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SPECIAL MILLWORK NUMBER.

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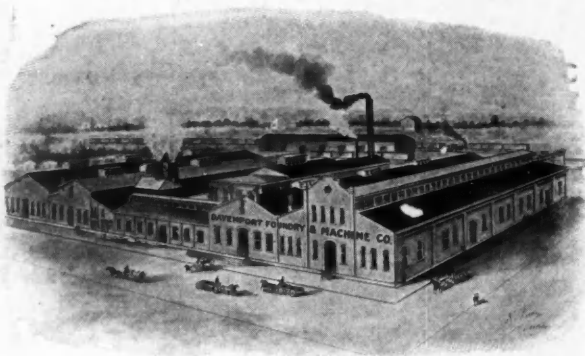
ESTIMATORS, TRAVELING MEN ALWAYS AT YOUR SERVICE

City Sash and Door Company

Minneapolis, Minnesota

Sioux City, Iowa

Minot, North Dakota



**DAVENPORT FOUNDRY
 & MACHINE COMPANY**

DAVENPORT, IOWA

MANUFACTURERS OF BUILDING CAST IRON
 STRUCTURAL AND ORNAMENTAL STEEL

FIRE ESCAPES

STAIRWAYS

ALL SIZES OF

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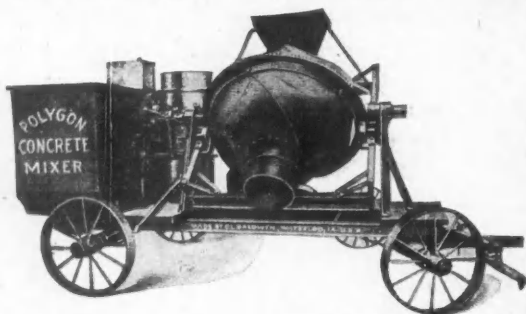
GRILLES

Joist Anchors and Hangers Sash Weights

Write Department D for Estimates

DO YOU WANT TO BE A TOP-NOTCHER?

*Or are you content to play
 second fiddle?*

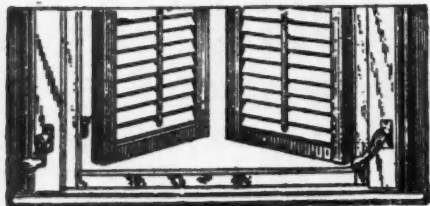


You may figure that you cannot afford a concrete mixer, but if you want to do business profitably and keep up with the procession—in other words if you want to be classed as better than a second rate contractor, you will have to get a mixer. It is not economy to do without one. A Polygon Concrete Mixer, positively the "best mixer on earth," will give you a business standing that you have never enjoyed and will put you on "Easy Street." We make all sizes of both hand and power mixers and guarantee them absolutely. Let us tell you about them.

WATERLOO CEMENT MACHINERY CO., Dept. A, Waterloo, Ia.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

MALLORY'S

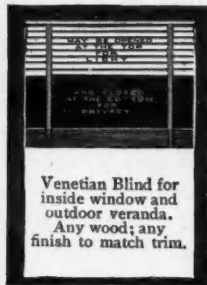


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New and improved patterns and designs.
Opens and closes the blinds without raising the window. Automatically locks the blinds in any position desired. Made of gray and malleable iron. The best and most durable blind hinge. Incomparable for strength, 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 **FLEMINGTON, NEW JERSEY.**

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Venetian and Sliding **BLINDS** Screens and Screen Doors



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

Satisfied customers and years of actual use have proven the merit of our goods. For your own best interests, and your customers, send for our catalogue-booklet, price list and proposition to you.

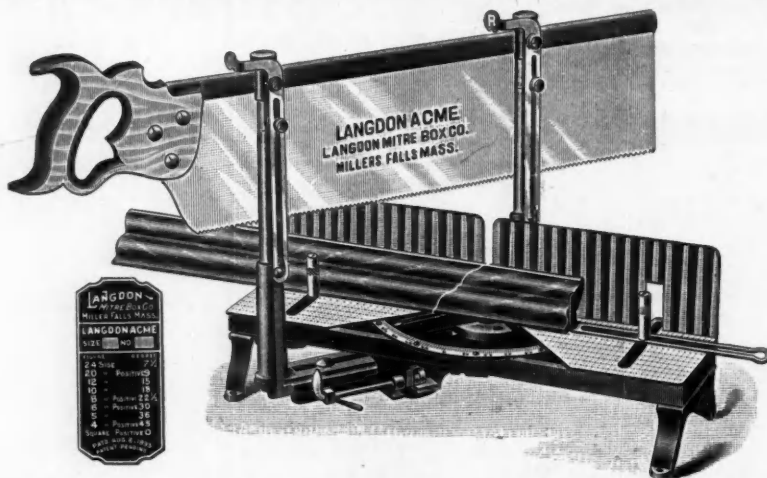


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BURLINGTON VENETIAN BLIND COMPANY
930 Lake Street, Burlington, Vermont

We Recommend as 'a PERFECT TOOL and One That Will GIVE THE UTMOST SATISFACTION

THE LANGDON ACME MITRE BOX



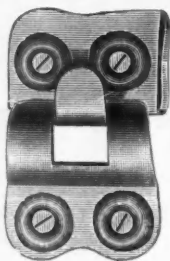
This cut shows the Size 2 Box with the saw suspended by the elevators, the moulding held by the supporting guide on one side, and brought against the length gauge on the other.

The bottom boards to this Mitre Box are made of sheet steel, slightly roughened. The elevators (as shown in cut) may be used for extreme heights or for varying depths for cutting tenons, etc. The graduated arc indicates all angles. Attached to the Box is a metallic index plate, explaining these angles. The supporting stock guides and length gauge will be found very useful. Polished parts are nickel plated. These Boxes are made in three sizes with varying lengths of saws.

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No. 28 Warren Street, NEW YORK



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It makes Storm Windows hung with Gossett Detachable Suspension Hinges easier to hang (no tools or ladder needed), makes them sell—makes them

PLEASE YOUR CUSTOMERS

Storm Sash so attached can be opened at the bottom for ventilation.

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SLIDING
BLIND
CO.**

Phoenix, N. Y.
Department "C"

**HIGH GRADE
VENEERED DOORS**



To put up a ceiling easily, to put it up in the least possible time and at the lowest possible expense, the ceiling plates must fit perfectly. This is one of the strong features of the

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Designed and modeled, as they are, by an expert, manufactured under the direction of men who have both the mechanical sense and skill to know what constitutes and how to produce a perfect ceiling, and handled from the sheet to the finished product by men particularly qualified in their special branch of the process of manufacture. The I. S. R. & C. Co.'s Metal Ceilings, in points of artistic beauty, close fitting qualities, and all else that go to make a perfect ceiling, are as perfect as human skill can produce.

Our catalogue "Metal Ceilings" will tell more about them. It's free upon request.

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Dept. G. Indianapolis, Ind.



A Metal Shingle Roof

"THE EDWARDS KIND"

Guaranteed to be an absolute protection against fire and the elements, taking a very low rate of insurance. Can be applied by an ordinary mechanic.

On pitched roofs of every description the Edwards Shingles, being considerably lighter than slate, and having none of the disagreeable features—i. e., rotting and warping—of wood shingles are especially recommended.

Made of best grade of Worcester Terne Tin, Painted or Galvanized (galvanized after being formed) in sizes 7x10—10x14—14x20 inches. Write for descriptive Shingle Booklet and Prices.

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MANUFACTURERS OF THE MOST EXTENSIVE LINE OF SHEET METAL BUILDING MATERIAL IN THE WORLD

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of a metal ceiling that makes it cheap. The cost of a ceiling is not complete until the work is accepted by the architect or owner. If the plates do not fit, your expense may be enormous. Better be on the safe side and get "Canton" Metal Ceilings. We have a reputation for good work.

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Formerly THE CANTON STEEL ROOFING CO.
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Metal Shingles

Perfect Side Lock.
Rain and Snow Proof.
Always Give Satisfaction.

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Specially Adapted for Hardwood Working.

The Forstner Labor-Saving Auger Bit, unlike other bits, is guided by its *Circular Rim* instead of its centre; consequently it will bore any arc of a circle and can be guided in any direction regardless of grain or knots, leaving a true polished surface. It is preferable and more expeditious than chisel, gouge, scroll-saw, or lathe tool combined, for core-boxes, fine and delicate patterns, veneers, screen work, scalloping, fancy scroll twist columns, newels, ribbon moulding and mortising, etc.

ing a true polished surface. It is preferable and more expeditious than chisel, gouge, scroll-saw, or lathe tool combined, for core-boxes, fine and delicate patterns, veneers, screen work, scalloping, fancy scroll twist columns, newels, ribbon moulding and mortising, etc.

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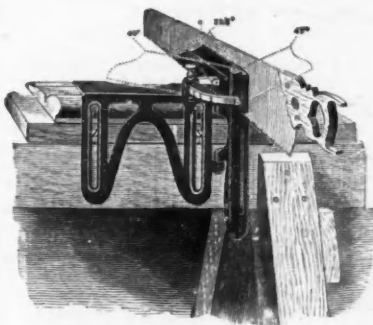
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Weighs only two pounds.
Will cut any angle.
Used by all up-to-date carpenters.
Has been tested by the most practical
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A PERFECT TOOL and the only Tool for the purpose ever invented.
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IT DOES ALL THIS. It is accurate, thus preventing all mistakes. It gives angles for any pitch. It gives lengths for any rafters. It gives cuts for principals, jacks, hips, valleys and cripples. Saves time for the skilled mechanic, and enables the ordinary workman to frame roofs with absolute certainty.
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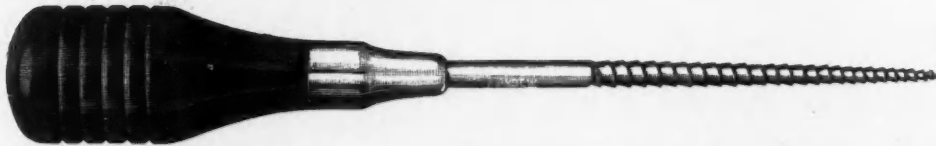
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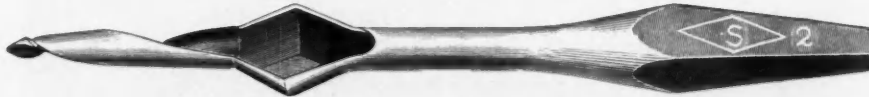
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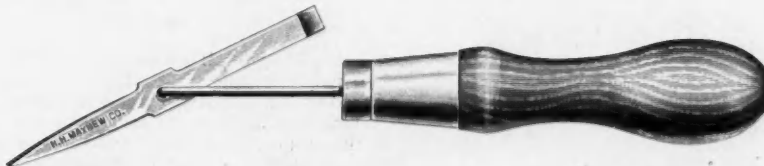
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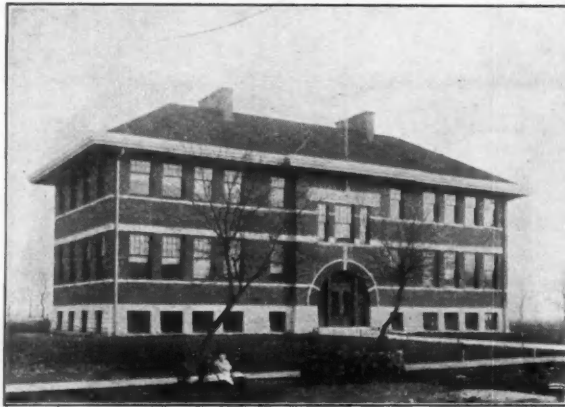
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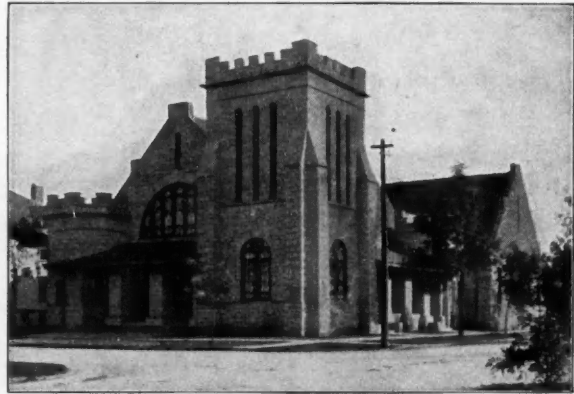
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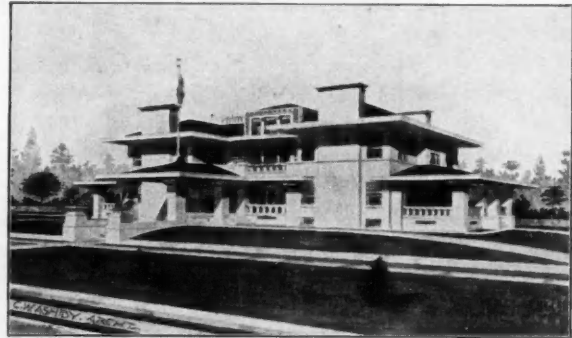
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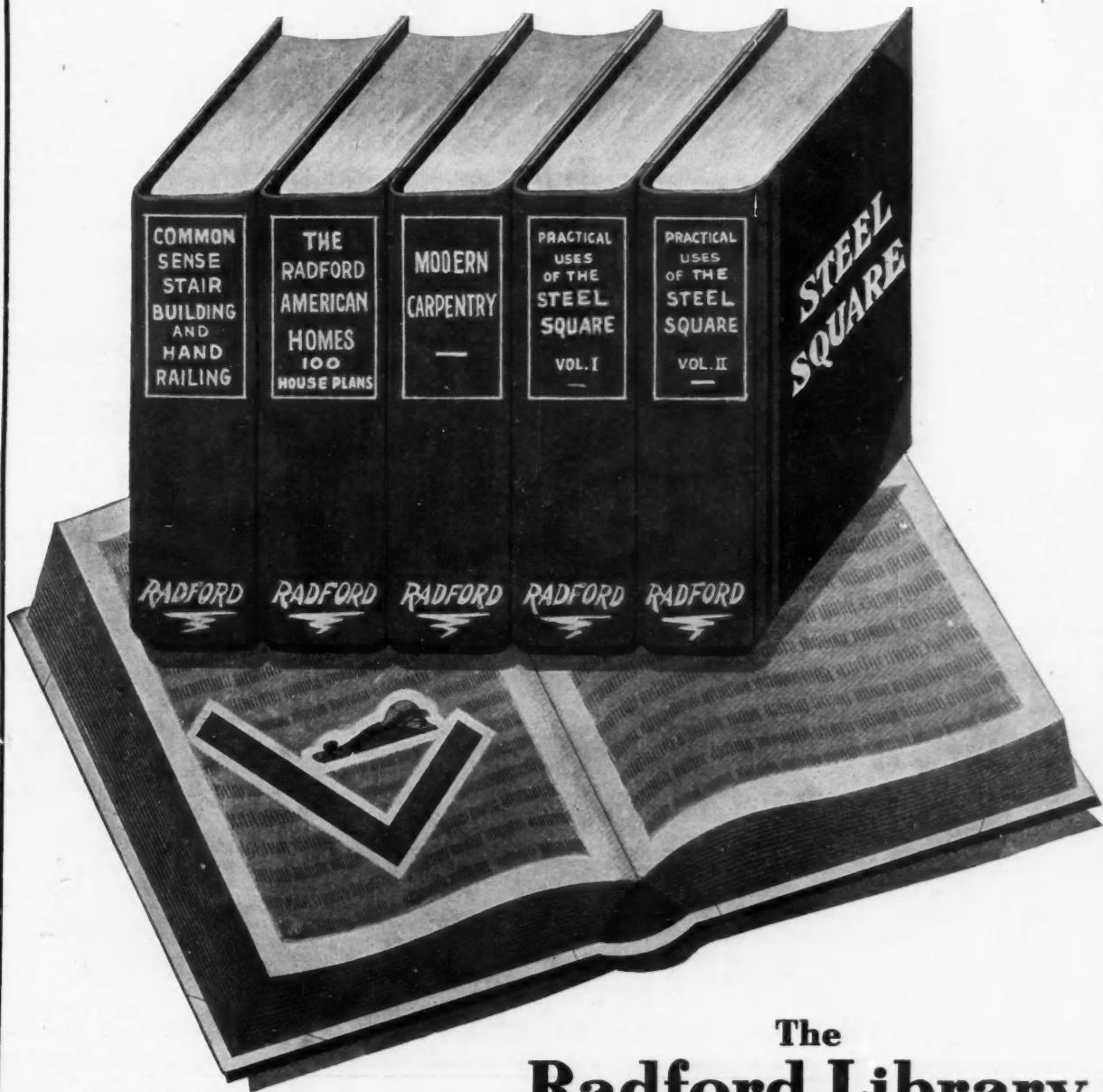
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KEEP YOUR TOOLS IN SHAPE



"Turn the faucet that's all"

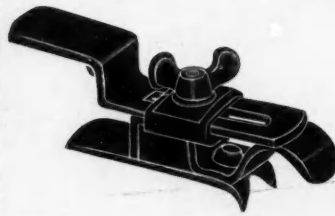
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Beware of cheap imitations which copy our advertisements. The "Little Wonder" is endorsed by three years of satisfactory service and 25,000 pleased customers. Our positive guarantee goes with it. Outfit complete, comprising motor, emery wheel, polishing wheel, buffing wheel, pulley wheel, stick of silver polish and stick of steel polish, neatly boxed, \$4.00, with specially selected fine grindstone of extra quality, \$5.00. Send remittance direct to us today or write for our **free descriptive booklet** containing further particulars. We also make large water motors, $\frac{1}{2}$ to 10 horse-power, water fans and all kinds of accessories. Agents wanted everywhere.

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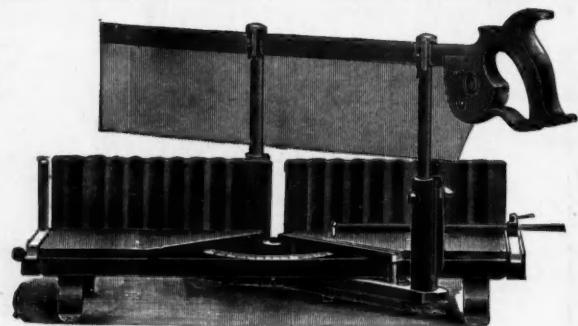
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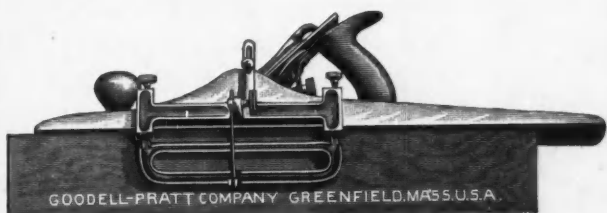
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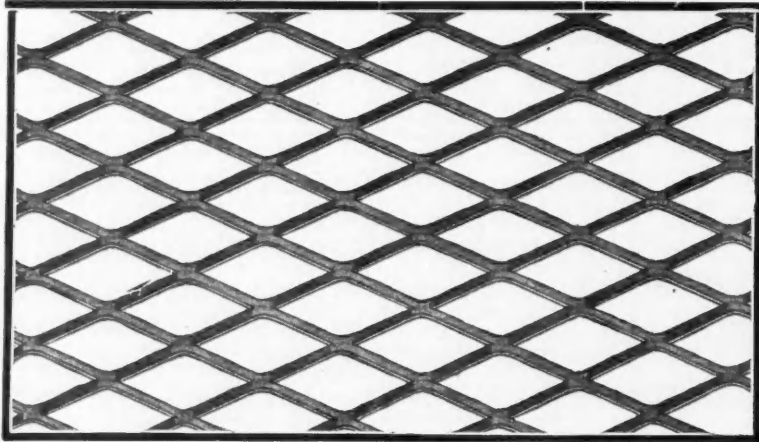
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EXPANDED STEEL
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No. 27 Gauge, Weight per Square Yard 2½ Lbs.
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A FIRE RESISTANT


SUPERIOR TO WOOD OR METAL LATH IN THE
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NAILED DIRECTLY TO STUDDING AND FINISHED WITH PLASTER

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Five Tools in One

8-INCH TRY SQUARE, BEVEL, BUTT GAUGE, MARKING GAUGE AND MITRE

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The Hight Manufacturing Co.
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The ROEBUCK VENTILATOR

Roebuck's Ventilators

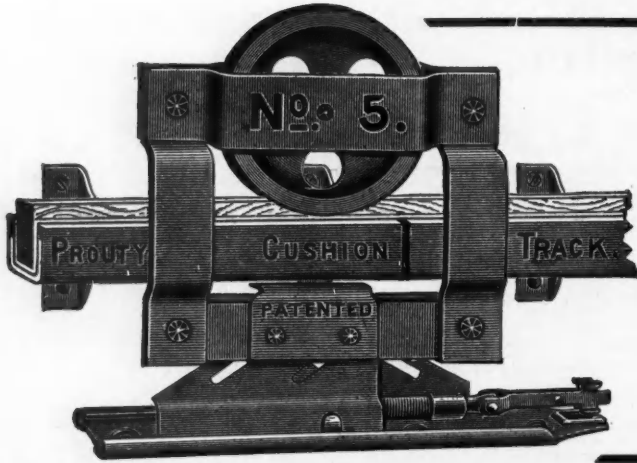
FIT ANY WINDOW

\$2.50 Each

Manufactured by
The Roebuck Weather Strip and Wire Screen Co.
Makers of the FAMOUS
ROEBUCK FLY SCREENS
Send for Catalog.



THE ROEBUCK WEATHER STRIP AND WIRE SCREEN CO.
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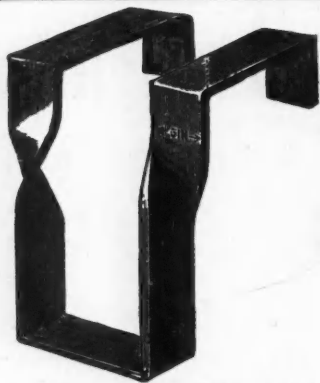
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Time is money to all busy men, and you can save hours by using Prouty Parlor Door Hangers.

The **PROUTY No. 5 CUSHION TRACK HANGER** does not require any cutting of the door, and our adjustment is positive, so when once in place it never requires further attention. It is noiseless, easy-running and strong, and if you use it once you will have no other.

Write us for particulars and sample set free of charge.

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JOIST HANGERS

For Concrete Blocks, Wood or Iron Beams.

Many Sizes in Stock.

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STEEL POST CAPS, WIRE FLOOR CLIPS,

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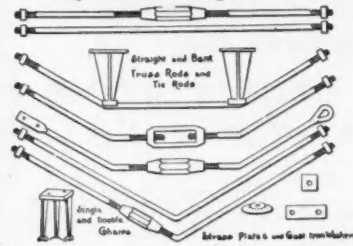
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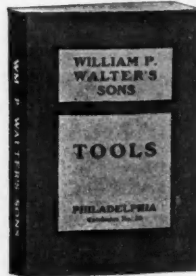
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ARE
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STAND
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Regular Hand Power Elevator

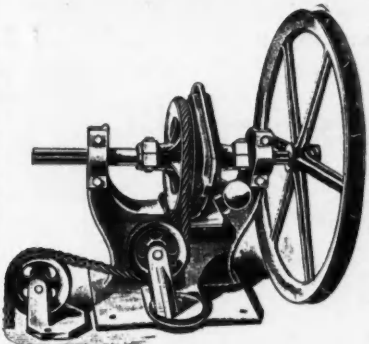
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None Better

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Are self-retaining owing to their automatic brake. Simple in construction, nothing to get out of order.

The **"JUMPER"** is a dandy for one story lift, cellar to first floor.

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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 screens.

For outside screens we use the identical finish of the outside of Pullman cars.

The best grades of Wire Cloth, enameled, galvanized, genuine bronze, etc. Fastened by tacks or by the "lock-strip" process.

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23 Years' Experience. 3 1-2 Acres of Floors.

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Modern **ELECTRIC, BELT and HAND POWER**

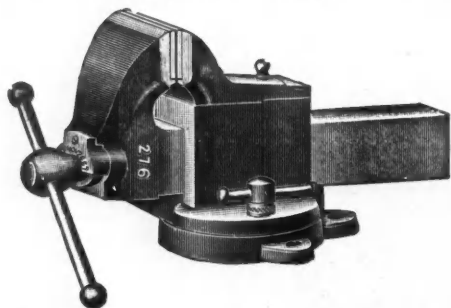
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Our Elevators are noted for their **Easy Running and Serviceable Qualities**

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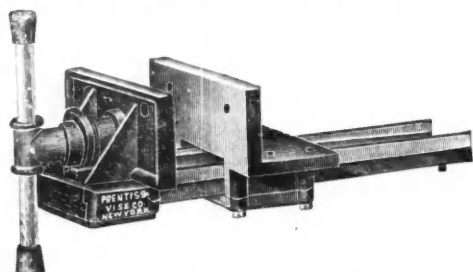
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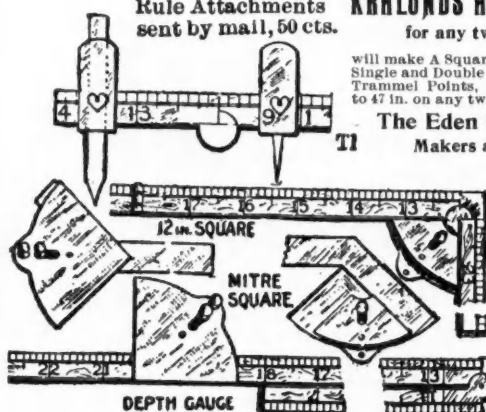
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Watrous Storm Sash and Screen Hardware

The Very Latest With Every Improvement

We prefer to furnish you through your dealer, but if he cannot supply you, we will send you the goods, post-paid, on receipt of prices given below.
Watrous Screen Hardware saves you time and money.



No. 17. Combination Storm Sash Hanger and Screen Hinge

All carpenters want it.
Put on in half the time needed for any other.
Only four screws to set instead of twelve.
Simple and extra strong.
Easy to locate.
A gauge on every pair makes mistakes impossible.
Points set in with a hammer, leaving both hands free to set in screws.
The points afford a much stiffer and more rigid grip on the wood than screws.
No loose joints, they don't let the hinge give and work loose.
Tested for strength up to 300 pounds.

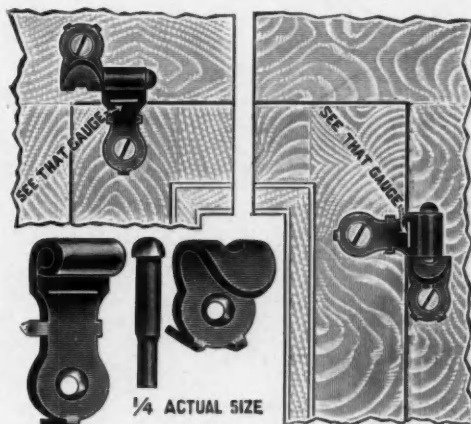


This is the only way to hang a screen.

You can't drive out flies with a top hung screen, for a fly won't go down.

A screen that can be unlatched and swung out puts the flies outside the house in one motion.

A screen hung in this manner will *not* sag, for the casing holds it in position, especially if our No. 3 screen catch is used on the opposite side.



Price per doz. Sets, postpaid, \$1.75

Windows easily washed.
Awning cords accessible.
It will hang either a full sized sash or screen or a half screen.
It is the only hanger that will do this.
Either side works either way.
Every part japanned, even the screws.
No rusty streaks down the casing.

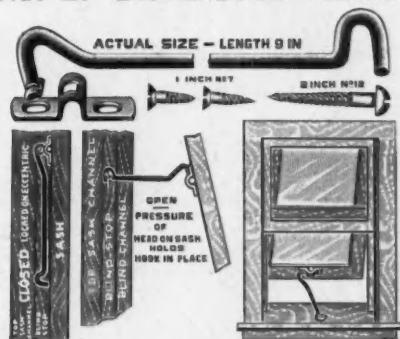
No. 2. Storm Sash Fastener

Locks on eccentric, draws sash tight and holds it fast.

When sash is opened for ventilation, the rod slides out over the screw, and locks automatically at the end.

No danger of sash being blown off in the hands of children or careless servants.

Simple and easy to put on.



Price per doz., postpaid, \$1.75

It cannot rattle.
Whether window is open or shut the fastener is on a tension which holds it tightly in place.
Extra strong and has no small delicate parts to break or get lost.
Can be used on either the side or bottom of the sash. No other can.
It is either right or left. On other side fasteners if either right or left is broken a new pair must be bought.

Ask Your Dealer

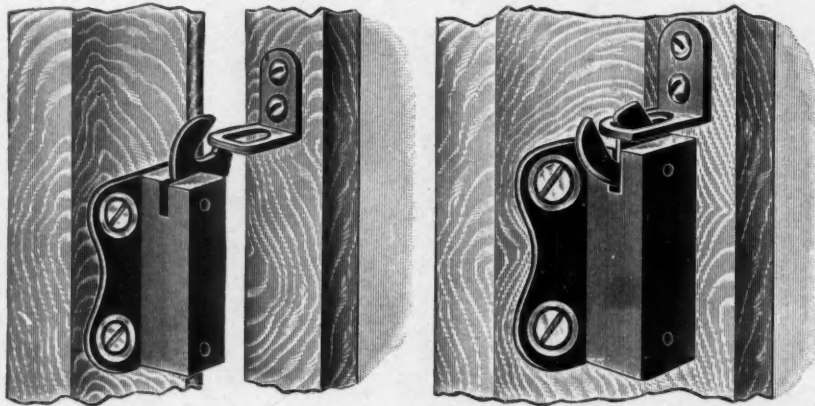
Insist on Having Them

Nothing else gives quite the action or quite the satisfaction of the Watrous goods.

E. L. Watrous Mfg. Co., Des Moines, Iowa

Watrous Storm Sash and Screen Hardware

We prefer to furnish you through your dealer, but if he cannot supply you we will send you the goods, post-paid, upon receipt of prices given below.
Watrous Screen Hardware saves you time and money.



TWO-THIRDS ACTUAL SIZE

Price per doz., postpaid, \$2.00

No. 5. Watrous Automatic Door Catch

For storm doors, screen doors, office gates, cupboard doors, etc.

Holds the door tight shut, and prevents standing ajar or sagging open at the top.

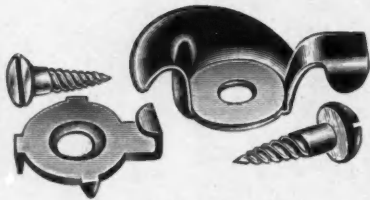
It does not show from the outside.

No diagram is needed with it, anyone can see at a glance how to put it on.

A light trip and a strong hold.

The neatest, best looking and cheapest door catch on the market

No. 3. Watrous Screen Window Catch



ACTUAL SIZE

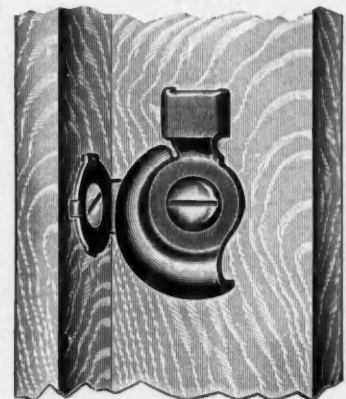
For screens, storm, sash, casement windows, cupboard doors, etc.

Makes a cheap and good storm sash fastener where it is not desired to prop the window open, or where the window does not have to be opened during the winter, four of them make a complete storm sash set.

Works inside the blind stop space and does not interfere with the working of the window.

The action is eccentric, and when fastened sash cannot be moved in any direction.

Price per doz., postpaid, \$0.60



No. 4. Watrous Japanned Steel Door Buttons



Twice the strength and half the weight of cast iron.

Cost no more.

Take a finer finish.

Every one perfect.

Price per gross, assorted, (1½ to 2½ ins.) postpaid, \$1.00

No. 10. Watrous Cupboard Catch

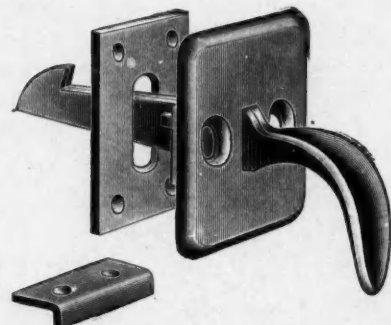
Works like an elbow catch.
Never fails to latch.
Opens at a touch.
Cannot be broken by slamming the door.
Strong, neat and ornamental.
A joy to the housewife.
Old copper, nickel plate, dull brass or dead black finishes.

Price per doz., postpaid, \$2.40

Ask Your Dealer

Take No Substitutes

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“Pullman” Sash Balances



You see them everywhere.
Steel Face Plate, Steel Frame
Enclosed Tape.

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Pullman Street ROCHESTER, N. Y.

Don't ask the Dealer for Sash Cord. Ask for “SILVER LAKE”

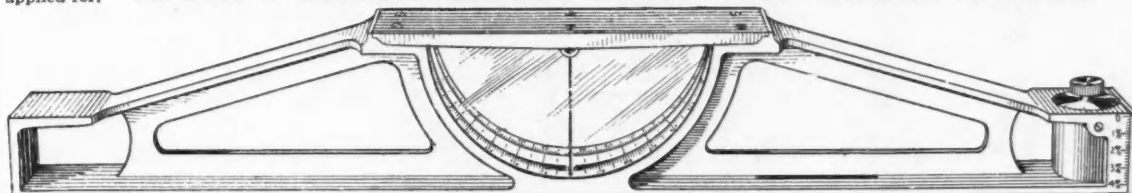
and see that he gives it to you. It is impossible to



substitute, as our name is stamped in red on the 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.

Patent applied for.

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MR. WORKMAN

How often have you been situated so that it was necessary for you to ascertain the exact grade of some work in degrees or rise in inches

per foot or in per cent? If you had this level it would help you out of all such difficulties instantly. It will show you at a glance a true level, true plumb, or any inclination in degrees, in inches per foot or per cent., and will establish all quicker and more accurately than you can establish a true level with the best spirit level you can buy. With the use of a bevel you can readily get the angle to set the bevel to cut any degree desired by setting the level so that the diaphragm sets on the degree desired and setting the bevel to the diaphragm, and you can use your steel square to get the right angle. You can set it on a track and it will show you the grade instantly in degrees or per cent. or inches rise per ft.

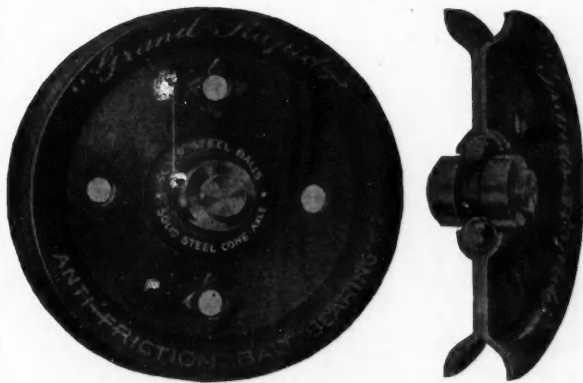
It is made of aluminum, and weighs two and three-quarter pounds. There is nothing about it that can get out of order or become untrue. When you see one of these levels, you will wonder how you have managed so long to get along without it. It sells for eight dollars, and in a year will save you many times its cost in time, work and worry. It will be sold only by myself or my son for the present until the hardware trade demands it, and upon receipt of enough to guarantee express charges, I will send it to you C. O. D., subject to your inspection.

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

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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 catalog and free samples and prices on half-gross, gross, barrel, or any quantity. Direct from the makers to you. Inquiries welcome.

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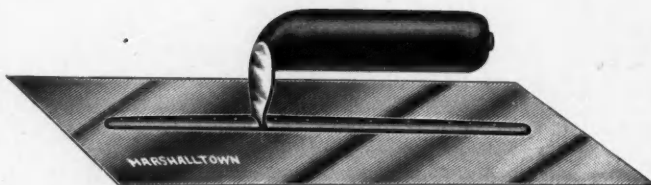
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You can start a profitable side line manufacturing Incubators and Brooders from our Free Plans. Easy and simple to follow. We supply all parts such as Lamps, Regulators, Tanks, Doors, Legs, etc., not convenient for you to make, at a very small cost. There's a big demand. Some manufacturers turned down thousands of orders last year. Why not pick up some of this extra money? A postal brings full information, our big catalogue and plans free. H. M. SHEER CO., 171 Hampshire St., Quincy, Ill.

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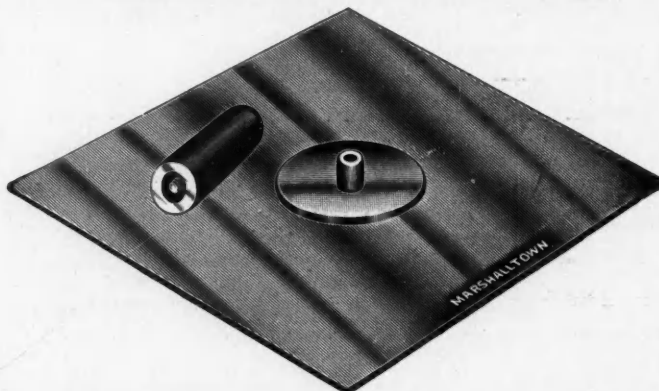
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Aluminum
Sidewalk Edgers
and Groovers,
All Sizes



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Marshalltown, Iowa.

U. S. A.

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

CHAPLIN'S IMPROVED PLANES

Patented Feb. 14, 1899; Oct. 30
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We invite the
Severest
Comparative
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We want you to have a copy of
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"A 'Plane' Talk About
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We want you to have a copy,
for it is a booklet you really need
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We'll gladly send you this
booklet with our compliments,
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BERGER'S SNOW SHOE IRONS



No. 2.

No. 1 is made for standing seam roofs and is clamped fast to the roof by clinching through the seam.
No. 2 is for slate roofs, and is riveted to a $\frac{3}{16}$ " x $1\frac{1}{4}$ " wrought iron plate, 14 inches long, to go 9 inches under the slate. These irons are designed to dispense with snow rails or gutters formed on the roof to prevent snow or ice from sliding. A rail can be used on them if desired, but is not necessary.
These are very ornamental, efficient and durable, being made of the best malleable iron.



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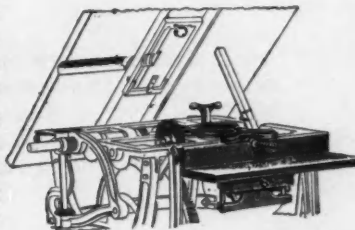
OFFICE AND STORE 239 Arch Street,
WAREHOUSES, 100-102-104 Broad Street,
FACTORY, 3114-16-18-20 N. 17th Street,

} PHILADELPHIA.

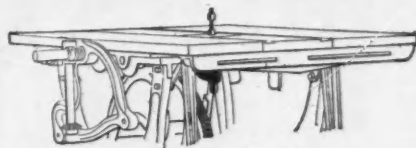
WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

If You Knew of a Man

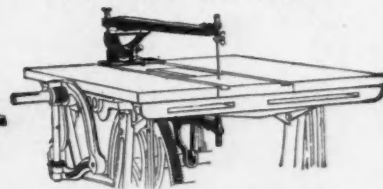
who could do as much work as 4 good men, would you hesitate to hire him? Don't believe you would wait a minute. Well, here is about the same proposition; one man with the No. 5 Union Combination Self-Feed Rip and Cross-Cut Saw will do as much as four men using hand tools, will do it easier and will do it better. Wouldn't it be economy for you to get a Union Combination Saw and save three men's wages?



"Union" Roring Attachment.



"Union" Moulding Attachment.



"Union" Scroll-Saw Attachment.

No. 5 "Union" Saw

Combination Self-Feed Rip and Cross-Cut

is suitable for various kinds of work—ripping (up to 3½ inches thick), cross-cutting, mitering, etc., and, with additional attachments, rabbeting, grooving, dadoing, boring, scroll-sawing, edge-moulding, beading, etc. Almost a complete workshop in one machine.

Send for Catalog "A," fully describing our complete line of foot, hand and light power wood-working machinery.

The Seneca Falls Mfg. Co.

218 Water St., Seneca Falls, N. Y., U. S. A.

(105)



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



DO
YOU
KNOW



The Grammes Circular Saw Vise?

It's a vise that holds all kinds of circular saws and cutters for filing.

It takes the place of the Wooden Vise and all others.

It's iron. Can't vibrate.

It's adjustable to all positions—on an axis to any point in a half circle—on a swivel to any point in a full circle.

It suits the ease of any filer.

It brings the light where wanted.

In a nut shell, it makes circular saw filing easy and correct.

But why multiply words about the admitted standard of saw vise excellence.

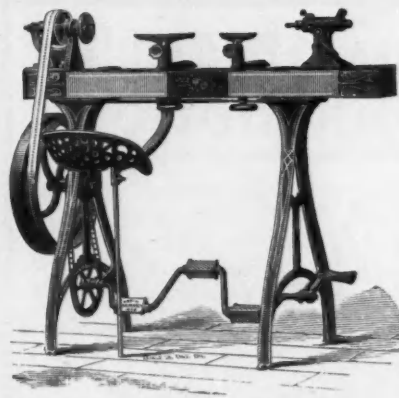
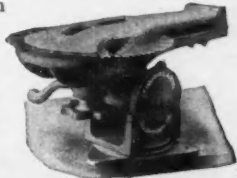
If you don't know the Grammes Circular Saw Vise, you can have one to try for Thirty Days. You return it at our expense if you don't like it.

Your dealer ought to be able to supply you by this time. Ask him. If he hasn't got them, tell him to get them. Price is \$6.50 each, whether you buy from us or your dealer.

Circulars when you ask for them.

L. F. Grammes & Sons

ALLENTOWN, PA.



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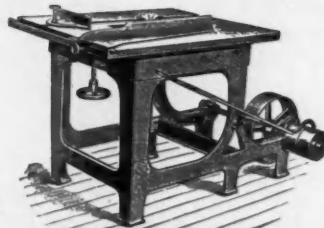
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Our No. 3 Wood Turning Lathe can be speeded from 1,000 to 2,000 revolutions a minute with perfect ease. Stopped or reversed at will of operator.

Write for particulars

W. F. & Jno. Barnes Co. 74 RUBY ST., Rockford, Ill.

LOOK! Only \$50.00 for an all Iron SAW BENCH with countershaft complete. It will pay you to investigate. Send for circular giving full particulars.

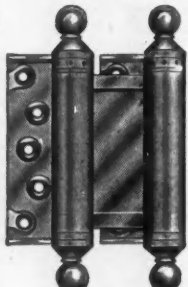

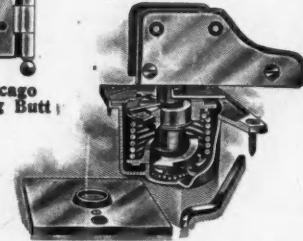


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Chicago Spring Butt Company

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OFTEN IMITATED—BUT—NEVER EQUALED
They cost no more than the inferior kinds.

The springs never go lame

Reject all substitutes





Gold Medals—Liege, 1905—St. Louis, 1904—Buffalo, 1901—Paris, 1900

Your Hardwareman can supply them. Kindly but firmly refuse all substitutes.

BOMMER BROTHERS, Mf'rs, Brooklyn, N. Y. Est. 1876.

Do you object to making money?

We have an agency proposition which will interest any man who mixes with men that use tools. It requires little or no work and is intended to appeal to men who have no objection to earning a little on the side without much effort.

This is a straight business proposition by the biggest and best house in the country selling hardware only directly to the consumer. There is nothing tricky or questionable about it in any way.

We want to hear from a live man; contractor or mechanic in each town. A big general contractor will lose none of his dignity by taking up a proposition of this kind.

We will appoint only one well recommended man in each locality, so write quick. Address Department 37.

Orr & Lockett Hardware Co.
Established 1872 CHICAGO

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THE "SPECIAL" SAW SET



MY TRADE MARK ON ALL MY GOODS

To be perfect in Workmanship and Material and will replace any part, no charge, that proves defective during legitimate usage and within a reasonable time after purchase.

PRICE, ONE DOLLAR

CHAS. MORRILL, 283 Broadway, New York

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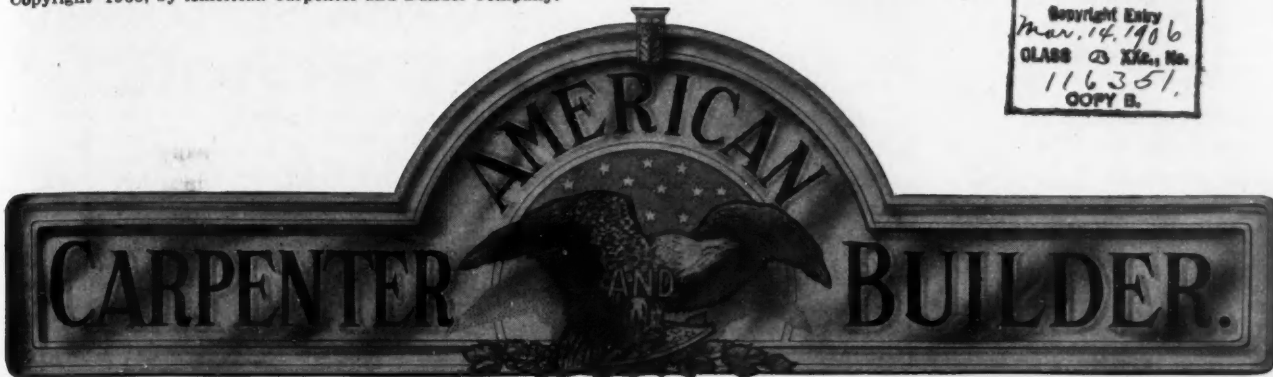


All have Corrugated Metal Bed Plates—same are ground true, and cannot warp and split like thin Wooden Plates. Made in 4 sizes and 40 numbers. Ask your dealer to show you one, and if he does not carry them in stock, ask him to order one for you, for you want the best.

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The Largest, Best and Most Practical Trade Journal in the World for the Carpenter and Builder

American Carpenter and Builder

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VOL. II. JANUARY, 1907 No. 10

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.

Short practical letters and articles on subjects pertaining to the carpentry and building trades are requested.

SUBSCRIPTION RATES.

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SUBSCRIPTIONS may be sent by check, express or money order, or registered letter. Make all remittances payable to the American Carpenter and Builder Company. Postage stamps are not desirable, but if necessary to remit them, two-cent stamps are preferred.

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Furnished on application. The value of the AMERICAN CARPENTER AND BUILDER as an advertising medium is unquestioned. The character of the advertisements now in its columns, and the number of them, tell the whole story. Circulation considered, it is the cheapest trade journal in the United States to advertise in. Advertisements, to insure insertion in the issue of any month, should reach this office not later than the 20th of the month preceding.

The Cement Users Convention

FROM present indications there will be a larger gathering of cement users in Chicago from January 7th to the 12th than have ever gathered at one place during the life of this great industry.

The mornings and evenings will be devoted to the

business of the convention, where topics of vital interest to the industry will be ably discussed by the best authorities on these subjects. This leaves the entire afternoon to the delegates to visit the many interesting and instructive displays which will be in operation in the various booths.

The AMERICAN CARPENTER AND BUILDER will occupy one of the booths, where they will be pleased to meet and renew the acquaintance of their friends who are attending the convention.



Good Material Pays

IT has become more and more apparent that cheap building material is not economical to the user. It often happens that a contractor is forced to bid so low, for one reason or another, on a contract, that he thinks he can not afford to put in the best grade of material, but the low grades are very apt to call the attention of the user to the high running expenses of his house and to blame the contractor accordingly.

There is no article to which these suggestions apply more than sash cord. The total first cost of the cord in a building is very small, and any saving is much more than balanced by the expense of the first broken cord. To be durable, a sash cord should be made of the best stock, should be braided evenly, and smoothly finished. Rough cords wear out by abrasion over the pulleys. Any contractor should get samples of sash cord and all the facts in regard to their durability, and then insist on getting the brand which he finds is the best. A little pains taken in studying this question will save his clients much trouble and expense.



Our New Office

WHEN the present issue of the magazine reaches you we will be occupying our new offices at 185 Jackson boulevard. It is located in the center of the business part of the city, being on the corner of Jackson boulevard and Fifth avenue, within one block of the Board of Trade and Marshall Field's wholesale building and all the principal banks. Our office, which will take up the entire eleventh and twelfth floors of the Medinah building, having over 13,000 square feet of floor space, will always be open for your inspection,

and we want you to put it on the list as one of the places of interest to visit while in Chicago. We will be better equipped than ever to look after your wants, and we want to show you that what one of our subscribers recently said holds good in all cases. When leaving he remarked "You certainly carry out every promise which you have made in your valuable paper."

Another Southern Letter

IN the November issue of this magazine we published a letter from Pensacola, Fla., by F. M. Williams, asking for carpenters who might desire to come south for the winter. In one month he received so many answers to the letter that he has asked us to publish the following, which is self-explanatory:

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Chicago alone has made an expenditure of nearly fifty million dollars to improve its water supply and thus reduce greatly the death rate from typhoid fever. To appreciate the expenditure of this amount of money by a population of two million, it must be remembered that this sum is equivalent to an expenditure of two billion dollars by eighty million people of the United States. To make the illustration more effective, the United States could build ten Panama Canals if it expended proportionately the sum disbursed by Chicago on its drainage canal, which was built for the express purpose of preventing the pollution of Lake Michigan, the source of Chicago's water supply.

Chicago is not the only municipality that is spending money with the definite purpose of fighting off

death. Some States have passed laws exceedingly strict for the regulation of those who practice and engage in the art or science of plumbing.

An Act of the Illinois Legislature, in force July 1, 1897, provides for the licensing of plumbers engaged in, or working at, the business of plumbing in cities or towns of five thousand inhabitants or more, either as a master plumber or employed plumber or as a journeyman plumber, and that they shall at such times and at such places as the Board of Examiners may designate be compelled to pass such examinations as to their qualifications as the State Board may direct, which shall be of a practical and elementary character as to strictly test the qualifications of the applicant. This Act also provides that each town or village in this State, having a system of water supply or sewer, shall by ordinance or by letter within three months after the passage of this Act prescribe rules and regulations for the material, construction, installation and inspection of all buildings and sewers placed in, or in connection with, any building in such city, town or village; that no plumbing work, except in cases of leak, shall be done without a permit being first issued therefor upon such terms and conditions as such city, town or village shall prescribe.

Illinois is getting parental in the care of the health of its citizens. The new plumbing ordinance of Chicago is considered by sanitary experts to be very thorough in all its details. Think of living in a city of fifteen thousand population or more, which has no plumbing regulations whatsoever, yet, generally speaking the statement can be truthfully made that only a small percentage of cities of this size have any plumbing and sanitary code or any provisions for municipal supervision of same. The result is that the plan and location is left to the architect or owner, who are more liable to cater to fancy than to hygienic considerations. The workmanship is left to the skill of the local plumber, whose conscience is liable to be smothered when the item of profit is endangered.

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If there are any public-minded citizens looking for a worthy cause to promote and foster to maturity for the public welfare of their community, let them agitate the question of having a State law passed to provide for the licensing of plumbers, a Board of Examiners and a Plumbing Ordinance. It's a worthy cause.

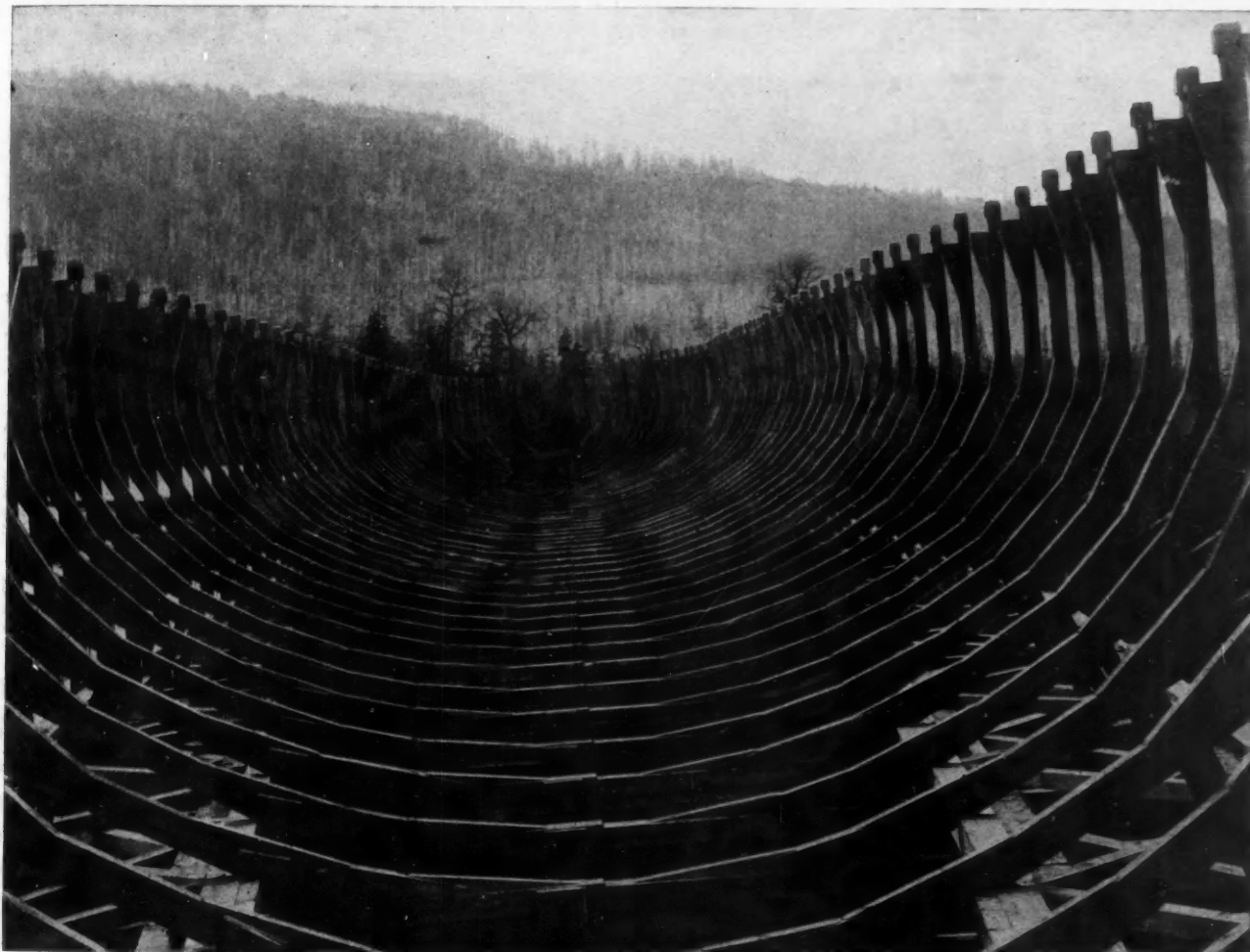
WILLIAM R. MARSHALL.

The Giant Log Rafts of the Pacific Coast

BY WALDON FAWCETT

NO activity connected with the securing of material for the carpenters and builders of the United States exceeds in elements of the daring and picturesque the rafting of logs on the Pacific Coast. The monster bundles of logs that come into being in the Pacific Northwest are not only the largest rafts constructed anywhere in the world, but they are practically the only ocean-going rafts of the kind that

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Timber Cradle in which Pacific Rafts are Built

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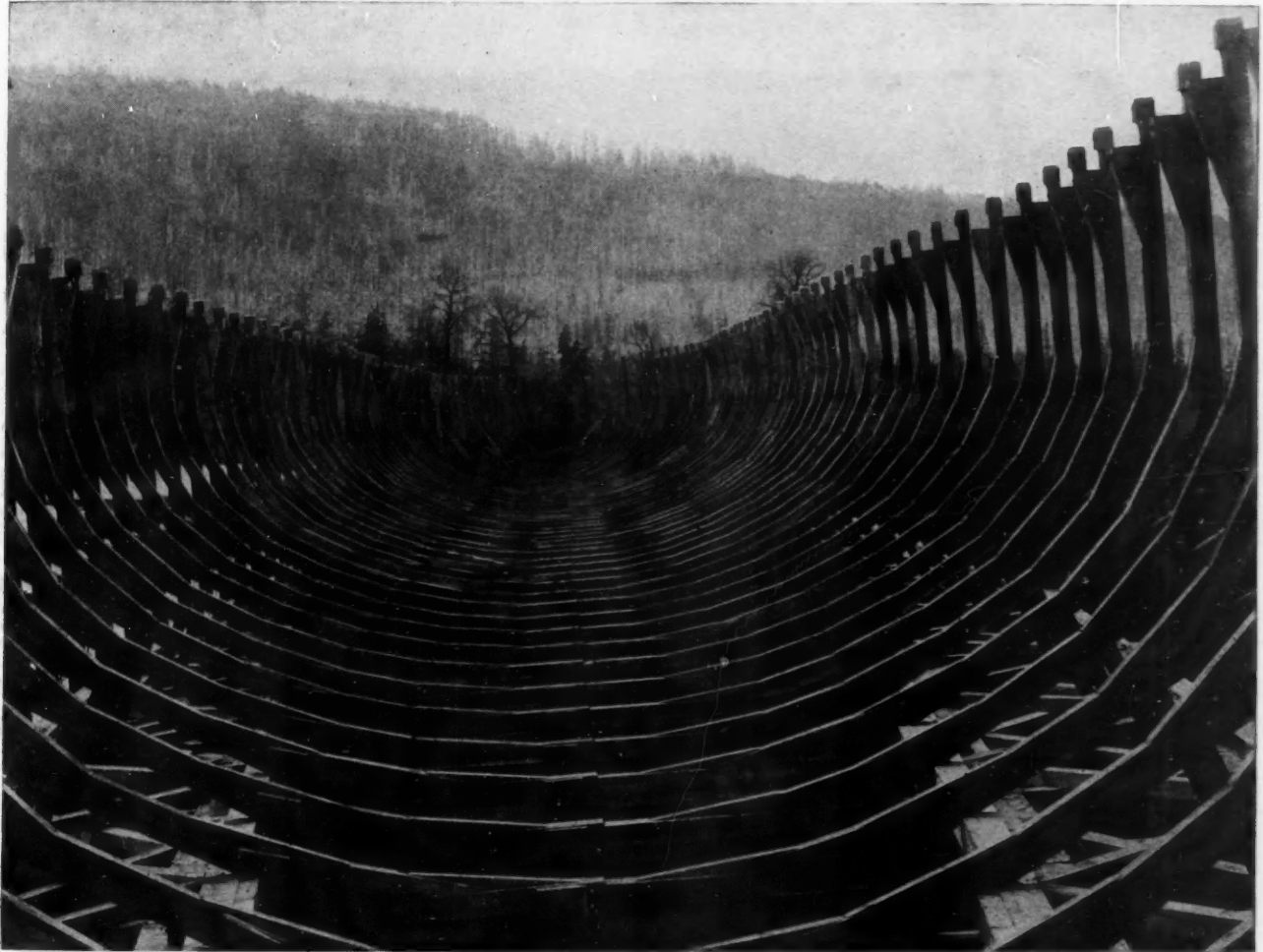
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cific Northwest to take advantage of the larger opportunities there awaiting. The development of this unique industry, under the direction of the original discoverer of the field, has been marked by many advances and improvements, notably the invention of the floating cradle, which not only saves time in the construction of a raft but also greatly facilitates the launching of these bulky objects.

A majority of the log rafts of the Pacific are constructed at Stella, Washington, or some other port on

in freeing the completed raft, but may be used over and over again. The cradle is placed in deep water but as near the shore as possible and in a sheltered spot, and is anchored to a row of piles by means of so-called "anchor boxes," being given sufficient play to enable the frame to rise and fall with the tide.

