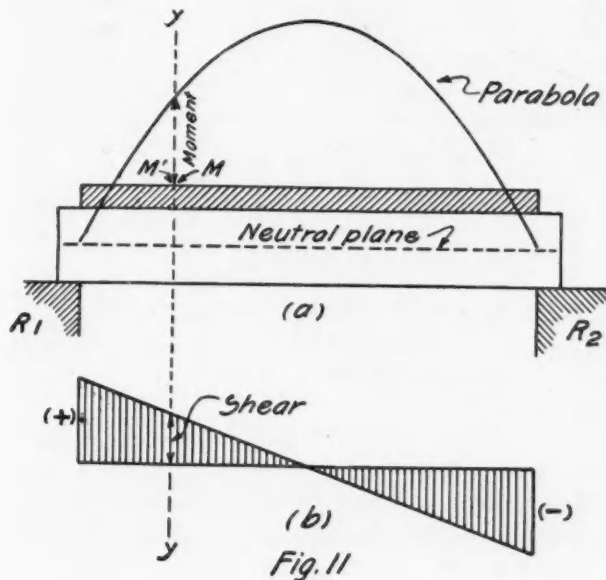


Fig. 10
Showing Typical Shear Cracks in Beam.

Figure 11 (a) shows a uniformly loaded beam resting freely on two supports. At (b) is shown the shear diagram. The vertical shear at either end is equal to one-half the load and is zero at the point of maximum bending moment. The vertical depth, measured in pounds, of the shear diagram at any point is a sum-curve of the loading to that point.

The bending moment at any point is the area of the shear diagram between that point and the support. The vertical dimension is in pounds. The horizontal dimension is in feet when the result is foot pounds and in inches when the result is inch pounds. The bending moment at any section, such as $y \dots \dots y$ is the sum curve of the shear at that section.

Let the bending moment at $y \dots \dots y$ be M (in inch pounds), then the unit fiber stress at $y \dots \dots y = \frac{M}{jdb}$.



Moment and Shear Diagram of Uniformly Loaded Beam.

Let V = total shear at any section.

M = bending moment on one side of the section,

and

M' = bending moment on the other side of the section, the section assumed to have a thickness as nearly zero as possible.

Then on one side

$$f = \frac{M}{jdb}$$

And on the other side

$$f = \frac{M'}{jdb}$$

The total shear is $V = M - M'$, and the unit shear is $v = \frac{V}{M - M'}$

$$v = \frac{V}{jdb}$$

In T beams the b used in expressions for shear is the thickness of the stem below the floor slab.

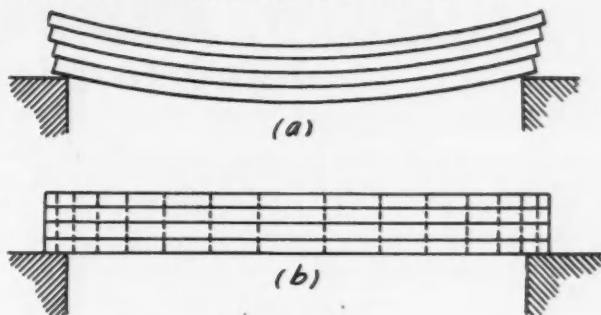


Fig. 12

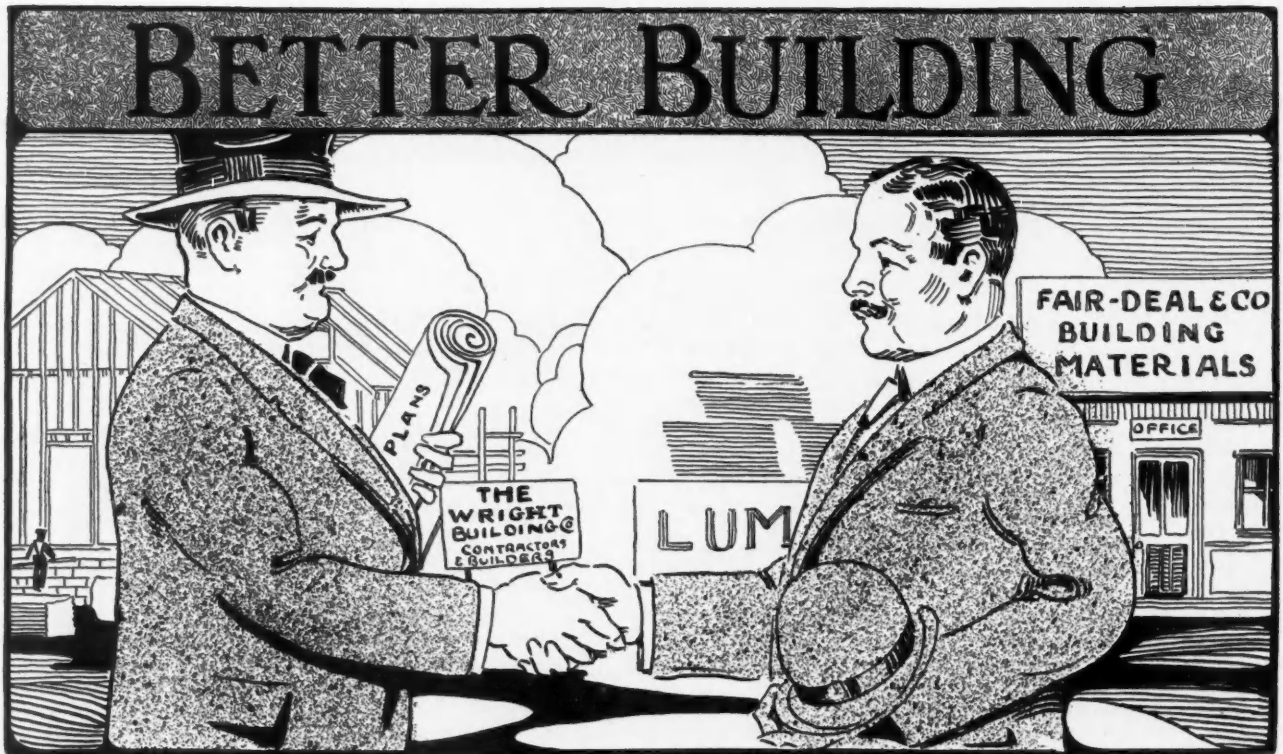
Condition Assumed for Purpose of Computation.

The shear being tension increases from the top and bottom skin to a maximum at the neutral axis where the bending stress changes from tension to compression and from compression to tension. In a beam of homogeneous material with a uniform cross section the shear is the same above and below the neutral plane at equal distances from this plane. The amount may be computed for any depth by assuming different values for jd , the V and M being constant. This distribution of horizontal shear is found in a reinforced concrete beam above the neutral plane. Below the neutral plane the shear is constant, for all the tension is carried by the steel. The unit value of the shear at all depths from the neutral axis to the center of gravity of the steel is determined by the expression,

$$v = \frac{V}{jdb}$$

in which d = depth from top of beam to center of gravity of the steel

(Continued to page 120)



Dealer-Contractor Good-Will Best for Building

Mr. Jackson J. Jones, Average Citizen, Finds It Easy to Plan His Home

CONTRACTOR AND DEALER WORK TOGETHER TO FURNISH INFORMATION, PLANS, AND REAL SERVICE

By J. S. Williams

Of West Coast Lumbermen's Ass'n.

MR. JACKSON J. JONES, thru ten years of careful attention to business, had just risen to the position of Superintendent of the A B C Company. Any other average citizen might have achieved the same position by an application of similar methods, and that's why we shall call this superintendent Mr. Jones.

Because Mr. Jones is an average citizen he also is a married man, and has just reached that stage in his life where his long cherished ambition for a home of his own can be realized.

"Dearie," said he to Mrs. Jones one evening, "I believe I'll go down and call on Mr. Brown, the contractor who lives in the next block. He may have some ideas for our new home."

Jones found Mr. Brown reading the latest building trade papers.

"Hello, Mr. Brown, I see you're keeping the cobwebs away from your business."

"Yes," said Mr. Brown, "improvements in materials and methods come thick and fast these days. How's the A B C Company?"

"Prospering, thank you. In fact that little raise they gave me recently has made it possible for me to start figuring on our new home. That's what I came to see you about—thought you might give me some suggestions."

"I probably can," said Mr. Brown, "but I think the best plan would be for me to drive by your house tomorrow and get you and Mrs. Jones, and we'll all go down and see Mr. Smith, of the Smith Lumber Company. He operates a Plan and Service Department in connection with his business, and there's no charge for it at all. How will 2 o'clock tomorrow afternoon suit you?"

"Fine. I'll be prompt."

The next afternoon found Mr. and Mrs. Jones, Mr. Brown and Mr. Smith seated around the big quartered oak table in the Plan and Service Room of the Smith Lumber Company.

"Now first I want to explain," said Mr. Smith, "that you are absolutely under no obligations to me. This department of our business is maintained with the thought that perhaps because of our experience and familiarity with home building, we can aid the people of this town in building more attractive and more serviceable homes. We'll take a chance on our share of the business later."

"Here," continued Mr. Smith, as he laid before Mr. and Mrs. Jones several plan books, "are actual pictures of over 200 homes of the most attractive and original design. These homes are located in different cities from the Atlantic to the Pacific. You'll find

(Continued to page 150.)

Permanent Furniture for Your Home

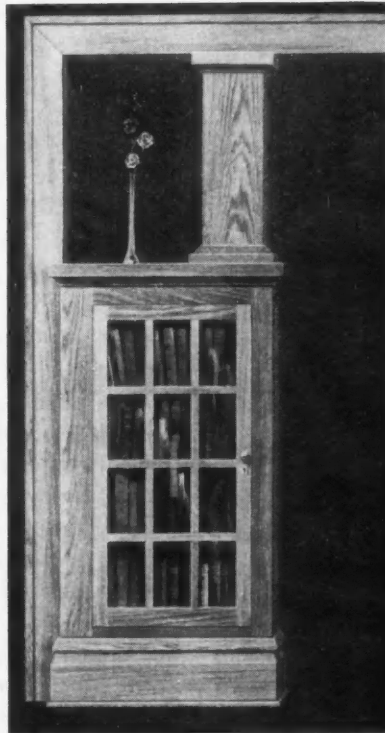
By L. M. Francisco

"He chooses wood for its warmth of life and for its general use to make his house comely and express his inner self; and a home results that satisfies the heart."

MODERN merchandising of lumber and building materials is bringing about a decided change in the building industry. Dealers and contractors are selling complete homes, and are not merely handling building materials—they are even helping home-builders furnish their homes.

The kind of furniture that the dealer is selling and the contractor is building into homes is *permanent* furniture. It consists of those articles of woodwork that have all the features of regular furniture except that they are not movable. They are built-in to the house as an important part of it.

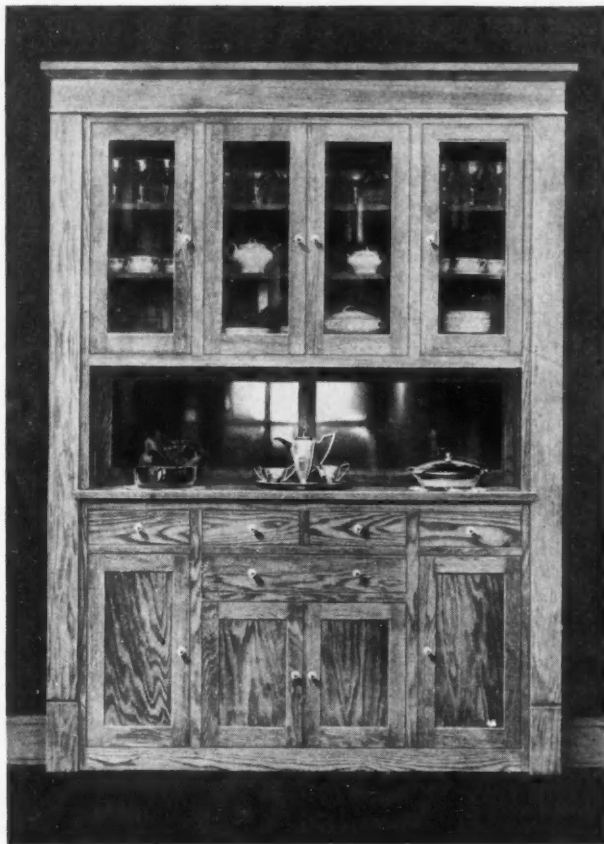
Built-in woodwork appeals particularly to the housewife. It makes keeping house a joy. It is easy for



Type of Modern Colonnade Having Case for Books Built in Column Pedestal.

her to keep clean because dust cannot collect under it. She can keep her table cloths, napkins and silverware in her dining-room sideboard or buffet. The kitchen cupboard protects her cooking utensils and other articles from the dust. The colonnade's pedestals make good bookcases. A cozy seat here and there affords a convenient resting place. If its cover is hinged, it is a handy receptacle for overshoes, children's toys, and miscellaneous household articles. Built-in furniture is convenient because it stays put, always in place, ready to serve the many needs of the home's occupants. Having a place for everything, it's easy enough to keep everything in its place. That means efficiency in the business of keeping house.

The beauty and homelike appeal of permanent furniture are important qualities. It is the first thing



Dining Room and Kitchen Sides of Popular Combination Sideboard and Kitchen Cabinet to be Built Into Partition Between Dining Room and Kitchen.



Type of Modern Half Open Stairway Featuring a Neat 4-Door Bookcase.

that you notice about a vacant house. The walls can be denuded of pictures, and the paper faded, but the permanent furniture is always there to grace its lonely

rooms. The woodwork gives the homelike touch. Wood always retains some of the warmth of the fluid of life that once coursed thru its fibered veins. Its wonderful variations in grain lend it a charm possessed by no other material. The grain in even such standard woods as yellow pine, oak or birch is fascinating to behold. When finished in any of the many colors in which furniture can be obtained, its woodwork makes the interior of the home truly livable.

The dealer will find that by urging the use of woodwork he can not only increase his sales by selling more and larger house bills, but he can also increase his profits.

Built-in furniture is profitable for the contractor because it saves him time in constructing new homes. It is shipped assembled and ready to install with a minimum of preparatory work. It is sandpapered before it leaves the factory, and well packed for shipment, so that it reaches the job clean and in good order. Many contractors who build homes to sell or rent pay particular attention to the woodwork for such homes. They realize that in selling or renting a vacant house, the woodwork is the only decoration on the walls. The prospective purchaser or tenant is influenced in his or her opinion of the house by its permanent furniture. Some contractors are finding profitable business in the remodeling of old homes by installing built-in woodwork.

Dealers and contractors have always sold some built-in woodwork, but it has, heretofore, been made only on order.

(Continued to page 138.)



Any Dining Room Provided with Built-in-Place Buffet or Sideboard Like This Is Already Half Furnished. Such Cabinet Work Is Easily Obtainable Thru Any Retail Lumber Dealer.

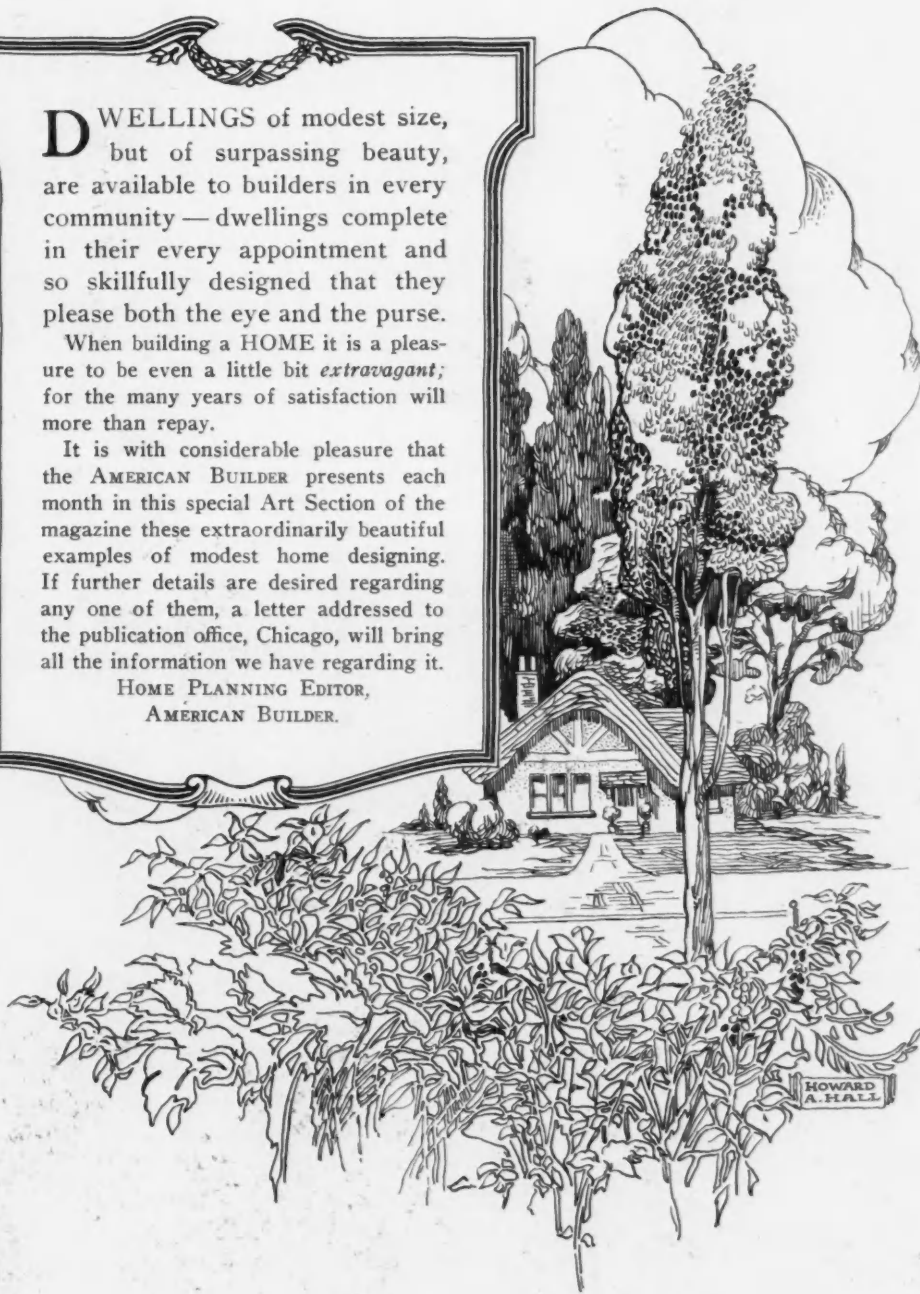
A PORTFOLIO *of* BEAUTIFUL HOMES

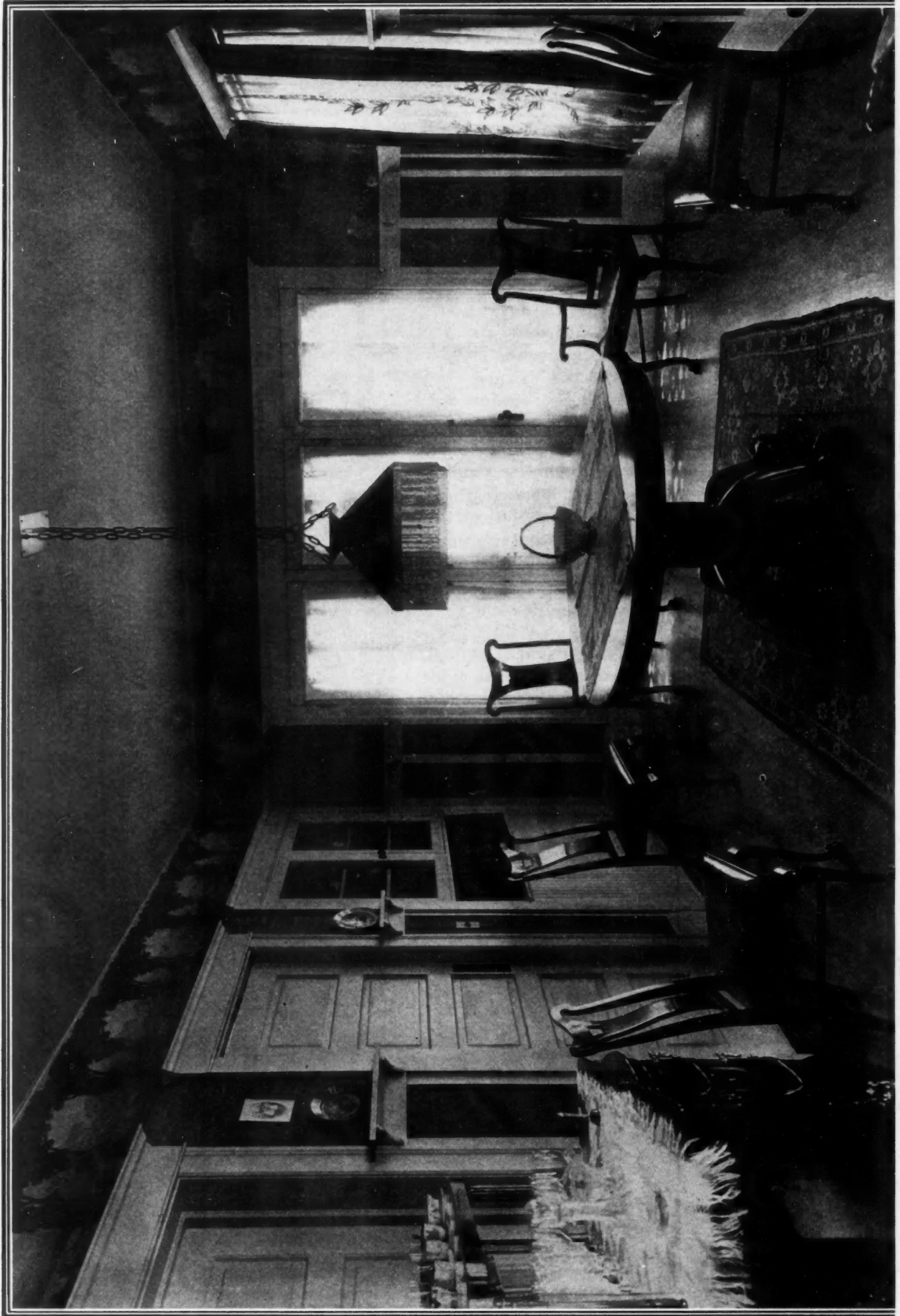
DWELLINGS of modest size, but of surpassing beauty, are available to builders in every community — dwellings complete in their every appointment and so skillfully designed that they please both the eye and the purse.

When building a HOME it is a pleasure to be even a little bit *extravagant*; for the many years of satisfaction will more than repay.

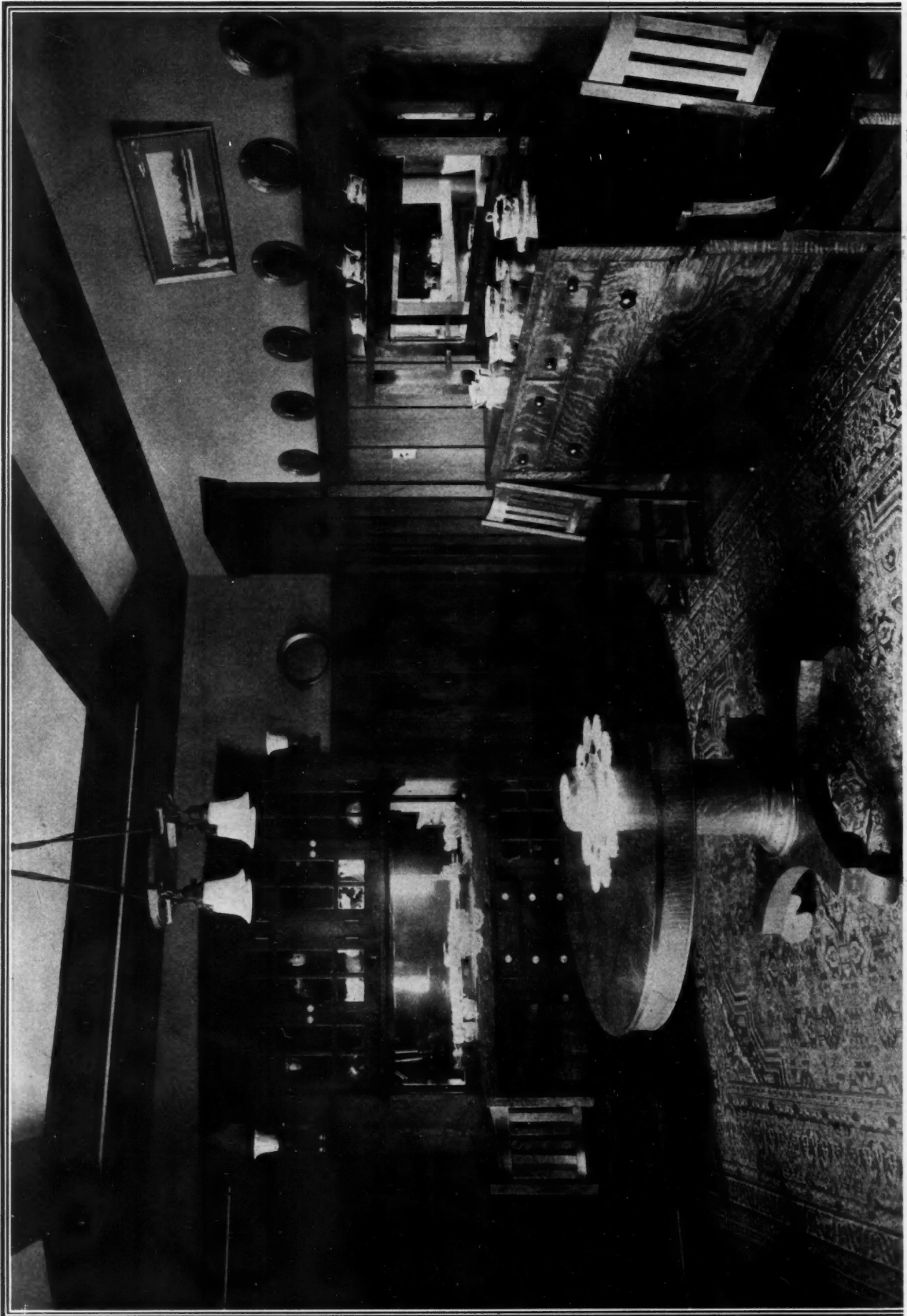
It is with considerable pleasure that the AMERICAN BUILDER presents each month in this special Art Section of the magazine these extraordinarily beautiful examples of modest home designing. If further details are desired regarding any one of them, a letter addressed to the publication office, Chicago, will bring all the information we have regarding it.

HOME PLANNING EDITOR,
AMERICAN BUILDER.



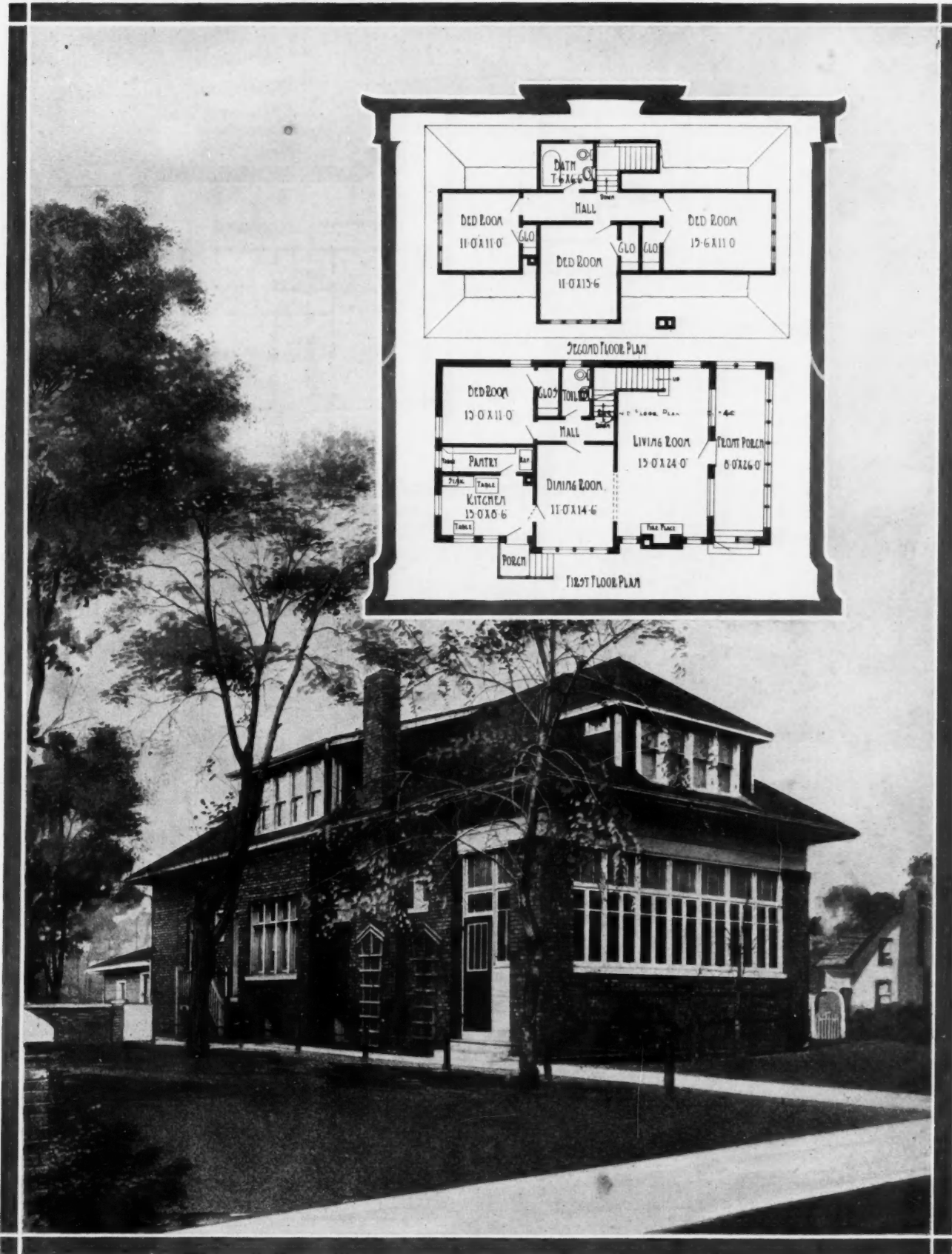


This Dining Room is an Example of the Effectiveness of Contrast in Interior Finish. The Trim is Enamelled Pure White in Contrast with the Stained Floor and Rather Dark Walls and Ceiling. Some Might Prefer a Less Elaborate Decorative Treatment, but the Convenience, Distinctiveness and Bright Aspect of the Room Stand as Inherent Qualities.

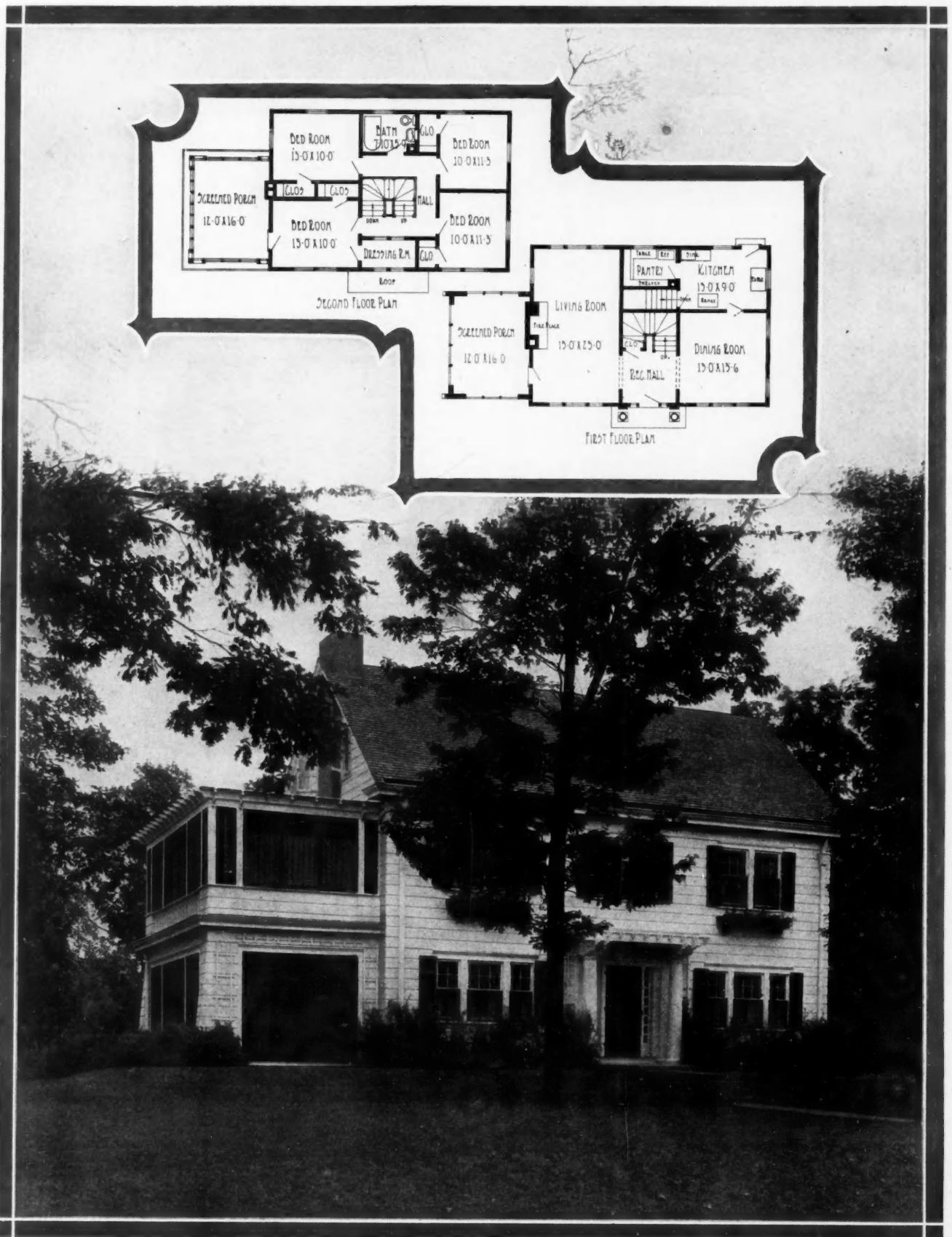


A Mission Style Dining Room with Exceptionally Well Handled Trim and an Artistic and Nicely Proportioned Buffet. The Heavily Beamed Ceiling Balances the Wainscoting and Prevents What Might Have Been a Rather "Bottom Heavy" Effect. The Harmony in Trim and Furniture is Especially Noticeable—a Thing Which is Very Necessary Since the Trim is so Prominent.

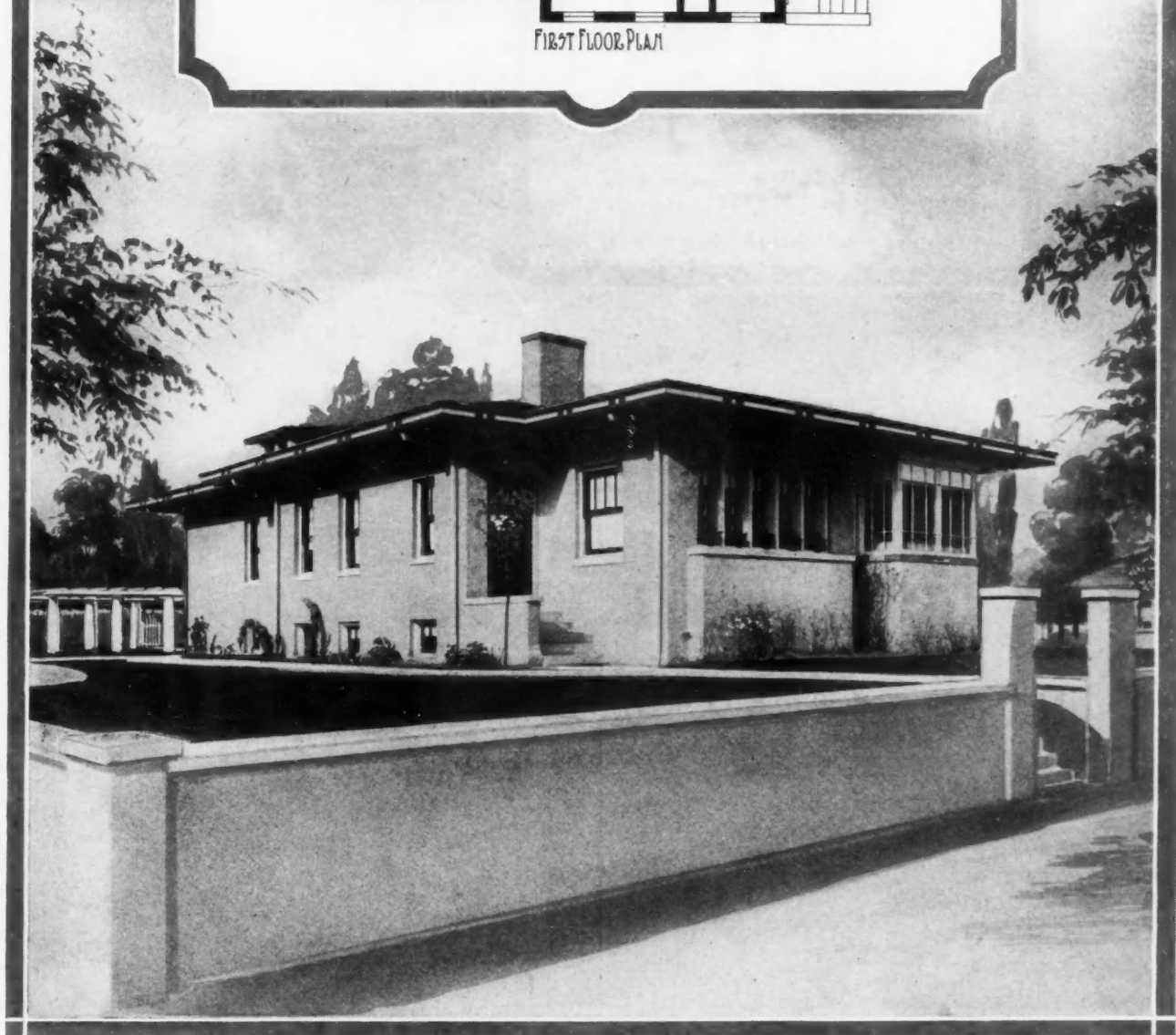
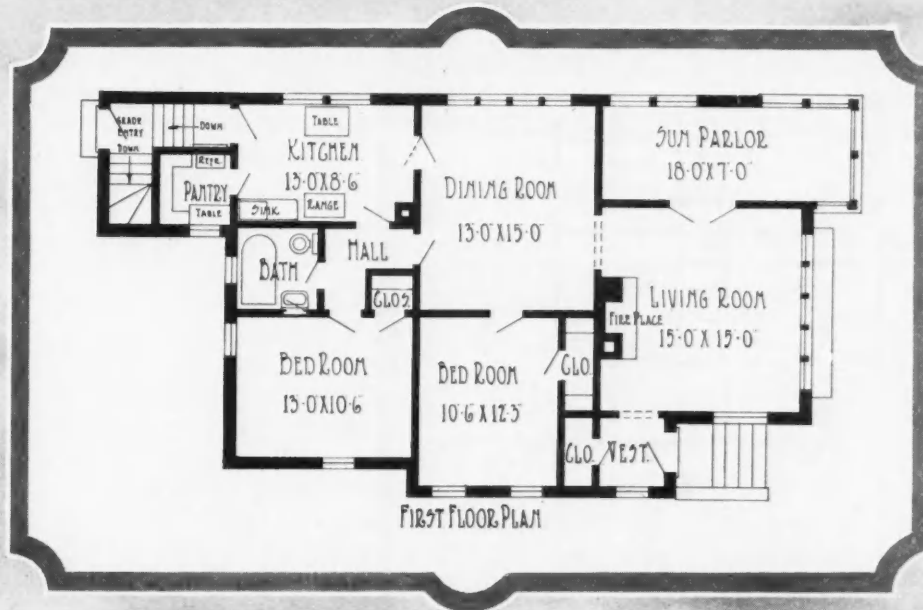
A Mission Style Dining Room with Exceptionally Well Handled Trim and an Artistic and Nicely Proportioned Buffet. The Heavily Beamed Ceiling Balances the Wainscoting and Prevents What Might Have Been a Rather "Bottom Heavy" Effect. The Harmony in Trim and Furniture is Especially Noticeable—a Thing Which is Very Necessary Since the Trim is so Prominent.



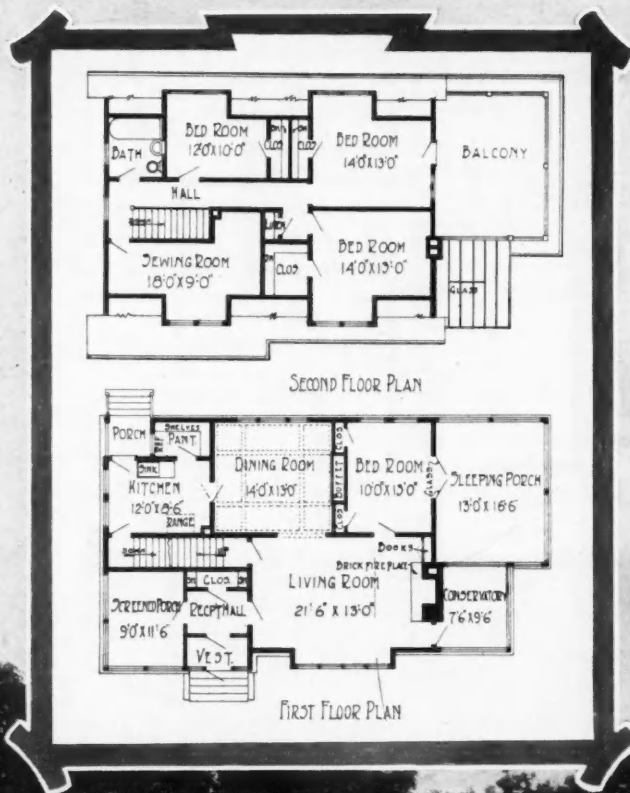
BRICK HOUSE WITH ENCLOSED SIDE-ENTRANCE PORCH. By placing the entrance to the front porch at the side of this house, and by enclosing the porch with a series of casement windows with fixed sash above, two qualities are obtained: The exposed wall surface of the living room is reduced, facilitating maintenance of an even temperature during the winter. An airy, bright porch which is fairly private is obtained without waste of materials or space. Size of house is 48 feet by 26 feet.



BEAUTIFUL COLONIAL DESIGN. This is the type of house which, when painted pure white thruout, except for the deep green shutters, and surrounded with a trim, well kept lawn, attracts more attention than any other house on the street. The interior provides an exceptionally large living room with connecting screened porch. A large sleeping porch is a feature of the second floor plan. The size of house is 36 feet by 24 feet, the porch adding another 12 feet to the length.



STUCCO BUNGALOW OF UNIQUE DESIGN. A photograph can hardly do this design justice. One must see the house itself in order that the real merit of the design may be appreciated. The beauty of its exterior is dependent upon the shape of the building, upon the pure white of its walls, upon the windows, upon the roof—in a word, every detail of the exterior has contributed to the beauty of the house. Notice the shadow effects, especially those of the wide cornice. Every room is pleasant and convenience is a dominant characteristic. The house is 56 feet 6 inches by 29 feet 6 inches.



GAMBREL ROOF HOUSE WITH UNIQUE ROOM ARRANGEMENT. The exterior appearance of this house depends largely upon the roof. The walls are finished with brick up to the porch rail copings and with stucco the remainder of the way up to the roof. In the room arrangement, attention is called to the screened porch, sleeping porch, conservatory and balcony. These are features which many people are enthusiastic about. The relative position of living room, dining room and kitchen is commendable. This house is 53 feet by 29 feet 6 inches.



Private Water Systems

A BRIEF DESCRIPTION OF A FRESH WATER SYSTEM FOR RURAL AND SUBURBAN HOMES, SCHOOLS COUNTRY CLUBS, ETC.

By L. P. Lessard

ONE of the most important considerations when building a home in a place not within the reach of a city water system, is the question, "What is the best system to install?"

The accompanying picture shows in a detailed way the installation of a fresh water system, which is the ideal water system for farm purposes, providing, of course, well conditions permit its use. The pumps are manufactured to operate in 4-inch, 5-inch, 6-inch or larger drilled well casings, and also for shallow wells. The drilled well pumps require a 5 or 6-foot head of water, while the shallow well pump will operate in one foot of water. Water can be elevated up to 150 feet in height, that is, from the position of the pump in the well to the highest fixture.

The machinery can be placed at any point convenient, as you will note in the cut the power plant is in the garage. A suitable base should be made either of concrete or wood on which to mount the compressor, so that any jarring of the engine would not loosen the

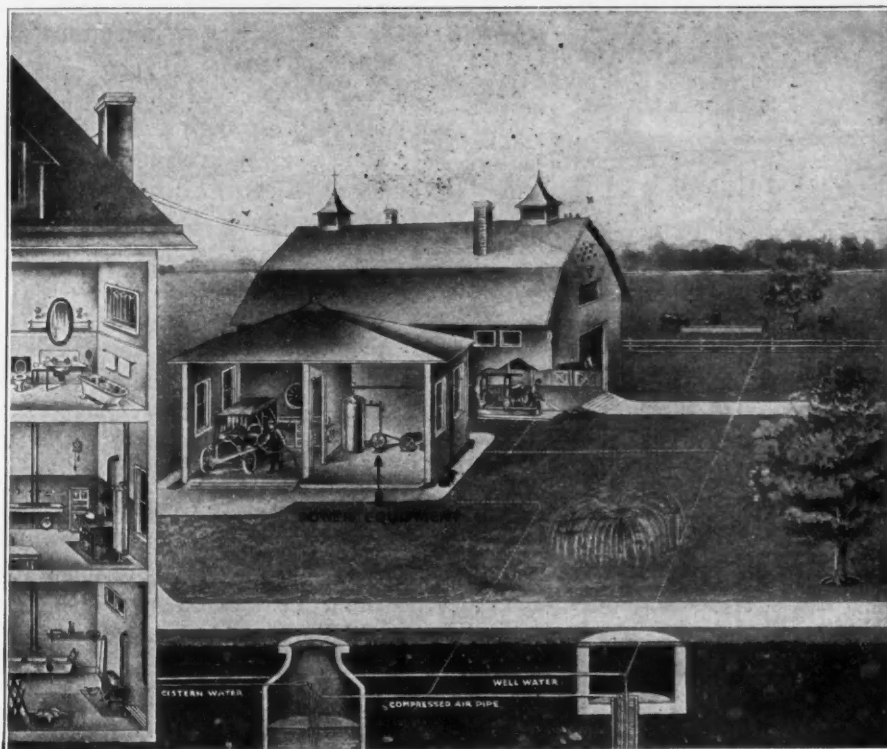
pipe connections. The tank, if small enough, can be stood up vertically and if a long tank is required, it can be properly set on a couple of stands or blocks, so that it will be solid. As a rule, a one-half inch galvanized iron pipe is used to take the air from the tank to the pump in the well, cistern or spring, as the case may be. For spring and cisterns the shallow well pump (shown on this page), is used, and for drilled wells the drilled well pump (also shown), is used.

The pump is immersed in the water and suspended from the air and water pipes. Well conditions should be thoroly known before the pump is installed, so that it will positively be known that the pump is not resting in the mud at the bottom of the well and still be sure that it is immersed enough so that when the water is at its lowest level,

the pump will be covered with water.

The water pipes used to deliver the water from the pump to the different points of delivery, should be large enough to overcome practically all of the friction of the water in the pipes and these pipes, of

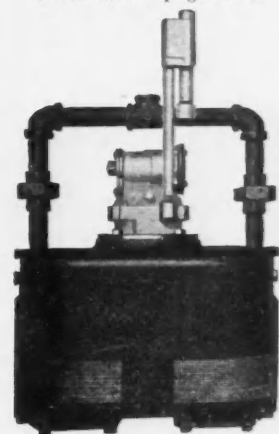
(Continued to page 154)



Modern Farm Buildings Cut Open to Show Arrangement of Private Water Supply System.



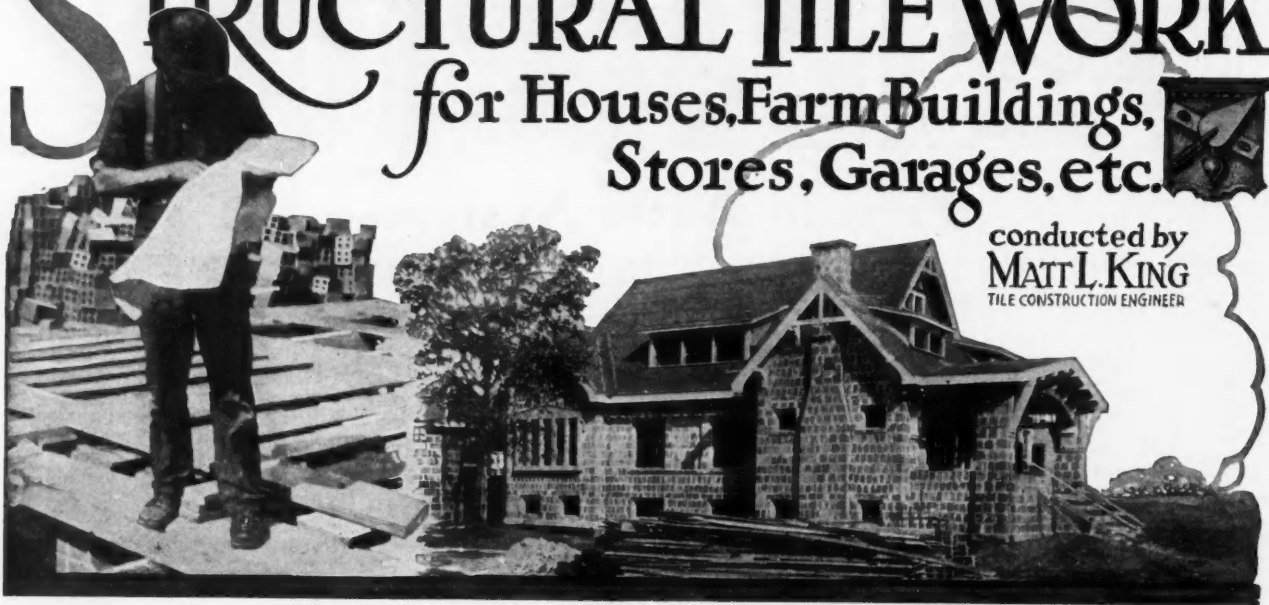
Pump for Drilled Wells.



Shallow Water Pump.

STRUCTURAL TILE WORK

for Houses, Farm Buildings,
Stores, Garages, etc.



conducted by
MATT L. KING
TILE CONSTRUCTION ENGINEER

How to Build Silos of Clay

PRACTICAL DETAILS AND DIRECTIONS FOR HANDLING BRICK AND BLOCK SILO JOBS

By Matt L. King

IT taxed the hearts of a group of college professors when they first heard of building silos of hollow clay blocks. The walls were to be as thin as 4 inches, the diameter of these silos was to be as large as wanted, and only the limit in height was that they were not to interfere with the moon in her travels across the sky.

You should have seen those college professors. Their little pumps almost quit working and they insisted that such blocks had no strength, they were "just little hollow pieces of clay." Some even referred to them as egg shells. This happened about nine years ago.

Last summer while in Fairbury, Ill., on another little clay block stunt, I was informed that clay blocks were a great thing for silos. The speaker stated his father-in-law had a silo built of this material which had been struck by two cyclones. It was damaged neither time, but no other building in that vicinity stood the racket.

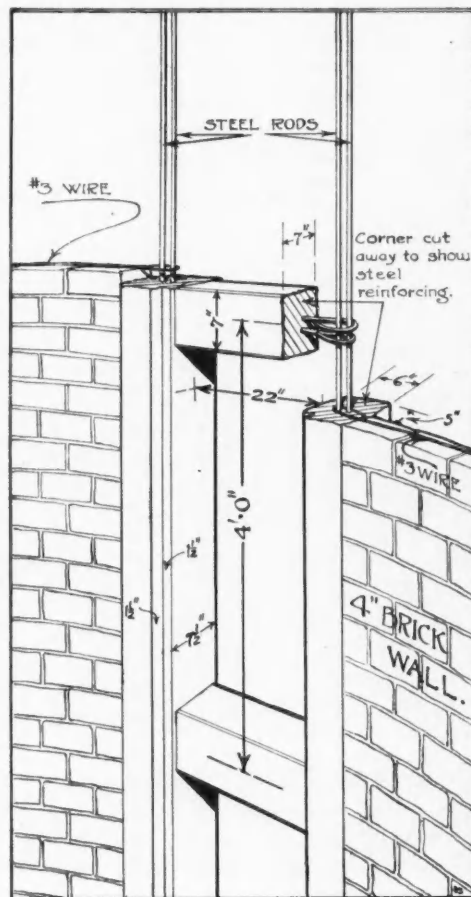
For a good many years good silos have been built of brick. Common brick and paving brick have been used to a good advantage in these buildings. The day of jokes on silos is passed.

The serious question now is to know how to build them to the best advantage.

In the first place, don't put the scaffold outside. I never tried it, but I have seen lots of good material and labor wasted that way. Put the scaffold inside, frame it so it is collapsible and can be used for different sized silos on different jobs. You may need to use the scaffold on a good many different sizes.

C. O. Mack, of Dows, Ia., has built 125 permanent clay silos in one county in five years. If you don't believe it, drive thru Mr. Mack's county. You can't get thru without seeing some of them. He has made money, dealers have made money, the farmers have made money, and it hasn't hurt the clay business a bit. So everyone is happy.

But let's get back on the scaffold. We have plenty of photographs, but the drawing will show it a little more plainly. Build the wall up scaffold high, put in the scaffold, and while the wall is being continued the four posts can be set inside of the wall, tied to the wall with No. 9 or smaller wire going into the mortar joints, and block away



Details of Reinforced Concrete Continuous Door Frame for Masonry Silos.

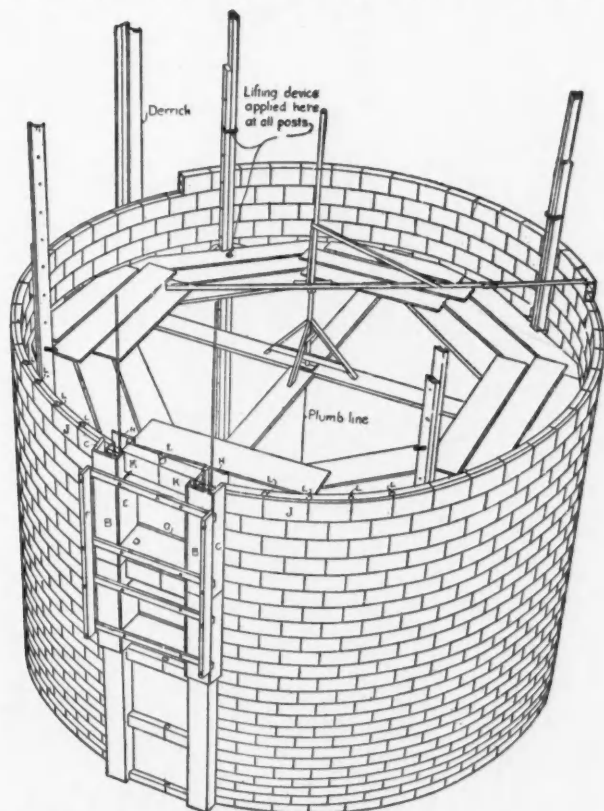


Unusual Photograph of Fire Near Freeport, Mich., Where Two Large Barns and a Straw Stack Burned, Leaving Practically Unharmd the Clay Tile Silo. The Doors and Feed Shute Were Burned Off; That Was All.

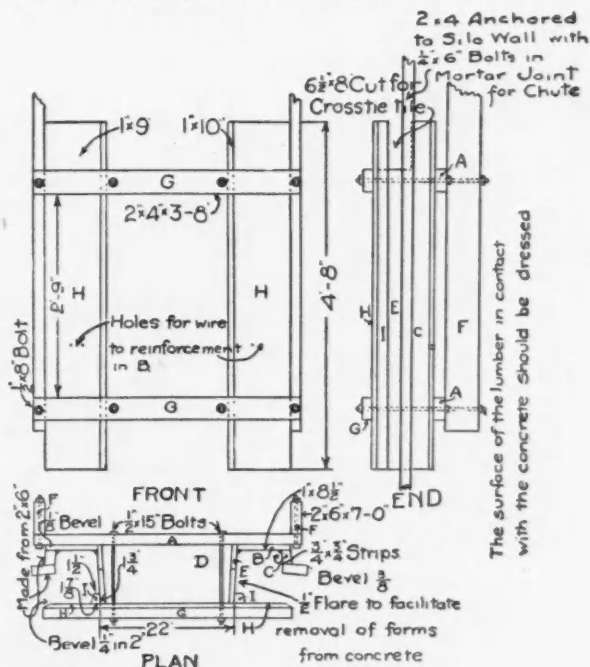
from the walls by scraps of 2-inch lumber. These should be nailed into the green mortar joints and toenail the posts to the 2-inch wood blocks. Twist up the wires, tighten up the 1/2-inch triple block and tackle on

each post and you are ready to go up. Four men, one at each post—He-O-Heave! It is easy.

The posts are made of two 2 by 6's. Start with an 8 and a 16. Fasten them together with an occasional flat-headed screw, bore 7/8-inch holes thru the post every 18 inches or 2 feet. You should have on hand



Perspective View Looking Down Into Iowa Type Silo, Showing Scaffolding.



FRONT AND END ELEVATIONS AND PLAN VIEW OF WOOD FORMS FOR CONTINUOUS CONCRETE DOOR FRAME

Front and End Elevations and Plan View of Wood Forms for Continuous Concrete Silo Door Frame.

Building with Art-Tile

HOW THE SELF FACING OR ROUGH TEXTURE FACE CLAY BUILDING BLOCK ARE USED

By J. J. Cosgrove

WHEN we are boys at school, we soon learn that it is not the rules but the exceptions which count. It is a very simple matter to learn a rule by heart, but just as we are congratulating ourselves on having mastered a subject in such complete and simple manner, we are informed that we must learn the exceptions to the rule, and we have to start in all over again to learn the real important part.

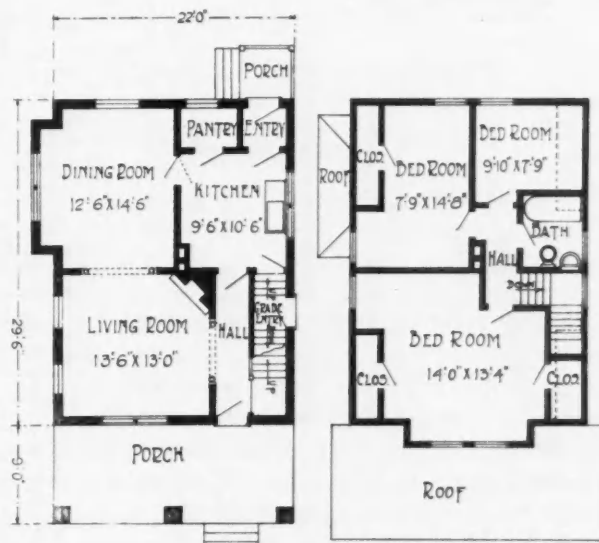
So it is with hollow-tile construction. It is a rule of practice to lay the hollow blocks in a wall on end; but then comes into play the exceptions to the rule, and the exceptions comprise as large a field as the rule.

In the sense in which the word is here being used, exception means, not being omitted from general consideration, but the opposite of the rule. As we have already seen, the rule is to lay hollow-tile on end with the webs and cells running vertically. In the exceptions to the rule the opposite is true, the tile blocks being laid on their sides with the webs and cells running horizontally.

This exception to the rule applies even to the ordinary hollow tile when laid in non-bearing partitions and walls. It is true of interlocking tile, and is likewise true of the type of hollow tile we are going to consider in this installment.

Art-tile is to be the subject. By art-tile I mean all those hollow tile building blocks with finished surfaces which are known under various trade names and require no outside stucco or other finish to complete the wall.

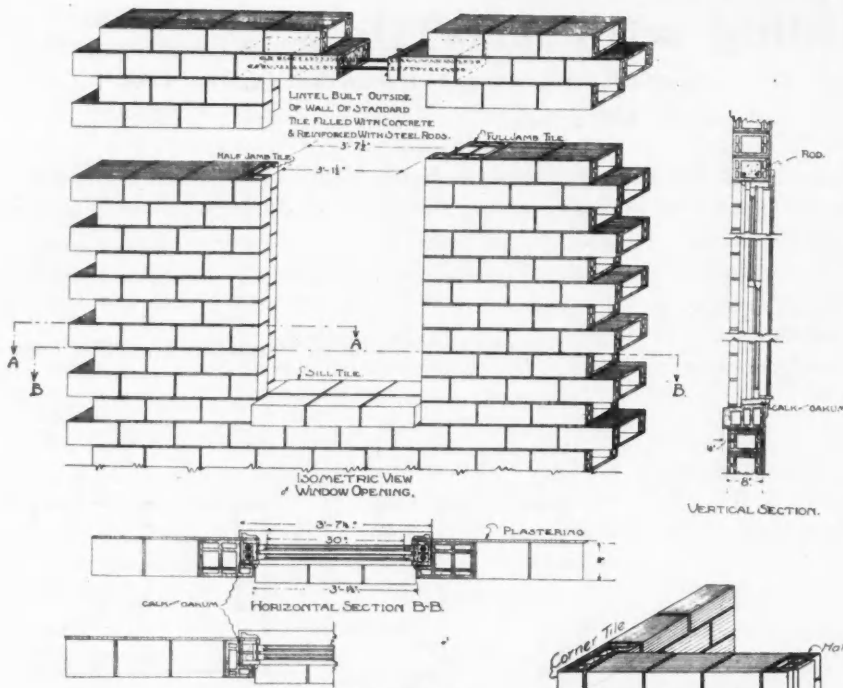
It was but natural that manufacturers of this mate-



First and Second Floor Plans of Sinclair House. Size, 22 by 29½ Feet.



The Sinclair House at Lyons Farm, N. J., is a Good Example of Art-Tile Construction. The Dark Reddish Brown Tile Has a Pleasing Rough Brick Surface, Yet Impervious. The Mortar Joints Come Out in Strong Contrast. The Second Story is Shingled.



Details of Window Openings in Sinclair House.

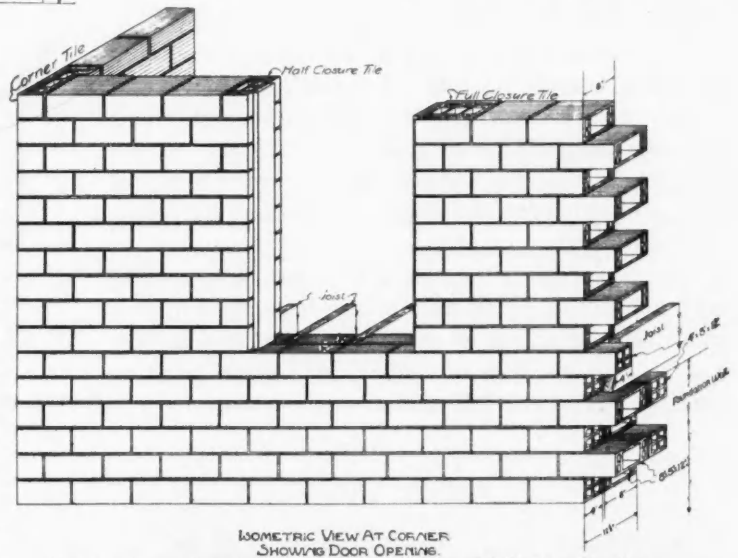
rial would sooner or later seek for a proper finish so that when the blocks were laid up in a wall they would present an attractive appearance, and not require a plastered or stuccoed veneer to hide them. From merely structural material, to advance them to structural plus finishing material. In this they have been more than ordinarily successful, as is evidenced by the many striking and beautiful effects produced by the right combination of joint, bond and colors.

The Sinclair House, Lyons Farm, New Jersey, is a pleasing example of what can be

done with this new art structural material. The plans and elevation show a neat average size dwelling of moderate cost and convey a very good idea of the adaptability of this material for residence work. Art-tile are rough-surface tile. They are wire-cut on a rougher scale than wire-cut brick, to harmonize with their size. To all appearances, when laid in a wall, they are bricks, but bricks formed in a far more generous mold.

It was no doubt the improvements made in bricks which first pointed the way for the improvements in tile, and there was a grad-

(Continued to page 124.)



Detail of Art-Tile Wall at Corner and Around Window Opening.



Demonstration of Self-Facing Rough Texture Hollow Building Tile at the Cleveland Complete Building Show.



What Every Architect and Builder Should Know About Strength of Materials and the Design of Safe Construction

Noon Hour Talks by The Boss Carpenter

Talk No. 58. Overhanging Beams

New Series No. 15

THE BOSS TELLS HOW TO DESIGN A BEAM WITH LOADS WHICH EXTEND BEYOND THE SUPPORTS

"TWO of the new members of our 'Calculating Squad,'" said the Boss, "have found a little difficulty in handling problems which have come up during their work, and have asked that we help them out with a little explanation. The points which trouble them were explained in the earlier part of our work and at a time before these men joined our squad.

"One of our fellows does not understand the way to use the formula for finding the size of a rectangular beam, $\frac{p I}{e} = M$, and the other wants to know how

cross-section is to balance the effect of the loads and supporting forces acting about this same point.

"Text-books on mechanics add up and balance the effect of these external and internal forces as shown by formula

$$\frac{p I}{e} = M$$

In this formula, p is the tension or compression stress in the beam fibers in pounds per square inch. This quantity varies with the kind of material used as a beam, and also with the degree of safety desired. The following table gives safe values of p for common materials under ordinary conditions.

Safe Unit Stresses in Bending

Material	Unit fiber stress p , pounds per square inch.
Timber:	
Yellow Pine, dense.....	1,600
Yellow Pine, sound.....	1,300
Douglas Fir, dense.....	1,600
Douglas Fir, sound.....	1,300
Hemlock.....	1,000
Mild Steel.....	16,000

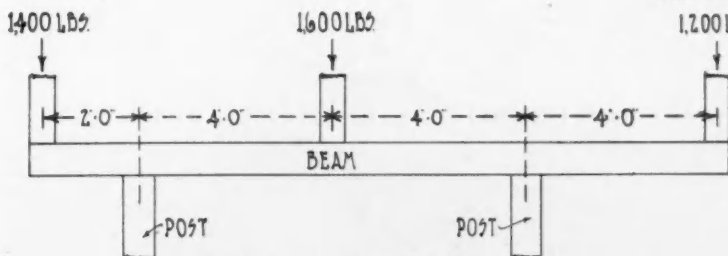


Fig. 15A. Example of An Overhanging Beam.

to find the amount of the two supports under the beam shown in Fig. 15A. To help these men, and to give us all a little reminder of the principles of our earlier work, we will go thru the detail to be followed in designing a timber beam or girder of rectangular cross-section loaded as shown in Fig. 15A.

"To take a simple case, as shown in Fig. 15B, when the beam is loaded the center part sinks below the end supports. This causes the fibers along the top surface to shorten and those along the bottom surface to lengthen. At a point between the top and bottom surfaces of the beam there is neither shortening nor lengthening, and all fibers between this point and the top or bottom surfaces change in length an amount which is proportional to the distance of that particular fiber from the neutral point or line across the cross-section. The effect of these pulls and pushes in the fibers of the

"The quantity I is called the moment of inertia of the cross-section and varies with the shape of the section of the beam. Since most beams are either of rectangular or square shape section, the value of I that

will be used in your design will be $\frac{1}{12} b h^3$, where b is

the breadth or thickness of the timber in inches and h is its depth or height in inches.

"The quantity e is one-half of the depth or height of

(Continued to page 158.)

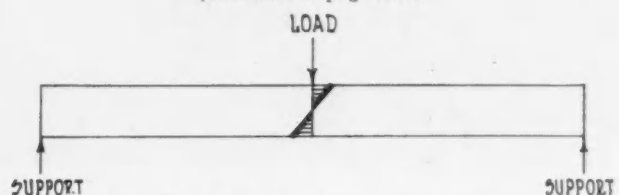


Fig. 15B. Variation of Fiber Stress in Loaded Beam.

