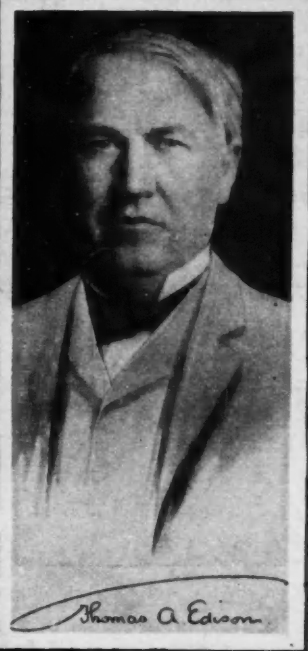


AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

EDISON'S
CEMENT
HOUSE



PRESENTED
IN THIS
NUMBER

THE "DUTRO" Sash and Door Holder



A Practical Tool for Practical Men

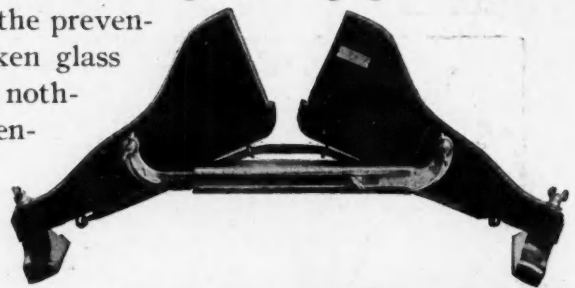
**Will Not Slip, Easily Adjusted,
Always Ready, Fits Any Tool
Chest, Will Hold Any Sash
or Door in a Perfectly
Rigid Upright
Position**

"The Dutro" will not mar any highly finished door or floor, as the jaws and feet are rubber lined. Steel clutches are provided to clamp over the rubber feet for use on rough floors, cement floors, etc., to protect rubber against unnecessary wear and tear.

No More Broken Glass

Will save its cost in fitting and hanging 25 doors and sash in the prevention of broken glass alone, to say nothing

of the added convenience and pleasure of having a perfect tool always at hand to fit your doors and sash.



If
your
hard-
ware deal-
er cannot sup-
ply you, send us
\$3.00
and we will deliver
one prepaid.
Read our
Guaran-
tee.

Wherever, Whenever ^{You} Want It ^{It's} There

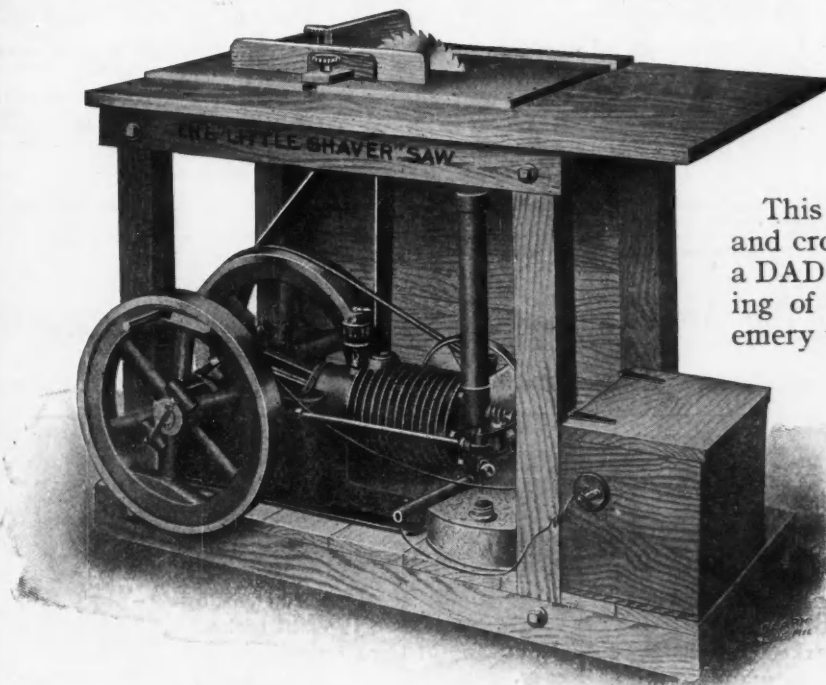
OUR GUARANTEE

If the "Dutro" does not fulfill all claims made for it your money is refunded for the asking. **We take your word.** Send for "A Talk With Dad." It tells you all about it.

DUTRO MANUFACTURING CO.

331-333 S. Main St.,

MASON CITY, IOWA



Do Your Own MILLWORK

This portable saw rig will rip and cross-cut 2½-inch lumber, has a DADO head which will do plowing of window and door frames, emery wheel for sharpening tools, strong 3-horsepower water-cooled engine, iron table fitted with gauges, the entire outfit strongly built, ready to start when it reaches you. Can be moved from job to job, total weight 615 pounds.

THE "Little Shaver" Floor Scraper

has all the weight on the blade and not on the handle, as in other scrapers. Nothing but a large hand scraper. A boy can do the scraping. Simplest and most satisfactory machine to work on the market.



WRITE US

for folder
and prices
on these
two time
and money
savers.

Do it today

Inter-State Equipment & Engineering Co., Old Colony Bldg.
Chicago, Ill.



The American Floor Surfacing Machine

is the original and only two-roll, self-propelling, dust collecting machine, protected by U. S. and Foreign patents, and the only one that will satisfactorily surface any kind of a wood floor, and has been in general use by contractors, hardwood floor companies and others for over five years.

Its work is rapid, regular, smooth and even, because the power that drives the rolls propels the machine at the same ratio of speed.

It has established the standard for surfaced floors, and the only machine whose work is specified by leading architects and meets the requirements of contractors, owners and hardwood floor companies for finely finished, smooth, even floors.

It has surfaced and polished millions of square feet of the finest floors in America and Europe.

Don't be fooled with an imitation, but get a machine that does work in paying quantities, and can be operated in small rooms.

The only one whose construction is guaranteed and sold on its merits. Write for our book "Surfacing Floors as a Business."

Manufactured by

The American Floor Surfacing Machine Company
TOLEDO, OHIO

A NEW MACHINE

THAT WILL NOT ONLY DO THE WORK OF
10 Floor Planers and Scrapers

But will do it more perfectly

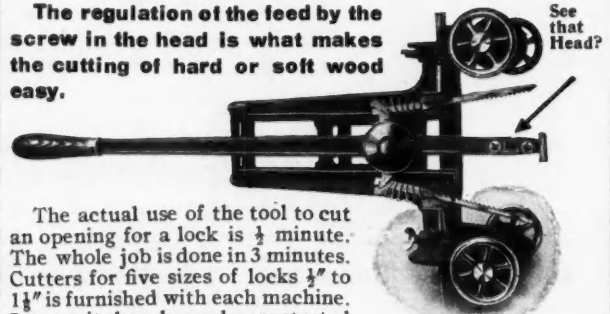
We claim and have proven that it has no equal competitor on the market for perfect work. We also manufacture the electric scrubber and polisher.

Floor Sanding and Polishing Machine Co.
Driven by Electricity. Automatic Throughout. Ask for Booklet "F." 628 Race Street PHILADELPHIA, PA.

Miller's Lock Mortiser

IS SCIENTIFIC

The regulation of the feed by the screw in the head is what makes the cutting of hard or soft wood easy.



The actual use of the tool to cut an opening for a lock is $\frac{1}{2}$ minute. The whole job is done in 3 minutes. Cutters for five sizes of locks $\frac{1}{2}$ " to $1\frac{1}{2}$ " is furnished with each machine. Its merit has been demonstrated thousands of times. Sent on Trial.

THE BOSS

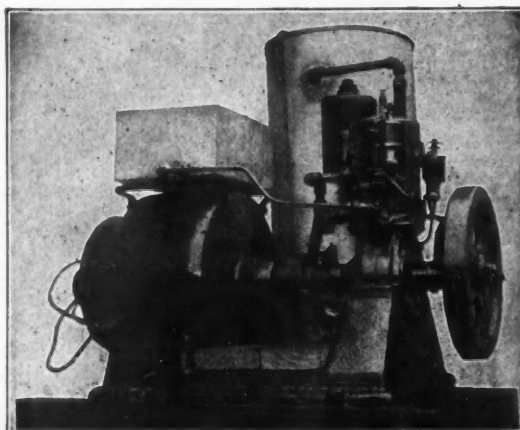
The Boss Double Swivel Head Floor Scraper and sand papering device is the only complete outfit. It costs nothing to convince yourself. The head can be set at any angle by loosening one bolt and by loosening two bolts you can tilt the knife up or down to suit the kind of lumber you are working. The price will surprise you. For further information call on or write the manufacturer,

G. J. Kepplinger
DWIGHT, - ILLINOIS

Butt Mortiser

Cuts the seats for butt hinges [in doors, jambs and other work. It does the work in one-third the time and makes a neat, clean, accurate job. Price, including rule gauge, 75 cents.

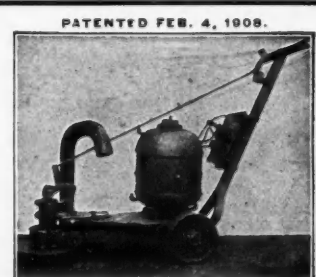
A. W. Miller Mfg. Co.
Western Office: RIVERSIDE, CALIF. Main Office: CINCINNATI, OHIO.



"THE WORLD'S
BEST
FLOOR FINISHING
MACHINE"

IT PLANES—GRINDS—SANDPAPERS—OILS—POLISHES.

Valuable Perpetual County Rights
For Sale by **JOHN M. CROOK**
Dept. A. C. B. Austin, Chicago, U. S. A.



DAY OR NIGHT—ANYWHERE—IT GRINDS FLOORS TO A GLASS SURFACE AND POLISHES TO A PIANO FINISH.

Outfit comprises; Outside Power & Light Generator. Inside Grinder & Polisher. Cable Attachments.



Edge Roller Attachment

Interchangeable to either side of machine. Works close to base-board.

Perfect Results Easily Obtained Schlüter Rapid Floor Surfacer

Built on the only correct principle. Guaranteed to be **THE BEST** machine with which to produce an even, smooth surface on any kind of wood floor old or new, hard or soft, and in all buildings; Residences, Stores, Factories, Bowling Alleys, Roller Skating Rinks, Reception and Dance Halls, etc. **THE SCHLÜTER** will remove all joints or warped edges, and leave the floor perfectly smooth. Will remove shellac, varnish, oil, wax, lime stains or the "muck" from skate wheels in a most satisfactory manner.

WE SELL MACHINE OR SURFACE YOUR FLOOR

EASY TO OPERATE. NO DUST. Over 500 contractors are now using our Machines. Made in two sizes. We will surface your floor. Mail us size of floor, new or old, and kind of electric power. **In eight hours will sandpaper 4,000 to 5,000 sq. ft. once over.** Write for new prices, catalogue and our **FREE TRIAL** proposition.

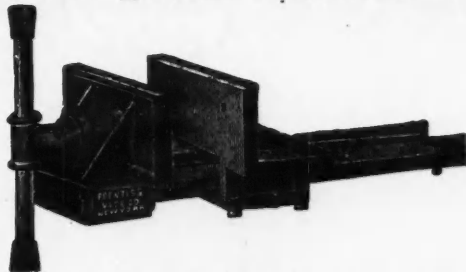
FREE Illustrated booklet containing full information sent free to contractors.

Sandpaper the Only Perfect Way

The **SCHLÜTER RAPID FLOOR SURFACER** is so constructed that a roller, to which a sheet of sandpaper is quickly adjusted, is brought in contact with the floor surface while revolving at a speed of **600 revolutions a minute.** It is guaranteed to do the work cheaper and smoother than any other machine or method. This machine will surface from one to two thousand square feet in eight hours. Cost of sandpaper and electric power from \$1.00 to \$2.00 per day

M. L. SCHLÜTER 28 S. Canal St. CHICAGO

BLAKE QUICK ACTING VISE



For Cabinet Makers and Wood Workers. Simplest—Strongest—Cheapest—Best
Send for Catalogue of all kinds of Vises
PRENTISS VISE COMPANY, MAKERS
44 Barclay Street, New York, U. S. A.

PARKS' COMBINATION WOODWORKING MACHINES

Make a Complete and Economical Operating Mill for CARPENTERS AND CONTRACTORS

Take our No. 460, for instance—here is a combination of

Friction Clutch Pulleys, to start and stop either or all machines at same time, will be furnished at small additional cost.

FIVE MACHINES IN ONE

- A Circular Saw
- A Band Saw
- A Jointer
- A Grooving and
- A Boring Machine

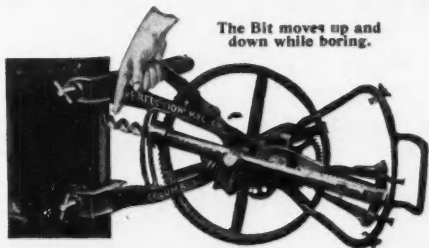


Our No. 460.

All stand ready for instant use. You do not have to take off any device and put on another and all are driven from one countershaft. No line shaft and large amount of floor space required for Parks' Combination Machine. Everything simple and strong and made to save time and operating expenses for the user. Any of the machines furnished separately or with other combination.

We Deliver on Short Notice.
GET OUR PRICES AND CATALOG
PARKS' BALL BEARING MACHINE COMPANY
Knowlton and Fergus Sts., CINCINNATI, O.
Originators of the Circular Saw-Band Saw and Jointer Combination Foot and Power Machines.

PERFECTION DOOR LOCK MORTISER



The Bit moves up and down while boring.

Weight 12 lbs., unbreakable malleable iron, automatic, ball-bearing Carpenters and builders cannot afford to be without it. 11-16 inch bit with each machine; any size furnished. Set the cam for any size mortise wanted, clamp on door, turn crank until finished.

Price of machine can be saved on 50 doors.
PERFECTION MFG. CO., 48 W. Patterson Ave., Columbus, O.
Rehm Hardware Co., 354 Blue Island Ave., Chicago, Ill.
Lee-Laumer Lumber Co., Birmingham, Ala.

3 New Features

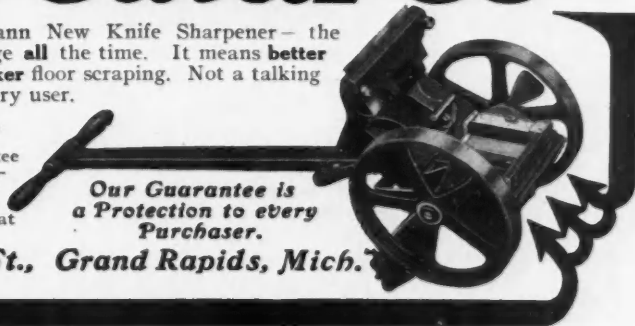
These three features form the Ackermann New Knife Sharpener—the invention that ensures a perfect cutting edge all the time. It means **better** floor scraping than hitherto—it means **quicker** floor scraping. Not a talking point but a device that saves dollars for every user.

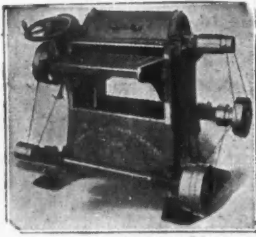
Ackermann Floor Scraper

The Ackermann is the **best** floor scraper. We guarantee it to do more, better and easier work than any other machine on the market. If it doesn't you get one free. Send for details of our offer under which any contractor may test the Ackermann Rapid Floor Scraper and Ackermann's New Knife Sharpener free at our expense.

J. B. ACKERMAN CO., 100 Pearl St., Grand Rapids, Mich.

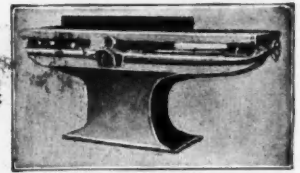
Our Guarantee is a Protection to every Purchaser.





Chicago No. 35 Pony Planer

Machines for Contractors



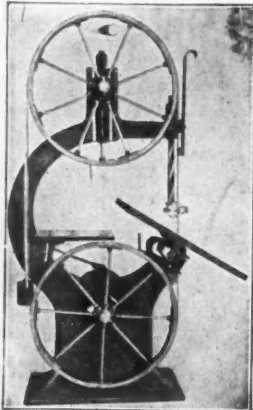
Chicago Hand Jointer
8, 12 and 16 in.

Every carpenter and builder can afford to invest in one, or more, of these machines. From our stock of 500 new and rebuilt machines contractors can obtain sufficient machinery to make them independent of local mills and their attendant delays and high charges. Stop paying somebody else profit—put it in your own pocket. Be in a position to estimate under competitors. You can do this by installing your own machinery. All our machinery is of special construction to secure fine finished surfaces and to reduce sandpapering to a minimum.

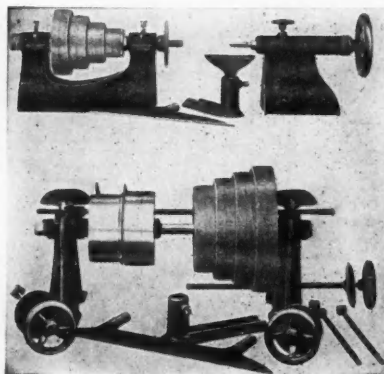
Prices are lower than you think. Send today for our monthly list of rebuilt machines (free to carpenters and builders).

Chicago Machinery Exchange

7-11 No. Canal Street, CHICAGO



Chicago No. 1 Band Saw
27, 32 and 36 in.



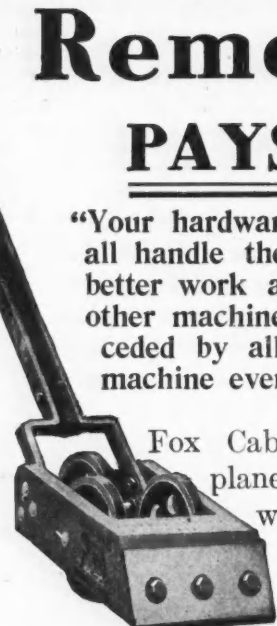
Wood Turning Lathe and Countershaft
16 and 20 in.



Chicago No. 10 Tilting Table
Improved Variety Saw Bench

**Fox
Floor
Scraper
No. 1**

A Perfect
Machine
for
Perfect
Work.



Remember—THE FOX PAYS FOR ITSELF

"Your hardware dealer will order it for you. They all handle the Fox Floor Scraper because it does better work and more of it in less time than any other machine on the market and is conceded by all to be the easiest running machine ever built."



Fox Cabinet Scraper

Fox Cabinet Scraper works like a plane. A FINE TOOL for fine work. Price, express prepaid, \$1.25.

(Write us for Catalogue.)



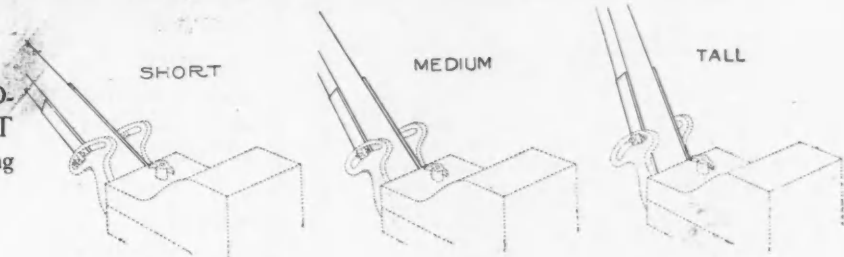
Brooklyn, Wis.

The Adjustable Floor Scraper

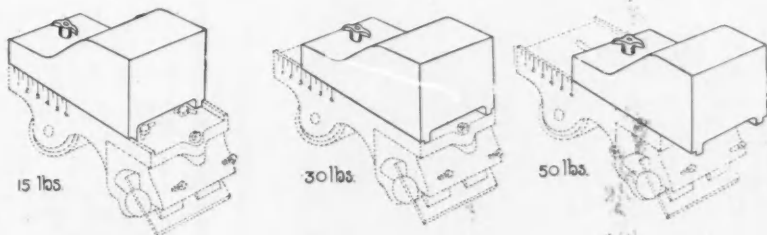
(PATENT APPLIED FOR)

Will do more and better work with less labor than any other Scraper made. Its exclusive features of adjustment enables it to do perfect work on any kind or condition of floors

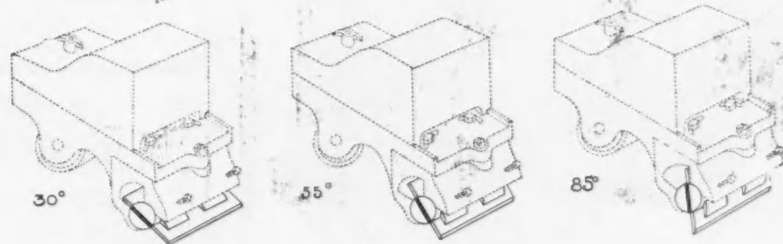
HANDLE CAN BE ADJUSTED TO HEIGHT OF OPERATOR—No lifting or pressing on the handle.



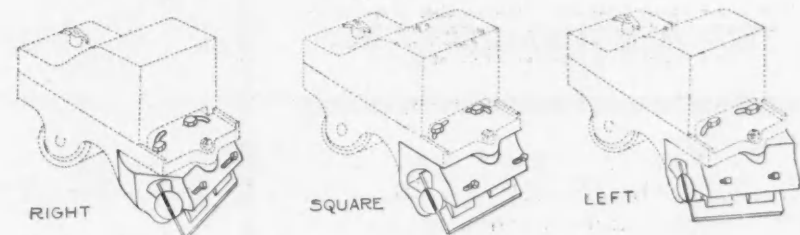
WEIGHT OF BLADE CAN BE ADJUSTED ANYWHERE FROM FIFTEEN TO FIFTY POUNDS—No variation from pressure to which adjustment is made.



ADJUSTMENT OF BLADE TO ANY VERTICAL DEGREE—According to requirements of work in hand.



BLADE MAY BE ADJUSTED TO ANY LATERAL ANGLE—giving any "shear" cut desired.



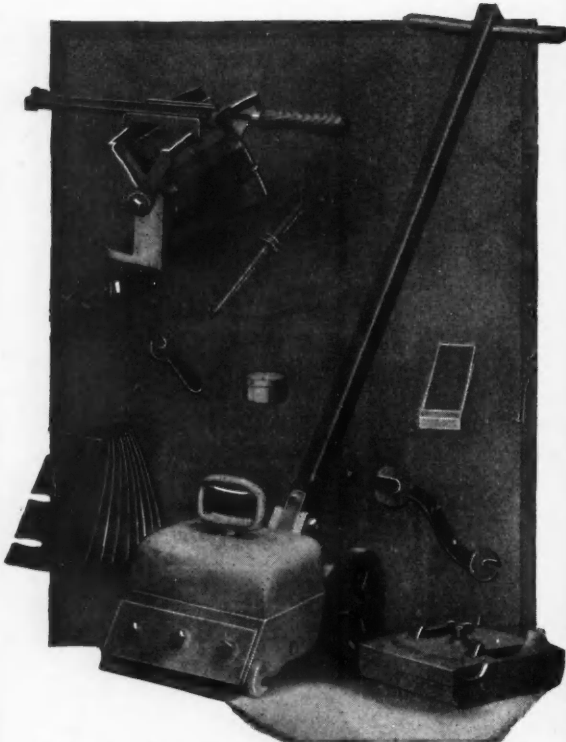
It stands to reason that any scraper lacking any one of these essential features of adjustment cannot be an all around success. The Adjustable is the only machine combining them all.

Any machine wherein the weight over blade is governed by pressing or lifting upon the handle cannot produce a smooth perfect job. Such variable pressure as is given by the operator's hand must result in an uneven, wavy surface. In the Adjustable the weight upon the blade is absolutely uniform at the pressure to which it is adjusted, hence a perfect cut is assured.

<p>Shipped on approval</p>	<p>Long Distance Telephone Mfg. Co. 1100 High St., SOUTH BEND, IND.</p>	<p>Sold on its merits</p>
------------------------------------	---	-----------------------------------

"Show Me"

That's the cry of the buyer to-day. No more "buying a cat in the bag." No more of this "taking the word of the manufacturer." Let the article speak for itself and if it has merit it will make its own sale.



The Acme Floor Scraping Outfit consists of the Floor Scraper, Blade Sharpener, Sander, One Dozen Blades, File, Gauge, Oil Stone, Two Wrenches, Two Bolts, Burnisher and Box of Tallow

I am ready to show you that the ACME FLOOR SCRAPING OUTFIT is the best equipment on the market to-day for floor scraping, by offering to send the complete outfit to you on ONE WEEK'S FREE TRIAL.

You be the judge and if the ACME is the scraper you want, buy it, if not, send it back at my expense.

Can I make any fairer proposition?

Booklet and further information will be sent on request.

JOS. MIOTKE
247 LAKE STREET
MILWAUKEE :-: WIS.

"Little Giant" Floor Scraper

Sent on Free Trial
20,000 "Little Giants" are in use

throughout this country and abroad. These were purchased because they were better; because they did more work—did it quicker, cleaner and cheaper—than any other machine made. So great is our faith in its ability to prove its worth to you that we are making the following liberal proposition.

Special Terms

A request from you brings a "Little Giant" to your door—you send no money and we pay all expenses. After you have tested it as thoroughly as you know how, and have found it satisfactory, pay for it. If you don't consider it the best floor scraper in existence, return it at our expense. That's all. Won't you give it this chance today?

CATALOG AND FURTHER DETAILS ON REQUEST
HURLEY MACHINE COMPANY,

155 South Jefferson Street, CHICAGO
71 First Street, SAN FRANCISCO
1010 Flatiron Bldg., NEW YORK

The Union Floor Scraper

Price \$35.00

A money maker for the contractor and a satisfied customer every time a floor is scraped.

The Union will pay for itself in two days.

SENT ON APPROVAL

GEO. J. BACHMANN
No. 501 Lyon St.
Grand Rapids, Mich.



WE PAY THE FREIGHT

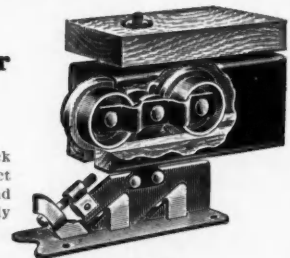
"RICHARDS' ROYAL" TROLLEY BALL-BEARING

House Door Hanger

Without Doubt the Best House Door Hanger Made

Wood-Header furnished with track wheels travel on polished maple. Direct center draft. Adjustment in hanger and track. Smooth running and perfectly noiseless.

Specified by Leading Architects
Sold by the Hardware Trade

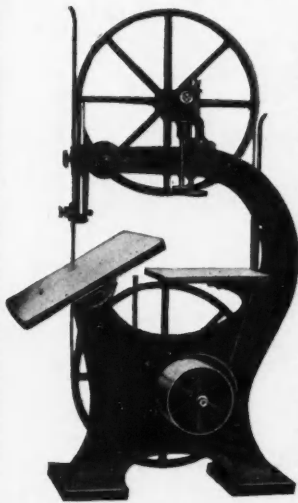


No. 122

MANUFACTURED BY
THE RICHARDS MFG. COMPANY
Door Hangers for all Kinds of Sliding Doors AURORA, ILL. U.S.A.
3rd Street

The
1909 Crescent Catalogue
is just off the press.

It contains eighty pages of valuable information for the prospective purchaser of wood working machinery.



If you are interested in motor driven wood working machinery you should by all means get it at once. If you do not want the motor driven kind, send for a copy anyway, describing: *Band Saws, Saw Tables, Jointers, Shapers, Borers, Swing Saws, Disk Grinders, Planers, Planer and*

Matchers, Variety Wood Workers, Band Saw Blades.

THE CRESCENT MACHINE CO.

224 Main Street

Leetonia, Ohio

U. S. A.

A Weber Floor Scraper
On Free Trial



I want you to be the judge of the Weber Double Acting Floor Scraper. I want you to make the trial, upon which you shall base your judgment, at my expense. All you've got to do is ask me to send you one of my machines and I'll do it. I'll take all the risk. All I ask you to do is try the scraper and if it isn't the best you ever saw send it back to me—at my expense. You can try it for 10 days.



Send for one of my booklets—it gives you the truth about floor scrapers.

And send for my 1909 price list of my 10 different priced machines weighing from 78 to 135 lbs.

JOHN F. WEBER, President

WEBER MFG. COMPANY
670 71st Ave., WEST ALLIS, WISCONSIN

The Floor Scraper

THAT'S ABSOLUTELY PERFECT

Of all the floor scrapers on the market not one can be quite as good as the Star, because no other embraces such durable features.

There's practically nothing about it to wear out. Consider the benefit obtained by the new mechanical principle. The principle that means better work and quicker.

The Star does **clean** work. A patented Ball and Socket device allows the blade to be set diagonally at any angle. This gives a shearing cut to the machine. It means a finished floor **free from planer marks and "waves."** It works the same on old floors as it does on new.

Star Scraper Co. - Elkhart, Ind.

Five Days Free Trial

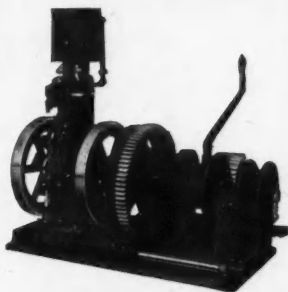
As a duty to yourselves you are asked to test this machine before you spend a cent on floor scrapers. A postal stating you will use the star for five days brings one to your door. We want you to be the judge of the best floor scraper. We want you to be thoroughly convinced of Star superiority.

We pay the Freight

Particular literature on request



EVERY CONTRACTOR AND BUILDER



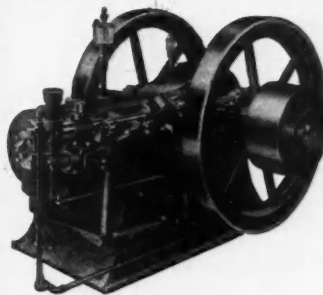
should know about our **Hoist** direct connected with **Gasoline Engine** for use with **Double Platform Material Elevators**. We furnish **Hoist and Elevator** complete ready to run. This outfit will elevate more building material at a less cost than by any other known method. Our Bulletin No. 5 will give you all particulars.

BATES & EDMONDS MOTOR CO.

LANSING, MICHIGAN

THE FOSS GASOLINE ENGINE

DIRECT TO YOU



We save you from 25 to 40 per cent on the Highest Grade Gas or Gasoline Engine.

Write for Price List and Catalogue.

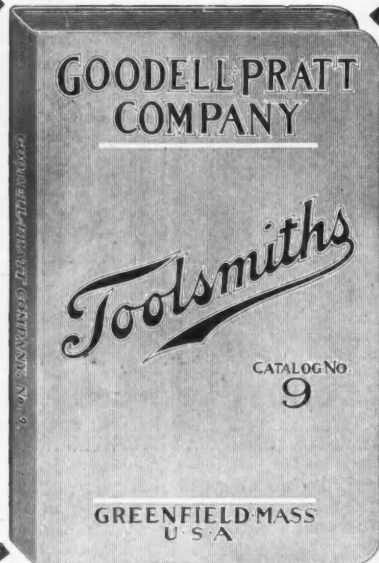
FOSS GASOLINE ENGINE CO.

754 Portage Street

KALAMAZOO, MICHIGAN, U. S. A.

TOOL CATALOG FREE

Every Carpenter should have one.
A postal brings it.



GOODELL-PRATT'S NEW No. 9.

CATALOG CONTAINS 272 PAGES,
ILLUSTRATING AND DESCRIBING
USEFUL AND LABOR-SAVING TOOLS

In this edition we are showing a number
of new items which everyone should know
about.

Goodell-Pratt Company

Toolsmiths

Greenfield, Mass., U. S. A.

MONITOR SASH LOCKS



(PATENTED)

NEVER BREAK

**BECAUSE THEY ARE MADE OF VERY HEAVY GAUGE
METAL AND PERFECTLY CONSTRUCTED**

If the upper sash drops, the Monitor "Never Break" Sash Lock will pick it up from a lower point than any other, adjust the sashes perfectly, prevent all vibration and lock securely, so it cannot be opened from the outside.

MADE IN TWO SIZES AND ALL FURNISHED BY

The Champion Safety Lock Co.
Geneva, Ohio

GRAND RAPIDS

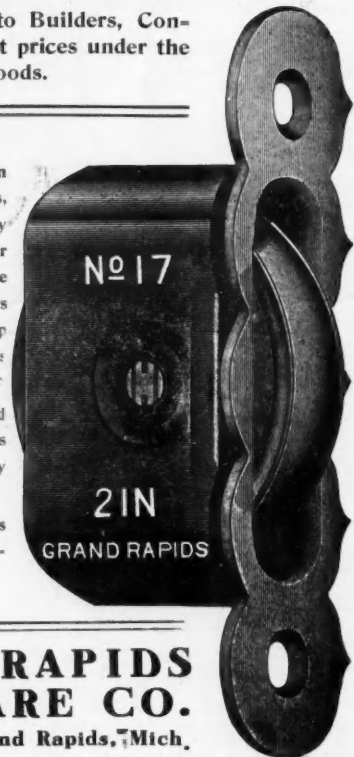
All-Steel Sash Pulleys

Are sold **DIRECT** to Builders, Contractors and Mills at prices under the common ordinary goods.

If you make ten or ten thousand window frames, we can save you money and give you a superior sash pulley. We are the largest sash pulley makers in the world. We ship direct, or through dealers and jobbers everywhere.

Write for catalogue and free samples and prices on gross, barrel, or any quantity.

Direct from the makers to you. Inquiries welcome.



GRAND RAPIDS HARDWARE CO.

34 Pearl St., Grand Rapids, Mich.

“DEFIANCE” HIGH GRADE

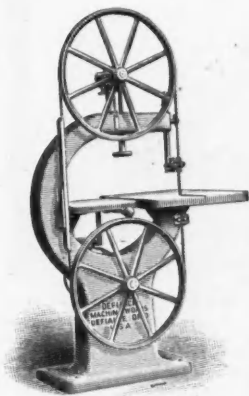
Wood-Working Machinery

Invented and Built By

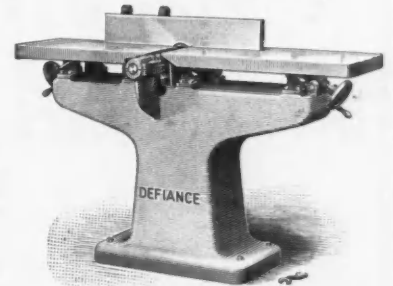
The Defiance Machine Works
Defiance, Ohio

For Manufacturing General Wood-Work

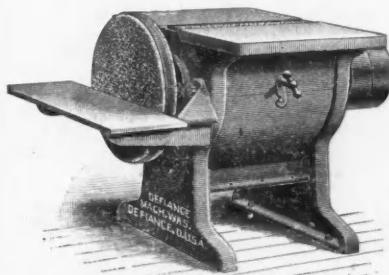
Also Special Machines for making Hubs, Spokes, Wheels, Wagons, Carriages, Automobiles, Rims, Shafts, Poles, Neck-Yokes, Singletrees, Hoops, Handles, Spools, Bobbins, Insulator Pins, Balusters, Table Legs and Wood Dishes.



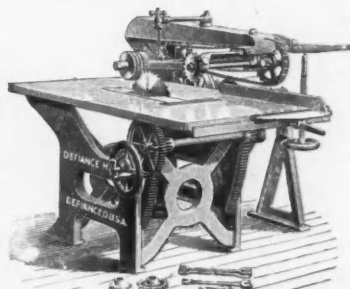
28" Band Saw



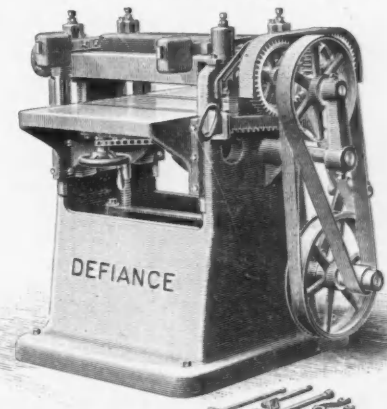
12" Hand Feed Planer with or without Boring Attachment



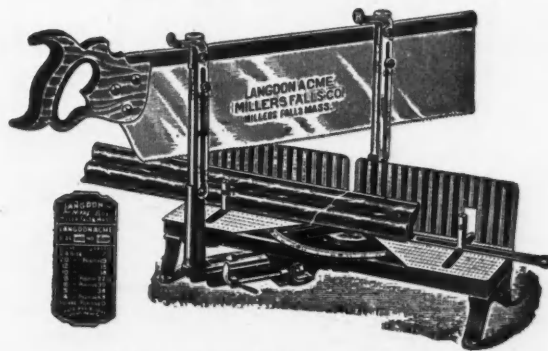
Drum and Disc Sander



No. 3 Power Feed Rip Saw



24" Single Surface Planer



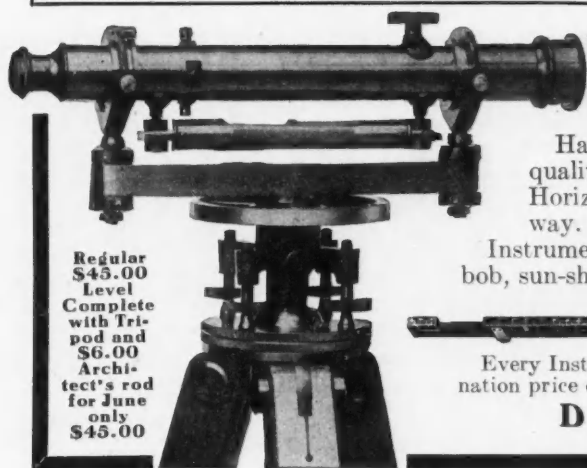
Ask for Catalogue giving full description.

ARE YOU INTERESTED IN MITRE BOXES?

If you are, it will pay you to investigate the **LANGDON ACME**. It has all of the advantages of any other box and several that others do not have. They are made in three sizes and put up with varying lengths of saws.

MILLERS FALLS COMPANY

28 WARREN ST., NEW YORK, and MILLERS FALL, MASS., U. S. A.



Regular \$45.00
Level Complete with Tripod and Architect's rod for June only \$45.00

This Improved Level

especially designed for Builders, contractors, etc.

Has a telescope 12" in length. Lenses of the best optical quality. Magnifying power 25 diameters. Object glass 1 1/4". Horizontal circle 4 1/2" in diameter, graduated from 0-90 each way.

Instrument complete in a polished hard-wood box with strap, plumb-bob, sun-shade, adjusting pins and trivet.

Every Instrument guaranteed to be accurate in every respect. Special combination price of Level and Architect's Rod, \$45 00.

DAVID WHITE COMPANY

419 East Water Street, MILWAUKEE, WIS.

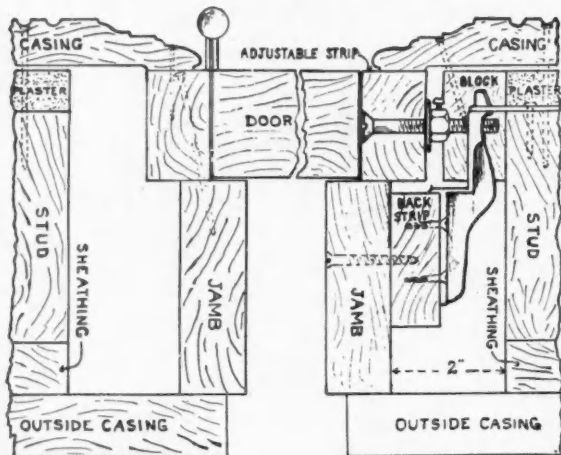
A Swell Head and A Swell Door

are both pretty stiff propositions, but the latter is a mere trifle when you have

The Taylor Door Jamb Adjuster

A few turns of the screws make a perfect fit, whether the door swells or shrinks.

Send for folder explaining this cut.



JAMES L. TAYLOR MFG. CO., - Bloomfield, N. J.

Carry
A Ton,
Last
A LIFETIME—

A pair of our smallest size

Wall Brackets.

There isn't room here to tell you how cheap or how convenient they are.

Write for Catalogue and Special Trial Offer.

ARE YOUR CLAMPS GIVING BEST RESULTS?

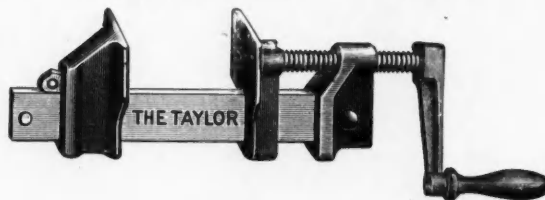
Do you know about our improved gripping device?

It Saves Time!

The special grade of steel we use?

Our Clamps are warranted unbreakable in use.

Catalogue showing 19 styles sent on request.



CARPENTERS!

Look for this trade mark on tools when buying
Planes, Chisels, Auger Bits, Drawing
Knives, Gouges, Spoke Shaves, Etc.

Registered It will protect you against inferior goods. "Ohio" Tools are made in only one quality and that The Best.



Every "Ohio" Tool is covered by a broad guarantee. Write for our CATALOGUE No. A, if you are interested in Good Tools.

OHIO TOOL COMPANY
Columbus, Ohio

THE AMERICAN Combined Level and Grade Finder



All Progressive and Up-to-date Mechanics as well as Manufacturers having use of a Level, are getting one

An instrument with which at one glance you can get the true slant on any line or grade either in degrees inches or percentage, or all at the same time, and will at once give the exact distance needed to plumb up a true level.

A Civil Engineer that you may have with you at all times.

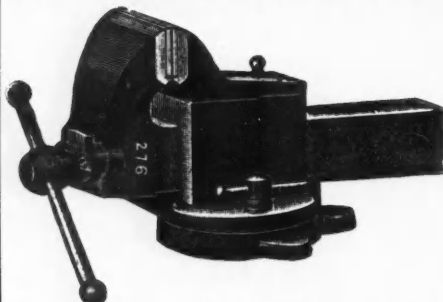
The most practical, durable and convenient instrument of the day.

The longitudinal recess which is shown in cut is well worth the low price of the instrument.

Write at once for large list of testimonials from all over the United States, and special introductory price given only to first applicants with privilege of taking agency.

Address Edward Helb, P. O. Box No. 55, Railroad, Pa.

PARKER VISES



MADE
ESPECIALLY
FOR WOOD
WORKERS

FOR SALE BY
DEALERS

SEND FOR
CATALOG

CHAS. PARKER CO.
MERIDEN, CONN.

SELF-SETTING PLANE

No plane like it. See this paper for December, pages 261, 320 and 322, for facts and large pictures. This advertisement authorizes any dealer to sell the first SELF-SETTING PLANE in any town on our regular 30 days' trial guarantee. If it is not more than satisfactory to their customers, the dealer may return it to us at our expense within 90 days of this date, and we will refund the amount he sent us. If your dealer does not care to supply you, try another; if he won't, send us list price and we will deliver the plane, charges prepaid, and if it is not just what you want, return it to the Express Co. within 30 days of your receiving it, and they will send it to us at our expense, and we will return you the entire amount you sent us and the trial won't cost you a nickel. This paper guarantees that we will do as our advertisement says. You run no risk. If there is any, we take it.


THE BEST IS THE CHEAPEST.
None Cheap but the Best.
All Want the Best.
Sent on 30 Days' Trial as per Circular,
if Dealers do not keep it



SECTIONAL VIEW—showing ADJUSTABLE IRON THROAT.

July 1, 1909.


GAGE TOOL CO., Vineland, N. J.

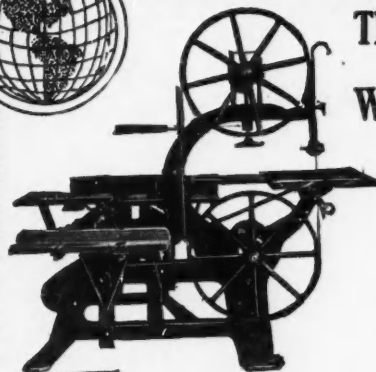


THE WORLD'S FAMOUS LINE

—OF—

WOOD WORKING MACHINERY






Universal Wood Worker, fitted up with Band Saw, Mortising Attachment, Shaper and Jointer.

On the Famous Universal Wood Worker shown in this ad. you can do any kind of work which can be done on a band saw, jointer, saw table, boring machine, single spindle shaper, disc or drum sander, power feed planer, single end tenoner and either plain or hollow chisel mortising attachments. It also makes the best outfit for any contractor or carpenter or builder shop as you are only compelled to have the one machine to do all your work above mentioned.


We are now building this machine with a 12" head as well as the 10", making a 12" jointer and 12" power planer, planing up to 4" thick. In order that you may know what other contractors think of this machine, we herewith below give you a testimonial which we received from a party who has recently installed one of the Famous Universal Wood Workers:

"Sometime ago I purchased one of your Improved Universal Wood Worker, which I have used to my entire satisfaction. This machine should be in every contractor's shop, more especially in the smaller towns where there are no mills.

Wishing you success, I am,
Yours very truly,
H. L. MARSHALL,
Ft. Cobb, Okla.



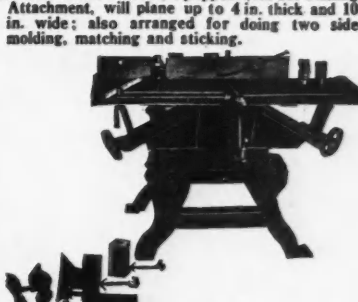
Universal Wood Worker, equipped with our Planing Attachment, will plane up to 4 in. thick and 10 in. wide; also arranged for doing two side molding, matching and sticking.



Universal Wood Worker, fitted up with the Single End Tenoning Attachment, with traveling table and hold down lever.

SIDNEY TOOL CO.

SIDNEY, OHIO



U. S. A. Universal Wood Worker, fitted up with Jointer, Shaper and Two Side Molder.



Dorn's Revolving Mitre Box

Saw compound as well as plain mitres any width with a back saw 4 inches wide


SEND FOR BOOKLET

IT TELLS THE STORY

MANUFACTURED BY

Braunsdorf-Mueller Company

1093 E. Grand Street, ELIZABETH, N. J.



Compound Mitre

PUMPS, DOOR-HANGERS, STORE LADDERS

The Pump That Pumps

MYERS

Glass Valve

Myers Stayon Flexible Door Hangers

with steel roller bearings, easy to push and to pull, cannot be thrown off the track — hence its name — "Stayon." Write for descriptive circular and prices. Exclusive agency given to right party who will buy in quantity.

F. E. MYERS & B.O.
Ashland, Ohio.

Double-acting, Lift, Tank and Spray


PUMPS

Store Ladders, Etc.

Hay Tools

of all kinds

Write for circulars and prices.



Noiseless
Cushion
Tires

LADDERS



DUMB WAITERS AND HAND ELEVATORS

OF THE MOST IMPROVED AUTOMATIC CONSTRUCTION

INVALID LIFTS

TRUNK, CARRIAGE, SIDEWALK AND FREIGHT ELEVATORS

SEDGWICK MACHINE WORKS

POUGHKEEPSIE, N. Y.

AND

128 LIBERTY ST. NEW YORK

CATALOGS AND ESTIMATES FURNISHED

SEE SWEET'S INDEX

P. ERICSSON & Co.,
Gothenburg - Sweden -
Est. 1850.

HOME OF THE
SWEDISH VENETIAN BLINDS

Swedish Venetian Blind Company

SOLE DISTRIBUTORS

Ericsson Venetian Blinds

FOR UNITED STATES AND CANADA

The Swedish Venetian Blind takes the place of both awning and shade.

Automatically operated, giving four shades of light, they are the most satisfactory blinds in use.

Head Office: 1123 Broadway, New York, N. Y.

Agencies Wanted in all Principal Cities in United States and Canada

Territory Rights on Application
Samples Furnished

Venetian Blind

Roth's Latest Type Band Saw

Do not buy a Band Saw with pulleys for belt driving. Be up-to-date — have it fitted with a

**ROTH BAND
SAW MOTOR**

Tell your friends what a fine outfit you have—it will increase your business. Study the picture a little. Decide you want the **BEST** — the **BEST** is not expensive.

ROTH BROS. & CO.
483 W. ADAMS ST. CHICAGO
136 LIBERTY ST., NEW YORK

No. 225 C. E. Tenoner

The Smith Tenoner is today acknowledged the standard because of its rigid design, accuracy and simplicity. There is no vibration as the frame is heavy and cast whole. The carriage is mounted on rollers and can not be lifted or tilted, and you will find it an all 'round high grade machine. *A postal request will bring circulars and prices.*

H. B. Smith Machine Company
Smithville, N. J., U. S. A.

NEW YORK CHICAGO ATLANTA MEMPHIS

FAR AHEAD for smooth, easy work and holding edge will be YOUR VERDICT ON TRYING

CHAPLIN'S IMPROVED PLANES

Patented Feb. 14, 1899; Dec. 30, 1900; Dec. 24, 1901

We invite the
Severest
Comparative
Tests

We want you to have a copy of our booklet

"A 'Plane' Talk About a Good Plane!"

We want you to have a copy, for it is a booklet you really need in your business. We'll gladly send you this booklet with our compliments, promptly upon receipt of your request.

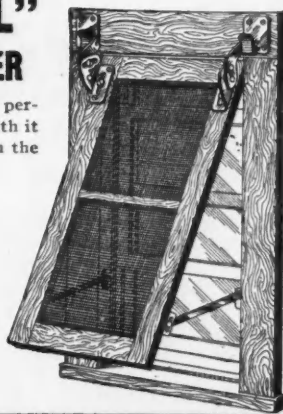
Tower & Lyon Company, 95 Chambers Street, New York

The "UNIVERSAL" ADJUSTABLE HANGER

can be used anywhere. It forms a perfect, practicable lock; sash hung with it cannot be opened or removed from the outside; it cannot be blown open by storms; makes practicable the only substitute for the half-sash sliding screen; is sold in sets, half sets, or in any other way the trade demands; indestructible; will outwear a dozen screens.

Ask your hardware dealer or write for free sample and catalog.

The ADJUSTABLE HANGER CO.
415 Huron St. Toledo, Ohio, U.S.A



Don't Ask the Dealer for Sash Cord. Ask for

"SILVER LAKE"

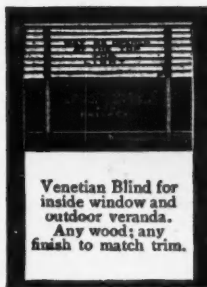
and see that he gives it to you. It is impossible to



substitute, as our name is stamped on every foot of cord. Silver Lake Sash Cord is the Original Solid Braided Cotton Sash Cord, and has been the standard since 1868. No other is just as good.

BURLINGTON

Venetian and Sliding BLINDS Screens and Screen Doors



Venetian Blind for inside window and outdoor veranda. Any wood; any finish to match trim.

Equal 500 miles northward. Perfect privacy with doors and windows open. Darkness and breezes in sleeping rooms. Write list and proposition to you.



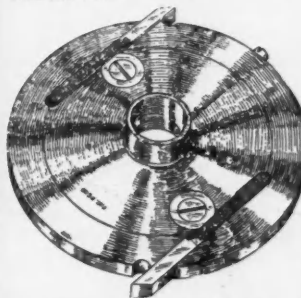
Sliding Blinds for inside use. Require no pockets. Any wood; any finish.

BURLINGTON VENETIAN BLIND COMPANY
341 Lake Street, Burlington, Vermont

THE ROSS IMPROVED

SASH COPING HEAD

SAVES FOUR OPERATIONS



A great labor saving device in making sash, cutting the straight, bevel, or mould mortise by merely adjusting the bits, entirely eliminates the operation of removing Coping opposite Tenon Mortise, thereby saves moving material from one machine to another. Cuts mortise up to 2 1/2 inches. Saves one-half the time in making sash. Used on top coping mandrel.

