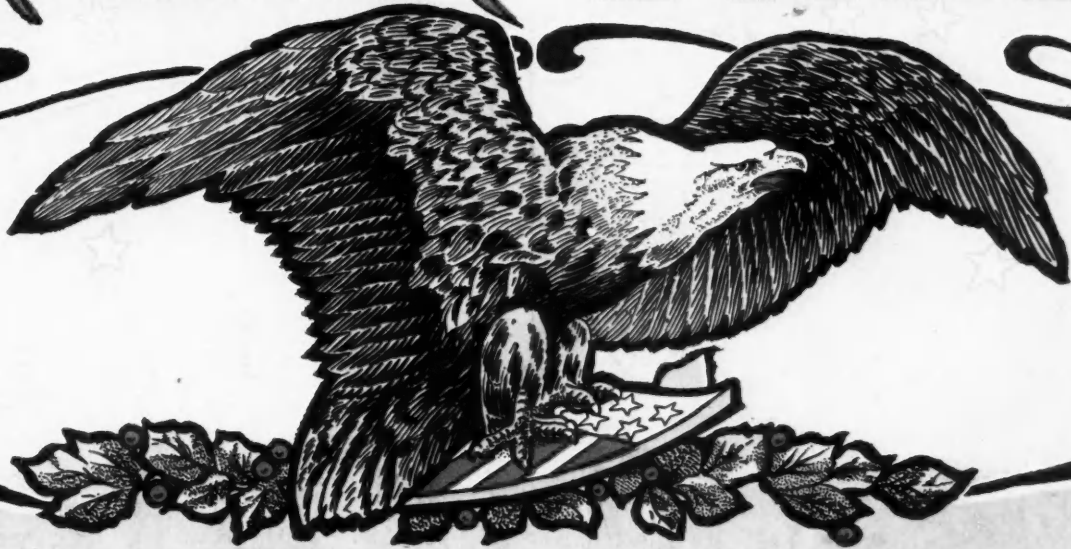


# AMERICAN CARPENTER AND BUILDER

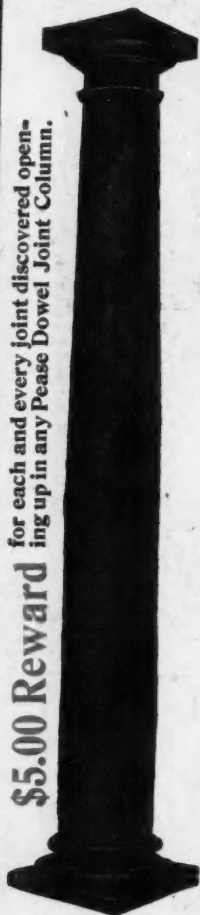


The World's Greatest Building Paper



United States Capitol at Porto Rico.

**\$5.00 Reward** for each and every joint discovered opening up in any Pease Dowel Joint Column.

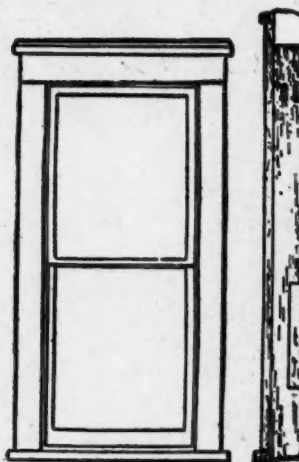


Pease Dowel Joint Column No. 70

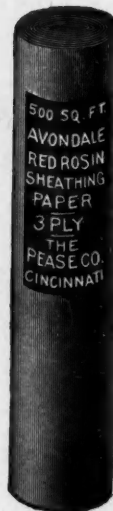
Have You Seen the New **Pease** Dowel Joint Colonial Column No. 70 at **\$1.76 up?**



Would You be Interested in Our Line of Door and Window Frames at **\$1.15 up?**

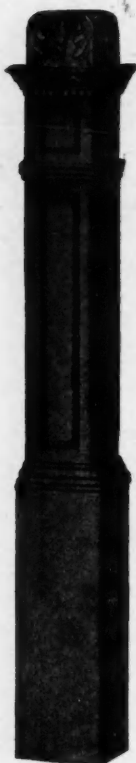


Window Frame No. 1

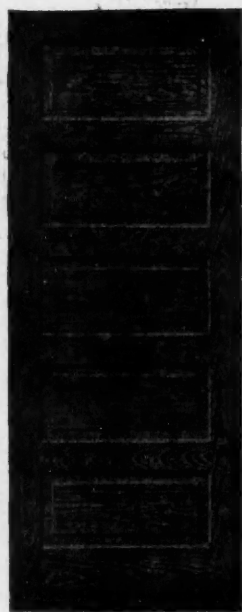


Write to-day for our **FREE SAMPLES** of Building Papers and Ready Roofings

What do you think of our **Stair Newel** No. 7, surmounted with our elegant, genuine **Wood Carved Cap**, at **\$3.80 up?**



Stair Newel No. 7



Door No. X.L., 5 Cross Panels Soft Arkansas Yellow Pine free from Check.

We carry the largest stock of good doors in the world. Perfectly manufactured.

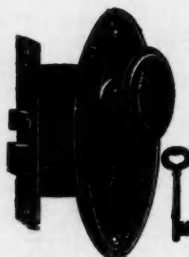
At **\$1.05 up**



**85c** per gallon up

Write for our beautifully colored folder

**Practical Painting** mailed free



Inside Door Set No. 13271.

We carry a complete line of **Builders' Hardware** at before unheard-of prices

**Write To-day** for our **BIG ILLUSTRATED CATALOGUE** and Price List. Just off the press. Gives you our low net prices on Frames, Doors, Sash, Blinds, Hardware, Paints, Screens, Mantels and thousands of other building material items. Mailed to you **FREE**

**THE PEASE CO., Cincinnati, Ohio, U. S. A.**

# FACTS AND FIGURES

## A Simple Problem in Arithmetic

A SOLUTION WHICH IS OF INTEREST TO YOU



### The Old Way

One man will scrape, by hand, about two squares, or two hundred square feet of flooring, in eight hours. The wage scale for this is from 40 cents to 55 cents per hour, or from \$3.20 to \$4.40 for 200 square feet, which is \$1.60 to \$2.20 per square.

## The "Little Giant" Floor Scraper

FOR OAK  
MAPLE  
BIRCH  
BEECH  
YELLOW PINE  
PARQUET } Floors



Scrapes every inch of floor, into corners and along baseboard

### The New Way

One man with a "LITTLE GIANT" FLOOR SCRAPER will scrape eight squares, or 800 square feet of flooring, in eight hours, which at the wage scale of from 40 cents to 55 cents per hour, would be 40 cents to 55 cents per square.

PAYS FOR ITSELF IN A FEW DAYS

## SAVING

*A saving is therefore made of from \$1.20 to \$1.65 per square.*

*On 5,000 square feet (50 squares), the saving will be from \$60.00 to \$82.50, which at the lowest wage scale practically pays for the machine.*

*We furnish one dozen knives with each machine, and they will scrape 30,000 square feet of flooring.*

*New knives cost \$6.00 per dozen.*

SOLD UNDER OUR GUARANTEE TO DO BETTER,  
FASTER AND CHEAPER WORK THAN  
ANY OTHER METHOD

Price Complete . . . **\$65.00**  
F. O. B. Chicago or New York

MANUFACTURED BY THE

## HURLEY MACHINE COMPANY

General Offices and Works:

153-159 SOUTH JEFFERSON STREET

New York Office: 1010 FLAT IRON BUILDING

CHICAGO, U. S. A.



## Why Not Increase YOUR Earnings?

Mr. William Weber, Contractor and Builder, of Beaumont, Texas, whose picture appears above, says:

"When I enrolled, I was a bricklayer, earning a bricklayer's wages. I am now a contractor and builder, and the volume of my business is over \$200,000 a year. All of this success I owe to the I. C. S."

This proof is merely one of thousands which we have to show that we can help any ambitious man, *no matter what his circumstances are*, to gain a better position and increase his earnings. If **YOU** want to gain a better position, write us today, stating the occupation you wish to rise in, and we will explain how you can better yourself without loss of time from your present work or paying more than you can afford.

**INTERNATIONAL CORRESPONDENCE SCHOOLS**  
Box 910, Scranton, Pa.



## MILBRADT'S ROLLING STEP LADDERS

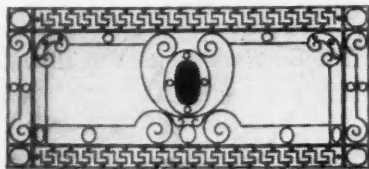
are the finest ladders made easiest running, work noiseless and are absolutely safe and durable. Made to order and **To Fit All Kinds of Shelving**. Besides ladder here shown, we manufacture 16 other styles, and are therefore in position to meet all requirements.

WRITE FOR CATALOGUE NO. 24

Special Discount to Contractors and Builders

**MILBRADT MANUFACTURING COMPANY**

1436 North 9th Street, St. Louis, Mo.



## ORNAMENTAL IRON AND BRONZE WORK

ELEVATOR CABS, ENCLOSURES, BANK GRILLES AND CAGES  
HEAVY IRON FENCES, WINDOW GUARDS, STALL FIXTURES, ETC.

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**DOW IRON AND WIREWORKS, Louisville, Ky.**

## NORTHWESTERN GRILLE WORKS

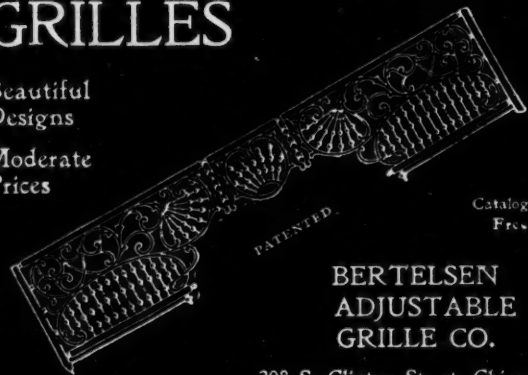


Send for our catalogue, which contains a large number of attractive and modern designs of Grilles.

OFFICE AND FACTORY  
**1452 Milwaukee Ave., CHICAGO.**  
CHRISTENSON BROS., Props.

## GRILLES

Beautiful Designs  
Moderate Prices



**BERTELSEN ADJUSTABLE GRILLE CO.**

308 S. Clinton Street, Chicago

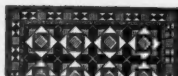
## GRILLES "Direct from Factory" MANTELS



### 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.

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.

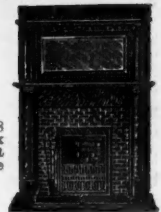


### TILE AND MOSAICS

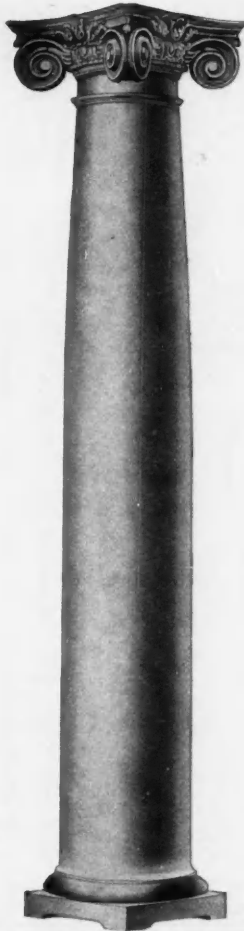
For Everywhere, Walls, Floors, etc.

**\$14.25** buys this Solid Oak Four Column Mantel. It is 80 in. high, 54 or 60 in. wide, 36x18 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.

Get Our Prices.  
**W. A. OSTENDORF, 2923 North Broad Street, Philadelphia, Pa.**



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

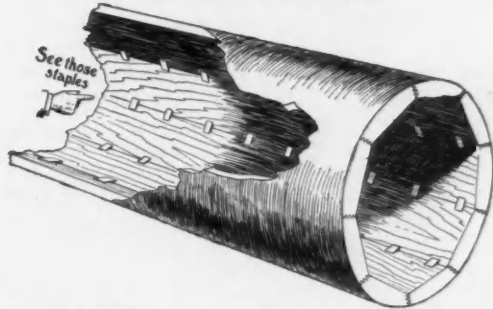


Cut of Staple is three quarters size.

Columns are glued up under enormous pressure and then the staples are driven in as shown in illustration by our special machinery. :: :: :: ::

**LARGEST GLUING SURFACE! STRONGEST LOCK JOINT MADE! BEST MATERIAL! BEST SHAPE! PRACTICALLY INDESTRUCTIBLE!**

Patented in U. S. and Canada.



**FREE OFFER** On receipt of postal saying where you saw this Adv. we will send you postage paid a Sample Section of this Column, showing the wonderful Lock Joint.

**WHAT A U. S. GOVERNMENT OFFICIAL SAYS**  
*American Column Co.* Oct. 14, 1905.

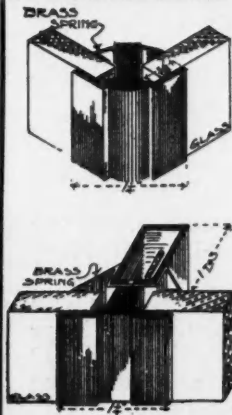
Gentlemen: I take pleasure in remitting herein check in full of our account; both columns and capitals are perfect and add greatly to the looks of my residence. I feel justly proud of them and wish to congratulate you on your excellent work.

ANDRE FOURCHY, Asst. Supt. of Construction,  
U. S. Life Saving Service, Norfolk, Va.