“Permanence?”—Why, Yes, That Means Lumber

By Carl Hamilton

I SUPPOSE there are those who would consider a man more or less unbalanced who in this day of frenzied “fire prevention” dared speak of wood as a “permanent” material. The fear of fire has, during the last decade, been so everlastingly pounded into the minds of the American building public that the average home-builder is apt to think of “permanency” in building materials only in terms of fire.

I have no figures to prove it—but I venture the assertion that the annual waste due to the improper use of building materials in dwellings is far greater than the damage by fire in the same class of buildings. This improper use is not confined to any one material—it is universal.

“Permanent” construction is dependent fully as much on the proper selection of materials and the intelligent use of materials as on the inherent qualities of the materials. Carelessly mixed or carelessly applied concrete or stucco—brick laid in improperly mixed mortar—cannot build permanent, enduring houses.

Wood has been thought to lack permanence because until very recently little attention was given to the proper use of the different woods. Wood was plentiful and cheap—it had the field practically to itself—

there was no incentive to scientific use. Any wood was sold for any purpose.

Nevertheless, wood has in this country as good a record for durability as any other material. Buildings well toward three hundred years old might reasonably be called permanent—especially when they have endured the severe climate of New England without even a coat of paint. Countless painted wood houses in the Eastern section of the country from 100 to 200 years old stand today in practically as good condition as the day they were built.

The fact that some wood houses—thru improper use of wood—have not proved durable, should not condemn wood as a building material. Use wood intelligently and it will give at least as much service per dollar invested as any other material.

Wood is being sold more intelligently and efficiently today than ever before. Lumber men no longer sell all species of wood for all uses. They sell you the kind that is best suited to meet your particular requirements; and they sell you the grade and size that will meet the requirements most economically.

It is well for the builder to bear in mind that in building residences one group of woods is best for outside uses, where resistance to decay is desired;



The Wheeler House, Oxford, New Hampshire, Built About 1800. It is Believed This House Was Designed by Bulfinch.

another group for framing purposes where strength is the deciding factor; still another group, for interior use where beauty of grain is most desired.

Again, some woods are infinitely better adapted to underground uses or in damp places than other woods. And so one could go on almost indefinitely. If you don't know what woods are best for particular uses, consult your lumber dealer. Above all, always tell your lumber dealer to what use you are going to put the wood you are buying. He will save you many costly blunders.

Science has finally stepped in and is working wonders in the durability of woods. Creosoting and other processes are increasing the life of the less durable woods many times over. Science has learned what agencies cause decay in wood—and is making it impossible for these agencies to operate. Science has even bent its efforts to making wood "fireproof"; and has already made great strides along this line.

With the efforts now being made in behalf of wood it is safe to predict that wood will ever hold its place as a Permanent Construction material in this country. It has earned its place upon its record—in spite of misuse and abuse. It will hold it thru intelligent use, supplemented by scientific achievements.



Doorway Phillips House, North Andover, Mass., Built in 1752.

Good Wall Board is Permanent and Durable

HOW ARCHITECTS AND BUILDERS ARE USING IT WITH SATISFACTION

By I. M. Holdridge

THE permanence of dependable wall board and the hundreds of uses for it are sometimes a revelation of the contractor and builder.

Often wall board is looked upon by builders as merely a substitute for plaster—a makeshift—with uses limited to the crudest of buildings.

As a result, the builder sometimes overlooks the endless opportunities a good wall board offers him for bigger business and more profits.

It must be admitted, however, that the prejudice of builders against wall board is usually justified by an unsatisfactory experience they have had with some inferior, unreliable wall board, or the discouraging experience of a brother contractor.

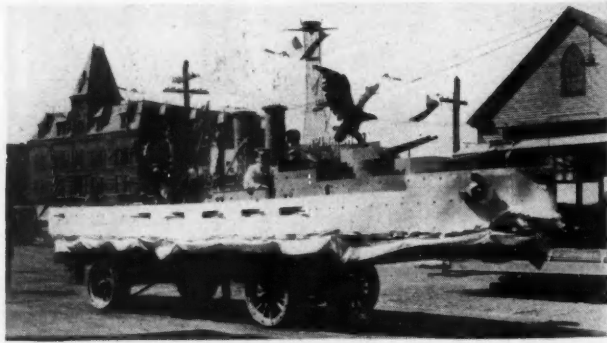
For there is a big difference in wall boards. Dependable wall board that is scientifically made is more than a substitute—it is an

improvement over lath and plaster. Its uses are unlimited. It is the most modern, most practical lining for every kind of building. It is a veritable gold mine for the contractor who realizes its possibilities and then cashes in on them.

In the Dayton flood, for instance, one wall board proved its permanence and durability under a grilling test. In one of the offices of the Lowe Brothers Company, the well known manufacturers, where the walls and ceilings were lined with this wall board, the water rose to a height of 10 feet. The wall board naturally absorbed some moisture and bulged a little. But after the water receded, so Mr. Lowe wrote the makers, the walls went back in place. Mr. Lowe said: "We are sorry that all of our offices were not lined with your wall board, for the walls and ceilings of the other offices were



In this Exhibition Room of the Metropolitan Museum of Art the walls and ceilings of high-grade board have made an ideal background that bring out all the beauty of the antique furnishings.



The Wallboard Float Mentioned in This Article Is Here Reproduced. This Is About the Severest Test to Which a Wallboard Manufactured Primarily as a Lining for Walls and Ceilings Could Be Put.

completely ruined."

Just recently the Carter Ink Company, of Chicago, had a surprising experience with wall board in their offices. During the night a fire started in the tenant rooms above the offices. For six hours twenty to twenty-five streams of water were turned on the flames and the building was thoroly drenched. But the next morning the wall board lined offices showed no other trace of the drenching than a few stains of water that came thru the floor above. "As a matter of fact," one of the officers of the Carter Ink Company said, "a

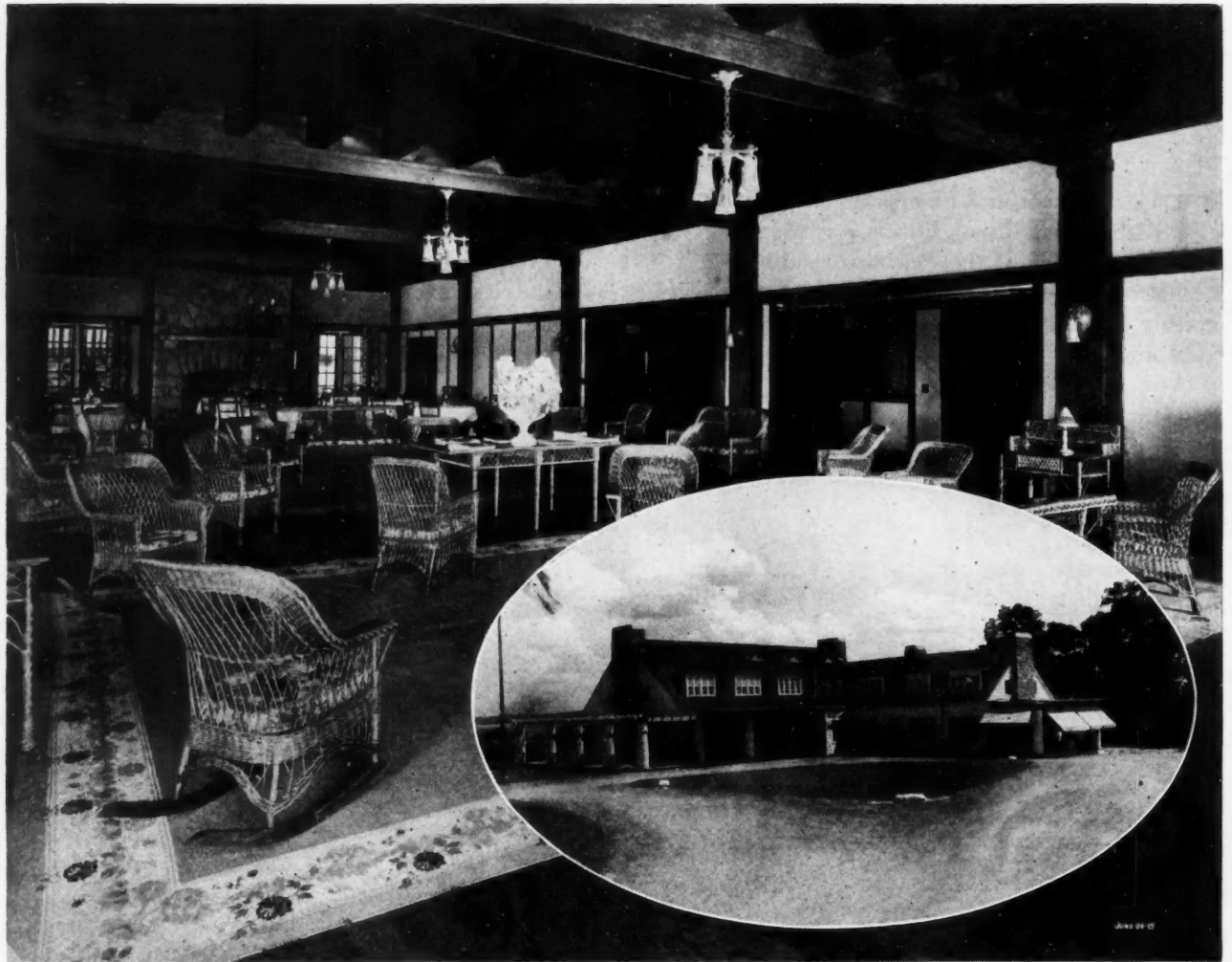
casual visitor would hardly believe, to look at our offices, that we had been thru this experience."

In Quincy, Mass., a wall board float was built measuring 37 by 7 feet, weighing 1,200 pounds, which has demonstrated most convincingly the durability and permanence of wall board. The float was built about two years ago for a Memorial Day parade. Then it was forgotten and left out doors, exposed all summer to rain and storms. In October, the promoters of a Columbus Day celebration bethought themselves of the wall board float, hardly expecting that they would be able to use it. But to their surprise, they found the float in perfect condition, and it served in the Columbus Day celebration.

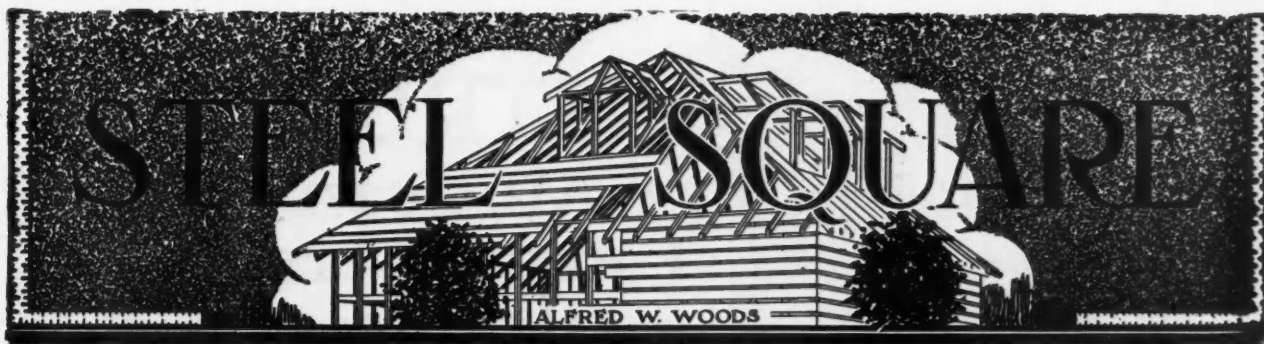
In a western city, Dr. Miles Pink Pills, even, are advertised by a most unique wall board sign. This sign, mounted on the top of a business block, is made to represent Dr. Miles' pill box and carries the standard printed matter. It has withstood rain, weather and storms for over a year.

Still further convincing evidence of the permanence of good wall board is its successful use in furniture drying rooms, in the cabins of steam ships and in collapsible booths. Even the film companies are using

(Continued to page 156.)



The Pittsburgh Field Club, Aspinwall, Pa., Is a Notable Example of High-Grade Wall Board Finish. Architects, Janssen & Abbott, of Pittsburgh. Contractors, F. Hoffman & Co., of Wilkinsburg, Pa.



Possibilities of the Steel Square in Connection with Circular Measure

ILLUSTRATING HOW MITERS AND OBLIQUE OR SIDE CUT OF RAFTERS MAY BE DETERMINED BY THE USE OF CIRCULAR MEASURE

By A. W. Woods

SPEAKING about the top or oblique cut of the jack, it is quite the common practice among carpenters after laying off the plumb cut, to take a block, cut from the timber and place it edgewise along the plumb line and mark along the opposite side of the block; then carry the lines square across the back of the rafter; and by cutting diagonally across the back from one line to the other and down the plumb line will give the proper cut for any pitch the roof

measure and the principle must apply to all alike, as will be seen by the following illustrations:

In Fig. 1 is shown the back of the rafter in connection with circular measure showing what part of same determines the angle or distance apart. The plumb lines should be to obtain the proper angle for the cut across the back of the rafter which in degrees is the same as for the miter for the respective corner. In the square cornered building it is 45 degrees, as shown in Fig. 1. In this it will be seen that the tangent is equal the co-tangent or thickness of the rafter which accounts for the block system as before mentioned, giving the proper distance apart of the plumb lines.

In other words, it is the tangent that governs the distance apart at right angles, the plumb lines should be and in this case being equal, the thickness of the rafter fully explains why the block system gives correct results for the right angle cornered building.

The swing of the plumb lines on the side of the rafter regulates the angle across the back so that no attention need be paid to the pitch further than to obtain the plumb lines themselves.

From this it will be seen that buildings having an obtuse or acute angle, the tangent must necessarily be more or less than the thickness of the rafter.

For an example let us take an angle for an equilateral triangle and a hexagonal building respectively.

(Continued to page 164.)

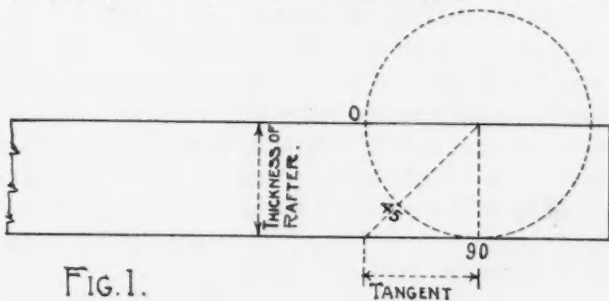


FIG. 1.

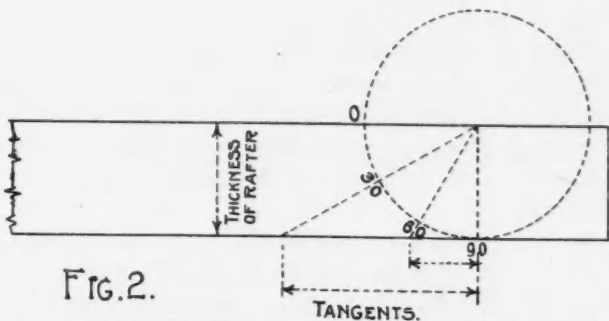


FIG. 2.

may have, provided the plates rest at right angles to each other. But how many ever stop to think why this simple operation gives a correct result for the side cut for either jack or hip, and that, too, regardless of the pitch given the rafter? We will venture to say that nine chances out of ten if called on to frame the rafters for any other angle than the square corner, they would be at a loss to know how to proceed, which would clearly show that they do not understand the principle involved in the block system. Yet, the same principle that applies to the square cornered building applies to any other shaped corner the building may have. All are governed or determined by circular

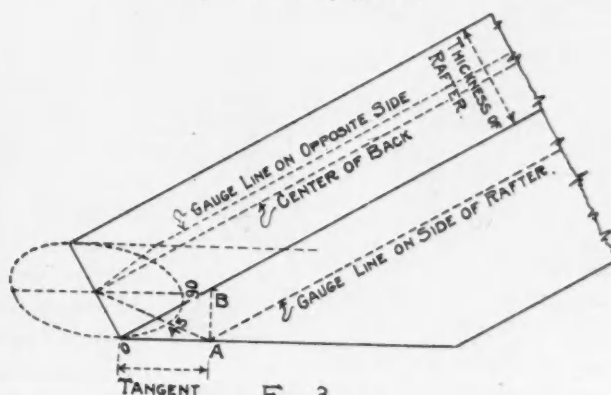


FIG. 3.

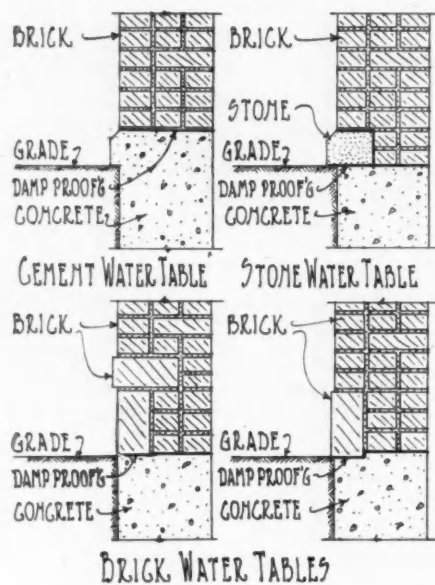


Details of Brick Construction

TWO OF A SERIES OF FOUR DETAIL PLATES SHOWING METHOD OF BUILDING UP FOUR DIFFERENT TYPES OF WALL HAVING A FACE BRICK EXPOSED SURFACE TOGETHER WITH DOOR AND WINDOW DETAILS. REMAINING PLATES WILL APPEAR IN A SUBSEQUENT ISSUE OF AMERICAN BUILDER

Plate 1. Face Brick Veneer Over Sheathed Wood Frame

ONE of the most common types of face brick construction is shown on this plate. The frame of the building is built up of 2 by 4-inch studding covered on the outside with box sheathing. The sheathing is usually placed horizontally because of the cost of construction with diagonally placed sheathing. The latter gives a more securely braced wall but requires more material and a higher labor cost. The brick veneer is built up with a 1-inch air space between the inside of the brick veneer and the outside of the sheathing. Metal ties hold the brick to the frame. The ties are placed at each stud, every fourth course. A layer of insulating building paper is placed over the sheathing before the brick are laid up. When a better insulation is desired, heavy hair



Wall Sections Showing Four Popular Water Table Designs.

felt or other material resisting temperature changes may be used in place of building paper. In this type of construction the interior plastering is done over lath nailed to the studs. Windows and doors are framed into the structure in much the same way that these details are handled in a frame house. Angle iron lintels are used over all openings to support the face brick veneer. Stone or concrete sills are mounted on the veneer brick in all cases except in cellar windows, where the sills are set into the concrete foundation walls. The foundation wall is built of concrete up to grade, of face brick backed with common brick from grade up to a point approximately 2 inches below the bottom of first floor joists where a 2 by 6-inch plate is set flush with the inside edge of the brick. The first floor joists are placed upon this plate and the wood framing is begun at this point. Second floor joists are spiked to the studs above a 1 by 4-inch ribbon.

It will be noticed in both of the plates that no water table is shown. Occasionally houses are designed without the water table, but as a general rule the appearance of the house is greatly improved by the use of some form of water table. The illustration on this page shows four popular water table sections which may be used in any of the types of construction described.

Plate 2. Face Brick and Hollow Tile Construction

Face brick may be built up on a backing of hollow building tile. In this form of construction the walls are built up to completion immediately after the foundation has been completed, and the interior is framed in subsequently. Provision is made in the walls for the placing of the floor joists. The wall of face brick and hollow tile for one-story buildings is carried up in the thickness of the concrete foundation wall to the elevation of the bottoms of the first floor joists, where the thickness of the wall is reduced, leaving a 4-inch ledge upon which to place these joists. A joist bearing tile 4 inches wide is shown directly under the joists. A better distribution of load is obtained on the tile in the lower courses, if this bearing tile is extended

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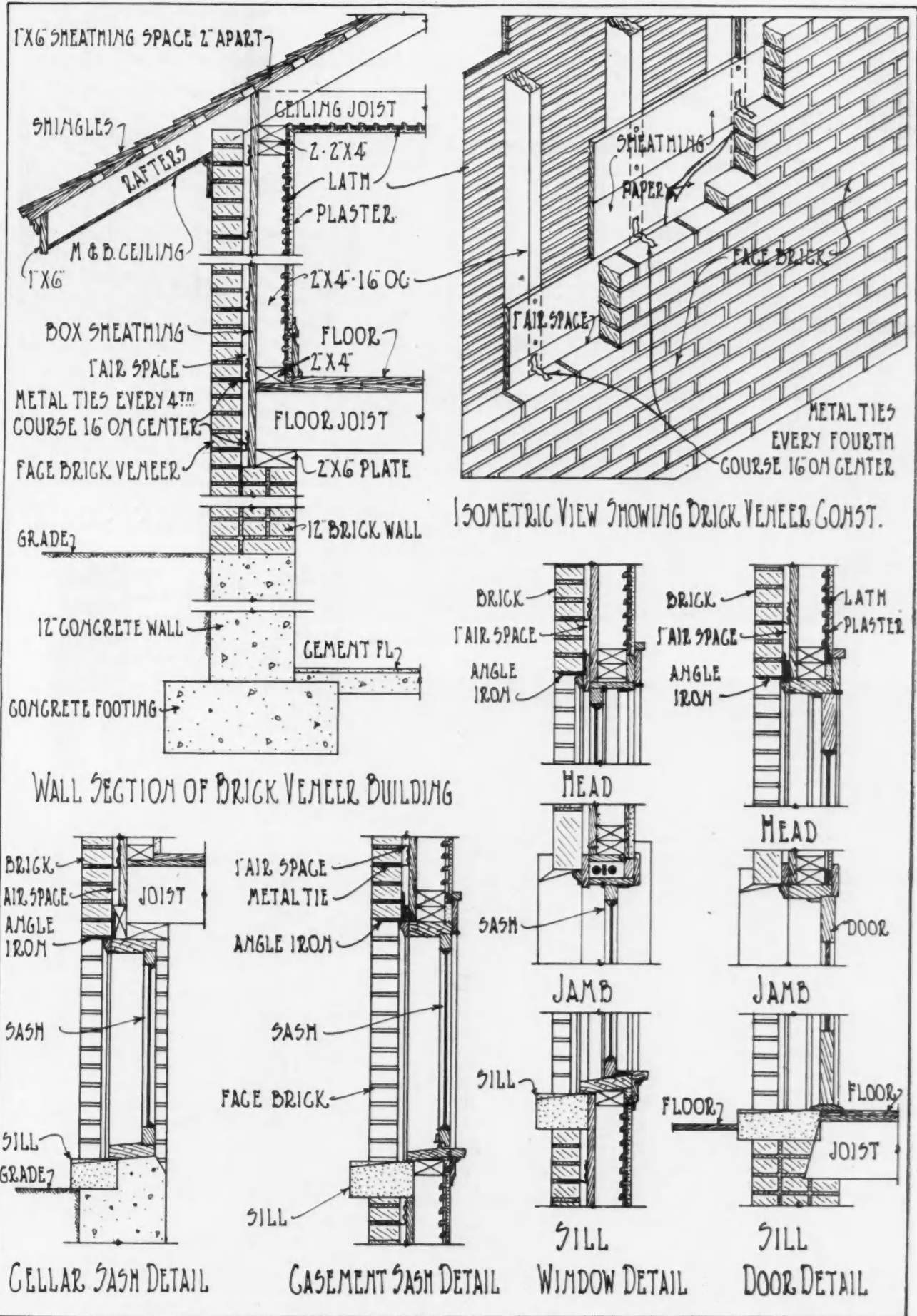


Plate I. Face Brick Veneer Anchored by Means of Metal Ties to Sheathed Wood Frame of Building.

A Commendable Improvement at Moderate Cost

AS far as external appearance is concerned, the pergola porch which J. M. Triggs built on his house in Huntington, Ind., resulted in a new home. It was responsible for the transformation of a house which possesses no distinctive characteristics in external appearance into one which is decidedly attractive and far more pleasant, as a home, than it originally was.

The porch balustrades are of brick construction with concrete copings. Turned wood columns support the pergola roof. The width of porch is 8 feet and the total length is 46 feet. Mr. Triggs reports that the total cost of the improvement, which includes cement foundation and floor, face brick balustrade, pergola and wire glass roof, was approximately \$350. Judging from the illustrations, the increase in value of the property is considerably above this amount.

The wire glass roof is fastened between the pergola timbers and does not show plainly on the pic-

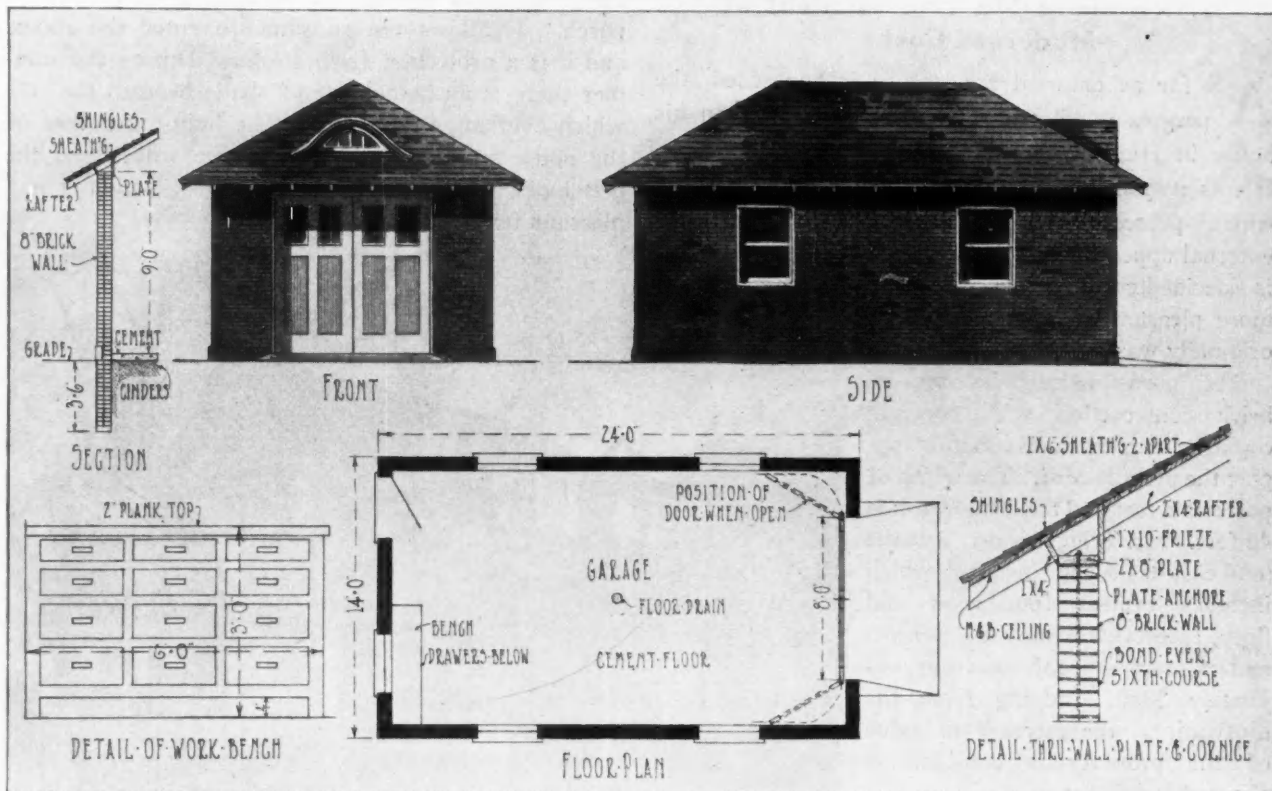
ture, but it is one of the unique features of the porch. It allows the sunshine to enter the rooms and it is a protection from storms. During the summer there is an abundance of shade beneath the tree which overhangs the porch. The built-out corner of the house furnishes additional space within and the better placing and increased number of windows is a pleasant feature.



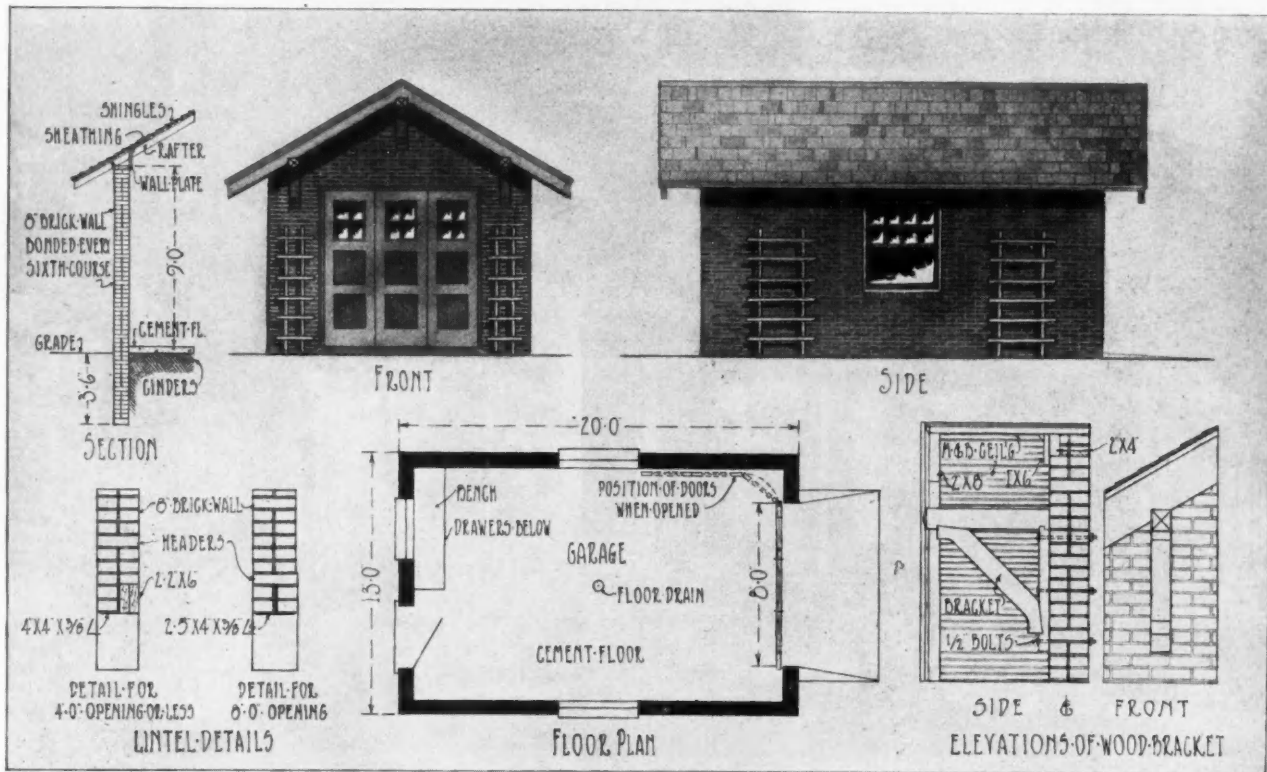
The Residence of J. M. Triggs, Huntington, Indiana, Had No Strong Appeal as It Was Originally Built.



The Transformation Brought About by the Construction of a Pergol Porch with Face Brick Base and Wire Glass Roof is Clearly Evident in This View.



Trim Little Garage Giving Plenty of Space for One Large Car. Walls Are Built of Face Brick Backed with Common Brick. Notice Detail of Handy Bench with Drawers Below. Hip Roof with Exposed Rafters Is Artistic Feature. The Doors Are of the Type to Slide Inside Around the Corner.

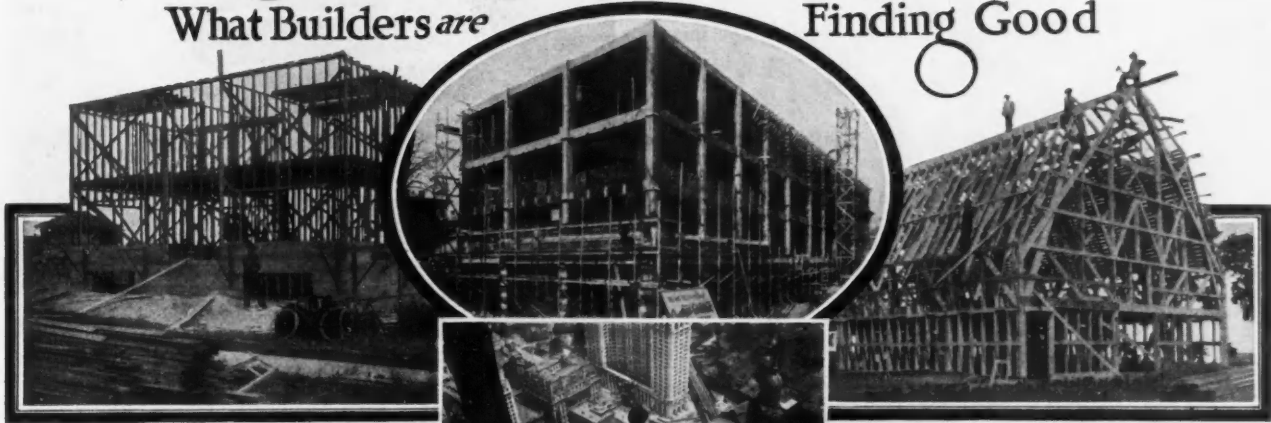


Face Brick Garage with Bracketed Gable Roof. This Design Is Particularly Attractive When Roof Is Covered with Mottled Slate or Composition Shingles Harmonizing in Color with Brick in Walls. Plenty of Light and a Work Bench Similar to That Shown Above Are Attractive Features. Notice Door in Three Sections Hung to Slide Inside Around Corner.

OUT ON THE JOB

What Builders *are*

Finding Good



EDITOR'S NOTE: The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or

seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

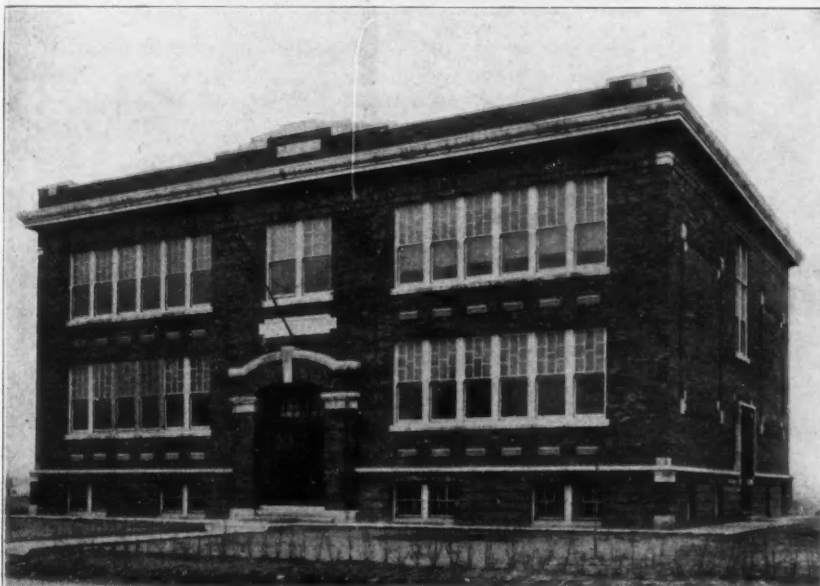
Heating and Ventilating System for Public Buildings

In buildings used to assemble a large number of people in a comparatively small space, it is necessary to supply constantly a large volume of air. This is best done in connection with the heating system, since when the windows must be kept closed the heating system is in operation and when the system is not in operation it is usually possible to supply the air thru open windows.

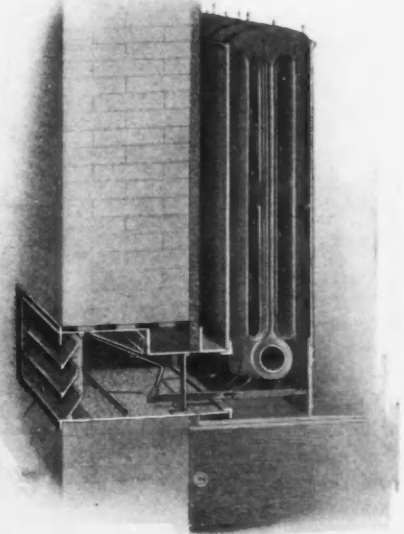
The illustration shows a system of heating and ventilation for schools, hospitals and other public buildings, which is commendable on account of the absence of fans, blowers and other mechanical devices for the movement of the air, together with the thoro distribution of fresh air which it provides, always under easy control of those in charge. The

system consists, in general, of a number of radiators, either hot water or steam, fitted in the manner illustrated, which supply the heated air to the room, this air being allowed to circulate in a natural manner, after which it is exhausted thru a discharge flue.

The illustration shows clearly how the air is drawn from the outside of the building, the amount being controlled by the foot-operated damper, and how this air is directed upward between the sections of the radiator where it is heated. The illustration does not show how the moisture is added to the air. This is accomplished by a removable air moistener, placed on the upper half of the radiator between the radiator and the front air diffuser. The inside wall of the moistener is corrugated, following the general outline of the sections of the radiator. The supply of water in the moistener is automatically taken from the radiator by a special valve.



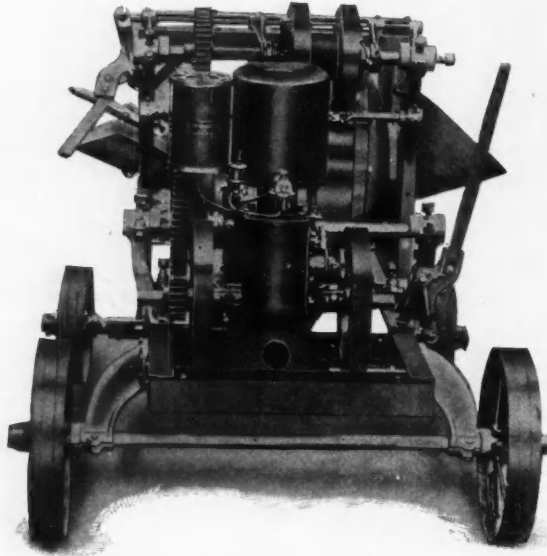
McClainville School, Center Township, Marion County, Indiana. Wall Boxes Are Shown Under Windows.



This Sectional View Shows Cast Iron Wall Box, Controlling Damper, Ventilating Box Base and Adjustable Air Diffusers.

Mixer Equipped With Silo Hoist

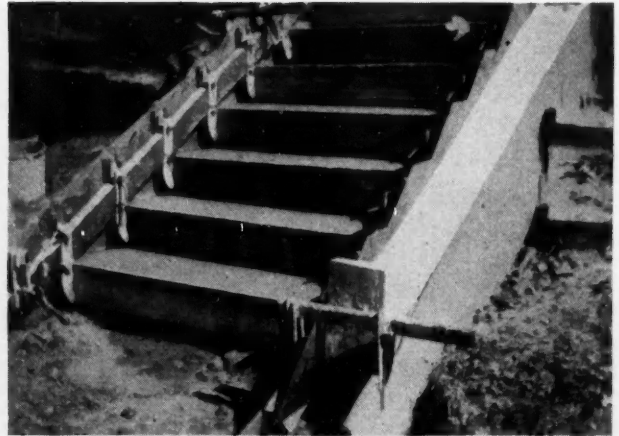
One of the large manufacturers of concrete mixers has designed a very useful attachment for their batch mixers which consists of a builders' auxiliary or silo hoist. The hoist is attached to the upright frame supports between the mixer drum and the engine housing by means of semi-steel brackets



Concrete Mixer with Engine Housing Removed to Show Method of Mounting Builders' Auxiliary or Silo Hoist on Frame of Machine.

securely bolted to the frame. In the illustration, the housing over the engine is removed in order to show the close connection between mixer, engine and hoist.

The drum of the hoist revolves on a cold rolled steel shaft of generous size, in babbitted boxes. All parts of the hoist are of semi-steel, except the shaft and the operating lever. The construction is very simple, consisting of auxiliary shaft and clutch, favored by leading machine tool designers and mechanical engineers. The clutch is of the expansion ring type, the rings being keyed to the shaft, one used as a brake and the other being loose. The friction drum is loose on the shaft. The action is simple, quick and positive and the details of design are so mechanically correct that friction has been reduced to a minimum. The cable drum is lubricated thru the hole drilled in the shaft, which is equipped with a compression grease cup on the end.



Adjustable Form for Concrete Steps and Stairs.

Adjustable Step and Stair Forms

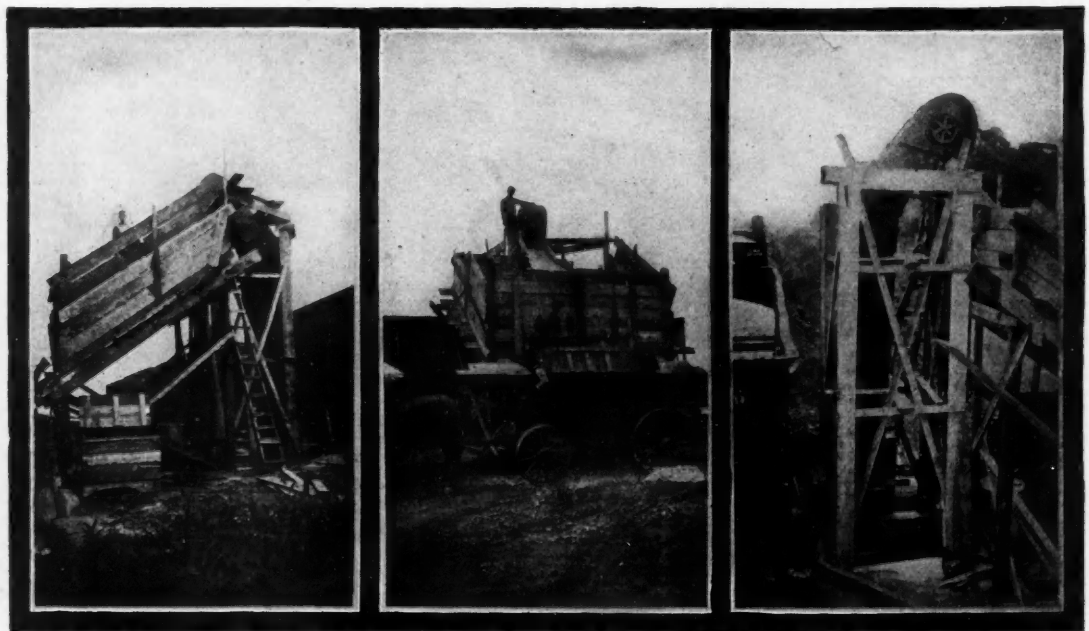
The construction of concrete steps ordinarily requires quite an amount of carpentry work. The illustration shows a flight of steps which has been constructed by the use of a set of adjustable step forms designed to eliminate this carpentry work.

The illustration shows quite clearly how the forms are used. The riser boards are held in place by plates clamped to the 2 by 4-inch stringer on each side of the steps. Two bolts with hand nuts are used for this purpose. The method of attaching riser boards to the supporting plates is novel. Near the bottom of the plate there is a point projecting out from the surface upon which the riser board is driven. A hook with pointed end, higher up on the supporting plate, is then dropped down against the top of the riser board and is driven in. By this means the riser boards are securely held in place.



Grain Elevator Given a Severe Test

At the foot of West Lincoln St., Pontiac, Ill., stands the 32-foot stationary inside cup grain elevator shown in the illustration. It is set in an 8-foot pit along the Chicago & Alton R. R. tracks, and is used to elevate sand, gravel and



Three Views Showing How a Grain Elevator Was Used to Elevate Crushed Rock, Gravel and Sand at Pontiac, Ill.

crushed stone from the pit to the chute from which the wagons are loaded.

This elevator is owned by R. Lobb & Son, paving contractors, who state that in its second season of use and up to August 18, 1916, it had elevated over ten thousand tons of gravel, sand and crushed stone. This would be equal to elevating over 10,000 bushels of ear corn per year for 25 years.

On August 15, 1916, it elevated 115 tons of crushed stone in five hours; for six weeks preceding that date it averaged over 150 tons per day or weight equal to over 4,000 bushels of ear corn. It is driven by a 4-horsepower kerosene engine and is operated by one man.

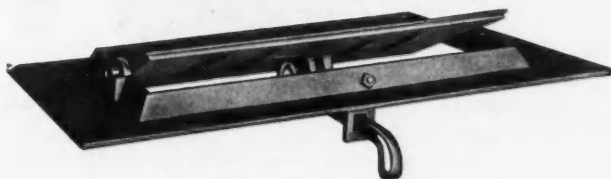
In their report of August 18, 1916, R. Lobb & Son stated that the season's repairs had cost less than \$5.00, that every cup and every link of the original cup chain was still in use and that the elevator was still in first-class condition.



Easily Adjusted Flat Ratchet Damper

The ratchet damper for fireplaces, in its earlier forms, was more or less unsatisfactory because of the uncertainty of its adjustment and the inconvenience of its manipulation.

The damper shown in the illustration was designed to



Flat Ratchet Damper for Fireplaces.

eliminate the difficulties. The lever on this damper is directly under the first row of brick. It eliminates all guess work and makes it unnecessary to soil the hands or clothes to regulate the draft.

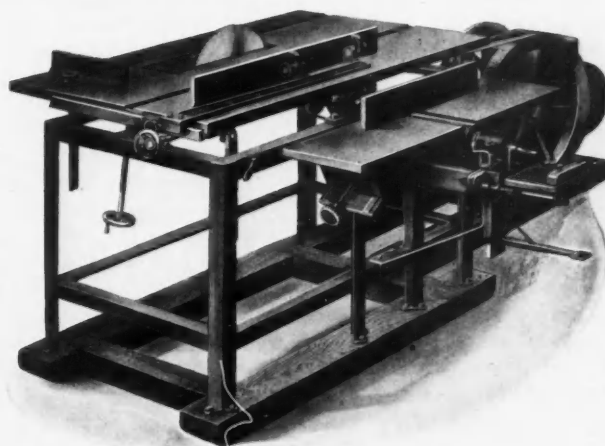
The lever is easily adjusted by hand or poker and locks in any position the instant it is released. Special long levers and brackets are furnished by the manufacturer when a 4-inch steel angle is used under the damper, which brings the lever under the first row of brick.



New Portable Woodworker

The portable woodworker shown in the accompanying illustration has been designed to provide the independence of parts which will enable each operation to be performed as if it were being done on a separate machine. The saw table is operated like any standard saw table, there being nothing in the way and the saw always being ready for operation. The jointer operates right-handed and is mounted in its own bearings, two in number, and is driven thru its own pulley. The patented reversing drive used makes it possible to drive the saw and cutter head in opposite directions, each at its proper speed, with a single belt.

The frame is of steel, electrically welded. The machine is mounted on heavy wood skids, the engine skid being separate from the machine skid to eliminate transmission of vibration from the one to the other. The engine and machine are locked together with a quick-acting locking lever. The hinged saw table is 54 by 30 inches in the clear. Cross-cutting slides are provided on both sides of the saw. Adjustable cross-cutting and ripping gauges are furnished. The machine will take a saw as large as 18 inches. The mandrel is arranged to take dado or cutter heads up to 2 inches wide. The jointer is fitted with 8-inch knives. The hollow chisel mortising and boring attachment is shown in the illustration. The table



Light But Strong Portable Power Woodworker.

has vertical and horizontal adjustment and automatic set stops for regulating the depth of cut. Horizontal movement is controlled by a foot lever, with spring for returning the table to its original position.



GOD put our eyes in front of our heads—let us look forward, not back.



An Ardent Advertiser

In a Montana graveyard stands a tombstone on which you may read: "Mr. Joseph Smith will repose here. At present he is living and conducts a boot and shoe store at 91 Main street."



Long Handled Tools for Finishing Concrete

For their respective purposes, the concrete floor and the concrete sidewalk certainly typify permanent construction. Of course, the manner of their construction will determine how successfully they fulfill their purpose. One of the important things to be considered in the construction of concrete floors and sidewalks is the kind of tools used in finishing the wearing surface.



The Easy Working Positions of Men Using Long Handled Tools.

The time used to place and finish the work is an important consideration with the contractor. In order that he may turn out the best quality of work with the largest possible profit, it is necessary for him to use the kind of tools which will enable his men to turn out high quality work rapidly.

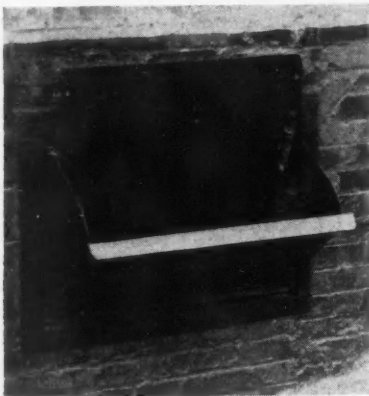
Long handled tools are being used for this purpose. They are well adapted to rapid work, as may be concluded from a study of the accompanying illustration, since they allow the workman freedom of movement, give him a broad and natural view of the work he is doing and increase his radius of operation from a given position. Most men do their best work when they are in a natural position.

Contractors who are planning to cut out the loss of profit due to sublet contracts and those who have planned to develop the field of concrete construction in their vicinity should give the matter careful consideration before any money is invested in finishing tools.



All-Steel Coal Chutes Are Durable

The fact that all-steel coal chutes are durable is attested to by several installations of these chutes in various parts



This Coal Chute Doesn't Show the Effect of Eight Years' Use.

of the country. The illustration shows an all-steel chute which was installed in the Grand Theatre, Kewanee, Ill., in 1909. This chute is in perfect condition today, as may be seen in the illustration

Blue annealed steel is used in the construction of coal chutes of the type shown here. There is no glass to be broken nor is there any cast iron in any part of the illustration

The chute. A steel shield, shown in the illustration, swings up when the chute is open, protecting the foundation wall from flying pieces of fuel. The action of the chute is automatic. It is locked by means of a trip lever on the inside of the chute. It cannot be opened from the outside while locked. The trip lever lock can be operated from any part of the house with a cord. When closing, the protecting shield automatically falls into place, allowing the hopper to be closed, which locks the chute.



Mixer Made from a Barrel on Farm Work

The use of concrete on farms is becoming a necessary thing because farmers are realizing that it serves their purpose for the construction of foundation walls, floors, tanks, small bridges and culverts, retaining walls and many other structures better than any other material.

The accompanying photograph shows a water tank constructed by L. H. Brehm, of Neligh, Neb. This tank has a capacity of 115 barrels, and it is 9 feet deep inside, 10 feet long and 8 feet wide. Mr. Brehm also constructed a corn crib and granary and a feeding floor 16 feet by 32 feet on this farm, all concrete being mixed with the outfit

shown in the illustration. This mixer is an example of a type of machine which, while it is extremely low in cost, is capable of mixing a fairly large quantity of concrete in a thoroly satisfactory manner.

The machine is furnished either complete, knocked down or assembled or simply the castings and other metal parts may be obtained and the machine built up from drawings furnished by the manufacturer. The barrel is either wood or steel and it may be turned either by hand or power. There are mixing blades of sheet metal placed on the inside of the barrel. The mixer is discharged by tilting the frame which carries the barrel, guides and large sprocket driving mechanism. It is not necessary to disconnect the power when the mixer is discharged.

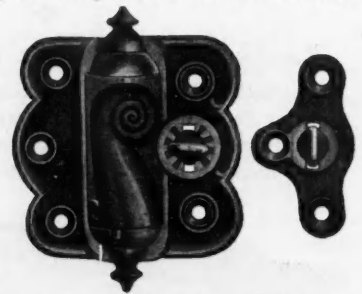


Detachable Screen Door Hinge

As a rule, screen doors are taken down during the winter months. For this reason, the hinges used on screen doors should be designed to take account of this fact.

A hinge which has loose pins or other detachable parts, or one which requires the removal of screws when the door is removed, usually gives dissatisfaction sooner or later.

The hinge shown in the accompanying illustration is designed for screen doors which are to be taken down during the winter months. One-quarter turn of the small button locks or unlocks the hinge. Doors can be taken down or put up in a very short time without the use of any tools. This is a spring hinge with no loose parts to be lost.



There Are No Loose Parts on this Detachable Hinge.



The Commander in Chief

It was at an evening party and Dodge asked Keller:

"Who is that impressive-looking woman over there?"

"That's Mrs. Moore," was the reply. "She's a remarkably strong-minded woman. It is said she commands a large salary."

"Indeed," said Dodge, reflectively, as he looked at the woman with interest. "How does she earn it?"

"She don't earn it," said Keller. "Her husband earns it, and she commands it."



This View Shows the Mixer Made From a Barrel, Being Used by L. H. Brehm, Near Neligh, Nebr.



Hook for Handling Structural Tile

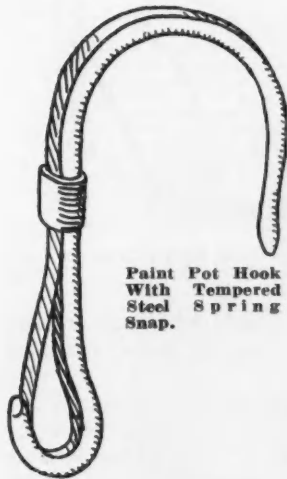
The little tool shown in the illustration stands for a saving in time, gloves and fingers. It is finding favor among



Showing How the Tile Hook is Used.

the men who handle structural tile because it protects their fingers and cuts down the expense of replacing worn-out gloves. It is finding favor among the dealers in structural tile because it enables their men to make faster delivery.

When it is possible to cut down the average time of delivery twenty minutes, by the use of a pair of these hooks, an hour's time is saved for the man, wagon and team on every three loads of tile. This is certainly a saving worth considering.



Paint Pot Hook With Tempered Steel Spring Snap.

Hook for Paint Pot

An eastern firm has recently placed on the market a hook for paint pots. It is made of strong wire and has a snap with tempered steel tongue at one end so that it cannot become detached except when it is desired to release the paint pot. The hook is large enough so that it can be slipped over the rung of a ladder or any convenient support. The length of the device is about 3¾ inches. The hook is superior to the old bent wire hook which is continually in the way if permanently attached to the

paint pot and is continually falling off if not so attached.

Significant

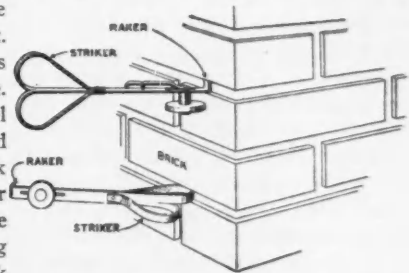
"Do you know, George," remarked Mrs. Ray, "I should say the Browns' marriage was an ideal one. I couldn't help but notice it tonight. Really, there wasn't one word of disagreement. I believe they both think absolutely alike."

"They are a charming couple, my dear, perfectly charming," said her husband, "but as to their thinking alike, Madge, did you notice that she always thought first?"

Handy Combination Joint Raker for Brickwork

The raker, jointer and striker combined, shown in the accompanying illustration, makes a smooth, perfect raked out joint. It is adjustable to any depth of joint.

There are no screws or nuts to work loose. The revolving wheel prevents wear and will not mar the work or cause irregular depths in joints. The wheel revolving against the brick makes it easier for the mechanic to handle the tool.



Showing Method of Using Combination Raker and Striker.

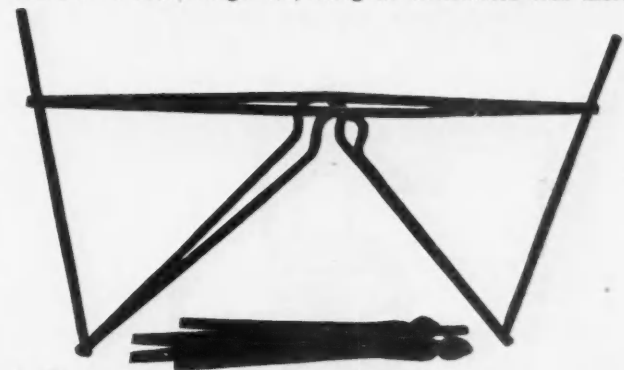
The handle of the raker forms two strikers which will clean out any mortar that may collect. Where this striker is used there is no need for a brush. To adjust the raker, swing the lever to the side and move the wheel backward or forward to the depth desired, then swing the lever back in place and the wheel is positively locked in place. The tool is made of a special grade of steel, thoroly tempered.



Scaffold Bracket for Chimney Construction

The scaffold bracket shown in the accompanying illustration is used in building chimneys either at the peak or on the side of a roof. The advantages of this bracket are its simplicity, its convenience in use and in transportation, its protection to the roof and its safety.

In setting up the scaffold, two pairs of brackets are used, one on each side of the proposed chimney. They are hung over the ridge of the roof, fitting equally well over a ridge board or a metal ridge roll, being so constructed that there



Scaffold Bracket Extended and Folded for Storage or Transportation. Two Brackets Are Used to Construct the Scaffold.

is no weight on the roll itself. The horizontal bars are then raised into position and the supporting posts adjusted. Boards are laid across the horizontal bars to complete the scaffold.

On the side of the roof, the bracket is extended with the center at the base of the chimney. With a trowel or other tool the short hooks are sprung inward until the retaining rivet is loosed and the hooks dropped down. They are then in position to catch the sheathing or a roof ladder. The scaffold is completed as above.



Mottled Asphalt Shingles

Asphalt shingles are being sold in great quantities in all parts of the country. The home builder has become thoroly familiar with them, and finds them quite satisfactory in every

way. There has, however, been some objection, by the more artistic users, to the "flat" colors which are prevalent. The dark red, the grayish green, and the pearl gray colors display too much uniformity in a complete roof to please the eye of the discriminating architect or the builder who is looking for every distinctive touch which will make his work stand out from the rest in his community. These are superficial objections at best, but they indicate the existence of a desire for something to relieve the monotony of solid colors.

With these thoughts in mind, one manufacturer has now produced a mottled asphalt shingle, made by application of the red and green slate in varying proportions of color. There is no attempt to follow a design, as is sometimes done by roofers when they lay alternate courses of different colors, or work out roof designs in color. The crushed slate is applied by a special "rig" which distributes it in a "hit-or-miss" effect that is very beautiful in the completed shingles.

It is intended that the roofer shall lay the shingles just as they are taken from the package, with no thought to match them or to form patterns in the roof. The completed effect of the whole roof will be heightened if this suggestion is carefully followed.



High Speed Lock Mortiser

The lock mortiser shown in the accompanying illustration is very rapid in its operation. It will cut an opening for a mortise lock in a door in a few minutes. It will develop a speed of 1200 revolutions per minute and turns out work of very much higher quality than can be obtained by the use of a bit and chisel. It will cut a mortise from $\frac{5}{8}$ to $1\frac{3}{4}$ inches wide, $4\frac{3}{4}$ inches deep and 6 inches long.

Features of special importance are the self-centering clamps, the self-feeding mechanism and the machine cut gears. These features contribute to the speed of operation, accuracy in results obtained and ease with which the machine is operated.

To use, the mortiser is attached to the door by the self-centering clamps. The length of mortise is adjusted by the long screw in the lower clamp and the depth by the sliding set collar on the center shaft. While turning the gear wheel

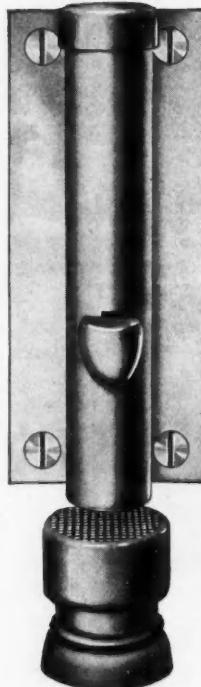


Lock Mortiser Which May be Operated at 1200 R.P.M.

with the right hand, the upper handle is raised and lowered the full length, with the left hand, so the pawl will strike the ratchet wheel and feed the cutter $\frac{1}{16}$ of an inch with every stroke. When set collar has reached its limit, the pawl is raised off the ratchet and the shaft is pulled back. A larger size cutter is used for the face plate of the lock.

Improved Door Holder

One of the large manufacturers of builders' hardware has recently remodelled their door holder, making additions in the mechanism of the holder which greatly increase its usefulness on the doors in residences, offices, stores and public buildings.



The Improved Door Holder.

The new holder, shown in the accompanying illustration, is convenient to operate because the footpiece is near to the floor and the trip is easily engaged by the foot. There are no sharp corners or edges to catch draperies or clothing.

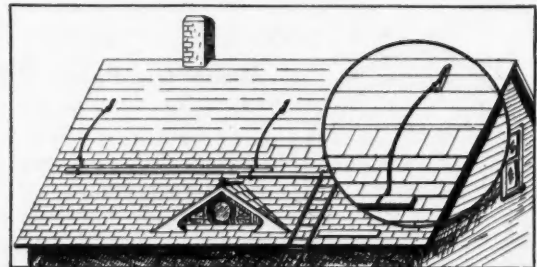
A strong spring re-enforces the rubber bumper, always giving it a firm grip on slippery or uneven floors. Because of its long throw, the range of operation is wide.

The materials used in its construction consist of wrought steel, piano wire steel for springs and solid bronze for the trip. A coiled spring of considerable length is used for withdrawing the bolt and a separate light spring is used for operating the trip. Long life is assured by the use of large working surfaces and simple, substantial parts. The holder is finished in bronze plated, antique copper, dull brass and electroplated finishes.



New Bracket to Support Roof Staging

The bracket shown in the accompanying illustration is designed to support the staging on the roof while the roofing



Bracket Which Supports Staging Over Either Close or Open Sheathed Roof.

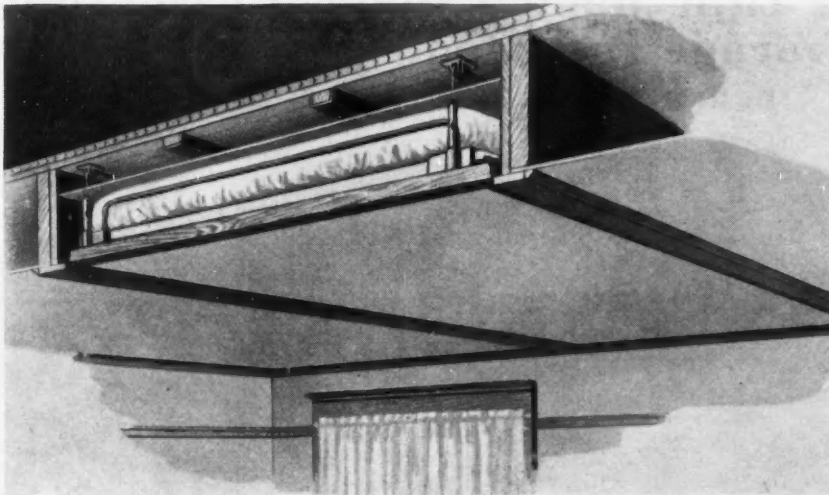
is being laid. It may be used over wood, metal or slate shingles, composition or metal roofing in sheets or roofing in rolls.

The bracket consists of a $\frac{5}{8}$ -inch bar of soft steel, 5 feet 6 inches long, made in the form of an arch to allow the roofing to be laid under it. A loop at the lower end receives a 2 by 4-inch studding and a reversible hook at the upper end attaches the bracket to the roof. The hook end is used over the roof boards on an open sheathed roof and the flat end with a slot in it is placed over a 10 or 20-penny nail driven in the roof on a close sheathed roof. The staging is easily moved ahead as the work proceeds.



Disappearing Ceiling Beds

One of the most useful devices for saving space in modern and old homes is the disappearing bed. The bed shown in the illustration is a novel example of what is being done



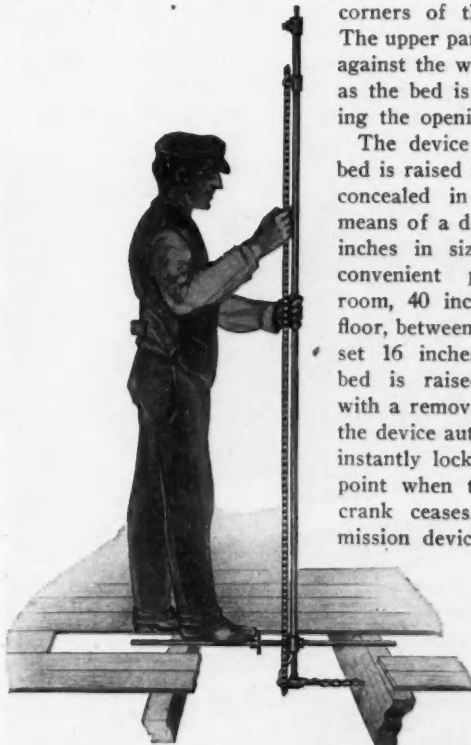
This View Shows How the Bed is Completely Concealed When in the Ceiling Receptacle.

to make one room serve for two. This bed is wholly concealed in a ceiling receptacle during the day time and may be lowered into place for use in a very few seconds. Whether up or down, the ceiling has a finished appearance, since the bed receptacle is automatically closed when the bed is withdrawn.

Any room of sufficient size may be used as a bedroom without losing its utility in line with the purpose for which it was designed. Installations may be made in any ceiling above which there is room for the receptacle, whether there is a floor above or not. The illustration shows an installation with floor above. Two 4-inch channels with 2 by 4-inch nailing strips are used to support the portion of the floor above the receptacle.

The lower false ceiling panel carries the bed up or down, and automatically separates itself from the bed and spring when the legs of the bed reach the floor. The legs are inserted in heavy fittings made to receive them at the corners of the bed frame. The upper panel drops down against the wood trim strip, as the bed is lowered, sealing the opening.

The device by which the bed is raised and lowered is concealed in the wall by means of a door 15 by 16½ inches in size, set at any convenient place in the room, 40 inches above the floor, between two studs set 16 inches apart. The bed is raised or lowered with a removable crank and the device automatically and instantly locks itself at any point when turning of the crank ceases. The transmission device is connected



Chain Drive Boring Machine Which Does Rapid Work Either in Position Shown or on Overhead Work.

to the bed with four ¼-inch steel cables, threaded thru notches cut in the top of floor joists. The cables run on ball bearing pulleys.



Chain Drive Boring Machine

The machine illustrated here is capable of greatly increasing the number of holes which may be bored in floor joist for the installation of electric wiring over what can be accomplished with an ordinary breast drill. It is so constructed that it may be used to bore holes in joist either above the workman or immediately below him. The steel extension rod, telescoping into the wrought iron tubing, allows the desired adjustment for ceilings 7 to 11 feet high. When operated in the reversed position, a cross-bar with foot pedal is inserted in the cross fitting

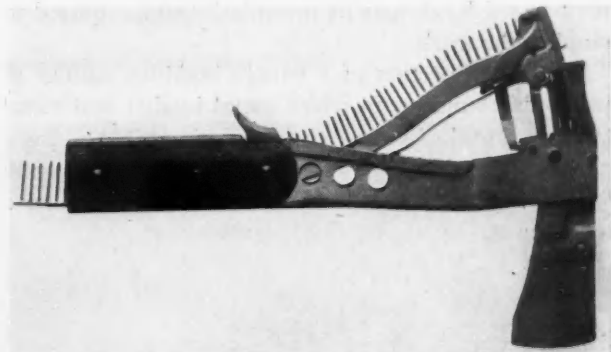
shown in the illustration, which supports the machine on the joists and permits the use of the foot in starting the bit. One interesting feature of this boring machine is the outside bearing for the upper sprocket wheel, which keeps the bit at right angles with the chain and tubing.



A Hatchet That Drives Its Own Nails

Driving a nail a second is a record few lathers and few carpenters, if any, can equal. But a tool recently invented in the West, and now being manufactured there, can turn the trick nicely.

The automatic lathing hammer means much to industry.



An Automatic Lathers' Hammer, Showing How Nails Are Fed.

It means more rapid work, almost a total elimination of mashed thumbs and fingers, and the abolishment of diseased mouths caused by using the mouth as a pouch for nails. It will save life by eliminating accidents due to swallowing of nails by workmen.

The automatic hammer works like a machine gun. Small nails are fed into it on a strip of paper, and thus the loss from dropping or bending nails is totally avoided. The invention is one of the cleverest and most practical of any made in years. Already union workers and lathers organizations, after using the new tool, have given it their official endorsement. By releasing a catch the hammer may be used for pounding without driving nails, and it is fitted with a sharp bit for cutting.

The American Builder Information Exchange will be pleased to furnish on request the name and address of the parties responsible for any of the interesting novelties or improvements described in these columns.

Metal Lumber and Lath Make a Modern Fireproof Garage Building

By R. M. Nicholson

THE Canton Motor Car Company building, Canton, Ohio, is one of the finest examples of a fireproof garage in the State of Ohio.