If you are at all interested send for this head at our expense on ten days' trial. It will pay for itself in that length of time. In ordering state size of mandrel.

UNIVERSAL MFG. CO. 310 Nevada Bldg. Cincinnati, Ohio

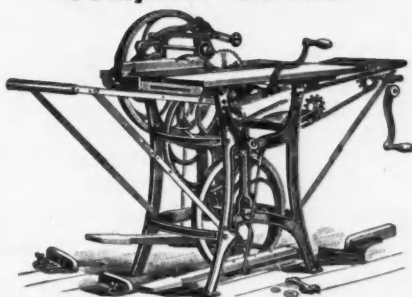
WOOD-WORKING MACHINERY

FOR WORKING WOOD IN ANY MANNER

Complete Outfits



"Victor" Scroll Saw



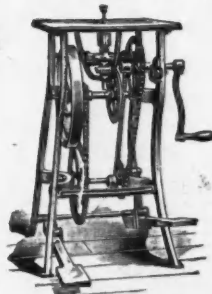
No. 5 "Union" Self Feed Rip and Cross-Cut Saw



"Diamond" Mortiser



No. 8 "Union" Power Saw



"Rex" Moulder



No. 6 "Union" Combination Saw

Carpenters, builders, cabinet-makers and wood-workers generally can successfully compete with the large shops by using our labor saving machinery. With any one of our machines one man will do the work of four to six men using hand tools.

They are built for hard work, accurate work and long service.

Each machine is carefully tested before leaving factory. We guarantee them to give entire satisfaction, and they may be returned at our expense, if, after ten days' trial you prefer your money back.

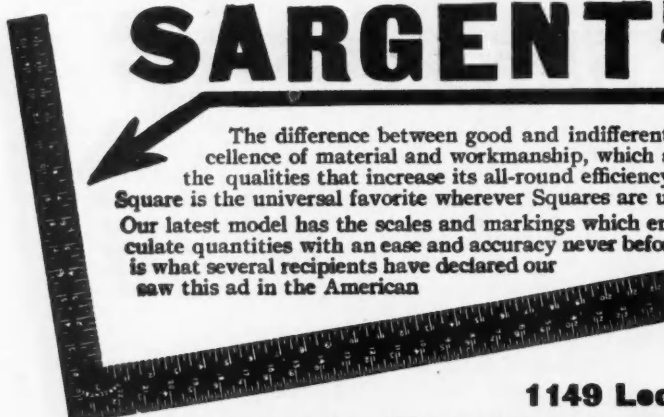
Ask for Catalog "A"

THE Seneca Falls Mfg. Co.,

218 Water Street

SENECA FALLS, N. Y., U. S. A.

SARGENT'S IMPROVED STEEL SQUARE



The difference between good and indifferent Carpenters' Squares lies in something more than excellence of material and workmanship, which are, of course, among other "Sargent" features—it is in the qualities that increase its all-round efficiency. That is why the practical "Sargent" Standard Steel Square is the universal favorite wherever Squares are used.

Our latest model has the scales and markings which enable the carpenter to lay out all kinds of work and to calculate quantities with an ease and accuracy never before thought possible. "A practical treatise on Steel Square" is what several recipients have declared our little publication. Copy free simply by mentioning you saw this ad in the American Carpenter and Builder.

Sargent & Company
New York

1149 Leonard Street

The Best Ever

You Will Never Regret Buying One

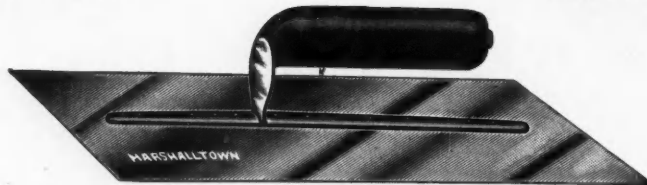


Wide Heel Brick Trowel
Made of Best Quality Crucible Trowel Steel.
Leather Handle.



Philadelphia Pattern
Best Quality Crucible Trowel Steel.
Wood Handle.

Send For
Catalogue

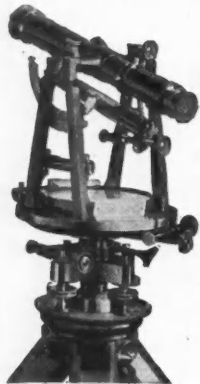


Send An
Order

Genuine Marshalltown Trowel

Straight Edges Always. Best Quality Spring Steel Blade. Hardened Mounting
Ten Rivets. Imitated because they are good.

Marshalltown Trowel Co., - - Marshalltown, Iowa



"Sterling" Transits and Levels

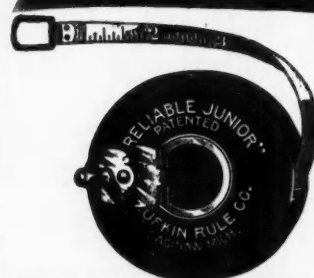
Are in use on many of the largest building operations under way in this country.

Why? Because they are the strongest and most accurate instruments made. Before purchasing any make at any price send for our Catalogue, Terms and Discounts.

ISZARD-WARREN CO., Inc.
MANUFACTURERS

1122 Vine Street. :: :: Philadelphia, Pa.

LUFKIN STEEL TAPES and RULES



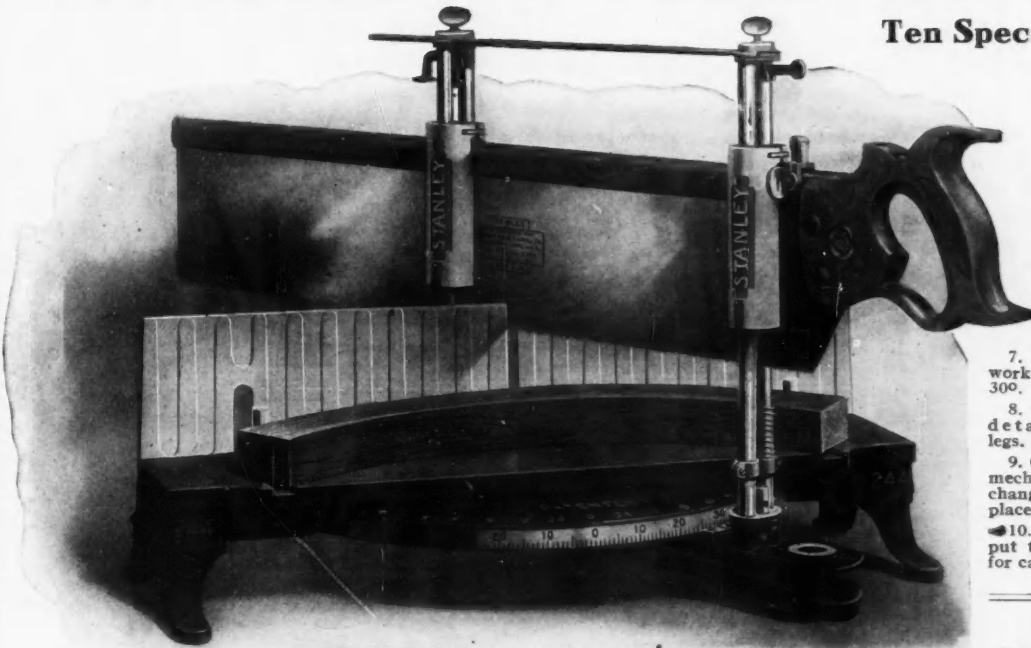
and RULES

ARE INDISPENSABLE FOR ACCURATE WORK

MADE BY
The Lufkin Rule Co.
Saginaw, Mich., U. S. A.
New York London

For Sale Everywhere.
Send for Catalogue.

STANLEY MITRE BOXES



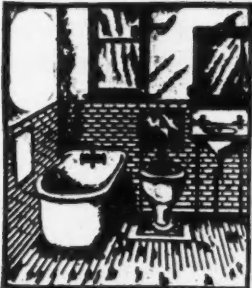
Ten Special Features:

1. Saw is held above work when not in use.
2. Swivel is automatically locked at any angle.
3. Two sockets in swivel for use of long or short saw.
4. Narrow opening in back of frame, especially adapted for small work.
5. Steel rod up-rights for saw guides.
6. Stock guides for holding work in place.
7. Extra wide range of work—will saw at angle of 30°.
8. One-piece frame with detachable malleable iron legs.
9. Construction thoroughly mechanical; all parts interchangeable, and readily replaced if lost.
10. Quickly and easily put together or taken apart for carrying.

Send for our
Catalogue No. 34

STANLEY RULE AND LEVEL CO. NEW BRITAIN, CONN., U. S. A.

PLUMBERS' SUPPLIES AT WHOLESALE



If you need anything in my line and wish to **SAVE 20 to 40 Per Cent** on every article, write for my free illustrated Catalog. Shipments promptly made from a very complete stock of guaranteed goods. Small orders are as carefully handled as large ones.

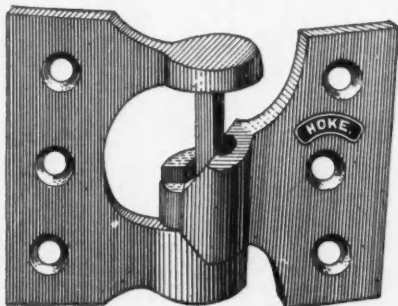
B. B. KAROL, 233 W. Harrison St., Chicago, Ill.

CUSTOM MADE FLY SCREENS

Our work is far superior to the usual output of local mills and has a style and finish not obtainable from those who do not make a specialty of fine screens. Our screens have waterproof coped joints and the frames are weather proofed before the finishing coats are applied. Best grades of Wire Cloth, enameled, galvanized, genuine bronze, fastened by the most approved methods. Intending purchasers may have free, by mail, samples of woods, finishes, wire cloth, and a copy of catalogue and price list. Agencies in nearly all large cities. Agents wanted in smaller cities. Special terms to Contractors and Builders.

A. J. PHILLIPS & CO. FENTON, MICH.

25 Years' Experience 3½ Acres of Floors



An Improvement on other hinges is seen in the

Hoke Reversible Shutter Hinge

A hinge which is bound to meet with instant approval wherever shown. It can be used on either side of the window equally well. It is easy to adjust, and shutters are easily hung, being guided to place by a bevelled slot. It prevents shutters from falling off, and keeps them from banging and slamming when open against the house.

We want you to test this hinge—send for **FREE SAMPLE**

inspect it carefully, and see if you don't agree with us that it will be a big seller for you. Send to-day

HANOVER HINGE CO., HANOVER, PA.



Here is a Gimlet


Equal in quality and usefulness to any Brace Bit

HANDLE OF
SELECTED
COCOBOLO
WOOD

THREE SIZES ONLY
Cutting 4-32, 6-32, and 8-32 Holes

Price Postpaid **15 cents** each

H. H. MAYHEW COMPANY
SHELBURNE FALLS, MASS.




GRILLES COLUMNS AND CONSOLS

In quality and price our work is not surpassed. You will make no mistake in writing us before ordering elsewhere.

Send for 48-Page Catalog No. 15.

It contains many fine designs of modern Grilles, Columns and Consols.

Illustration at right shows half-section of Column design No. 552.



Northwestern Grille Works
CHRISTENSON BROS., Props. 1452 Milwaukee Ave., Chicago

MALLORY'S



**Standard
Shutter
Worker**

New and improved patterns and designs.

Opens and closes the blinds without raising the window. Automatically locks the blinds in any position desired. Made of gray and malleable iron. The best and most durable blind hinge. Incomparable for strength, durability and power. Can be applied to old or new houses of brick, stone or frame. **Send for Illustrated Circular.** If your hardware dealer does not keep them send direct to **MALLORY MANUFACTURING CO.**

204 Flemington National Bank Building. FLEMINGTON, N. J.

**DON'T PUT SASH WEIGHTS IN YOUR
WINDOWS—THEY ARE OUT OF DATE**

The "AUTOMATIC" SASH HOLDER



The "Automatic" Sash Holder is the new, modern, up-to-date device that dispenses with cumbersome sash weights, kinking cords or ribbons, useless weight pockets, misfit pulleys and reluctant balances, and saves all the time, labor and expense of fitting them in place.

Prevent rattling and permit the window to be moved up and down with ease. Hold it safely at any point desired.

A sample set of four sent, postpaid, for \$1.20. Ask your dealer, or write to us direct.

Automatic Sash Holder Company
277 Broadway, New York City.



It's Very Easy To Use A "YANKEE" Screw Holder

Slight thumb pressure opens the jaws to receive the screw and instantly you are ready for business. (The bit centers itself in the slot.) Holds the bit firmly, but **releases itself** as the screw is driven home. Slips back on the blade out of your way when not in use, but right at your fingers' ends when you want it quickly for awkward or out of reach places. Pays for itself every time you use it. Costs but a trifle.



Did you get our "Yankee" Tool Book? We want every Mechanic to have one. It demonstrates 25 interesting "Yankee" Tools, each a labor-saver. A postal brings it if you mention "The American Carpenter & Builder." Send to-day — now.

Your Dealer Sells "Yankee" Tools.

NORTH BROS. MFG. CO. DEPT. A. PHILADELPHIA, PA.

PHOENIX INSIDE SLIDING BLINDS

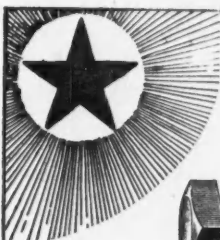
WILKES BARRE, PA.

The Phoenix Sliding Blind Co. Enclosed find my check for blinds. I am pleased with them and sorry I did not have them put throughout the whole house.
C. W. MILLER.

**Comfort!
Economy!
Convenience!**

The lately improved springs and corrugated steel rods put the "PHOENIX" far in lead of less improved styles. Write for Catalogue "C" and free samples, showing construction.

PHOENIX SLIDING BLIND CO.
BRIDGE & CANAL STS. PHOENIX, N. Y.



EXPANSION BOLTS



FOR Quick, Labor-Saving Fastenings that HOLD in Brick, Stone and Masonry, Drill hole, place STAR SHIELD within, then put lag screw thro' material to be attached and into STAR SHIELDS and fasten tight. A positive inside lateral expansion insures a fastening PERMANENTLY DEPENDABLE. Catalog, Samples and Prices upon request.

STAR EXPANSION BOLT CO.

Cor. Cedar and Washington Sts.

New York City

W&B "DIAMOND" W&B

The Brand to Demand



No. 4.
Finished
in Gold.

Pat.
Feb. 5, 1907

"Diamond" Hay Carriers are built for service — are easy to operate and are absolutely positive in action.

They are built of selected material by mechanics having years of experience in this line of work, and before leaving our factory are given severe tests, and are carefully inspected.

This not only insures a perfect Carrier, but also a perfect working Carrier, and one that will stay right after it goes in the barn.

The "Diamond" Hay Tool line is complete and includes Carriers for Steel and Wood Track, Steel Track, Forks, Slings, Pulleys, and other sundries.

Write for Catalogue No. 70, giving complete description, and other useful information.

THE WHITMAN & BARNES MFG. CO.
120th Street, CHICAGO, ILL.



"A Bit Of Utility"

Guided by its circular rim—instead of its centre—the Forstner Labor-Saving Auger Bit will bore any arc of a circle, and can be guided in any direction.

Doesn't matter how hard the wood is, no consequence whether it is full of knots, or the grain awkward to negotiate. The Forstner Bit works with equal smoothness under any condition and leaves a true polished surface on every job.

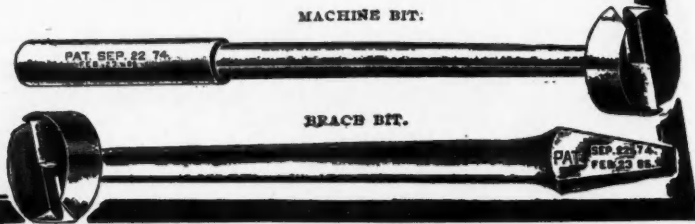
Unequaled for Delicate Work

Supersedes chisels, gauges, scroll-saws, or lath tools combined, for all kinds of delicate work. Cabinet and pattern makers and carpenters are enthusiastic because they do more work than other bits and cost no more.

We can offer something special in the matter of price on sets packed in a sensible box. Send today for particulars and catalog.

The Progressive Mfg. Co.

Torrington, Conn.



"Last a Lifetime and give Satisfaction to the end"



The Celebrated Barton Planes and Edge Tools for carpenters and all other woodworkers are unequalled by any other make for keen, hard, smooth cutting edges. If your hardware dealer does not handle

The Celebrated Barton Tools, send direct for catalog. Be sure and specify "CARPENTER'S CATALOG"

MACK & CO., 20 Brown's Race, Rochester, N. Y.

We Want You

to know us; to get our catalogs and see what we have to offer in goods and prices. Get a catalog and look it over. It will put you under no obligation and you will not be bothered by a lot of advertising matter that is no good to you

ORDER CATALOG BY NUMBER

Number 371

WOODWORKERS' TOOLS—Contains tools for the cabinet maker, car builder, carpenter, carriage builder, cooper, draftsman, furniture maker, lather, manual training school, millwright, pattern maker, ship builder, wagon maker and for carvers, engravers, turners and all workers in wood. The only complete catalog ever issued of this line.

Number 372

BUILDERS' HARDWARE—Contractors' Edition. 198 pages of the finest hardware in the world. Shows everything necessary to equip any building. Sent free to contractors, architects or owners of proposed buildings.

Number 376

REFRIGERATORS, HOUSEHOLD—An abridged catalog which explains the reasons for the superior ice-keeping qualities of our "A" Refrigerators.

Number 377

DUMB WAITERS AND HAND ELEVATORS—Giving details required to enable us to quote you intelligently. Sent free.

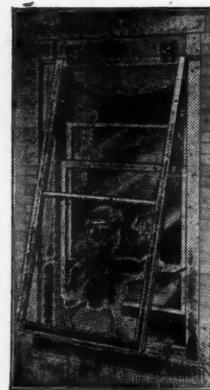
Number 3714

CONTRACTORS' TOOLS—Showing tools for the bricklayer, cement contractor, mason contractor, sewer builder, lather, plasterer, slater, stonecutter, stone mason. Is the most complete work for contractors ever issued.

ORR & LOCKETT HARDWARE CO.

Estab. 1872

CHICAGO



You Will Sell More Window-Screens If You Hang Them With

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No experiment. Eight years of growing sales prove them the best. Find out for yourself.

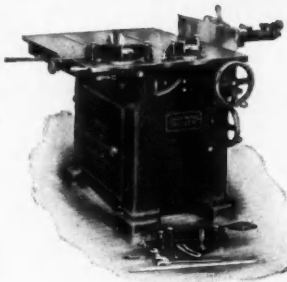
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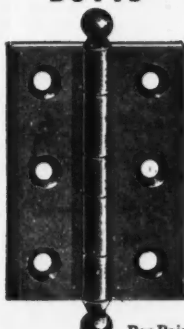
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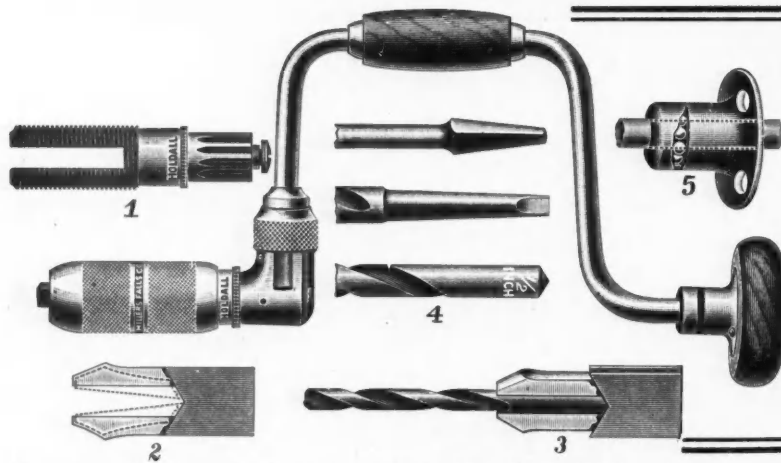
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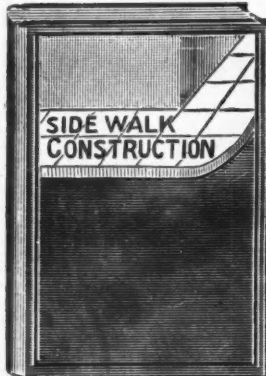
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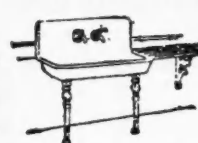
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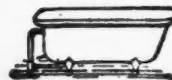
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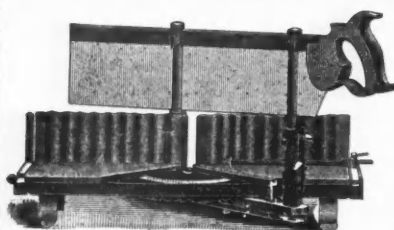
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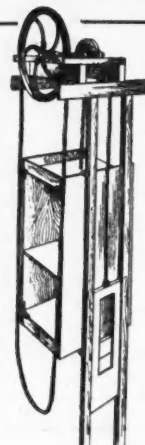


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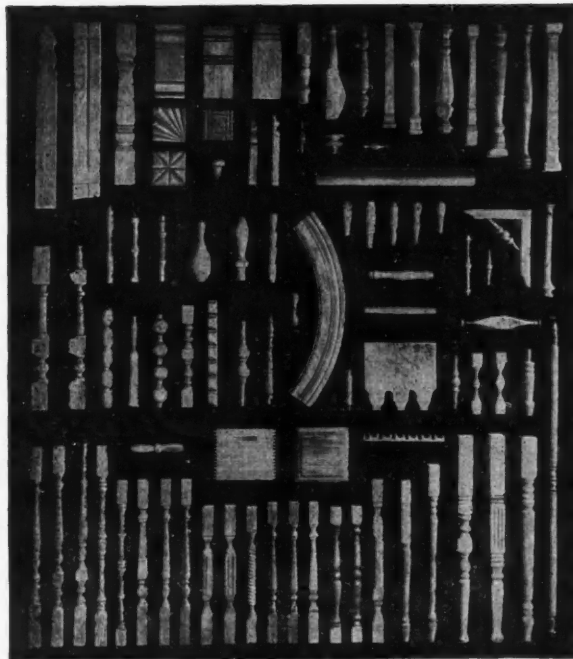


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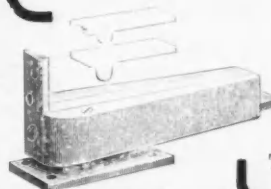
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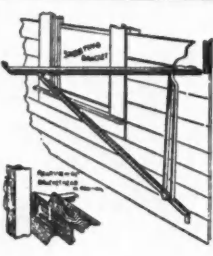
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Spring Butt



Floor Hinge



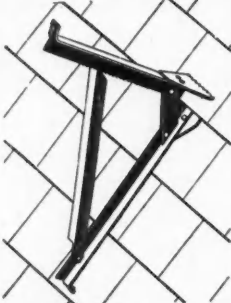
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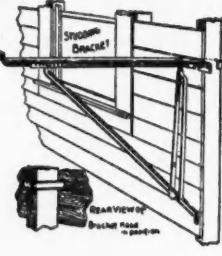
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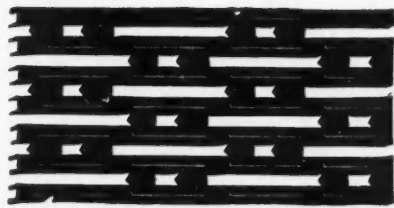
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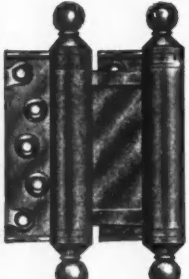

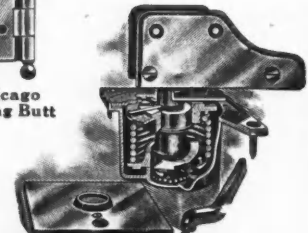
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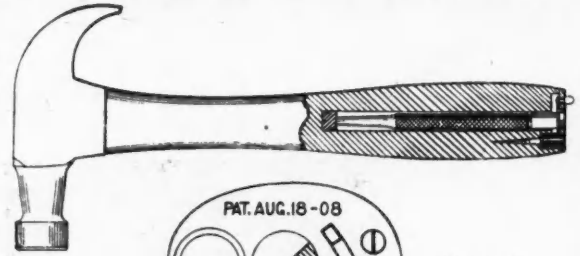
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FOR PEACE OF MIND, GOOD WORK, AND A WELL SET SAW, USE

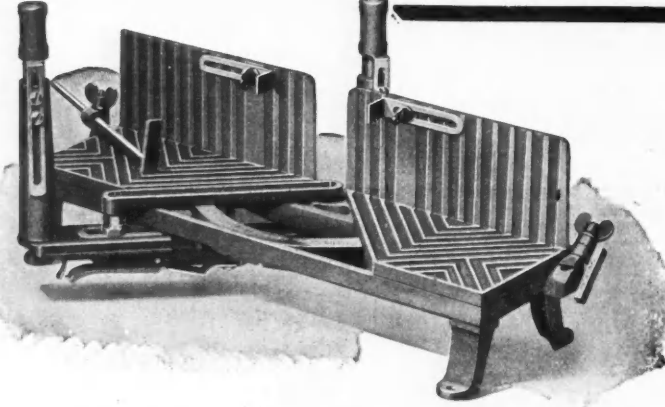
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MY TRADE MARK SHALL BE YOURS.

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AMERICAN CARPENTER AND BUILDER

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VOL. VII

JULY, 1909

No. 4

The AMERICAN CARPENTER AND BUILDER is issued promptly on the first of each month. It aims to furnish the latest and the most practical and authoritative information on all matters relating to the carpentry and building trades.

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THE time to advertise is when you want more business. That's very old, but very true.

Building Activity

REPORTS indicate that building is going on at a tremendous rate in all parts of the country. New high records are erasing preceding high-water marks. During May permits were taken out in fifty-seven cities for the construction of 18,295 buildings, involving a total investment of \$76,918,950, against 15,486 buildings, involving \$45,210,526, for the cor-

responding month a year ago, an increase of 2,809 buildings and \$31,708,424, or 70 per cent.

City.	Cost, 1909	Cost, 1908
New York	\$18,620,491	\$ 7,585,150
Chicago	12,609,480	6,042,650
Philadelphia	4,974,260	2,909,500
Newark	3,715,881	619,842
Pittsburg	2,570,099	2,322,315
San Francisco	2,569,783	2,690,904
Cleveland	1,826,539	668,070
St. Louis	1,823,926	1,880,769
Seattle	1,590,045	1,004,312
Omaha	1,362,195	393,385
St. Paul	1,324,287	891,499
Kansas City	1,306,325	977,595
Milwaukee	1,145,234	859,646
Portland	1,142,600	754,945
Detroit	1,133,300	1,096,450
Indianapolis	1,029,365	370,957
Los Angeles	1,006,764	830,320
Baltimore	972,700	883,952
Denver	824,000	686,260
Cincinnati	807,260	425,580
Spokane	807,225	572,490
Buffalo	767,000	624,000
Tacoma	580,285	306,684
Toledo	565,350	150,855
Brooklyn	454,448	612,739
Atlanta	546,462	355,056
Oakland	528,183	533,822
Grand Rapids	492,716	162,703
New Orleans	385,145	390,966
Columbus	361,160	812,295
Worcester	360,990	356,350
Memphis	291,251	274,883
San Antonio	266,450	167,015
Birmingham	242,087	116,990
Harrisburg	230,875	121,700
Paterson	175,077	279,999
Lincoln	127,300	141,130
Davenport	106,340	42,275
South Bend	104,125	53,650
Stockton	101,248	34,020
Wilkesbarre	100,000	74,703
Sacramento	93,441	36,493
San Jose	80,237	93,027
Terre Haute	79,185	94,020
Chattanooga	55,020	128,450
Mobile	39,335	59,910
Salt Lake City	592,000	601,275
Rochester	872,073	642,485
Washington	1,605,441	749,157
Minneapolis	1,533,910	1,507,750
Des Moines	424,375	133,535
Dallas	412,987	234,903
Duluth	262,525	592,050
Louisville	255,002	202,309
Richmond, Va.	201,227	238,911
Cedar Rapids	196,000	105,000
Fort Worth	267,941	212,425
Total	\$76,918,950	\$45,210,526

The most significant feature of this compilation is the large number of cities showing tremendous increases, notably New York, 145 per cent; Chicago, 100; Philadelphia, 71; Cleveland, 173; Omaha, 246; Indianapolis, 177; Toledo, 274; Oakland, Cal., 203; Birmingham, 107; Davenport, 149; Stockton, 198; Sacramento, 156; Washington, 114; Des Moines, 218. Of the fifty-seven cities enumerated in the list, forty-three show increases of from 1 to 499 per cent, while in fourteen there were decreases of from 1 to 57 per cent.

Chicago made a particularly fine showing, and the

total cost of the permits issued, \$12,609,480, is the largest for any previous month in the history of that city. The greatest year previous was in 1908, when permits were taken out for \$68,000,000 worth of new buildings. The permits for May of that prosperous year amounted to \$6,049,850. For this May the comparative season of the year, they were more than twice that amount. Statistics have been prepared showing the distribution of these Chicago building permits with respect to the types of structures. They are as follows:

	No.	Value
Office buildings	1	\$4,500,000
Residences	309	1,199,800
Flats and apartments	388	3,389,900
Stores	131	392,900
Factory buildings	4	486,000
Warehouses	4	259,000
Theaters	3	21,900
Schools	3	540,000
Miscellaneous	211	1,819,980
Total	1,054	\$12,609,480

To as far a point as one is permitted to look into the future, the indications clearly point to the beginning of another period of prosperity. Building construction is such an important feature of good times, present and to come, that these figures may be taken as a pretty sure indication of the state of business in general. The country is at the present time enjoying a period of unusual prosperity and from everything that one can see it is at the beginning of a greater period of development.

Concerning Defective Scaffolding

THERE is no truer adage than "Familiarity breeds contempt." At the present rate of progress, it will not be very long before many people will consider that a few casualties are necessary evils in the erection of any structure larger than a summer cottage. The subject of defective scaffolding is an old one, but this is an argument in favor of its discussion. To the contractor it is a matter of the greatest import. Often, in the case of accident, it is he who is the greatest sufferer; for while he may be ready to go to the limit of his resources—and sometimes this is not far enough—to settle an accident case amicably, there is an aftermath, often just the suggestion of a stigma, that is far from pleasant.

Then there is the workman's standpoint. There have been so many cases of misrepresentation on the part of the workman, that the sympathy of the masters has been considerably lessened. When so many cases of wilful fraud can be so readily brought to mind, there is small wonder in this, but, even so, it is not fair to let the honest suffer with the dishonest. And, after all, think of the numbers of workmen whose principles are beyond question; any way they have a right to be protected while pursuing their daily work. In a recent case argued in the Quebec courts it was held that "where men are placed in the charge of a foreman, especially where they are sent into a position of danger, it is the duty of the foreman in charge to examine the precautions which have been taken to make the work safe." Here, then, is another aspect

of the matter. Careful inspection of scaffolding is not only called for in the workman's interests and those of the contractor, but it is demanded by law.

Contractors have entered upon what will probably be a record season of building activity, but not even in the height of the pressure will there be any excuse for their neglecting the proper precautions. A man who takes risks with his scaffolding must bear the consequences. He has had plenty of chance to find out what the outcome usually is in litigation with a workman, and if he has not benefited by the opportunity, he alone is to blame. From a selfish standpoint, from humanitarian considerations, from a legal aspect and from all the dictates of common sense, builders should see to it that in the erection of scaffolding nothing is left undone for the adequate protection of the workmen.

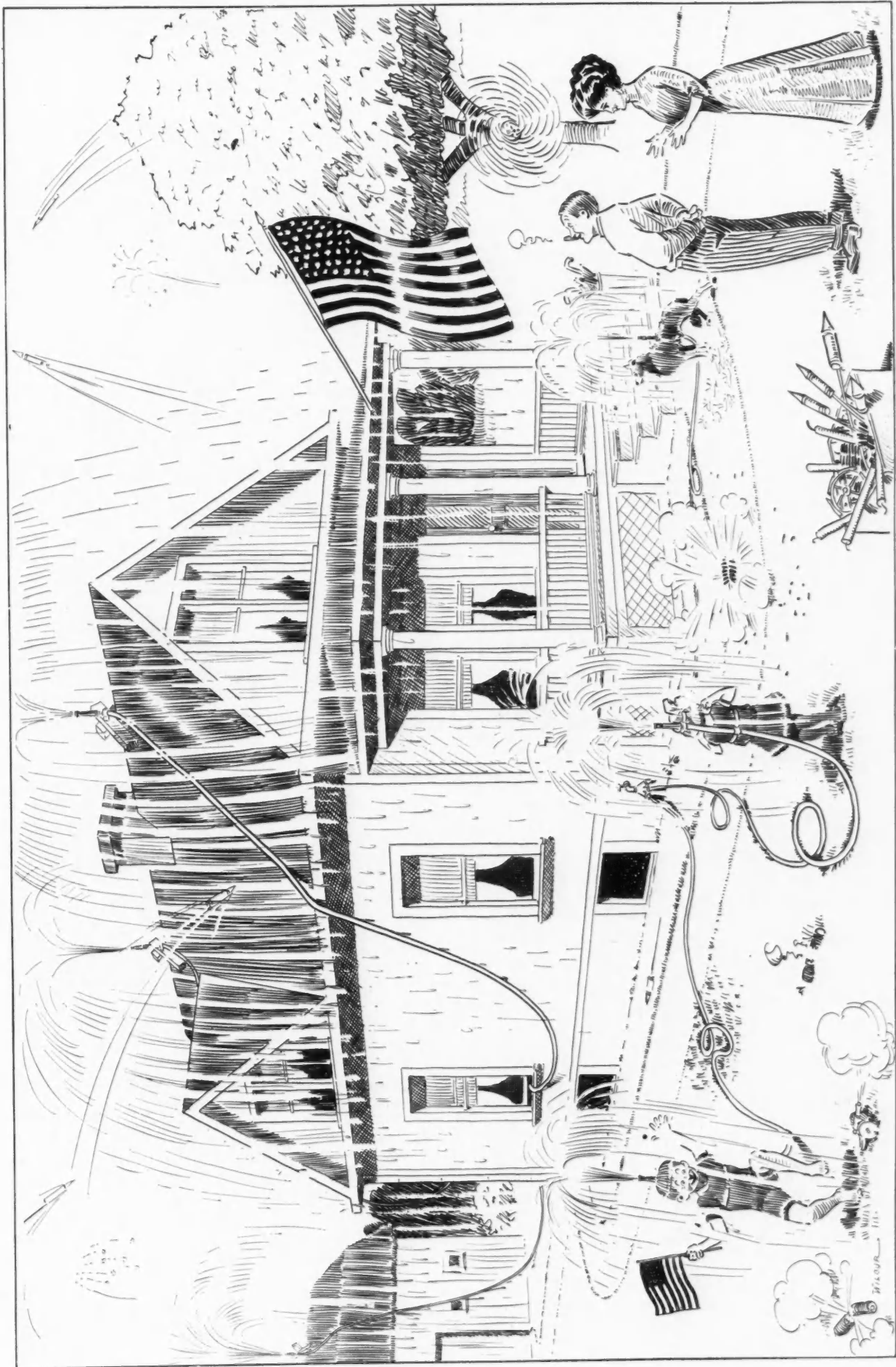
Where to Build

TWO thousand years ago we are told that a house that is built upon a rock will outlast one that is built upon sand, and the fact is just as true today as it was then. But, strange as it may seem, one of the very things that modern builders tell us to avoid in selecting a site is rock. That is principally because of the great cost of excavating a cellar in rocky soil. Another objection to rocky soil is that water will not soak through rock, and so runs down it. Some of this water would be almost certain to seep through the cellar walls, thus making the cellar damp, or it might undermine the foundations. Again rock often contains springs. If a spring were opened during blasting it would mean either that the water would have to flow through the cellar or be deflected—a costly operation. A house built upon a rock also vibrates during thunder storms.

Clay is perhaps more to be avoided than rock. Clay collects water and spreads under pressure. It expands in wet or frosty weather and contracts in summer. Frozen clay clings to brick or stone and often causes dislocation of cellar walls and piers. Also it is impervious to water. Thus an underground layer of clay will prevent the proper drainage of rain water and leave the soil foul and sodden. Finally, it is extremely costly to excavate.

Undesirable for building purposes also are made land, sand and silt. Made land is not always stable.

Gravel is the ideal soil for building purposes. It is porous and drains perfectly. At the same time it is sufficiently stable to support foundations. A gravelly elevation is the ideal building site. Depressions or levels between rocks are likely to retain water, even though the depression is slight and the elevations distant. The ground water thus retained stands at a level. Small gravelly elevations form islands, as it were, in a subterranean lake, and upon them houses may be built with perfect safety. The cellar floor will be above the ground water level and no rain water will drain into the cellar.



Fire Protection for "The Fourth"

Progress Toward Industrial Education

THE NEED OF BETTER TRAINING FOR THE YOUNG WORKMEN OF THE BUILDING AND WOODWORKING TRADES—WHAT IS BEING ACCOMPLISHED

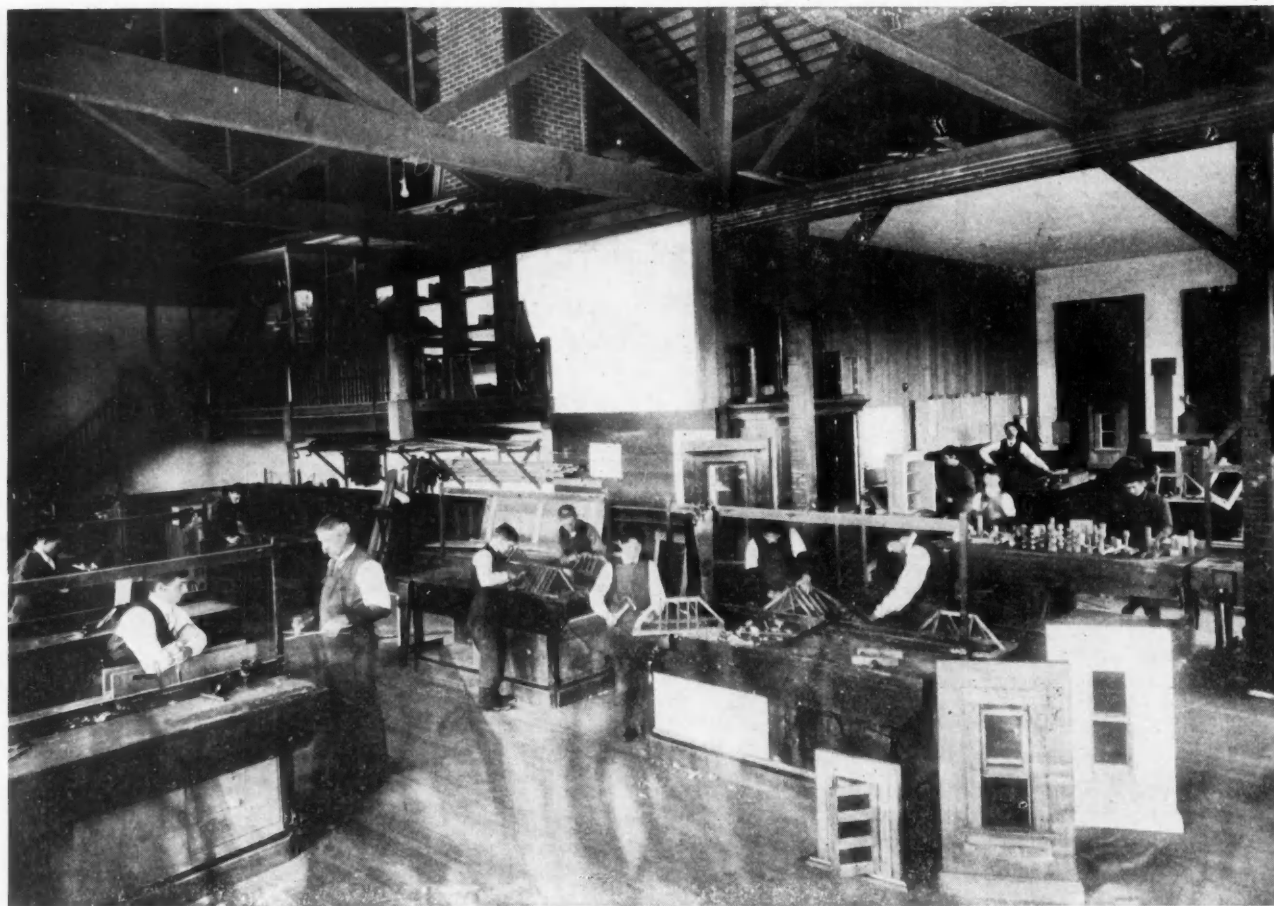
By Ira S. Griffith

TIME was when a boy who wished to become a carpenter could make his wish known to the nearest contractor and his chance of getting a place to work and an opportunity to learn all the "ins and outs" of the trade from an interested boss were of the best.

Even today, in the more thinly settled parts of the country, a boy may often obtain the same opportunity to "learn the trade" under a man who is proud to show him all that he knows and to give him an opportunity as rapidly as his growing skill permits, of practicing the new things. In the shop of the small town with rural contractors, opportunities are offered for

welfare we have a very favorable condition for the apprentice. However, it is not always so, for while a great mass of the country's woodworkers are in the rural districts there is to be considered the trade in the cities, large and small, where the "milk of human kindness" is often soured by misunderstandings and lack of high ideals.

In the cities where large numbers of men are employed we find a sharp line drawn between employer and employee. There is too often a feeling on the part of the employees that their employers seek only their own selfish ends, that they would like to "put on" a lot of inexperienced workmen in order to force wages



Wilmerding School of Industrial Arts, San Francisco—Privately Endowed

learning almost all parts of the trade from bottom to top, from the carrying of lumber for the other workmen and the rough work that falls to the lot of the beginner through the framing of houses and barns, the making of door and window frames, woodwork in brick buildings, such as small stores, churches and school buildings, and interior finishing, even to the making of cabinets, etc., etc.

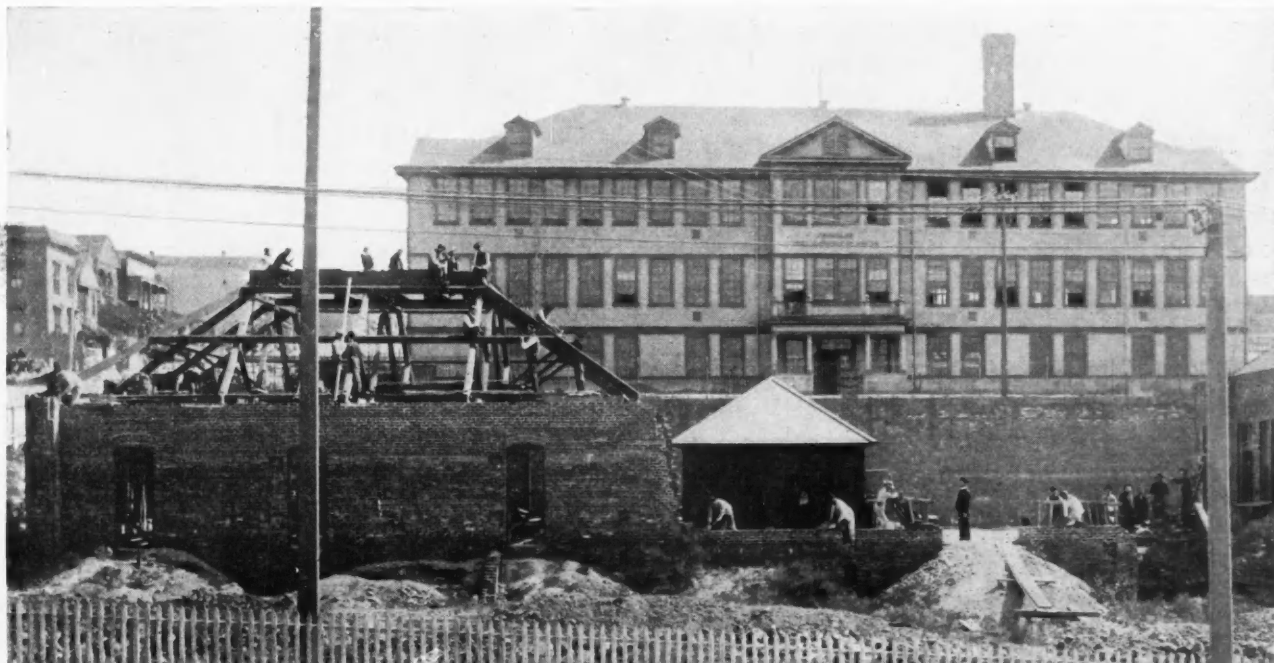
With a patient "boss" who is interested in the boy's

down and create unfavorable conditions for the workmen, that they might gain thereby. On the other hand there is too often a feeling on the part of the employer that the employee seeks to raise his own wages by limiting the supply of apprentices and that they do not appreciate the problems which confront the employer.

In the city our apprentice too often finds the learning of his trade fraught with grave discouragements. He may be kept at one kind of work, it may be noth-

ing more than putting on sheathing, because he has learned this, and it is more profitable for the employer to have him do the one thing he has learned and can do well than to take the time of the boss to teach him

Not only are schools as at present administered—especially the high schools—not giving the pupils any adequate preparation for a life's work in lines other than professional, but they are creating ideas concern-



Classes in Framing and Bricklaying—Wilmerding School of Industrial Arts, San Francisco

something new. Then there is the danger of his botching up some of the work in trying to apply his new instruction.

Too often the boss is willing to have the boy continue the same kind of work year in and year out because it saves trouble. Thus the apprentice gets encouragement from neither side to whom his industrial education has been intrusted.

The solution of the problem of educating the apprentices for the wood-working trades in the cities is a part of that great problem which has long confronted our people and which but recently has been taken seriously by the public, namely the problem of providing a system of universal education.

For years we have been educating our children on the basis of mind training only. Today we are coming to see that the community owes something more to the children, boys and girls, than merely to train their minds; that it must train hands as well as minds so that they may be able to go out into the world when through school and be intelligent enough industrially to make a beginning in life's work, whether it be teaching, preaching, law, medicine, carpentry, bricklaying or what not.

Heretofore the argument has been that the schools are for training the mind and that the boy or girl would soon learn his trade or profession when he gets out of school without school help. But today the situation is such that something must be done looking toward the preparation of boys and girls for their life's work.

ing labor which are directly opposed to industry, serving to make the pupils feel that labor is degrading. So it is we find strong, capable young men preferring to stand behind a counter and sell lace at eight dollars a week rather than soil their hands at some trade at thirty dollars a week.

If circumstances force a man to enter a trade it is with a feeling of apology and dissatisfaction rather than with a feeling of pride and determination to "climb" in that trade.



At the Hampton (Va.) Institute—Government School

Our girls are affected too with this false pride.

Something is being done looking toward the training of the young for their future vocation, but for the most part it has been done outside of the public

schools. We have manufacturers' schools, labor union schools, privately endowed schools, each doing its work, but from the very nature of things, not destined to do the work of a universal education.

Universal education must be undertaken by the public schools: (1) Because they alone can have the confidence of all parties concerned; (2) because they alone can reach the masses; (3) because the percentage of pupils reached and benefited by the upper grammar grades and high school courses as now constituted show that an injustice is being done to the great majority of our country's people—the industrial class—the 95 per cent—and that expediency and common justice demand the introduction of subject matter which will be beneficial to this class, so that they will remain in school until they are capable of entering their vocation with advantage to themselves and to society.

Mr. James F. McElroy has said that in Albany, N. Y., there was a falling off in the attendance from 1,551 the first year to 551 in the eighth year. He claimed that this falling off was due mainly to the fact that a large proportion of the children in the schools are either forced by circumstances to leave school before they have graduated from the grammar schools, or

than 1 per cent ever attended a high school, and about 7 per cent had completed courses in the grammar schools.

"The ordinary mechanic in our manufacturing institutions is indebted to our school system for teaching him how to read and write and for some instruction in mathematics, but outside of these elements of education, the schools furnish him practically nothing that is of value or helpful in the struggle which he must maintain the rest of his life. The course of study in our schools is based upon the theory that the student will continue throughout the entire course and graduate from the high school, and this course is designed to prepare the student for admission to college. This course of study, it seems to me, is unjust, unfair and unreasonable, so far as it relates to over 65 per cent of the total school population.

"If our schools furnished him the opportunity that he longs for, there would be little tendency to shirk his duties, and the services of the truant officer would not be required. There would be also no temptation on the part of the parents to take the boys out of schools in order that they might learn something practical elsewhere.



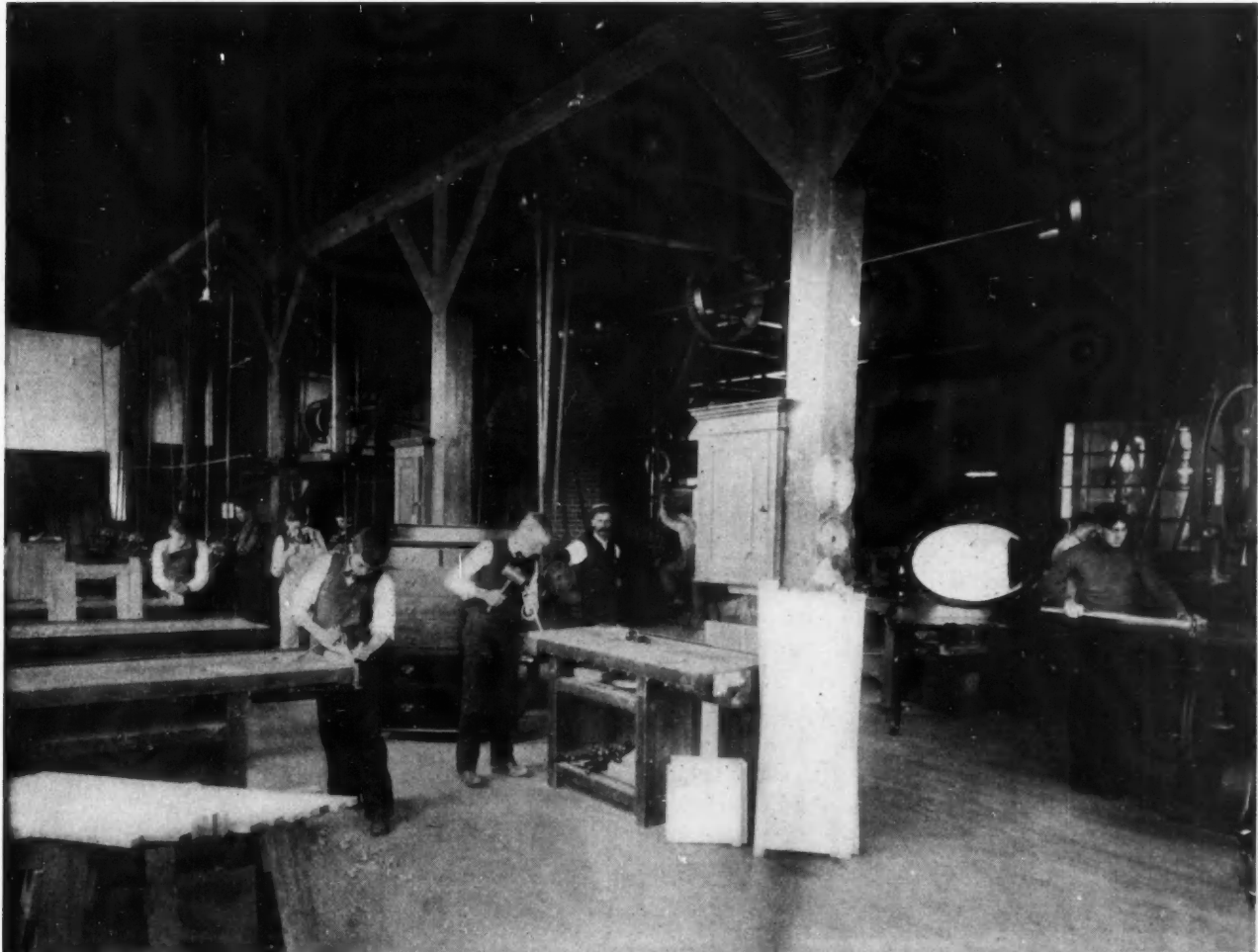
Milwaukee Free School of Trades—Supported by Public Taxation

they leave through want of interest. A close investigation of the manufacturing industries of Albany, the speaker said, developed two facts: That out of all the men employed in the mechanical departments less

"Young men destined for industrial pursuits, not only do not receive in the schools a proper education for their life work, but after leaving school, they find no place in which they can receive instruction in the

trades which they may select. Our manufacturers cannot afford to maintain industrial or trade schools, and it is not their business to do so, even if they could afford it. This is a work that properly belongs to the public schools."

permitted, two more years of this general hand work might be given. The pupil would then be at an age, 16 years, when his judgment and his muscular development would enable him to take his special work to the best advantage.