**We Make and Sell more GOOD Columns than any other firm in the United States**  
**THEY CANNOT OPEN AT THE JOINTS**

Put them where you will, in the hottest room, the driest or dampest climate, they **POSITIVELY WILL NOT OPEN. WE GUARANTEE IT.**

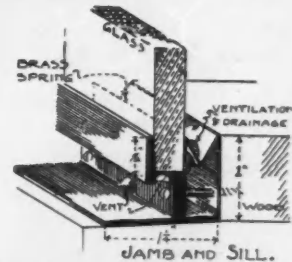
Made only by **AMERICAN COLUMN COMPANY, BATTLE CREEK, MICH.**  
**DON'T TAKE SUBSTITUTES**



## The New "Kawneer" Store Front

**IS THE NEWEST AND MOST DURABLE STORE FRONT CONSTRUCTION KNOWN**

Frostless Glass, because of perfect ventilation.  
Fireproof, because made entirely of heavy drawn metal.  
Absolutely perfect drainage device.  
Insurance 400% less than certain other fronts.  
No wood to rot and swell; no painting or repainting.  
Electric lights attached to back of bars.  
No beveling or boring of the glass.  
Allowance for expansion and contraction of glass.  
No putty, felt, cork, etc., used.  
Gives the greatest glass width.  
The glass is set from the outside.  
All parts are cut accurately at the factory.  
No delay in shipment, orders filled from stock made up.



**FOR SALE BY THE TRADE. MANUFACTURED BY**

(This setting goes all around the glass.)

**Kawneer Mfg. Co. Office: 505 Kemper Bldg., Kansas City, Mo.**  
U. S. PATENT MAY 15, 1906. OTHER PATENTS PENDING

# KOLL'S PATENT LOCK JOINT COLUMNS AND PILASTER

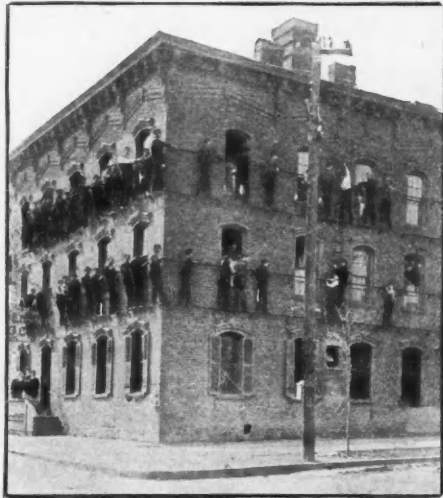


For Exterior and Interior Use  
And General Line of Porch Work

Send for Catalogue  
**HENRY SANDERS CO., 70-80 Weed St., CHICAGO, ILL.**

PACIFIC COAST:  
AUG. J. KOLL, Los Angeles, Cal.

EASTERN FACTORY:  
HARTMAN BROS., MFG. CO., Mt. Vernon, N. Y.



## Fire Protection

This illustrates a section of a factory building equipped with the

## Covert Fire Escape

No other Fire Escape will give the same facilities for quickly vacating a burning building.

It is the simplest and most economical permanent Fire Escape now on the market

Send for Circulars and full particulars

**COVERT FIRE ESCAPE CO.**  
TROY, N. Y.



## DIXON'S CARPENTERS PENCILS

LAST THE LONGEST  
BREAK THE LEAST  
MARK THE CLEAREST

Send 16 cents for samples and our special circular 182 J.

**JOSEPH DIXON CRUCIBLE CO.,**  
JERSEY CITY, N. J.

## Supplies Wanted

Material, Machinery, Tools and all sorts of Carpenter's, Builder's and Contractor's supplies can be sold at

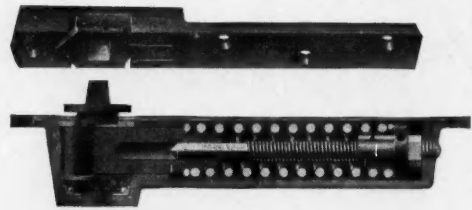
## WINNIPEG

for Northwest and Western Canada. A wonderful boom now on. Write us for particulars.

**Western Canada Contractor  
and Builders Gazette**

720 Union Bank, WINNIPEG, MANITOBA, CANADA

## "THE HINGE WITH A DOZEN GOOD FEATURES"

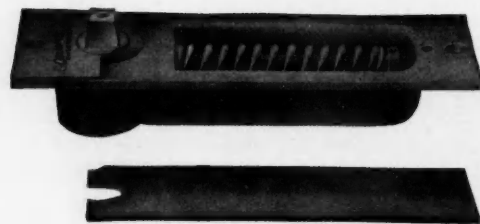


# Simple Good-Original

**SIMPLE** The COLUMBIAN FLOOR SPRING HINGE has proven its simplicity to all that are now using it, and will do the same for you. It is easy to install, easy to apply tension to spring, easy to adjust door with the new alignment adjuster, easy to remove door, easy to replace door.

**GOOD** Its good qualities are due to the many advantages it has over others. The door is not disfigured by side plates. The door can be removed without disturbing the tension on the hinge, it is ball bearing, swings the door smoothly without strain or jar. It is practically invisible,—dust and rust proof.

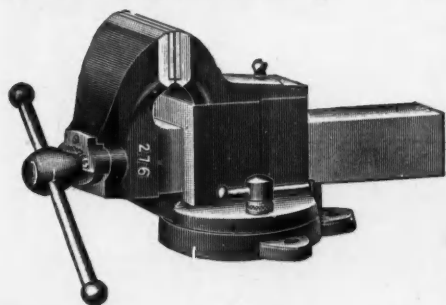
**ORIGINAL** The Columbia is the only Floor Hinge made by this method,—all the features are unique. Compare the above cut with as many as you like, and you will see that the ideas are decidedly different,—this shows originality. The top pivot for instance; there is no other that can compare with it—the alignment adjuster—the whole hinge throughout is original. Our catalogue No. 12 will keep you posted on the latest styles of spring hinges. Send for it—costs you nothing.



## THE COLUMBIAN HARD- WARE CO

168 Church St. CLEVELAND 26 E. Lake St.  
NEW YORK OHIO CHICAGO

# PARKER VISES



MADE  
ESPECIALLY  
FOR WOOD  
WORKERS.

FOR SALE BY  
DEALERS.

SEND FOR  
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**CHAS. PARKER CO.**  
MERIDEN, CONN.

**TAYLOR CLAMPS**  
Come in all sizes and shapes  
Send for Catalogue

**No. 16**  
THE TAYLOR

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

## No. 5 "Union" Combination

### Self-feed Rip SAW and Cross-Cut SAW

(Almost a complete workshop in one machine.)

THIS MACHINE is suitable for various kinds of work—ripping (up to 3 1/4" thick), cross-cutting, mitering, etc., and with additional attachments, rabbetting, grooving, dadoing, boring, scroll-sawing, edge-moulding, beading, etc.

The heaviest, most substantial, accurate and easiest running machine of its kind on the market.

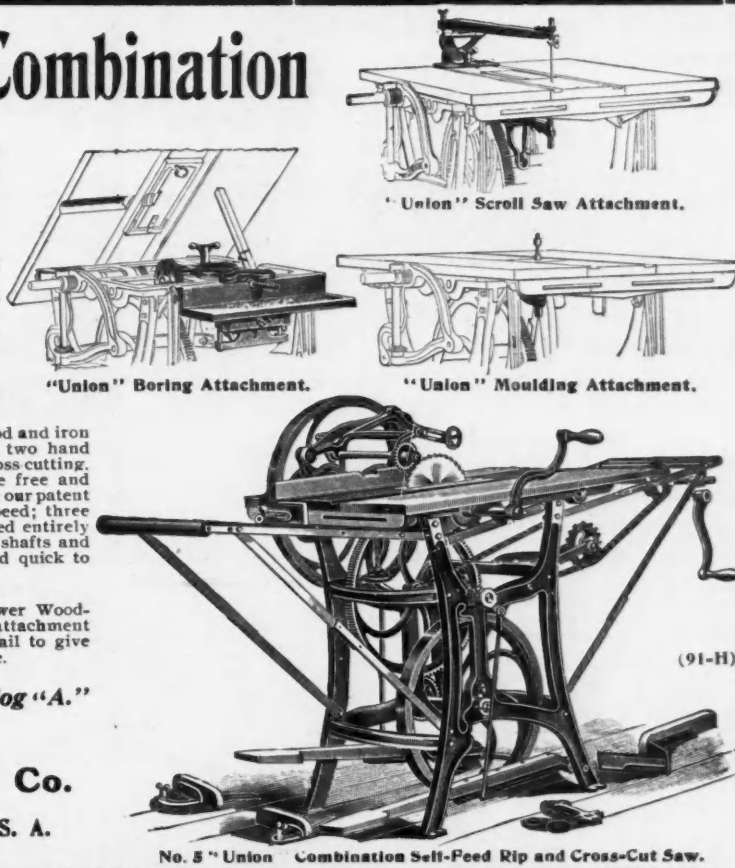
**ADVANTAGES:** Large adjustable combination wood and iron table 28x36"; folding extension rolls for long work; two hand powers, one for self-feed ripping and the other for cross cutting, etc., arranged at the rear of machine, leaving table free and allowing operator a natural, upright and easy position; our patent foot power with walking motion; three changes of speed; our patent chain-belt and accurate machine-cut gears; steel shafts and babbit metal lined boxes, adjustable for wear; easy and quick to change machine from one operation to another.

WE BUILD a complete line of Foot, Hand and Power Wood-working Machinery, and guarantee each machine and attachment to be thoroughly practical and accurate, and if they fail to give you entire satisfaction, may be returned at our expense.

*Machines sent on trial. Send for Catalog "A."*

**The Seneca Falls Mfg. Co.**

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



**"Yankee"  
Quick-Acting  
Lever  
Vise.**

Rapid, Strong, Durable. Best "All-Round" Vise. Self-Adjusting Jaw. Unequalled for Wood-Workers. Holds securely Pipe, Rods, Bolts, Etc.

Send for Catalogue of all kinds of Vises.

**PRENTISS VISE COMPANY MAKERS**  
44 Barclay Street, New York, U. S. A.

## COLT'S CLAMPS

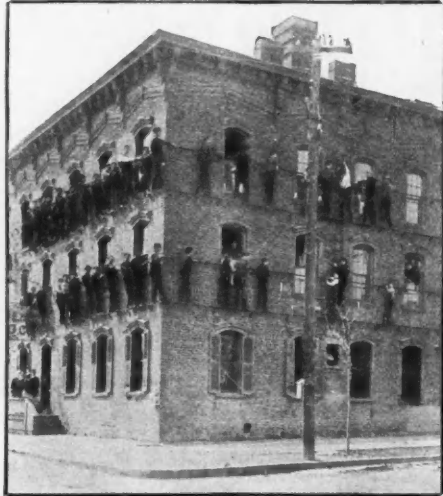
Steel Bars Any Length Desired

Quick Acting. Time Saving

Eccentric and Screw.

Ask for CATALOGUE No. 124.

**BATAVIA CLAMP CO.**  
57 CENTER ST., Batavia, N. Y.



## Fire Protection

This illustrates a section of a factory building equipped with the

## Covert Fire Escape

No other Fire Escape will give the same facilities for quickly vacating a burning building.

It is the simplest and most economical permanent Fire Escape now on the market

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## DIXON'S CARPENTERS PENCILS

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Send 16 cents for samples and our special circular 182 J.

**JOSEPH DIXON CRUCIBLE CO.,**  
JERSEY CITY, N. J.

## Supplies Wanted

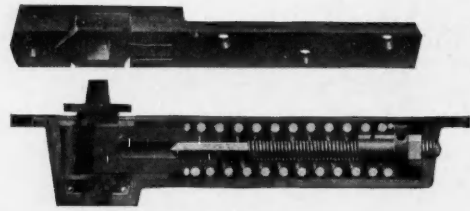
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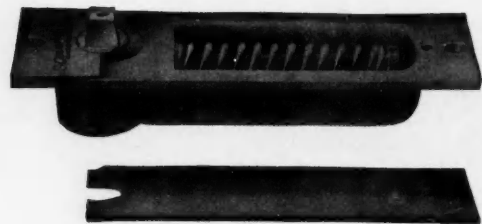


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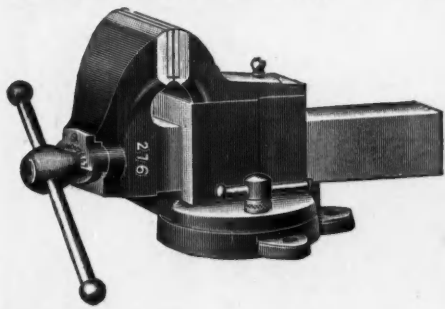


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168 Church St. CLEVELAND 26 E. Lake St.  
NEW YORK OHIO CHICAGO



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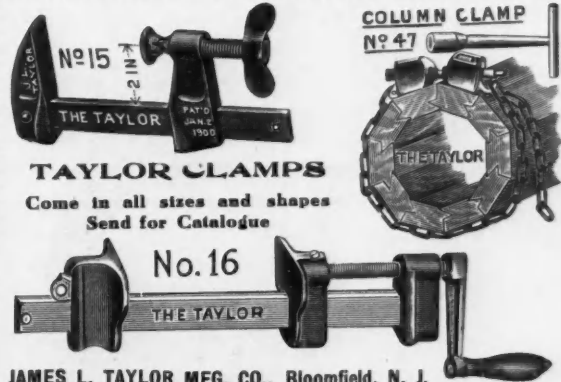


MADE  
ESPECIALLY  
FOR WOOD  
WORKERS.