The permanent receptacle of the giant log raft as it takes form could have no more appropriate name than cradle. It consists of a long series of half circles of wood securely bolted together and held in place by strong ribs



Building One of the Big Rafts

the Columbia River, the magnificent stream which for a distance of more than two hundred miles serves as the boundary between the states of Oregon and Washington. This is in the very heart of the nation's most remarkable lumber region—Oregon alone containing one-sixth of the standing merchantable timber in the United States—and since the forests extend practically to the water's edge the advantage of building rafts constructed at what is virtually a base of supplies, where the material is obtainable without rehandling, will be readily apparent.

The floating cradle or lumber mould in which the raft is fashioned is an expensive piece of equipment, costing thousands of dollars to construct, but it serves as a permanent investment on the part of the raft builder, for the cradle is not damaged or demolished

of well seasoned timber. In general appearance it very strongly resembles the skeleton framework of a great ship, and in order to give the raft the distinctive cigar shape it tapers at either end just as a ship curves at bow and stern.

As the first step in the construction of a log raft the enormous chains that are later to encircle the log mass are spread out at intervals on the bottom of the cradle, and then the logs or "big sticks" which have previously been brought from the forest and piled on shore are, by means of a derrick and donkey engine, lifted one by one high in the air and carefully lowered into place in the cradle. Gradually the strange body takes form but there is no undue haste for the logs must be very carefully arranged in order to insure that compactness which will count for so much during its ocean voyage.

As the weight of the log mass increases the cradle, of course, sinks deeper and deeper into the water. At the commencement of operations the skeleton of the cradle towered high above the heads of the workmen engaged in arranging the component parts of the rafts, but ere the log structure is pronounced complete the upper part of the cradle is on a level with the surface of the water while the whale-like back of the raft curves ten feet or more above the highest point of the

be seen that this monster bundle of logs is, in effect, enclosed in a gigantic net, so arranged that when the raft is being towed the strain on the main chain will bear equally on all parts of the structure. To further strengthen this unwieldy craft there is constructed at either end of the raft a bulkhead of heavy timber, held in place by strong steel cables.

When all the logs destined for a raft are in place and all the chains have been tested and tightened the



Top of Raft, Showing Towing Hawser

bed it is soon to desert. Simultaneous with the placing of the logs in the cradle has been the arrangement of the chains which must bear the brunt of the strains during the coming voyage, and great care is bestowed upon this portion of the work, for not only strong chains but also well-placed strands of iron are essential to the preservation of a raft.

Not less than one hundred and twenty tons of chain are employed in binding the average large log raft. A main chain, consisting of links of iron nearly two inches in circumference, runs fore and aft through the center of the log mass. At right angles to this main chain and connected to it at intervals of twelve feet are smaller cross chains which run to either side of the raft and are there joined to the encircling chains mentioned of which has already been made. It will thus

mass is "launched" from the floating cradle, and this constitutes one of the most interesting processes in a series of remarkable achievements. The cradle, although to all appearances a rigid, stable structure, is in reality in two sections, just as though the frame of a ship which it so closely resembles could be cleft in twain long the line of the keel. The ribs of this cradle are dovetailed together so dexterously that although the structure is capable of bearing enormous weight as it gradually sinks into the water the two sections can at the proper time be separated very quickly. This is accomplished by the withdrawal of key pins which enable one side of the cradle to be drawn aside, permitting the raft to slip into the water and float clear of its former support. Now a manila hawser, as large around as a man's body, is attached to one end of the

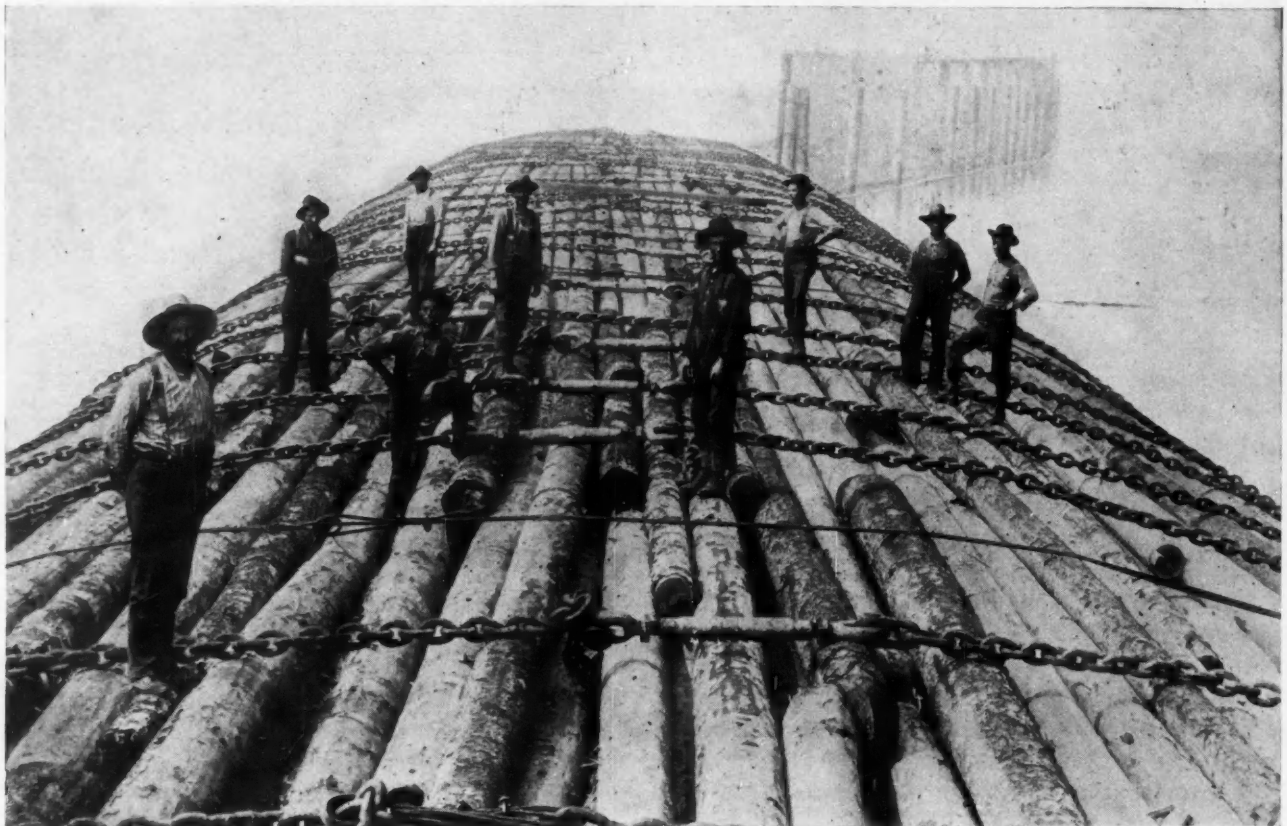


Launching of a Big Raft on the Pacific Coast

raft, and it is ready to be towed to any destination however distant.

One of the first rafts constructed on the Pacific Coast was three hundred feet in length and contained

450,000 linear feet of logs valued at \$45,000. Gradually the size increased, until of late years it has been nothing uncommon for the raft builders to turn out craft 700 feet in length and 50 feet in width, each con-



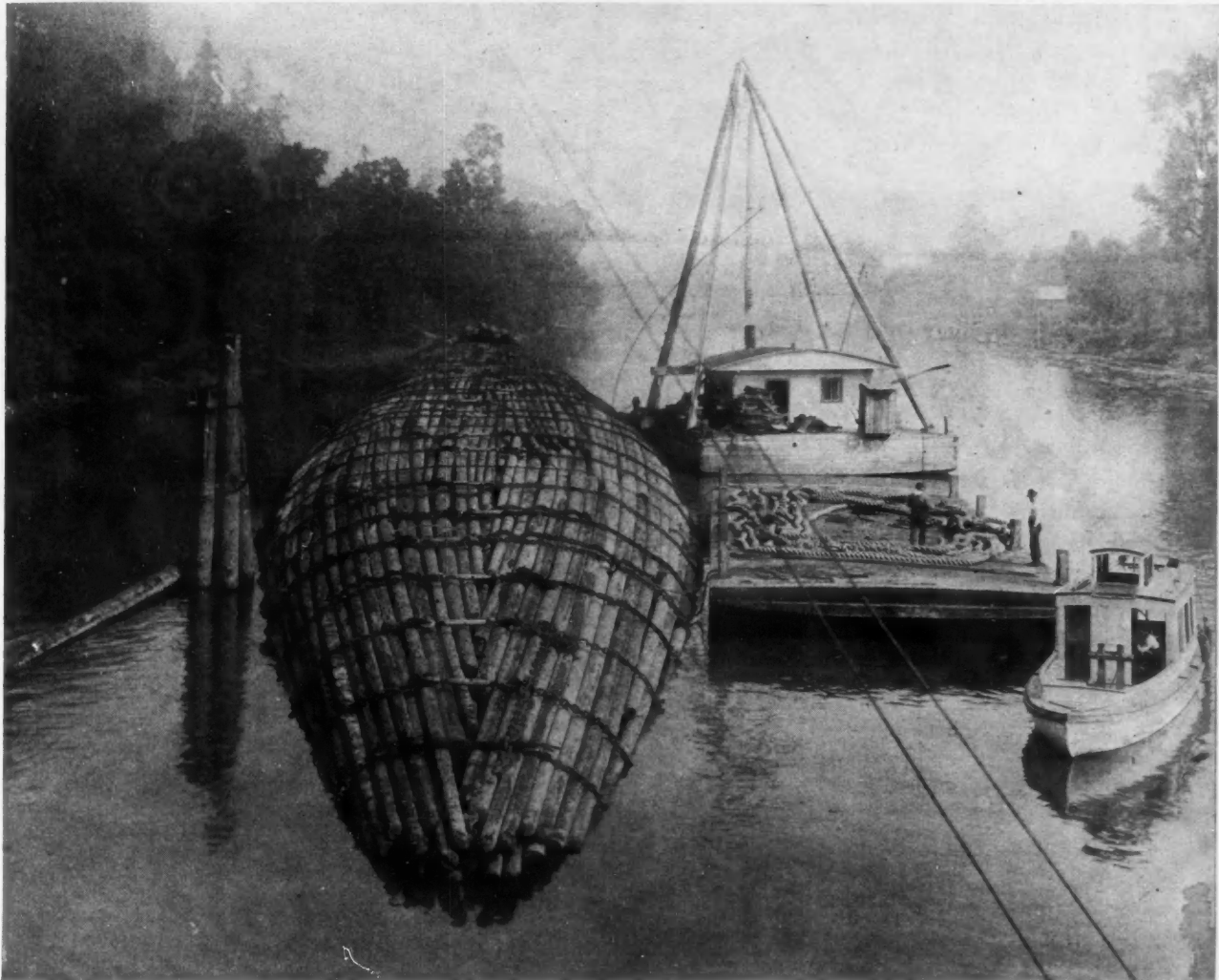
One of the Big Rafts, Showing the Binding Chains

taining about 600,000 feet of logs or 8,000,000 feet of lumber, board measure. Such a raft draws twenty-two and one-half feet of water. The raft which it is proposed to construct for the voyage to China will contain 10,000,000 feet of lumber board measure, and will be not less than one-fourth larger in every dimension than the craft just mentioned.

Some of the earlier rafts constructed in the Pacific Northwest required eight months or more for their completion and cost in the neighborhood of \$30,000 each, but such are the strides which have been made

is slow and the average raft is so unwieldy that it is difficult to manage. On more than one occasion a raft has stranded during the river journey and all sorts of trouble has been experienced in releasing them. For the voyage on the broad Pacific, that so often belies its name, the raft is taken in tow by two powerful ocean-going tugs, although the builders claim that if fitted with rudder and canvas such a raft could make very fair progress on her own account.

Some ship owners and vessel masters on the Pacific have opposed the rafting industry because of the ever-



Pacific Coast Raft with Tug

by the builders, who have had the benefit of experience, that one of the largest size rafts can now be completed in a little more than three months, necessitating the services of only about one dozen employes and entailing an expense that is but a fraction of the cost involved during the early period of the industry.

The towing of the monster rafts from their birthplace in the timber country to the points of consumption is one of the most interesting phases of the whole activity. Most of the rafts are built on a comparatively narrow river, and each is taken down stream by a tug with a stern wheeler at the after end for steering purposes. Owing to the size of the mass progress

present danger that the rafts will be broken up in severe storms and the scattered logs prove a menace to navigation. Attempts have even been made to secure the adoption of laws preventing rafting on the high seas, but thus far without success. On the other hand the raft builders refute the charges made by showing that not more than two or three of the thirty log rafts which have been sent from the Pacific Northwest to San Francisco or other ports have been lost at sea. The danger has lately been still further reduced by placing the encircling chains closer together and by entrusting the towing to automatic towing machines which handle two and one-eighth inch diameter steel cable.

Some exciting experiences have been encountered in the towing of these floating cargoes of logs. Some years ago the towing steamer *Progreso* while steaming southward in the Pacific with a huge raft was overtaken by an equinoctial storm. Such was the fierceness of the gale that the steamer was able to tow the raft only eight miles in three days. Finally the center chain of the raft parted, and the towing steamer pulled off all the encircling chains from the forward end. This happened in a gale at midnight and the crew did not know that they had lost the raft until the next morning. The great bundle of logs, although bereft of part of its bindings, drifted to a point nearly fifty miles below San Francisco, where it anchored itself in forty feet of water. Eventually it was safely delivered at the Golden Gate. Another raft which got adrift was at sea for forty-two days but not a log was lost.

The insurance of the monster rafts of the Pacific Coast is one of the heavy items of expense in connection with this scheme of moving timber to market. There have been instances when underwriters have insured rafts at a premium of 4 per cent, but usually the rate is much higher, premiums of 10 per cent having been demanded and paid in some instances. By reason of the heavy cost of insurance it is the custom of the raft builders to insure rafts only for amounts sufficient to cover the cost of construction. Thus the raft above mentioned as having a valuation of \$45,000 was insured for only about \$16,000. A raft which is insured for \$20,000 may be expected to bring its owner gross receipts of \$60,000 if safely delivered in San Francisco or some other port to the southward. This will convey an idea of the great profits in the rafting industry, to say nothing of the economies of time involved, for the average log raft carries fully eleven times the cargo of a fair-sized sailing vessel engaged in the lumber carrying trade. As intimated above almost the sole permanent investment required of the raft builder is the cradle, which represents an outlay of from \$5,000 to \$8,000.

Log rafting on the Pacific is just now a subject of especial interest in view of the fact that it has been proposed to resort to this method of transporting much of the material that will be required in connection with the construction of the Panama Canal. The project for the dispatching of log rafts from our Pacific Northwest and British Columbia to the Orient contemplates the use of two ocean-going tugs for each raft, the tugs to be accompanied by a collier or oil steamer with fuel for the tugs, and this same plan would probably be followed in the case of rafts destined for the Isthmus. When a log raft reaches port it is quickly broken up and the component material disposed of. A large proportion of the better grade of logs are sold to shipbuilders for use as spars. Another profitable market is found in the sale of the logs for use as piling in railroad construction, in providing foundations for buildings, etc.

The success which has attended log rafting on the Pacific impelled a Portland, Oregon, firm, that operates what is accounted the largest sawmill in the world, to resort to the sea-going raft as a means for the transportation of lumber as it came from the mills. One of the rafts constructed by this firm was 400 feet in length and 53 feet wide, containing 5,000,000 feet in lumber, while another raft of the same type was 334 feet long, 53 feet wide and 30 feet deep. The lumber raft is not cigar-shaped as is the log raft, but assumes the form of a colossal oblong box.

The method of constructing the lumber raft is comparatively simple. The raft is built alongside a dock the outer piles of which serve as a foundation, so to speak, on one side. The floor of the raft is built somewhat after the style of the floor of a house, and surmounting this is an iron framework of skeleton construction. Resting on the foundation previously mentioned and held in place by the iron uprights at frequent intervals, are placed layer after layer of boards, arranged lengthwise and crosswise alternately. About 170 iron rods were used as uprights in the construction of each of the rafts above mentioned, but inasmuch as these rods could support a weight of 11,000 tons, whereas the raft, ready for towing, had a weight of less than 7,000 tons, it can be seen that a considerable margin of safety is allowed. About two-thirds of the average lumber raft is submerged when the craft is ready for sea and an enormous cable is passed around the body of the raft in order to afford a firm grip for the towing hawser. Although theoretically practicable the construction of lumber rafts has not been attended by the success which has been met with in the case of the log rafts. One of the rafts broke in two in a gale, but the plucky towing crews managed to secure the two sections and tow them into San Francisco in triumph. Moreover, the cost of construction is proportionately greater than in the case of the log raft, so that it is not likely that the lumber raft will become the permanent feature of Pacific Coast commerce that the log raft is.

Building Materials in Morocco

Reports from Tangier state that there is a large and increasing demand in that part of Morocco for cement and building material of all descriptions. The reason of the increase in the importation last year of cement, bricks, tiles, hardware and furniture is to be found in the great stimulus experienced in the building trade.

The right of foreigners to acquire land having been confirmed by the powers represented at the Algeciras conference, the demand for building materials of all descriptions will, it is said, increase considerably. There is sure to be a great demand for tools of all sorts and descriptions, and all the many conveniences required for a modern town will be in demand. Steel and iron girders and ironmongery of all kinds were imported in large quantities during the past year.

Use of Yellow Pine for Interior Finish

INCREASING USE OF THIS MATERIAL FOR INTERIOR TRIM—VERY FAVORABLE COMMENT RECEIVED AT
WORLD'S FAIR AT ST. LOUIS

By **Geo. K. Smith**

IN the building of homes one of the important features is the interior finish of the various rooms. The architect is usually consulted both as to the material to be used and the design to which it is to be worked. The large variety of woods available for interior trim makes the question of selection quite a complicated one, and some information as to the adaptability of yellow pine for this particular part of a modern home we trust will place this wood in a new and interesting light before the architects, designers, specification writers, carpenters and prospective builders who may chance to see this article.

For the past thirty years yellow pine has been steadily gaining ground as an all-round building wood, until now it comprises about one-third of the entire wood construction annually, totaling 10,000,000,000 feet.

For many years little attention was paid to its qualities as an interior finish, but the growing scarcity of hardwoods made a substitute for them necessary, and yellow pine was given a test by its manufacturers, which has convinced thousands of architects of its superior qualities for interior trim.

During the World's Fair at St. Louis a three-room cottage was erected in the Forestry Building for the express purpose of demonstrating the beauty of grain, the adaptability to the new stain effects, and the cost of yellow pine as compared with hard woods, when given the same treatment in workmanship and materials used in finishing them. The exhibit was so unique, so pleasing and so practical that it received a grand prize in the Forestry display, and a gold medal in interior decoration, competing with rooms from Germany and other countries.

So much favorable comment was passed by visiting architects that the manufacturers of yellow pine decided to duplicate one of the rooms and send it complete to various cities in the United States, in order that it might be seen by many who could not come to the Louisiana Purchase Exposition. It was the Flemish room with carved mantel, beam ceiling and panel walls, all of yellow pine stained brown.

The cities of Minneapolis, Chicago, Pittsburg, Buffalo, Cleveland, Omaha, Kansas City, San Antonio, Houston, Dallas, Denver, Detroit, Toledo and Columbus have already been visited, and the original World's Fair rooms are now in use in one of the large stores of St. Louis for displaying furniture, chairs and bric-a-brac.

To the many thousands who have seen this practical demonstration of the use of yellow pine in high class interior finish, it has been a revelation and has undoubtedly established this wood as a worthy competitor for admission to the best class of homes, not only in

the cities already visited, but in all others where yellow pine is available.

It is equally satisfactory for the interior trim of cottages, and is increasing rapidly in use by manufacturers of doors. The fact that it is carried in standard patterns by 10,000 lumber yards adds to its availability by eliminating the extra time and expense in having special designs worked at a local mill.

In France and Germany it constitutes one of the principal materials for the manufacture of furniture, to which use it will undoubtedly be called at no distant day in the United States.

Improved woodworking machinery has done much to aid yellow pine in reaching its present position as a high class interior finish, and now that the stain and varnish manufacturers have solved the problem of producing goods which can be easily and economically applied, it seems that the use of yellow pine as an interior finish in all classes of homes will steadily increase and continue until the supply of this wood is exhausted many years in the future.

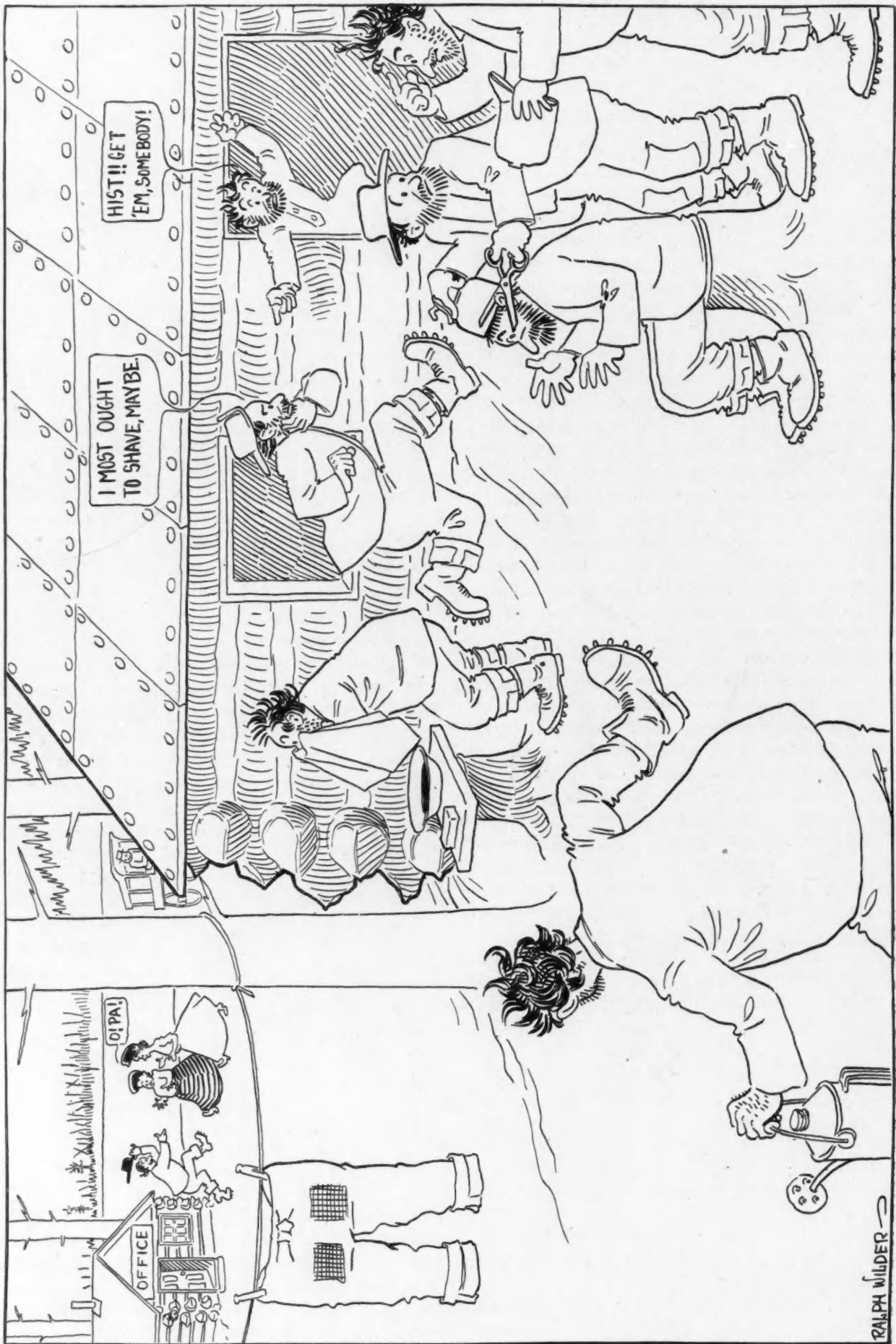


American Institute of Architects

The next convention of the American Institute of Architects, to be held in Washington, D. C., January 7, 8 and 9, 1907, will commemorate the fiftieth anniversary of the institute, founded in 1857. It is proposed to make this a notable meeting. A bronze tablet containing the names of the founders of the institute will be unveiled in the Octagon, commemorating the occasion. During this meeting the institute will inaugurate the custom of presenting a gold medal for distinguished merit in architecture. The first medal will be presented to Sir Aston Webb, the architect of the Victoria Memorial, who received the gold medal of the Royal Institute of British Architects and knighthood during the past year. This meeting will also be the occasion of a formal banquet at which will gather those distinguished in the fine arts, prominent government officials, representatives of educational institutions, and men of literary fame. As ceremonial and social events will occupy the time of this meeting no formal papers will be read, but the routine business and commemorative exercises will occupy the time of the delegates.



Gasoline engines were first employed as a motive power for boats the latter part of the '80s. Since then they have gradually increased in popularity, until now boats driven by gasoline engines are to be found in nearly every quarter of the globe.



At the Lumber Camp — "Ladies Coming!"

Use of Birch for Interior Finish

QUALITIES THAT MAKE BIRCH ONE OF THE BEST WOODS FOR INTERIOR FINISH—OFTEN USED TO IMITATE OTHER WOOD

By H. A. Callahan

IN being requested to prepare a paper for the January number of the *AMERICAN CARPENTER AND BUILDER*, the writer, after deliberating upon a choice of articles, selected the above subject as one which, in view of the present tendency toward simplicity in interior architecture, is especially pertinent, and one which also requires no technicalities in de-

out gaining a real opportunity. He is called versatile by his friends. That is the reason for his failure. Thus it is with birch. It is compelled to masquerade throughout its use, as almost everything but itself. You have birch imitation of mahogany, of walnut, of cherry. It does not make any difference whether you are imitating these woods with plain white birch, or



Fig. 1

scription. No depth of expert knowledge is needed to enable one to appreciate beauty when seen. It may be difficult to explain just why one appreciates artistic work of any kind, but one glance suffices to give the impression—either good or bad—and that impression remains.

In the writer's opinion birch, in its uses for decorative purposes, has never had its due. It has not been maligned—simply misunderstood. Birch is versatile. That perhaps, is its weak as well as its strong point. Many a man of multifold talent goes through life engaging first in one pursuit and then another, with-

curly birch, or plain red birch. The imitators are indiscriminate. Great will be the gratitude of the birch enthusiast the day some of these imitators, in a moment of carelessness, imitate birch with birch. Nine men out of ten, in discussing the wood, will invariably make pre-eminent to all its other qualities its readiness to take mahogany stains. A finisher will take white birch (beautiful in itself in the natural or slightly darker stain) and daub it up with a thick, gluey mixture, and behold, you have mahogany! Well, now, have you? As a matter of fact, you have not mahogany and you have not birch. "It is neither fish

nor fowl." In some varieties of red birch, when used in small pieces and furniture, it may take experts to detect the imitation, but never in broad paneling. In the majority of cases, as mentioned before, birch is used as a counterfeit, the only difference being (in the writer's opinion) that the counterfeit in itself is of greater beauty than the material it counterfeits. This indiscriminate abuse of what is perhaps our most beautiful American wood, has made birch a martyr,

hogany. It is easily worked, and when properly dried shrinks very little and holds its shape. There is no pulling apart at the joints. It is true, birch is liable to wind checks in the growing tree, but this fault is easily obviated by selecting the wood. As far as we know this is the only fault, and not a great one at that. It might be called the aristocrat of woods.

Now, as a matter of fact, one will find, in discussing the subject, that there is no great objection to the



Fig. 2.

and we fear its real worth may never be duly appreciated, until, like many other things, its supply begins to grow scarce.

Red birch, with its variety of curly birch, of course is used in imitation work with much more sense and justice than white birch. It is darker than the latter, and the resemblance of grain and figure is closer, but the very qualities that render the simulation possible are qualities which in themselves make birch the ideal decorative wood of America. It has richness of tone and figure. It is not porous, and requires no filling, consequently takes a very high polish. There is nothing garish about it, such as one finds in the much sought after quarter-sawed oak or sycamore. It has dignity and stability, and is more durable than ma-

use of birch for any inherent fault in the wood itself. It is simply "damned with faint praise."

Let us take up the numerous objections usually offered for the non-use of any particular building material. Step by step they are: First, price; second, supply; third, working qualities; fourth, durability, and fifth, appearance. The first two objections can be treated together, as they regulate each other to a great extent. Birch is plentiful, but more than that, it is accessible. The New England and Eastern states have vast quantities of it. In the upper peninsula of Michigan, in a great many vicinities known for their white pine and hemlock, birch is practically the only good hardwood on the tracts. Throughout Minnesota and Wisconsin it is quite the same. This country is close to the lum-

ber manufacturing markets naturally, and the lumber in sight will last for many years to come. Consequently we find birch selling at maple prices (a wood whose sole merit practically is its durability). We find birch selling far below plain oak or ash, its inferiors in working qualities, and we venture to add (at the risk of controversy), in appearance and durability. Plain white, or plain red birch, is fairly plentiful at the present demand. Its price is low. Curly birch is scarce in the same proportions. Its price is high. A curtailment of supply or an increased demand would vary the situation gravely. The fact remains that the present supply of birch is great, while the selling price of the general variety is low. (An argument in its favor from a business standpoint.)

The third question is that pertaining to manufacture and working qualities. Birch is a fine grained wood. That is, its texture is close and runs straight for the most part. It is hard and heavy, but not cross-grained or tough. It does not need to be planed both ways, for instance, or

scraped or surfaced to the extent of elm, sycamore, oak or ash. It takes glue joints almost perfectly, and this, in door work, is something to be remembered. Birch is very easily cleaned up in preparation for a finish and presents a surface hard and even. One will rarely ever see birch veneered panels pulling or warping away from the mouldings, as is very common in other hard woods. A slight checking is sometimes seen in some birch lumber, but as mentioned above, that is entirely a fault in the growing tree, and does not result from

any methods of manufacture. This fault is one easily apparent, and lumber thus affected should be kept out of finishing grades.

Of the fourth question, that of durability, there is not much doubt. The wood is not only heavy, but is extremely hard and smooth. In interior finish or furniture this quality is of great importance. At present there is, for instance, a great deal of artificial enthusiasm being worked up in the interests of cypress.

Cypress beveled siding or shingles, when exposure becomes a factor, are incomparable, but when it comes to interior finish, it is another proposition. It is not easy to hold in place, but warps and shrinks. But above all things else, it is soft. It mars and dents and scratches, and that is something which will forever bar it from any extensive interior finish uses, even were it true (which it is not) that its figure is of sufficient beauty to counteract these other defects. Now birch, in contrast with these others, does not dent or mar. Not being porous, consequently does not



Fig. 3.

absorb sufficient moisture to affect its life. To quote a colloquialism, "it stays put." This quality of permanence is of the greatest importance, and in this respect we find birch faultless.

Fifth, and lastly, we come to perhaps the chief characteristic, and one which, in most cases, decides the selection of any wood, i. e., its appearance. There is nothing startling in the first glance of any birch interior. It is essentially quiet and well behaved. Its figure does not stick up like a bas relief from the sur-

face appearance. It seems to be conscious of its beauty and is satisfied to reserve its charms for the appreciative only. Quarter-sawed oak is blatant and noisy, and is constantly waving its curious figure, in frantic fear that you will pass unheeding; but you will notice that the richest of quarter-sawed oak, plain oak, or ash, is finished quietly nowadays. It needs subduing, hence the weathered oak so much in use. Quietness and refinement of tone are essential to all beauty, and birch lends itself to the combination most admirably. Curly birch, finished in rich chocolate brown or

as the white or red. Fig. 2 shows a plain red finish on curly birch. While not, perhaps, apparent in the photograph, this interior gives an impression of rich refinement and simplicity. If any criticism were to be offered we would suggest less of the mahogany red and more of the brown, of real birch. Fig. 3, a staircase of curly birch, finished in flesh color—a satisfaction to the lovers of the unique, and to those who like birch for its own sake, rather than for its faculty of imitating other woods. Fig. 4, a good sample of birch paneling. This is in curly birch for the most part, and

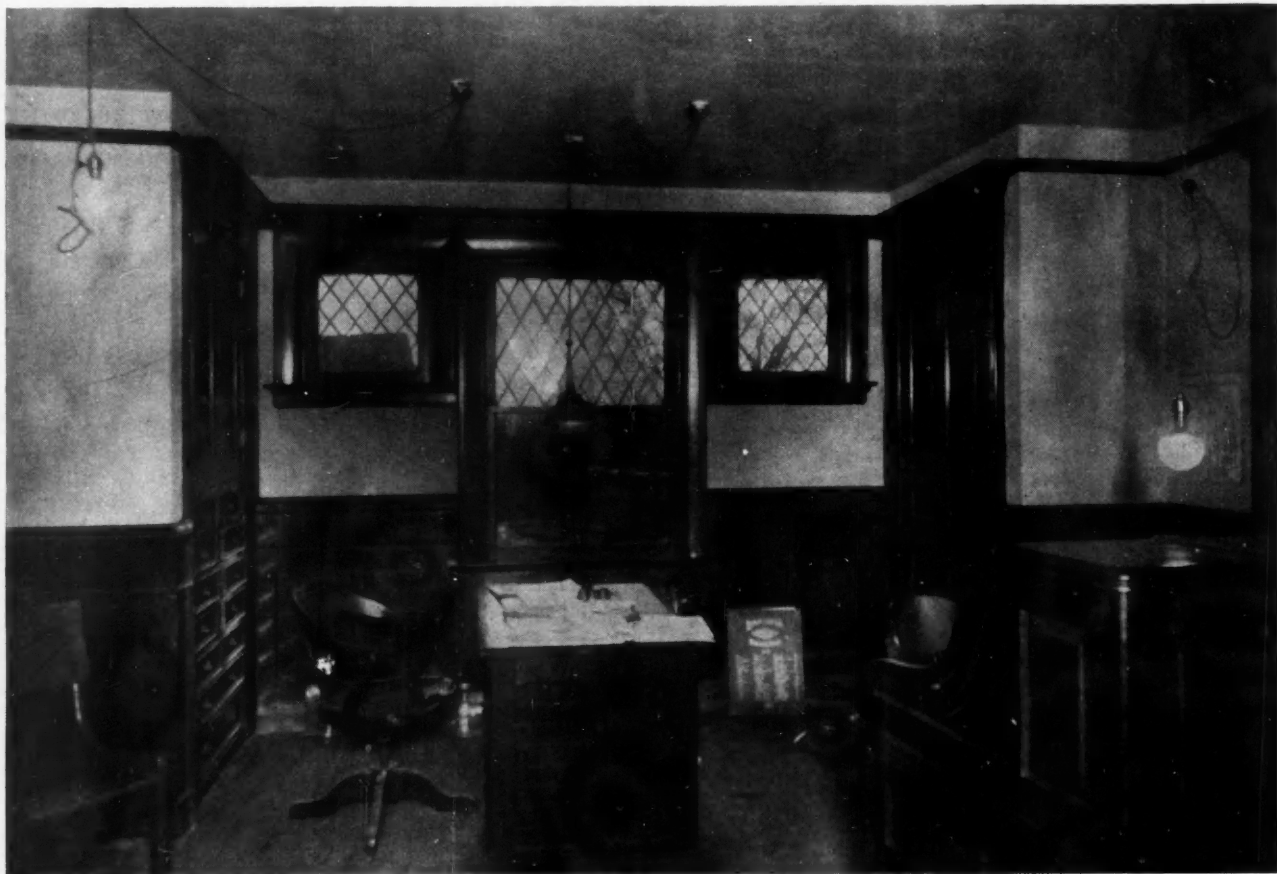


Fig. 4.

flesh colors, is superb, and need take no pointers from the much vaunted mahogany. The moment you go further, and attempt mahogany finish you have worked havoc with your birch, and you have not attained your mahogany. For white birch we would suggest light finishes, that is, natural finishes. For plain red birch or curly birch a darker finish should be used. To use, for instance, a wine-color stain on a naturally light wood, such as white birch, would be as senseless as the putting of an overcoat on a marble statue. Above all, a thorough rubbing to take away the cheap varnish shine should be the last operation in birch finish. Fig. 1 shows the white and red combination so much used at present in up stairs and bedroom finish. This can be varied by using light birch finish for both doors and woodwork. This last gives a more cheerful appearance to the room, although perhaps not so decorative

is finished in a rich chocolate. The rounding surfaces of the specially detailed pilaster frames, together with the broad panels of the wainscoting and doors, lend a fine opportunity for real birch. In this interior, at least, it is quite as imposing as mahogany.

In conclusion we might say that the writer is well satisfied if this unpretentious article is sufficient to arouse even a modest interest in birch wood. If somewhere, some one, some time or other, should be aroused to the point of even languid curiosity by any statement here made, I feel certain that the qualities of the material in question would in themselves carry him onward to real enthusiasm.



Know how to listen well; take in all the points you are told, and catch the spirit as well as the letter of the request.

with that for a one-foot run of the common rafter, while the figures from the heel to 12 represent the length of the tangents. Here is a beautiful study. Note: The descent of the tangents is very rapid from 12 for the square down to 3 11-12 for the decagon, or ten-sided building. The more sides the shorter the tangent would be, until finally when they become so short that they are no longer recognized then the building would be without hips. In other words, it would be round, and consequently its run rests at zero and its length is 12 inches. This transferred to

The triangle is not shown in the illustration, yet it is indirectly represented. The reason for this is, that the angle of the run falls into the co-tangents. The operation for finding the angle is the same as described in Fig. 97. The quotient is found to be 60 degrees, and consequently would be beyond 12 on the tongue. In fact, it would not intersect the tongue at all, as its tangent is 20 3/4 inches. Therefore, it would be necessary to reduce the scale as 10 3/8 and 6, which is a reduction of one-half; and these figures taken on the steel square will give the same results as 20 3/4 and 12.

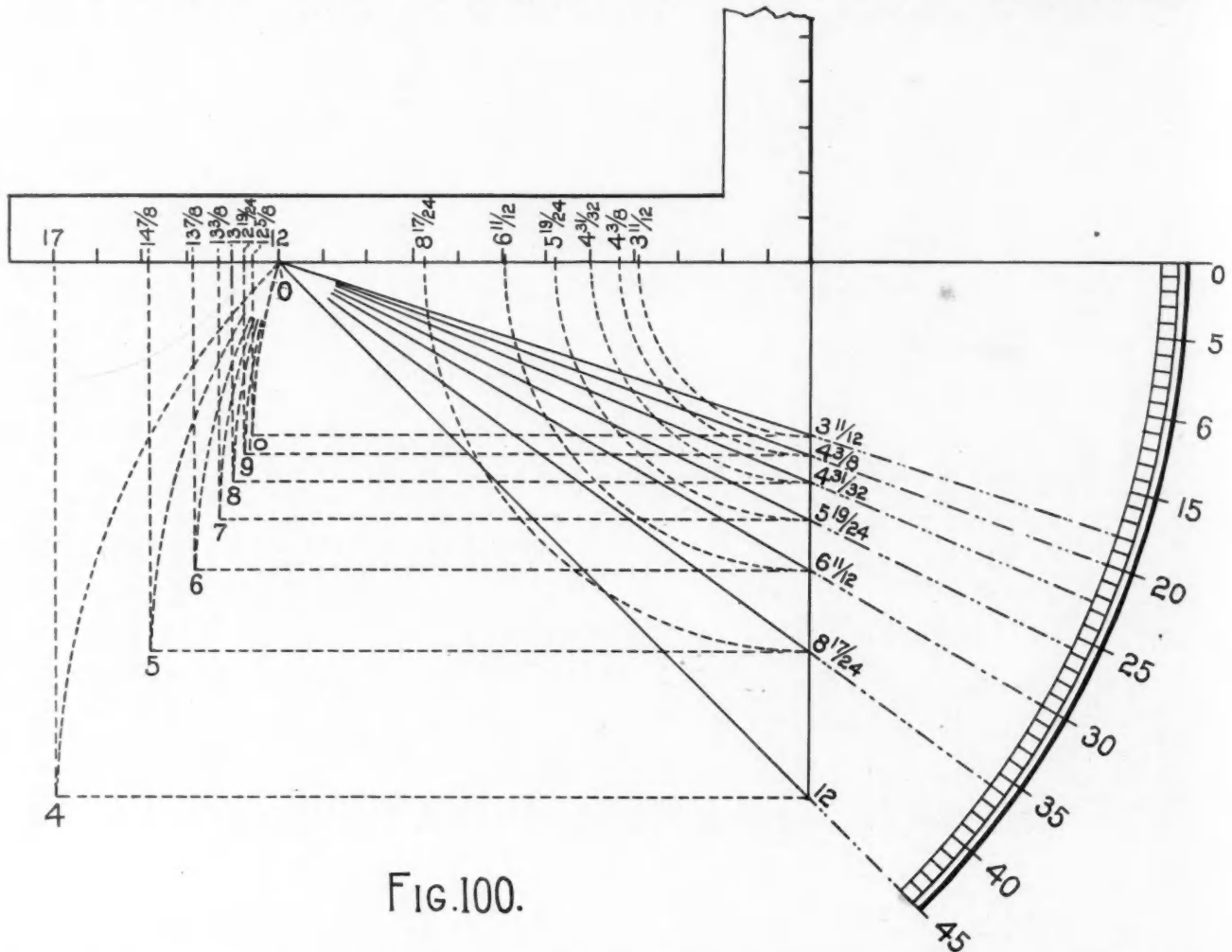


FIG. 100.

the parallel line intersects at 0, and the perpendicular line from this point intersects 12 on the tongue, thus showing that the rafters would be the same as for the common rafter for any kind of a building. Note: There is only three-eighths of an inch difference between the length of run of the decagon and that for the common rafter. Therefore, no difference how many more sides the roof may contain, their lengths would fall in between 12 and 12 5/8 on the tongue. This would require pretty close calculation and accuracy on the part of the mechanic. However, it is very rare that examples of this kind come up in actual practice, and in fact may never in a life time, but the theory is correct, and they are worked out along the same lines as for the more common angled corners, such as come up in every-day work.

To illustrate this point further we refer to Fig. 99. Here is the 60 degree line centering at 12, as in the case of the other examples. The intersecting point on the tongue would be at 20 3/4. Now as this is beyond the length of the tongue we must use some other figures. Say we wish to take one-half of the above proportions. Then square out 6 inches below 12 on the blade (because 6 is one-half of 12) to a point intersecting the 60 degree line, thence down to the tongue and the line will intersect 10 3/8, which is one-half of 20 3/4. A line from 10 3/8 to 6 will be parallel to the one above and will give the same results. For finding the side cuts, proceed from these points as in the previous figure.

However, we are not through talking about Fig. 98. 12 on the tongue is a pivotal point, because it repre-

sents the full scale, or in other words, 12 inches equals one foot. The pitches are reckoned from this point.

For example, we have taken the 2-3 pitch (16 on the blade), then the dotted line from 12 to 16 represents that pitch, and gives the seat and plumb cuts of the common rafter. For the corresponding hips for any of the polygons it is 16 on the blade and those for the

what each angle is for, so that it is not necessary to enter further into the description of this figure. However, it might be well to show how 12 on the tongue can be used for both the common rafter and hip, and yet give the same results, as in the previous figure, though different figures are used on the square to give the cuts for the hip. In other words, 12 and 7 1-5 (see Fig. 102) will give the same results as 14 7/8 and 9; and 12 and 14 will give the same as 14 7/8 and 17 1/2. But the length of the hip should be calculated as from 12 to D' in comparison to one foot run of the common rafter. Otherwise, if the length is reckoned from 12 to 7 1-5, then this applies to each foot of its own run.

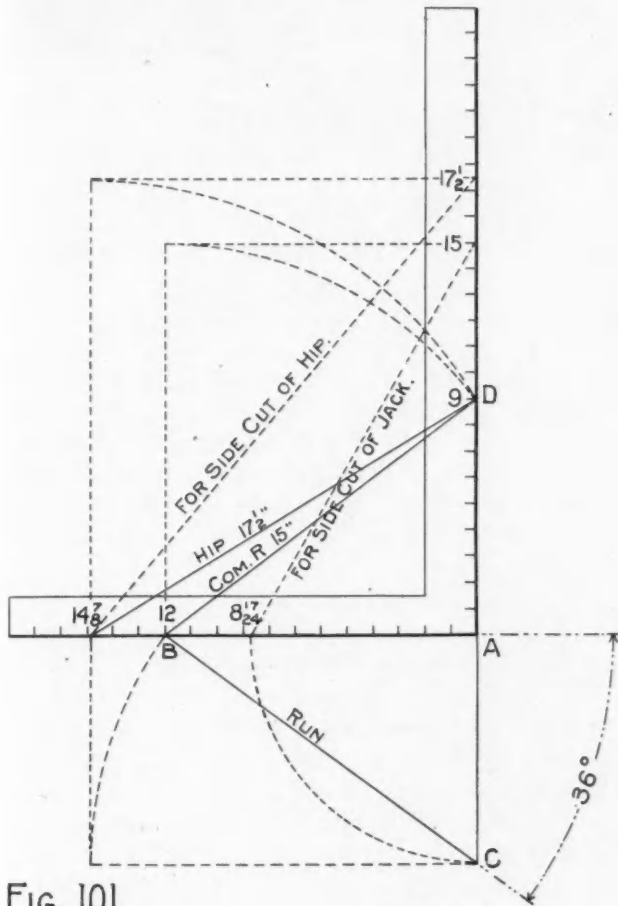


Fig. 101.

respective number of sides on the tongue. For the side cut of the jacks it is the length of the common rafter (20) transferred to the blade and the respective tangent on the tongue; the blade will give the proper angle for the cut. Thus for the side cut of the octagon jack it would be 4 31-32 (practically 5) on the tongue and 20 on the blade.

Fig. 100 shows another form of illustrating how to find the figures to use on the tongue of the square. In this the calculating is all done from the central point of 12 on the tongue, instead of 12 on the blade, as in the former. Thus the unseen, but existing points, are determined from the tongue alone, leaving the rise, plumb and side cuts to be determined on the blade. This has some advantage over the former, in the way of less complication of the imaginary lines. Using the latter form we will now illustrate the pentagon alone, as shown in Fig. 101. In this the 9-inch rise, or 3-9 pitch, is used for illustrating purposes, and like letters are used to represent the different parts, as before described in Fig. 95, for the octagon, besides the different angles are clearly described, showing just

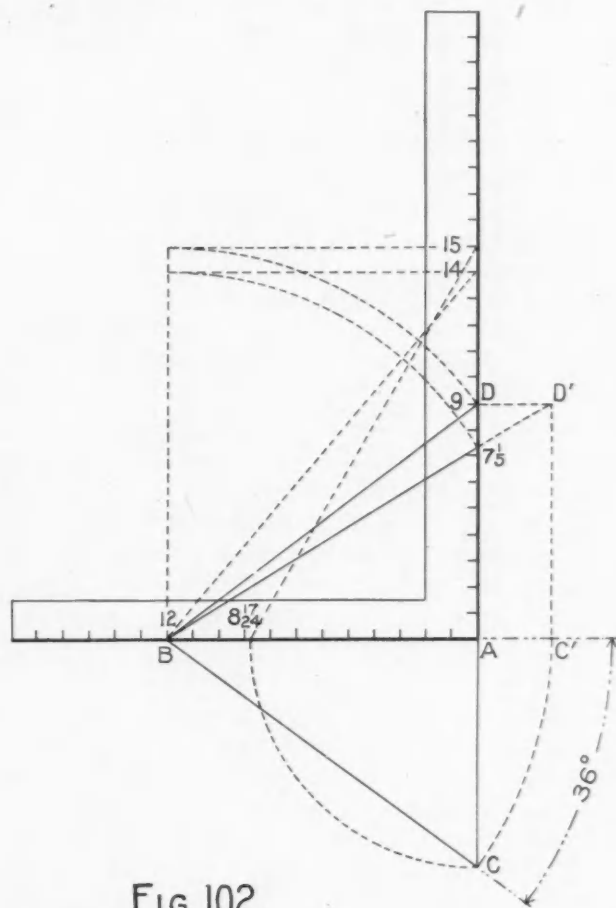


Fig. 102.

As this would require an extra calculation to arrive at the lengths of the individual run of the hip, it is better to use the figures on the tongue (for the hip) as shown in previous figures.



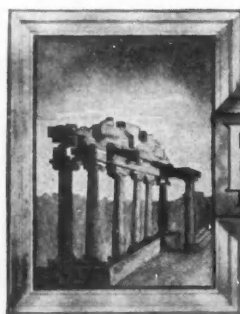
Pleased Subscriber

I am highly pleased with your journal. I think that every carpenter who wishes to keep abreast of the times and wants to become proficient in his chosen pursuit, can do nothing better to attain to that purpose than to take the AMERICAN CARPENTER AND BUILDER.

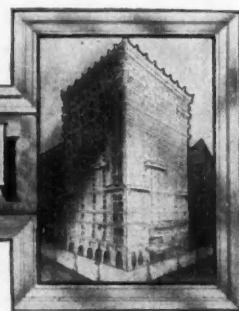
JAMES SELBY, Claysville, Pa.



Every time a man commits a mean act he has what he considers a good excuse for it.



BUILDING CONSTRUCTION



J.A.F. Cardiff.

Construction of Casement Windows

GIVING ONE OF THE BEST METHODS OF MAKING THE FRAME AND SASHES—ILLUSTRATIONS SHOWING THE CONSTRUCTION COMPLETELY

CONTINUING the examples of the construction of casement windows opening outward, we illustrate in this number one of the best methods of making the frame and sashes, and incidentally show how the outside architrave may be omitted, which feature is frequently considered desirable from a standpoint of appearance.

The frame wall is constructed in the usual manner of 2 by 4-inch studs, placed 16 inches on centers and doubled for jambs, heads and sills of openings. The studs are covered on the outside with matched sheathing boards, heavy building paper and shingles. The inside of the wall is wood lathed and plastered. Plaster, except the white finish, should be carried behind all wood base, wainscot, trim, dressers, etc.

The frame is gotten out of 2-inch stock, rebated and molded as shown, and projects beyond the outside surface of the sheathing boards not less than one and three-eighths inches, so that the shingles or other exterior wall covering may butt against it. This manner of allowing the frame to project to take the shingles, does away with the necessity for an outside architrave. This is considered a desirable feature when it is important that as little wood as possible shows about the window. The head of the window is made water-tight by flashing with tin or copper in the manner shown in Fig. 156. The flashing is carried up behind shingles at least 4 inches, and down over top of frame, so that the metal projects sufficiently to form a drip, which prevents water from trickling down under head of frame.

In the better class of work the joints of the shingles with the jambs are also flashed in the manner shown in Fig. 157.

After the frame is set, the spaces about the frame should be made weather-proof by calking with oakum and plastering over, or by filling up the interstices with plastering mortar.

The sashes are rebated and are fitted with wood beads for holding the glass in place instead of using putty. The glass is, however, bedded in putty before the wood beads are affixed. A drip molding is let into the lower rail of sash to catch any water drippings and prevent them from beating in under the sash.

Jambs of frame have a groove cut in the rebate as

shown at "A," Fig. 157. This groove catches any water which may beat in between sash and jamb and conveys it downward, as indicated by the dotted lines in Fig. 158, and discharges it on the sill as indicated by the arrow.

Fig. 156 is a vertical section taken through the head of the window. The cant strip shown is required over the head to give the first course of shingles the proper tilt. The trim is of 1½ by 5-inch molded and hollow backed material, mitred at angles and put together with slip tongues and glued. A small wall mold follows about all trim.

Fig. 157 is a horizontal section taken through the jamb of the window and shows the trim and inside stop bead finishing on a molded stool.

Fig. 158 is a vertical section taken through the sill and shows the joint of stool with sill put together with a slip tongue and glued. The sill has an undercut into which the shingles are fitted.

Fig. 159 is a horizontal section through the meeting stiles of casements in two leaves. This makes a tight joint but requires that both leaves be opened and closed together. The crescent shaped space between the two stiles is required for the play of the sashes when thrown forward owing to the hinges turning on a center outside of the sashes.

Fig. 160 is an exterior elevation of the upper portion of the window.

Fig. 161 is a vertical section taken through the transom bar. The projecting portion is pitched to throw off water and the underside is grooved to form a drip. The upper or transom sash is stationary and joints are put together with white lead. The inside of the transom bar is molded to correspond and mitre with a portion of the trim.



An important law which will have a far-reaching effect in France on most of the industries is that recently passed in that country relating to the Sunday rest. The new law restricts trading to six days and imposes a rest on Sunday whenever possible.



Turpentine and camphor are generally used as lubricants for drilling glass, but a simple solution of soap in water answers very well.

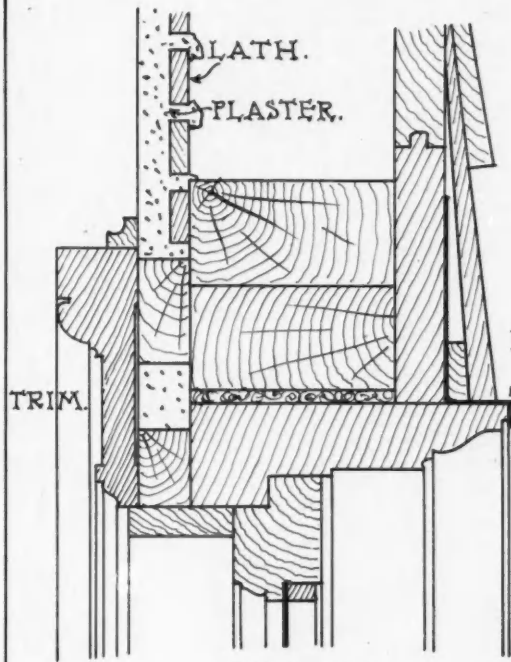


FIG. 156.

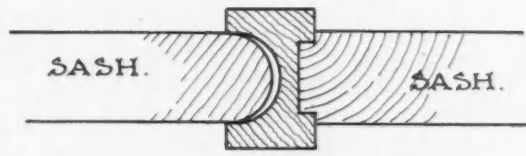


FIG. 159.

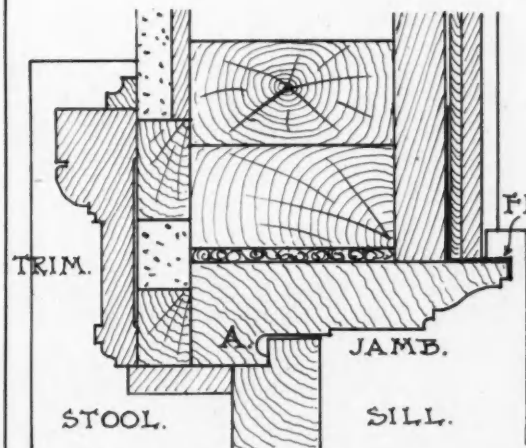


FIG. 157.

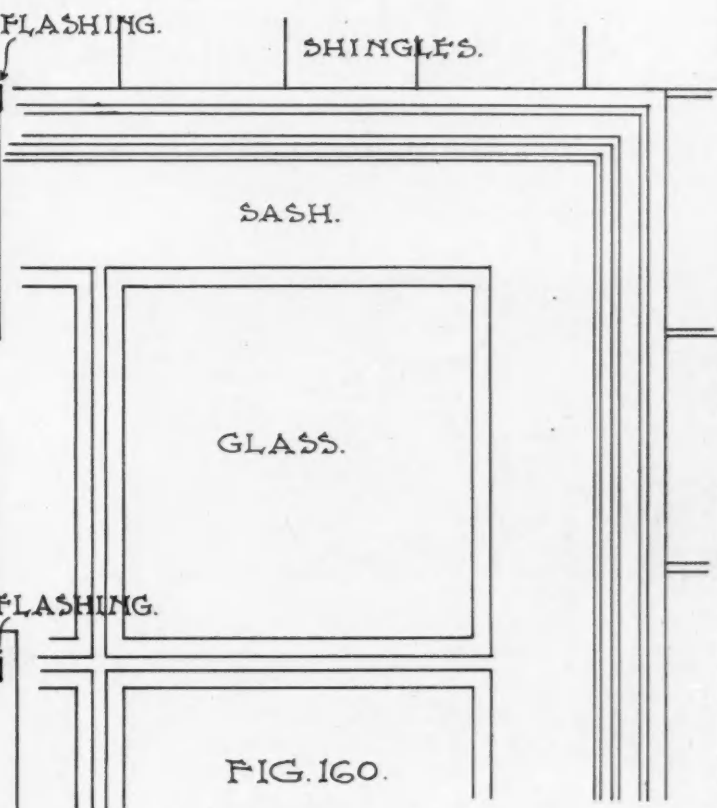


FIG. 160.

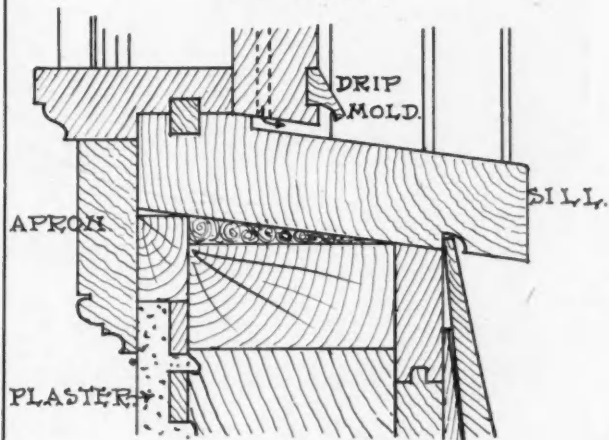


FIG. 158.

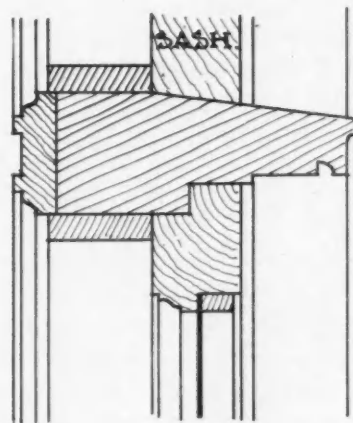


FIG. 161.

PLATE XXXVI.

WINDOWS.

Concrete Blocks in Cuba

GREAT FIELD OPEN FOR BLOCK MACHINE MANUFACTURERS—CRUDE METHODS USED AT PRESENT
WITH BAD RESULTS

By George H. Melrose

LIKE all old Spanish towns, Havana and surrounding centers of Cuba are well built up with houses and manufacturing plants constructed with concrete blocks, cement stones, artificial rock, and various compositions of solid materials suitable for buildings. As soon as the writer arrived here, he visited the quarries where they take the pe-



Quarried Stone near Marianao, Cuba

culiar Cuba rock out in a soft state and whittle it down to the right proportions before it hardens in the sun. He also visited the establishments in which the native artisan manufactures a very substantial description of artificial stone for building purposes and for paving streets. Just what the composition of some of this manufactured stone is, could not be ascertained. However, let us examine some of the peculiar methods of getting the material and working it up. The Havana builders, likewise the builders with stone of Marianao, Vedada and vicinity, prefer ornamental products. In America, we make concrete or cement in all styles of ornamental architecture, as all know. It is cut like any hard material or is moulded. In Cuba the artisan both cuts and moulds the product. He has his various types of wood, clay and metal flasks in which he can produce various designs with the pliable stuff before it hardens. The natives cast cement in sand moulds. They have wood and metal flasks also. They reduce the mixture to a pouring state and run it into the moulds. Some of the patterns are made direct from the genuine stone. I have seen very good effects obtained by using the coral products secured from the beaches.