Cabinet Makers Apprentices—Wilmerding School

As to just how this universal education is to be brought about we cannot now predict. That it must come—and that soon—cannot be denied and the different parties interested should seek to meet and solve the problem intelligently. It would be much easier of course to deny that its need existed and thus avoid facing the issue.

If all parties were to be actuated by high ideals and right motives, with the elimination of feeling due to past misunderstandings we should find that there was not such a great difference as might be supposed.

As to the time at which a child should begin vocational training there seem to be differences of opinion. With plenty of construction work through all the grades of the grammar schools leading up to serious, systematic manual training bench work in the two upper grammar grades for boys, and in the household arts—cooking and sewing—for girls, the pupil ought to be ready to enter upon his specialized vocational course. Possibly, if time and circumstances

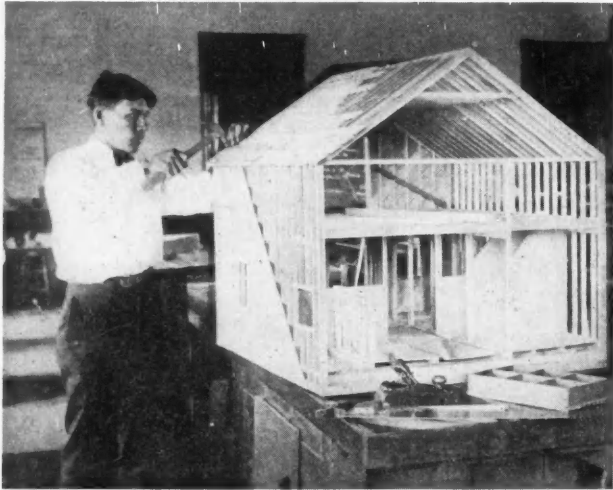
This is the high school age, and when we stop to analyze the educational question we will find that the elementary schools are doing about all that can be expected of them in the way of universal education. Their subjects have practical value as well as cultural.

Reading, writing, arithmetic, etc., these supplemented with a course in constructive hand work, fulfill all requirements of a system for a beginner.

The great state universities, with their colleges of medicine, law, agriculture, engineering, etc., are rapidly developing towards a system of universal education. It is with the pupils of the high school age that industrial education has most to do, therefore, high school authorities should study to find in what way they can best serve the 95 per cent instead of catering to the 5 per cent.

In conclusion we would suggest: (1) That a universal education, hence industrial education, is only just and fair to the great mass of boys and girls, the 95 per cent of our population, who must earn their

bread in the industries; (2) that whatever system is adopted looking to this end it must afford instruction in all the major industries; (3) it must be readily accessible to the masses; (4) it must care for the cultural and academic as they pertain to the trade studied and be highly practical; (5) it must be cheap, if not free; (6) it must have the confidence of employer and



Carpentry Construction—Government Indian School

employee. Provision must be made so that the labor market shall not be flooded with half-trained workers, and on the other hand it shall not seek to limit arbitrarily the number seeking to enter any trade.

We believe that educators are in the best position to lead out in finding ways and means for industrial education; that they must take a broad, fair view; that they must not be conservative, neither must they be stampeded into hasty ventures. They must think out their plans carefully after studying the various phases of the problem, believing that it is highly possible to serve the interests of all the people without injury to any.

Blue Gas: A New Illuminant

A new system of illumination based on the same principle as that generally used in railway-car lighting has been recently introduced in Germany under the name of "blau (blue) gas," says *The Literary Digest*, abstracting an account contributed to *The Engineering and Mining Journal* by Robert Grimshaw:

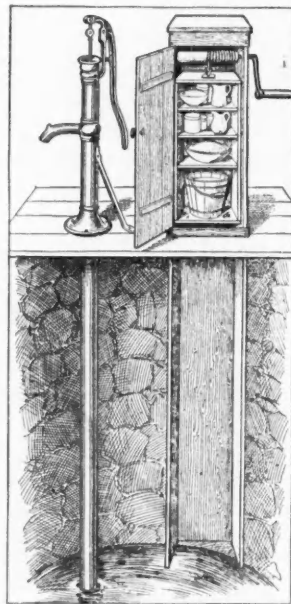
"The gas is delivered in liquid form, in such shape that it may be used in closed rooms in hanging burners giving from 50 to 1,000 candle-power. To use the gas, all that is necessary is to pour the liquid from the steel cylinders, in which it is delivered, into the gasometer. This is almost as convenient as having one's own gas plant, for one can protect himself against accidents at the factory or delays in transit by always having on hand several filled cylinders. A cylinder contains 22 pounds of the gas, and costs about \$2.86. This quantity will supply a 50-candle-power burner for 480 hours, so this illuminant appears to be cheaper than petroleum. This 'blue gas' can, of course,

be used for heating and cooking as well as for forging, hardening and tempering and other industrial processes. It is a hydrocarbon compound, free from carbonmonoxid, and is not poisonous; its heating effect is $3\frac{1}{2}$ times that of ordinary coal gas. The gas is burned at a pressure of about 1 inch of mercury, or 13.6 inches of water at the burner. Almost any apparatus that is arranged to burn ordinary coal gas or acetylene gas can be altered without much difficulty to burn this; and in such cases all that is necessary is to make the connection between the cylinder and the house pipes through a reducing valve. As regards its explosibility, Professor Götz, of Augsburg, reports that, while the range of explosibility of acetylene gas when mixed with air is between 2 and 49 per cent (a range of 47 per cent), and that of ordinary coal gas is between $6\frac{1}{3}$ and $19\frac{1}{3}$ per cent (a range of 13 per cent), that of 'blue gas' is only between 4 and 8 per cent (a range of 4 per cent). No special permission from the authorities or the insurance companies is necessary for its use."

A Well Refrigerator

A subscriber writing to *Popular Mechanics* tells of a novel food cooling arrangement which will prove highly useful to many country and suburban dwellers. A country place is not always situated where ice can be procured during the summer months and a substitute refrigerator must be provided. A resident of a

country place devised a cooling apparatus which he placed in his well. The device consisted of a box about 1 foot square made of boards having a length to reach almost to the water level and to extend about 4 feet above the platform of the well. A short box containing several shelves is made to slip easily into the long one similar to a dumb waiter. This smaller box is lowered and raised with an old-fashioned windlass. The smaller box containing the shelves is filled with things to be kept cool and the box



then lowered to the bottom of the long box or near the water in the well. The rope holds the box in this position until the food is wanted, when a few turns of the crank will bring the box and its contents to the top within easy reach from the outside.

Canada leads the world in producing asbestos. Her output during the thirty years of asbestos production has been \$20,000,000 worth.

STEEL SQUARE

ALFRED W. WOODS

How to Use the Steel Square

HIP AND COMMON RAFTERS AND THE RELATIVE DIFFERENCE BETWEEN THEM—HOW THE LENGTHS AND CUTS FOR THIS WORK ARE FOUND

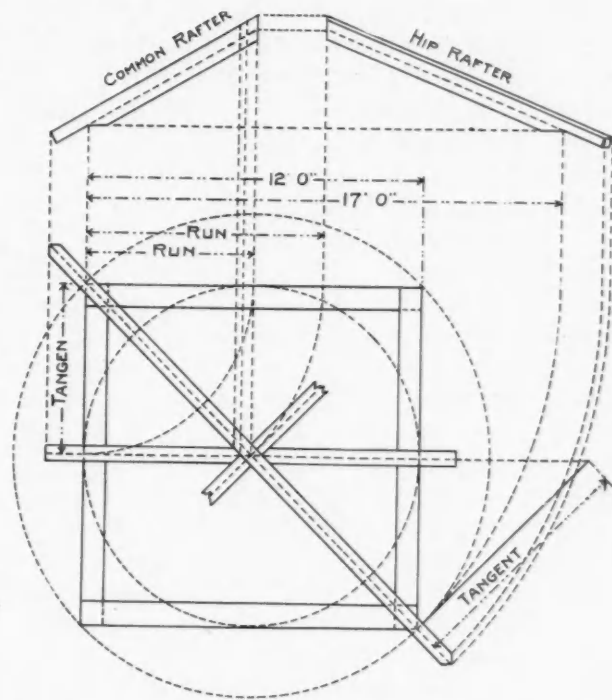
THE framing of hip and valley rafters furnishes a problem that taxes the ingenuity of a great many carpenters who are otherwise good mechanics. They experience no trouble in framing a plain roof with gables, but when a hip or valley is thrown in, they become bewildered and turn the job over to someone else. Yet, if they would only stop to think a minute they might readily see that the same rule applies to both. Generally speaking, the run and rise taken on the steel square will give the seat and plumb cuts. The run is taken, not because it is the run, but because the run in the case of the right angle or square cornered buildings equals the tangent, which is one of the parts that should be taken in any shape building.

So far, this is plain enough and all will understand, but the trouble is in obtaining the side cuts for these rafters; yet, they too are found by the same rule, that is—the individual run and length of the rafter taken to a scale on the steel square, will give the cut, the cut being on the side on which the length is taken. The only difference is in the run; that for the hip being $\frac{5}{12}$ greater than that of the common rafter. In other words, when the span of the common rafter is 12 feet, that for the hip is 17 feet.

The illustration shows these rafters in position both in plan and elevation. The run for the common rafter in this case would be $\frac{1}{2}$ of 12, or 6 feet, and that for the hip $\frac{1}{2}$ of 17, or $8\frac{1}{2}$ feet. These figures (representing the run) and the rise given the roof, taken on the steel square, will give the seat and plumb cuts of the respective rafters. These same figures and the figures representing the length of the rafters, will give the side cuts. Or, if working to the full scale, for a one foot run, it is 12 and 17 for the runs of the common rafter and hip or valley respectively, and the number of inches given the rise of the common

rafter to the foot, will give the seat and plumb cuts. The same figures and the length of the diagonal to the rise will give the side cuts.

It should be remembered that the rise of the hip remains the same in either case, because it must coincide with that of the common rafter and to do this, the hip must cover 17 inches of space to 12 for that of the common rafter.



As for the lengths of the rafters, say for a building as shown in the illustration, with a 7-inch rise to the foot, all that is necessary is to run the steel square at 12 and 7, six times for the common rafter and at 17 and 7 the same number of times for the hip or valley and their lengths will be obtained.

Practical Methods of Estimating

THE IMPORTANCE OF CORRECT ESTIMATING IN CARPENTER WORK—HOW IT IS OFTEN DONE AND HOW IT SHOULD BE DONE

By I. P. Hicks

THERE is nothing that can be of more interest to the carpenter and contractor than accurate estimating. Every contractor knows that if he estimates too high he loses the job; and if he esti-

mates too low then he loses money on the job if he gets it. So in order to be a successful contractor it is absolutely necessary to know how to figure about right. No force of workmen, however good they

may be, can make good on a job for any contractor who has done a bad job of figuring.

One can hear all manner of ideas advanced as guides to estimating. The labor problem is the most difficult on account of the varying conditions that always exist.

Some will say that the labor is worth exactly the same amount as the material. But this rule has not the least thing in the world to commend it to any one; and it would hardly hold good on any kind of work. Figuring, by this rule, almost in every instance the contractor would get his figures too high.

For example, take shingles at \$4.00 per thousand. Everybody knows that they could not figure \$4.00 per thousand for putting them on. For plain, straight roofs they might be figured at \$1.75 per thousand, but this rule would not bring any profit to the contractor if he paid over 40 cents an hour for labor. An average day's work of two thousand shingles, in a day of eight hours, is every bit as good as any contractor can expect to get out of his men, and there are many who will not do even that well. There are others that can do better, but the two thousand a day is a good average to take on straight work.

Now the cost of shingles on a roof that has numerous hips and valleys is much more; and the labor should be figured all the way from \$2 to \$3 per thousand shingles. There are roofs where a man will not lay over one thousand shingles in a day, especially some parts of a complicated roof. So the man who figures the shingles at \$1.75 a thousand straight will come to grief when he runs up against the complicated roof.

He will find the same experience in framing the roof, the same experience in sheathing it, and the same experience all over when complicated work is compared with plain work. Thus it is, and always will be, necessary for a contractor to be able to discriminate or distinguish—from the plans—the common or plain work from the more complicated and costly parts, and to be able to place a proper value upon each class.

Many contractors are inclined to indulge in various schemes of estimating that are in no way practical; but they accept them simply because the system involves no labor to speak of, and perhaps no knowledge of the construction of the building they are figuring on! This will not do. There is no system of guessing that is reliable. It is, and must be, a system of going into the details accurately and for enough at least to be certain and convincing.

We may take the siding of a house for another example in estimating. Suppose one job is a plain square house with all square corners and with corner boards, siding to be $\frac{1}{2}$ by 4 inches, laid about $2\frac{1}{2}$ inches to the weather. Suppose the next job is one with octagon bay windows running full two stories, is without corner boards and the siding has to be mitered on every corner. No one will contend for a

moment that it will do to figure this the same rate as the former job.

Then if the contractor has been used to the plain work all his life and runs up against a job of the latter kind he must know about how to figure or he will fail to make good on this kind of work. The question very naturally arises: How much more is one worth than the other? On plain, straight work the $\frac{1}{2}$ by 4 inch siding can be figured at \$1.50 per square of 100 square feet; but on the building with mitered corners and octagon bays, with mitered corners throughout, making innumerable little mitered pieces to put in between windows and corners, such work would have to be figured at \$3.00 to \$3.50 per square. Often places will be found on a building where even \$3.50 a square would not hold out to make the man's wages at 40 cents an hour; but we have got to strike an average somewhere on the different classes of work, and the rate of \$3.00 to \$3.50 per square on houses with octagon bay windows and mitered corners will work out about right on the entire job.

Again, it is necessary to be able to use some discriminating judgment when it comes to putting the cornice on a house. Many times the cornice work on a house or porch takes much more time than the contractor has allowed for this work. Many times it is just because the contractor has never measured up the plans and he rather concludes in his own mind that two men will cornice the building in so many days! This is simply guessing and the only time guess work comes out right is when some one is lucky enough to guess about right; more times the guesser is off and is the loser.

There is no safer way to estimate a cornice than to take a plan and measure up each kind of cornice by itself—for example, the main cornice, gable cornices, dormer cornices, and porch cornices. Get the number of lineal feet of each and the number of members of each kind. Then figure 1 to 2 cents per lineal foot for members 1 to 3 inches wide, 3 cents per foot for members 4 to 6 inches wide, 4 to 5 cents per foot for members 8 to 10 inches wide, and 5 to 6 cents per lineal foot for members 12 inches wide. For the job with numerous corners always take the higher rate, while the lower rate will answer for the plain straight work.

While it is impossible to tell just the amount of work any two men or any set of men will accomplish in a given time on this or any other kind of work, this method will prove far more satisfactory than guessing at a job. Those who figure on work will find it to their interest to have some system in the matter of making estimates and adhere to it rather closely.

Often we have known cases where certain systems seemed to bring the estimate up too high and consequently a system of cutting prices on the estimate would be indulged in by the contractor only for him to find in the end that his first figures were about right.

PRACTICAL CARPENTRY

Design and Construction of Built-in Cases

TWO VERY ATTRACTIVE DESIGNS FOR BUILT-IN DINING-ROOM SIDEBOARDS—PRACTICAL SUGGESTIONS CONCERNING THEIR CONSTRUCTION AND FINISH BY AN EXPERIENCED MILL MAN

THESE three designs for dining-room buffets are about what the modern householder is looking for. Each is a different arrangement with a different style of detail.

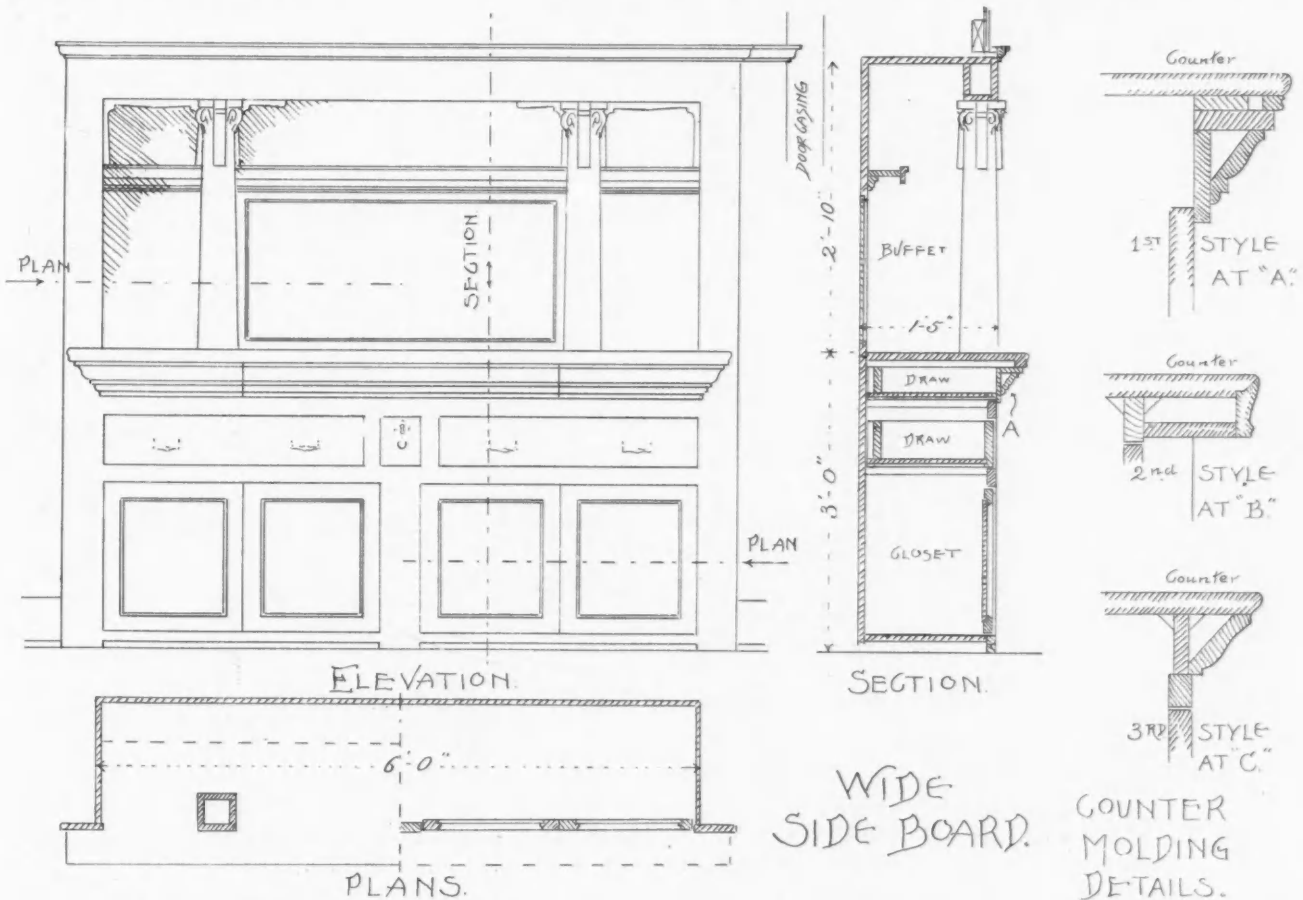
The wide buffet is most suitable for a large room. It is a little over 6-feet wide and of the same height. Above the counter a shelf runs across the back. The panel underneath may be of wood or a mirror. The pair of columns and wide nosing to the counter impart a massive appearance.

In the molding of the counter front is a private

drawers and a double set of closet doors under make the remaining receptacles. The latter can have glass or wood panels.

The details of this buffet will match the prevailing classic work in style. The columns have a little bracket capital with a volute in the corners. As the height is less than that of door finish, the top molding, if it forms the frieze of the room, should unite onto the casings.

The 3-foot closet, detailed on the next page, is most practical for flats and moderate-sized houses. It



drawer. It opens by pulling out the molding. Finger holes on the under side of the fillets will give sufficient hold. If desired it could be made to lock and pull out by operating the little drawer under it. Two

is intended to set into an ordinary doorway opening.

There is a recess shelf under the top or frieze line. Three shelves under this are closed with glass doors. In this design there is a concealed drawer behind the

base board. It raises this recess shelf to a more convenient height. There is a roomy drawer under the counter.

The style of finish is massive. Sometimes these wide box moldings are made perfectly flat, but it is not very good taste. It is better to slightly mold the face as shown in the detail. Doors and drawers are recessed and the paneling is in proportion to match the molding. On the whole there is more character to this design than in the ordinary mill patterns.

The wall sideboard shown will have the appearance of a nook in the furnished house. There are sliding doors in the back. They are to open into a buttery or kitchen where the space below and above the buffet can be utilized for shelves.

This piece of furniture is 4 1/2 feet wide and of about the same height. The shelves above the counter with mirrored panels and drawers below make a serviceable and attractive article.

The moldings are designed with softened angles. It looks well and cleans easily. The outline at the cor-

respond with the general finish of the interior. While intended for hard wood they are also suitable in the soft or strong grained varieties.

Some suggestions concerning the construction of such pieces may help the new mill man.

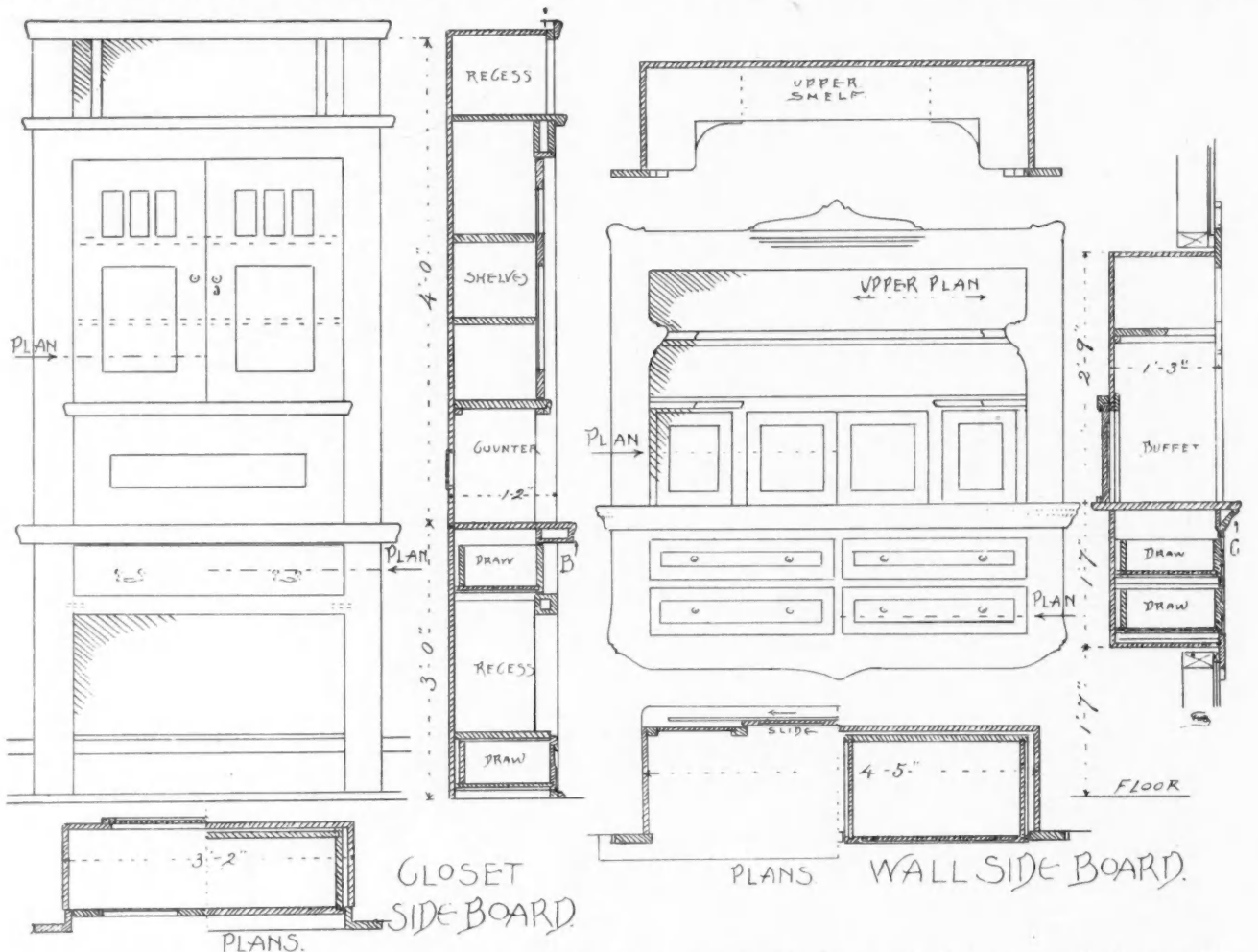
The large sideboards should be made in two pieces for convenience. Where necessary the casing would have to be cut at the counter nosing.

The off-hand sketch of the drawer shows the best way of its construction. It is better to have a frame for it to slide in; 1/8 inch is just right for the front to set back of the case, forming a panel that conceals the open joint.

The adjustable shelving is made quickest with round notches, as they can be bored two at a time.

As one does not want to drive any fastenings through the counter, glue-blocks underneath will furnish ample hold.

In style "B" it is much easier to glue the corner straight than with a mitre. It is not likely the joint will ever open in either, but the miter joint is more



ners is rounded just enough for neatness. The finishing of a long line with a wavy scroll is very artistic. There is an ogee shelf projecting from the upper casing that will display a tall piece of porcelain to advantage.

The construction of these sideboards can be finished off in any style. That is a matter of choice and should

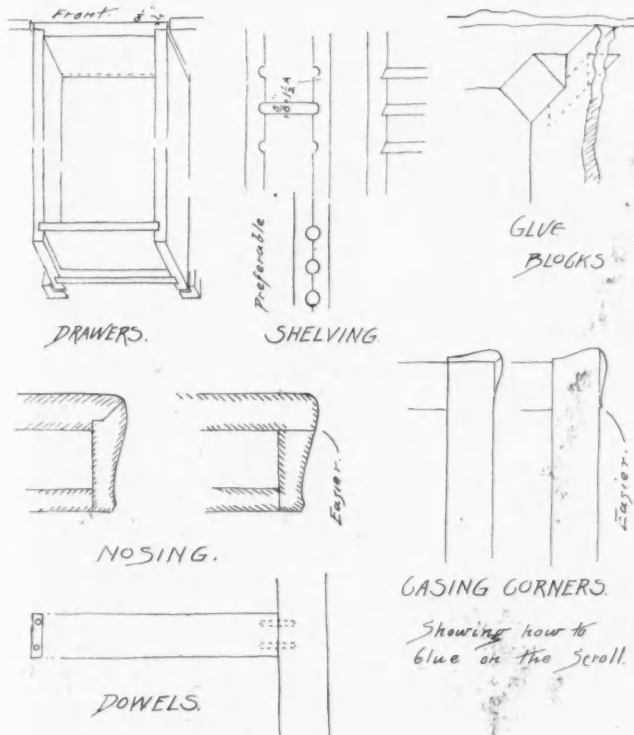
likely to do this, because it shrinks more in front, while the back forms a fulcrum that pries it open.

The scroll corners of the casings are blocks glued on and then cut out to finish. Where the matching of the grain does not show very much the continuous line does very well; but in other cases like a piece of furniture where the edge is towards the view a fillet

looks better and besides is much easier to handle.

Where there is width enough dowels should be in pairs.

In cleaning the molding it takes an intelligent man



SOME PRACTICAL SUGGESTIONS FROM THE MILL.
SKETCHED BY G. BURKHARDT.

to know what to sandpaper and what not. The square fillet at the bottom of an ogee should be sharp, while the corners of the column and the edges of the drawer casings want to be touched with sandpaper.

Good glue will hold the glue-blocks in place as soon as they are pressed into the corners.

Matched Lumber for Metal Roofs

Much has been said in the past about the desirability, if not the necessity, of having matched sheathing as a foundation on which to apply a metal roof, assuming, of course, that a roof of ultimate maximum economy is wanted. There is no necessity of reiterating at this time all these arguments. As a matter of fact, all, or nearly all, are conceded as axiomatic, the difficulty being that short-sightedness prevails rather than long-sightedness, first cost often warping the views of the consumer and contractor, so that the more invisible yet just as certain results of best work are overshadowed. As an additional plaint for matched boards, however, may be mentioned the experience of a considerable number during a recent summer, especially in certain parts of New York state. When different localities have been visited by hailstorms of record-breaking severity it was found that the tin roof withstood the battering without sign of failure where the roof boards were close together. Where such was not the case the metal was bent into

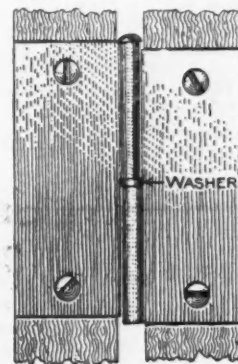
the opening beneath the boards, with the result that there was a general breaking along the seams and the roofs were in some cases absolutely ruined.

Experimenting With Fireproof Paint

Interesting experiments have been made by a Canadian railway commission at Ottawa with fireproof paint as a means of protection for wooden trestles and bridges. After the trestle had been painted with fireproof paint, an engine was run slowly over it and ashes shaken out. Nothing resulted. The engine was then brought to a standstill in the center of the bridge and red hot cinders shaken in a heap on the painted ties. The fire practically went out in a few minutes. In another case treated similarly, the paint was burned, but no fire resulted. There will be further experiments.

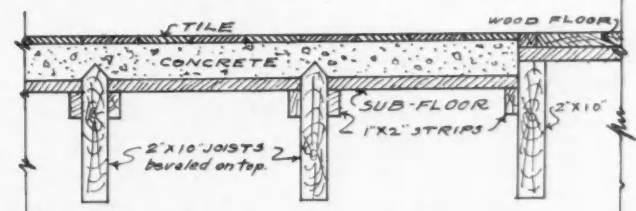
How to Remedy a Sagging Door

A shed or barn door that has sagged so that the outer end rubs on the floor, sometimes wearing an arch-shaped groove, is quite an annoyance. If you do not want to reset the hinges on such a door, or have not the tools to do the work, the door can be raised high enough, says *Popular Mechanics*, to prevent its dragging by inserting a washer or two on the pin between the halves of the hinges. The door can be lifted, carrying the pin off the hinges with the top half, the washers put on the pins and the door replaced in a very short time.

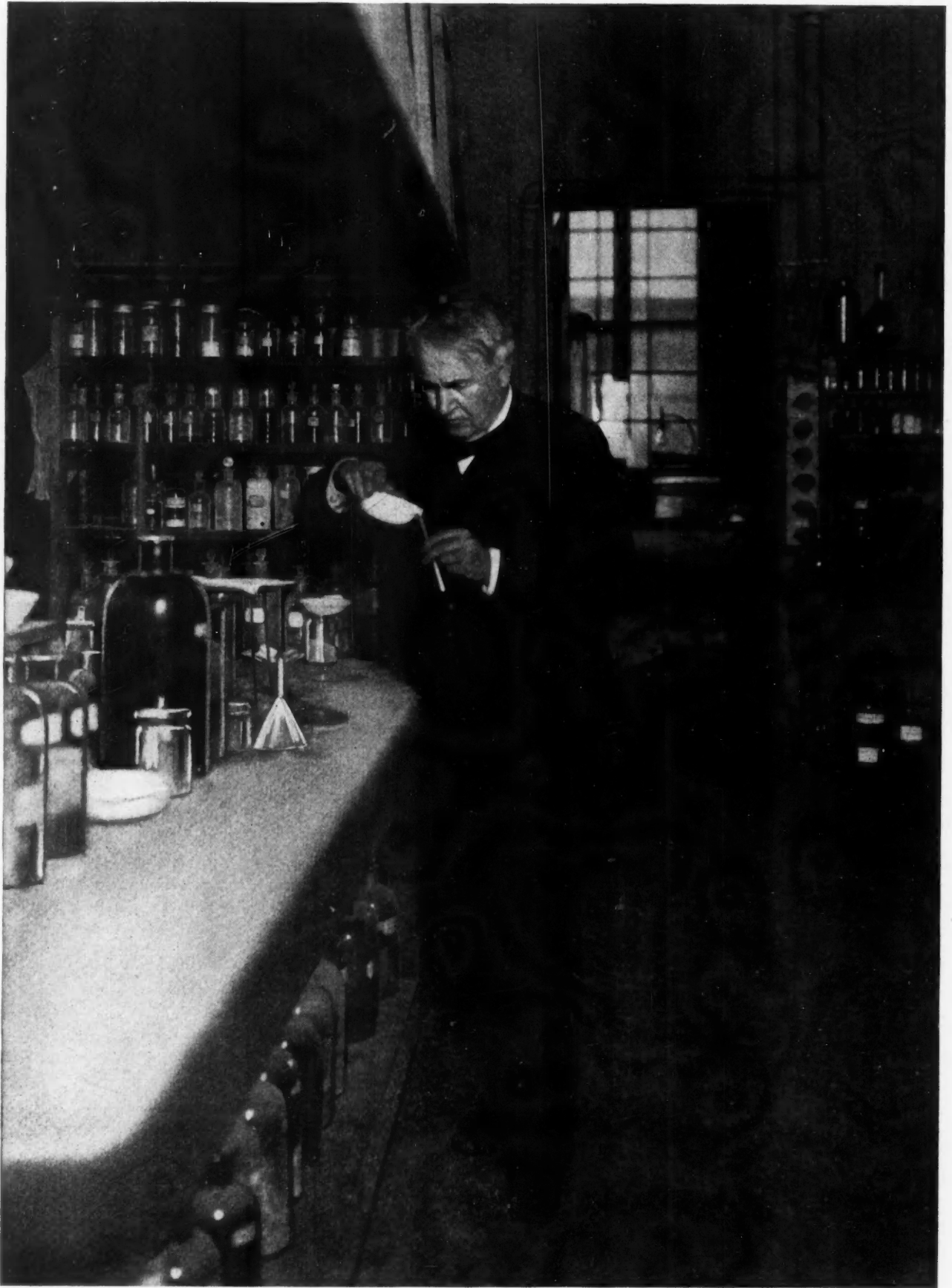


Framing for Tile Floor

It is often necessary to lay a tile or mosaic floor in one or more rooms of a building where wooden joists are used, such as vestibule, hall or bathroom, and we show herewith the best method of laying the same and also the proper way of joining an ordinary wood floor to it, such as in a doorway where no threshold is desired, or around the hearth of a fireplace. If the joist under this joint is a trimmer, it should be



doubled. The tops of all the joists should be beveled as shown in order to prevent cracking of the concrete above the joist. When necessary to lay tile floor in old buildings, the wood floor should be taken up and the floor then put in as shown in the drawing.



Thomas A. Edison in His Laboratory

EDISON POURED CEMENT HOUSE



This is the first and only complete and authoritative account of the Edison poured cement house, concerning which there has been much speculation and no little discussion during the past two years. All the illustrations of the house, the floor plans and the ornaments, together with all the facts about its construction, are by the express consent and authority of Mr. Edison and his engineers.

I believe every carpenter and every builder is interested in this house, not because it is made of cement, but simply because it is a house. It is especially interesting to them, I believe, because it is to be built by a new method.

I consider it not only a duty but a pleasure in all the Radford publications to spare neither time nor expense if thereby those engaged in building construction, or in any of the lines allied with it, can be served or profited thereby. The Edison house is new. It may be epoch-making. You must determine for yourself whether it will affect you in your trade. It is my duty and pleasure to tell you the facts about all the new creations that arise in building construction.

Realizing the importance of the Edison house as one of the achievements of a man remarkable for other wonderful inventions, I have deemed it a subject of prime importance for the readers of the Radford publications to be informed about.

The modern carpenter is progressive. He demands information not only about the things intimately connected with his bench, but he wants to know all that is going on in the construction line. I know you can be instructed by this article; but after you have read it then is the time when you can appropriate the facts and apply them to your own condition, and consider how you will be affected.

The article on the Edison poured cement house herewith presented is published through the courtesy of the Cement World, one of the other members of the family of Radford publications, each one of which, it is my pleasure to say to you, spares neither time nor expense to bring before all those engaged in construction the latest and the best information about the new inventions and the new methods that are constantly being devised by the brains of the world. It is a pleasure to serve you in this way, knowing that each of these publications is recognized by you as first in its field.

WILLIAM A. RADFORD, Editor-in-Chief.

“THOSE fellows wanted to make a plain panel for the house, one without ornamentation, but I told them we would give the workman and his family ornamental work in their house. They deserve it, and besides it costs no more after the pattern is made to give decorative effects than it would to make everything plain.”

Thomas A. Edison said this as he was standing in a little pattern shop in the laboratory at Orange, N. J., the afternoon of May 28th, exhibiting to the writer the many patterns that are to be used in the production of his poured cement house.

His words revealed the motive and interest in the welfare of the workman that lie behind the creation of this structure. Motives are often revealed unintentionally and unconsciously.

It was so in this case. Mr. Edison's one thought through all the eight years he has been studying this problem has been to evolve something to make the struggle for existence easier for the wage earner.

The Edison poured cement house is about to become

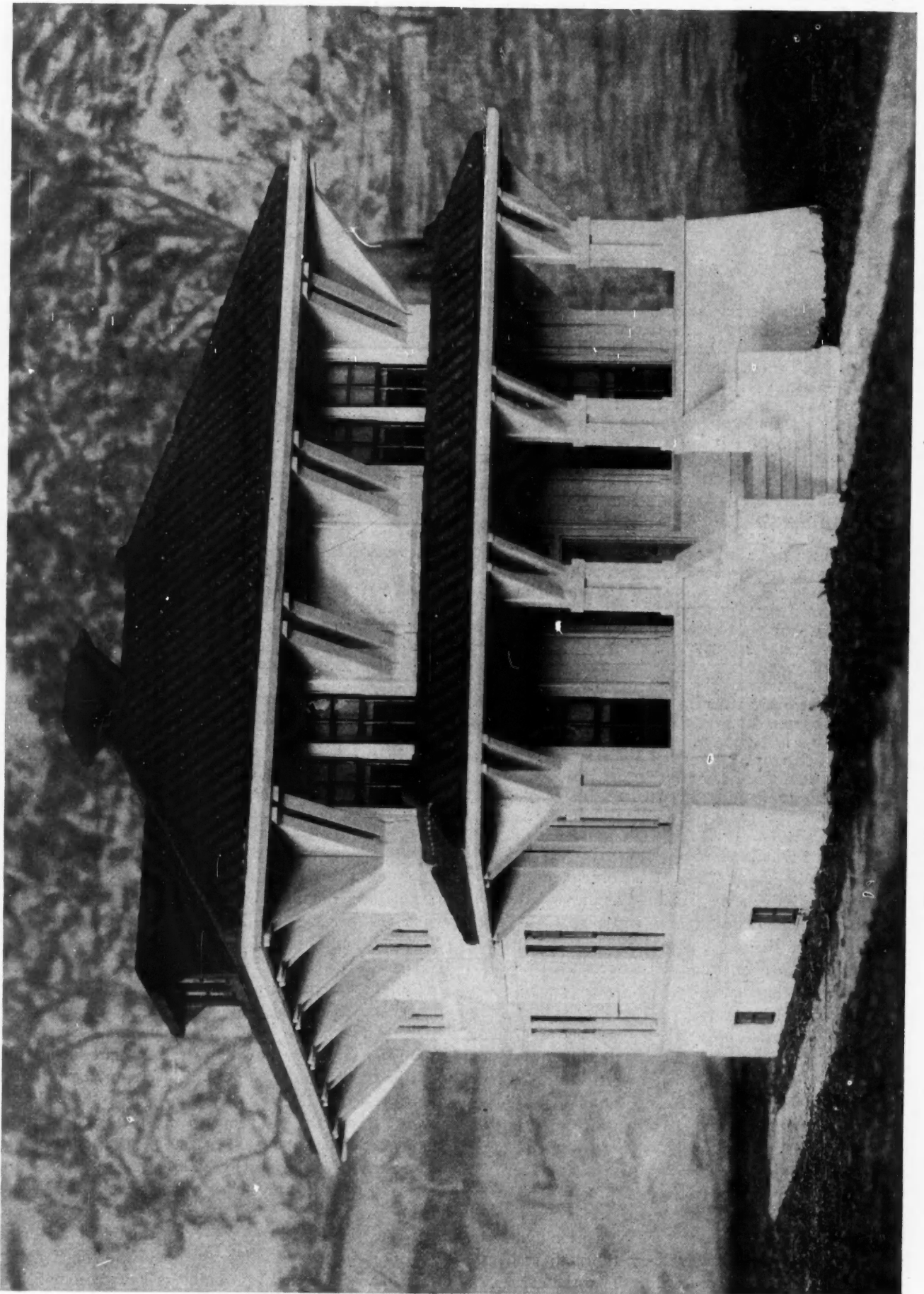
a factor in twentieth century building construction.

For two years it has been discussed pro and con and much speculation has been indulged in concerning it. In a few weeks it will be a fact, if the genius of Edison can make it so.

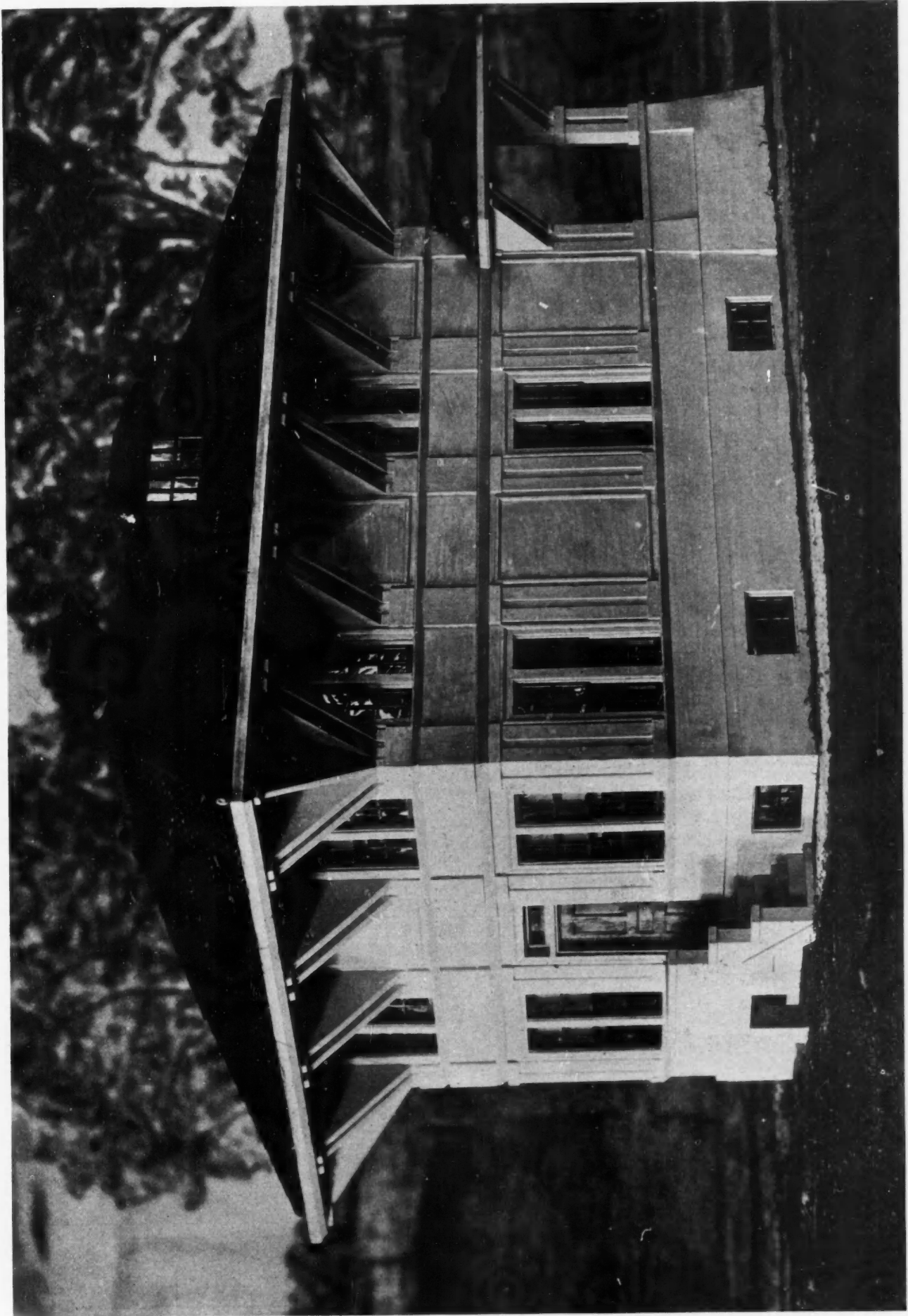
The CEMENT WORLD has been given the privilege of telling the public all that has been done to date on this epoch-making invention.

Its editor has seen all the molds that have been completed and which will be used in producing the first house, has seen the patterns for many others, and the designs for those that remain to be fashioned. In a word, the entire problem now rests with the pattern makers and the foundry.

Because of his sympathy with earnest men who are honestly trying to solve the problems presented by the use of cement and cement concrete the inventor was generously ready to lay open every nook and corner of his laboratory to put before the readers of the CEMENT WORLD what he and his engineers have accomplished towards the solution of the poured house problem.



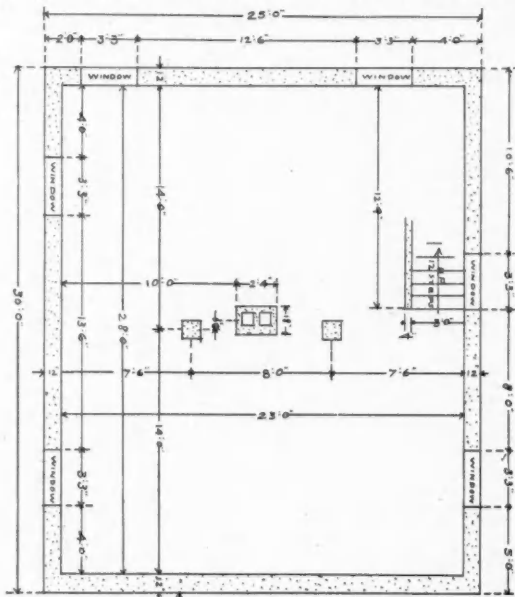
Front View of the Edison Poured Cement House



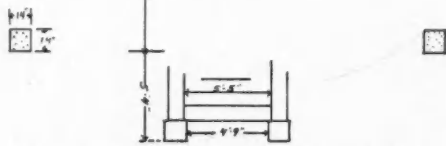
View of the Side and Rear

And after spending that afternoon in the laboratory, listening to the instructive talk of the inventor, in-

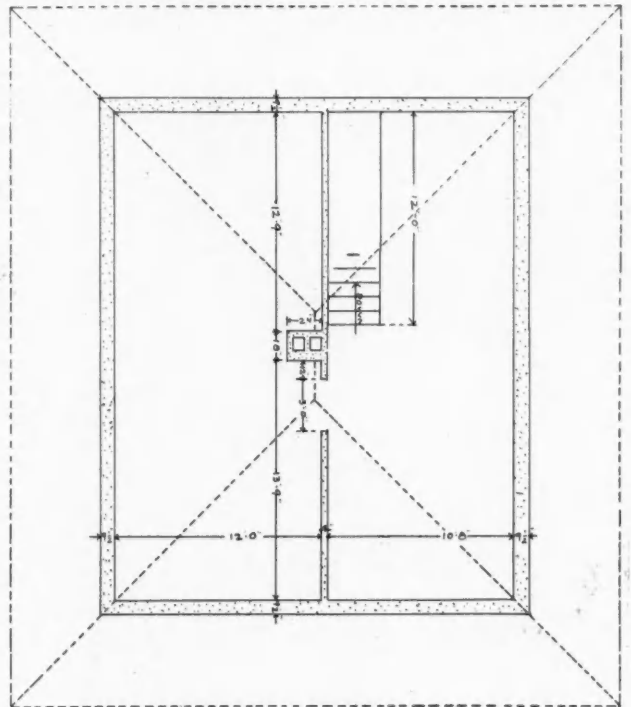
It had been mentioned in a general way that the purpose was to help the poor man to have a home



GELLAR PLAN



specting the parts of the molds completed, the patterns and the plans of others and specimens of ornamental work that have been cast for this house, the writer asked himself what the significance of a \$1,200 water-proof and vermin-proof house was.

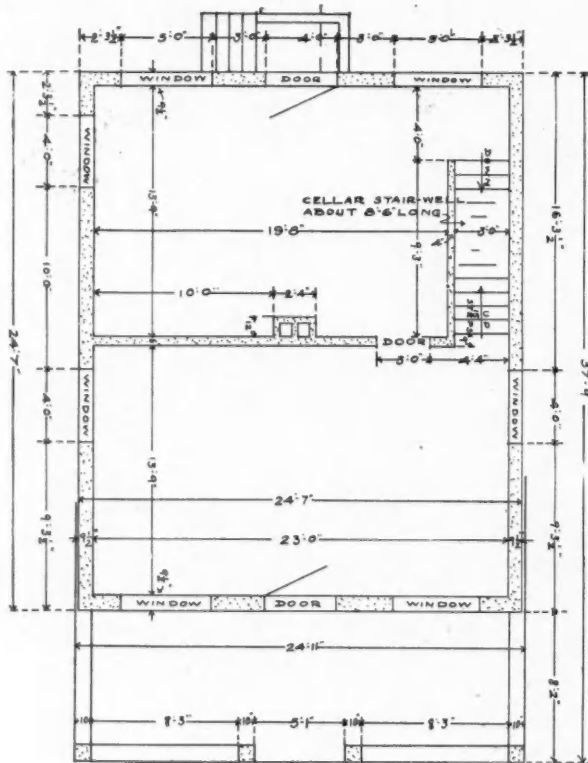


ATTIG PLAN

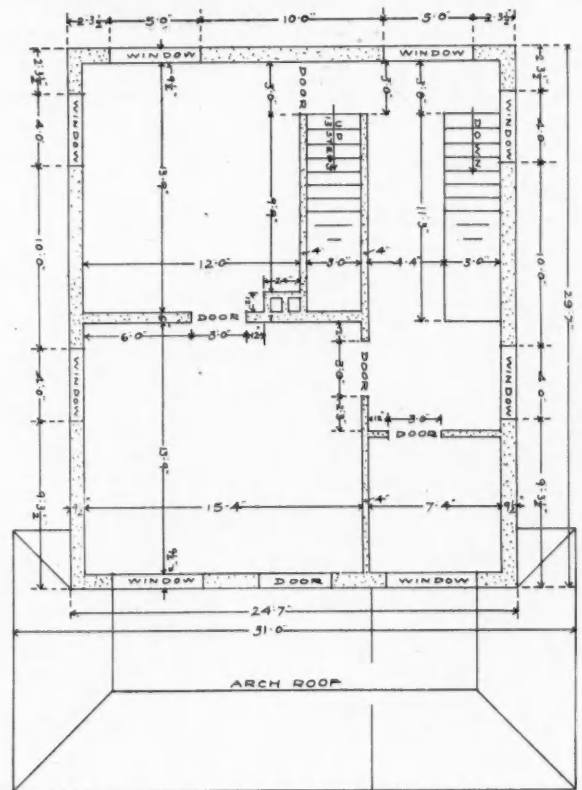
of his own. That sounded well.