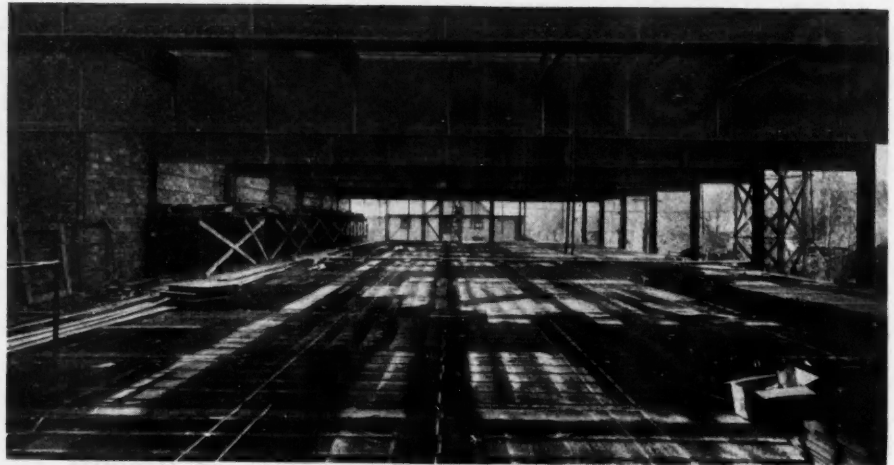
The building is 66 2/3 feet wide and 200 feet long. The floors and roof are constructed of metal lumber, to which is attached metal lath as a basis for the concrete. This is a most economical approved fireproof construction, and, furthermore, the light weight of the material makes it possible to span the entire width of the building with structural steel girders, without intermediate columns or other supports, giving a large, unobstructed floor area.

Floors and roof were designed for live load of 125 pounds per square foot—roof to serve as future floor when additional stories are added.

Approximately 41,100 square feet of metal lumber were installed—about 68 tons of joists, 14 tons of metal furring, and 9 1/5 tons of metal lath being required to complete the work.

A recent inspection of a garage building, similar in size to this building, in which metal lumber and metal lath were installed seven years ago, reveals not a single crack in the cement floors on top of steel joists or in plaster ceiling underneath, altho the building has been in continuous operation since erection.

Positive strength under all conditions, simplicity of design, and ease and speed of erection are characteristics of metal lumber and metal lath floor construction. Sidewalk lights are installed in front and side.

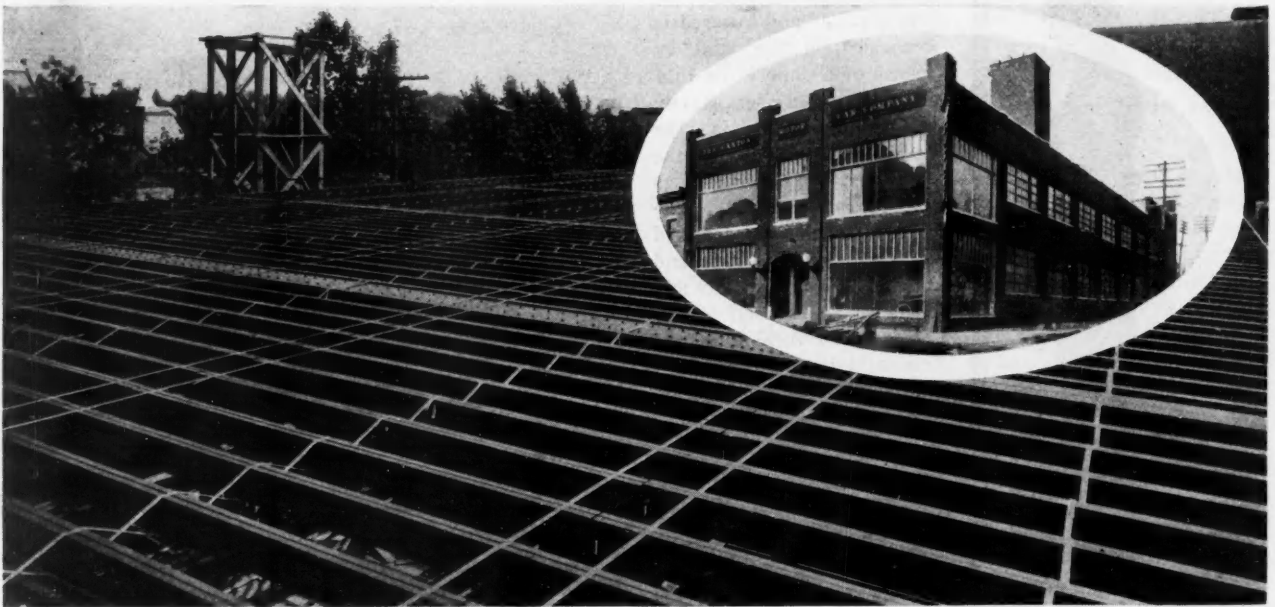


View of Second Floor of Canton Motor Car Company Building During Construction. Metal Lath Is in Place Over Light Steel Joists Preparatory to Laying Concrete Floor.

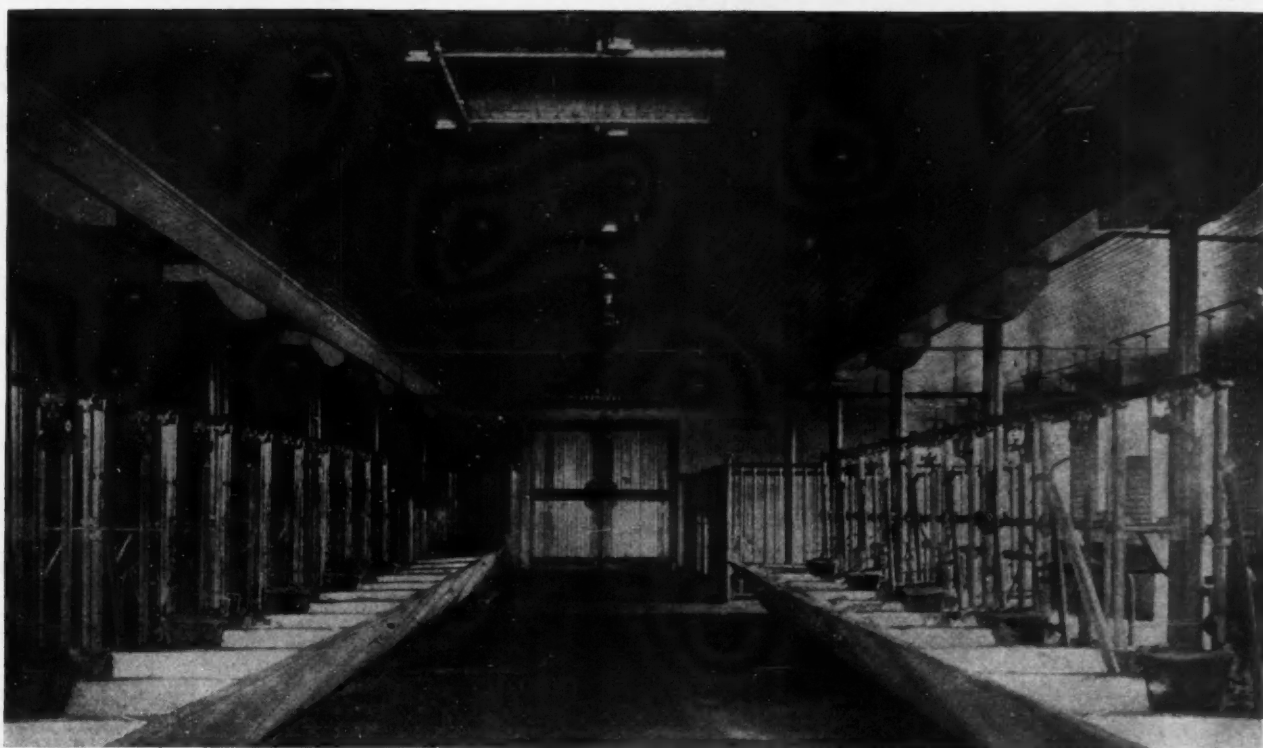
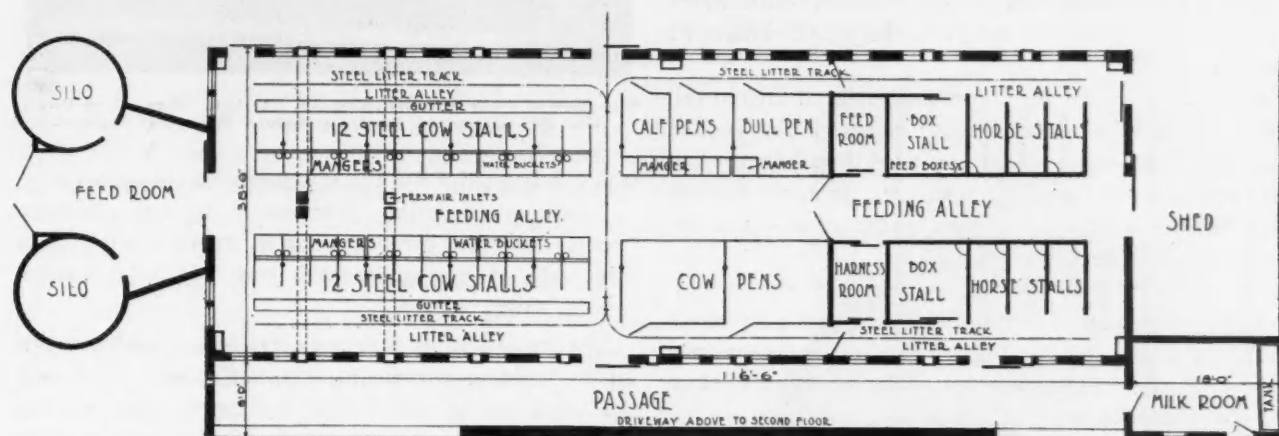
Most Fires Found Preventable

THE National Board of Fire Underwriters, in tabulating the five hundred thousand fires occurring in the United States, ascertained that the per capita fire loss of the United States is many times greater than that of most European countries, and found the 1915 fire loss classified as follows:

Strictly Preventable Fires.....	\$32,720,239	21.4%
Partly Preventable Fires.....	58,148,339	37.9%
Unknown (Largely Preventable)	62,363,298	40.7%



The New Canton Motor Car Company Building Is a Striking Example of Metal Lumber Construction. The illustration shows the method of bridging joists with steel straps to produce uniformity of strength in floors and resistance to concentrated or accidental loads applied on floors.



Exterior and Interior Views and Dimensioned Floor Plan of Remodeled Barn at Lake Congress, Ohio. Contract Handled by F. V. Hoover and E. A. Pennell, of Hartville, Ohio, Following Plans Prepared by the James Mfg. Co.

Permanency in Barn Ventilators

By L. Klima

THE wooden cupola has had its day. Of course there are still some wooden cupolas being built on barns just the same as there are still some farmers that are driving oxen in place of horses and tractors.

There will always be some at the end of the procession, but the progressive farmer has learned long ago that the wooden cupola would not answer the purpose of ventilating his building.

The illustration shows what has been done in twenty-five years in barn and ventilator construction. Note that this wooden cupola has sagged the roof of this building several inches, for the weight of these cupolas would sag almost any ordinary roof.

This wooden cupola would perhaps weigh about 1,200 pounds, while a galvanized steel aerator of a much greater capacity would weigh in the neighborhood of 400 pounds.

Just as the woven wire fence has replaced the old rail fence, so has the metal aerator replaced the wooden cupola. The lumber which was used in rail fences can be used to a much better advantage. In fact, some of this lumber is now being used in the most expensive and most durable furniture.

There was a time when a few hundred feet of lumber, more or less, in a barn did not make very much difference; but today, in the age of economy and efficiency, the steel aerator has come to take the place of the discarded wooden cupola.

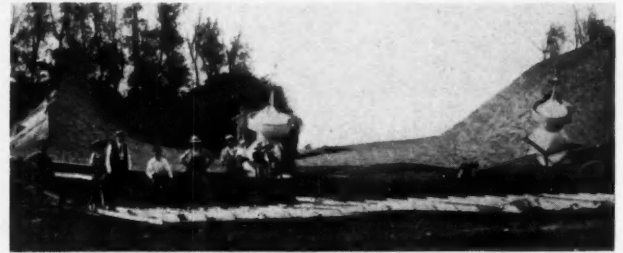
Note the difference in the beauty and architecture of these two buildings. The galvanized steel aerators are now on buildings that have been up for twenty-five years, and they are just as good today as they were the first day they were put up.

There is no depreciation on the metal aerator. This, however, is not true of the wooden cupola, because it must be repainted every few years, and it is no easy

matter to get up on the peak of a barn and paint the wooden cupola.

The steel aerator needs no refinishing because the finish on it will last as long as the building. In this day and age, when ventilating systems are being installed in the modern barns, the question of an efficient and durable ventilator is indeed a very important one.

In the day when the wooden cupola was used merely as an ornament it did not make much difference how it



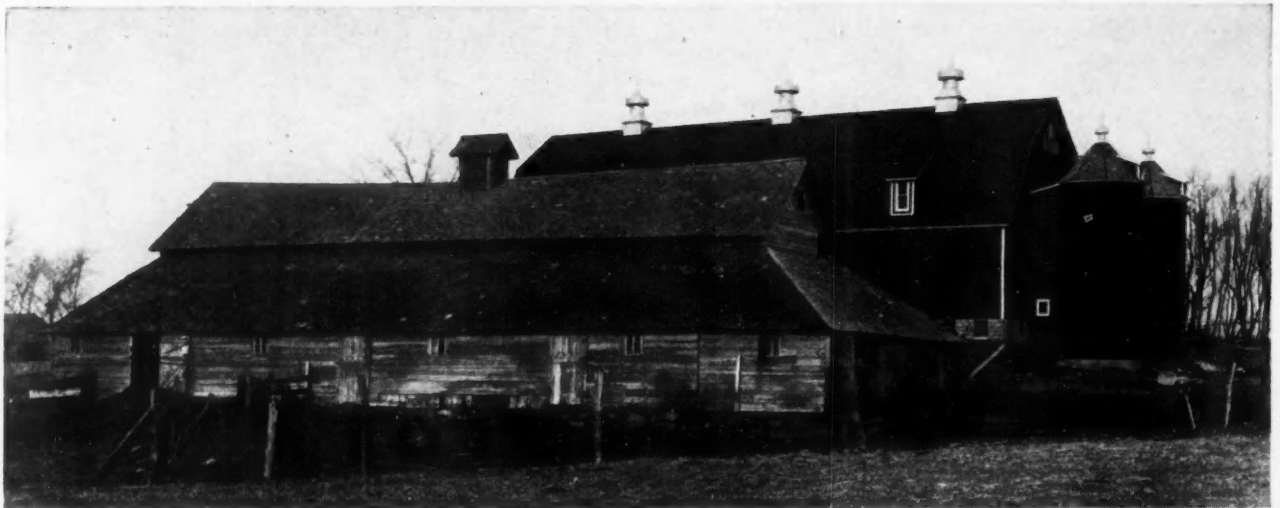
The Barn of Peter J. Christopherson, Hartland, Minn., Blew Down, But the Galvanized Steel Ventilators Were Not Injured.

was constructed, from the standpoint of efficiency.

Birds would build their nests in these wooden cupolas, and the birds nesting in them would ruin a large pile of hay underneath each of these wooden cupolas every winter.

The metal aerator is very easily erected, and once put on the building is there to stay. It is bird proof, and the wind cannot affect it in any way. The surface exposed to the wind is round, thus it does not have the effect that it would on a flat surface, as is the case with the wooden cupola.

Contractors everywhere are recommending metal aerators because they know that there is positively nothing that will give the value for the money invested, and they can save the time in building the old wooden cupola, which never did do the work, and which took



The Old and the New. A Striking Contrast in Barns on the Farm of F. F. Coggins, Blooming Prairie, Minn. Notice Particularly the Difference in Cupola Ventilators. The Modern Air-Tight Barn Requires a Scientific Ventilating System with Permanent Aerators on the Roof.

up a great deal of time, and gave little to show for the work.

While the crew is picking up the tools ready to go to another job, the aerators can be put on the building, and the barn owner has his building equipped with a ventilator that will be a source of pleasure and pride to him as long as the building stands.

Note the illustration showing the barn destroyed by a cyclone, and the aerators still on the roof just the same

as they were put on the building. The barn was rebuilt, and the aerators put back into place.

Hundreds of wooden cupolas are blown off of the roofs every year. It is impossible for the storm to destroy a metal aerator without destroying the building, and in this case the building was destroyed, and the aerators are again being used on another building which was put up in its place. The best in steel ventilators is always the cheapest in the long run.

Concrete Staves for Permanent Silos

By Chas J. Perkins

MR. FARM BUILDING CONTRACTOR, how often have you been asked to build a concrete silo and been unable to do the work, or even refer the person making the inquiry to any one who could do the work? As a result, the silo buyer has been compelled to resort to wood structures and you, the man that has the contract to build the house, the barn or other out-buildings, get the job of erecting a wood stave silo for a few dollars in days' pay. The silo buyer is dissatisfied with his purchase and always will be, because of upkeep expense. You lost a good profit because you couldn't comply with his wishes and build him a concrete silo.

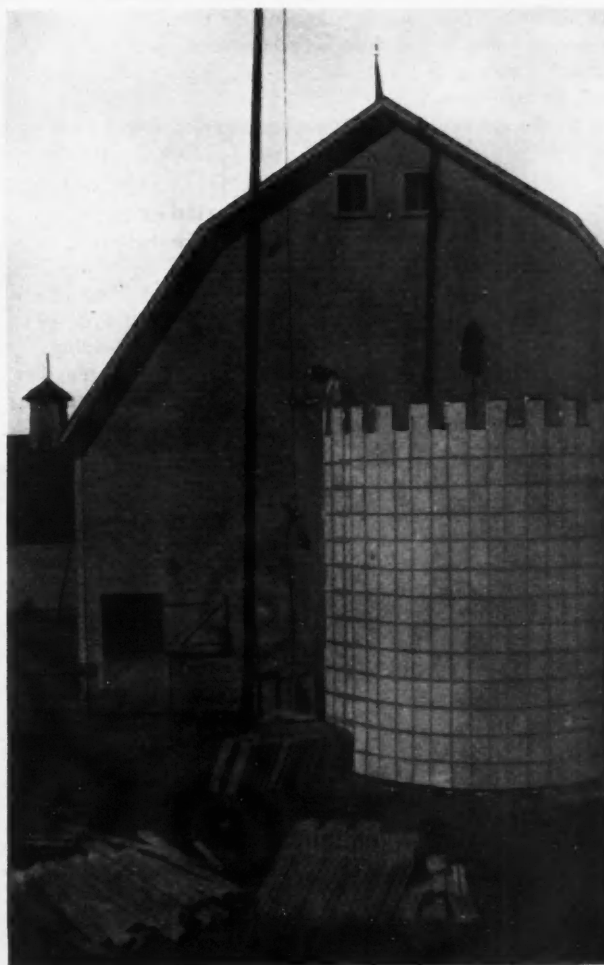
The farmer has the money these days and all over the country he is putting up permanent farm building improvements, for the reason that he is receiving the highest prices ever known for his farm products. The farmer is buying and building of the best material and his improvements are substantial and lasting. The fence posts are made of concrete; the hog house and chicken houses are made of concrete; often the entire barn, except the roof, is made of concrete, and the new house is built, in part at least, with some form of concrete construction. The day of shoddy construction is past.

Above all kinds of buildings on the farm that the stock man and the dairyman wants built in a permanent manner, is the silo. During the winter months it contains the food supply of his herd, and the up-to-date farmer, dairyman and stockman wants this food supply stored in a fire-proof, wind-proof structure.

When it comes to choosing the form of concrete silo construction, one should adopt the kind that has been tested by time; one that is recommended by creditable silo users, and yet, one should choose the form of concrete construction that will permit quick work in erecting and furnish the maximum of profit on every silo that is built.

There is no form of concrete silo construction that will meet these wishes better than the concrete stave. They have been tested out for more than twelve years by more than ten thousand farmers, dairymen and stock feeders. One form of concrete stave construction of silos and stock water tanks is illustrated on this page. The concrete staves are made "wet mix"

and are cast in steel moulds; the mixture consists of one part cement to five parts of good sharp sand and gravel. A depression is made on the sides and ends of each of the staves, into which a rich cement mortar is placed during the construction, and when the structure is finished every joint is thoroly sealed with mortar,



Stave Silo Being Erected on Iowa Farm.

thus preventing any air entering into the silo thru the joints and preventing the juices of the silage escaping thru the joints.

The door system is all made of steel, including a permanent steel ladder over the door system; the door

(Continued to page 120.)

CORRESPONDENCE



Questions Answered and Ideas Exchanged.

Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

More About Inlaid Work

To the Editor:

East Jewett, N. Y.

In answer to Edw. I. Barnes' question about inlaid work. I have an inlaid table top with between 1,200 and 1,300 separate pieces in it, which I made. I used an old top for the base and scraped it down to pure wood before inlaying on it. I used pulverized glue, which I think is the best. Not one piece has moved. The longer the glue is mixed the better it is. Of course, the raising of the blocks may be the fault of the special wood, lignum-vitae.

As to the market, I find no market here for inlaid work.

BEN C. MERWIN.



From a Self Made Builder

To the Editor:

Marshalltown, Ia.

In gratitude, I am sending you the photo of my office.

I moved into town from the farm where I had lived all my life. I am 41 years old. I had no trade, had but little education and lots of grit. I certainly found it hard sledding.

In 1913 I subscribed for the AMERICAN BUILDER, together with another good magazine. In the spring I went to contracting. Experience and study go well together. At that time I had

never worked at the trade or seen specifications or blueprints. Today I have 48 new houses to my credit, besides the repairing and remodeling of many others; also one large garage that I built.

I am working an average of 20 men. I do all the designing, planning, make all the blueprints and superintend all the work.

Last year I cleaned up \$4,000.

A man can if he will.

W. S. HAYNES,
Contractor and Builder.



What Do Garage Builders Say?

To the Editor:

Minocqua, Wis.

Will you kindly advise what—in your judgment—is the latest and best way to have entrance in a (50-foot wide) garage—in the center of the building or along one side of the building?

Also give reasons.

A. H. RANTZ.

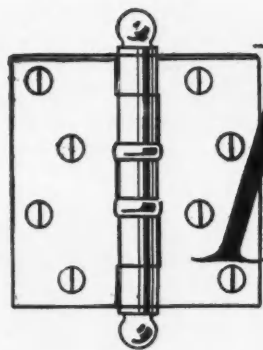
Answer—It seems to us that all of the advantage is on the side of having a public garage entrance in the center rather than to one side. The 50-foot width permits automobiles to

(Continued to page 88.)



The Business-Like Office of Contractor W. S. Haynes, Marshalltown, Iowa. His Equipment of Home Study Books in the Case and His Copies of American Builder Close at Hand Point the Road to Advancement.

How to Specify Butts



FRANCIS W. GRANT, in a recent article on "Fundamentals of Specification Writing," states that exact lists of quantities are out of place in an architect's specification. ¶ Exceptions to this rule, Mr. Grant continues, are only where it is impossible to give the necessary information on the drawing, as the number of coats of paint or the size and number of butt hinges.

You will find the following table helpful in specifying the proper sizes of butts:

Dimensions of Door	Weight of Door	Size of Butt
Cupboards		2½ ins.
7/8 and 1 1/8 ins.	30 lbs.	3 x 3
1 3/8 ins. thick and less than 2 ft. 8 ins. wide ..	30 to 50 lbs.	3½ x 3½
1 3/8 ins. thick and 2 ft. 8 ins. or more in width	50 to 60 lbs.	4 x 4
1 3/4 ins. thick and less than 3 ft. 0 ins. wide ..	60 to 75 lbs.	4½ x 4½
1 3/4 ins. thick and 3 ft. 0 ins. or more in width	75 to 100 lbs.	5 x 5

As to the number, experience has proved that the only proper way to put up a door is to hang it on *three* butts. And it seems needless to add that the architect who takes the trouble to specify the proper size and number of butts will see to it that they are STANLEY Ball-bearing Butts.

All Stanley Works' products may be furnished by the leading builders' hardware manufacturers such as P. & F. Corbin, Russell & Erwin, Sargent, Yale & Towne, and by hardware dealers everywhere.

If you have not a copy of The Stanley Works' catalog of Butts, etc., in your files write for it today.

New York
100 Lafayette Street

The Stanley Works

Chicago
73 East Lake Street

New Britain, Conn., U. S. A.

Manufacturers of Stanley Garage Hardware

Varnish that stands by you

Woodwork is the most conspicuous feature of interiors, so everyone wants well-finished floors, stairs and trim. How will your work look a year from now? Are you protecting it with good varnish?

Very likely you get little encouragement to do fine varnishing. People don't know it is worth while to pay for it. But you do.

And the public can be taught. We are urging good varnish and good varnishing in all the leading magazines.

Murphy Varnish

"the varnish that lasts longest"

produces a finish that brings out every good point the wood has and keeps your work looking well for years. Yet it costs you no more to use than a cheap varnish, if you figure by the job instead of by the gallon. It covers more surface and goes on more easily, making quite a saving in labor. Its extra length of life costs nothing and is worth much to you and to your customers.

Our principal house-finishing products are:

Murphy Transparent Interior Varnish
Murphy Transparent Floor Varnish
Murphy Transparent Spar Varnish
Murphy Nogliss Interior
Murphy Semi-Gloss Interior
Murphy Univernish
Murphy White Enamel
Murphy Enamel Undercoating

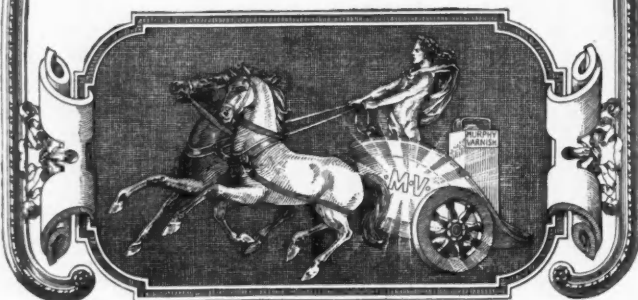
Murphy Varnish Company

Franklin Murphy, jr., President

Newark New Jersey

Chicago Illinois

Dougall Varnish Company, Ltd., Montreal, Canadian Associate



(Continued from page 86.)

be stood along each wall facing the center aisle on driveway. With the driveway down the center the cars can be backed into their place or stalls along either wall with equal facility. If the entrance is on the side the front space on that side cannot be used for storage and the far corner is inaccessible.

Perhaps others concerned with public garage building will want to have their say about this thru our correspondence columns. What are the arguments as you see them?

EDITOR.

✦ Curb Walk the Latest

To the Editor:

Chicago, Ill.

The photograph enclosed, which was taken on Fargo Ave., Chicago, demonstrates that luxuries of today are necessities of the morrow. Not long ago we were so well contented to ride in automobiles that such a little thing as stepping out and walking thru the mud of the parking was merely vexing, but today it has become exasperating. To satisfy the dwellers



Narrow Concrete Walk Along Curb on Fargo Avenue, Chicago.

of large modern apartment buildings in Chicago, narrow concrete walks are built along the curb, with a crosswalk opposite the entrance. With this convenient arrangement the car can arrive at any place along the curb and my lady's slippers are neither soiled nor is American chivalry assailed for lack of a Sir Walter. These walks are built similar to a sidewalk.

UNIVERSAL PORTLAND CEMENT CO.,

WM. M. KINNEY,
 Engineer, Promotion Bureau.

✦ First Qualify, then Carpent

To the Editor:

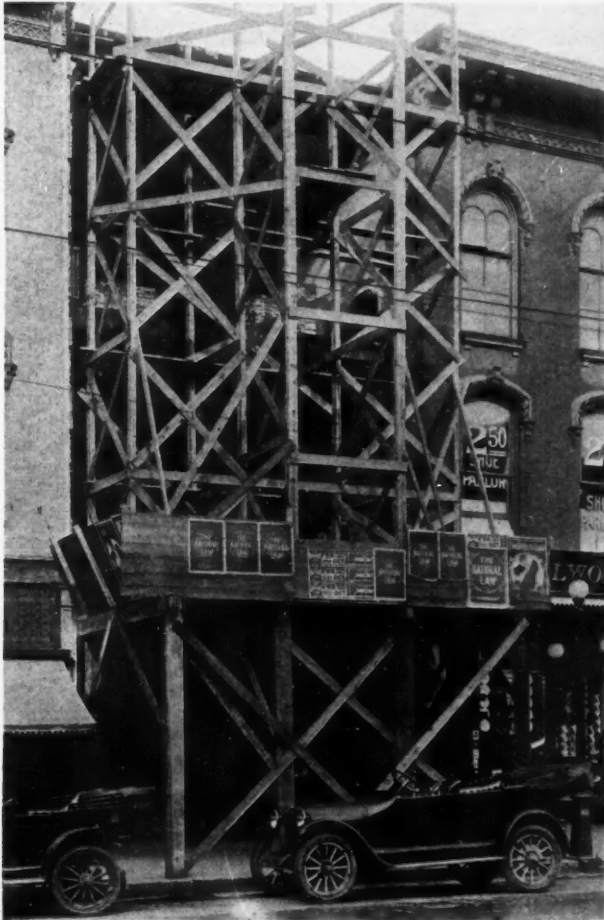
Drumright, Okla.

After reading Bro. I. P. Hicks' letter in the October issue, I "sorter swelled up," and would like thru your paper to let him know what I think of "Jacklegs," as he calls them, and also what I think about the licensing of carpenters.

Now I don't believe in making any man put up so much money per year to be allowed to work his trade, but I would like to see a law passed compelling a carpenter or a contractor to pass an examination before he is allowed to put himself up as a carpenter or a contractor. Also a law that will allow only a certain percentage of apprentices on any one job, say one apprentice to every four journeymen carpenters.

Bro. Hicks says, "give the 'Jackleg' a boost," but for my part the only boost I'll give him is to boost him out of my way if I can. I never could enjoy seeing a man jump in and

(Continued to page 90.)



During Construction

PUT YOURSELF ON THE MAP

THE CONTRACTOR who popularizes himself with the community will garner in most of the business.

Transforming the front of any dingy, old-fashioned structure into an attractive, sales-producing shop front with Midland Enamel Terra Cotta is a sure way to gain popularity—*and profit.*

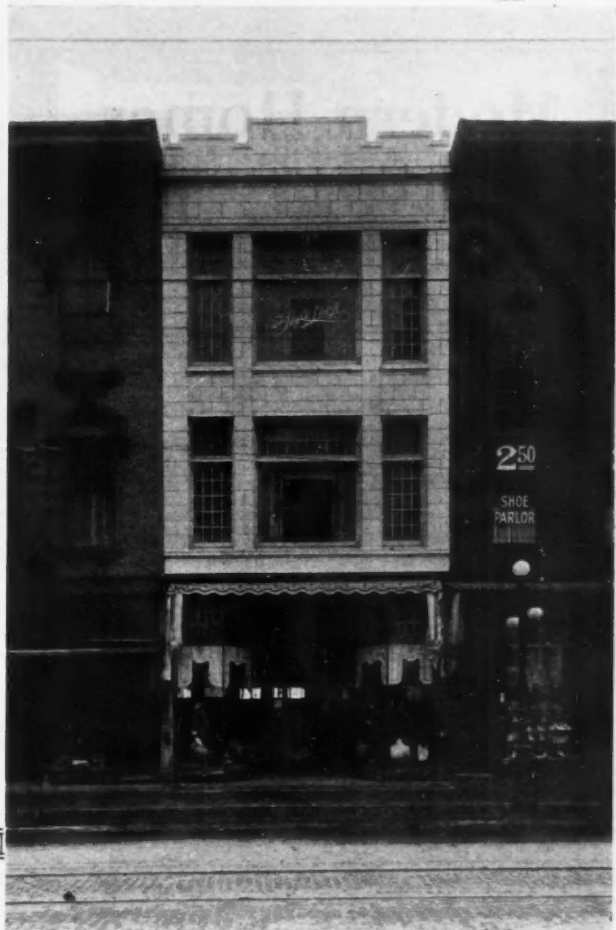
Ask contractor Isadore Leins of Aurora, Illinois.

BOOKLET OF IDEAS—FREE

MIDLAND TERRA COTTA COMPANY

Chicago

1515 Lumber Exchange



After Completion

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

(Continued from page 88.)

take work away from me just by doing it a little cheaper when I've spent a lifetime learning to do that work.

He will probably say "the man who hires a 'Jackleg' gets what he pays for," but does he? The man who has spent a lifetime to learn a trade will not only do better, but a quicker job, and nine times out of ten the "Jackleg job" costs more money.

I presume Bro. Hicks is a mechanic and I would like to ask him how he likes to lose a job just because some "Jackleg" tells the owner he can do it just as good, but cheaper.

He don't really need to answer, for I know just how he feels, for I've been there, not once, but many times.

I think if Bro. Hicks would read the article "What Is Competition" in the September issue, it would help some.

Now I don't want anyone to think I would place anything in the way of a man trying to *learn* the trade; on the contrary, I am willing and do try to help them all I can; and any of the beginners who have worked with me can and will tell you that I am always ready to help them out. But—let them learn the trade and then call themselves "carpenters" and we won't have any "Jacklegs" to contend with.

Yours for better building,

V. A. PLEASANT.
Drumright Planing Mill.

Wants Bookkeeping Articles

To the Editor:

Penticton, B. C.

I would not care to do without the AMERICAN BUILDER now after having it for a year. The ads alone and your methods of illustrations, etc., keep a man up-to-date. I think perhaps it would be good for the smaller contractors and shop men who do all their own estimating of plans, timekeeping, bookkeeping (profit and loss accounts, trial balance, percentage of

depreciation in plans, etc.) if you could run a series of articles showing short systematic methods of keeping track of a business.

LEROY A. PELTON.



A Rustic Sign Board

To the Editor:

Indianapolis, Ind.

The photograph accompanying is of a street sign built in a very rustic manner. It is built of old scrap boards and makes a very peculiar combination.



Unique Sign Board Hung and Framed Out of Old Drift Wood.

The sign is located in Billings, Mont., on one of the principal streets.

The effect as an advertising scheme is very good.

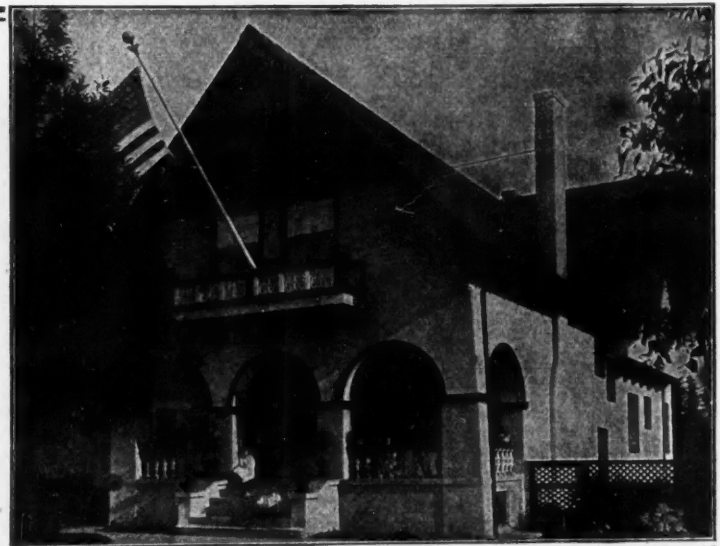
RUSSELL WALDO.

Modern Homes at Less Cost

You can build the finest types of *strong, permanent, fireproof* structures at a decided saving of material and labor—by using Hy-Rib and Rib Lath.

These materials *eliminate all forms* of pouring cement—saving expense, labor cost and time of erection. Because of their extraordinary stiffness and rigidity, they *permit the wider spacing of studs and supports*, saving in the cost of studding and labor of installation.

Begin now to build with Hy-Rib and Rib Lath. The line is complete, including Diamond Lath, Channels, Studs, Corner Beads, Base Screeds, etc. They provide a more valuable building in every respect—and assure the greatest satisfaction to your customers.



Rib Lath Residence for F. L. Spaulding, Los Angeles, Cal.—S. Munson, Architect

Hy-Rib A steel sheathing, stiffened by rigid deep ribs. Manufactured from a single sheet of steel. Its use is decidedly simple. The easily handled sheets are fastened to the supports and the plaster or concrete applied. No forms, stiffening channels nor wiring required.

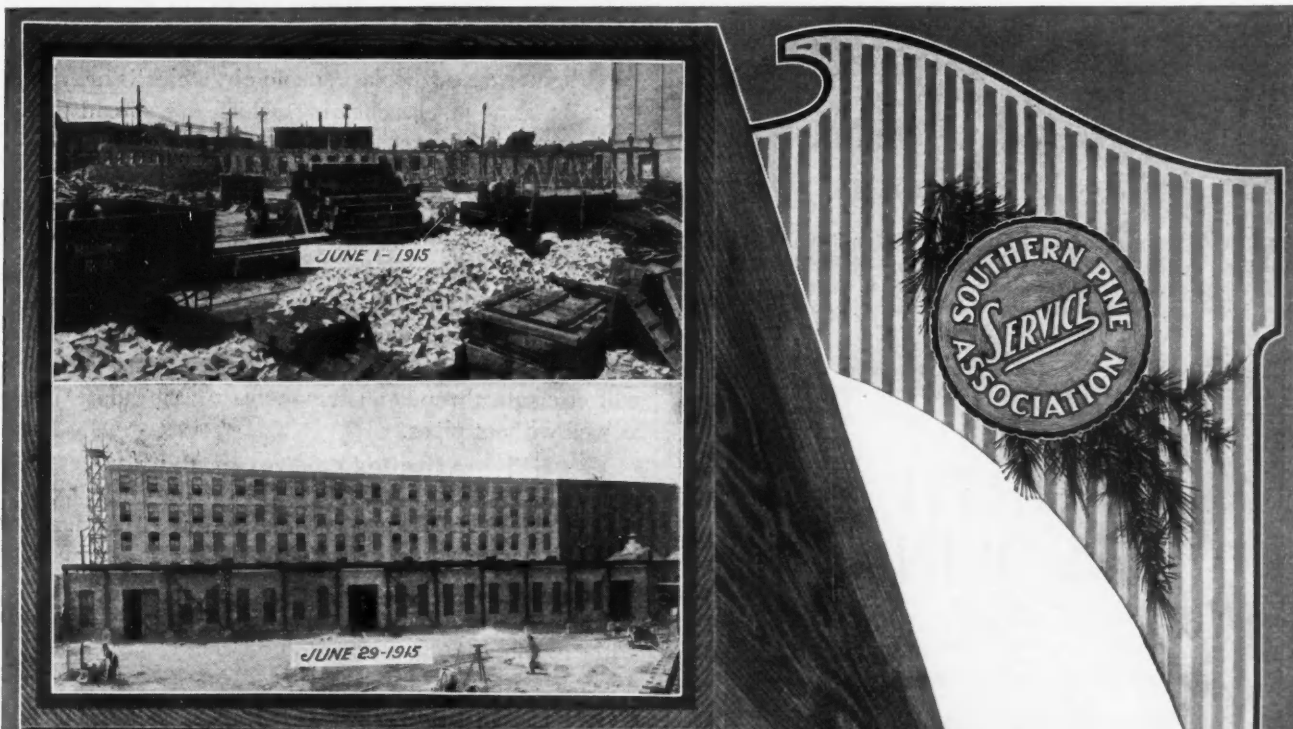
Rib Lath A superior metal lath with beaded ribs that span between the studs, making it exceptionally stiff and rigid and permitting the wider spacing of studs. Provides a perfect clinch for plaster and will not crack or streak. Saves time, labor and material in erection.

Write for Hy-Rib Handbook, with specifications, tables, illustrations, etc. Every builder should have a copy. Address Hy-Rib and Lath Dept.

TRUSSED CONCRETE STEEL CO.
YOUNGSTOWN, OHIO

Representatives in Principal Cities





These two photographs show the rapid progress made in the construction of the pattern shop of the Allis-Chalmers Manufacturing Company. No Time Lost Here Waiting for Delayed Material. One million feet of Southern Yellow Pine used.

Yes Sir! Mill Construction!

Would you build—**now**—a new Shop, Factory, Foundry, Mill, Warehouse? What is your chance to obtain structural material promptly—**NOW**?

The time-saving, money-saving, trouble-saving course open to you is to erect the Standard Mill-Construction type of building—employing, for interior framing and floors, sturdy, durable, dependable

Southern Yellow Pine

Unlimited quantities of highest grade Southern Yellow Pine, in all its forms, are available **now**, including heart timbers meeting completely every requirement of the Density Rule, formulated by the U. S. Forest Service and adopted as standard by the Southern Pine Association, the Society for Testing Materials, and the United States Navy Department.

Standard Mill-Construction, employing Southern Yellow Pine, is the most ECONOMICAL as well as the most SERVICEABLE type of industrial structure. Properly sprinklered, a mill-constructed building is rated far more fire safe than a non-sprinklered building of so-called "fire-proof" type.

Our new book, "Mill-Construction," an authoritative and comprehensive work on modern building, is ready for distribution. A copy will be sent you, gratis, promptly on request.

Southern Pine
2062 Interstate Bank Bldg.



Association
New Orleans, Louisiana

Farmers Today Demand Up-to-Date Buildings

THE generations which first occupied farm land and secured it merely for the taking has been displaced by a class much more cultured, discriminating and prosperous.

Hence, the average farmer today is as proud of his buildings as of his equipment and cattle, *and is one of your best prospects.*

NORTH CAROLINA PINE

"The Wood Universal"

is being widely used for farm buildings. Its limitless utility, its genuine worth and its extreme economy are responsible for its growing popularity in this respect.

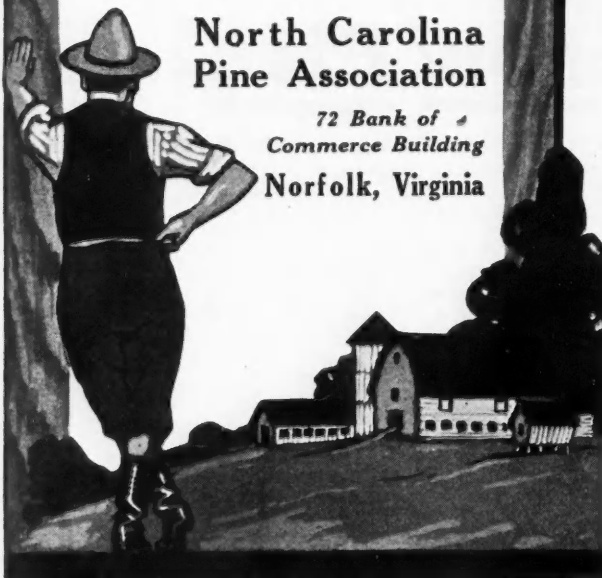
For homes, for barns or silos, for implement sheds or poultry houses, for out-buildings of all kinds, you can specify North Carolina Pine with full assurance of satisfactory results.

Let Us Help You Get Farm Trade

If you will send us the names of actual farm building prospects in your community, we will send them direct a most interesting Farm Building Book. In addition we will mention your name and refer them to you for further information. Thus we can render both you and your prospect a most valuable service free of charge. Send us the names as soon as you get them.

North Carolina Pine Association

72 Bank of
Commerce Building
Norfolk, Virginia



Pipeless Furnace Winning New Friends

THE simple law of physics that warm air, being lighter, rises, displacing cold air, which is heavier, is the basis of pipeless heating, which has spread thru the country with such rapidity.

Everyone learned this simple and elementary law in his school days, but only a few years ago it was realized that this principle could be successfully utilized in heating a house. It has always been considered that it was necessary to conduct the heat from a furnace to the different rooms by means of pipes. Within the last few years, however, it has been proved that the heat will circulate thruout all the rooms of the house just as well without pipes.

Solves Heating Problem for Many

The importance of this discovery can hardly be overestimated. It makes possible the heating of moderate sized houses

with perfect comfort and with much less expense than was necessary in installing and operating the ordinary pipe furnace. Especially for large, single rooms, such as churches, schools, assembly halls, etc., the pipeless furnace is ideal.

Equally important is the manner in which the pipeless furnace has solved

the heating problem for thousands who wished to be freed from the labor and discomfort of firing stoves in the different rooms of their homes, but who did not wish to incur the expense of tearing up the walls to put in pipes and flues for a pipe furnace.



Type of Pipeless Furnace That Is Popular.

New Field of Profits

The pipeless furnace is of especial interest to contractors, carpenters and builders because it has opened for them a new field of profits. It is a practical, efficient and economical method of heating modern homes of medium size, while thousands of dwellers in stove-heated homes are having it installed.

The fact that many of the country's best known and most conservative furnace makers are now manufacturing pipeless furnaces and do not hesitate to recommend them with absolute confidence, is proof that the pipeless furnace is sound in principle and safe in practice.

The furnace is placed in the cellar, underneath the

(Continued to page 94.)

ARKANSAS SOFT PINE

Satin-like Interior Trim

Send For Our
New Book

ARKANSAS SOFT PINE

How to Finish
and Paint It

An authoritative brochure on
applying stains or enamel
which will prove of marked
value in supervising the work
of Interior Finishes.

Sent Free on Request

*Arkansas Soft Pine is trade-marked and
sold by dealers. Yours can supply it*

Arkansas Soft Pine Bureau

916 Bank of Commerce Building
LITTLE ROCK, ARK.



(Continued from page 92.)

central room of the house, and the furnace casing is carried up to a large register in the floor, directly over the furnace. There is thus a continual circulation of moist, warm air thruout all the rooms and a constant supply of cool air delivered to the furnace for reheating.

It is very easy to install a pipeless furnace. All that is necessary is to set the furnace in place in the cellar, cut a hole in the floor immediately above it for the register, make connection from the furnace casing to the floor register and connect the smoke pipe with the chimney. The pipeless is ideal for installation in small or partial cellars, and if there is no cellar at all, a pit large enough can easily be dug.

Furthermore, when the pipeless furnace is once installed it is there to stay and does not have to be put up every fall and taken down every spring like stoves. There is no carrying of coal or wood to the different rooms and carrying ashes away from them. The entire heating plant is in the cellar, where it belongs, out of sight and out of the way, yet at all times easy of access and doing its work quietly and efficiently.

This ease of installation and absence of pipes and flues puts the first cost of the pipeless furnace within the reach of the most modest home, while the heating comfort which it provides, the excellent ventilation, improved health conditions and economical operation are largely responsible for its popularity.

How to Build Silos of Clay

(Continued from page 62.)

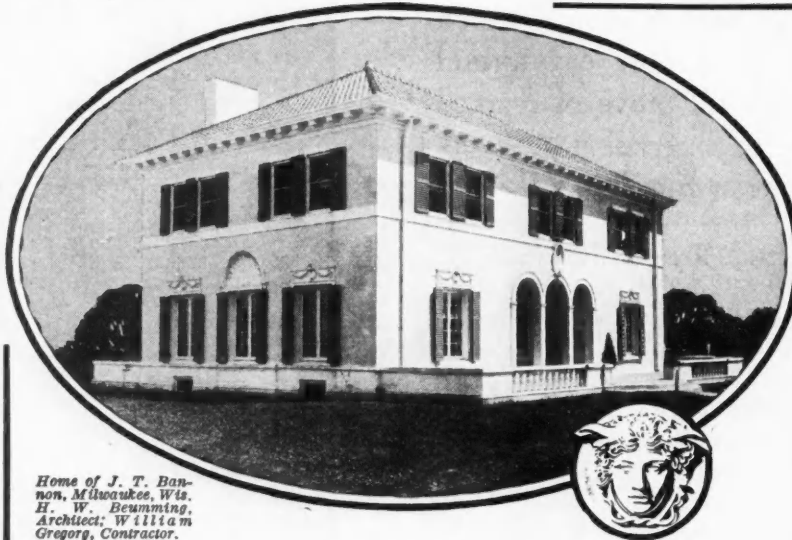
prospective brick silo builder. If it is desired to use standard steel for reinforcing the wall and reinforced concrete door frames, the following plan will be found good.

The wall is easily reinforced with No. 3 wire. In order to take the "curl" out of this wire, that comes in rolls, it may be placed on a reel and pulled thru a piece of gas pipe which is bent opposite to the curl of the wire and fastened to the block close to the reel. If your guess on the bend of the gas pipe is wrong the first time, take it off and hit it over a rock.

In practice, the table showing the amount of reinforcing steel would be used as follows: For example, take a 16 by 36 silo made of 4 by 8 by 12 blocks, reinforced with No. 3 wire. In the left half of the table under 16 at a depth of 36 feet is found a mortar joint which should contain two No. 3 wires. Succeeding joints should be reinforced as indicated in this column successively above. The left half of the table is for joints 5 inches apart. The right half is for joints 8 inches apart.

The door frames are reinforced both vertically and horizontally with steel, having a cross-sectional area equivalent to $\frac{1}{4}$ square inch or a square reinforcing bar $\frac{1}{2}$ by $\frac{1}{2}$ -inch. Two of these, or the equivalent, is

(Continued to page 96.)



Home of J. T. Bannon, Milwaukee, Wis.
H. W. Beumling, Architect; William Gregor, Contractor.

Removing the Last Objection to the White House

The popularity of the white house was held back for a while because prospective builders demanded a white house in which the finish would be permanent, and the exterior walls would be both damp-proof and waterproof. Time proved these results certain with

MEDUSA WHITE-CEMENT WATERPROOFED

This is the one material in which both whiteness and water and damp-proofing are integral, permanent features that never need renewing.

Medusa White Cement Houses stay white indefinitely because the stucco cannot absorb moisture and there can be no staining or efflorescence.

Medusa White Cement (plain or waterproofed) and Medusa Waterproofing is sold by reliable dealers everywhere. If you don't know your dealer, write us. Write today for full information and booklets describing Medusa White Cement Waterproofed, and Medusa Waterproofing.

The Sandusky Cement Company, Dept. Cleveland, Ohio

Select the Right Wood

THREE of the essentials for success in building a home are—a practical plan, artistic design, and good workmanship.

But without the fourth essential—proper selection of materials—the other three are of little avail.

Take the matter of lumber. All woods are not equally good for all uses. One is good for one purpose—another for another. Select woods for their proper uses, and your clients will have no disappointments.

WHITE PINE

Every carpenter knows that for the outer covering of a house—subjected to the rigorous onslaught of rain and snow, heat and cold, sun and wind—no other wood is so durable and holds its place so well, without warping, splitting, rotting or opening at the joints, as White Pine.

A Free Magazine for Contractors

We publish a bi-monthly architectural magazine, every issue of which is full of valuable and helpful information for contractors and builders. If you would like this magazine write us and we will be pleased to place your name on our mailing list.

*WHITE PINE BUREAU,
1535 Merchants Bank Building, St. Paul, Minn.*

Representing
The Northern Pine Manufacturers'
Association of Minnesota, Wisconsin
and Michigan, and The Associated
White Pine Manufacturers of Idaho

"Beautiful Birch for Beautiful Woodwork"



Beautiful
birch
is the first step toward
Getting the Contract

Here's why. In the first place, as every good carpenter knows, "beautiful **birch**" is the all around wood for interior—hard—mar-proof—beautiful—capable of taking all stains and white enamel beautifully. It is good to work with, stays where put and retains its original beauty through long years.

And the price? Of course you know that **birch** is very low in price for a fine cabinet wood. So you can figure to get the job.

On top of all this we are starting a big advertising and service campaign to make your customers want **birch** and respect your judgment in recommending it. Get aboard the **birch** band wagon—make money—make friends—make customers.

FREE: So you can show **birch** conveniently—sample panels showing various finishes and a handsome book. Send for them today.

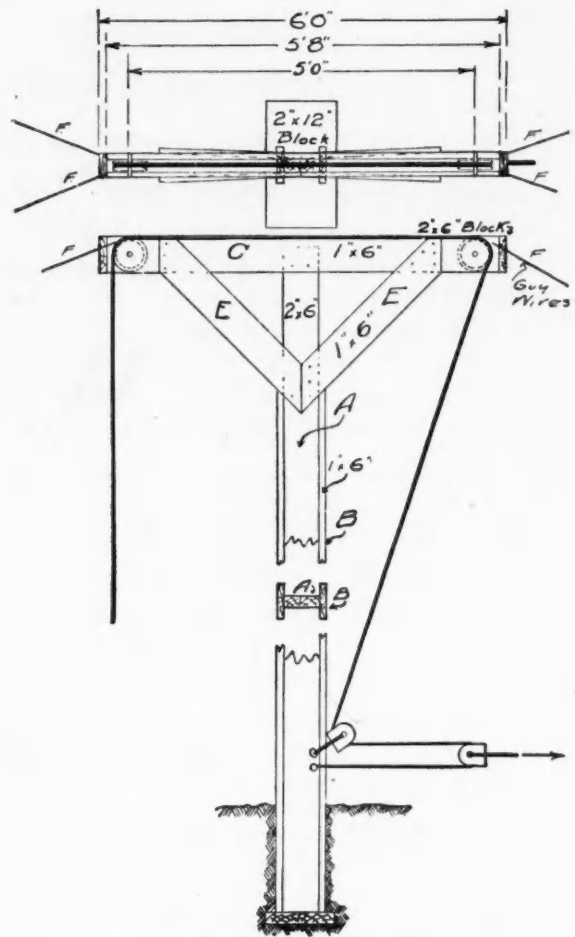
**Northern Hemlock and Hardwood
Manufacturers' Association**

201 F. R. A. Building Oshkosh, Wisconsin

(Continued from page 94.)

sufficient in most any silo. The steel used for cross-tie reinforcing is cut in lengths of 7 and 11 feet, and one of each length is placed in each half of the cross-tie extending, then into the wall on each side, except when brick are used. The cross-tie steel should amount to about a half more than cross section of wire in 4-foot height of wall.

The continuous doorway illustrated consists essentially of a continuous door jamb on each side of the opening. These jambs are made of reinforced concrete and may be used with either blocks or brick. The horizontal reinforcements of the wall hook into the vertical reinforcements of the jamb. The jambs are



Handy Hoisting Rig for Silo Work.

tied together at intervals of 4 or 5 feet by steel within the cross-tie block. This steel not only extends into the vertical jamb, but, in order to be more secure, extends several feet into the wall on either side of the jamb. These cross-ties may be of steel and protected from rust by being incased within the clay blocks filled with concrete or within concrete alone. When the wall has been completed to the height at which it is desired to commence the door, two blocks are laid upon the wall across the doorway, or the forms for the concrete are put in. These should be placed out far enough so that the door

(Continued to page 98.)



Your Customers Will Judge You

by the finished appearance of the homes you build for them. After the house is completed, the home owner can't see beneath the surface the quality of your workmanship. The average home owner doesn't know much about the technique of building anyway. He is influenced in his judgment of his contractor's work by the "looks" of the finished home. There is nothing in the home's interior that contributes so much to its appearance as its "permanent furniture".

1866 CURTIS WOODWORK

"The Permanent Furniture for Your Home"

of such good materials that you can stake your reputation on it. We have staked ours on it, for it bears our name.

If you build homes under contract, recommend **CURTIS** Woodwork, because it will give your workmanship a chance to show itself. It will help you to permanently satisfy your customers, because **CURTIS** Woodwork makes homes enjoyable.

If you build homes to sell, **CURTIS** Woodwork will help you sell them, because it gives them a finished appearance. Buyers don't want to buy homes half built.

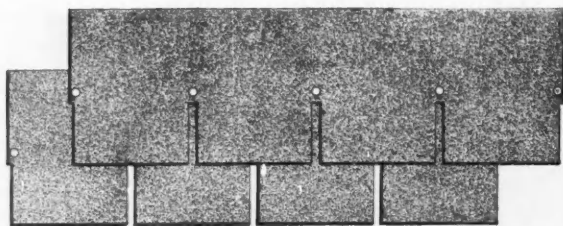
If you build homes to rent, **CURTIS** Woodwork in them will help you secure a higher rental. Renters appreciate livable homes as well as owners, and they'll pay higher rent for better homes

Your lumber dealer will tell you about **CURTIS** Woodwork, or you can write for information to

THE CURTIS COMPANIES, SERVICE BUREAU, 1643-1743 SOUTH SECOND ST., Clinton, Iowa

Manufacturing and Distributing Plants at
Clinton, Ia.; Sioux City, Ia.; Wausau, Wis.; Minneapolis; Chicago; Oklahoma City, Okla.;
Lincoln, Neb.; Detroit; Topeka, Kans. Eastern Offices at Pittsburgh and Washington.

The Makers of CURTIS Woodwork Guarantee Complete Satisfaction to its Users.
"We're Not Satisfied Unless You Are"



THE FAMOUS REX STRIP SHINGLE

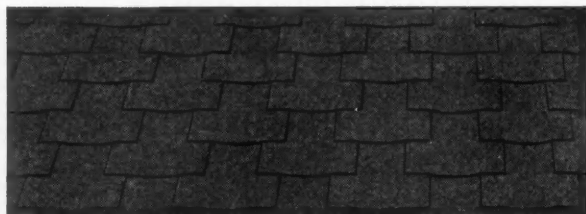
Mottled Asphalt Shingles

JUST the same kind of asphalt shingles you have been buying but more attractive.

—Architects welcome them because they overcome the objection to the “flat” appearance that plain colors inevitably have. Home builders and owners will use more of them than they ever did of plain color asphalt shingles.

—They look surprisingly like slate—and one of the principal qualities of slate is beauty. Yet they cost the same as the plain color asphalt shingle, for they are made of identically the same materials. The beautiful mottled effects are gained by using varying proportions of the red and green slate as a surface, instead of only one color.

—Made in two styles only—Rex Strip Shingles and Rex Wide Space Shingles. Ask us about them. We will gladly send literature photos in color reproduction and prices—also our 112 page Catalog which describes twenty-three Rex Products. All will be sent free to you—no obligation whatever.



REX WIDE SPACE SHINGLES

Flintkote Manufacturing Co.

INCORPORATED

90 Pearl Street, Boston, Mass.

New York

Chicago

New Orleans

(Continued from page 96.)

may be set down inside without touching the cross blocks. The vertical shoulder or ledge thus formed for the door should be $1\frac{3}{4}$ inches wide. Thru this crosstie, and extending into the hollow spaces in the blocks on either side of the doorway, should extend in the reinforcing steel, unless brick are used, in which case this is not practicable and the reinforcing steel may simply be hooked into vertical steel.

A detailed drawing of these forms, two of which are required, is shown. The upper left-hand view shows the elevation; the upper right-hand shows the form as seen from the side, while the lower plan view presents the form as seen from above.

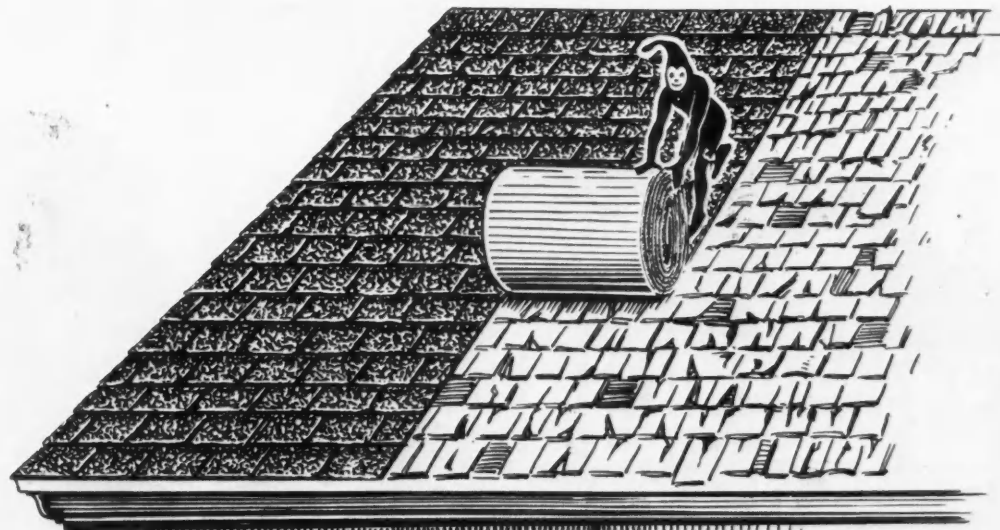
Brick may be used in the same way as the blocks, except that the mortar joints will be closer together. You can change the use of the steel shown in the table enough to take care of the brick. This will depend on the size, but put about the same amount of steel in the wall per foot in height as the table shows. The brick will work in the concrete door frame the same as blocks. It is not necessary for the horizontal steel in the door frame to extend around into the brick wall, providing it is hooked around the vertical steel in the concrete jambs.

A very handy derrick is shown. This derrick, 48 feet high is built of three 2 by 6's 16 feet long, A, and six 1 by 6's 16 feet long, B, besides the pieces necessary for the arm at the top. As seen in the cross-sectional view in the center, the 1 by 6's are nailed flatwise upon the edges of the 2 by 6's, thus forming an I-beam. All of the members are so placed that no joints are closer than 5 feet 5 inches. Two short 1 by 6 struts, E, support each end of the 1 by 6 pieces, C. Two No. 9 guy wires, F, are secured to the end of C toward the silo and fastened to stakes driven into the ground a considerable distance away from the bottom of the derrick. These prevent any side motion of the arm where the pulley is attached, while a third guy wire is fastened to the other end of C and secures the derrick in the other direction. This derrick has been thoroly tried out with loads up to 400 pounds. With the usual loads of less than 100 pounds it is entirely safe. The derrick itself is most easily raised by being constructed on the ground and raised after the guy wires, pulley and rope have been attached.



Lumberman's Short Course at Georgia College of Agriculture

A one-year course in forestry has been inaugurated at the Georgia State College of Agriculture to supply the demand for a short, practical training in lumbering, with special emphasis on the engineering aspect of the subject. This course does not prepare a man for professional forestry or engineering, rather it fits him for a position as woods foreman, yard boss, scaler, cruiser or surveyor. Under Civil Service rules he may compete for the position of Forest Ranger, a position carrying with it a salary of \$900 to \$1200 per year.



A New FLEX-A-TILE Roll Shingle!

Made to Lay Vertically from Peak to Eaves

You lay it right alongside your ladder—a whole sheet at a time—without shifting. This new and easier method of applying Roll Shingle saves much time, yet gives the same beautiful individual shingle effect as the first FLEX-A-TILE Roll Shingle.

In the new style Roll the shingles face *endways* instead of across the Roll. That is its only difference. Gives a roof of real FLEX-A-TILE Asphalt Shingles, with butts ex-

posed, size 5x10 inches. No paint or imitation pattern of any kind is used. Yet laying is as economical as with any roll roofing.

Lay Over Old Shingles

FLEX-A-TILE Roll Shingle gives full satisfaction when laid over old shingles. Simply nail through new and old material alike. Its rich, fadeless colors of red and green give an old house a new lease of beauty and usefulness.

Write for Samples

You can get a lot of roofing contracts this summer simply by showing prospects actual samples of FLEX-A-TILE Roll Shingle and telling them the facts. Write for samples and complete particulars today.

FLEX-A-TILE quality materials make the Roll Shingle thoroughly water and weather-proof and **strongly resistant to fire**. Approved by Chicago Board of Fire Underwriters. Put up in 32-inch wide rolls—108 square feet in each roll. Packed with nails and cement.

DEALERS: This new FLEX-A-TILE Roll Shingle offers big selling possibilities. Become the FLEX-A-TILE dealer in your territory. Write us for proposition.

The Heppes-Nelson Roofing Company

Dept. E-1010, Kilbourne Ave.
Chicago, Ill.

Factories: Chicago, Minne-
apolis and in New Jersey

Dept. E-414, Marshall St., N. E.
Minneapolis, Minn.

FLEX-A-TILE Slab Shingles

No-Tar Asphalt Paint

FLEX-A-TILE Roll Roofings



The Only Widely Advertised Asphalt Shingles

Neponset Twin Shingles are the most consistently advertised asphalt shingles on the market today. Thousands and thousands of people know Neponset Twin Shingles not only through our advertising in National publications, but from actual conversation with owners of Neponset roofs in their towns.

Advertising has helped to establish a national reputation for Neponset Twin Shingles, but it is beauty, wear, fire-resistance and moderate cost that maintains that reputation. Read opposite page for detailed description of Neponset Twin Shingles

Here Are Other Neponset Products

Neponset Twin Shingles are only one of the well-known Neponset Building Products. There are two other types of shingles, both made of materials similar to those which have given Neponset Twin Shingles their great reputation for quality and durability. Similar material is also put up in rolls.

Neponset-Wall Board for walls and ceilings is another Neponset Product that is in big demand.

Neponset Building Papers need no introduction. For over 25 years they have maintained their original leadership.

NEPONSET TWIN SHINGLES

(Patent applied for)

“The Roofing Development of the Twentieth Century”

are made of five layers (six processes), pressed into a thick, solid, inseparable mass, impervious to rain, moisture, frost; undecaying and unaffected by sparks or embers. Similar materials in our famous Paroid Roofing are still giving good service on roofs laid 18 years ago when Paroid was new. A roof of these shingles, when laid, being several times as thick, will give wonderful service.

Neponset Twin Shingles are self spacing. The twin shape halves the cost of laying and requires 25% fewer nails. They will not crack, dry out, warp, buckle, pull off or blow away. They are approved by National Board of Fire Underwriters.

Fill out and mail the coupon below and we'll send you detailed facts about Neponset Twin Shingles.

BIRD & SON (*Established 1795*) Dept. C, East Walpole, Mass.

New York Washington Chicago Canadian Office and Plant, Hamilton, Ont.



Look for this trade mark on all Shingles, Roll Roofings, Wall Boards and Building Papers. There is a Neponset Product meeting every requirement and purse—all guaranteed by us.

BIRD & SON,
Department C, East Walpole, Mass.

Please send me information about Neponset Twin Shingles and the other Neponset Building Products. Also a copy of your book, "Repairing and Building." This request does not obligate me in any way.

Name.....

Address.....



NEWS OF THE FIELD

New Director at Forest Laboratory

Announcement is made by the Forest Service of the appointment of Carlile P. Winslow as Director of the Forest Products Laboratory, at Madison, Wis., to succeed Howard F. Weiss, whose resignation took place April 1.

Mr. Winslow was graduated from the Sheffield Scientific School of Yale University in 1905, and entered the Forest Service in 1908. For the past four years he has acted as assistant to the Director of the Laboratory.

Before entering the Forest Service, Mr. Winslow was employed in general construction and engineering work. He is an expert on wood preservatives and has done considerable research work on this and allied lines.



Leading Salt Lake City Lumber Companies Consolidate

An arrangement which is practically a consolidation has been established between the Parker Lumber Company and Morrison, Merrill & Company, both of Salt Lake City, Utah. The new organization will retain the name Morrison, Merrill & Company.

Metal Lath Campaign Planned

Announcement has just been made by the Publicity Bureau of the Associated Metal Lath Manufacturers that their offices have been moved from Chicago to Room 901 Swetland Building, Cleveland, Ohio, and that Zenas W. Carter, formerly of Boston, has been appointed Commissioner, to supervise all their publicity, promotion and investigation from the Cleveland office.

Mr. Zenas W. Carter has been manager for manufacturers' associations for the past ten years, directing co-operative publicity and promotion work between manufacturers, distributors and consumers. He was the first General Secretary of the Electric Development Association when it was incorporated in New England, and he has managed the publicity and field promotion and investigation work of the Granite Paving Block Manufacturers' Association of the United States since their organization two and one-half years ago.

Among the plans of the Metal Lath Association, which are yet in the embryo, is a co-operative national campaign of publicity which will be developed by the Council of Advertising Managers of the member companies, which Council is an active part of the Publicity Bureau of the manufacturers' organization, altho the Publicity Bureau proper includes officials and sales managers of the companies interested. Their plans cover a series of extensive and exhaustive tests of the fire resistance properties of metal lath, its use in fire retarding construction, the exploitation to architects and the public of the saving in space which can be effected thru the use of this material, its vermin and rodent proofness; investigation and assistance in the revision of building codes of cities so that metal lath will receive its proper recognition by city officials and engineers, and co-operative movement in the distributing centers of the United States seeking to develop

(Continued to page 104.)

Keep your roofing on the basis of
the best construction

KEYSTONE  **Copper Steel**

Open Hearth Roofing Tin

will add permanent value. This is a point which careful builders should not overlook. **KEYSTONE** Plates give unequaled service and protection from fire and weather—and the cost is right.

Keystone Copper Steel Roofing Tin—highest quality plates obtainable for residences and public buildings. Look for the stamp. Apollo-Keystone Copper Steel Galvanized Sheets—superior for cornices, skylights, spouting and exposed sheet metal work.