FOR SALE BY  
DEALERS.

SEND FOR  
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**CHAS. PARKER CO.**  
MERIDEN, CONN.



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## Self-feed Rip SAW and Cross-Cut SAW

(Almost a complete workshop in one machine.)

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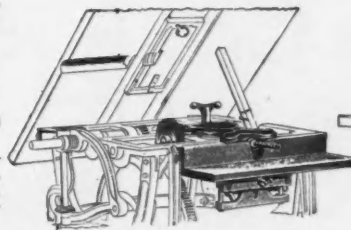
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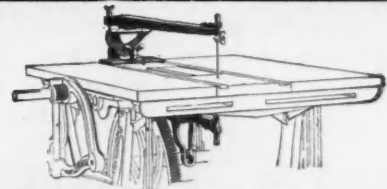
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**The Seneca Falls Mfg. Co.**

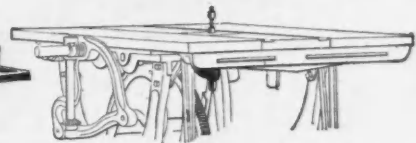
218 Water St., Seneca Falls, N. Y., U. S. A.



"Union" Boring Attachment.



"Union" Scroll Saw Attachment.

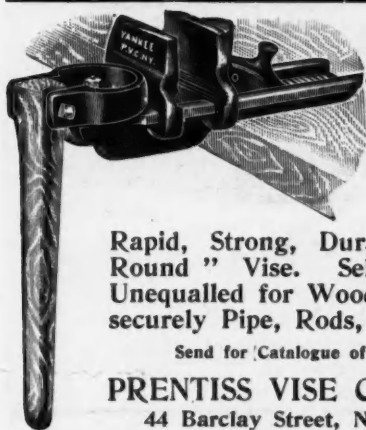


"Union" Moulding Attachment.



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

(91-H)



## "Yankee" Quick-Acting Lever Vise.

Rapid, Strong, Durable. Best "All-Round" Vise. Self-Adjusting Jaw. Unequalled for Wood-Workers. Holds securely Pipe, Rods, Bolts, Etc.

Send for Catalogue of all kinds of Vises.

**PRENTISS VISE COMPANY** MAKERS  
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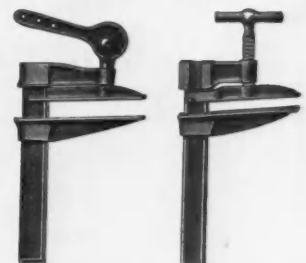
Steel Bars Any Length Desired

Quick Time  
Acting. Saving

Eccentric  
and Screw.

Ask for  
CATALOGUE No. 124.

**BATAVIA CLAMP CO.**  
57 CENTER ST., Batavia, N. Y.

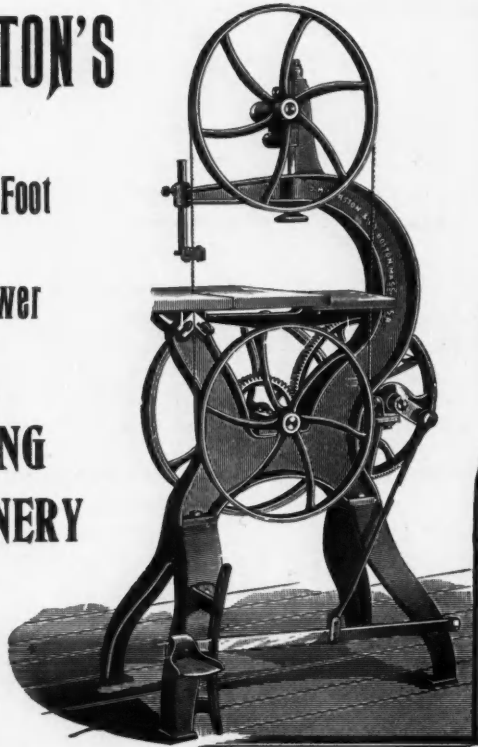


# MARSTON'S

Patent  
Hand and Foot  
and  
Steam Power

WOOD  
WORKING  
MACHINERY

20-inch Hand  
and Foot  
Power Band  
Saw.



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227 Ruggles St., Boston, Mass., U. S. A.

# File Right

and  
**YOUR SAWS**  
will last longer  
and  
cut  
better.

File wrong and you shorten the life of saw or cutter. Filing at the wrong angle dulls a saw more than any amount of use. You can't file wrong if you use the Grammes Saw Vise.

Instantly adjustable—and absolutely right because there is no other position. No vibration—no jarring—no buckling—no mistakes.

The **GRAMMES CIRCULAR SAW VISE** is an absolute necessity if you want quick and accurate sharpening. \$6.50 buys it. Thirty days free trial—to test.

Write us if you would like to try one.

**L. F. GRAMMES & SONS**

1247 Hall Street  
ALLENTOWN, PA.

IF YOU ONLY KNEW HOW GOOD IT IS YOU WOULD HAVE

## The Taintor Positive Saw Set

URBANA, N. Y., July 10, '06.  
TAINTOR MANUFACTURING CO.  
Gentlemen: I am getting to be an old man and have used all kinds of Saw Sets in the last 30 years, and I can't recommend Taintor's too strongly. I regard it today the best tool on the market. I wish every carpenter in the country had a copy of your *Hints on the Care of Saws* and one of your Positive Sets. There can be no better made.

Very truly yours,  
(Signed) JOSEPH STRONG.  
P. S.—I will recommend it to any mechanic.



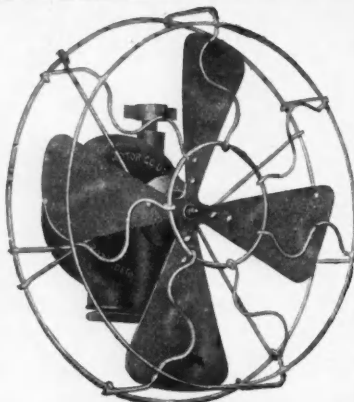
If your dealer tries to sell you any other Saw Set, insist on seeing the Taintor Positive, and then judge for yourself. If he will not supply you write us.



ANVIL—Full Size

"Hints on the Care of the Saw" will be sent free on application

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### DIVINE'S GENUINE RED DEVIL WATER MOTOR FAN

Just the article for keeping your place cool. 100 per cent cheaper than Electric Fans. You can use it any place any time where there is a faucet. Attach to a bench or shelf.

Price complete, . . . \$6.50  
" fan and guard, 3.50  
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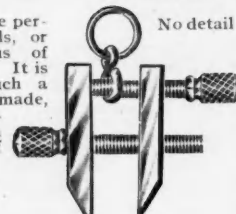
Write for Booklet and Trade Discount on Divine's Faucet Water Motors.

Divine Water Motor Co.  
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### Davison's Miniatures Trade Emblems Beautiful Watch Charms

Each of these are perfect working models, or exact reproductions of the standard tools. It is wonderful how such a small article can be made, duplicating a standard tool, for such a small amount of money.



No detail is neglected, and each one is guaranteed to be exactly as shown in cut. Fine nickel plated finish. Also can furnish Wrenches, Draw Knives, Cleavers, Razors, Valves, Steels and Telephones. Price each, 25c or 20c and this ad. will get one tool as selected.



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**AUTOMATIC BORING TOOLS**



In quality, style and beauty of finish our Automatic Boring Tools cannot be matched. The improved chuck now put on these tools is absolutely positive and quick working.

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# "Yankee Tools"

The newest, cleverest and most satisfactory in use, and the first to be offered at so reasonable a price that every up-to-date mechanic could buy tools of their quality and character.

Other tools are very good tools but "Yankee" tools are better.

"Yankee" tools are sold by all leading dealers in tools and hardware everywhere. Ask your dealer to see them.

Our "Yankee" Tool Book tells all about these and some others, and is mailed free on application to—



No. 15. "Yankee" Ratchet Screw Driver, with Finger Turn on Blade.



No. 30. "Yankee" Spiral-Ratchet Screw Driver, Right and Left Hand



No. 44. "Yankee" Automatic Drill, Eight Drill Points in Handle, and Adjustable Tension to Spring



No. 50. "Yankee" Reciprocating Drill for Iron, Steel, Brass, Wood, etc.

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## "FORSTNER" BRACE AND MACHINE BITS FOR FINE CARPENTER, CABINET AND PATTERN WORK



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.

**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.

Manufactured by

**THE PROGRESSIVE MFG. CO., Torrington, Conn.**

Enquire of your Hardware Dealers or write us direct.

Supplied in sets.

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To thoroughly introduce this high grade tool among carpenters, pattern makers and others, we will mail to any reader of the AMERICAN CARPENTER AND BUILDER upon receipt of 50 cents any bit we make from one-quarter inch to one inch in size.



**CONTINUOUS  
BLACK OR BLUE PRINTS**  
MADE IN ONE PIECE  
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**4 1/2 FT. WIDE**

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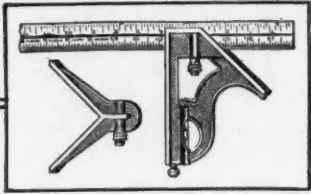


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**SAVES TIME**

for the draughtsman, and is a great aid to the learner. It holds a number of sheets or a pad, which requires no fastenings. The Protractor T Square gives accurate angles direct. You get measurements from the board. Has a drawer for instruments and can be carried around to make drawings on the spot. Circulars free.

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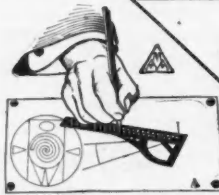

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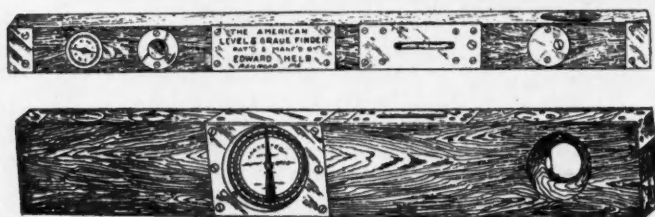
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All progressive and up-to-date Mechanics, Machinists, Carpenters, Bricklayers, Masons, Plumbers, Millwrights, Road Supervisors, Track Foremen, Surveyors, Architects, Civil Engineers and others will find this an indispensable invention.

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For Concrete Blocks,  
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A Steel Corner Bead to be efficient must be anti-rust. UNION METAL CORNER BEADS are double hot galvanized after all perforating and forming has been done. This insures the greatest possible protection against rust. NO OTHER CORNER BEAD MANUFACTURER offers a metal corner bead protected from rust in this manner. Aside from its many other good points this anti-rust feature alone is sufficient reason why it will be to your advantage to use UNION METAL CORNER BEADS. Write for circulars, prices, estimates, etc.

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Saves from 3 to 24 hours in laying out a single roof. Saves time for the skilled mechanic, and enables the ordinary workman to frame the most difficult roof with absolute certainty.

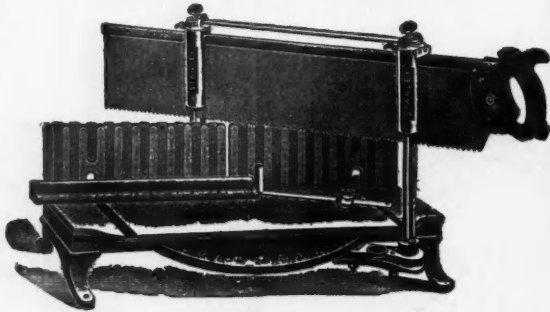
**IT DOES ALL THIS.** It is accurate, thus preventing all mistakes. It gives angles for any pitch. It gives lengths for any rafters. It gives cuts for principals, jacks, hips, valleys and cripples. Saves time for the skilled mechanic, and enables the ordinary workman to frame roofs with absolute certainty.

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On the edge of the Solid Metal Base, (where they will always remain correct) degrees are accurately graduated.

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For duplicating work, a stock guide can be screwed in a threaded Plate, inserted in base board, making a perfect length gauge.

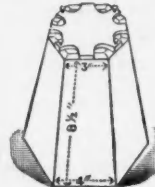
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For full description, sizes, and prices, write for Catalogue No. 34.

*Sold by all Hardware Dealers.*

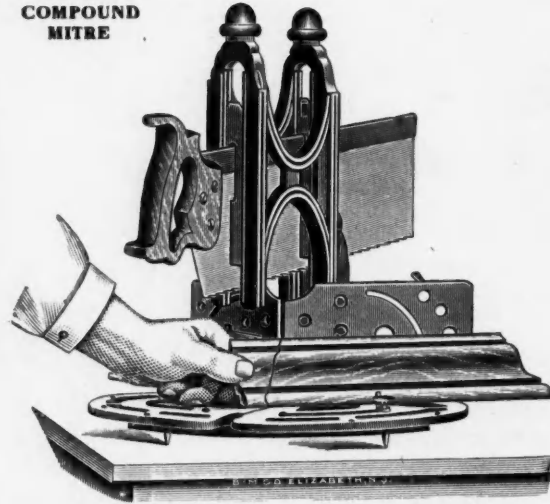
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**SAW COMPOUND AS WELL AS PLAIN MITRES ANY WIDTH WITH A BACK SAW 4 INCHES WIDE ON**



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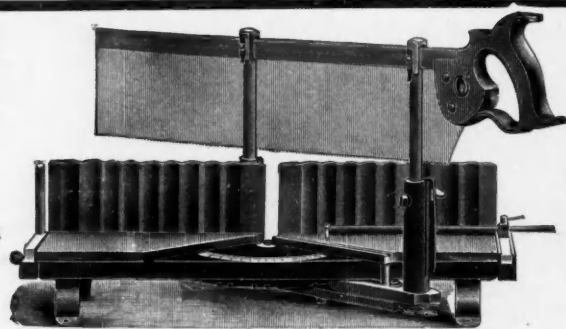
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**MADE ENTIRELY OF STEEL**

**NO MORE BREAKING & FIRST in QUALITY and IMPROVEMENTS**

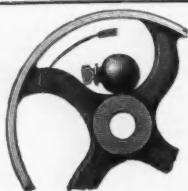
**Automatic Stops for Holding up Saw. Corrugated Backs. Graduated. Gauge for Duplicate Cuts and many other features**

If you want the best you will take no other  
Send for Circular C.