These selected coral designs are impressed in the

sand moulds and the impression thus obtained is used to reproduce the patterns on the new material. Hence we find buildings with exact representations of coral. They make a cheap form of cut stone, which is possible because of the exceedingly soft condition of the material before it becomes hard. It is not unusual to see the native stone cutters at work shaving down the sides of the stones with a common wood axe. This must be done soon after the stone is removed from the ground. This natural stone is the salvation of the country, so far as building construction is concerned. Nevertheless, the native stone and cement block makers turn out a great deal of artificial material. There appears to be a demand of about equal proportions for the quarried stone and the manufactured product. The manufacturers obtain a great amount of acceptable sand at very low rates, for the reason that there is an abundance of properly featured sand along the water front around the island of Cuba. There are hundreds of teams always hauling this endless supply of sand to the block makers. The water fills the excavations as fast as made. Real rock-faced stone is



Ovens of Brick and Stone Plant

turned out in good form by the ingenious cutters in the works of Cuba. The plant at Marianao, where they are running a quarry with double car track to the engine and plant, turns out superior descriptions of ornamented stone for the architects.

Then they have processes of beautifying the stones by a mechanical process of finishing, involving quite a lot of tedious rubbing and smoothing, both by hand and machine.

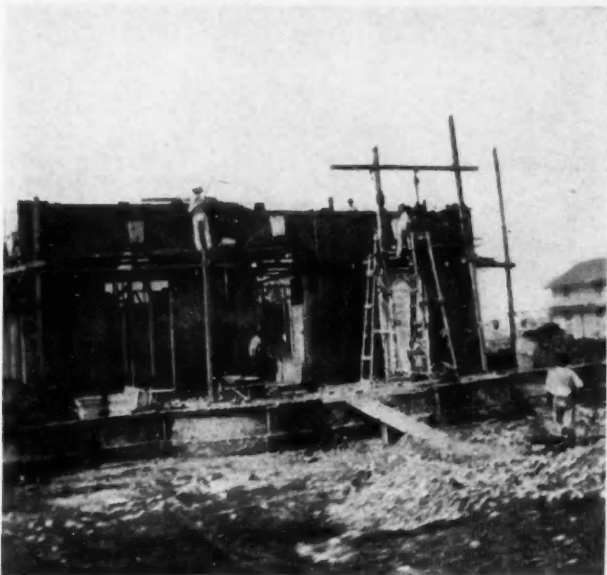
Your correspondent visited the Philippines, China,

Japan, Honolulu and Guam last year, but never noticed so much progress in the stone making line in the above mentioned countries as is in progress in revolutionary Cuba. Regardless of uprisings in the interior and patriotic speeches of rebels, the stone



Stone Works near Marianao, Cuba

manufacturers have worked steadily along. Many new buildings have been erected, and it would do the eye of any one good to inspect some of these Cuban residences. At night you can imagine that you are passing through fairy land. The average Cuban, rich or poor, does not consider the expense of light. He runs up his electrical, gas and oil bill in order to have



Cuban Concrete House Being Constructed

numerous lights burning in all the windows of his house and on the porches.

The houses are built with natural and artificial stone, or by the combination process of wood and

stone. Or the walls are put up on the hand-made cement and metal rod plan, by which the walls are gradually cemented upwards in moulds, from the base to the roof, with long iron rods extending parallel through the same. There are not many real block machines in the country, but the Cubans come very near to making the real block by slow hand methods. Hence you may see the walls gradually rising, while all the stone shaping is done on the premises, or the walls built up inch by inch in moulds and frames direct. Then these walls are allowed to harden and in time the roof goes on and the house is finished. Then the walls are tinted beautifully, inside and out, in white, blue, pink, and kindred shades. These colors are kept clean and free. Hence when the lights are going at night, and you pass row after row of brilliantly lighted homes, and hear the music within, and observe the ladies in evening dress and the men likewise costumed, you can imagine that you are witnessing an opera. And it is so, street after street,



Typical Cuban House of Concrete Blocks

along the famous Vedado. And all this is due to the fine architectural construction of Cuba's designers. They are wonders at it. Nevertheless, the houses remind you of the card house that falls. The cement structures crumble in a few years. I saw many fine structures in process of decay. The corners wear off, the edges go, and in 25 years the mansion which ought to be good for 100 years, if of stone, has to be overhauled and rebuilt.

I believe that there is a very good opportunity in Cuba, as in other foreign countries, for the more extensive introduction of the American concrete block machine. American builders of these machines will find it to their advantage to distribute literature advertising their machines, through the manufacturing districts. I saw many rebuilt and reconstructed second-hand block making machines in use here. I observed some patterns of block machines which were built by home labor. These machines are exceedingly crude and

(Continued on page 1189)

Architecture in Great Britain

EXAMPLES OF STONE WORK AND OTHER FORMS OF ARCHITECTURE SHOWING THE EARLY ENGLISH IDEAS ALONG THIS LINE

By **George E. Holt**

WE build great buildings, astonishing buildings, good buildings in these days, and perhaps a few hundred years from now our great-great-grandchildren will gaze upon some isolated ruins of a commercial castle of the Twentieth century and wonder. But we who think that the people of the



Melrose Abbey

Elizabethan period were of the unenlightened have but to look upon their work and know that they were at least good builders.

At Chester, England, in the first century the Roman legions cut through the solid rock about the walls of the city a fosse, or moat. In some places they cut a channel through the rock sixty feet deep. With



Lancaster Castle

the stones thus secured they built a wall. An ingenious idea that, to manipulate level ground so as to produce two lines of defense—a moat and a wall, and to produce the wall while they were producing the ditch! And so good were they both that Twentieth century

people still may walk upon the wall, and a Twentieth century transportation company finds the fosse big enough to use as a canal upon which to carry freight.

In cathedrals, in parish churches, in castles, in palaces, one who travels through Britain finds that the old Britons were good builders. And they not only built to have their buildings stay built, but they had an eye for beauty—so true an eye that the modern builder is wise in studying the remains of that past epoch, whether it be a well-preserved cathedral or a ruined abbey.

Our illustrations show two or three examples of stone-work which especially attracted our attention in Britain. Melrose Abbey is probably the best-known of any British ruins, and after looking upon it or upon a picture of it, one can readily understand why this is so, for it is beautiful. We studied the building itself for hours, but when our photographs were finished,



Old Wall of Chapel, Lancaster Castle

we found a wealth of detail that had escaped our notice before—delicate tracery, designs so assimilated by the plan of the whole as to be almost unnoticeable. Melrose Abbey was founded in 1136 by David the First and was mother to all the Cistercian churches in Scotland. The wall enclosing the monastery was more than a mile in circumference and the abbey itself took more than a century to build. The ruins are 258 feet in length and 75 feet wide. The famous window, shown in our pictures, is 36 feet high and 16 feet wide.

Our second view is one which, we believe, has never before been taken, for it was only by much labor and the conventional English inducer that we secured access to a point from which we could get this view.

In point of date Lancaster Castle, at Lancaster, England, precedes Melrose Abbey, for one tower in



Entrance to Chapel, Lancaster Castle

it dates from the year 124, while another portion is said to date from the year 79. The castle became important while occupied by John of Gaunt, son of Edward the Third, and in the Wars of the Roses was the scene of many a fight. In those days each well equipped castle had its own chapel, for should the worshippers have had to go any distance to attend service,



John O'Gaunt's Gateway, Lancaster Castle

the probabilities are that they would never have returned. There were warm times then, you see. Our pictures 3 and 4 show various interesting details of the chapel. The first includes the very old portion, probably nearly fifteen centuries old, and the comparatively modern entrance, although that was built before Columbus' grandfathers lived. The difference between the two portions will be noticed at once. The other illustration shows the entrance on a larger scale, with the Virgin Mary in stone over the doorway, the gargoyles—hideous faces which were believed to keep away evil spirits—and the exquisite carving. John of Gaunt's gateway is a masterpiece of building, even down to the stone figure of John himself, which, in



Norman Doorway, Kenilworth Church

armor and helmet and with sword in hand, keeps guard over dominions once his own.

At Kenilworth church is a Norman doorway which is one of the most beautiful entrances we have seen, in spite of its age. In fact, age has only softened its appearance, much as age softens and beautifies the human face. Although the details are in perfect keeping with the general design, one appreciates better its beauty by getting only an impression of the details.



Some one says that the voice of conscience is but an invoice.

How to Make Blue Prints

SOME WRINKLES FOR CRAFTSMEN WHO MAY WISH TO DUPLICATE THEIR WORKING DRAWINGS BY THIS SIMPLE AND EASY METHOD

By T. B. Kidner

"I WISH I knew how to make those blue prints," said a carpenter to the writer while going through some working drawings together recently. "If you have ten minutes to spare you can learn right now," was the reply. The offer was accepted and the lesson took just about the time mentioned. That is to say, the essence of blue printing are of so simple a nature that scarcely any instruction is needed before the beginner can go ahead for himself and complete his knowledge by the actual doing, the best road to all learning.

The philosophy of the familiar blue print is easily comprehended by any person of ordinary intelligence and may be briefly stated as follows:

Certain chemical salts (several, in fact) have the property of being acted upon by sunlight in such a way as to change their nature somewhat. Broadly speaking, this is the basis of all the photographic processes, of which we may count blue-printing as one.

If a thin solution of gelatine be impregnated with the iron salt, ferro-prussiate of potash, and then exposed to the action of sunlight, it becomes insoluble in water. Blue print paper is ordinary paper, coated with a ferro-prussiate solution of gelatine in a darkened room, and afterwards carefully dried, away from all light. Thus prepared the paper is ready for the draughtsman's use, and is placed by him under a drawing, made in ink on tracing paper or cloth, and exposed to sunlight.

Tracing paper or tracing cloth is transparent, and the light goes through the clear parts of the tracing, but can not penetrate the lines of the drawing. The effect of this is that the gelatine coating of the paper which is under the clear parts become changed so that it will not dissolve. The gelatine under the lines has not undergone this change, and when, after proper exposure to sunlight under the tracing the prepared paper is placed in water, the coating under the lines washes away, leaving the clear paper showing.

The familiar white lines of our every-day blue prints are thus produced, the blue portion being that part of the gelatine coating which was changed by the action of the light, the lines, etc., being the clear paper.

Some years ago draughtsmen had to coat their own paper with the chemical solutions, but nowadays there is no necessity for that, many excellent brands of paper being on the market.

The apparatus for making blue prints is of the simplest description, all that is necessary being a frame with plain glass in which to expose the prepared paper under the tracing, and a tray or large dish in which to wash it afterwards.

The accompanying illustrations show a simple frame which can easily be constructed by any woodworker.

Fig. 1 is a front view and Fig. 2 is a back view. The pieces showing across the back are simple springs, made of oak, and serve to hold the prepared paper in close contact with the tracing.

Some details of construction are given in Figs. 3 and 4. The body of the frame is formed of 1½-inch by 1⅛-inch whitewood, halved together at the angles. The rebate for the glass is formed by glueing and nailing a thin piece (¼-inch) to the face of the body. The back is flush clamped, and is cut in half and hinged with two 1½-inch brass butts, a thick piece of felt being glued evenly on the inner face. The back is hinged to allow of the operator examining the print, to judge whether or not it has had sufficient exposure to the light in printing.

The springs for the back are of oak or hickory, shaped as shown in Figs. 3 and 4. Common square hooks serve to hold them to their work.

The frame in question is a small one, being only 12 by 18 inches inside. The glass for this size need not be heavier than common "double-thick." Of course, for large frames, plate glass is used, and the dimensions of the various parts made stronger in proportion.

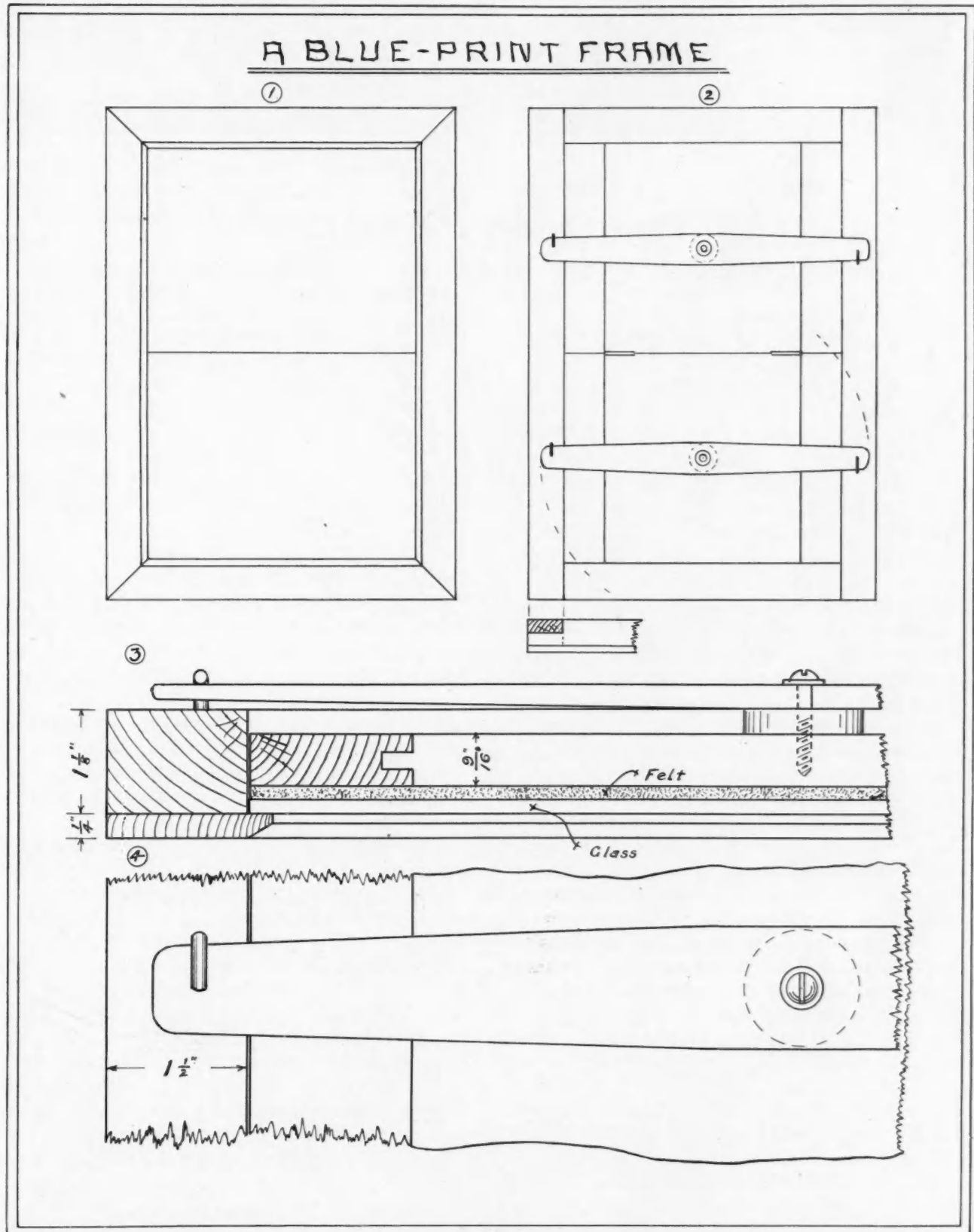
To prepare a tracing, from which, of course, any number of blue prints can be taken, a drawing is first made on common cartridge or manila paper. Over this a sheet of tracing paper or linen is stretched by means of thumb tacks, and the whole of the lines of the drawing underneath are carefully inked in with a ruling pen and Indian ink. When all the lines are inked in and the titles and dimensions also marked, the tracing is ready for the frame, in which it is laid flat upon the glass. A piece of prepared blue print paper is then placed upon it and the felt-covered back fastened into place over all. The frame is then placed face up in the sun for a certain period, but no exact rule can be given for the length of time necessary, several considerations entering into it. For one thing, the light varies at different times in the day and also in clear and cloudy weather. Again, the paper itself is made in several speeds, fast, medium or slow, and these also vary in different brands.

The best way is to cut up some small pieces and experiment with several different timings. Sometimes a minute or two will suffice; at others an hour or more will not be too long. But this is one of the things that experience soon teaches one, and therefore need cause no apprehension.

The exposure completed, the paper is removed from the frame and placed in clean water, running, if possible, although this is not very important. In a second or two the white lines will begin to appear and will gradually become clearer and clearer

When all the lines show up well, the print is taken from the water and hung up to dry and the process is ended. Several very good arrangements for holding

papers which give white lines on a black ground, and eties are used by draughtsmen, but the general idea of all is pretty much the same. Thus we have some papers which give white lines on a black ground, and



the prints while drying are on the market, but common spring clothes pins make capital clips by which to hang the prints to a cord stretched across the room.

Besides the common blue print several other vari-

vice versa. The most popular, however, is our old familiar friend, the common every-day blue print, which easily holds the field for simplicity, ease of working and clear effects.



The Quest for Quality

SUGGESTIONS AS TO HOW BETTER WORK CAN BE PRODUCED IN OUR PLANING MILLS — IN PRODUCING QUANTITY THE QUALITY OF THE WORK IS NEGLECTED

THE quest for quality in mill work is comparatively new, but it is very insistent these days. That is, it is new to this generation. Away back in the older days, when we were not in such a hurry, quality in workmanship was an important factor, but there came a time when we left this behind and pursued other ideas with such full bent minds that quality was more or less lost sight of. In this connection it is interesting to go back to the earlier days of power appliances in mill work. It's not so far back, either, when you come to look at it in comparison with ancient history, for it goes back only to about the year 1800.

The exact dates and places are a little bit obscure, but all data at hand leads to the conclusion that power driven saws and planing machines were introduced along about the turning of the century, around the year 1800. One prominent figure in this work was Sir Isambard M. Brunel, who was born at Rouen in 1769. This great pioneer in the woodworking machinery world came to America and did some engineering work, but afterwards went to England and built, at the Chatham dock yards, one of the first steam saw mills. This was about the year 1806, and it seems that a little later he went to Battersea and equipped a workshop of his own. Back in an old work of Timbs there is a sketch of Brunel's career, in which he quotes from an article by Sir Richard Phillips, entitled a "Morning Walk from London to Kew," an extract from which is worthy of reproduction here for the sake of the idea of quality, or at least to show that quality existed as a strong factor in the early days of machine woodworking. This writer says he was "ushered into a room where a steam engine of 16 h. p. turned by means of bands four wheels fringed with fine saws, two of 18 feet in diameter and two of 9 feet. These circular saws were used for the purpose of separating veneers and a more perfect operation was never performed. Planks of mahogany, rosewood, and sawed veneers of 1-16 of an inch thick were cut with a precision and grandeur of action which was really sublime."

To cut a sheet of veneer 18 to 24 inches wide and 8 to 10 feet long and 1-16 of an inch thick is considered

among the neat jobs of saw mill work today, and when one gets into the average planing mill and examines the work done by saws there it raises in the light of the interest in fine work some question as to what we have done with this element of quality that existed earlier? We've got some of it yet, but we've got too many other things along with it. When we got the power appliances we got the speed mania, and the speed mania came so near absorbing all our main ideas in connection with wood working that we have been neglecting other things that are now overshadowing it in importance. We are waking up to that fact, too, and when we wake up we look around in a rather dazed way and wonder just how a man is to go about getting better quality out of the work of his saws, and especially the saws in a little planing mill.

That's what we want to talk about, how to get better work out of these planing mill saws. Maybe you think they are all right. Most of them do look fine and go through the timber all right, and they do their work as smoothly as your neighbor's saws, but are they doing it as smoothly as they should? That's the question. Study about it a while and then go over in the cabinet shop where they are doing some fine work by hand and see if you can't get a pointer. You will find that the carpenter has his ordinary cross cut saw with about seven points to the inch, and probably a rip saw with five, but when he gets down to fine work he lays aside this cross cut saw with five points to the inch and takes up one with possibly ten or twelve. Then, if it's a very neat job you will find him using a thin saw with lots of fine teeth and the back stiffened with a metal rib. There are two ideas to get from this. One is, that finer teeth on a power driven saw will do smoother work just as they will on the hand saw, and the other is, that the more you can stiffen your saws, guard them against bending and dodging about, the better work you can do.

During the past quarter of a century there have been numerous efforts made to construct a rip saw which would rip or edge a piece of lumber, and at the same time plane or smooth this edge so that instead of hav-

ing saw marks left on it it would look as if it had come from the planer. One of these efforts consisted in what is termed a planer tooth saw, a saw with inserted teeth having extremely heavy corners, carefully side filed so as to insure smoothness of the side cut instead of leaving the marks of sharp corners in the edge of the stock. There is not much question, either, but what they help somewhat, but the great trouble in the way is the fact that the stock being worked must get past the back of these little saws where the teeth are coming up again after doing their work, and it is hard to keep them from marring up the work a little. Various devices of one kind and another have been tried to accomplish the same end, but none of them seemed to have lived very long, attained much prominence, or to have reached the degree of perfection desired. Still, and notwithstanding all these failures and partial failures to attain the end desired, the writer not long ago stood in a plant where they make that class of hardwood flooring known by the various terms, wood mosaic, parquetry, etc., and observed saws ripping the strips for this work, and doing the job so well that no further jointing was required. That ought to be an eye opener and an object lesson in mill work, for if it can be done in work of this kind a planing mill man ought to be able to equip a rip saw table that would do the same thing.

Quality in saw work depends first on the machine. It must be absolutely rigid and for this, of course, the iron frames are best. The mandrils must be as closely adjusted as planer heads in their bearings, so as to prevent shaking and end play. Then, the larger the collars and the smaller the saws, the more assurance you have of doing absolutely true work. This means, of course, within reasonable limits of ordinary rip saw work. And it is a point that has probably been made in these columns before. However, it is worth repeating again, that a 10-inch saw supported by a 6-inch collar will do better work than a 12-inch saw supported by a 4-inch collar. It's the same thing in a different shape as the back of one of the fine saws you will find in the cabinet shop. It adds stiffness to the saw blade and enables you to run a thin saw with fine teeth and do smooth work. It would be better, generally speaking, to have the saw blade thicker, but as a rule the thicker the saw blade the larger you have to make the teeth, and what you want to aim at to get real fine work in either ripping or cross-cutting is to get as fine teeth as possible, just the same as you do with your hand saw. Now, don't make the mistake in thinking that fine teeth saws are best for all purposes, for they are not. When you want to do rough work at high speed, take saws with coarser teeth, and for heavy ripping the best tooth to put on the saw is the swaged tooth, the same that is used in mill saws for making lumber. Many people make a mistake on this point, and think that the thing to do is to use a thin saw and springset the teeth to save lumber and power. That's

a mistake if you've got rough work to do. It's not intended to go into the details of the whys and wherefores of this at the present time, but if anyone wants argument on the point there is plenty to be had that will be furnished at some future date. What it is desired to set forth now is, that for heavy rough work one should have rips saws of tolerably heavy blade and teeth swaged and filed like a lumber saw, and then for smooth ripping or fine work one should have an entirely different kind of saw, made with small teeth and filed pretty much as one files the finer hand saws for cabinet work. In other words, have different saws fitted up in a different manner for the different kinds of work and then use each saw for the work it is intended, just as the carpenter does in cabinet work.

With careful attention to these points, and all the little details of adjustment, it is not only possible to put more quality into that part of the mill work done by saws, but it is a good practice to get into for other reasons. It will not only be found a time saver and a money saver in the end, but it contributes materially to quality generally by inspiring workmen to take more pains with and pride in his work. It saves lots of time in rejointing and smoothing up and will make a reputation for quality in the end that will not only be pleasing, but will be a revenue producer. It will bring more work, better work and better prices for the work, and lead us back on to the road where we ought to be, seeking more quality in the right way. We will probably never lose all our taste for rapid work of one kind and another, because that is a deep-rooted American characteristic, but it will keep that from uprooting and smothering out the element of quality and make a more even balance between the two, something that is not only needed today, but is in strong and insistent demand. It's no longer a question of how cheap, but rather one of how good, and the man who gives more attention to the good and less to the element of cheapness to be gained from speed and slack work will come out ahead in the game and get lots more satisfaction out of his work, too. Try it thoroughly, it's worth more than passing attention.



Painting Brick Walls

The painting of brick walls is mainly for the purpose of preservation, but the fact should not be forgotten that paint is an excellent preventative of dampness and that a house with well-painted walls is dryer and consequently healthier than one with the walls exposed. The best paints for this purpose, where the color is not an objection, are the natural ochre pigments, united with zinc oxide. Thus yellow ochre and zinc would give a pleasing buff. Whatever imparts the usefulness of a paint by attacking its tenacity and waterproofing quality is to be avoided.

Building Forms for Concrete Arches

A SERIES OF ARTICLES COVERING THE CONSTRUCTION OF STANDARD CONCRETE ARCHES—SHOWING THE SIMPLEST METHOD FOR THE FORM BUILDER

By Thomas P. Ellis

AS THE forms for 5, 6 and 8-foot arches are so much like the 4-foot arch described in the preceding number as to need no further description, we will pass them by and take a standard 10-foot arch. Fig. 1 shows plan of whaling and braces to be used inside of sheet piling and should be made of 6 by 6 or 6 by 8, the number of which depends on the

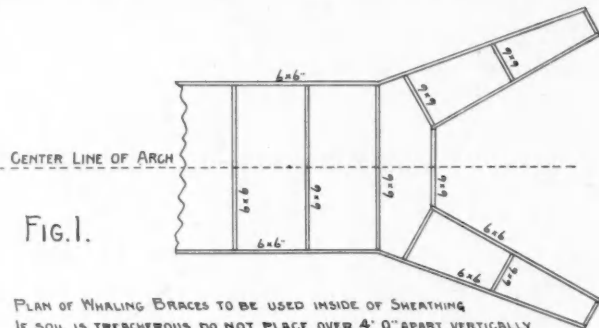


FIG. 1.
PLAN OF WHALING BRACES TO BE USED INSIDE OF SHEATHING
IF SOIL IS TREACHEROUS DO NOT PLACE OVER 4' 0" APART VERTICALLY
AND MAKE b' LARGER THAN FORM SO AS TO GIVE ROOM FOR STUDDING.

depth of excavation and condition of soil. A center line should be drawn the length of the pit and a plumb bob dropped from it to center line on cross braces to insure getting them on center, and after bracing securely, sheeting can be driven around same and excavation carried deeper and another tier of whaling put in when necessary.

Fig. 2 shows front elevation with 30-degree wing walls built, as is often the case with a pile bent coming where it will. As we have here a footing of 4 feet an invert should extend 1 foot under bench wall; footing should be brought up 32½ inches and offset 12 by 15½ inches formed for invert to rest in (as is shown at A. Fig. 2) when invert can be put in. Finish invert with a template made with a radius equal to

the distance from B. to C. Fig. 2. The forms for bench walls should now be put in place and studding should be cut off 3½ inches below spring line to allow a short block to be placed under arch ribs and on top of plate, see Fig. 3. The reason for which will be apparent when the form is taken down. When ribs are in place cover entirely with 2 by 6 lagging, which should be beveled so that the top edges will meet and box around each pile separately, being careful to allow enough clearance around piles for vibration caused by passing trains.

The box should be tapered and placed with the larger end up (see Fig. 2) and a step provided to place bent on. When arch ring has hardened sufficiently the bent can be placed on it and piles cut out and the hole filled with concrete.

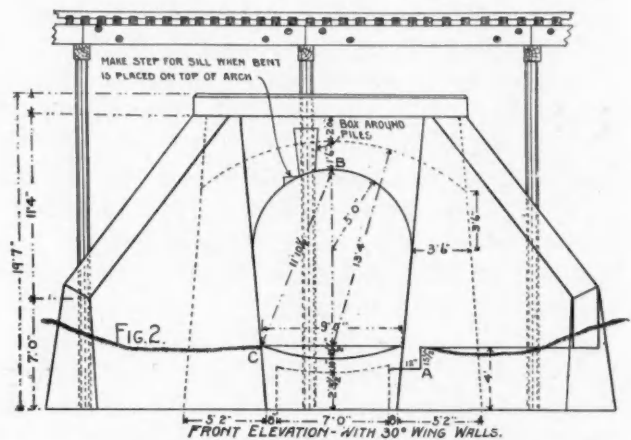


FIG. 2.
FRONT ELEVATION WITH 30° WING WALLS.

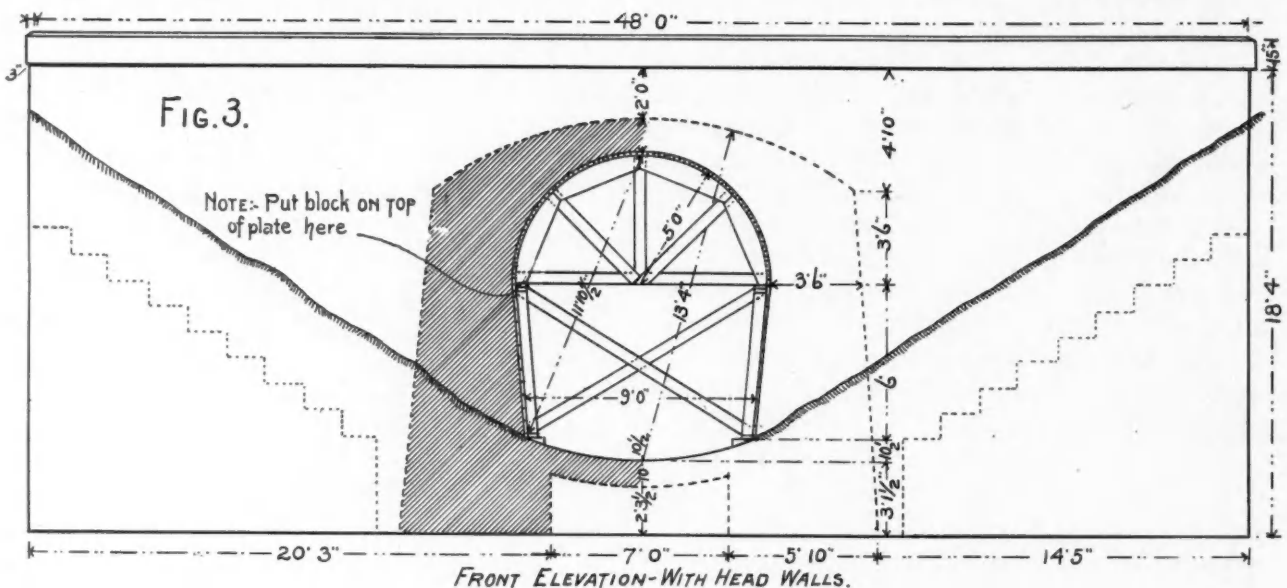
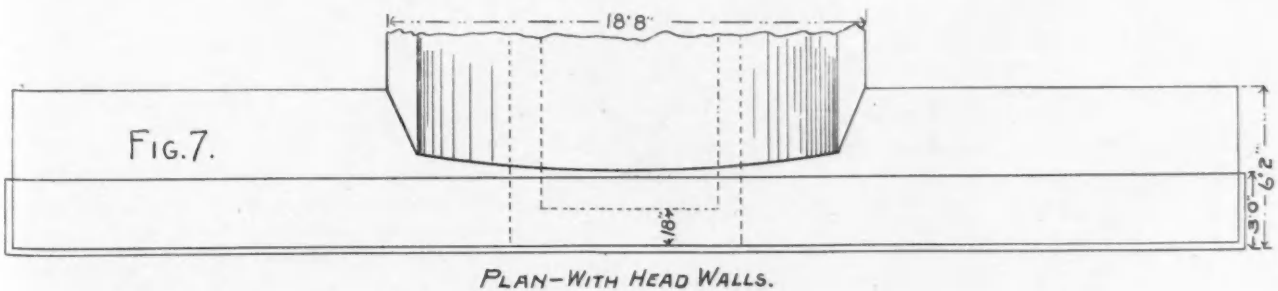
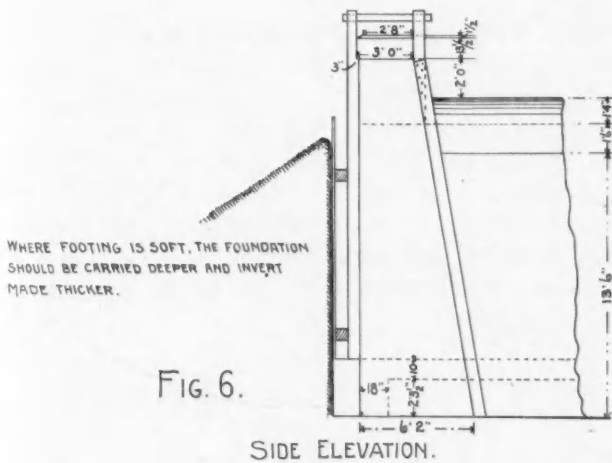
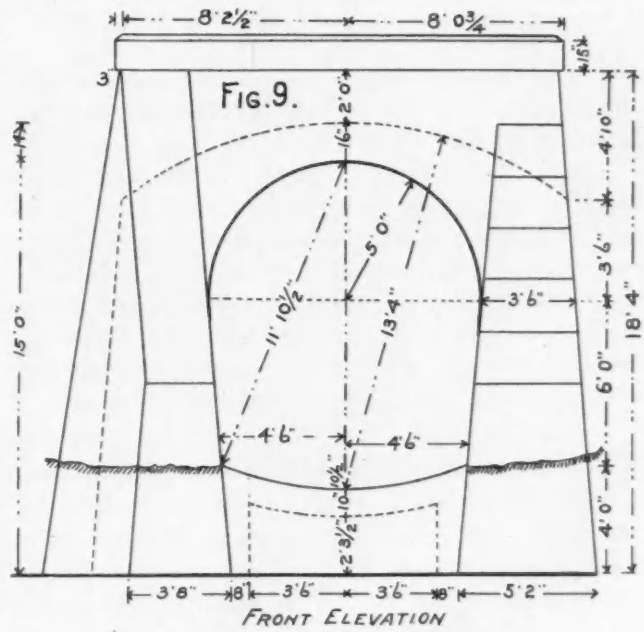
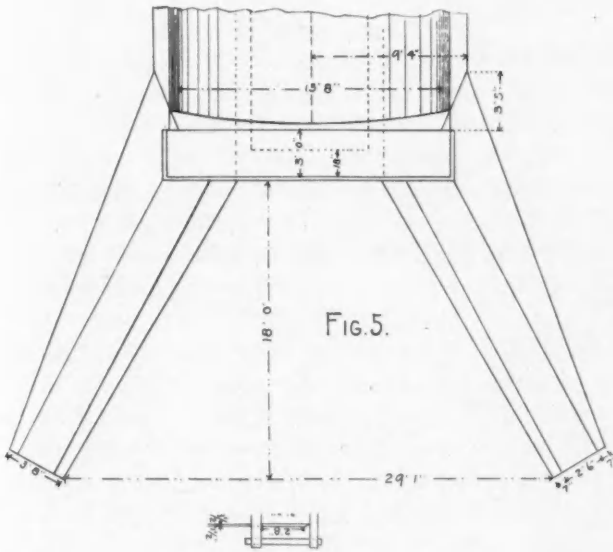
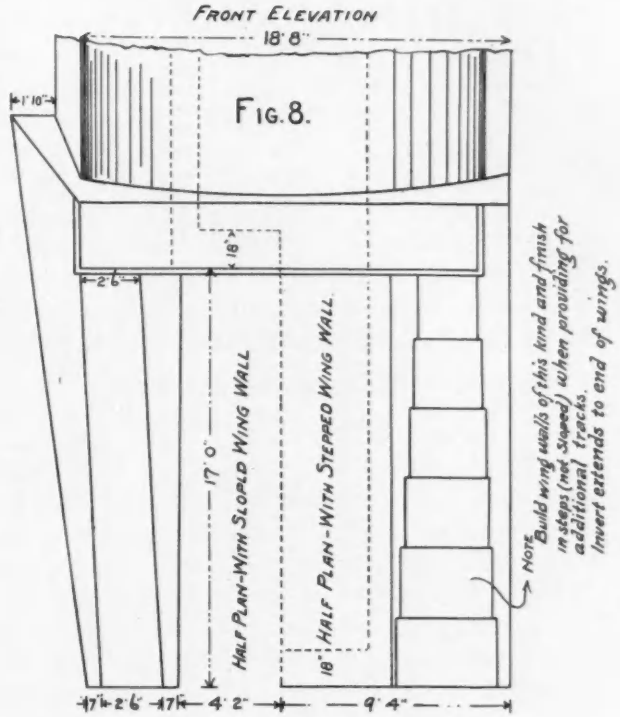
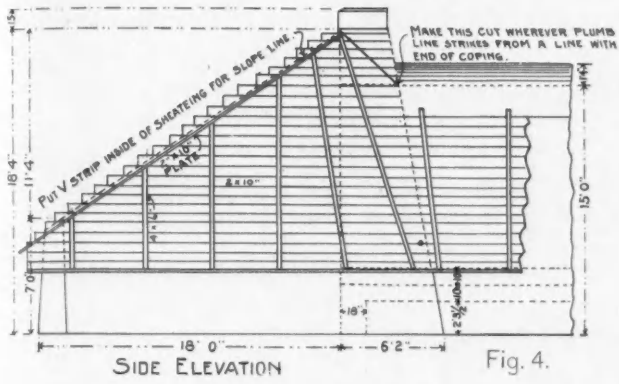
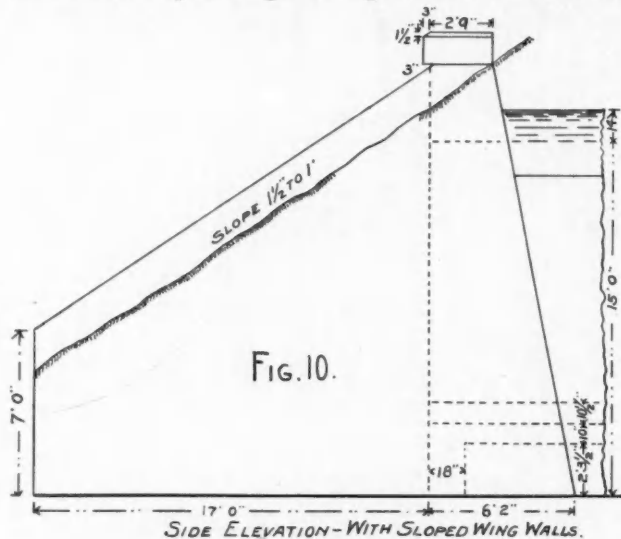


FIG. 3.
FRONT ELEVATION WITH HEAD WALLS.



the wing can be housed on top of the V strip and requires no further attention. Fig. 5 shows plan with 30-degree wing walls. Fig. 6 shows side elevation of head walls. Fig. 7 shows plan with head walls. Fig. 3 shows front elevation with head walls which may or may not be built in sections as desired. Fig. 8 shows half plan with sloped wing walls and also stepped for extension. The invert in one case stops at end of wing and in the other at line of front wall. Fig. 9 shows front elevation. Fig. 10 shows side elevation with sloped wing and Fig. 11 shows side eleva-



tion with stepped wing. The corners of all steps should be finished with V strips to hide joint in bulkhead and to keep corners from chipping. Forms of this size and smaller can be braced to the ground and kept from bulging or swinging out of line, for if wires are used they will be greatly in the way of placing concrete in form, however, if ground is too soft to afford good footing for braces it is best to use wires. In our next article we will show reinforced segmental arches and as the carpenter has to erect runways and platforms we will touch on stone and sand bins, etc.

To Clean Whitewash from a Ceiling

Take three pints of flour and beat thoroughly in cold water, then pour boiling water to it until cooked; dissolve one pound of alum in hot water, and pour in the paste. Use the paste quite thick. Apply to the ceiling with a whitewash brush, being sure to cover the ceiling thoroughly; then close the room, and let it stand overnight. In the morning the bits of lime left clinging to the ceiling are easily scraped off. Be sure to carry everything from the room before commencing work, as the lime falls to the floor.

Hand Saw Filer

A new type of hand saw filer, suitable for use on a bench or pedestal is adapted for automatically filing any ordinary small hand saw. The vise which carries the saw is clamped together by spring pressure sufficient to hold the saw firmly, yet allowing it to slip

through as each tooth is filed. At each revolution of the file shaft, the file is automatically withdrawn from engagement with a tooth, dropped back, and just as the smooth portion of its circumference reaches the saw, it pushes the saw along for the next tooth, this movement being regulated according to the size of the saw tooth, by a thumbscrew. The file is controlled by cams to cut only a certain depth each time, and this feature insures accurate and even teeth. The saw carrier can be swung so as to get any desired angle of hook and any bevel up to 30 degrees. The saw carrier slides easily on a long bar.—*New York Commercial.*

A Concrete House

The advantages of concrete on the mechanical side are these: It is proof against fire, wind and water, rats, insects and dry rot and the danger of electricity. It needs no painting or repair. Fire or water overflow inside can do only local damage to the contents of a room and no more. It becomes stronger and harder with age. There are no leaky roofs, no damp or cold east or north rooms. There is great economy of heating. Being a firm mass throughout, like a house made of baked clay, there is no vibration, and in case one spot of the foundation should be undermined the well knit structure might not show so much as a crack. It is practically earthquake proof. Concrete is healthful. It leaves no fissures for dust or for insects which spread disease. It is cool in summer and warm in winter, and with a minimum of exertion can be kept sweet and clean.

Painting Galvanized Iron

Much difficulty is generally experienced in getting paint to adhere firmly to galvanized iron, and various experiments are resorted to to overcome the trouble. The government has adopted a mode of procedure that seems to be satisfactory. Their specifications compel the use of vinegar for washing the surface preparatory to painting. This roughens or corrodes the surface, and gives the paint better adhesion.—*Modern Painter.*

To Keep Tools from Rusting

Take 2 ounces of tallow and 1 ounce of resin; melt together and strain, while hot, to remove the specks which are in the resin. Apply a slight coat on the tools with a brush and it will keep off the rust for any length of time.

The Fence

The fence it runs around the yard;
It has a swinging gait;
All day, all night, it stands on guard—
Such is the picket's fate.
A better servant it than most;
The fence it never leaves its post.

—*Saturday Evening Post.*



PRACTICAL CARPENTRY

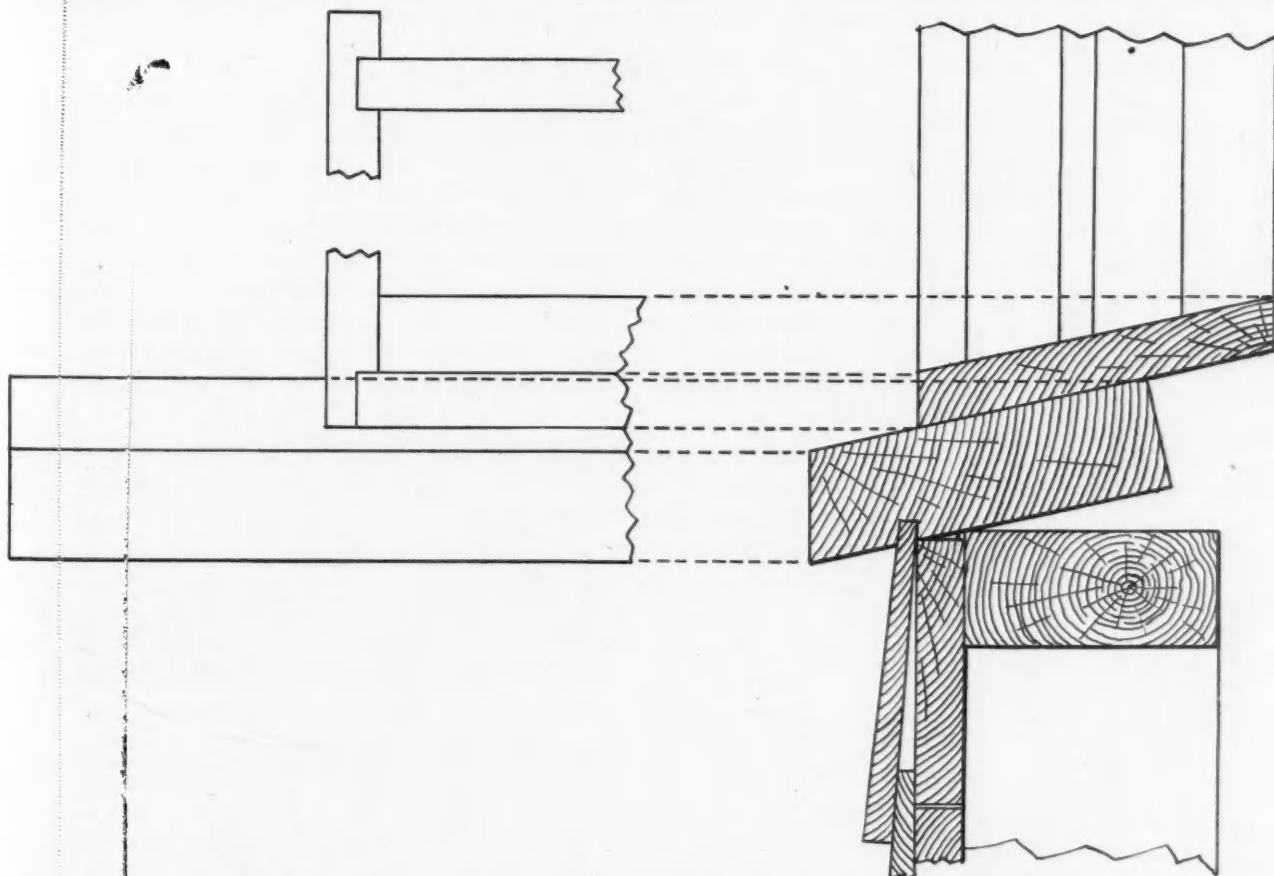
Making Window Frames

PRESENT METHODS OF BUILDING WINDOW FRAMES COMPARED TO THOSE FORMERLY USED—ADVANTAGES OF SOME OF THE FORMER METHODS

By Dwight L. Stoddard

WHEN I was an apprentice I was taught to nail the side jambs onto the end ones, although they are generally made the other way now by most mill-men, or at least that is the way it seems to me, and I am unable to understand where the improvement comes in. It is natural to think the way you were taught first is the real way.

and when their weight settles down on the jamb nailed up from the bottom the sill is liable to become loose from the side jambs. In this great day of hurry it is sometimes overlooked, and the window is cased without nailing it back to place, the result being a very poor job. By nailing the side jambs onto the end ones, the way I was taught, this generally is avoided.



Still in many other things, I have greatly changed my opinion, yet I hold that in this the old way is good enough for me. There is practically no difference, especially at the top, but at the bottom the frame is set a certain height and no matter how near right the headers are put in, the sill is often some distance from the header. The carpenters in constructing the house are almost sure to go in and out of the windows,

Another thing I was taught to do, which I note many neglect to do at the present time, and that is to plow the sill to put the siding in. This makes a tighter and better job in every way and it makes it easier to put on the siding. Now, some may claim that they do not plow the sill because there should be an apron under the sill. I will agree that this is right, if there is to be an apron, but it is not really a neces-

sity and in my observation it is left off more often than it is put on. If it were left entirely to me, there would never be an apron under the sill of the window on the outside of the house.

When I was taught to make window frames, lumber was plentiful, and therefore I was taught to make a window sill out of 2 by 6-inch stuff, which when given the desired pitch, prevents water from running up over the back edge, as it does when they are made out of 2 by 4-inch stuff and when dressed up lack a great deal of being 4 inches. The driving rain often works its way up over the sill and lets in enough water to wet the wall under the window and where there is a delicate finish on the wall it becomes so soiled that it is practically ruined. It is true windows may be built with 4-inch sills and never give this trouble, yet the poorest windows in the house may go an entire year and not give any bother, still there is the danger I have mentioned and I am sure many carpenters have also noticed it. If the sill is to be

made out of 2 by 4-inch stuff it should have a steep pitch, and care should be taken in nailing the sub-sill tight all along the sill.

Another matter to which careful attention should be given is to plow the jambs so that the parting strip should be just the right distance from the blind stop and this should be just a little more than the thickness of the sash. How often carpenters are compelled to dress off the sash with a kind of bevel in order to get it into the space left. Care should be taken not to make the space too wide, but strike a medium and get them just right, for it is just as easy and only requires a little more care.

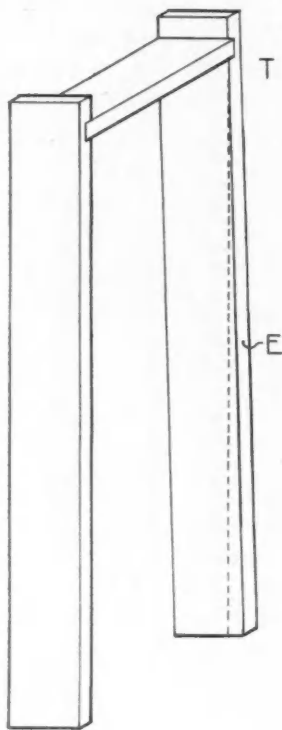
My object in writing this brief article is to call attention to some of the weakest points, as I have noticed them when setting frames, in my daily work as a carpenter, hoping it will do some good and that it will be the means of causing others to write and tell how they make frames or how they think frames should be made.

Setting Door Jambs and Hanging Doors

TROUBLES WHICH ARE ENCOUNTERED IN FITTING AND HANGING DOORS—HOW TO AVOID AND OVERCOME THEM—SOME VALUABLE SUGGESTIONS GIVEN

By I. P. Hicks

IN building construction one thing that deserves more attention than it usually gets is setting door jambs, and the fitting, hanging and putting locks on doors. You have often noticed that doors do not shut securely as they should; that is, they stand in or out at the top or bottom of the door frame, as if the door was in a wind, or in a twist. Of course, carpenters



have a handy way of getting out of this trouble by saying the door is in a twist and that they can not help it. Sometimes this may be the case, but more often the trouble is in setting the door jambs. To begin with, good straight studding should be selected to set next to the door jambs, but how often we find that the poorest studding brought to the job is used in the partitions next to the door. This is owing to the fact that the partitions are the last place where studding is used, and by the time the partitions in the house are to be set, all the good studding has been picked out and used, and nothing is

left but the crooked ones. Scarcely any one cares to use the crooked studding, so they always pick out the straight ones, until at last nothing but the crooked ones

remain. This may be used without harm in many places about the building. For example—for short rafters, headers, over and under windows, and for lookouts in the cornice. The contractor should see that they are used in these places and enough good straight studding reserved to use around the door openings next to the door jambs. The trouble with doors being in a twist more often comes from the door jambs being set out of plumb. If crooked studding are used it is difficult to plumb them up securely, and two-thirds of the carpenters will get the studding more or less in a twist, or commonly called, in a wind. When the man who sets the jambs comes along he will nearly always set his jambs to conform to the plastering, otherwise the jamb would stick out too far on one side of the door and not far enough on the other. It is the edge of the jamb that is mostly neglected and gives the most trouble. Many workmen set the jambs with the wall, regardless of whether they are plumb or not.

In the sketch at E is shown a jamb set with the edge of one jamb out of plumb. Now this is just what is done about six times out of seven, where the doors seem to be in wind. If the jambs were set as shown in the sketch, the door would not close well at the top, but would stand as shown at T. The dotted line shows how much this line is out of plumb. In case it is found impossible to get the jambs exactly plumb do not set the jamb plumb on one side of the door and the other side out of plumb, as shown in the sketch. Be sure that you have both jambs alike. If one is out of plumb a trifle be sure the other one is out the same amount and in the same direction. Then your door will not come in wind, and if the amount is small not one will ever notice it.

Door jambs properly set facilitate hanging doors, and a man can fit and hang more doors in a day to jambs that are set right. Most doors run one-eighth of an inch wider than the listed size, thus a door listed 2' 6" wide will in most instances measure 2' 6 $\frac{1}{8}$ ", and it is safe, therefore, to make the jambs one-eighth of an inch wider than the width of the door. It makes a difference in the time of fitting the door, where there is considerable to plane off, or if the door is so much wider that it has to be ripped.

The question has arisen as to what is a day's work in setting doors. Of course, circumstances alter cases, and it depends to some extent where the doors are located. It may be in a cramped place, where the workman has to take the door into some other room to dress it. For example, as in narrow halls, around closets and bathrooms. But on an average a good door fitter can fit a door in fifteen or eighteen minutes; can cut in the hinges and hang it in fifteen minutes, and put in an ordinary mortice lock in twenty to twenty-four minutes, thus allowing a good workman sixty minutes to fit, hang and lock a door, or eight doors per day of eight hours. Any expert door hanger can do this and do a good job. There are very many, how-

ever, who cannot fit, hang and lock over six doors a day, of eight hours, and no matter how good their work may be they are not experts at hanging doors. I have seen mortice locks put on in nineteen minutes, but most workmen will consume thirty to thirty-five minutes on each lock, when working under ordinary speed.

To put on locks rapidly, use a three-quarter inch bit and use the same bit to bore for the escutcheon, thus avoid the necessity of changing tools. Boring the locks with a three-quarter inch bit, also saves lots of time in getting out the mortice. It is a much quicker operation to bore out the mortice than to cut it out with a chisel.

The mortice should be big enough so that it is not necessary to drive the lock in, as many workmen break a number of good locks in trying to drive them into the mortice. Locks were not made to be pounded and should not be hammered into place, for they can be neatly fitted without being hammered. The lock plates should be let into the wood, so they will fit, as it looks bad to see the wood cut out too large for the plates. Make your marks right and cut to the marks, not all around them, and it is then easy to get nice fits without taking any more time.

Proper Care of Belts

PREPARATIONS TO USE IN CLEANING LEATHER AND RUBBER BELTS—GOOD METHOD OF LACING BELTS SHOWN HEREWITH—PROPER SPACING OF HOLES

By J. Crow Taylor

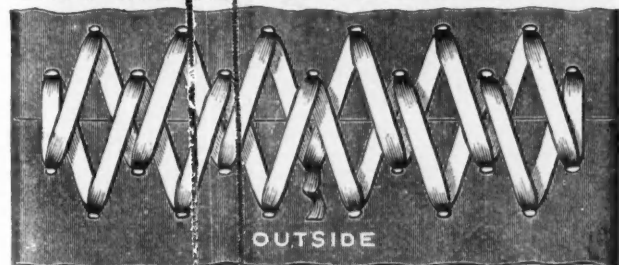
THE main care the average belt gets in the small wood-working institution is to have new faces put in when the old ones wear, and to have a piece cut out and the belt made tighter when it fails to pull its load. Moreover, belts running on a moderate load don't need a great deal of

possible, that is, have a belt just tight enough to do its work with a fair factor of safety and no more. There are more belts ruined by being made unnecessarily tight than are worn out in actual service. Keep the surface of the belt in good shape and it won't have to be as tight as when left unattended. If you are running a leather belt and it gets dirty from an accumulation of dust, oil, etc., take the time and trouble to clean it. To cut the grease and loosen the dirt, use a mixture made of three parts of benzine, naphtha or gasoline and one part of turpentine. If you are afraid to use this, or its use in the shop is not permitted, because of the danger of fire, explosions, etc., use the turpentine alone to loosen the grease. After the belt is cleaned and dry (and this stuff dries quickly), apply a light coat of some good belt dressing, or in the absence of that, a little castor oil. The majority of mineral and vegetable oils are injurious to belts and should not be used. They are used quite extensively though; in fact, it's quite a practice in most shops to take the lubricating oil and pour some on belts that seem to need limbering up. That is not a good practice. The best treatment is to clean all the oil and dust off with the mixture mentioned above and then apply some good belt dressing, but, in the absence of this, castor oil or a little tallow.

The mixture mentioned is for cleaning leather belts and should not be used on rubber belts, be-



"BEST" METHOD OF LACING BELTING



attention, still a little attention is worth while, as one not only gets better service out of the belt, but increases its life of usefulness. One should really strive in the first place to keep the belts as slack as

cause it will cut the rubber. You can clean rubber belts with a little soap and water, but use it sparingly so as not to injure it. What you want to do is to take off the grease and dirt and not take off any of the rubber. To make a rubber belt more pliable and stick to the pulleys better, moisten it lightly on the inside with boiling linseed oil. Don't use animal oil or grease on rubber belts.

In the lacing of belts there are so many different methods, and their claims for superiority are so con-

shown herewith a reproduction of what one of the leading belt manufacturers considers as the best method of lacing. They do not go into details as to why they consider it the best, but it is known to be a very good form of lacing, and as it is very simple it doesn't tax one's power of imagination to work it out like some of the methods which resemble a Chinese puzzle. If you have some other method that you like best, all right. There are plenty of them, and you can take your choice. But, if you haven't formed any set ideas of your own on this subject, the method illustrated may appeal to you, as may also a table for spacing holes for the lacing of rubber belts given by the Boston Belting Co.

Also here's a simple shop kink that may be worth something to you, and it may not. When you have troubles about threading the end of the lace leather through the holes, try lighting a match and burning the end of your lace leather with it. A little burning will usually make the end hard and stiff so that it will serve as a sort of a needle and it may be readily pushed through the holes. Of course a part of the lace string that is burned is ruined and will do have to be cut off, but that is generally what you do with the tips anyway after the lacing is done, cut them off. Try this kink once just for a change and see how it works.