But later, when the scribe left Orange, arrived at Hoboken and took the Christopher street ferry, landed on Manhattan and walked up Christopher street, he saw a few things that may have influenced Mr. Edison himself as he followed often the same route to the city from his laboratory.

It was early in the evening. The atmosphere was



FIRST FLOOR PLAN



SECOND FLOOR PLAN

sultry and warm. The tenements on each side of the narrow street had been emptied of their hordes of children of all ages and these were out in the gutter and crowding the walks. Children's games of all sorts were going on and shouts filled the air. The stairways reeked with the accumulated filth. Tired mothers and fathers who eke out a daily wretched existence for themselves and children could be seen at the windows, their wan faces showing no trace of hope. Day by day they struggle on and their children, in whom the joy of life is abloom, shout on in the streets with never a sight of a tree or a blade of grass, much less a lawn to play on.

The Edison house is for these and millions like them.

Every mother and every father deserves a better home and a better chance.

Every child has the right to better surroundings than now are withheld.

It was a strikingly impressive revelation of what the Edison house is to do that the crowds in Christopher street gave.

The tenement can be deserted and for \$10 a month the workingman can live in a detached, sanitary, water-proof cement house with a yard for his children.

To help these millions Mr. Edison has given his best thought and endeavor.

That he has succeeded in his efforts we must leave to the judgment of the reader who we trust will read the account of the inventor's accomplishment with a mind open to the reception of facts that speak for themselves.

Much has been published about the Edison house—

much that was erroneous and even ridiculously exaggerated.

Writers in the daily press have spread an impression abroad that this house was a magical object that the inventor could produce in some way by the mere wave of a wand.

It is sufficient to say that Mr. Edison has proceeded only along sane lines, simply making use of the materials nature has provided for the builder.

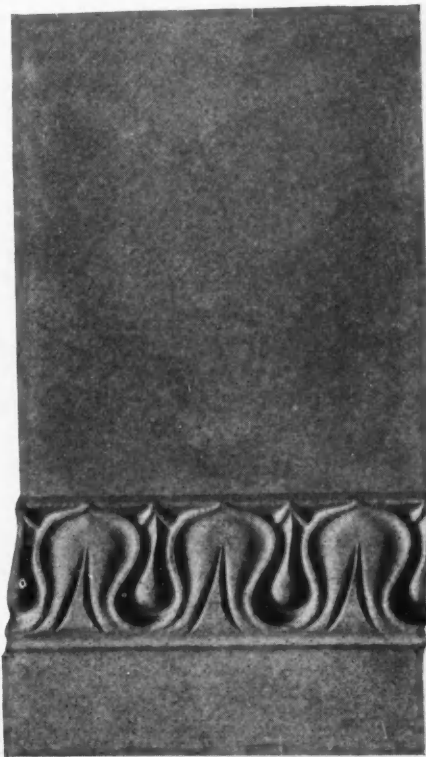
Architects and engineers and in fact all technical men who have a knowledge of the properties of concrete greeted the first announcement of the Edison poured house two years ago with incredulity and smiles.

The most frequent objection, or criticism, offered was the apparent impracticability of pouring concrete into an intricate set of molds and securing a surface throughout that would be free from imperfections. "It will clog," "It will not flow," were expressions heard on all sides. Then objections were offered on artistic grounds. "Imagine a city of houses, every one of which was like all the others. It is preposterous," was said.

Mr. Edison has answered all these objections to the full satisfaction of the most critical. Here are the important facts about the poured house which will be spoken of more in detail further on:

He has produced a mixture of a consistency almost like water which holds the stone or aggregates in suspension, allows the mixture to flow freely to all parts of the molds and secures a uniform distribution of the aggregates throughout the mass.

The molds are adapted to variations of arrange-



Ornament of Water Table. Photo from Original



Ornament in the Panels of the Porch

ment, thus making it possible to change the style of houses with the same set of molds. With five or six sets of molds, therefore, a wide variety of style is possible.

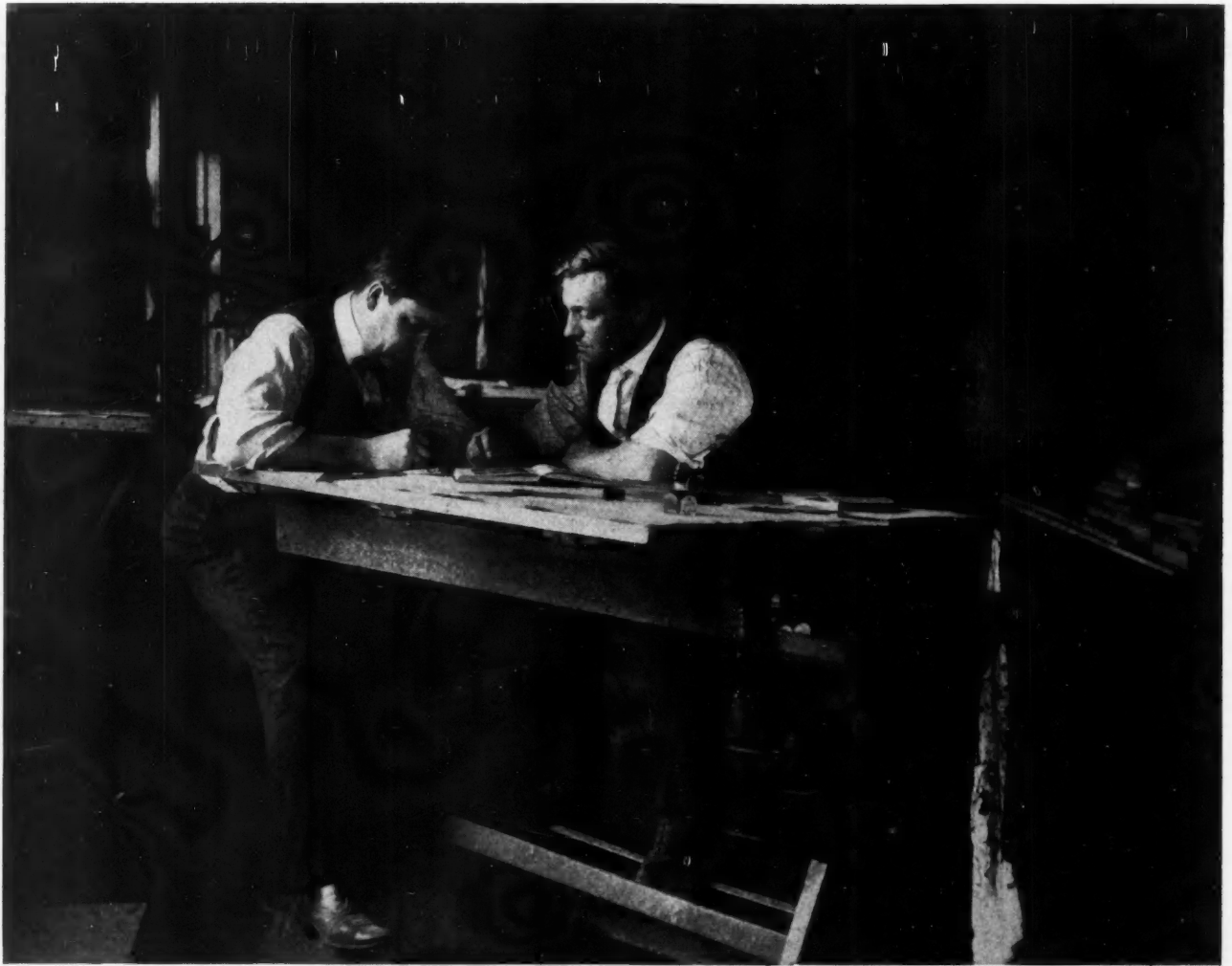
Yet he makes no boast of his accomplishment. The first house itself, which will be cast in a few weeks, will be sufficient answer to all critics.

And while hitches may occur and unforeseen difficulties may arise it must be the conviction of any man who views the specimens of poured work in the laboratory—specimens in which the aggregate was held in suspension while being poured—that the poured house is a fact and not a dream.

cases about the outer part of the ground floor, while in the galleries are other cases in which are kept specimens of nature's store of materials.

A statue of electricity greets the eye at the side opposite the entrance, and a large table in the center of the polished floor bears a beautiful palm.

I was admiring all these things while trying to frame up a nice phrase to accompany a dancing school bow when Mr. Edison should come in, varying the mental exercise with no little wonder as to what the great army of cement users would say if they were there with me, when suddenly the sound of rapid footsteps was heard in the hall, the door was opened hur-



Mr. Edison's Engineers—George E. Small on the Left. Henry J. Harms, on the Right

For be it known that with this problem solved and with the further fact that the design for every one of the parts of the intricate mold has been completed and now awaits only the pattern maker and the foundry there seems no doubt of its success.

In the Edison Library

Mr. Edison's library, where he received the man who was seeking information about the house is an institution in itself. It is a large room, large enough, you might say, for a public hall.

There are two galleries. Books are arranged in

riedly and Mr. Edison burst in.

A previously formed impression of Mr. Edison as a professor-of-astronomy type of man vanished like vapor when he glided across the floor with outstretched hand, grasped mine, shook it cordially and said:

"Glad to see you. Come on over and let's sit down." And from that moment there was simple freedom of conversation with no more reserve than might be expected between any two enthusiastic cement men of the Big Family. It would offend Mr. Edison to make

any flattering comment on his personality, and likewise would it insult the intelligence of the reader to attempt a description of a man whose name and fame are so familiar to the world.

When you walk up the street of your town at night and a bright street lamp lights your path, when you hear some opera singer giving voice to the classics on the talking machine or come in contact during your daily life with a thousand and one conveniences that make modern life easier—you meet Edison.

And he is content to live in his creations. He is absorbed in them. A simple man himself, the man does not live who can approach him on any other ground than that of simply man to man.

Then if you have a love for something in mechanics or science, or have *done* something the road is easier.

"I came to talk to you about the poured house," the visitor said.

Instantly the inventor's face lightened up and he smiled as he said:

"Yes, yes. A good many things have been printed about that house that were not authorized. Want to see the model and the molds? Come on." And he grasped the visitor by the arm and led the way out to the little open elevator he uses to go to the upper floors.

Arrived on the third floor, Mr. Edison chatting about market conditions the while, he led the way into the drafting room at the front of the building.

Here, in the middle of the room stood the model of the house.

The pictures of the house, the plans and the pictures of the decorative work have never before been shown or published and you see them here for the first time.

Immediately behind the model for which complete molds are now soon to be made is the discarded model of the two-family house Mr. Edison first had in mind.

Pictures of this have been published in hundreds of periodicals throughout the country, but this model is now figuratively in the scrap heap, and the house that will be produced is the one shown here.

The inventor stepped to the front of the model and patted it affectionately, you might say, as he said:

"Isn't it a beauty?" And the model certainly was handsome. The two aids of Mr. Edison, who are working out the details of the designs for the molds, George E. Small and Henry J. Harms, were busy at their drafting boards, but they looked up and smiled with pleased looks of indorsement of their chief's pride in the model.

"Give the CEMENT WORLD the plans of the house right away," Mr. Edison said, turning to the engineers. The plans are copied from blue prints furnished by these gentlemen.

Then Mr. Edison led his visitor over to one side of the room where a number of the finished molds that are to enter into the complete set were standing. They were of cast iron about an inch thick with backs reinforced by ribs and flanges.

"When all the molds are complete, ready to set up, they will be assembled and locked together," Mr. Edison explained. Then he displayed the molds that are to be used in fashioning the ornamental parts of the house.

Casts made from all these molds are shown here, and the surface in each specimen is smooth and without a blemish or hair crack. The color is a soft gray.

The inventor turned again to the model of the house. This, by the way, was made of the same mixture that will be used in the full-size house.

The model is about 4 feet high and even the interior partitions were included when it was cast.

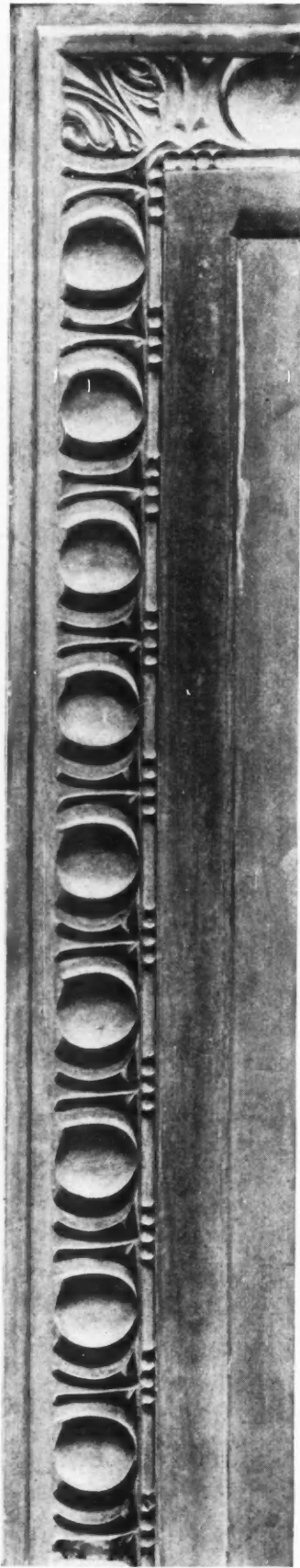
The window glass was not overlooked, and the little house is lighted by miniature electric lamps.

Considerable time was passed in the examination of the model and the molds. Mr. Edison then conducted the scribe down the elevator out into the yard and across an area to the little pattern shop, where a workman was busy at his task.

The inventor picked up the pattern of the beautiful panel decoration—the one shown bearing words on the margin written by him, "This is the one I prefer"—and displayed the



This beautiful Panel was one of Several that were Submitted to Mr. Edison for Approval. The Memorandum on the Margin is in his Handwriting.



Ornament of the Large Panels for the Decoration of the Edison House. It will be observed that Mr. Edison has planned Decorative Features for every part.

Photo from Original.

piece with much pride. "Those fellows," he said, "wanted to make a plain panel for the house, one without ornamentation, but I told them we would give the workingman and his family ornamental work in their house. They deserve it, and besides it costs no more after the pattern is made to give decorative effects than it would to make everything plain."

So the workingman who in the future may live in one of the Edison houses will not look upon bare walls or cheerless interior trim, but upon artistic designs and classical figures.

And do you know these little touches of art will have their influence on his children who now get their ideas of the sublime and the beautiful, if any at all, from bleak walls and dark corridors.

If the reader will pardon the momentary digression, we would give it as our honest conviction after talking to this man who seems to live and breathe close to the secret chamber where Mother Nature holds her most precious treasures, that his house is destined to be a practical instrument in that great uplift movement that now occupies the minds and hearts of lovers of humanity.

It was suggested to Mr. Edison that the one vital thing necessary in the cement industry at this stage of its development and in all the future is honest intelligent workmanship.

"That's it, that's it," he said. "Honest work is what we must have. When the architect gives directions we want them followed to the letter when his back is turned."

It has been mentioned casually that Mr. Edison has had this matter on his mind for eight years. His first idea was a two-family house, the designs for which were furnished by a New York architect. Considerable work was done on this design, which is the one familiar to all newspaper and magazine readers.

The work progressed so far that some of the patterns for the molds were made. But Mr. Edison came to the conclusion nearly a year ago that the design was not practicable and offered many serious obstacles.

But more important than this consideration was the fact brought forcibly to his mind that the one-family house is the structure demanded.

He brought into his organization George E. Small, a young engineer from Philadelphia, a man expert in detail work, and Henry J. Harms, an engineer who has seen service all over the world, particularly with the Dutch government in India.

These men designed the house shown on these pages and were instructed after its acceptance by Mr. Edison to proceed with the designs for the patterns and make all necessary experiments.

A house like this built of stone, both Mr. Edison and his engineers say, would cost several thousand dollars. But if the operator of the molds for the Edison house buys his materials in large quantities it can be built for \$1,200.

Now this house is for one family with a floor plan



Ornament for the Columns. These Figures and Designs were chosen and arranged with the utmost care and judgment.

Photo from Original.

25 by 30 feet. It is intended to be built on lots 40 by 60 feet, giving lawn and small garden room.

The front porch extends 8 feet and the back porch 3 feet.

On the first floor is a large front room 14 by 23 by 9½ feet high, intended as a living room, and a kitchen in the back 14 by 20 by 9½ feet high. In the corner of the front room is a wide staircase leading to the second floor. This contains two large bedrooms, a wide hall and a roomy bathroom (7 feet 6 inches by 7 feet 6 inches by 8 feet 2 inches high). The third floor has two large rooms.

Each room has large windows, so that there is an abundance of light and fresh air. The cellar, 7 feet 6 inches high, extends under the whole house and will contain the boiler, wash tubs and coal bunker. The main room, as well as the outside of the house, will be richly decorated.

The decorations will be cast with the house and will, therefore, be a part of the structure and not stuck on, as is done at the present time.

It is an important fact about this house that it will be entirely of reinforced concrete, including the roof, floors, bath and laundry tubs.

The doors and window frames will be the only parts of wood or metal, so it will be practically fireproof. The mixture composing it is both water-proof and vermin-proof.

The inside walls, stairs and partitions will be concrete also, and no plaster will be used. The surface left by the molds will be perfectly smooth and can be painted or tinted if desired.

The writer was shown a specimen on which paint had been applied, and it takes paint as readily as wood, even showing a gloss if paint of that character is desired.

All the decorations and ornaments will be cast with the house and in every case will be a part of the wall which it adorns; in fact, the entire house will be in one piece, as if hewn or carved out of a solid piece of stone. The cost of the house, \$1,200, Mr. Edison says, includes heating and plumbing and a structure ready for occupancy. He lays special emphasis on the fact that this price is based on the building of houses in large numbers where materials can be purchased in large quantities and where the gravel excavated on the site can be used in the mixture.

Now we come more to the details of construction. As has been indicated, cast iron molds will be used, set up on a concrete foundation or footing.

Some time before the molds are set up this footing and the basement floor will be placed in order that they may be thoroughly set before the molds are erected.

The molds will be placed on this footing, and the cast house will include the basement walls. Regula-

tion reinforcing rods can be used in the molds. The stack for the bathroom and all gas pipes will be placed at the time the molds are set up. Mr. Edison allows four days for the erection of the molds. For this house several hundred pieces will be required. Each will be fitted to be assembled with the others and locked readily.

The time necessary for the pouring of the liquid he says will be only six hours. Four days after the pouring the dismantling can be done. Six more days are allowed for the hardening of the concrete.

The inventor thus makes fourteen days as the time necessary for the completion of a house.

This time may be reduced under favorable conditions.



Ornament of the Two Bands Around the House. Photo from Original

It is estimated that with six sets of molds 144 houses can be built in a year. As the same forms are used indefinitely the cost is reduced to a minimum. Concrete residences at the present time and under the conditions that require the use of wood for forms are prohibitive on account of the expense for lumber.

Now we come to two points that make the invention of Mr. Edison specially interesting to the cement man. As to the method of pouring there has been much speculation outside of all consideration of the mixture itself. Extra large size mixers will be used.

The concrete, after being mixed, will be dumped into large tanks from which it will be conveyed to a distributing tank on the roof or top of the forms. A large number of open troughs or pipes will lead the mixture to various openings in the roofs, whence it will flow down and fill all parts of the molds to the footings in the basement till it overflows at the tip of the roof. The actual pouring will require about six hours, and while the pouring is going on the mixture will be agitated to prevent the congestion of the materials. This will be further accomplished by the addition of a certain colloid, or clay, to the mixture.

The fact has been absolutely demonstrated by experiment, as proved by specimens in the laboratory and by actual and exhaustive tests, that a mixture is produced that has all the characteristics of a liquid, flows readily and fills all interstices and openings, and that during this flow the heavier aggregates can be held in suspension so that they are distributed evenly throughout the mass.

This hardly seems credible, but what the eye has seen can hardly be doubted. You will notice the details of the ornamental work shown from the laboratory.

Each piece was poured from this liquid that was

almost as fluid as water, yet it is a true concrete and stands all the compressive and tensile strength tests. Any good Portland cement can be used in the mixture.

The most convincing fact in support of Mr. Edison's claim that the mixture he has evolved will be satisfactory in the pouring process is the result of a test at the laboratory. A photograph of this test is shown.

The reader should observe that the face of the form has been removed so that the surface of the material inside is exposed and can be seen. The upright section to which the funnel was attached was 7 feet high.

The lower section was 24 feet long, jointed to another section 16 feet long by a perpendicular part 3 feet high. The tail end of the form was another perpendicular section 3 feet high.

The forms were made of ordinary dressed lumber, 1-inch stuff, and securely nailed. The inside dimensions were 4 by 4 inches.

The liquid used in this test contained crushed granite of the size that would pass a half-inch mesh sieve

It was poured in the funnel, which can be seen near the door of the shop, the pouring continuing till the mixture ran over at the other end, which is nearly on a level with the funnel.

In its progress the liquid containing the stone made a turn at the bottom, passed along 24 feet to the upward turn on the right, flowed up, stone and all, 3 feet to the section parallel with the bottom one, back 16 feet and up 3 feet.

The stone remained uniform in the mixture through-

out, and was as evenly distributed at the far end of the form as at the funnel.

The surface is even and smooth, but is much improved by the use of cast iron forms, for by the use of these the grain of the wood forms is avoided.

Messrs. Small and Harms have all the remaining parts of the molds ready for the pattern maker, and as soon as the patterns are completed the work of casting the molds will be done.

After that the first experimental house will be poured in sections to learn certain points and discover possible defects if any may exist.

It is expected now that the first pouring will be made this summer, possibly the end of August. If this is successful, as it now appears sure of being, a larger pouring will be made of the cellar and the first floor and a third pouring will include the complete house.

It is not to be presumed that Mr. Edison and his engineers have had no difficulties. Difficulty is a factor that lurks all about the Edison laboratory, just as it does about any other institution where original things are being accomplished.

But so many seemingly impossible things have been done that the inventor and his lieutenants feel reasonably certain that they have reached the goal of success with this house. The mixture has been secured. The forms are a certainty. Now for the house.

One of the last difficulties encountered, Mr. Harms said, was the problem of removing the interior molds after the pouring, particularly those of the basement.



The Edison Laboratory



Edison Storage Battery Plant

This problem has been solved satisfactorily and the system of taking away the inner molds no longer presents any trouble.

One of the principal objections made to the Edison

house was on artistic grounds. When announcement was made of the poured house the architects instantly offered the objection that every house would be alike, that a whole town might be built with one set of



The Edison Phonograph Factory

molds and would present an appearance of monotony.

We are able to assure all who object to the cast house that a number of variations of style are possible and provided for in any set of molds.

There may be variations in the porch, or a 1-story bungalow may be cast with the molds.

Then if six sets of molds are made use of the field of variety will be greatly widened.

A complete set of molds will cost approximately \$25,000, while the necessary plant will cost \$15,000

his reach, and the change in economic conditions that may come must be met when the time arrives.

If he succeeds his accomplishment is only a step in that era of rapid modern development.

The architect will always have clients and the skilled mechanic will always be in demand, for individual taste must continue to find expression. But the tenement house dweller for whom this house is intended cannot build under present conditions, much less consult an architect.



Test of the Edison Mixture—Note the Funnel Where Pouring Was Done

more. Successful operation will require six sets of molds to keep men and machinery constantly employed.

So it will be seen that a large capital will be required, and on that account building operations with the Edison molds will be carried on only by responsible men, but the inventor himself will not be commercially interested in the molds.

With the problems involving the industrial world that surround the adoption of the forms and the building of any very great number of houses after his method neither Mr. Edison nor the men engaged in the cement industry have any concern.

A certain thing he aims to accomplish, the building of good homes for the workingman at a price within

The Edison house will reduce living expenses, he says, enabling any man to own a home without paying twice its cost. Fire insurance and repair expenses will be eliminated altogether.

Such is the Edison house as it was explained by the inventor himself and his engineers for your instruction and profit.

And its mission?

There's a cry from millions of mothers and children who grope about in the human bee-hive tenements of the great cities, craving a breath of air, a glimpse of blue sky, a few blades of grass. Swallowed up and submerged as they are in the dark back rooms, the Genius of Invention is to be their salvation.



How to Make a Woodworker's Bench

COMPLETE INSTRUCTIONS WITH ILLUSTRATIONS AND WORKING DRAWINGS SHOWING HOW A CABINET OR WOODWORKER'S BENCH SHOULD BE MADE

IN RESPONSE to a number of requests for a description with working drawings and stock bill showing how to make a cabinet or woodworker's bench, we offer the following:

The bench described is one the writer has used in his work for a number of years and one which has proven quite satisfactory. The originator has kindly given permission to present it to the readers of the Home Workshop at this time.

Good benches are the result of years of study. There are many things which go to make up a good bench that the amateur bench maker knows little about. In fact, in a good bench, practically every point in its construction has been argued for and against and

vides space for the small tools, while to the back is fastened a tool rack for the saws, chisels and larger tools. The bench is ample in size for the needs of the amateur with work such as chairs, desks, etc.

This same top construction may be used and a bench built with the base completely filled with drawer space, as is shown in one of the illustrations.

One who has ever used a rapid-acting vise will not need to be told the advantages of that style over the old-fashioned continuous screw kind which our fathers used. To one who has never used one, we suggest that the time alone which is saved, not to mention the satisfaction in being able to get quick results, is well worth the small difference in cost. In



finally decided by the test of hard usage. The writer considers, therefore, that he is best answering the requests for a description of a good bench by presenting this one, which has had the best thought and study of its originator through a long period of development.

Such a bench is especially suitable for the home workshop, for it is nicely finished and as trim and neat as a piece of furniture. The single drawer pro-

vides space for the small tools, while to the back is fastened a tool rack for the saws, chisels and larger tools. The bench is ample in size for the needs of the amateur with work such as chairs, desks, etc. This same top construction may be used and a bench built with the base completely filled with drawer space, as is shown in one of the illustrations. One who has ever used a rapid-acting vise will not need to be told the advantages of that style over the old-fashioned continuous screw kind which our fathers used. To one who has never used one, we suggest that the time alone which is saved, not to mention the satisfaction in being able to get quick results, is well worth the small difference in cost. In the vise shown in the picture, throwing the lever to a vertical position permits the movable jaw of the vise to be moved out or pushed in as far as is desired. To fasten a piece, throw the lever vertically, pull the jaw out sufficiently to permit the piece to be inserted, move the movable jaw up against the piece by pushing on the lever, then swing the lever to the right about a quarter turn.

Begin work upon the frame. Make the ends first

and glue them up. The phantom sketch shows the top and bottom horizontals doweled to the verticals. The stock bill calls for enough extra length for these verticals to permit their being tenoned entirely through

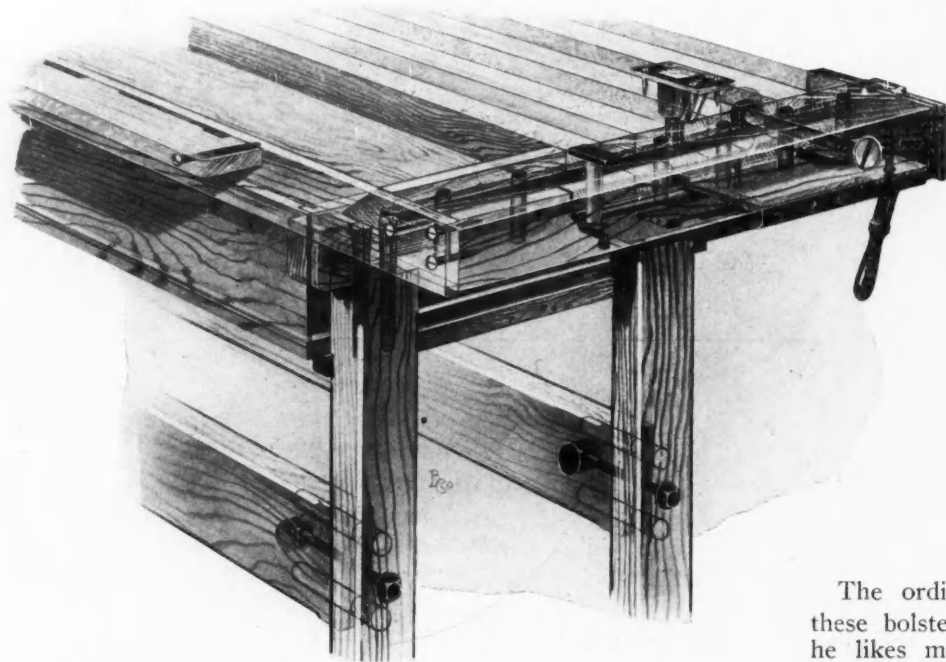
the horizontals, then glued and wedged. There is a cross strain put upon these joints that necessitates there being made as strong as possible.

From the drawing it will be seen that the holes for the draw bolts of the girts are in the middle of the verticals so that top and bottom of the end frames are reversible.

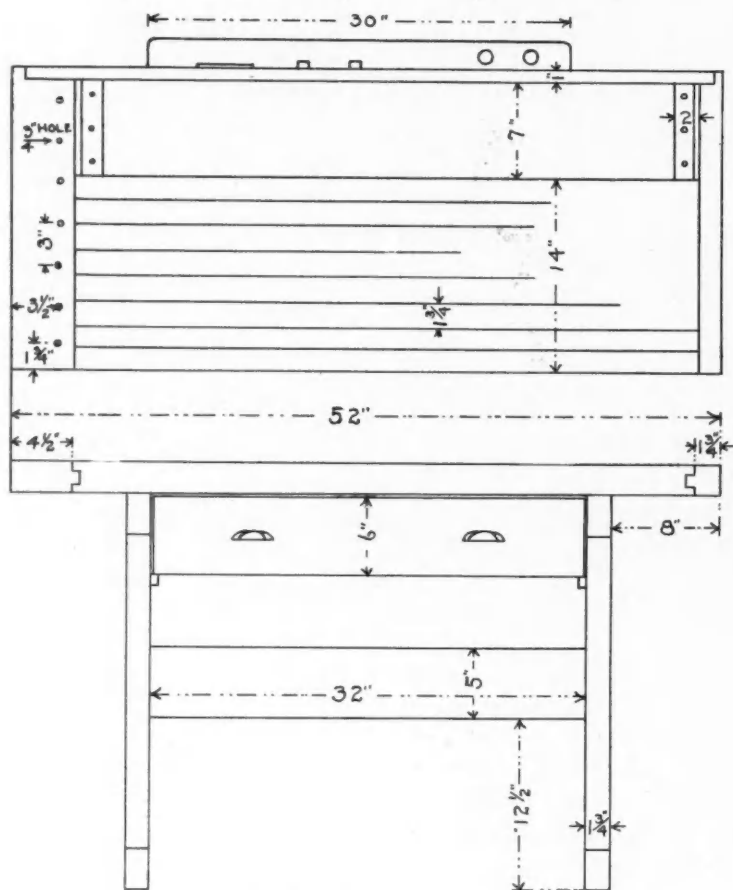
Square up the girts and bore for the dowels and draw bolts. Use a 6-inch machine bolt. Chamfer the parts as shown in the picture. These parts may now be assembled.

Make the top next. This will prove the most difficult part of the whole project because of the bolsters which are to be tongued and grooved to the ends of the bench top proper.

The ordinary bench does not have these bolsters and the amateur may if he likes make the top without them, making the top surface level for its full width. Experience with both kinds of tops has shown the writer that the cross clamping between vise dog and bench dog will, unless done by the experienced mechanic, open up the glue joints. With the bolster, such as is shown in the picture, this cannot happen, for the strain is along the length of the bolster and not across the glue joints.

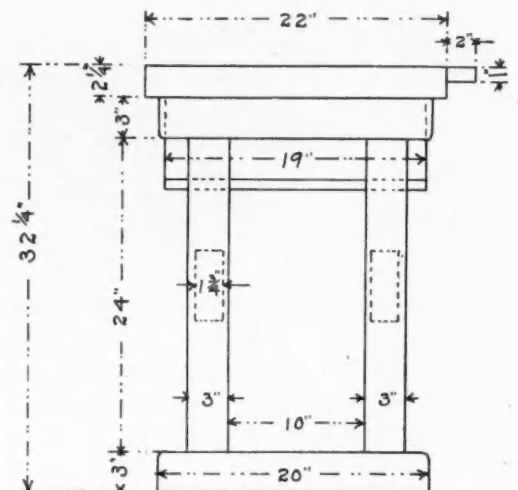


Phantom Sketch Showing Construction



FRONT.

TOP



END

WOODWORKERS BENCH.

It might be urged, and justly too, that it is contrary to the principles of good construction to join members so that end grain and side grain are together. However, in this case the top, being but 14 inches wide, is not inclined to shrink or swell enough under ordinary conditions—providing the wood used has been thoroughly seasoned—to cause any trouble.

The top proper is made up of eight pieces 1¾ inches wide, jointed and glued. These are surfaced after the glue has set so that the top shall be 2¼ inches thick, the bolsters having been tongued and fastened into the grooves cut in the ends of the top. The board which forms the bottom of the tool recess is rabbeted and set into grooves in the back and top proper.

To make it possible to easily brush this recess clean two beveled pieces are fitted and nailed at either end of the recess.

The location of the holes in the tool rack is a matter for the ingenuity of the worker. As shown in the drawing there is a place for backsaw, two chisels, hammer and mallet. Other openings are to be cut.

The top is to be fastened to the framework, as is the bench to be fastened to the floor, by lag or coach screws. Four screws are sufficient for all.

The drawer sides are to be made of 7/8-inch stock and thoroughly put together. The ledge or tongue

the best hard maple should be used, and it must, by all means, be thoroughly seasoned. A bench made of poorly seasoned maple is certain to prove a great disappointment. Order the stock mill-planed and sand-



Woodworker's Bench with Drawers

papered as indicated in the stock-bill. Stock specified S-2-S, surfaced on two sides, has an allowance of ¼ inch for dressing. Stock specified S-4-S is of exact width and thickness. All stock is ordered ½ inch extra length to allow for squaring the ends.

Mill bill for the frame, sandpapered:

	Thick	Wide	Long	
4 horizontals	1¾	3	20½	S-4-S
2 horizontals	1¾	5	32½	S-4-S
2 horizontals	¾	1¾	19½	S-4-S
4 verticals	1¾	3	30	S-4-S

For the top, not to be sandpapered:

	Thick	Wide	Long	
1 piece	2¾	5	22½	S-4-S
1 piece	2¾	2¼	22½	S-4-S
8 pieces	2¾	17/8	46¼	S-4-S

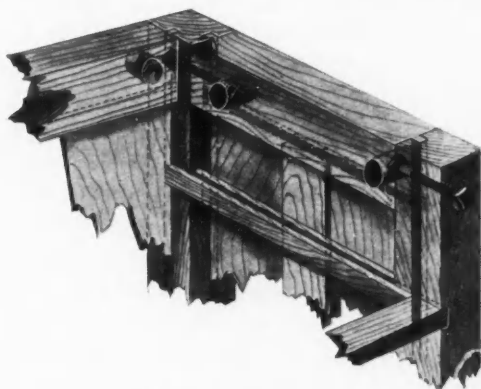
To be sandpapered:

	Thick	Wide	Long	
1 piece	1	8	46¼	S-2-S
1 piece	1	2¼	52	S-4-S
1 piece	1	2	30	S-4-S
2 pieces	1¼	2	7½	S-4-S

For the drawer, to be sandpapered:

	Thick	Wide	Long	
2 pieces	7/8	6¼	32½	S-2-S
2 pieces	7/8	6¼	19½	S-2-S
1 piece	¾	22	32	S-2-S

Fig. 4 is a bench that has the maximum of drawer

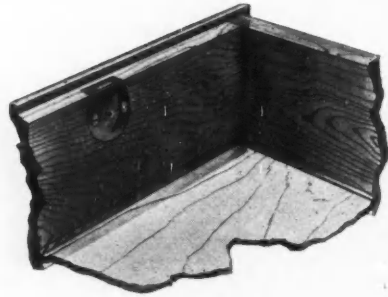


Frame Construction

and groove joint is to be used at the corners and the bottom of 3/8-inch stuff is to be "let into" the sides and back.

For a first-class woodworker's bench nothing but

space. The dimensions are: Height, 32 inches; length of top, 60 inches; width, 24 inches; thickness



Drawer and Lock Construction

of top, $2\frac{3}{8}$ inches. The tool recess is 7 inches wide. The legs are 3 inches square and the rails $3\frac{1}{2}$ inches wide. The general tool drawer is $5\frac{1}{2}$ inches high, 38 inches long and 20 inches deep. The smaller drawers are 5 inches high, $16\frac{1}{2}$ inches long and 20 inches deep. The paneled tool rack is 34 inches long and 7 inches high.

The paneling is to be made of clear kiln-dried birch; the frame of clear kiln-dried hard maple.

These benches should be finished with a liquid filler rubbed down and followed with several coats of shellac. The tops of hard maple benches are frequently finished by thoroughly rubbing in several coats of boiled linseed oil.

Perspective Drawing Simplified

BEING THE THIRD OF A SERIES OF PRACTICAL ARTICLES—ANGULAR PERSPECTIVE EXPLAINED—HOW TO MAKE THE "PICTURE" OF A HOUSE

By Edwin V. Lawrence

WHEN, in contrast to parallel perspective, the main lines of the building are at an angle to the picture plane, the drawing is in angular perspective.

As this is the way a building is nearly always represented, after a short talk on the theory, various shop methods will be explained and compared.

The first point and line to establish are the center of vision and the eye level or horizon, then the ground line at the specified distance below. Locate the spectator's position and revolve this point down on to the picture plane. The location of these points determines the position in which the building is seen, as the relation of ground line and eye level shows whether the picture is seen from the ground or as a bird's-eye view. The location of the center of vision determines the angle from which the spectator sees the building and the spectator's position determines the distance away from the building and the picture plane. Thus

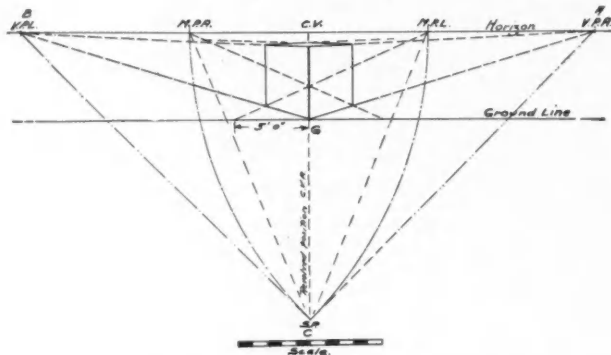


Fig. 1. Simple Problem in Angular Perspective

you see, great care must be used in planning the drawing.

As in parallel perspective, measuring points must be found, in order to cut off or measure distances back into the picture, and the principle of the isosceles triangle is used, although it is used a little differently than in parallel perspective.

In Fig. 1 is shown the result of the location of the ground line 6 feet below the eye level, the spectator's position 20 feet away and revolved down, and the measuring points for the different sets of lines vanishing at A and B.

As it has been explained, to find the vanishing point of any line, look parallel to the line; and the intersection of the new central visual ray with the eye level gives the desired point. Thus, in Fig. 1, if it is desired to have the sides of the cube or box which are at right angles to each other, equally foreshortened, or at 45 degrees to the picture plane, the lines C B and C A are visual rays, parallel to the sides of the box at 45 degrees to the picture plane determining the vanishing points at A and B.

With the distance from the vanishing point, V. P. L., to the spectator's position and the distance from V. P. R. to the spectator's position as radii, and the vanishing points as centers, draw two arcs cutting the eye level at M. P. R. and M. P. L. The chords of these arcs form the bases of the isosceles triangles A.—M. P. R.—C. and B.—M. P. L.—C., therefore, any distance from G. back into the picture on a line vanishing at V. P. R. or V. P. L. may be determined by drawing a line to M. P. R. or M. P. L. from the end of the required distance laid off on the ground line from G.

This may be understood more clearly by reference to Fig. 2, which is the view of two sides of a building at right angles to each other, and at 30 degrees and 60 degrees to the picture plane. One side is 16 feet long and the other is 10 feet long, while the cornice is 8 feet high with a 4-foot gable and roof overhanging the long side 1 foot. From the revolved spectator's position, or C, draw a line at 60 degrees to the C. V. R., intersecting the eye level at A. Draw a second line from C at 30 degrees to the C. V. R., intersecting the eye level at B. A and B are then the vanishing points of all lines at 30 degrees and 60 degrees re-

spectively to the picture plane. With A and B as centers, and radii equal to A C and B C, find the M. P. R. and the M. P. L.

Draw a line from G to A, which is the bottom of the 10-foot side of the building. On the ground line from G, toward the right, measure off 1 foot for the overhanging roof, 5 feet, to locate the center of the side, 5 feet and 1 foot to locate the other half and overhang respectively. By means of lines drawn from these points to M. P. R., intersecting the line G A,

Fig. 3 is a perspective drawing of a house, showing the various processes from the start to the finish. A few of these processes are developed as follows. After having established the eye level and the center of vision, the ground line is drawn parallel to the eye level 8 feet below it, which indicates that the spectator was slightly above the ground. The revolved spectator's position is 45 feet from the center of vision, which also makes the vanishing points, as the house is at equal angles to the picture plane, 45 feet

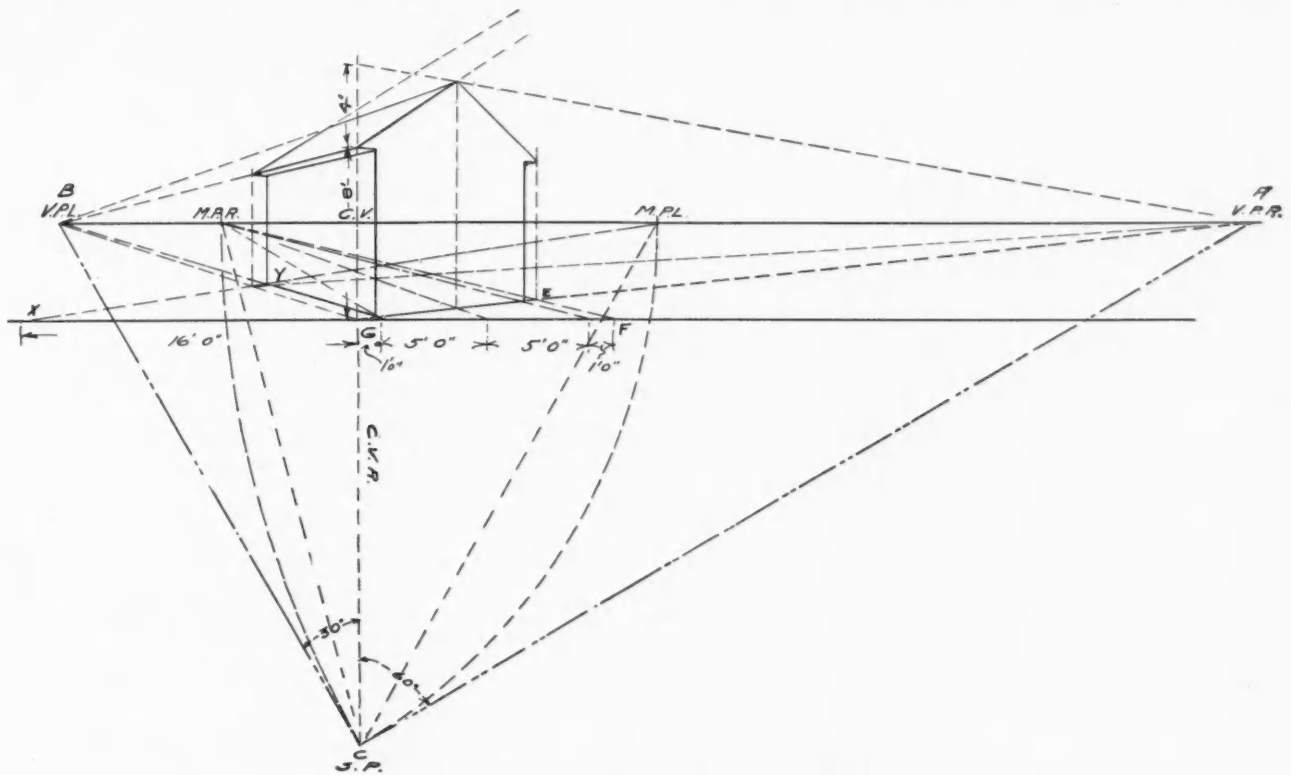


Fig. 2. To Determine Distances in Angular Perspective

the required distance will be cut off on G A, because G E F is an isosceles triangle whose base is E F, which is proved as follows: The base M. P. R.—C of the known isosceles triangle, M. P. R.—A—C, is parallel to E F (vanishing at the same point). The side C. A. is parallel to G E, for the same reason. The side G F, is parallel to M. P. R.—A, being the ground line and the eye level. Therefore when two triangles have three sides parallel each to each, they are similar and in this case isosceles.

By a second theorem, lines parallel to the base of an isosceles triangle divide the two equal sides proportionately. By this theorem the distances laid off on G A are equal to known distances on G F because all lines vanishing at M. P. R. are parallel to the base E F.

The same method is used to find the 16-foot side vanishing at B; by using the isosceles triangle, G X Y, which is found by drawing lines from the ground line to M. P. L. The height of cornice is found on a vertical line of measures erected at G, while all other vertical distances are worked from this line, such as the height of the gable.

from the center of vision. The measuring points are found as explained in Fig. 2, and a secondary ground line is taken at a convenient place below the first one. In making the perspective drawing of this house, it is desired to see a little more of the left-hand side than the right, so, the corner of the house touching the picture plane, or A, is placed on the ground line 4 feet to the right of the center of vision.

The bottom of the two walls vanish respectively to right and left from A. By means of dividers, scale or proportional dividers, the distances are taken from the plan, and in the case of the left-hand wall, laid off on the ground line from A to the left. Measuring lines are then drawn to the left measuring point, giving the location of the end of the wall, windows and other details. The same method is used to finish the other wall.

All measures that can be conveniently taken from the ground line may be found in this manner, but, owing to the very obtuse angles of intersection, it may be convenient to tack a piece of tracing paper below the ground line, thus establishing a secondary ground line, so that you are looking down on the top of the

building. The plan of the roof is plotted this way, using the same measuring points. After having found the plan of the roof, draw vertical lines and project it upward to its proper place.

The heights are all found upon the vertical measuring line A B and then projected backward to their proper location by means of vertical lines, as may be readily seen in the case of the chimney.

of houses may be seen where the paint has completely peeled from the galvanized work. In Chicago the metal workers prevent this peeling by first dissolving in a glass jar or earthen vessel one ounce each of copper chloride, copper nitrate and salammoniac, in one gallon of soft water. When all the salts are dissolved

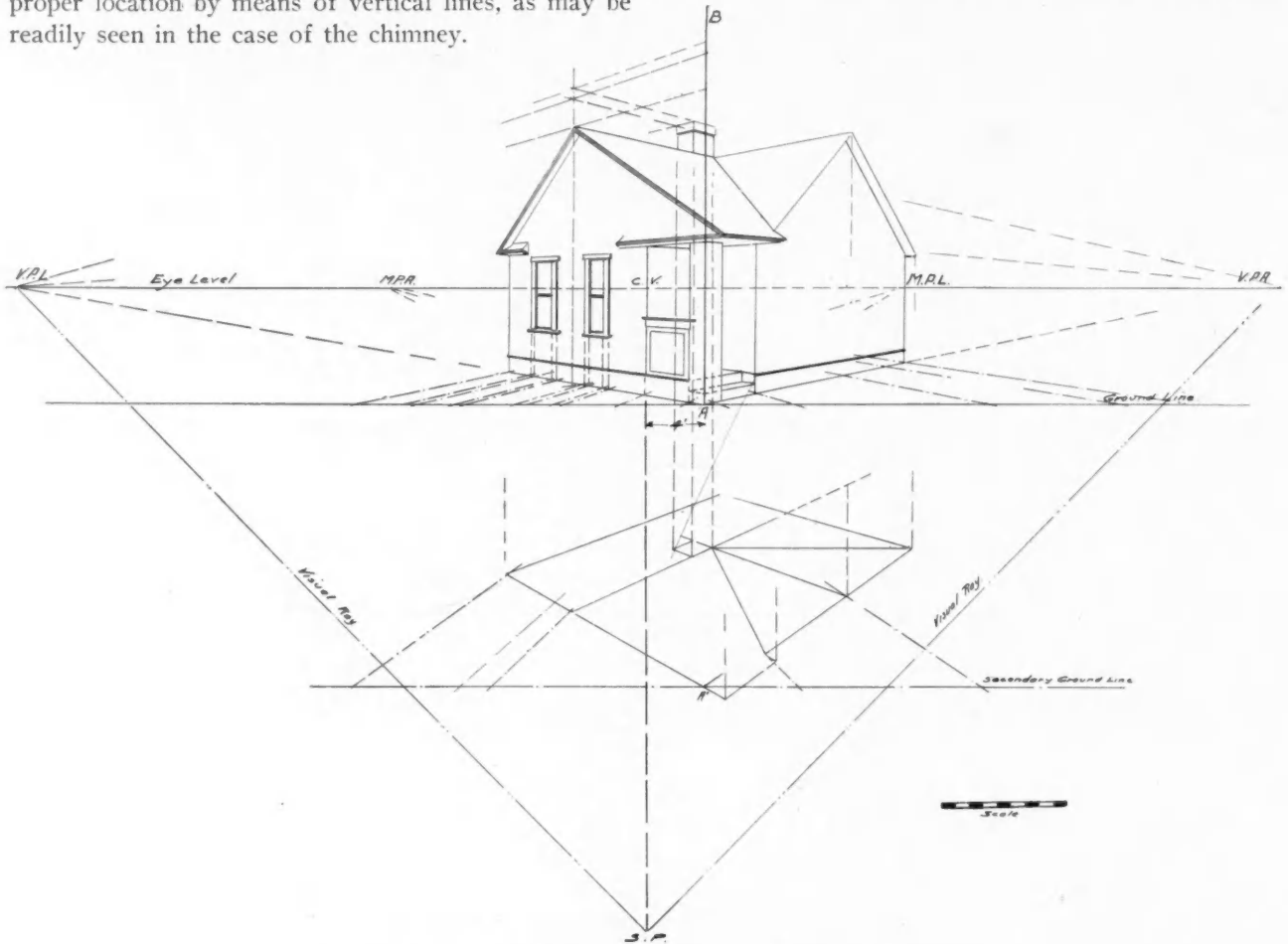


Fig. 3. Suggested Problem in Perspective to Be Solved

This method of working out a perspective drawing may be longer than other methods, but has the advantage of not making it necessary to draw that portion of the building not seen. If the drawing is worked out on tracing paper and has the same scale as the plan and elevation, the plan may be slipped under the tracing paper, so that the wall or the side will coincide with the line of measuring or ground line, and the work thus be simplified.