American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle



This is a small section of Herringbone Lath as used in the construction of this home

Wherever You Use Plaster, Use Herringbone Metal Lath

Establish yourself as the Herringbone Builder in your community. Use Herringbone Rigid Metal Lath for all your lath-and-plaster construction. It will pay you to do so. For the Herringbone Builder creates for himself a reputation in economical, permanent building, and such a reputation brings satisfied clients, more business, better profits.

The Herringbone Builder finds that Herringbone Rigid Metal Lath can be adapted to a wide range of applications. It makes a perfect plaster base for the modest stucco bungalow, or for the pretentious stucco mansion. It can be used in any part of a building as bond and reinforcement for the interior plastering.

HERRINGBONE RIGID METAL LATH

A basement ceiling of Herringbone-and-plaster forms a protection against fire. It is the most serviceable type of construction for walls and ceilings of kitchen, dining room, living room, bathroom and bedroom. For the Herringbone Home—outside and inside—stubbornly resists fire, dampness, mice, vermin and decay. The lath will not stain the plaster. The plaster can't crack and fall, because it completely covers and protects the lath, and the lath holds the plaster in an unbreakable grip.

If you specialize in construction other than residence work, you will find Herringbone very useful. Use it for all lath-and-plaster work in stores, hotels, dormitories, apartment buildings, schools and churches. Use it, not only for the walls, ceilings and partitions, but also for the stairways, elevator shafts, dumb-waiter

shafts, air vents, columns, beams, suspended ceilings, false beam and cornice work.

Herringbone Rigid Metal Lath construction offers nothing to feed the flames. The bond of lath and plaster is so perfect that even the hottest fire makes poor headway against it. It will not absorb moisture.

Remember these characteristics of Herringbone—it has slanted ribs that give it great rigidity and strength. It can be applied directly to the studs—no furring is required. It is economical—erecting and plastering costs are low, and Herringbone makes possible wider stud spacing.

Interested builders should send for the Herringbone Catalog and our booklet for the home builder, "Herringbone Homes."

THE GENERAL FIREPROOFING COMPANY - Youngstown, Ohio

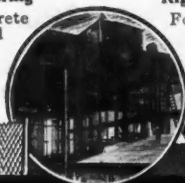
Members of Associated Metal Lath Manufacturers

Branch Offices: New York City, Chicago, Philadelphia, Kansas City, Atlanta, Cincinnati, Buffalo, Utica

The best dealer in your town has GF Products in stock

Manufacturers of the following GF Products:

Self-Sentering
For Concrete
Roofs and
Floors



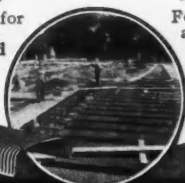
Self-Sentering

Herringbone
Rigid Metal Lath
For Stucco and
Interior
Plastering



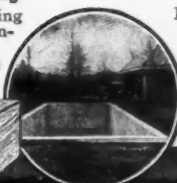
Herringbone

Steel-Tile
Steel Forms for
Concrete
Floors and
Roofs



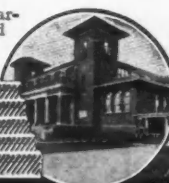
Steel-Tile

Waterproofing
For Protecting
and Harden-
ing All
Concrete



Waterproofing

Trussit
For Solid Par-
titions and
Curtain
Walls



Trussit

co-operative promotion work on the part of the jobbers and large distributors of metal lath.

The advertising managers who comprise the Advertising Council of the Publicity Bureau of the Associated Metal Lath Manufacturers are:

- Mr. C. O. Powell, President, Northwestern Expanded Metal Company.
- Mr. S. M. Fechheimer, Trussed Concrete Steel Company.
- Mr. R. M. Nicholson, Berger Manufacturing Company.
- Mr. C. M. Stewart, Consolidated Expanded Metal Companies.
- Mr. L. E. Fisher, General Fireproofing Company.
- Mr. L. J. Rouleau, Penn Metal Company.
- Mr. F. E. Ericksen, Milwaukee Corrugating Company.
- Mr. Wm. Geo. Lane, Secretary, The Bostwick Steel Lath Company.
- Mr. Zenas W. Carter, Commissioner.



Archer Iron Works Expand

In order that the growth in business, which has been especially evident this spring, may be adequately taken care of, the Archer Iron Works, 2435 W. 34th Place, Chicago, Illinois, have just completed an enlargement in their building which gives them half again as much floor space as they have previously had available. It is hoped that this enlargement will enable them to catch up with their orders and keep up with the demand for their portable and discharge mixers.



Smith and Hemenway Office Moved

In order to facilitate their service to the trade, Smith & Hemenway Co., Inc., of No. 99 Chambers street, New York City, manufacturers of "Red Devil" Tools, are removing their executive offices to No. 130 Coit street, Irvington, N. J., where their factory is located, thereby linking their office

and factory facilities together. Only a small sales office devoted to New York City and export trade will be maintained in New York City, at No. 261 Broadway.



Changes in Johns-Manville Personnel

Mr. J. D. Vail, former manager of the Salt Lake City office of the H. W. Johns-Manville Company, has been appointed manager of the Building Materials Department of that company's branch at Chicago.

In the future the Salt Lake City office will be under the management of Mr. C. F. Cate. The Great Falls, Mont., office will be managed independently of Salt Lake City, by Mr. J. H. Roe.



Fair Play in Business

By R. M. Nicholson

The sense of fair play is inherent in the makeup of every human. Sometimes it is so weak and undeveloped that it never reaches the surface and remains indiscernible to the most keen observer. But where this sense is stronger it is apparent, but does not always manifest itself in the same way and in the same direction. Some paths seem to be easier than others for the fair play idea to follow.

In 1910 a group of manufacturers of a certain commodity awoke to the realization that something was wrong in business ethics, that the old policy of "All's fair in business" was wearing out and getting wobbly on its hind legs. It dawned on them that the same square deal which was acknowledged best in social life was also best in business life. So the Metal Lath Manufacturers Association was born.

These men were pioneers in a new movement destined to grow and flourish thruout the land. They were idealists then—but idealists with vision and courage to meet the many obstacles and carry their principles thru to success. For

(Continued to page 106.)

A STOCK FIREPROOF DOOR

Manufactured by the

A. C. Chesley Co., Inc., of New York

FIREPROOF DOORS

Metal and Metal Covered

Before automobiles were known we were making fireproof doors, and as the car of the past has been improved so have we improved our door until now we are in a position to furnish a door that cannot fail to please the most critical. It is strong, clean, and mechanically made of metallic construction in designs of popular demand, using no imitation pressed work, and is very easy to install. It is not held together with iron edged bands necessitating special hardware. We use no nails, bolts, screws or rivets, in the construction of our door to deface it in any way, and by the use of improved machinery we are able to manufacture at a minimum cost.



Standard
Sizes in
Stock of
All Designs

These doors are carried in stock so as to avoid delay and can be ordered from catalog and price list.

**Agents
Wanted**

Write for Booklet and Price Lists—also our Agent's Proposition.

The A. C. Chesley Co. Inc.
275 Rider Ave., New York



Art Craft Roof

A Beautiful Permanent Roofing— and a permanent roofing business

YOU can make Art-Craft Roof a big paying proposition from the start—your first job starts things going, and is an effective advertisement for you because it is distinctive and low in price. Permanently establish a fine healthy roofing business by handling this high grade brand.

Prospects Abound Everywhere

Any house, old or new, is an Art-Craft prospect, because it costs half as much as a shingle roof—can be put on right over the old shingles or directly out on the roof boards in case it is a new building. See your opportunity? It is a conservative estimate to say one out of every three of the wooden shingled houses in your town need new roofing. You can go after all this business and get the new work as well with Art-Craft Roof. It is the *only* practical roofing for both old and new houses.

You Will Have No Competition—No Stock to Carry One Art-Craft dealer sold more than 3,000 Art-Craft Roofs in his city. This not only demonstrates its *easy selling* possibilities but also speaks well for the permanency of Art-Craft, in that complaints from the first hundred jobs would have a damaging effect on sales if the roofing was not making good. Permanency, beauty and low price are distinctive features of Art-Craft Roof—points that make them easy to sell

We Help You Sell Art-Craft Roof Send us the name of a prospect and we promptly mail him persuasive literature and beautiful photographs of homes having Art-Craft Roof. We interest him—convince him to the extent that he is 90% sold before you call on him. We help you in other ways. Art-Craft Roof is guaranteed. They can't leak or rip off—and they cost so much less than wooden shingles. They are furnished in three distinctive non-fading colors—red, green, and silver gray, and are suited to any kind of building. Art-Craft Roof is laid in sheets. It costs but little effort to send in this coupon; and it means the opening up of a fine *exclusive* roofing business for you. We will give you prompt attention and our *strong co-operation*.

Clip the coupon and send it right away. We will send back samples, complete description on Art-Craft Roof and further information regarding our Exclusive Agency Proposition. Send the coupon today—now.

THE RECKITT CORPORATION

Ashland Ave. at 76th St., CHICAGO, ILL.

CUT OFF ON THIS LINE
 The Reckitt Corporation, Dept. F-2, Chicago.
 Send me samples and complete information about Art-Craft Roof and Art-Craft Plan for giving me contracts.
 Name.....
 Address.....
 City.....

**"Mr Smith
recommended you
- He said**

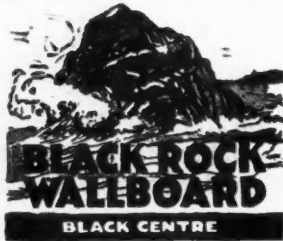


"That room was done by Jones - he used 'BLACK ROCK WALLBOARD'"

The only way to get ahead in the world is to build well — whether you build a house or build a business.

If you are in the building business, the only way you can build your business in a big way is to do each day's building so well, that when you build for Mr. Smith—he will go to Mr. Brown —and he will say to Mr. Brown:

"If you want your building done right go see Jones"— (or whatever your name may be).



That sort of mouth-to-mouth advertising will come your way if you use Black Rock Wallboard. Ask us to send you a stock-sample of Black Rock Wallboard.

When you get this, look at the black centre. Examine this "backbone" of the board. Take your knife and cut the board in pieces.

Notice the veneer process by which the board has been built up. Then you will see why Black Rock is staunch. Each of the 4 piles are made by the compression of six separate sheets of tough fibre, carefully selected for its high meshing quality.

You will find in Black Rock Wallboard a board that "handles like lumber." Its moisture-repellent black centre makes it (in some ways) better than lumber.

Send now for a sample of Black Rock and you will soon find how to build your business by doing your building with the kind of a wallboard which makes your customers practical salesmen for you.

MAIL THIS COUPON TODAY

**The Black Rock Wallboard Co.
1510 Ontario Pl., Black Rock, N. Y.**

Please send me stock sample of Black Rock Wallboard and booklet showing Black Rock jobs.

Signed.....
Your name

.....
Your address

(Continued from page 104.)

competitors to co-operate was a revolutionary idea. "It never had been done and therefore it couldn't be; there was a crooked deal back of it all and someone would take all the spoils while the others held the bag"—so ran the gossip. But the originators of the plan knew better. They knew, too, that rarely are our highest ideals fully realized, yet they believed that much was to be gained in a process of approachment and they held strongly to the hope that in time the goal desired would be reached.

Old beliefs are not fully discarded in a day and it is not strange that everything at first did not move as rapidly and directly on the path of progress as might be desired. All believed in the new religion, but some were of one denomination and some another—that is, their ideas of how to gain the desired end differed. Doctrines had to be thrashed out and a composite acceptable to all obtained. Time was required to find out how to work before real work could be started. It was a man's size job to line up the forces and direct them in one direction, but it was accomplished and today the Associated Metal Lath Manufacturers, the pioneers of the religion of candor in business, are, thru their principles and practice, not only keeping the metal lath industry on a high plane, but are rendering a real public service by promoting and making possible better and safer buildings.

The Associated Metal Lath Manufacturers do not pose as philanthropists. It is true that they have started a movement which is being followed by other associations and is lifting all business to a higher standard, yet every motive behind their action is selfish.

They believe that by making competition constructive instead of destructive they create more business and make more money without hurting anybody. They believe in being fair to each other and to the public simply because it pays. If it didn't pay they might not feel the same—they are just "folks" like the rest of us and claim no superhuman qualities whatever. In everyday social activities history has proven that practicing the square deal makes us richer in happiness. The Associated Metal Lath Manufacturers are proving that the same practice in business makes us richer in money.

The work of the Association and its activities are open for inspection always, there are no secrets. Every manufacturer is free to sell his product at whatever price he chooses; there are no price agreements. Thru association and co-operation they develop new markets and increase business in the old. They promote tests and experiments to secure further information on fireproof constructions for the benefit of the building public. They know the market price of their commodity in all localities and with this knowledge destructive price cutting practices are stopped and goods sold on their merit. Contractors are directly benefited, as all secret prices and unfair rebates are eliminated. The building public is directly benefited thru the exhaustive construction data made available thru the extensive research work of the association. The general public is benefited, for the greater use of fire resisting and safe building materials means greater security for life and property.

This small group of manufacturers who saw the light in 1910 and hit the trail of business religion have indeed done much for themselves and their industry and more for the American people who are daily profiting by the excellent work of the many co-operative associations which have arisen since and are promoting the element of fair play thruout the business world. The crack which they made in tradition has spread like a net work until its ramifications reach and affect, directly or indirectly, almost every citizen, and the old time-honored element of fair play is enjoying a broader application than ever before.

R. M. NICHOLSON,
Canton, Ohio.



"I tell you, it means a lot to a carpenter to work with a wall board that cuts, saws, fits and goes up as easily as lumber. That's why I am as strong for Upson Board as my customers are. Upsonizing is just another name for everybody's lasting satisfaction."



UPSON PROCESSED BOARD

The Most Dependable Wall Board Made in America

REPORTS have reached us that certain carpenters desiring Upson Board have been subjected to annoyance and sometimes to serious trouble. Unscrupulous dealers have attempted—successfully in some cases—to foist imitations of Upson Board upon them. These imitators not only have tried to approximate the appearance and construction of Upson Board, but some of them even have followed the Upson innovation—adopted five years ago—of having a colored center. We originated this colored center—BLUE, with two light-colored faces—solely that our customers might identify Upson Board easily and quickly.

We never knew of a board where the coloring in the center made it any better or any worse. What counts is the quality of the fiber. In Upson Board this would be a cream-colored fiber if left uncolored, but we simply color it for the protection of Upson Board buyers. The United States Court has forbidden any other manufacturer to use the Upson BLUE center or any other color so similar as to cause confusion on the part of the buyer.

No carpenter enjoys being fooled. He naturally wants the board he asks for.

The substitution would not be such a serious matter for the carpenter, however, if the quality of the substituted board were up to the quality of Upson Board. He knows Upson Processed Board as the board of "standardized" quality—the quality necessary for a clean, quick, workmanlike job, with no come-back. Upson is the board that looks, feels and works like lumber.

It goes without saying that if the imitations had merit of their own, they would not have to resort to deception to force sales. It takes more than a mere imitation to prove up to the quality of the original. As a result, carpenters have reported difficulty in sawing, fitting and applying the imitations. And they have gotten "in bad" with their customers through the unsatisfactory painting and lack of permanency of the boards.

We cannot emphasize too strongly the necessity of making sure that you get Upson Board. Look for the BLUE Center—the sign of genuine Upson Processed Board. And accept no board that does not have this blue center.

If your dealer offers you an imitation made to approximate the appearance and construction of Upson Board, you ought to say to him: "You and the manufacturer of this imitation ought to be ashamed of yourselves." A cheap and indubitable imitation is evidence of want of originality. And any concern of reputation or standing should be ashamed to admit by its own production such want of originality.

Write us for practical information on how to establish and develop a good-paying, permanent business in wall board installations.

Every job carpenter will find it pays to keep a bundle of Upson Board on hand. He can fill in spare time by making screens, cabinets, shirtwaist boxes, etc., for which there always is a demand among his customers and which sell at a good profit.

THE UPSON COMPANY
Fiber Board Authorities

53 Upson Point

Lockport, N. Y.

LOOK FOR THE BLUE CENTER

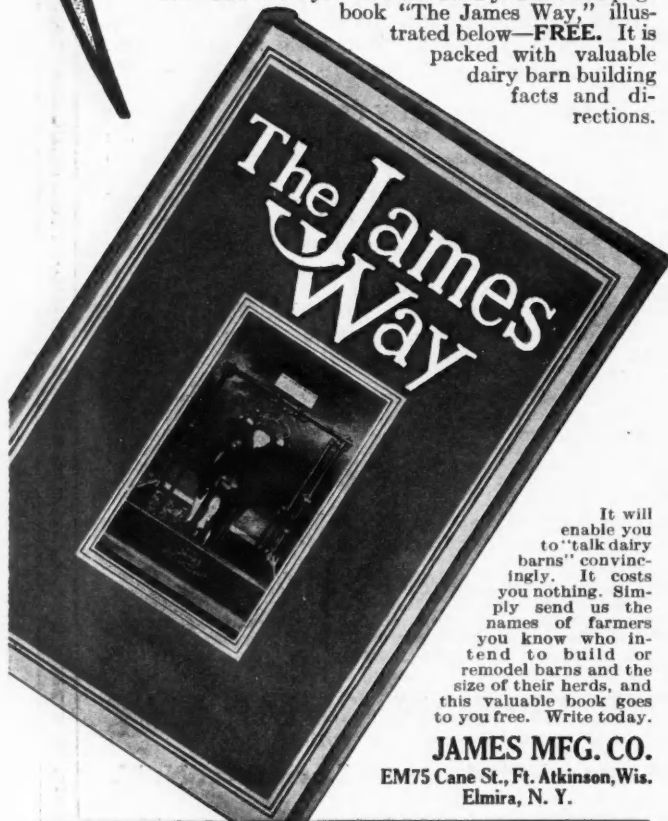
Erecting Good Dairy Barns Brings Big Profits To Builders



Dairy barns so built and equipped that they make for more milk, better milk, cleaner milk—and less work for the dairyman, are in big demand. Dairymen all through the land are either erecting new and better barns or are remodeling their old ones.

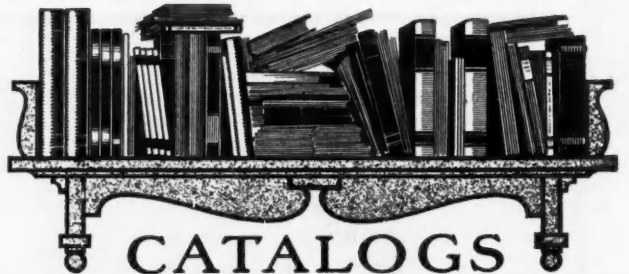
James Barns and James Equipment are known to these dairymen. We advertise heavily in farm and dairy papers.

We will be glad to cooperate with you and help you land contracts for building barns in your vicinity the "James Way." We will send you the 312 page book "The James Way," illustrated below—FREE. It is packed with valuable dairy barn building facts and directions.



It will enable you to "talk dairy barns" convincingly. It costs you nothing. Simply send us the names of farmers you know who intend to build or remodel barns and the size of their herds, and this valuable book goes to you free. Write today.

JAMES MFG. CO.
EM75 Cane St., Ft. Atkinson, Wis.
Elmira, N. Y.



CATALOGS BULLETINS & BOOKS RECEIVED

The following literature, dealing with subjects of interest to builders, has recently been sent in:

"**Practical Cement Waterproofing**" is the title of a booklet of 8 pages, 3½ by 6½ inches, with reinforced concrete slab chart insert, just published by The Bitu-Mortar Waterproofing Co., 340 East 27th St., New York City.

"**Heating and Ventilating**" is the title given a beautiful 62-page catalog, 8½ by 11 inches, illustrated, of C. C. Shipp & Company, Indianapolis, Ind., presenting the D-I specialties for schools, hospitals and other public buildings.

"**'Space-Saver' Facts**" tells in 34 pages, 3½ by 6 inches, illustrated, how a combination of kitchen fixtures manufactured by the Apartment House Appliance Company, 30 Sullivan St., New York City, makes available two tubs, a sink and drainboard.

"**Directory to Apartments of the Better Class**" is a volume of 128 pages, 9½ by 12½ inches, compiled by Albert J. Partridge and Harold Bradley, 719 Lincoln Parkway, Chicago, exhibiting photographic reproductions of the exterior and typical floor plans, description of essential advantages and rental schedule of apartments along the North Side of Chicago. Price, \$5.00.

"**How to Run An Automobile**," by Victor W. Page, is a book of 178 pages, 5 by 7½ inches, published by The Norman W. Henley Publishing Company, 132 Nassau and 15 Beekman Streets, New York City. Contains concise explanation of modern gasoline automobile parts with complete instructions for driving and care. Price, \$1.00.

"**The Building Estimator's Reference Book**," by Frank R. Walker, 168 North Michigan Avenue, Chicago, Ill., 3535 pages, 4½ by 6½ inches, illustrated, covers estimation of the cost of construction of all classes of modern buildings. Price, \$5.00.

Wire cloth and ornamental iron and wire work, representing some of the many kinds of work of this nature being done by the Buffalo Wire Works Company, Inc., Buffalo, N. Y., is presented in their catalog, No. 8, a book of 175 pages, 8 by 11 inches, fully illustrated.

"**Modern Methods in Concrete Construction**" is the subject of Bulletin A-5, 14 pages, 6 by 9 inches, illustrated, by the Hydrated Lime Bureau of the National Lime Manufacturers' Association, Arrott Building, Pittsburgh, Pa. This bulletin contains letters of prominent engineers and contractors telling their experiences with hydrated lime in concrete.

"**Electric Light on the Farm**" is the title given a booklet 6 by 9 inches, 20 pages, descriptive of the "Rothlite" country home electric lighting systems manufactured by Roth Bros. & Company, Adams and Loomis Streets, Chicago, Ill.

Rothmotors are illustrated and described in Bulletin No. 199 of Roth Brothers & Company, Adams and Loomis Streets, Chicago, Ill. This 8-page bulletin, 8½ by 11 inches, deals with direct current motors for band saws.

(Continued to page 110.)

Those FREE PLANS are certainly worth having

They are adaptable to every form of permanent crib and granary construction, and should be in the hands of every builder.

They are easy to understand and give complete instructions and working drawings, showing how to get the greatest capacity with least expense by installing the Meadows Stationary Inside Cup Elevator. This elevator can be set back in the crib and out of the driveway. Wagon jack fastened to overhead joists and is entirely out of the way. No pit is necessary for dumping grain.



Meadows Means Permanency

You'll find the proof at the end of the arrow! The weight of 10,000 tons of the materials elevated by Lobb & Son is equal to more than 265,000 bushels of ear corn or an average of over 10,000 bushels a year for 25 years and the elevator was still in first class condition.

This is absolutely proof of MEADOWS PERMANENCY.

Write today for free plans, catalog and "World's Record" folder describing and illustrating the work done by the elevator owned by Lobb & Son.

The Meadows Manufacturing Co.
PONTIAC, ILLINOIS



R. LOBB & SON
Hard and Soft Coal, Cement, Concrete Blocks
and Boral Voids, Sand and Stone
PAVING CONTRACTORS
Pontiac, Illinois, Aug. 18, 1918. 191.

Meadows Manufacturing Co.,
Pontiac, Illinois.

Gentlemen:

We take pleasure in stating our satisfaction of our Meadows Inside Stationary Cup Elevator, and the following will give you an idea of the work it is doing:

This is the second season that we have used it to elevate sand, gravel and crushed stone from our pit along the G & A tracks at the foot of West Lincoln Street of this city.

Up to the present time it has elevated over 10,000 tons of this material. Our repair bill for this season has been less than \$5.00, and we have not replaced a link of 483 chain or a single cup. The elevator is still in first-class condition and looks good for 10,000 tons more.

On August 15, 1918 we elevated 115 tons of crushed stone in five hours, being driven with a 4 H.P. kerosene engine and operated by one man, thereby doing the work of at least 30 men.

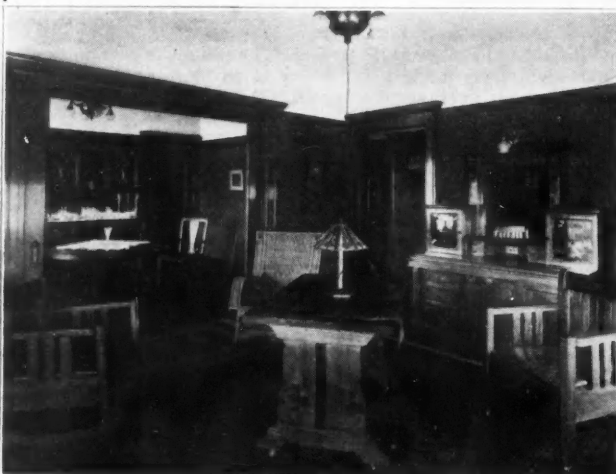
We do not believe there is another elevator in the world that is making such a record, and we give you our permission to use this letter in any way you may see fit.

Very truly yours,
R. LOBB & SON
By *Edward Lobb*

BUILDING for Permanency Means Building for Profit.

The investor in any kind of building intended for occupancy, as a home, must on account of present ground values and high cost of building, meet the problem of conserving space without sacrificing permanence, comfort or attractiveness.

This is a serious problem. We can help you solve it.



Living rooms in one of the thousands of homes equipped with one of our many types of comfortable, sanitary, concealed beds.

Note the inviting elegance that can be converted into comfortable, airy, sleeping rooms in an instant—with little effort.

The cost of installation is surprisingly low.

May we serve you?

Holmes Disappearing Bed Co.

Manufacturers of

Concealed, Disappearing,
Recess and Wall Beds

175 W. Jackson Boulevard

CHICAGO, ILL.

MAIL THIS COUPON TODAY

I am interested in building

- Apartments Flats Bungalows
 Residences Remodeling

Name.....

Address.....

Business.....

Catalogs, Bulletins and Books Received

(Continued from page 108.)

Leonard Cleanable Refrigerators, one-piece, porcelain lined, are illustrated and described in the 1917 catalog, 96 pages, 6 by 9 inches, of the Grand Rapids Refrigerator Company, Grand Rapids, Mich.

"The Invisible Garbage Man" is the title of a 24-page booklet, 6 by 9 inches, by E. C. Stearns & Company, Syracuse, N. Y. This booklet illustrates and describes the Stearns' line of "Incinerites."

Parry Bodies for Ford Extension Chassis are presented in a late catalog of the Parry Manufacturing Company, Indianapolis, Ind. The folder-catalog contains 16 pages, 9 by 10 inches, well illustrated.

Davis and Cook Levels for carpenters, masons, bricklayers and others are illustrated and described in a 12-page catalog, 5½ by 7 inches, just prepared by S. Robert Jackson, successor to Davis and Cook, Watertown, N. Y.

The Brownwall Engine is described and its advantages presented in a folder issued by The Brownwall Engine and Pulley Company, Holland, Mich.

"Concrete Mixers" is the title of a new catalog published by The Jaeger Machine Company, Columbus, Ohio. It is a book 8½ by 11 inches, 32 pages, illustrating many uses of concrete mixers in addition to the Jaeger equipment.

"Rolling and Folding Doors and Shutters" is the title of a very well illustrated book, 11 by 8 inches, 136 pages, which presents clearly the steel and wood rolling and folding doors, shutters and partitions manufactured by The Kinnear Manufacturing Company, of Columbus, Ohio.

"Build with Brick" is a book of distinctive brick homes published by the National Building Brick Bureau, Indianapolis, Ind. The principle feature of the book is twelve house designs taken from those submitted in competition by members of the Indianapolis Architectural Club.

Tables giving the quantities of material required in concrete construction are contained in a little booklet, 3¾ by 6¼ inches, 12 pages, published by The Sandusky Cement Company, Cleveland, Ohio.

The Jaeger Mixer Number 34-E is illustrated and described in Catalog No. 10, 12 pages, 6 by 9 inches, published by The Jaeger Machine Company, Columbus, Ohio.

Specification for Portland Cement, United States Government, is given in Circular No. 33, illustrated, of the Bureau of Standards, Department of Commerce. This circular covers in detail the specification adopted by the United States Government and by the American Society for Testing Materials, which became effective Jan. 1, 1917.

Standardization of sash pulleys as exemplified in the new Specification Chart and the new numbering system adopted by The Columbian Hardware Company, Cleveland, Ohio, is carefully explained and discussed in a booklet issued by this company.

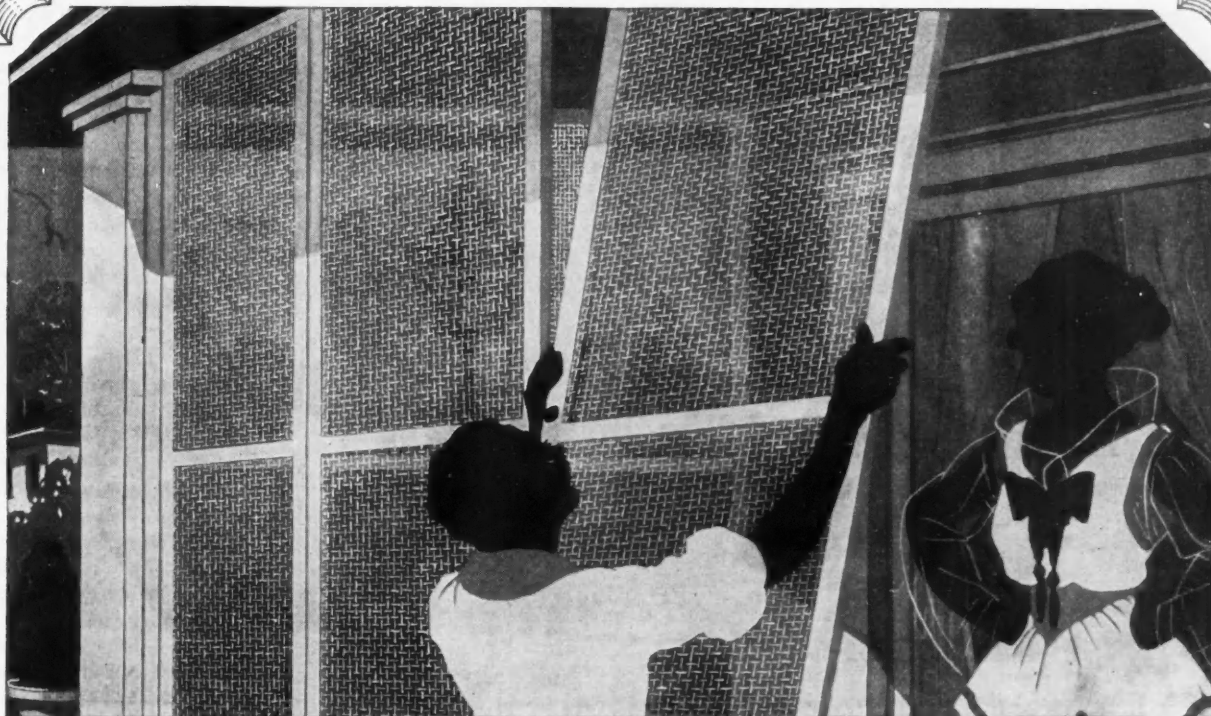


George Henry Sargent Dead

George Henry Sargent, president of Sargent & Co., died at his home in New York City on April 14. He was 88 years old. Mr. Sargent had long been esteemed as a "Grand Old Man" and commonly alluded to as "Dean of the hardware trade." He had, since his identification with the affairs of Sargent & Co., in 1853, attended constantly to business, early and late, until within a very few years.

George Henry Sargent followed his brother, Joseph Bradford Sargent, as president of the corporation, after the death of the latter in his eighty-fifth year in 1907.

Mr. Sargent was a member of the Chamber of Commerce of New York, a director of the old Mercantile National Bank, and of the Fidelity Trust Company.



G & B PEARL—First Choice For Satisfactory Screens—

THE most universally used and biggest seller in branded screen materials is today G & B PEARL Wire Cloth. This special process wire cloth is the best rust resister in its class. That's why it wears so long—for—rust is the great screen destroyer.

G & B PEARL is a handsome screen, too. It is easy on the eyes and sanitary because its smooth meshes don't retain or catch dust and dirt.

For over twenty years the Gilbert & Bennett Co. have kept the manufacturing process of PEARL a secret. Consequently, while other makes of wire cloth may imitate PEARL in appearance, they cannot approach it in performance.

Play safe! Look for the 2 Copper Wires in the Selvage and the Round Tag on each roll. These marks identify the genuine article.



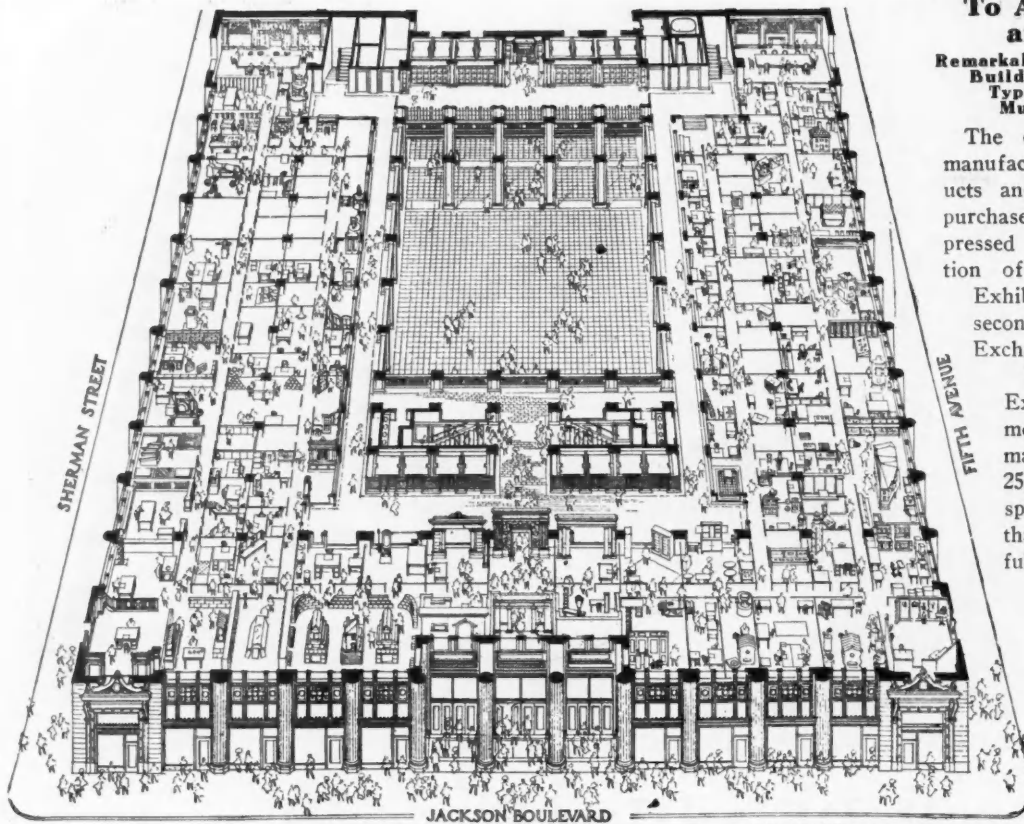
There's a retailer near you who sells and recommends G & B PEARL for permanently screening doors, windows and porches. See him or write us direct for samples and literature.

Address Department A

The Gilbert & Bennett Mfg. Co.
New York Georgetown, Conn. Chicago Kansas City, Mo.

PEARL is Made in Two Weights—Regular and Extra Heavy.

The best Hardware Dealer in your city sells "PEARL"



Panoramic View of Permanent Building Material Exhibit—2nd Floor Insurance Exchange, Chicago.

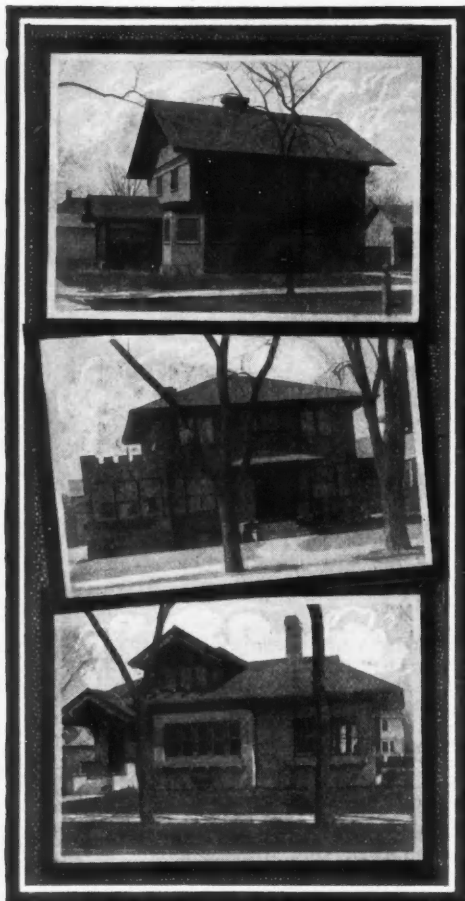
Manufacturers Cooperate To Aid Architects and Builders

**Remarkable Success of Chicago
Building Material Exhibit
Typifies New Spirit of
Mutual Helpfulness**

The closer harmony between manufacturers of building products and those who specify or purchase their goods is well expressed in the successful operation of the Building Material Exhibit, located in the entire second floor of the Insurance Exchange Building, Chicago.

Within three years the Exhibit has grown from a mere idea to a huge permanent exposition, covering 25,000 square feet of floor space and displaying all that is new, good and useful in building products, building material and equipment. To walk once around the Exhibit would be equivalent to walking five blocks, which will give an idea of its extent.

The purpose of the Building Material Exhibit is to



Ceresitized Stucco

Ceresitized cement stucco will not hair crack, discolor or disintegrate. Ceresit protects cement stucco by preventing moisture penetration and it is well known that water causes practically all of the trouble in stucco buildings.

Stucco attracts dust and, if unwaterproofed, every rain drives this dust into the stucco. On the other hand, every rain cleans waterproofed stucco.

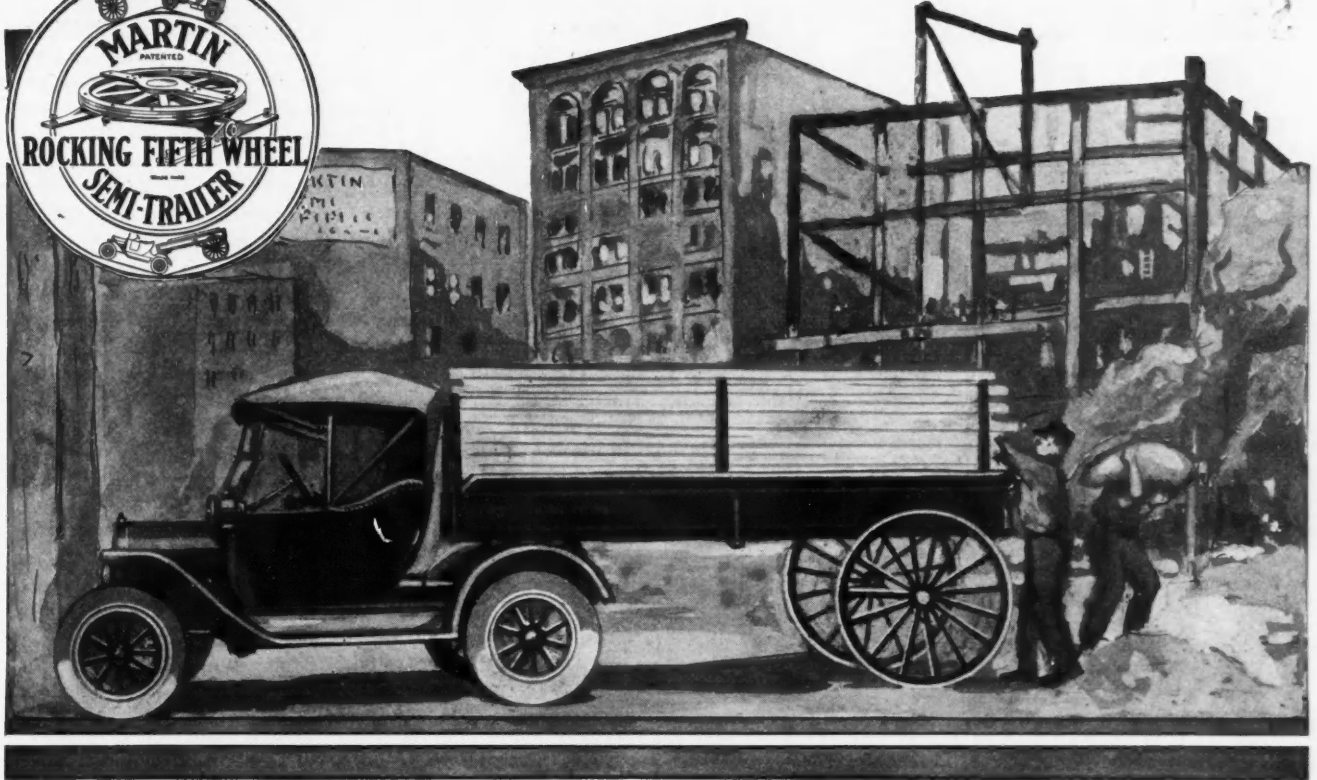
The three stucco houses shown here are in Winona, Minn., and the architect, Mr. W. H. Stevens, Winona, specified Ceresit to make the stucco exteriors permanent.

Ceresit is the perfect waterproofing for basements, cisterns and all kinds of construction. If you have any waterproofing problems, let us help you solve them. Your requests for information will not obligate you in the least.

*Send for "The Ceresit Waterproofer."
It tells all about Ceresit and the six
other C. W. Co. Products.*

Ceresit Waterproofing Co.

910 Westminster Bldg., Chicago



Swift Deliveries—With Hauling Costs Cut “To The Quick”

CARPENTERS and builders have been quick to see the economy that this new and better delivery unit offers—*assures*. Have you investigated it?

Do you know that you *can* transform your Ford—or other runabout—into a powerful, dependable one-ton truck merely by adding a Martin Semi-Trailer and a Martin Rocking Fifth Wheel? A truck that will “make” 20 miles an hour carrying a full ton and *more*

without the least strain on the Ford mechanism. A truck that you can turn and back into narrow quarters—lumber yards, switch yards and such—easier than you can turn or back a standard one-ton truck.

And then—when through hauling, you can change the Ford back into a pleasure car—with no evidence of ever having been used for commercial purposes—in six minutes.

Martin Semi-Trailer

—with Martin Rocking Fifth Wheel

Attaching the Martin Rocking Fifth Wheel and Martin Semi-Trailer to a Ford or other runabout, doesn't require boring or mutilating the car frame in any way. Anyone can do it—in a few minutes.

It comes to you *complete* (no extras for cab, body or shop work) for \$195. Investigate—send us your name and address on the coupon or a post card. Let us give you full particulars.

\$195

MARTIN ROCKING FIFTH WHEEL CO. SPRINGFIELD, MASS.



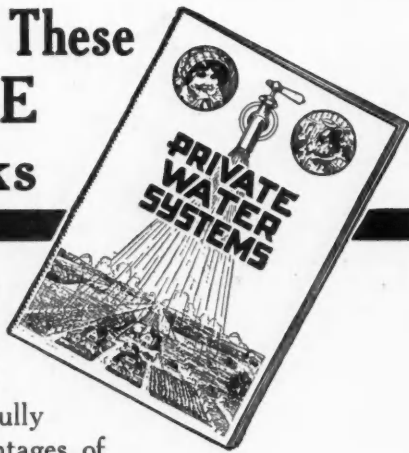
MARTIN ROCKING FIFTH WHEEL CO., Springfield, Mass.
 Send me immediately full information in regard to Martin Semi-Trailer and Martin Rocking Fifth Wheel.
 I need a hauling unit capable of hauling _____ tons.

Name _____
 St. No. _____
 City _____
 State _____

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Send for These FREE Books

Every architect, contractor, real estate man and builder should inform himself fully about the advantages of the "Direct from the Well"



Where municipal water is not at hand or of poor quality, a Milwaukee Air Power Water System assures an ample and instantly-available supply at reasonable expense.

This system is adapted for use in farm and country homes, schools, clubs, institutions, small industrial plants and other places where city water service is not available; also for private wells and cisterns in the city.

Here are the advantages of this system: no water storage tank—water is always fresh, "Direct from the Well"; nothing to freeze; the pumps are made in several styles or types to meet all sorts of conditions; large volume of water delivered; great flexibility; entirely automatic with motor as power or semi-automatic with gasoline engine; supplies hard and soft water, or water from several sources, with one power equipment and one air storage tank; power equipment may be located wherever convenient; instantaneous high pressure for fire protection or sprinkling purposes.

This system is very simple and its reliability has been thoroughly proven by thousands of installations.

Write for these
FREE Books today

**Milwaukee Air
Power Pump Co.**

872 3rd Street
MILWAUKEE, WIS.



(Continued from page 112.)

provide a central market place where architects and builders may go when they are in the market for any particular line of material. Also a central bureau of building information from which descriptive literature can be sent out regarding goods obtainable thru local dealers. At the Exhibit they not only see the actual products under consideration, but they are enabled to compare various products side by side. They can confer with factory representatives who are enabled to give much fuller and more adequate information than could a dealer's salesman or even a branch office.

The saving of time made possible by the Exhibit especially recommends it to the busy architect or contractor who must make his decisions in a hurry and still make them *right*.

At the present time over 200 firms manufacturing building materials or equipment are represented by displays at the Exhibit. An immense range of products are encountered, the list beginning with Air Conditioning Apparatus and ending with Wood Preservatives. In almost every line more than one concern is represented, the average being about two concerns in each line. They are for the most part the leading concerns in the building field, whose goods can be obtained locally from building material, lumber, and hardware dealers.

The success of the Exhibit may be estimated from the fact that the number of visitors averages 11,000 a month. About 35,000 calls are received each month, which requires a telephone exchange with twenty trunk lines and ninety terminals.

It can be safely said that the Building Material Exhibit is past the experimental stage and has demonstrated its capacity to be of real service to builders and architects. Exhibits in other cities, as Minneapolis and Detroit, are a result of the pioneering of the Chicago Building Material Exhibit.



The Fireproofing of Doors in Modern Building Construction

By A. C. Chesley

JUST when or about what time the people of this country began to study fireproofing of buildings is not definitely known. No doubt the great fires of Boston and Chicago were strong factors for same. However, it remained for the Insurance Underwriters, thru their perfected system of requirements resulting in the saving of insurance costs, to bring about the greatest improvements. Regrettable as the case may be, no doubt the loss of life was not considered as seriously as the financial loss caused by fires. This, we believe, has been changed by the great Safety First agitation — reversing the former deplorable and inhuman conditions.

The value of human life, no doubt, is becoming more highly prized than formerly, consequently stronger and greater improvements should be made to protect it. Among others is the important protection of the complete fireproofing of doors and windows in buildings. Owing to the perfected methods of manufacturing at the present time, doors and windows—more particularly doors—are made of fireproof construction at a cost no more—and in some cases much less—than the inflammable wooden doors.

We all know the door opening in a building is the means of access or exit, also the connecting point of

(Continued to page 118.)



You can place G-E Motors anywhere

THIS illustration shows two G-E motor drives used in woodworking shops. The glue jointer is operated by a G-E motor on the ceiling, and the edging machine is driven by a G-E motor on the floor.

In considering new equipment, have the motor and motor control made a "built-in" part of the machine. You will find that progressive wood-working machinery manufacturers are prepared to furnish G-E motors as a part of direct-driven combinations.

Ask your manufacturer, your power company, or our nearest office about G-E motors and "Safety First" motor control.

General Electric Company

General Office,
Schenectady, N. Y.

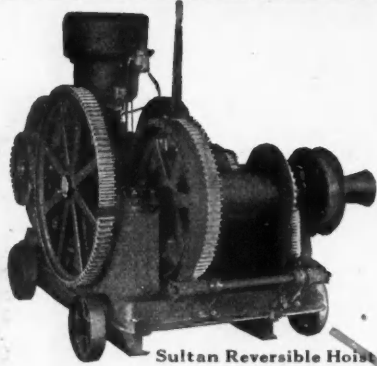


Sales Offices in
All Large Cities

2500 G-E Motor Agencies

4432

The Sultan Scientific SULTAN



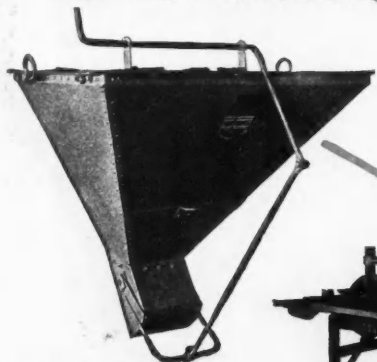
Sultan Reversible Hoist

**All Sultan Contractor
Equipment Machinery**

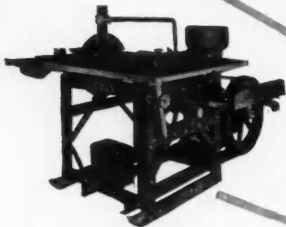
QUICK PROFIT PRODUCERS

No class of work required of the modern gasoline engine or equipment is more exacting or demand a higher degree of general efficiency than that of the Contractor. Here the breakage of a part or the failure of the engine or equipment to work properly and steadily means delay which is often costly. To meet the heavy and varied demands of this service requires a machine that is light enough to be easily portable, powerful enough to carry any load that is put upon it, but simple enough to enable the most inexperienced person to operate it satisfactorily and with perfect safety. The new Sultan Contractors' Engine and equipment embodies all of these qualities, has none of the objectionable features found in this so-called machinery, and will work day after day and month after month without repairs and with little attention other than supply the machine with necessary oil, fuel and water.

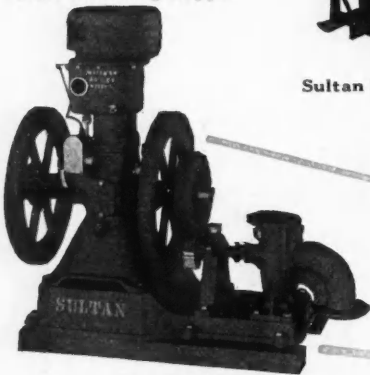
The profits of the contractor on all classes of work are governed to a considerable degree by the reliability of his engines and equipment, especially in this so in concrete construction work, where a breakdown of the outfit would necessitate laying off a force of men and result in a heavy loss. The Sultan Engine and Equipment is the only insurance against such accidents.



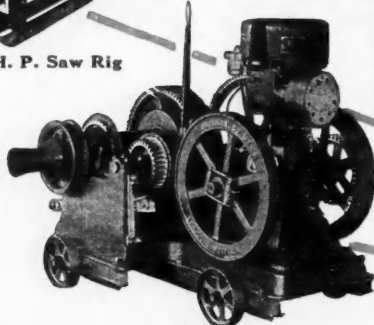
Sultan Vertical Back Concrete Receiving Hopper



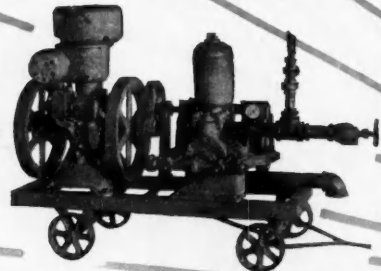
Sultan 7 H. P. Saw Rig



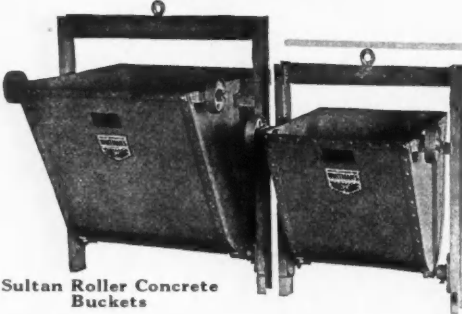
Sultan Unit Centrifugal Pumping Outfit



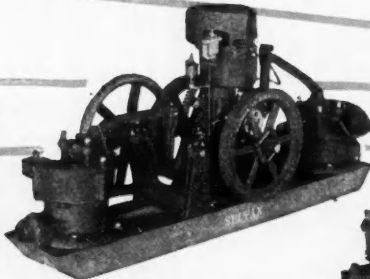
Sultan Heavy 9 H. P. Hoist



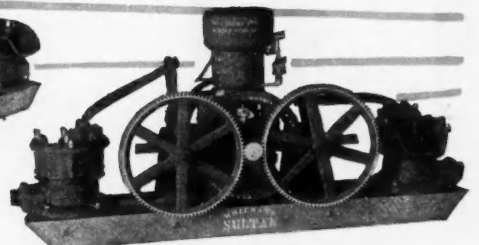
Sultan High Pressure Road Pump



Sultan Roller Concrete Buckets



Sultan "Double 4" Trench Pump



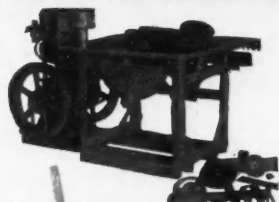
Sultan Double Trench Pumping Outfit

AGENTS
IN ALL PARTS
OF THE WORLD

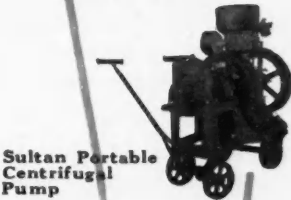
**Manufactured Complete
THE WHITMAN AGRICULTURAL CO.,**

Contractors Machinery

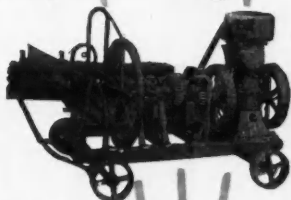
The Power Behind



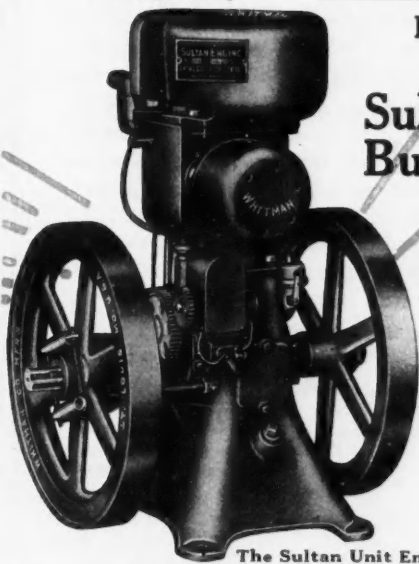
Sultan 5-6 H.P. Builders' All Round Saw Rig



Sultan Portable Centrifugal Pump



Sultan Bridge Work Drag Cross Cut Saw



The Sultan Unit Engine

Sultan Equipment Outclasses All Others! Why They Sell on Sight

Because—Sultan Engines and Sultan Contractors' Equipment are the greatest cost reducers in the modern building of today.

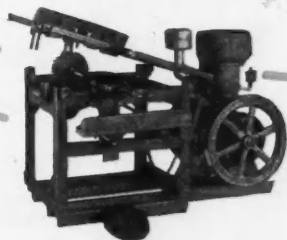
Because—All parts are of the best charcoal iron, practically indestructible and proof against rust and wear.

Economy, Service, Speed, Efficiency and Life Dependability

Every Job is Your Job with a

Sultan Power-Driven Builders' Saw Rig

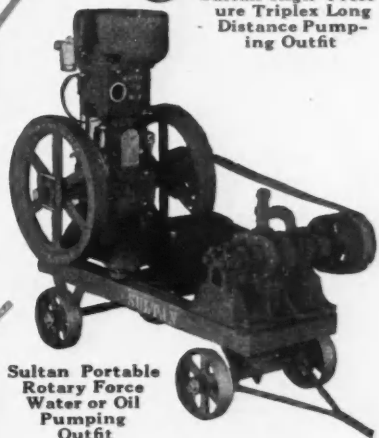
Write for Big, New, Free Catalogues



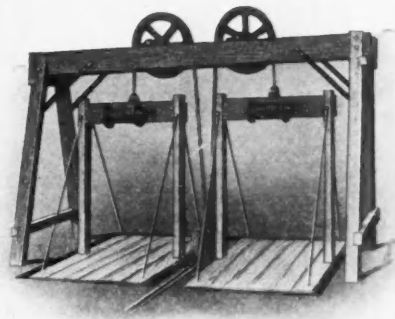
Sultan IB Small Saw Rig



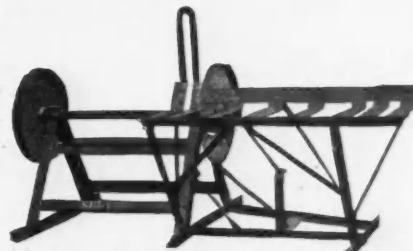
Sultan High Pressure Triplex Long Distance Pumping Outfit



Sultan Portable Rotary Force Water or Oil Pumping Outfit



Sultan Double Cage Material Elevators



Sultan Steel Cut Off Sawing Outfit

in One Large Plant by

7306 SO. BROADWAY, ST. LOUIS, MO., U. S. A.

AGENTS WANTED IN ALL PARTS OF AMERICA

(Continued from page 114.)

danger from fire, and it means that many fires have been confined to the place or room where started. When the door openings have been protected by non-combustible material lives and property are consequently positively protected. In proof we explain as follows:

Say the walls of a building having brick or stone construction, together with steel frame work, fireproof floors and interior partitions, that would leave the only weak and dangerous point at the openings. Now, to complete the building in a perfect manner, the doors also must be fireproof, consequently the well-meant cost of wall and floor construction is not wasted but conserved by the installation of fireproof doors.



Permanent Roof Nails

By John Domagall

WITH the coming of high-priced material and labor, the matter of permanent nails, and especially roof nails, looms up as a very important item, inasmuch as the roof is no better than the nails it is held down with.

State engineering colleges have taken up the question and are making actual weather tests of the different kinds of nails to determine their lasting qualities. Farm papers and building trade journals are advocating the use of permanent nails. Manufacturers and dealers of wood, asphalt and asbestos shingles are recommend-

ing nails of one kind or another; but nowhere has a definite stand been taken to define a certain nail for a certain place.


Thru my years of experience in making permanent roof nails of all kinds for every class of trade, I have learned that all nails that are solid copper, solid zinc or zinc coated are in the permanent nail class. However, each grade has its specific use which may be considered standard, altho, as said before, many builders do not know what is a proper nail to use and take the first thing offered.

For roofing tile, solid copper wire nails should be used; for roofing slate, copper wire or copper cut nails or zinc cut nails; for asbestos shingles, copper wire or zinc coated wire nails; for wood shingles, zinc cut nails, zinc coated cut or zinc coated wire nails; for metal shingles, zinc coated wire nails; for asphalt shingles, zinc coated wire nails.

It must be remembered that not all zinc coated nails are permanent nails. Permanent wire nails have a base of steel and should have a coating of not less than 10%, while the cut nails usually have a base of wrought iron which in itself is a well known rust resistant, and should have a coating of not less than 7½%. Nails that are coated by any other than the hot process cannot consistently be considered as permanent nails.

Here in America, where roofs are laid in rapid-fire order, we lean to wire nails because a little time is saved

(Continued to page 120.)



CLAYCRAFT Brick

EVERY Builder should have the Claycraft Catalog showing this beautiful brick in its natural colors. We will gladly mail you one!


If you are considering face brick for your new buildings, bear in mind these facts concerning Claycraft, Velour and Corduroy Brick:

- ¶ They never show dirt, retain their original color forever and grow more beautiful with age.
- ¶ They have individuality and distinctiveness all their own and stand the test of critical examination near and far.
- ¶ Time the leveler of all things deals kindly with them.
- ¶ They are artistic, beautiful and good to live with.

Every shade known to claycraft and the brickmaker's art—Velours, Corduroys, Buff, Golden Matts, Green and Golden Raglans, Dry Press, Golden Flash, Smooth Ivory, Buff and Gray Impervious. These are all made in Claycraft brick.

Write for the Claycraft catalog today, also our catalog of Mantel designs.

THE CLAYCRAFT BRICK COMPANY
Hartman Bldg. Columbus, O.



Why NATCO leads—



Air space in every Cross Joint

THE perfect alignment of all shells and cross webs in a Natco Hollow Tile wall — partitions directly over each other — and the fact that end construction directs the bearing "with the grain" of the tile, gives a strength to Natco that is unequalled by any hollow tile laid on its side, as has been proven by many convincing tests.

This insures a wall of maximum efficiency in load-bearing qualities. Added advantages of Natco are: Its simplicity of construction around corners, window and door openings and in approaching floor levels:

All shells and webs in alignment.

The big square units build up wall areas with maximum speed:

Compared with brick or concrete, Natco is more economical.

We shall welcome an opportunity of furnishing detailed information in connection with any job you may have in prospect or on the boards.

Air spaces for Insulation.

Any inquiries on Natco itself can be answered at any time by your local dealer in building materials.

3" x 12" x 12" Tile closes ends of joists.

4" x 12" x 12" Tile between joists.

Tile Slab Course, bearing plate and closure for vertical air spaces at each joist level.

NATIONAL FIRE PROOFING COMPANY

564 Federal Street, Pittsburgh, Pa.
Other Offices: New York, Chicago, Boston, Philadelphia, Detroit, Syracuse, Washington
23 factories in the United States

National Fire Proofing Co. of Canada, Ltd.
Office at Toronto and Factory at Hamilton, Ontario, Canada

High Grade Face Brick

Afghan Matt—Afghan Vertical Ruff

Mr. Contractor: We have an interesting set of pictures of houses, bungalows and public buildings, built of these beautiful brick, we would like to send you free. Please tell us what you are planning to build this spring.

Mr. Dealer: Hundreds of good dealers now carry our line. We want more of them. Write us for our dealers' special plan.

CRAWFORDSVILLE SHALE BRICK CO.
Factory Sales Offices in all Principal Cities of Middle West
CRAWFORDSVILLE, IND.

Attention of Builders

The American Brick Works has organized for the extensive manufacture of brick, and will have an output of from 100,000 to 200,000 finished bricks per day.

We have a plan for builders to co-operate with us, whereby you will receive your bricks at a lower price than any other brick can be purchased for. Write us for this information.

This is NOT a Stock Proposition

American Brick Works, Inc.
Heed Building Philadelphia

LET US TELL YOU ABOUT THESE
BEAUTIFUL FACE BRICK

"VINE-WOVE"

A Vine-like texture is woven into the surface of these brick.

"PERSIANTEX"

The soft, deep nap of a Persian Textile has long characterized these brick

These Lines are made in both Red and Buff

Write for Illustrated Descriptive Circular

ACME BRICK CO., Cayuga, Ind.

Factory Sales Offices in all Principal Cities
We want local lumber dealers to carry the Acme line—Write us

Make Your Basements WATER TIGHT

by using Bitu-Mortar Waterproofing Compound. Liquid, for waterproofing cement coatings—powder for waterproofing mass concrete—dampproofing, for interior surfaces of masonry walls. Inexpensive and everlasting. Write for our catalog.

The Bitu-Mortar Waterproofing Co., Inc.

BITU-MORTAR
WATERPROOFING
WATER-RESISTANT PERMANENTLY

Engineers, Contractors and Manufacturers
340-344 East 27th Street New York, N. Y.

(Continued from page 118.)

in driving them, while in foreign countries, where roofs are put on to last for generations, cut nails are mostly used. Cut nails have more holding power than wire nails of equal size. In a government test cut nails showed a 72% holding power superiority over wire nails of equal size.

The day is near at hand when roofing manufacturers will specify the particular kind of nails their product must be nailed with in order to get best results, and when this practice comes into general use owners will be assured of permanent roof jobs so far as the nails are concerned.



Concrete Staves for Permanent Silos

(Continued from page 85.)

opening is twenty-five inches wide by twenty-six and one-half inches high, and, by reason of the small space occupied by the junction of the bottom of one door and the top of the next, the door system is practically continuous from the foundation to the roof.

By reason of the simplicity of construction, a silo of this make, 14 feet in diameter by 35 feet in height, can be easily erected in three days' time with a crew of four men.

Here is a form of concrete stave silo construction that the contractor can easily sell, for he can guarantee it for fifteen years against destruction by every element, fire, wind, warping and shrinking or cracking, and if it will stand up under a guarantee for fifteen years, it will surely stand up for ages.

The farm contractor should be equipped to build these concrete structures. The investment is small; the profits are large. The silos built this year of this type will be adopted by silo builders for years to come, for this type of concrete stave silo construction is everlasting. It cannot rot; it cannot burn; it cannot blow over; it cannot shrink, swell or warp. There is no upkeep expense. It will be doing business when the buyers' great-grandchildren wish to silo their crops.

Concrete for permanence, Mr. Farm Contractor, when it comes to building silos and water supply tanks.



Fundamentals of Reinforced Concrete Design

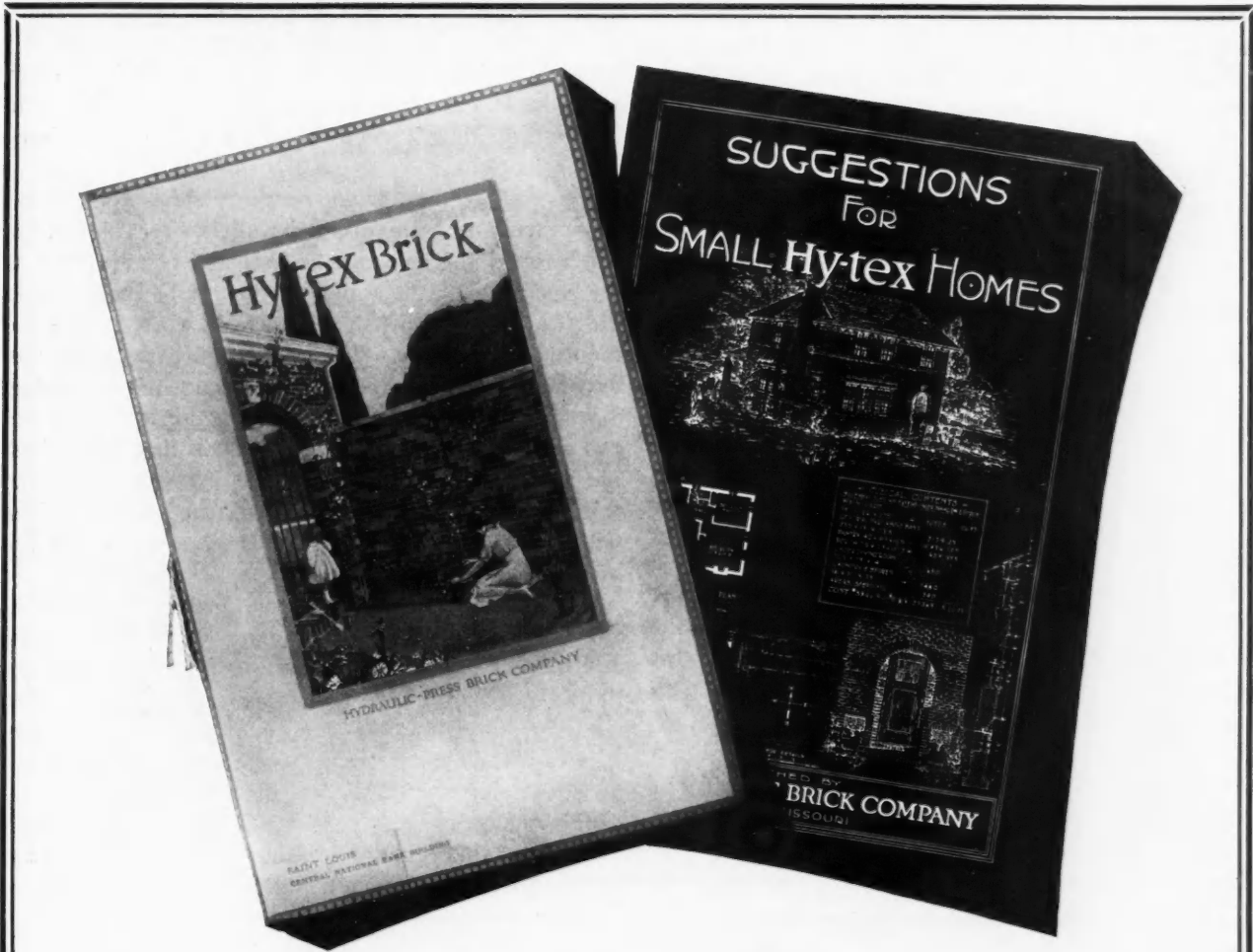
(Continued from page 47.)

$$j = 1 - \frac{k}{3}$$

$$jd = d - \frac{kd}{3}$$

In Fig. 12 is given an illustration of horizontal shear. Several planks laid loosely on end supports bend under load and the slipping of one plank past the adjoining plank is a horizontal movement. This is shown in Fig. 12a. Spike, or bolt, the planks together as shown

(Continued to page 122.)