Table for Spacing Holes for Lacing Belts

Width of Belt	Punch first row of lace holes from ends of belt.	Punch second row of lace holes from ends of belt.	Centres of outer holes on the row nearest the ends of the belt to be distant from each edge of the belt.	Size of lace leather to be used.
2 to 4 in.	1/8 in.	1/8 in.	1/8 in.	1/8 in.
6 " 8 "	1/8 "	1 "	1 "	1 "
10 " 12 "	1/8 "	1 1/2 "	1 1/2 "	1 1/2 "
14 " 16 "	1/8 "	1 3/4 "	1 3/4 "	1 3/4 "
18 " 20 "	1/8 "	1 3/4 "	1 3/4 "	1 3/4 "
22 " 24 "	1 "	2 "	1 "	1 "

fusing and generally obscure that a study of them becomes more tiresome than enlightening. There is

The Use of Millwork in Decoration

SUGGESTING SOME NOVEL IDEAS BY WHICH THE DECORATOR AND WOODWORKER CAN CO-OPERATE—ARTISTIC EFFECTS WHICH CAN BE PRODUCED

By Sidney Phillips

POSSIBLY the only reason why woodwork is not more often used by the decorator is because both decorators and woodworkers are apt to travel along beaten paths and seldom strike out into original lines. Not often, indeed, do either of them understand the possibilities of the work of the other trade being of assistance to them in making their own work more attractive. It is true that we have seen numerous examples of fretwork and spindle grilles, but these have usually been of a commonplace character, or else they have borne absolutely no relation to the general scheme of decoration. They are a thing apart from it, and such a grille usually looks like an intruder. For this reason, the grille work and spindle work, so largely employed in all classes of houses a few years ago, has largely disappeared except from the cheaper class of speculative buildings. Yet there were great possibilities in work of this class, had it only been properly used, and what is more to the point, had it been used in moderation. The growing popularity of the so-called Art Nouveau or Modern style of decoration, which has manifested itself in this country in the demand for the mission and craftsman type of furnishings, gives special opportunity for the decorator to work har-

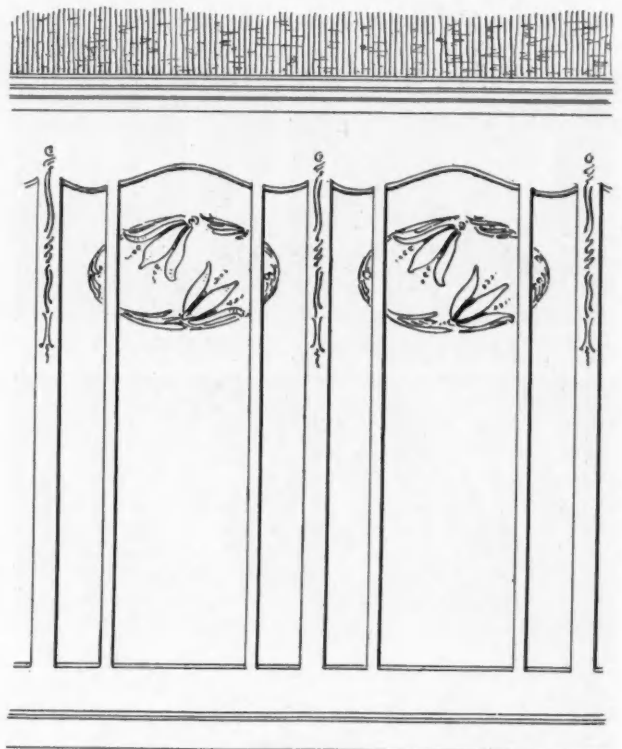


Fig. 1

moniously with the millworker, or rather one should say for the decorator to utilize millwork as a part of the general scheme which he originates. In France and Germany this modern decoration (l'Art Nou-

thought, at the time he first consults his architect or builder, as to how he will decorate the rooms of his future dwelling. Indeed, he is too often looking for a nice little house with plenty of big rooms in it, that

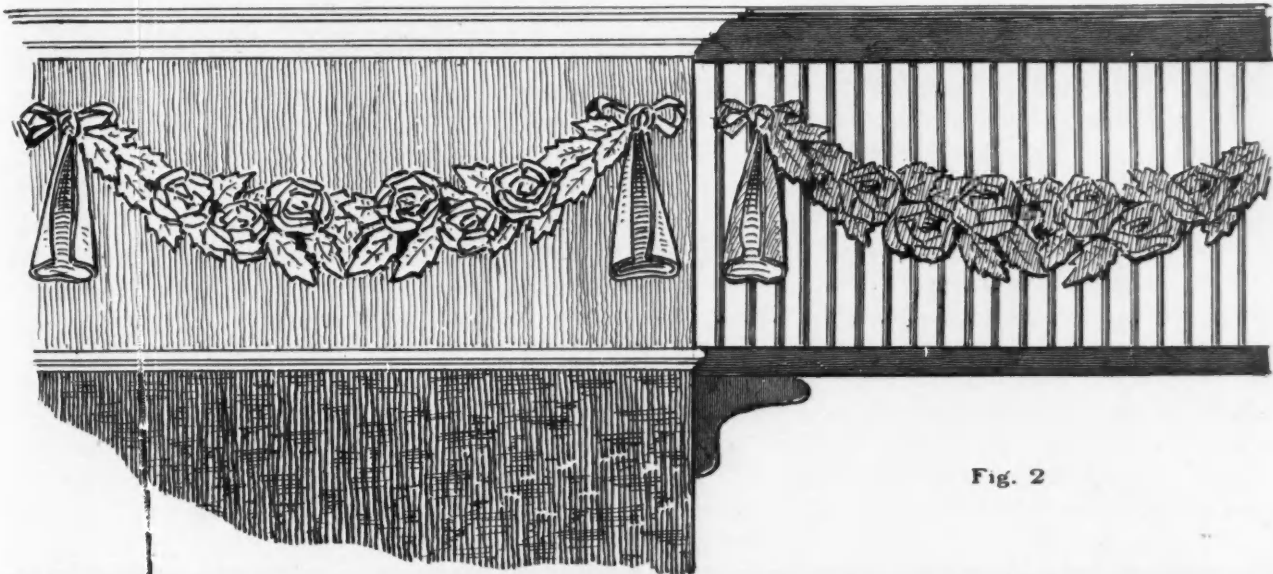


Fig. 2

veau) does not stop with painted ornament nor with hangings and wall papers, but it is carried out in every detail of the room. The doors are designed with quaint panel effects and the wainscot is made in curious shapes that are apparently designed to form a part of the general decorative scheme. To do this, the decoration should be planned at the same time as the house, so that the woodwork and the decorative

shall cost about half as much as it can honestly be built for, to think of any such thing as an attractive and beautiful interior. Until the house is paid for, he thinks he will be content to live with bare walls. Consequently the rooms of the average house are little more than white plastered boxes, pierced here and there with holes for windows and doors. When the time finally comes that the owner begins to think of

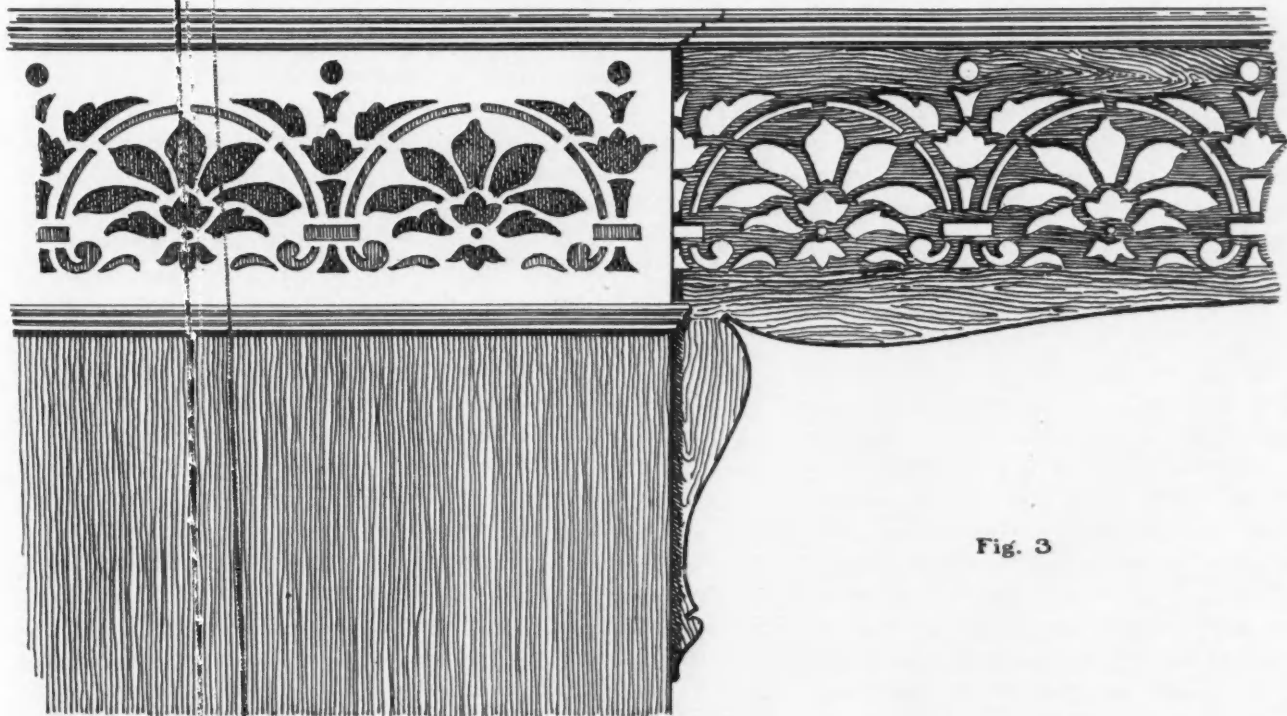


Fig. 3

ornaments may perfectly harmonize. But, unfortunately, the average American house owner is so intent upon getting a roof over his head and has to scheme so much to pay for it, that he has little

beautifying his surroundings, and, thanks to the influence of the popular magazines, it comes very soon, the decorator has unpromising material to work upon, if he hopes to create anything original.

Ordinarily, if there happens to be wainscot in the room when it comes to the decorator's hands, he finds it either made up of narrow beaded boards or of plain oblong panels that are difficult to fit in with any scheme of decoration that he may suggest. Certainly any opportunity for decorating the wainscot itself is almost entirely lacking, because the panels are usually of a shape which do not lend themselves to the application of ornament. In Fig. 1 we see an example of paneled wainscot that has been designed with special reference to the stenciled ornament, the shape of the panels and the elliptical form of the ornament harmonizing one with the other. The panels, it will be noticed, are arranged in groups of three—a broad one, flanked by two narrow ones—each group being separated from the adjoining one by a wider stile than the intermediate ones. These wide stiles are also decorated with stenciling. In this particular case, a very attractive color scheme would be to finish the woodwork in cream or ivory enamel, the lily ornaments being in pale pink and the leaves in green,

are not nearly so often utilized as they might be. Too often he is content to use some commonplace grille that he finds ready made at the shops, or else he depends upon a simple beam, in either case breaking up the continuity of the ornament that has been carried round the apartment as a frieze decoration. Fig. 2 shows a novel form of grille work, in which the frieze design has been carried across an opening. The ornamental swags used in this case are cut from a relief material like lincrusta, or are made from the flexible plaster relief ornaments that are as easily put up as wall paper decorations. If a relief material is used, the swags are first cut out and are then appliquéd against a plain ground, either ingrain paper, burlap, denim, or something of that kind. When it comes to the opening, these relief ornaments are fastened to a seven-eighths inch pine board, and the outlines are carefully sawed out. Holes are bored through the board for the vertical spindles, which form the grille. These are slipped through and glued in position. If the grille work is used at a bay window or some place

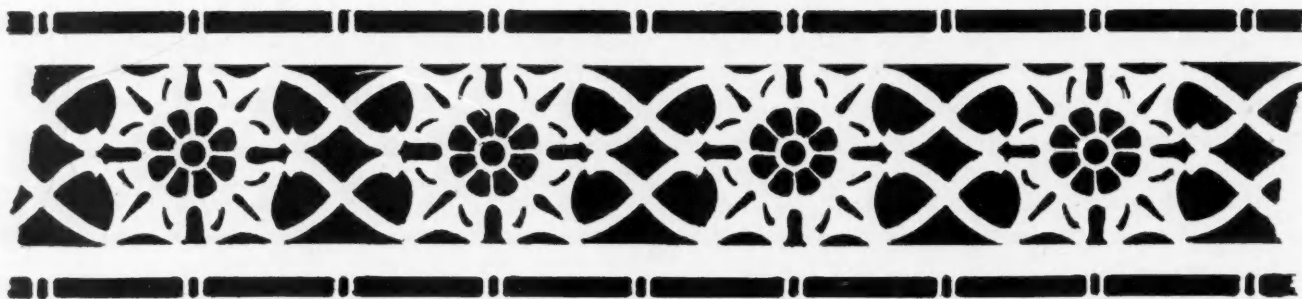


Fig. 4

while the ornamental designs between the panels are carried out in gold. On woodwork of forest green or fumed oak, the leaves might be either in very dark or bright grass green, the lilies in red and the ornaments in reddish gold. Still another treatment would be to outline the lily pattern with a pyrography point, filling in with varnish stains or with pigment. In fact, all sorts of color treatments are possible. The main idea has been to indicate the decorative possibilities, in so designing the woodwork of the wainscot that the panels are of proper shape to receive ornament, for there is no reason at all why a paneled wainscot should be left so plain as it usually is. Where there is no wainscot, the decorator can easily build one up for himself by the use of mouldings that will suit any scheme of ornament that he may have in mind, or that can be used in connection with fabrics or with some of the relief decorative materials, such as lincrusta or anaglypta, for panel fillings. If desired, these materials can be stained and finished to imitate the natural wood, hence giving the effect of a richly carved wainscot at a fraction of the cost.

When we come to the grille work used to cross an alcove or to shorten the length of a long apartment, the opportunities for the decorator are endless, yet

where it will be seen from one side only, it will not be necessary to finish the back, but if it is to be viewed from both sides, it will be needful to cut out a second swag and fasten it to the back of the board after the holes have been bored and it has been sawed into shape. After the grille has been finished by the woodworker it may be painted to correspond with the woodwork of the room or with the colors of the frieze, or it may be stained or grained to imitate natural wood, thus giving the effect of carrying the frieze design across the opening in carved woodwork.

Many modifications of the design shown in our illustration will suggest themselves to the decorator, who is limited only by the patterns that he can obtain in these relief materials that adapt themselves to such a treatment. There are garland and flying ribbons, heraldic shields, acanthus scrolls and many other forms that can be used, and which at the same time hold themselves together so they may be fastened in position upon the spindles of a grille work. A similar treatment might also be used where a square or diagonal latticework of interlacing thin pieces was employed. In this case it would be better to fasten the ornaments to three-ply veneer, securing it to the face

(Continued on page 1181)



NEWS-ITEMS

The Miracle Pressed Stone Company recently received a very nice endorsement for their sewer pipe molds from far-away Russia. On September 1 they received an order from Bodo Egestorff, of St. Petersburg, Russia, for 10 and 12-inch sewer pipe molds. Mr. Egestorff wrote at that time if they were satisfactory he would want more of the various sizes.

On December 14th they received another letter from Mr. Egerstorff enclosing a large order for various sizes and stating that he had received the first shipment, and was very much pleased with the same.

The Miracles state they now have customers on their books from practically every civilized country in the world, and that they recently sold one of their Exhibit "A's" to the English government.

We are advised by the Cement Machinery Company, Jackson, Mich., well-known manufacturers of the Favorite sand cement brick machines with the mechanical tamper, the Normandin, Cemaco, Champion and Peninsular block machines, concrete mixers and ornamental molds, that owing to their increased foreign business it has become necessary for them to open a suite of offices at 29 Broadway, New York City, for the exclusive purpose of taking care of foreign trade and shipments. These offices are in charge of the well-known export representatives, Messrs. A. M. Lawrence & Co., and to say that the Cement Machinery Co. are wide awake in promoting their sales in this country as well as foreign countries is but putting it mildly.

The Cement Machinery Co. have been favored with several orders for their Favorite brick machines and mixers from Brazilian military engineers who are under the jurisdiction of the Brazilian government, and the use of their line in South America is certainly very favorable.

In order to handle to the best advantage their large and rapidly increasing business in this section, the H. W. Johns-Manville Co., of New York, will open a New Orleans branch on January 1st. This will consist of a large retail store, offices and warerooms, located in the large three-story building at the corner of Baronne and Perdido streets.

This company is well known as being the largest manufacturers of asbestos and magnesia products in the United States, if not in the world. They also manufacture a large line of electrical specialties. Mr. W. E. Carpenter, formerly well known as the local manager of the Western Tube Company, has been appointed as manager of the New Orleans branch. The company propose carrying a large stock of their prod-

ucts constantly on hand, so that shipments can ordinarily be made from New Orleans stock. Among the well-known products of the company might be mentioned asbestos roofing and insulating materials, steam pipe and boiler covering, asbestos packing of all kinds, "Noark" fuse devices, and other well-known electrical devices manufactured by the company.

The Hurley Machine Company, which was organized about six months ago after purchasing a number of patents on floor scrapers, have met with phenomenal success in the introduction and successful operation of their "Little Giant" floor scraper throughout the United States as well as in leading foreign countries.

The foreign business of this company has developed so rapidly that it has found it necessary to send a special representative, Mr. George E. Spaulding, abroad. Mr. Spaulding sailed for Europe November 28th, and will exhibit the "Little Giant" at the Paris Automobile show. The show management, in addition to providing space for automobile display, furnishes space for all kinds of modern and improved machinery.

The offices of the Hurley Machine Company of France will be at No. 1 Rue de Laborde, Paris. Mr. George E. Spaulding will be Managing Director.



Moths in Carpets

Moths will work in carpets in rooms that are kept warm in winter as well as in summer. A sure method of removing the pests is to pour strong alum-water on the floor to the distance of half a yard around the edges before laying the carpets. Then once or twice during the season sprinkle dry salt over the carpet before sweeping. Insects do not like salt, and sufficient adheres to the carpet to prevent them alighting upon it.



To Remove Marks from Tables

Hot dishes sometimes leave whitish marks on varnished tables, when set, as they should not be, carelessly upon them. For removing them, pour some sperm or raw linseed oil on the spot, and rub it hard with a soft cloth. Pour on a little spirits, and rub it dry with another cloth, and the whole mark will disappear, leaving the table as bright as before.

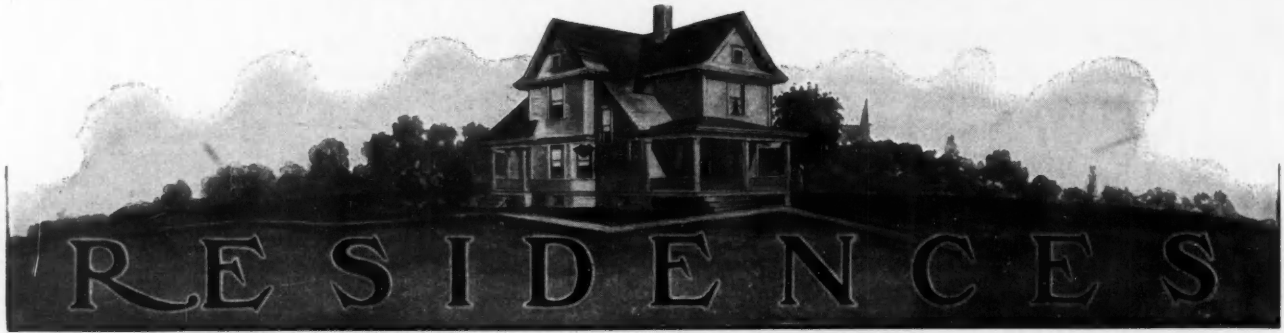


Run of the Stair

During the examination of a witness as to the locality of the stairs in a house, the counsel asked him, "Which way did the stairs run?" The witness, who by the way was a noted wag, replied that "one way they ran up, and the other way they ran down." The learned counsel winked both eyes, and then took a look at the ceiling.



A man can make mistakes far more easily than he can make good.



Four Modern Homes

PERSPECTIVES AND FLOOR PLANS OF PRACTICAL, MEDIUM PRICED HOUSES—POSSIBILITIES OF CONCRETE BLOCKS IN HOUSE CONSTRUCTION

THE perspective and floor plans, shown on this page show those of a house built after plans and specifications prepared by Woods & Corder, at Lincoln, Neb. At first sight it would appear as though this was a one and a half story building, but upon closer inspection will show that all of the

trance is had through a vestibule to the reception hall, which is a very desirable feature in many sections of the country, especially where the house is to face the north. A columned archway separates the hall from the parlor and the low platform in the stairway, with its seat and high art glass window, forms a cozy and



rooms on the second floor are square at the ceiling; the space under the lower part of the roof being taken up with closets and headroom for the stairways.

The first floor contains reception hall, parlor, dining room, kitchen and family bed room, with bath in connection, all admirably arranged. The front en-

inviting nook. The dining room is separated from the parlor by sliding doors. It is of good proportions, and well lighted by three windows, forming a bay, occupying the full end of the room. The kitchen, too, has not been neglected for want of comfort and arrangement, to her whose work is never done. The

room is large enough to admit of ranges for both fuel and gas, as well as other modern conveniences. A stairway leads to the second floor and also to the basement. A grade door here serves a double pur-



pose, that is, it can be used for another door to the basement, or for the kitchen. A large pantry with cupboards with drawers and bins serves to make the kitchen complete. The bath room may be entered either from the bed room or kitchen, which makes it convenient in case of sickness, besides it gives an entrance way to the front part of the house without having to go through the principal rooms.

The second floor contains three large bed rooms with ample closet and storage space. This floor also contains a basin and commode accessible from the hall way. The rooms are all well lighted and of good size. The finish in the three front rooms on first

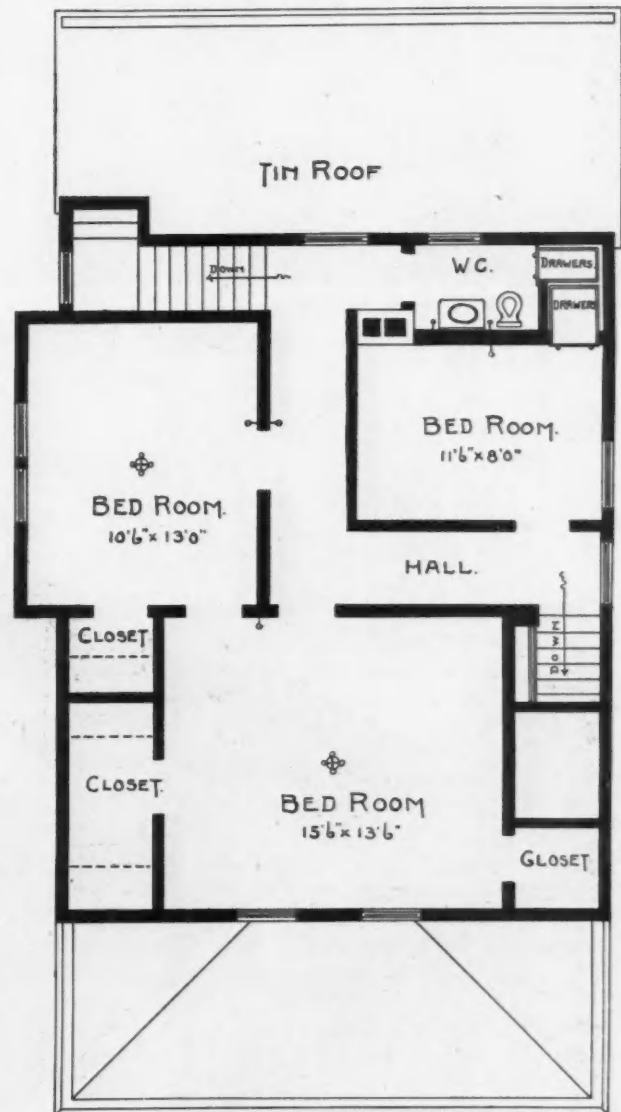
floor, including the hall, is of red oak, while all of the remainder is of clear yellow pine.

The basement extends under the whole of the house and is divided into cellar, laundry, furnace and fuel rooms, besides a large basement room that can be used for a general work room, or storage purposes. The heating is done by a furnace and the total cost, complete, was about \$3,300.

The architectural effect is unsurpassed for a house of this cost. In short, it is a well-arranged house for a family with moderate means, who wish to enjoy an up-to-date home.

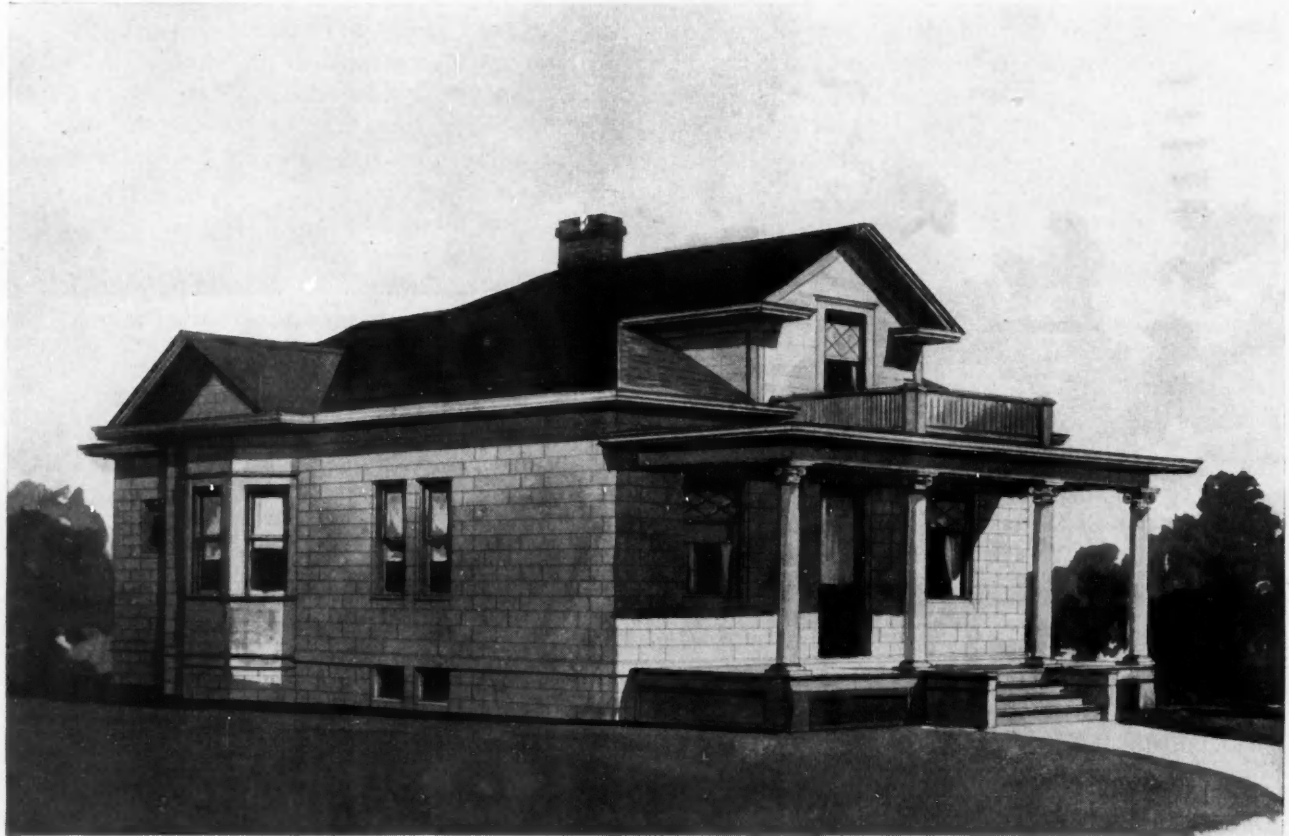
A Cement Block House

The perspective with floor plans shown on page 1178 is that of a very desirable cottage, planned by Ernest Meister, of Vincennes, Ind. The exterior walls are

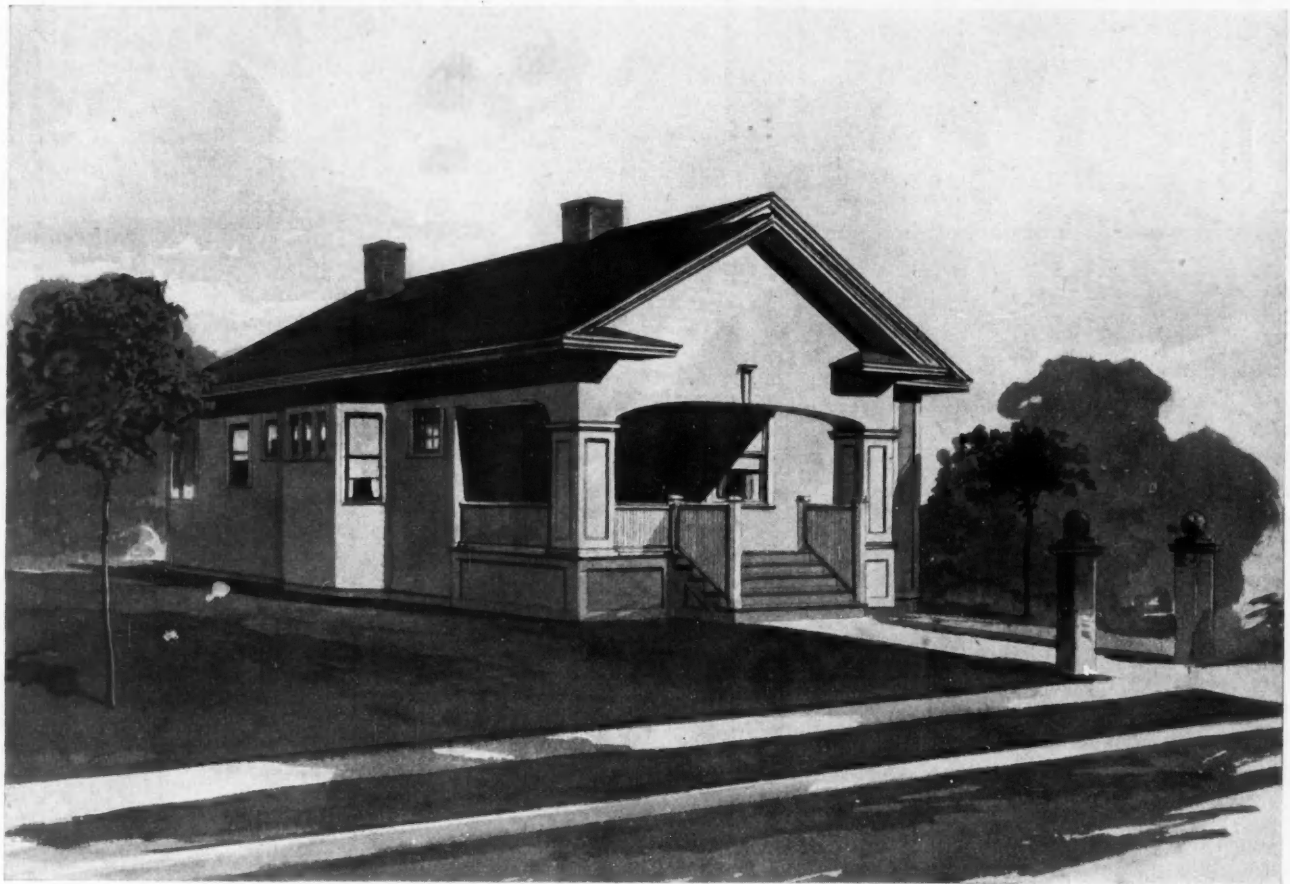


SECOND FLOOR.

constructed of concrete blocks, laid up in even range courses, which is fast coming into general use as a building material, made necessary by the gradual decrease both in quantity and quality, and, we may say,



A Cement Block House



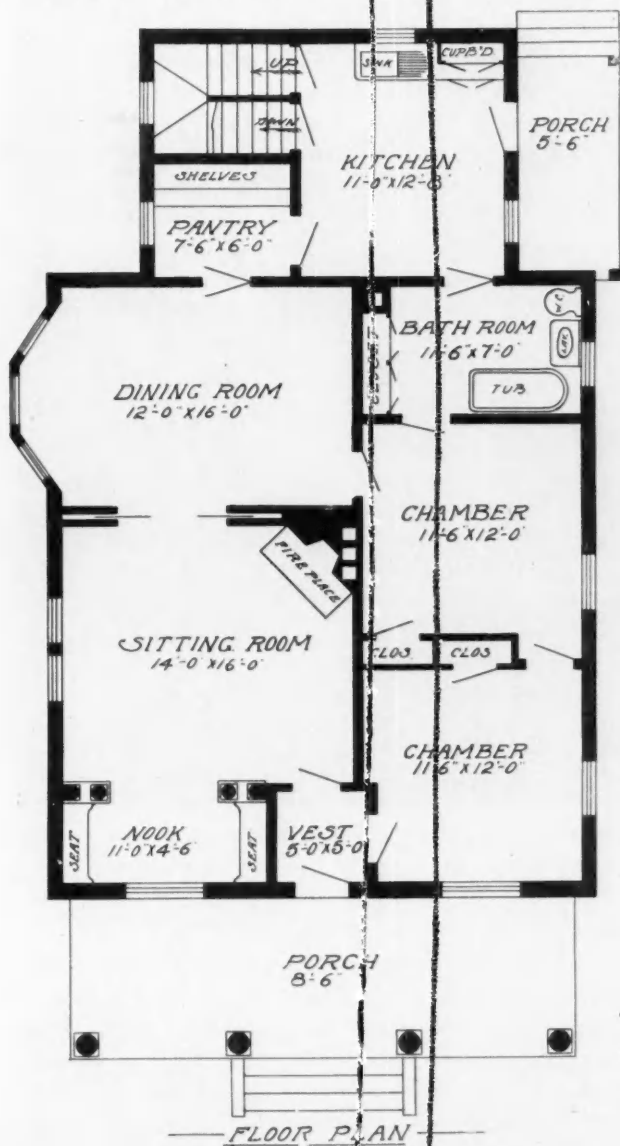
A Southern Home

the more than gradual increase in price of building lumber. This is largely responsible for the cause of this change in building material for houses of this kind. However, cement is not a new building material, as some may suppose, for history and the structures

able. The stairways to the cellar and attic occupy the same space. The porch spans the entire front and also contains a balcony with access to same from a large window in front gable.

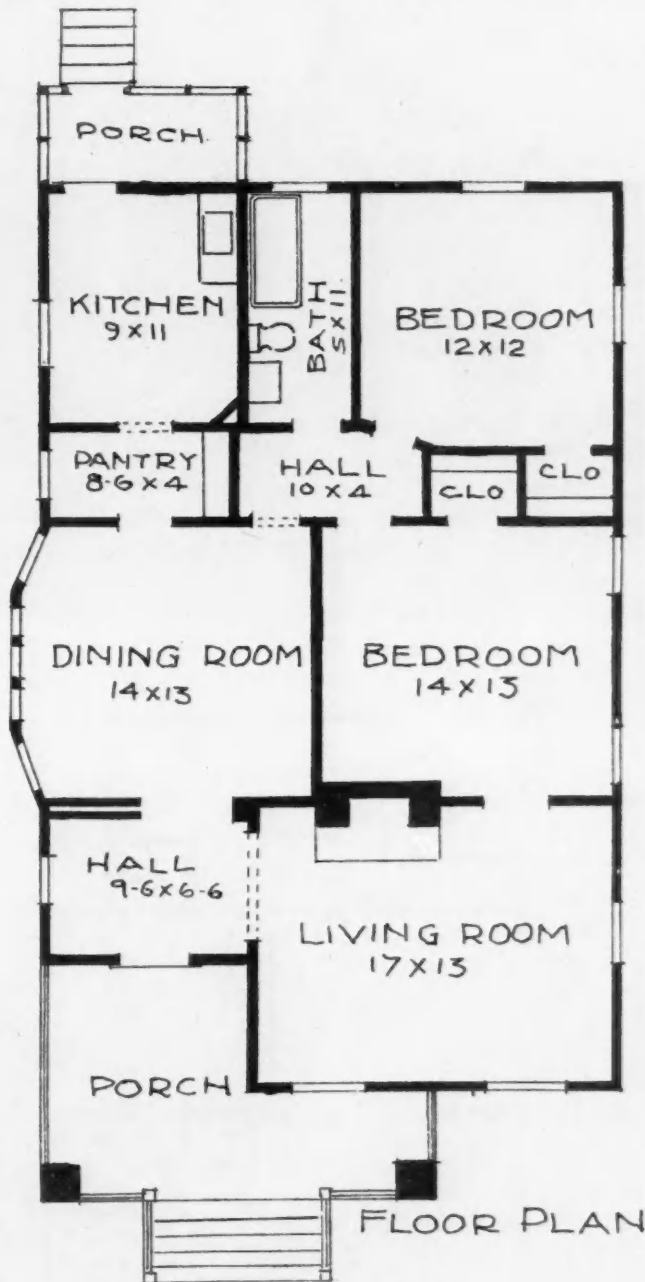
A Southern Home

On page 1178 we are showing a small one story house designed by Charles P. Rawson, of Fort Worth, Texas. It is a very attractive little home and has some very desirable features. It contains a living room, dining room, two bedrooms, a kitchen and a bath



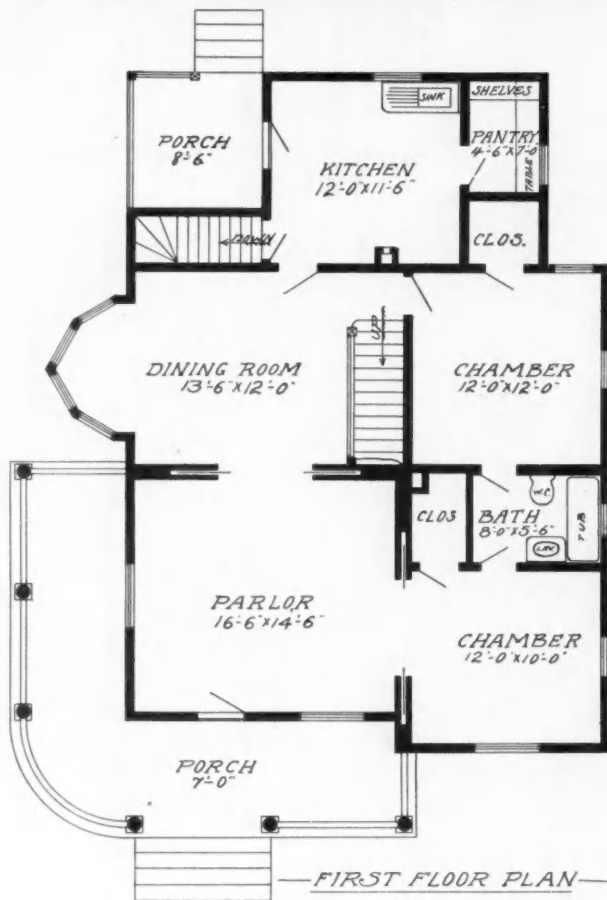
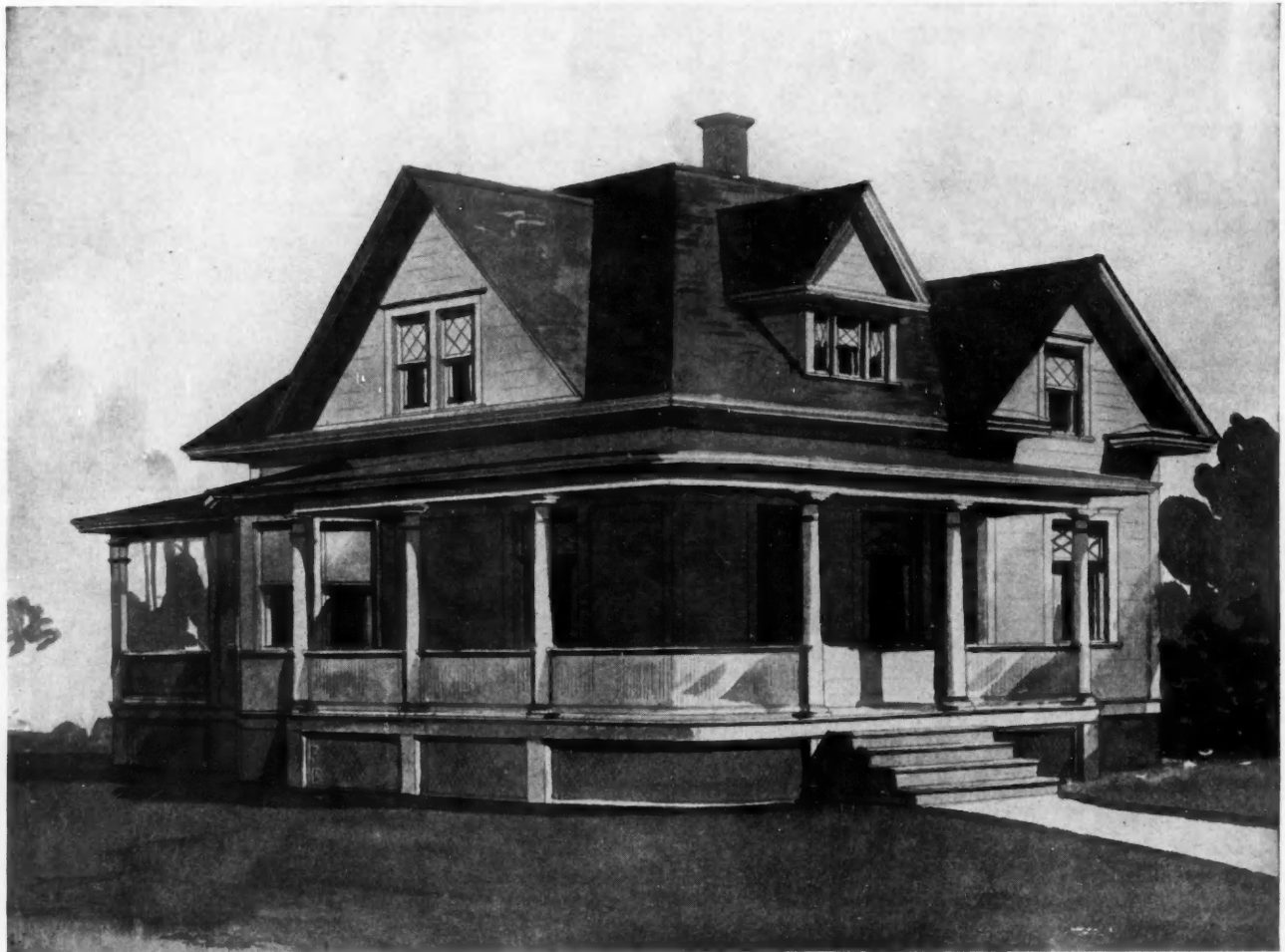
A Cement Block House

themselves stand as monuments of past ages, having stood the test for centuries and centuries, which is proof enough of its durability as a building material. Therefore, we have not gotten the edge over the old-time fellows in the use of cement. About all that we can claim in its latter day use is that we have better facilities for handling it in the way of machinery to mould it into various shapes suitable for building purposes. Mr. Meister has succeeded in doing what many others have failed to do, that is, he has given the exterior a good architectural effect, which is sadly lacking in many of the cement block houses. The interior arrangements are very similar to that of Mr. Campbell's house, shown and described on another page, except this house contains a fire place in the sitting-room, also a cozy nook and a vestibule, which are all desir-

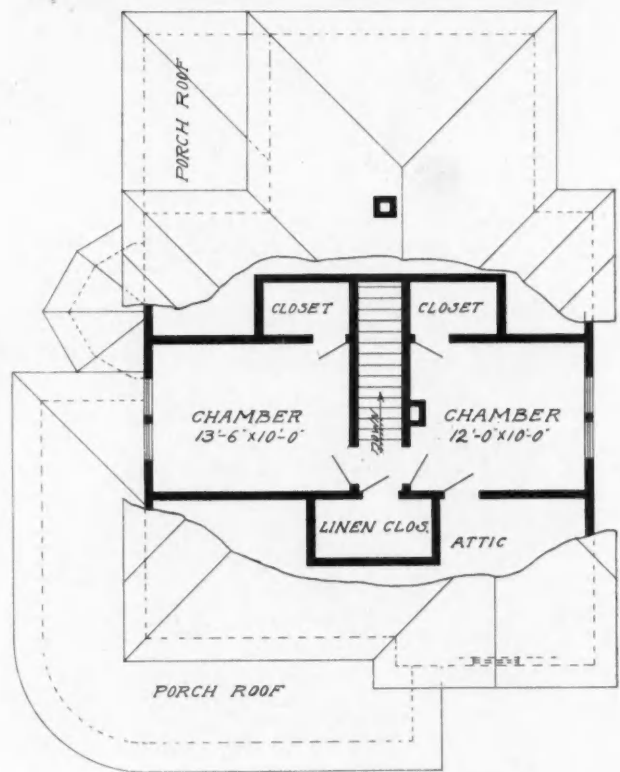


A Southern Home

room. The front porch is entirely covered and is a very good feature as it makes an ideal cool resting place in the hot climates. Separating the front hall from the living room is an archway, and the living room has a large open fireplace. The fireplace is the only means of heating the house outside of the kitchen,



—FIRST FLOOR PLAN—



—SECOND FLOOR PLAN—

but as the weather is usually mild throughout the south except in the evening, it will be perfectly comfortable. It is better to sleep in a cold bedroom anyway, and one of the great faults of the people throughout the north is that they sleep in over-heated bedrooms during the winter months. A good plan to follow is to shut off the heat and open not less than two windows and then keep yourself well covered, and it will be surprising how refreshing your sleep will be as compared to sleeping in a close, stuffy, over-heated bedroom. This house is well lighted, having several windows in each room, and the dining room is especially favored in having two large windows and three half windows. The pantry is very conveniently arranged, being between the kitchen and the dining room, and thus saves many unnecessary steps. The bath room is located between the kitchen and one of the bedrooms and contains all modern conveniences.

A Compact, Well-Built House

On page 1180 we show the perspective and floor plans of a house built by R. R. Campbell, of Alva, Okla. It is a compact, well built and artistic house and does away with the idea that there are no pretty houses in that section of the country. The large porch extending across the front of the house makes it an ideal resting place and adds very materially to the appearance of the house. The first floor is divided into a parlor, dining room, kitchen, two bedrooms and a bath room. The bath room is located between the two bedrooms and can be entered from either. Another good idea is the octagonal bay window which is a very good feature in a dining room as it makes it bright and cheery and this is one of the good features of any good dining room. A good sized pantry is off from the kitchen and is provided with shelves and also a window. We wish to call attention to this fact as there should be a window in every pantry, as it does away with the stuffy atmosphere which prevails when there is no ventilation or sun shine in a room. The second floor is divided into two bedrooms which are well equipped with clothes closets. There is also a large linen closet at the head of the stair which makes a convenient and definite place to store the linen and avoids storing it in odd nooks and corners about the house.

Use of Mill Work in Decorations

(Continued from page 1174)

of the latticework. Where this is to be viewed from both sides each should be cut from a separate piece of veneer. The best method of fastening it would be by means of small bolts, and the veneer should be secured to the latticework before the relief ornament is glued on. The bolts can in this way be covered by the ornament.

Of course, such a treatment can be carried out only when a relief ornament is used, and only when such decorative forms are employed as are adapted for sawing out. Hence the decorator must make himself

familiar with the possibilities of millwork to insure the success of any original ideas of this character.

A wall paper frieze could not well be carried across an opening, except by running on a deep plastered beam, but this is a commonplace and meaningless treatment. It is the motive of the decoration that should appear in the grille or other break, rather than the actual decoration itself. Indeed, the difference in material should be accented as it was in the last suggestion. Many stencil forms lend themselves admirably to reproduction in wood, as we have illustrated in Fig. 3. Here the stenciled ornament that has been used for the frieze of the room is carried across the board arch that has been employed to break the opening, but the design that has been stenciled upon the wall in the one case has been cut out from the wood in the other case, and will stand out either lighter or darker than the background, according to the position of the arch, and whether it is viewed against a dark room or passage, or is seen against a window or a light of any kind. The frieze design in this case is a stencil of the modern type and is adapted for use with Arts and Crafts furnishings. All stencils do not lend themselves equally well to cut-out decorations, and the decorator should be careful to select or design one that will not look clumsy and heavy when sawed out. Fig. 4 is a good example of a type of design well suited to be carried across an opening by means of a pierced board. This design is one that is known as a background stencil, since the background of the design is cut out and stenciled on, instead of the ornament, as in the preceding pattern. As a rule, background stencils are better adapted for pierced ornament than the ordinary form.

The cut-out ornament or stencil form may be applied to the decoration of a glass paneled door, very effectively, by covering the glass panels with thin boards—three-ply veneer would ordinarily be best—which are sawed out in some quaint patterns that will stand out brilliantly against the dark panels, when looking along the hall toward the door.

Of course, all such expedients as the shelf rail, or the broader shelf, carried on brackets to support bric-a-brac, are well known to all progressive decorators. But there are other forms in which woodwork can be advantageously employed. For example, the wall may be covered with a floral paper in which a rose vine meanders over a white ground. This paper can be run to the ceiling without a break, and then the topmost two or three feet of wall can be covered with a latticework, formed by interweaving strips of sixteenth-inch veneer, perhaps an inch and a quarter wide, so as to leave square openings of six or eight inches. To add to the natural effect of this treatment, artificial sprays of roses and leaves, matching the paper in color effect, may be fastened here and there, as though they were coming through the lattice. A similar treatment might be employed for a ceiling.

PLUMBING

W^M R. MARSHALL

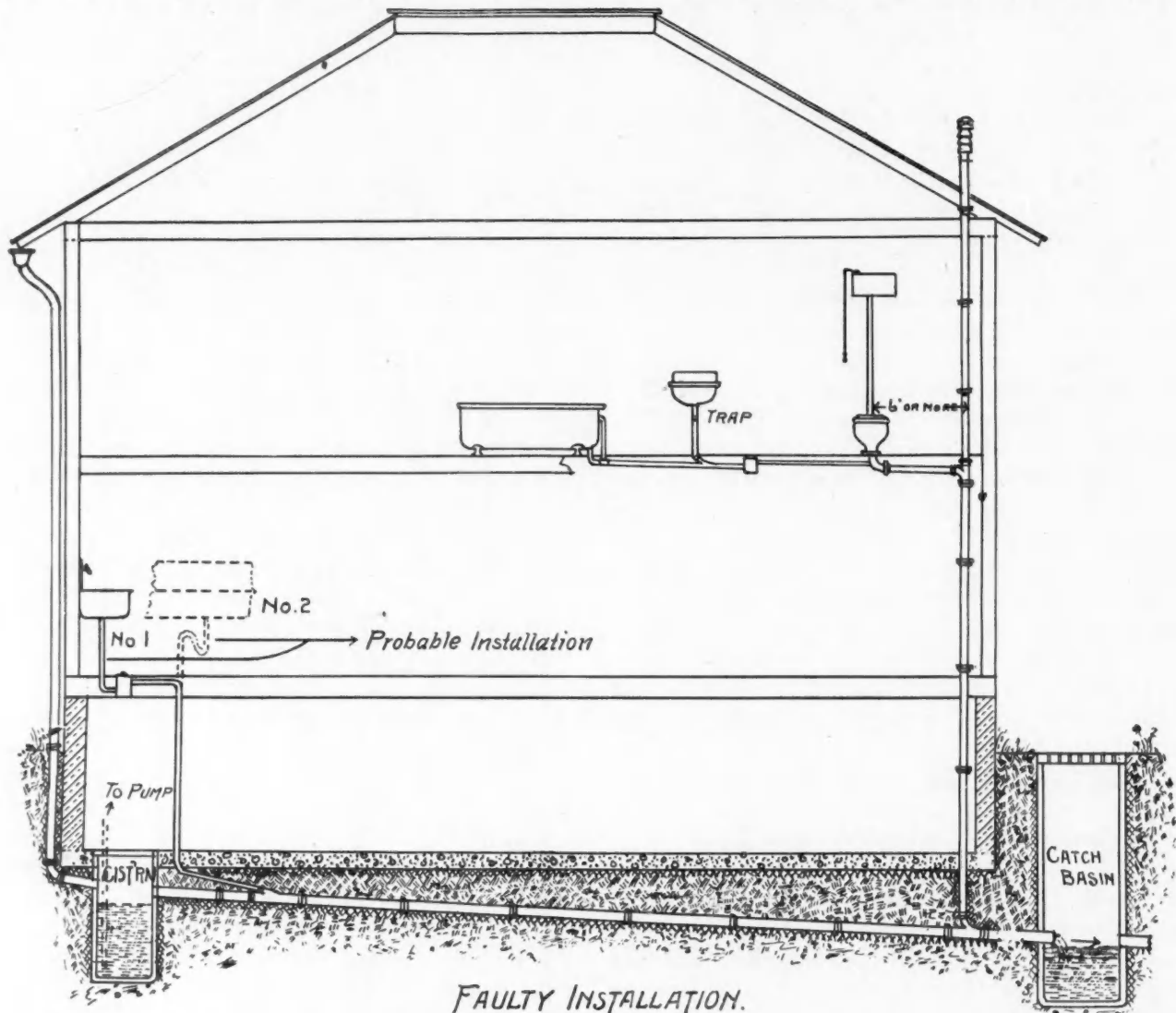
Faulty and Correct Plumbing Installation

SHOWING THE FAULTY SYSTEM WHICH WAS RECENTLY OBSERVED TOGETHER WITH THE CORRECT INSTALLATION—
VALUABLE SUGGESTIONS GIVEN TO INSURE GOOD SANITARY CONDITIONS IN BUILDINGS

IN this article we will try to explain the difference between faulty and correct plumbing installation, as it appears in this specific case. Sketch No. 1 is not a creation of the imagination (although it is difficult to imagine a mechanic (?), having the nerve to call himself a plumber, installing any such death trap

the long stretch of waste pipe between drum trap lavatory and bath tub will in time become foul and objectionable.

The waste pipe from lavatory and bath tub should never be connected into the same bend that connects the closet with the vertical drain pipe, commonly



as this), but is one made from actual observation very recently. The three bath room fixtures, namely, the bath tub, lavatory and closet, are installed without any re-venting whatsoever and without individual traps—

known as the soil pipe stack, as any temporary stoppage in the waste pipe between the bend and the soil pipe stack tee will permit the sewage to back up into the waste pipe extending beyond the bend to the lavatory

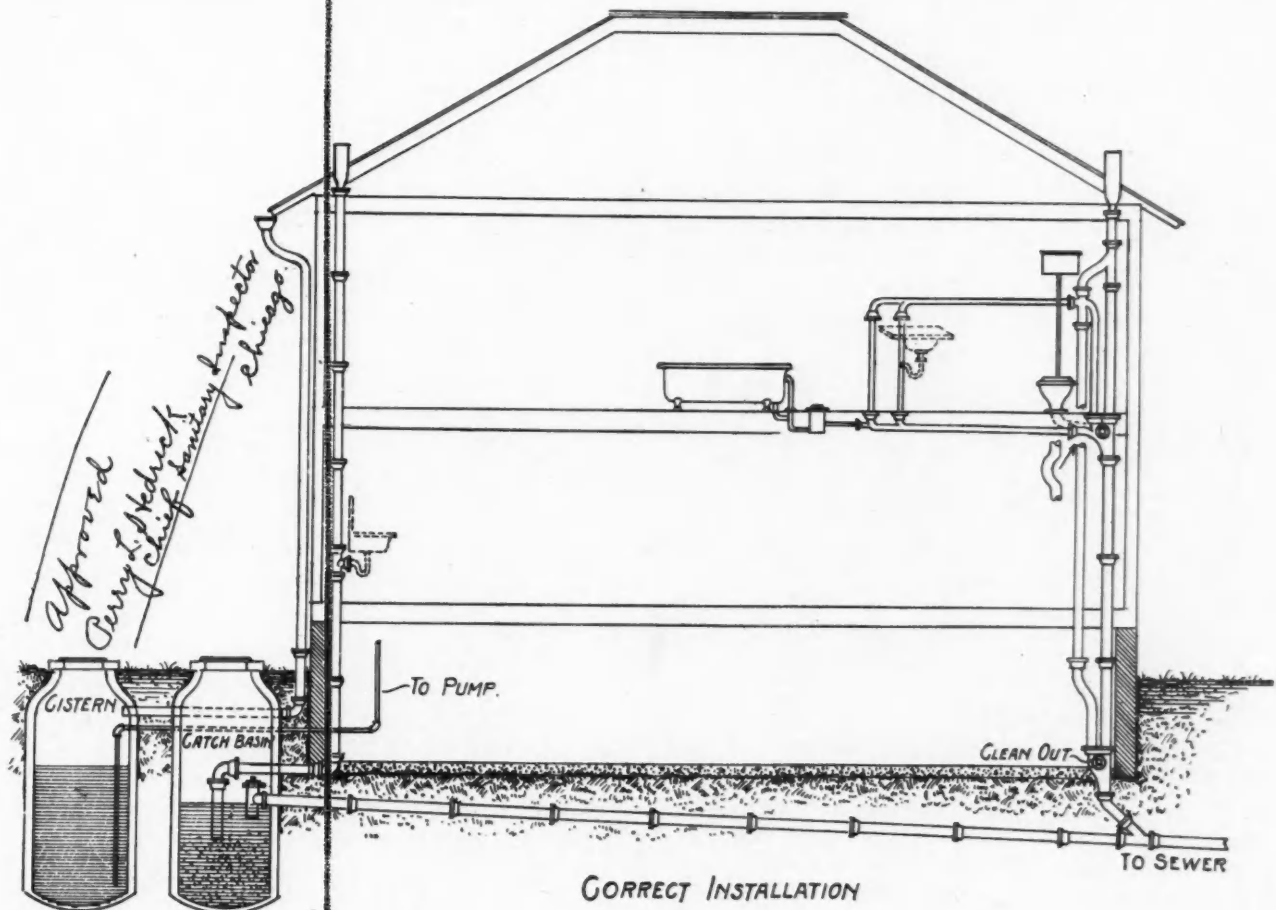
and bath tub, and will foul the drum trap, which in this installation is vented into the room through the bath tub and lavatory outlet. The lack of venting or re-venting destroys the possibility of free air circulation in the system which is so essential in an ideal plumbing system.

The soil pipe stack in this installation is run through the roof without enlarging it. In such cases, the pipe being only four inches in diameter is liable, especially in severe climates, to be closed with hoar frost.

The important items to be remembered, which if followed, will prevent the abuses explained heretofore,

dwel upon it further than to say that all plumbing ordinances have a section which read in substance as follows: "Kitchen or other greasy waste water shall be intercepted by a catch basin or grease trap and thence conducted to main sewer for reasons too obvious even to the laymen to need further explanation."

The two really criminal violations of all sanitary law in this job are: First, in placing an open catch basin or clean-out basin in the yard between the house drain and main sewer. The purpose of the plumber, and we can only guess at his motive, was to provide some means of access for rodding out the house drain



are: First, every water closet, lavatory and bath tub should be effectively and separately trapped and re-vented. Traps should be placed as near the fixtures as possible, and in no case should a trap be more than two feet from the waste outlet of its fixture, and all traps should have at least one and one-half inch water seal, and care should be taken that traps are set level and true with respect to their water seal.

The kitchen sink in this job is trapped, but is without any re-vent, and no provisions are made to intercept the grease, and the waste pipe from the sink discharges water directly into the house drain pipe. The conditions of the drain pipe can better be imagined than described.

We have treated on this subject of grease interception so many times in this magazine that we will not

pipe and the extension of the drain pipe to main sewer, in case of stoppage. What he did do was to install an open cess pool with an overflow to the sewer, the bottom of which was filled with sewage to a level with the overflow or outlet pipe to sewer, and the entire contents vented into the yard.

Imagine the polluted atmosphere that must have prevailed in and around this building. Criminal! We do not think the word criminal is severe or adequate enough to express it.

Second, the second objectionable feature saddled onto the occupants of this residence was in connecting the cistern to the main sewer. The object of the plumber was to provide an overflow for the cistern, which is not absolutely necessary. What he did, however, was to provide an unobstructed passage from the

main sewer, and still worse, from the germ breeding mass of putrid matter imprisoned in the bottom of the cess pool, below the outlet to the sewer, into the cistern for the free travel of the floating organic particles in micro-organisms which are always carried in sewer air, and in this particular instance, they find entrance into the house through the water pumped from the cistern and used for domestic purposes.

As we have often said before, sanitation is based upon scientific knowledge, but it is very evident that even common sense was lacking in this particular case.

Statistical reports on mortality prove beyond a doubt that of the causes of death which are usually in action, impurity of the air is the most important. The laws of health which command pure air, pure water and pure soil, have all been violated in this job, and right here allow me to say, that in awarding the contracts for the plumbing of your house, in which man spends at least one-third of his life, and women and children the larger percentage of it, the health of the household depends in a greater degree on the plumbing than on any other item entering into the construction of the building, and too much attention can not be devoted to the question of sanitation, in the selection of the fixtures and an intelligent installation of same. Therefore, do not always consider the lowest bid the correct one.

In sketch No. 2 we show a correct installation of piping and fixtures, using the same fixtures and the same location. The bath room fixtures are all separately trapped and vented. Vented to protect the traps siphoning and to insure perfect circulation of air throughout the system, by connecting the vent pipes to the main stack at the top above the level of the water seal of the highest trap and at the bottom; the connection of the vent pipe at the bottom of main stack is not only for the purpose of permitting free circulation of air, but is to allow any scales from the vent pipe to fall into the stack and be washed away. Provisions are made for a clean out or rodding opening. The sink is separately trapped and vented and discharges into a catch basin for the interception of grease, and the catch basin trapped against the main sewer and provided with plug tee for rodding purposes in case of stoppage.

It probably would not be amiss at this time to mention the window area of toilet compartments ordinarily required by law in cities having a plumbing ordinance.

Fresh air and light are essentially necessary for a well appointed toilet compartment. Such sections treating on this requirement say that there shall be a window not less than one foot wide and with an area of at least four square feet for a floor area of forty-five square feet or less, opening directly into the outer air, and for upwards of forty-five square feet of floor area there shall be a window area of at least one-tenth of the floor area, and the windows in all cases must be so arranged as to admit of their being opened at least

one-half their height. Where special light or air shafts are used there shall be no other rooms or compartments other than closet compartments ventilated into them, and in a two-story building the air shaft shall contain not less than twenty-two and one-half square feet in cross sectional area, with a minimum width of three feet, three story buildings shall contain twenty-seven square feet in cross sectional area, with a minimum of three feet in width.