By making several perspective plans, such as the first floor, meeting rail of windows or second floor, on pieces of paper, tacked below the paper, on the secondary ground line, and these plans discarded after the points have been found on the perspective, confusion of lines will be obviated. It is suggested that a cottage without much detail, following pretty closely Fig. 3, be taken for the problem with this month's talk.

Wash for Galvanized Painting

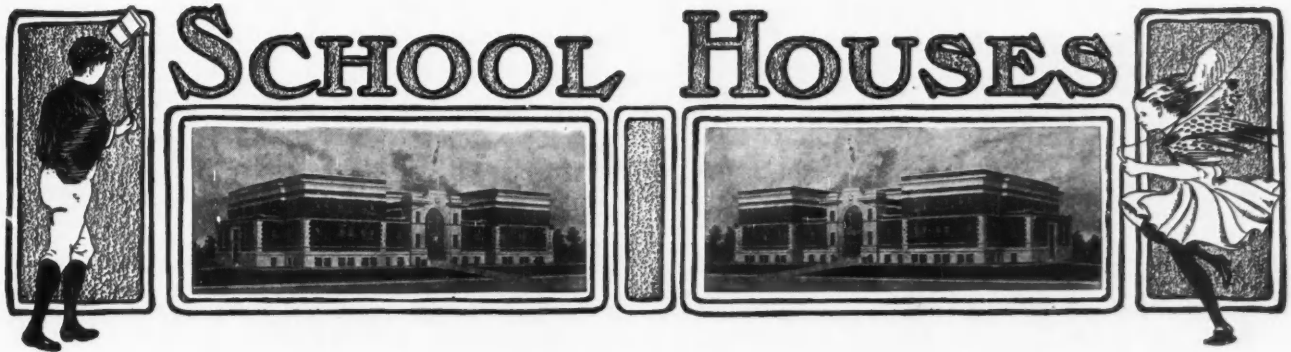
In the newer parts of Philadelphia row after row

they add one ounce of commercial hydrochloric acid. They apply this wash with a wide, flat brush. In a short time the metal turns black, afterwards drying a whitish-grey. Then they go over it with a dust brush to remove the surplus salt and paint as desired, with the consciousness that the paint will not peel if of good quality.

Wall Paper Poisons Entire Family

Reports from Evansville, Ind., state that John L. Fulling, superintendent of the county schools of Gibson county, Ind., and his family are in a serious condition as the result of being poisoned a few days ago. They slept in rooms recently papered, and physicians think they were poisoned through breathing fumes of arsenic or other poison contained in the wall paper.

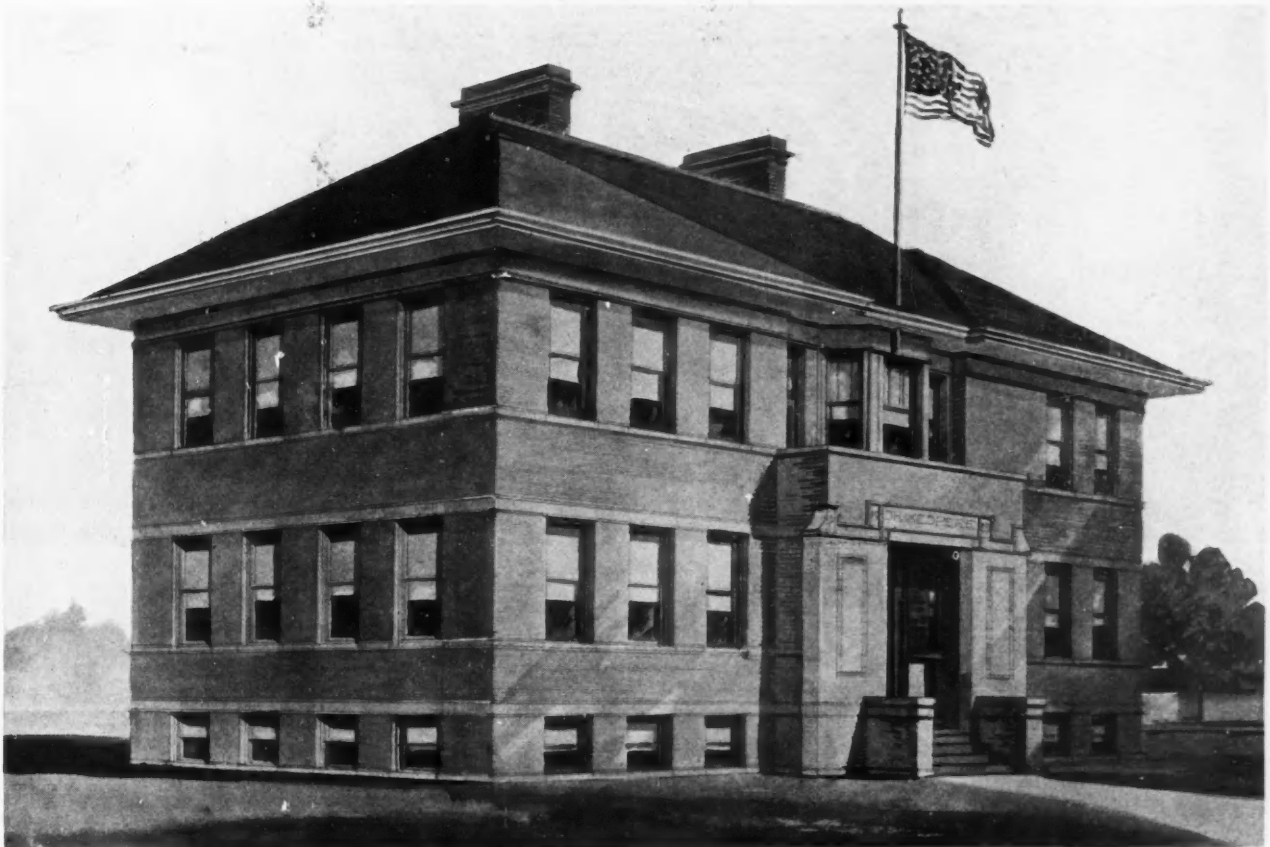
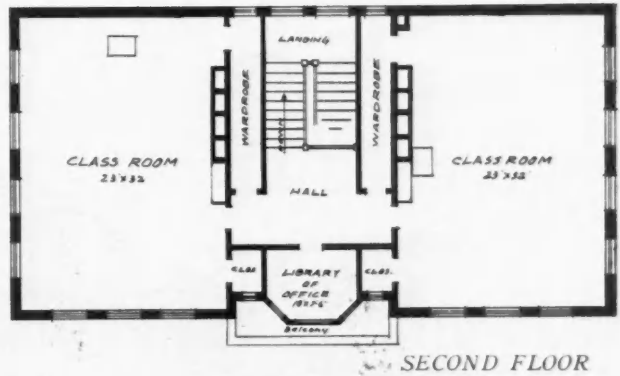
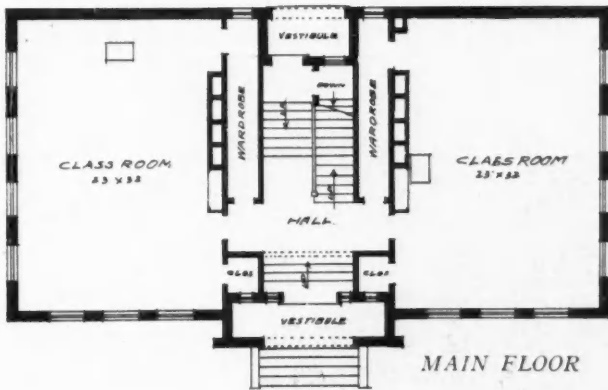
A scientist says the flaxseed poultices your grandmother put on you did no good. He is wrong. They did her good.

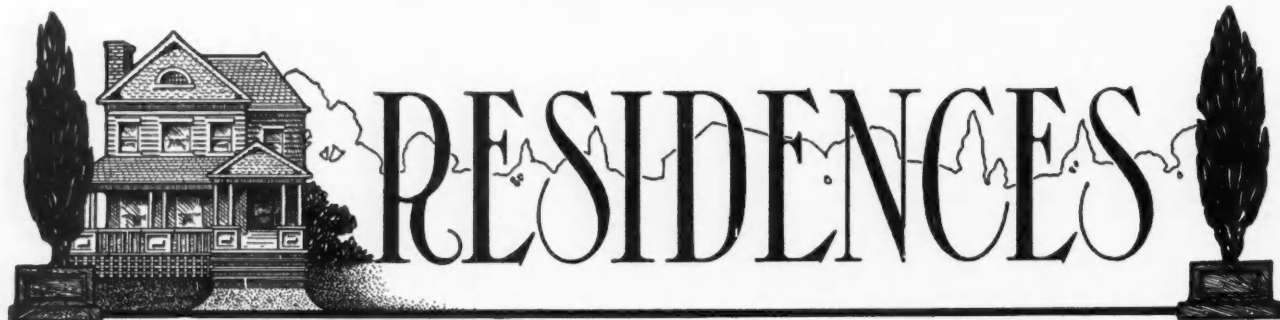


Four-Room School of Pleasing Design

PERSPECTIVE AND FLOOR PLANS OF A SMALL MODERN SCHOOL BUILDING OF CONVENIENT ARRANGEMENT AND ECONOMICAL DESIGN

WE ARE showing herewith plans of a 4-room school building designed by G. W. Ashby, architect. They show what may be done toward a pleasing architectural effect even in a small, inexpensive building. The material to be used is red brick with terra cotta trimmings. The roof is shingle.



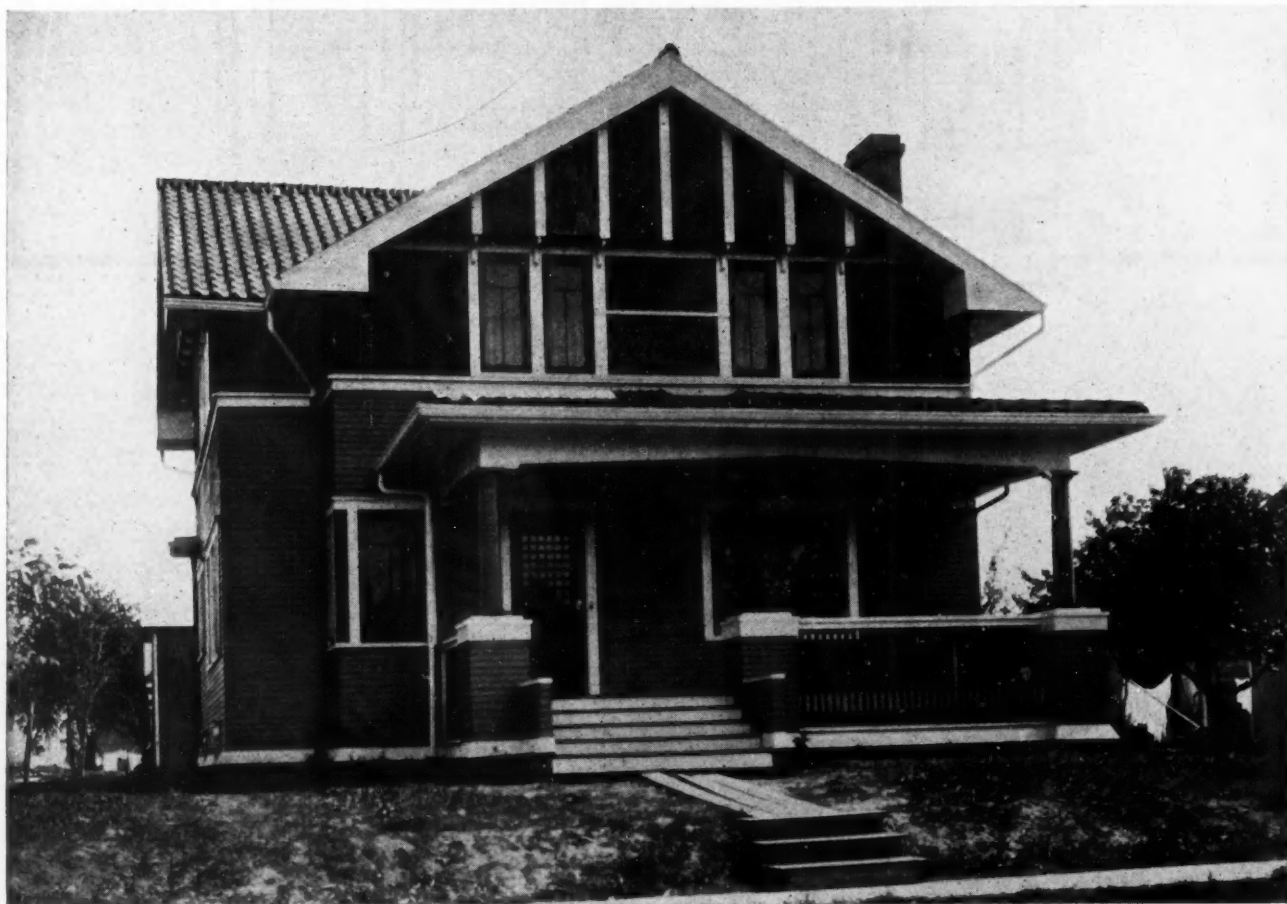


Practical and Artistic House Designs

PHOTOS WITH FLOOR PLANS OF SEVERAL VERY WELL-DESIGNED RESIDENCES OF DIFFERENT STYLES AND COSTS—SPECIAL FEATURES MENTIONED

THE first design presented herewith shows a house of more than ordinary beauty and attractiveness. It is a 6-room, 2-story residence laid out in such a way as to gain the maximum amount of roomy convenience for a house of its size. As will

every evidence that this is what was given. The entire first floor is finished in oak, with hardwood floors in living and dining-rooms; two-paneled veneered oak doors were used. The second floor is finished in yellow pine.



Fine Six-Room House Built by C. F. Otey, at Robinson, Ill.

be seen from the floor plans, given on the opposite page, the arrangement of rooms is thoroughly modern; the rooms are of good size and the available space is not cut up by numerous partitions, yet privacy is secured for the kitchen, bath and downstairs bedroom.

This house was built by C. F. Otey, general contractor, at Robinson, Ill. The specifications called for a very thorough-going job throughout; and there is

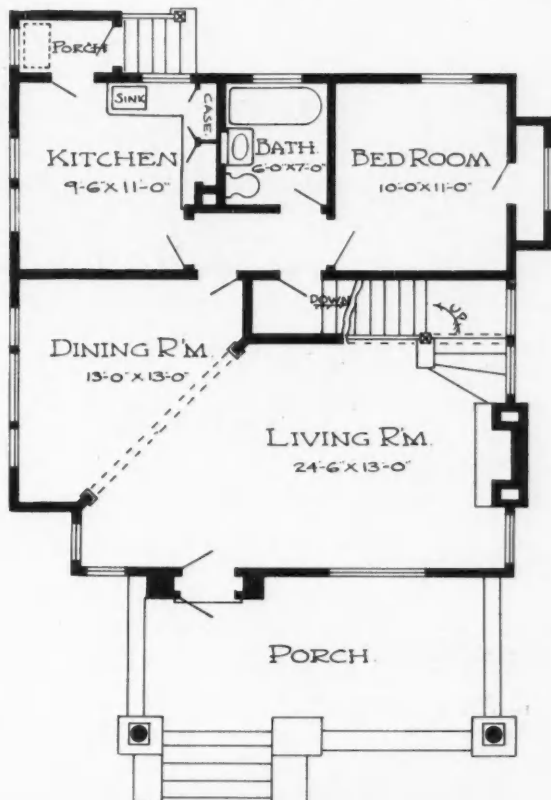
The roof is covered with Spanish tiles, and the gable ends done in the English half-timber style, with a cement coat mixed with glass and given a slap-dash finish. The cost of this residence complete, including hot-water heating plant and plumbing system, costing \$600, electric lighting and fixtures costing \$65, and with all interior walls frescoed in lead and oil, is stated as being \$3,700.

A Southern Cottage

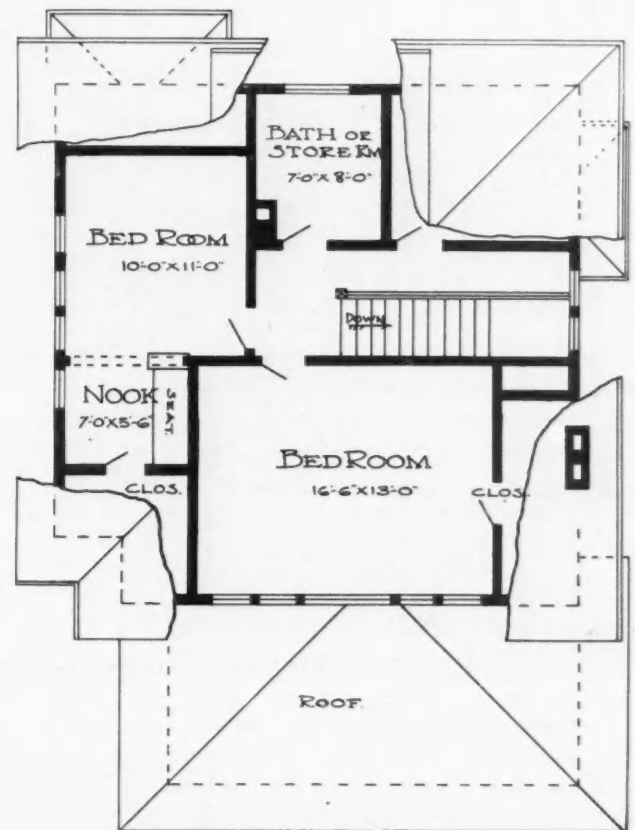
A cottage is illustrated in connection with this which is of a design very popular in the southern states, and

cost, complete, of \$2,000.

This cottage will look well and can be adapted to numerous purposes and any place. By observing the



First Floor Plan



Second Floor Plan

has a number of features to recommend it. It was built by Edwin L. Markel at New Orleans, La., at a

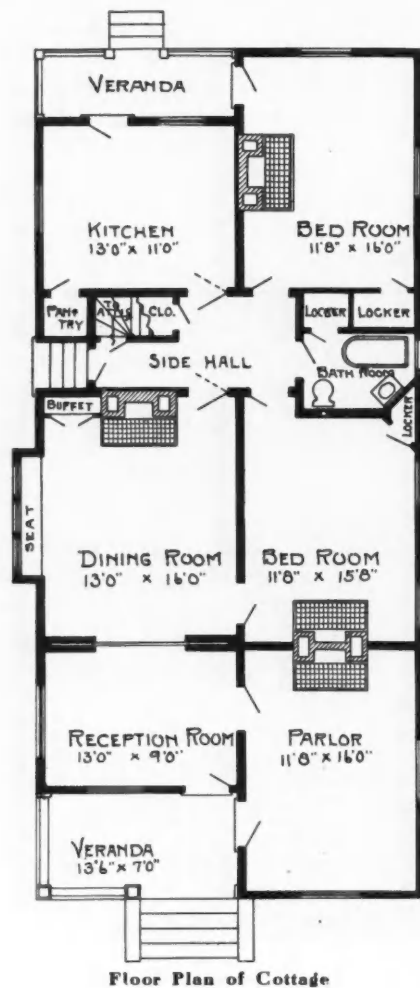
plan it will readily be seen why this can be built much cheaper than most houses. The arrangement of the



Side View. House Built by C. F. Otey. Cost, Complete, \$3,700



Destable, Inexpensive Cottage. Built by Edwin L. Markel, New Orleans, La.



side hall gives three entrances and makes the bedrooms private, so that they may be locked during the day without interfering with the rest of the house. This also gives a private entrance to the two attic rooms. The projection in dining-room comes under the main roof so there are no breaks in the cornice or roof, which is a saving. Stairs can be put to cellar directly under those leading to the attic.

If this house were wanted cheapened the two side dormers and rear dormer could be taken off, and the stairs taken out of side hall. It can be built with attic and modern plumbing and tile mantels in parlor and dining-room for \$2,000. If it is raised on a 7-foot foundation \$350 should be added. Without dormers or side entrance and leaving out plumbing and tile mantels and putting on a shingle instead of slate roof it can be built for \$1,500.

Many consider that this house is as convenient and practicable a house as can be built for the money. It will look good whether it is raised or not, and is one of the type that can be sold to very good advantage at any time. The more one studies this plan the more good points will be found; notice how the closets are arranged so as not to break the rooms; and how the small window near the stove in kitchen takes off the heat. The arrangements of windows make all rooms light and airy.

A Well-Arranged Bungalow

The design shown on the next page is that of a very pretty little four-room bungalow, arranged for great

convenience for a small family. It is designed very simply and along the lines of economy, having a straight-line, rectangular plan; and yet it is by no means ordinary in appearance. The low hip roof with projecting open cornice gives the characteristic cozy bungalow look. The broad porch, extending clear across the front and covered by a part of the main roof adds to the bungalow effect.

The cost of this residence, constructed in first-class substantial manner, and finished in oak, is estimated at \$1,800. Considerable reduction from this figure would be made if it were to be built for summer-cottage use only—a use for which this particular design is well suited.

Aroused Curiosity

"Beg pardon," said the hotel clerk, "but what is your name?"

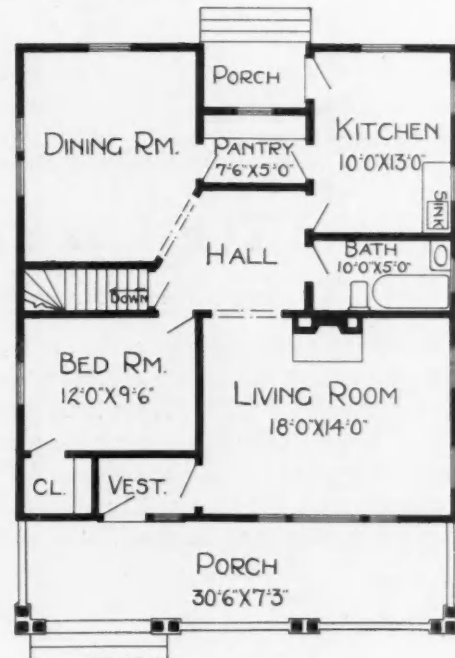
"Name!" echoed the indignant guest, who had just registered. "Don't you see my signature there on the register?"

"I do," answered the clerk, calmly. "That is what aroused by curiosity."—*Chicago News*.

Builds House in Tree Stump

According to the *New York Herald*, John Seivert of Seattle, Wash., has constructed and is living in a most remarkable house in that city. Seivert came there several months ago. He had but little money and a large family. Because of the great boom

With an auger and saw Seivert cut out a 7-foot section from the south end and walked into his stump. The walls were found to be 15 inches thick, and the whole stump was a hollow shell. He cut out windows,



Floor Plan of Bungalow

laid a tight floor and made a ceiling of planking and flooring.

With a ladder he cut another door 12 feet above ground, went inside and made the windows for the second story. The third story was constructed, and

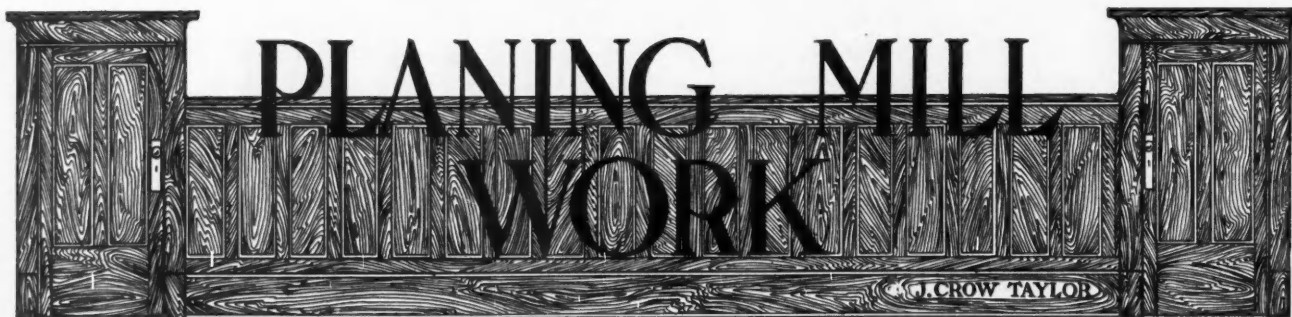


Pretty Little Four-Room Bungalow—Estimated Cost, \$1,800

he was unable to find an empty house and resolved to build one of his own. He bought an unimproved lot in the north part of the city, in a district where logging operations ceased but a year ago, and on going out to plan his house he found half the lot occupied by a gigantic cedar stump 30 feet high and 18 feet in diameter, 10 feet above ground.

a tight roof of shiplap and shingles was made over the top.

Seivert peeled off the bark and painted the stump a light green and the window and door frames pure white. The whole makes a very pretty home at a cost of only \$40, and the owner has refused \$2,500 for his unique abode.



The Care of Planer Knives

HOW KNIVES ARE TEMPERED FOR DIFFERENT KINDS OF WORK—HOW THEY SHOULD BE GROUND—THEIR ADJUSTMENT ON THE MACHINE FOR BEST RESULTS

IT GOES without saying that one of the most important points connected with the operation of a planing machine is in the care and adjustment of the knives. Machines can do bad work even with the knives properly ground and adjusted because of derangement in the bed, the feed rollers, chip breakers, or something, but they can't very well do good work unless the knives are properly fitted. So one of the first things for the novice in charge of a planing machine to learn is the proper care of knives.

The care of the knife really begins in its making and tempering, for knives are today varied in temper as well as in design to suit different kinds of work. There is a certain temper for hardwoods, another temper for soft woods, and then there is what is called a compromise temper where both hard and soft woods are being worked and the work all done on the same knives. The careful knife maker likes to be informed as to the class of work that is to be done with the machine so that he can temper the knives in such a manner as to insure their running and holding their edges longest. This means not only better work but less grinding.

Grinding—Proper Bevels

One of the first things a man has to learn is how to grind knives, how much to bevel them, etc. For smooth work generally the less bevel on a knife the better.

That is, just make enough bevel so that the heel of the knife won't hit the face of the work. These are the natural points in knife grinding, however, that one would pick up and come to as progress is made in the work of caring for knives. Generally your knives and cutters are ground to a bevel that is twice the thickness of the knife. For example, if a knife or cutter is $\frac{3}{8}$ inch thick the bevel would measure $\frac{3}{4}$ inch from point to heel on the face of the bevel. This bevel may be varied as judgment dictates to suit local conditions. Only be careful about getting too long and keen a bevel because while it may make a machine run lighter it doesn't add to the quality of the work and it makes the planer knife more likely to develop gaps.

With the modern knife grinding machines not much difficulty need be experienced in grinding knives to

whatever bevel may be desired to grind them perfectly true. Also with a cup-wheel grinder one can grind a bevel on the knife perfectly straight or hollow it out concave to whatever extent is desired. Usually it is not desired to do much concaving because this is the same in effect as grinding the bevel too long. It helps out, though, to concave the bevel slightly so that after the knife runs a while it can be whetted and made sharp again on the machine with a little work, whereas if it is ground perfectly straight, whetting would be quite a job or else it would necessitate snubbing off the point a little, which would make the knife run heavy and pound in the cut.

Not too Fast

One thing to guard against rigidly in grinding knives is against grinding them too rapidly and thus taking the temper out. It doesn't matter whether you are being worked and the work all done on the same the easiest thing imaginable to get in a hurry and take the temper out of a knife by grinding too rapidly. When you see the edge of the knife turning blue or blue spots appearing on the face that is being ground, you may know from this that you are taking out the temper. Take it slow, that is the secret of good knife grinding. It doesn't cost any more either, the modern machines are made automatic, so you can set them to cut as slowly as desired and let them run. It is better to spend an hour or two grinding one knife than to burn a spot on it for the sake of getting it ground sooner.

In grinding strive to keep the planer knife the same width at each end. It don't matter if there comes a gap in one end, and seemingly that end needs more grinding done than the other. Grind the knife down just the same its full length. This is essential to keep a good running balance in your knives because if they are ground until they are wider at one end than at the other and consequently heavier on one end, even if you do make the knife on one side of the head balance with the knife on the other side of the head there will not be what is termed a true running balance. There will be an unequally distributed weight which sets up a strain on the cutter head. So keep your knives the same width from end to end. Or, more correctly

speaking, the same weight or as near as you can from end to end.

Balance the Knives

As soon as the knives are ground and you are ready to put them on the machine, we come to a point where practice divides itself. Some whet the knives up perfectly before putting them on and others prefer to put them on the machines and do the final whetting afterwards. This however, is a matter which you can be governed in by your own inclinations and experience. The first thing to attend to is to see that the knives are marked pairs, the ones that go opposite each other, and then lay the knives and the bolts and washers in place just as they go, and see that each pair balances, one with the other. Don't take it for granted that because they were carefully balanced before they can't be much out of balance in one grinding and let it go at that, but make sure. Balance them carefully and if there is the least bit of difference in the weight, get rid of it. If the difference is in the knives, measure them carefully and see if the heavy one is broader on one end than at the other. If it is, grind it off on the back top corner of the heavy end. Or if it is longer than the other knife, you may grind it off at the end itself. If the difference in the weight is in the bolts or washers instead of in the knives, make the corrections in them; don't grind the knives to humor the bolts. Usually bolts and washers that come with a machine are all carefully made of exact size and consequently balance very nearly so that they do not require any attention. In the course of time, however, when some bolt may be strained or broken and it is necessary to put in a new one; the balance may be disturbed by this means; then one should look carefully after these bolts and washers. If a new one is put in, have it made not only exact in size, but make it weigh exactly the same as the others, no matter how much time or work it might take to do it. It is only by careful attention to these small things that one can insure perfect work at the planer.

When it comes to putting the knife on the cutter head the first problem that presents itself is that of how far to let the edge of the knife extend beyond the lip of the cutter head, and the next question is what means to use to insure setting both ends of the knife and all the knives on the head so that they will extend the same distance and cut evenly with each other.

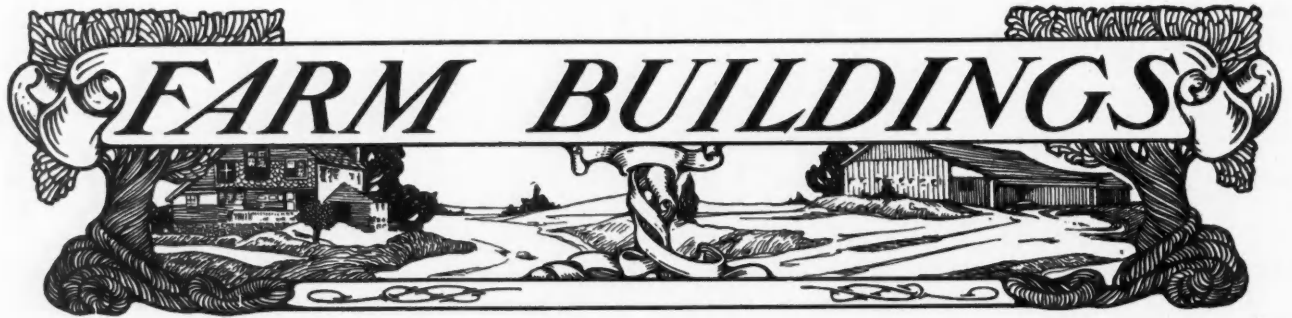
Proper Extension

The first problem, that of how far a knife should extend beyond the lip of a cutter-head, is one that lots of ink has been used in arguing about by technical writers. These discussions have thrown considerable light on the subject, even though they have never resulted in any unanimous opinion as to the extension which is best for general work. The same theory applies here as applies in the use of a hand plane. In the hand plane with the cap that tightens down on the bit the practice is to take the jack plane used for roughing off and set the cap back $\frac{1}{8}$ inch or more so

that the plane will cut freely and clear itself readily. The smoothing plane used for finishing off on the other hand has the cap set down very close to the edge of the knife, sometimes as close as $\frac{1}{32}$ inch, so as to insure smooth work and break the shavings quickly so as to prevent the bit digging into the wood. That's the way it is with the knives on the cutter-head, the lip of the cutter-head occupies the same relation to the knife that the cap does on the bit of a hand plane and for rough work and light running, the knife may be allowed to extend anywhere from $\frac{1}{8}$ to $\frac{5}{16}$ inch. But for smoothing planers where it is desired to do nice work, the knives should be set back close, say, extending something like $\frac{1}{16}$ inch beyond the lip of the cutter-head.

Adjusting the Knives

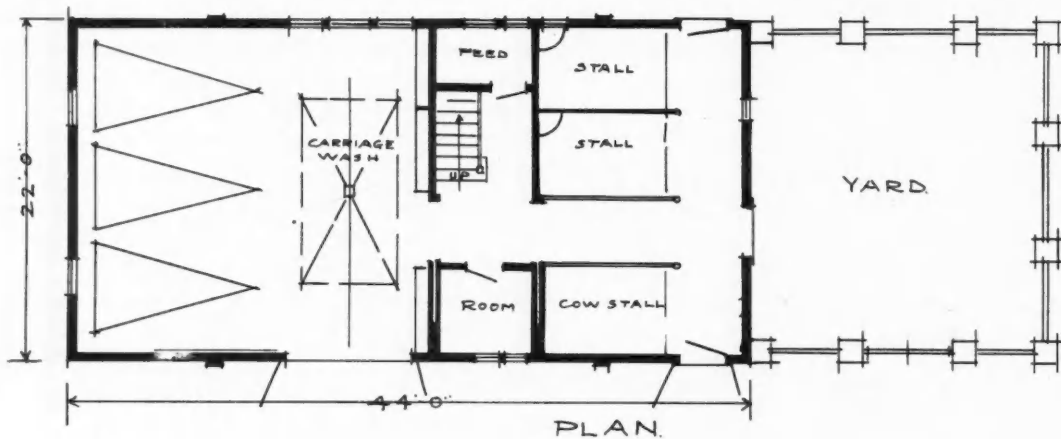
As to what means one should use to insure getting both ends of the knife set out the same and keep the knives all set the same so that all may cut evenly, there are a dozen different methods and appliances. The old-time method is to take a finely graduated rule and measure from the point of the lip to the point of the knife edge for the primary setting, then after whetting, make the final test by putting a smoothly dressed strip on the bed-plate, usually two strips being used, one on each end or near the end. These are put under the cutter-head and the bed adjusted so that the knives will just barely tip the face of the strip, then by carefully turning the cutter-head each knife can be adjusted. Where one shows a little out either way, the bolts can be slacked just a little and the knives set, either in or out, by a light tap with the hammer. The later practice for this work involves the use of rigid gauges for setting knives, some made to hook over the back of the cutter-head and extending over the body of the knife to furnish a stop gauge in front of the edge. There is, in fact, a great variety in gauge designs and some are gotten up elaborately for very accurate measurements and undoubtedly assist materially in not only setting knives correctly, but in getting the work done in less time than is required by the older method. It has come to be recognized of late years that this knife setting is really the most difficult job about the adjusting of a planer and there are technical experts who claim that it is really impossible to set four planer knives perfect enough with even the best of gauges that each knife will cut exactly the same as the other. In fact, this idea had so strong a hold that at least one well-known manufacturer of planing machines has designed machines in which, after the knives are carefully set with microscopic gauges, they are then put in operation and jointed off while in the machine to get all of the edges absolutely even. This, however, is getting down to finer points that the new man in the business, especially the man operating a small plant, will probably go in for at first. Still, they are good things to know about because it gives one a better understanding of the great care that should be taken in fitting and adjusting planer knives to insure good work.



Attractive Suburban Barn

PLANS FOR AN EXCEPTIONALLY WELL-DESIGNED BARN SUITABLE FOR CITY OR SUBURBAN PLACE—SPECIAL FEATURES NOTED

A PROPERLY designed barn is a very important part of a well laid-out city or suburban place. Very often one sees a magnificent house surrounded by beautiful grounds, yet with the stock and vehicles ordinarily kept. There are stalls for two horses and a cow, feed and harness rooms and a large room for carriages. This carriage room would also afford excellent housing for an automobile,



whole effect—except possibly from square in front—spoiled by a poorly designed group of out-buildings. They may be plain and cheap or they may be grossly over-ornamented; the result is the same.

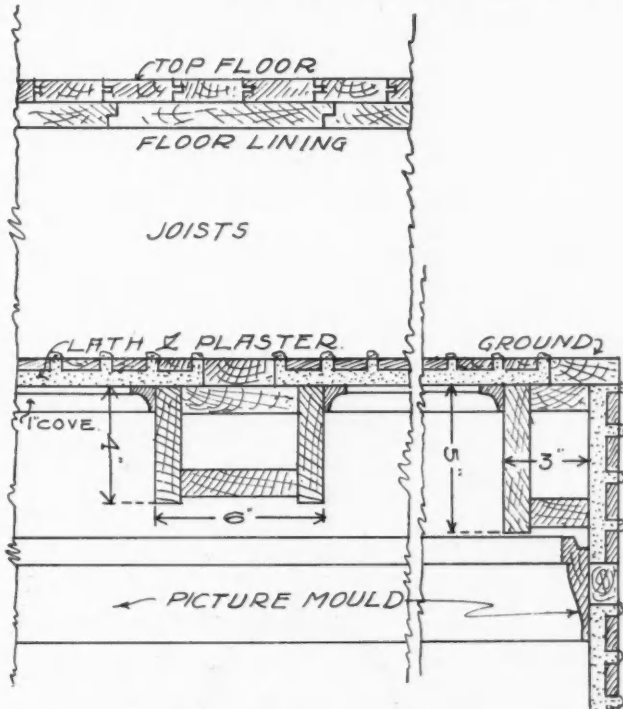
The accompanying design shows a barn with yard, designed to be in accord with a residence in the New Art style. It is of proper size to accommodate the

proving a very light and roomy place for the necessary overhauling and cleaning of the machine. The design is intended to be carried out in cement plaster on wood lath. The roof is to be of stained shingles.



Beam Ceiling Construction

To the Editor: Maxville, Ont.
 I would like a rough drawing of how to make the false beams to put in ceilings of hall and dining-room of my new house.
 Kindly give me instructions regarding the beams, which I wish to put in after the plastering is done.
 First—What size should they be?
 Second—How far apart?
 Third—How do the ends of beams fit into walls, or is there a piece of timber to receive them?
 E. J. GOODIER.
 Answer: We are enclosing herewith a sketch of the beams, showing how they should be constructed. The size



of the beams should be 6 by 4 inches spaced about 3 feet apart, and there should be a half beam 3 by 5 inches running around the room against which the other beams terminate. A picture molding should be placed under this half beam.
 EDITOR.

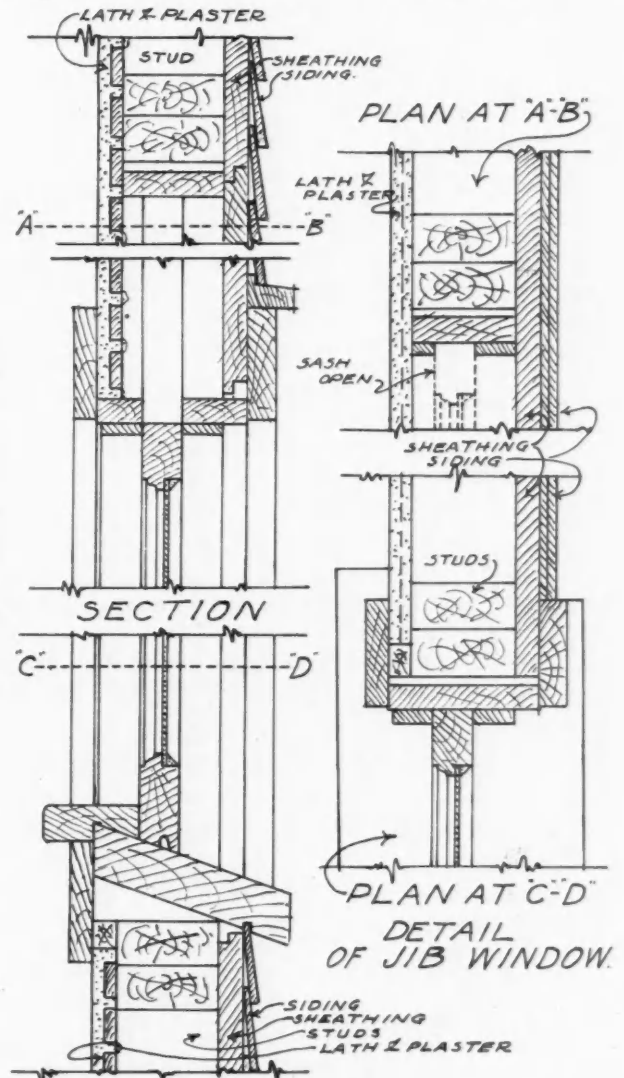
Flashing for Porch Pedestals

To the Editor: Chester, Iowa.
 I have never written for advice through your most valuable paper before, but have read many valuable articles that others have written.
 The question I have to ask is this. I have a large house to build and the porch is to have a tin roof with railing around on top. How is the proper way to set the pedestals so as to get a water-tight job? Do we set the post before it is tinned and flash around it, or is it set after being tinned?
 GEO. M. SPENCER.
 Answer: It will be impossible to answer this, not knowing the construction of the post. Of course, if one is setting a

solid post and casing around it, it is best to fasten the post and then flash around same before casing, painting tin on both sides before placing. But if the post is a box post, the flashing can be run up on shaft of post and base put on afterwards.
 EDITOR.

Framing for Jib Window

To the Editor: Miles, Iowa.
 I am a charter member of the AMERICAN CARPENTER AND BUILDER and think it the best paper published for the carpenter and a help to the young fellows as well as the older ones. It is practical and interesting to all that read it. We learn from one another; I find a man never gets too old to learn; I have been at the business about 40 years, but am learning



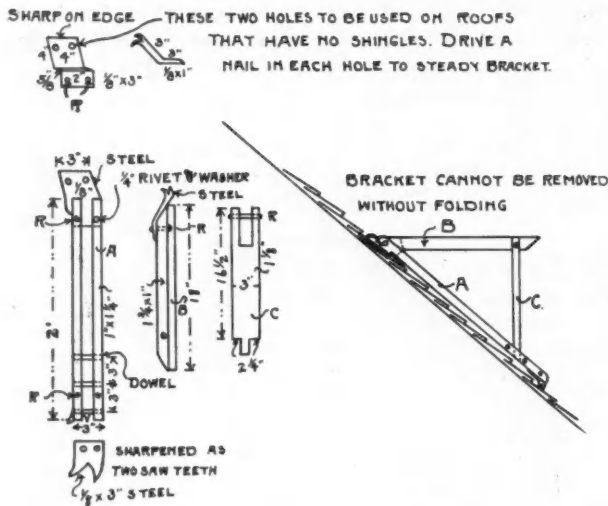
yet and am willing to help the younger men out all I can. I think that is what our paper is for.
 Now in regard to a brother workman from Leaksville, Miss., O. E. Baird, asking in the June number for the proper

way to make a window frame jib head to close at top (I take it for single sash). I enclose a sketch that shows the way I build them. The side jambs run up past the heads length of sash to keep it in place. The jambs are made thickness of sheathing outside and lath and plaster inside from top of head up, so as to case over plastering and sheathing. Outside stop I make 1½-inch wide by ½-inch thick. The heads should be even with top of sash so the head stop when taken out will let top of sash come out in case it has to be taken out. This, I think, is what is meant by having top closed when sash is down.

Now, if my idea is right, all right; if not I want some brother chip to correct me. Hoping this will be some benefit to O. E. Baird, will close by saying let's make the correspondence of this paper useful to the young fellows that are starting in. Hope they will ask more of us older ones. Exchanging ideas perhaps we will all receive benefits. V. DENICK.

Shingling Brackets

To the Editor: Princetown, Mass.
Having a little leisure time, I am sending you a sketch or plan of a shingling bracket, which necessity compelled me to



make. I first made a model and found it was satisfactory, then I made five dozen for my own use. I will state that it will be impossible to remove one of these brackets from a roof without first folding the same, doing away with all possible chance of accidents from slipping of brackets. Any practical mechanic can easily make his own roof brackets by following the specifications and sketch.

This is a roof bracket that needs no nailing and cannot slip. Use three ½-inch dowels to change pitch of brackets; drive a 1-inch brad in each end. The stock is birch, 1 inch thick. It has ¼-inch iron rivets with washers on wood side. Letter R on sketch means rivet. JESSE ROGERS.

What Is a Day's Work for a Carpenter?

To the Editor: Springfield, Ill.
In regard to Mr. Brundage's cannon problem in the May number, the ball will be where the cannon is discharged. For to every action there is an equal and opposite reaction. And if the cannon is withdrawn at the rate mentioned there will be no action, consequently no reaction and the gas will expand without resistance. The cannon must be 3,600 miles from its original position.

I wish some reader would kindly give through the columns of the AMERICAN CARPENTER AND BUILDER the quantity of the various kinds of average work a carpenter is capable of doing in a day of 8 hours. To illustrate what I mean, I will ask a few questions. How many doors can he hang? How many

can he case up (inside)? How many windows can he hang and case inside? How much base can he nail on? How much flooring can he lay—6-inch and 2-inch? How much siding can he nail on? How many window frames can he make? How many can he set? These are only a few of the many that would be very helpful to the estimator in calculating the cost of work. Of course, many conditions prevail; but I want it for average work only. I would like examples of actual work and the amount of time required to do it.

J. W. TRAFZER.

Charge for Setting Plate Glass

To the Editor: Petoskey, Mich.
Will you please inform me what per cent contractors charge for setting and putting in place plate glass, such as store fronts? I have a front to put in and expect to put in more and want to know how to figure on same. I have in the present front eight lights of 30 by 48 inch sheet prism glass, and two plates 38 by 102 inch and two plates 106 by 102 inch. Now what would be the usual charge in your city for the job of taking glass in box at the curb and unboxing and putting same in place and insuring same against breakage during the process of the job? WILLIAM J. GROTEMUT.

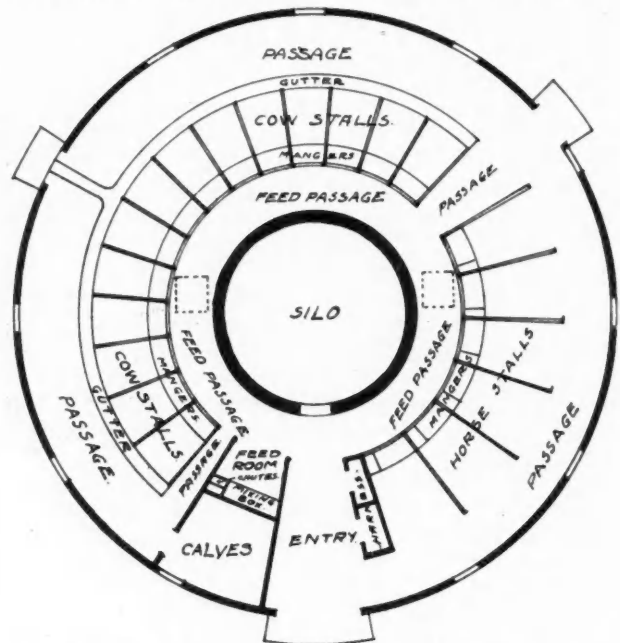
Answer: It is customary among the contractors in Chicago to add about 20 per cent of the cost of plate glass for store fronts for the handling and setting of the same; 75 cents per hour is paid men for doing this class of work. No insurance is obtainable on plate glass until after it is set in position.

EDITOR.

Arrangement for Round Barn

To the Editor: Lyndon, Kan.
What is the best way to construct a round barn? It is to have a driveway through the center so as to unload hay from the inside, and stalls for horses on one side and for cattle on the other. WM. H. HEAVILIN.

Answer: We would not advise a round barn divided by a drive way. A square barn would make a more convenient



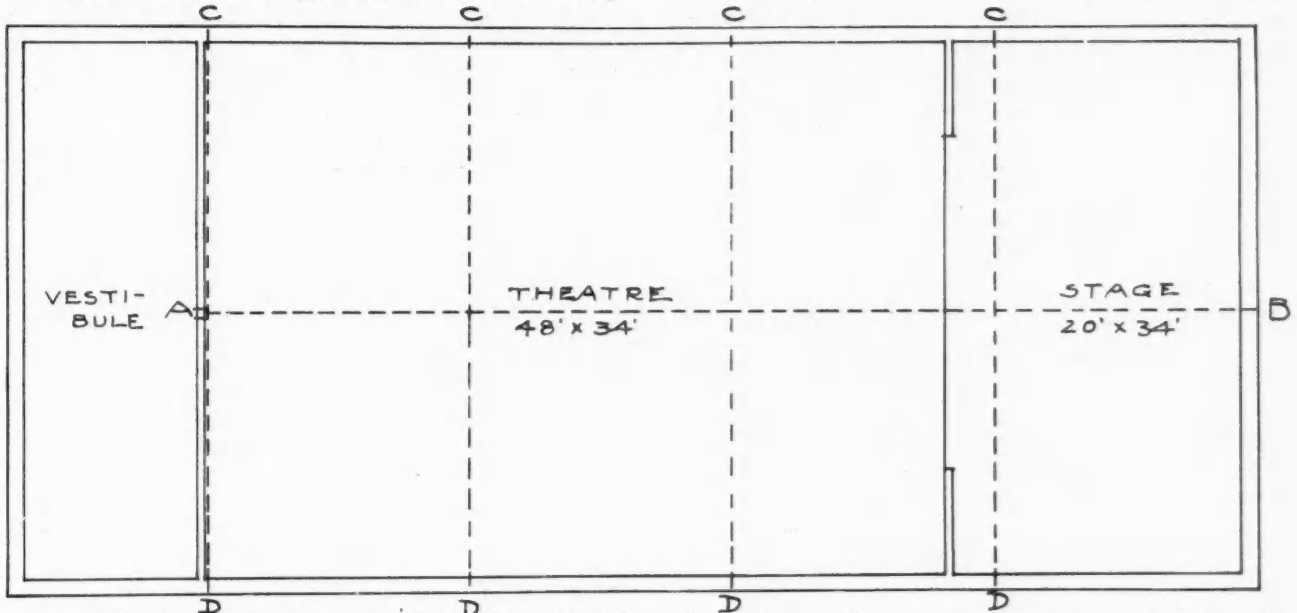
plan at a much lower cost, if such an arrangement were desired. The principal object sought in the planning of a round barn is convenience in feeding. In the barn shown herewith a cement silo is shown in the center with the stalls arranged around it in a circle. Hay and straw are stored above the stalls, being put into the barn by a fork from the

outside. Chutes in the floor allow the hay to be dropped directly into the feed passage. The plan shown has accommodation for fourteen cows and six horses. EDITOR.

Floor Support for Theatre

To the Editor: Butte, Neb.
I am interested in a building that is going to be erected here soon and I would like some information in regard to it. The building is 36 by 80 feet and 28 feet to eaves; lower floor to be 15 feet in the clear. Lower floor is to be used as an opera house and the upper floor to be used as a lodge

Answer: It would be impossible to make a safe girder of the length required in your solution of the problem (sixty-eight feet), and shown on the drawing by dotted line A B, without making the depth so great that its projection below the ceiling line of the room would be several feet. A much better way would be to run eye beams in the opposite direction, as shown by dotted lines C-D; run the joist lengthwise of the building from beam to beam. Figuring the floor load at 100 pounds per square foot a 24-inch 90-pound eye beam would be necessary. There should be riveted to each side a 4 by 4 inch angle iron to support the joist. It would not be safe to carry the ends of these beams on a cement block



room; walls to be built of cement blocks. The attached plan shows the arrangement.