¶ The Carpenter Builder interested in *permanent construction* cannot afford to overlook brick. Its long life and safety from fire have been demonstrated beyond question. And it makes beautiful and comfortable houses.

¶ Extend your operations by building brick houses. The American Builder is showing you how to do it. ¶ Fill in the coupon and get the attractive booklets illustrated above.

Hydraulic-Press Brick Company

Saint Louis

Branch Offices: Baltimore, Chicago, Cleveland, Davenport, DuBois, Pa., Indianapolis, Kansas City, Minneapolis, Omaha, Philadelphia, Roseville, O., Toledo, Washington

Largest Manufacturers of Face Brick in the World

Hy-tex
The Standard of Quality in Brick

Hydraulic-Press Brick Company
St. Louis, Missouri

Send me "Hy-tex Brick" and "Suggestion for Small Hy-tex Homes."

Name.....

Street.....

City..... State.....

(Continued from page 120.)

in Fig. 12b and the slipping cannot occur. The spikes or bolts represent with fair accuracy the stirrups used in reinforced concrete beams. The shear being a maximum at the ends where the bending moment is a minimum, the fastenings are closer together than nearer the middle of the span where the shear is a minimum and the bending moment is a maximum.

By reference to Fig. 11b it is seen that vertical shear exists at all points on a beam. We have seen that horizontal shear also exists at all points on a beam. Along the neutral plane it is equal to the maximum end vertical shear. Very thin horizontal slices, like the planks in Fig. 12, are assumed for the purposes of computation.

The resultant, according to the parallelogram of forces, is a diagonal tension, which causes the cracks shown in Fig. 10.

In designing reinforced slabs, beams and girders, the resisting moment must be equal to or greater than the bending moment. When this is fixed the beam must be tested for shearing strength, and if it is found to be deficient in this particular, steel in the form of stirrups must be provided or the size of the beam be increased. The unit shearing stress v should not exceed 40 pounds per square inch for the concrete alone, nor exceed a total of 120 pounds per square inch when stirrups are used.

(To be Concluded in the June American Builder.)

Details of Brick Construction

(Continued from page 70.)

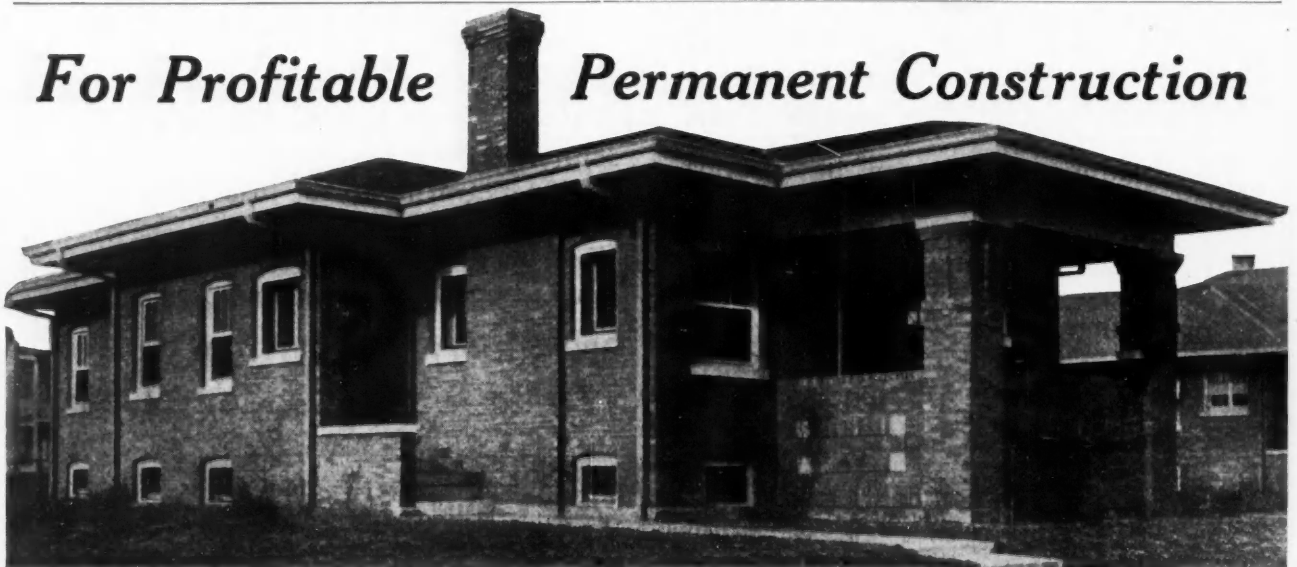
into the wall 8 inches. This carries the load over from the innermost wall of the block directly beneath the joist, dividing it among the three walls or partitions of the block.

The wall section shown on the plate is for a one-story structure. In case the wall is over 14 feet in height or if the structure is designed for two floors, the thickness of the wall will remain 12 inches until the second floor joists are reached, when it will be reduced to 8 inches. This will require recessing the first floor joists into the wall. A course of tile having a length equal to the width of the joists is laid on end around the building at the floor line, the joists are set on the bearing tile placed immediately below this belt of tile and the wall is built up between joists with tile set on end. The wall is then continued up in the usual manner.

In this form of construction, in residence work, wooden window and door frames are used and it is necessary to provide some means of attaching them to the walls. Wood lintel beams are used to support the tile above the window and door openings and the frames are nailed to these beams at the top, lugs or anchors being used to secure the casings at the sides of the windows or doors. The face brick are supported above door and window openings with angle irons as on Plate I. Every seventh course of brick is a header

(Continued to page 124.)

For Profitable Permanent Construction



YOU will find our line of face brick a highly profitable material for your permanent construction work. Profitable because, in reality, there is but little difference in the actual cost of brick over frame construction and this is made up many times over in the LIGHTER INSURANCE, saving in PAINTING COST, FUEL EXPENSE and depreciation.

The majority of home buyers would prefer a handsome face brick house—it has a substantial, dignified appearance. It is the nearest approach to the "brownstone front."

Get our free floor plans on the fireproof home illustrated here.

Send for our big free portfolio of K. B. B. Face Brick in NATURAL COLOR.

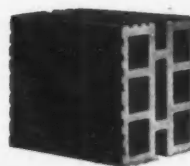
We maintain sales offices in all the principal cities of the Middle West—hundreds of dealers carry our line.

If your dealer happens not to know the K. B. B. Line, won't you send us his name when you write for our portfolio?

We are anxious to serve you—promptly

KANSAS BUFF BRICK & MANUFACTURING CO., Buffville, Kansas

Increasing Demand for Permanent Buildings



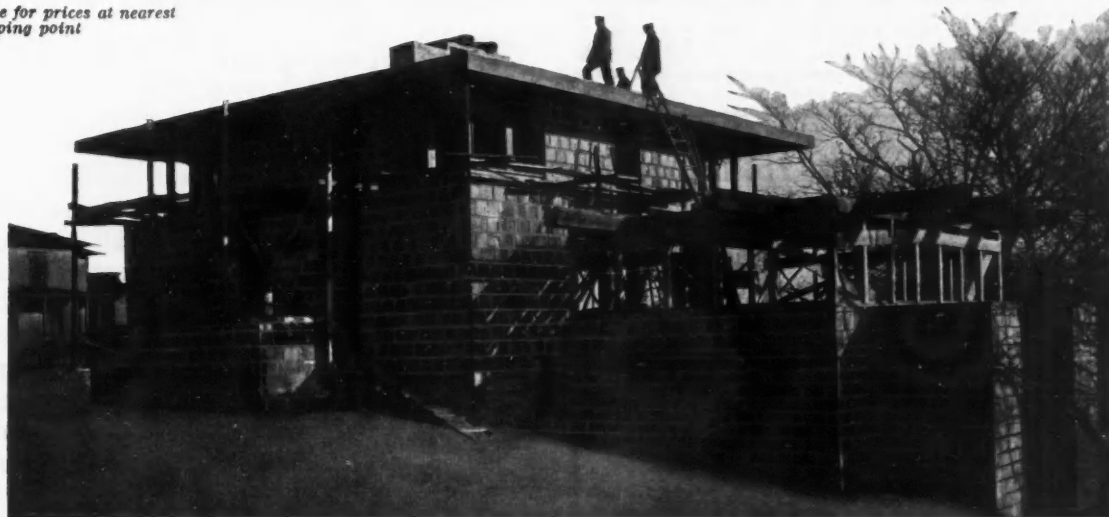
Every contractor and builder wants to increase his profits. Hollow Tile construction pays larger profits with less competition. Tile houses are in great demand and have effectually demonstrated their superiority over other types.

A Hollow Tile House is permanent. There is nothing to deteriorate. The first cost is the last cost. It never has to be repainted or repaired. Built of non-burnable material, it allows a lower rate of insurance. It costs no more than good frame construction, yet will last a century.

Denison Load Bearing Tile will carry a load of 140,000 pounds to the square foot. The bedding surfaces are easy of access and the tile lays up quickly and easily. The broken mortar joint prevents frost or moisture from penetrating to the inside walls. Plaster applies directly onto the tile without furring.

Made by the **Denison Fire Proofing Co., Mason City, Iowa**

Write for prices at nearest shipping point



The Keim Brick & Tile Company

Makers of

KEIM BRICK

DISTINCTIVE TEXTURE—CONVINCINGLY BEAUTIFUL

Plant: Mapleton, Ohio. Offices: Louisville, Ohio
Selling Agencies in All Principal Cities

Write for our new folder showing our line in full range of colors and textures.

WITHOUT OUR ESTIMATE YOU HAVE NO COMPETITION

The Whitacre-Greer Fireproofing Co.

Manufacturers of
HOLLOW TILE FIREPROOFING
and BUILDING BLOCK

Waynesburg, Ohio

Chicago Office:
538 South Dearborn St.

Pittsburgh, Office:
7138 Jenkins Building

FIREPROOFING MADE OF PURE FIRE CLAY

Rockford Hollow Building Tile

Hollow Building Tile is a safe material for all classes of buildings, especially farm buildings, and one which all progressive contractors should know how to use. We will be glad to give you any assistance in the matter of the Rockford line.

Sold only to Dealers and Contractors

Rockford Hollow Tile is only sold to the building public when we have no dealers, and even then at a price at our dealers' price. We always protect the dealer.

Rockford Brick and Tile Co., Rockford, Iowa

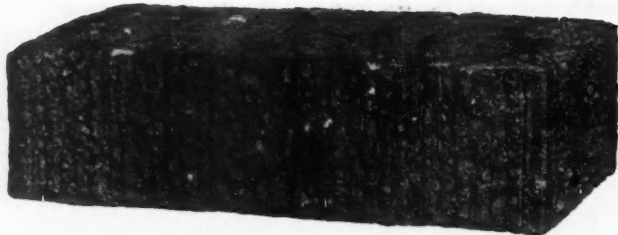
TILEBAK

(Hollow Clay Tile)

Covered with STUCCO or
HOMESTEAD FACE BRICK

Makes ideal construction for Residences, Schools, Churches, Banks, Garages, Theatres, etc. *It's Fire-Proof*
Send for Descriptive Pamphlets

The Barkwill-Farr Company ^{Nine Modern Plants} Cleveland, O.



ALLIANCE MULTI-COLOR RUFF BRICK

EXCEL ALL OTHER BRICK as to beauty of coloring. The chromatic scale of colors runs through the beautiful rough-texture faces, most of the individual brick showing on the face of each brick three or four or more of the seven primary colors or their shades—gun-metals, wines, chocolates, browns, ox-blood reds, bluish tones and multi-colors.

Mr. Dealer: If you want the best seller among the many brick made today ask for the agency for Alliance Multi-Color Ruff Brick—beautiful rough-texture and all the colors of the rainbow. Samples and prices on request.

The ALLIANCE BRICK CO., 25 South Linden Ave., Alliance, Ohio

Shackelford Brick and Hollow Tile

Made of Iowa's Best Shale

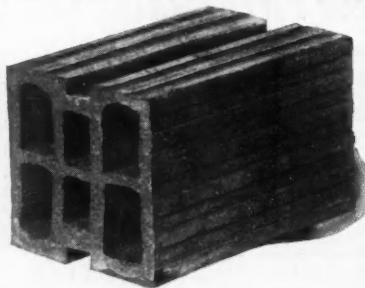
Shackelford common brick and hollow tile are made of Iowa's best shale, and always give entire satisfaction. They are in wide demand throughout the Central West. We would be glad to have your inquiry.

Our Lumberman's Special is a brick that hundreds of lumber dealers are carrying to decided advantage. If you carry chimney and foundation brick get in touch with us at once—we have something of interest for you.

SHACKELFORD BRICK CO., Des Moines, Ia.

"HEAVY DUTY" INTERLOCKING TILE

The STRENGTH of BRICK and the DRYNESS of TILE are combined in Vigo American Heavy Duty Interlocking Tile to make a BETTER wall than solid brick and at two-thirds the cost.



We also manufacture Fire-proofing, Building, Arch, Partition and Drain Tile, Hollow Brick and other shale products. Send for our literature.

VIGO-AMERICAN CLAY COMPANY
7th and Ohio Sts., TERRE HAUTE, IND.

"Practical Homes"

A Plan Book Containing Thirty Plans and Elevations of Houses

Built During Past Three Years

This selection includes all prize-winning and mention designs from National Building Show, New York, Competition

\$100

Postpaid

S-A-F-E, 356 Leader-News Bldg., Cleveland, O.

(Continued from page 122.)

course, which is the method used to bond the brick to the tile. Of course, it is possible to use any of the special bonds in laying up the face brick; the plate illustrates the common bond because it is the most used and embodies the principal features of this type of construction. When the face brick used are costly, it is sometimes cheaper to increase the thickness of the tile portion of the wall so that this part of the wall is capable of carrying the entire load. The face brick are then laid as a veneer, anchored to the tile with some approved form of metal tie.



Building with Art-Tile

(Continued from page 64.)

ual development or evolution of brick and tile going on side by side at the same time. At first the brick-maker, like the tile manufacturer, made his material for structural purposes only, and gave but little thought as to its architectural possibilities. For many years the art of the brickmaker did not rise above the level of common brick, or the art of the tile manufacturer above common tile. Then came the brick machine with a very fine-grain, close-texture product known as a pressed brick, and the art of the brick-maker took a step forward, the size, shape and color coming in for consideration. The tile manufacturers then put out a glazed-surface tile which required no outside finish.

The present tendency both in brick and tile manufacture is towards rough texture and dull finish. This is an effort to harmonize with nature, which in all its work is rough and rugged. A rough-texture surface has a weathered appearance where a weathered appearance would be expected, and by the selection of proper shades and the proper width and shade of mortar joint, a new wall of art-tile can be given the appearance of age, thereby taking away that "newness" or "veneer" so noticeable in many operations.

But in laying art-tile we must forget or unlearn much that we have learned about ordinary hollow building tile, or it will lead us into costly error. We must bear in mind that the blocks are to be laid on their broad flat side, like a brick, not on end, as has been the rule.

The foundation wall is 12½ inches thick and is made up of two tile to a course, one 4 inches the other 8 inches wide. The ends of the joists are beveled so they will have a bearing of 8 inches on the foundation wall, and still allow for a 4-inch tile at the upper part of the joist.

To prevent cell openings showing at the corners, special corner tile with vertical cells must be used. One pattern of corner tile is all that is necessary, as by reversing it the block can be made fit either way. For window and door openings special closure tile are provided, which may be full closure, that is the full length of a standard art-tile, or half-closure, which

(Continued to page 126.)

A large manufacturing corporation in Ohio laying out a model industrial allotment of five hundred acres and constructing at the present time several hundred homes requires a thoroughly capable organizer to become General Manager for this work and push construction and engineering force in excess of two hundred. Two thousand homes to build quickly.

Address Box 234, care of American Builder, Chicago



Drop us a line and tell us what you are figuring on building this Spring

HUNDREDS of progressive contractors are finding that brick construction is as easily handled as frame; and it has many advantages — the principal one is, that it gives your client a more permanent home and relieves him of the continual expense of painting and upkeep.

Then we will tell you how "Artfashioned" Brick can be used to advantage

Artfashioned Brick are made in a wide range of colors and textures. There is a Nuvoque Brick for every style of architecture — from the modest bungalow to the best building in town.

You can get "Artfashioned" Brick from your Local Dealer

We have hundreds of lumber dealers in the Middle West now handling "Artfashioned" Brick. If your local dealer does not carry our line ask him to write us. We prefer to furnish it through his yard.

BOONE BRICK TILE & PAVING CO., Manufacturers of Artfashioned Brick, Boone, Iowa
Sales Offices all through the Middle West

MADE IN IOWA!



Build With Belden Brick

—On the basis that brick houses make for a higher standard of construction and therefore more good work and more profit to you.

—With the knowledge that once you are familiar with brick construction that you can make more money building brick houses than any other kind.

—With the absolute conviction that "Belden Brick" represent the biggest value you can buy and that we are prepared to give you the kind of service you want.

We appeal to you to investigate carefully brick house construction.

Direct from the Manufacturer

We have dealers in hundreds of cities and towns in the United States and Canada at the present time. We ask you to write for samples and prices and the name of our nearest dealer. Belden Brick are made in five modern factories and come in all colors, shapes and sizes, and in most textures, rough and smooth. We have the very brick you are looking for, be it house, bungalow, garage, theater, store, bank, church, school, library or office building.

THE BELDEN BRICK CO. Est. 1885 Canton, Ohio

Five Plants at Canton, Somerset, Uhrichsville, Port Washington

-----USE THIS COUPON NOW-----

Belden Brick Company, Canton, Ohio

Gentlemen:—We are favorable to the use of brick for many purposes and would like to know more about your product. We are figuring on building (use this line if anything definite).....

We buy thru (give name of dealer).....

Name.....Address.....

(Continued from page 124.)

are only one-half the length of a standard tile, and can be used for breaking joints. Both the full-closure tile and half-closure tile are shown at the sides of the doorway.

A very important detail of hollow tile construction I would like to point out is the necessity for arranging all window and door openings, as well as all breaks in the wall, so they can be built up, using blocks of standard size. A brick is comparatively easy to cut in case it is necessary to make it fit in the space available; but it is more difficult to make good, clean, neat cuts on tile, and as it is good practice to arrange openings in a brick wall so a half brick will act as a closure for a course, it is even better practice to arrange all openings and breaks in a hollow tile wall so the half-closures, or half-jamb tile will fill out each course.



The Man From the Lumber Yard Talks on Patriotic Service by Builders

(Continued from page 39.)

in action reminded you of a delicately adjusted automatic machine, his left worked in such unison with his right. As is usual with many good wage-earning mechanics, he devoted his spare time to amusements, in place of reading and self-improvement. Billiards was his hobby.

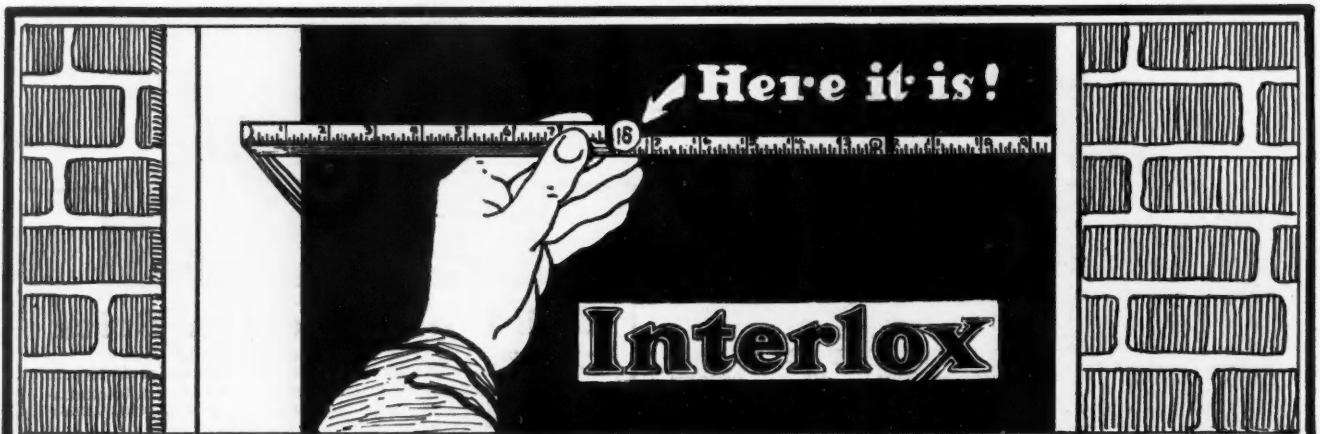
Last April a fellow workman dropped a timber which struck him on his left wrist, shattering it. You can appreciate the fact of his being very much depressed, knowing that the compensation allowed him would soon be eaten up by his family. In his enforced idleness and inability to enjoy the game which had occupied his leisure, he turned to reading. Naturally he read the magazines he found in the contractor's office. His attention was riveted by an ad of a mortising machine. He corresponded with the advertisers and when his left arm was out of the sling he applied for his old job.

In relating this to me last December the contractor mentioned that the one good arm of this man plus a machine was earning more for him than his two arms formerly did. Being unable to follow his old pastime, and taking no interest in any other, he is a better family man, which means that he is a better workman.

Something over a year ago I was down in St. Louis and met an old friend that had quite a good-sized contract of a rough work sort, but he was badly swamped on account of inability to get labor. He had a small force of dependable fellows, but he would have to practically double their number because of his time limit. His problem was very easily solved by the installation of a portable power saw table.

As stated above, the job was of a rough kind, merely

(Continued to page 130.)



Instantaneous reading—no figuring

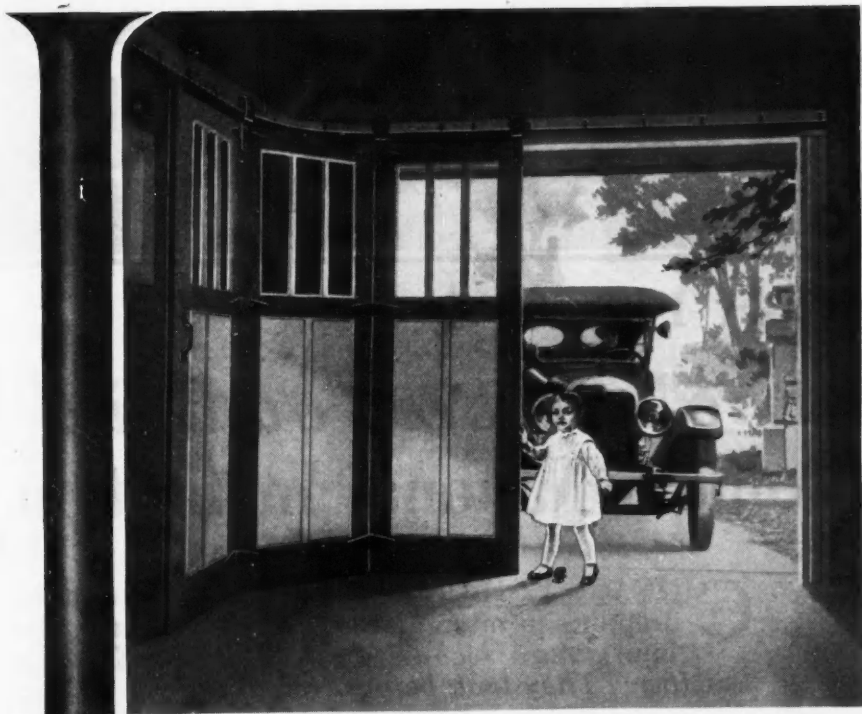
The Interlox Master Slide Rule takes both inside and outside measurements. Every carpenter or contractor is familiar with the difficulty encountered in taking inside measurements of such things as windows, doors, boilers or furnaces with an ordinary rule.

There is much figuring—much guesswork, and considerable loss of time connected with it. But the Interlox operates so quickly—and accurately; place one end of the rule on the left side of the casing; draw out the rule till it touches the opposite side, then read off your measurement at the point indicated by the intersection of the folded and extended parts of the rule. (See illustration.)

Large concerns purchase the Interlox Master Slide Rule in large quantities to insure accuracy. The Interlox is made of selected box wood, trimmed with brass—a waterproof lacquer prevents rust. It's made in lengths of from 2 to 8 ft. It sells for 20c a lineal foot. (In U.S.A.) You will appreciate an Interlox. Get one.

Dahl Manufacturing Co.

51 East 42nd St. New York City, N. Y.



The Most Convenient Garage Door Hanger Made

LOUDEN



Here's What You Get

- No. 1. Track supporting brackets riveted on for 6, 8, 10 or 12 foot door, as specified.
- No. 2. Three swivel-jointed, roller bearing trolleys.
- No. 3. Six durable 6-inch strap hinges.
- No. 4. Two adjustable floor stay rollers to guide the door and hold it in place at the bottom.
- No. 5. One wall stay roller to keep the door from binding on the side wall.
- No. 6. Two heavy, well shaped door handles.
- No. 7. Three-eighths pound special barbed nails for putting up track.
- No. 8. Seventy-two screws for hinges, handles and stay rollers.
- No. 9. One hasp and staple.

No Lumber is Furnished
Complete directions for building and erecting door accompany each set of hangers.

It Meets Every Condition Perfectly---Convenience, Safety, Space Economy, Beauty of Design, Ease of Operation, Permanence, Cheapness.

The door is made in three panels, stoutly hinged together, supported by swiveled, roller bearing trolleys which operate on a continuous steel track.

The track extends across the door opening, inside, and along the adjoining wall, curved at the corner. The door slides smoothly around the corner—doesn't cut off an inch of valuable space—and when open lies flat against the side wall out of the way.

The Louden-Hung Garage Door overcomes the disadvantages of clumsy swinging doors and posts in the yard, and solves permanently the problem of the inside sliding garage door.

A DOOR WITHIN A DOOR

An extremely valuable feature of the Louden-Hung Garage Door is the hinged section, which makes a separate foot entrance unnecessary. A small door for the man and a large door for the car, all in one, is an exclusive, Louden-patented feature—absolutely new in garage door construction.

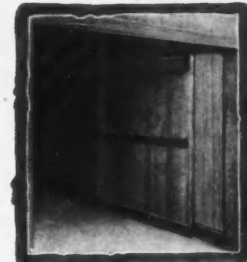
The convenience, safety, and handsome design of the three-panel Louden Equipped Garage Door makes it popular with wealthy owners of fine garages. Its inexpensiveness makes it popular with those who wish to economize.

Specify this hardware for the garages you build. It will insure lasting satisfaction and bring you new contracts.

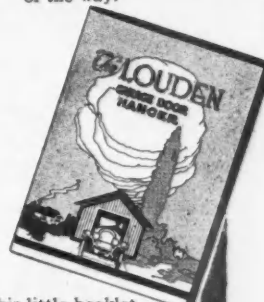
Write for complete illustrated booklet of garage plans and garage door information.



Swinging section of Louden-Hung garage door permits individual entrance and exit without moving entire door.



When open the Louden-Hung garage door lies flat against the inside wall—entirely out of the way.



This little booklet tells the whole story. Mailed postpaid on request.

1867 — THE LOUDEN MACHINERY CO. — 1917
5512 Court Street, Fairfield, Iowa

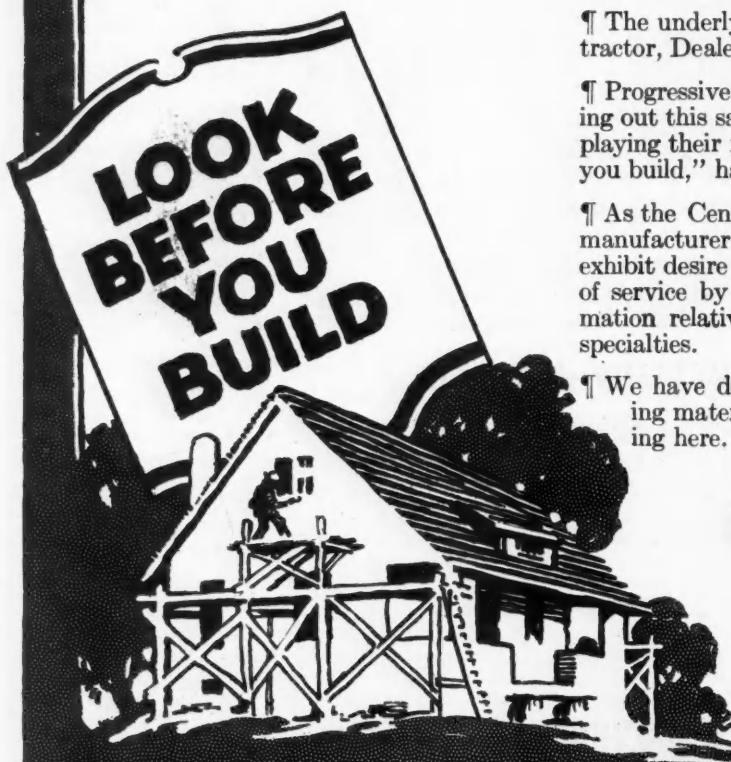
BUILDING MAT

CHICAGO

Our Slogan "*Look Before You Build*" Has Become a National Institution

Contractors, Dealers,
Architects, Owners:

**Make Use of
Our Facilities!**



CHICAGO BUILDERS have learned the value of dropping in often at the Building Material Exhibit, *entire second floor Insurance Exchange Building.* **They look before they build.**

¶ Visitors to Chicago search out the Exhibit as one of the worthwhile sights of the city—on a par with the Union Stock Yards, the Wheat Pit, or Marshall Field's—and if they are interested at all in building they find the time spent at the Exhibit their best investment.

¶ A visit to the Exhibit today is like attending a World's Fair—only better—if you are concerned with building. National Advertisers whose goods are on display in a small way in the office of every first-class Building Material Dealer, here at the Chicago Exhibit have installed elaborate expensive demonstrations of their complete lines, in several instances costing more than \$5000.00.

¶ The underlying idea is that you, *as a Builder*—whether Contractor, Dealer, Architect or Owner—may "Look before you build."

¶ Progressive Building Material Dealers in many towns are following out this same idea as far as they can in a modest way, by displaying their regular lines attractively. Our slogan, "Look before you build," has become a National Institution.

¶ As the Central Headquarters of the builders' supply trade the manufacturers associated in this great central building material exhibit desire to supplement all such local displays and also to be of service by distributing widely catalogs, booklets, and all information relative to dependable goods, both standard lines and specialties.

¶ We have demonstrated our ability to serve contractors, building material dealers and architects of Chicago and those visiting here. We desire to extend this Service nation-wide.

Building Material Exhibit
Insurance Exchange Building
Entire Second Floor
Chicago, Illinois

MATERIAL EXHIBIT

CHICAGO

The Leaders Exhibit Here!

A National Headquarters for the display of dependable builders' supplies and the distribution of information concerning them.

¶ Contractors, Builders, Dealers—anyone interested in building—better building—should not overlook this big splendid permanent exhibit of nation-wide educative value.

¶ Two hundred representative building material manufacturers display here their best products—and offer the building trade their earnest co-operation.

¶ If you cannot get to Chicago in the immediate future, write us. Our Exhibitors are the most dependable manufacturing concerns in the building field and their standard goods are carried in stock by the best dealers in every community. Let us know your needs and we will see that you are supplied with full information. If you are in need of any special items—goods not ordinarily carried in stock—some one of our number will certainly be able to serve you.

Mail this coupon now while you think of it. Remember, our intention is to aid you—to give you access to the help and advice of the leaders in the building supply field. We are here to serve you.



BUILDING MATERIAL EXHIBIT
 Insurance Exchange Bldg. Chicago

Gentlemen: I am interested in the following items. Please have full information sent me.

.....

.....

.....

Name

City.....State.....

(Continued from page 126.)

a saw and hammer proposition. He placed one of his best men to operating the saw and had two others of his reliable men to oversee a gang of eight roustabouts. He was able to put the work thru in good shape.

The natural disposition with so many people is to turn up their toes in the stress when they are up against a hard proposition. The real man makes difficulties stepping-stones to greater successes.

Your Position After the Shakeup

My wife sometimes sends me on a hurry trip to the grocery. The last time it was to get a SMALL quantity of potatoes. Do you notice the emphasis on small?

As I entered the store I located the basket which contained about half a bushel. The potatoes were in a very serene normal condition. When I made my wants known to the clerk, stating that I wanted a certain size, he picked up the basket and gave it a vigorous shaking. I noted that this readjusted the position of every potato.

There is going to be a decided readjustment in all affairs during the present crisis. Some are so strongly entrenched that they will hold; others who have not believed in preparedness and had no foresight will go down. The question with each reader is, what will be his status when business gets back to normal?

Not Selfishness But Patriotism

The deciding factor is going to be service—service

to country, service to the community and to his clients.

TO SERVE SELF is O. K. in one of our modern eat shops, but not in the building trade.

I can point to many stones in the grave-yard of failures in the building field where the epitaph should read "He considered only his own interests." You can put it down as basic that the man who serves self best does it by serving the interests of all—which is true patriotism.

While it is more spectacular to go to the front, it is essential that many go to the field. It is more thrilling to work a machine gun than to operate a machine in the factory for ten hours straight; but if you stop the latter there is disaster for the former.

Mobilizing machinery for every possible job is as patriotic as mobilizing men. American men must learn more and more, every day, to work with machines.

It is your duty to yourself and your country to encourage the use of every machine that will facilitate work.

If you are an employer, the installing of a machine releases possibly five men for productive work elsewhere. Are you an employe? The operating of a machine multiplies your producing capacity. Even prior to this crisis humanity could not have been fed had it not been that the thresher had succeeded the flail. Humanity would not have been clothed had it not been for the nimble steel fingers of the spinning jenny.

(Continued to page 132.)

ALL worth while paints contain *some* white lead. The better kinds are *chiefly* white lead. The best kind is *pure* white lead.

You are not likely to have used paint which doesn't contain some white lead, the more the better, the better the lead, the better the paint. "Carter" is the last word in pure white lead and the one you will choose by every test.

Practical working paint specifications for all surfaces are given in **The Carter Paint Calculator**, a leather-bound text book of seventy pages on paint and painting. It gives definite answers to most specific paint questions. Sent free to architects and contractors.

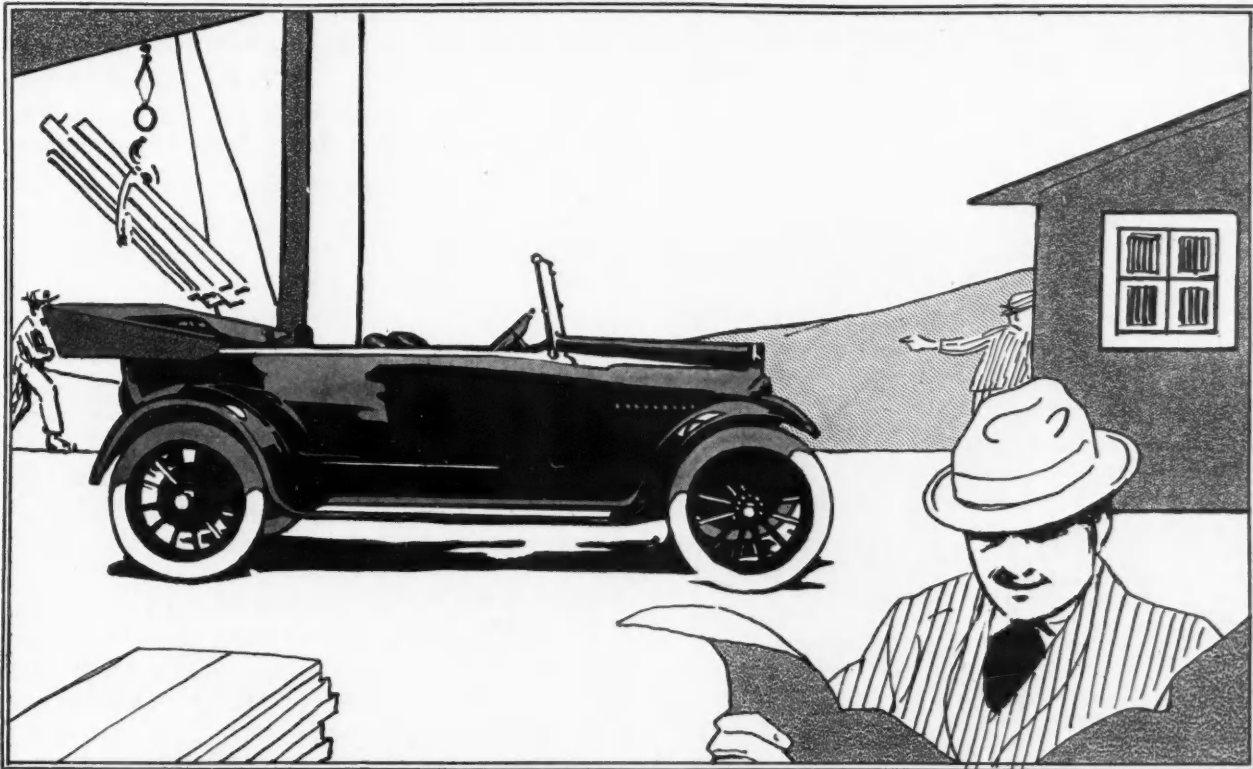
CARTER WHITE LEAD CO.

West Pullman Station "B"

CHICAGO

ILLINOIS





The CASE 40 for Busy Builders

THERE is *permanent construction* in the Case "40" just as there is permanency in the Case Company as an institution. Since Jerome I. Case started in the manufacturing business, 75 years ago, our organization, through its strict adherence to a high standard of excellence, has steadily grown in the confidence of users of Case equipment.

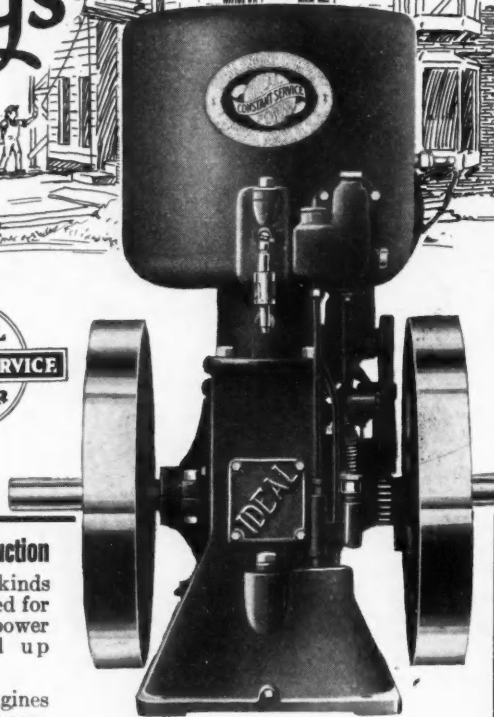
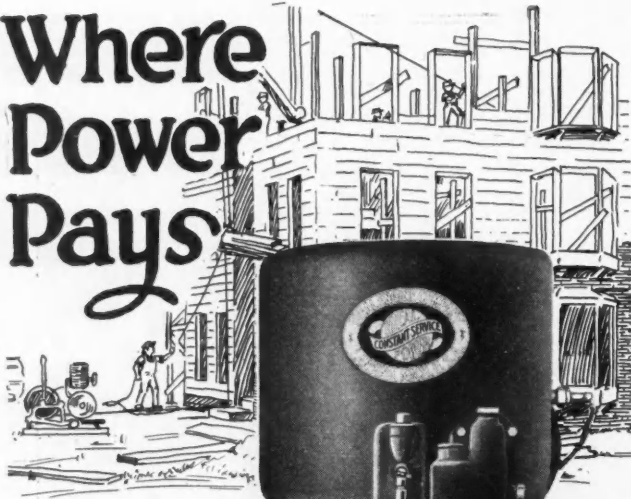
The Case "40" is but one of a long line of machines—such as tractors, road graders, rock crushers and road rollers for contractors. It is reliable, it serves the needs of the busy contractor who must have a dependable machine to get about town in. The Case "40" is a 100,000 mile car.

This car sells for \$1190.

The Case "40" is a busy man's car. It is always ready to take you there and back, Mr. Contractor. Doesn't that mean you? Let us send you a complete description by mail. Ask for literature on the Case "40".

J. I. Case T. M. Company
Racine, Wisconsin

Where Power Pays



On Construction

work of all kinds there is need for **reliable** power to speed up the work.

Ideal Engines and Ideal pumping and hoisting outfits are designed and constructed especially for this class of work. They furnish economical, dependable, year around power.

And on thousands of building jobs Ideal Engines are **more** than paying their way—they are adding profits to every job by making possible **faster** building with less cost for labor.

Wherever there is material to hoist—water to pump or other work requiring power, the Ideal will deliver dividend paying service.

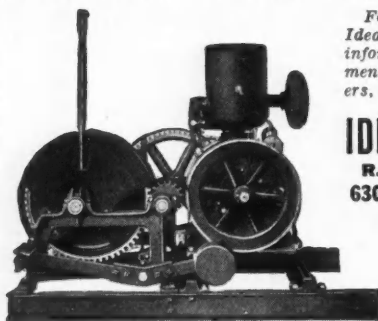
Light weight for its power—therefore easy to move about. Vertical type, requiring small floor space. The enclosed crank case keeps the cylinder, piston and rings free from dust, dirt and grit.

Frost-proof, dirt-proof and fool-proof. Runs with minimum care and attention. Needs no engineer. Well balanced so that when mounted it runs with practically no vibration. Equipped with a special carburetor, so arranged as to use warm air, which insures greater efficiency even in the coldest weather.

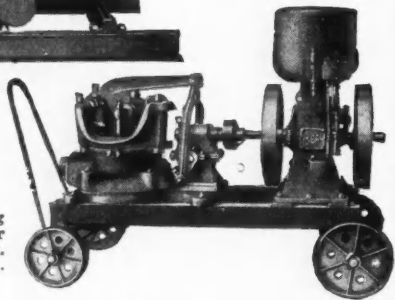
For complete details of the Ideal Engine, together with all information and special equipment for carpenters and builders, address

IDEAL ENGINE CO.

R. E. OLDS, Chairman
630 E. Kalamazoo St.
Lansing, Mich.



Single line one way single drum hoist.
4½ and 6 H. P.



Diaphragm pumping outfit on skids or truck 2½ H. P. only. 3" or 4" suction.

(Continued from page 130.)

If I can write something that will cause the use of one hundred machines that will do the work of 500 men I feel that I have done a most patriotic thing by adding a thousand hands to the productiveness of our country.

Mobilize Machines

Why not harness up a gasoline engine on the job? It can walk twice as fast and lift ten times as much as the best man in shoe leather.

You can now put a power saw on the job that will do almost everything but suck eggs. You don't have to shut off the power for changing tools. Shift the handle and, presto, the tool you want is on the job to serve you.

If you are laying concrete, a souse of gasoline into the engine and a feeding of material into the hopper will turn out per day as much concrete as a gang of ten shovelers could mix by hand.

Do you want to finish the floor of that room 15 feet by 50 feet? It would take ten hands, three days of ten hours each, to rub down the floor. You can put one man on the job for twenty hours and have it completed by the use of a power floor surfacer.

Why waste horse flesh and man power when a motor truck will not tire, even tho it be on the job early and late.

Don't overlook the humble screw driver that will grab the head of the screw and hold on to it until sunken into the wood. This driver does away with the wrist strain and its ratchet action does the work quick.

The farmer is equipping for his job. The continuance of the race depends on his efforts. If he went on a strike we would all be playing on golden harps next Easter.

Realizing this, he is installing tractors in place of hay-consumers.

A tractor and a man will produce as much as four men and sixteen horses.

Housing The Crops

Your duty, Mr. Contractor, is to help him care for his crops. Doubt is cast on Russia having wheat to spare because of her well known carelessness in caring for her crops. You must initiate with the farmers of your community this work of barn building, granary building and cold storage warehouse building.

Live stock consumes less and keeps in better condition when well housed. Avoid temporary structures, cut your profits if necessary, but build in a way of which you will be proud. Build for the future. You will reap.

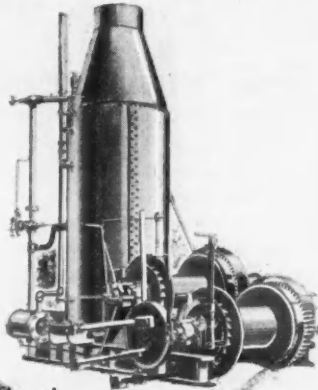
Financing A Job

But the man who is toiling early and late on the farm, and being honest from top to toe, may hesitate, saying: "I can't afford it."

Right here you either show your state of prepared-

(Continued to page 134.)

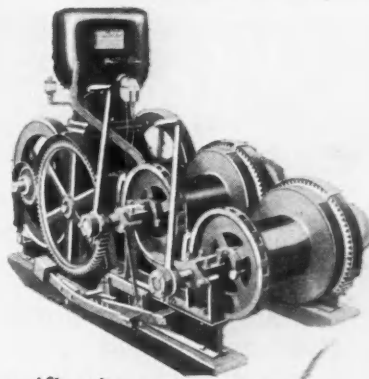
Steam Equipment



Specifications

Weight—Three times that of gasoline outfit.
Production of Power—Great waste of steam in producing a given horsepower.
Delivery of Power—Dependent upon efficiency of operators.
Space Required—Location restricted by height of boiler and area of floor space covered.
Location—Outside the building to conform to city ordinances.
Labor Cost—Skilled operators necessary for each equipment.
Operating Expense—High. Great waste of fuel in intermittent hoisting.
Price—Higher than that of gasoline outfit.

Novo Standardized Power



Specifications

Weight—Light: outfit is easily moved.
Delivery of Power—Smooth, absolutely dependable. Outfit easily started and shut down.
Space Required—Small. Novo outfits take up little space.
Location—Anywhere on the job. No danger from fire.
Labor Cost—One man operates whole battery of Novo outfits.
Operating Expense—Low: no fuel required when engine is idle.
Price—Low.

Have You Adopted Novo Power?

If you have not, won't you admit that it's because you never gave much thought to the advantages of Novo Power over steam and electricity? Use steam through habit, don't you?

You're used to moving heavy steam outfits. You don't notice the coal bills and the payroll of the men that keep the steam outfits going.

You know there are two kinds of electric current and so you buy two motors to be able to run one machine.

Isn't it time to stop such outlays? Isn't it time to **standardize your power**?

Already, over 80% of concrete mixer manufacturers use Novo Engines as standard equipment. Novo outfits include over 75 kinds—Hoists, Pumps, Air Compressors,

Saw Rigs—all of them portable.

These outfits are not subject to city and state restrictions.

Adopt Novo Power, and one man can keep all your outfits running. Novo Power is handy, reliable, economical, portable.

Novo Engines, for power developed, are the lightest on the market. They are vertical and self-contained—gasoline in the base, water in the hopper. Guaranteed proof against freezing damage, furnished to operate on gasoline, kerosene, alcohol or distillate.

NOVO ENGINE CO.

Clarence E. Bement, Sec. & Gen. Mgr.
 703 Willow Street Lansing, Mich.
 Chicago Office: Lytton Building



NO TANK
 NO FAN
 NO FREEZING
 TROUBLE

Let us send you more details. Write on your letterhead for our free book, "Standardized Power."

(Continued from page 132.)

ness or quit the job. Before you begin your campaign with the farmers, consult the banks of your locality.

Patriotism Plus Profit

I have interviewed bankers in farming communities and find that practically all are willing to lend on most liberal terms, at a minimum rate of interest, for any farm improvements. Nor does the security have to be as heavy as on loans for improvements of town property.

The latter represents more comfort and possibly ostentatious show, while the former becomes a productive factor.

Patriotic motives may be at the bottom of this act, but this is one place where virtue has rewards other than itself. Every piece of permanent, well advised improvement reacts to the benefit of the community. No one in the community benefits more promptly than the banker.

Right now is the time for each one to become thoroly posted on silos.

May is none too soon to begin building silos. Remember that stock fed on ensilage keep in better condition than those which are dry fed. Foodstuffs that would be wasted can be utilized thru the use of the silo. Not one spear of grass should be wasted.

For possibly the first time in our history, the chief executive has made a strong appeal for the economy of all.

If you are not "doing your BIT" in the economy of man power, as well as every physical resource, thou art a SLACKER.

THE MAN FROM THE LUMBER YARD.



"Buy a Home" Campaign

(Continued from page 43.)

vacant air, while three of the best speakers in our city helped the real estate men sell houses and lots. Can you see it, Tom?

We've raised a fund of \$2,000, the highest contribution being \$250, the lowest \$100. We haven't found any place to spend the money yet, but it's joyous to know it's there.

The Gas & Electric Company have decided they sell more electricity to homes than they do to apartment houses, so every letter going out has our "Buy-a-Home First" sticker on the back of it. Every bill of the Telephone Company likewise. Every bill of the Water Company the same. And the Street Car Company has agreed to put posters 20 by 30 inches in every car window and replace the discs that tell where the cars run with a "Buy-a-Home First" poster.

Special articles every Sunday by well-known authors such as Herman Whitaker, Rose Wilder Land, Jean Baker, and about a dozen others, are special features of our three months' spring campaign. It began two weeks ago. We were supposed to have one page of the Oakland Tribune turned over to this purpose. We started with one, but ran it up to three with the second issue. We follow with three next Sunday.

The Manufacturers' Association have joined in and appointed a committee, which means that every working man will get the thought from a poster displayed in every factory in Oakland with the boss back of it.

(Continued to page 136.)

HYDRATED LIME PLASTER

Sound Proof and Durable

Hydrated Lime Plaster for scratch and brown coats has met the approval of hundreds of contractors—plasterers—architects. It has many distinct advantages.

Hydrated Lime Plaster deadens sound. Tiny, dead air cells form when the plaster hardens. These cells absorb sound and minimize reflection and transmission—an important consideration when building a residence, school, church, hospital or office building.

Hydrated Lime Plaster sets slowly, giving the plasterer ample time to straighten walls and angles. Lath buckling is rendered impossible because laths are given time to expand fully before the plaster hardens.

The ease with which Hydrated Lime Plaster is applied convinces the contractor of its adaptability to his work. It is the plastic, uniform, smooth, buttery-like plaster.

Hydrated Lime Plaster offers a high resistance to fire. 1650 degrees Fahrenheit are required before it will disintegrate.

Hydrated Lime Plaster represents a decided economy on big jobs because droppings can be retempered and used again. It costs no more than other plasters. Its higher sand-carrying capacity is an important saving to the contractor.

Its use on your next job will convince you of its merits.

YOU WILL BE INTERESTED IN OUR BOOKLET

The subject of hydrated lime plaster is fully discussed in this neat little sixteen-page booklet. It tells you in a convincing manner why Hydrated Lime Plaster is used in the largest buildings—in the finest homes. Sent promptly on request.

HYDRATED LIME BUREAU

of the National Lime Manufacturers Ass'n

1610 ARROTT BLG.

PITTSBURGH, PENN.



Make your work more permanent

OUR LINE of Protective Materials has been developed to meet the increasing demand for permanent construction. There is hardly a building job where one or more of them cannot be used to your advantage. They make your work more satisfactory and add largely to your profits.



A powerful and permanent flame-proofing wood preservative. Penetim repels insects and boring worms and prevents fungus growths. ¶It will greatly prolong the life of any wood construction that is subjected to wet or damp conditions. ¶Penetim is inexpensive and can be freely used wherever flame-proofing or a preservative is desired. ¶One gallon will cover in immersion about 240 square feet, and applied with a brush 360 square feet.



Sta Dri was perfected especially for the purpose of water-proofing stucco, cement or concrete surfaces. ¶It penetrates deeply into the pores of these materials and is absolutely permanent under all weather conditions. ¶Sta Dri is the first preparation on the market that positively will not discolor even the lightest surface. ¶One gallon of Sta Dri applied with a brush or spray will cover 450 square feet of surface and the cost of material does not exceed one-half cent per square foot. ¶Remember Sta Dri on your next stucco job.

We Will Gladly Mail You Literature on Our Full Line of Protective Materials

including "Rusteline," a non-corrosive for steel, iron and all metals, made in four coatings. "Creto-line," a liquid for improving concrete floors and removing efflorescence in brick work, and "Trackoline," an exceptionally effective weed killer.

Write today for pamphlets and prices on these profit-making materials.



PROTECTIVE MATERIALS Co.
51 East 42d St. New York.

DENBY TRUCKS

FOR TRAIL OR PAVEMENT

THE building trade requires great flexibility in a motor-truck. The loads vary greatly, both in bulk and weight. And the roads may be the paved streets of a city or the muddy, rutted thoroughfares of an outlying suburb.

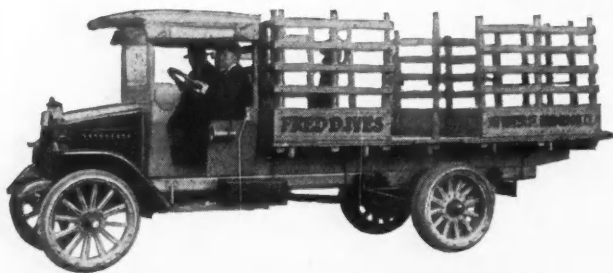
The internal-gear drive in the Denby means strength, economy and efficiency. The load is carried on a dead axle—a solid round bar of selected steel. The live axle, through which the power is delivered, has no other duty to perform. Greater strength, with less weight, is thus possible.

Many trucks can hardly be used with trailers. The pulling power of the Denby is equally effective at the slower speeds, making it ideal for trailer work.

We maintain, too, a special body department equipped to advise regarding special bodies for any type of haulage work—a service of special value to you.

YOU SHOULD HAVE THE DENBY
CATALOG. WRITE FOR IT TODAY.

Denby Motor Truck Company
Dept. S, Detroit, Michigan



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

(Continued from page 134.)

The Contractors' and Builders' Associations have appointed a committee and we're going to have *discounts of from five to fifteen per cent.* during the month of April. We are going to *smash the world's record* in our vicinity for the number of houses built by owners in any one month.

I don't know whether or not you know it, Tom, but Oakland has the *record for America for percentages of homes owned* by occupants—54%—but we're going to beat that to death. The slogan is "Every Oaklander in his own home."

This will give you, Tom, some idea of *what we're after.*

We believe that the "Buy-a-Home First" idea is the *biggest thought that can be spread over America* by the Real Estate Association or any other body of men in existence today. We believe it is a national issue and of just as much importance as the solution of the situation with Germany.

"Buy-a-Home First" before you buy *booze*, before you buy *sealskins* or *diamonds*, before you buy *automobiles*. "Buy-a-Home First" before you ask the girl to marry you. Bring her fruit blossoms from her backyard-to-be and make that offering against the other fellow's record of good intentions in her behalf. Buy it with \$100.00 down if you have to and then take out an insurance policy guaranteeing that she'll have a roof over her head. Get every man in America to own a piece of property and own his own home by the time he's married.

Did you ever know a man who owned his own home who let another fellow kick in the front door, or even let a chunk of mud be thrown at the side of the house? Home-owners, Tom, fight for what they have, and what America needs right now is a *nation of fighters*, not a nation of talkers.

This "Buy-a-Home First" Campaign, Tom, we believe to be the salvation of our nation at a time when *money is being thrown to the birds*. It never was easier to lay aside a competence than at the present time, and there *never was a period in our history when the spendthrift was so hard at work*. Nor will be able to promote the habits of thrift so essential to the welfare of our nation unless we set up something for the fellow to do with his money rather than merely save it. *No man ever gave up a bad habit without substituting something in its stead* that appealed to him all over as better, and isn't this substitute for *booz*? and many other forms of reckless expenditure the big thought of "Buy-a-Home First."

Ninety per cent of our people in America *at the age of sixty are not able to pay their own rent*. Isn't this a startling condition? What are we going to do about it? I believe, Tom, the National Association of Real Estate Boards can do more good for our nation within one year from today by following up this thought hard than almost any other agency in America. Isn't it a *real national idea*, Tom?

Let me tell you how we got our ministers interested. We ask them if they didn't think they *could preach religion to families that owned their homes* with better results than to renters. The result of that simple question was the United Ministerial Association preaching sermons to Oakland on "Buy-a-Home First." And when you tack religion on to an idea based on good, hard, sensible logic, what's the result?

Grab this, Tom, and shoot it for all you're worth. It's just as big as we make it. The good book says: "A little child shall lead them," but it doesn't say that the best way to carry out an idea is not to *get every big force behind it*.

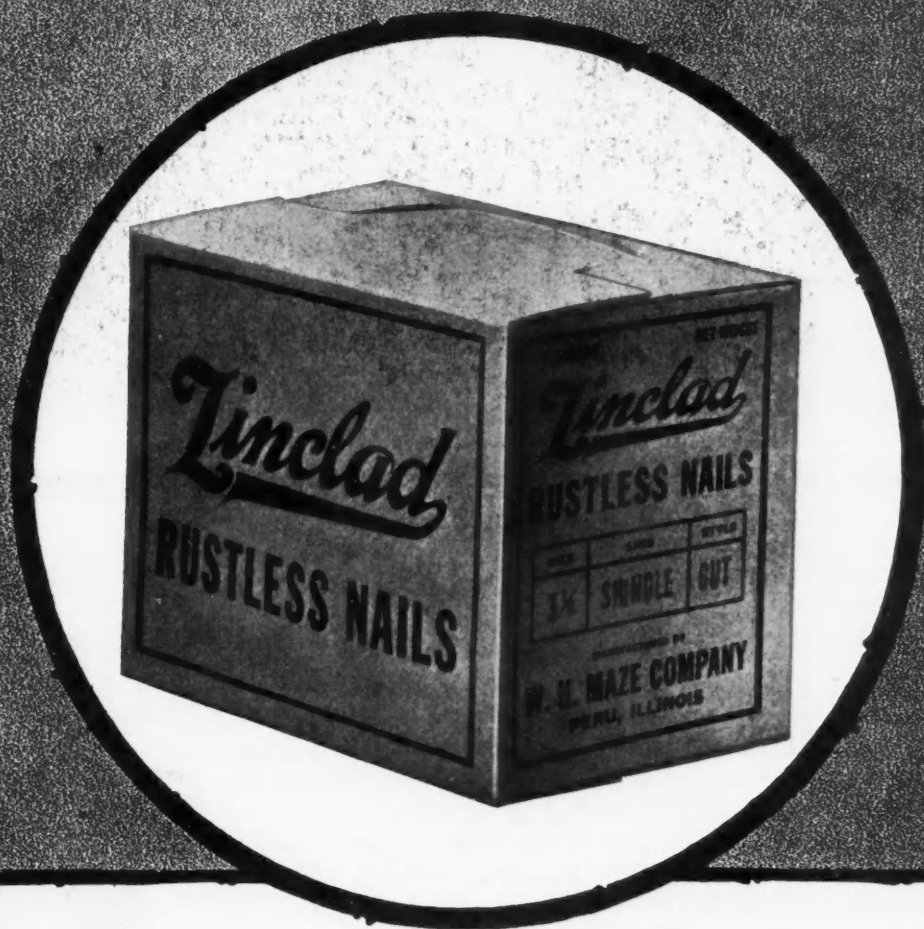
That's why we want you.

Affectionately,
FRED E. REED,

Chairman "Buy-a-Home-First" Campaign Committee.

To MR. TOM INGERSOLL, Executive Secretary,
National Association of Real Estate Boards,
Minneapolis, Minn.

Better Roofs When Laid With



YOU CAN MAKE better roofs by using Zinclad Shingle Nails. They are cheapest in the long run—for you, because of easy driving qualities—for the owner, because they are everlasting. Get these nails from your local lumber dealer with every purchase of shingles.

W. H. Maze Company - Peru, Illinois

Permanent Furniture for the Home

(Continued from page 50.)

Now standard designs in woodwork in standard sizes are made to fill the standard requirements of the average house. They can be secured on short notice, because such designs are already manufactured and sub-

ject to immediate call. If the woodwork is broken in transit, standard designs can be quickly replaced by others held in stock. They are made in quantities, and therefore they cost less. Standard designs cost, on an average, about twenty per cent less than special woodwork. This is a point that should not be overlooked.



A Cheerful Combination Piece of Built-in Furniture for the Living Room.

Buckeye Ventilators and Buckeye Service

offer a remarkable opportunity to contractors and dealers.

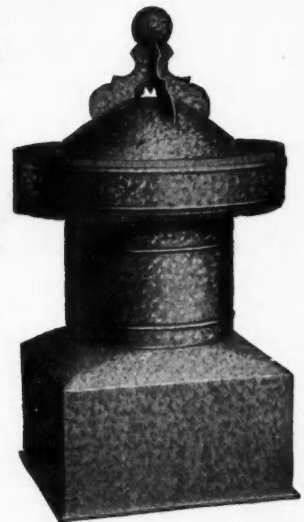
1. The Buckeye Ventilator is the easiest to install. Simply bolt it to the rafters.
2. The Buckeye Ventilator is the most scientific, because it conducts the air in broad curves, with no sharp angles. Storm proof, rain proof, bird proof.
3. Buckeye Service is complete without extra charge. Expert engineering advice, even complete plans, are offered without cost to the contractor.
4. Buckeye Ventilators offer a good profit and exclusive territory—and the first cost is the only one.



Cupola for Barns

Write for our proposition. See how simple and fair it is, how much we will assist the contractor, and you will want to close with us, for our plan protects the contractor and the dealer in every particular.

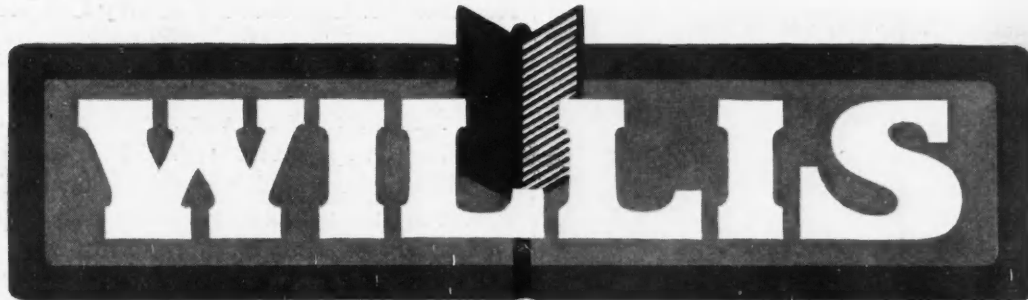
Write us today. Get a copy of our handsome Ventilator Book. It will help you sell ventilators that will please.



Ventilators for Factories, Storehouses, etc.

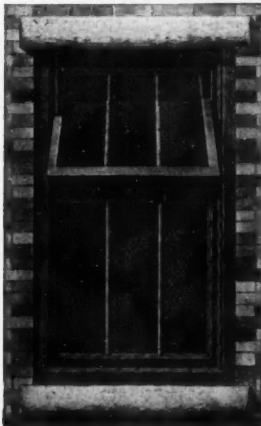
The Thomas & Armstrong Company
126 Union St., London, Ohio

QUALITY



SERVICE

SHEET METAL PRODUCTS



METAL WINDOWS

Tested—inspected—approved by the Underwriter's Laboratories and bear their label. Made in all standard types for every requirement. The simplest, easiest operating, and best constructed Metal Windows on the market.

FIRE DOORS

Standard Tin-clad Fire Doors bearing the Underwriter's label. Furnished with or without hardware or frames. Made to care for every requirement. Willis Doors give permanent satisfaction and service.



SKYLIGHTS

ALL STYLES

ALL SIZES



Willis Skylights are right in design, they give maximum light and are strong and rigid. Any ordinary workman can erect them with a hammer and screw driver. No putty or solder required. The ease of erection and quality of Willis Skylights should warrant your attention.

VENTILATORS



Willis Ventilators are built on scientific principles. Simple construction; nothing to get out of order. Give a constant exhaust of foul air. Bird-proof, storm-proof—no down drafts. Absolutely the best for every ventilating requirement. Made in all sizes and styles.

PROMPT SHIPMENTS

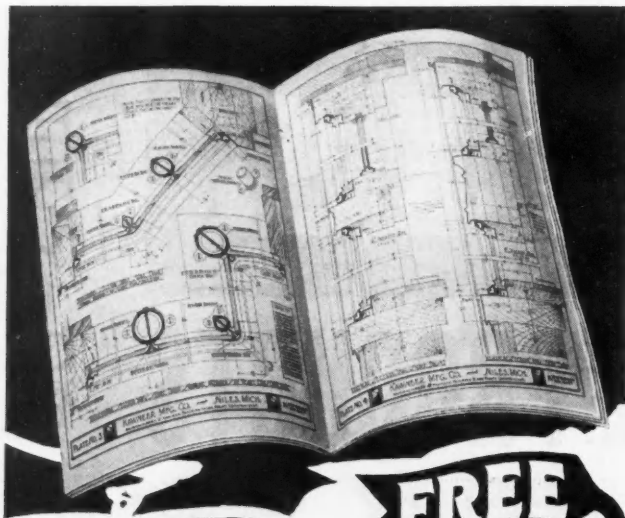
Large stocks of material, expert workmen and modern equipment, enables us to give you immediate shipments. Our immense business enables us to sell at a small margin of profit.



WRITE FOR THIS BOOK

Every page a message of interest and profit. It fully covers every requirement you may have for Sheet Metal Building Materials. You should have a copy in your files.

WILLIS MFG. CO. DEPT. "B" Galesburg, Ill.
SHEET METAL BUILDING MATERIALS



FREE OUR CATALOG H

YOU may know one or two prospects who are thinking of modernizing their store fronts at this time. Very well—why don't you write for our Catalog "H," which contains all necessary sectional details for the proper installation of an up-to-date Kawneer Store Front. This catalog will surely be of great help to you in your store-front work.

Kawneer STORE FRONTS

are found everywhere and everyone is giving maximum service and satisfaction; 56,000 retail merchants, scattered all over the United States, are today conducting profitable business behind a Kawneer Store Front.

An efficient sales organization is maintained by us to assist everyone interested in our products. We will analyze your client's merchandizing problem and will suggest and help you in all matters pertaining to your store-front work.

At our Home Office we are maintaining an efficient Engineering Department, which at all times is at your service.

Let us co-operate.

Kawneer Mfg. Co. - Niles, Mich.

COUPON

Please send me a copy of Catalog "H."

.....

.....

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Reinforced Concrete Factory Construction

(Continued from page 46.)

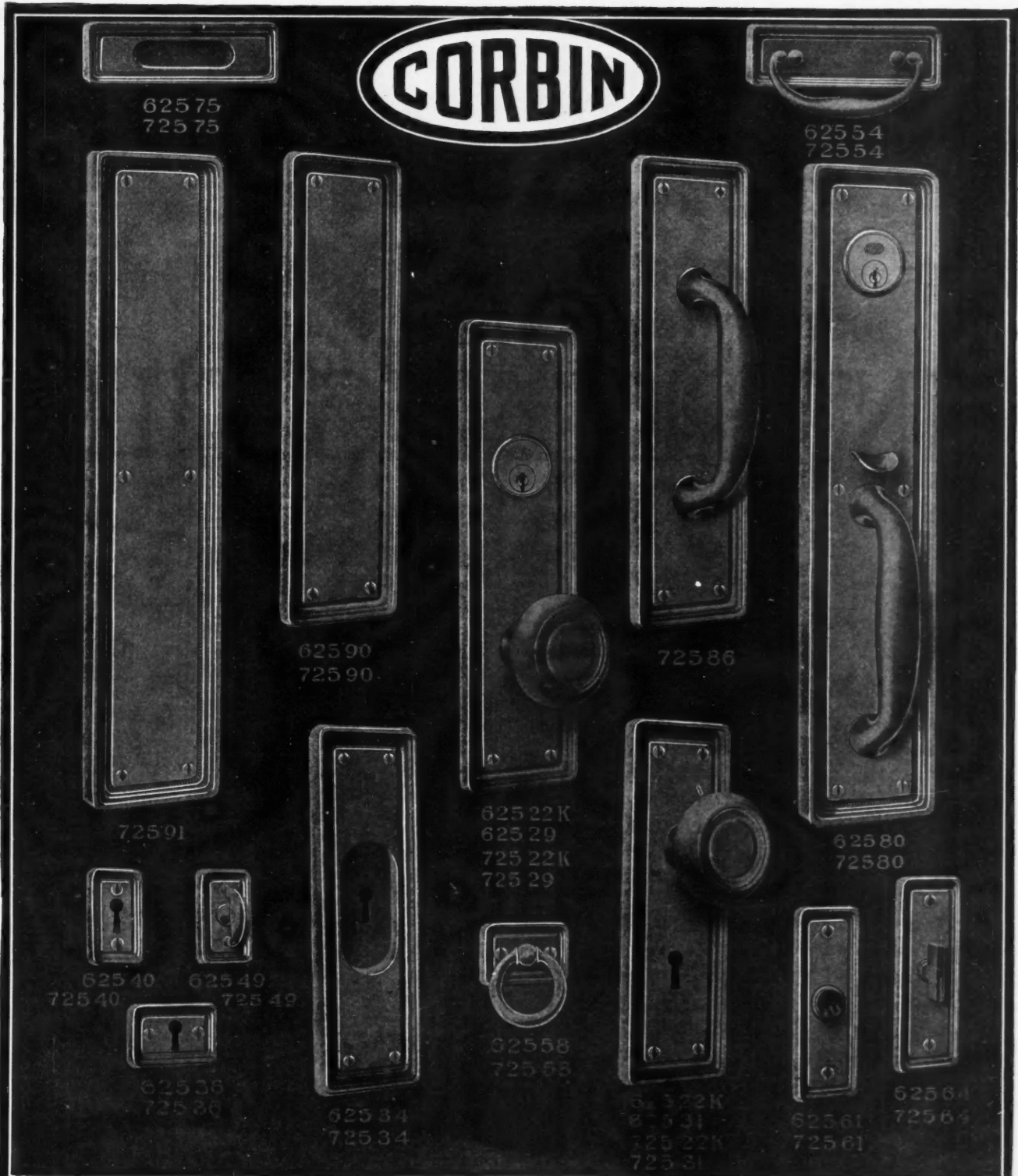
centers with clay tile, metal boxes or tile, or gypsum tile fillers between the joists and a very thin slab over same, the total thickness varying from 6 in. to 14 in., depending on spans and load. These joists are supported by girders framing into the columns. This type of floor has the advantages of a flat ceiling, a considerable saving in dead weight, especially when metal or gypsum tile are used as fillers, over the solid concrete slab and for long spans, oblong panels and relatively light loads it is a very economical type of construction. The appearance of the ceiling is not as good as for solid slab when clay or gypsum tile fillers are used and the ceilings are therefore generally plastered, while where metal tile fillers are used, plastering the ceiling is almost obligatory. The necessity of plastering cuts down the advantage of this type over the flat slab for ordinary spans, but for oblong panels and light loads as for roofs of one-story buildings, it can still be made to show saving over flat slab construction.