To Clean Oil Paintings

Wash with a sponge or a soft leather and water, and dry by rubbing with a silk handkerchief. When the picture is very dirty, take it out of its frame, procure a clean towel, and making it quite wet, lay it on the face of the picture, sprinkling it from time to time with clear soft water; let it remain wet for two or three days; take the cloth off and renew it with a fresh one; after wiping the picture with a clean wet sponge, repeat the process till all the dirt is soaked out; then wash it well with a soft sponge, and let it get dry; rub it with some clear nut or linseed-oil. Spirits of wine and turpentine may be used to dissolve the hard old varnish, but they will attack the paint as well as the varnish if the further action of the spirits is not stopped at the proper time by using water freely.



Cement for Metal

A well-known cement is prepared from zinc oxide and zinc chloride and some other material, such as fine sand, finely powdered iron slag, powdered glass, etc. It may be caused to set more slowly by adding to the zinc chloride, when it is mixed with the other ingredients, some zinc sulphate and powdered limestone. The adhesive power of the cement (for cementing metals) may be increased by the addition of 2 per cent. of ferrous sulphate.



To Clean Window Blinds

Strong soap will destroy green paint more readily than other colors, having the same effect that it has with grease. Many rooms are spoiled by the ignorance of wash-women in the application of strong soap water. Much better use whitening on the soiled places and weak solution of soap in cleansing, by which the luster will be preserved.



Gluing Emery to Wood or Metal

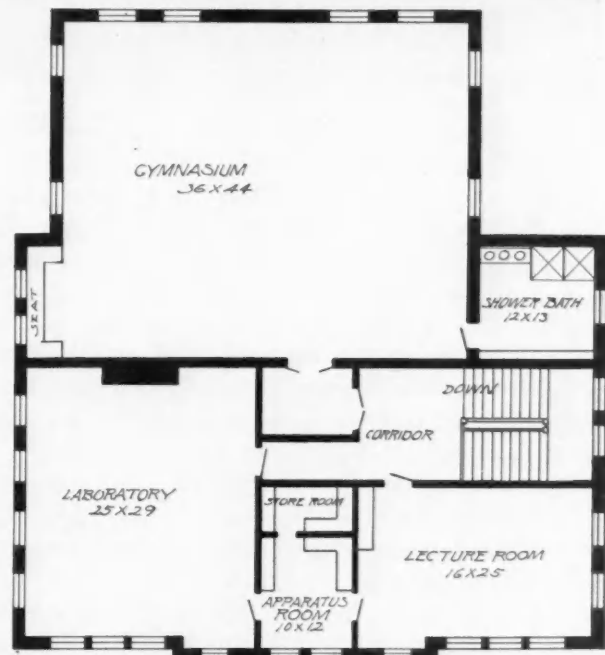
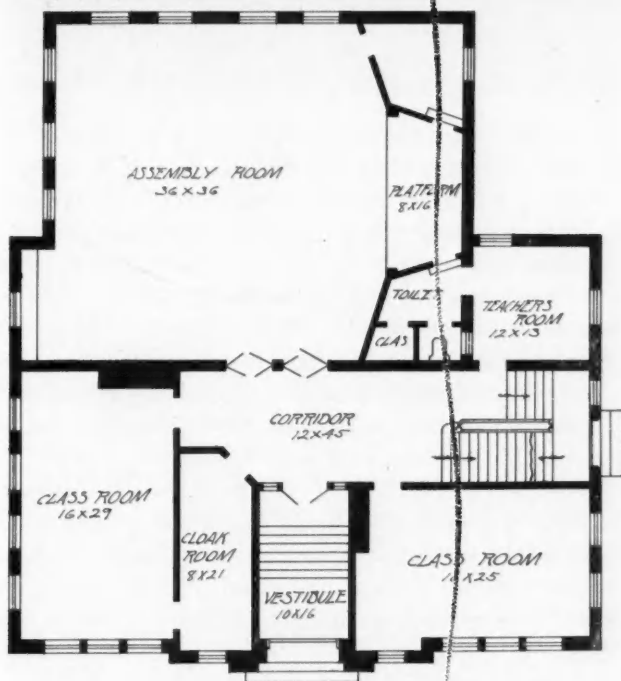
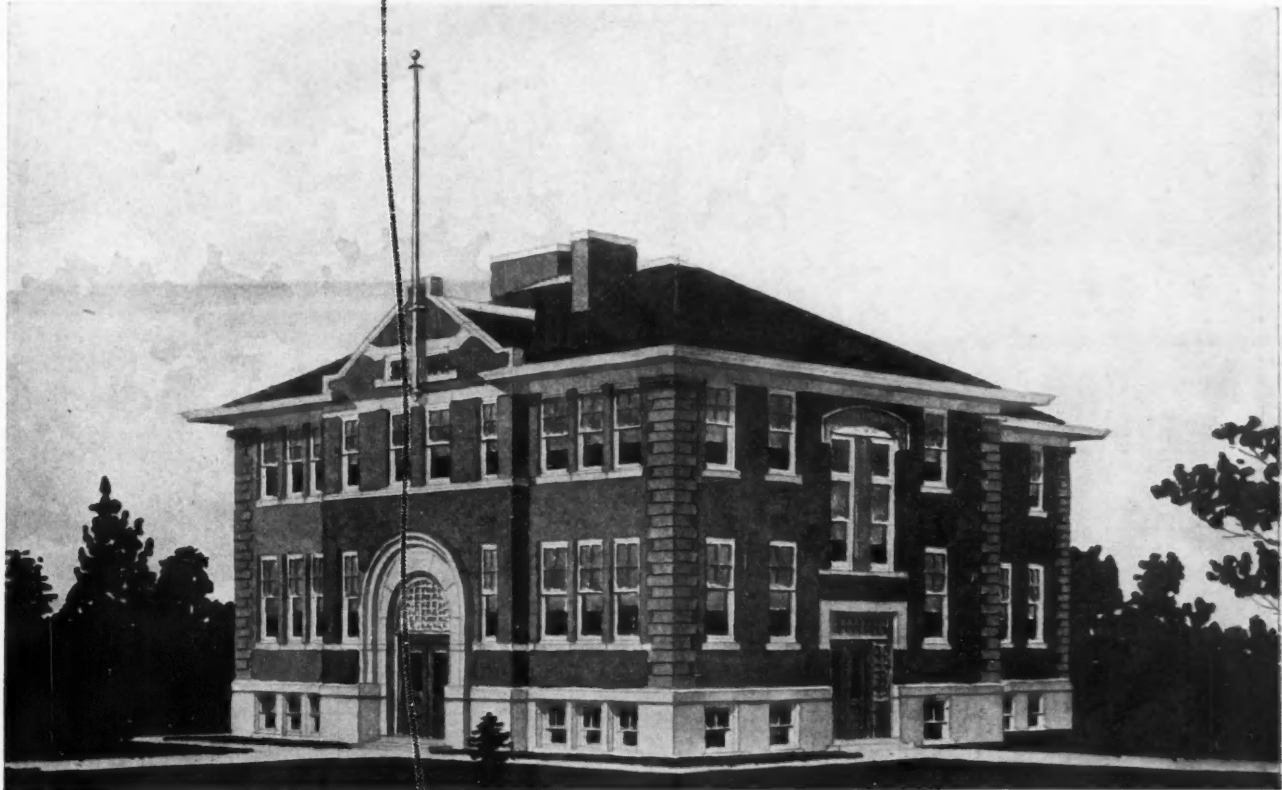
The following is a good receipt for gluing emery to wood or metal and I have used it with success where other cements have failed. Melt together equal parts of shellac, white rosin and carbolic acid (in crystals), adding the carbolic acid after the shellac and rosin have been melted. This makes a cement having great holding power.—*W. T., in Machinery.*

An Attractive High School Building

PERSPECTIVE AND FLOOR PLANS OF A MODERN HIGH SCHOOL BUILDING SHOWING THE INTERIOR ARRANGEMENTS EQUIPPED WITH ALL MODERN CONVENIENCES

THE high school shown herewith was designed by G. W. Ashby, Architect. The first floor is divided into a large assembly room, two class rooms and a teachers' room, while the second floor is divided into the gymnasium, laboratory and lecture room. In a small high school of this kind these are

all the rooms that are absolutely necessary, as the classes can be heard in the various rooms while the assembly room can be used as a study room. The gymnasium is large and is well equipped with apparatus and there is also a shower bath attached which is an exceptionally good feature.



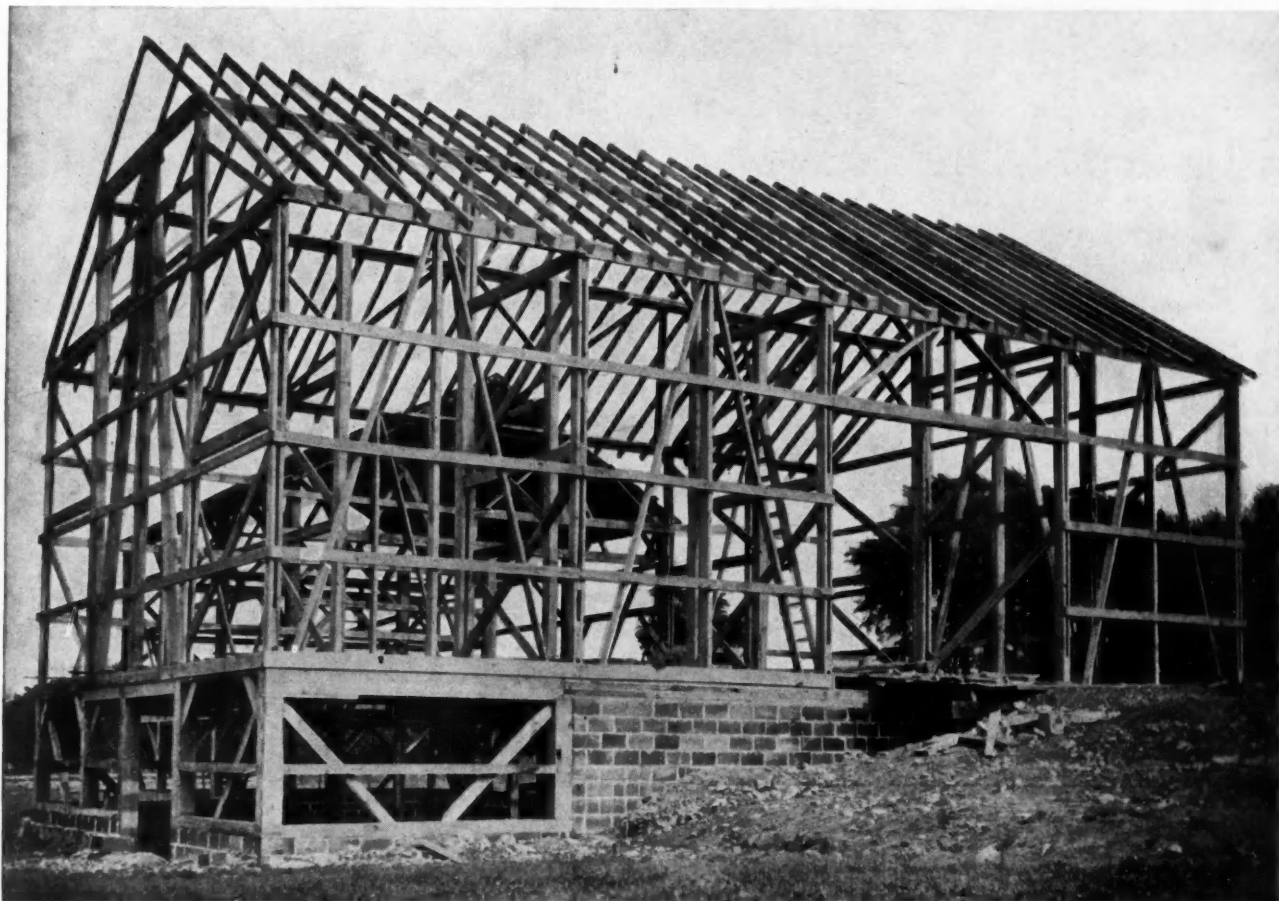
A Plank Frame Barn

SHOWING A FORM OF CONSTRUCTION WHICH IS BECOMING MORE POPULAR—REASONS FOR AND ADVANTAGES OF THE SAME

WITH this we are showing the skeleton of a plank frame barn, recently erected by Mr. W. Grove, contractor and builder, at Warren, Ohio. From the brief data accompanying the photograph we learn that the main part is 40 by 60 feet with a 30 by 40 foot wing. The posts are 20 feet high and are built up of joist spiked and bolted together.

cut from the round timbers, and when it does finally arrive on the building site, is yet green and really not fit to frame for the best results. This is no joke. The writer has gone through it all and what little hair there remains on top of his cranium is falling like the forests before the sturdy woodman's ax.

Another thing in favor of the plank frame is that



The bracing and cross pieces were framed together in sections before raising to their position. The inner set of posts extend up to form the purlin and the rafters, of which there are two sets, are placed on two-foot centers, lapping at this point, and are framed to the one-third pitch, the covering being of slate.

This kind of construction is very popular in some sections of the country and when built as this photograph indicates make a very substantial job, besides the timbers, being entirely of joist, are such as can be readily had in any lumber yard that is worthy of the name. This is a thing in itself that should not be overlooked, as solid framing timbers are not so plentiful as in years gone by, and in many places are not carried in stock. The dealer places the order after he receives the contract to furnish the lumber, and this means that the contractor must wait for the lumber to be shipped from some distant mill and more than likely to be first

the timbers are light and more easily put together than by the mortise and tenon method.

As to the interior arrangement of this barn, nothing is furnished us beyond the photograph, but from its appearance we judge it is to be used largely for hay and grain, while the stable proper is to occupy the half-basement, which extends under both parts. This part necessarily being low and having much weight to carry, square timbers are used to good advantage, but bank barns are not easily to be had, or rather few farms have building sites suitable for bank barns. There is one point that Mr. Grove incidentally dropped in his brief letter, when he said, "Three men and myself built this barn. These men have worked for me for the past five years." This is as it should be. He knows his men and his men know him and it goes without saying they are working to the mutual benefit of one another, and that his clients are getting full value received.



Edward Hurst Brown.

Painting the New House

DIFFICULTIES EXPERIENCED AND PREPARATION NECESSARY IN PAINTING PLASTERED WALLS—HOW TO OVERCOME THESE AND HOW SATISFACTORY RESULTS CAN BE OBTAINED

IN every house there are some walls and ceilings which should be painted, or which it is usual to paint. It is true that modern wall papers have been brought to such a state of artistic perfection, and can be obtained at such a comparatively low cost, that the old practice of painting most of the walls of the average dwelling house has almost entirely disappeared, but there are many people who believe that wall paper is unhealthy and that a wall finished in oil paint that can be washed is more sanitary. Moreover, this makes a very satisfactory finish for the kitchen, pantry and bath room walls, since the steam and dampness in such rooms often proves disastrous to wall paper. Of late years the custom of finishing ceilings in plain tints of water color has been very largely revived, probably as a revulsion from the elaborate wall paper creations of some years ago. The development of the modern artistic stencil, so different from the common-place stencil designs of a score of years ago, has also brought about a demand for painted wall and ceiling decorations that is in a fair way to reviving the old time popularity of painted walls, when the fresco painter was the highest paid mechanic in the building trades, and when his services were in constant demand.

Painting on plastered surfaces is one of the most ancient of arts, and examples of the old work have been preserved for our admiration in the ruins of Pompeii, where the colors, after nineteen centuries, are almost as bright as the day they were applied. These ancient frescoes were probably painted on the fresh plaster, being true frescoes, in the same manner as the fresco paintings of medieval Italy, which have likewise preserved the brilliancy of their coloring undimmed, although they have been exposed to the light and air for several hundreds of years. Such paintings are the glory of many of the famous buildings of Europe, and artists like Raphael did not deem it beneath them to assist in the decoration of the Vatican. This true fresco painting requires the utmost care in the preparation of the plaster, the lime for which was frequently allowed to slake in a covered pit for a year before it was used. But modern haste requires the

entire building to be completed in less time than the people of medieval Europe were accustomed to allow the decorator for his work. Everything is rushed along with the utmost speed, and where the old fashioned lime plaster is used the lime is frequently not allowed enough time to properly slake and the wall is often so caustic in its action as to seriously affect any oil paints that may be used upon it and to destroy the colors of certain distemper pigments. Moreover, it is difficult, nowadays, to find a plasterer who can, or who will, furnish a well-trowelled, hard white coat of plaster of paris, that is smooth and polished like a piece of marble and that makes an ideal surface for painting upon. Such walls are memories of the past, and unfortunately are likely to remain mere memories. Modern plaster work is soft and spongy and of unequal suction, and whether the wall is to be painted with oil colors or with distemper or water colors, a special treatment is needed to prevent suction, or the paint will dry dead in spots or will show unevenly. But even more difficulty is experienced with some of the modern patent plasters, which seem to contain either acids or strong caustic alkalies that sometimes make durable paintings almost an impossibility.

Killing Suction in the Plaster

In painting a plastered wall with oil paints, the first thing to be considered is the best method of killing the suction, or at least rendering it uniform. The paint itself, if mixed sufficiently thin with raw linseed oil, acts in a measure as a filler, and if a sufficient number of coats are applied it will finally show a perfectly smooth and even surface. But it will usually take from four to six coats to obtain a result like this, if the paint alone is depended upon. Hence other expedients are usually resorted to for the purpose of cheapening the work. The simplest and cheapest of these is to give the wall a coat of glue size, or a thin solution of glue in hot water, applied with a white-wash brush. This glue size holds out on the surface of the plaster, and practically stops the suction, so that with two additional coats of oil paint it will look as well, as far as mere appearances go, as a four or five coat job using no glue size. But there is one

decided objection to the use of glue size and that is its liability to be softened and thrown off by any dampness which may come through the plaster, and as it frequently happens that dampness is almost unavoidable on outside walls or on ceilings, this is a decided objection. Some painters recommend that the wall be given a priming coat of oil paint and that this be followed by a coat of glue size, and two additional coats of paint be applied on top of this. The object of this is to seal up the glue size between two waterproof coats and so prevent the dampness from affecting it. We must admit that there is some logic in this plan, but even used this way we do not think that glue size is a safe foundation for an oil paint. A cheap rosin varnish called "gloss oil" is sold for use on plastered walls, either under oil paint or under calcimine, but it has nothing to recommend it. A rosin varnish of this kind is almost certain to split, crack and peel off, or to throw off the subsequent coats of paint, and, moreover, when once put upon the plastered surface it is almost impossible to remove it or to cure the defects which it causes. No matter how many times the walls may be repainted, the rosin will continue its work and constant trouble will result. Of course it is a great temptation to the unthinking painter to use these cheap varnishes, which can be bought all the way from forty-five or fifty cents up to eighty-five or ninety cents, but the price should warn him of their character. At the present values of linseed oil, turpentine and varnish gums, no varnish fit to be used in a building of any character can be purchased for any price so low as this, and even when used as a suction stopper a fairly good varnish should be used. A good quality of hard oil finish reduced with an equal volume of turpentine (or with enough turpentine to make it dry without gloss) makes an excellent size for a plastered wall, whether it is to be finished in oil or in water colors. Many of the failures to obtain satisfactory results with the prepared calcimines that are now so largely used, are due to the fact that the wall was not first sized with glue size or a thin varnish size. Indeed, some painters not only use the varnish size, but they give a thin coat of flat oil paint before using the calcimine.

The following is recommended as an excellent glue size for use under calcimine. One pound of white glue is first soaked in cold water, which is afterward poured off and the glue is then dissolved in one quart of boiling water. To this is added one pound of finely sliced bar soap dissolved in one quart of boiling water, and then two pounds of pulverized alum dissolved in boiling water is slowly stirred into the mixture and enough cold water is added to make one gallon of the size. This is said to be much better than a simple glue size. Several prepared sizes, some of them made with vegetable glue, are on the market and have been highly recommended.

The use of a thin coat of shellac has been recom-

mended as a size on plaster before painting, and the reduced cost of shellac varnish, now that denatured alcohol is free of tax, may extend the use of this material. However, it is open to the same objection that glue size has, in that it is affected by moisture. Otherwise it is excellent.

Painting the Wall

The question whether oil or water colors shall be used in painting the wall, after it has been sized, is largely one of cost, water color or calcimine being much cheaper, although it presents a surface which is more or less absorbant, and is affected by dampness, it is much less durable. Walls painted with oil colors are non-absorbent, and can be washed readily, hence should always be employed for kitchens or similar places.

No definite rule can be given as to the number of coats of oil paint that are needed to produce a first-class job, but as a rule from three to four coats will be required in addition to the sizing, although a fair result can be obtained on cheaper work by the use of two coats in addition to the size coat. As many coats as are necessary to cover smoothly and uniformly should be applied, using white lead in oil, thinned with raw oil and turpentine. The last coat may be either white lead or zinc white, with such colors as may be required to produce the proper tint, and it may be made flat or glossy as desired. For kitchens and similar apartments a full gloss paint is best, while a flat color seems most suitable for ceilings. In many cases a faint egg shell gloss is desirable.

Sometimes a high gloss finish is desirable. For this the wall may be finished in enamel, the same as wood finish, after it has been prepared by at least two or three coats of white lead in oil. Some of the prepared enamels are specially designed for use on plastered walls, and are said to be particularly appropriate for use in hospitals and similar institutions, since they present a surface to which disease germs can not cling and which may also be washed with disinfectants.

Some manufacturers are now putting on the market paints that are specially adapted for use on plastered walls. They are prepared ground in oil in paste form and are intended to be thinned with turpentine in order to produce a flat color. These paints are claimed to be non-poisonous, and are probably made from a zinc white and inert pigment base. It is reported that some of them contain some of the Chinese tung oil, but of this the writer has no knowledge. These materials are being used with satisfactory results, but whether they are better or cheaper than pure white lead or pure zinc white, or a combination of the two, the writer is unable to say. Where a perfectly white wall or ceiling is desired, nothing better than pure French zinc, thinned with turpentine, can be used. It gives a smooth, velvety finish that will not discolor.

Decoration by means of stencils or by free-hand

work can of course be applied to the painted wall or ceiling to an unlimited extent, dependent entirely upon the amount which the owner desires to expend.

Calcmiming

The art of painting upon plaster with water colors is called calcimining or kalsomining. It is also known as distemper painting, and is sometimes spoken of as tinting. In this class of work the colors are mixed with whiting as the white base, while glue is employed as the binder. At the present day it is difficult to find a painter who is able to properly prepare calcimine, although it was formerly considered an essential part of the education of every journeyman painter. But this class of work practically fell into disuse for a number of years, and nowadays it is difficult to obtain thoroughly trained mechanics, and except among those who have learned their trade in Europe mixing a pail of calcimine is a rare accomplishment, and unless the employer happens to be practical enough to mix it himself for his men, he must necessarily fall back upon the prepared calcimines or water paints, which are offered in great numbers.

Calcimine is prepared by dissolving white sheet glue in hot water, after it has soaked in cold water. A saturated solution of alum in water is made and is added to a stout paste made by mixing bolted English cliffstone paris white (or whiting of the best grade) in water, and to this the liquid glue is then added as a binder. To color this paint, so-called distemper colors are used, or colors ground very fine in water. All colors that might be affected by lime must be carefully avoided, such as chrome yellow, chrome green, Prussian blue, etc. The tinting colors should be added to the whiting before the glue is put in. One great difficulty is that the calcimine dries out lighter in color than when it is wet, so the only way to test the tint is to dip a piece of white drawing or wrapping paper into the pail and take it out and dry it. This will show the color as it will look after drying.

The greatest difficulty in the use of calcimine is that it must be put on in a continuously flowing coat; since if an edge is allowed to dry, or if the painter goes back and touches up the work that is not dry, ugly marks called laps will show. In tinting a ceiling two men usually work together, sometimes three or more, beginning at one end of the room and working continuously toward the other end and under no circumstances must they stop work until the entire ceiling is completed, or the whole job will be hopelessly ruined. It is claimed that the prepared calcimines will not show laps, but practical painters say that this claim is not well founded.

The prepared calcimines are of two classes, the hot water and the cold water. They are put up in powdered form and are classed in accordance with whether hot or cold water is to be used in mixing them to working consistency.

Hot water calcimines are made by using finely ground

or powdered animal glue, and in principle do not differ from the shop mixed calcimines, except that they are put up in powdered form. A test made by a member of the Massachusetts Society of Master House Painters and Decorators showed that the results obtained from one of the best known hot water calcimines was equal in every way to the calcimine made by the writer of the paper, who is one of the most practical master painters in Boston. Many of the members gave very favorable testimony in regard to their own experience with this material. The cost is a trifle in excess of the shop mixed, but the great difficulty of obtaining men who can mix calcimine makes it preferable. In mixing hot water calcimines boiling water must be used.

Cold water calcimines, as a rule, are made with a casein binder. This is one of the constituents of skimmed milk. These materials have also given great satisfaction; but whether they are equal to the hot water calcimines is a question for the practical painter to determine for himself. The principle of the use of casein for a paint binder is by no means a new one, having been published in Europe many years ago, but its application is nevertheless covered by patent.

In addition to animal glue and casein, there have recently been put on the market a number of vegetable glues that are highly recommended for the preparation of calcimines. The greatest objection to the use of animal glue is that it is apt to decompose in hot weather and sometimes the smell will cling round the house for weeks.

There is still another material which is used for painting plastered walls, although it has not met with so much vogue in this country as in England. This is a special preparation known as Duresco, which uses silicate of soda or water glass as a binder. It possesses the advantage of being washable, and is moreover of the same color when wet as it is when dry. It is higher in price than the ordinary prepared calcimines—in fact, it is not a calcimine—and this additional cost has probably been the reason that it has not become very popular here. For kitchens, bathrooms and the like it is said to be equal to oil paint.

Concrete Blocks in Cuba

(Continued from page 1159)

turn out imperfect work. The art of making blocks is not fully understood in some quarters. I saw many pieces of poor work, in which too much water was used, resulting in the collapsing of the block by its own weight upon removal from the moulds. Again, too much stiffness could be seen in the brittle and cracking specimens. Also warped blocks and blocks containing flaws.

The Cuban Concrete Company, manufacturers of concrete blocks and artificial stones for building purposes, operate a first-class factory. There are a number of plants on the islands where blocks are made according to modern principles.



Something the Boys Can Make

COMPLETE DESCRIPTION WITH DRAWINGS OF HOW TO MAKE A PORCH CHAIR—DIMENSIONS GIVEN AND KIND OF MATERIAL TO USE

NOW that cold weather makes indoor work unusually attractive it might be well to plan and make something for warm weather use. By beginning now and putting in a little time Saturdays a porch chair such as is shown in the photograph may easily be made.

The construction is so simple that any boy of average ability ought to be able to make it with but little trouble. Then, too, there will be required no very great amount of close and continued application to make the parts.

Most any kind of wood will answer. If it is to be made of an open grained wood such as oak or chestnut, the parts should be filled with a paste filler, shellaced one coat and waxed or varnished just before assembling the parts. If of a close grained wood, such as whitewood, maple, etc., the parts may be treated as for the open grained wood except that the filler is not necessary. A liquid filler may be used if convenient. If the natural color of the wood is not desired, the wood may first be stained, the filler being colored somewhat darker than the stain.

Two different thicknesses of wood are required for the flat pieces, seven-eighths and five-eighths of an inch. The rods will require still another thickness, one inch. Since none of the pieces are over two inches in thickness, it is quite likely that material enough may be found in the scrap-pile. Every carpenter shop has a corner or place where are placed for possible future use the long strips which are often left after ripping.

For the uprights, Fig. 1, square up in the usual way two pieces seven-eighths by two by forty-nine and one-half inches. Bevel the ends on sides and edges to one-quarter of an inch each.

Measure from what is to become the top end of

one of them one and one-quarter inches and make a light pencil mark. Make the marks on one of the edges. Again measure from the same end eighteen and one-half inches and mark.

From the other end measure one and one-half inches. From this same end measure fourteen and one-half inches and mark.

Place the two pieces side by side, the edges up, and

even the ends with the try-square. Hold them firmly in this position and square light pencil lines across the two pieces at the marks laid off on the edge of one of them. Take the pieces apart and square these lines across one face of each piece. Next set the gauge to one-half the width of the piece and mark across each pencil line. Be careful not to gauge beyond what will be covered later by the bit, when the holes are bored.

Bore the holes nearest the ends with a one-inch bit, the cross lines of pencil and gauge indicating the points at which to set

the spur of the bit. The two remaining cross lines are to be bored with a one-quarter inch bit.

In boring such as this, where care must be taken to keep both edges of the holes clean and sharp, the holes should each be bored until the spur shows, the bit should then be withdrawn and the rest of the boring be done from the other side.

For the seat support, Fig. 2, square up two pieces to seven-eighths by two by forty-four and one-half inches. Bevel the ends to one-quarter of an inch.

From one end of one of the pieces measure one and one-quarter inches and place a light pencil mark. From this same end measure seven and one-half inches; from this last point measure three and three-quarters inches; from this point three and three-quar-



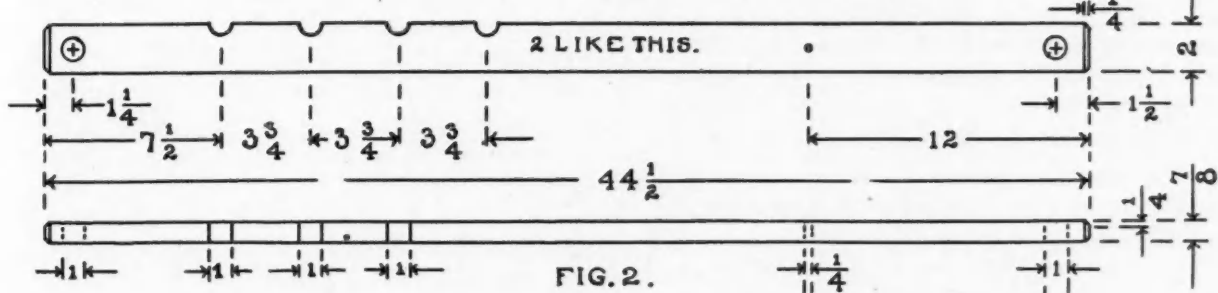
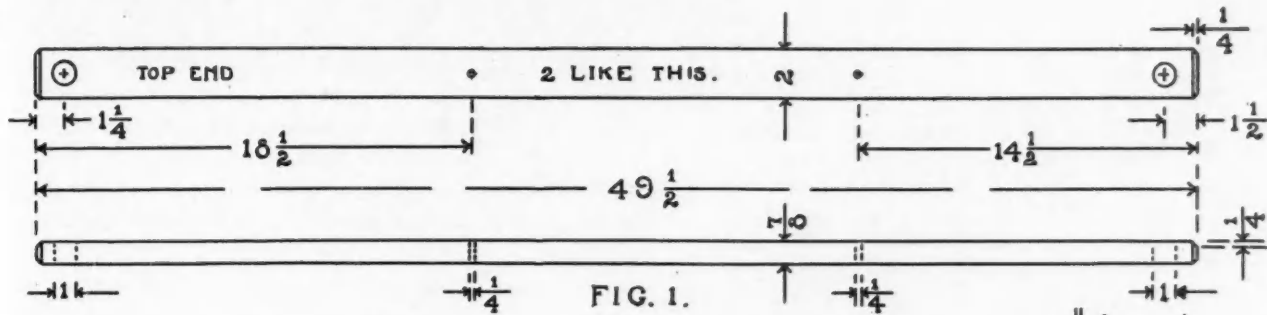
ters; from this last point lay off the same dimension again. From the other end of the piece measure one and one-half inches. From the same end measure twelve inches.

Even the ends of the two pieces and square light pencil lines across the two edges at the marks just laid off, as was done with the first two pieces made. Square these lines across one face of each piece.

Gauge for the middle of the piece across the lines

edge, back to a point measured from this same end three inches along an edge.

Two holes are needed in each of these pieces. Pair them and lay off in the usual way for holes of one-quarter inch diameter, one inch from the beveled ends. Gauge for the middle as usual. The other holes would best be laid off and bored after the parts are assembled as this will permit adjusting the parts as desired.



measured one and one-quarter inches from one end; one and one-half and twelve inches from the other.

Bore the end lines with the one-inch bit, the other one with the one-quarter inch bit.

The other holes, or rather half-holes, are made by placing the two pieces edge to edge in the vise and placing the spur of the bit in the crack. The one-inch bit is used. As it will be impossible to finish the boring of these blocks from the second side, the parts remaining must be cut out with the knife after the pieces have been separated.

For the part which supports the back, Fig. 3, there will be needed two pieces squared to seven-eighths by two by twenty-two inches. The ends are to be beveled one-quarter of an inch.

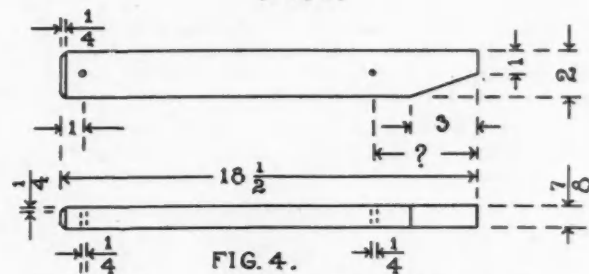
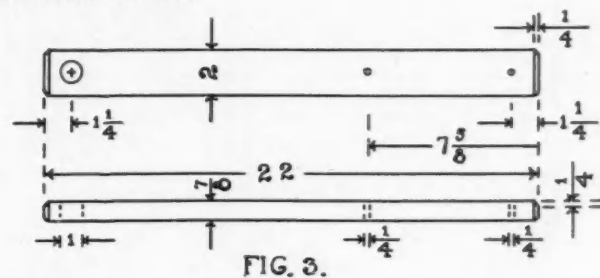
There will be a one-inch hole centered at one and one-quarter inches from one end; a one-quarter inch hole at one and one-quarter inches from the other end; also a one-quarter inch hole measured seven and five-eighths inches from the same end. The pieces should be paired, the lines squared across and the middles gauged as with the other pairs previously described.

The arms, Fig. 4, should be squared to seven-eighths by two by eighteen and one-half inches. One end only of each piece is beveled to one-quarter of an inch.

On the unbeveled end is to be cut a slope running from the middle of the end or one-inch from either

The two pieces which support the arms, Fig. 5, are to be squared to five-eighths by two inches by ten and one-fourth inches.

Cut the corners, not bevel, one-half an inch each way; that is, measure from the corner along the edge and down the end.



Pair the two pieces and lay off for holes three-quarters of an inch from each end and in the middle. It will be better to lay off and bore these holes, probably, before the corners are cut off. They are to be one-quarter inch in diameter.

In laying off all these pairs do not make the mis-

take of squaring the lines across the two pieces with the edges together and the broad surfaces up; but place the broad surfaces together and the edges up, carrying these lines across the broad surfaces afterwards. Do this even though the lines are not needed on the edges. The gain in accuracy will repay the extra labor.

The hand rests, Fig. 6, are to be made of five-eighths of an inch stock and should be two inches in

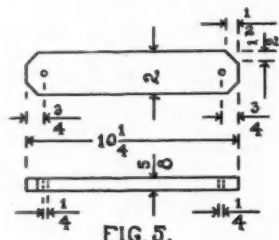


FIG. 5.

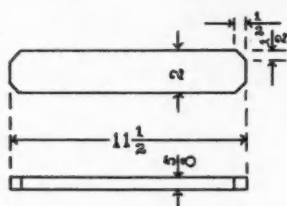


FIG. 6.

width by eleven and one-half inches long. The corners should be cut as in the previous pair to one-half an inch each way along the edge and end.

Five one-half inch dowel rods are needed. It is possible to get these in one long piece if you happen to live near a mill, and then all you need do is to saw off the desired lengths. However, if they can not be got easily you can make your own. The pieces may be sawed to the approximate length first, or two or more may be got out in single pieces.

Two rods each eighteen and one-quarter inches long; two rods each twenty and one-quarter inches

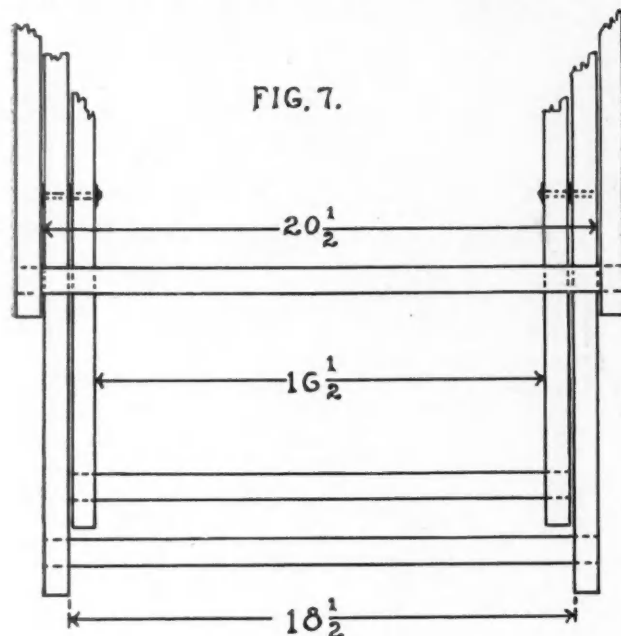


FIG. 7.

and one rod twenty-two and one-quarter inches give the exact lengths. It will be well to cut each piece several inches longer so that the ends which are imperfectly formed may be cut off.

Rip out and square up pieces to full one inch width and thickness. By full inch is meant enough over the inch to allow sand papering without getting below the inch.

On one end of one piece draw pencil lines connecting corner with opposite corner; that is, draw the diagonals. Now set a pencil gauge so that the distance shall be the same as one-half of the diagonal. Gauge from each edge each way, making two lines on each surface. Plane each of the four corners down to the gauge lines. This gives an eight-sided solid. A stroke or two of the plane on each of the eight edges will leave the solid so that it can easily be sand papered to a cylinder.

Fig. 7 shows the relation of the parts when assembled. The shortest pair of rods connect the pieces which support the seat; the next in length connect the pieces which support the back; the longest rod is for the pieces by which the back is adjusted.

These rods should fit tight and may be fastened in addition with a small screw or nail from the under or back side.

The hand rests should be nailed to the arms with small nails or brads before the arms are bolted. The photograph shows the relative positions.

The bolts should be of a size to fit snugly. Four of them must be of a length to accommodate two seven-eighths inch pieces of wood, a washer on each side and at least one between the pieces, and the nut, of course.

Two of them must be of a length to accommodate one seven-eighths inch and one five-eighths inch piece and three washers.

The other two bolts must take on two seven-eighths inch pieces, one five-eighths inch piece and four washers, two of the washers being placed between the pieces of wood.

The canvas should be tacked to the rods in such a way that the tacks will be concealed. This can easily be done because of the fullness given it. The ends should be folded back so as to give strength to the parts through which the tacks enter.

Common carpet tacks of small or medium size will do. They should be placed every few inches.

The photograph shows how the canvas should be hung.

While the size of the chair may be varied, it will be necessary to keep the proportions if the parts are to fold properly.



To Restore Faded Upholstery

Beat the dust out thoroughly, and afterward brush them; then apply to them a strong lather of castile soap, by means of a hard brush; wash the lather off with clear water, and afterward wash them with alum water. When dry, the colors will be restored to their original freshness. When the colors have faded beyond recovery, they may be touched with a pencil dipped in water-colors of a suitable shade, mixed with gum-water.



Solving Mr. Davis' Problem

To the Editor:

Herrin, Ill.

In reading your journal this month I find a very interesting problem submitted by Mr. A. Davis. Too many mechanics have not spent their spare moments in study, that they may be able to know their profession well. They have never perused the pages of standard authority along their special line of work enough to learn that there are a number of

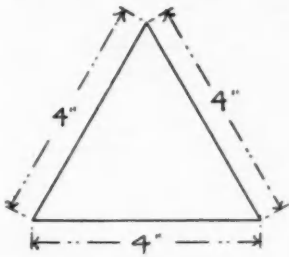


FIG. 1.

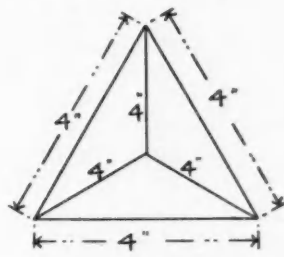


FIG. 2.

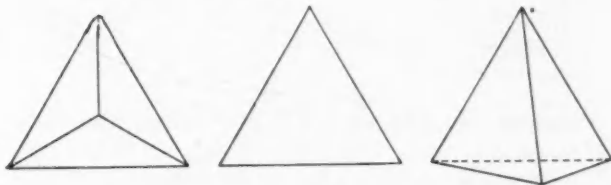
figures which are vastly different in form from the cube, and that they are dealt with in a very different mathematical manner. This should instantly suggest a reason for Mr. Davis not finding a person who could accurately solve his problem. I will make the following suggestions as to a manner of solving his problem: Instead of the cube use a form triangular in shape, which has each side of the triangle just four inches long. This form must be constructed of four equilateral triangles, as shown in Fig. 1, and when finished will look as does Fig. 2.

CLETUS JONES.

To the Editor:

Crichton, Ala.

In answer to Mr. Davis' problem, published in your December issue, would say that the figure which satisfies the conditions of his problem is known in geometry at a tetrahedron.



PLAN. ELEVATION PERSPECTIVE

It has four equal triangular faces, each of which is bounded by three equal lines. I enclose sketches showing tetrahedron in different positions.

VERE D. SCOTT.

To the Editor:

New Haven, Ky.

In reply to Mr. Davis' problem in the December number, I send you the following answer: Take a piece of wood or card board and cut four triangles four inches on each side each way. Put them together and you will have four equal sides of four inches on each side each way. That was a new

one on me and I would like to have another one or two to pass off a couple of minutes these long winter nights.

CHAS. R. HEIZER.

Lakewood, Ohio.

To the Editor:

In the last issue of your magazine Mr. A. Davis gave the readers a problem, that is, viz., to cut a piece of wood or other material of four equal sides, having four inches on each side each way. My answer to this problem would be an equilateral pyramid having a triangular base of the required dimensions. I wish you much success.

W. D. LEWIS.

Lakewood, Ohio.

To the Editor

In the December number of your magazine a gentleman from Pleasantville, N. J., gave a problem which he thinks is very hard. At the first glance without any guessing I knew that a piece of wood had to be a right pyramid.

ROBERT BRAUN.



J. Crow Taylor's Article Indorsed

To the Editor:

Rapid City, So. Dak.

Being a faithful reader of your valuable paper, have just read Mr. J. Crow Taylor's article on planing mill work, and he voiced my opinion when he said: "Most all of us are neglectful of the small details." However, the fault is not always found among the men that work at the machines, as it is sometimes with the employer. I have seen shops fitted up with the best machinery and cheap men hired to run them (when I say cheap men, I do not mean the man that gets the least wages per day, but the man that has had but little experience in that kind of work). Have often heard men say they could run any machine after it is set up. This is a wrong idea. It has been my experience in the past six years that a machine needs constant watching, for it may be doing good work one minute and poor the next. In fact, a man can not tell at what time a knife will get knocked out of place, or perhaps a corner or a nick will wear in the knives, especially in moulding knives, and the same holds good on most any wood working machinery. Another mistake is in setting the knives to rank; that is, they extend the cutting edge too far out from the head and wonder why their machine cuts so rough. Another trouble is they do not watch their bearings close enough, for a very little play in the boxes will cause a machine to cut rough; in fact, a person can hardly lay down any one set of rules to go by, but I have found that there are three rules that a man should bear in mind. First, to have a proper speed adjustment on the bearings; second, to have his knives properly balanced; third, keep the knives sharp and set as fine as possible. With these three rules and reasonably dry lumber he should do good work. The great trouble is that the majority of laboring men do not care to devote their spare time studying. They do not consider their employer's welfare and thus they fail to fit themselves to demand more wages. They say they can get so much per day and what is the use of devoting

their time to studying? Until the laboring men study how to handle their machines to the best advantage to all concerned, we are going to have fewer finished mechanics, for it is the man who studies that makes himself useful and should hold the best jobs in the mills and factories. J. W. BRYAN.

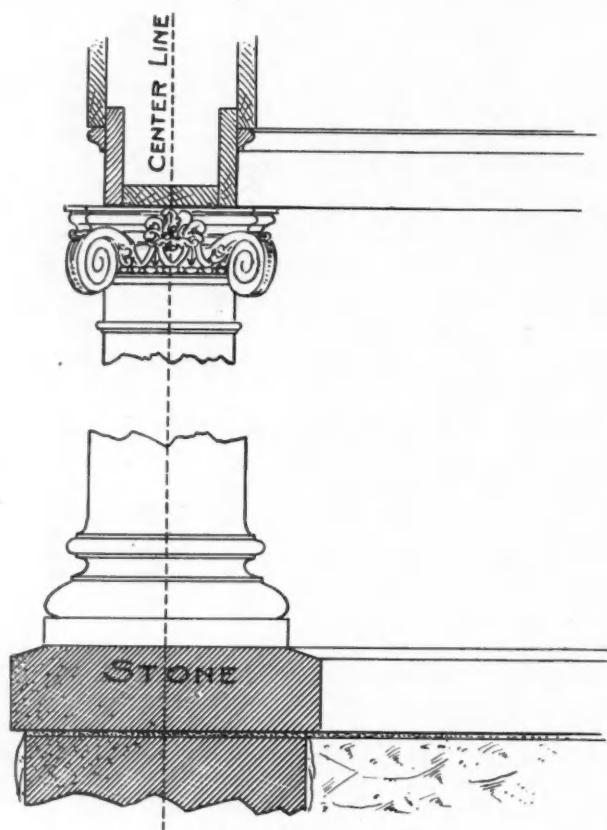
How Wide Should Be the Soffit?

To the Editor:

Kankakee, Ill.

I am looking for some information and have taken the liberty to ask you. Should the capital project outside of soffit? I claim as long as the rail is centered, it does not matter. I have built my soffit so that the forms of the capital do not project beyond the face of the soffit. Would you think it absolutely wrong? J. P. P.

Answer: Yes, it is wrong. According to the architectural orders, established by the Greeks and Romans centuries ago, and upon which no one has been able to set up any better



models, the soffit at its narrowest part should equal the diameter of the neck of the column, as shown in the accompanying illustration, which shows that the soffit should be centered over the railing or coping. This is an error that occurs too frequently and sadly to the architectural effect of the house. The builder should know the size of the column that he expects to use, the difference in the diameters at each end, and frame his work accordingly. There is an established proportion based upon the diameter of the column running through all of the different parts, even to that of the main cornice and other parts of the house itself, and for the best effect should be rigidly followed. A. W. WOODS

Grades of Lumber at Present

To the Editor:

Wilton Jct., Ia.

For a long time I have wanted to write an article about lumber and I wish you would bring these few lines out in your paper. As I have worked for thirty-three years at the

carpenter trade I have noticed how lumber was cut twenty years ago and now, and I am surprised how the contractors can keep quiet at the grades of lumber we get at the present time. Most of the flooring is only three-fourths of an inch thick and is all sold for one inch thick. The same with frame stuff. All the fir and yellow pine is only one and one-half inches by three and one-half inches, instead of two by four, so you hardly get three-fourths of the value. I think this matter should go to Congress and a law passed to get full value, and oiled dressed lumber to be seven-eighths inch thick. Besides this, the contractors and architects should stay together and should refuse to buy lumber that is not of the lawful thickness. I would like to hear from other contractors as to how they feel about this in your next issue.

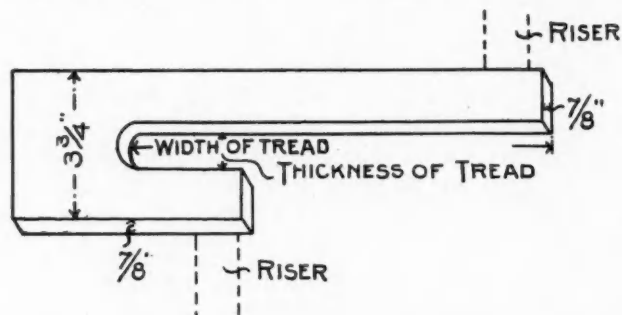
J. R. SCHMIDT.

Gauge for Stair Treads

To the Editor:

Akron, Ohio.

Enclosed find a sketch of a stair tread gauge, for marking the ends of treads for open stairs. It is very simple and I



think a great help, having used one for years. Most any stair builder will catch the idea of its usefulness and needs no further explanation. Would like to see a sketch of it in the AMERICAN CARPENTER AND BUILDER. C. E. MORROW.

Pest of Ants

To the Editor:

Rockville, Ind.

I was called upon recently to repair a job, a residence that had been built a number of years, an old fashioned house with large sills and frame work and I found something new to me. I want to ask my fellow workmen if they have ever had a like experience and if so how to get rid of them. The sills and posts were full of little ants and not content to eat the house up they persist in coming in on the carpet and piling up the trash to the annoyance of the lady of the house.

If you can give me any information on this subject it will be thankfully received. Edgar Jerome.

Where to Secure Landscape Frieze

To the Editor:

Bowdon, N. D.

I have been interested in many of the articles in the magazine, especially those treating about house decorating. In one article, for example, in the October number, page 818-820, mention is made of wall paper having designs large enough for a whole room without a single repeat. As we have no such paper offered us by our local dealer in these small towns, I would respectfully ask you to kindly send me the address of a firm or firms of whom I could procure such paper. The further west such firm is, the better, for freight charges from New York to this point are much higher than from Chicago, Minneapolis or St. Paul. A. E. DOERING.

Answer: The landscape frieze (referred to on page 819)

in the October issue which varies continuously so it may be run round an entire room without a repeat, is made by the Baeck Wall Paper Co., 630 W. 52nd street, New York City, with a branch house in Chicago. This concern also makes a side wall decoration caller "Muralia," in which the pattern runs from the baseboard to the ceiling without a repetition of any portion of the design.

The pictorial friezes that are made in five-foot sections, which can be arranged in any order and so vary the effect continuously, are made by the Schmitz-Hoonung Co., of Cleveland, Ohio. The complete set of six sections in each frieze gives a design thirty feet long without a repeat, and the elastic sections are so designed that there is always a perfect match in the pattern when the circuit of the room is completed.

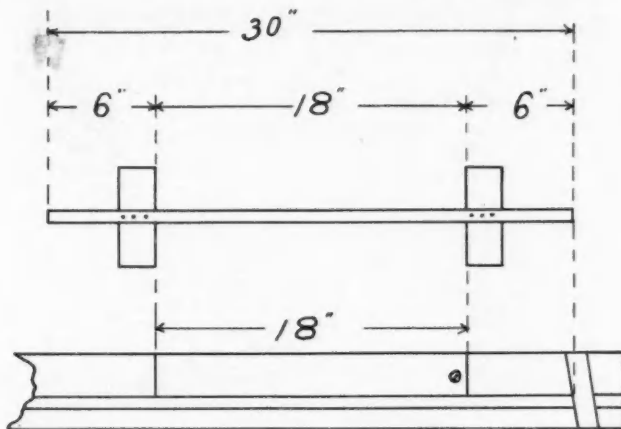
EDWARD HURST BROWN.

Gauge for Marking Pockets

To the Editor:

Ada, Ohio.

I noticed Mr. Johnson's marker for pulleys in the November number of the AMERICAN CARPENTER AND BUILDER and it was a good one. I have one but it only marks one side at a



time. I am sending you a drawing of a gauge to use in marking pockets for sash weights. It is one of my own make, and I think it is the best tool of its kind in use. Take a piece of parting stop one-half by one-half inch, thirty inches long. Nail one of these on each end, as shown in drawing. Drop the rod in groove which is made for parting stop with end flush with gain made for sill. Then with pencil, mark from groove made for parting stop out on the side you want the pocket.

NEWTON HOLMAN.

Effect of Japan Drier on Paint

To the Editor:

Wardensville, Wis.

I wish to ask one question through the AMERICAN CARPENTER AND BUILDER. It is this: Is Japan drier injurious to paint and metal such as tin roofing, etc.? A man who claims to be a painter says it will cause the paint to crack and peel off, and also will rust a metal roof. Now, I would like to have the opinion of some of the family on the subject. What is it made of?

BRANSON SNYDER.

Answer: Japan drier is added to paint to hasten the oxidation of the oil. Linseed oil does not dry by evaporation, but by taking up oxygen from the air, and converting the oil into a tough, leather-like substance, called linoxyn. The chemical processes involved in this oxidation are somewhat complicated. Paint is said to be dry when the oxidation has reached such a stage that the paint surface feels dry to the touch, and no longer is injured by dust or rain. After it has reached this state the action of the oxygen still continues, but very slowly. When it has gone beyond a certain point

the oxygen begins to burn up the oil (chemically speaking), the linoxyn film loses its elasticity and the paint begins to perish. Japan drier contains an element which acts as an oxidizing agent, and hastens this conversion of the oil into linoxyn. But the action of the drier does not stop here. It necessarily hastens the perishing of the paint. Hence the painter must use judgment, adding only just enough driers to make the oil dry sufficiently fast to overcome danger from rain and dust—it is not practical except in rare cases to omit the use of driers altogether. On the other hand, too much driers will cause the paint to perish prematurely, either by chalking or peeling, according to the nature of the pigment. Some driers are much more injurious to paint than others, and care should be taken to select a good quality of turpentine and oil Japan, free from benzine or rosin. Japans are made by heating the oxides or manganese or lead with linseed oil or rosin, and dissolving the molten mass in turpentine or benzine. The rosins employed in making first-class Japan driers are the gum rosins used in making varnish. Steel or iron rusts by uniting with oxygen and hydrogen to form the hydrated oxide of iron. Ordinarily rust can form only in the presence of moisture, but undoubtedly an oxidizing agent, such as a Japan drier under certain conditions, might promote rust by conveying the oxygen of the air to the metal. Excess of Japan is therefore undesirable in any paint used on a metal roof. But there is another objection, in that driers destroy, to a certain extent, the elasticity of the paint, and only a very elastic paint film will cling to a metallic surface which expands or contracts with every change of temperature. A paint that never dries thoroughly hard, but always remains more or less tacky, is considered better for a metal roof by many painters than a hard drying paint. For this reason they advocate the use of a small proportion of fish or animal oil in the thinness and the omission of driers.

EDWARD HURST BROWN.

Does Glass Lose Its Strength

To the Editor:

Meridan, Miss.

Does window glass lose its strength or rot by age? I have a great deal of glass cutting to do and I find it a difficult matter to cut old glass. In cutting new glass I rarely ever lose any. I've had quite a discussion about it and still contend that glass rots, not that it decays like vegetation, but loses its strength.

H. M. GRIFFIN.

Answer: There is no question but that old glass is much more brittle than new and while the term "rotten" is generally used for such glass, we doubt whether it is the correct word to use, because glass after once set remains as serviceable indefinitely as when first set, though it may break easier than new glass under the pressure of the cutter. Rotten applies more to things that change their state of being to that of another. This can not be applied to glass, because there is no disintegration taking place, and therefore always remaining in its present state.

A. W. WOODS.

Window Frames to Work with Concrete Blocks

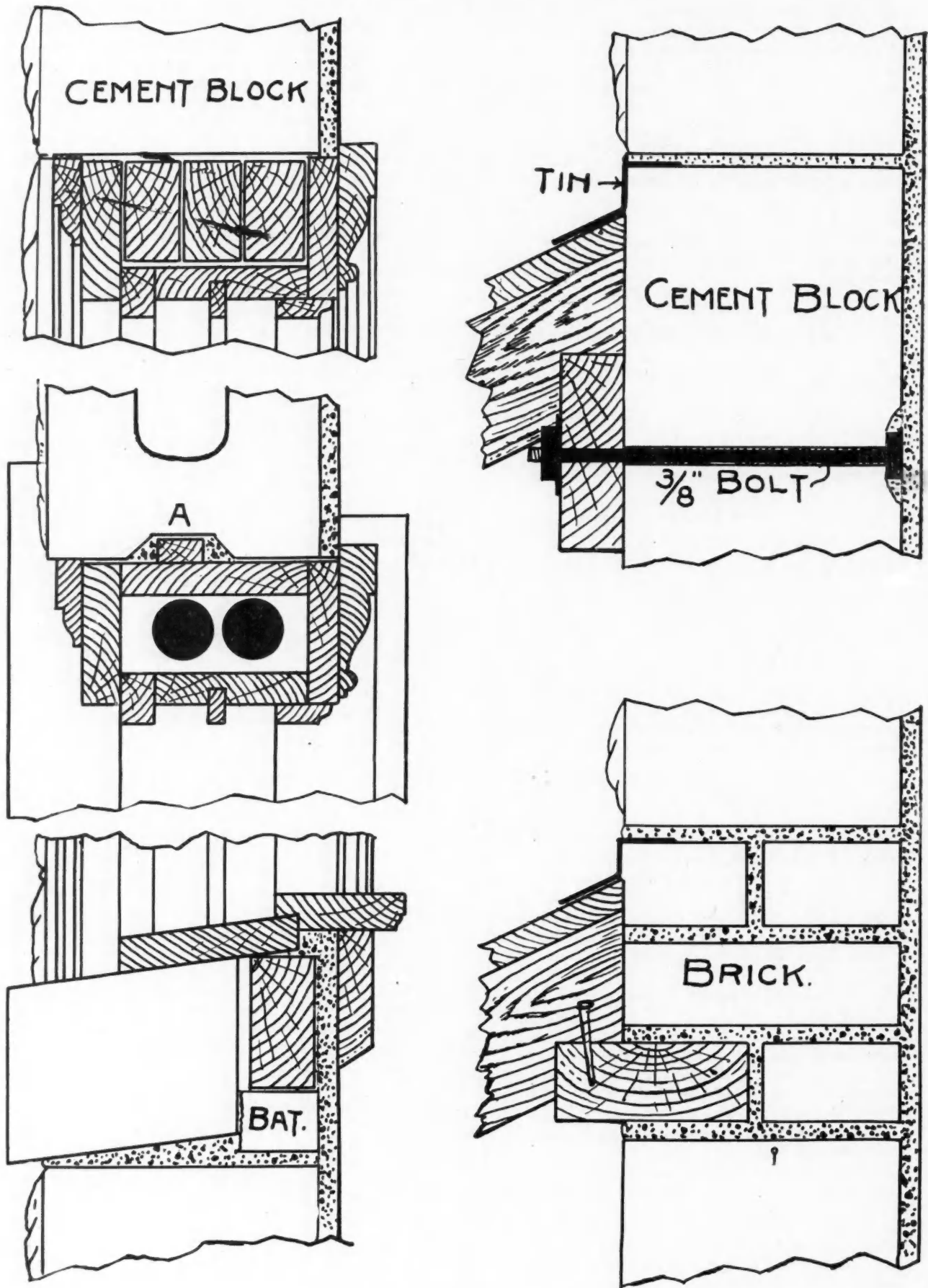
To the Editor:

Mullinville, Kan.

What is the best way to make window frames with pocket for weights for a dwelling house built of concrete blocks, eight-inch wall? Also what is the best way to attach a hip roofed porch to a building of this kind?