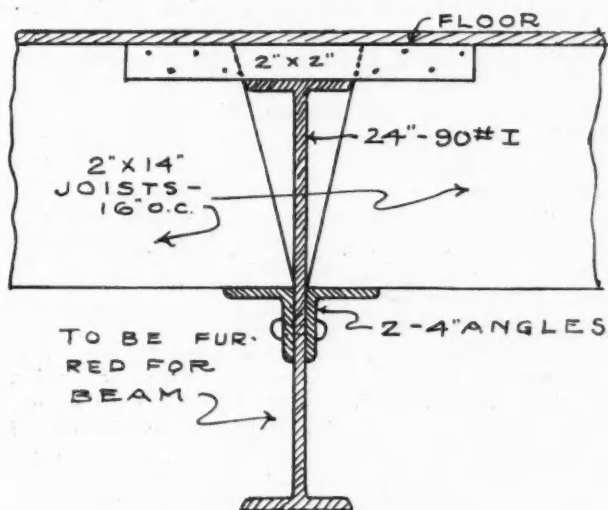
Question 1—What should be the proper thickness of the walls?

Question 2—How should the upper joist hangers be attached to the wall?

Question 3—What would you advise using for a stringer through the center to support the upper joist, not wishing to have any posts in the seating part of the opera hall, using

wall, and it would be necessary to carry them on iron posts placed just inside the wall at each end of the beam and running down to the main foundation. It would hardly be safe to rest the ends of joist on the wall of cement blocks as they are usually made. In building of this kind, the walls should not be less than 12 inches thick.

In such a building as the one in question, which at times contains many hundreds of people, the strength of floors, walls, etc. becomes a very serious problem, and no building of this sort should ever be built without first obtaining complete plans prepared by a competent architect. EDITOR.



18-foot joist? My idea is to use a steel stringer reinforced by truss rods.

Question 4—If a steel stringer is used what would be the proper size and shape, also size of truss rods, and would two smaller stringers be better than one large one?

F. R. SMITH.

Questions Concerning Square Planing

To the Editor: Waynesville, Ohio.

Will you please ask your readers this question for me through your paper, as I have had but little experience at the trade I need all the instructions I can get. Now this is a question on planing. When planing the edges of boards I have trouble getting the edge square with the surface or broad side of board or plank. Now will an experienced man at the business tell me how this awkward hand can be trained to do true work of this kind? It will be a great help to me to have this question answered by some one.

CLARENCE H. TAYLOR.

Outside Plastering Questions

To the Editor: Laingsburg, Mich.

I have all confidence in anything found in the AMERICAN CARPENTER AND BUILDER, and have read every one through since the first number was printed up to the present time. I would never think of doing without it. Now here is a question I want to ask the readers. How to mix mortar to plaster the outside of a building to give it a rough-coat finish?

Is it best to use hydrated lime with the cement and if any what proportions? Would it be all right to use hair for first coat? Should first coat dry before second is put on? Should the surface be covered and kept from the sun for a few days?

On my new house I have planned to sheath the outside with 1-inch lumber; cover the outside of the sheathing with tar paper and strip up and down over the studding with $\frac{7}{8}$ by 2 nailed on over the sheathing. Set my frame and put on cornice, using $2\frac{1}{2}$ by $6\frac{3}{4}$ inch window casing. Then lath horizontally with wood lath and plaster to face of casings; then put a band mold over casings, lapping over the plaster something like band mold on inside work.

WM. H. BENSON.

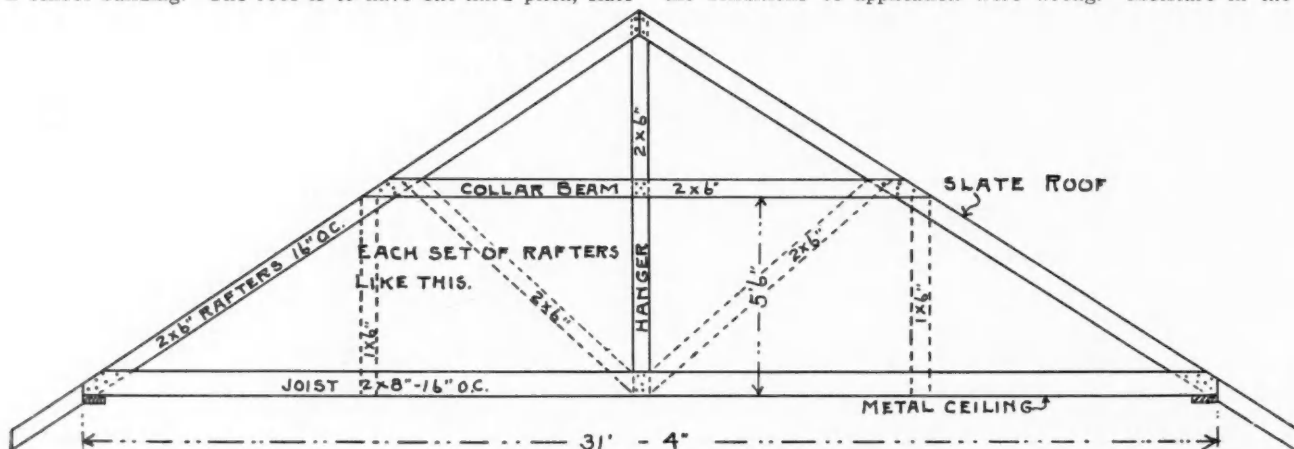
tracting for the last 15 years and this spring got into trouble with varnish, and haven't been able to find out the cause. The work is on yellow pine finish, filled with liquid filler and varnished one coat of varnish; but the painter can't get the next coat to work. It creeps away from the wood and will not hang together. Have tried hard sanding, rubbing with turpentine and benzine, and have even thinned with benzine, but don't have any effect. Is there anything to put in the varnish or any way to make it stick? What is the cause? We are using good varnish.

M. G. RUSTLETON.

Answer: Our correspondent has not given full enough particulars of the conditions under which the work was done to enable us to get at the cause of the varnish creeping or crawling in this particular instance, but from the fact that he has used the same varnish on other jobs, where no trouble has occurred, it is safe to assume that the trouble lies either in the wood, which may not have been properly seasoned or may have been unusually full of sap, or else the conditions of application were wrong. Moisture in the

Another Roof Truss

To the Editor: Wiconisco, Pa.
I am sending you a sketch of a set of rafters, which are for a school building. The roof is to have one-third pitch, slate



roof, ceiling to be metal. I would like a little information in regard to this roof; if you think it substantial or not. Roof also to be sheathed.

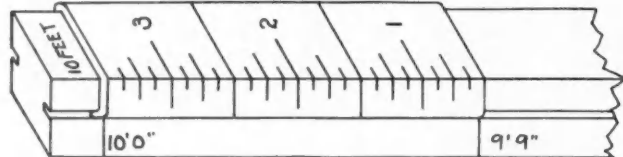
PETER C. BODDORFF.

Answer: Would suggest the addition of two 2 by 6 inch braces, shown by dotted lines, and two 1 by 6 inch hangers in order to make this roof sufficiently stiff.

EDITOR.

Device for Measuring Pole

To the Editor: Lima, Ohio.
Enclosed is a sketch of a device I made for my 10-foot pole, which is divided into 3-inch spaces. By sliding the brass sleeve shown in sketch to one of these marks I have what amounts to a 10-foot pole divided into $\frac{1}{8}$ inches, making it



easy to measure to a fraction of an inch. This saves the trouble of dividing the whole 10 feet into inches. The slots in which the brass divider slides are made with the rip saw.

L. D. BOND.

Trouble with Varnish on Yellow Pine

To the Editor: Clayton, Ind.
As I have been a subscriber to the AMERICAN CARPENTER AND BUILDER ever since it started, and think it is one of the best building papers out, also the best authority, would like some information in regard to painting. I have been con-

wood, or varnishing done in damp or muggy weather is very apt to result in crawling and sometimes the only way to remedy it is to remove the finish to the bare wood and begin all over again.

The trouble may be due to the liquid filler. A cheap rosin and benzine filler applied over unseasoned or sappy yellow pine will surely cause trouble. Moreover, the filler should be allowed ample time to harden before applying a subsequent coat of varnish—from three to five days not being too much time to give. It may have been that the varnish had thickened because of cold weather, and the painter, in order to thin it and make it work easier, had added benzine. If the varnish is a first-class turpentine varnish, the introduction of benzine or naphtha will produce a compound that will never dry and will always give trouble. Varnish should be used just as it comes from the can, and if warming it by setting the can in hot water is not sufficient to bring it to working condition, pure turpentine only should be added to the warm varnish, and the turpentine should likewise be warmed in the same manner.

Going over the surface with a thin coat of pure denatured alcohol shellac may possibly harden it sufficiently to permit another coat of varnish being given after the shellac is dry, but if this will not answer, the only remedy we can suggest is to remove the varnish and filler already on with one of the varnish removers now on the market, and then the surface should be thoroughly cleaned with benzine or naphtha. The woodwork should then be given a first coat of denatured alcohol shellac—which should always be used as a first coat over yellow pine instead of the cheap liquid fillers, on account of the rosin in that wood, and after at least forty-eight hours, the first coat of varnish should be applied. When this is dry it should be rubbed with curled hair or fine steel wool to cut the gloss and the second coat of varnish given. If there is no moisture in the wood and no chance for mois-

ture back of it, and if the air in the house is warm and dry, no further trouble need be looked for. It is always best to begin right and to allow plenty of time between coats, for if any varnish surface is coated over before it is thoroughly dry, subsequent coats will creep and crawl—getting worse as additional coats are applied, and removing the varnish may be the only remedy. It may, of course, be that there is some local condition of which we can tell nothing from our correspondent's description that causes the trouble or the varnish itself may be at fault. Going over a surface with a moist chamois when it first begins to creep will sometimes stop it.

EDWARD HURST BROWN.

To Stop Leaks

To the Editor: Marshalltown, Iowa.
I wish to tell Albion Knowlton how to "fix" his leaky bay window. I had the same trouble for years and tried everything I could think of for the time being. I took off the siding over the bay window and under the window above, put in more tin flashing, and that did not stop the leak. Then had the whole window sill tinned over, top and bottom and soldered to flashing over bay window—and still it leaked. Then took off siding over the window and flashed over the window cap, and it leaked just the same. Then I began to philosophize and found that the leaks were always under the line of outside wall over the bay window and directly under the two jambs of the window above. I took off the lath and plaster right where the stains showed on the ceiling, had the tinner make two tin pans about 4 inches wide, 12 inches long and 1 inch deep, painted them two good coats of red mineral paint outside and inside and put them right under where the leaks were from above, repaired the plastering and have never had a leak or stain there since. This is the way I fix an old bay window that leaks, but now when building a new one I flash the top of the header under the sill of the window over the bay and let the flashing run down outside of sheathing and over the flashing of the bay.

Another place where the majority of carpenters "fall down" on leaks is at flashing a chimney on the side of a roof. The ordinary way of doing is to take a piece of tin 3 or 4 inches larger than the chimney and just bend it up against the chimney and down on the shingles. The water in running off the

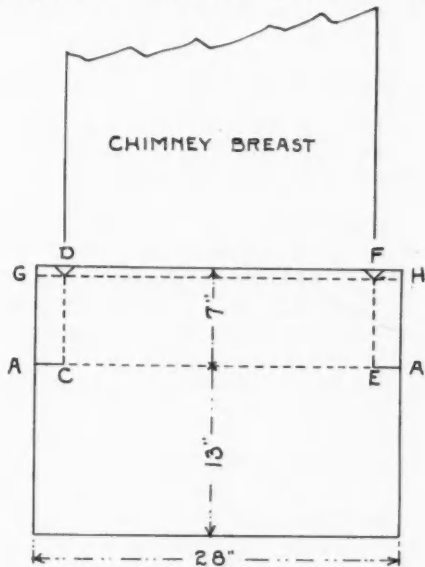


FIG. 1.

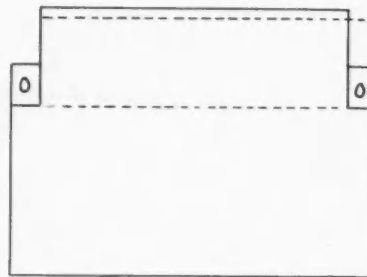


FIG. 2.

tin will invariably crowd back by capillary attraction on the shingles and then leak down in front of the chimney. To obviate this, take a sheet of tin 4 inches longer than the chimney breast, shown at Fig. 1. Cut the tin from A to C

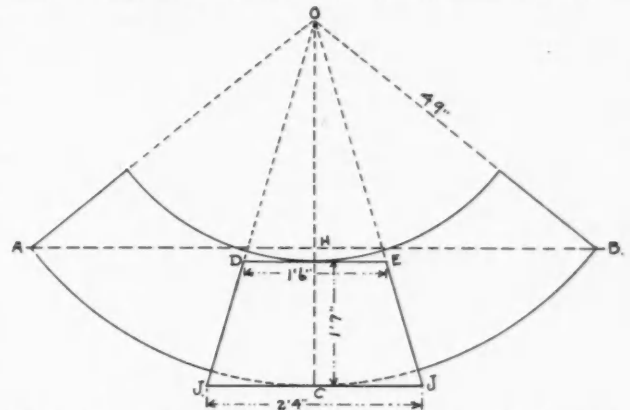
and from A to E and bend the sheet on dotted lines, A A, C D, E F and G H. Then cut two pieces of tin (right and left) as shown at Fig. 3, and solder on the sheet, as shown at O O Fig. 2. Fig. 4 shows flashing in position on roof. It will be observed that the water will leave the flashing at point B, Fig. 4, which is some 3 inches below chimney breast and will never leak. Be sure to always have line A B, Figs. 3 and 4, the same as pitch of roof. J. G. WEATHERBY.

Length of Chord

To the Editor: Hastings, Neb.
In answer to the query in June number to find length of chord, the formula to use is:

$$2 \times \sqrt{\text{radius}^2 - (\text{radius} - \text{rise})^2}$$

To find radius complete the cone, draw lines D. O. and



E. O. The O H C will be slant height or radius to circle A C B.

Radius equals 49 inches.

Rise equals 19 inches. Then by the formula:

$$\text{Chord A H B} = 2 \times \sqrt{49^2 - (49 - 19)^2} = 78 \text{ inches.}$$

J. A. KOHLER.

To Find the Area of Pentagon

To the Editor: Hanford, Cal.
Please say in reference to finding the area of a pentagon, when only its side is known: That the radius of the circle which inscribes the pentagon is in magnitude exactly 5/6 of the length of the side. This is true in every case. Therefore the area of a pentagon, of which by construction, the side is 10 inches will be exactly 166 2/3 square inches.

While the college student is mastering the proposition that

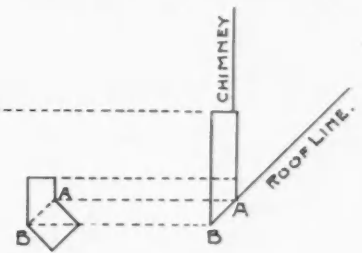


FIG. 3.

FIG. 4.

says: The chord of an angle of 60 degrees is equal to the radius of the circle, the kindergarten school is teaching the construction of a pentagon as follows: From any point in the circle commence to lay off chords of which

are $1 \frac{1}{5}$ times the radius of the circle. Thus with a radius of $8 \frac{1}{3}$ inches construct a circle and from any point in the circle a chord of 10 inches applied five times will carry you around the circle to the point of beginning.

In this case the apothem (the line from the center to the middle of a side) will be $6 \frac{2}{3}$ inches. The coapothem or versed sine of the segment will be $1 \frac{2}{3}$ inches.

The beauty of the study of a pentagon is the fact that all of the parts are expressible in figures (except the arcs).

Find the area of a pentagon by multiplying by five the product of the apothem by one-half of side. The apothem is always easily determined, since it is at right-angle to the side of the pentagon.

C. W. TALBOT.

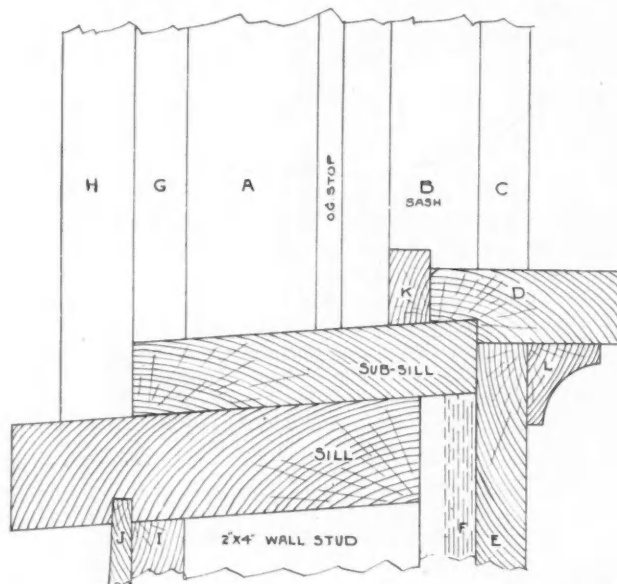
Framing for One-Light Windows

To the Editor:

Bloomfield, Mo.

I have noticed in some of the recent issues different methods of constructing window frames for one-light windows—all of which possess more or less merit and are no doubt appreciated by the great army of readers of your valuable paper.

However, so far as I have noticed, no one has shown a method of constructing a frame suitable for a single-sash



window where the sash is hung on the inside, which is many times obviously necessary in residence work on account of the screens being placed on the outside. Of course many times the slip head frame is adopted where there is room above to let the sash go up in the wall. This method however, is objectionable from the fact that it makes such a wide space to plaster over and weakens the walls more or less.

I am sending you a detail which clearly shows my idea of constructing such a frame and I think the drawing is self-explanatory by referring to the following letters:

A shows the jamb, B the sash, C the inside casing, D the stool, E the apron, F the plaster, G the blind stop, H the outside casing, I the wall sheathing and J the siding. K is a $\frac{5}{8}$ by $1\frac{1}{8}$ inch strip nailed against the stool over which the sash is rabbetted, making a perfectly water-tight job. This method does not interfere with the inside finish. The blind stop may be dispensed with, if so desired, by making the jambs full width and by setting the casings back on the outside edges of the jambs so as to receive the screen. There should be a very small chamfer worked on the outside edge of the top of the stool where the same strikes the slip K in order to keep the water from running over the stool, in case a little should blow in over the strip K, which is not very likely.

While this method is original with me, I do not know whether it is new to everyone, but hope it will prove of interest to at least a few of the readers. Also wish to state that there may be other methods just as good, for there is usually more than one way of doing anything; if this were not true, there are but very few of us who would know how to do anything.

In the May issue, Mr. P. J. Buerckle asks which is the right way to hang screen doors, with the wire on the in or outside. This is a question which has always been in controversy, more especially in my vicinity. I always put the wire on the outside in hanging window or plain door screens, as it seems to protect the woodwork better and looks just as well, if not better; but in hanging ornamental door screens, as they are usually placed under porches and protected from the weather, I prefer them hung with the wire on the inside, as I agree with Mr. Buerckle, that they look better and answer the other purposes just as well.

CHESLEY CLEMENTS.

To Fit and Hang Doors

To the Editor:

Alamogordo, N. M.

As I have read this wonderful paper for nearly three years I thought I would answer A. W. Crysler about fitting doors and windows (page 332, June number). I began my trade when I was 14 years old and am now 51. D. L. Stoddard has the door fitting about right, only in place of a dollar I use a try-square blade. And in place of his two sticks, put your door on trestle and cut off lugs at bottom; then lay a block $\frac{1}{2}$ by $\frac{1}{2}$ by 3 inches on floor; set door on this; drive a 6-penny finishing nail in mullion of door; hold to this and mark both sides of jambs and top. Now lay on trestles; saw off top; set on edge, joint to your marks; put in place; put a chisel under and raise it up tight to top. With a pocket knife mark for your butts 7 inches down from top and 11 inches up from floor. Now set your door on edge and with a butt gauge, set properly, lay off gain for butt and screw fast to door; pull pin, screw other piece to jamb; set your door in place, and put in pins.

As old as I am now I can fit and hang a door an hour. As for fitting sash, can't say any more than D. L. S. said; only if you will run your plane over each corner of top sash it won't stick when it is painted.

CHARLEY R. WHITE.

A Gambrel Roof Barn

To the Editor:

Maryland, Ill.

As I am building a barn with a gambrel roof and I do not quite understand the cutting of this kind of rafters, I wanted to ask if you would tell me what pitch to cut them and what length? The barn is 24 by 40 feet, roof to be supported by queen rafters. If not too much trouble to you I wish you would please let me know. Now I want to give you my order for your new book, "Framing." I have two of your books, called "Practical Carpentry," and find them very useful in many different ways.

CHARLES BENDER.

Answer: As to the pitch of the roof, it depends entirely on one's taste. The best way is to draw it out by scale, say $\frac{1}{4}$ inch to 1 foot and make the roof of such pitch as pleases your eye, then by taking the rise and run on your square and measuring across from the two figures, you will get the length of the rafter and these figures will also give you the top and bottom cuts. For instance, we go in 5 feet from outside and plumb up 10 for the curb. The figures 5 and 10 on the square would make both the plumb and seat cuts for rafter and the distance across the square from 5 to 10 would give you the length of rafter at point striking the corner of the plate. Of course you understand that twelfths on the square in this case would represent inches and the inches would represent feet.

A. W. WOODS.

Framing Hip Roofs

To the Editor: Oswego, Ill.

Fig. 1. On the plan 1, 1, 1 represents the outside of the plate; 2, 2, the ridge line; 3, 3, 3, 3, 3, the jack rafters of hip and valley; 4, 4, the side bevel of jacks and the length of jack from corner of plate and ridge to side of hip and valley; 5, bevel at head of hip and valley; 6, bevel at foot of hip and valley rafter; 7 is a common rafter; 8, the bevel at head of

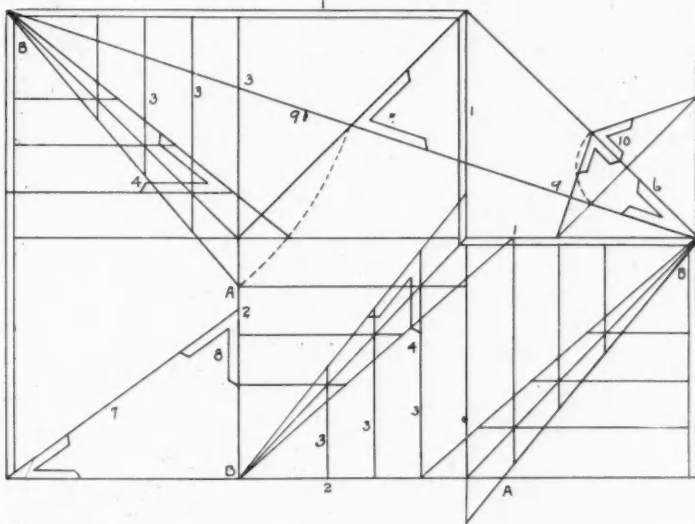


FIG. 1. THE CUTS FOR HIP, VALLEY AND JACK RAFTERS.

common rafter, is the down bevel for all jacks on hips and valleys; 9, 9 is the length of hip and valley rafter; 10 is the method of getting the bevel of back of hip. Draw a line at right angles with base line of hip, then set one foot of the dividers where this line crosses the base line and draw lines from that point to the plate each way, which gives the bevel for hip and turned the other way up it gives the hollow for the back of the valley. Line from A to B is the length of hip and valley, dropped down to get the length of jacks. Lengths and bevels of all hips and valleys are the same in same roof of same pitch.

Fig. 2 is a plan for framing a valley in a roof where one side is much steeper than the other, as for instance: One side rises, say 10 feet in 8, and the other rises 10 feet in 4 feet. 1, 1 is the wall line; 2, 2 is the ridge line; 3 is the valley rafter; 4 is the bevel at the foot; 5 is the bevel at the head; 6 is the bevel of the jacks on the lowest pitch, also the length of same; 7 is the bevel of and length of jacks on the steep side; 8 is the common rafter on steep side; 9 is a common rafter on the lower pitch; 10 is the down bevels on jacks of each side; 11 is the height of roof; 12 the base line of valley. The rafters will not match on the valley as in an equal pitch roof, as Fig. 1.

It will be seen that it will take seven jacks on the steep side, while it requires only four on the other side, but the bevels will all fit, as I have framed similar roofs and find no trouble in putting it up.

G. W. MANSEON.

To Keep Water Out of a Cellar

To the Editor: Richmond, Ill.

I would like to ask how to keep water out of a cellar. I have one which has a good sound wall under the building, built of concrete. The floor has never been cemented. Is there any way of keeping the water out and how would you do it?

HENRY KASKEN.

Answer: If the water comes through the wall, the best method would be to dig a trench all the way around, clean the wall off perfectly and cover with a good coat of pitch or other water-proofing substance, put on hot. Remember, if

there are any holes left in the job, the water will find them. Of course, the concrete wall was not made properly in the first place, or it would have been water-tight. If the soil is such that the water penetrates below the wall, you will have to put in a cement floor. The only way to make sure that a cellar will not let water in, is to make it tight enough so it would hold water, if it were filled. But of course, the pressure being on the outside, it would be necessary to put

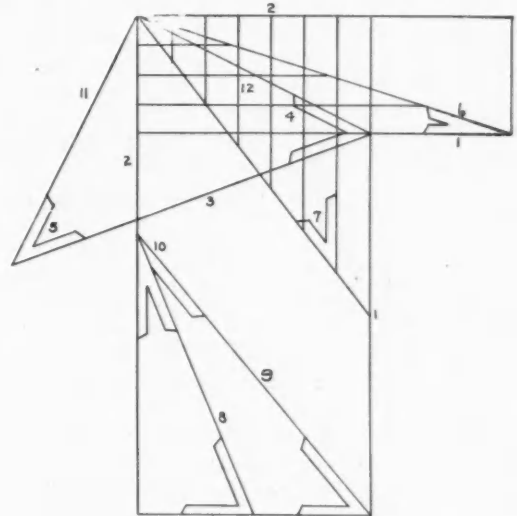


FIG. 2. A VALLEY BETWEEN SLOPES OF UNEQUAL PITCHES.

the waterproofing on the outside, otherwise it would be pushed from the wall.

A. W. WOODS.

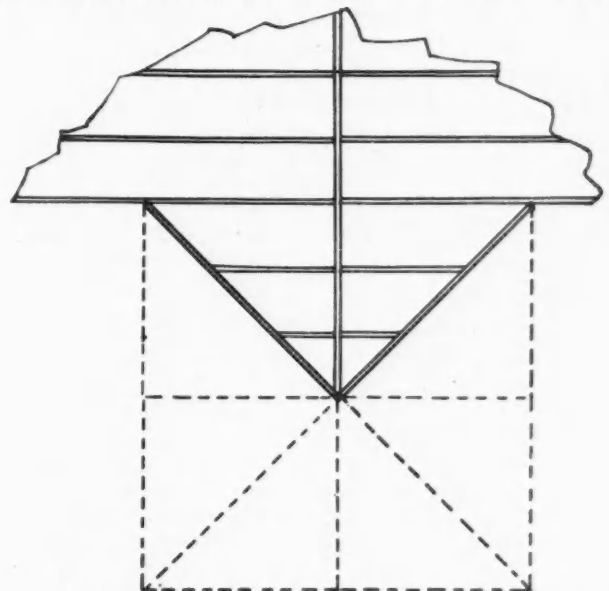
Projection for Hay Carrier Track

To the Editor: Hurdland, Mo.

I would like to have you explain in the columns of your paper how to find the cuts of the short rafters for making the projection on a barn for a hay carrier track. Explain also construction and bracing of the projection.

G. R. WARD.

Answer: Imagine your projection one-fourth of a square tower with four gables, then you have two valley rafters and their accompanying jacks, as shown in the figure. Dotted



lines represent the completion of the tower. Of course the number of jacks would depend upon the size of projection, and your ridge board continued out to receive those two valley rafters.

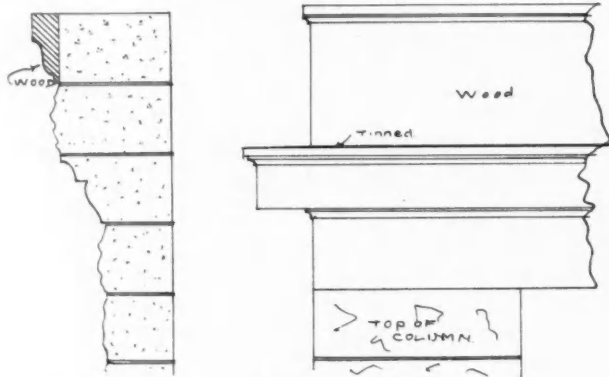
EDITOR.

Design for Porch Roof

To the Editor:

Maxville, Ont.

Attached is a sketch of the top of my cement block house. I am building a veranda, cement block, from ground up to two feet above the floor and square pillars 7 feet above that—three pillars in the front and two at the back. The veranda will come to within 8 inches of each side of the front of



Parapet and Suggested Porch Finish

house and width will be 10 feet floor and 16 inches of blocks with poured steps, cement block sides.

My carpenter wants to make a panel around top of veranda as the roof will be hopper, same as house; but I would like some other idea that would be more in keeping with finish around top of house.

Of course, veranda top will be all of wood, whereas finish of top of house is wood and cement. There are 8 inches to wood on front edge of cement block pillars to edge of house, 2 feet in height.

E. J. GOODIER.

Answer: The accompanying sketch shows a method of finishing your veranda roof which would be well in accord with the rest of your design and might be satisfactory.

EDITOR.

Handspike Problem

To the Editor:

Marshalltown, Iowa.

Having just joined the ranks of the AMERICAN CARPENTER AND BUILDER, suppose I will be considered as just a youngster and must not be too "fresh" to start in. But as it seems to be the style of the "old boys" to be sending in "stickers,"

thought I might start in with one just 30 feet long. I have three men, A, B and C, carrying a stick of timber of uniform size 30 feet long. A and B at a handspike and C at the end. How far from the front end must the handspike be placed so that each will



carry one-third of the stick?

J. G. WEATHERBY.

Spots on Polished Table Top

To the Editor

Moderia, Calif.

There is a party here that has a table with polished top that has been stained in spots which seems to have been caused by something hot having been set on the table. Is there anything that will remove the spots without sandpapering them and repolishing the places?

A. E. SHEDD.

Answer: This kind of a stain is difficult to remove without taking off the old polish and refinishing, but will sometimes yield to rubbing with a cleanser and polish made by mixing four parts of olive oil, two parts of strong vinegar and one part of spirits of turpentine. This should be applied with a cloth and afterward polished with a soft cloth to bring out the luster. Several applications may be required.

Another method of removing spots that will not yield to ordinary furniture polish is to rub them carefully with a soft cloth moistened with a mixture of equal parts raw linseed oil, turpentine and grain alcohol; polish with blotting paper.

EDWARD HURST BROWN.

Questions Concerning Lath and Lathing

To the Editor:

Irving, Ill.

Several cases have come under my observation where three or four of the best kinds of paint, well applied to dry lumber, has cracked and peeled off without any apparent cause. It is customary for people in this locality when building to put a lining of 1-inch lumber under the siding, and building paper between the lining and siding to make the house warm.

The fact that the paint peels worse near the corner boards and window casings leads us to think that perhaps the rain beats in at the joints and keeps this lining and paper wet, thereby removing the paint.

Would you advise using patent lath and discarding the use of lining, or line on the inside of studding? I would like to hear from others who have had experience along this line.

R. H. ARMENTROUT.

Plank Cutting Problem

To the Editor:

Evanston, Ill.

I take pleasure in saying that I am a subscriber to your valuable paper and I noticed in your June issue that an inquiry has been made by N. N. Signed, for a mathematical explanation as to how a ship carpenter can fill in a hole 5 by

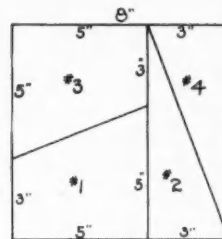


FIG. 1.

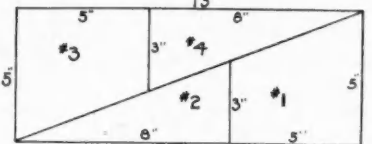


FIG. 2.

13 inches stove in its side with a plank 8 inches square. The following problem will probably explain.

Draw a square 8 inches and divide as shown in Fig. 1; by placing the different parts as shown in Fig. 2 it will make a piece of plank 5 by 13 inches.

A. HELANDER.

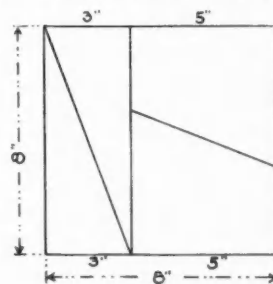
Screen Door Controversy

To the Editor:

Lane, Kan.

In the last issue of the AMERICAN CARPENTER AND BUILDER I notice what N. N. Signed says about hanging screen doors.

Now if he is right I have been wrong on that point for thirty years. Have been contracting for more than twenty-five years and always hang the doors with wire side out. If I am wrong, would like to have authority on the subject.



In regard to N. N.'s sticker would say: The ship carpenter would not stop a leak 5 by 13 inches with a board 8 by 8 inches. The board is to be cut as shown in sketch, but it lacks a full inch of doing it.

J. P. WELLS.

Passing Type of American Architecture

To the Editor: Cincinnati, O.

Latterly the typical New England type of frame house is going out, even in New England. The broad rambling structures, put up just before the Revolution, with the hallway at the center, and rooms at either side; and upstairs



deep broad chambers, with shutters closed to the sun, made up a type which has been copied ever since.

Now, however, other types are creeping in to supersede it, and soon the old "New England home" will be gone.

There are some specimens of this type to which a decided historical interest is added, notably the one in the photo. This house, facing the green at Lexington, Mass., was the home of Johnathan Harrington, the last survivor of this opening battle of the revolution.

FELIX J. KOCH.

Laying Hardwood Floor

To the Editor: Spear, Ill.

As I have taken your paper from the start, I would like to ask you the best way to lay 3/8 by 1 1/2-inch oak flooring to make a first-class job. Would it make a better job to glue the edges and clamp it up good, then nail it and is it best to blind nail through tongue or through-nail? What size nails would you recommend to use? If you can give me any information, it would be gladly received. And also give me prices for laying and scraping and sanding per thousand.

C. E. GAUMER, SR.

Answer: Three-eighths inch oak flooring should be laid with No. 16 brads without glue and blindnailed through the tongue. The prices usually charged in Chicago for laying a floor of this kind is about 7 cents per square foot and for surfacing the same about 2 cents per square foot.

EDITOR.

A Simple Steam Box

To the Editor: Chicago, Ill.

Will you or some of the AMERICAN CARPENTER AND BUILDER readers tell me several ways of making a simple steam box. I am making a canoe and as I do not expect to make any other boats, or have any further use for a steam box, I want one that will be cheap and will not take long to make. Want to use it to steam the ribs of the canoe, which are about 4 or 5 feet long.

M. NIND.

Answer: For making a shift box of this style for a single job, there is no need of anything but a small square box long

enough and large enough to contain the ribs, nailed up tightly with leaded joints and a door fitted in at the end fastened with buttons, hinges or hooks. It does not necessarily have to be steam tight unless the leakage of steam would do some outside damage. Steam may be piped into such a box from the tea kettle spout or from any other source.

EDITOR.

Constructing a Silo

To the Editor: Wausa, Neb.

I would be pleased to hear your opinion about which is the best way of constructing a silo. Was asked the other day in regard to silos, but as I never built any I might say that I was up against it. Have been thinking of using two thicknesses of fir flooring, with 2 by 2 inch wooden hoops on 2-foot centers between, thus making a 2-inch air space, and iron hoops on 2-foot centers outside. But probably it would be just as well to use 2 by 4 inch or 2, by 6 inch. Would that be tight enough if they were not matched? Should there be any air holes at the top, and how is to be filled, all at once or little by little, and is it to be weighted down?

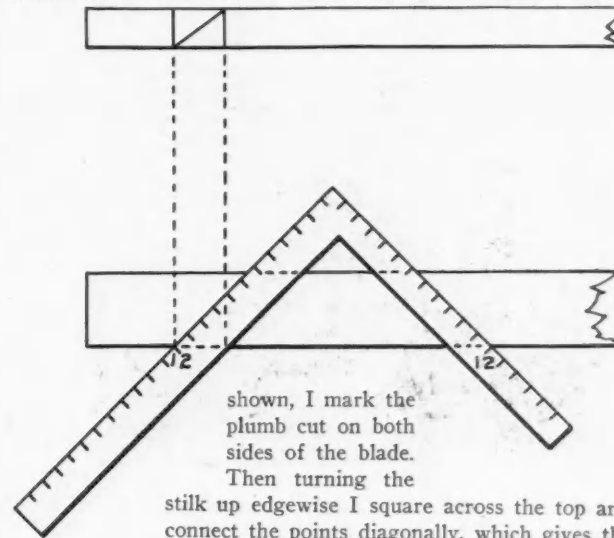
Answer: If you will write the agriculture department at the University of Nebraska and ask for their bulletin describing silos, their construction and uses, you will find a fund of valuable information along that line and will only cost you a two-cent stamp.

EDITOR.

To Find the Side Cut of Jack

To the Editor: New Milford, Ohio.

I am sending you a sketch of how I get the side cuts of jack rafters. I select a stick for a pattern as near as practicable to 2 inches thick. Then laying the square on, as



shown, I mark the plumb cut on both sides of the blade.

Then turning the stick up edgewise I square across the top and connect the points diagonally, which gives the side cut. This will give the cut on any pitch down to no pitch at all, when the plumb lines will be square across the stick and the bevel shown by the diagonal will be a true miter.

REED H. DEMING.

Proportions for Barn Cupola

To the Editor: Hope, N. D.

Will you please tell me what size I should build two cupolas for a barn 30 by 100 feet with 14-foot posts and a gambrel roof with rafters 14 and 12 feet? It is the proportions that I am after. I am a pleased subscriber to the AMERICAN CARPENTER AND BUILDER

C. O. SMITH.

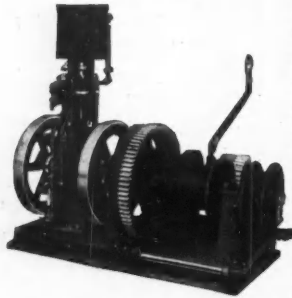
Answer: The cupalo should be about 5 feet square with the base 18 inches above the ridge and 5 feet from the base to the soffit of the cornice. The frieze should be about 12 feet wide and the roof should be over half pitch. A barn 100 feet long would look better with two cupolas than with only one.

EDITOR.

PRACTICAL TRADE APPLIANCES

A Special Builders' Material Hoist

The Bates & Edmonds Motor Company, of Lansing, Mich., whose advertisement appears on another page of this issue, are offering a material hoist and elevator which we believe



are worthy of the careful consideration of every contractor and builder. This hoist is intended primarily for use with a double platform elevator, one platform ascending as the other descends. With this arrangement the load is always partially balanced, consequently less power is required to elevate a given amount of material, hence it is very economical. On this hoist, in addition to the sheave which carries the elevator cable, the makers have provided a drum for direct hoisting. This drum can be run independent of the sheave carrying the elevator cable, as it can be thrown into gear by a very simple and effective device. This makes the hoist doubly valuable for contractor's work, because the drum for direct hoisting can be used without interfering with or dis-

turbing the elevator cable. This is a feature possessed by very few contractor's hoists now on the market. The hoist is built in a very strong and substantial manner and is fully guaranteed in every way. It is provided with a powerful foot brake. The clutches with which the hoist is reversed are very positive and easily adjusted.

The double platform elevators furnished by this company are intended especially for contractor's work. The overhead horse carrying the upper sheaves is made of angle steel and southern pine timber. While it is very strong and substantial, at the same time it is light and can be easily moved as the building progresses. The wire guides are made from the best steel cable and provided with a mechanism for drawing them taut. The wire hoisting rope is 1/2-inch diameter, with six strands and hemp center. The elevator platforms are 4 by 6 feet and strongly braced at all points. In fact the whole apparatus is built in the most substantial manner and fully warranted for the work intended.

The engines used in connection with these hoists are direct-connected, of the hopper cooling type. The gasoline is carried in the base, consequently they are self-contained, no outside connections whatever being necessary. These engines are the B. & E. Standard Type A machines, of which there

are the B. & E. Standard Type A machines, of which there



STORE FRONT IN WORLD BUILDING
NEW YORK CITY

Write for Illustrated
Catalog No. 2 containing
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The Pulling Power of a Good Store Front

MR. ARCHITECT: When you specify the Kawneer System Store Front you provide for your client a fully paid-up **Advertising** contract, available 365 days in the year in addition to a policy insuring against rotting of sills and a permanent injunction against painting.

The merchant pays high rent for a desirable location in order to sell his goods to the largest number of people. Why not help him to larger returns without increasing the amount of his investment?

Good merchandise cannot be properly displayed in poor show windows. In a **Kawneer System** Store Front goods can be displayed to the best advantage every day, winter and summer. **Goods well displayed**

are half sold and sales are what the merchant is looking for.

Kawneer Store Fronts mean better Store Front Construction, larger sales and more of them without adding to fixed expenses.

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"IT STAYS AND PAYS"

KAWNEER MFG. CO.

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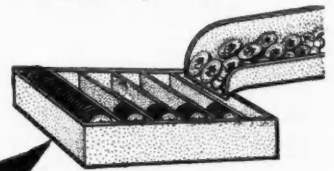
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SEE SWEET'S INDEX PAGES 650-651



Sackett Plaster Board

FIRE PROOFING

**Instead of
Lath**

**Time
Saving**

**Labor
Saving**

**Money
Saving**

**DOES
NOT
STAIN
OR
BUCKLE**



**The board
that made
plaster
boards
famous**

**First used
in 1891
Perfected
in 1908**

Sackett Plaster Board Company

**17 Battery Place
NEW YORK**

are something like 12,000 in successful operation.

Any contractor or builder interested in this apparatus will be amply repaid for writing the Bates & Edmonds Motor Company, Lansing, Mich., and asking for Bulletin No. 5, which gives full particulars of the entire outfit.

Simonds' Saws

A new nest of saws, being put out as No. 83 by the Simonds Manufacturing Company, of Fitchburg, Mass., and Chicago, Ill., is made up especially for the use of electricians and plumbers. The feature about this nest is that with a keyhole and a compass blade there is included a nail or metal cutting blade. The Simonds handle offers a simple but effective patented adjustment. Either one of the three blades can be readily adjusted to any working position that may be desired.

Sackett Plaster Board

We desire to call attention to the announcement of the Sackett Plaster Board Company on another page of this number. This is the fire-proofing board that is used instead of lath. It is the board that has made plaster boards famous.

Sackett plaster boards have been successfully used since 1891 in thousands of buildings of all classes, including small cottages, prominent hotels, costly residences, churches and theaters. Walls and ceilings of Sackett plaster boards will be dry and ready in half the time required when lath is used, as less than half the quantity of water is needed. Less moisture means less damage from warped and twisted trim and wood-work.

Sackett plaster boards are accepted by building departments and underwriters for slow-burning construction on the same basis as metal lath. Walls and ceilings properly plastered on these boards will show no cracks, stains or defects other than occur in high-grade plastering on wood or metal lath, caused by settlement of the building or the shrinkage of timber. Owing to the perfect adhesion between the plastering materials and the boards the ceilings will not fall. Their superior insulating qualities make warmer houses with less fuel.

The first cost is no more than good work on wood lath, and less than on metal lath. Sackett plaster board is an efficient and economical fire-proofing, not only for walls and ceilings, but between floors, and for protecting exposed wooden surfaces in mills, warehouses and industrial structures. It is also used extensively instead of lumber, as outside sheathing under weather boards.

Sackett plaster board comes in sheets or slabs 32 by 36 inches, ready to be nailed direct to the studding, furring or beams. They are nailed directly to the studding, set 16 inches from centers. Ceilings requiring leveling may be furred with $\frac{7}{8}$ by 2 inch strips, 8 or 12 inches from centers. To cut boards, use an ordinary saw, or score with lather's hatchet and break on straight edge.

In nailing use $1\frac{1}{4}$ -inch 11 $\frac{1}{2}$ wire nails with large heads. Nails should be 4 to 6 inches apart, and driven home firm and tight to prevent any working under the plaster coat. One keg of nails will properly apply 11,000 square feet of board.

Sackett plaster boards are carried in stock by up-to-date building material dealers everywhere.

Booklets showing buildings all over the country where these boards have been successfully used, with samples and name of nearest dealer will be furnished on application.

Hayden Blocks for Uncle Sam

The United States authorities at Fort Leavenworth, Kansas, at which point is located the military prison, are now perfecting plans for the erection of a new and commodious prison and power plant to replace the old prison which it has been decided is behind the times. Concrete construction

is to enter largely into the building of these immense structures.

After looking into the merits of the various machines for making blocks to be used in these buildings the authorities have finally decided to use the well-known Hayden machines, made by the Hayden Automatic Block Machine Company, Columbus, O., on this job.

The prison is to be modern in every respect and the best of its kind in the world. The outside perimeter of this building is 3,885 feet, and work is to be commenced at once.

Montross Metal Shingles

We desire to call the attention of all carpenters and builders to the new catalogue which has just been issued by the Montross Metal Shingle Company, manufacturers of metal shingles and tiles, Camden, N. J.

This is a very nicely gotten up work, fully illustrated with detail drawings and with photographs of many fine houses, churches and other public buildings, on which Montross metal shingles have been used. There is also a very valuable section telling how a building should be framed and how the various styles of metal shingles, octagon, Eastlake, gothic, Victor and Diamond tiles should be applied.

A card will bring this valuable book to any reader of the AMERICAN CARPENTER AND BUILDER.

Linofelt, the Modern Building Paper

The Union Fibre Company with main office and factory at Winona, Minn., have become very widely and favorably known through their insulating and sound deadening linen building felt, known as Linofelt. Its chief use has been for

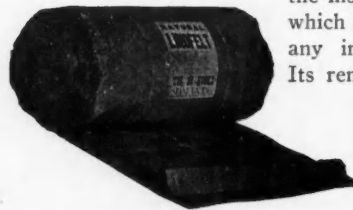
the insulation of refrigerator cars, which is the severest test to which any insulator can be subjected. Its remarkable efficiency and success in that field have led its manufacturers to offer it now in the larger field of general building.

A form of Linofelt has been produced which—although not expensive—has proved to be thirty-eight times as effective as ordinary building paper. It is to be strongly recommended wherever heat or cold resisting, sound and moisture resisting materials are wanted, and should be used for cold storages, breweries, pre-coolers, packing houses, ice houses and dwellings of every kind. Builders in all parts of the country who have used, in the aggregate, more than one hundred million yards of Linofelt testify to its efficiency.

Linofelt is a flexible insulating material $\frac{1}{2}$ inch in thickness, quilted between two sheets of Linoneponset black waterproof paper. The paper weighs ninety pounds to the thousand square feet, and Linofelt complete weighs forty-two pounds per one hundred square feet.

Linofelt is made from flax; it is the linen building felt. In it there is nothing that can decay nor become objectionable. The manufacture of this building felt, as carried on by the Union Fibre Company at their Winona works is very interesting. The stalk of the flax plant is a single round cylinder without joints, between 2 and 3 feet in height. The woody portion is on the inside. Around this outside is a sheathing of the finest fiber, so fine that it compares with the finest silks. The stalk contains besides the wood and fiber, certain gums and oils. The retting process used in the olden times was in fact rotting the gums, oils and woody portions so they were loosed from the fibre, which remained unaffected in the process.

The flax straw for Linofelt is first hackled or broken in a machine which loosens the fiber sheathing from the woody portion of the stalk. The fiber is then carried to the cooking room where it is chemically retted, or freed from the vegetable gums and oils. It is then picked and combed by special



LUMBER TRUST PRICES SMASHED!

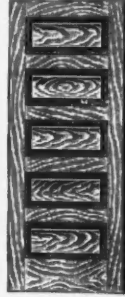
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150,000,000 Feet of Brand New Lumber at Wrecking Prices!

We purchased direct from the Mills, at various Forced Sales, thousands of carloads of high-grade, first-class, brand new Lumber. We bought it at sacrifice prices and we are offering it for sale at a reasonable margin of profit. This is an opportunity of a lifetime to buy the very best lumber manufactured at prices less than the dealer or jobber can ordinarily buy it for. Don't delay a single moment. Even if you have no immediate need for lumber, the time to buy it is today when our low prices are calling on you for action. You will never again be able to buy lumber at such low prices as we offer.

We don't ask for money in advance. You can buy without sending one cent of money with your order. All we require is a guarantee as to your responsibility. Money refunded if material is contrary to our representation. We have a capital stock and surplus of over \$1,000,000.00. We refer you to any bank or banks anywhere. Or you can write direct to the Great Stock Yards Bank, The Drivers' Deposit National Bank of Chicago.

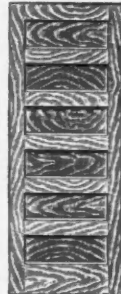
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These prices hold good for June and July only. If you want to save money we advise you to buy now and take advantage of the big saving you'll be able to effect.



As to quality, rest assured nothing better is manufactured. Don't listen to what unscrupulous dealers may tell you. Our material is guaranteed to be clean, new, fresh lumber — not wrecked material in any sense of the word — just as good as you can buy anywhere and it is sold under a positive, binding guarantee that protects you absolutely.

Solid Short Leaf Yellow Pine Doors		Solid Short Leaf Yellow Pine Doors		Veneered Red Oak Glazed Bevel Plate		Six-Panel Veneered Red Oak		Two-Panel Veneered Red Oak	
2'6" x 6'6" x 1 1/2"	\$1.20	2'6" x 6'6" x 1 1/2"	\$1.60	2'6" x 6'6" x 1 1/2"	\$8.50	2'6" x 6'6" x 1 1/2"	\$3.25	2'6" x 6'6" x 1 1/2"	\$3.55
2'8" x 6'8" x 1 1/2"	1.30	2'8" x 6'8" x 1 1/2"	1.65	2'8" x 6'8" x 1 1/2"	9.15	2'8" x 6'8" x 1 1/2"	3.35	2'8" x 6'8" x 1 1/2"	3.85
3'0" x 7'0" x 1 1/2"	1.45	2'8" x 7'0" x 1 1/2"	1.70	3'0" x 7'0" x 1 1/2"	11.70	2'8" x 7'0" x 1 1/2"	4.00	2'8" x 7'0" x 1 1/2"	4.35

\$650 Buys all the Material to Build This House!

\$700 Buys all the Material to Build this House!

\$780 Buys all the Material to Build this House!



HOUSE DESIGN No. 6.

In the above design we illustrate a 6-room house of symmetrical outline and comfortable interior. It is provided with all the conveniences of a modern home, bathroom, pantry, basement and handsome open stairway. The rooms are all of comfortable dimensions. The hall, living room and dining room are connected by cased openings, practically throwing these rooms into one large apartment, which is universally appreciated. Large number of windows.



HOUSE DESIGN No. 126

In the design illustrated above we have made a complete departure from conventional methods in house designing for a building of this size. It contains 7 rooms, bathroom and reception hall room. It is of strictly classic architecture. Its handsome entrance with the Massive Columns and Colonial windows fitted with panel shutters give to this house a distinction all its own. It is arranged for seven rooms, bath, pantry, stair hall and the necessary closets. The handsome open stairway leading to the second floor and the leaded casement windows and window seats located in appropriate locations still further develop the artistic harmony of this design. It is provided with every essential convenience of a modern home. Its large number of windows insure an abundance of light and air and by reason of its compactness, it can be erected at a very moderate cost.



HOUSE DESIGN No. 139.