Building Cost Data

Much has been written on the subject of cost data, their use and value, and they have also been grossly misused owing to the inexperience of the users or by wilful misrepresentation by those having an "axe to grind." It should be pointed out at the outset that unless all conditions are the same, comparison of costs of concrete and timber buildings or different types of concrete buildings are very misleading. This is confirmed by the results of bids taken on two designs for the same building, one of timber (mill) construction and one of concrete flat slab construction, where the bids received indicated that the total cost of the concrete building would be 24 per cent, more per square foot of floor than the timber building, all due to the fact that the bidders were lead to believe, owing to the prejudices and remarks of the architect that the timber building would be the one selected in any event. On the other hand, bids taken on both timber and concrete flat slab designs made by the Condrion Company for an addition to the Imperial Brass Mfg. Co.'s building in Chicago in September, 1916, indicated a difference of only 14 per cent per square foot in favor of the standard mill design. In this case the majority of the bids were obtained from contractors making a specialty of either timber or concrete construction, and only one or two put in bids on both designs. This should have effectually prevented any padding of prices on one design or the other owing to the personal prejudices of the contractors.

The building is 85 by 125 feet in plan consisting of six stories and basement and containing 74,000 square feet of floor space. The typical bays of the standard mill design are 18 feet by 16 feet 6 inches and 18 feet by 21 feet 6 inches for the reinforced concrete design, while the floor heights were 13 feet in both cases to match those in the old building.

(Continued to page 144.)



THE DOVER

A new design of Corbin wrought bronze and wrought steel hardware, which is dignified, simple and pleasing. The deep modelling and high raised borders give an appearance of strength and weight. The sizes are appropriate for general use. The motives and their treatment are modern.

Any Corbin dealer can give you full particulars—or write to

P. & F. CORBIN

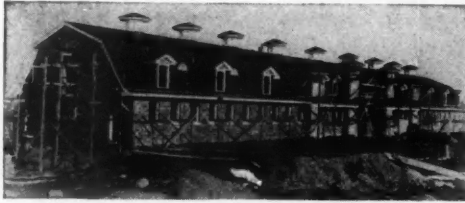
The American Hardware Corporation, Successor

NEW BRITAIN, CONN.

NEW YORK

CHICAGO

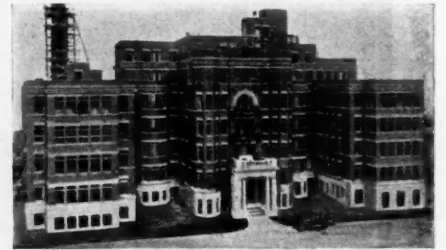
PHILADELPHIA



Exposed Tile
This barn built with Interlocking Tile cost but little more than frame, in Seattle.

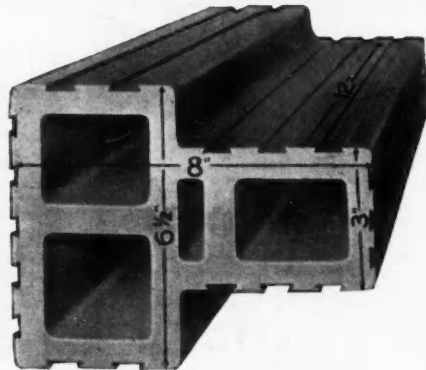


Plastered With Stucco
A five-room Interlocking Tile bungalow built for \$3,400 in Texas.



Faced With Brick
\$6,900 saved by using Interlocking Tile in this Hospital in Buffalo.

DENISON INTERLOCKING TILE



No matter where you are located or what kind of building you are doing—whether it is dairy barns, houses or 10-story hotels—we can help you to build them better and usually at lower cost with Interlocking Tile.

Your building will be fireproof, dampproof, warm in winter and cool in summer. They can be faced with brick, plastered with stucco or just left with the tile exposed. Study the drawing and you will understand these and many additional advantages found in no other wall except Interlocking Tile.

We can show you right in your own neighborhood famous buildings where this tile has been used and many buildings of the exact kind that you are working on.

Partitions always directly over each other—giving greatest possible supporting strength.

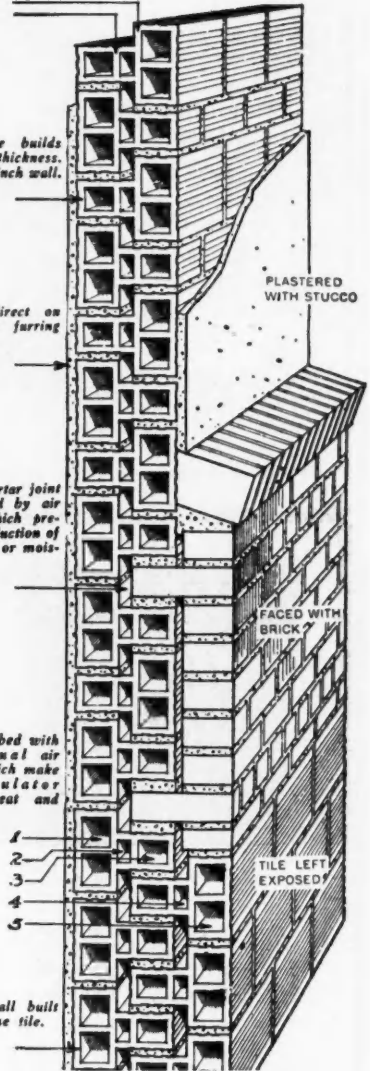
Same tile builds walls any thickness. This is 8-inch wall.

Plaster direct on tile — no furring necessary.

Every mortar joint interrupted by air pocket which prevents conduction of heat, cold or moisture.

Honeycombed with individual air spaces which make best insulator against heat and cold.

12-inch wall built of the same tile.



I am interested in Interlocking Tile for

(Kind of building)
Send me your magazine THE INTERLOCKER and full information.

Name _____
Address _____
Business _____

Tear off the Coupon and send it now for full information

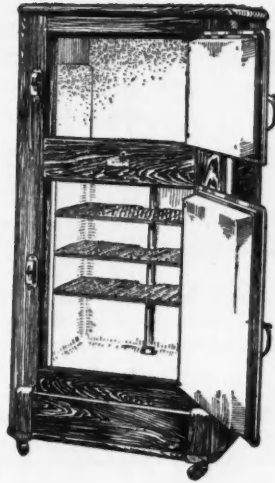
Denison Interlocking Tile Corporation

Thirty-One Factories in United States and Canada

Executive Offices
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Apartment House



Builders, Owners and Architects

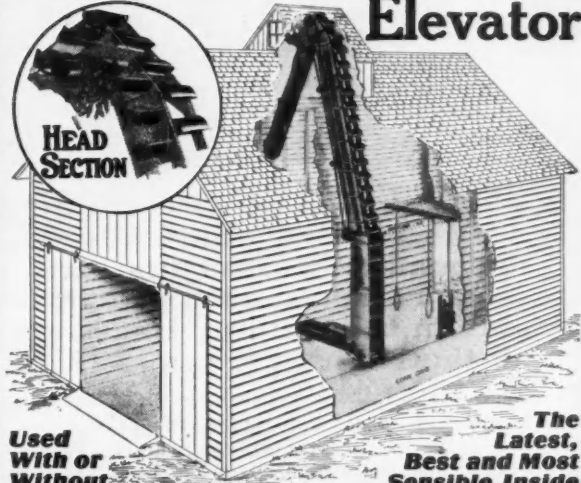
Write today for our "Apartment House Circular."

It tells how you can make your investment in Refrigerators pay from 100 to 1000 per cent and gives you the opportunity to make a larger investment than usual.

A catalog of our famous LEONARD CLEAN-ABLE One Piece Porcelain Lined Refrigerators will come with the circular.

GRAND RAPIDS REFRIGERATOR CO.
7 Clyde Park Avenue Grand Rapids, Mich.

Get FREE Plans of this Modern Crib with the Famous National Giant Inside Elevator



Used With or Without Cupola

The Latest, Best and Most Sensible Inside Machine Ever Invented

Carpenter-Contractors drop us a postal, please, and we'll be glad to tell you how to make big extra profits by recommending and installing our National Giant Bucket Elevators in your crib jobs.

The "National Giant" has more desirable features for you to base your recommendation upon and more sensible features for the FARMER than can be found on any other make of inside grain elevator. Why? Because on cribs 28x38 ft. or less, with half pitch roof, it is not necessary to have a cupola. Saves the farmer money. When cupola is necessary, we can save the farmer from \$15 to \$30 with the National Giant. Ask us why, please. We also save the farmer the cost of digging a pit, and on the length of elevator required. The "National Giant" leaves the corn on the cob, where it belongs; more money in the farmer's pocket.

Get Full Details of Proposition to Carpenter-Contractors

Ours is a good proposition for you and the farmer. It will pay you to look into it. It will bring in more business, greater profits for you. One satisfied customer will bring you many more crib jobs. Write us today—we will give you full details and assist you in any way with plans, specifications, etc. Write now for full details.

Portable Elevator Mfg. Co., 854 East Grove St. BLOOMINGTON, ILL.



We can offer something **SPECIAL** in the way of **PRICE**. Write for catalog and particulars.

"A Bit of Utility"

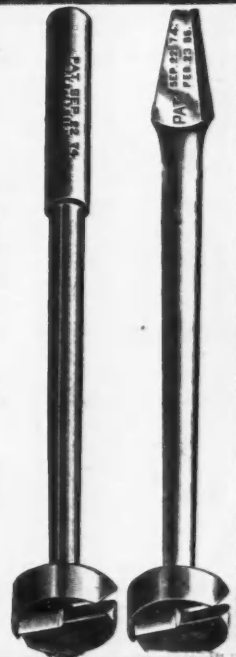
FORSTNER BITS are **DIFFERENT** from all other wood boring tools. Being guided by the outer rim they may be turned in any direction. The work is left smooth and polished.

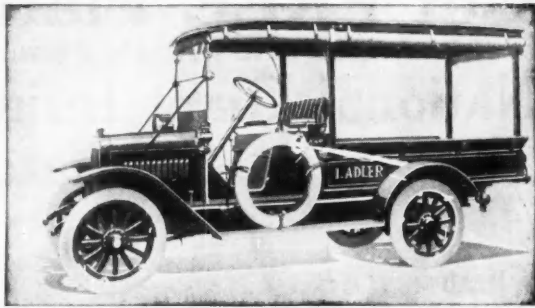
Unequaled for Delicate Work

Practical for use as gouges or chisels, suitable for scalloping, fancy scrolls, twists, columns, newels, ribbon mouldings, mortising, etc.

Cabinet and pattern workers are enthusiastic over them. They do more work and cost no more than other bits.

The Progressive Mfg. Co.
Torrington, Conn.





KISSEL built-in strength—in frame, axles, springs, brakes, motor and other structural parts—insures continuous performance in the building trades at all times.

This kind of truck performance for carpenters, builders and contractors is visible evidence of the Kissel economy and service which KisselKar Trucks will give you.

No matter the amount of work, the length of hauls, the difficulties under which your trucks are loaded or the condition of the roads, the stamina and wear that have always characterized KisselKar Trucks will enable your haulage department to be always on the job.

There is a KisselKar Truck built in the exact size that will fit your requirements. Let us send you information and data on how they are making good with other owners in the carpentering and building trade. Send for specifications and photos.

Kissel Motor Car Company
Hartford, Wis. U. S. A.

The matchless Kissel-built motor, and perfect worm drive rear axle are guaranteed with every KisselKar Truck.

KisselKar Truck branches, display rooms and service stations in all principal cities and towns.

Five sizes—from Light Delivery up. Chassis prices \$1085 to \$3750.



(Continued from page 140.)

The foundations for each design were of the usual spread type except that cantilever footings were required on the side adjacent to the old building. The concrete design had 8-inch flat slab floors supported on round columns with flaring heads, while the timber design is of the standard mill type of construction. It should be pointed out in connection with the costs given below that the comparison was not entirely fair to the concrete design insomuch as the story heights

(Continued to page 146.)

Roofing Slate

J. Bray Slate Co., East Bangor, Pa.
Manufacturers and dealers in **Genuine Bangor Roofing Structural Slate**, Vaults, Blackboards, Sinks, Slaters' Tools, etc. Write for our New "Slate" Folder Price-List.

SLATE WE HAVE WHAT YOU WANT

In Roofing Slate, Slate Blackboards Structural and Plumbers' Slate

SATISFACTION GUARANTEED in QUALITY and PRICE
Ask for Delivered Prices

J. K. HOWER Station C Danielsville, Pa.
R. J. KICHLINE, Sales Agent

Best Roof Under the Sun

Montross Metal Shingles for House or Barn or buildings that require durable, economical roofs. Easily applied. Fire, lightning and storm proof. Nine different designs. Write for illustrated catalog and testimonials from satisfied customers who have used Montross Roofing for a "Quarter Century." Liberal commission to good, live agents.

MONTROSS METAL SHINGLES
Montross Metal Roofing Co., 110 Erie St., Camden, N. J.

ROOFING SLATE SINCE 1869

Miners, Makers and Shippers of all Styles and Colors of Roofing Slate. Write for Prices.

RISING & NELSON SLATE CO.
Main Office: West Pawlet, Vt.
Branch Offices:
1058 Marbridge Bldg., New York City. 4 Post Office Sq., Boston, Mass.
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ROOF SLATE

Of every kind. Black—also the varying delicate shadings and rich tones of Red, Green and Purple—clear and in mottled effects.

Structural Slate — Slate Blackboards

E. J. JOHNSON, Inc.
Quarriers of Slate
19 West 44th Street, NEW YORK

**UNFADING
ROOFING SLATE**
and Slate Blackboards
*Best to be had and made in
Slatington — Buy from us*
Slatington-Bangor Slate Syndicate, Inc.
Slatington, Penna.



ROOFING SLATE

—“they were represented to be as good as G F T slate but after we used them we know POSITIVELY that they were NOT AS REPRESENTED. Hereafter we will use G F T slate. We are done with ‘Just as Good’ brands.” This is the experience of all who buy UNKNOWN brands of roofing. Insist on G F T slate. They are the best and cheapest in the end. Price List and Catalogue on request.

Sole Manufacturers
Slatington Slate Co.
Slatington, Pa.



The Roof of Eternal Youth
CHELDON'S
RED, GREEN, PURPLE, BLACK
SLATE

Custom made to “fit” your Roof. A wide choice of distinctive Color Combinations. Quality, Price and Service unequalled.

F. C. Sheldon Slate Co., Granville, New York

S Roofing
L Structural
A Blackboards
T
E

Get Our Prices

BANGOR SLATE CO., Inc.
Bangor, Pennsylvania

GENUINE BANGOR ROOFING SLATE
Use Genuine Bangor Roofing Slate for your own work.
Recommend it to your customers:

- (a) **For durability**—
Slate roofs 50 years old are common.
- (b) **For safety**—
Slate is a perfect fire protection.
- (c) **For economy**—
Slate cost is not high; yearly cost is the lowest of all roofings.
- (d) **For appearance**—
Always dignified and attractive.

We Also Manufacture
Structural Slate for Stairways, Toilet Rooms, Etc. Blackboards for School and College Class Rooms. Small Units for Flat Slate Roofs.

NORTH BANGOR SLATE COMPANY, Bangor, Pa.

You Can't Go Wrong If You Use Good Old



FOR ANY KIND OF BUILDING

- Hudson Asphalt Shingles**
Mineral surfaced Red, Green Mottled furnished in Individual Shingles 8"x12 1/4" and in strips 10"x40" with 5 shingles to a strip. Hudson Strip Shingles can be very quickly laid.
- Protection Brand Roofing**
Mineral Surfaced; has 6" lap Pat. Nov. 18, 1902. Laid with all nails covered.
- Hudson Brand Asphalt Felts**
For built-up roofs. For sheathing buildings and reinforcing slate and tile roofs. You will like Hudson Felt. It is pliable; will not dry up or crack, as it does not stick at the butts. You can use every inch of it.

ASPHALT READY ROOFING CO., Dept. 53, 9 Church St., New York

Cut out this advertisement and put an X in the along side of the material you are interested in. Mail it to us and we will gladly send samples.

Name.....
Address.....

What Solves the Roof Problem
Best for Cost, Utility, Beauty—



Asphalt Shingles
Red and Green

STOWELL MFG. CO., Asphalt Prepared Roofings
42 Culver Ave., Jersey City, N. J.

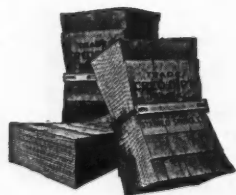


OWNER AND BUILDER, ALBERT BERTALOTT, JR., SQUIRREL HILL, PITTSBURG, PA. "CREO-DIPT" 24' SHINGLES ON SECOND STORY.

Increase the selling value of the houses you build, especially if you are *building just to sell.*

There is no material for **side walls** as well as **roofs** that expresses individuality and a charming contrast with neighboring houses like

"CREO-DIPT" STAINED SHINGLES



17 Grades — 30 Colors.
16, 18, 24 Inch.

You cannot buy such shingles in the open market.

You cannot afford to stain on the job even if you try to get results with "cheapened" stains.

Our volume of business is such that we command the best shingles to be obtained.

Our own process and our long experience with earth pigments ground twice in pure linseed oil and refined creosote insure even stain and lasting colors.

Write for Book of Homes and Sample Colors on Wood

CREO-DIPT CO., Inc.
Standard Stained Shingle Co.

1028 Oliver Street, No. Tonawanda, N. Y.
Factory in Chicago for West

(Continued from page 144.)

had to be such as would match with the old building, thus giving a much higher effective story height for the concrete design than for the timber design, this is indicated by the fact that based on cubical contents the concrete design would have cost only 12½ per cent more than the timber. It is safe to say that comparative designs made so as to give the same effective story heights for each type will still further reduce the percentage of extra cost of concrete over mill construction. (See Table 1.)

Table I

TABLE SHOWING COMPARATIVE COSTS OF MILL AND REINFORCED CONCRETE CONSTRUCTION FOR IMPERIAL BRASS MFG.

CO. BUILDING. FLOOR AREA 74,000 SQ. FT.

	Mill Design	Concrete Design
Masonry (brick, stone and concrete)...	\$31,097	\$80,000
Ornamental and Miscel. Iron, etc.....	13,250	Incl. in above
Carpentry	23,500	
Steel Sash, Glazing, Roofing, Sheet Metal	6,069	6,883
Plumbing (drainage)	1,536	1,669
Wiring (estimate)	1,830	2,060
Total	\$77,282	\$90,479
Per Sq. Ft. of Floor Areas.....	\$1.04	\$1.22
Relative Cost per Sq. Ft.....	100%	117%
Adding 28c per sq. ft. to cover cost of sprinkler system, elevators, heating and plumbing fixtures, cost per sq. ft. becomes	\$1.32	\$1.50
Total Relative Cost per Sq. Ft.....	100%	114%
Total Cost per Cu. Ft.....	10c	11½c
Total Relative Cost per Cu. Ft.....	100%	112½%

Even with the present high cost of building materials and labor, flat slab building, two or more stories high, with brick spandrel walls, steel sash and cement finished floors, should not cost over \$1.30 to \$1.40 per square foot of floor without plumbing, heating, sprinkler or elevator equipment. These later, will in general amount to from 25 to 35 cents per square foot of floor, depending on the layouts. The use of finished floors of maple sleepers bedded in cinder fill on the concrete slabs will increase the cost about 15 cents per square foot.

The cost of flat slab floors in buildings of several stories is in general less than that of beam and girder type floors owing to the more economical use of steel and concrete and the simpler formwork required for the former. The expensive formwork necessary in beam and girder type buildings greatly increases their cost while adding nothing to the value of the finished structure. For the roofs of one-story buildings the concrete joist and filler block type of construction will prove cheaper than the flat slab, owing to the greater proportion of dead load to be carried in the latter type; however, in multiple story buildings with floors having different live loads the flat slab proves very economical since the forms can be reused in all stories, while with beam and girder construction the different sizes of members required, make this impossible.

(Continued to page 148.)



Gedney Farm Hotel, White Plains, N. Y.
Kenneth M. Murchison, Architect

Examine The Roofs Of Handsome Buildings

You will find that the contractors have used
BAYONNE Roof and Deck Cloth

Investigation has convinced them that BAYONNE is the best and most economical roofing material on the market. The large summer hotels and dwellings are weather-proofed on roofs, sleeping porches, conservatories, etc., with this handsome, durable fabric.

BAYONNE Roof and Deck Cloth is easiest to lay because it fits perfectly into the corners. It cannot buckle, as metal roofing does, and it wears better because there is not the danger of rusting. It cannot crack or peel like ordinary canvas roofing because a special process makes it resist wear and weather.

BAYONNE Roof and Deck Cloth is laid on dry boards and painted afterwards. This insures a neat, smooth appearance, as well as easy-to-lay qualities. It can be kept perfectly clean, for it can be sluiced with water like cement. And for wearing qualities it is unexcelled.

Examine BAYONNE Samples in our FREE Sample Book "N"

JOHN BOYLE & CO., Inc.
112-114 Duane St., 70-72 Reade St., New York City
Branch House: 202-204 Market St., St. Louis, Mo.



CANVAS ROOFING
CDN-SER-TEX

When properly laid, Con-ser-tex affords a neat, smooth, hard service which will remain so under the most severe wear.

INDESTRUCTIBLE
Con-ser-tex is a specially treated cotton fabric which is not subject to the deteriorating effects of oil in Paint—Dry rot nor mildew. It is not affected by rain, snow, sun, wind, heat nor cold. It is ideal as a roof or floor covering.

NOISELESS and SATISFACTORY
It is sound-proof—deadening the noise of wind and rain and is a non-conductor of heat and cold. It reduces the heating bill in Winter and helps to keep the house cool in Summer.
Con-ser-tex Floor and Roof covering is praised by thousands of users. It is the best material to use wherever wear and tear is the hardest. Sun Parlors, Porches, Halls, Bathrooms, Kitchens, Roofs, etc.
Easy to lay—saves labor costs and eliminates the necessity of the expensive roof and floor lumber. Make lower bids by using Con-ser-tex for roofs and floors. Send for New Booklet "Roofing Facts and Figures"

William L. Barrell Company, 8 Thomas Street, New York City
CHICAGO DISTRIBUTOR—Geo. B. Carpenter Co., 430-48 Wells St.
CALIFORNIA DISTRIBUTORS—Waterhouse & Price Co., Los Angeles.
The Pacific Building Material Co., San Francisco.

Badger Equipped Hog Houses Insure Healthy Hogs

Direct Sunlight and Ventilation is now demanded by all up-to-date Hog Raisers. The best way to supply this demand is by furnishing the Badger Quality Line. Badger Hog House Skylights, Cupolas, etc., are scientifically constructed of guaranteed rust-proof material. First cost is the only cost, as they last a lifetime.

Write at once for full particulars and special price proposition

Badger Steel Roofing & Corrugating Co.
La Crosse, Wis.

Send for this
Air and Sunshine for Hogs
Badger Steel Roofing & Corrugating Co.



Fiberlic
Wall
Board

Fiberlic
Wood Grain
Panels

The material from which it is made, the fact that the pulp is chemically cleansed and that the *fibre lengths* give the finished product that *natural reinforcement* that is lacking in ground wood boards, is in itself a guarantee of the superiority of Fiberlic from strong, permanent, economical and sanitary construction.

MacAndrews & Forbes Company
200 Fifth Avenue, New York City
Factory: Camden, N. J.

**Make Money During
Dull Seasons With**



THERE are many repair and alteration jobs that you can do more satisfactorily with Compo-Board than with any other material. Besides, it is not affected by cold, dampness or other weather conditions. It is the easiest to work with—does not shrink, bulge, warp or buckle.

Compo-Board, remember, is the only wood core wall board—one-quarter inch thick, straight, stiff, strong and durable. Saws smooth and clean. Light in weight.

Other wall boards are often wrongly called Compo-Board—and sold as such. Be sure you buy and use **real** Compo-Board—our trademark, as shown above, is on every piece. It's sold almost everywhere. Write for free sample and interesting booklet.

The Compo-Board Co.,
5777 Lyndale Ave. N.,
Minneapolis - Minnesota

(Continued from page 146.)

Notes on Design

In laying out flat slab buildings much can be saved on the cost of arranging the columns and spans so that all exterior spans (perpendicular to walls) are less than the interior ones by at least 18 inches or 2 feet. This will more nearly equalize the bending moments and not make the thickness of slab dependent upon the exterior spans, as in the case when the exterior spans are longer than the interior. In which case the slab would be too thick to be economical on the interior spans if made the same thickness throughout, which is best for appearance and economy of form construction.

Spans of from 18 to 20 feet usually are the most economical for flat slab construction, as are the square or nearly square panels. The floor slabs should, if possible, project a distance beyond the center line between exterior columns to give sufficient resisting moment to carry the spandrel load in addition to the tributary floor load without using beams dropped below ceiling or raised above floor, since these unduly raise the cost. (See Fig. 5.)

Finished cement floors are considerably cheaper than covering the slab with a wood floor and where buildings are heated there is little ground for the "time worn" argument that cement floors are unhealthy and cold to the feet of workmen. The fact that practically all of the concrete buildings built by the great automobile industry of the United States have cement finished floors should be convincing proof that they are entirely satisfactory.

By exposing the floor slabs at walls they serve the double purpose of window lintels and a part of the architectural treatment very satisfactorily. (Fig. 5.)

Just what size of building will prove the most economical or most satisfactory for the particular business in question depends upon several factors. First of all, if land is comparatively cheap, it will in general be found more economical to spread the building over more ground and decrease the number of stories than to build a four or five-story structure. This accounts for the great number of one and two-story factories in small manufacturing towns, and the five and six-story factories in the larger cities.

In a building of more than one story the cost of foundations and roof, which are necessary but unproductive adjuncts, is spread out over two or more floors and hence the cost per square foot of floor for these parts is decreased. As in general rule a two-story building will be found more economical than a single story structure and for the same length of building and the same amount of floor space under one roof the former will be a better lighted and ventilated structure. For ordinary manufacturing buildings, a width of from 60 to 80 feet, divided into three or four bays, will insure excellent light at all points, but if a one-

(Continued to page 150.)

**WATERPROOF
PLASTERGON
WALL-BOARD**

(See how this 10-foot panel stands straight without bending. Send for actual photo.)



Improves Property

Many an unused room and discarded attic have been brought back into use by WATERPROOF Plastergon Wall-Board on the walls and ceilings. You can build a new room inside of an old one at minimum expense, and make a 1917 house out of an 1889'r.

Avail yourself of every inch of room you can claim and make it modern, economical, permanent and artistic with WATERPROOF Plastergon Board. Be safe. Use WATERPROOF Plastergon Wall Board. Our users say it has no equal at any price.

Your Safeguard in Buying (No. 11)

"I made 5 rooms and a bath in my attic with Plastergon Wall Board and I'm delighted with the work. I expect to build another house in the Spring and will finish it thru-out with Plastergon Wall Board."

H. R. KUMLER, Grass Creek, Ind."

Samples and our "Contractors' Practical Working Guide" sent free. Send the name of your Lumber or Builders' Supply Dealer. Write today.

Plastergon Wall Board Co.
1 Philadelphia Ave., Buffalo, N. Y.



This Test

proves that
Moisture
cannot
injure-

CAREY

Ceil-Board
SUPERSEDES PLASTER FOR
WALLS
AND CEILINGS

A New Haven Builder says:

"The writer has made comparative tests of various ceil and wall boards to determine which would absorb the least moisture, with the result that your Ceil Board 'won out.'"

Al Frothingham



This test shows that a good sized drop of ink remained on the broken edge of a piece of Ceil Board for 1 hour and 35 minutes.

Write for samples of fine finishes, booklet and "Special Service" proposition for builders.

THE PHILIP CAREY COMPANY
1021 Wayne Ave., Lockland Cincinnati, Ohio

You can't expect Beaver Board results unless this trade-mark is on the back of the board you buy.



Be a Beaver Board Man

Increase your profits or earnings.

In every town there is a wonderful opportunity to get good Beaver Board business. It's pleasant, interesting and profitable *inside work*. Rainy days won't stop Beaver Board profits. Every good Beaver Board job brings other profitable jobs and the Beaver Board result means permanently satisfied users.

Write us and we will gladly tell you how to become the Beaver Board man in your town. Our free design and decoration service will work with you in laying out plans for your customers. Don't wait, write us now.

THE BEAVER BOARD COMPANIES
135 Beaver Road Buffalo, N. Y.

Branches in Boston, New York, Baltimore, Cleveland, Detroit, Chicago, Minneapolis, Kansas City, San Francisco.

Manufacturers also of Beaver Greenboard and Beaver Blackboard

BEAVER BOARD
FOR BETTER WALLS & CEILINGS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

(Continued from page 148.)

story building is used such widths might require a building too long for the purpose intended and the area desired, and wider building with saw-tooth skylights over the middle bays will be found the proper solution insofar as light is concerned, tho more expensive to build.



Dealer-Contractor Home Planning Service

(Continued from page 48.)

all classes, from the modest three-room bungalow to pretentious mansions."

"We had rather planned on a bungalow," spoke Mrs. Jones. "I think they're so cosy and homelike."

"They're certainly very popular," replied Mr. Smith. "These two books are devoted exclusively to bungalows.

"These first few designs, you will note, are strictly Californian. But Illinois climate is not California climate, and the original homes were not made to withstand the cold weather we have here in winter. But that doesn't prevent our embodying their pleasing lines. Our architect has revised the specifications, with different windows and thicker walls, etc., so that they're 'coldproof.'"

"That's a pretty one," said Mrs. Jones, pointing to

a Swiss Chalet typed bungalow. "Those shingles make such an attractive siding."

"Eight of the last ten bungalows I've built," returned Mr. Brown, "have been sided with shingles. When properly stained they are attractive for years without further attention."

"Now I tell you what you do, Mrs. Jones, take these two books on bungalows home with you, and you and Mr. Jones look them over, and then you can talk it over and decide much better there just what you want than we can here."

"Oh, fine," said Mrs. Jones, "that will be so much fun!"

"But before you go," spoke Mr. Smith, "I want to tell you something about the woods from which you can choose to build your home. For the framing, where strength and durability are essential, I'd advise either Douglas fir or Southern longleaf yellow pine. Here are samples of each of them, and there's little to choose between them. The Douglas fir is cut from strictly old growth, close grained logs. The longleaf pine is from a certain southern district famous for its wonderful timber. Both of these companies brand every stick they sell. I've visited each mill, and know that they won't brand any lumber that isn't all right.

(Continued to page 152.)



Faster Shingling—More Money
Carpenters and Builders! That's what it means when you use a

Sayre Shingling Hatchet
with Positive Gauge—Get One Today!
Gauge is positive—cannot slip. Clamps on with screw—is readily changed. Unequaled for fast shingling. Ask for No. 144 made (with oval head, 169 points) price, prepaid, \$2.00. Also with flat head, No. 44, 81 points, milled. Price, \$2.00, prepaid.

J. E. Coates, Prairie Du Chien, Wis., writes: "Never had a tool that I got so much good out of and wouldn't be without one for \$10.00."

We also make a complete line of lathing hatchets. Sayre Shingling or Lathing hatchets are the best your money can buy.

See That Gauge

L. A. SAYRE CO. 8 OLIVER STREET NEWARK, N. J.




There is profit in laying sidewalks and floors. Don't let the other fellow get it—make it yourself by using

Arrowsmith Long Handled Finishing Tools

No expert needed to use our tools. 10-day trial on all tools
Write for catalogue and free trial offer

Arrowsmith Concrete Tool Co. South Water St. ARROWSMITH, ILL.



In constant use since 1909 in the Grant Theater Building, Kewanee, Ill.

Permanence, Durability and Satisfaction

That's what it means when you install a Kewanee all-steel non-breakable coal chute.

Your reputation as a progressive and up-to-date builder is at stake. Will you leave the coal room window unprotected or will you protect it with a Steel Coal Chute?

Why not take advantage of the Coal Chute Business?

On every building job you have an opportunity to make a nice profit by selling and installing the Kewanee.

Write Us Today for Our Special Dealers Prices and Get in the Game!

KEWANEE MFG. COMPANY, Kewanee, Ill.

FOR EMERGENCY SERVICE

You may be called upon tomorrow to help the United States by reorganizing some shop, or increasing some factory capacity. In such an emergency, Fenestra Preferred Stock may be one of your best Allies. Supplied in 45 types and 90 sizes. Shipped in ten days from receipt of order in Detroit. Saves time—saves money.

Easy to erect. Permanent and fireproof when installed. Equipped with external adjustable butt, automatic cam latch, and other exclusive features. Varied combinations made possible by the use of standard Tee Bar Mullion. Ask for list of stock sash ready to be shipped within 10 days after order is received in Detroit.

DETROIT STEEL PRODUCTS COMPANY
2516 East Grand Boulevard - DETROIT, MICHIGAN

Fenestra
SOLID STEEL WINDOWS

USE

Cornell Wood-Board

for Walls, Ceilings, Partitions

This superior wallboard is the ideal material for walls and ceilings of HOMES, STORES, OFFICES, SCHOOLS, CHURCHES, THEATRES, GARAGES, FARM BUILDINGS, REPAIRS AND ALTERATIONS and for a HUNDRED DIFFERENT EMERGENCY USES. Write for a large sample and complete information.

CORNELL WOOD PRODUCTS CO.
C. O. FRISBIE, Pres.
Dept. T-3, 173-175 W. Jackson Blvd, Chicago

BOGALUSA BOGALUSA

"BOGALUSA" is the name *BY WHICH TO BUY* the BEST LONG-LEAF PINE THAT GROWS. (There's a difference.)

BOGALUSA is the name of the city where the best long-leaf pine that grows is cut into every size from great bridge timbers to little laths.

BOGALUSA, in lumber, is more than a name—it is a symbol of superiority and responsibility.

FOR ALL STRUCTURAL USES SPECIFY "BOGALUSA"—that is your guaranty. And if you don't find "BOGALUSA" stamped on EVERY PIECE or bundle you'll refuse it as "not per order."

WRITE US. (Cutting 1,000,000 feet a day still leaves us time to take an interest in YOU.)

There's a value for you in the *Bogalusa Book*. (Free.) It's full of valuable pine statistics.

GREAT SOUTHERN Lumber Co., Dept. A, Bogalusa, La.
MEMBER SOUTHERN PINE ASSOCIATION

BOGALUSA BOGALUSA

Every Contractor Welcomes this Release

Guarantee

Every Morgan Door produced must come up to the "Morgan" Standard. To this end we guarantee it to be perfect in material and workmanship. This guarantee releases you as a builder or contractor from all future responsibility.

MORGAN DOORS

with their White Pine Cores are Enduring Monuments to Your Wisdom and Integrity

Morgan Doors don't stick today and rattle tomorrow. Once properly hung they give perfect service. Your customer is completely satisfied.

Install Morgan Doors on all your jobs—large and small—and your reputation is safe.

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It's free for the asking and is full of helpful information.

Your dealer can always supply you promptly with Morgan products because of our unmatched service.

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Morgan Co., Oshkosh, Wisconsin
Morgan Millwork Co., Baltimore



The All-White-Pine Core is an Exclusive Morgan Feature



Our Guarantee to Builders

goes with every product that we manufacture. It is the permanent trade-mark in the enamel of each KOHLER bath tub, lavatory and sink. You get rid of all risks by selecting

KOHLER WARE

*"It's in
the
Kohler
Enamel"*

Always of one quality—the highest

One-piece construction and modern, hygienic patterns are important features of KOHLER products.

KOHLER WARE is notable for the beauty of the enamel.

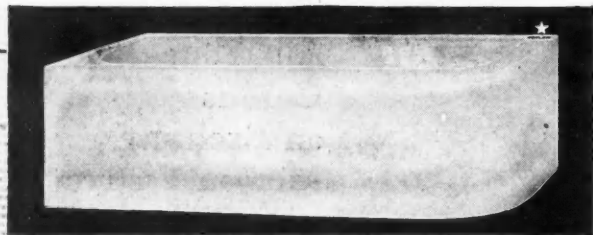
Our products are designed to simplify installation.

Have you seen our famous one-piece built-in bath, the "Viceroy"? Manufacturing economies enable us to make it available for houses and apartments of all classes.

KOHLER CO. Founded 1873 Kohler, Wis.

Boston	New York	Philadelphia	Pittsburgh	Atlanta
Detroit	Indianapolis	Chicago	St. Paul	St. Louis
Houston	San Francisco	Los Angeles	Seattle	London

*The star indicates the location of the KOHLER permanent trade-mark in faint blue.



The "Viceroy," Plate V-1. (Patent applied for and name registered.)

(Continued from page 150.)

"Now for your interior finish, its almost exclusively a matter of individual taste. We've made up panels of the various 'finish' woods and you'll notice these all around the room. The first is the birch, 'Beautiful Birch,' that you see advertised quite frequently; it's very light and cheery. The second one is Arkansas 'Satin Like' trim. Notice its velvety appearance. The third is southern cypress, 'The Wood Eternal.' We buy only such cypress lumber as has been inspected by the Cypress Association. They stamp each piece with an arrow, containing the number of the mill manufacturing it, so if it isn't right we know just who to call on to make it right. This Su-gi cypress finish is quite odd and pleasing. The next one is the famous California redwood, made from the largest trees in the world. It's quite dark and rich. This panel is an especially pleasing panel, made up from rotary cut Douglas fir veneer. The dark irregular lines are the dense summer rings of growth. It is made by rotating mammoth fir logs against a sharp knife, the wood coming off in a large thin sheet. After drying it is then made up into the veneer you see here. So it's solely a matter of choice. Any and all are quite attractive and serviceable."

"They are all handsome," said Mrs. Jones.

"Now the only shingles we handle are western red cedar, 'Rite-Grade' inspected, the kind you see advertised so much. The shinglemen's association won't let this inspection mark go on any shingles that are not well manufactured, full thickness and properly dried. It's a great protection these advertised forest products give to a builder now-a-days. You used to take a chance. Now you know what you're getting."

"Mr. Smith," said Mr. Jones, his face beaming like one who has just discovered something, "I had no idea selecting a home was so simple. I thought it would take us a month to select one. It's not going to be the bugbear we had thought at all. Why it's a downright pleasure."

"Our neighbor recently built a new home," continued Jones, "and bought his material from a mail-order house, and found he had a lot of extras to buy. You're sure everything is included?"

"I'm right here all the time, within reach of the telephone, to make good if it isn't."

"I'll not worry about that."

Mr. Smith, a week later, called to his stenographer: "Get Mr. Brown on the line."

"Hello, Brown, this is Smith. Jones signed the contract for his house today. Wants you to call him up about when you can start work."

"Did he? That's fine," said Brown.

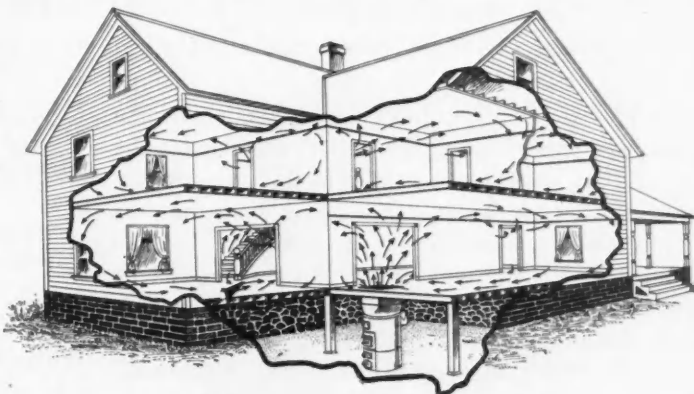
"That's not all, Brown, he got to telling some of the other fellows over at the A B C Company about all this, and two of them have called me up and made appointments to show our plans, etc., to them and their wives."

MUELLER Pipeless Furnace Will Make Big Money for You

The big demand for the **Mueller Pipeless Furnace** has opened a new field of profits for contractors, builders and furnace men. Thousands of dwellers in stove heated homes are having it installed. It is also a practical, efficient and decidedly economical method of heating new and modern homes of medium size.

You can make good money for yourself and insure complete satisfaction to your customers by installing the **Mueller Pipeless** in new and old houses.

The **Mueller Pipeless** is a **real** furnace—of exactly the same construction as the old reliable **Mueller** line, but without pipes or flues. It heats the whole house comfortably, cleanly, economically and dependably from one register. Burns hard or soft coal, coke or wood. Saves 35% in fuel. It is dominating



the "single register" heating field because it possesses the unequalled heating efficiency and fuel economy of the nationally known **Mueller Warm Air, Hot Water, Steam and Vapor Systems**, and has behind it the 60 years' reputation of the **L. J. Mueller Furnace Company**.

Extensive advertising has made the **Mueller Pipeless** well known. Contractors, builders and furnace men everywhere are profiting by the big demand. Get in on this now and get your share. Write at once for our proposition.

L. J. Mueller Furnace Co.
218 Reed St., Milwaukee, Wis.

Makers of Heating Systems of All Kinds Since 1857
Consult, free, our expert service bureau on all your heating requirements—Get our estimate on all your heating installations.

MUELLER PIPELESS FURNACE

THE FORBES WAY

NOTICE THE MANIFOLD

At the back of the Forbes is our coal saving manifold which extracts and retains the heat which usually goes up the chimney. This manifold also provides an immense radiating surface. Forbes Furnaces are particularly economical of space, our highest furnace being only 4 feet 3 inches high, giving splendid elevation for hot air pipes and making the Forbes especially adapted to low cellars. We would like to send you further information on the Forbes along with free estimates on your heating system costs.



Write today for our catalog

TUBULAR HEATING and VENTILATING CO.
232 Quarry Street PHILADELPHIA, PA.

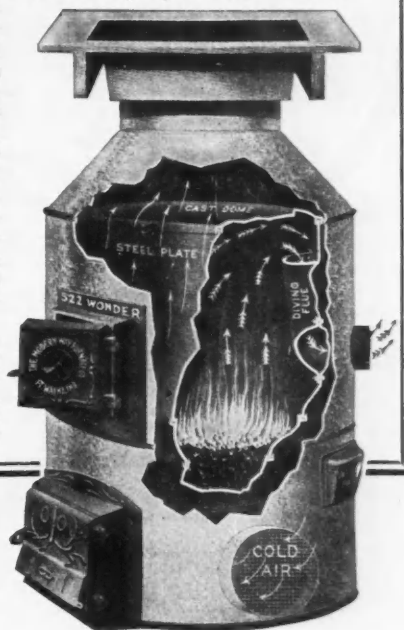
OUR NEW MODEL

OWING to the great demand for a moderate priced furnace we have brought out the "Wonder Line," a combination furnace that can be used either as a Pipe or Pipeless.

This new furnace is especially designed to meet the needs of the Industrial or Real Estate Builder and meets the requirements of any style or size of house.

Mr. Contractor, Architect or Builder: It will save you dollars to investigate this new line before you buy. Write for our special dealers' proposition, and from our experience let us help you to select the furnaces that your houses require.

Remember, Modern way Pipeless Furnaces are no experiment! Over 4,000 have been sold and are in use in twenty-seven states.



Modern Way Furnace Co.
7th Floor Shoaff Bldg. Ft. Wayne, Ind.

Private Water Systems

(Continued from page 59.)

course, are connected to the various building fixtures and faucets.

Now that we have outlined the installation of the system in a general way, we will next take up the principle of the plant, its capability and its advantages. Instead of pumping water, air is pumped into the air reservoir by means of the air compressor. On the air line, between the tank and pump in the well or spring, is placed a pressure reducing valve, which reduces the air pressure from that in the tank to the pressure necessary to operate the pump in the well. This pressure depends, of course, on the lift, which invariably is different under different conditions. The pump in the well or cistern is operated by the air in the tank and pumps the water direct from the well to the different faucets so that there is always a steady stream of pure, fresh water to be had at any point desired. The pump operates only when a faucet is opened, so that there is no air being used when no water is being drawn.

An extra pump or several extra pumps may be operated from the same power plant. It is simply necessary to branch a one-half-inch air line from the air tank to the extra well or cistern and install the pump. As a rule, a pump is installed in the soft water cistern and the water pipe from this pump is connected to the

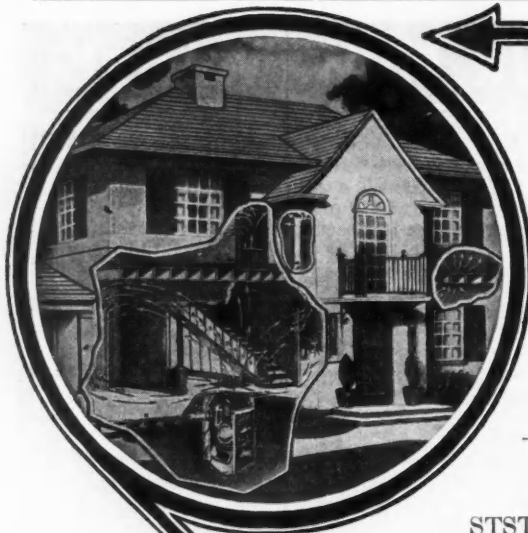
range boiler, so that hot and cold soft water can be had in the house for laundry, bath and various other purposes. The well water is used for cattle and other purposes around the farm and also for drinking and cooking in the house.

If electric current be secured, a motor can be used to operate the air compressor and the plant can be made entirely automatic, so that it requires only an occasional oiling to keep the plant in first-class shape.

From the foregoing it can readily be seen what such a water system means to a farm or rural home. It saves time and time saved is money saved. It takes the drudgery out of hauling water and makes the farmer feel master of his work instead of work being his master, as formerly used to be the case.

It is a protection against fire and few farms are provided with any fire-fighting equipment. Insurance does not prevent fire, it only covers the loss and not all of it at that. Fires usually start very small, and it surely would be a relief to the farmer to know he had a water system that his wife could handle to advantage in case of a fire. By means of the pressure reducer, the pressure on the pump can be instantly increased to fire-fighting pressure.

Progressive farmers the country over are commencing to realize that fresh water is absolutely necessary for the health of their stock and for all other purposes, and it is only a question of time till every farm will be equipped with a fresh water system.



CLEAN-AIR ONE REGISTER SYSTEM

A Pipeless One Register Furnace that heats and ventilates with the greatest economy and efficiency.

Saves one-half of fuel used in other heating systems. Quickly distributes an even, balmly heat in all parts of the house without waste.

No heat in the basement, but all heat in the living rooms—just where you want it.

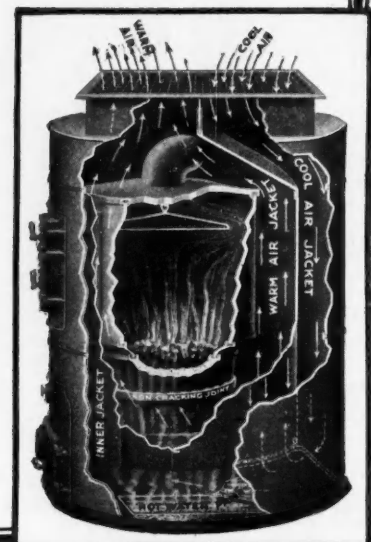
One man can install in one day.

WHY NOT INSTALL THIS SYSTEM?

We furnish you with free building sketch blank, specifications and advice on heating.

LET US SHOW YOU HOW TO BUY HEATING AT MANUFACTURERS' PRICES.

**Standard School Heater Co.
CHICAGO**



AB-417

**STANDARD
SCHOOL
HEATER CO.,
Chicago, Ill.**

Coupon—Send me free Building Sketch Blanks and heating advice on a Money s^{er}ver.

Name.....

City.....

State.....

MAIL THIS COUPON TODAY



CANTON CHUTES LOOK WELL

THEY are practically and sensibly built and present a neat appearance on any building. They are easy to install and are equipped with an automatic locking device, also an independent outside lock.

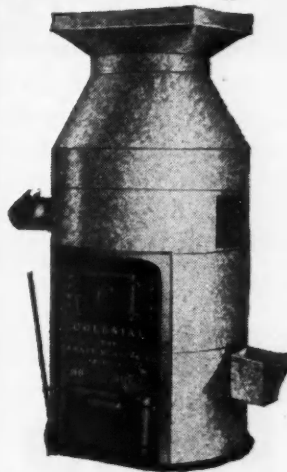
Every Canton Chute you install is an advertisement—that will bring you many more sales.

Coal Chutes have become a necessity in modern homes and can be made the source of considerable profit to the builder.

Send for our prices and Catalog B-4 today

Canton Foundry & Machine Co.
CANTON, OHIO

Jahant Pipeless Furnace



COMBINED with the best heating principle known is the pipeless feature. The Jahant Down Draft Furnace uses all the heat units in the coal and saves its original cost in a few months.

Save \$20 to \$50 on
Coal Bill

A Jahant will save $\frac{1}{3}$ to $\frac{1}{2}$ on coal bills according to size of house. Remember the Jahant burns air and saves the coal. We have been selling Jahants for 35 years and have never had one returned.

Get Our Engineers' Help
FREE

Our Engineers will figure out your heating problems, will make drawings and plans for every Jahant Job and give advice as to whether the pipe or pipeless Jahant is best—this service is absolutely FREE.

Contractors' and Builders' Proposition

Jahants are sold on easy payments—we pay the freight. They are easily and quickly installed—each Jahant is cut to fit—blue prints with each job. 360 Day Legal Guarantee Bond. Get our Contractors' and Builders' Special Proposition. It's a money maker—it adds profit to every house built. Write now for Catalog—literature and proposition all FREE.

JAHANT HEATING CO.

105 Jahant Bldg.

Akron, Ohio



HOLLAND FURNACES

Make Warm Friends
Ask Any Owner

Ask any owner of a Holland Furnace.

Hear what he has to say about how warm it keeps his whole house—how warm it keeps the floors—what perfect ventilation it provides—how much fuel it saves. Investigate the merits of the Holland Furnace and you will understand why more than thirty thousand owners declare it to be the best and most economical heating plant that can be installed in a home—why it makes friends everywhere.

Be a Holland "Booster"

You can conscientiously recommend the Holland Warm Air Furnace. You know, because you have given the subject of heating plants close study, that warm, moist air, such as is supplied by a Holland Furnace, is the most healthful heat that can be had. You know that it costs less to install a warm air furnace than any other kind of a heating plant, and is most economical to operate. Our Holland Service Home Comfort Insurance-Bond is the strongest guarantee ever given with any heating plant.

Your recommendation of Holland Furnaces will make friends for you. Not only does a Holland Furnace insure an abundant supply of heat in the coldest weather at the smallest possible cost, but it invariably enhances the value of the house in which it is installed.

Special Proposition To Contractors and Builders

Free heating plans. Send your floor plans. Holland Furnaces are not installed by dealers. We have our own special representatives who have made a study of the Holland Furnace, and who make a regular business of installing

it. We have a very special proposition which we would like to submit to you. Let us submit this proposition in detail. Mail the coupon for full particulars. This places you under no obligation whatsoever. Just sign and mail the coupon today.

HOLLAND FURNACE COMPANY

World's Largest Installers
of Furnaces

Dept. 16 HOLLAND, MICH.

Two Factories
128 Branches

HOLLAND FURNACE CO.,
Dept. 16 Holland, Mich.

Gentlemen:
I am interested in your Special Proposition to Contractors and Builders. Without obligation to me please send me full particulars.

Name.....
Address.....
City..... State.....

You Can Take Hills On High Without A Knock

IF you will keep your motor free from carbon. That knocking in your engine—the difficulty you have climbing hills—poor pick-up—lack of power—noisy motor—pre-ignition—in fact 80% of engine trouble is caused by carbon. Clean it out

with

JOHNSON'S CARBON REMOVER

and your engine will run like it did the first 500 miles, quietly and full of "pep". And your gasoline consumption will drop from 12% to 20%.

You Can Do It Yourself

For 25c—five minutes' time—and with no labor you, yourself, can remove all carbon deposits. Simply pour an ounce of Johnson's Carbon Remover into each cylinder—allow it to remain from two to twelve hours and then drive your car 10 or 15 miles. You will be surprised at the wonderful improvement.

How It Works

Johnson's Carbon Remover does not eat the carbon, but releases it from the metal and softens it into a jelly-like, inflammable mass. Then, as the engine is operated, the mass burns, pulverizes and is blown out with the exhaust in powder form.

Use It Every 1,000 Miles

If you will use Johnson's Carbon Remover at regular intervals, giving carbon no chance to accumulate, you will automatically eliminate most valve trouble and your engine will always be at its highest efficiency.

If your dealer cannot supply you with Johnson's Carbon Remover use attached coupon.



S. C. JOHNSON & SON, Dept. A # 5 Racine, Wis.
I enclose \$1.00 for which please send me by prepaid express enough Johnson's Guaranteed Carbon Remover to thoroughly clean an ordinary four-cylinder motor 4 times.

NAME _____
ADDRESS _____
CITY & STATE _____
MY DEALER IS _____

Made and Guaranteed by
S. C. JOHNSON & SON
Racine, Wisconsin, U.S.A.

Good Wall Board is Permanent and Durable

(Continued from page 68.)

wall board in their open-air studios not only for scenery, but in building all kinds of property.

One wall board maker says that even tho he has aimed to manufacture his board scientifically so as to make it exceptionally hard and woodlike and more durable on the walls, he, himself, has been surprised at some of the tests his board has stood. Surely, with the tangible evidence of its permanence and durability no builder will question the possibilities of dependable wall board for his building or repair work in homes, stores, factories, warehouses, garages—and in every kind of building.

Even the special uses to which wall board is being put every day are suggestive of profits to the builder who is looking for all year around work—work that he can do in his shop during the winter months. Lockers, department workrooms and supply cupboards are suggestive of the shirt waist boxes, handy little cabinets, cupboards and the dozens of articles of household use which the ingenious builder can easily make with hard, wood-like wall board.

Prominent builders and architects have recognized the possibilities of superior wall board. For instance, one of the best known architects in New York City specified wall board for the Gedney Farms Hotel at White Plains, N. Y. And an equally well known builder applied the board in this hotel which might be called the summer playhouse of wealthy New Yorkers.

The walls of some of the exhibition rooms of the Metropolitan Museum of Art in New York are also lined with wall board. And the Pittsburgh Field Club which is the playground for the oil and steel kings of Pittsburgh, is lined thruout with wall board. "Not an ounce of plaster is used," one of the members writes. Such installations are conclusive evidence of the desirability of wall board for permanence, durability and beauty combined are requisites of installations like these.

Every type of home, as the accompanying pictures prove, can be permanently beautified with walls and ceilings of dependable wall board.

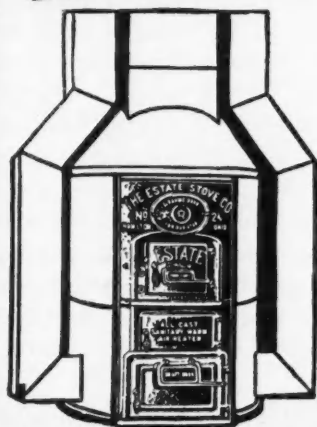
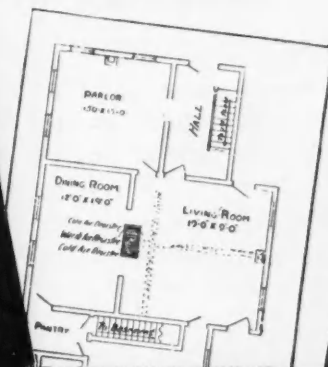
The permanence of good wall board is probably the feature that appears first to the home owner, whether his home is simple or elaborate, for it saves him the expense and annoyance of constant repapering and replastering—it reduces his upkeep cost to a minimum.

The cleanliness of wall board walls and the non-conductive qualities which promote home comfort the year around, are also desirable.

And then the wide range of sizes in which wall board is made combined with the variety of artistic painting effects obtainable, make possible decorative effects ap-

(Continued to page 158.)

Get the Estate Heating Plans and Estimate



Be Sure of Profits and Satisfied Customers

Let us plan the heating systems of the homes you build. Take advantage of our engineering service. Write us—learn how you can save time and money—make bigger profits and more friends by selling and recommending

Estate Warm Air Heaters
—IN PIPE OR PIPELESS SYSTEMS

We design the system—you do the installing. You will be glad to recommend Estate Warm Air Heaters. They are built with many big exclusive features and are backed by a strong guarantee. White enameled water pan on front door; ball bearing grate; Five-year guarantee on the fire pot. **Write us.**

THE ESTATE STOVE CO.

892 South Ave., Hamilton, O.

House Founded 1845

Boston Block, Minneapolis, Minn.

In every summer cottage you build



—you can install, at a profit, a **Ro-San Indoor Closet**

Every building—home, cottage, store or office—that has no sewer connection needs this modern sanitary indoor closet. Absolutely odorless. Act as our agent—this fixture sells easily to your customers—good Profit. Hundreds of carpenters represent us. We also distribute through builders the

Ro-San Washstand

Provides Running Water, Hot or Cold, Without Plumbing. Every housewife wants one. Convenient, sanitary. Sells readily with little effort. Carry this work along with your regular business. Ask for terms to agents.

Absolutely Odorless

Rowe Sanitary Mfg. Co., 501 Sixth St., Detroit, Mich.



WRITE FOR FOLDER

Let us send you complete information on this attractive all metal coal chute. Their convenience and neat appearance are sure to please your customers. Rain proof, flush, and automatically locking. With either wire glass or solid cast iron door. Locks both open and shut. Prices moderate. Write today.

STERLING FOUNDRY CO., 8 Ave. A, Sterling, Ill.

1/3 SAVED

BUY DIRECT

GET FREE BOOK

INSTALL YOUR OWN PLUMBING AT LOW COST

Get our Handy Man Book. Every builder and contractor needs it. Shows new home improvements and everything in guaranteed plumbing and heating supplies exclusively at wholesale prices. Any handy man can install with our free, easy installing plans and instructions with the help of our Service.

CUT TO FIT HEATING PLANTS

Our 40 years' experience enables us to furnish heating plants, CUT TO FIT, bathroom outfits, etc., with new, original, easy installing features, combining quality, economy, simplicity and ease of installation.

Our \$500,000.00 plants behind our guarantee. **WRITE TODAY.**

THE HARDIN-LAVIN CO. 40 years at 4532-42 Cottage Grove Ave. Chicago



PARK STEP FORMS

—make step building easy!

Cuts your cost of production in half. Easily adjustable to any dimension, shape or pitch of flight.

Once assembled, the Park Form needs only adjustment.

The Park Edger is made of the best bronze and is especially fitted for this work.

Write today for our Catalog. **H. L. PARK CO. Reading, Mass.**



(Continued from page 156.)

propriate for every type of home. With the new "flat" paints which give a soft, velvety finish—effects as beautiful as the most expensive fabrics are within the reach of everyone.

A good many contractors and builders are convinced of the dependability and utility of good wall board. Some of them are cashing in on the business and profit possibilities it holds out for them.



Noon Hour Talks by the Boss Carpenter

Overhanging Beams

(Continued from page 65.)

a beam of rectangular section, and is always given as a distance in inches.

"The value of M depends upon the length of the beam between the end supports, and the kind, amount and location of the load carried. The general rule for finding the greatest M for a given beam is as follows: First, find the amount of the load carried by each end support. Then find the distance in from either end where the sum of all the loads acting downward is either equal to or greater than the amount of the supporting force at that end. This is the place where the greatest bending effect occurs and the location of the greatest value for M , the bending moment. Next, multiply each of the loads on the right hand side of this

point by its distance from the point in feet. Add the results and subtract the number obtained by multiplying the right hand supporting force by its distance from this same point. If any of the loads are equally distributed over any part of this length of the beam, the amount of the load on the right of the point should be multiplied by the distance in feet from the point to the center of the length of that part of the load.

"The answer thus obtained should be multiplied by 12 in order to get it into the same units as the other quantities in the formula.

"To find the amount of the supporting forces, choose either one as a reference point or pivot and consider that the whole beam can swing about that support as a center. Multiply each load by its distance from the reference point and add the answers for all loads that tend to turn the beam in the same direction. Subtract any answers that tend to turn it in the opposite direction. Divide the final sum by the distance between the supports and the result is the supporting force at the end of the beam opposite the reference point. Subtract the value of the supporting force thus obtained from the sum of all the loads, and the answer will be the supporting force at the end where the reference point was taken. These methods will be shown in the problem which is to follow.

"Common cases of loading have standard values for M . A beam supported freely at the ends with a uni-

(Continued to page 160.)

make the next one a HERO

Don't Experiment Further with Your Heating and Ventilating Problems.

Hero Pipeless Furnaces are easily and quickly installed and our agency Proposition gives the Builder a good commission on each sale.

The **Hero Furnace** employs the simplest and most direct method known for the heating and ventilating of homes, stores, halls, etc. There are no pipes to waste heat and room in the basement and a constant flow of warm, fresh air is maintained throughout the house.

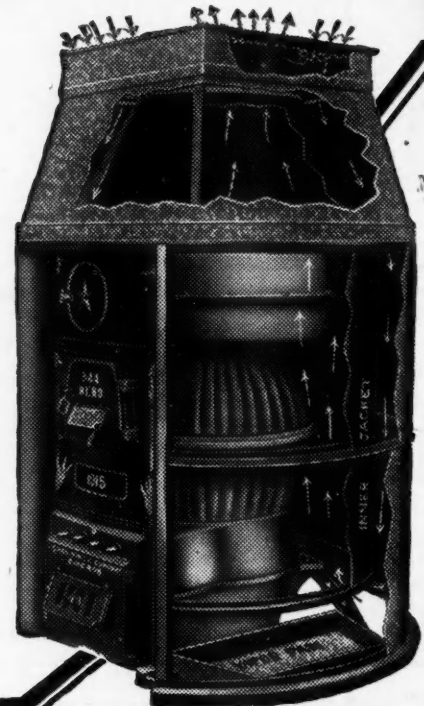
Hero Furnaces are Economical, both as to the original price and the cost of installation, and are giving the best of satisfaction to their many users.

Write us today for details of our agency Proposition and Dealers Prices

CHAS. SMITH COMPANY

180 No. Dearborn St. - Chicago

Northwestern Distributors
CENTRAL SUPPLY CO. Minneapolis, Minn.



SECURE dependable, ever-ready fire-protection; insure a steady high pressure water supply in any part of buildings or grounds conveniently and surely.

DEMING Water-Supply

systems are complete. They are built to last—to perform their daily duties without expert supervision or mechanical attention. Their installation marks the owner's pride in a perfect home. Information gladly furnished. Simply write for attractively illustrated, easy-to-read booklet of installation suggestions.

Capacities 180 gallons to 60,000 gallons per hour

The Deming Co.
99 Depot St. Salem, Ohio

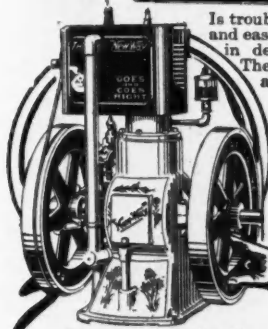
The Complete Systems



THIS is a small sample of the type of advertising in national magazines that helps you in making sales of DEMING Hydro-pneumatic Water-Supply Systems. Don't overlook the opportunity for profit that this gives you.

Catalog Free
The Deming Co.
99 Depot St. Salem, Ohio

THE "New-Way" ENGINE



Is trouble proof. Simplicity of construction and ease of operation have been the main ideas in designing the "NEW-WAY" Engine. These, coupled with economy of gasoline and oil makes the "New-Way" a consistent performer and a perfect power plant for mixers, hoists, pumps, saws or other machines where steady running is necessary. The "New-Way" stops losses due to shut downs—increases the profits.

GUARANTEED For LIFE

The troubles incidental to freezing and overheating have been entirely eliminated by our perfect direct cooling system, made possible by the peculiar construction of the "New-Way" cylinder. This is only one of the many features that make "New-Way" Engines superior for your requirements.

Look this engine over first. It is built with the same care to details employed in the making of the finest automobile engine and is a wizard to work.

Send for catalogue 35.

Made in sizes 1 to 12 H. P., both vertical and horizontal.

Buy a "NEW-WAY" equipped outfit.

THE "New-Way" MOTOR COMPANY
LANSING, MICHIGAN, U.S.A.
18 CHASE STREET



"Don't tell me you never had a chance!"

"Four years ago you and I worked at the same bench. I realized that to get ahead I needed special training, and decided to let the International Correspondence Schools help me. I wanted you to do the same but you said, 'Aw, forget it!' You had the same chance I had, but you turned it down. No, Jim, you can't expect more money until you've trained yourself to handle bigger work."

There are lots of "Jims" in the world—in stores, factories, offices, everywhere. Are you one of them? Wake up! Every time you see an I. C. S. coupon your chance is staring you in the face. Don't turn it down.

Right now over one hundred thousand men are preparing themselves for bigger jobs and better pay through I. C. S. courses.

You can join them and get in line for promotion. Mark and mail this coupon, and find out how.

I. C. S., Box 8142, Scranton, Pa.

INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 8142 SCRANTON, PA.

Explain, without obligating me, how I can qualify for the position, or in the subject, before which I mark X.

- | | |
|---|---|
| <input type="checkbox"/> ARCHITECT | <input type="checkbox"/> Law for Contractors |
| <input type="checkbox"/> Architectural Draftsman | <input type="checkbox"/> BUSINESS (Complete) |
| <input type="checkbox"/> Contractor and Builder | <input type="checkbox"/> BOOKKEEPER |
| <input type="checkbox"/> Building Foreman | <input type="checkbox"/> Stenographer and Typist |
| <input type="checkbox"/> Concrete Builder | <input type="checkbox"/> Higher Accounting |
| <input type="checkbox"/> Plumber and Steam Fitter | <input type="checkbox"/> GOOD ENGLISH |
| <input type="checkbox"/> Heating and Ventilation | <input type="checkbox"/> Common School Subjects |
| <input type="checkbox"/> Plumbing Inspector | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Foreman Plumber | <input type="checkbox"/> SALESMANSHIP |
| <input type="checkbox"/> CIVIL ENGINEER | <input type="checkbox"/> ADVERTISING MAN |
| <input type="checkbox"/> Surveying and Mapping | <input type="checkbox"/> Window Trimmer |
| <input type="checkbox"/> Structural Engineer | <input type="checkbox"/> Show Card Writer |
| <input type="checkbox"/> Structural Draftsman | <input type="checkbox"/> CIVIL SERVICE |
| <input type="checkbox"/> ELECTRICAL ENGINEER | <input type="checkbox"/> Railway Mail Clerk |
| <input type="checkbox"/> Electric Lighting | <input type="checkbox"/> AGRICULTURE |
| <input type="checkbox"/> Electric Wiring | <input type="checkbox"/> Poultry Raising |
| <input type="checkbox"/> Electric Car Running | <input type="checkbox"/> MINE FOREMAN OR ENGINEER |
| <input type="checkbox"/> MECHANICAL ENGINEER | <input type="checkbox"/> Metallurgist or Prospector |
| <input type="checkbox"/> Mechanical Draftsman | <input type="checkbox"/> Chemical Engineer <input type="checkbox"/> Spanish |
| <input type="checkbox"/> Shop Practice | <input type="checkbox"/> Gas Engineer <input type="checkbox"/> German |
| <input type="checkbox"/> Sheet Metal Worker | <input type="checkbox"/> AUTOMOBILES <input type="checkbox"/> French |
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Street and No. _____
City _____ State _____



Unusual Stresses Will Not Crack It

THE first all important question about any stucco material which vitally affects your reputation, is **always** this—will it or will it not crack, break and fall off even under unusually severe building strains and stresses? There is only one stucco that can answer this question flat footedly and satisfactorily, and that is

KELLASTONE IMPERISHABLE STUCCO

It is its chemical nature that makes Kellastone the strongest stucco material ever produced. It contains no Portland cement, limestone, or gypsum. Kellastone approaches the hardness of granite—yet it is flexible, it gives under wall settling, stresses and wind-strain, without cracking or breaking. Because it is not subject to expansion or contraction and bonds perfectly to wood, stone, metal, etc., no rain or frost can reach and destroy the backing. Therefore Kellastone stucco adheres permanently.