J. V. SIMPSON.

Answer: The first question is answered in the AMERICAN CARPENTER AND BUILDER by Mr. Hicks, on pages 82 and 230, of the 1905 May and July numbers. However, as these numbers may not now be at hand we submit the following illustration, though somewhat different from that shown by Mr. Hicks. The thickness of the wall (8 inches) necessarily



crowds the frame in giving the proper space for the box to contain the weights. In fact, it is too close for the best

class of work and should only be used for the cheaper grade of work. Mr. Hicks' plan suggests inserting wood blocks in

the moulds to form an angle to receive the box and grounds, which, of course, is the better way, but as this will require considerable skill on the part of the operator, our illustration is more to show how box frames may be used in connection with the common cement block, just as it comes from the moulds. Most blocks are made with a groove at the end and there should be a strip nailed onto the frame coming opposite this groove, and the remaining space filled with mortar, so as to form a wind-proof joint, as shown at A. The frames should be made to work with the even courses of range blocks, otherwise the result will be a botched job.

As to the second question, this may be done by bolting a timber onto the wall, as shown, or as that part of the wall is concealed from view, a timber may be built into the wall and the remaining space that the range course would occupy be filled in with common brick, as shown in the illustrations.

A. W. WOODS.



Making Show Window Sash

To the Editor: Emmitt, Idaho.
Please answer through your paper how to put plate glass in store windows? What should be put under the lower edge of the glass where it rests on the window sill? How

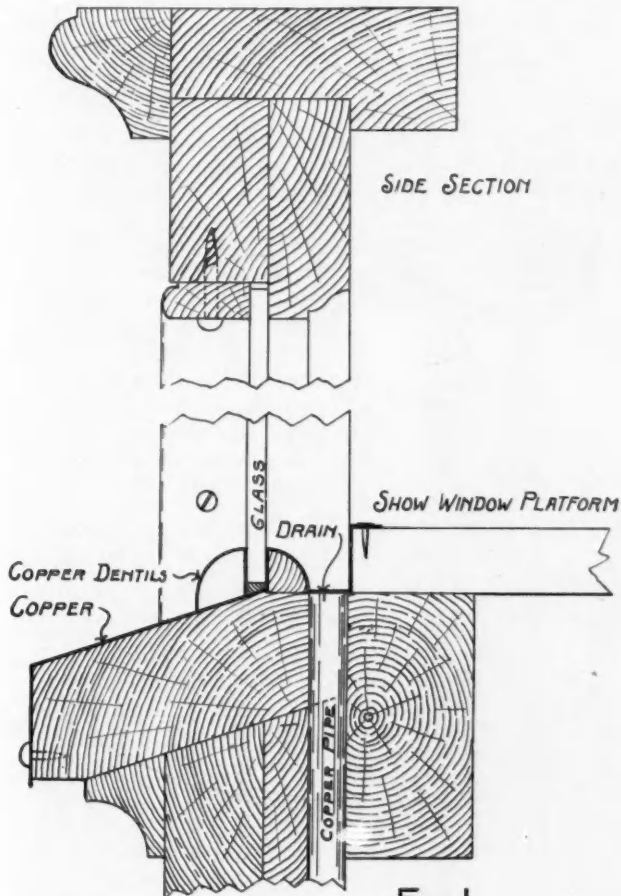


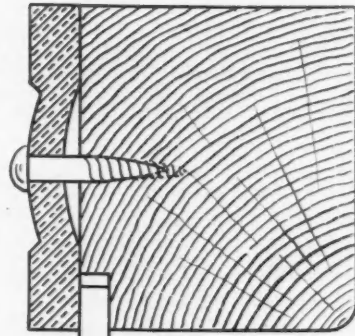
FIG. 1.

should it be fastened at the bottom inside and out, and should pieces of lead or rubber be put under the glass? Should the moulding be put on the inside with nothing on the outside, leaving the lower edge of glass bare and showing the lead or rubber?

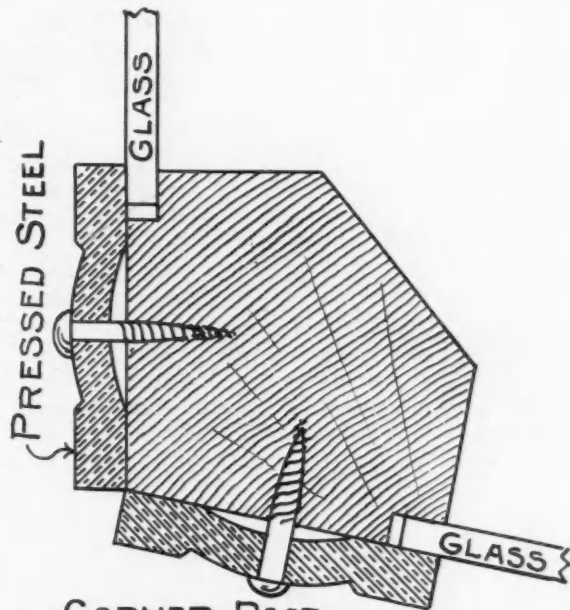
FRANK G. CARPENTER.

Answer: There are a number of ways of constructing store windows, and it is hard to say which is the better way. Cork or rubber is quite often used to put under the glass.

Some use soft pine. Fig. 1 shows a form that the writer has used in his work, which has given very general satisfaction. In the better class of work the sill is covered with copper, letting the same extend back far enough to form a drain on



SIDE SECTION



CORNER POST.

FIG. 2.

the inside. Three-inch copper dentils are soldered on the outside about six or eight inches apart, and the bearings for the glass are placed back of the dentils, but none should be placed at or near the corners, as the weight will be liable to cause the glass to crack. The side stops are placed on the outside and made secure with round-headed screws. The glass can then be set from the outside, which is much handier to get at, besides the wind pressure against the glass has a solid bearing against the frame itself, the members of which should be glued and put together with screws.

Fig. 2 shows another form quite generally used in the West. The frame work is of wood with the cross-pieces morticed into same and faced with pressed steel fronts of various ornamental patterns, which can be had through most any local hardware dealer. There are a number of patented devices for show window fronts, all possessing more or less good points, but the object of this article in answering the above question is more to show how a satisfactory job may be had by the home workmen.

A. W. WOODS.

PRACTICAL TRADE APPLIANCES

The Taylor Pencil for Carpenters



A good pencil is just as essential to a carpenter as is a first-class saw, as it is an instrument to which oftentimes a bungling piece of work owes its origin in its workings and tracings.

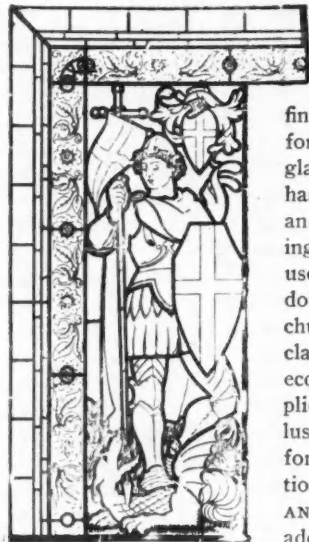
There are many different makes of pencils on the market at the present time which their makers claim as carpenters' pencils, but most of them are entirely worthless as far as their usefulness to the carpenter is concerned, as he in his work requires a pencil quite out of the ordinary, and one that is adapted entirely to his work; one that makes a clean, even mark, distinct, and yet not a coarse, thick line; neither does he want to stop every few minutes to sharpen his pencil.

The Taylor Carpenter Pencil is entirely suited to the work, and thousands of testimonials from carpenters all over the country are a proof of this assertion. These pencils have been on the market for 29 years and the quality is maintained always.

The manufacturers have been in receipt of numerous letters lately from individuals who were looking for the Taylor Carpenter Pencil, but who were told by their hardware dealer that the pencils could not be obtained any more. This was done to enable the dealer to sell them some other pencil on which he could make a larger profit. Insist on having the pencil you want and take no other, and if you can not get them of your dealer send direct to them and they will send you a dozen, 60 cents, postpaid. Mention AMERICAN CARPENTER AND BUILDER when answering.

A Perfect Substitute for Stained Glass

The accompanying illustration is of Glacier, a perfect substitute for stained glass, and is being placed upon the market

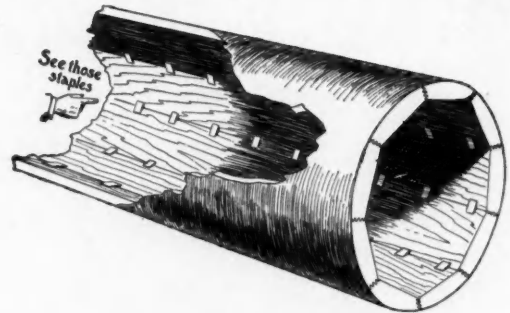


by George Quaile, of 149 Columbus avenue, New York City. This is a transparent material in gelatin finish carrying designs in colors for the ornamentation of sheet glass. It is not experimental, but has been used since 1882 and has an established reputation as being thoroughly reliable whether used for ornamenting the windows of cottages, mansions or churches. The manufacturers claim it is artistic, durable and economical and can be readily applied by anyone. Handsomely illustrated catalogue giving full information can be had by mentioning the AMERICAN CARPENTER AND BUILDER when writing and addressing George Quaile, the

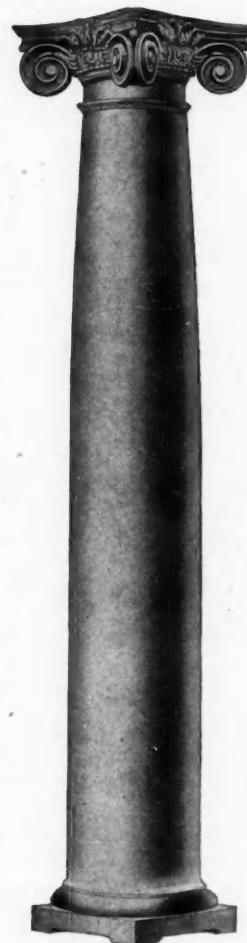
dealer, 149 Columbus avenue, New York City, N. Y.

An Exclusive Column Factory

It was our pleasure recently to visit the factory of the American Column Co., at Battle Creek, Mich., where they have one of the most up-to-date exclusive column factories in



the country. It is thoroughly equipped with labor saving machinery, which is all owned and patented by them. This enables them to make one of the best columns on the market



and at the same time sell them as cheap as the poorest. Another important feature is that everything is made to fit perfectly, thus saving both labor and waste, and thereby reducing the cost of production. The bases of the columns are all made with their patented dove-tail lock, which makes it impossible for the corners to come apart, and there will also be no end wood to check and split. One of their machines rounds the top, corrugates both edges and also tapers the stave, all in one operation, thus saving the labor of



three men. The curvature of the columns is all together in the staves. This makes the strength of the column uniform throughout. When the staves are complete, they are glued together and then stapled. These staples are put in by a special machine which fastens the staves together from the inside, thus making it impossible for them to come apart. When the columns are complete, they are primed with pure white lead and the best linseed oil. This is thoroughly applied by hand



HEATED WITH A HESS STEEL FURNACE

OUR BUSINESS IS FURNACES



UST furnaces; and after working steadily at this one line for thirty-four consecutive years, we believe we can offer you peculiar advantages in furnace buying which you won't find elsewhere. Our furnaces are not like those of other furnace men.

for our ideas of furnace construction are different; and, naturally our plan of selling is different, and if you'll look into it a little, you will discover that these differences tend to the buyers' advantage.

Our Furnace is Square because a square form presents more radiating surface than a round one, in practically the same space and at the same cost, and our firebox is rectangular, for the same reason, and, also, because many customers want to burn both wood and coal at times, and a rectangular firebox is better for such uses than a round bowl. Moreover, in a square firebox we have a larger grate area than in a round one. That means perfect combustion, with coal or wood, and good combustion spells economy.

We Use Steel because when the joints are riveted tight they never come open and leak gas and dust, which occurs sooner or later when cast-iron is used. We use steel for fuel economy, too, for it heats up faster and with less fuel than cast-iron.

There are other details in our furnaces, different from other people's furnaces, and we have good reasons for these differences, all of which are explained in our booklets.

Our Selling System is Different and right here is the biggest difference of all. We have no agents, no salesmen, no representatives outside of Chicago.

We Deal Direct with the last buyer—the user. Here's the reason. It's one thing to make a good furnace, but it's another matter to plan the heating of a building and get it equipped so it will be comfortable, with economy. When we deal direct with the user we personally know just what his requirements are, and we plan the arrangement of every detail—every pipe, register, air supply, etc. Thus we **KNOW** that the arrangement of these details is what it should be and we are able to guarantee results, please our customer and get more business. When the planning is left to others we are not so sure it will be planned right, and, if trouble comes, the furnace is condemned, we are censured, and hope of future sales is lost.

Our furnaces are all just alike, but buildings are not, and each building requires special study and planning. **WE DO THE STUDYING, WE MAKE THE PLANS AND WE GUARANTEE SUCCESS.** For every estimate we make we prepare a careful plan, drawn to a scale showing every detail, and this plan is submitted for approval and correction before the order is filled.

Hamilton, Ohio, February 15, 1905.
 HESS WARMING & VENTILATING Co.,
 Gentlemen: I am very well pleased with the No. 45 furnace purchased of you and would say that the saving in coal by its use was over 50 per cent compared to the expense of previous years, using coal stoves. I shall require another of the same size for a new house which I contemplate building this summer. Wishing you continued success in your method of selling direct to the consumer, I am,
 Yours very truly,
 WM. PILTON.

Hess Warming & Ventilating Company
 920 Tacoma Building - - CHICAGO



HEATED WITH TWO HESS STEEL FURNACES

There's Another ADVANTAGE

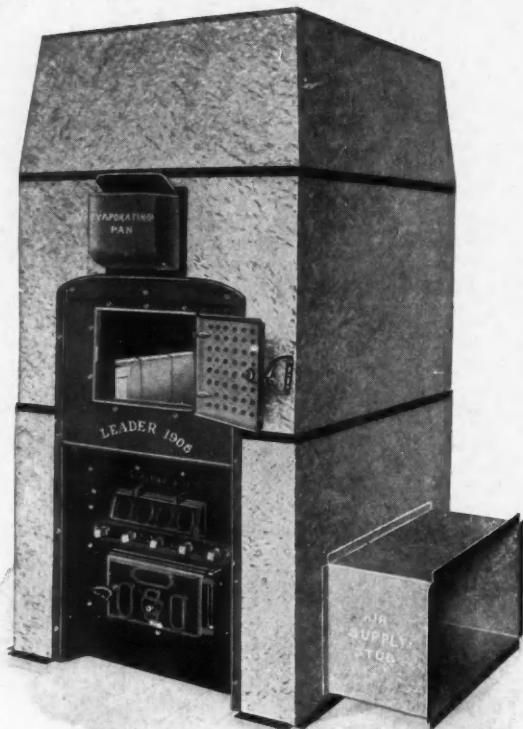


YOU must not forget. We have cut out all of the usual expense for selling, salesmen, agents, etc., and we offer no discounts to middlemen. Therefore we can sell to you at a price carrying ordinary factory profits, but not including any selling expenses, and thus give you more for your money than any maker who sells through the usual channels.

For instance: Our No. 45 Furnace, which has 53.7 square feet of active steel radiating surface and 378 square inches of grate surface, is sold for

\$49.00, Freight Prepaid

Sterling, Ill., February 24, 1905.
 HESS WARMING & VENTILATING Co.,
 Gentlemen: Your inquiry as to the Leader furnace you sold me in 1902 is received. The furnace has given splendid satisfaction. It seems to stand the wear and tear, and gives all the heat that any furnace possibly can give. A couple of weeks ago we had very severe weather, the thermometer going down to 30 to 35 below zero, and it heated the house very comfortably without forcing it at all.
 Yours truly,
 A. A. WOLFERSPERGER.



THE HESS STEEL FURNACE
 Made in 6 Sizes. Burns any Fuel



HEATED WITH A HESS STEEL FURNACE

to any station east of Omaha. Pipes and registers extra, at factory rates. Proportionate prices are charged for five other sizes, and freight rates equalized to all points.

Our terms are based on the "SQUARE DEAL."

1. Cash with order or on receipt of goods, under our broad guarantee of success.
2. On 60 Days Trial the purchase price to be held by your local banker till the test is made. If we fail, the goods to be returned at our expense for freight both ways, and the money to be returned you by your banker. We take all the risk. Please note—

No Heater Sold by Us on Trial Has
 Ever Been Rejected

3. On Installments \$10 to \$25 down, the balance in monthly installments of \$5 to \$10 each, with interest at 6 per cent on the deferred payments.

Hess Warming &
 Ventilating Company
 920 Tacoma Building - - CHICAGO

Ask us to send you our Free Booklet

"Modern Furnace Heating"

LT tells how to heat buildings with furnaces. It is instructive and profitable reading for builders and owners. It tells you more than this space will permit of the success of our system of making and selling furnaces, and a smaller booklet of 40 pages goes with it, containing the names of customers using our heaters. Some of them are your neighbors; you could investigate.

Carpenters' Pencils Free

We have some of the best Carpenters' Pencils you ever used. Send us the names of three or more owners who will buy furnaces, and we will mail you two of the pencils. They are better than you buy in stores. Don't forget to ask for the furnace booklet also.

**Hess Warming &
Ventilating Company**
920 Tacoma Building - - CHICAGO



HEATED WITH A HESS STEEL FURNACE

Pittsburg, Texas, February 13, 1905.
HESS WARMING & VENTILATING Co.,
Gentlemen: Your favor of the 10th inst. came duly to hand, and in reply will say, I have used your furnace at Bryan, Texas, where they gave good satisfaction. I found them surprisingly cheap. I doubt if there is another furnace made that is the equal of the Leader, as a matter of economy. I like them so well, I have just installed two No. 58 here which are doing finely to begin with. You have the liberty of using my name any time you wish as a believer in the Leader furnace. Sincerely, (REV.) E. L. SHETTLES.

Snow Hill, Md., February 6, 1906.
HESS WARMING & VENTILATING Co.,
I have waited until now to write you about the No. 45 Leader Steel Furnace, in order that we might test it in as many different kinds of weather as possible. Let me say first that I am already even more satisfied with it than I expected to be. It responds at once to every touch, so that in a few moments (quicker than in any furnace that I have used) one can reduce or increase the supply of heat. Its care is the simplest thing possible, and it is as solid as a rock. I cannot detect a flaw anywhere.
It has, however, a better virtue than this, a better one than its economy of fuel, and that, I should say, is one of its very strongest points, and the virtue of which I speak is that throughout all that concerned its delivery and at every other time you have fulfilled all that you promised.
This I value. Yours truly,
(REV.) JOHN F. KIRK.

Potosi, Mo., February 15, 1905.
HESS WARMING & VENTILATING Co.,
Gentlemen: Your furnace placed in the Presbyterian church here November 1, 1904, has given entire satisfaction, is easily managed, heats rapidly and well. We use both wood and soft coal. This is the first winter our church has been comfortable, yet it has been the coldest weather we have had for years — anywhere from zero to 25 degrees below. Have made a study of other church furnaces in neighboring towns and would not exchange ours for any I have seen. I am glad to recommend the Leader Furnace for any church. The ease with which it can be run is a great advantage, since the average church sexton is seldom much of an engineer.
Respectfully,
MRS. EDW. T. EVERSOLE.



EVERY HOUSE IN THIS PICTURE IS HEATED WITH THE HESS STEEL FURNACE

What Will it Cost



Equip your house, church, school or store with the **HESS STEEL FURNACE**? Send us a sketch of the building with the information following, and we will tell you what our charge will be for a complete equipment, fully guaranteed.

Your sketch need not be to a scale; but should clearly indicate the position and sizes of the rooms, measuring inside, from wall to wall.

Show the partitions by single lines; the doors by spaces in the lines; the chimney by a square; stairs by parallel lines; mark folding or sliding doors, if any.

Make a separate sketch for each floor, and mark the size of each room in figures.

Our sketch on this page shows about what is wanted, though, of course, your sketch should be larger.

In the cellar plan indicate the piers, posts and beams, the location of chimneys, fuel supply, and the cellar stairs or entrance. Show the direction of the joists by an arrow, thus $\leftarrow \text{---} \rightarrow$

ON THE PLAN PLEASE INDICATE

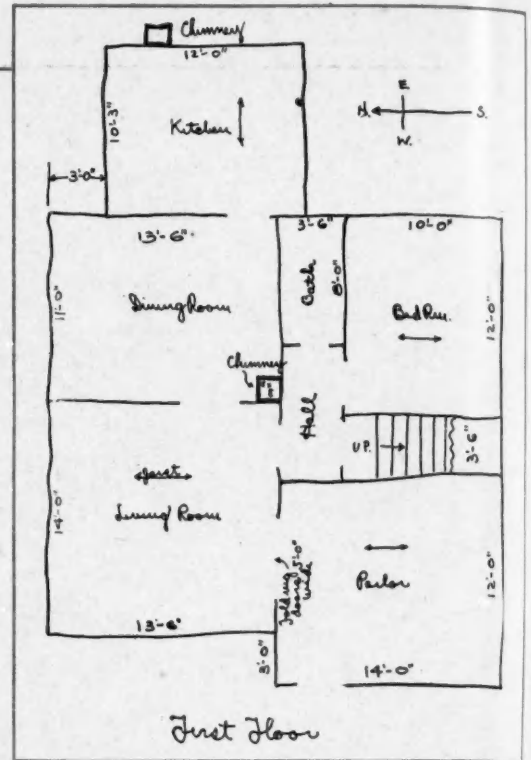
1. The points of compass.....
2. In what stage of construction is the building?.....
3. Is the upper story a full story or a half story?.....
4. How much below the first story joists do the beams project, if any?.....
5. Height of cellar..... first story?..... second story?.....
6. If cellar is not 7 feet where furnace will stand, can you make it 7 feet?.....
7. Width of stairways—mark on plan.....
8. Width of joists, first story?..... second story?.....
8. Thickness of floors, first story?..... second story?.....
10. Width of studs in partitions?.....
11. Width of studs next to sliding doors?.....
12. What kind of fuel will you use?.....
13. Is cellar ceiling plastered?.....
14. Width of doorway through which furnace must pass?.....
15. If church, school or store, show position and width of aisles?.....
16. Are any pipes or registers now in the house, if so show sizes and positions?.....

Pendleton, Oregon, March 5, 1905.

HESS WARMING & VENTILATING CO.,
Gentlemen: We received the Leader Furnace No. 45 with all pipes and attachments ready to set up, which I installed myself and have now had in use one year. We are very much pleased with the furnace as it is easy to run and very easy on fuel and by buying direct from the factory we saved at least two hundred dollars, and would not exchange for any furnace we ever saw.
J. M. COOK.

GIVE US THIS INFORMATION and we will make a plan to a scale, showing just how we would heat your house with our furnace, what size to use, where to place it, what size of pipes and register to use, and where to put them; how to provide air supply, and we will send you our estimate of cost, which will include everything, freight prepaid by us, and success guaranteed.

WE CHARGE NOTHING for plan, estimate and information even if you buy from others. We are glad to have your consideration if you contemplate the purchase of a furnace, and by this careful showing of our method we feel sure we can make your consideration favorable to us.



First floor



EVERY HOUSE HERE IS HEATED WITH A
HESS STEEL FURNACE

Hess Warming & Ventilating Company

920 Tacoma Building - - CHICAGO

When ready for shipment the columns are crated so as to arrive in the best possible condition. Owing to their equipment, they have made it possible to always have at least 3,000 columns in all sizes up to twelve inches by twelve feet on hand, thus making it possible for them to ship any ordinary order within twenty-four hours.

For further information, write to the American Column Co., of Battle Creek, Mich., and mention the AMERICAN CARPENTER AND BUILDER.

Complete Structural Iron Department

The Davenport Foundry & Machine Co., of Davenport, Iowa, engineers, founders and machinists, who have for many years followed up the general foundry and machine business, and who have also made a specialty of building special machinery and doing general repairing, have within the last few years entered the structural iron business. Beginning in a small way their structural iron work proved so successful and gave such general satisfaction that the increased demand for their product has compelled them to increase this special department of their business very materially. They have just completed a very large department to handle this exclusive line of work and have equipped this department with every thing in the way of proper machinery, so they can now handle all orders, large or small. They always have on hand a stock of beams, channels, angles, tees, etc., which they carry in their yards at all times. This large amount of ready-made material combined with their foundry for the cast-iron work, places them in a position to fill all orders promptly. They will be pleased to submit estimates to any one. Address them at Davenport, Iowa, and mention this paper.

Successful Draughtsmanship

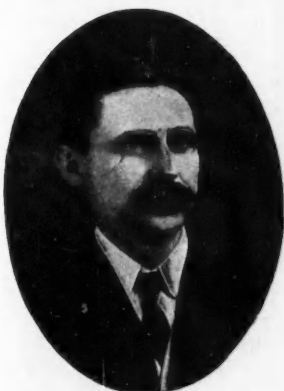
How often in the past have you been thinking and wishing to be more of a draftsman, in fact, wishing to be successful and first-class at this work. How often have you looked at plans and kept looking for a long time trying to make out certain lines?

Mr. Fred V. Dobe, M. E., and chief draftsman of the Engineers' Equipment Company, 97 Washington street, Chicago, has for a long time been making a practice of giving personal and individual instructions in complete architectural as well as mechanical drawing and designing, and is prepared to accept a few more students, old and young. His instructions are given by mail, but must not be compared with the ordinary correspondence school instructions, as all the work is laid out personally by himself and prepared especially for individual requirements.

With this method he is able to satisfy and educate any experienced or absolutely inexperienced man who is willing to better himself.

He furnishes free, this month only, without extra cost, a complete and highest grade full Drawing Outfit, including finest set of German silver tools worth \$13.85.

His book, "Successful Draftsmanship," size 6x9, is sent



free with full particulars for four cents in stamps to cover cost of mailing.

Rumford Old Fashion Fire Places

The accompanying illustration is certainly a cheerful and entertaining picture. It illustrates an old gentleman sitting in a very commodious room enjoying his pipe and gazing dreamily before the cheerful embers of the fire. Fire places have been in use hundreds of years, our forefathers and the aborigines were compelled of necessity to use them, and rudely constructed, smoky contrivances they at that time were. Times have changed. Though fire places are being used today as of yore, education, experience and study are perfecting them into utilities of luxury and comfort. G. Curtis Gillispie, a well-known New York architect, who has made a special study of fire place construction, is placing on the market "The Old Fashion Rumford Fire Place," as shown in illustration. This fire place he guarantees to heat and ventilate without smoking, is manufactured of asbestite slabs, crated and ready for immediate shipment to any part of the world. These asbestite slabs are strictly fire-proof and heat



reflecting and can be placed on both old or new fire places anywhere if the correct sizes are ordered. Mr. Gillispie is also publishing a very interesting book upon fire places which will be found extensively illustrated. This book is entitled "Rumford Fire Places and How They Are Made," containing over 200 illustrations. For fuller information and particulars address G. Curtis Gillispie, 7 Warren street, New York City.

Snow Breaks for Roofs

The Snow Break here shown is offered to the trade by Berger Bros Co., Philadelphia. This article is designed to



do away with snow rails or gutters formed on the roof, to prevent the snow and ice from sliding down. Parties desiring to use a rail can bolt it on to these irons, but if they are spaced reasonably close together no rail is needed, and the artistic effect of the appearance on the roof is very decided. They are made of the best malleable iron, well tinned—riveted to heavy wrought iron plates, which extend up under the shingles, and are very easy to put on the roof.

Another style is also made to be clamped fast to the standing seams of metal and tin roofs. All roofs having much pitch should be provided with this article for safety during the period of the year when snow and ice prevail. Full information furnished free upon request to the makers.

The Cleveland Window Glass Co. and their Short Order Mill



An evolution in the millwork business of very great interest to builders is shown in the Short Order Mill of the Cleveland Window Glass Co., of Cleveland, Ohio.

Who would think it possible under any conditions to produce a special odd size veneered hardwood door in 24 hours after receipt of the order? Those of us who have waited two to four months for hardwood doors because they were special and who consider four weeks the shortest time in which such work can be promised may well wonder at such a record.

And yet this unique mill does this and other like feats constantly. Odd sash are made and glazed in an hour. Box frames for brick or stone buildings are often delivered the day the order is received. Special finish in both hard and soft woods and turned work is equally quick on occasion.

How can this be done? Only in one way; by having the various parts that enter into the construction of the hardwood doors, the odd sash and the frames, made up as far as possible and carried in stock, ready to finish with a few operations.

Of course, all orders are not handled in this record-breaking time, but the whole mill is equipped for unusually quick service on all business, and rush orders can generally be handled as quick as wanted.

The capacity of the mill is also notable, being able to produce \$40,000 worth of odd and special millwork monthly.

The main purpose of the mill is to supplement the stock work service. Immense stocks are carried of standard size doors, both hardwood and pine, finish, sash, frames, porch and stairwork. These goods can usually be shipped within a day or two.

Quality is of equal or greater importance to contractors and many pay high prices to their local mills under the impression that they are getting better goods. In this respect the position of the Cleveland Window Glass Co. is notable. A

visit to their mill and warehouse shows that the utmost care is given to quality, both on stock work and special goods.

Their glazed windows illustrate this. Not only are the sash clear, the glass of high grade and the best quality of putty used, but the windows are backpainted, washed and paper packed to avoid all damage in transit.

On both doors and sash the grading is much higher than that called for by the National Association of Sash and Door Manufacturers.

Price is the next consideration. Here they challenge comparison, asking only an opportunity to quote in competition with any wholesale dealer in the country. Even with their high grades they are able to show a large saving on most quotations. They desire especially to quote on entire house-bills, stock and special, doors, windows, frames, finish and all the other millwork.

On glass their position is equally strong. Few wholesale plate or window glass dealers in America are as well known, as a result of 37 years of liberal dealing and aggressive advertising, backed by extensive stocks and manufacturing advantages.

In art glass alone 60 men are engaged making art glass windows for homes and churches, prism glass, and also leaded glass domes for dining rooms, in which they do a very large business.

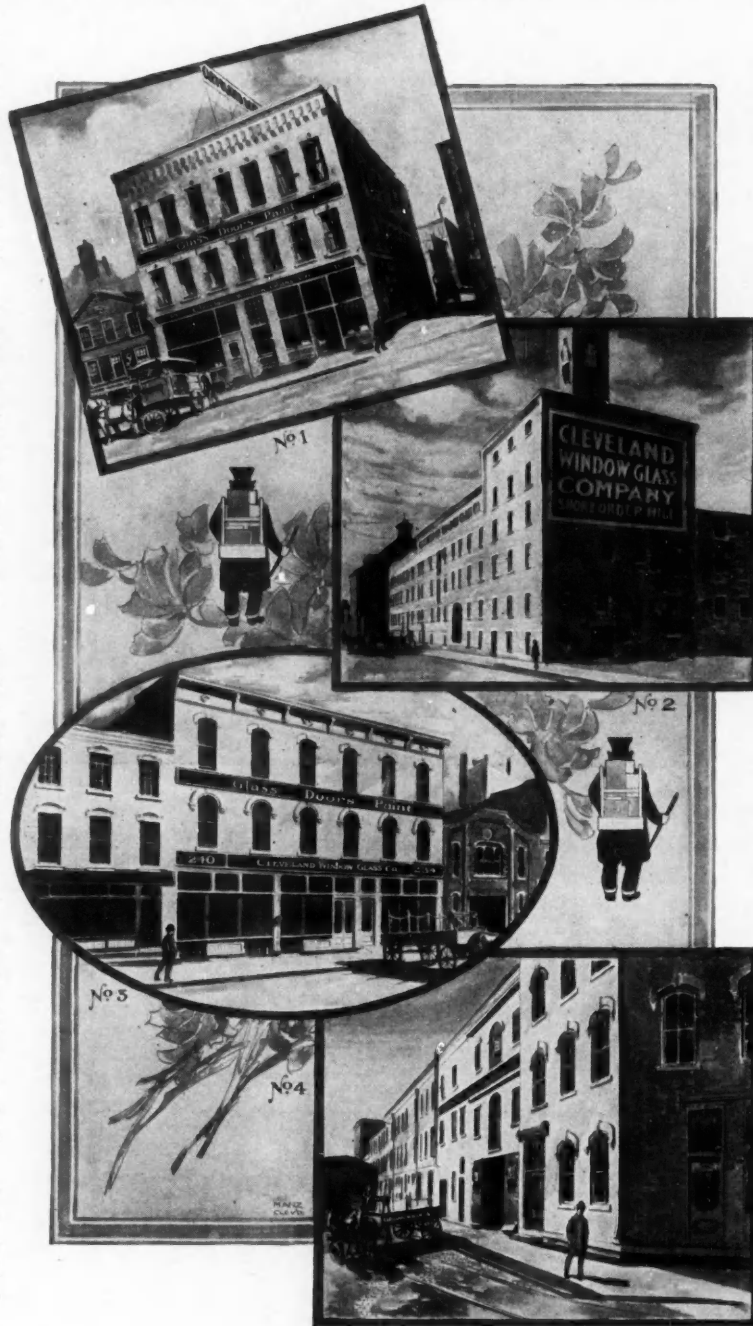
They have an extensive beveling and silvering department, making mirrors and beveled plate.

All of these, together with their wholesale paint department, enable the Cleveland Window Glass Co. to supply contractors with building materials to exceptional advantage.

Their terms are very liberal. On all sash and door orders the freight is allowed to the customer's depot. The goods

are sold on time with a cash discount if paid in 10 days or a larger discount if paid in advance, enabling each buyer to suit his convenience and capital.

The policy of the company has always been progressive and fair, believing as they do that their customers' interests are their own and working in every possible way to promote them.



- No. 1 Offices and salesrooms sash and door department.
 No. 2 Short-Order mill.
 No. 3 Offices and salesrooms paint and glass departments.
 No. 4 Warehouse.

These buildings occupied by our many departments give us over four acres of floor space.



The Roofing Tin Experience of a Firm of Kansas Merchants

"Target and Arrow Old Style" tin still giving good service after many years' wear, while a cheap imitation "old style" gave out in a few years' time.

This building of M. E. Yost & Sons, of Hiawatha, Kansas, was built in two parts. One part was roofed with genuine "Target and Arrow Old Style" tin and the other with an imitation "old style." The "Target and Arrow Old Style" tin has given splendid service for many years without costing a dollar for repairs, while the so-called "old style" has been a constant trouble and expense.

Messrs. Yost & Sons are now building a cement block building of three stories and basement, and the builder has bought "Target and Arrow Old Style" tin for the roof.

The experience of Messrs. Yost & Sons with tins which are called "old style" for the purpose of trading on the reputation of the genuine "Target and Arrow Old Style" tin is being duplicated all over the country. Our booklet, "A Guide to Good Roofs," has kept many out of expensive mistakes of this kind. Would you like to read it?



Note that we now use the old name for the brand—"Target and Arrow Old Style"—rather than the words "Taylor Old Style," which have been imitated in every possible way by other tinplate houses.

N. & G. TAYLOR COMPANY

ESTABLISHED 1810

Philadelphia

Starting in a small way the company now employs 400 people, using 4 acres of floor space, 25 horses and 60 telephones. The work is highly specialized, expert men handling each department.

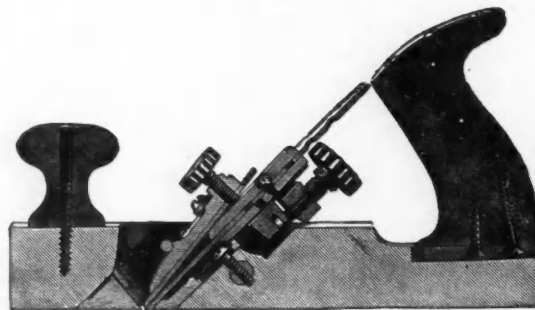
We can only suggest that each of our subscribers write for their prices on his next housebill or on any millwork, glass or paint he may require.

New Self-Setting Bench Plane

The illustrations represent a new self-acting bench-plane which has been perfected and is now manufactured and introduced by the Gage Tool Company, of Vineland, N. J. This tool combines the advantages of the iron and the wood plane,



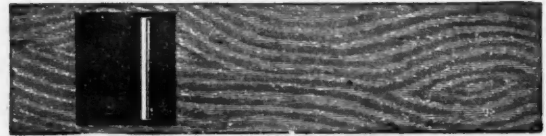
and is claimed to possess points of superiority over many excellent planes already on the market. The construction of this plane is clearly shown in the sectional view, and, as will be seen, is very simple. In replacing the bit, no setting of the same is required, as it falls with great accuracy into the correct position, and in this respect the plane is self-setting. For minute accuracy the bit is adjusted by the screw shown behind the cutter, and after it has been properly adjusted it can not be set wrong or moved out of position by striking a knot while in the act of planing, which is a feature to be appreciated by all who have occasion to use a plane. The cap is not attached to the cutter, but remains stationary, and is



Sectional View—Showing Adjustable Iron Throat, which can be raised or lowered as desired, if wood wears away.

clamped into position by the screw passing through it. The cutter can be moved up or down by the thumb-screw shown behind the bit, and thus, even while at work, the thickness of a shaving can be changed by a simple movement of the thumb and finger. Provisions have also been made by which the bit or cutter can be set square with the face of the plane, even if the cutter is not ground exactly square with itself. The throat is prevented from wear by being within the adjustable iron bit-holder, which extends through the plane. It is claimed, and this claim is based upon actual trial, that the cap and cutter can be removed, and accurately readjusted in five seconds, consequently the time saved in setting the bit

would alone amount to many days' labor in the course of a year usually spent in setting the cutter. The Gage Tool Company pride themselves in their selection of the steel for and the tempering of the cutters, by which they obtain a uniform cutting quality, enabling the company to warrant their planes



Bottom View—Showing Adjustable Iron Throat.

for planing the hardest hemlock knot to the satisfaction of the users.

It is also claimed that the tool can be changed from a double to a single iron, or from a single to a double iron, in two seconds. It can be adjusted to the coarsest or finest work, and will smooth cross-grained, eaty, hard or soft wood, against the grain. The plane stocks are saturated with hot wax or oil.

Old-fashioned wood-planes can readily be changed to this new plane.

Architectural Building Block Molds

One of the best moderate priced block molds now on the market is that manufactured by the Architectural Mold Co., of Detroit, Mich. In these molds rock-face, bush-hammer and smooth face blocks, together with half-blocks and corner returns, can be made. They are hinged at the back, and on the front are equipped with a patent corner locking and squaring device which instantly locks and brings them into alignment. This feature is found only in their molds. They manufacture two kinds of molds, one making a block 8 by 8 by 16 inches, and the other mold 8 by 10 by 20 inches. They are also prepared to furnish hand plates for making blocks 8 inches wide in the 8 by 10 by 20-inch mold. When making 8-inch blocks in this mold, always use the 10-inch returns for corner blocks. By so doing the joints will come proper, that



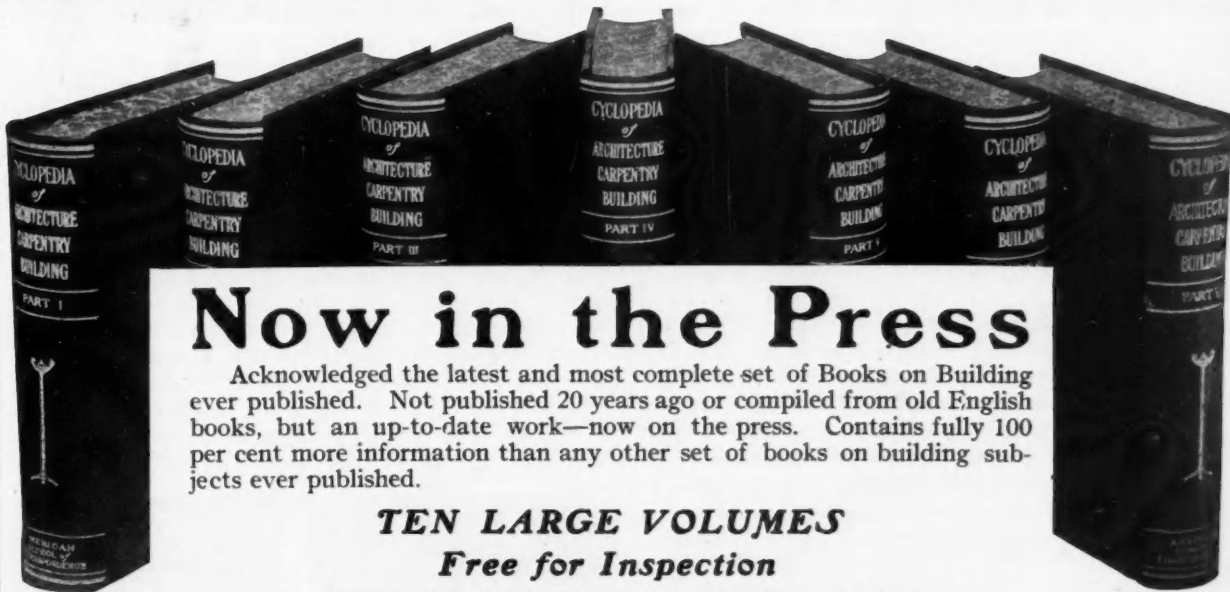
is, exactyl in the center of the other blocks, and thus make a uniform appearance. For further information write to The Architectural Mold Co., 1176 Theodore street, Detroit, Mich., and mention the AMERICAN CARPENTER AND BUILDER.

Power for the Shop

For the Carpenter Shop or Planing Mill there is no better power than a Gas or Gasoline Engine.

This type of engine is particularly adapted to the above work as it can be started or stopped within a few seconds' time.

There is no Carpenter Shop too small to use one. By the use of a Gasoline Engine, even in the smallest shop, the out-put can be doubled, and as the engine will do the same



Now in the Press

Acknowledged the latest and most complete set of Books on Building ever published. Not published 20 years ago or compiled from old English books, but an up-to-date work—now on the press. Contains fully 100 per cent more information than any other set of books on building subjects ever published.

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You have *five days* to thoroughly examine the books in your own home

Cyclopedia of Architecture, Carpentry and Building, Ready for Delivery January 31, 1907 • Enlarged to Ten Volumes

Ten Large Volumes, 4,000 pages—1,900 illustrations, handsomely bound in half red morocco leather, marbled edges, full page plates, plans, sections, tables, formulae, fully indexed, ready reference, type is new-cast especially for this work, clear, easy to read.

Not prepared by *one man*, but by a staff of *twenty* practical writers and mechanics. Every section has been prepared especially for *home study* by an acknowledged authority on the subject, men of such standing as James C. Plant, Superintendent of Computing Division, Office of Supervising Architect, Washington, D. C., Walter Loring Webb, Consulting Engineer and expert on reinforced concrete; Fred T. Hodgson, author of "Modern Carpentry," "The Steel Square," and others, each a specialist in his particular line. Each volume is supplemented by test questions to enable the reader to test his knowledge of the subject, making the most complete, strictly up-to-date library on *Carpentry* and *Building* ever published. The *Carpenter, Builder* and *Contractor* should have in his possession, for ready reference, the best, latest, most complete books on building possible to obtain. Neither a great building nor a successful career can be built on a poor foundation.

Special Advance Sale

The regular price is \$60.00. The books are now on the press and will be ready for delivery January 31st. They are right up-to-date on such new and important subjects as Reinforced Concrete, etc. We want to introduce them quickly. To those who order now, before the books are ready for delivery, we will make a special introductory price of \$19.80.

Price for Thirty Days \$19.80—Regular Price \$60.00

Free Consulting Privilege Those who order within 30 days are entitled to one year's *Free* membership in the Consulting Department, composed of a staff of expert Builders and Engineers, to which he may refer any questions pertaining to subjects that may arise in his daily work.

You Need Not Pay One Penny in Advance

The books will be sent by express (prepaid) for *Five Days' Examination*. If, after a careful examination, you find the books not satisfactory, notify us and we will order them back, paying all expense to and from your home. If you want to keep them, send us \$2.00 and \$2.00 per month until you have paid \$19.80, the *Special Advance Offer Price in Full*.

Remember we employ no agents, solicitors or collectors. You order the books at your own *free will* without investing *one* penny. You have five days to thoroughly examine the books in your home. You are to be the judge. Do not buy until you have seen this newest set of books. Remember it does not cost you a cent to see them. The carpenter should know something of *all* the other trades employed on the erection of a building. To get this information he must have up-to-date books, for it cannot be found in books published years and years ago.

Among the Chapters are the Following:

Reinforced Concrete Construction, Cement, Testing, Stone, Steel, General Principles, Practical Applications, Centering, Finishing, Carpentry, Hardwood Finishing, Wood Carving, Stair Building, Handrailing, Superintendence, Estimating, Correct Measurements, Contracts, Specifications, Strength of Materials, Law of Contract, Mechanical Drawing, Freehand Drawing, Perspective Drawing, Pen and Ink Rendering, Architectural Drawing, Foundations, Concretes, Mortars, Cements, Masonry, Bricklaying, Excavating, Electric Wiring, Plumbing, Steam Fitting, Gas Fitting, Heating, Ventilating, Cornice Work, Skylight Work, Roofing, Mill Work, Steel Square Problems, Steel Construction, Burglar Alarms, Door Bells.

AMERICAN SCHOOL OF CORRESPONDENCE

3317 Armour Avenue, CHICAGO

Mention American Carpenter & Builder, January, 1907

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

work as 15 or 20 men, at a cost less than you can hire one boy, the profit is greatly increased.

For the Planing Mill a gasoline engine is far ahead of steam, as it entirely eliminates danger from fire.

A 6 H. P. Gasoline Engine, operating under full load, using ordinary gasoline at 10c a gallon, will cost not to exceed 50c to 60c; if operating on natural gas at 25c a thousand, the fuel cost will be 15c to 18c for a full day's work. When operating on city or manufactured gas at \$1.00 per thousand, the daily operating expense would be 70c to 75c.

The Weber Gas Engine Company, or Kansas City, Mo., are now building two sizes especially for the small Carpenter Shop and Mill, viz.; 3 and 6 horse power. They build engines in all sizes to 350 H. P. for the larger Mills. They also have a 3 H. P. Gasoline Hoist, which lifts a 600 lb. load at the speed of 125 ft. per minute. In the construction of high buildings a rig of this kind is invaluable to builders.

The Weber Company will be glad to forward descriptive catalog and estimates on complete installations, upon request.

The installation of a gasoline engine in any shop is certainly a paying investment, and it will cost you but a 2c stamp to have the complete information before you.

The Wagner Shingle Gauge

The Wagner No. 60 Shingle Gauge is a device gotten up for convenience and saving of time in laying shingles.

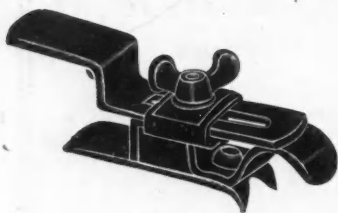


Fig. 1

The tongue of the gauge slips underneath the shingle. The teeth at the lower end of the tongue catching into the shingles, these teeth preventing the device from slipping out, but at the same time make it possible to place the article in position in a moment's time, as also taking it out of position when through using. A curved handle is arranged for convenience in doing that.

Figure 1 shows the article itself placed in position. The top part of the gauge is provided with a thumb nut and an adjustable gauge for adjusting to the different distances, which shingles are laid to the weather, giving an adjustment of from four to six inches. In shingling a roof two of these gauges are used in connection with a straight edge, as shown in Figure 2, preferably four inches wide; either a regular straight edge or any straight board from one-half to one inch thick can be used. Two gauges are placed in position as far apart as the straight edge is long.

Adjust the gauge to whatever distance you lay the shingles. Place them in position, then place your straight edge against the gauge, as shown in Figure 2 and lay your shingles against the top of the straight edge, in that way the shingles can be quickly laid down for any distance; the butts of the shingles coming against the straight edge. Thus the work is quickly done without the use of a chalk line, nailing of a straight edge, or anything of that kind.

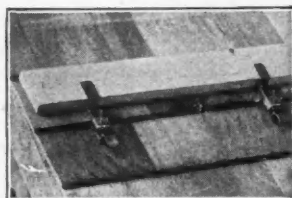


Fig. 2

When the row is finished, take out your gauges, which requires but a twinkling of time, and place the next row above and repeat the same operation. The adjustment of the gauge and thumb nut is only necessary for getting the lay of the shingle to the weather on each particular job. After that is determined, that part of the article is not brought into use in placing in position and taking out. That part of the work is done entirely by slipping the tongue of

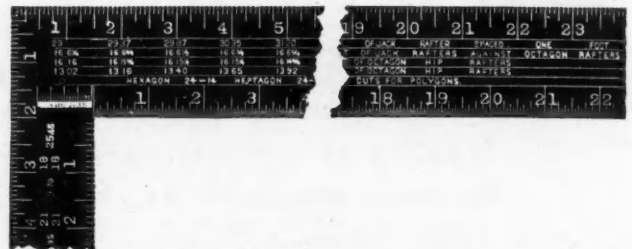
the gauge underneath the shingles. The Wagner Manufacturing Co., of Cedar Falls, Ia., are the sole manufacturers of this shingle gauge. They invite correspondence from any of our readers.

The Nicholls Squares

The Nicholls Framing Square is the only square on the market on which there is a complete framing rule. It saves time, trouble and brain work. No carpenter can afford to be without it. Every young carpenter should use it, as it saves him years of study; the old carpenter will use it because it saves time and avoids mistakes.

On the square is where the carpenter wants his figures; not in a book or on a piece of paper, as they are usually lost. No carpenter works without a square, therefore he should have the best—Nicholls. The price is low compared with the usefulness of the tool.

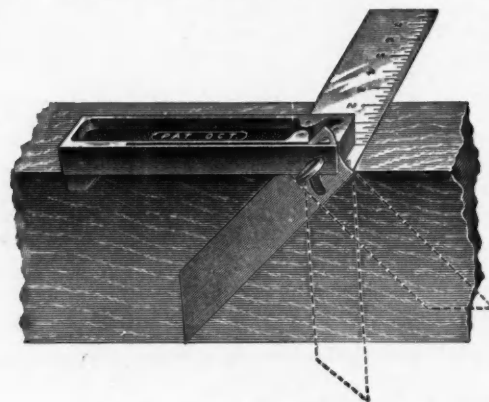
What It Will Do: It gives the length of any common rafter from 2 inches to 18 inches raise per foot on any building, no matter how wide. It gives the length of any hip or



valley rafter. It gives the length of any jack rafter spaced sixteen inches or two foot centers. It gives the side cut of hip or valley rafter. It gives cuts of cornice or frieze boards. It gives cut of sheathing in valley or hip. It gives cuts of all parts of roof exact. It saves valuable time for the carpenter.

The Nicholls Framing Square is made with 1½ inch or 1¾ inch tongue. The latter makes it convenient for spacing, as much of the dimension lumber is 1¾ inches thick.

A Weldless Square—Ever since the beginning of the square business in the United States, about eighty-five years ago, all squares have been welded at the corner, and the carpenters all know how much trouble they have had with squares breaking at the weld. About three years ago the Nicholls Manufacturing Co. perfected their machines for producing a weldless square, thereby obviating the danger of a square of their make breaking. Their square is the only one made without a weld. Some dealers will say that other makes of squares which are welded are just as good, but anyone who stops to consider knows that two pieces of steel can not be welded together so as to be as strong as a solid piece.



IDEAL BEVEL TRY-SQUARE.

Another square which the Nicholls Manufacturing Co. have had great success with is the Ideal Bevel Try-Square. This is a combination of a bevel and a try-square. Before this

invention was patented the carpenter was compelled to have a try-square and also a bevel square. By using the Ideal Bevel Try-Square a carpenter can accomplish more in laying off work. He can mark the square and bevel cut with one continuous stroke of his pencil without having to change squares. It is easy to change the bevel blade to any angle, as the slot in the bevel blade will allow shifting so it will always come to corner of try-square blade. By setting bevel blade at right angle to try-square blade you can get both marks without changing the position of square. For beveling a board on edge, swing bevel blade over to back of handle, which gives a straight surface on handle.

If your dealer does not handle either of the above squares write to the Nicholls Manufacturing Co., Ottumwa, Iowa, and they will send either direct by mail. They will be pleased to furnish our readers with any further information concerning these squares or any of their other products.



Bostwick Steel Lath Company

Niles, Ohio, has long been recognized as one of the leading iron and steel manufacturing centers of the country. On this account the Bostwick Steel Lath Company, one of the leading manufacturing concerns in the production of fire proof metal lath, both sheet metal and expanded metal lath, corner bead, metal bridging, eaves trough, conductor pipe, elbows and other sheet metal specialties, located there. The Bostwick Steel Lath Company, established and duly incorporated under the laws of the state of Ohio, grew and prospered. Their buildings are of substantial frame construction, covered with galvanized corrugated iron, both roof and sides, with solid concrete floors. The business of the company has been very successful, expanding and growing each year, until its annual output is something like \$300,000 in value, with an authorized capital stock of \$100,000. The plant is fitted up with all mod-

ern machinery, appliances and conveniences for the manufacture of metal lath, corner bead, metal bridging, galvanized and copper conductor pipe, eaves trough, elbows, etc. Their Bostwick Sheet Metal Lath and Expanded Metal Lath has gained a reputation for perfection and permanency the world over being used in many of the largest public and private buildings in this country. They have a large domestic and foreign trade, shipments being made into every state in the Union, as well as into the far eastern countries. They recently shipped fifteen carloads of material to the Isthmus of Panama, for use in buildings in connection with the Isthmian Canal. They also have a large trade in South Africa, China, Australia, etc. Their principal output is gotten out by machinery, and amounts to about three thousand tons annually.

The Bostwick Steel Lath, Expanded Metal Lath, etc., is rapidly displacing the old-fashioned wood lath. This lath is manufactured from steel sheets of standard gauge; is painted to prevent rust, and is much more desirable than wood lath, being fire-proof, roach, bug and rat-proof. It is not as cheap as wood lath, but it will be soon, as wood lath is becoming very scarce and hard to get. It will not burn or act as kindling wood like wood lath. When building a residence or a home for yourself and loved ones—a hospital or asylum for the sick and helpless—a school house, a church or any sort of a building that you lath and plaster, use Bostwick Steel Lath. Bostwick Corner Bead, Metal Bridging, Eaves Trough, Conductor or Leader Pipe, Elbows, etc., etc.—all manufactured by the Bostwick Steel Lath Company, Niles, Ohio. Write them for further information.



A Progressive Paint Firm

The Toledo White Lead Co., of Toledo, Ohio, whose advertisement appears on page 1238, requesting the names of consumers of paint, is a house of hustlers. They are not



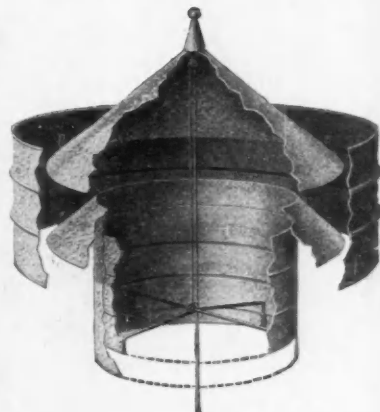
THE glass top in the ordinary Ventilator is least valuable when there is most need of it. The light is shut off when the Ventilator is closed during a storm or cold weather. All ventilators are "ordinary" in this respect except

The Burt Ventilator

The Patented Sliding Sleeve damper used in the Burt Ventilator insures perfect ventilation and perfect lighting at all times. It "stays set," does not collect dust, never deflects air downward, and it makes the ventilator absolutely storm proof.

Because of these features, together with its unusual solidity of construction; and because of the further fact that the Burt surpasses all other ventilators in pulling power, it is being specified for an increasing number of the most important constructions in the country.

Burt Ventilators can be furnished with either glass or metal top, as preferred. Write for our 64-page general catalogue.



The Burt Mfg. Co.
500 Main Street. Akron, Ohio.

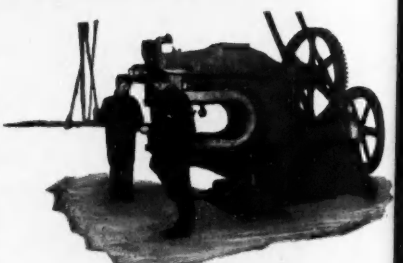
Largest Manufacturers of Oil Filters and Exhaust Heads in the World.

ANDREWS HOT- INCLUDE AN ESTIMATE IN YOUR NEXT CONTRACT AN UP TO DATE PLANT



TO CONTRACTING CARPENTERS:

Increase your profits by including a hot water heating plant in your price, if you are building under a contract, or if you build to sell; just as well supply the heating plant as to erect the mill-work. We will sell you a complete heating plant—boiler, radiators, fittings, etc., and piping, cut to fit, with plans showing just how the radiators are to be set up, where the piping is to be run, and full instructions and special letter of advice for each particular house, so that you will have no trouble whatever in putting the plant together. In fact, of the thousands of plants sold, many were erected by carpenters. This piping is cut to exact lengths and tied in bundles, the same as window frames are now shipped, knocked down. The short pieces and fittings are put up in boxes. An exact estimate will be made for any particular house you have under consideration, so that you can see just what we can do for you. The job is figured and laid out very carefully; the radiators are just the right sizes for the particular rooms, the boiler is ample and the piping proportioned to the work to be performed. The furnishing of a reliable and well balanced hot water heating plant will give you in selling the house or getting the contract quite a preference and an additional talking point. The descriptive matter following explains more fully our methods. Send for our book "Home Heating" which tells the whole story.



Punching.

Saved Over 90 Per Cent.
November 23, 1903.

Andrews Heating Company.
Gentlemen: I have the plant in operation now, having completed same the 20th inst.; figuring the cost, your contract price, freight and drayage, I have saved over 90 per cent.

I put it together myself, and anyone can do the same, because your plans and instructions are very plain. No one need have any hesitancy about placing their order with you because of your not putting them together in place.

Respectfully yours,
F. M. Clift.

Terre Haute, Ind.
Care Revenue Service.

HOT WATER HEATED For \$213



days to complete the installation and from 30 to 45 minutes to start it, with soft coal.
Yours truly, W. P. BARTLETT, Collinwood, Ohio.

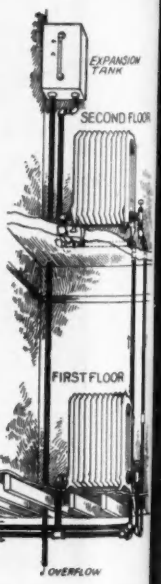
THE COST. Do you know that a hot-water plant will cost less than any other system of heating—less than stoves, less than a furnace or a steam plant—and be far more satisfactory?

The Andrews Hot-Water Systems, manufactured by thousands from the best quality of material and sold direct "from factory to user," can be placed in a house at a very low price. A fair idea of the actual cost of Andrews Systems is given in the illustrations in our book "Home Heating."

Send for this book, "Home Heating," which explains the principles of hot-water heating, tells how you can obtain valuable information about where to locate boiler, estimate of the amount of radiation, proper size of piping, together with cost and much other information of practical value, besides describing the Andrews System in detail. It also gives a large list of users in every State, some known to you, perhaps. Send us the names of two other persons who are likely to be interested in the purchase of a heating plant and we will send you the 72-page book, "Home Heating," free.

Set Up the Plant in Two Days.
June 14, 1905.

Andrews Heating Company.
Gentlemen: Your plant is heating our house quite satisfactorily. It took about two days to complete the installation and from 30 to 45 minutes to start it, with soft coal.

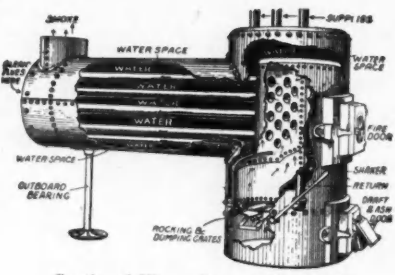


Sectional View showing Boiler, Radiators, Expansion Tank and Circulation of Water.

THE ANDREWS SYSTEM—WHAT IT IS.

economical heating plant. These plants are manufactured with every economy of large production, and are sold direct to user, saving in many instances 25 to 75 per cent, and giving the service of the best heating engineers and a 360 DAYS' FREE TRIAL guaranty bond of satisfaction, or money refunded, from a thoroughly responsible firm—all fully explained in "Home Heating."