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**AN UNPARALLELED OFFER**

To every manufacturer using wood-working machinery of any description, who will tell us he saw this ad in the American Carpenter and Builder, we will send **free of charge**, one of our **VAN DUZEN LOOSE PULLEY OILERS**

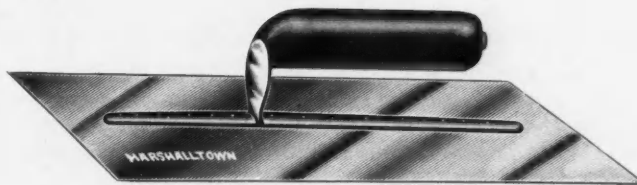
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# The Marshalltown Trowels

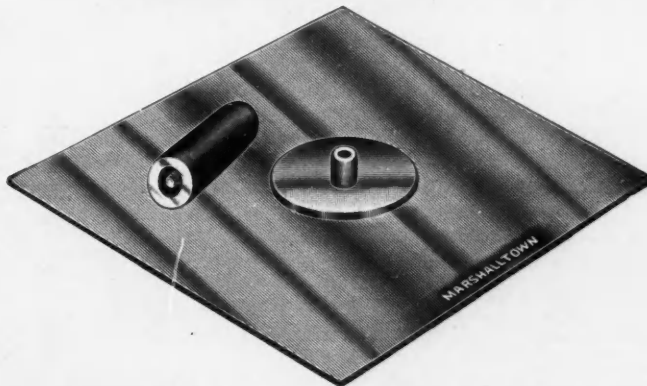
Aluminum  
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All Sizes

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Beading Tools

## Marshalltown Trowel Co.

Marshalltown, Iowa.

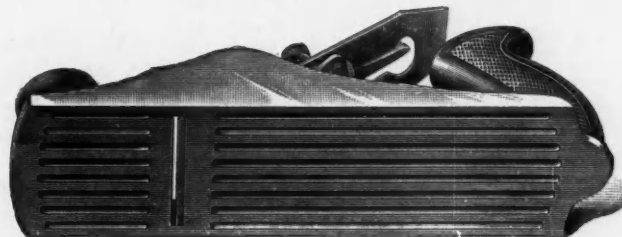
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FAR AHEAD for Smooth, easy work and holding edge will be YOUR VERDICT ON TRYING

## CHAPLIN'S IMPROVED PLANES

Patented Feb. 14, 1899; Oct. 30  
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Severest  
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Tests



We want you to have a copy of  
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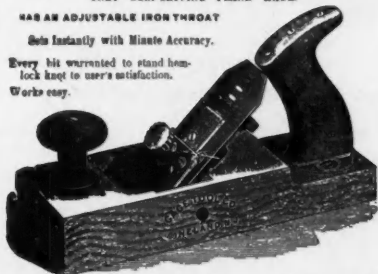
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ONLY SELF-SETTING PLANE MADE.

HAS AN ADJUSTABLE IRON THROAT

Sets Instantly with Minute Accuracy.

Every bit warranted to stand hon-  
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Works easy.



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and we will send you the whole amount you sent us.

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and we will send it at once.

A MANUFACTURER USING THESE PLANES SAYS:

Gage Tool Co., Vineland, N. J.

Philadelphia, July 5th, 1906.

Gentlemen:—Replying to yours of the 4th inst. making inquiry in regard to our opinion of  
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now than when we first commenced to use them.

We could not really get along without them.  
When we take on additional men, we absolutely require them to use the Gage Tool Co.  
Plane, as it is the only plane with which we can make a smooth cut over knots and cross grain  
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Yours very truly,

G. WOOLFORD WOOD TANK MFG. CO.  
(Signed) Geo. Woolford, Pres.

For other information see this paper for May at page 150, July page 399 or write to **GAGE TOOL CO., Vineland, N. J.**

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Buy a Davis & Cook Level



Buy of your dealer—or write us. The Davis & Cook Level is made of better material than any other. Can be used to plumb or level. Has two tubes. Can see them 10 feet away, and in any position—under or over. You know the trouble with the old style bulb-in-the-top levels—useless unless you stand over them. Avoid that trouble. We make them in wood, iron, aluminum. Guaranteed. Ask for Davis & Cook Level.

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It Pays to Buy Good  
**LEVELS**

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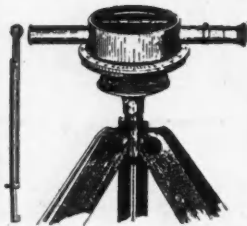
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Levels are Superior

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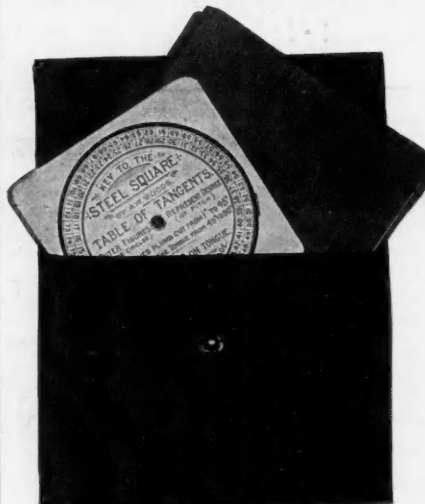
Sole Agents for Riefler's Round System Drawing Instruments.

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Full Size  
4x5 inches.

It tells the whole story of how to use the common steel square for all kinds of framing.

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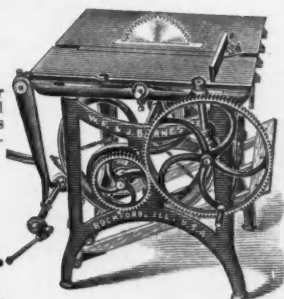
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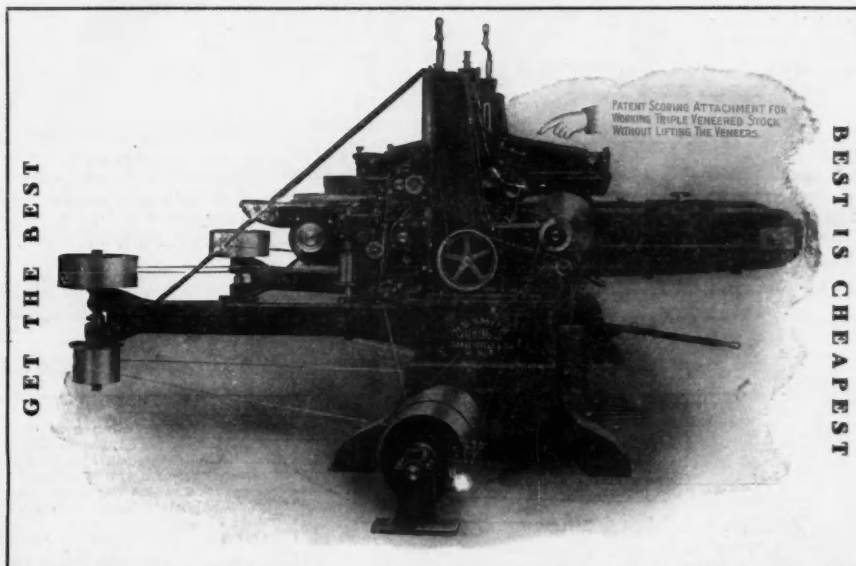
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Every fellow fortunate enough to own a CRESCENT JOINTER is so perfectly satisfied that when any of his friends want a jointer he tells them on the spot to order a CRESCENT.

You will do the same when you get one.

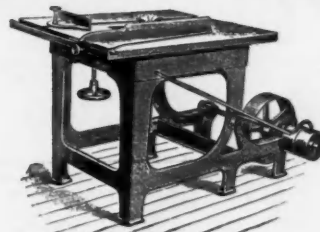
Catalog describing our elegant line of BAND SAWS, SAW TABLES and JOINTERS mailed on request.

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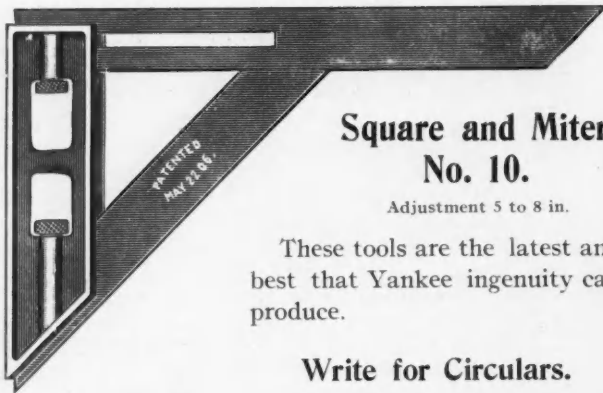
**LOOK!** Only \$50.00 for an all Iron SAW BENCH with countershaft complete. It will pay you to investigate. Send for circular giving full particulars.



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# THE FOX TOOLS



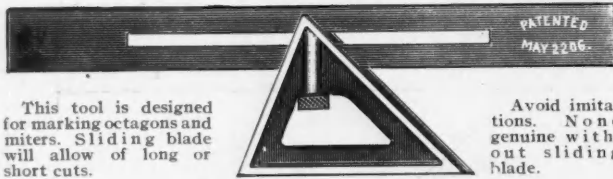
## Square and Miter No. 10.

Adjustment 5 to 8 in.

These tools are the latest and best that Yankee ingenuity can produce.

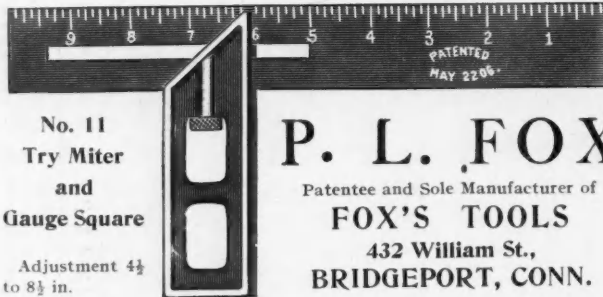
Write for Circulars.

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This tool is designed for marking octagons and miters. Sliding blade will allow of long or short cuts.

Avoid imitations. None genuine without sliding blade.



## No. 11 Try Miter and Gauge Square

Adjustment  $4\frac{1}{2}$  to 8  $\frac{1}{2}$  in.