This is why a Kellastone job **remains** a satisfactory job, year in and year out—you know the result in advance. Kellastone is water and fireproof—a non-conductor of heat and cold.

Let us tell you more about this stucco in our illustrated book, "The Story of Kellastone," you will see why it is being used so extensively in modest as well as the finest homes, factories, shops, railroad stations, hospitals, and U. S. Government Buildings. We will tell you also about Kellastone Composition Flooring which will solve your flooring problem.

THE NATIONAL KELLASTONE CO.
504 Association Building, - CHICAGO, ILL.

(Continued from page 158.)

formly distributed load has $M = \frac{1}{8} W l$, where W is

the total load on the beam in pounds and l is the length of the beam in inches. A beam with a single central

load has $M = \frac{1}{4} W l$. A cantilever with a uniformly

distributed load has $M = \frac{1}{2} W l$. If a cantilever has a single load at the end, $M = W l$.

"We will apply the formula $\frac{p I}{e} = M$ to the timber

beam shown in Fig. 15A, and design the beam for the loading shown. It will be necessary to find the amount of each of the supporting forces and the location and value of the greatest M to be used in the formula.

"To find the supporting forces, we will consider that the left hand support is used as a pivot and proceed as described above.

$$\frac{(1,600 \times 4) + (1,200 \times 12) - (1,400 \times 2)}{8} = 2,250 \text{ pounds}$$

as the value of the right hand support. Then $(1,400 + 1,600 + 1,200) - 2,250 = 1,950$ pounds as the amount of the left hand support.

"Applying the rule for finding the greatest value of M , we see that it will either be over one of the supports, or at the middle of the beam. The way to find out which one of these places has the greatest M is by trial. The value of M at the left hand support is $1,400 \times 2 \times 12 = 33,600$ inch pounds; that at the middle is $(1,400 \times 6 \times 12) - (1,950 \times 4 \times 12) = 7,200$ inch pounds, and that over the right hand support is $1,200 \times 4 \times 12 = 57,600$ inch pounds. Thus we see that the greatest M is over the right hand support and is equal to 57,600 inch pounds.

"If the beam under consideration is of 'sound' yellow pine and of rectangular cross-section, the value of p will be 1,300 pounds per square inch (see table), the

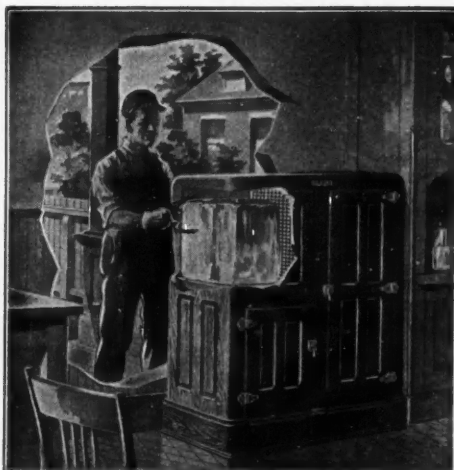
value of I will be $\frac{1}{12} b h^3$, and the value of e will be $\frac{h}{2}$.

If we assume that the beam will be 4 inches thick, then b will be 4 inches.

"Filling in the formula $\frac{p I}{e} = M$, we have

$$\frac{1,300 \times \frac{1}{12} \times 4 \times h^3}{\frac{h}{2}} = 57,600$$

(Continued to page 162.)



Install the Herrick refrigerator

The old type refrigerator means muddy tracks across the kitchen floor, scrubbing and leaving the home open when away.

Herrick Outside Icing Refrigerators are built for the greatest economy and convenience in the home. It keeps the ice man out of the house, yet your refrigerator is iced at any time. In cool weather refrigerator is run without ice.

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You will find a big field for **Herrick** refrigerators — install them in your new constructions — sell them to your friends who are tired of the drippy, old, inside refrigerators. Drop us a line now while you think of it. Write to

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WATERLOO, IOWA



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Vanadium is a purifier of steel. The best vanadium obtainable is used in making the **Vaughan Hammer**. Each hammer is tested and tempered individually. The handle is carefully shaped for the hand and has a wax hole in the end for waxing nails to be driven in hardwood. The claw of this hammer grips—it never slips.

If your dealer does not carry the **Vaughan Vanadium Hammer** we will send it to you prepaid. Let us have the dealer's name, too.



The Toughest, Strongest Hammer Made

\$1.50
EACH

WAX HOLE

No. 41 1/2 16 oz. Full Polished No. 42 13 oz. Full polished

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Makers of Fine Tools



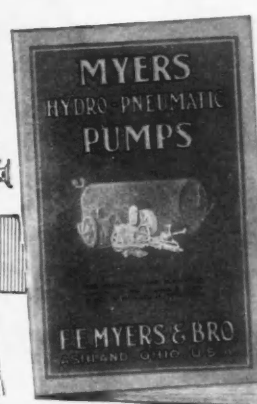
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AND
CONTRACTORS**
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Wood Truss
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Especially Adapted to Garages.
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CHICAGO



**NU-I-DE
ALUMINUM
LEVELS**

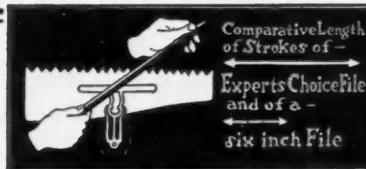
Ask your dealer to show you the Nu-I-De.

This level overcomes all objections to aluminum levels.

It costs no more than other aluminum levels and is built of Aluminum Rectangular Tubing, reinforced with a waterproof composition making a light, non-warping and strong level. *If your dealer does not stock this level, write us for our catalog.*

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THE FILE YOU WILL EVENTUALLY USE

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Genuine RU-BER-OID contains no tar, sand, wood fibre, paper. And in addition to being leak-proof, RU-BER-OID is also sparkproof, rustproof and rotproof.

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Made in Slate Gray, Tile Red and Copper Green. Your dealer will show you samples and quote you prices.

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Look for the "Ru-ber-oid Man" on every roll of genuine Ru-ber-oid

What is the Answer?

How many board feet in 68 pieces, 2x4, 14 ft. long?

68 Pcs 2x4-14
48 136 544
752 354 14
378
7512
1077612 (6343)
36
48
8

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Steel Square in Connection with Circular Measure

(Continued from page 69.)

The angle in degrees for these angles are 30 and 60 degrees, as shown in Fig. 2. Note the difference in the length of the tangents as compared to the thickness of the rafter. These tangents represent the proper distance apart the plumb lines should be, and for accuracy in the cut should be carried clear around the rafter, then by cutting diagonally across the back from one line to the other will give the required cut.

We will now say a few words in reference to the backing of the hip. This is not always done in practice, or we should say, not done as often as should be, when first class work is required. Therefore its effect, whether it is back or unbacked, is not generally understood by the great majority as to the proper points of measurements to take to bring the hip or valley in the proper plane with that of the common rafter. This, too, is governed by circular measure, tho the proper addition or deduction may be arrived at in other ways it must in the end coincide with circular measure.

It should be remembered that the measurement line of the rafter should be calculated as along the center of its back and just how to place the square on the side of the rafter to obtain the correct result at the center, furnishes a problem that is not readily solved by many.

The top edge of the hip, whether backed or unbacked, should rest at the same vertical height above the outer edges of the plate as that of the corresponding common rafter, and in order to bring the hip in the proper plane it is necessary to extend the seat cut in at the center (provided it has a tail), one-half of the hip's diagonal thickness in order to clear the corner of the plate. In the case of the valley, when not backed, there will be a space under the roof boards corresponding to the shape of the backing of the hip. In other words, if the part removed from the hip were reversed and tacked onto the outer edges of the valley, it would form the proper backing for same, and the seat cut would cut out at the sides correspondingly to the amount cut in at the center, as mentioned above for the hip.

In Fig. 3 is shown the tangent system, or amount to set off on the seat line as at A for the gauge line on the side of the rafter from which to remove the wood to the center line of the back. The vertical line A-B shows the relative difference in the height of the backing and shows the allowance that should be made in framing the rafter before it is backed.

We have in this article purposely refrained from mentioning the use of the steel square in the laying out of the angles because circular measure supersedes the square, and is therefore only a reading instrument to the circle from whence all angles are determined.



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IT will be well worth while for you to investigate thoroughly the Majestic Duplex Heating System before you decide what heating system to put in that new house or store.

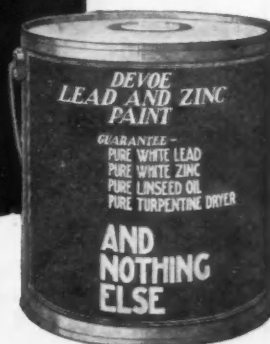
The Duplex draws the cold air from the floor through the cold air duct while pure warm air is discharged from the main face of the register. And the register itself makes an excellent bench or table.

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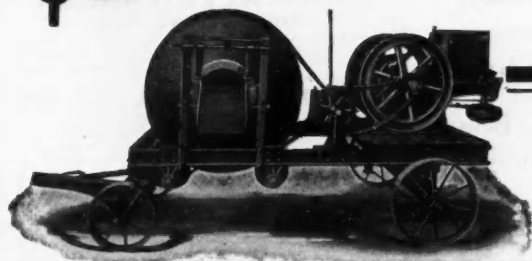
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Architects are specifying Edwards Metal Spanish Tile, for they know it will do away with roofing "troubles." Builders like it because of the finished appearance it gives any house on which it is used.

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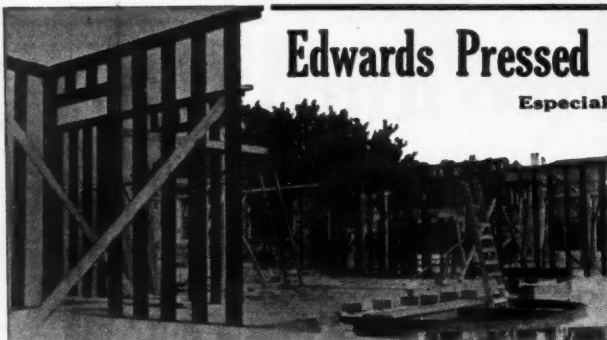
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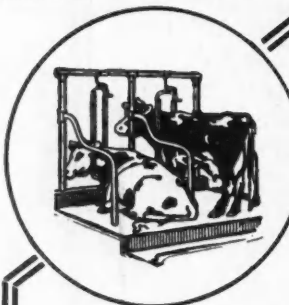
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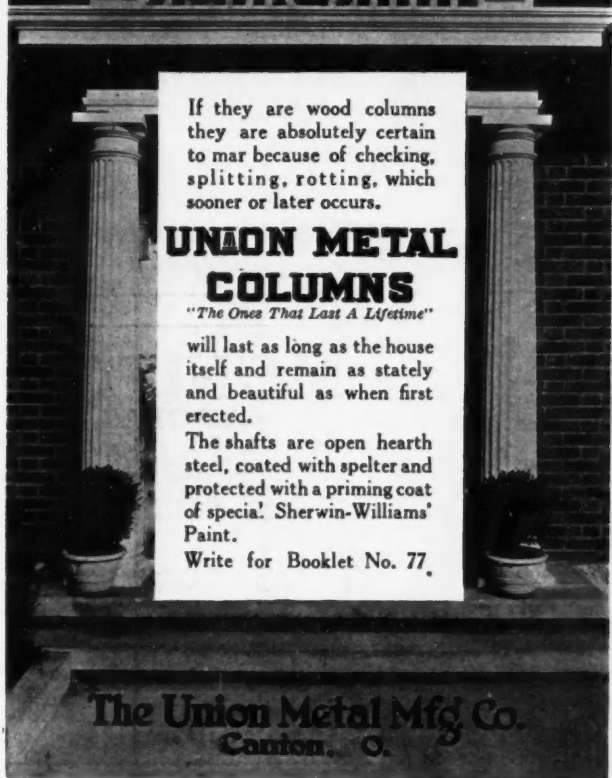
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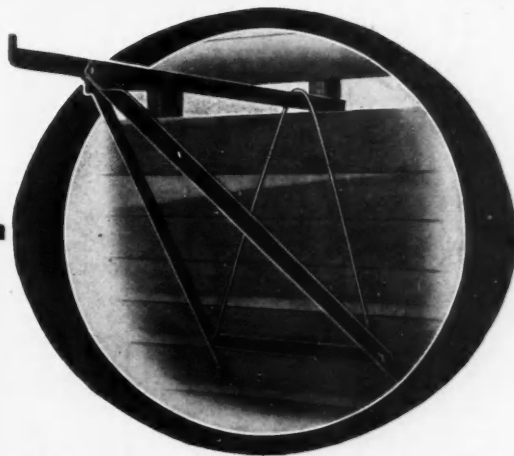
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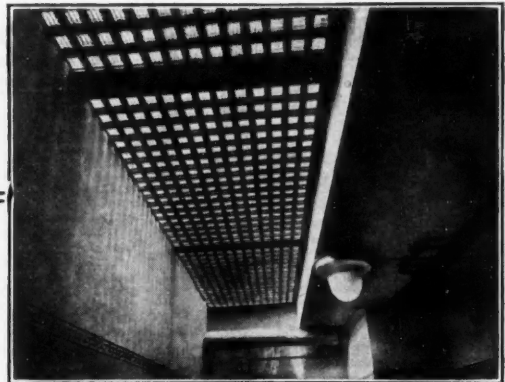
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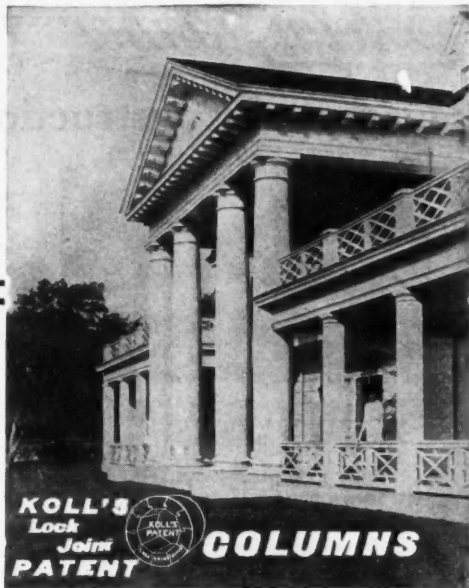
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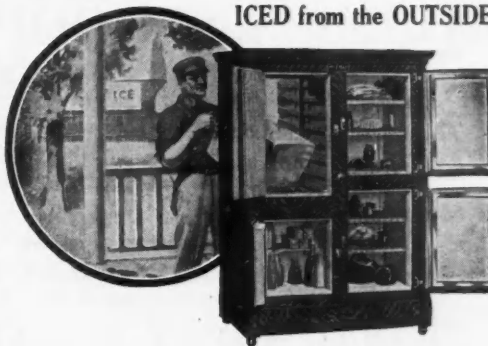
Catalogue "U-40" contains very useful information about Exterior and Interior Columns, will be sent to those who want it for 10 cents in stamps

HARTMANN-SANDERS CO.

Sole Manufacturers
2155-2187 Elston Ave. Chicago
New York Office, 6 East 39th St.

Note.—We have unexcelled facilities for the manufacture of special porch materials; to architect's details. Send us your list and plans for estimates.

ICED from the OUTSIDE



Complete Your Plans

The plans for any building are not complete unless you have provided for scientific refrigeration. It is just as important as the heating and plumbing systems and means much to the comfort and satisfaction of the owner and occupants. Your buildings will be equipped with the most efficient refrigerating system if you specify

MCCRAY SANITARY Refrigerators

There is a McCray—either in stock sizes or made to order for every type of building from the finest hotel or public building to the smallest bungalow. When you put them in your plans, arrange for outside icing and specify the finish that will match the interior trim.

They may be arranged for either ice or mechanical refrigeration. The linings of white opal glass, enamel or odorless wood are the cleanest and most sanitary known. Food is kept fresh, cool and free from spoiling by the McCray patented system of refrigeration. All odors and impurities are carried away through the water-sealed drain and trap.

McCray refrigerators are recognized as the standard for refrigerator efficiency.

Free Plan Service

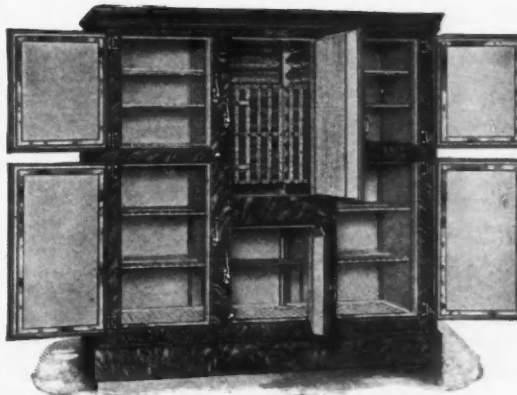
We will be glad to furnish you with suggestions, blue prints and specifications of refrigerators for any style or size building. We maintain trained architectural draftsmen and give you this service without cost.

Get these catalogs and complete your files.
No. 92 for Residences. No. 51 for Hotels, Clubs, Institutions. No. 70 for Grocers. No. 62 for Meat Markets and General Storage. No. 74 for Florists.

McCray Refrigerator Co.

760 Lake Street Kendallville, Indiana

Agencies in all principal cities





The little one had been listening when father was explaining to mother how Linofelt was made—and how it kept the house warm.

It is a blanket, made of rough, woolly flax fibre, sewed between strips of heavy Kraft paper—spread between studding of side walls and under floors—goes on before lath and plaster.

LINOFELT

"Between You and the Weather"
(Copyright 1914 Union Fibre Co., Winona, Minn.)

Is a perfect insulation, keeps house warm in winter and cool in summer—just 38 times more effective than paper. *Saves 30% on fuel bills.*

Architects, contractors and builders now specify Linofelt—it makes friends and holds clients.

We want to send our Linofelt book to all who don't know about this splendid material. Write us today.

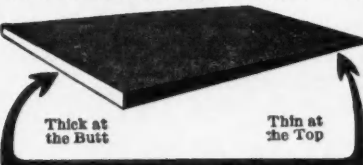
Union Fibre Co.
118 Union St., Winona, Minn.



The Only Tapered Asphalt Shingle

Winthrop Tapered Asphalt Shingle

Just ask for a sample shingle. See how tough, how pliable and how durable it is. See how it is made like a wooden shingle—thick at the butt and thin at the top. See how easy to lay it is. See what a beautiful roof it will make—red, green or slate-black. Then you will understand why owners want the Winthrop when they know about it.



Winthrop Tapered Asphalt Shingles will enable you to get most of the roofs in your town. They win out with less argument than anything you ever tried to sell, for they look better than wood shingles and they have all the protection of asphalt.

Ask for Sample Shingle

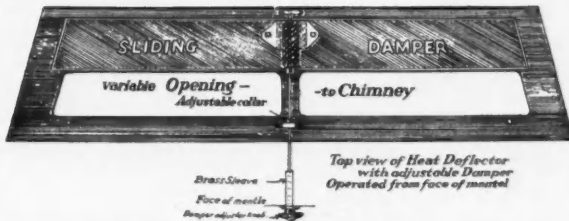
THE BECKMAN-DAWSON COMPANY

Asphalt Shingles
Factory: Argo, Ill. 1413 Y. M. C. A. Bldg., Chicago, Ill.

Fire Place Damper with Heat Deflector Plate

Try it before you buy it

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I will show you how you can make more money in the contracting business with little extra work. Don't wreck buildings—move them to cheaper lots—trim them up. Sell at a good profit, or rent for a steady income. Easy, quick work with

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Will last you a lifetime. 30 Days' Free Trial. Other carpenters are clearing \$1500 to \$2000 extra a year. So can you. Write now for Catalog B and full details.

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LA PLANT-CHOATE MFG. CO.

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FREE—Successful House-Moving Contractor—special house-moving magazine. Send name now.

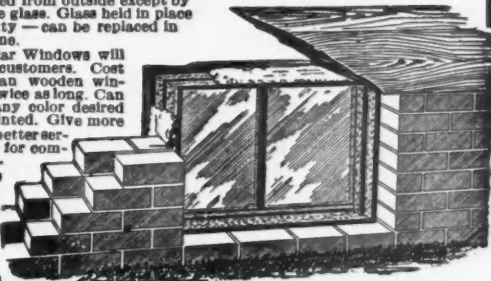


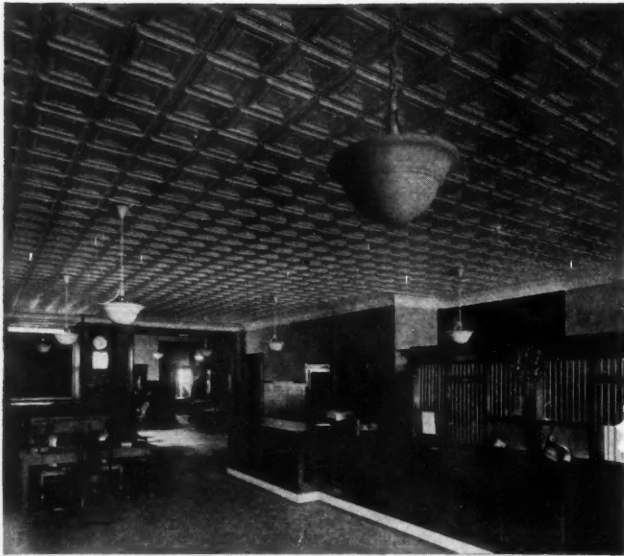
Famous Chief Cellar Windows Will Not Stick, Warp or Rot

The solution of the cellar window problem—a modern, 20th Century Cellar Window made right for service. Made of steel-window, casing and all. No rotting, shrinking or swelling. Fits perfectly all the time. Trouble proof, easy to open and close, leak-proof and fire-proof. Will not rust. Nothing about it to wear out. Fitted with special, inside steel latch—cannot be opened from outside except by breaking the glass. Glass held in place without putty—can be replaced in minute's time.

Chief Cellar Windows will please your customers. Cost no more than wooden windows—last twice as long. Can be painted any color desired or left unpainted. Give more service and better service. Write for complete description, prices and terms.

SHRAUGER & JOHNSON
430 Walnut St.
Atlantic, Iowa





Canton Electric Company, Canton, Ohio

Isn't This An Attractive Ceiling Installation?

NOTE the distinctive appearance it gives to the room—the dignified effect of the deeply-stamped panels, which stand out in bold relief—the perfect alignment thruout.

Compare a ceiling of this character with a wood lath and plaster ceiling. Some difference! No matter what the interior may be,

**“BERGER'S”
Classik
STEEL CEILINGS**

can be adapted. There are hundreds of attractive designs to choose from. Besides their beauty, Berger's “Classik” Steel Ceilings are economical, sanitary, light in weight, durable, fire retardant, non-collapsible, and easily and quickly applied. They can be decorated to harmonize with the finish of the room and the furniture.

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The Bessler Movable Stairway

Shows Stairway in position for use.



- Enables you to use attic or loft.
- Uses up no space in lower floor.
- Costs less than stationary stairs.
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- Specially recommended for bungalows and 2½ story houses.

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Contractors, builders and architects would do well to write us and find out more about this wonderful space-saving stairway. The stairway that has made the bungalow practical. By its use you can add another room to your house without sacrificing stairway space on the lower floor. The only stairway of its kind made. Manufactured in Akron—used all over the country.

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Come to Us for
Everything in Sheet Metal

MFMA

This trademark on flooring is a **GUARANTY** of *Quality* and standard grades

← For lasting satisfaction

See that your customers use Maple, Beech or Birch

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bearing this trade-mark. It's your guaranty of *dependable* Quality and Grades, and will out-last and out-wear any other wood flooring. Sold thru dealers only. Made by members of the



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"Ten Reasons Why Retail Lumbermen Should Handle Maple Flooring"

Write for it.

Maple Flooring Manufacturers' Association, Stock Exchange Bldg. Chicago
 Handle MFMA Flooring and get the benefit of MFMA sales help and consumer advertising

Asbestone Fireproof Sanitary Floor Covering

Splintered Unsanitary Rough Wood Floor

Notice to Contractors

You know that virtually the only portion of a building that wears out is the floor and that your locality is in need of someone to take care of the big demand for renewing old floors at a small expense.

Look around for worn out ugly floors and suggest our process and you will secure orders for installations that will keep you busy inside on cold or rainy days and add enormously to your income.



The Floor That's Laid With a Guarantee

We offer you this opportunity by selling you direct our ASBESTONE, the artificial stone that can be laid over wood, stone, brick or concrete.

No experience necessary, we give you full instructions. If you have some place in mind that needs repair, tell us and write us now for prices, information and samples which we furnish free.

FRANKLYN R. MULLER & CO. 754 MADISON ST. WAUKEGAN, ILL.
 Make Old Wood, Brick, or Cement Houses Over with Our Elastic Magnesium Stucco. Inquiries Solicited

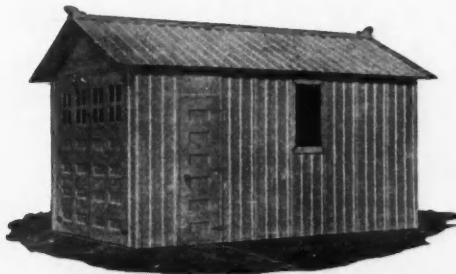
LOOK THEM BOTH OVER CAREFULLY ←

When a Garage Is Needed

—and it has to be moderately priced and yet durable and weather-proof, you can assure all this, and *more* and save much of your men's valuable time by using

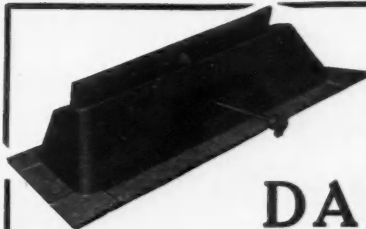
"Ready-Bilt" Steel Portable Buildings

Although portable they are permanent wherever they are placed—or moved to. Parts are standardized and interchangeable. "Ready-Bilt" Steel Buildings are light, sturdy and dependable—always. For contractors' or carpenters' sheds "Ready-Bilt" Buildings are *exactly right*. Let's send our catalog for your business file.



Garages, Offices, Storerooms, Cottages, Warehouses, Tool Rooms, Etc.

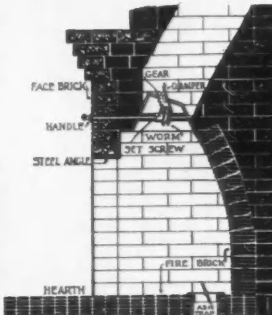
The Canton Metal Ceiling Company
 1947 Harrison Av. Canton, O.



Improved Fireplace DAMPERS

Stover Dampers make the building of fireplaces easy. The labor saved by their use reduces the cost considerably.

Catalog 1590-X describes these and other new style dampers in detail, gives valuable suggestions as to fireplace construction and shows a large assortment of other fireplace fixtures.



If you build fireplaces send for this catalog. *It's free.* We manufacture builders' and household hardware, windmills, feed mills, gasoline engines.

Stover Mfg. & Engine Co.

725 East Street Freeport, Illinois

STOVER MFG. & ENGINE CO., 725 East St., Freeport, Ill. Send us Catalog 1590-X.

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 BUSINESS
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EXPANDED CUP
SYKES SELF FURRING METAL LATH
 SAVES 5 TO 10 CENTS A SQUARE YARD

**STRONGER—Being Heavier
 SAVES—Labor and Material**

Sykes Expanded Cup Metal Lath has wider strands than others of the same gauge; it is therefore heavier, stronger, more rigid. No furring strips being needed, Sykes Lath saves money on materials and labor. Select.

SYKES Expanded Cup Metal Lath
 SELF FURRING

For Stucco Work and for Interior Work this Lath with the Cup that Clinches Always Gives Satisfaction and Saves Money.


It can't be applied wrong. Approval by U. S. Government for Post Office work. Indorsed by architects.

Free Book of Specifications and Free Samples—upon request. Address

SYKES METAL LATH AND ROOFING COMPANY
 504 River Road, WARREN, OHIO

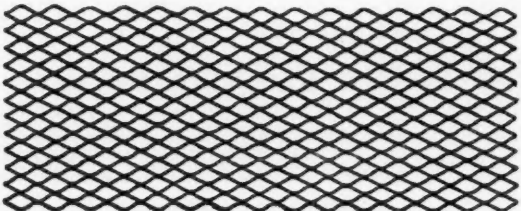


Metal Lath Insures



Permanence and Endurance

Prevents cracking and unsightly corners.
 A fire retardant—non-combustible. A barrier against mice and rats.
 Makes walls and ceilings firm and rigid. Reduces cost of plastering.
 "NETMESH" Expanded Diamond Metal Lath satisfies the Architect, Contractor and Owner.
 Sheets are rigid and flat.



Samples and Prices on Request

Milwaukee Corrugating Company
 Branch at Kansas City, Mo., MILWAUKEE, WIS.

Blackboard talks by the professor

No. 2—"The Plaster Can't Crack or Fall"




"A BIG disadvantage in using old-fashioned wood lath is the cracking of the plaster. This is due to the fact that with atmospheric changes, wood lath will swell and shrink to a greater degree than the plaster; therefore, the two will separate, unsightly cracks will occur and sometimes large areas of plaster will break and fall without warning.

Berger's Metal Lath

entirely overcomes this. It expands and contracts in the same ratio as the plaster, thus preventing cracks.

"Plaster on wood lath is not safe, as it is only latched to the lath. On the other hand, Berger's Metal Lath is clinched by the mortar, the entire surface being reinforced. This makes a rigid construction which adds to the structural strength of a building."

Send for Booklet F. A. B.

The Berger Mfg. Company, Canton, Ohio 

BRANCHES: Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco, Los Angeles. EXPORT DEPT.: Berger Building, New York City, U. S. A. 

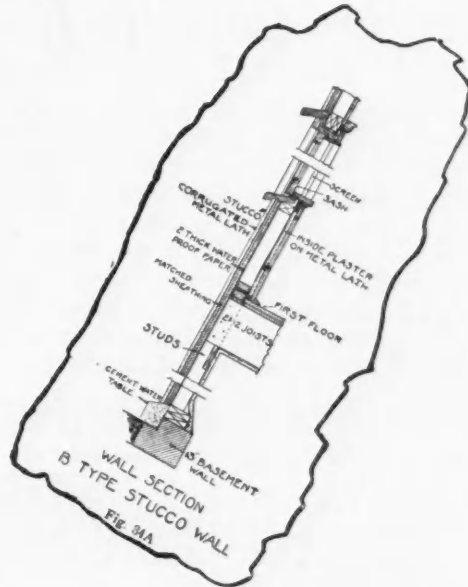
"Kno-Burn" Takes the Risk Out of Stucco



Stucco Residence of
J. C. SALSMAN,
Madison, Wis.

This is a standard detail for stucco wall construction.

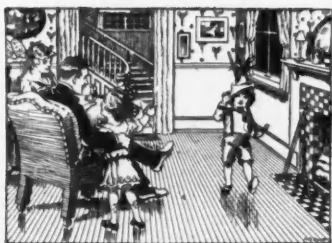
The residence above is an interesting example of the effectiveness of stucco over "Kno-Burn" Expanded Metal Lath.



North Western Expanded Metal Co.

Manufacturers All Types of Expanded Metal
903 Old Colony Building Chicago, Ill.

Beautiful Oak Floors — Everywhere WHY??



BECAUSE—

- Oak Flooring by right of superior merit and conquest is "America's Best Flooring".
- Women prefer Oak Flooring for the reason it is rich and cheerful in color, and offers unlimited possibilities to give the home that coveted touch of elegance.
- Oak Flooring is Distinctive, Beautiful and Substantial, three very vital reasons why so much Oak Flooring is in use today.
- Service and satisfaction are assured if Oak Floors are used.
- Of all the hardwood flooring in use today, Oak stands pre-eminent for color, texture and durability.
- Keeps the "For Rent" and "For Sale" signs off of the property. Landlords know what is best in flooring.

See our Page 758—1916 Sweet's Catalog. Write for Booklet—"America's Best Flooring."

Oak Flooring Service Bureau, 1603 Union Trust Building CINCINNATI, OHIO

SPANISH TILE ROOFING

MADE IN

GALVANIZED STEEL PAINTED

Stamped in plates of 10 Tile each, 16 plates covering one square. Storm and dust proof joints. Easily and securely laid.

Write for catalogue showing full details of this roof. Prices quoted on application.

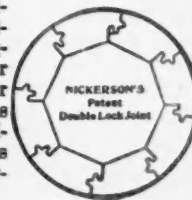
THE W. H. MULLINS CO.

214 Franklin Street, Salem, Ohio

THE BEST COLUMNS

for Porch, Interior and Pergola use the NICKERSON Patent DOUBLE LOCK JOINT THEY CANNOT COME APART

We Specialize on Detail-work. "Vignola" is our Standard for proportions when Architect's details are not furnished.



Clinch you Trade by giving them the very best Column. Ours have the best Construction and correct shape.

All kinds of interior trim to detail. Write for Catalogue No. 4.

NICKERSON MFG. CO.
KNOXVILLE - TENNESSEE
Members Knoxville Builders' Exchange

Fortify your plant against inefficient methods

The
CEMENT - GUN

has been tested by the United States Bureau of Standards and "Gunitite," the cement and sand product of the Cement Gun, has been proven to excel all other forms of "Stucco."

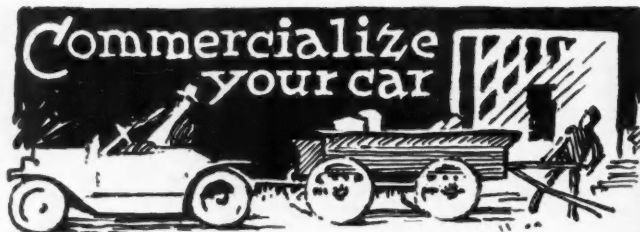
This process is the most efficient and economical method of applying concrete to Metal Lath, Brick — Monolithic concrete, Hollow Tile, or in renewing old concrete, brick or stone construction.

Every grain of sand in "Gunitite" is thoroughly coated with cement. The uncoated grains bounce back. Any contractor will find a multitude of uses for the Cement Gun.

We will gladly mail you copies of interesting bulletins about "The Cement Gun." They contain illustrated data and show the many uses and advantages of the Cement Gun.

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Allentown, Pa.

Cement-Gun Co., Inc., 30 Church St., New York City.
Byers & Ayers, 1414 Fisher Building, Chicago, Ill.
John A. Traylor, Newhouse Bldg., Salt Lake City, Utah.
Taylor Engineering Co., 538 Central Bldg., Seattle, Wash.
Taylor Engineering Co., Vancouver, B. C.
A. R. Roberts, 727 Traders Bank Bldg., Toronto, Ont., Can.



Use It on the Job

Make it a Valuable Asset as well as a Convenience

Miami Trailers

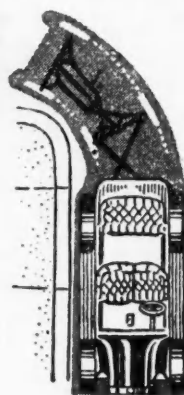
enable the carpenter or builder to solve his hauling problems without extra expense or injury to his car.

They are equipped with a special shock-absorbing draw bar, attached to the chassis (not the axle) of the car and which prevents any strain in starting or stopping the car. The axles and bearing of the Miami are of the same grade as is used in automobile construction.

The Miami Trailer is made in several designs and special bodies can be furnished to meet the requirements of your hauling propositions.

Write for prices and descriptions.

MIAMI TRAILER COMPANY
TROY, OHIO



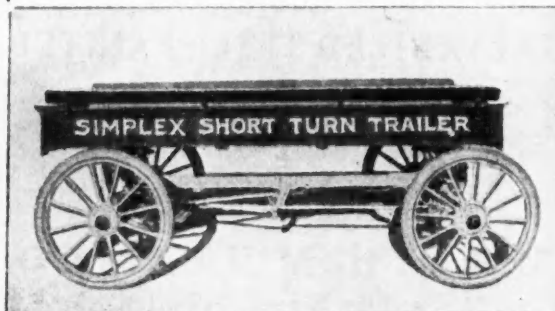
--a trailer that "trails"

Simplex Trailer

It follows the "trail" of the automobile so positively that both vehicles can turn in a twelve-foot circle. It isn't necessary, with a Simplex to take to the middle of the street to avoid bumping into curbs or swinging the trailer into everybody's way.

The Simplex is ideal for the contractor who wants to get the most out of his automobile. He can preserve the appearance of his car for pleasure; and at the same time put it to work. Any automobile that will average 20 miles will carry the Simplex along at the rate of 19 miles. Write for our catalog.

Simplex Short-Turn Trailer Co.
AUBURN, IND.





4-Team Hauling Ability At 1-Team Cost

THE transportation feature of any lumber and building supply house is one of the factors which controls profits. With this important problem solved by the 4-team hauling ability and low operating cost of Smith Form-a-Truck you can place your particular business on a plane distinctly above competition.

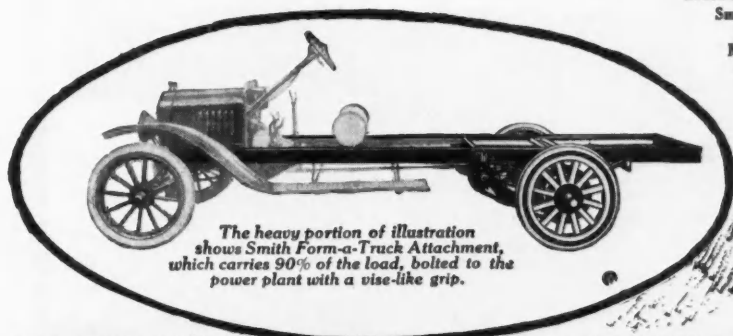
A speed three or four times greater than that possible with horses and hauling costs of less than 8 cents per ton-mile are the deciding elements Smith Form-a-Truck introduces into your delivery system—the elements which are displacing the slow costly horse-drawn hauling methods of building and supply houses everywhere.

Dispense With Horses

The best hauling ability of your team is approximately four one-ton loads daily under average conditions. This is the inefficiency which reduces your profits.

One Smith Form-a-Truck will double and treble your present hauling capacity. On this basis, one Smith Form-a-Truck can dispense with at least two extra drivers and two or three teams. It will keep every loader busy every minute in lumber yard and pay for itself in a few months.

**Smith
Form-a-Truck**
\$350 F. O. B.
CHICAGO



The heavy portion of illustration shows Smith Form-a-Truck Attachment, which carries 90% of the load, bolted to the power plant with a vise-like grip.

Getting New Business

This Smith Form-a-Truck efficiency will give you an advantage in price and service which will enable you to secure new business now beyond your scope. You can secure business and take care of deliveries in an area three to four times greater than possible now.

Select These Power Plants

The performance of Smith Form-a-Truck in practically every line of business throughout the country has created such a universal demand that we have been compelled to make Smith Form-a-Truck attachment for Ford, Maxwell, Dodge Bros., Chevrolet, Buick and Overland power plants.

Choose either one of these chassis with Smith Form-a-Truck attachment and you have a fully guaranteed powerful one-ton truck, capable of hauling full ton loads under every hauling condition.

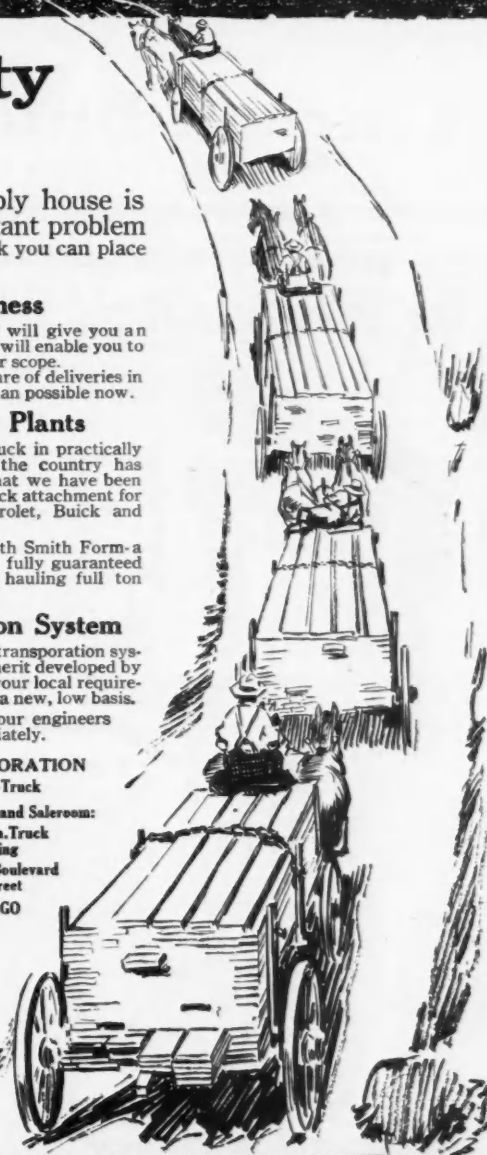
Write for Transportation System

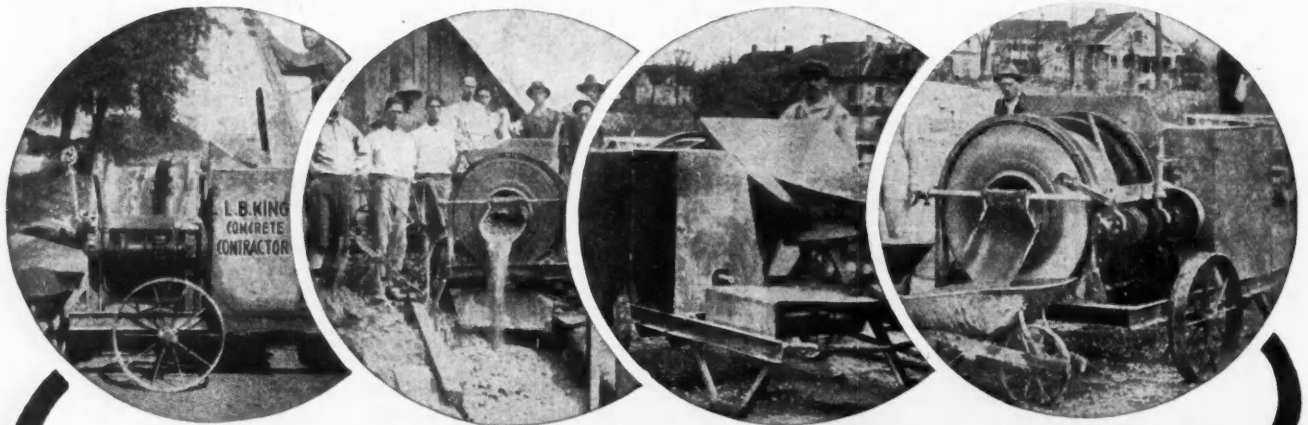
Smith Form-a-Truck operated on a transportation system based on principles of proved merit developed by our transportation engineers to meet your local requirements will place your hauling cost on a new, low basis.

Write us your problems today and our engineers will send you correct answers immediately.

SMITH MOTOR TRUCK CORPORATION
Manufacturers of Smith Form-a-Truck

Executive Offices and Saleroom:
Smith Form-a-Truck
Building
Michigan Boulevard
at 16th Street
CHICAGO





Always on the Job--

“Little-Devil” Mixer

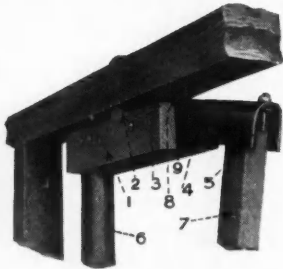
A Bigger, Better Mixer for the Same Money

Capacity 7 cubic feet of loose material. Low Charging—End Discharge—May be used for Paving, Grouting Brick Pavements, Foundations, Sidewalks and will mix and place concrete quicker and at less labor cost than any mixer on the market. Write today for catalogue, prices and terms.

Chicago Builders' Specialties Co.

1461 Lumber Exchange Building, 9 South LaSalle Street, Chicago, Ill.

For Up-to-Date Barns---Wilder Patent Steel-Latch Cattle Stanchions



Study Wilder Construction

Wise contractors insist upon them. All hardwood—except the patented steel latch. Comfortable, noiseless and easy to adjust. Won't rust, rock or loosen at the joints.

1—Cross-bolted top block; won't split. 2—Top one of the two pins on which stanchion revolves when closed. 3—Cast lug; holds stanchion rigid when open. 4—High carbon rustless steel latch. 5 and 8—Stop bolt and steel clip which limit width of opening. 6—Stationary upright. 7—Movable upright. 9—String piece; mortised for cast lug.

Automatically rigid when open—swings freely when latched. Opened or closed without removing mittens. **Write for full information.**

WILDER-STRONG IMPLEMENT COMPANY
Box K
MONROE, MICHIGAN

**BANKRUPT
PRICE**

\$47.50

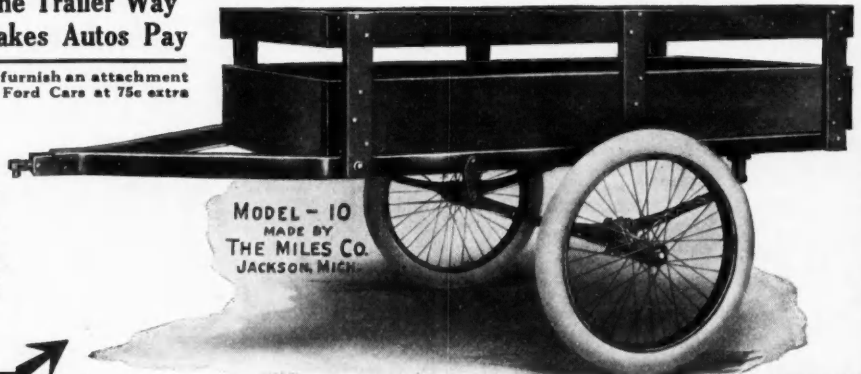
F. O. B. Jackson, Mich.

OUR MODEL 10 Auto Trailer, with 2" solid rubber tires, steel wheels, ball-bearing axle, automobile channel frame, heavy springs, and shackles, drop forge spring links, our famous all-way coupling, combination rack and delivery body 42"x70"x15" deep. Finished in a handsome Brewster green. Can you beat it? No. And neither could we if we had not bought the material from a large Automobile Company—at bankrupt prices!

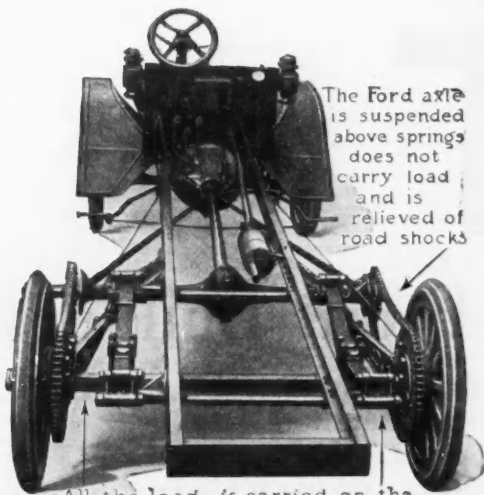
THE MILES COMPANY
309 E. Franklin St. Jackson, Mich.

**The Trailer Way
Makes Autos Pay**

We furnish an attachment
for Ford Cars at 75c extra



MODEL - 10
MADE BY
THE MILES CO.
JACKSON, MICH.



The Ford axle is suspended above springs does not carry load and is relieved of road shocks

All the load is carried on the truck axle - truck springs - wheels and solid tires.

**Capacity 2,000 lbs.
Will carry 50% over load**

If it's a "PIONEER" and a Ford—Then it's AMERICA'S GREATEST ONE-TON TRUCK---

The "Pioneer"-Truck-Attachment converts a new or used Ford into a Reliable, Sturdy, Guaranteed, One-Ton Truck.

With the "PIONEER" you don't have to waste time sawing off the Ford axles or changing Ford chassis in any way. Any handy man can bolt the "PIONEER" on. Simply use the Ford that you have, or the one that you can buy, old or new, in your home market.

Remember! the "PIONEER" is not a makeshift proposition, but a high grade one-ton truck when attached to your Ford, and will do the work of any \$1500 one-ton truck and at less than one-third the cost.

Selling Direct to YOU from the factory at Factory Prices

"PIONEER" Truck Units are sold Direct from Factory to Consumer.

Don't pay a dealer \$50 to \$100 to sell you a one-ton truck attachment for your Ford; it's not necessary.

You are perfectly safe in ordering **direct** from the factory—the "PIONEER" is guaranteed against defective material and workmanship—is guaranteed to give you absolute satisfaction in every way.

We are the only firm in existence selling one-ton truck attachments **direct** — we have succeeded — we have made good — we are saving truck buyers thousands of dollars in all parts of the United States.

Buy your Ford from your local dealer—your one-ton truck attachment direct from the factory—any handy man, garage or blacksmith can connect it up in a couple of hours time.

Better buy a "PIONEER" than wish you had!

The Pioneer Truck Attachment is a perfect mechanical masterpiece—designed by mechanical experts—it's the latest in Motor Truck Construction.

The "PIONEER" is designed and built by engineers under S. A. E. standards—therefore it will give full service with the minimum of trouble to the owner.

It has been tested out in actual service by hundreds of owners—there is no guess work about the "PIONEER."

**Factory Price
\$297.50
Dealers' Price
\$350.00**

**Save \$52.50 on Truck Attachments
Big Savings on Truck Bodies**

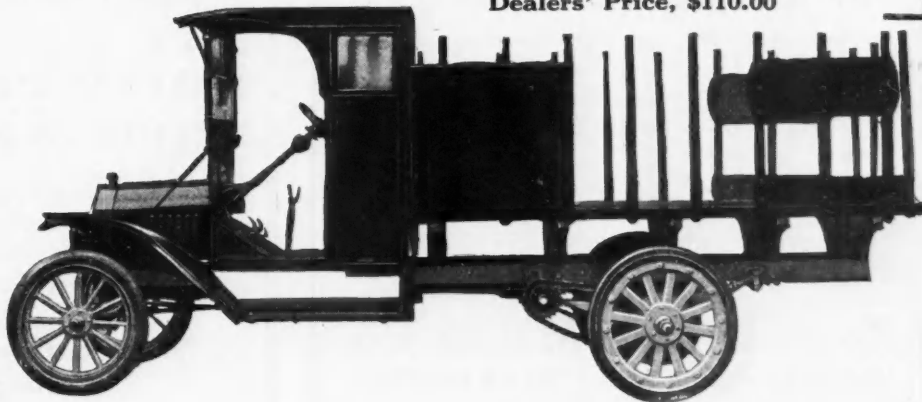
\$50.00 Cash with Order Brings the "Pioneer" to You

Prompt Deliveries Guaranteed

Write for Catalog

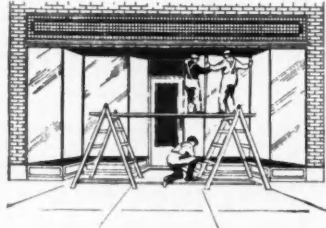
**PIONEER TRUCK MAKERS, Inc.
SOUTH BEND, IND.**

We can furnish you any style and size body, suitable for any business, at factory prices. This style body and cab, complete, \$75.00 Dealers' Price, \$110.00



PROFIT

For Store Front Builders



Desco
METAL
STORE FRONTS

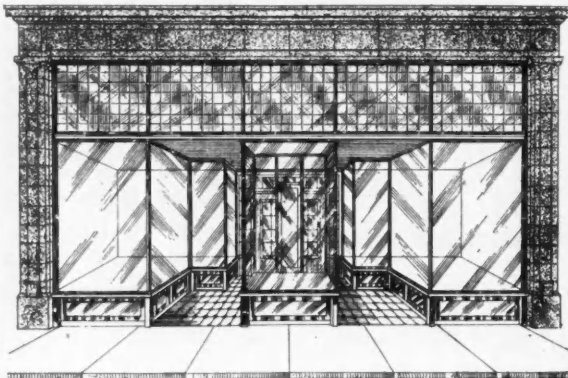
IN every city and town new store fronts are in the planning or building. Retailers now realize the absolute necessity of attractive windows. This country-wide movement is making a big opening for builders and "Desco" store front construction makes possible the maximum of net profit. For it is simple in construction, easy to properly install, strong, protects the glass and low in cost—lower than you've been accustomed to pay. "Desco" is the result of our 28 years' of experience. Be sure to get details and prices—gladly sent upon request. Be ready to bid—be in a position to get the next job. A card will do.

DETROIT SHOW CASE COMPANY

491 Fort Street West

Detroit, Michigan

Broken Glass—No

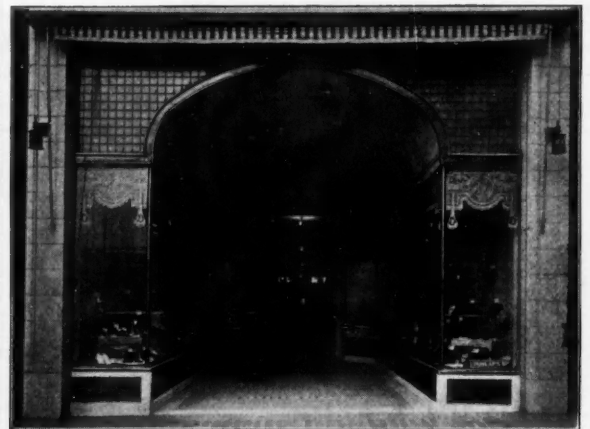


You have used copper store front construction and have had trouble with broken glass.

Use Zouri key-set

—the only modern construction and you will avoid all trouble.

Zouri Drawn Metals Co.
1803-1843 East End Ave., CHICAGO HEIGHTS, ILL.



Are you going to build, remodel or repair a store front?

Let us send you our interesting catalog of up to date store fronts, giving full details and descriptions of the Coulson Patented Store Front Construction. *Write today!*

J. W. Coulson & Company
Columbus, Ohio

Buy An Engine



On Your Own Terms.
30 Years of success in making and selling high-grade engines enables me now to sell direct to the user on practically his own terms. Any worthy, creditable man anywhere in the U. S. can accept my offer, and be sure of a reliable engine at direct from factory prices.

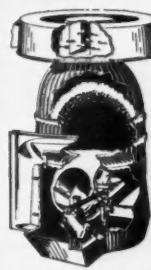
Ed. H. Witte **WITTE**
High-Grade ENGINES

are made in sizes 2, 3, 4, 6, 8, 12, 16 and 22 H-P. —Kerosene or Gasoline. Particularly adapted for farm and shop. Hundreds in use in every state. My Free Book, "How To Judge Engines," explains fully what you should know before buying.—ED. H. WITTE, Pres.,
Witte Engine Works 1779 Oakland Ave., Kansas City, Mo.
1779 Empire Bldg., Pittsburgh, Pa.



Cut Coal Cost

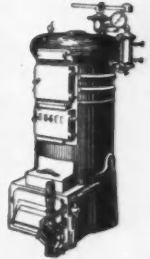
1/2 to 2/3 Guaranteed



Yes, absolutely guaranteed. Over 40,000 Williamson UNDERFEED Furnaces and Boiler users are enjoying UNDERFEED saving and comfort season after season.

Free Book Tells How
A postal brings it to any carpenter, builder or contractor. Book pictures and explains it all. Write for it NOW and learn how you can guarantee this great saving to your customers.

UNDERFEED Boiler



The Williamson Heater Co.
517 Fifth Ave. Cincinnati, O.



The Superior Heating Boiler for Hot Water Vapor or Steam

The Modern Method of heating your residence. Insures comfort in every corner of the house in the coldest zero weather. It Will Pay You to investigate this Boiler before buying.

Our Estimates and Plans are Free
"A Complete Line of Plumbing and Heating Material"

DUPLEX MANUFACTURING CO.
Send for Free Catalog SUPERIOR, WISCONSIN

HEAVY DUTY KEROSENE AND GASOLINE ENGINES

SAVE MONEY BUY NOW



HEAVY DUTY KEROSENE ENGINES save You Money They are safer to operate than gasoline engines and you can operate them at half the cost of gasoline. Kerosene costs about 10 to 12 cents, gasoline over twice that. **HEAVY DUTY ENGINES** work as well on Gasoline as on Kerosene, use whichever fuel you prefer, you are not bound to use Kerosene if you don't want to, as the **HEAVY DUTY** works better on Gasoline than any other Gasoline engine, but it also works on Kerosene which a Gasoline engine will not do. Save money, get more power and better results. Buy the **HEAVY DUTY** Kerosene engine. We have not as yet made an advance in price but there will be an advance about May 1st. Buy now, save the extra cost. **SPECIAL PRICE IF YOU ARE THE FIRST BUYER IN YOUR LOCALITY. CATALOG FREE.**
A. CONSOLIDATED GASOLINE ENGINE CO., 202 Felton Street, New York City

BOVEE'S PIPELESS CENTRAL HEATING SYSTEM AND OTHER FURNACES



Every home can now have a first-class high-grade heating system in an old house as well as new. Heats as much as three large stoves. Costs but little more than a good stove.

We furnish either our **UPRIGHT FURNACE** for burning hard coal, soft coal or wood; or our **HORIZONTAL FURNACE** with large doors 16x16 inches for burning 4-foot wood or soft coal. Either style furnace furnished in any size necessary to heat the house. **UNUSUAL SYSTEM WITH PIPING TO EACH ROOM FURNISHED WHEN DESIRED.** Write for our three color catalogue, free.

BOVEE FURNACE WORKS
210 Eighth St. Waterloo, Iowa

The Home Furnace Service to Builders

Why not go into business for yourself? We have a good money making proposition to offer for a hustling furnace man, carpenter or builder. Will give exclusive agency to the right man, with our cooperation.

The Home Hot Blast is a handsome furnace built on the correct principles of combustion and the carpenter or builder will find the selling and installing of them worth part or all of his time.

Below are some of the features that make the Home Hot Blast a distinctive and desirable furnace.

The Home Hot Blast Patented Combustion Chamber, which does away with the smoke, soot or clinker nuisance and effects a saving of 15 to 30% on fuel bills.

The Home Automatic Humidifier, a novel and effective method of retaining the proper relative humidity, so essential to health.

Also the improved shaker equipment, easy to operate and which in connection with the special dust flue, eliminates the dust nuisance. The shaker handle on this apparatus is fixed and is always there.

Be sure to write for complete information on our proposition and full description of the Home Hot Blast Furnace.

HOME FURNACE COMPANY
Holland, Mich.



The Great Bell

-original-Pipeless-Furnace

Father of Them All

We have thousands in use. Sizes, styles and prices to suit all. \$38.00 to \$94.00.

Made for the building where a furnace is needed, but where the cost has been prohibited.

The GREAT BELL PIPELESS FURNACE will heat any one or two-story building in the most efficient manner with the least effort and the lowest relative cost. While **Cost** is secondary to **Service** in this furnace, our methods of production and sales have reduced the cost so low that no builder can afford to overlook our proposition.

And we guarantee our furnaces to be and do all we claim for them in both catalog and correspondence. Write for our catalogs, describing the various styles, prices and specifications of the Great Bell Furnaces.

American Bell & Foundry Co.
27 Cody Street, Northville, Mich.

SELL - If - INSTALL

you are building in the suburbs, small towns or country districts you can quickly solve the problem of an inexpensive indoor toilet by installing the

WOLVERINE
Chemical Toilet

The greatest sanitary invention ever offered. We guarantee it to be absolutely satisfactory in every way and can make you an attractive offer to act as our representative. Now is the time to get our proposition.

Dall Steel Products Co.
600 Main St.
Lansing, Mich.

Write For Particulars

Andrews
Hot-Water
Saves Heating
1/3 Fuel

Write For Big Free Book.

More Profits For Contractors

Most economical and satisfactory for home owners. We furnish all estimates and erection plans. Complete systems of best quality or our famous steel boilers sold alone. Write for our Big Heating Book and Proposition.

Andrews Heating Company
1576 Heating Bldg. Minneapolis, Minn.

Plumbing, Heating and Pneumatic Waterworks Supplies at Wholesale

When in the market for Plumbing, Heating and Pneumatic Waterworks Supplies and you wish to

Save 20 to 40%

on every article, write for my free illustrated Catalog. The only house that sells first-class guaranteed goods at wholesale prices direct. Shipments are promptly made from a very complete stock.

Small orders are as carefully handled as large ones.

B. B. KAROL, 800-802 S. Kedzie Ave., Chicago, Ill.

HESS MEDICINE SANITARY CABINET LOCKER

The Only Modern, Sanitary STEEL Medicine Cabinet

or locker, finished in snow-white, baked everlasting enamel, inside and out. Beautiful beveled mirror door. Nickel plate brass trimmings. Steel or glass shelves.

Costs Less Than Wood

Never warps, shrinks nor swells. Dust and vermin proof, easily cleaned. Should be in Every Bath Room. Four styles—four sizes. To recess in wall or to hang outside. Send for illustrated circular.

HESS, 920L Tacoma Bldg., CHICAGO

The Recessed Steel Medicine Cabinet Makers of Steel Furnaces Free Booklet

WARNING



The Hess Steel Pipe Furnace

Every year we receive orders in the late summer for furnaces for winter use, and they come in such volume that with our entire shipping facilities working night and day we run behind and orders are delayed, errors occur, and in spite of our best efforts somebody, somewhere, is dissatisfied. This happens every year, but in the spring and early summer we are not overcrowded and have ample time to prepare and ship equipments carefully.

This year conditions will be worse than usual for the unready buyer. Materials are very high and furnace prices will be higher than they are now. Hundreds of thousands of young men are enlisting and will be drafted away from industrial pursuits and that will curtail production. Some of our best have already gone. Many factories will be called upon for government work. During the Spanish War our shop worked night and day on cooking equipments for the army, to the exclusion of other work, and our factory is listed with the government as available for government use, and is offered for military purposes. If it is taken that will reduce our output of furnaces. What is true of our factory is probably true of every other well equipped shop.

There is a great shortage of material such as we use and difficulty in securing supplies, although we have

laid in the largest supply we ever had, and most of it was bought last year at prices we could not duplicate now.

Our services and our material will go out freely to the early purchasers. We will do our best for those who come late, but if you want the best service and at the lowest prices that will be in force this year, place your order **NOW**, to cover your furnace requirements.

Another consideration that should interest you at this time in the

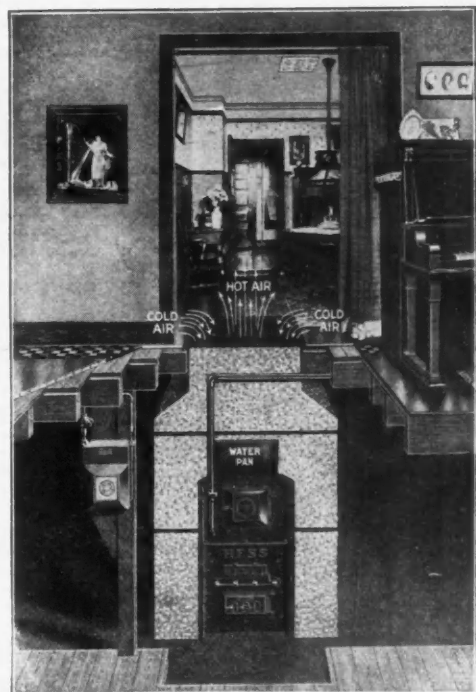
HESS STEEL FURNACE

is the fact that the Hess furnace will burn any fuel, hard or soft coal, slack, screenings, coke, wood, lignite, etc. Last year there was a great scarcity of fuel of the preferred kinds, and many who were accustomed to burning one kind of fuel were forced to take something else, and often to use it in heaters not adapted to that particular kind of fuel. Therefore, there was a loss, inconvenience and discomfort.

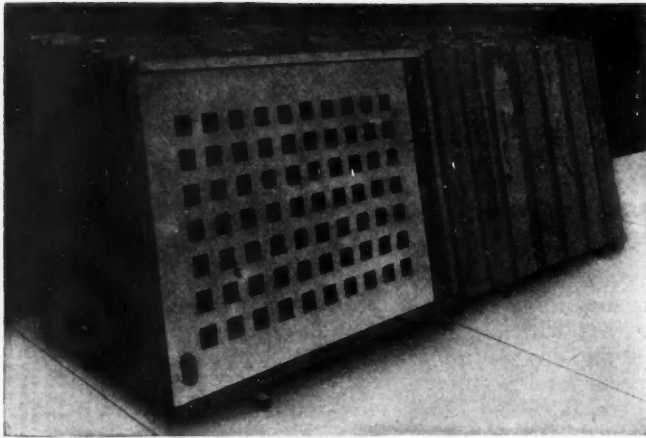
In your preparedness plan for next winter supply yourself with a **HESS WELDED STEEL FURNACE**. Then you can be comfortable and heat economically with any kind of fuel you are able to buy. We will be glad to mail you our booklet describing the Hess Furnaces and our easy and safe terms of sale.

Hess Warming & Ventilating Co.
1220-A Tacoma Building CHICAGO

Special Rates to Contractors



The Hess Steel Pipeless Furnace



Labor is Scarce!

Make quick work of your sidewalk light installation by using American 3-Way factory finished SLABS

FORMS, staging, high-priced cement finishers and the attendant muss and trouble is eliminated when

American 3-Way Factory Finished Sidewalk Light Slabs are used. You merely take the slab out of the crate, slip it into its seat in the sidewalk and caulk the joint. ¶ All our lenses are made of specially annealed LAZALITE GLASS with plastic malleable coating on side walls to take care of expansion. ¶ We have several shapes and sizes based on the 3-Way principle.

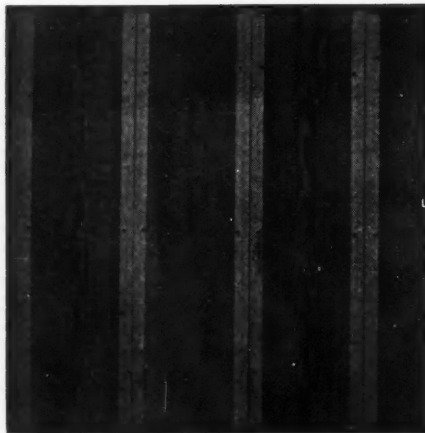
ASK FOR CATALOGUE 16-L

American 3-Way Prism Company

Manufacturers of Prism Products, Sidewalk Doors, Coal Hole Covers

Main Office and Factory: LA PORTE, IND.

Branch Office and Factory: Spring and Wooster Sts., New York, N. Y.



METALLIC BATTEN STRIPS

PRACTICAL—EVERLASTING—ECONOMICAL

These Batten Strips of Galvanized Metal will never warp, split, or draw away from the boards. Offer no obstruction to sliding doors. Allow for expansion and contraction of the siding. Made in 6, 7, 8, 9 and 10 foot length with interlocking joint. Easily cut; no waste. Nailed directly to siding with small nails.



steel
ch. 12,
1913



End view showing joint closed. A perfect fitting Batten at all times, in all weathers. Beautifies any building.

End view showing joint open. Provides for expansion or contraction of the siding so nails will not work loose.

Metallic Batten Strips make strong, neat joints. They make the building wind-proof, weather-proof and rat-proof. Also valuable for lining grain bins or wagon boxes.

Write for Free Sample and see for Yourself

METALLIC BATTEN COMPANY Owensville, Indiana



Shut Out Flies

The most effective means is full length window screens. (Half screens won't keep them all out.)