In the above we illustrate a thoroughly modern home of liberal dimensions and pleasing exterior effect. Please note the symmetrical lines of the roof with the gable and dormer and the wide porch extending nearly across the entire front of the house. The interior arrangements are not only modern, but delightfully roomy, yet there is not an inch of room wasted where not needed. The fire-place in the parlor is flanked on either side with a handsome casement window. Other windows of this kind are placed at convenient locations and insure harmonious effect. The house is 29 feet wide by 33 feet 6 inches in length, exclusive of the porch. Has 7 large rooms, bath, pantry and all conveniences of a modern home. The dining room, especially, is the finest room in the house and with its large bay windows is universally appreciated. We recommend this design to people of good taste.

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8"	10' to 20'	No. 1 Arkansas Soft Pine Drop Siding (any Pattern).....	8"	10' to 16'	No. 2 Soft Minnesota Pine Roof Sheathing.....
6"	10' to 20'	No. 1 Genuine White Pine.....	4' 6" 8" 10"	1 1/2"	Selected White Pine Sheathing.....
4"	8' to 16'	No. 1 Genuine White Pine Barn Boards.....			Selected Soft Minnesota Pine Furring Strips Sided, per 1000 lin. feet.....
3"	10' to 20'	Clear Y. P. Flooring D. & M. Kiln Dried.....	4' or 6"		Byrkit's Pat. Sheathing Lath.....
3" 0" 4"		Selected No. 2 Kiln Dried Y. P. Flooring.....			No. 1 Michigan Soft Pine Lath.....
1 1/2" x 4"		Clear Y. P. & M. and Beaded Y. P. Ceiling.....			No. 1 Michigan Soft Pine Lath.....
1 1/2" x 4"		No. 1 D. & M. and Beaded Y. P. Ceiling.....			No. 1 Soft Arkansas Pine Lath, Kiln Dried.....
2" x 6"	12"	No. 1 Y. P. S1S1E.....			Diamond A Washington Red Cedar Shingles 1/2" to 2", 6" and Better, Clear; Good widths, best 2nd Grade Shingles made. If shingles are laid 4 1/2" to the weather, a perfect roof is assured.....
2" x 4"	14"	No. 1 Y. P. S1S1E.....			Extra Star "A" Star Washington Red Cedar Shingles.....
2" x 4"	16"	No. 1 Y. P. S1S1E.....			
2" x 10"	18"	No. 1 Y. P. S1S1E.....			
2" x 12"	20"	No. 1 Y. P. S1S1E.....			
8" x 10"	10' to 20'	Yellow Pine Sheathing Boards.....			
4"	10' to 16'	No. 2 Soft Minnesota Pine Roof Sheathing.....			

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In addition to this General Catalogue we publish a "BOOK OF PLANS." It shows illustrations of modern houses and barns; gives illustrations from life as well as floor plans; it explains our unique offer to furnish all material needed to construct any buildings shown in our book. You can get a complete set of plans, specifications and bill of material for \$2.00, or furnished free with your order. We also publish a Furniture Catalogue showing handsome designs in Household Goods, Furniture and Office Supplies. Write us your wants. We can save you big money. No matter what you want, write us; we can save you money.

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Johnson's Prepared Wax can be successfully used upon furniture and woodwork as well as floors. It produces a lasting artistic finish to which dust and dirt will not adhere.

S. C. Johnson & Son, Racine, Wisconsin



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It is full of practical information and helpful suggestions that are of great value to painters and wood-finishers.

Johnson's Wood Dye is made in fourteen beautiful colors. From these any desired shade can be made. To lighten use alcohol—to darken use Flemish Oak No. 172. Pick out any color you want from the list below, and write the number on the coupon. If you would like a set of wood panels, showing various shades of Johnson's Wood Dye, kindly note this on the coupon, and we shall be glad to include them with the working samples. These panels will be mighty handy for you to show your customers. Help them to pick out just the colors they want. And you can depend on it, Johnson's Wood Dye will always match up exactly with the samples.

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I accept your offer of Free Booklet Edition 1087, sample of Johnson's Wood Dye, shade No. and samples of Johnson's Under-Lac and Prepared Wax Black.

Name
Address

machines, and then is felted by a batting or felting machine into a blanket uniformly $\frac{1}{2}$ inch in thickness.

The diameter of a flax fiber varies from .0002 to .0006 of an inch, and in the fiber blanket there is an uncountable number of these fibers interlaced, holding in their embrasures minute particles of entrapped air, and in their hollow cells still smaller beads of air. The cells of flax are elongated cylinders and when the fluids of the plant are dried out the cells absorb small air bubbles. From this structure the high insulating efficiency of Linofelt is gained.

When the fiber blanket is ready for the final process, the fiber is the same, save that it is unbleached, as that used in Ireland and Belgium in the manufacture of linen.

The final step is to stitch between two sheets of Linoneponset water-proof paper the flax fiber blanket, and complete the quilt. The machines on which this stitching is done are the largest in the world. Besides stitching the quilt they apply binding to the edges.

Linofelt has come into such universal use for the most efficient type of refrigerator cars and has withstood every test so well that there is no longer any doubt as to its value and economy. Builders will do well to learn for themselves just what this material—which is 38 times as effective as building paper—is and will do for them.

The Union Fiber Company, 72 Fiber avenue, Winona, Minn., will send samples and specifications on request to readers of this journal.

Concrete Hens' Nests

A new field, in which there is splendid profit for the wide-awake cement man of to-day, is opened. The manufacture of concrete hens' nests for which an enormous sale is easily acquired is started on a very small investment. Inasmuch as the nests give such universal satisfaction a man in every town is enabled to make a very handsome little profit. In the

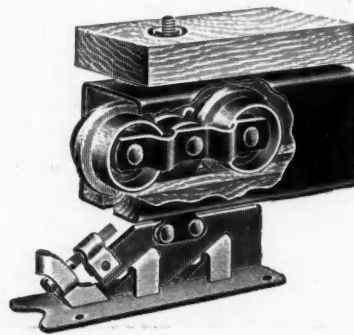
first place, they are sanitary, are easily cleaned and will last practically forever; and what is still more to the point, they can be sold at a very low price.

These nests have been tried out thoroughly. It has been found that when a chicken-raiser has purchased one he is soon in the market for dozens. Almost everyone—especially in the smaller cities—raises chickens, either on a small or a large scale. The field is therefore unlimited.

B. M. Bangs, of Lake Mills, Iowa, has for the past several years been putting on the market forms for the manufacture of these nests. He reports constantly increasing sales. His literature tells all about the nests and the business of making them. He would like to place this book in your hands. Drop him a card or a letter today. His proposition will interest you.

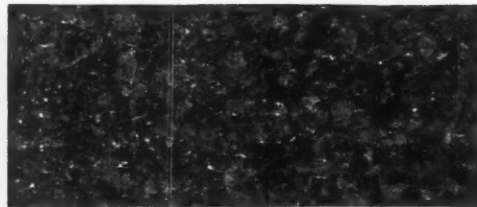
Royal Door Hangers

The Richards Manufacturing Company, Aurora, Ill., the well-known manufacturers of high-grade hardware specialties,



are now presenting a complete line of house, barn, warehouse and fire door hangers. These goods mark the very last step in the evolution of the house door hanger from the heavy crude appliances of years ago, with crude iron wheels, with axle bearings traveling on an iron track, with no adjustment and operating in a noisy clumsy manner, with the wheels constantly jumping the track, to the perfect ball-bearing hanger of today. The Richards No. 122, illustrated herewith, is the acme of

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The Contractor and Builder is our main dependence for getting our goods in use. He, more than anyone else, stakes his reputation on the goods he uses. For this reason, Mastic Roofing appeals to him.

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There are many roofings offered. As the English language contains but a certain number of words that can be used in describing a roofing, there is necessarily a sameness about roofing Ads, and every maker naturally claims to have the best.

But, this sameness does not extend to the goods. Compare a sample of Mastic with any and everything else made. We rest our case right there. Write us to-day for this sample and full information.

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If you want cheaper roofings we furnish them at as low prices as any, but our recommendation and guarantee does not go with them. Mastic Roofing is made right and acts right. For permanent buildings you cannot afford to use anything else. Booklets and Samples Free.

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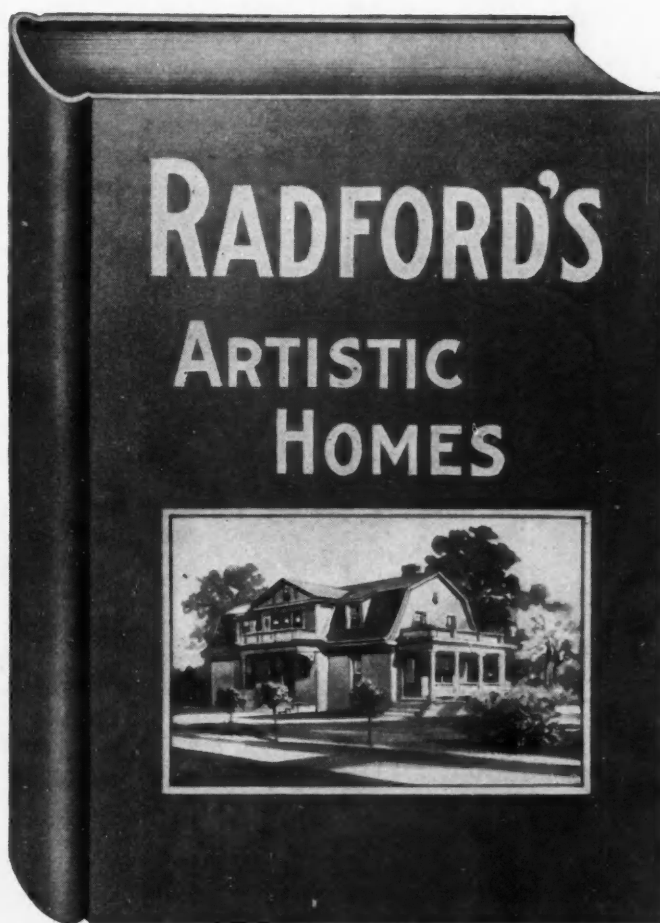
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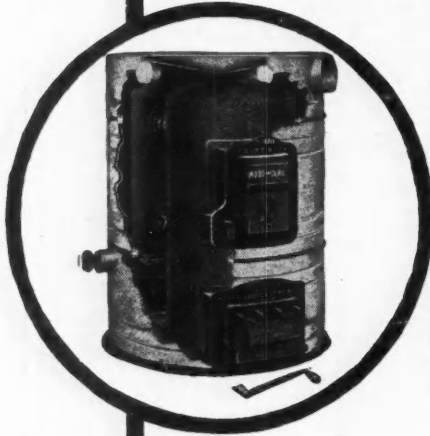
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perfection in the door hanger line. It contains an adjustment in both the track and hanger, making it possible for adjustment to a nicety. The wheels have wide tread and travel on polished maple, insuring a practically noiseless operation. There are four sets of ball bearings in each hanger and the door is hung directly from the center of the hanger, insuring an even distribution of the weight. With the old-style hangers, in case of the hanger jumping the track, it was often necessary to tear out the walls in order to replace the wheels on the track. With this hanger it is impossible for the wheels to get off the track; and if for any reason whatever it ever becomes necessary to remove the hanger it can be easily taken down after the walls are plastered, without disturbing the walls. It is stated that leading architects throughout the country regard the Richard No. 122 Royal hanger as the best hanger made, and specify it in preference to all other styles.

This company has a large, finely illustrated catalogue describing their line of hardware specialties and giving much other valuable information of interest to builders. This will be gladly sent upon request to readers of the AMERICAN CARPENTER AND BUILDER.

Valuable Booklet Free

The Hess Warming and Ventilating Company, 920 Tacoma building, Chicago, have just issued a new edition of their handsome booklet, "Modern Furnace Heating," which, in completeness and in high quality of printer's work, excels anything ever published by this company.

The booklet forms a complete handbook on furnace heating, and contains much information of value to every house builder or owner.

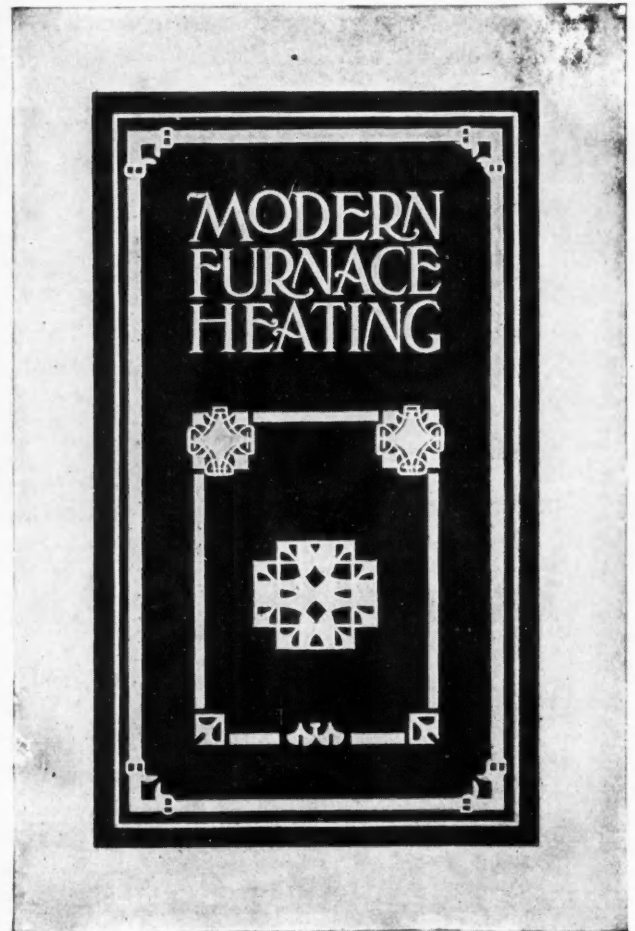
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Answer every requirement for finishing cement or any other surfaces

**The Enamel with the
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It covers forty-eight pages, beautifully printed in two colors, on fine enameled paper. The cover is handsomely embossed.

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Original Ideas in Mantels suitable for Bungalows, Cottages, Concrete or Cement Houses.

Investigate our new Combination Mantel Fireplaces—ideal for Flats and Apartments.

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The styles are modern—the designs are distinctive—the workmanship is better than other makes sold at higher prices.

Every mantel is made by experienced workmen from highest quality air seasoned lumber in various woods and finishes. The prices are as varied as the style—all the way from \$3.00 to \$250.00.

Our enormous stock is mirrored, and priced, in our catalog—the most magnificent ever issued. Send your name **now** and receive a copy as soon as it comes from the press.

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Our latest innovation, the combination **Mantel-Fireplace**, will coin extra dollars for mantel dealers. Something new! Handsomer, richer, and vastly superior to any brick fireplace. We explain this to anybody writing. **Write today**

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We will send you, direct from our factory, a complete Hess furnace heating outfit of best quality, all made to your measurements, for **\$25 to \$100 less** than you can buy from dealers. We will supply special plans and full directions for installing, and will loan you all necessary tools so you, or any man handy with tools, can put up the equipment easily

Our Unusual Free-Trial Offer

Special Heating Plans

You send us a rough sketch of any building you wish to heat and we will have our experts prepare a simple, clear plan showing the best possible arrangement of furnace, pipes and registers, for your building, together with the exact cost to you of the complete outfit. The plan, and our advice are absolutely free. No obligation on your part to buy of us or to pay us one cent.

Important Booklets Free

At great expense we have compiled and published two very important booklets which are sent free to those who write. Our booklet, "Modern Furnace Heating" contains numerous illustrations and clearly explains every principle involved in furnace heating for any class of building. "These Bear Witness" gives the names of thousands of users of Hess Furnace Outfits, to whom we refer

The Hess Steel Furnace Burns Any Fuel. Besides any kind of coal, gas or wood, any other fuel, such as chips, twisted straw, corn cobs, etc., may be utilized and money saved

Write Now—Today For Booklets **Hess Warming & Ventilating Co.** 920 Tacoma Bldg. CHICAGO

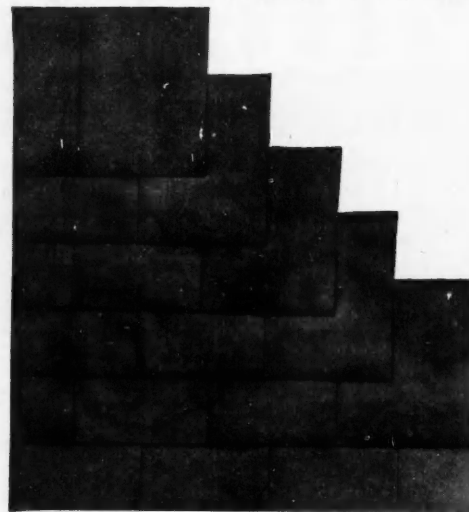
in two colors, and the booklet, as a whole, is most attractive and well worthy of preservation. The Hess Company, whose advertisement appears on another page, are large manufacturers of steel furnaces, selling directly to consumers and not through dealers.

They invite correspondence from all who contemplate using hot air furnaces, and offer most unusual terms of trial, besides a lower price on furnaces and fittings than any dealer can afford to quote. The new booklet is free on application; and a copy will be sent to every one requesting it.

Winthrop Asphalt Shingles

The Winthrop Asphalt Shingle Company, with offices in the Temple, Chicago, Ill., has placed upon the market a shingle which it is claimed will neither warp nor split; is light in weight; attractive in appearance when applied to the building; is readily put in place, and it is pointed out greatly reduces the fire risk of a structure in connection with which it is used. The shingles have the appearance of slate, and being made from asphalt are said to be practically indestructible. The appearance of a portion of several courses of these shingles as they appear when applied to a building is presented in the accompanying cut. The company points out that while the shingles are fire resisting, the claim is not made that they are fireproof in the sense that they cannot be destroyed by fire. They will, however, resist sparks and cinders and flying embers to such an extent, it is claimed, that a building is not likely to be set on fire by firebrands falling on a roof covered by these shingles. The latter are 8 by 10 inches in size, are laid 4 inches to the weather; are tapered like a wood shingle and are about $\frac{1}{4}$ inch thick at the butt where the shingle is solid asphalt reinforced with tough fibre to give it the necessary tensile strength. The shingles are made rigid and are not intended to bend. The color is a gray slate, which darkens a little

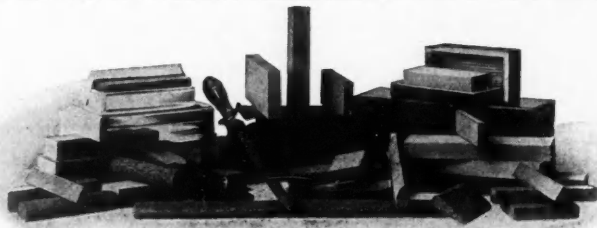
from exposure to the weather. The claim is made that 450 shingles will cover a space 10 by 10 feet on a building, or about the same as 1,000 wood shingles laid 4 inches to the



weather. The usual shingle nails may be used for securing the shingles to the roof, attention being called to the fact that the nail becomes coated with asphalt as it is driven through the shingles, thus preventing the nails from rusting out. The company has issued a very neat catalogue in which the merits of these shingles are set forth at some length, the illustrations being half-tone reproductions of photographs of roofs of buildings covered with the shingles in question.

Gage Self-Setting Planes

It is with a good deal of pleasure that the editor of this journal endorses a tool for woodworkers—*after* it has been thoroughly *proved* that that tool is *right*. Now this is what



EVERY MAN WHO WORKS WITH TOOLS

needs Carborundum Sharpening Stones—
No other stone will put such a keen, even edge on a tool—
No other stone will do it so quickly and easily—

ASK YOUR HARDWARE MAN

If he doesn't keep Carborundum Sharpening Stones,
write direct to

THE CARBORUNDUM COMPANY
NIAGARA FALLS, N. Y.



Would YOURS Be the Empty Peg If Hard Times Came Again?

WHERE would you be if the pay roll had to be cut down? Would you be one of the first to go because of lack of training, or would your ability as an expert insure your position? If you have the special knowledge such as the International Correspondence Schools, of Scranton, can impart, you need never fear for your position. The "laid-off" bugaboo will never scare you. On the contrary I. C. S. Training will bring you steady advancement—will put and keep you far above the failure line.

These statements have been proved true by the experience of thousands upon thousands of men who have taken Courses of I. C. S. Training and as a result have advanced to better positions, insured permanent employment, and have multiplied their earnings many times over. Millions in increased salaries have been made possible each year for I. C. S. trained men.

Suppose you wished to be sure of keeping your position? What if you wanted to find some way to secure promotion to an advanced position, increased earnings, future success, and self-dependent old age? Wouldn't it be more sensible to adopt a definite system of obtaining all this rather than plod along in the same old job, trusting to luck for advancement?

The truly wonderful results accomplished by the I. C. S. during 17 years of experience not only prove that this is the most practical system of technical training for 95 per cent. of the people but that **it is the most powerful force for promotion in the world.** If you wish to secure promotion, you do yourself injustice by not investigating this plan. Merely marking and mailing the coupon will do this and will put you to no expense, nor under any obligation to go further if you do not wish to. You won't have to buy books nor give up your present work; you need spend but a small part of your spare time, in your own home. **Get rid of the risk of the empty peg. Use the coupon now.**

International Correspondence Schools

Box 910, SCRANTON, PA.

Please explain, without further obligation on my part, how I can qualify for a larger salary and advancement to the position before which I have marked X.

Architect	Estimating Clerk	Foreman Machinist
Arch'l Draftsman	Bridge Engineer	Sh.-Met. Pat. Drfts.
Contractor & Build.	Civil Engineer	Mining Engineer
Building Inspector	Surveyor	Textile Expert
Structural Eng.	Mechanical Eng.	Bookkeeper
Struct'l Draftsman	Mechan'l Drafts'n	Stenographer
Plum. & Heat. Con.	Stationary Eng.	Ad Writer
Supt. of Plumbing	Electrical Engineer	Window Trimmer
Form. Steam Fitter	Electrician	Illustrator
Plumbing Inspect'r	Elec.-Light. Supt.	Civ. Service Exams.
Heat. & Vent. Eng.	Elec.-Rail'y Supt.	Chemist

Name _____

Street and No. _____

City _____ State _____

we know the self-setting plane of the Gage Tool Company to be: It is right, will make good every time.

In this connection we want to quote part of a recent letter from the makers concerning this self-setting plane:

Vineland, N. J., June 16, 1939.

AMERICAN CARPENTER AND BUILDER, Chicago, Ill.

Gentlemen: * * * * All we ask is to get a plane user to try the plane; after that the plane will do its own talking, and if it don't convince the one who shoves it, he can send it back and the trial costs him nothing. GAGE TOOL CO.

And here is what hardware dealers have to say about the self-setting planes:

Wm. P. Walter's Sons, Philadelphia, Pa.: "We have no complaint from anyone. A customer told us that if he could not replace them he would not take fifty dollars for his set of planes."

Hammacher, Schlemmer & Co., New York: "All those who have bought your planes think they are the best ever."

Thomas F. Leonard, Scranton, Pa.: "We do not recall a single dissatisfied customer who has purchased one of your self-setting planes of us and we have sold them for seventeen years."

J. P. Rasmusson, Tacoma, Wash.: "The mechanics who use the planes say it is the only plane that gives satisfaction."

The Potomac Hardware Company, Cumberland, Md.: "Everybody who uses a Gage plane is thoroughly delighted with it."

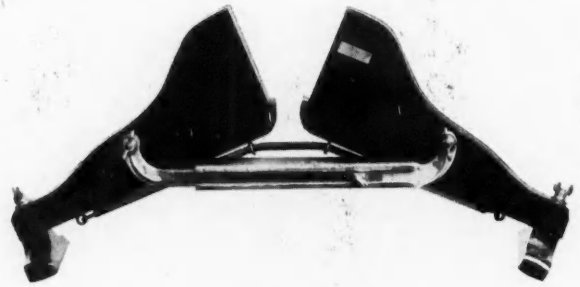
John Henne, Youngstown, Ohio: "They never complain about the planes, they are always satisfied."

Vonnegut Hardware Company, Indianapolis, Ind.: "They are prized highly by our customers that use them."

Necessity Is the Mother of Invention

Each day brings us some little invention that makes our work just a little easier, and among the recent inventions is

one invented by S. B. Dutro of Mason City, Iowa, in the shape of a sash and door holder, which is possibly the most useful addition that any carpenter could add to his kit.



By looking at the cut one can easily see the advantages to be derived from its use. Necessity is the mother of invention, and this was practically so in the case of Mr. Dutro who for the past thirty years has been in the carpentry line. He, as is the case with every other man in this line of work, experienced no little difficulty in fitting and hanging doors and sash, owing to the fact that there was no device at that time that would hold the door or sash firmly while it was being planed. So being of practical mind he immediately set to work to devise some method whereby this difficulty was obviated. It took him several years before he had succeeded in accomplishing his ends; but at last he manufactured and patented what is now known as the Dutro sash and door holder, which immediately took a firm hold upon every carpenter and builder who saw it.

The Dutro sash and door holder is a device for holding any sash or door from 1/2 inch in width up to 7 inches absolutely firm while it is being planed, sawed, or fitted with locks and hinges. It is constructed from Tennessee poplar

Canton Metal Ceilings

With Punched Nail Holes.

Produce

One half cost of erection.

Perfect Alignment.

Invisible Joints.

Canton Art Metal Co.

Canton, Ohio.

Eastern Branch.

**525 West 23rd Street,
New York City.**

Western Branch.

**206 South Third Street,
Minneapolis, Minn.**

Drawing Trade to Builders

More Roofing Business follows the use of "satisfaction-giving" roofing. That's why contractors should continue the use of Ford's Roofing.

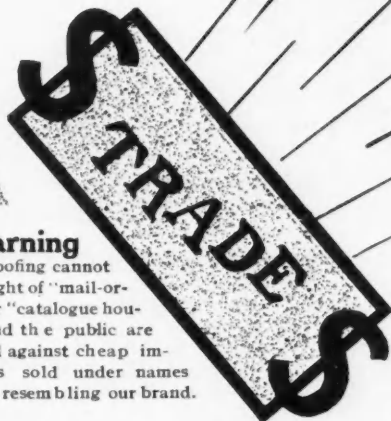


Look for the Record Behind the Roofing

The contractor is responsible for the roofing he uses. Good roofing makes pleased clients and more business. Our forty-year-old reputation is an iron-clad guarantee of quality. Ford's Galvanized Rubber Roofing is just as much ahead today as it has been since 1865.

Warning

This roofing cannot be bought of "mail-order" or "catalogue houses" and the public are warned against cheap imitations sold under names closely resembling our brand.



FORD'S Galvanized Rubber Roofing

Is made by a special manufacturing process and from special materials. The manufacturing process involves extreme heat and enormous pressure. It is the only process that insures a perfect prepared roofing.

The materials used, under this process, *must* be of extremely high quality. So every ounce of materials that enter into the manufacture are examined before being used. Thus we know the quality is there. Thus we are certain that every square foot of Ford's Roofing is *good*. That is why we take no risk in making broad guarantees.

Roofs Covered with Ford's Roofing Are Safe

Where a good roof is needed, use Ford's Galvanized Rubber Roofing. It's the cheapest roofing, wearing and service-giving qualities considered, at present on the American market. It is "different" to other "cut-price" prepared roofings. Not much different in price but in the quality. The Ford quality is the standard quality.

Send for samples, particulars, dealers' names and important literature.



FORD MANUFACTURING CO.,
2333 La Salle Street, CHICAGO

BISHOPRIC WALL BOARD

Better than Lath and Plaster

BISHOPRIC WALL BOARD (Pat'd), the wonder-worker in building construction, is taking the place of lath and plaster. It is made of kiln-dried, dressed lath, embedded in Asphalt Mastic (99% pure), and surfaced with sized cardboard. It is constructed in the factory, cut into sheets 4x4 feet, and shipped in crates—ready to be nailed to studding.

Bishopric Wall Board Sheets are of uniform, even thickness; are cut absolutely true, insuring neat, close, snug unions and smoother wall surfaces than lath and plaster. It may be sawed in any size without waste. Expert labor not required. Hammer and saw the only tools needed. Can be nailed to studding in less time than lath alone is put on for plastering; is ready for the immediate application of wall paper or paint. It is guaranteed not to crack, flake or blister; is proof against moisture, heat or cold. Being a non-conductor, it saves fuel in winter and keeps the house cool in summer.

Bishopric Wall Board is suitable for costly dwellings or modest cottages, bungalows, flats, summer homes, health resorts, offices or factory buildings. For ceilings, beautiful Mission effects may be produced at very reasonable cost. Nothing better for finishing your attics, new partitions and cellar ceilings, in old or already completed buildings, because of its cleanliness and low cost of application. Cut shows easy method of application.

Dealers should write for our attractive proposition. Send for free sample, booklet and prices, freight paid.

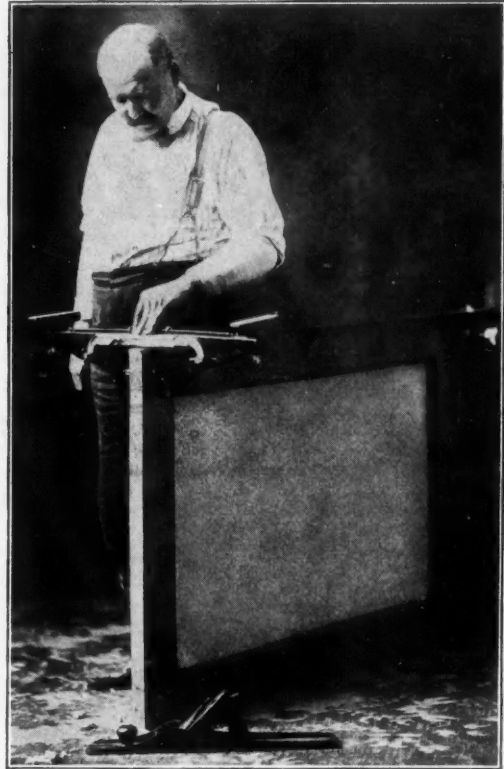
Can ship from Cincinnati or direct from factory in New Orleans, or Alma, Mich.



The Mastic Wall Board & Roofing Mfg. Co., Ltd.

38 E. Third Street, Cincinnati, O.

and nicked malleable iron and is so built that it will last a life-time. It is a compact, durable, well-finished, perfect tool. The jaws that hold the door or sash are lined with corrugated rubber thereby preventing the most highly polished door or sash from being marred in the least. The feet also



are covered with corrugated rubber so the Dutro may be used on the most highly polished floor. By its use expense from broken glass is entirely eliminated. By its use there need be no more marred jambs. By its use there need be no more plaster knocked off. It is not necessary to carry the door or sash to the bench in an adjoining room to be clamped in a vise. The Dutro is as much at home on the highly finished floor as it is on the rough floor. When using this little tool on a rough floor two little steel clutches are provided to protect the rubber feet from useless wear and tear. The Dutro is absolutely automatic in its action. That is, as soon as the door is lifted the tool opens automatically, releasing the door or sash, as the case may be, instantly, leaving the tool open ready for the next operation. There is absolutely no danger for the door or sash to blow over and break when placed in the Dutro sash and door holder. It can be used on the ground in the cellar, in the house, anywhere. It is not in the least complicated and there is nothing about it to stick or get out of order.

Their little booklet, "A Talk With Dad," tells you all about it. It is really interesting and will be sent to any one requesting it.

Franklin Tunnel Slate

The Slatington Slate Company, Slatington, Pa., backed by their remarkable record of 57 years continuous, successful operation of producing good slate, are now laying special emphasis on their two best known lines, the "Genuine No. 1 Franklin Tunnel," for roofing purposes, and the "Clear" Black Structural Slate, for general use.

All that can be said of the Genuine No. 1 Franklin Tunnel is as nothing compared to the way the slate speaks for itself. The best way to prove their superiority is to try them—try them on your next roof—test them in the worst weather. This is the way the host of satisfied customers of this

FLIES ALWAYS LIGHT
ON THE SCREEN

WATROUS No. 17
ONLY SIDE HANGER MADE

BIGGER PROFITS

FOR THE
CONTRACTOR
Who Uses The
**WATROUS
NO. 17
SCREEN
HANGER**

YOU CAN'T DRIVE OUT FLIES WITH A TOP-HUNG SCREEN FOR A FLY WONT GO DOWN

The same pieces, arranged to suit, will hang either a full or a half screen from either the top or side. Storm sash should be hung from the top, but this is the only way to hang a screen.

Only four screws to set instead of twelve, a saving in labor of two-thirds. A gauge mark locates the piece instantly, and makes mistakes impossible. A carpenter who has bought other hangers, could afford to throw them away, buy the Watrous No. 17, and make more money on the job. Mounted working model sent free postpaid to dealers or carpenters. Write to-day.

Finish either japanned or galvanized, with galvanized screws.

E. L. WATROUS MFG. CO.

DES MOINES : : IOWA



Asbestos "Century" Shingle Roof—Dayton Gun Club, Dayton, Ky.; William Lampe, Newport, Ky., Architect; R. L. Brown, Covington, Contractor

Asbestos "Century" Shingles

"The Roof that Outlives the Building"

Asbestos "Century" Shingles are made of asbestos fibre and hydraulic cement, compacted into dense and uniform sheets by hydraulic pressure. They grow harder and more elastic with age, as the concrete matures.

Asbestos "Century" Shingles are fire-proof—climate-proof—accident-proof. They do not flake off or split at the nail holes. Outlive the building—need no painting—no repairs. Easily laid, cut and fitted.

Made in numerous shapes and several sizes, in three colors—Newport Gray (silver gray), Slate (blue black), and Indian Red. Ask your roofer for new quotations. Write for Booklet "Roofing 1909", and select the shapes to harmonize with a building you have in hand.

The Keasbey & Mattison Company, Factors
Ambler, Pennsylvania



"First Cost is Last Cost"

Galva-nite Roofing

"Easy To Lay."

The very name "GAL-VA-NITE" carries with it a positive feeling of satisfaction. The carpenter or builder who either specifies or uses this high grade ready roofing on a building can rest assured that the owner will be satisfied. GAL-VA-NITE marks that degree of perfection among roofing materials which characterizes it as the "STANDARD" of moderate priced ready roofings. It has made good in all climates and under all conditions. The fact that it needs no painting or after attention when once on the building, makes it especially in demand by house owners who have long since tired of the expense and trouble of patching up leaky roofs.

GAL-VA-NITE is waterproofed with a triple coating of mineral asphalt and weatherproofed with a heavy "armor-plating" of flaked mica, which makes it impervious to the ravages of rust and the dangers of flying sparks and fire-brands.

Better let us send you FREE SAMPLES and ROOFING BOOKLET. A postal today will bring them to you. Ask for DETAIL 9. Address the manufacturers.

UNION ROOFING & MFG. CO. 1100 East 7th St. ST. PAUL, MINN.
WE HAVE DISTRIBUTING WAREHOUSES IN THIRTY-FIVE CITIES



THE MANUFACTURE OF CONCRETE HENS' NESTS

Pays enormous dividends on a very small investment

They are Sanitary—Will Last Forever. They offer a profitable field with No Competition

ONE SALE MEANS A DOZEN

Every man who owns chickens is a SURE CUSTOMER

OUR FOLDER TELLS ALL ABOUT THEM. WRITE TODAY

B. M. BANGS & CO., BOX 464C LAKE MILLS, IOWA



The Nest

BISHOPRIC WALL BOARD

Better than Lath and Plaster

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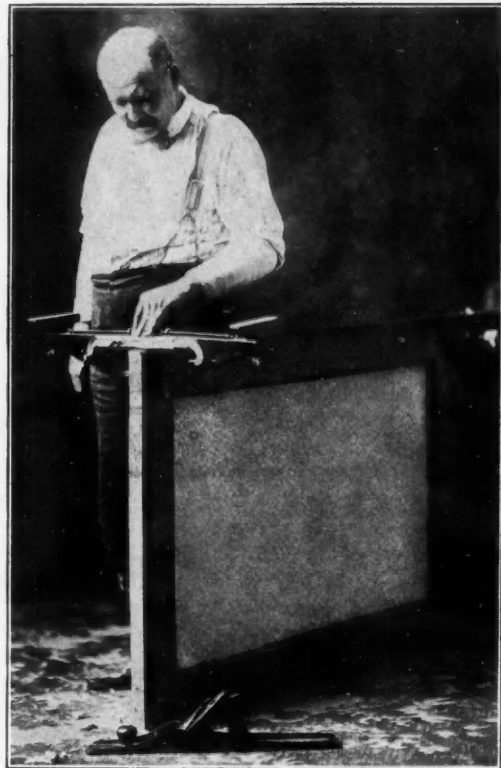
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BIGGER PROFITS

FOR THE CONTRACTOR Who Uses The **WATROUS NO. 17 SCREEN HANGER**

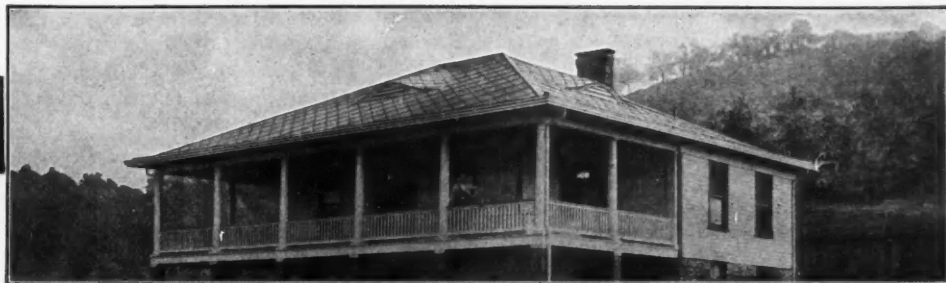
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ONE SALE MEANS A DOZEN

Every man who owns chickens is a SURE CUSTOMER

OUR FOLDER TELLS ALL ABOUT THEM. WRITE TODAY

B. M. BANGS & CO.,

BOX 464C
LAKE MILLS, IOWA



The Nest



*To a man
who knows
a good saw*

The Simonds Saw

WARRANTED
The Simonds Saw
FITCHBURG, MASS. CHICAGO, ILL.
U.S.A.
BRANCH HOUSES
NEW ORLEANS, PORTLAND,
SEATTLE, NEW YORK, SAN FRANCISCO,
LONDON, ENGLAND.
LOOK FOR THIS TRADE MARK ETCHED ON
EVERY SAW

means much. Our Boss Carpenter gives some points on our saw.

"Every carpenter wants a good cutting saw, for a dull saw means extra labor and most of us get tired enough."

You can't keep your saw sharp unless it's tempered right, this is where the Simonds people are strong. They have a special patented process.

Another point, because the **SIMONDS SAW IS MADE OF SIMONDS STEEL** you are sure of getting the finest crucible steel, made especially for this saw in their own mills.

Now here's another point, you're never sure of a saw that isn't trade marked. The trade mark means the makers are back of it.

It's a fact.

THE SIMONDS SAWS ARE BEST And They ARE Best

In a nutshell:—Buy a Simonds Saw, because it's made right, tempered right and cuts right.

You'll know it by the trade mark.

Save extra work by using a Simonds Saw, and my advise is **buy it now.**

If your dealer don't keep them write to headquarters. Tell them what kind of a saw you want and ask for a free copy of "Simonds Carpenter Guide," a valuable booklet.

SIMONDS MFG. CO.
FITCHBURG, - MASS.

Chicago
San Francisco

New York
Portland

New Orleans
Seattle

company have been made—the secret of their more than half a century's success.

We beg leave to quote the following letters from the many received showing the verdict of the users concerning these slates.

N. Manchester, Ind.

Slatington Slate Company,

Dear Sirs: Will say that I have had 32 years' experience in laying slate and don't think that I ever used a better slate than the Genuine No. 1 Franklin Tunnel I bought of you last season.

Yours truly,

Walter Laidlaw,
Mansfield, Ohio.

Slatington Slate Company, Slatington, Pa.

Dear Sirs: We are very well satisfied with your Genuine No. 1 Franklin Tunnel slate, and consider them a good strong slate, and for color are better than anything we have yet used.

Yours truly,

Chas. E. Martin & Bro.
Mt. Joy, Pa.

Slatington Slate Company,

Gentlemen: The experience we had with the Genuine No. 1 Franklin Tunnel slate proved they are a black slate, strong and uniform.

Yours truly,

H. E. Miller & Bro.

In regard to the use of structural slate it is an undeniable fact that this material excels all others for many purposes. Slate should always be used for treads, platforms, wainscotting, urinal stalls, sink tops, etc., because it is the most sanitary and best wearing material that can be used for these purposes.

The "Clear" Black Slate, produced by the Slatington Slate Company, is free from ribbons and is far superior to the cheap so-called ribbon slate. This company also manufactures natural slate blackboards, made in the most approved manner to give the smoothest, cleanest and best writing surface. All progressive builders—readers of this paper—should be informed concerning the uses, merits and cost of these slate products. Valuable information will be promptly mailed upon request.

Motor-Driven Band Saws

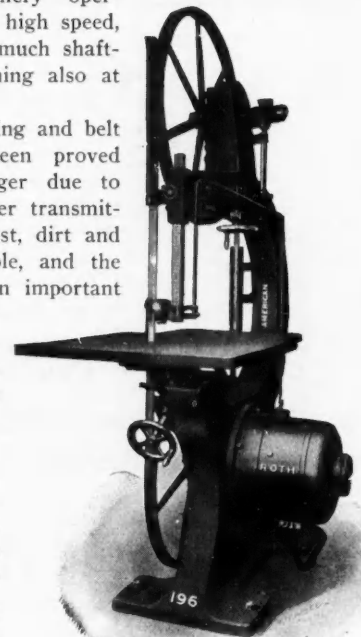
The use of electric motors for driving wood-working machinery has increased very much in the past few years. Most wood-working machinery operates at comparatively high speed, and this necessitates much shafting and belting, running also at high speeds.

The losses in shafting and belt transmission have been proved very high; the danger due to these high-speed power transmitters is great; the dust, dirt and noise are objectionable, and the fire hazard is also an important factor—these combined have been enough to make the benefits of electric motor drive easily apparent.

The band saw is one of the wood-working machines which can be very efficiently operated by individual motor. This machine is used in a large variety of works. In many

cases it is the only wood-working machine in the establishment. Then, as a rule, it is usually best located at a point where the shafting is not easy to belt from.

At this point the individual motor drive suggests itself and in the cases where it has been adopted, has proved entirely satisfactory. Various ways of driving are in use: the earlier applications have been by simply belting from the motor pulley to the band-saw pulley,—then the motor has



SHELDON'S MILL and CABINET BENCHES



Fitted with guaranteed indestructible rapid acting iron vises and steel bench dogs, not just invented, but improved and strengthened beyond all possible defect.

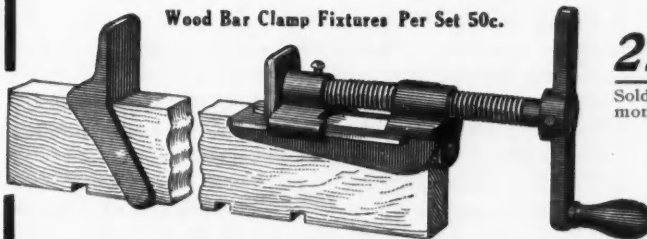
We construct these benches throughout as described in another page in this magazine, and believe them to be unapproached in efficiency and reliability.

The steel dogs in connection with vises can be instantly adjusted to hold rigidly on the top of the bench on work ranging from the size of a door down to a thin drawer bottom.

SPECIAL OFFER

Top 60"x24"x2½" with two vises as illustrated. **\$15.50** With one side vise . . . **\$12.00**

Wood Bar Clamp Fixtures Per Set 50c.



Patent Malleable Clamp Fixture

E. H. SHELDON & CO., Chicago, Ill.
Gentlemen:—We are pleased to state that the 25 dozen Clamp Fixtures which we bought of you a little over a year ago are giving excellent service. We are well satisfied with them and shall be pleased to remember you whenever we want anything additional in this line.
Yours truly,
Sioux City, Iowa. **CURTIS SASH & DOOR CO.**

22,000 Sheldon Steel Rack Visas

Sold on approval, an unconditional money back guarantee.

SHELDON'S



STEEL BAR CLAMPS

Guaranteed Indestructible

We solicit privilege of sending samples and our complete catalogue.

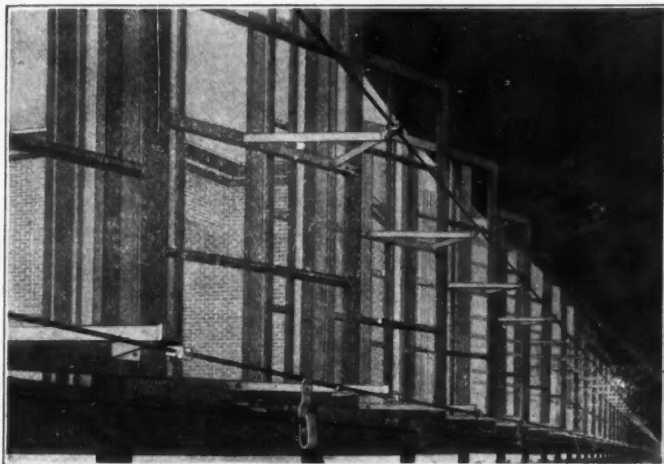


RAPID-ACTING WOODWORKER'S VISE No. 3

E. H. SHELDON & CO.
84 N. May St., Chicago

Pond Operating Device

(PATENTED)



AMERICAN CAR & FOUNDRY CO., ST. LOUIS, MO.

CUT SHOWS

80 vertically pivoted sash; 2600 square feet in one line, 400 feet long, operated with one gear.

The sash are operated in perfect alignment with a double line of brackets controlled by two tension rods connected with compression couplings with phosphor bronze bearings.

Let us show you the nearest installation and you will use it. Send for catalogue.

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Its simplicity, unusual strength and method of glazing will interest you.

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Are widely used for superior design, material

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Measure the cost of ready roofing by what it will do all the way through.

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costs a little more in the beginning than ordinary roofing because it is made of genuine Trinidad Lake asphalt; but that gives it life to resist sun, air, heat, cold, rain, and fire. You are sure Genasco will last—you know what it's made of; and you know it is cheapest in the end.

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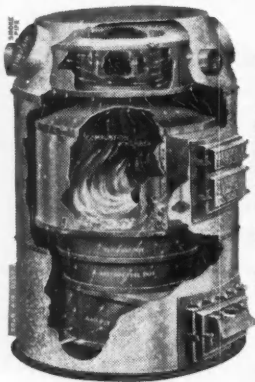


Largest producers of asphalt and largest manufacturers of ready roofing in the world.

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They Actually Save from One-third to
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We ship our furnaces cut to fit. Any handy man can install them without the aid of a tinner.

Catalogue and full specifications free.

Bovee Grinder & Furnace Works
50, 8th Street Waterloo, Ia.



been set on the floor and connected to the band-saw shaft by means of gearing. Later the motor has been set on the floor, or on an extended part of the frame and the motor shaft coupled to the band saw shaft.

The Roth way, as exemplified by wood-working machinery of Roth Bros. & Co., Chicago, Ill., is the latest type of modern up-to-date direct-drive.

The motor is of a special design, having a supporting ring at one end which is bolted against the band-saw frame. A special long bearing is used at the band wheel end, which extends through the band-saw frame, and the band wheel fits on the motor shaft close up to this bearing.

This motor runs at a slow speed so as to adapt it to directly driving the band-saw wheel. There are only two bearings, no pulley nor belts; consequently the maximum efficiency of operation is obtained. The bearing which supports the shaft at the band wheel end is very long, and the shaft is of large diameter. Brass rings revolve with the shaft and dip into an oil chamber and carry the oil up into the oil grooves, thus insuring constant and good lubrication.

The motor is fully enclosed and protected against dust and mechanical injury. The general construction and materials entering into the manufacture of these Roth band-saw motors is up to the usual high standard of Roth apparatus. Steady power is obtained by this construction because there are no belts to slip, and this, with the elimination of vibration insures better work.

The floor space occupied is reduced to the minimum, and as the motor is up, out of the dirt, it will have a long life. Cleaning and sweeping around the machine is easy, and all parts of the machine are easily accessible. Being a self-contained and complete machine it can be set in any part of the shop, independent of line shaft, belts, etc., and having in view only the best location for efficient operation.

The neat and clean cut appearance of this outfit must appeal strongly to the buyer who desires the most efficient, up-to-date apparatus.

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Zimmerman's all-steel shutter fastener and casement window adjuster, one of the greatest improvements ever made in shutter fasteners and casement window devices, is the only bowing and locking device for either shutters or casement windows which is universally indorsed by the leading architects and builders. It holds the blind open and bows at any

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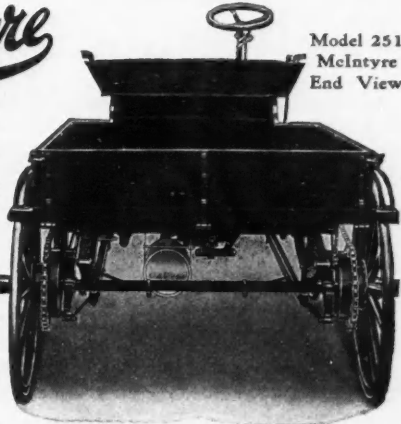


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McIntyre
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☐ If added expense could improve this high-grade car, we should not have hesitated to ask a higher price.

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Give Your Shoulders FREE PLAY

Don't make them sore and tired by wearing the old-style rigid-back suspenders, which tug, strain, and chafe with every move you make. Get a pair of

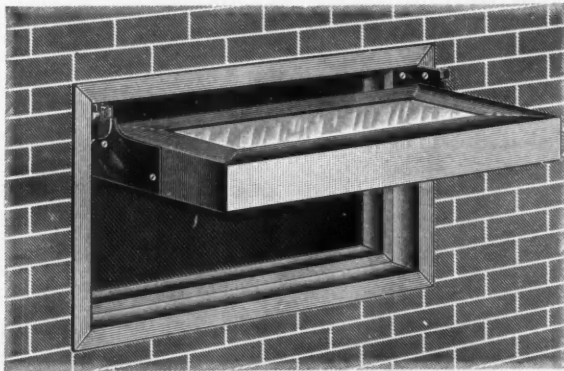


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and learn what **real** suspender comfort is. The sliding cord in the back of President Suspenders (which is not found in any other suspender) permits them to "give and take" with every motion of the body. They rest lightly upon your shoulders and allow you perfect freedom of movement. The Extra Heavy Weight, made especially for workers, outlasts several pairs of ordinary suspenders. Light and medium weight for dress wear. Extra lengths for tall men. Every pair sold with the maker's guarantee—satisfaction, new pair or money back. If your store-keeper cannot supply you, we will, postpaid, upon receipt of price, 50c. Get a pair today.

THE C. A. EDGARTON MFG. CO.

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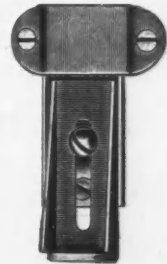
Diehl's No. 22 Basement Window Hinge.

DIEHL'S No. 22 BASEMENT WINDOW HINGE

The only bracket hinge made. It acts as a hinge and at the same time is a ceiling hook. They are self supporting. It is only necessary to use the hinge and you have both appliances. They save time and labor. Try them.

DIEHL'S No. 19 BASEMENT WINDOW FASTENER

It acts as a wedge and forces the window firmly against the stops. Trying to open the window from the outside will have a tendency to lock it more firmly. Therefore it is an excellent safe-guard against marauders and the like.



Diehl's No. 19 Basement Window Fastener

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These clothes or fence posts are made of tube steel, filled with concrete, and are therefore

Indestructible

Are easily removed, leaving lawn free for mower or other purposes.