## P. L. FOX

Patentee and Sole Manufacturer of  
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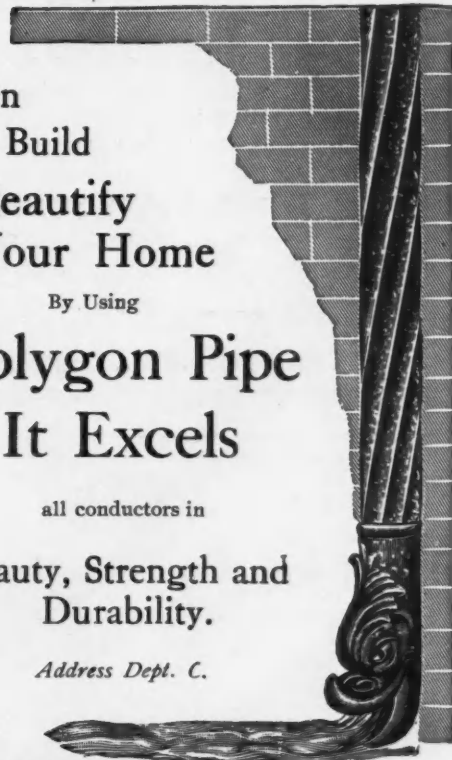
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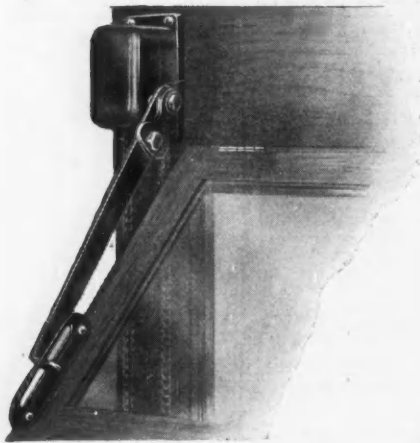
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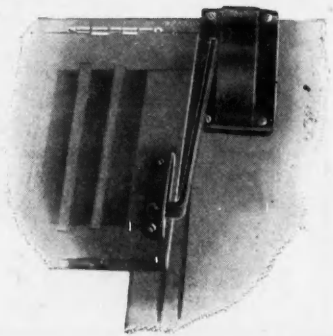
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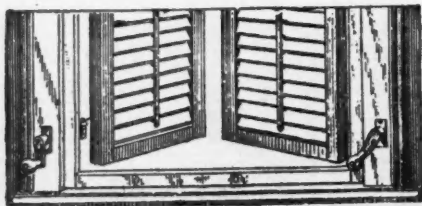
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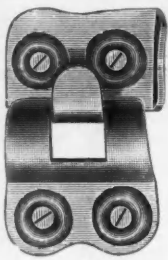
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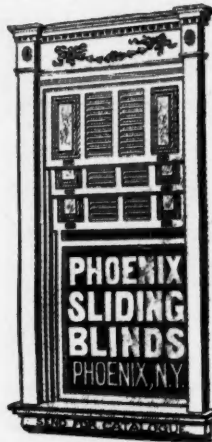
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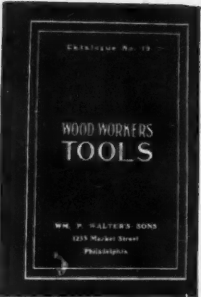
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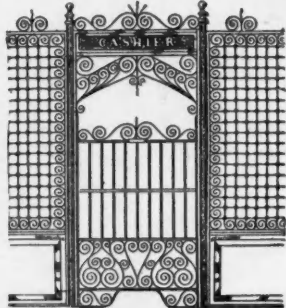
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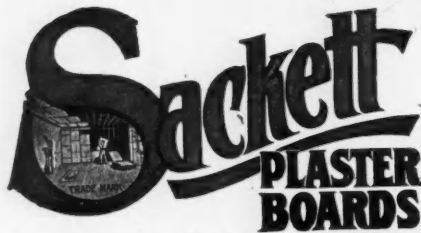
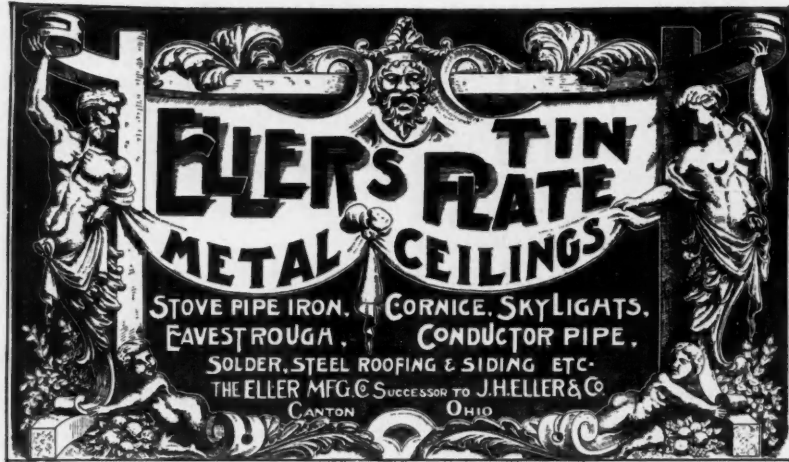
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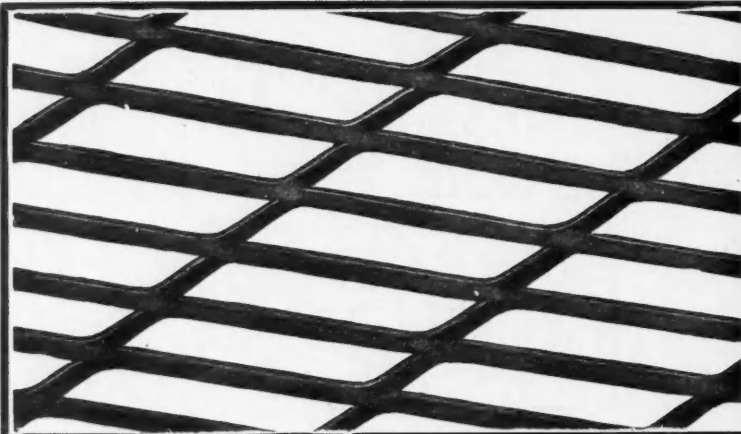


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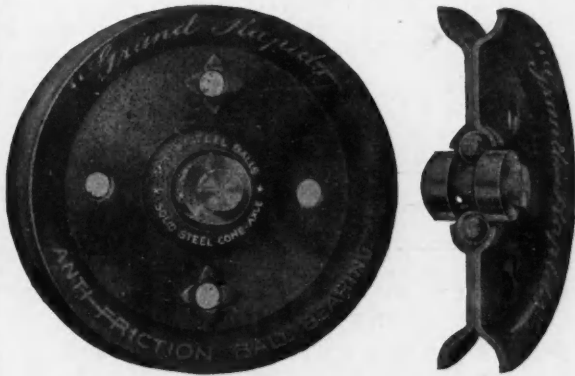
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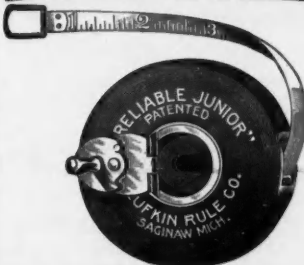
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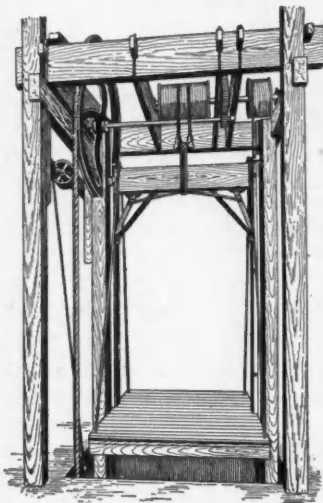
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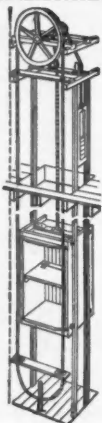
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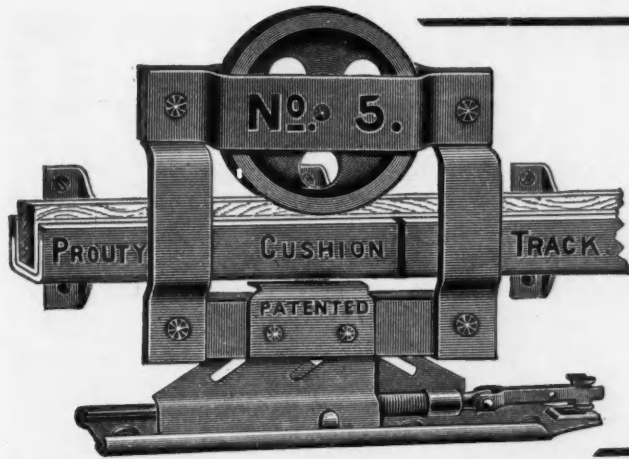
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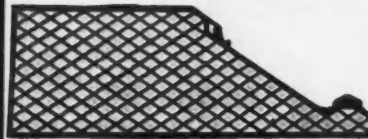
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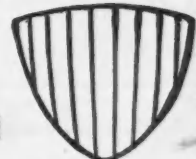
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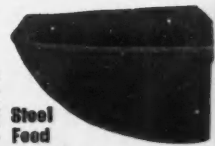
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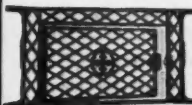
Wrought Iron Hay Rack



Steel Water Trough



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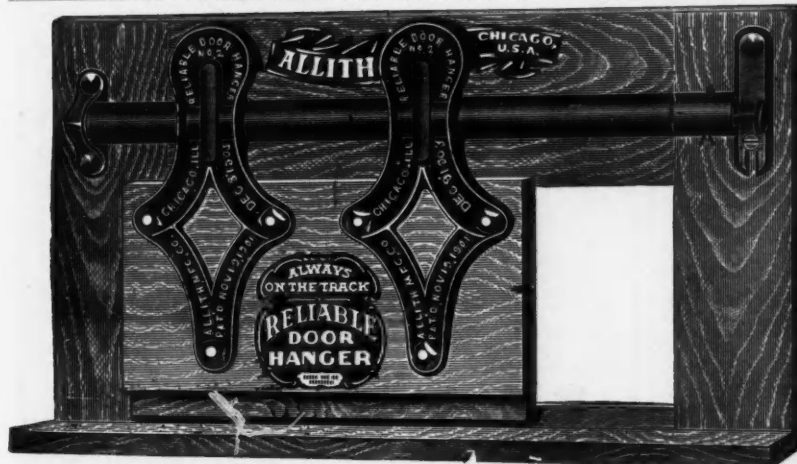
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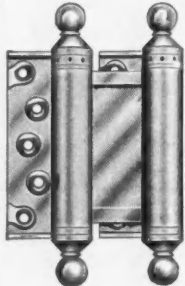

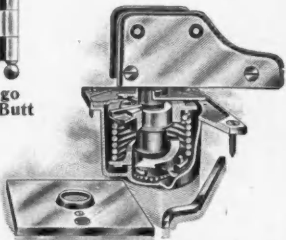
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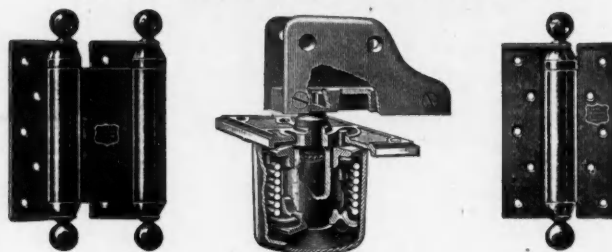
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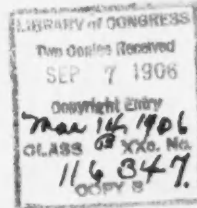
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# AMERICAN CARPENTER AND BUILDER.

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

## American Carpenter and Builder

Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill under the Act of Congress of March 3, 1879.

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WILLIAM REUTHER, EDITOR.

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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.

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**W**ISDOM, like timber, said Oliver Wendell Holmes, should be well seasoned before using.

**W**HEN a man shows up the evil of our ways he is a "kicker," but when he gets after some other fellow he is a "reformer."

**M**ANY a workingman wastes his breath in helping to keep a political pot brewing, without any

chance of getting a look in when the brew is done. But, then, there are others, too.

**W**HAT we generally term the cement of brotherly love that is supposed to hold us together in friendly conclave, sometimes develops weak spots, because it contains too high a percentage of selfishness.

### Age of Specialists

**I**N this age of special work, when trades as well as professions are divided into many branches, there is danger of the old-time, all-around artisan giving way to the specialist, who is all right at one branch of the building trade, but who would be lost if expected to put up a house complete from the original plans.

### Concrete Machinery Convention

**L**AST month's convention of the concrete machinery manufacturers at Detroit was marked by a tendency toward closer affiliation. Heretofore the members have been inclined to attend and watch what the "other fellow" was going to do. It was pleasing to note an entire absence of this at the Detroit meeting, and to see the members getting together on points of mutual advantage. That there has been a wonderful advance in the industry in the short space of one year was very evident and we feel safe in predicting that another year will show equal if not greater progress. Notwithstanding the large amount of machinery on the market, the industry is yet in its infancy. Many of the former difficulties have been overcome, and as these disappear it is bound to go forward with even greater impetus than at any time in its history.

### The Jamestown Exposition

**T**HE article on the Jamestown Exposition which we are publishing this month is very timely and instructive, inasmuch as it will give our readers a better grasp as to the scope and purpose of the exposition. The Jamestown fair will be the first to be historical not only in occasion, but in character. It

will be designed to afford a study of our national beginnings.

In the Arts and Crafts Village will be reproduced the industries and home life of early Virginia. Every obtainable relic that will reveal the Southern forefathers of the nation is to be placed in ordered collections, and the products of the forge, bench and loom as made by the old colonists will be here shown.

The exhibition will do much good in forwarding acquaintance and sympathy between people of widely separated parts of the country.

+

#### Conditions in San Francisco

AFTER the many conflicting reports which have been circulated with reference to the existing conditions in San Francisco it is interesting to receive authentic information from the seat of the recent disaster as to what the conditions really are. Of the 335,000 persons who left the city after the fire more than 200,000 have returned, and 50,000 more are awaiting in nearby cities the providing of proper accommodations. The number of persons receiving relief has been reduced from 225,000 to 17,000. In mercantile and social circles the outlook is especially bright. Hotel accommodations are satisfactory and many lodging houses are fast being placed in a condition to care for guests. Seven theaters are playing to good houses every evening, and others are under construction. Dealers in all lines are supplying a heavy demand for the highest class of goods.

The principal lack is labor in all branches of the building trades. The demand for ordinary laborers is far greater than the supply. The number of permanent buildings under construction in the burned district is 66. The number of temporary buildings in the burned district is 4,500. There are 6,000 firms doing business in the burned district, and 25,000 men are doing reconstruction work, while 100 cars of debris are removed daily.

Together with the energy which these people are putting into the rebuilding of their city comes the gratifying report of an exceptionally good crop throughout the state, and the mining district reports a greater output of mineral wealth than for several years past.

**From Mill to Consumer**  
**M**ANUFACTURERS of sash, doors, blinds and other millwork cannot fail to note the tendency toward selling their product direct to the consumer. Some very large manufacturers have established selling houses, which dispose of goods at prices which are difficult for the dealer to meet. Other manufacturers

are selling direct to the consumer, without any pretense at secrecy, having been emboldened by the success of a trial bid for the trade of the contractor. The AMERICAN CARPENTER AND BUILDER has refrained from mentioning this, awaiting the outcome of experiments being made by prominent manufacturers, but the tendency is now so evident and becoming so universal, that no journal that is in touch with general conditions in all branches of the business can fail to recognize it. This movement is now so thoroughly under way that it is really alarming and it will be difficult if not impossible to check it—it is sweeping the country like a tidal wave and threatens to overthrow all previous methods, turning the course of trade into entirely new channels. This is just as serious a problem to the manufacturer who is able to but who is not selling to the consumer, as it is to the retail dealer, through whom formerly fully 99 per cent of the business has been transacted, but who now must necessarily suffer a loss. One can realize its magnitude when it is stated that one firm alone is selling from \$5,000 to \$12,000 worth of millwork a day, which is equivalent to five to twelve carloads. The outcome of this remarkable movement is extremely difficult to forecast. What effect will it have on future transactions between the manufacturer or wholesaler and the dealer, and between the dealer and the consumer, are questions which all interested parties are asking, fully realizing that a great change in methods is about to take place. In the meantime the carpenter, builder and contractor is reap-

ing the benefit in greatly reduced prices and correspondingly increased profits, and the dealer is losing just as much business.