Kees-Gossett Hinges

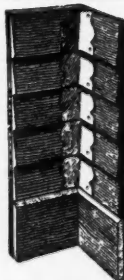
make full length screens really convenient. Make it easy to wash windows—just swing the screens out. Render screens instantly removable, without tools or ladder. Storm windows can be hung on same hinges. Sample free on request.

E.D. KEES MFG. CO. BEATRICE, NEB.
Box 552

We'll Send Free Samples of Kees Metal Building Corners

Chief Metal Building Corners

Warp-Proof—Rust-Proof—Fit Anywhere



They make a corner with the smoothness and neat appearance of a "mitred corner" and save the time and labor of beveling down the siding. Made of heavy galvanized steel. Fit any corner—inside or outside and make a smooth corner that does not hold dust or moisture. Cannot warp or split, and prevents warping of the siding.



Chief Corners protect buildings from injury and are practically indestructible. Furnished ready perforated for nailing to the siding. Put on easily and quickly. Can be painted any color or left unpainted as desired.

Write for free sample and full information

SHRAUGER & JOHNSON :: 430 Walnut St. ATLANTIC, IOWA

Water Works Plants

We Want, and Will Protect, good agents in every county

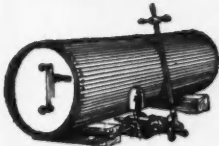


WE specialize in the designing and fabricating of water works systems to meet any and all requirements for which they are intended.

We make tanks (wood or metal) of every kind and towers of any height.

We have filled over 18,000 orders and have made installations in many parts of the world.

We want agents in every county to sell our water works plants and will allot a limited territory with full protection.



Simplex Pneumatic Systems Complete as low as \$42.

These plants have a world wide reputation and sell for as little as \$42 complete. Others up to the largest such as used by railroads, factories, and municipalities.

Send for Water Systems Circular No 49.

The BALTIMORE COMPANY
Baltimore, Md.

Every Country Home You Build Needs Electricity

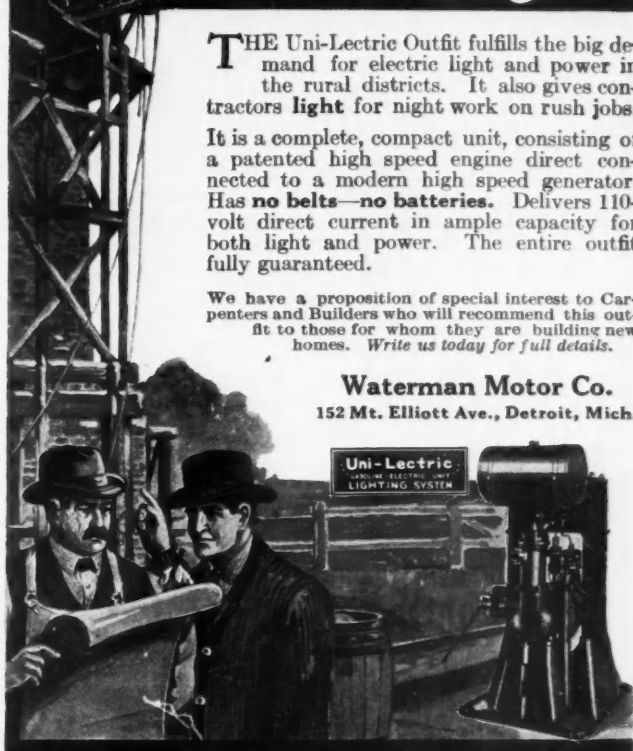
THE Uni-Lectric Outfit fulfills the big demand for electric light and power in the rural districts. It also gives contractors **light** for night work on rush jobs.

It is a complete, compact unit, consisting of a patented high speed engine direct connected to a modern high speed generator. **Has no belts—no batteries.** Delivers 110-volt direct current in ample capacity for both light and power. The entire outfit fully guaranteed.

We have a proposition of special interest to Carpenters and Builders who will recommend this outfit to those for whom they are building new homes. Write us today for full details.

Waterman Motor Co.

152 Mt. Elliott Ave., Detroit, Mich.



Typewriter Sensation

GREATEST TYPEWRITER BARGAIN EVER OFFERED

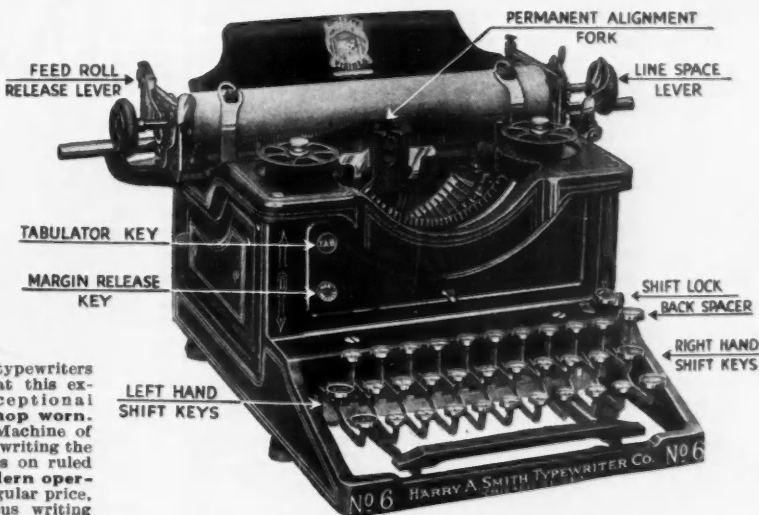
Only \$2.00 a month until the bargain price of \$34.15 is paid and the machine is yours. This startling offer has astounded the typewriter world. Absolutely the greatest typewriter bargain ever offered. For a short time only I offer a limited number of these standard reconstructed

VISIBLE WRITING MODEL No. 6 typewriters at this exceptional price. Perfect machines, not damaged or shop worn. Complete outfit, cover, tools, instructions, etc. Machine of standard size, keyboard of standard arrangement writing the full 84 characters, tabulator, back spacer, writes on ruled lines; in fact, every late style feature and modern operating convenience, at less than a third of the regular price, and each letter visible as printed and all previous writing completely visible at all times.

FREE TRIAL NO RISK You Take My brand new Model No. 6 offer for but \$34.15—and only \$2 per month. I won't let you buy this typewriter before you see it. I want you to be absolutely convinced that this is the greatest typewriter bargain ever offered. If you have the slightest use for a typewriter you should accept this amazing offer. You cannot equal this wonderful value anywhere. When the typewriter arrives deposit with the express agent \$6.15 and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw, keep it and send me \$2.00 a month until my bargain price is paid. If you don't want it, return to the express agent, receive your \$6.15 and he returns the machine to me. I will pay the return express charges. This machine is guaranteed just as if you paid \$100.00 for it.

ONLY 100 TYPEWRITERS There is no time to lose. Fill in the coupon and mail it today sure. The typewriter will be shipped promptly. There is no red tape—no solicitors—no collectors—no chattel mortgage. It is simply understood that I retain title to the machine until the full \$34.15 is paid. You cannot lose. It is the greatest typewriter opportunity you will ever have.

HARRY A. SMITH 300-231 N. Fifth Ave. CHICAGO, ILL.



-----TEAR OUT-----MAIL TODAY-----

HARRY A. SMITH
300—231 N. Fifth Ave., Chicago, Ill.

Ship me your Model No. 6 F. O. B. Chicago, as described in this advertisement. I will pay you the \$28.00 balance of the SPECIAL \$34.15 purchase price at the rate of \$2.00 a month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee for one year.

NAME
ADDRESS

GOLDBLATT TOOLS have stood the test 30 years

Goldblatt Tools Are Made to Give the Best Service and Longest Wear

50 foot Steel Measuring Tape

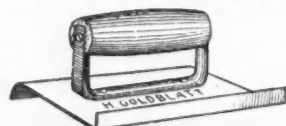


In stout leather case, long folding handle, center adjustable for hard wear, with trimmings nickel plated. Can be carried in pocket with ease. Price, \$3.25.

Wood Floats



Made of selected soft pine	No.	06	07	08	09
	Size	4x10	5x12	5x14	6x14
	Price	35c	40c	45c	50c



Sidewalk Edger

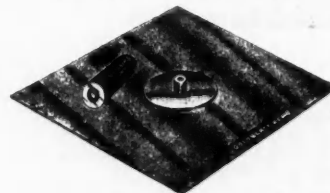
Made of trowel steel, and much lighter in weight than a cast iron tool of same size. Price, 75c.

Pointing Trowels



Price..... 25c 30c 35c 40c

Plasterers' Aluminum Hawks
Far Superior to Wooden Hawks



Made of very hard cold rolled aluminum 1/4-inch thick. Lighter in weight than wood Hawks. Handle detachable. 4-inch flange. A very strong and durable Hawk.

No. 1—13x13-in. Price, each, \$2.55
No. 2—13 1/2 x 13 1/2 -in. Price, each, 2.65
No. 3—14x14-in. Price, each, 2.75

Providing your dealer does not carry Goldblatt Tools in stock, we will sell direct to you at these low prices. You take no risk in ordering Goldblatt Tools. All our tools are guaranteed. Write for illustrated catalog and save money.

H. Goldblatt Tool Co.

212 E. 15th St., Kansas City, Mo.

Largest Exclusive Tool Makers for Plasterers, Masons, Cement Workers and Tile Layers
Write for Our Complete Catalog. It's Free.

Made from very fine gum rubber. Soft and easy to your hand. Will fit on aluminum or wood Hawks. Guaranteed to make callouses disappear and prevent new ones coming. No 3.—Price, each, 40c.

To The Standard Paint Co., New York.

The **Impervite Stucco** work is the best job in the County, not a hair-crack in the whole building.

Carbon Cement Block Company.

To The Standard Paint Co., Chicago.

We tried everything to overcome water seeping through the **cellar wall**. Are now using the room for pianos and there is no sign of dampness.

Bell Brothers Music Company.

To The Standard Paint Co., New York.

The **pit goes twenty-five feet below water level**. It was originally waterproofed with ten layers of tar and felt, which failed. The **Impervite** system was decided on and a 3/4" inside facing was applied in 1912 and has been absolutely successful.

Isaac Hopper Sons, Inc.

To The Standard Paint Co., Boston.

We ordered 5000 lbs. of **Impervite** for plastering several reservoirs. We have had no leaks, we have had no cracks and it has held on a stone wall where we very often had trouble in being able to hold the cement plaster.

Frederick & Bradenbaugh.

CONCRETE PORCHES



ATTRACTIVE
EVERLASTING
INEXPENSIVE
EASY SELLING

Sell Two Concrete Porches

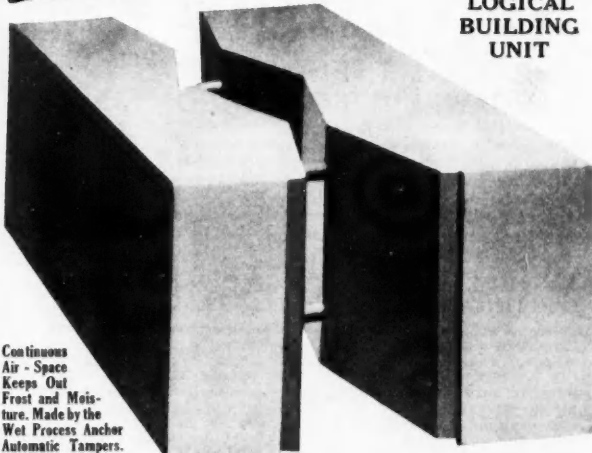
and you'll make enough profit to pay for the Dunn Porch Mold Outfit. After that your profit will be 300%. with a big demand for porches by home owners. The same molds will make chimney blocks, posts, ornamental fences, etc. Write for the Porch Mold Bulletin.

W. E. DUNN MFG. CO.
415 24th St. Holland, Mich.

MOLDS SOLD ON 15 DAYS' TRIAL

ANCHOR BLOCKS

YOUR LOGICAL BUILDING UNIT



Continuous Air - Space Keeps Out Frost and Moisture. Made by the Wet Process Anchor Automatic Tampers. Built to fit any block machine. Write for Big Catalog and Special Offer to Contractors & Lumber Dealers

ANCHOR CONCRETE STONE CO.
ROCK RAPIDS, IA.



THE WOOD WORKER'S FRIEND

Get directions for building table and operating our Jointers. This information is valuable to wood workers. We manufacture 20 styles and sizes. Try a Jointer Head 30 days, if you are not pleased, return at our expense. Get prices. Manufactured by WHISLER MFG. COMPANY, Gibson, Iowa

BE AN ARCHITECT

Here's Your Chance

Carpenters, Bricklayers, Foremen, Superintendents, Contractors and all men in the building line, why don't you learn to estimate and make your own plans? A few hours of your spare time at home will soon qualify you for an architect.

Architectural, Structural, Sheet Metal Drafting, Building Construction, Reinforced Concrete, Contracting and Building, Plan Reading, Estimating, etc., etc.

Would you like to see our catalog? Which subject fills your wants? Write now. Then in a short time you will say, I'm drawing big pay because I had the grit to work while others play.

Columbia Correspondence School, Dept. B, Philadelphia, Pa.



Hydro Stone

The Logical Building Unit

The beauty and effectiveness of this building material bring prices equal to those of Brick, Bedford Stone and similar materials.

Hydro-Stone machinery makes every size and shape stone necessary for the walls of a house, church, school or other buildings.

Write Today for Samples and Catalog

HYDRO-STONE COMPANY
240 Insurance Exchange Bldg., Chicago, Ill.

IVES PATENT WINDOW STOP ADJUSTER

Prevents Drafts, Dust and Window Rattling



The only stop adjuster made from one piece of metal with solid rim and heavy bed that will not cup or turn in tightening the screw

Descriptive circular mailed on application

THE H. B. IVES CO.
Manufacturers of Builders' Hardware
NEW HAVEN CONN. U S A.

ORNAMENTAL CONCRETE



VASES

FLOWER BOXES

CONCRETE VASES are easily and economically made with Dunn Vase Molds. Attractive and symmetrical pattern. A good selling proposition everywhere. Profits are unusually high.

FLOWER BOXES are the fashion in flower culture. Every home owner wants one or more. Use Dunn Molds for ease of manufacture and satisfaction to customers. Write for Ornamental Concrete Bulletin for complete information on Vase and Flower Box Molds.

W. E. DUNN MFG. CO.
415 24th Street Holland, Mich.

SOLO ON 15 DAYS' TRIAL

Was \$100
Now \$49

NEW OLIVER NINE FOR HALF PRICE

The Oliver Typewriter Company created a nationwide revolution on March 3rd when it announced its new plans. No more expensive sales force of 15,000 men! No high office rents in 50 cities! No idle stocks!

But dealing direct with the people—cutting out all middlemen. The old plan cost the buyer a needless \$51 per machine. We now save that and give it to you. So the new price for standard \$100 Oliver is \$49.

The Oliver Nine—our latest model—direct from the factory to you. It is the finest, the costliest, the greatest typewriter ever built. Used by the leading concerns.

Who would ever pay over \$49 again for a new typewriter? Especially when we not only make a new low price, but also give the lowest terms—about 10 cents per day—over a year to pay.

STARTLING
FACTS



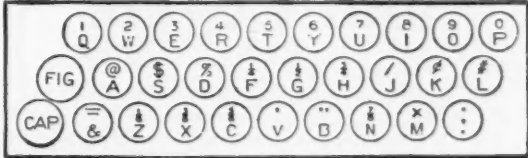
Contractors' Special!

For contractors, our Special Oliver Nine is unbeatable. Besides being the best for ordinary correspondence, none can equal it for figure work. It has the characters you need, as shown on the keyboard herewith.

Over 600,000 Sold

And remember, carbon copies of everything written, for your records.

Our new price and terms ought to sell an Oliver to every contractor. Longhand writing will be out of date among progressive men.



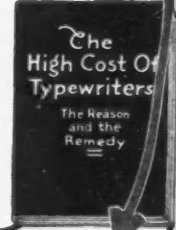
Free Trial—No Money Down

FREE BOOK

Just send for our amazing disclosure entitled "The High Cost of Typewriters—The Reason and the Remedy." Then ask for a trial. You are not put under the slightest obligation. It is our new-day way of selling. It saves money for both of us. You act as your own salesman—the Oliver itself must convince you. You pocket the \$51.

FREE BOOK

Send in the coupon below today for one copy of this sensational book that exposes the secrets of the typewriter world. (609)



THE OLIVER TYPEWRITER COMPANY
2405 Oliver Typewriter Bldg., Chicago

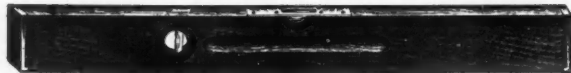
Mail me your book and further information—all free and without obligation to me.

Name

Street Address

City State

Stanley Tools



Stanley Plumbs and Levels

All numbers are make of thoroughly seasoned selected stock. They have many special features which will appeal to CARPENTERS, MACHINISTS, MASONS, PLUMBERS, MILLWRIGHTS—in fact to every workman who has occasion to use a Plumb and Level.

A STANLEY Plumb and Level can be readily identified by an ingenious device of blackening both plumb and level side views. This device concentrates the light directly on the bubble which with the patented feature of having two indelible lines at the crowning or central point of the glass, enables the user to very clearly and quickly locate the position of the bubble.

Many styles and sizes from which to make a choice. For Sale By All Hardware Dealers.

ADDRESS

STANLEY RULE & LEVEL CO.
NEW BRITAIN, CONN. U.S.A.

QUICK ACTING *The Taylor* SELF LOCKING

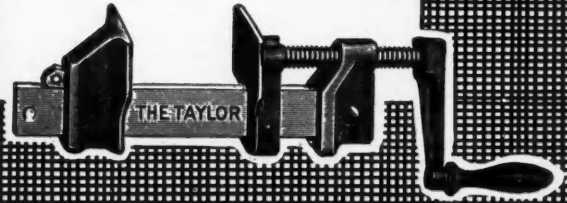
Clamps

An Investment
Not an Expense

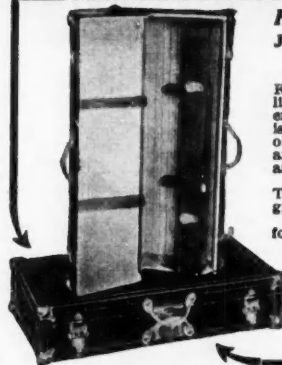
The quickest and strongest clamps made. That's why they're the standard in U. S. Government Works and in such concerns as General Electric Co., Singer Sewing Machine Co., Victor Talking Machine Co., etc.

We can PROVE it in your own shop. Write today.

James L. Taylor Mfg. Co.
Poughkeepsie, N. Y.



Carpenter's Tool Trunk



Handy—Practical—Economical
Just the thing in which to carry your tools.

It can be carried anywhere—like a suitcase. Keeps your tools in good shape, and lasts a lifetime. Made of basswood, covered with enameled steel. Has a steel binding, and is lined with paper. Locks and bolts are of brass. Contains drawer for small tools and an arrangement for holding steel square, level and three saws. Size 32 inches. Price \$7.00. If your dealer doesn't handle this "Handy Tool Trunk", we will credit you with 50c for giving us his name when you order your chest. Simply send us his name and your check for \$6.50 and we will send you chest at once.

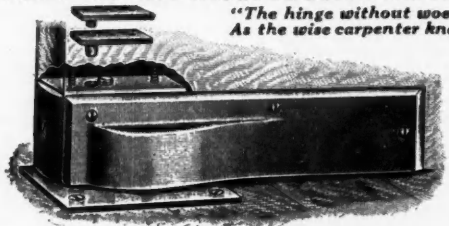
F. ENDEBROCK TRUNK CO.

1417 South 14th, ST. JOSEPH, MO.

Say Shelby "CHIEF"

When You Talk About FLOOR HINGES

*"The hinge without woes,
As the wise carpenter knows,"*



Manufactured by
The Shelby Spring Hinge Co., Shelby, O.
Sold Everywhere



Lowest installation cost

SORLIEN CEILING BED

The Sorlien Ceiling Bed is the ideal bed for sleeping porches, apartments or houses of any size. Either closed or open it leaves the ceiling complete. The Sorlien can be installed for from 50% to 90% less than any other disappearing bed.

Install the Sorlien Ceiling Bed. Write for catalogue today. The Sorlien sells for \$40.00 f. o. b. Minneapolis.

Sorlien Ceiling Bed Company
410 Sixth Ave. South Minneapolis, Minn.

Easily installed in either old or new buildings by any good carpenter



DAMP-PROOFING PERCOPROOF COMPOUND

Makes Foundations Impervious to Moisture

Eight Thousand Gallons of Percoproof were used for waterproofing the Cincinnati General Hospital Buildings ::

APPLIED with a brush direct to foundation walls, concrete construction, masonry, or stucco surfaces, Percoproof forms an unbroken, elastic facing that fills every pore and crack and prevents all seepage and moisture from penetrating. Unlike ordinary waterproofing materials, Percoproof contains no oil and requires no thinning. It comes ready for use and is equally satisfactory in all climates and at all seasons. *Write for our damp-proofing booklet.*

THE PHILIP CAREY COMPANY
136 Wayne Ave., Lockland Cincinnati, Ohio





Carpenters, Builders, Attention!

You owe it to yourself, as well as to the property owner for whom you are working, to see that his buildings are adequately equipped with proper protection from loss by lightning.


His confidence in your judgment will make it easy for you to secure this additional work.

The Barnett System of Guaranteed Lightning Protection is the easy way to more profits on the same job. Our rods are in big demand and there is a big profit in selling them. They are made of pure copper cable, with attractive fixtures that are easily put on any building.

Why not equip yourself to take advantage of the opportunities for this work which are continuously arising? Let us show you the way to more profits on the same job.

FREE -- Cable Samples, Price List and Catalog. Write for them today.

JOS. L. A. BARNETT & CO.
RIVERSIDE, IOWA



SILVER LAKE A Sash Cord

The guaranteed sash cord (since 1869 the standard) not only outwears common cords, but outwears chains and ribbons. The name Silver Lake A is printed on every foot of the genuine. Guaranteed full lengths.

Silver Lake Co.
Newtonville, Mass.



The Practical Workman is Sure to know the Reason Why



GOODELL PRATT

1500 GOOD TOOLS

Write for Complete Catalog

Goodell-Pratt Company
Greenfield, Mass. *Toolsmiths*



When you think of tools, think of

"Red Devil" Carpenter's Tools

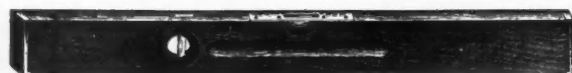
and you will have tools worthy of your skill. The "Red Devil" trade mark on Auger Bits, Screwdrivers, Mitre Boxes, Pincers, Pliers, etc., means satisfaction.

To be obtained from dealers. If not, write for circular matter.

Smith & Hemenway 106 Chamber St.
New York City



Stanley Tools



Stanley Plumbs and Levels

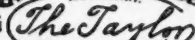
All numbers are made of thoroughly seasoned selected stock. They have many special features which will appeal to CARPENTERS, MACHINISTS, MASONS, PLUMBERS, MILLWRIGHTS—in fact to every workman who has occasion to use a Plumb and Level.

A STANLEY Plumb and Level can be readily identified by an ingenious device of blackening both plumb and level side views. This device concentrates the light directly on the bubble which with the patented feature of having two indelible lines at the crowning or central point of the glass, enables the user to very clearly and quickly locate the position of the bubble.

Many styles and sizes from which to make a choice.
For Sale By All Hardware Dealers.

ADDRESS

STANLEY RULE & LEVEL CO.
NEW BRITAIN, CONN. U.S.A.

QUICK ACTING  SELF LOCKING

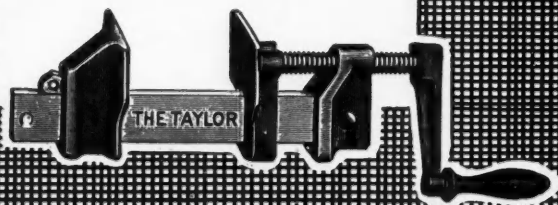
Clamps

An Investment
Not an Expense

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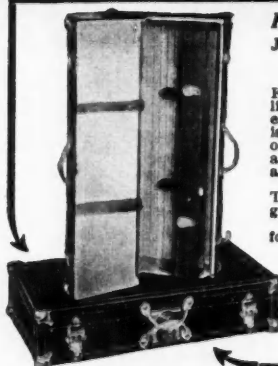
We can PROVE it in your own shop. Write today.

James L. Taylor Mfg. Co.
Poughkeepsie, N. Y.



Carpenter's Tool Trunk

Handy—Practical—Economical
Just the thing in which to carry your tools.



It can be carried anywhere—like a suitcase. Keeps your tools in good shape, and lasts a lifetime. Made of basswood, covered with enameled steel. Has a steel binding, and is lined with paper. Locks and bolts are of brass. Contains drawer for small tool and an arrangement for holding steel square, level and three saws. Size 32 inches. Price \$7.00. If your dealer doesn't handle this "Handy Tool Trunk", we will credit you with 50c for giving us his name when you order your chest. Simply send us his name and your check for \$6.50 and we will send you chest at once.

F. ENDEBROCK TRUNK CO.

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Manufactured by
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Lowest installation cost


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THE PHILIP CAREY COMPANY
136 Wayne Ave., Lockland Cincinnati, Ohio





Carpenters, Builders, Attention!

You owe it to yourself, as well as to the property owner for whom you are working, to see that his buildings are adequately equipped with proper protection from loss by lightning.

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FREE -- Cable Samples, Price List and Catalog. Write for them today.

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SILVER LAKE A Sash Cord

The guaranteed sash cord (since 1869 the standard) not only outwears common cords, but outwears chains and ribbons. The name Silver Lake A is printed on every foot of the genuine. Guaranteed full lengths.

Silver Lake Co.
Newtonville, Mass.




The Practical Workman is Sure to know the Reason Why.

GOODELL-PRATT

1500 GOOD TOOLS

Write for Complete Catalog

Goodell-Pratt Company *Toolsmiths*
Greenfield, Mass.



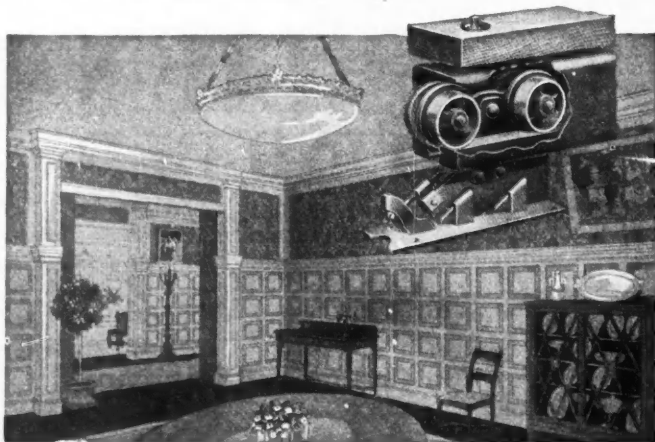
When you think of tools, think of **"Red Devil" Carpenter's Tools**

and you will have tools worthy of your skill. The "Red Devil" trade mark on Auger Bits, Screwdrivers, Mitre Boxes, Pincers, Pliers, etc., means satisfaction.

To be obtained from dealers. If not, write for circular matter.

Smith & Hemenway 106 Chamber St.
New York City





Convenience and the Modern Home.

Every home builder strives to achieve convenience in arrangement. Doorways present a serious problem.

RICHARDS-WILCOX SLIDING DOOR EQUIPMENT

solves the problem. Doors hung on this equipment slide out of sight and out of the way, eliminate the danger of injury to little fingers, marring of furniture and kicking up of rugs. Permit proper lighting and ventilation—and they stay where they're put.

Roller and ball bearings make the doors slide easy. Fibre wheels and wood-lined track make them silent. Lateral and vertical adjustments of the hangers provide for settling and shrinking of building walls. Quality of material and workmanship insures long and satisfactory service. Adaptability of the line covers all conditions and requirements—"A Hanger for any Door That Slides."

Sold by the Best Hardware Trade Everywhere. Write for Catalog.

Richards-Wilcox Manufacturing Co.

SAN FRANCISCO
LOS ANGELES
NEW YORK
CHICAGO

AURORA, ILLINOIS, U.S.A.

Richards-Wilcox Canadian Co., Ltd., London, Ont.

PHILADELPHIA
MINNEAPOLIS
BOSTON
ST. LOUIS

"A Hanger for any Door That Slides."



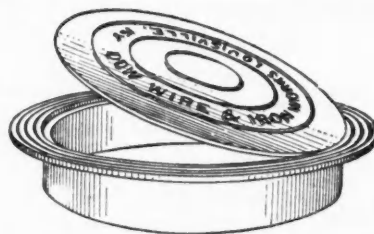
Make Perfect Stucco and Pebble Dash
and make more money doing it with the Improved Automatic Stucco Machine.

The Automatic Stucco Machine

as now improved, applies stucco and particularly pebble dash in an even uniform coat, that will be stronger and far superior to hand work. Good pebble dash work cannot be done by hand. This machine is specifically adapted for that work, as it throws the pebbles with great force and securely embeds them in the stucco. The Automatic Stucco Machine enables you to give your customer a durable, artistic finish at the price of a good painting job. You can make big money doing remodeling and refinishing work with this machine.

Bricklayers, Masons, and Plasterers International Union of America have recognized and agreed to use the Swenson Automatic Stucco Machine.

Write for further particulars and special discount to builders.
AUTOMATIC STUCCO MACHINE CO.
51 E. 42nd St., New York City, N. Y.



BUILDERS' IRON WORK

Window Guards, Elevator Enclosures, Elevator Cabs, Hangers, Ornamental Iron, etc., etc., etc.

DOW WIRE & IRON WORKS (Inc.) 215 Buchanan St. LOUISVILLE, KY.



PAYS FOR ITSELF ON THE FIRST JOB

The Pearson Automatic Shingle Nailer

Do your nailing fast—faster than ever before. you can use this Pearson's Nailer on any pitch roof. Wear mittens, gloves, etc. This "Hand Nailer" is the only Nailer—throw nails in by the handful—then start nailing. Nails easily driven through tin or quite heavy sheet iron.

These nailers are made in two sizes—The BLUE Nailer for 3d. common No. 14 gauge wire nails. The RED Nailer for 3d. galvanized No. 13 gauge 1 1/4-inch wire nails.

The regular price is \$7.00, but if you order from this ad, we will send it prepaid parcel post for \$5.00. This offer is liable to be withdrawn, so act now.

PEARSON MFG. CO. - ROBBINSDALE, MINN.

CHIEF ALL-STEEL CUPOLA

New-improved, scientifically designed ventilating cupola for all buildings. Up-to-date in design, material and construction. Used and approved on hundreds of farms. Made of heavily galvanized steel with base strongly braced. Can't rust, rot, or blow off. Absolutely storm-proof and bird's-nest proof.

Easy to Install—Sure to Please Your Customers

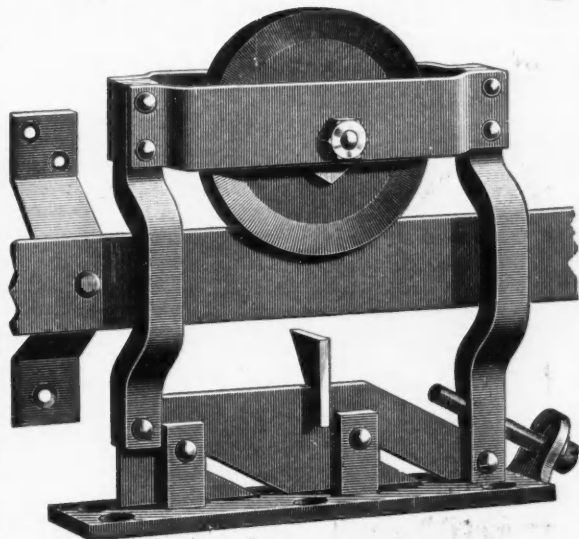
Chief Cupola saves time and labor installing—base bolts directly to roof and cupola bolts to the base. Only six bolts needed. Meets all requirements—insures adequate ventilation—satisfies all users. Write for full description, prices, etc.

Schrauger & Johnson Co.

430 Walnut Street, Atlantic, Iowa



Lane's Ball Bearing



THE BEST HOUSE DOOR HANGER FRAME ALL STEEL

Bearing made and hardened just the same as similar bicycle parts. Hanger guaranteed in every respect. Ask any dealer or write us for catalog showing large variety of styles for every requirement.

Lane Brothers Company

Cherry Street

Poughkeepsie, N. Y.

Are you sure of your NAILS?

Do you KNOW that they are properly protected from rust—rust which rots away the best carpenter job and necessitates expensive repairs?

M. I. F. nails don't rust! They are thoroughly galvanized by a heavy coating of zinc.

M. I. F. nails can be used anywhere a copper nail is used—and at half the cost.

Malleable Iron Fittings Co.
BRANFORD, CONN.



Trade **SIMPLEX** Mark
Reg. U. S. Pat. Office

ROOFING NAILS

FOUR NAILS at PRICE OF ONE

When You Buy Them

ONE NAIL in place of FOUR

When You Drive Them

BECAUSE the Simplex has four times the head area of an ordinary roofing nail—hence four times the holding power, as head area is the all-important point in laying prepared roofing or sheathing papers.

Demand Simplex Nails from your hardware dealer. Don't buy prepared roofing unless Simplex Nails are packed in the rolls. **FREE** samples sent on receipt of request accompanied by dealer's name.

H. B. Sherman Mfg. Co. Battle Creek, Mich.



For Garage Doors of All Kinds

Whether the garage door be sliding or swinging there is the proper McKinney hardware to hang it—hinges, door hangers and track—all especially designed for garage use, door handles, latches, foot and chain bolts, etc.

McKinney Garage Door Hardware

Careful selection of door hardware is of utmost importance if the garage is to be a success. The door is the most used part of the garage, and should not only add to the attractiveness of the whole structure but be easy to operate as well.

Chief among the features of McKinney Garage Door Hardware aside from its absolute dependability is its neat design, and the rich and durable finish. McKinney hung doors are a source of satisfaction to the owner and a ready reminder of the valuable service rendered by the man who hung them. Ask for McKinney Garage Hardware of your dealer—all goods in this line are from stock. Write for Builders' Catalog "A11."

McKinney Manufacturing Co.

Makers of hinges, bolts, hasps, door hangers,
steel door mats, hardware specialties

Pittsburgh, Penna.

RELIABLE - FOLDING SCAFFOLDS

Save You Time and Money!

Reliable Scaffolds can be put up and taken down in a fraction of the time required for the old wood scaffold.

You simply drive four nails and your bracket is hung. With a set of "Reliables", your men are at work 10 minutes after leaving the ground.

The dotted nail holes make it possible to remove this bracket without effort and the nails can then be driven in without defacing the siding.

The actual saving in money on waste lumber and nails will pay for the Reliable Bracket in a short time and from then on will be a source of additional profit to you

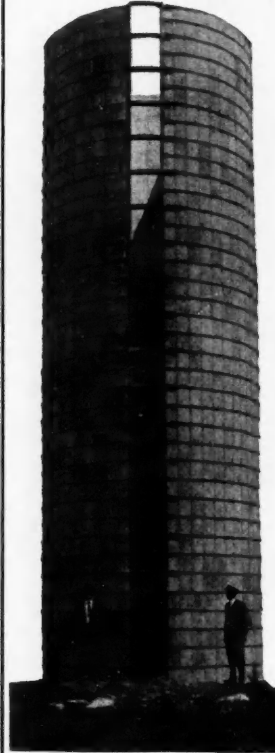
Ask your dealer to show you the Reliable and if he cannot supply you, write to us for catalogs and prices, giving us his name.

Elite Manufacturing Co.
ASHLAND, OHIO



Pay for Themselves in Two Jobs

4 REASONS WHY YOU, TOO, CAN MAKE BIG MONEY BUILDING



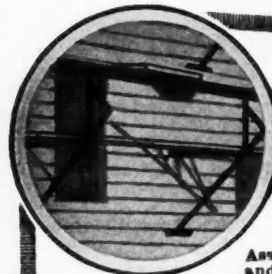
PERFECTION STAVE SILOS

1. "Perfection" Concrete Staves are made "wet mix"; they are strong and non-porous. All joints are mortared and the silo is air tight.
2. "Perfection" Silos, Water-Supply and Stock Tanks are easily and quickly built; a 14x35-ft. Silo can be erected in two days.
3. "Perfection" all-steel door frame and steel-door system is the most convenient on the market and gets the silo buyer's name on the dotted line.
4. Let us ship you enough "Perfection" moulds and all the rods, lugs, steel frames and steel doors to build a sample silo at your factory at a total cost of only \$37.15, and this sample silo will "cinch" the silo business for you in your section.

Write now for full particulars of this big selling-profit-making proposition.

**Perfection Concrete
Stave Silo Co.**

621 Hubbell Bldg.,
Des Moines, Iowa



—The key to Confidence

"Safety First"

SCAFFOLDS

Assure absolute protection to yourself and your workmen. You cannot fall off.

They can be attached as fast as one man can hand them to another man, as there are no holes to bore or nails to drive. It is not even necessary to have your building sheathed. Equipped with tool shelf. Folds up flat for storing.

Write for catalog and trial proposition.

John Faragher, 811 So. Brooks St., Madison, Wis.

Good Profits

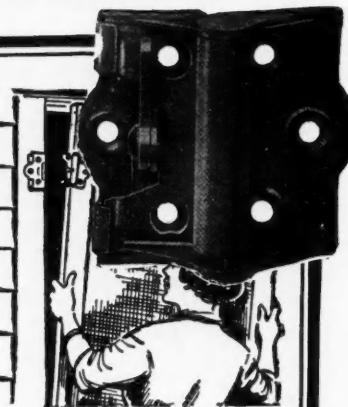
and satisfied customers are assured if you use

Jiffy Screen and Storm Door Hinges

Save time, temper and expense. No screws to bother with after door is hung.

Write for Prices and Free Sample

ROCK CITY MFG. CO.
Wabash, Ind.






That Carborundum Niagara Grinder Puts New Life Into Any Edge Tools—

MY plane bit for instance was way off—needed grinding. On one corner of my work bench is the ever handy Carborundum Niagara Grinder. A few turns and the bit is sharp—you never saw a wheel that cuts so clean and quick as that Carborundum Wheel. Every Niagara Grinder has one. Then a couple of rubs on a Carborundum sharpening stone and my plane bit has a keen, smooth edge that will stand up on the job. That Carborundum Niagara Grinder is a dandy tool. Easy and smooth running—well made—durable—every one of you fellows should have one.

Ask your hardware dealer. Send for the Carborundum catalog.

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.




ADZE

Without question more carpenters are using White Adze now than any other kind. They wear about twice as long is why. Ask your dealer.

Be Sure you get WHITE

The L. & I. J. WHITE CO.
10 Columbia St. Buffalo, N. Y.



As Enduring As a Sky-scraper

Equip yourself with a Caldwell Structural Tower and you have the endurance of a modern sky-scraper.

The same latticed, bridge-like construction goes into both and one is as lasting as the other. You will be as well satisfied with a Caldwell Structural fifty years from now as you are today.

Send for Catalogue

W. E. CALDWELL CO.
INCORPORATED
1990 Brook Street
LOUISVILLE
KY.

Caldwell
TANKS
AND
TOWERS

Worth \$.50 to Every American Builder Reader

**The King
of Hand Saws**

“VANADIUM”

20-in. \$2.00—26-in. \$2.50
22-in. \$2.15—28-in. \$2.75
24-in. \$2.30—30-in. \$3.00

Current quotations for Hand Saw Steel:
CRUCIBLE 8½ cents per pound
VANADIUM 35 "

This difference in price tells the story why Vanadium Steel Saws stand up better than any others.

Our Guarantee—If the Vanadium Steel Saw does not give better service than any other saw you have ever used, return it and your money will be refunded.

Our Offer—In order to get at least one Pennsylvania Vanadium Steel Saw into the hands of every reader of the American Builder, we offer a reduction of \$.50 from prices shown above on every saw ordered from manufacturers on coupon attached.

Manufacturers—**PENNSYLVANIA SAW CO., Frackville, Pa.**



PENNSYLVANIA SAW CO., Frackville, Pa.

I enclose \$..... for a trial ^{saw} Length..... inches.

Teeth..... pts. Narrow or Wide Blade.....

Straight or Screw Back..... Prepaid.....

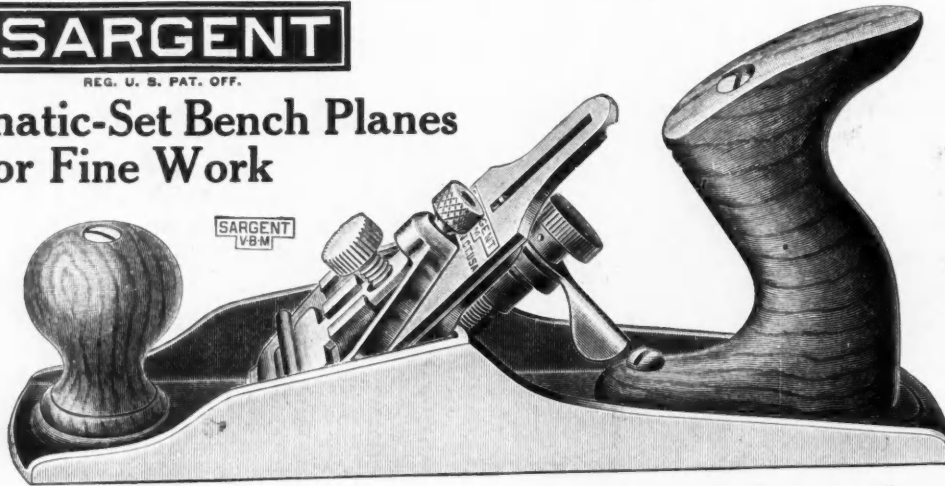
Name.....

Address.....

SARGENT

REG. U. S. PAT. OFF.

**Automatic-Set Bench Planes
Best for Fine Work**



Sargent Automatic-Set Bench Planes are best by trial and by the recommendation of America's best mechanics. They will do work requiring a finer degree of accuracy than any other plane on the market.

These Planes are made in six sizes with both smooth and corrugated bottoms.

The great interest in these Planes on the part of tool-users shows that the advantages and points of superiority—solidity, compactness, simplicity, ease of adjustment and, most of all, the automatic-set feature—are apparent to mechanics.

Catalog of Planes, with full information about these Automatic-Set Bench Planes, will be sent free on request.

SARGENT & COMPANY

51 WATER STREET

NEW HAVEN, CONN.

Sand's Aluminum Levels

Always Tell the Truth

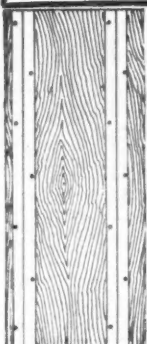
The standard of accuracy. And not only the most accurate—but easiest to read, even in the dark. Never rusts—cannot warp, split or crack—and are easily handled.

The lightest levels made—strong and durable because the greatest strength is placed where most needed. Ask your dealer to show you these levels, and also write for our new catalog.

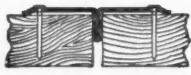
J. SAND & SONS Originators of Aluminum Levels 1023 - 29 Rivard Street, Detroit, Michigan



**Wind-Proof—Rain-Proof—Rot-Proof
Chief Galvanized Iron Barn Bats**



Make your buildings tight. Chief Galvanized Steel Strips fill the cracks between boards and make strong, neat, weather-proof joints. Keep out vermin. Cannot rot, warp or split like wooden batten. Always fit. Allow for contraction and expansion of boards without loosening nails. Furnished in 6-7-8-9-10 ft. lengths with interlocking joints. Write for full information.



Shows end view of Chief Batten with joint closed. Siding expanded. Note position of the batten in the crack.

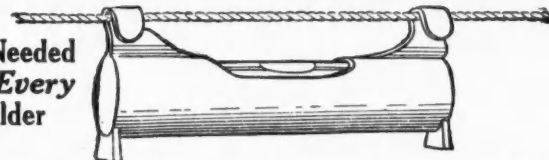


Shows end view of Batten with the joint open and siding contracted. Chief Battens automatically accommodate expansion and contraction.

SHRAUGER & JOHNSON
430 Walnut St. :: Atlantic, Ia.

The Simplex Aluminum Line Level

is Needed by Every Builder



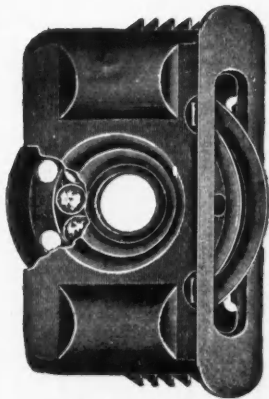
This two-inch level takes the place of the usual sixteen-foot straight edge. It saves time and labor and is positively accurate on lines stretched from one to forty feet.

Just stretch a line between the two points, attach the Level—that's all! Suitable for use by carpenters, builders, contractors, bricklayers, masons and architects. Can also be used as a pocket level. Made of aluminum, fitted with a proved level glass. Only weighs one-fourth of an ounce.

FITS THE VEST POCKET

If your dealer is out of stock send us 50c and the Simplex Level comes to your door prepaid. We will also send free tool catalog.

Mechanics Specialty Co., 421 Wood Street, Pittsburgh, Pa.



No. 10 Ball Bearing

"Grand Rapids"
Ball Bearing
ALL STEEL
Sash Pulleys

Fasten Automatically
No Nails—No Screws
Just Bore Four Holes

The automatic saw tooth fastening feature and the simple and easily made mortise will save in labor enough to pay for the pulleys.

The bearing contains eleven 1/4-inch Solid Steel Balls running in lubricant, insuring a noiseless, easy running wheel under any load.

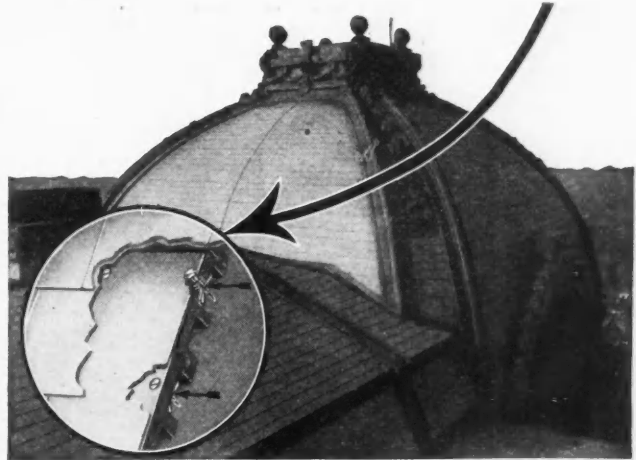
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Fifty Different Styles

Grand Rapids Hardware Co.

Manufacturers

158 Eleventh Street - Grand Rapids, Mich.



Roof tree to
Wall Radiator

BUILDERS everywhere now realize that the sure way to fasten anything, from slate or tile roofing to bathroom fixtures, picture moulding, kitchen fixtures or wall radiators, so they will stay fastened, is to use ANKYRA ANKOR BOLTS.

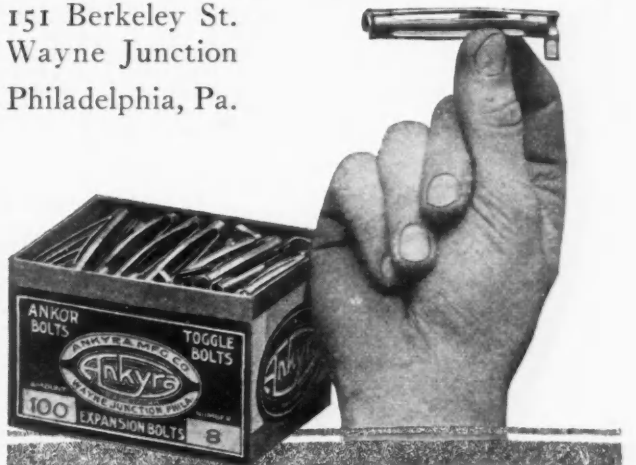
This applies to anything that is to be fastened in a building, regardless of whether it is to go on lath-and-plaster, glazed or hollow tile, concrete, expanded metal or wood.

Ankyras rivet themselves and yet you can remove the wood screws used with them and change the fixtures they hold any number of times.

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Ankyra Manufacturing Co.

151 Berkeley St.
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1917

Fine Beveled Edge
 Shank and Socket

Chisels



Tang and Socket
Butt Chisels

Plain and Beveled Edges

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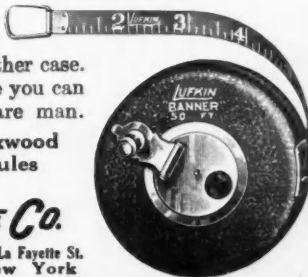
Measuring Tapes, Boxwood and Spring Joint Rules

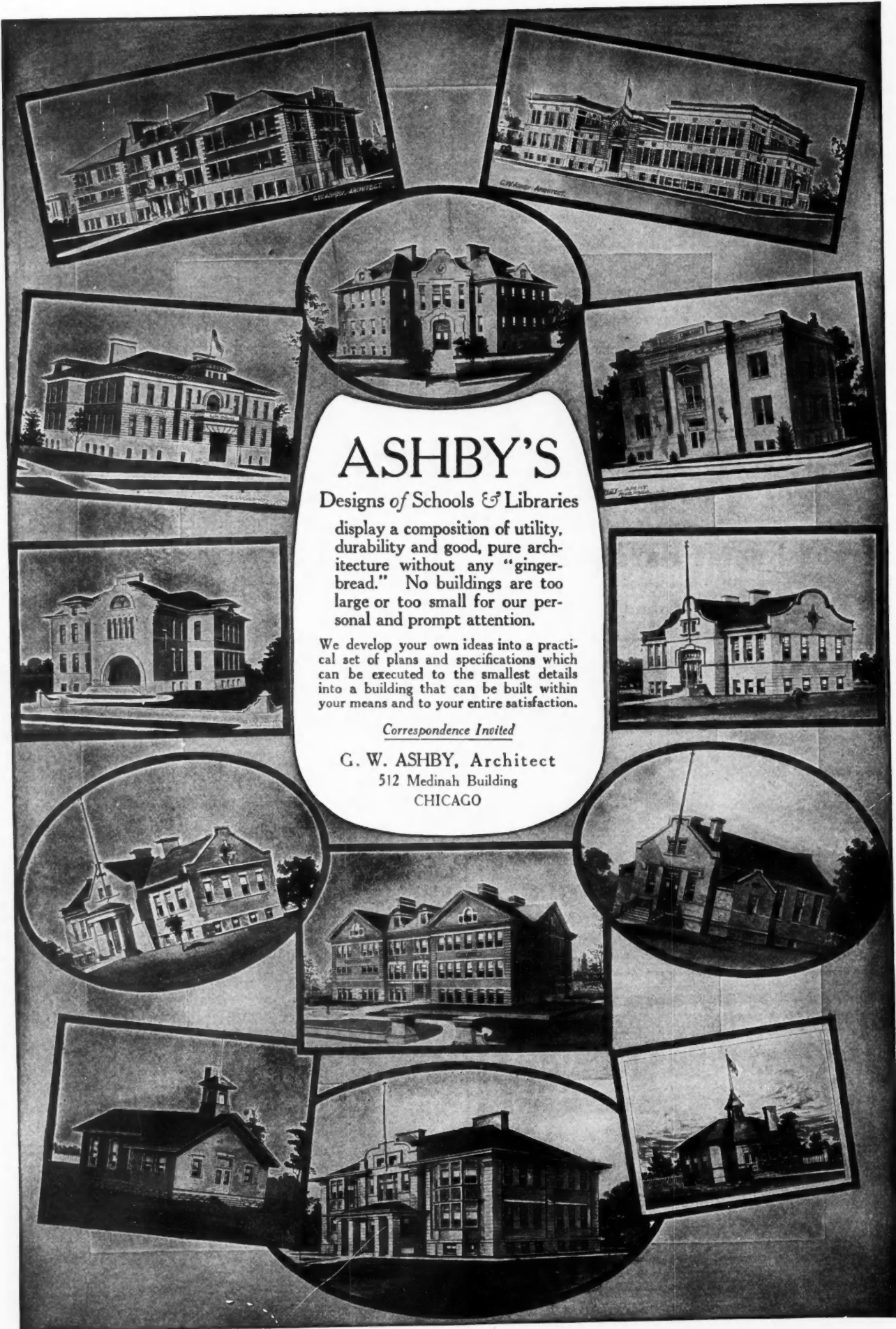
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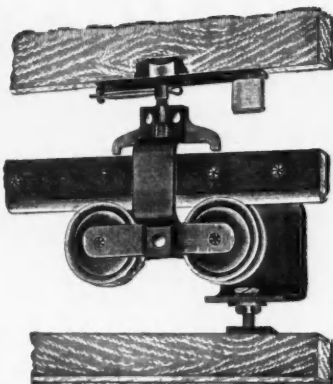
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512 Medinah Building
CHICAGO

Dix Noiseless Door Hanger

See that select hard maple Strip



Reinforced by high carbon steel bars



That's What makes them ABSOLUTELY NOISELESS

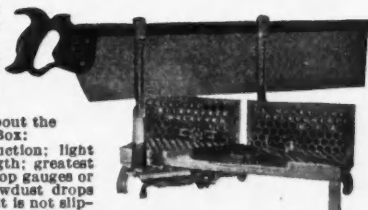


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BALTIMORE, MD., U. S. A.

A Mitre Box Bargain

IN order to extend the sale of Honey-comb Mitre Boxes we are offering a box at wholesale price to carpenters and builders in communities where we have no dealers.

Consider these points about the Honey-comb Mitre Box:
Unexcelled design in construction; light weight without loss of strength; greatest range of places for moving stop gauges or duplicate length gauges; sawdust drops through box out of the way; it is not slippery and will not mar the finest work; saw is elevated in such a way as to be free from bearings of guides; the highest grade materials and workmanship used throughout.



Snap this up! Get this high-grade mitre box at an extremely reasonable figure

Let us send you further information on the Honey-comb. Get our prices and Circular "A"
Rockford Mitre Box Co., 99 Forbes St., Rockford, Ill.

C. G. HUSSEY & CO.
Pittsburgh, Penna.

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In Sheets, Plates, Rolls

CORRUGATED COPPER CONDUCTOR PIPE



Copper Nails, Copper Rivets, Conductor Pipe, Eaves Troughs, Elbows, Shoes, Mitres, Soldering Coppers, Gaskets, Etc.



Garage Doors Should Open E-a-s-i-l-y

Door hangers can give a vast amount of trouble—hundreds of men will testify to that. Your client who is having a garage built, will not be slow to appreciate the superior advantages of the

TOPPING'S *Folding*

Garage Door Hanger Hardware

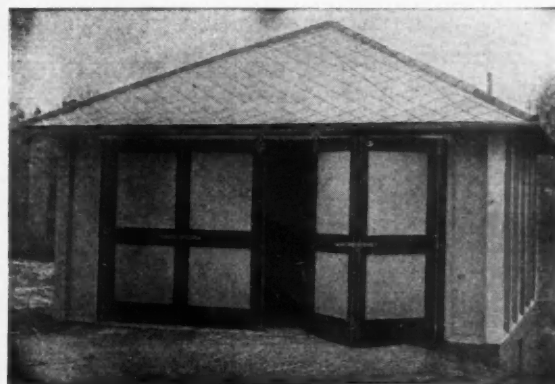
The Topping can be applied easily and quickly. Necessary hardware for each door is furnished with the hanger. When the door is opened it folds outward and is easily pushed to the side of the garage—folded and out of the way. No projections or guides in the floor are required.

With Topping hangers the door can be opened just a few inches or the full extent as easily as one would open an ordinary house door.

When the doors are closed all parts fit evenly and tightly so that snow or rain cannot penetrate.

You will be interested in a complete description of this equipment. Topping hangers mean guaranteed satisfaction on your garage job. Write for our folder on Topping Folding Garage Door Hangers.

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WANTED—Machine work or building; modern plant and foundry; J. & L. equipment; medium and light punch press work. **THE CHALLENGE MACHINERY COMPANY**, Grand Haven, Mich.

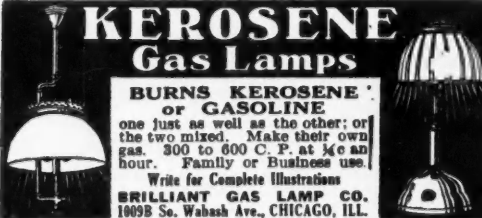
CARPENTER'S time sheets, order books, contract blanks, letter heads, bill heads. Samples and copy of Bookkeeping Hints for Mechanics free. **HADDON SPECIALTY CO.**, Box 449, Haddon Heights, N. J.

CALIFORNIA CORPORATION IN TOUCH WITH builders and contractors wants to represent up-to-date building material firm on West Coast. What have you? State full particulars first letter. **THE ARMOR CONCRETE CO.**, 310 Wright & Callender Bldg., Los Angeles.

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DRAFTSMEN'S, BUILDERS' AND FOREMEN'S COURSES. **MAACK'S ACADEMY OF ARCHITECTURE**, 1742 Chouteau Ave., St. Louis. Joist and Rafter List, 10 cts.



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**BURNS KEROSENE
or GASOLINE**
one just as well as the other; or
the two mixed. Make their own
gas. 300 to 600 C. P. at 1/4c an
hour. Family or Business use.
Write for Complete Illustrations
BRILLIANT GAS LAMP CO.
1009B So. Wabash Ave., CHICAGO, ILL.



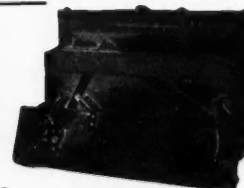
JOHNSTON'S Patent SHELF PIN

1 DOZ 15¢
1 GROSS \$1.00

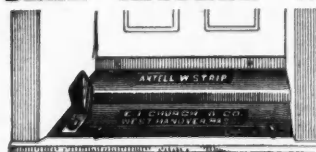
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by any one.*

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like one. Made of 3-ply veneer, covered with
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For bottom of doors and swinging
windows. Simply two pieces of steel.
Bottom plate hinged to sill with
staples, lies flat when door is open,
prevents wear on sill. Absolutely
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MEAD CYCLE COMPANY, DEPARTMENT L-122 CHICAGO

OLMSTED'S IMPROVED MITRE BOXES

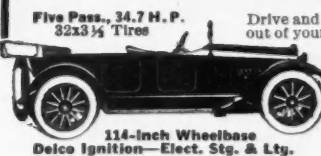
Wood and iron, with adjustable saw guides. Suitable for any cross cut or back saw. Insures perfect mitres. Carefully made. Several styles. Prices very reasonable. Write for circular.



Olmsted's Tool Grinder and Sharpener
No foot power required. Guide rests for tools, etc. Requires no skill for operating—does rapid work. Ask for further particulars.
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Five Pass., 34.7 H.P.
32x3 1/4 Tires
114-inch Wheelbase
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ZINOLIN

("Arnold-ized" Zinc)
Use this Zinc, ground-in-oil, instead of white lead. Non-poisonous. Whiter, doubly durable, forever fadeless. Less expensive. Quicker to work. Send for leaflet today.
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THE ZIMMERMAN IRON BASE

allows the air to circulate between the porch column and the floor, keeping both perfectly dry and preventing rot.
Have your architect specify from page 958 of Sweet's catalog or write for circular "G."
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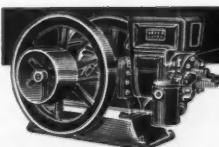
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The American Combined Level and Grade Finder With Compass

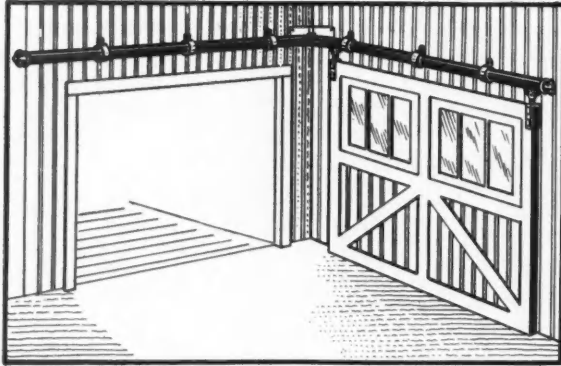


For Contractors, Carpenters, Masons, Bricklayers, Surveyors, etc.



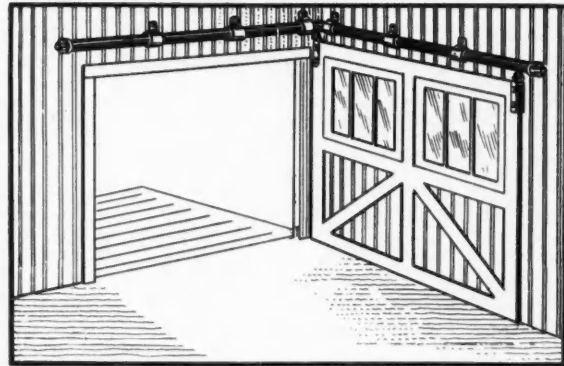
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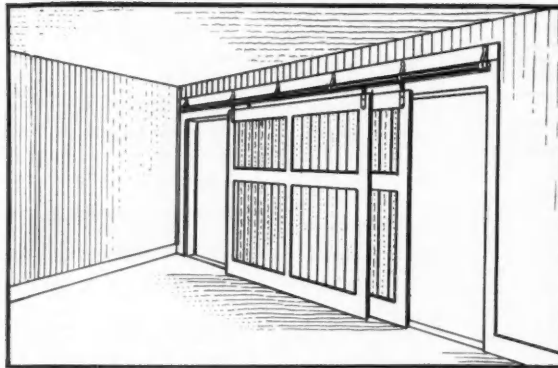
Cannon Ball "Curve" Garage Door Hanging

Permits the use of a rolling door where the opening is nearly as wide as the building itself. The door lays back against the wall when open—away from wind and accident and requiring only the corresponding space to its own thickness.



Cannon Ball "Right Angle" Garage Door Hanging

Suitable for use where the opening is placed to the extreme side of the garage. Brings the door back inside against the side wall—a perfect working arrangement for this type of garages, where the "Curve" installation cannot be successfully used.



Cannon Ball "Parallel" Garage Door Hanging

Suitable for garages where the doors cover the entire front of the garage. Permits of their being hung either inside or outside of the building. Parallel lines of track are so arranged that the doors can pass by one another.

FOR A PERFECT GARAGE DOOR USE CANNON BALL HANGINGS

The Hangings of Garage Doors present problems peculiar to that particular type of building and require special treatment. There are three types of Cannon Ball Garage Door Hangings: "Curve"—"Right Angle"—"Parallel"—

These 3 successfully meet every conceivable garage condition. They are quickly put up and operate easily and noiselessly. They allow maximum room for bringing in and taking out the car, as well as permanently satisfactory operation.

Our new booklet, "3 Cannon Ball Door Hangings," is just off the press. It contains floor plans of garages and valuable information about Garage Doors. It is FREE for the asking.

HUNT - HELM - FERRIS & COMPANY

61 Hunt Street

Harvard, Ill.

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Canton Metal Ceiling Co.	173	Kimball Bros. Co.	14	Simonds Mfg. Co.	162
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Carey Mfg. Co., The Philip.	149-189	Kissel Motor Car Co.	142	Slatington Bangor Syndicate.	145
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Case T. M. Co., J. I.	131	Koehring Machine Co.	19	Smith Co., Chas.	158
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Cement Tile Machinery Co.	24-28	Kolesch & Co.	10	Smith, Harry A.	185
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Chicago Spring Butt Co.	36	Mack & Co.	15	Stanley Rule & Level Co.	188
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Corbin, F. & F.	141	McKeown Mfg. Co.	163	Sykes Metal Lath & Roofing Co.	174
Cornell Wood Board Co.	151	McKinney Mfg. Co.	191	Syracuse Twist Drill Co.	8
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		Nice, Eugene E.	165		

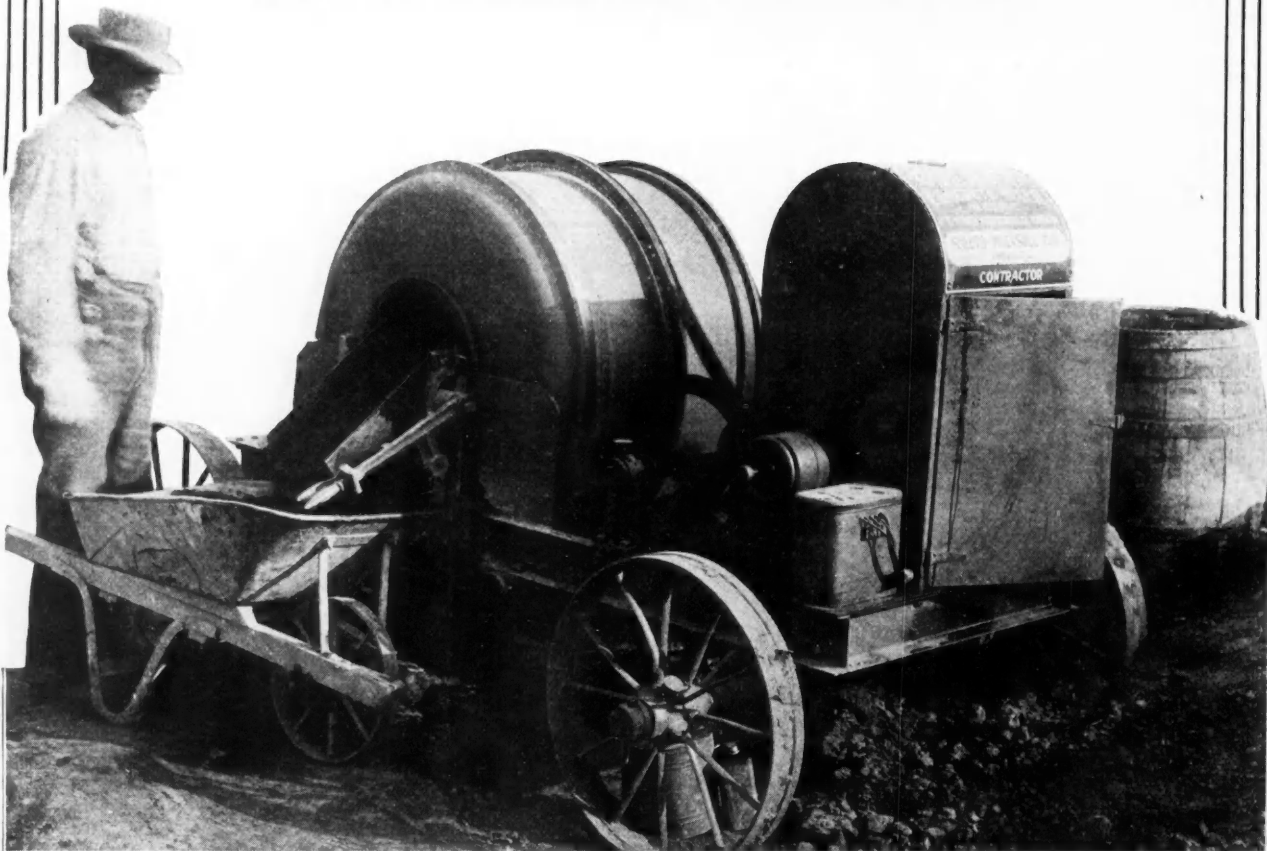
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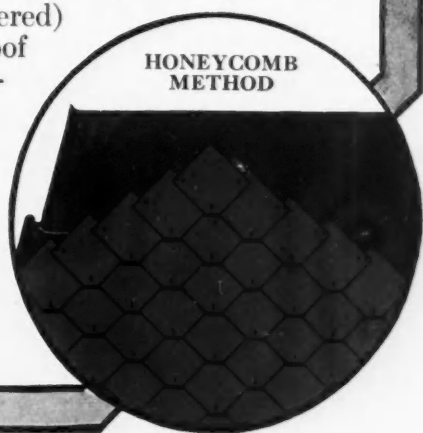
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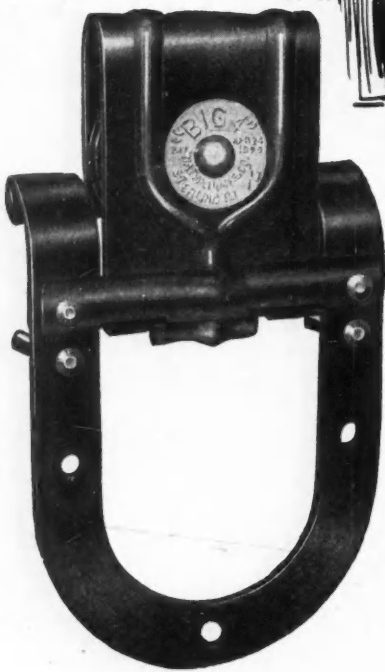
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