The Andrews System is an improved and simplified method of heating old and new buildings by hot water, including a number of patented features not found in others. It is the result of highly specialized engineering practice, combining in proper proportions all the essentials of a simple, economical heating plant.

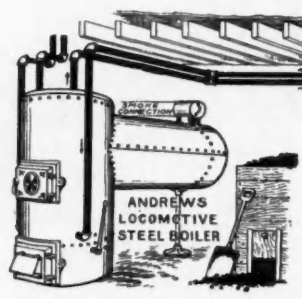


Sectional View—Locomotive Style.

Cheaper Than Stoves.
January 19, 1904.

Andrews Heating Company.
Gentlemen: Our plant is giving us very good satisfaction and has come up to your guarantee; we have had no trouble in keeping the house very comfortable through the coldest weather (20 degrees) with about one-half more coal than it took to run our hard coal stove, which only heated two rooms.

Very truly,
J. R. McCLEAN.
Wilton Junction, Iowa.
R. F. D. No. 1



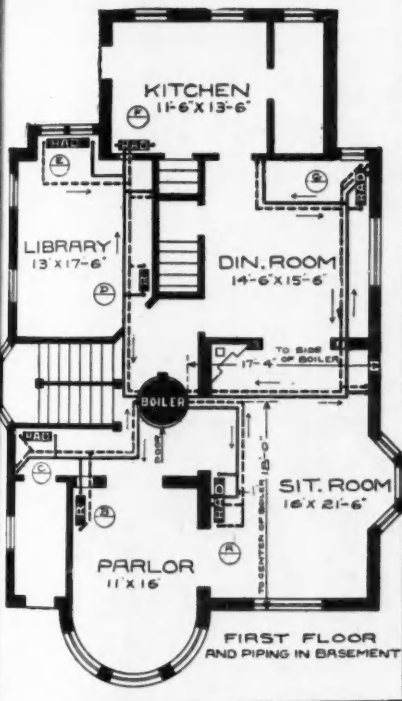
480 Hennepin Av. Minneapolis, Minn. **ANDREWS**

WATER HEATING

FOR HOT-WATER HEATING THE SAME AS LUMBER AND BRICK WILL COMPLETE YOUR PROPOSITION

HOT WATER HEATING PLANS

FOR
WM. JONES
DENVER, COLORADO
ANDREWS HEATING CO. MINNEAPOLIS AND CHICAGO.
ENGINEERING DEPT. JUNE 2, 1905.
APPROVED BY SCALE 1/8" = 1'-0" F.D. NO. 2600.
BY *Wm. Jones* H.T.O.P.M. 3081.
SHEET NO. 1. DRAWER --- CONT. NO. 2590.



EXACT PRICE DELIVERED.

Send us plan of your building, with basement, dimension of rooms, heights of ceiling, size of windows, etc., as explained in "Home Heating," and we will make an exact estimate of cost of all material delivered to your city, with an estimate of what it should cost you for installing the plant, if you employ a mechanic or handy man for that work.

THE MATERIAL.

Our price includes richly ornamented Radiators for every room except the kitchen, Andrews Steel Boiler, Andrews Regurgitating Safety Valve, fittings, valves, floor and ceiling plates, gold bronze, brushes and all the piping, cut to fit and ready to screw together according to diagram, so that any man handy with tools can erect the plant. We also send pipe random lengths, if desired.

The Andrews Steel Boiler is manufactured in two styles—vertical and locomotive—from 60,000-pound steel of the same thickness as used in high-power steam boilers. It contains an unusually large amount of effective heating surface, surrounded by thin sheets of water, making the boiler most efficient and economical in fuel consumption—and no repairs. All our pipe is reamed by special machinery so as to give full efficiency, something not done by others. Read the full explanation in "Home Heating."

OUR FACTORY.

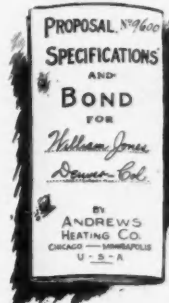
For 20 years we have been engaged in contracting and manufacturing in heating lines. Our factory has unequaled facilities for the manufacture of the Andrews System. Our boiler factory has a large equipment of special tools, such as punches, riveters, shears, flangers, hoists and jigs, designed by our engineers exclusively for the manufacture of the Andrews Steel Boiler.

Complete and accurate plans are prepared by competent heating engineers for each heating plant. These are sent to the customer for approval before shipment of material.

Our plants are shipped to all parts of the country. We can include the freight in our estimate, relieving you of all responsibility and assuring promptest delivery.

RESPONSIBILITY.

We are pleased to refer to the St. Anthony Falls Bank, of Minneapolis, who state that they cheerfully recommend the Andrews Heating Co. as thoroughly responsible; that the management is personally known to them, and that they have full confidence in our representations. They employed us to heat their bank building, and are much pleased with the workmanship, heating power and small amount of fuel used.



360 Days' Free Trial Guaranty Bond.

Each of our heating plants is sold under our 360-day Free Trial Guaranty Bond, facsimile of which is shown in our book, "Home Heating." It is the strongest guaranty offered by any firm, and one which we could not afford to give if the Andrews System was not universally satisfactory.



Whatever Else You Do Send for "Home Heating."

WE DO IT RIGHT IN 44 STATES, CANADA, ALASKA

They Must Guarantee; They Can and Will Do It.

May 29, 1905.
Gentlemen: I can heartily recommend the system furnished me by the Andrews Heating Company. Their method of doing business was to be entirely satisfactory. The efficiency of their system was proven conclusively at a time this winter when the mercury for three days stood 18 to 20 below zero, many of the windows in my residence were only cloth-covered; notwithstanding this the temperature was evenly and easily maintained at about 70 degrees.

I would suggest the following: Don't buy the smallest plant, don't get the largest, simply permit the company to supply you with what your situation or building and area to be heated requires. They know best; they must guarantee; they can and will do it.

I am simply "tickled to death." Hot water under 12 to 15 pounds pressure chases itself to the most remote and coldest parts of the house. Come over and see my plant. I don't get a cent for saying this.

Very truly yours,

FRANK PACKHAM.

American Seeding Machine Company.
Springfield, Ohio.

\$60 to \$70 Less Than Plumber's Price.

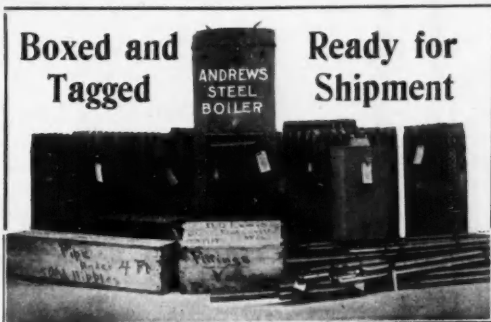
Messrs. J. C. Ewing & Co.,
Pioneer, Ohio.

Gentlemen: Your letter of
The Andrews heating plant

June 7, 1905.

of May 26 received, that I installed last winter is very unique, and on account of its simplicity most any common laborer can construct them.

Yours truly,
W. E. Sullivan.
Lima, Ohio.
610 N. Elizabeth St.



A Complete Plant Ready to Ship.

GENERAL HEATING CONTRACTING.

We also do a general heating contracting business, as well as manufacturing. We employ a corps of thoroughly experienced graduate engineers, also a complete force of skilled mechanics, and are prepared to do erecting wherever necessary.

HEATING Co. 184 LaSalle St. Chicago - Ill.

the oldest nor among the largest of paint firms, but their aim is to be as progressive as any of them. Their machinery equipment is of the very best and up-to-date; their mixing is done by trained workmen under the direction of an expert superintendent; their goods are bought at the right place and price and in the right quantities. Their lines are complete in variety, extent and uniformity. Their products will speak for themselves.

The following is taken from their catalogue: "There is a sense of responsibility behind each sale. We want to have the confidence of the paint people, and to get in as close contact as possible with you. We want to make your business profitable, pleasant and generally satisfactory. Your success is our success. Established in a small way in 1892 this company has gradually worked its way forward until its sales for 1906 show an increase of nearly 100% over 1904. We take this as an evidence that our prices, our goods, our treatment of customers are something near what they should be."

They give you an opportunity to know them. Get acquainted.



Hight's Union Combination Square

One of the new patents which is being put on the market is Hight's Union Combination Square, manufactured by the Hight Manufacturing Company of Toledo, Ohio.

It consists of a combination 8-inch try square, bevel, butt gauge, marking gauge and mitre.

There are notches on the edge of a slot in the blade one-eighth inch apart, which furnishes first-class and very convenient marking gauge. The notches are so arranged that any carpenter's pencil will fit them.

There are three series of numbers on the circular segment of the stock of the square ranging from 0 to 12 in the first series, 12 to 0 in the second, and 0 to 12 in the third series, representing rise of inches on a 12-inch base.

A sliding protractor works over this segment, and is held

in position by a clamping bolt. When set on figure six (6) in the first series, the angle is one which will give a rise of 6 inches in twelve, or the angle for the bottom cut of a rafter for one-quarter pitch. Set on 6 in the third series, and you have the angle for the top of the rafter or plumb cut for the same pitch. So with all the figures in the first and third series. The second series is used principally for the extended and graduated bevel.

The circular segment on the opposite side is laid off in degrees, so that clamping the protractor on any given number, the angle formed by the protractor and the stock of the square is the angle indicated by the number on the scale.

There is a notch in the lower end of the protractor which will enable it to be used for a gauge to get in corners, setting hinges, beveling edges, etc.

The end of the stock opposite to that on which the scales are indicated is so cut as to form a mitre.

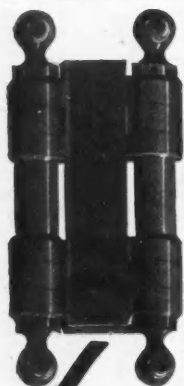
Thus any desired cut, try square, butt gauge, marking gauge and mitre are available at the same time.

It is made of cold rolled steel, coppered and nicked, while the protractor is coppered and oxidized, making one of the neatest, most useful and convenient tools put on the market.



Preparing for Big Increase in 1907

The Century Cement Machine Co., of Rochester, N. Y., report a strong demand for the 1907 Hercules, and have prepared for an unprecedented business in 1907. Progress is the keynote throughout the factory where the Hercules is made, and the 1907 model shows that improvements have been made wherever possible. The machine as it stands to-day is a giant in strength and there is no denying the fact that its strength lies in the wonderful simplicity of mechanism. Indeed it is really marvelous how such a simply constructed machine can turn out such a variety of designs and sizes of Blocks, Sills, Lintels and Ornaments. In many of the large



COLUMBIAN

WE made the first double action spring hinge—The American—it started the world moving.

We made this hinge shown, 25 years ago—Gem Cast Iron Spring Hinge—it started everyone thinking seriously.

We made the latest hinge—Columbian Floor Spring Hinge—it now has everybody sitting up and taking notice.

Do you know we make spring hinges that swing any door no matter what size, style or shape—some hinges weigh 75 lbs. each and from that down to ½ oz. and every one complete guaranteed?

The next time you even think of spring hinges don't forget that in our 25 different styles there is a hinge that will do your work.

Some of our different styles—Floor—Wrot Steel Jamb—Cast Iron Jamb—Screen Door—Lavatory—Cabinet—Show Case.

A simple and inexpensive way to keep posted on the latest and newest fads in spring hinges.

WRITE "12" ON A POSTAL

Sign your name, hand it to Uncle Sam, and he will with his squad of trusties return to you a booklet showing the snappiest line of spring hinges ever made by one concern.

47 YEARS IN THE BUSINESS MEANS SOMETHING

THE COLUMBIAN HARDWARE COMPANY
168 Church St., New York CLEVELAND, OHIO 26 E. Lake St., Chicago

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

3,303

Salaries Raised

This is a 12-months' record showing the number of men who have voluntarily reported an increase in salary and advancement in position as a direct result of the help received by them from the INTERNATIONAL CORRESPONDENCE SCHOOLS. Their names, addresses, and letters are open for public inspection and investigation.

This marvelous record, which shows only a small part of the actual results accomplished, tells better than words how the I. C. S. enables men to make more money by fitting them for more important positions. These 3,303 were, most of them, poorly paid and had no chance of advancement until they called to their assistance the I. C. S.

Are you at this minute situated as they were? If so, why not do as they did? Why not mark the coupon below and have the I. C. S. show you, as it has shown so many thousands of others, how you can qualify yourself in your spare time and in your own home to earn a high salary in the occupation of your choice?

Mailing this coupon places you under no obligation whatever. Take your first step toward a higher salary by sending in this coupon NOW.

International
Correspondence
Schools Box 910
Scranton, Pa.

Please send me your free Carpenters' and Architects' Booklet, and explain how I can secure a higher position and a larger salary in the building trades.



Name _____

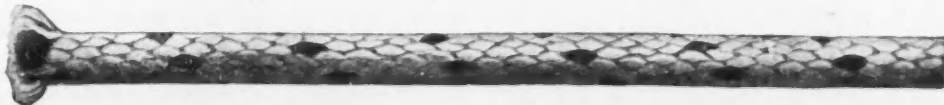
St. & No. _____

City _____ State _____

WHY IS SAMSON SPOT CORD

The Best Sash Cord?

- FIRST.** Because it is made of extra quality stock.
- SECOND.** Because it is inspected and guaranteed free from bad splicings and rough braiding.
- THIRD.** Because both tests and actual experience show that it wears three times longer than the best chain and forty times longer than the rough cords so often found on the market.



The colored spot is our trade mark—used only in this extra quality cord.

Here is a letter from one of the largest users of sash cord in the world—The Weightman Estate.

Philadelphia, October 8, 1906

The Samson Cordage Works,
Boston, Mass.

Gentlemen:

We have been using your "Samson Spot Cord" in the Weightman properties for a period of eight (8) years, during which time we have not had to replace or renew one broken cord of the Samson variety. This to us is a remarkable record, considering the experience we have had in the past with other sash cords we have used.

Yours very truly,
JAMES F. TALLEY,
Superintendent of Repairs.

*Write to us for copy of tests and
samples, also Catalogue B.*

Samson Spot Cord is carried in stock by dealers in all parts of the country. If you do not find it when wanted, let us know.

Samson Cordage Works
Boston, Mass.

contracts for Concrete Construction, which were completed last year all blocks were made on the Hercules. The immense power house of the New York, New Haven & Hartford Railroad at Cos Cob, Conn., and a large building for the General Electric Co., at Schenectady, are two instances.

The Hercules has also jumped into favor abroad, for export orders have been plenty during 1906, and machines are in operation in nearly every country in the world.

Fine Views of Hollow Concrete Block Buildings

The Harmon S. Palmer Co. have just placed on sale a fine pictorial album, displaying elegant residences, some in course of construction, substantial business buildings, suburban steam railway stations, water works and large factory buildings, gas plants, and municipal buildings, mausoleums, houses of worship, retaining walls, park ornamentations, etc., to the number of over sixty plates, engraved from photographs and printed with double tone ink on sheets of heavy white double enamel book paper, stock 9x12 inches in size, enclosed in heavy white double fold parchment covers, on which is embossed gold and black medallions, and tied with Victoria green silk cord, all in a very artistic manner.

The price of this album is one dollar, mailed in white paste-board box and postpaid. If unsatisfactory on receipt return to the company and they will refund the dollar and your postage.

Address Harmon S. Palmer Company, 1450 Girard street, Northwest, Washington, D. C.

Two Leading Papers for \$1.00

Elsewhere in this issue the Concrete Age and the Southern Architect, both of Atlanta, Ga., are offered for one year for \$1.00. These are the two leading papers of the South. The price of each is \$1.00 per year, but for a limited time the

two will be sent one year for the price of one. Look this ad. up on page 1007 and subscribe while the offer is open. No better \$1.00 value anywhere.

The Sykes Metal Lath

The Sykes Metal Lath & Roofing Co., of Niles, Ohio, are much elated over the great increase in their business for 1906. They write that their business for the past year has been much better than they expected and that prospects for 1907 are very flattering. They have been pushing the sales of their Expanded Cup Lath, and their progressiveness, coupled with the sterling merit of their product, have met with just reward. It is their aim to give their customers the best product that can be manufactured. Their expanded cup lath must be seen to be admired and used to be appreciated. It is the only expanded metal lath that can be used for plastering on either side, therefore it can not be applied wrong. For stucco and cementine work it is what architects have been looking forward to obtain for years, and for ornamental work, false beams, arches, coves, columns, etc., it is the best, and above all, no higher in price.

In the Sykes Expanded Cup Lath the mortar does not hang on a sharp cutting or knife edge, but rests on a beveled edge. The Sykes Co. state that there is more of their cup lath used on state work in the state of New York than all other expanded metals combined. They have recently secured the contract for the new hospital that is being built at Middletown, N. Y.; they furnished the lath on the armories at Flushing, Oneonta and Gloversville, and the Sixty-fifth Armory at Buffalo, requiring 32,000 square yards. The last-named armory is the largest armory in the United States, if not in the world, covering a plot of ground 361 feet wide by 500 feet long, or approximately three and a half acres. The architect was so well pleased with the lath used on this building that he is specifying it on all of his present contracts.

GLACIER

A PERFECT SUBSTITUTE FOR
STAINED GLASS



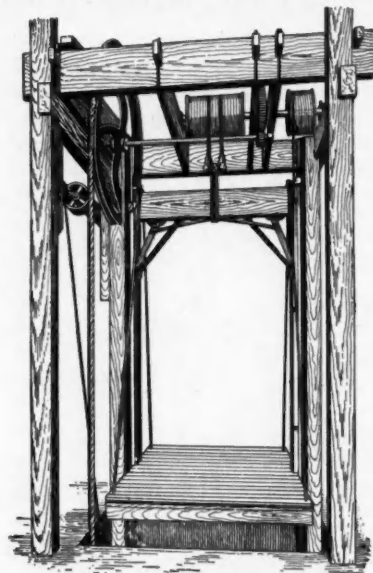
It is used in Churches, Homes, High Class Apartments, Hotels, Stores, Etc.

Guaranteed not to fade, does not transmit color, can be mopped with cold water without the slightest injury. In GLACIER, beautiful figured windows can be had at a mere fraction of their cost in Stained Glass.

...New Illustrated Booklet Sent Free on Application...

GEO. QUAILE, 147 Columbus Av., New York

We Pay the Freight
You Install Elevator Yourself



STORE HOIST

We will ship this Elevator direct to you, freight paid and you can install it yourself without expense except the help of the average mechanic. This is an exceptional offer. Everyone knows that EATON & PRINCE means dependable Elevators. No other Elevator is quite as good because none is made with such infinite care. Send for Catalogue No. 99.

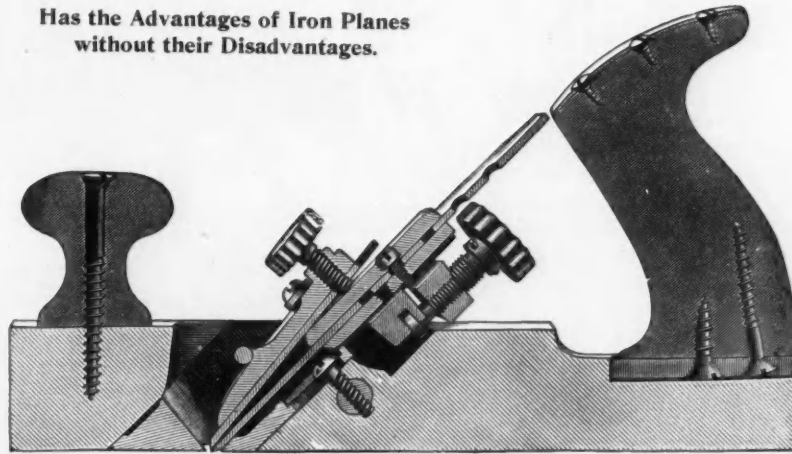
EATON & PRINCE COMPANY
70-76 Michigan St., Chicago, Ill.

THE SELF-SETTING PLANE

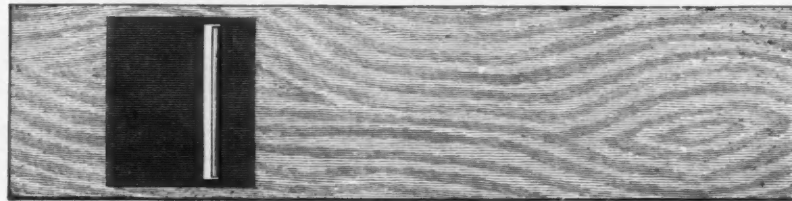
The Only Self-Setting Plane. No Other Self-Setting Plane Made. Different from All Other Planes.

**SENT
ON
THIRTY
DAYS'
TRIAL
WHERE
NOT
SOLD**

Has the Advantages of Iron Planes
without their Disadvantages.



Sectional View—Showing ADJUSTABLE IRON THROAT.



**30
DAYS'
TRIAL
WON'T
COST
YOU
A CENT
AS STATED
BELOW**

The Self-Setting Plane Works Easier, Better and Quicker; Saving Time, Muscle and Temper

Five seconds sets it exactly right and it don't vary the $\frac{1}{100}$ part of an inch in 100 times setting. An inexperienced person can set it right the first time. The throat is iron and adjustable, holding the plane bit solid in its vice-like grip (see cut). Every plane iron is guaranteed to give user satisfaction, and any unsatisfactory one returned us within thirty days will be exchanged without charge.

The under part of the cap is tempered steel and can drop only into its exact place, the thumb screw doing the rest. The cap does not move up and down with the bit as other caps do, but stays stationary in its right place as other caps don't. It can be used as a single or double iron plane. The thickness of a shaving can be changed less than $\frac{1}{100}$ part of an inch, or more than $\frac{1}{100}$ of an inch, a dozen times in planing a 12 inch strip, without breaking the shaving. It will properly smooth any hard or soft cross-grained eaty wood, knots or burls, against the grain, and is perfection for floor work. It is ready for use when it leaves our factory, each plane having been tested and shavings left in the throat. The plane stocks are thoroughly saturated with hot linseed oil, to prevent change of shape. We claim an exceptionally high standard for our plane irons. The above are some of the good points of the **SELF-SETTING PLANE**.

We send this **SELF-SETTING PLANE** to any U. S. towns where not sold, on 30 days trial, without cost to user, if he returns it to us at our expense within a month of its receipt.

The first cost of this plane is more than others, but if you do not think it is worth many times its cost after a thorough trial on your own bench, just return to us at our expense, and the month's use will not cost you a cent. Any other information or testimonials asked for will be sent, but the best and most satisfactory way is to try the plane on your own bench, in your own way, then send it back, as above, if you don't want it.

On receipt of \$3.00 we will send you a smoothing plane, delivery-charges paid by us. If you do not want it, return it to us at our expense, as sent, within 30 days of receipt, and we will return you \$3.00 and you will not be out one cent. This paper, "**THE AMERICAN CARPENTER AND BUILDER**," guarantees we will do as our advertisement says. If there is any risk we take it.

Send for a plane now and try it thoroughly while you have time.

Do not let dealers sell you any other plane until you have used the Self-Setting Plane made by

GAGE TOOL CO., Vineland, N. J.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

There was also 40,000 square yards of No. 24 expanded cup lath used in the Carnegie Library at Pittsburg, Pa. This shows that there is no contract too large for the Sykes Company and none too small. Their lath has been used this season on two large jobs in Denver, requiring about 30,000 square yards each.

If any of our readers wish to become better acquainted with this modern, up-to-date method of lathing they should write to the Sykes Metal Lath & Roofing Co. for further information. Address them at Niles, Ohio.

The Roebuck Window Ventilator

The accompanying illustration is of a ventilator which is being placed upon the market by the Roebuck Weather Strip and Wire Screen Co., makers of the famous Roebuck Fly Screens. This ventilator is made of both oak and walnut finish and made to fit any window, and is very easily operated and can be adjusted by a child. These ventilators have been manufactured and made to order for many years, but as the demand has constantly been growing this concern has decided to make them in larger quantities than heretofore, and are prepared to furnish them at \$2.50 each. By mentioning the AMERICAN CARPENTER AND BUILDER when writing them they will mail you one of their catalogues giving more information therein. They are the Roebuck Weather Strip Wire Screen Company, 179 Fulton street, New York City.

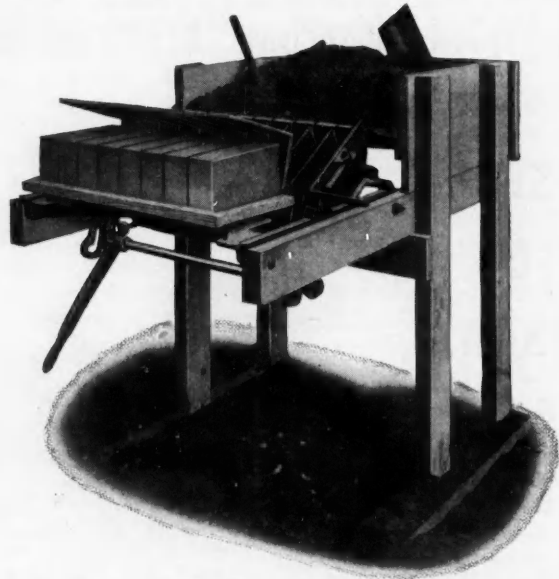


their catalogues giving more information therein. They are the Roebuck Weather Strip Wire Screen Company, 179 Fulton street, New York City.

Cement Brick Machines

One of the simplest and strongest machines for the production of cement brick is that manufactured by the Coltrin


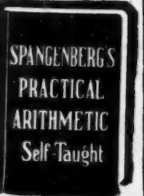
Mfg. Co., of Jackson, Mich. This machine is equipped with a full set of eight plates for making plain brick, and also eight plates for making rock face brick. They claim that one man can make brick faster than two men can mix the mortar and place it on the table for him. The entire method of



operating this machine is very simple and is completely explained in their new 1907 catalogue. This may be had by writing to the Coltrin Mfg. Co., 140 W. Main street, Jackson, Mich., and mentioning the AMERICAN CARPENTER AND BUILDER.

Mail Ordering Brings Country to City

The growth of mail order buying in the United States is one of the most startling developments of modern business.

<p>Price \$3.50</p>  <p>Post-paid.</p>	<p>Practical Engineering For Contractors. Prof. Spangenberg's "Steam and Electrical Engineering" is the ONLY BOOK published containing 1,055 Questions and Answers asked by examining boards, with full explanations. 672 pages; 648 illustrations. A mine of information in practical form. Explanations by W. E. Pratt, Master-Mechanic.</p>	<p>DON'T WORRY if you have forgotten what you once learned, or had not opportunity for learning, of</p> <p>ARITHMETIC</p> <p>Spangenberg's New Method requires no teacher. Makes calculation and estimates for Builders easy. Gives all the short cuts to results, in simple form. 257 pages. Sent anywhere for 60c. - - - Edition de Luxe, \$1.00.</p> <p>(Stamps Accepted.) Write us To-day.</p>	
<p>GEORGE A. ZELLER BOOK COMPANY, 65 South Fourth Street, St. Louis, Mo.</p>			

The American Combined Level and Grade Finder
SOMETHING ALTOGETHER NEW

All progressive and up-to-date Mechanics, Machinists, Carpenters, Bricklayers, Masons, Plumbers, Millwrights, Road Supervisors, Track Foremen, Surveyors, Architects, Civil Engineers and others will find this an Indispensable Invention.

A Civil Engineer that you may have with you at all times. The most practicable, durable and convenient instrument of the day.

The cost of the instrument is so low that it is within the reach of all. Agents wanted on liberal terms. Apply to

EDWARD HELB, Railroad, Pa., Manufacturer



Normandin

HIGH GRADE CONCRETE MACHINERY


We have the Leaders—"9 of them"—Normandin, Cemaco, Peninsular and Champion Block Machines (2 side face, 2 face down); Favorite Concrete Brick Machines, with mechanical tamper, big demand; Systematic Mixer, mixes sand-cement dry, then wet, any proportion, very popular. Universal Post Machines, Ornamental Ball-Base Baluster Molds, Practical Sill Cap Molds.

We are in the business, responsible, started 1900, have world-wide reputation, square dealing and practical machinery. Products of our machines in demand because they are displacing clay brick, stone, lumber, everywhere for superior excellence in modern building construction. Our machines received highest awards, St. Louis, 1904, Portland, 1905. Also adopted twice by U. S. Govt. We can please you. Write

CEMENT MACHINERY CO., Russell Bldg., Jackson, Mich.



Favorite with Mechanical Tamper

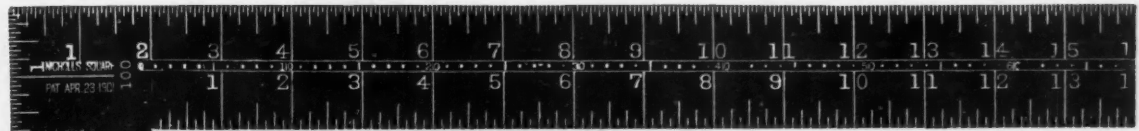


Looking All Ways for Business

Columbia Mineral Wool Company

Standard Mineral Wool makes buildings fire, sound and vermin proof. Send for circulars and samples--free

OFFICES: 918 Opera House Bldg., 112 Clark Street, Chicago, Ill.



NICHOLLS

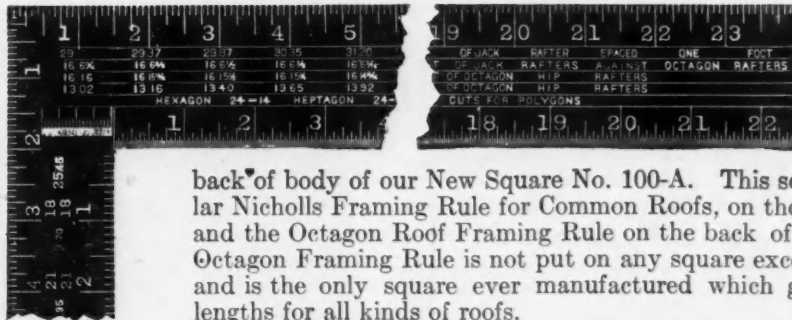
FRAMING SQUARE

SAVES TIME AND AVOIDS MISTAKES

On the square is where the carpenter wants his figures, not in a book or on a piece of paper, as they are usually lost.

What It Will Do

It gives the length of any common rafter from 2 inches to 18 inches raise per foot on any building, no matter how wide. It gives the length of any hip or valley rafter. It gives the length of any jack rafter spaced 16 inches or 2 feet centers. It gives the side cut of hip or valley rafter. It gives cut of cornice or frieze boards. It gives cut of sheathing in valley or hip. It gives cut of all parts of roof exact.

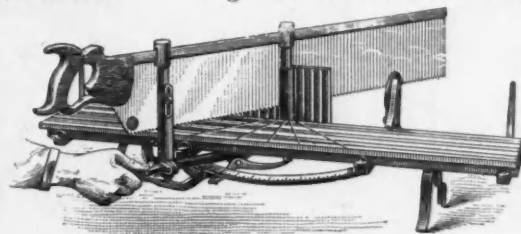


No. 100-A
Square

This cut shows a portion of the

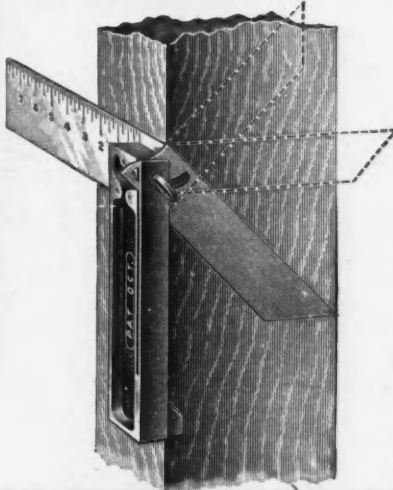
back of body of our New Square No. 100-A. This square has the regular Nicholls Framing Rule for Common Roofs, on the face of the body, and the Octagon Roof Framing Rule on the back of the body. This Octagon Framing Rule is not put on any square except the No. 100-A and is the only square ever manufactured which gives all cuts and lengths for all kinds of roofs.

Nicholls "Common Sense" Miter Boxes



A Miter Box easy to carry. A Miter Box that will lock at any place. A Miter Box of any length. A Miter Box with long saw guides that will hold saw accurate when raised to its full height. A Miter Box with a graduated circle, making it easy to obtain cuts. A Miter Box that raises saw to swing over stock, making it easy to obtain desired cuts.

"IDEAL" BEVEL-TRY SQUARE



This tool is a combination of a Bevel and a Try Square. By its use the carpenter can save considerable time in not having to lay down one tool and pick up another. When Bevel is not in use it may be closed in handle out of the way, or by removing thumb screw the bevel attachment comes off, leaving an ordinary Try-Square.

Nicholls Mfg. Co.

Ottumwa, Iowa.

The country enjoys all the advantages of the city's best stores and has none of the inconvenience of standing in line in crowds.

The oldest mail order house in America is that of White, Van Glahn & Co., at 3 Chatham Square, New York City. This house was established almost one hundred years ago, and has given entire satisfaction to its hosts of customers through the whole of that time.

White, Van Glahn & Co. issue a 600-page catalogue free

Classified Advertisements.

Advertisements under this heading will be inserted at the following rates:
 One month.....\$0.45 per line
 Three months..... 1.25 per line
 Six months..... 2.25 per line
 One year..... 4.25 per line
 Count 10 words to the line. Situations wanted one-half above rates.
 Replies may be addressed in our care and will be promptly forwarded.

Situations Wanted.

SITUATION WANTED—By young man thoroughly familiar with cement block making; would like to take charge of a block plant as foreman or superintendent of construction; carpenter and builder by trade; draw plans, make estimates; capable of doing anything in connection with stone making or building in general. Best of references. Address "Builder," American Carpenter and Builder.

For Sale.

FOR SALE—At a bargain, one 4 H. P. gasoline engine and wood-working machinery. For detailed descriptions, etc., write E. R. Jeffers, Martin, Tennessee.

Help Wanted.

WANTED—Two or three good carpenters can find a steady situation for the coming season by addressing Chas. Kirk, Gridley, Ills.

Miscellaneous.

A FEW DOLLARS will start a prosperous mail order business; we furnish catalogues and everything necessary; by our easy method failure impossible. Send for particulars. Milburn-Hicks, 726 Pontiac Bldg. Chicago.

THE CEMENT WORKERS HAND-BOOK is worth its weight in gold to any cement user. The most practical book on the subject ever written. Over 50 subjects are treated. Contains over 100 pages, cloth bound, price only 50 cents, postage paid. Is worth 50 times its cost to any carpenter or builder. Over 10,000 copies already sold. Order to-day. Address: The Concrete Age Publishing Co., Atlanta, Ga.

I MAKE careful working drawings from rough pencil sketches; good work reasonable. W. W. Daniels, No. 3312-A. Merramec St., St. Louis, Mo.

TWO PAPERS FOR THE PRICE OF ONE

THE CONCRETE AGE is the leading paper of its class in this country—64 large pages profusely illustrated. Shows pictures and floor plans; cost, etc., of all kinds of buildings of concrete construction. Aply edited. Invaluable to every architect and builder. The price is \$1.00 per year.

THE SOUTHERN ARCHITECT is an ideal paper in its field. Shows views, plans, cost, etc., of the better class of buildings being erected in the South. Price \$1.00 per year. Every issue is worth price of year's subscription.

BOTH PAPERS FOR \$1.00

For a limited time only we will send both papers one year for \$1.00. Send us \$1.00, check, stamps, money order or currency, and both papers, **THE CONCRETE AGE** and **THE SOUTHERN ARCHITECT**, will come to you twelve months. Subscribe today. Address

THE SOUTHERN ARCHITECT
 BOX 846, ATLANTA, GA.

BUY a HAYDEN for STRENGTH as well as RESULTS

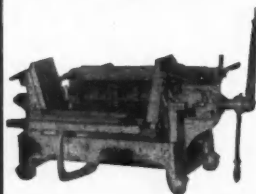
The Hayden Automatic and Adjustable Block Machine is the only one on the market strong enough to withstand the heavy strain of pneumatic tamping.

Write for booklet of what practical men say on the subject.

POINTS OF SUPERIORITY

- Strength, Down Face,
- Limitless Range, Rapidity,
- Ease of Operation,
- Simplicity of Construction

HAYDEN, the standard of excellence.
 Send for catalog M today



The Hayden Automatic Block Machine Co., 112 W. Broad St., Columbus, O., Box 705

NEW YORK AND FOREIGN OFFICE:
 Hayden Automatic & Equipment Co., 26 Cortlandt St., New York

on request. They deal in over 75,000 different articles, which comprise practically everything required in a home or shop or on a farm.

PREVENTS DRAFTS, DUST AND WINDOW RATTLING.
IVES' PATENT
 Window Stop Adjuster.



HEAVY BED



PATENTED.

The only Stop Adjuster made from one piece of metal with solid ribs and heavy bed that will not cup, turn or bend in tightening the screw. Manufactured only by **The H. B. IVES CO., New Haven, Conn., U. S. A.** (Fifty-page Catalogue Mailed Free.)

I Can Cure Cancer

At Home Without Pain, Plaster or Operation and I Tell You How; Free.



I Have Proven Cancer Can be Cured at Home No Pain, No Plaster, No Knife.—Dr. Wells.

I have discovered a new and seemingly unfailing remedy for the deadly cancer. I have made some most astonishing cures. I believe every person with cancer should know of this marvelous medicine and its wonderful cures, and I will be glad to give full information free to all who write me and tell me about their case.

Peter Keagan, Galesburg, Ill., had cancer of the mouth and throat. Doctors said, "no hope." Mr. Keagan wrote: "It is only a question of a short time—I must die." To-day his cancer is healed up and he is well. My marvelous radiatized fluid did it. It has other just such cures to its credit. It is saving people every day and restoring them to health and strength. If you have cancer or any lump or sore that you believe is cancer, write to-day and learn how others have been cured quickly and safely and at a very small expense. No matter what your condition may be, do not hesitate to write and tell me about it. I will answer your letter promptly, giving you, absolutely free, full information and proof of many remarkable cures. Address Dr. Rupert Wells, 2195 Radol Building, St. Louis, Mo.

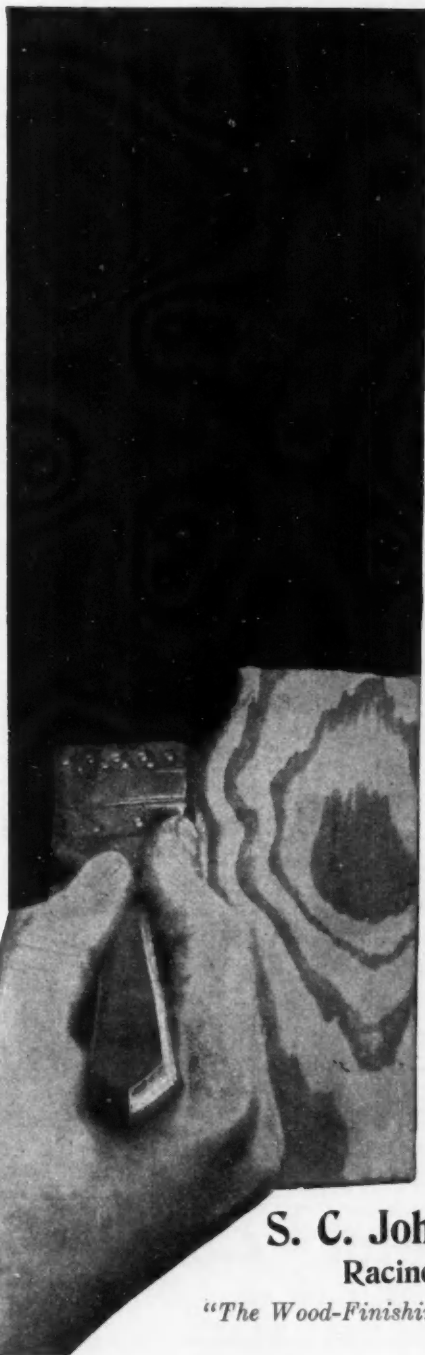
We Will Send You FREE 3 Cans (Any Desired Shades) of Johnson's Wood Dyes for Name of Your PAINT DEALER

We want every painter to try Johnson's Wood Dyes at our expense, as we know that one trial will insure continued use. Its superiority is acknowledged by the enormous sales. Don't confound Johnson's Wood Dye with various "stains" now on sale, Water "stains" and spirit "stains" raise the grain of the wood. Oil "stains" do not sink deep into the wood, nor do they bring out the beauty of the grain. Varnish stains do not properly color the wood—the color being only in the finish. When varnish finish is marred or scratched it shows the natural color of wood—revealing the sham.

Johnson's Dyes are Prepared in all Shades as follows:

- No. 131, Brown Weathered Oak;
- No. 129, Dark Mahogany;
- No. 172, Flemish Oak;
- No. 140, Manilla Oak;
- No. 126, Light Oak;
- No. 110, Bog Oak;
- No. 123, Dark Oak;
- No. 128, Light Mahogany;
- No. 121, Moss Green;
- No. 125, Mission Oak;
- No. 178, Brown Flemish Oak;
- No. 130, Weathered Oak.

Photographic illustration showing how Johnson's Wood Dye brings out natural beauty of the wood.



Johnson's Wood Dye

is a dye. It penetrates the wood; does not raise the grain; retains the high lights and brings out the beauty of the wood. It is the best for use on floors, interior woodwork and furniture.



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Address

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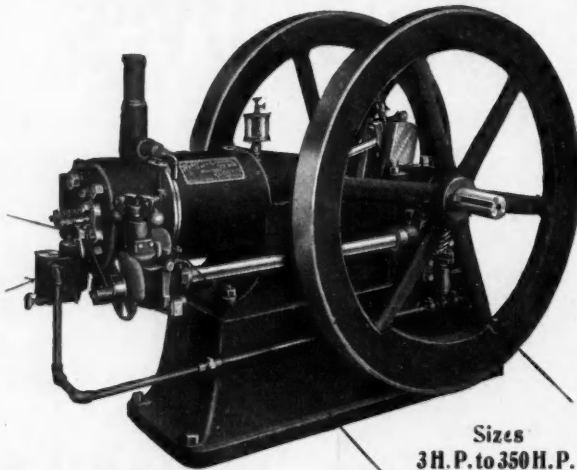
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No more Sash Weights, Cords, Pulleys, Balances
and their annoyances, if you use the

Automatic Sash Holder

A Simple and Economical Device. Positive and automatic in its action, which can easily be seen from the illustrations showing position in and out of sash.

It has the following advantages over the old system, particularly on the lighter weight sash, which all practical minds will admit:

PRICES LOWER than weights, cords, pulleys or balances.
Saving of Labor and Lumber in making sashes and frames by doing away with pockets, grooves, etc.
Saving of Nearly Entire Labor of Fitting and adjusting windows, as sashes after inserting Holder are easily slipped into frames and stop beads put on.

Saves Carrying Stock of Weights for each weight of sash.
Prevents Windows from Rattling while in any position, a great annoyance heretofore.

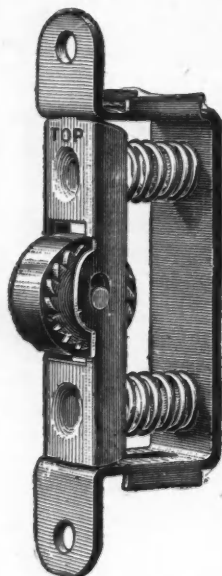
Shrinking or Swelling of Sash or frame is no longer of any consequence, as Holder adjusts itself automatically.

Is Invisible, being inserted into the sash or stile, thereby eliminating the unsightly appearance of ropes and pulleys.

Can be easily adjusted to any old window, and for windows without pockets meets a long felt want.

For sashes up to 16 lbs. one Holder on one side is sufficient, thereby reducing cost to one-half. For those of 16 to 35 lbs. use one Holder on each side, and for heavier ones use two or more on each side.

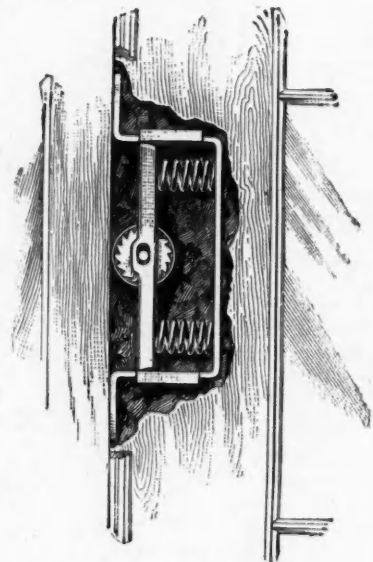
Inquire of your hardware dealers or write us direct and we will send by mail sample set of four Holders on receipt of One Dollar or one-half set for Fifty Cents.



Patented

Fig. 1

Automatic Sash Holder,
nearly two-thirds size.



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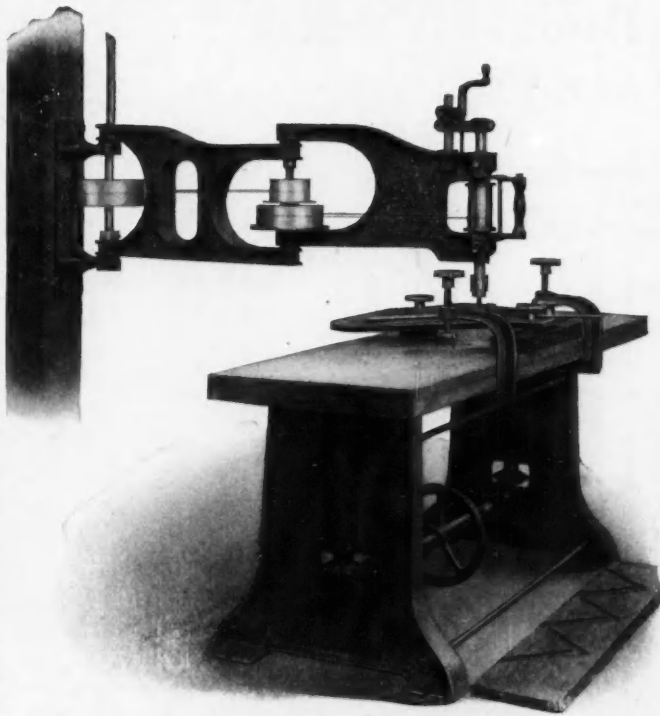
Fig. 2

Holder in Position, with part of the
stile cut away.

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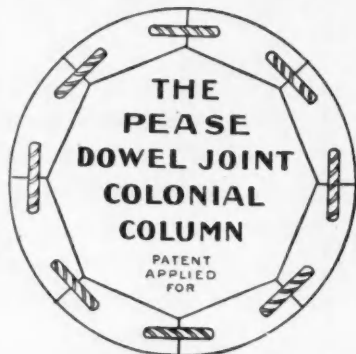




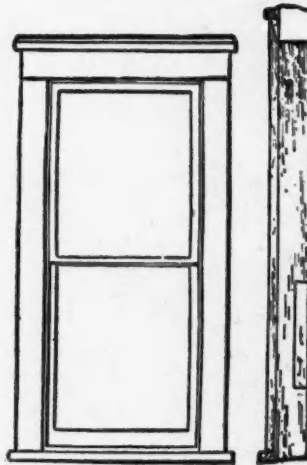
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Pease Dowel Joint Column No. 70

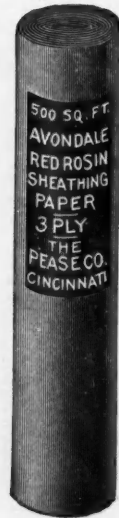
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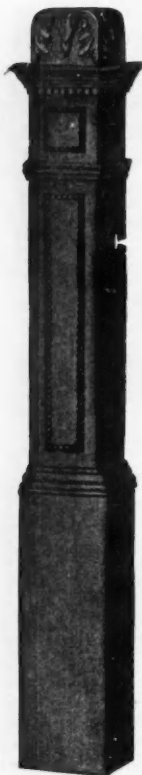


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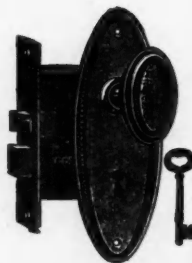
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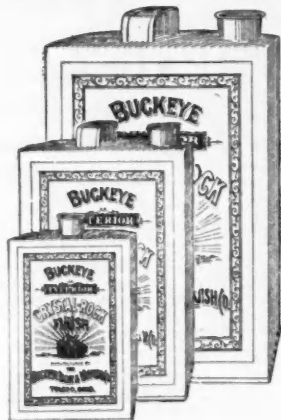
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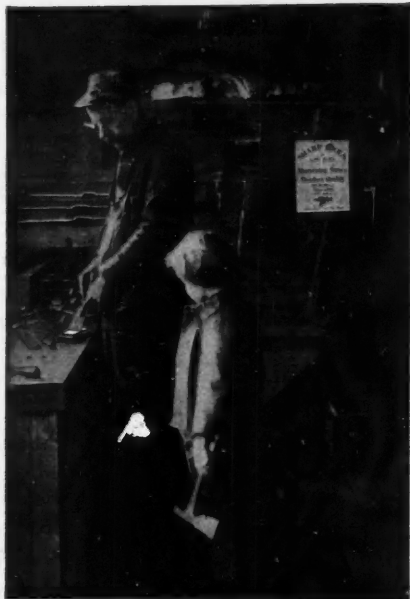
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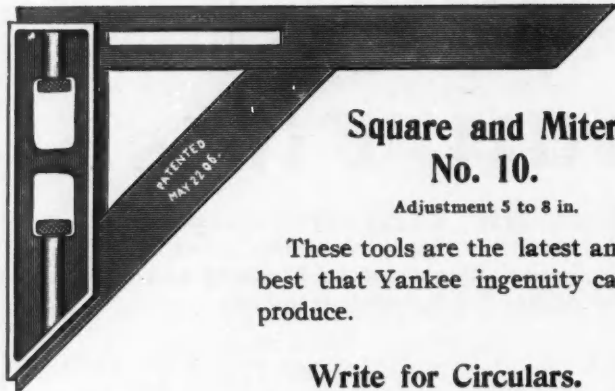
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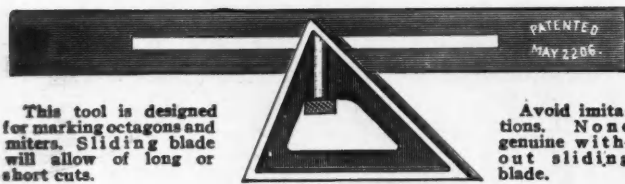
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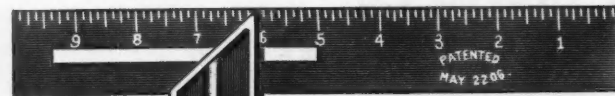
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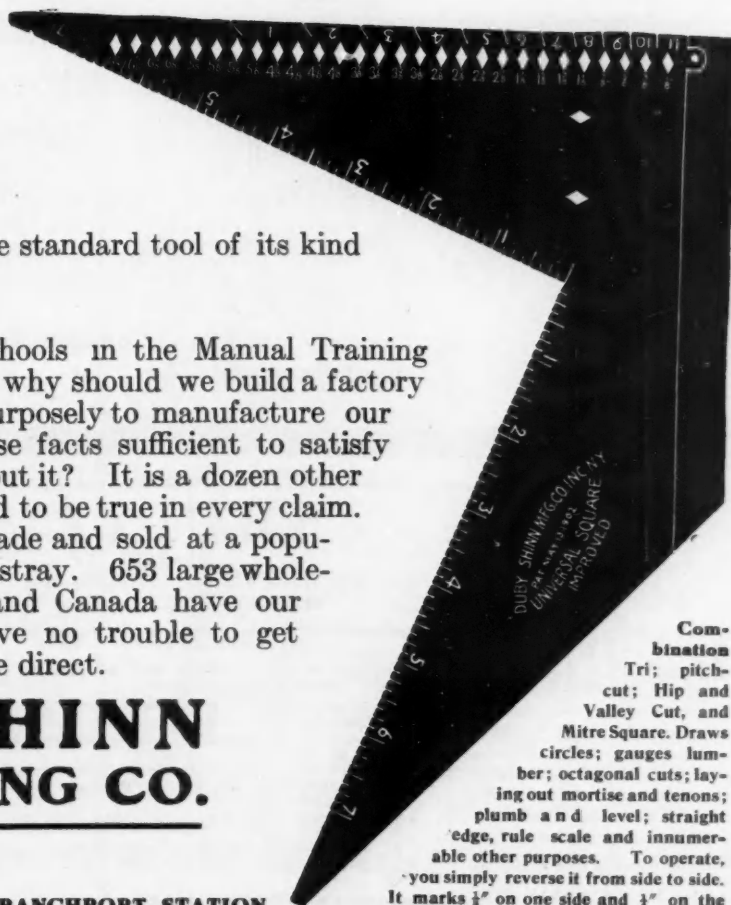
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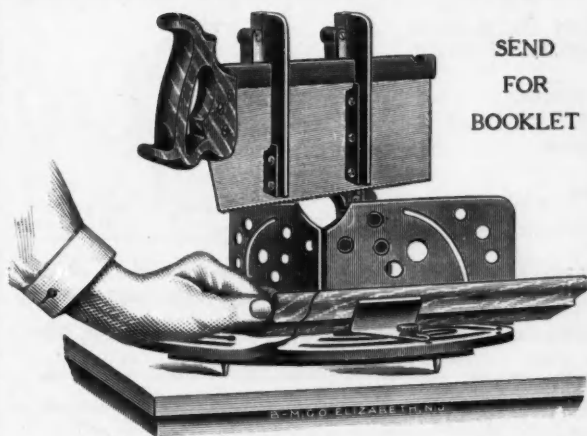
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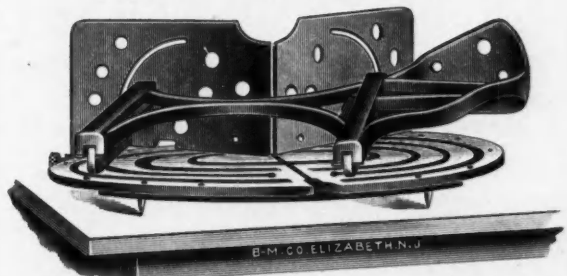
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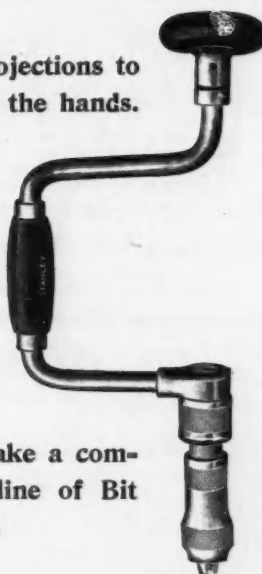


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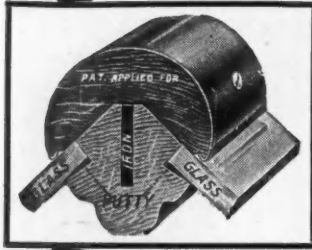


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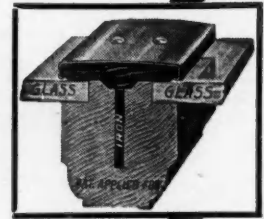
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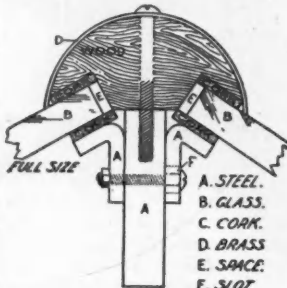
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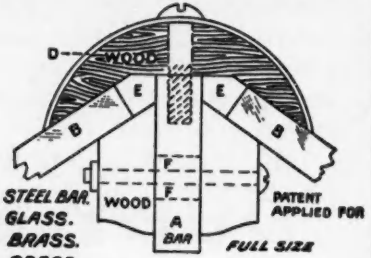


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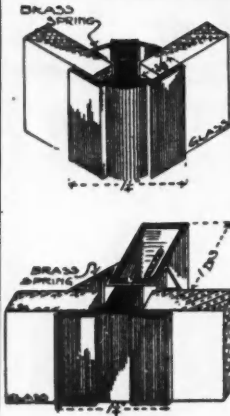
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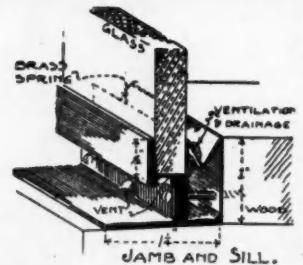


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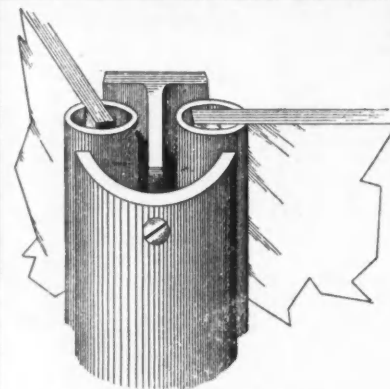
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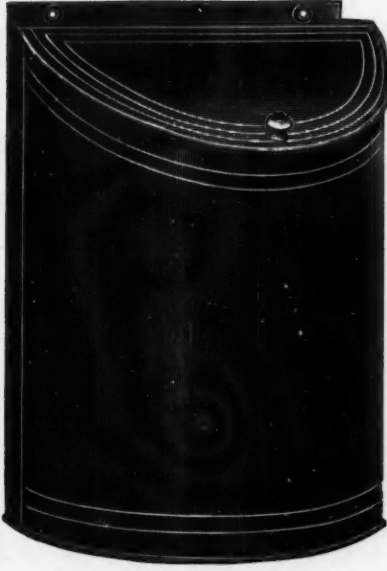
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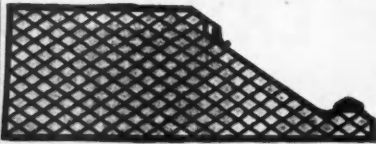
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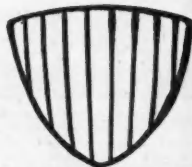
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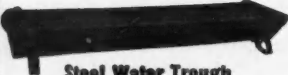
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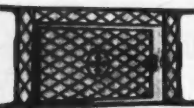
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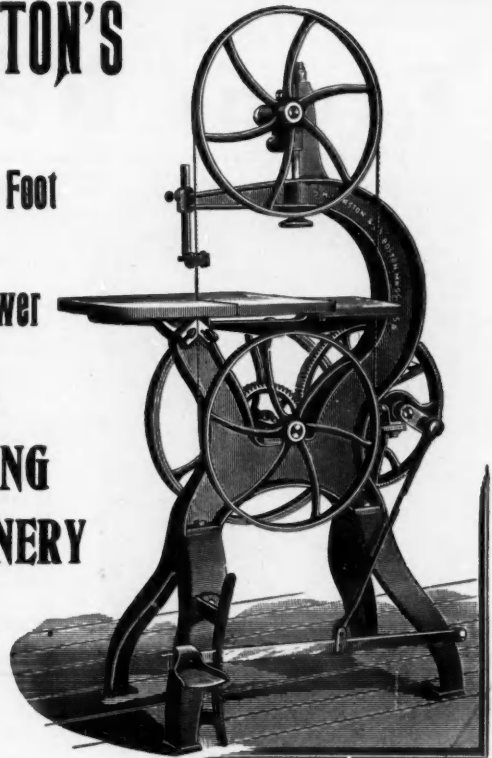
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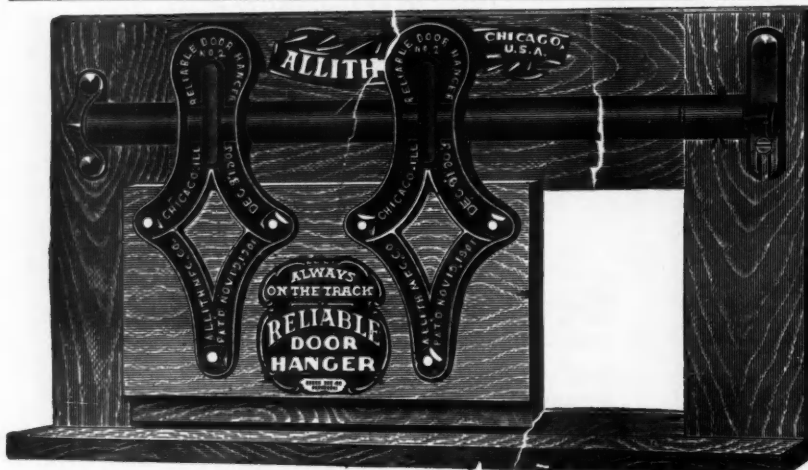
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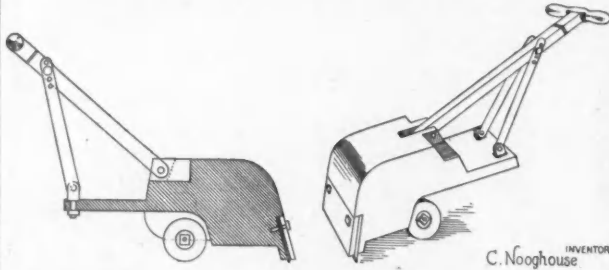
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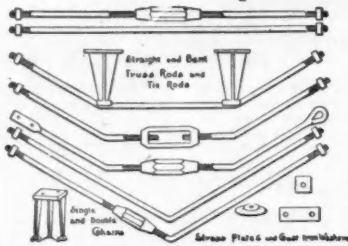
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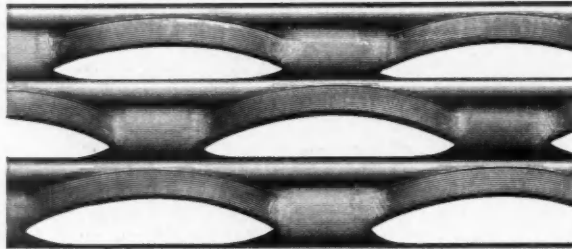
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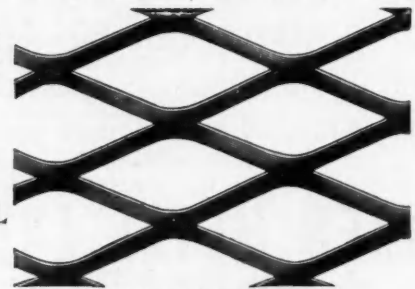
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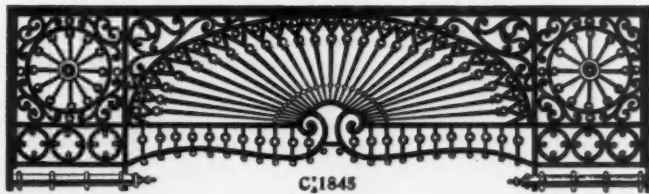
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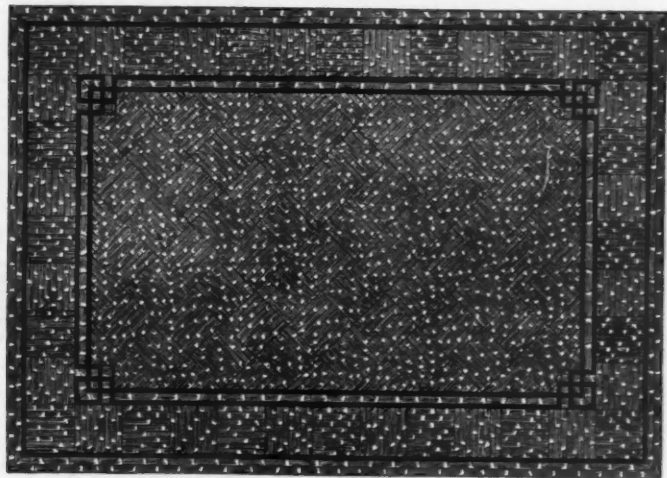
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These figures tell exactly what we are doing—selling a \$20.00 watch for \$5.45. We don't claim that this is a \$40.00 watch or a \$50.00 watch, but it is a \$20.00 watch. A leading watch manufacturer, being hard pressed for ready cash, recently sold us 100,000 watches—watches actually built to retail at \$20.00. There is no doubt that we could wholesale these to dealers for \$12.00 or \$13.00, but this would involve a great amount of labor, time and expense. In the end our profit would be little more than it is at selling the watch direct to the consumer at \$5.45. This Clarendon Watch, which we offer at \$5.45 is a rubbed jeweled, finely balanced and perfectly adjusted movement. It has specially selected jewels, dust band, patent regulator, enameled dial, jeweled compensation balance, double hunting case, genuine gold-leaf and hand-somely engraved. Each watch is thoroughly timed, tested and regulated, before leaving the factory and both the case and movement are guaranteed for 20 years. Send us your name, postoffice address and nearest express office, and name of this paper, tell us whether you want a lady's or gent's watch and we will send the watch to your express office at once. If it satisfies you after a careful examination, pay the express agent \$5.45 and express charges and the watch is yours, but if it doesn't please you return it to us at our expense. A 20-Year Guarantee will be placed in the front case of the watch we send you and to the first 10,000 customers we will send a beautiful gold-leaf watch chain FREE. We refer to the First National Bank of Chicago, Capital \$10,000,000.