Catalogue on Application

Milwaukee Steel Post Co.
Milwaukee, Wis.

Granite
TRADE MARK
ROOFING
Penn. R. R. Station
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Good Material and Plenty of It

Many ready roofings are made of flimsy, light-weight paper, scantily coated, which last only a year or two.

Granite Roofing does not belong in that class. Good materials and plenty of them are used in making it. There is nothing flimsy or fragile about Granite Roofing. It has a heavy sea-grit surface, which takes the place of the usual coat of paint, and wears indefinitely. Other roofings require coating with some special compound every year or two, but Granite Roofing never requires any coating. After the roof is laid, it will take care of itself.

A Free Sample will be sent "for the asking." You will be astonished to see how heavy, firm and durable a ready roofing can be made.

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SOLID TAPERED
Asphalt Shingles



These shingles have the appearance of slate and being made of asphalt are practically indestructible.

COOL, GRAY, SLATE COLOR

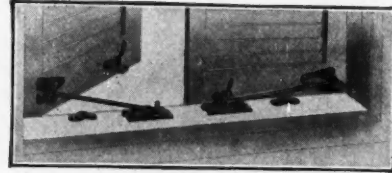
Special inducements offered for applying first roof of these shingles in each town.

Winthrop Asphalt Shingle Co.
1101½ The Temple CHICAGO, ILL.

angle. Can be locked from without as well as from within. Can be attached to any blind or hinged sash that opens outward. Is a perfect handle to the blind. Saves the glass from being broken during stormy weather. Does not in any way interfere with the installation of fly screens.

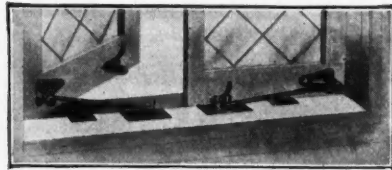
A few of the many special advantages in the all-steel adjuster are as follows:

Every part interchangeable, no rights or lefts for the hardware dealer to even up or to confuse the carpenter. Neat, dependable, inde-



structible. The lock end of the rod is smooth for the hand to grasp, is double pear-shaped and cannot jump from the sill plates. Double lock—

will lock the shutter securely when slightly ajar and also when entirely closed. Thus a shutter that becomes sagged or warped, or covered with ice and does not close entirely, can be locked securely in its partly opened position without any re-adjustment of the parts.



The lock bracket has a special shelf to carry the end of the brace rod and insures it locking. The sill plates cannot be put on backwards. The brace rods are interchangeable for either right or left and there can be no confusion of parts. In casement sash fasteners the sill pieces are countersunk and the window sill is entirely free from obstruction.

The illustrations show how this adjuster and fastener looks when applied to shutters and to casement windows. Write for full information and prices, Harry Zimmerman & Co., Fremont, Ohio.

Auto vs. "Bike"

The automobile is a great invention and an excellent mode of conveyance. But for real health value it does not compare with the once-popular bicycle. Many men and women found both pleasure and health in country tours on their wheels. And while some had the "scorching" fever and rode in a fashion that was dangerous to themselves and to others, they were few compared with the many thousands who gained physical health and vigor through the proper use of the bicycle.

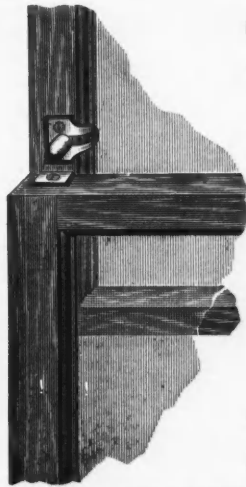
Walking clubs are fine for both health and recreation; but it would be an excellent thing for the people if "cycling" should again become as popular as it was a decade or more ago.

For a very few dollars you can buy a wheel of the latest type from the Mead Cycle Company, Chicago.

Get their new catalog of bicycles and supplies. If you wish they will send you a wheel for ten days' free trial.

An Employer's Liability

When a man is working for a contractor and is injured, one of the first questions to be determined is whether the liability is that of the contractor or whether the accident happened owing to circumstances for which the contractor is not liable. In one case it means a possible suit for damages, which the contractor must stand the brunt of. In the second case it means that the employe must personally stand his own losses. In either case there is loss to the man injured, but not only must he stand the pain and suffering, but he loses his wages besides and is under additional expense for medical or surgical attendance and the other expenses that disability from accidents or illnesses usually bring along. Employers' liability insurance protects the employer against



Ventilation Without Risk

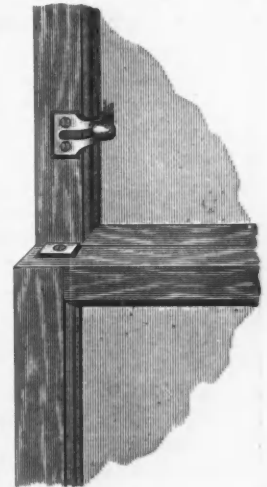
IVES PATENT VENTILATING LOCK

A safeguard for ventilating rooms, allowing windows to be left open at the top, the bottom, or both top and bottom with entire security against intrusion, a permanent fixture easily applied and quickly operated, affording three times more protection to the window than the ordinary sash fastener.

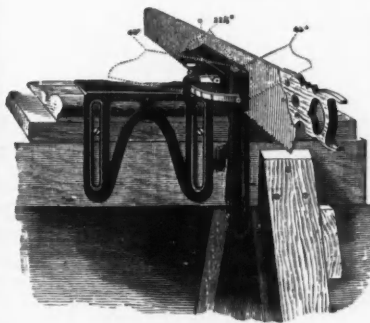
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his employes during working hours, his liability is one that is difficult to determine, and usually is determined only by a suit at law, but if the plan proposed by President Roosevelt in one of his messages is generally adopted, all accidents happening to the working man while he is working, become a direct charge against the employer. This view is now taken by some of the states in the union and is very liable to be adopted by more states on the general theory that

the damages which he would have to pay if he were uninsured, but the employer's liability policy does not cover the workman who is unfortunate enough to get injured and under circumstances for which the employer is not liable. His only protection lies in accident insurance. The Accident insurance companies throughout the land have determined after a long experience in insuring persons in the building trades that carpenters and builders have certain definite fixed chances to accidental injury and accidental death. Persons constructing steel buildings have much greater chances to injury and accordingly are charged greater rates by the casualty companies. To insure a carpenter who is earning \$3.00 a day, for an amount which would give his widow a year's wages in case of his accidental death, or would give the carpenter himself half-wages if accidentally injured, would cost about \$30.00 a year.

So long as the present employers' liability laws of most of the United States are so worded that the employer is only responsible for some of the accidents that may happen to every business should stand its own cost, even in life and disablement of its employes as well as in the cost of materials. When a machine is disabled the cost of repairing it and the loss of time due to its lying idle falls upon the contractor. It is not fair that the loss of a workman's time due to accident should also fall on the contractor? Some legislatures think it should, others think differently, but the general opinion is that among other costs of production of any manufactured product, the cost of disability or death of workmen should be included.

Should this view become general, accident insurance for the employe and paid for by the employer, will become a necessity, for no employer could afford to take the uncertain chances of having to pay heavy sums of money for disabled workmen owing to some accident which might kill, maim or injure a number of them.

The principal company at the present time insuring working men against accident and illness is the United States Health and Accident Insurance Company of Saginaw, Michigan. This company issues policies whereby workmen are insured as individuals, paying for their own insurance, or are insured in groups where the workman pays part of the insurance and the employer pays a part. In many states of the union it has been decided legally that where an employer pays part of the cost of accident insurance of his men, they paying the other part, and they accept benefits of such insurance, it relieves him from any damage suit that may subsequently be brought on account of the same accident for which the workman has been indemnified. Many employers take advantage of this law and contribute to working men's policies and urge their men to take such insurance, for in cases where there is no liability on the part of the employer, the working men are benefited just the same and are in receipt of a comfortable income while disabled or while ill from any disease whatever. The illness feature is an added feature, but it completes the insurance. It thus provides a definite income for the sick and disabled when all other sources of income have ceased and when the need for an income is greatest. It takes the place of wages and is continued as long as the disability continues, within the bounds of a reasonable limit.

The subject is an interesting one to those who have the interests of their disabled working men at heart, and is well worth looking into.

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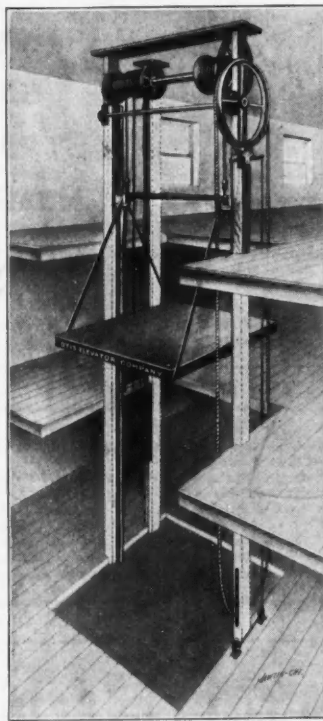
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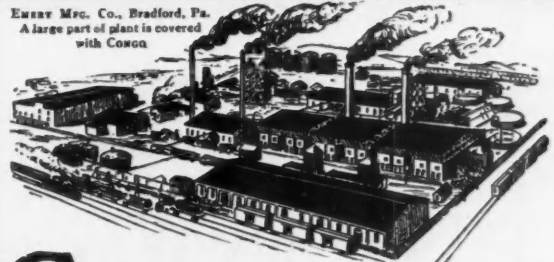
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The Bar With a Record

Write us and let us send you the names of the prominent firms that have adopted the Petz system of store front construction; also the names of prominent architects and builders who endorse and use the Petz bar for this class of work.

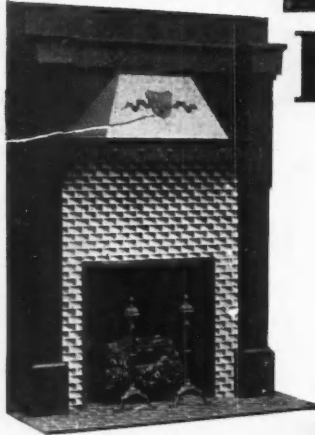
The Petz bar has gained the lead for its safety, its strength, its ease of installation, and because it insures the most artistic results. Plate glass is safe when set in Petz bars; leading insurance companies recognize this fact.

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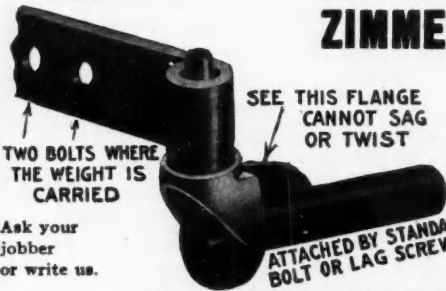
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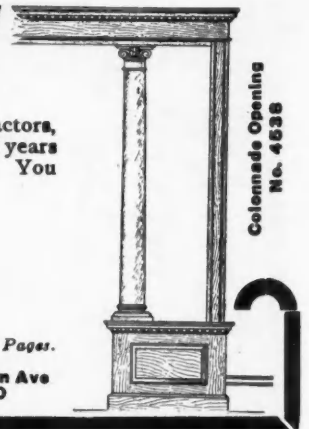
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Colonnade Opening No. 463B

Berger Mfg. Co. Increases Capital

The stockholders of the Berger Manufacturing Company, Canton, Ohio, voted unanimously at a special meeting, June 19, 1909, to increase the capital stock from \$2,000,000 to \$5,000,000. The purpose of this increase is to provide for additions, extensions and improvements to keep pace with the growing demand for their various products. A larger output will be secured and the volume of business greatly increased. One of the first improvements will be the erection and enlargement of warehouse and shipping facilities, so that all orders may be promptly executed and a much more complete stock carried at all times.

Valuable Graphite Products

What might be called a pocket edition general catalogue has just been gotten out by the Joseph Dixon Crucible Company, of Jersey City, N. J. This lists their principal products, such as crucibles, facings, lubricating graphite, greases, pencils, protective paint, etc., giving brief descriptions and prices.

It is of value to the purchasing agent, engineer, contractor, superintendent, and anyone, in fact, who uses or specifies graphite in any form.

The booklet is of commercial envelope size, and will conveniently go in the pocket or desk pigeonhole. It is substantially bound in tough cover stock, and attractively printed.

If you want a copy address the Dixon Company at their home office and mention this publication.

Red-Blooded Exercise

America is becoming too prone to sit back in contented admiration and watch the trained few engage in games of strength and skill.

Exercise should be by the people and not for the people.

As a means of exercise nothing embraces so much of pleasure and exhilaration as cycling. Every muscle, every nerve, every faculty is spurred to healthful activity.

And best of all, this exercise is in the open, where each deep breath of air fills the lungs with the sweetest and purest of all health tonics—oxygen.

Bicycles have been wonderfully improved even within the past five years. It is surprising what a fine wheel a few dollars will now buy.

We never realized this so fully as we do after looking through the latest catalog of the Mead Cycle Company of Chicago.

If you are interested in bicycles or if you feel the need of this sort of red-blooded exercise, write this company for a copy of their catalogue. They will gladly send it and a wheel, too, for ten days' free trial of your wish.

Free Roofing Sample

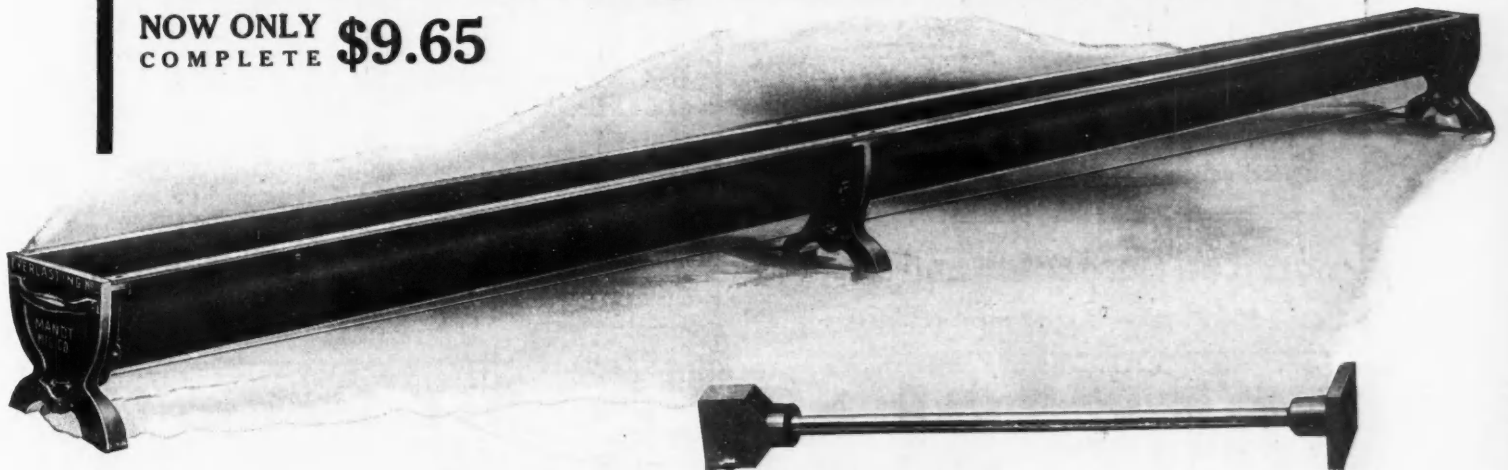
Since the appearance on the market of ready roofings that need no painting, there has been a very lively curiosity on the part of many people to see the goods. Accordingly the makers of Amatite, the best known of this class of roofings, have arranged to supply samples to any inquirer free of charge.

These samples show the goods complete with the mineral surface which replaces paint as a protection against the weather, and it is easy to obtain a very good idea of just what Amatite is like.

All you have to do in order to obtain the sample is to send a postal card request for same to the nearest office of Barrett Manufacturing Company, at New York, Chicago, Philadelphia, Boston, Cincinnati, Cleveland, Pittsburg, Minneapolis, St. Louis, Kansas City or New Orleans.

Mandt's "Everlasting Cement Post" Machine

NOW ONLY \$9.65
COMPLETE



Big Money in Making Posts

If you now make less than \$8.00 to \$10.00 a day, begin post making.

Farmers and others pay 20c to 25c for wood posts that won't last; you can sell the tremendously strong, durable "Everlasting" post for much less at a good profit. The "Everlasting" is the best-known and most popular in the country. Investigate this proposition today.

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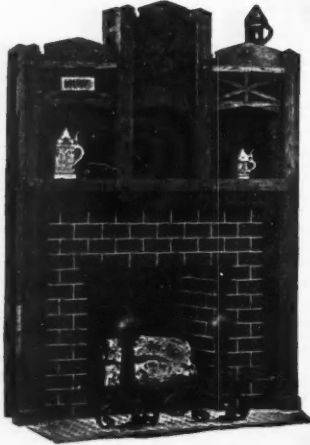
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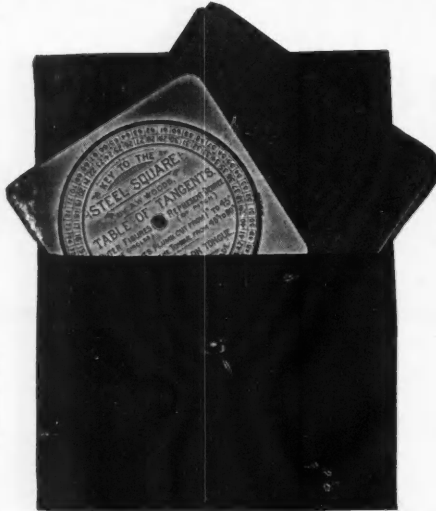
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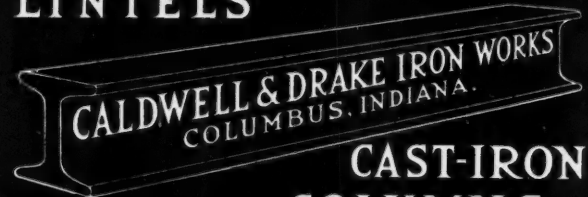
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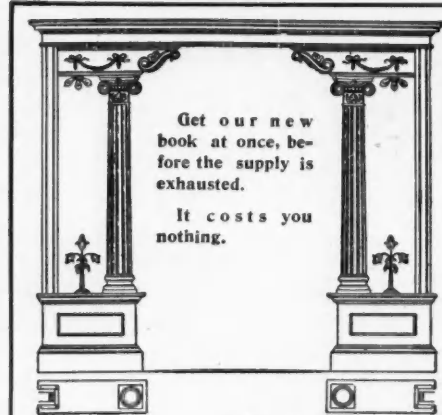
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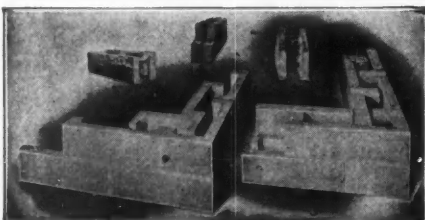
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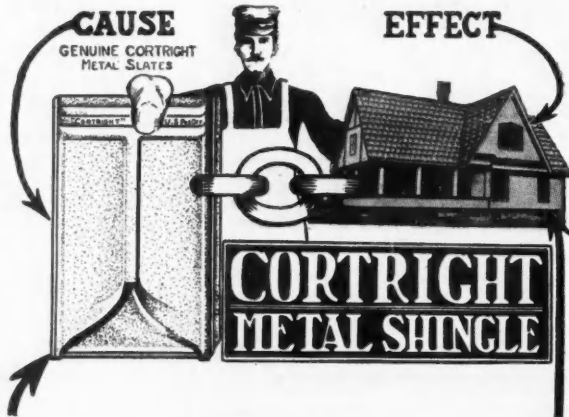


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This is a fact, and here are some of the advantages they offer:

They last as long as the building and never need repairs. They're only one-eighth the weight of slate.

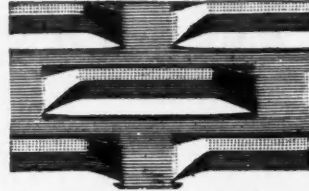
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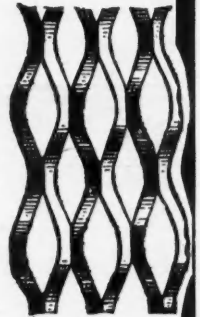
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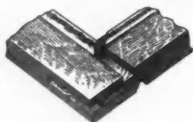
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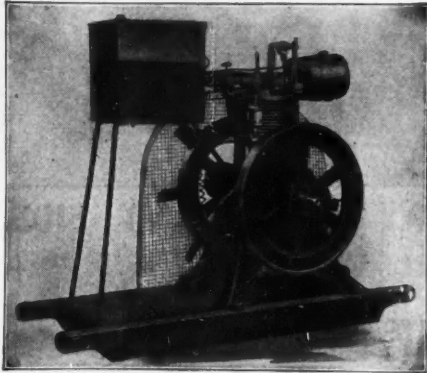
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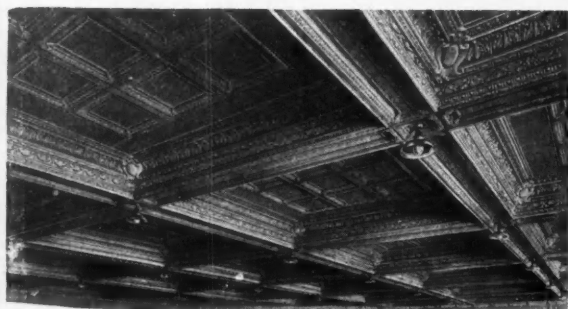
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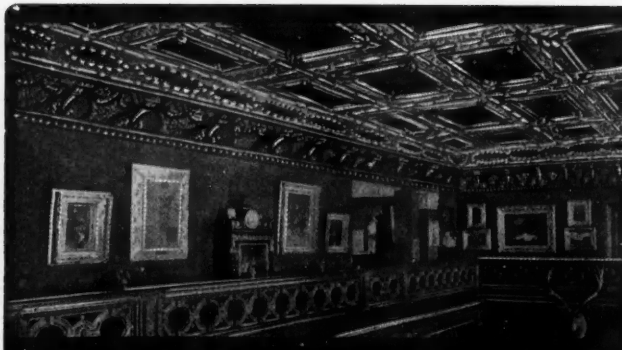
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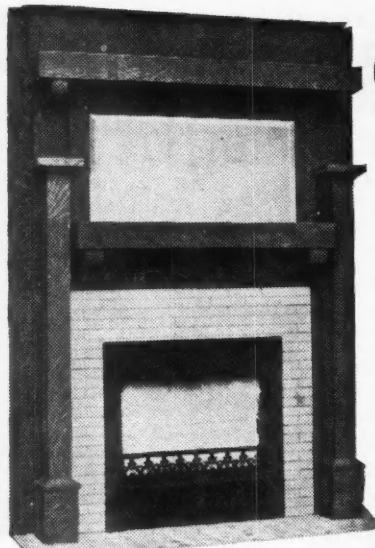
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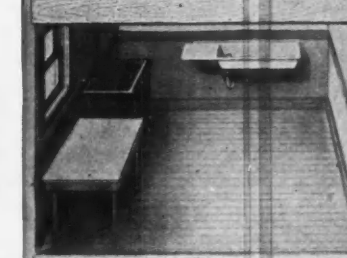
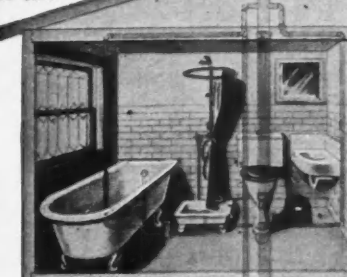
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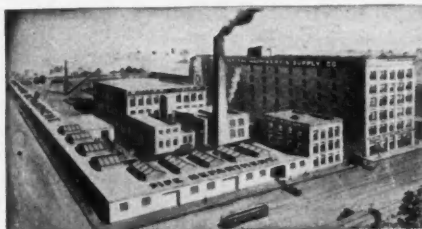
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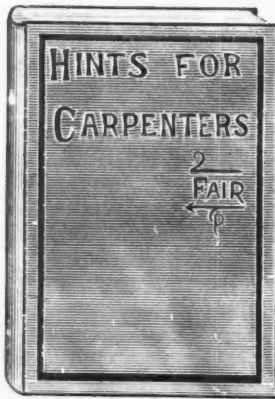
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These contracts may be paid for in easy installments from \$1.50 to \$5.00 a month. Further information will be supplied by addressing the undersigned Company, giving name, address, age and occupation. If in the building trades, state the nature of work, whether supervising only or working, and full information will be sent to you.

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Handiest, Strongest and Most Practical Bar on the Market. Long Life—nothing to rot out. Glass Bedded on Spanish Cork, preventing cracking or crushing of glass. No putty, yet **ABSOLUTELY WATER AND DUST PROOF.** Simply incomparable with old fashioned styles. They add immensely to the Beauty, Utility and Rental Value of Buildings.

ARE LOW IN COST. Architects, Contractors and Owners are invited to write me for descriptive literature, prices or estimates. Also Shultz Patent Burglar Proof Coal Chutes. All Steel Cork Bedded and Ventilated Bottom Bar



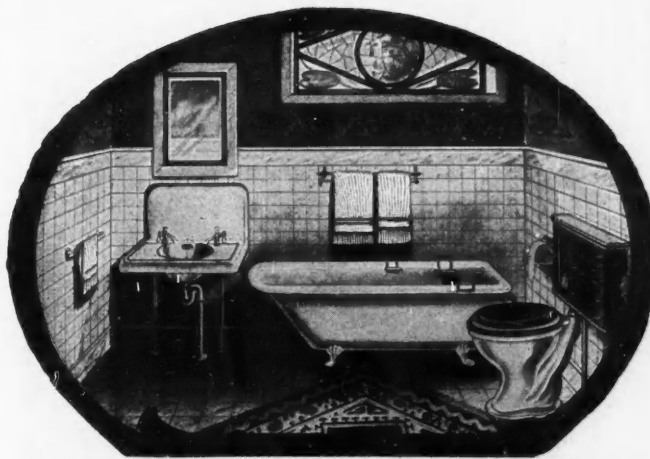
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Clean—Sanitary—Odorless—Newest Designs—Best Appliances—Finest Nickel Trimmings

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THE BATH TUB is spotless white porcelain enameled, with heavy roll rim and of very graceful shape.

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THE ACCESSORIES include bath seat, nickel plated soap cup, two towel bars and toilet paper holder.

NO JOINTS TO WIPE, all threaded pipe connections.

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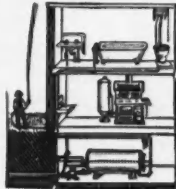
We furnish a written binding guarantee with every outfit that we sell. If any material is not fully up to our representation or your expectation we will exchange at our freight expense or refund your money.



OUR BOOK ON PLUMBING MATERIAL contains charts, drawings and diagrams; shows how any ordinary mechanic can install plumbing fixtures without wiping joints, also tells how to secure perfect sanitation. We send it free if you mention where you have seen this advertisement.



\$48.00 Buys a Modern Air Pressure Water Supply System



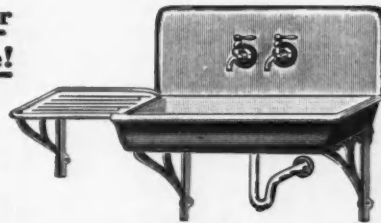
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Names of these customers furnished upon request.

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Chicago House Wrecking Co., Chicago, Ill. Dear Sir:—Please send me one of your catalogs. I have one of your Hot Water Heating plants installed in my house since 1906 and it gives fine satisfaction. I am more than pleased with it all the way through. Yours very truly,

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Get our estimate on a plant for your home.



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Standard Store Front Construction of the World

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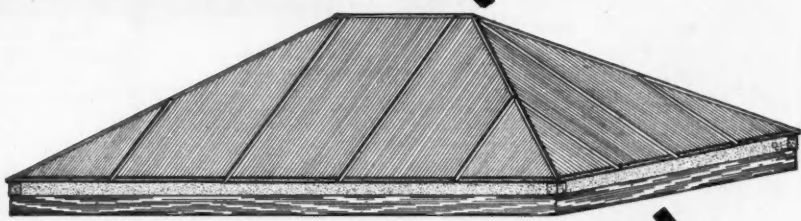
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They won't leak. Are easily installed by anyone with screw-driver and hammer.

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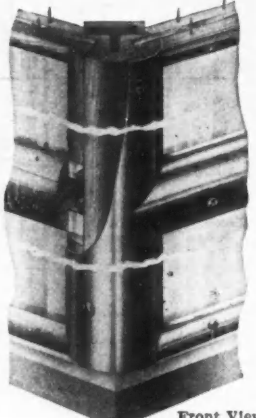


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Ask for "MORE LIGHT" on the subject

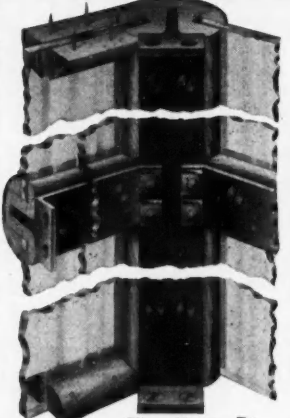
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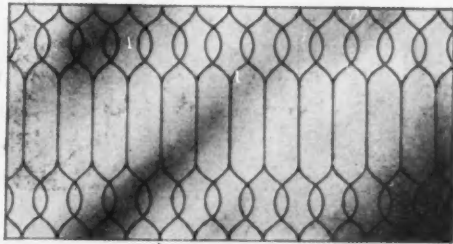
Yours very truly,
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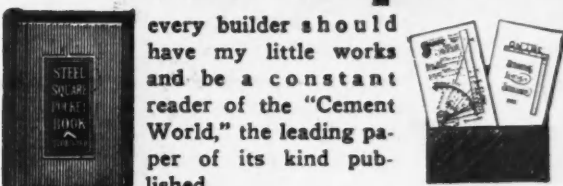


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The Sensation of ALL the Shows

THIS machine is a marvel of simplicity and durability. It has been brought to the highest standard of labor-saving and profit-sharing efficiency, and stands alone in a class by itself.

No other machine of like character has ever been invented, so far as we know, that can produce one-quarter the number of brick in the same time as the Peerless.

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The wall that's
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A perfect dead air space from cellar to garret.
Standard Machine makes blocks 8x24 in.—any width from 8 to 12 in.

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All blocks tied together in construction by four quarter-inch galvanized iron rods 8 in. long and turned 1 in. at each end, guaranteed rust proof and everlasting.

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Made from OPEN
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SAVES cutting and weaken-
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All styles and sizes for brick
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Wet Process is Right.
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Three blocks at a time is Right.
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The Mogul Invincible Block Machine
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IT IS RIGHT

It is 48 inches long and will make three 16" or two 24" blocks at one operation. It makes sills, caps, copings, rails and steps, faster and better than a special sill machine. It has every adjustment that any other machine has and many that no other machine has.

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The U. S. Standard Continuous Concrete Mixer

ACCURATE AUTOMATIC

CONVENIENT CONTINUOUS

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Manufactured by

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BLOCK MACHINES

ARE THE FASTEST, SIMPLEST, STRONGEST AND

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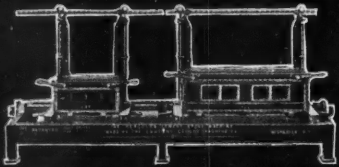
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THE ONLY machine making any size of stone from a 3 inch block to a 6 foot water table.

THE ONLY face down machine that allows for a really coarse WET mixture with fine facing.

THE ONLY machine on which four 16 inch stone can be made at ONE time, or two 20 inch, 24 inch or 32 inch stone at one time.



THE HERCULES IS AN OLD ESTABLISHED MACHINE

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They make the kind of blocks that sell.

Strong, Durable, Everlasting Blocks.

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The kind the trade demands.

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Complete Outfit, \$34.50



Includes two full sets of face plates and other attachments.

Sold on Trial Guaranteed

If found otherwise than represented costs you nothing.

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We shall be glad to tell you more about this machine that's interesting if you write to

The Singer Block Machine Co. Cortland Building, JACKSON, MICH.



Miracle One-Man Brick Machine

Price \$100

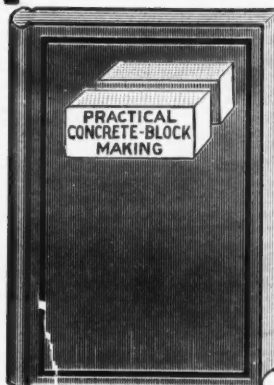
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Ask for our Catalogue "K" covering full line of Concrete Tools, Machinery, Pipe Molds, Culvert Forms, Concrete Mixers (batch and continuous), and all kinds of equipment for Cement workers everywhere.

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Largest Mfrs. of Concrete Machinery in the World.

PRACTICAL Concrete Block Making



A Simple Instruction Book for the Use of the Practical Workman

By CHARLES PALLISER

75 Pages, (5x7 inches)

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It is concrete; strong and warm. It is fire-proof. It is absolutely damp-proof. It costs less than a frame house of the same size and design.

The Jackson System is not a "stucco" method. It uses a solid, durable, poured concrete wall. A dead-air space makes it damp-proof. With it no lumber is wasted for forms.

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"The Miles" Improved Block Machines

Make the Best Block Face down, Adjustable, Rigid, no Springs or Cogs to bother. Wet mix used. Prices right. Ask about our Metal Lined Universal Adjustable Sill, Cap and Step Mold.

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The Uniform High Quality

The regular setting properties and good popular color of



Universal Portland Cement

Recommend it to the building contractor for concrete work of all kinds.

Annual Output
 Six Million Barrels

30 Tons' Pressure

GUARANTEES

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THE SOMERS

uses the "wettest" mix of any block machine on the market.

The Somers Makes Money

We can prove it | You can guarantee it

OUR CATALOG IS FREE

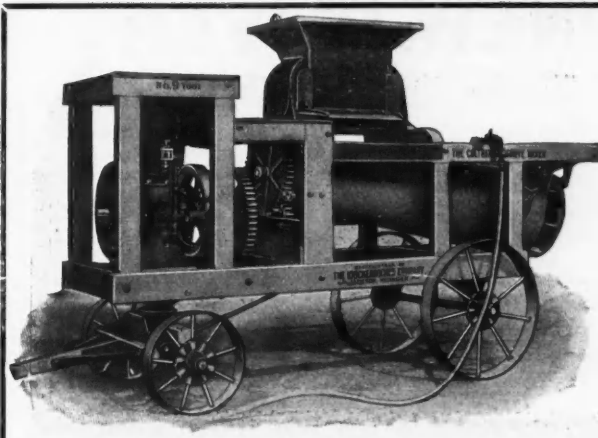
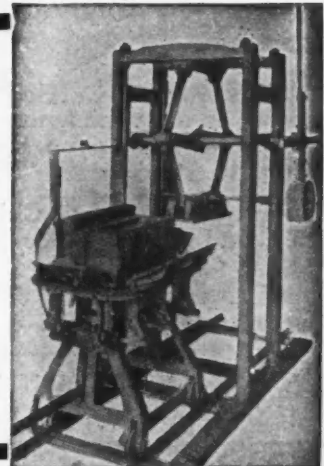
SOMERS BROS., Urbana, Ill.

2 Blocks Per Minute

FASTEST MACHINE MANUFACTURED

The machine does the work, not the man

It makes an absolutely damp-proof wall



"She Is A Dandy"

Shoshoni, Wyo., June 1, '09

Cement Machinery Co.
 Denver, Colorado.

Gentlemen:—Excuse me for being so slow about writing you in regard to the No. 10 Coltrin Mixer, but will say she is a dandy. We have been running it every day since the 15th of April and not a break of any kind so far and no trouble with the engine.

Yours respectfully,
CROSS & HARRISON
 By A. E. Harrison

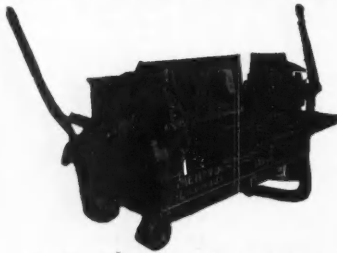
COLTRIN CONCRETE MIXERS
 Shipped on trial to any part of the
UNITED STATES

THE KNICKERBOCKER CO.
 JACKSON, MICHIGAN

All blocks made face down; automatic in action, great strength; easy to operate; very rapid; large range; simple in construction.

HAYDEN CONCRETE BLOCK MACHINES AND MIXERS

Molds, Power Tampers, Cars, etc.



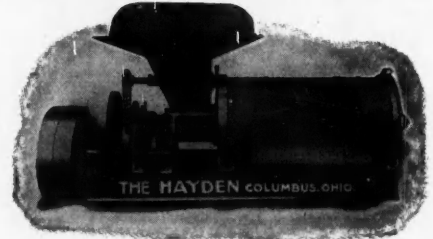
The Hayden Down Face Machine
Three sizes—24-inch, 32-inch and 16-inch.



Porch Column Molds, Spindles, Balls, Lawn Vases, etc. Best Quality, Latest Designs.

Send for Special Mold Catalog Before Buying.

The Hayden Concrete Mixer
mixes sand, gravel or crushed stone—any proportion. Maximum capacity 70 yards per day. Water arrangement perfect. Uniformity and thoroughness absolute.



View of mixer on steel skids showing clean-out door open.

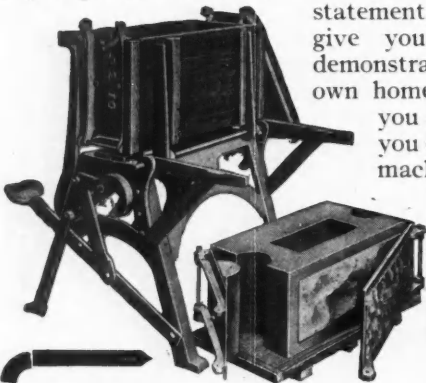
NEW YORK AND FOREIGN REPRESENTATIVE
H. W. REMINGTON
19 SOUTH STREET, NEW YORK, N. Y.

The Hayden Automatic Block Machine Co.

112 West Broad St., Columbus, Ohio
Send for Our General Catalog "M" Today

We'll prove before you buy

that this machine will make better blocks—make them with less cement—and more sizes than higher priced machines. We know this is a strong statement, but we will give you an actual demonstration in your own home town, before you accept it—and you can operate the machine yourself.



Price
\$40.00

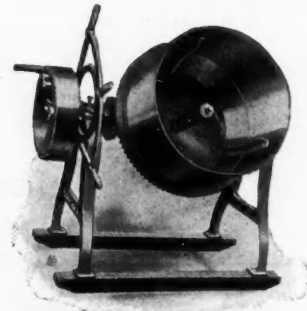
Send for our Catalog. It gives practical common-sense reasons for our claims. If they look reasonable to you, send for a machine on fifteen days' free trial.

Twenty-One Sizes of Chimney and Porch Molds for \$25.00
Made of the best steel castings. Many designs and patterns to select from. Send for information and illustrations of the different designs.

W. E. DUNN & CO.
337 Grand Avenue : : Chicago, Ill.

"Standard" Concrete Machinery

"Machines of Quality"

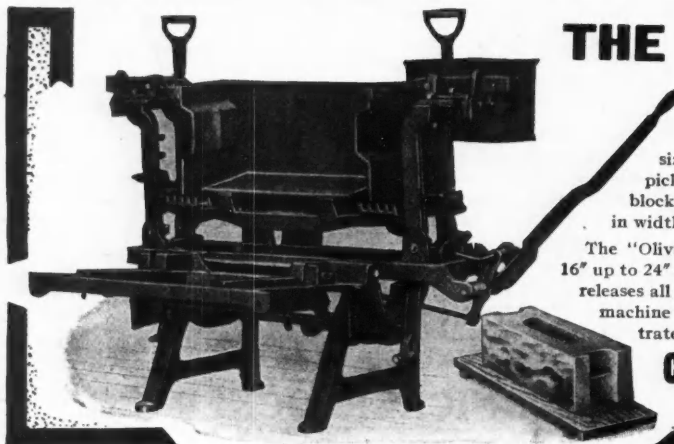


Handles wet or dry mix; requires little power to operate; mixes both perfectly in one minute; self-cleaning; easily charged and dumped; 3 sizes.

Send for catalogue giving complete line of Mixers and Brick Machines.

South Bend Machine Mfg. Co.

General Sales Offices
40 Dearborn Street Chicago, Ill.



THE "NEW OLIVER" AUTOMATIC BLOCK MACHINE

With the "Oliver" all changes for making all the different sizes of blocks are made without the use of a wrench. Simply pick out one set of plates and place in another. The "Oliver" makes blocks running every inch from 2" to 24" in length, and from 4" to 12" in width; also 4", 6", and 8" height blocks.

The "Oliver" makes porch piers blocks (both hollow or solid), from 16" up to 24" square, faced on all four sides. One movement of the lever releases all plates from block, the reversing of the lever closes and locks the machine strong and rigid. Study its principles! Write for free illustrated catalogue, full particulars etc. It will amply pay you.

Concrete Stone Mould & Machine Co.
CLARK'S LAKE, MICH.

Walter's Metal Shingles



WALTER'S

Shingles That Last. Never Leak. Never Need Repairs. Made in Painted Tin, Galvanized Tin and Copper.

**Won't Rot Like Wood
Won't Crack Like Slate**

1883 1909

It is a superlative article that increases in demand after 26 years in use.



The only absolutely protected or covered Lock. No chance here for the lock to flood and leak.

NATIONAL SHEET METAL ROOFING CO.
JERSEY CITY, N. J.

"The Trough With the Lid"

Cassens Ideal Eaves Trough Takes Water Only

If you want a clean trough and clean cistern water use the **IDEAL**


This trough completely overcomes the disadvantages of the old style open gutter. It catches and carries away all water that falls on your roof. It insures clean, healthful cistern water. Leaves, trash, gravel, etc., cannot enter it. Neither can birds build nests in it. Therefore it is never clogged.

Write for free booklet.

CASSENS MFG. COMPANY
EDWARDSVILLE, ILLINOIS



CASSENS IDEAL EAVES TROUGH
PAT. NOV. 13, 06 OTHER PATENTS PENDING



You Are Interested In Perfect Blocks—

Blocks which can't be beat in *appearance*—Blocks which will *stand the test*—Blocks which are *accurate* as to *shape* and *size*. You are interested in being able to make such Blocks at the *Maximum Speed* and at the *Minimum Cost*. Let us show you the way.

Ask for Booklet.

DAYTON CONCRETE MACHINE Co.
Successor to
Detrick Concrete Machine Co.
118 W. McPherson St.
DAYTON OHIO

WE WANT YOU
to know the

BOOS ADJUSTABLE MACHINE

makes blocks 6", 8" and 10" wide, 16" and 20" long, and 8" high.

5 Days' Free Trial

Prove the "Boos" in actual service. Use it—prove it for 5 days. Then, if you are satisfied, buy it.

Get Catalogue B.

Coltrin-Boos Mfg. Co.
Jackson, Mich.



LOOK! LISTEN!

Mr. Contractor:

This is the new improved combination concrete block machine. Makes blocks face down, wet and medium process. Three distinct machines in one combination. Lever and lift core with wood or iron pallets. Equipped with beautiful Rock Face and Ornamental Plates. Large equipment at **LOW PRICE**. Write for our Special Price and do it now.

Detrick Concrete Stone Co.
866 North Main Street
DAYTON, OHIO. U. S. A.



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NOTICE TO ADVERTISERS

New copy, changes and corrections for advertisements must reach office of American Carpenter and Builder, 185 Jackson Boulevard, Chicago, not later than July 20 in order to insure insertion in August number.

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Contractors Say

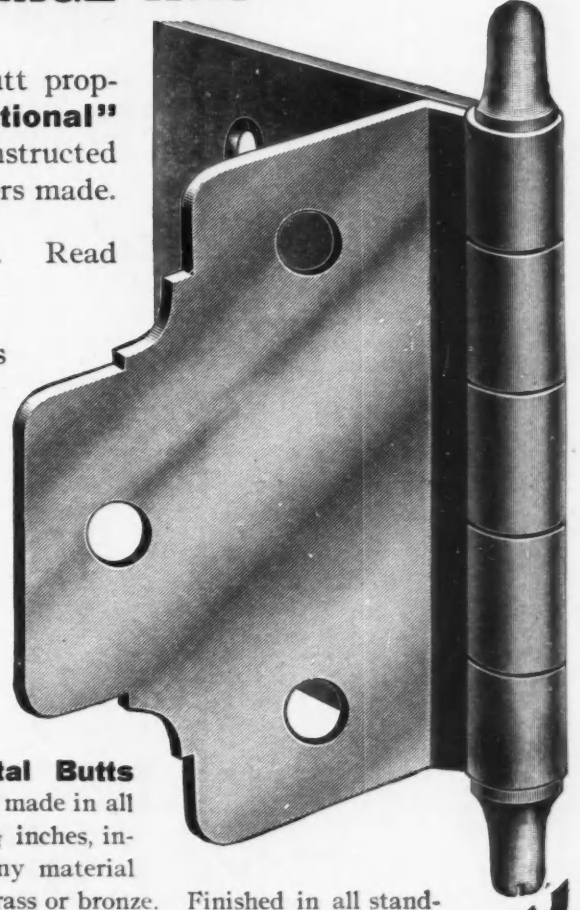
THE "NATIONAL" WAY

"IS THE ONLY HINGE WAY"

When talking about the hinge and butt proposition. There are reasons for it. **"National" Butts and Hinges** are designed and constructed on lines that mean superiority over any others made.

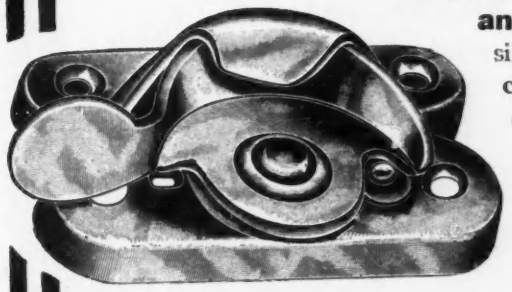
Not hearsay, but facts—proven facts. Read about the advantages they possess.

They are labor-saving;—contractors say they save one-half the time required to hang the doors. Extreme rigidity;—the false tip has slot for screw driver, making it easy to remove pin. Great durability;—screws in the ornamental leaf of our butts are subjected to a shearing strain—an obvious advantage.



Artistic Designs

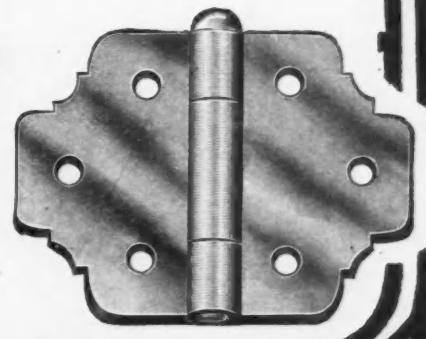
"National" Ornamental Butts and Hinges are made in all sizes from 1½ to 4½ inches, inclusive, and in any material desired—steel, brass or bronze. Finished in all standard finishes. Exclusive artistic designs that look well on any door.



Standard of Perfection

The radical innovation that **"National" Ornamental Butts and Hinges** have proved to be, their real practicability and the simple principle on which they are made, have caused them to be regarded as the standard of perfection in butt construction. Wide-awake contractors and builders are everywhere adopting them, and the thousands already in use stand as examples of genuine satisfaction.

Send for booklet **"Ornamental Designs."** It gives carpenters and contractors a few pointers about good butts. You might mention your dealer's name when writing.



NATIONAL MFG. CO. STERLING ILLINOIS

JUL 16 1909

Oak Flooring Again Reduced!

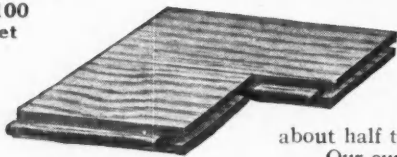
NOW 48 Cents!

Our Enormous Purchases of Material in the Height of the Recent Panic
Make it Possible for us to Still Further Reduce Our
Prices on Flooring and Millwork.

A Sample of the Big Reductions All Along the Line!

Price per 100
Lineal Feet

48c



Seasoned, Polished, Matched Wrapped, and
Ready to Lay, Random Lengths.

We went into the market when mill owners everywhere were pressed for ready money during the recent panic and bought choice hardwood lumber in million-foot lots—for CASH—at the lowest figure we have known in years.

We were fortunate in securing a big quantity of flooring lumber. Our new, clean stock of Oak Flooring is now ready for delivery at about half the last year's price.

Our customers get the full benefit of the extraordinarily low prices at which we bought the lumber.

We make our small profit on the manufacturing. The cut price on the Oak Flooring is a sample of the enormous reductions on our full line of millwork.

Tremendous Stock of Hardwood Flooring!

Our 48-cent Oak Flooring is a new departure in Hardwood Floors that is becoming widely popular. It is a special thin flooring, $\frac{3}{8}$ x $1\frac{1}{2}$, to be laid over old floors or cheap pine boards. It is matchless for beauty of grain and finish. Makes a superb floor—durable and economical. Cheaper and better than a good carpet. Can be put down over old pine floors without changing base boards. Saves all the labor and expense of tearing out old floors. For new homes it is especially good. Made from selected White Oak that has been air-seasoned and scientifically dried.

Write for further particulars or order direct from this advertisement under our Guarantee of Quality. Satisfaction and Safe Delivery.

Finest Oak Interior Finish in America at 50% Saving in Cost.

Our heavy purchases of Red Oak, at panic prices, puts us in a position to offer big reductions in all styles of Oak Moulding and Interior Finish, Base Boards, Casing, Door and Window Trim, Picture Moulding, Door and Window Stops, Cove Moulding, Quarter Round, Stool and Apron, Plate Rail, Base and Corner Blocks.

Here are a few items showing the reduced prices on highest guaranteed quality of beautiful Plain Red Oak Finish:

Oak Pilaster Casing	Size $1\frac{3}{8}$ x $4\frac{1}{4}$ inches. Price per 100 lineal feet in random lengths, from 8 to 12 feet	\$3.23
Oak Base Boards	Size $1\frac{3}{8}$ x $7\frac{1}{2}$ inches. Price per 100 lineal feet, random lengths, from 8 to 12 feet.	6.11
Oak Base Moulding	Size $1\frac{3}{8}$ x $2\frac{1}{4}$ inches. Price per 100 lineal feet, random lengths, from 8 to 12 feet	1.79
Oak Quarter Round	Size $\frac{7}{8}$ x $\frac{3}{4}$ inches. Price per 100 lineal feet65

OAK BASE BLOCKS. Size $4\frac{1}{2}$ x 11 x $1\frac{3}{4}$, each **7c.** **OAK BASE CORNERS.** Size $1\frac{3}{8}$ x 14 inches, each... **3c.**

All our lumber is air seasoned, scientifically dried and does not warp or crack. The designs are artistic and right up-to-date. We run our mouldings through the machines on slow feed, which insures smoothness and accuracy.

Oak may be finished in a variety of shades, including Natural, Golden, Antique, Mission, Flemish, Green, Brown, Weathered, etc.

At the low prices we offer, you can finish a house in handsome Oak at less than dealers charge for pine.

Grand Free Home Builders' Catalog of 5000 Lumber and Millwork Bargains

Unquestionably the handsomest, most complete and authoritative building material catalog ever issued. Everything in Sash, Doors, Millwork, Lumber, Stair work, Porch Material, Roofing, Moulding, Mantels, Grilles, etc., etc., at 50 per cent below retail dealers' prices. Quality, safe delivery and satisfaction absolutely guaranteed. Sent free on request. Write to-day.

GORDON, VAN TINE CO., 476 Federal St., Davenport, Iowa