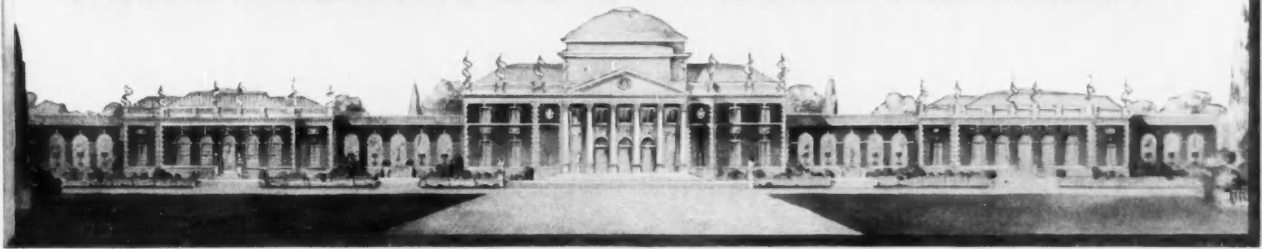
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**K**EEP to the trail. Success lies in continuous effort along a certain line.

**Don't  
Fail to  
Read  
About the  
Special  
Carpenters'  
Number  
to be  
Issued  
October 1**

**See  
Page 657**

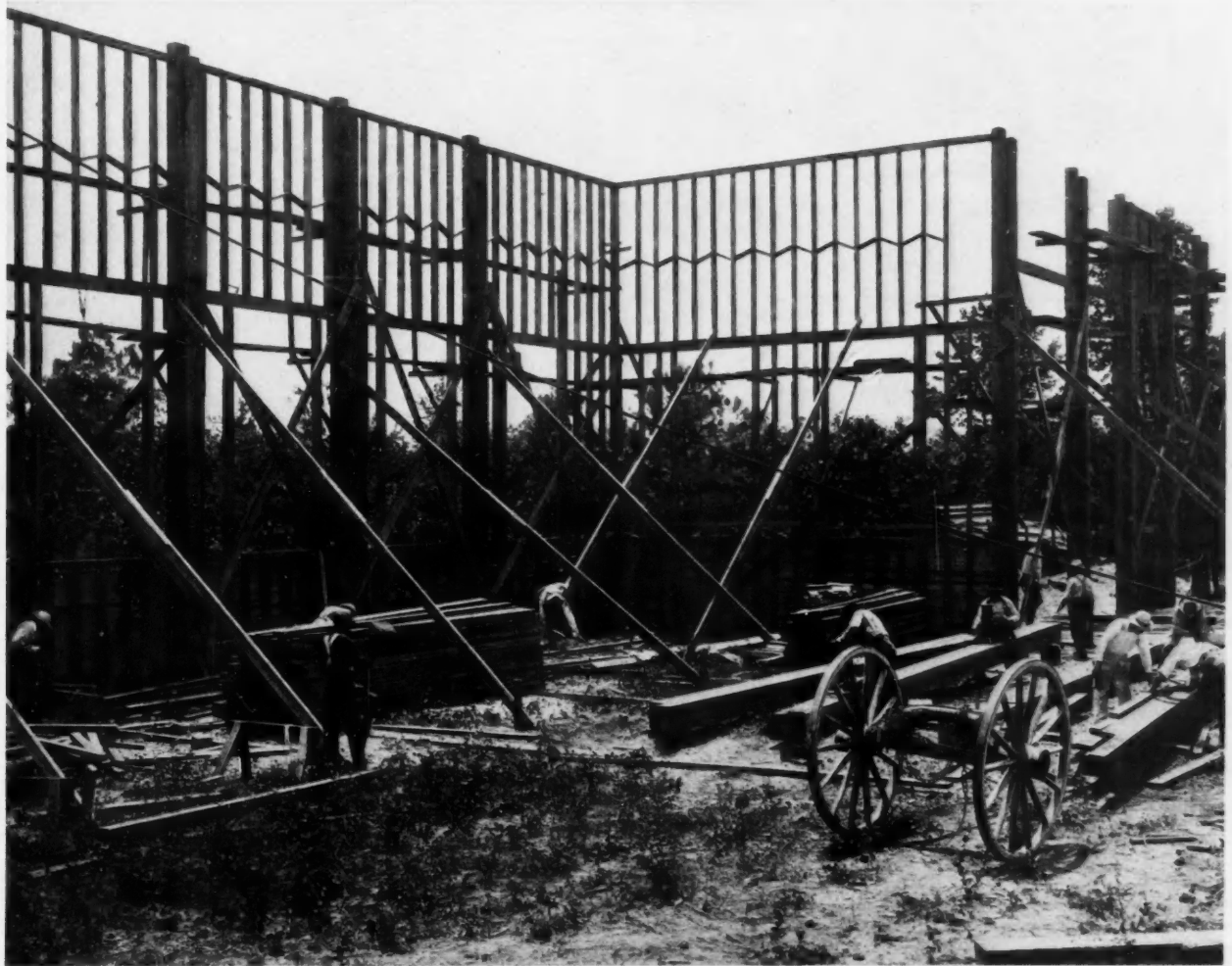
# THE JAMESTOWN EXPOSITION



By Waldon Fawcett

**T**HE building trades naturally welcome expositions. Nothing else, perhaps, makes so sudden and pronounced a boom in the business of carpenters, builders and contractors in general as these international shows which are almost invariably held in the vicinity of some large city and thus come well within the scope of operations of regularly established

ment stands and all the other structures incidental to an exposition project, to say nothing of the fact that a forthcoming exposition, with its prospective trade benefits usually emboldens merchants and other business men in the territory affected to contract for additions to their establishments, enlargements or improvements of one kind or another.



Busy Builders at the Exposition Grounds

firms and building trade workers. It is not merely that large expositions involve the necessity for the erection of big exhibit halls—although that is, of course, a considerable item—but, in addition, there are placed contracts for hotels, lodging houses, refresh-

ment stands and all the other structures incidental to an exposition project, to say nothing of the fact that a forthcoming exposition, with its prospective trade benefits usually emboldens merchants and other business men in the territory affected to contract for additions to their establishments, enlargements or improvements of one kind or another.



**Pocahontas Hospital at Jamestown Exposition**

the Jamestown Exposition, although its full official title is the Jamestown Ter-Centennial and Naval and Marine Exhibition. The show is in celebration of the three hundredth anniversary of the first permanent settlement of English-speaking people in America and the birth of this Anglo-Saxon nation, which occurred at Jamestown, Virginia, the 13th of May, 1607.

**Site Advantageous to Contractors**

The site chosen for the exposition is a most attractive one and offers many advantages from the standpoint of the contractors who will be called upon to deliver material on the grounds and the exhibitors and

others desirous of making shipments direct to the site. The first suggestion was that it should be held on Jamestown Island, situated thirty miles from the mouth of the James River, where the first settlement occurred, but the most superficial investigation disclosed that there would not be sufficient space available and that other conditions were not favorable. Accordingly a site was selected facing that great natural harbor, Hampton Roads, at Sewell's Point, where the first Virginia engagement of the Civil War was held.

For persons not thoroughly familiar with the rather



**One of the "Arts Crafts" Exhibit Buildings**



confusing geography of the eastern section of the Old Dominion, or "Tidewater Virginia," as it is usually denominated, it may be explained that the exposition grounds are not located in any well known municipality, as was the case at Chicago and St. Louis, but are adjacent to half a dozen of as thriving cities as may be found in the "new South." The grounds are distant five miles, by trolley or steam road, from Norfolk (population 75,000) and from Portsmouth (popu-

lar common stock receive any return upon their investment. The state of Virginia, the railroads, the hotel and steamboat companies have been the heaviest purchasers of stock, but, as indicating the energy and progressive spirit of the rejuvenated South, it may be cited that more than 2,500 firms and individuals have subscribed for the common stock.

#### Government to Spend Vast Sum

The United States government is going to spend



Home of Hampton Roads Yacht Club

lation 30,000), are distant five miles by water from Hampton and from Newport News—the latter the greatest steel ship building port in the United States, and finally may be reached by a water journey of four miles from Fortress Monroe, or Old Point Comfort.

The exposition site comprises a tract of 350 acres of land, purchased at an average cost of \$352 per acre, thus involving an expenditure of \$126,000, and which it is proposed to develop into a permanent summer and winter resort after the close of the exhibition. As in the case of all similar enterprises previously held the exposition is financed by a local corporation authorized to issue \$1,000,000 in preferred stock and \$500,000 in common stock, the preferred stock being entitled to six per cent interest before holders of the

vastly more money in building construction at Jamestown than at any of the smaller expositions which have been held in this country in the past. Uncle Sam expended at the Portland, Oregon, exposition last year the aggregate of \$485,000; at Omaha exposition, \$240,000; at Charleston, S. C., \$250,000; at the Atlanta, Georgia, show, \$250,000, and at Nashville, \$130,000. At the coming international exposition, on the other hand, the Federal government will make an outlay of approximately \$1,600,000 and will erect at least six different buildings.

The planning and construction of these governmental buildings, by the way, is to constitute the nearest approach to rush work which this branch of our national government has experienced in some years.

The national legislature made an initial appropriation of \$250,000 a year ago, but this was only for the naval display, which is to be an important feature at the exposition, and the main appropriation of one and one-third million dollars was not made until the closing days of the last session of Congress. Therefore, there presented itself to the officials at Washington the necessity of planning, contracting for and erecting half a dozen fairly pretentious structures in the interval between July 1, 1906, and April 26, 1907, the scheduled date for the opening of the exposition.

#### **Contracts to be Let this Month**

However, James Knox Taylor, supervising architect of the United States Treasury, rose to the occasion. He made a hurried trip to the exposition grounds—it is customary for the chief government architect to visit every site selected for a public building ere the preparation of plans begins—and upon his return immediately recruited his force by the employment of a number of additional draughtsmen. It is now claimed by the supervising architect's office that by October 1 all plans and specifications will have been completed for the six buildings and the immense piers, bids advertised for, and the contracts let so that beginning on the date mentioned the contractors can rush the actual work of construction. In order to put through the exposition work in the manner above mentioned, however, the supervising architect sidetracked all work upon the plans and specifications for the 200 postoffices, custom houses, etc., authorized at the last session of Congress and for which an appropriation of \$20,000,000 was made, aside from the sum set aside for the Jamestown project.

It is expected that approximately \$8,000,000 will be expended for buildings and general construction work at the Jamestown exposition. Of this amount more than \$1,500,000 will be disbursed by the United States government and an equal sum will be paid out by the various states of the Union that will erect separate exhibit or headquarters buildings on the grounds. The exposition corporation will invest \$3,000,000 or more in general exhibit palaces, and the concessions, including the amusement enterprises on the "War Path"—the pleasure street corresponding to the "Midway" at Chicago and the "Pike" at St. Louis—will add \$2,000,000 more to the total.

#### **Description of Buildings**

The largest structures to be erected by the exposition corporation are two handsome twin buildings—already more than half completed—each containing 130,000 square feet of exhibit space. One of these buildings will be devoted to general manufactures and liberal arts, while the other will contain exhibits of machinery, electrical apparatus and the transportation display, including motor and power devices. There will be two thoroughly fireproof structures, each containing about 10,000 square feet of floor space, which will house the valuable relics and articles

of historic value which will be displayed at the exposition.

A building with 75,000 square feet of floor space will be provided for the agricultural, horticultural and mining displays and an annex will provide show room for all kinds of agricultural implements. An innovation will be a building devoted exclusively to exhibits of pure foods, and another novelty will be an exhibit palace given over to medical and hospital devices and appliances and hygienic and sanitary manufactured articles. There will be a spacious building devoted to mining and forestry exhibits and \$100,000 will be expended upon a building designed to show by its contents the progress of the negro race from savagery to their present status. Finally there will be provided a Marine Appliance building, in which will be displayed all articles and forms of manufacture that enter into the construction and outfitting of ships of the navy or the merchant marine. As at other recent expositions there will be an "Inside Inn," this hotel at the Jamestown exposition being of frame construction, 650 feet in length by 450 feet in depth, two stories in height and providing accommodations for 2,000 guests.

#### **Architecture will be Colonial**

The Jamestown exposition will illustrate a distinctive style of architecture that is appropriate both to the site of this show city and to the events in celebration of the anniversary of which it is held. The whole scheme of construction will be primarily colonial. All of the buildings erected by the exposition company will be replicas of seventeenth century structures or elaborations of them. Most of the states of the Union which will erect separate buildings at the Jamestown exposition will conform to this colonial scheme of architecture. Thus Ohio will reproduce a notable mansion erected during the early days of the Buckeye state, and Pennsylvania will provide a replica of Independence Hall at Philadelphia.

Several buildings used at different times as headquarters by George Washington, a church where he worshiped and the site of the house where he courted the Widow Custis, are located within a few miles of the Jamestown exposition grounds, and it is therefore very appropriate that a number of states have chosen to reproduce as state structures buildings associated with the history of the Father of His Country. New Jersey will duplicate Washington's headquarters at Morristown, and Massachusetts will reproduce the old Longfellow home at Cambridge, used by Gen. Washington as his place of residence during the Revolutionary struggle in New England.