NATIONAL CONSOLIDATED WATCH CO., Dep. 585, Chicago

GRILLES "Direct from Factory" MANTELS

This No. A18 Oak Grille 14 inches deep with curtain pole, finished at \$5.00 for sizes up to 5 ft., over 5 ft. add 60 cents lineal ft. Division Screens and Special Grilles to order.

Hardwood Floors will last as long as the house. Any carpenter can lay it easier than ordinary flooring. Send for designs. Write for catalog of Mantels, Grates, Tiles for floors and baths; Slate Laundry Tubs; Grilles, etc. It is free. Or send 10 cents to pay postage on our Art Mantel Catalog. Mantel Outfits from \$12 to \$200.

W. A. OSTENDORF, 2923 North Broad Street, Philadelphia, Pa.

TILE AND MOSAICS
For Everywhere, Walls, Floors, etc.

\$14.25 buys this Solid Oak Four Column Mantel. It is 80 in. high, 54 or 60 in. wide, 8x18 bevel edge Mirror. Four Elaborate Capitals. Quarter-Oak Veneer Columns. Above Mantel with two long columns at same price. Tile Facing and Hearth, with Plated Frame and Clubhouse Grate, \$10.00 extra.

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Broad Street, Philadelphia, Pa.

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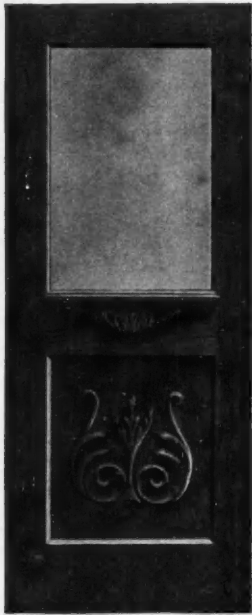
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Stairs, Grilles, Gratings, Fire Escapes, Stable Fittings, Elevator Enclosures, etc. | Girders, Trusses, Columns, Builder's Iron Work, etc.

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50% Saved

Oak Veneered Doors in Stock All Sizes



F.-M. 761



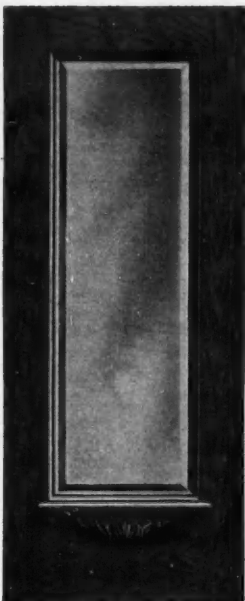
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Oak Veneered
Doors at
Price of
Common Doors

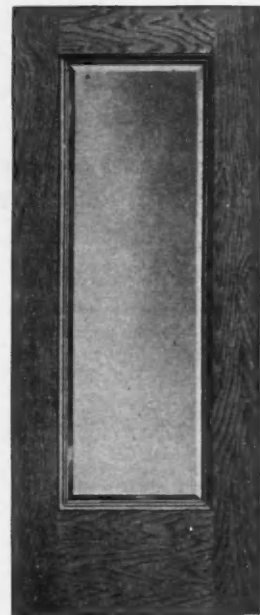
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F.-M. 774.



F.-M. 799



F.-M. 775

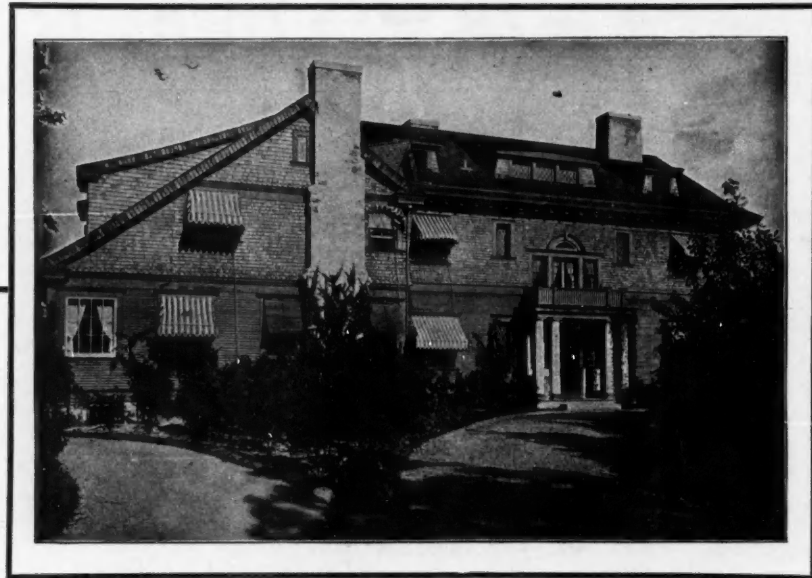
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Sash and Door House

Chicago, U. S. A.

Write for Veneered Door Book 1448 Z



AS A RULE, too little attention is paid to the Shingles of a house, when, in fact, they should be first considered. Preserving and beautifying the shingles is as essential as any part of the building. These stains are made with permanent German colors ground very fine with Creosote and drying oils, the colors being thoroughly incorporated with liquids. The stain penetrates the wood, and there is no hard surface to peel and crack as with paint, and it will prolong the life of the shingles many years, protect them from dry rot and boring of insects, and keep them from warping. It brings out the beautiful shading of the grain of the wood, which cannot be obtained with paint, giving a remarkably artistic coloring effect, quite different from a painted surface. The cost of these stains is about one-half, when compared with paint. If interested send for samples on wood of twenty-one different tints and colors.

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is also one our productions. Several colors and grades. Quotations made delivered at any point. Correspondence solicited.

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in the states of Ohio, Michigan and Indiana. In return for your name we will send you one of our 1907 vest pocket memorandum and diary books. It will contain also a color card of our specialties. WRITE US.

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BUFF AND BLUE

**Sawed, Planed, Turned
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Estimates promptly made for stone delivered to any point. Plans sent for estimate, promptly returned.

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ALL ORDERS FILLED PROMPTLY.

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Write us before ordering elsewhere.

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Thousands have my works. Have U?

STEEL SQUARE POCKET BOOK, second edition, 159 pages, 150 cuts, cloth bound 50 cents.
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Roofing Slate for Houses, Barns, &c. Always clean, beautiful and fireproof. Blackboards for Schools, Colleges, &c. Needs no commendation; universally used all over this and other countries.

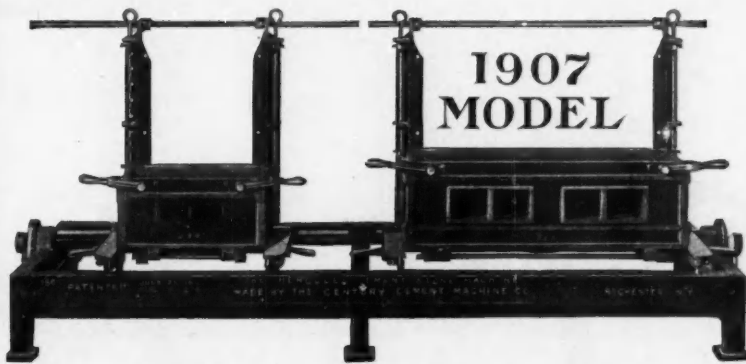
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Slaters' Supplies, Handmade Slatting Tools, Felt, Cement, Nails, Snow-guards, Punching Machines, &c.

Write for prices and I will tell you all about Slate.
DAVID MCKENNA, Slatington, Pa., U. S. A.

Hercules

Concrete Block Machine



Don't think of buying a machine till you have seen our beautiful new catalog describing in detail the superiority of the 1907 model Hercules above all other machines.

This catalog, which is the most elaborate book of its kind ever printed, is handsomely illustrated with high grade half-tones of Factories, Apartment Houses, Churches, Dwelling Houses, which were built of stone made by the great Hercules.

The 1907 model Hercules is built stronger than ever before and has several advanced improvements fully described in the new catalog. Write for the catalog today.

**Be sure and ask for
Catalog XX.**

Century Cement Machine Co.

273 West Main Street

Rochester

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New York

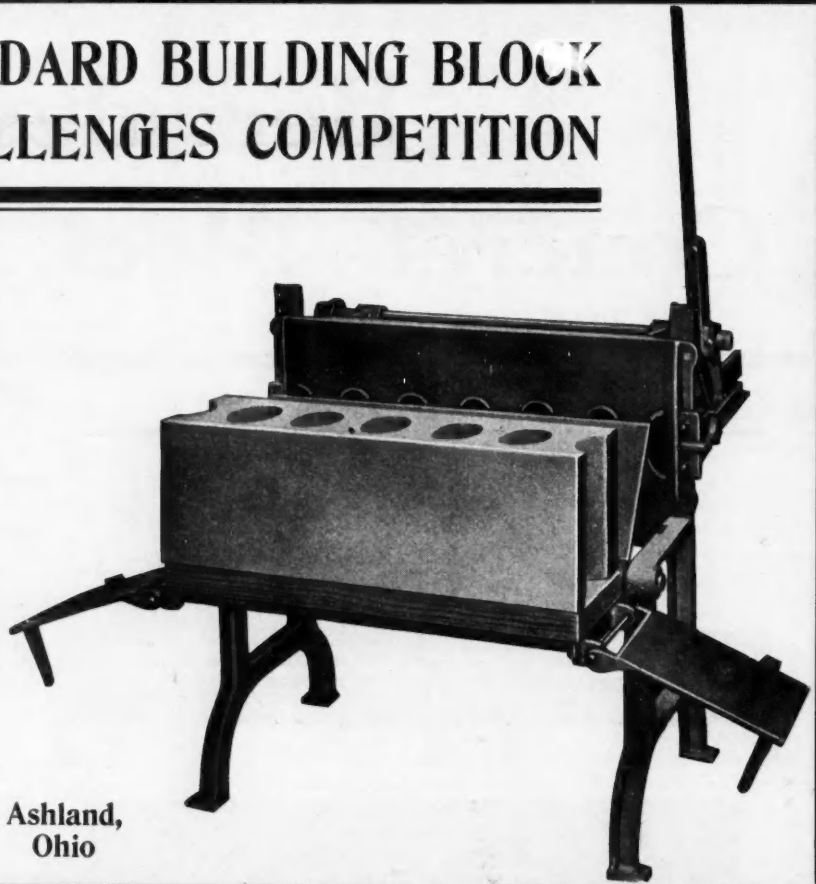
THE U. S. STANDARD BUILDING BLOCK MACHINE CHALLENGES COMPETITION

- 1st. In simplicity of construction.
- 2nd. In speed of operation.
- 3rd. In variety of its production.
- 4th. In the superior construction of its product.
- 5th. Etc., etc., etc.

Do not fail to see the U. S. Standard at the National Cement Users' Convention, to be held in Chicago, Jan. 7 to 12, 1907.

Our exhibit will be found facing the central aisle in the second space from main entrance.

Ashland Steel Range & Manufacturing Company
Ashland, Ohio



READ THE FOLLOWING OFFER

One Dry Mixer, 6 ft long (All Iron).
One Wet Mixer, 5 ft. long (All Iron).
One Block Machine.
One Brick Machine, makes 6 brick at a time on the flat side.
One 5 Horse Power Gasoline Engine.

One Sand Screen.
Shaftings, Pulleys and Belting.
All complete for \$750.00 F. O. B. Keokuk.
Three men make 3,500 brick or 250 building blocks with above machinery in 10 hours.

BRICK MACHINES
\$100 EACH

WATERPROOFING
FORMULA \$2.50 EACH

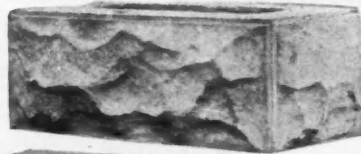
MIXERS
\$100 EACH

WRITE US NOW.

KEOKUK CEMENT BRICK & BLOCK CO., 314 Johnson Street, KEOKUK, IA.
DEPARTMENT G.

PRICES

8, 8, 16, \$20.00
8, 10, 20, \$25.00
Extra plates for
8, 8, 20, \$8.25



A tamper
furnished with each machine

ARCHITECTURAL MOLD CO.

UTILITY BUILDING BLOCK MACHINES

Size of Machines 8x8x16 and 8x10x20

SIMPLICITY :: ECONOMY :: MERIT

These Machines make Blocks, Half Blocks and Corner Returns in three style faces, **Rock Face, Bush, Hammer and Smooth Face.** They are hinged at the back and on the front, are equipped with our patent locking and squaring device, which instantly lock and bring them into alignment. This feature found only on our machines.

FOR CIRCULARS ADDRESS

THE ARCHITECTURAL MOLD CO.
1174 Theodore Street. DETROIT, MICH.

Three Companies Consolidate

The Hoosier Manufacturing Co. and the Concrete Machinery Co., both of Auburn, Ind., have consolidated with the Cement Machinery Co., of Jackson, Mich.

Offices and Factory, Jackson, Mich.

THE PAINTER HOIST

(PATENTED)

FOR BRICK AND CONCRETE CONTRACTORS

Its easy application to different kinds of power makes it available for work anywhere. Takes power from electric light circuits or electric power circuits or from a gasoline engine.

It pays to use it on two story brick residences as well as on sky-scrapers.

The Painter Hoist drives two platforms—one up full, one down empty.

Light-running, simple construction, rugged powerful in action and, "fool-proof."

The Painter Hoist does its work cheaper and better than any other. It's not only economical, but a money saver—a money maker.

Endorsed by all Central Station Managers, Brick Contractors, Concrete Operatives—Trade Experts generally.

Started, stopped and reversed by throwing one lever.

Lifts 500 pounds 250 feet per minute.

Supplies 15 to 20 brickmasons.

Raises 6,000 bricks per hour.

Operates satisfactorily even by cheap labor.

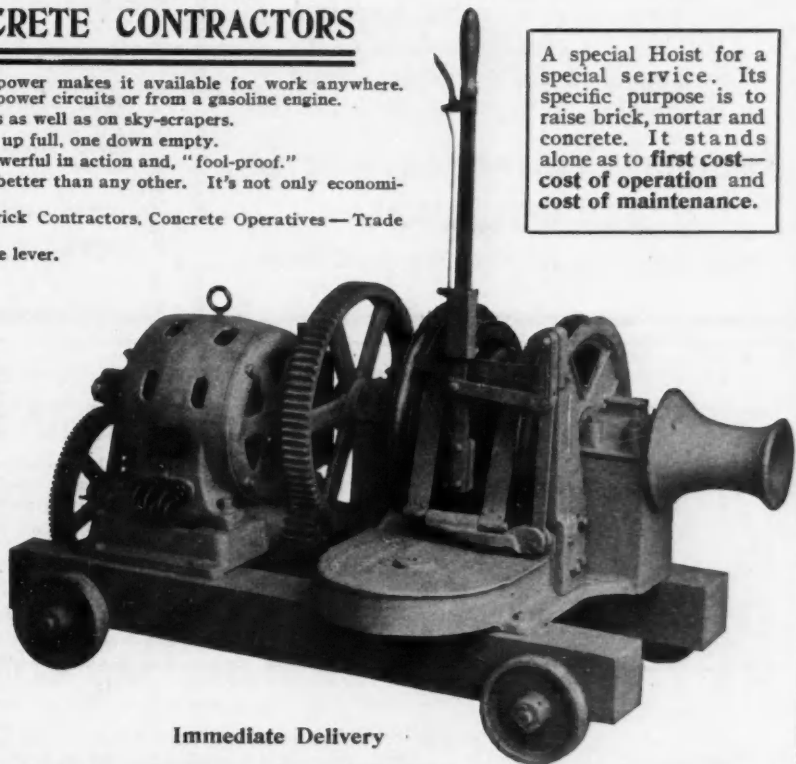
Easily moved from job to job; easily set up; weighs 1,200 pounds with motor, and 1,400 pounds with gasoline engine. It is the lightest, most portable, invariably satisfactory hoist on the market.

The Painter Hoist is guaranteed by manufacturers, and the guarantee is absolute.

The one hoist that hoists as a good hoist ought to hoist to hoist right.

If you raise brick, mortar and concrete you lose money on every pound unless you use a Painter Hoist. The hoist is made especially for you and you can't afford to be without it. Let us prove this statement. Write to us now.

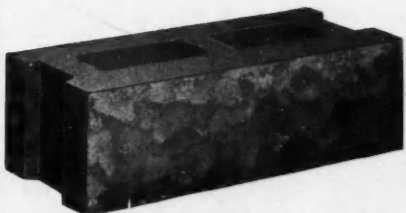
A special Hoist for a special service. Its specific purpose is to raise brick, mortar and concrete. It stands alone as to first cost—cost of operation and cost of maintenance.



**TRUXAL - PAINTER
MANUFACTURING CO.**

CHATTANOOGA, TENN.

Immediate Delivery



We Move the Machine NOT THE BLOCKS

Saves labor of off bearing, loss by damage; obviates necessity for heavy and expensive iron pallets. Reduces cost of plant and cost of operation. Every one knows that concrete should not be disturbed after it is molded

or while it is setting, but this is the only machine by which this is possible. The blocks cost 6 cents to make—sell for 18 cents. One man can make 200 blocks per day. Whole outfit costs \$125.00. Figure the profits.

Competition simply demonstrates the superiority of the Pettyjohn machine. Unlimited guarantee. SENT ON TRIAL

THE PETTYJOHN COMPANY

634 No. 6th Street, TERRE HAUTE, IND.



**BUY A COMPLETE MACHINE
EXTRAS SPLIT THE PROFITS
THE NATIONAL CONCRETE
BUILDING-BLOCK MACHINE**

comes to you complete for making all sizes, angles, etc., that are required in building—all made on one pallet and takes them with as little work and time as any machine sold.

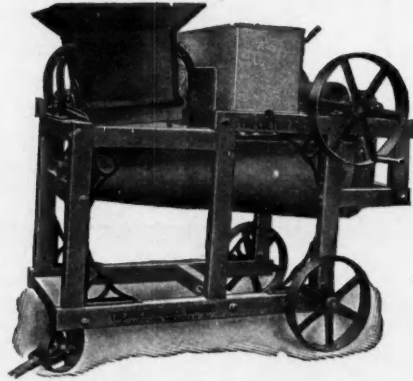
OUR CATALOG

gives some good substantial reasons, why you should buy a NATIONAL in preference to other machines and besides contains a fund of information on the business. Send for Catalog "E."

**National Cement Machine Co.
BAY CITY, MICH.**

New York State Agents: Woodruff Bros.,
Old Forge, N. Y.

**TURNING HIMSELF
AVERAGES
FOUR CUBIC YARDS PER HOUR**



Walkerton, Ind., Oct. 12, 1906.

The Knickerbocker Co.
Jackson, Mich.

Gentlemen:—I paid your draft on the second day's run of the Mixer, and am more than pleased with it. I use hand power and am putting a concrete foundation under the elevator here. I am mixing on an average of four yards per hour and do most of the turning myself, and am satisfied I have the best Mixer on the market.

Yours truly,

WM. H. NIXON.

**THE KNICKERBOCKER CO.,
JACKSON, MICHIGAN**



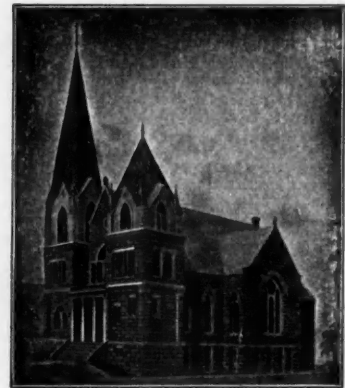
**GET A MACHINE THAT WILL
DO THE BUSINESS**

The cut of the church shows what can be done with the Stewart Machine, as this church was erected of blocks made on a Stewart. You can make blocks in any old box, but if you want to make good blocks,

GET A STEWART

Write for Catalogue to the
STEWART CEMENT BLOCK MACHINE CO.
888 Lafayette Block, WATERLOO, IOWA

The OHIO CERAMIC ENGINEERING CO., Cleveland, Ohio
Agents east of Wisconsin, Illinois and the Mississippi River



The DUNN HOLLOW BLOCK MACHINE

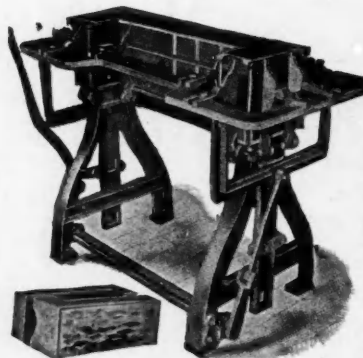


COMPLETE in every detail. Especially adapted to the use of the Block manufacturer. Making blocks in all widths, lengths and many designs, including Sills, Lintels, Pier Blocks etc. PRICE \$100

**Masons & Builders
Block Machine**

MAKES blocks from 2 to 12 inches in width, up to 20 inches long in different designs. No expensive iron pallets required. A practical, rapid and economical machine for the Mason & Builder. No machine at any price makes better blocks or makes them more rapidly or economically. PRICE \$40

WRITE FOR CATALOGS.
W. E. DUNN & CO., Sole manufacturers in the U. S. 339 GRAND AVE. CHICAGO



**THE WALTON
Stone Machine
DRY WALLS**

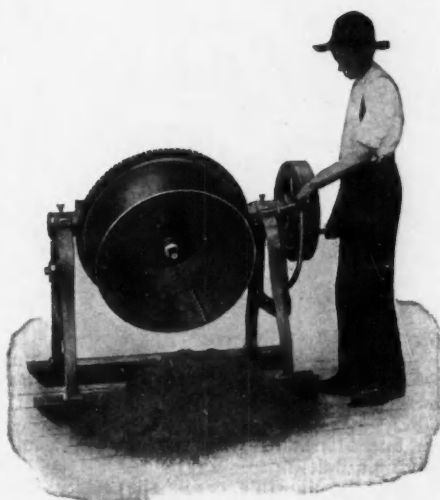
Makes lengths from 4 to 32 in and 3, 4, 1-2, 6 and 9 in. heights. 10, 12, 14 and 16 ft. circles. 30 and 45 degree angles.

All widths by lapping blocks. All shapes, lengths and widths made on the same pallet. Reducing cores save material.

LET US TELL YOU how we save labor, save material, save pallets, save expensive facings, save 5c. per cubic foot over other machines by our method. Send for illustrated catalogue

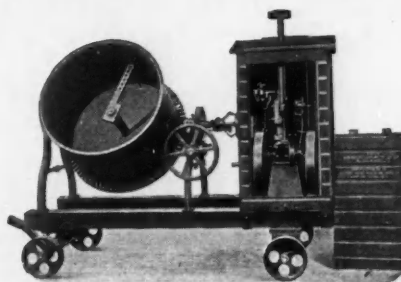
WALTON STONE MACHINE CO.
2502 East 18th Street, KANSAS CITY, MO

Standard Concrete Machinery



Hand Power STANDARD Concrete Mixer, Ball Bearing, especially adapted to brick and block work where large capacity is unnecessary

Weight 600 lbs.



Portable Power Outfits \$270 to \$470, according to Size and Equipment

THE STANDARD CEMENT BRICK MACHINE is the fastest hand brick machine on the market; will make plain, veneered, and ornamental face and shape; all perfect, smooth brick, true to size and design.

THE STANDARD CONCRETE MIXER handles wet or dry mix; requires little power to operate; mixes batch perfectly in one minute; self-cleaning; easily charged and dumped.

THE STANDARD GAS AND GASOLINE ENGINE is made in all sizes. Especially adapted to running concrete machinery.

THE STANDARD PORTABLE MIXER AND ENGINE are mounted on suitable truck; well designed; convenient to operate.

WRITE FOR CATALOGUE AND PRICES

SOUTH BEND MACHINE MANUFACTURING CO.

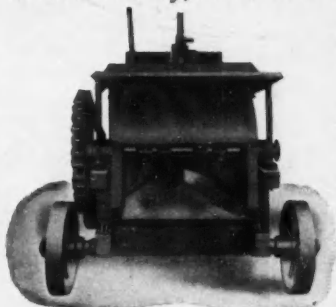
Price \$95.00 1803 South Franklin Street : : : : SOUTH BEND, IND.

A Good Mixer A Good Mixture

If either is bad, both are: Concrete must be uniform, for a structure is no stronger than its weakest part. There are no weak parts in the

American's Mix

The mixture is like the mixer—every part true to its purpose. The secret is out. That's the reason for the American's popularity. Discriminating contractors, those who get and give value for their money, never fail to recognize the merits of the American Mixer. Its superiority is too evident. Revolving plows inside the drum do the work.



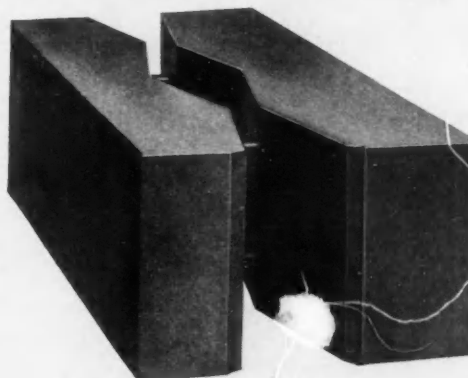
INVESTIGATE!

Catalogue O.

International F. & Fireproofing Co.,
COLUMBUS, OHIO.

ANCHOR CONCRETE STONE MACHINES

Make This Continuous Air-Space Block



TWO SLABS OF CONCRETE TIED TOGETHER with four one-quarter inch galvanized iron rods firmly imbedded in the block in its construction. Blocks lay in the wall 8 in. high, 24 in. long, 8 to 16 in. wide.

Easy to Make Easy to Lay Look Fine
Very Strong Frost Proof Moisture Proof

Capacity of Machine:

300 PERFECT BLOCKS PER DAY

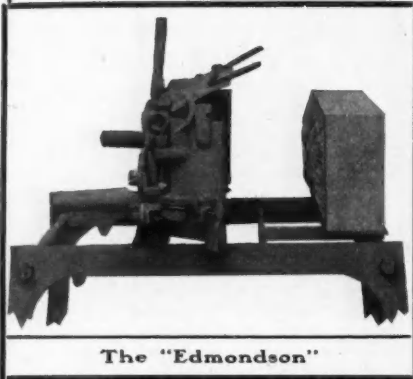
Write for Special Low Prices and Catalog of Machines

ANCHOR CONCRETE STONE COMPANY
ROCK RAPIDS : : : : IOWA

A Concrete Wall You Should Know About

One that overcomes every valid objection to concrete block construction, which though stronger than any other yet can be built more cheaply—a wall that gives better satisfaction to the customer and still pays a larger profit to the block manufacturer—such is the Edmondson Two-Piece Wall.

It is practically two separate walls with a 2 in. or 3 in. continuous horizontal and vertical air space between them, bonded into a strong moisture proof and fire proof structure with non-rustable galvanized wire ties.



The "Edmondson"

Can be laid up faster than any other concrete block wall—more than twice as fast as brick.

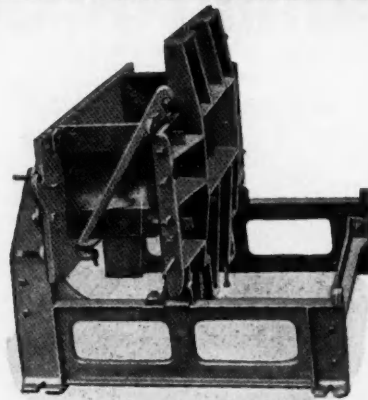
Concrete blocks can be made by two men with our

complete equipment at the rate of 600 blocks a day, equivalent to 285 square feet of 10 inch wall. This rate has been maintained for weeks at a time. Blocks are made face down, insuring clear, sharp lines. Full outfit makes over 50 different sizes and faces, affording ample variety with which to secure artistic results.

Cheapness, satisfactoriness and profitableness all combine to make the Edmondson the most desirable block machine on the market. **LET US PROVE IT. WRITE TO-DAY.**

The Edmondson Concrete Machinery Company
1343 Williams St. . . . South Bend, Ind., U. S. A.

GET THE BEST



Coltrin Mfg. Co.'s Block Mold.

The Coltrin Mfg. Co.'s improved Cement Block Machine makes blocks face down or side face—combines four machines in one.

It is the most **Rapid** and **Simplest** machine on the market.

It will turn out blocks of **Any Size, Design, etc.**, without removing a bolt, nut or screw.

It has the only "collapsible core" that frees itself from the molded block **Perfectly**.

Price well within reach of every **Contractor and Builder**. Send for catalogue No. 7.

The COLTRIN MFG. CO.

Rear 140 W. Main St.

JACKSON, MICH.

Concrete Blocks



WE HAVE a very Beautiful Album containing over Sixty views of Houses, Churches, Factories, Plants, etc., taken from different parts of the country. These are printed on heavy enameled paper with original halftones, and these halftones are made from original photographs—not wash drawings. Size 9 x 12 inches.

The price of this album is **One Dollar**, and we will send it to anyone upon receipt of price, with the understanding that upon receipt and inspection of same, if you do not think it is worth the price, or in any other way dissatisfied with it, return it to us and we will promptly return to you the cost price. Anyone interested or half-way interested in Concrete Construction in any form should have one of these.

HARMON S. PALMER CO.

1450 Girard St.

:::

Washington, D. C.

Waterloo Concrete Brick & Block Mach. Co.



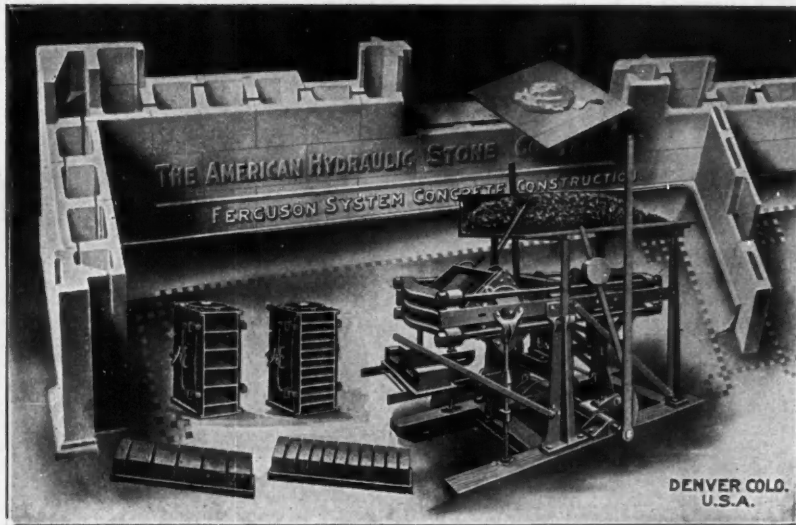
ONE movement of the lever operates the **ENTIRE** machine, consuming the least time for operation of any machine. Two men will make 250 blocks per day.

Our block is patented. Has double, a vertical and horizontal air space.

The brick attachment makes 18 brick as easily as a block. No gears or chains to clog or break.

Write for catalogue "B."

O. H. SWEENEY, Sec.
Agents Wanted. 101 E. 4th St. WATERLOO, IOWA.
Southern Agents, SILVERA & GADSDEN, Savannah, Ga.
Agents for the Pacific Coast, C. J. TALLON & CO., 618 Bailey Building, Seattle, Wash.



TWO-Piece Hollow Concrete Wall and Partition, containing Header Bond and Continuous Horizontal Air Space. Impervious to Heat, Cold, Moisture and Sound. Fire and Vermin-Proof. Walls of all widths; blocks of all shapes and sizes. New Hand Press enables three men (mixture supplied) to

make 1200 blocks, 10000 brick or 5000 paving blocks in 10 hours. THE WALLS OF A COTTAGE ARE THE WORK OF A SINGLE DAY. 80 page catalog, fully illustrated, mailed upon request.

The American Hydraulic Stone Co. Century Building Denver, Colo.

LOOK! \$35⁰⁰ Complete

Nurock Cement Stone Machine



Guaranteed for
RAPIDITY
AND
EASE OF
OPERATION
EQUAL
TO ANY
MACHINE
ON THE
MARKET
AT
ANY PRICE

Everything Furnished With This Machine
Complete for Making Hollow Building Blocks.....

Makes
ROCK FACE
PLAIN FACE
CORNER BLOCKS

SEND FOR CATALOG
Nurock Cement Machine Co.
DELEVAN, N. Y.

SUPERIOR
THE BEST CONCRETE BLOCK MACHINE



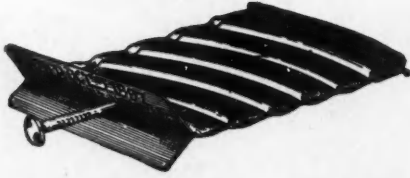
The **SUPERIOR** makes the stone with the face down or in the bottom of the flask, which permits of the use of fine rich material for the face and coarser, cheaper material for the main body of the block.

It is manufactured by
T. O. EICHELBERGER COMPANY
MIAMISBURG, OHIO

who will gladly tell you all about it. Write them.
ADAMS & CO. General Agents. Room 604 115 Dearborn St
CHICAGO, ILL.

Concrete Construction is Incomplete

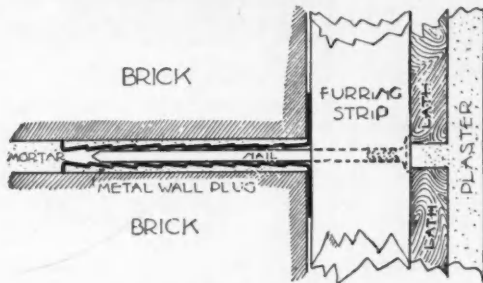
Without Our



RUTTY METAL WALL PLUGS

They are laid instantly, are indestructible, yet cost less than any other method. Previous difficulties of securing interior finish are entirely overcome by the use of the Ruddy Plug.

We make also Morse Steel Wall Ties and Prescott Steel Corner Beads



Furring Out on Brick or Concrete

Send for Samples and Catalog

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THE SNELL MIXERS

Easy to } LOAD
OPERATE
DISCHARGE
CLEAN



The Snell Mixers are Adapted

For all Classes of Concrete. For Wet or Dry Mixture.
For Heavy Concrete Construction.
For Sidewalk and Curb Work.
For Cement Blocks. For Cement Brick.

It will mix the finest of sand and cement together, any moisture desired, from a mealy dry to a sloppy wet, without balling.

Do not fail to meet us at the Third Convention of the National Association of Cement Users which will be held in Chicago, Jan. 7-12, 1907, where we will have a complete exhibit of our product.

The R. Z. Snell Mfg. Company

SOUTH BEND

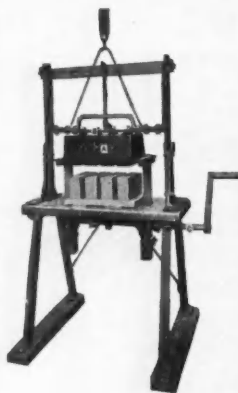
INDIANA

The Emery Cement Brick Machine

THE "TAMPING" PROCESS

There is but one way to make a perfectly sound Cement Brick, and that way is by the tamping process. Tamping excludes the air, leaving the Brick Solid to the core. Tamping is our process. Results: Solid Brick, Sound Brick, Brick that are perfectly square and all of exactly the same size. No material handled the second time. Each mold holds just enough material to make a perfect brick, no more, no less. Every moment with our machine accomplishes something.

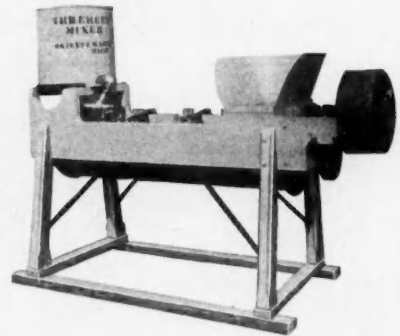
Three men 10 hours 6,280 perfect Brick. Ordinary daily output 5,000. We prove our claim. Positively no machine on earth is as well adapted for making cement Brick. Cement Brick are the most durable that can be made. You probably would like our catalogue.



Emery
Cement
Brick
Machine

Emery & McKerlie
301 E. Jane St., Bay City, Mich.

Emery
Mixer

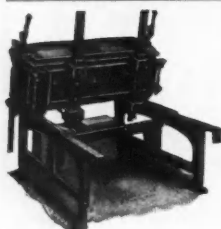


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DAMP PROOF AND STAIN PROOF COATING

Only and Original Material for Making Walls Damp Proof and Stain Proof.

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THE FRANCISCO BLOCK MACHINE IS A WONDER

Note What It Makes. Two 24 in. blocks at one operation or one 32 in. and one 16 in. or two 20 in. and one 8 in. or three 16 in., all made on one pallet and off beared at once. By placing in extension, makes caps, sills, lintels and waterable, any length up to 5 ft. 6 in. long. 8, 9 10 and 12 in. blocks for width of wall. All made from the adjustments on the machine. No additional parts required, which means a big saving in the cost of your equipment also makes circles, octagons, angles, chimney blocks, porch columns, veneered slabs, sidewalk block and sectional blocks, is a face down machine, using crushed stone, gravel or sand, wet process and wood pallets. MACHINE ON TEN DAYS' TRIAL. Send for catalogue G showing six different sizes of machine, prices ranging from \$25.00 up. Also fence post machine. Agents wanted. Don't delay.

FRANCISCO BLOCK MACHINE COMPANY

338 NORTH HIGH STREET

COLUMBUS, OHIO

WHEN WRITING ADVERTISERS MENTION THE AMERICAN CARPENTER AND BUILDER

The "Reed" Machines are in the "Lead"

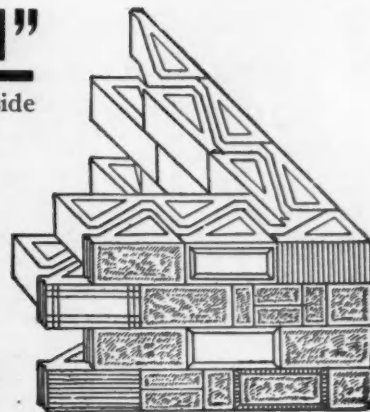
Most simple, rapid, up-to-date Machines on the market. Face-down or Face-side Machines producing single, double-hollow or right-angle tri-angle blocks.



Triple Hollow Wall

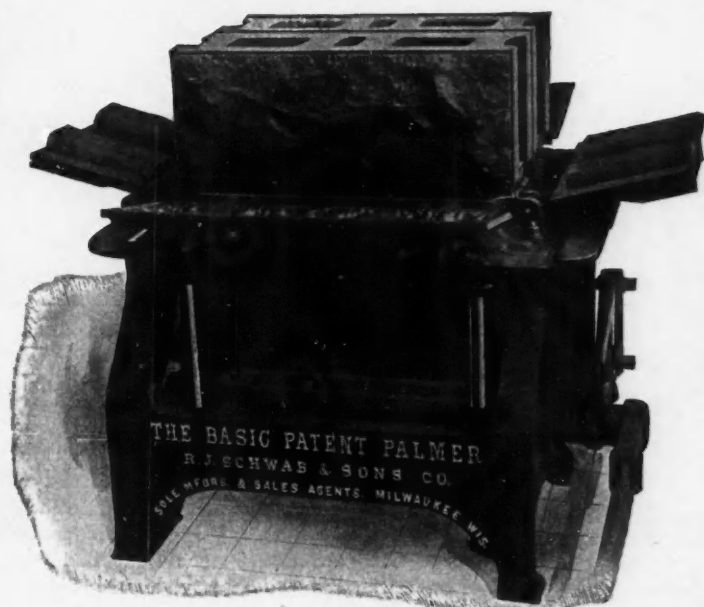
Best brick machines out. Our system of two-piece wall excels all others on account of the natural bondage and triple air space. Orders received from all sections of the country are filled promptly. When in the market for Concrete Block or Brick Machine as well as Concrete Mixer, get our catalogue and prices. Do you desire to make \$\$\$\$\$\$\$?

Wichita Coal & Material Co.
WICHITA, KANSAS U. S. A.



Right Angle Blocks

Harmon S. Palmer's Patents Established by Nine Recent U. S. Court Decisions



Showing Machine Open With Two Blocks Made at Once Ready for Removal

Ours has been an expensive and trying struggle to maintain our rights

We Own the Basic Patents of the Hollow Concrete Block and Block Machines Numbering 159 Claims

Ours the Only Machines Free From Infringements

The patent laws have shown us that not only the maker, but the seller and user are liable for infringement. We sell the Standard and New Multiple Automatic. The automatic machines are either twenty-four or thirty-two inches in length, any width and nine inches high. Will make two piece blocks, staggered air space, two or more at one time if so ordered. We do not claim our machines are the cheaper only in the long run.

Output! Output! Output!

A Combination That is Revolutionary

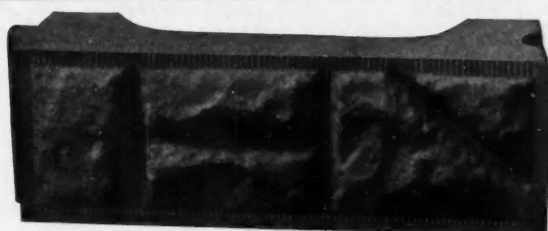
Multiple Makes any size or number of blocks within its capacity.

Automatic One operation opens the machine and removes all cores, dividing plates, etc. A reverse movement again closes the machine and locks it completely.

Greatest Speed - Least Labor - Write for Proof

Write for Catalogue "A"

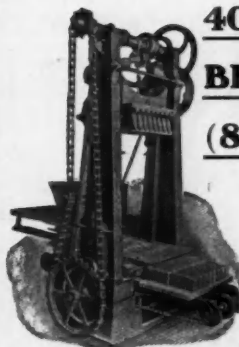
H. S. Palmer Building Block Company, Washington, D. C.



THE BEAVERS FAST BUILDING MACHINE

The outfit includes twenty-four different molds, each ranging in length from 10 to 24 inches and 8 inches wide. We have 30 other molds in stock. We have the facilities for casting any design you desire. Write us your wants. We will gladly give you any information about our machine or the concrete business in general. This machine has a capacity of 900 blocks per day

OLSON & RICHARDSON
Stoughton, Wis., U. S. A.



**40,000 SAND-CEMENT
BRICK or 5,000 BLOCK
(8 x 24) PER DAY**

Only TAMPING principle power machine made.

We also make an up-to-date mixer.

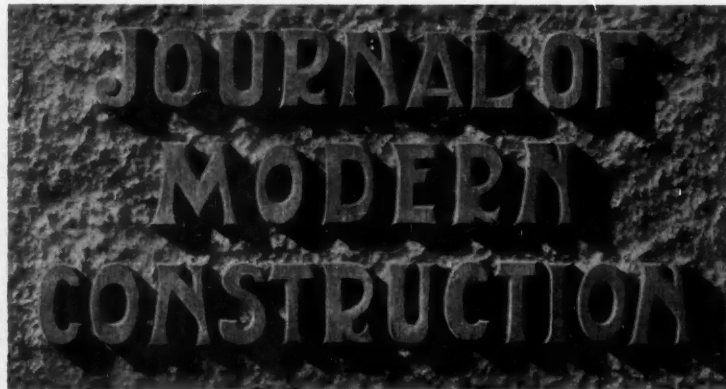
Write for our Catalogue of power machines, also of our perfect bond-damp-proof block wall. (Hand moulds).

CONCRETE MACHINERY CO.

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Have you seen the Journal of Modern Construction—my new Monthly Technical Magazine for Builders, Contractors, Architects, Building Material Dealers and everyone interested in Modern Building Design, Materials and Construction?



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I want you to know about it because it is one of the largest, most comprehensive and up-to-date publications in this important field, and is edited especially for the men who actually buy, sell and use Building Materials.

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THE REGULAR DEPARTMENTS in each issue cover Cement, Heating, Plumbing, Painting and Finishing, Notes on New Building Materials, Notes on New Methods of Construction, Current Prices of Building Materials, Good Books on Construction, Correspondence, Questions and Answers, Advertising Criticism, etc., etc.

THE BUILDING PLAN SERVICE. During 1907 there will also be published, from month to month, 18 Complete Sets of Building Plans and Working Drawings for a series of 18 modern cottage homes, costing from \$1800 to \$3000. The working drawings are on 1/4 inch scale full page (9x12) size, and consist of four elevations, two floor plans and important details. A complete list of all the materials required for building each house, with a complete description and photographic illustration of each house as actually built. Plans No. 1 and 2, illustrated above, appear in the January number; Plan No. 3 will appear in February number. Every Builder and Contractor will find this Plan Service of inestimable value in soliciting and figuring on new work of this character. We do not sell plans, so get this interesting work by **subscribing** to the Journal of Modern Construction.

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The yearly subscription price of the Journal of Modern Construction is \$2.00 payable in advance, but as a special inducement I will enter your subscription for one year, upon receipt of \$2.00, with the distinct understanding that your money will be promptly refunded upon request, if, after two issues, you are not absolutely satisfied. By this plan the Journal of Modern Construction must sell itself entirely upon its own merits and you need not take any risk whatsoever.

A complimentary copy of the January number will be mailed post paid to any Builder, Contractor, Architect or Building Material Dealer who will ask for it on his business stationery or enclose a business card.

Advance Plan Sheet describing the Building Plan Service in detail, and illustrating 10 of the 18 houses to be shown during 1907, will also be mailed FREE upon request.

One good Local Subscription Agent wanted in each town not already covered—if interested, write for special proposition, terms, etc.

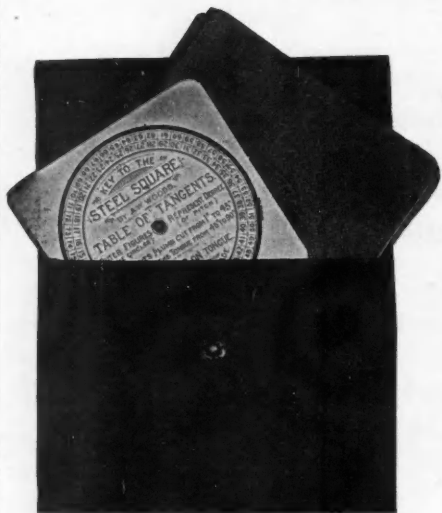


519 Lumber Exchange,
Minneapolis, Minn.

Max L. Keith

NOTE:--As the publisher for many years of the well known Keith's Magazine on Home Building, Mr. Max L. Keith hardly needs any introduction to the readers of this publication, and his great success in publishing Keith's Magazine is the strongest possible guarantee that the JOURNAL OF MODERN CONSTRUCTION will be equally good and successful.

KEY TO THE STEEL SQUARE.



This is it.

The Key,
Book of
Instruction
and
Morocco
Case.
Full Size
4x5 inches.

It tells the whole story of how to use the common steel square for all kinds of framing.

Ask your hardware dealer to see it. If he has not got it, write to me. Retail price, \$1.50.

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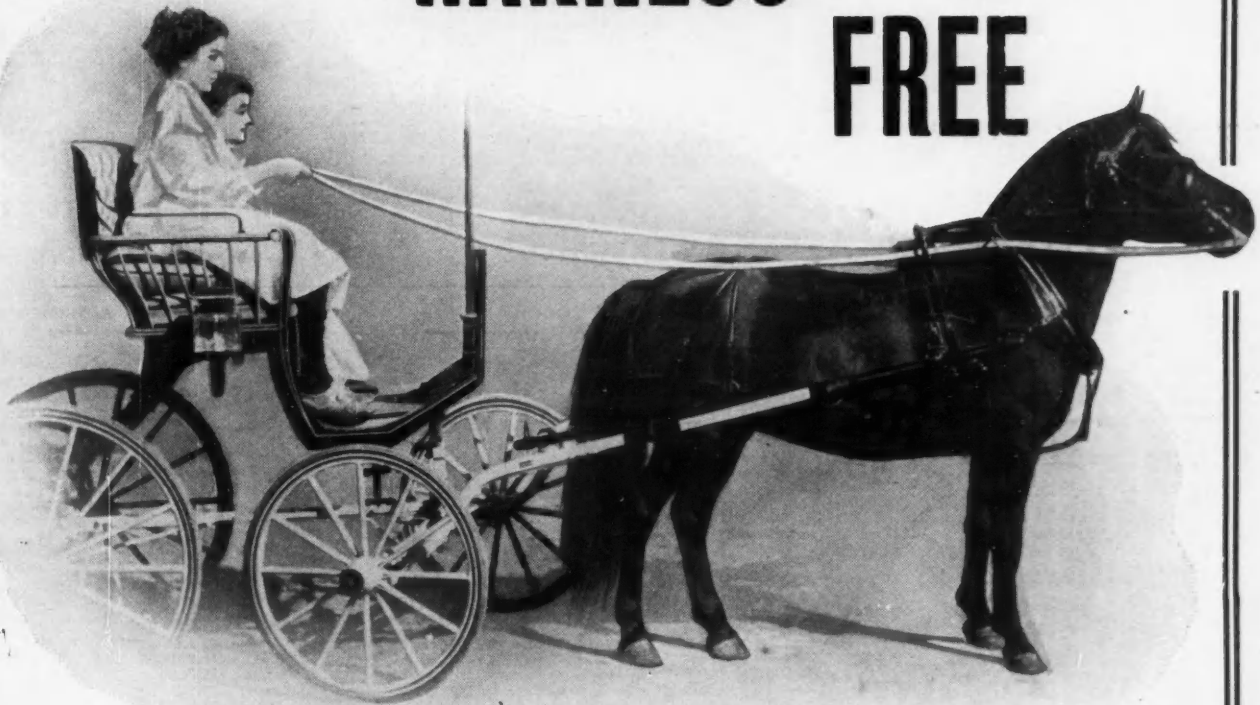
BRADT PUBLISHING COMPANY
1260 Michigan Ave. :: :: Jackson, Mich.

NOTE—This book is for estimating wood and veneered buildings and covers residence work from start to finish with the exception of plumbing and heating.

THIS PONY, WAGON AND HARNESS

A FINE SET GOLD MOUNTED To Be Given Away

FREE



The entire outfit, "Dexter" (that is his name), his harness and the wagon, is valued at over Two Hundred and Fifty Dollars (\$250.00). He is one of the finest specimens of the Shetland pony to be found anywhere in the country. We hunted for months to find just the kind of a pony we wanted to give to our boys and girls, and at last we found him, and he is a gem. As pretty as a picture, as gentle as a kitten and sound as a dollar, and he can do circus tricks, too. We are going to give away more ponies than this one. Just send us your name and address and say you want a pony. Do it now and don't delay or others will get ahead of you. This is surely your chance.

A TRICK PONY "Dexter" is a well educated little fellow and does some very amusing tricks, just like ponies in a big circus. He shakes hands, stands on a box or chair, kneels, kisses you, says "Yes" and "No," counts and is one of the kindest and gentlest little ponies you ever saw. Any boy or girl can drive him or ride him and he is perfectly safe. Since his pictures have appeared in the papers, showmen and others are willing to buy him, but he is not for sale. We are going to give him to some boy or girl free of all charge, and he will be sent by express right to their door, and with him will come a beautiful set of gold mounted harness, russet leather lines and the prettiest pony wagon you ever saw in all your life.

A BEAUTY To say this pony is beautiful expresses it very mildly. We are sure he will surpass your highest expectations. He is really one of the handsomest ponies in the United States. He is a good size too, not a real small pony, but stands about 40 inches high, or just about as high as a dining-room table.

We have been on the lookout for something to give our boys and girls for a long time and we finally found this beautiful pony and immediately decided that the pony, a fine set of harness and a handsome wagon to be the very thing to offer our boys and girls.

Every boy and girl wants a pony, and we don't blame them either; we only wish we could give everyone an outfit like the one above. We are going to give this one to some boy or girl and it will be very easy to get, too. All that is necessary now is to send your name and address on a postal card and say you want a pony.

DO YOU WANT A PONY?

Send us your name and address on a postal card to-day.

You should not delay a minute. This is going to be the greatest prize contest of its kind ever conducted by a reputable farm paper in the history of the publishing business. Any person who takes part will be amply rewarded. Remember we have not told you one-half of what we are going to give away. There are a whole lot of other things that we have not said anything about. The principal things are the ponies, and, do not forget, it will be a very easy matter for any boy or girl to secure one of these ponies. Just send us your name and address on a postal card and say that you want a pony, and you will hear from us by return mail. Do not wait and let others get ahead of you. You will be sorry if you do not act at once. Address:

FARM PRESS, Dept. A, 237 Fifth Ave., CHICAGO, ILL.

NOTE:—The "Farm Press" was formerly "Farm, Field and Fireside," established 1877.

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2.80 EACH

NO. 4 TAMPER
6x6 IN.
\$ 1.25

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ANY SIZE ANY SHAPE

ASK FOR PRICES

EVERYTHING IN CEMENT MACHINERY

MIRACLE BLOCK MACHINES

For making the only Double Staggered Air Space Building Blocks



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way through a Miracle wall. They must strike a dead air space where they lose their power through diffusion. Plaster can be safely applied to the wall without lath and furring. The strength of the building is increased by the staggered arrangement of air chambers. The cost is 20 per cent. less than the next cheapest building material, and you have a 50 per cent. better building. \$250 starts you in this money-making business. Your success with our outfit is certain, because you have many overwhelming advantages over all competitors. We even get the business for you with our extensive magazine and publicity advertising of the Miracle Block. Investigation costs you nothing, and our machines costs you nothing if they do not prove our claims.

MIRACLE ONE MAN BRICK MACHINE

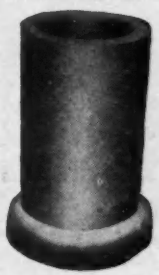


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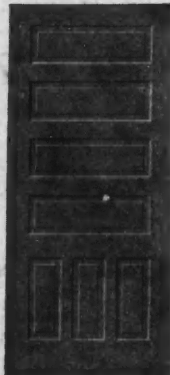
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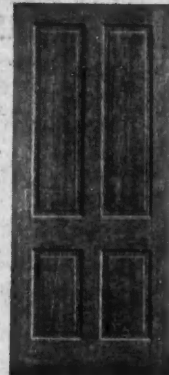
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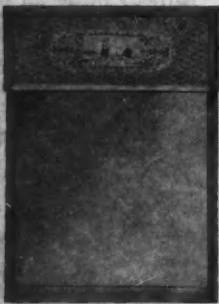
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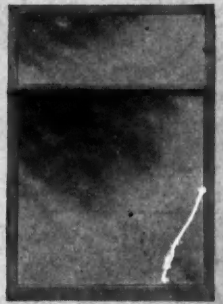
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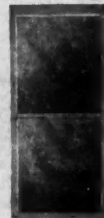
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