The state of Rhode Island will provide at Jamestown a representation of the old State House at Newport; Connecticut will set up a colonial mansion, and Maine will reproduce the poet Longfellow's birthplace at Portland. The state buildings will, in each

*(Continued on page 689.)*

# STEEL SQUARE L

Alfred W. Woods

## How to Use the Steel Square

SHOWING DIFFERENT METHODS OF OBTAINING THE SIDE CUTS OF VARIOUS RAFTERS—A CONVENIENT TABLE FOR SHOWING THE LENGTHS, CUTS AND BEVELS FOR THE COMMON RAFTER, BOARD MEASURE, ETC.

**I**N OUR rounds among the builders, we find that nine times out of ten the boss framer after laying off the plumb cut on the rafter, would take a block cut from the rafter and place it edgewise along with the plumb cut and mark on the opposite side and

altitude being equal is the reason that the thickness of the rafter set back from the plumb cut gives the proper angle across the top for the cut. In the illustration we show the amount to set off for the different polygonal jacks.

In Fig. 85 is shown the application for the octagon jack. The plumb lines A and B remain 4 10/12 inches apart, regardless of the pitch given the common rafter,

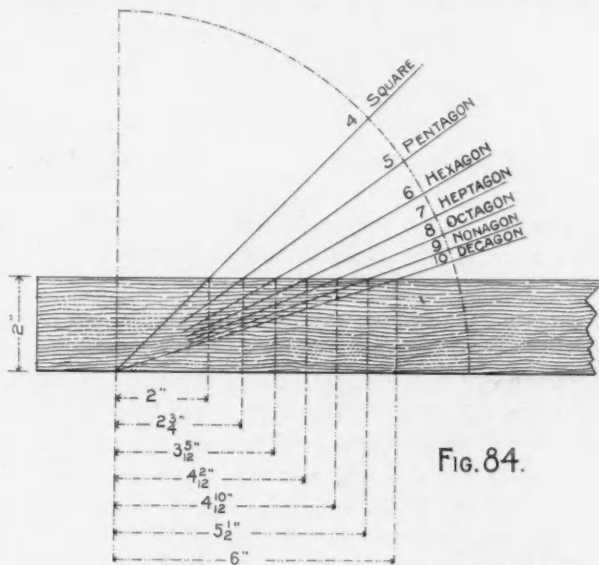


Fig. 84.

then diagonally across the top of the rafter to the plumb line on the opposite side and then cut to these lines, which, of course, gives correct results for either side cut of jack or hip for the square cornered building, but when asked to frame any other than for the square corner, more than likely could not explain and was, so to speak, up against it, because they did not understand the true principle. Yet what is true of the square corner is true of all other angles and which we think will be made clear by referring to Fig. 84. In this we show the angles for the polygons from 4 to 10 and are the same as those shown in Fig. 83, but the cuts are arrived at in a different way.

From this, it will be seen that it is the amount of the base of a triangle whose altitude is equal the thickness of the rafter, that is set off from the plumb cut. In the case of the square building, the base and

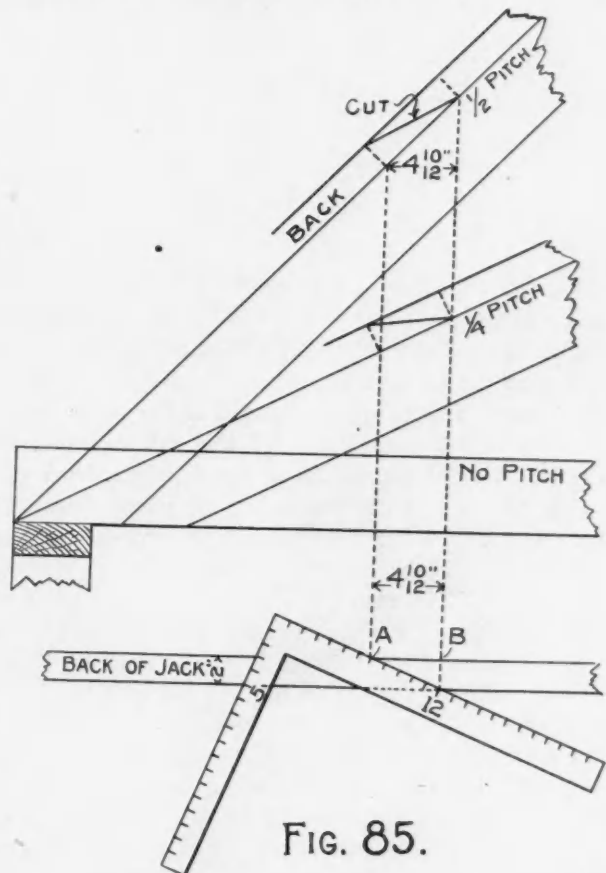


Fig. 85.

as will be seen by referring to the elevation in connection with this figure. Here we have the 1/2, 1/4 and the level or no pitch. These lines represent the plumb cut on either side of the rafter and by cutting diagonally

from one to the other across the back will fit to the side of the hip. It must be remembered that the thickness of the jack governs the width the lines will be apart. In Fig. 84 the jack is given as being full two inches thick. Hence, for the octagon they are 4 10-12 inches apart. But, after all, we do not get

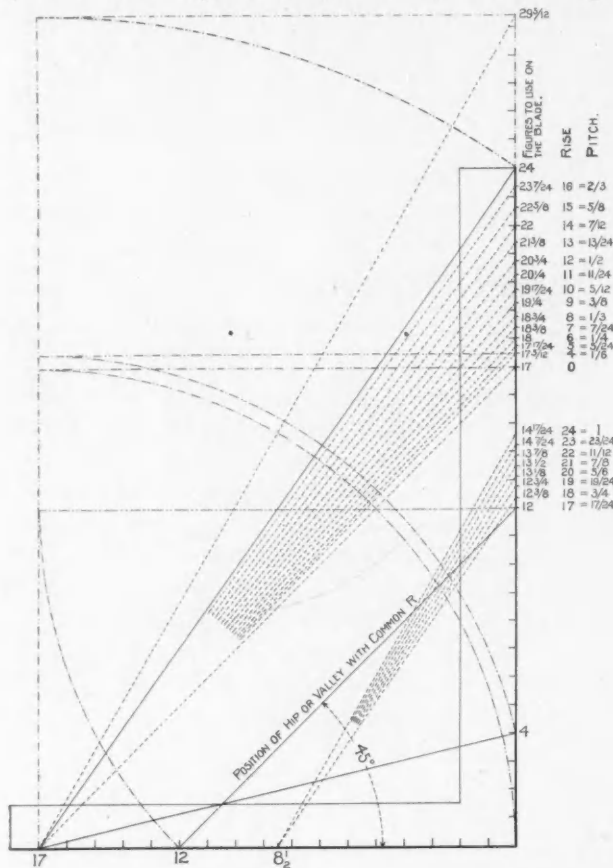


FIG. 86.

away from the use of the square, as will be seen by referring to the plan in Fig. 85. Here the square is shown applied to the back of the jack with the figures that give the octagon miter and the distance apart of the lines A and B are determined at the point where the blade intersects edges of the rafter and lines drawn at right angles from these points from the rafter govern the distance apart the plumb lines will be. For any other polygonal jack, proceed in like manner, using the figures on the square that gives their miter. The result, however, will be the same as given in Fig. 83, which is much the better system, because it gives the cut direct from the square. However, the formula given in Fig. 84 is worth knowing, and later on when we get in irregular or mixed pitches, we will touch upon this illustration again.

In Fig. 86 is shown the companion piece to Fig. 83 and represents the side cut of the hip. A line from 12 to 12 on the blade and tongue represents the run of the hip and its length taken on the tongue and the length of the hip (from 17 to the desired rise on the blade) taken on the blade will give the correct angle across the top of the unbacked hip. The blade giving the cut.

The first column of figures to the right of the blade represents the length of the hips from a 4 to a 24-inch rise in comparison with the common rafter and are the figures to use on the blade to obtain the side cut. The second column represents the rise in inches to the foot run of the common rafter and the third designates the pitch. Inasmuch as the lengths of the hip above the 16-inch rise exceeds the length of the blade, it is necessary to reduce the scale. Therefore, the lines centering at 8 1/2 on the tongue are for the 1/2 scale. The figures to use on the blade are, therefore, reduced in like proportion to what they would have been in the full scale. However, it must be understood that any figures on the blade and tongue may be used that are in proportion to those used in the full scale. Every fractional mark on the blade represents a scale. Therefore, taking the side of the square that is divided in twelfths there would be  $24 \times 12 = 288$  different scales and all giving the same result, but the intersections on the tongue would be in complicated fractions.

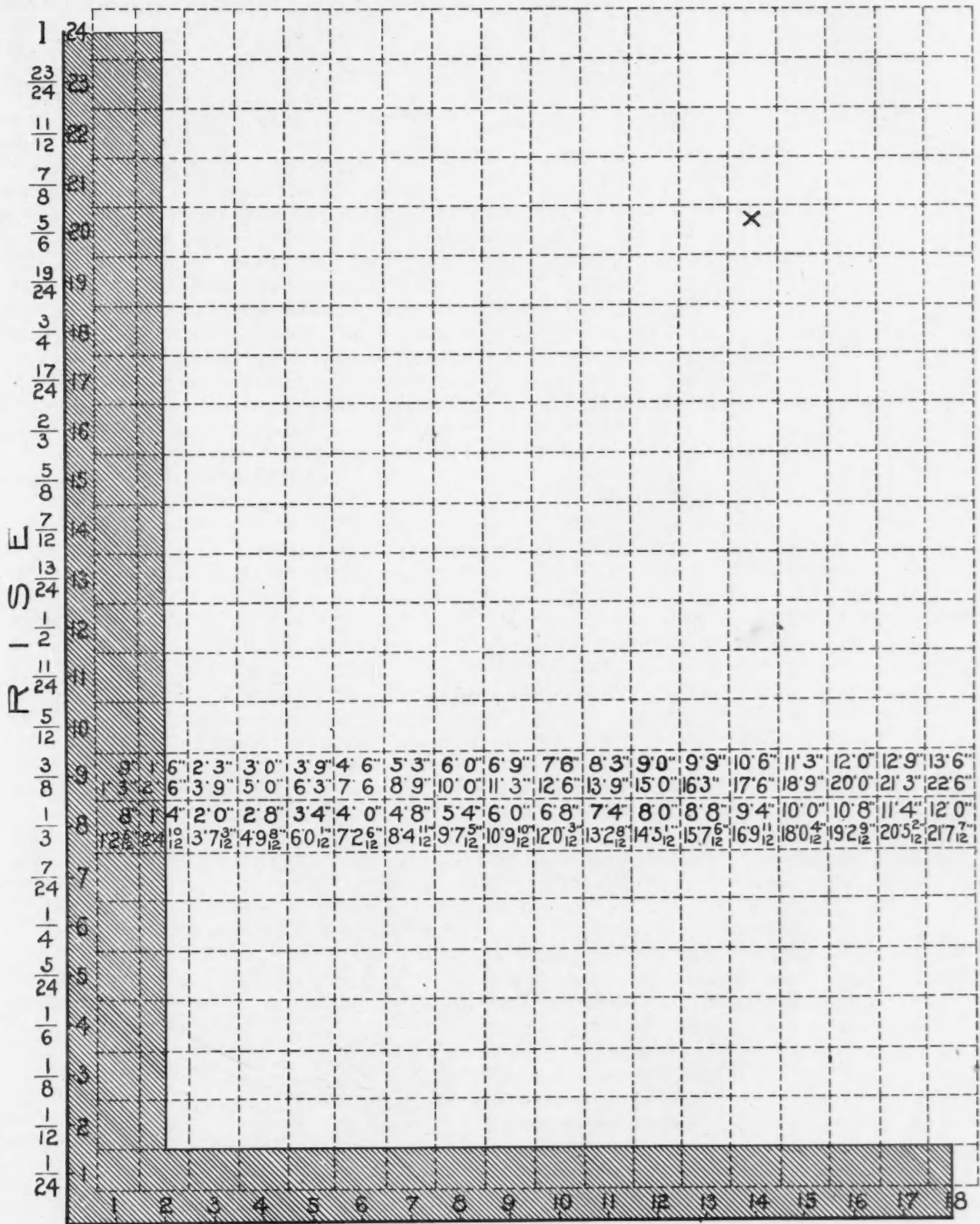
In Fig. 87 is shown a part of a very convenient table for the length, cuts and bevels for the common rafter up to an 18-foot run and with a rise from 1 to 24 inches to the foot. We have only given the figures for two of the pitches (1-3 and 3-8). The readers, of course, when they consider the amount of work it would take to complete the table will pardon us for not giving all of the figures. However, enough is given to show the convenience of a completed chart as follows:

The figures on the blade represent the rise to the foot run. The fractional figures to the left of the blade represent the pitch of the common rafter. The figures on the tongue represent the run in either feet or inches. Therefore, if we wish the length of the common rafter, for a 16-foot span for the 3/8 pitch, we take one-half of 16 for the run on the tongue (8) and look in the square opposite 3/8 and we find 6 feet which represents the rise and 10 feet represents the length of the rafter. If it be an 8-inch run, then the figures found there would represent as many inches. This table is very convenient in finding the common difference in the length of jacks as they are but a part of a common rafter, their lengths may be readily found as follows:

If they are spaced one foot from centers, then the length in the first square will be the common difference. The length of the second jack will be that found in the second square and that for the third will be found in the third square, etc. If the jacks are spaced on 24-inch centers then find the lengths in every other square. If they be placed on 16-inch centers, look under the 16th run and consider the length found there as inches. If they be placed on 18-inch centers, look under the 18th run, etc.

There are twelve scales in this table. Each figure in the run representing a scale and all giving the same cuts. Thus, the seat and plumb cuts for the common rafter are as follows:

Take the number of any run on the tongue and its rise found in the square above and opposite the desired give the side cut of the jack and also the face cut across the roof boards to fit in the valley or over the



R U N  
FIG. 87.

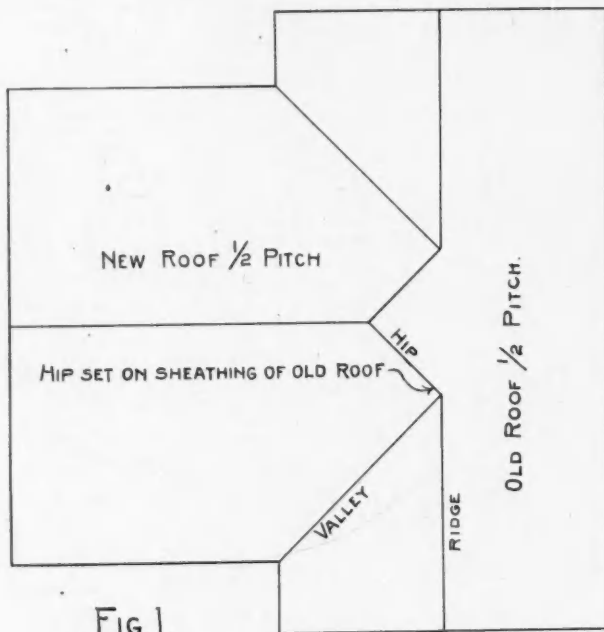
pitch, on the blade will give the seat and plumb cuts. Take the number of any run on the tongue and the corresponding length of the rafter on the blade will

hip. The blade giving the cut on the former and the tongue in the latter.

Take the length of the rafter for any run on the

blade and its rise on the tongue and the latter will give the miter cut across the edge of the roof boards, which is the same as the miter for the square hopper. The figures for the full scale are found in the twelfth run for the above cuts as before illustrated.

To find the side cuts for the polygonal jacks. Take



the tangent on the tongue (see Fig. 83) and the length of the common rafter found in the twelfth run on the blade and the latter will give the cut.

This table also contains a complete lineal board measure for any width of board up to 18 inches as follows:

Let the figures on the tongue represent the width of the board and those on the blade the length. The top figures in the intersecting squares opposite these numbers will be the contents of the board in feet and inches as follows:

A board 6 inches wide and 9 feet long contains 4 feet 6 inches. A board 17 inches wide and 9 feet long contains 12 feet 9 inches. A board 15 inches wide and 8 feet long contains 10 feet, etc. A board 14 inches wide and 20 feet long, the answer would be found in the intersecting square opposite the starting points, as at X. Thus it will be seen that a completed table of this kind would come very handy as a ready reckoner. The reader will notice in the 3/8 pitch that the lengths are without fractions. This occurs at three places on the blade, 5, 9 and 16, respectively. Thus in the 1-3 pitch, the lengths end in fractions and are expressed in twelfths. For an 8-foot run the length would be 8 feet 7 5-12 inches. For an 8-inch run the 5-12 may be discarded as it represents less than a half of a twelfth of an inch. The answer would then be 9 7-12 inches.

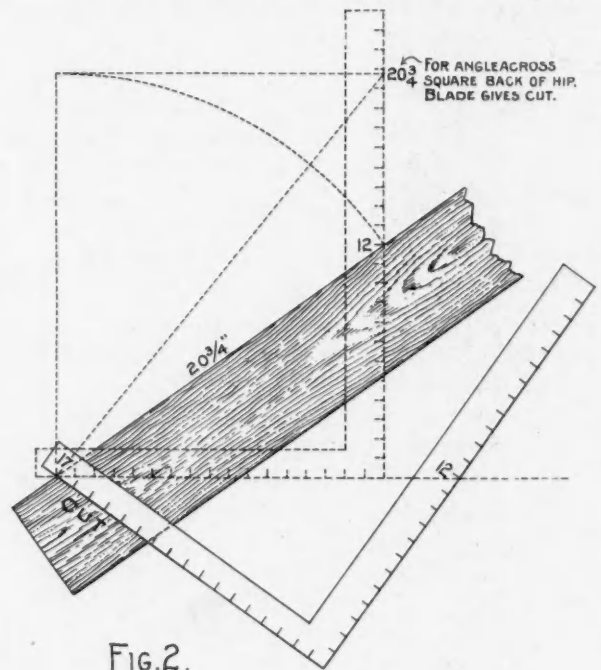
**End Cut of Hip to Rest on Adjoining Roof**

To the Editor: Gallatin, Mo.  
Will you please give a rule for cutting the bevels with aid

of the steel square, on the bottom end of a hip rafter with "square back" when the same sets on the sheathing boards at comb, as in case of building an addition to an old house, as shown in sketch.

J. A. Caraway.

ANSWER: Fig. 1 is a reproduction of Mr. C.'s sketch. The pitch of the two roofs are the same but are not necessarily so, as it is simply one roof joining another and may be of different pitches. If the new hip was to rest on a level plane, as in case of a plate, then the seat cut would be 17 and 12, as shown by the broken lines of the square in Fig. 2, but since the seat cut must rest on the sheathing boards of an adjoining roof, we simply apply the square with the figures that give the seat cut for the corresponding hip for the latter to the seat cut line of the new hip as shown in the illustration. However, this only gives the angle across the face or side of the hip and another angle across the "square back" of the hip is necessary to give solid bearing on the roof. This, however, is the same angle as that used at the top end to fit against the ridge board and in this case is 17 on the tongue and 20 3/4 on the blade. The blade giving the angle for cut. The dotted lines in connection with the upper



square show why these figures are taken. From these illustrations it will be seen that the cut in question is the same as the tail end cut of the hip, or valley, as described and illustrated in Figs. 80 to 82 in our regular article found in the August number of this magazine.



Maybe there is excuse to offer for bragging about what you have done in this world, but it's a poor policy to blow about what you are going to do.



Fireproof construction and mutual insurance are two things that manufacturers should keep in as close touch with as possible.



## Short Talks With Our Subscribers.

OUR subscribers will be interested to learn that the "Special Carpenters' Number," for which preparations have been under way for the past six months, will be issued October 1. Most of the special articles are ready, although there remains a large number of fine drawings to be made. A design of remarkable brightness and attractiveness has been accepted for the cover, and several engravers are now at work on the plates. The management is not satisfied with being so far in advance of other trade papers in the beauty of its covers every month, but every time a special issue is published the artists and engravers are called upon to surpass their previous efforts, no matter how perfect their first work may have been. The cover for the October issue, while retaining its present form and design, will be entirely changed in its color scheme, giving an effect which is unusually striking. The colors used are red, black, yellow, white, and two shades of green. These will be blended in lithographing in such a manner as to be at once pleasing to the eye and striking, because of the very boldness of the combination. The color scheme will be carried out on both front and back covers, and the effect will be unequalled by any magazine, no matter how high class in character.



### Review of its Contents

Such elaborate preparations have been made that at least 150 pages will be required in order not to omit any of the special articles which have been prepared expressly for this big issue. Unusual care is being taken with the drawings and half tone illustrations. The editors have endeavored to combine in this one number all that is practical and helpful, with the idea of giving our readers something that they will long remember and to which they will often refer during the entire year. Every department of building will be represented, and enough pages will be printed to accommodate every editor's wishes, so that each will be able to make the best possible use of his space.

The leading article will be "Dutch Types of Architecture in South Africa." This describes the buildings in this far-away country, showing their peculiarities of construction. It is fully illustrated with some excellent photographs taken by the author. "Uncle Rural" again makes his appearance with some practical advice on "The Difference Between Nursing a Job and Cultivating Trade." Arrangements have been made

to have every one of the many regular departments fully covered, and new features will be added. Considerable extra space will be given to the "Correspondence" department. This is one of the most helpful features of the magazine, as it contains the experience of practical men on various puzzling questions, and also contains answers to all kinds of inquiries from our large family of subscribers. The questions which are answered are those which arise in the every day work of the carpenter and builder, and are found of universal interest.



### Several Thousand Extra Orders

Advance orders for this special number have been coming by the hundreds, and at this early date it is certain that at least 40,000 copies of the October number will be necessary to cover the demand. Carpenters in all parts of the country have become interested, and those who are not subscribers have sent in their orders for this particular number, intending to become regular subscribers, if the magazine pleases them.

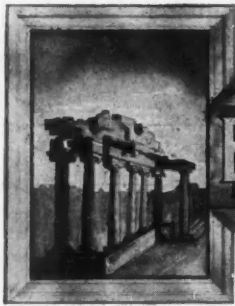
If any of our readers would like to secure extra copies for themselves or their friends, they should not delay ordering, for if they wait until after October 1 they will run great risk of learning that the edition is exhausted. We begin printing the magazine about September 15, and at that date we estimate as near as possible the requirements for the month. Orders received after that date may be too late.



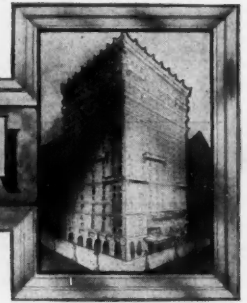
### What this Means to the Advertiser

Our advertisers have not been slow to appreciate the advantage of having their announcements appear in this number and many orders have already been received. A number of pages in two colors will be inserted in the front of the book, and a good portion of this space has already been sold. The opportunity to reach over 40,000 carpenters and builders in a single issue of a single journal does not occur often, and as no extra charge is made for this issue it has resulted in many advance orders.

In addition to this, present advertisers are ordering their ads. in increased space, or ordering them in two colors, or both. Orders for space or change of copy must reach us before September 20. Advertisers are urged to change their copy for this issue, so that their advertisements will be made attractive, and so that they will get the greatest possible benefit out of their announcements.



# BUILDING CONSTRUCTION



J.A.F. Cardiff.

## Building a Home

A SERIES OF ILLUSTRATED ARTICLES COVERING CONSTRUCTION DETAILS IN THE ERECTION OF OUR AMERICAN HOMES—FROM THE LAYING OF THE FOUNDATION TO THE DELIVERY OF THE HOUSE TO THE PAINTER

**A** DOUBLE hung sash window in a brick wall, with inside blinds folding in a slanting box, is made the subject of this issue.

The brick wall is thirteen inches thick and the opening is spanned on top by a stone lintel four inches deep, eight inches longer than the width of the opening, and four brick courses in height. Back of the lintel, the inner two-thirds of the wall is carried across the opening on a rowlock arch turned over a wood center. Rowlock arches are usually made with one rowlock for each eighteen inches or fraction thereof, in the width of the opening, and are segmental in form with a one-inch rise for each foot of span. Key bricks of the lower rowlocks should not be set until the arch is ready for the key bricks of the top rowlocks. The centers for the arches are usually set by the carpenter under the direction of the mason. Temporary centers for face arches, should not be struck until the mortar with which arches are laid, has thoroughly set and hardened.

The window frame is set so as to give a four-inch reveal. The joint between the brick jamb or lintel and the wood frame is covered with a moulded staff head nailed to the frame. This staff head should be moulded in such a manner as will give a channel or deep recess on the side adjoining the brickwork.

The opening on the exterior has a stone sill two brick courses in height, eight inches longer than the width of the opening, and of a proper depth to extend under the wood sill at least two inches. The stone sill is cut with a wash and has raised lugs or stools at each end to receive the brick jambs or imposts. The underside of projecting portion is cut with a water nose or drip. The sill should be bedded in mortar at each end under the imposts but should not be bedded in the center, as any settlement of the building would be likely to crack it if bedded. When building is nearly completed, the open space or joint under the sill should be pointed up with mortar, worked well into the joint.

The inside blinds fold back in a pocket or box, set on a slant, giving the appearance of a deep, paneled, splayed jamb. The first fold of the blinds is paneled and the inside soffit has a panel to correspond with it. The blind box projects into the room, with the trim

returned about box to plaster wall. The head is formed like an entablature, with a crown moulding, a fascia and a mould planted on fascia. The stool is deep, carried across opening, and returned about box to plaster wall. The stool is supported at each end, under the trim, on carved wood brackets. The joint between the plaster and the underside of the wood stool is covered with a small cored mould which breaks around the wood brackets and returns against wall. The blind box projects into the room, with the trim finish as the other woodwork of the room in which it occurs. This is also true of the inside stop head.

Fig. 139 is a section taken through the head of the window. The panel shown in the inside soffit should be arranged so as to be easily removable in case of splitting or warping. This may be readily done, if constructed as indicated, by removing the small coved wood moulds which hold it in position. These moulds should be fastened to the frame rather than to the panel. In this way the panel is set free so that it may contract or expand without affecting adjacent work.

Fig. 140 is a section taken through the jamb of the window. The second and third folds of the blinds are provided with rolling slats. The first fold may also be provided with slats but a panel makes a better appearance and does not catch dust the way the slats would. It will be observed that a special hinge is used on the blinds, which prevents them from catching or sticking in the box. All the blind stiles should be rabbeted as shown and should have a head on edge to lessen the prominence of the joint. The first fold is rabbeted over the side of the box which acts as a blind stop. The use of the tongue dividing the weight box is a feature used only in the best grade work.

All interstices and spaces between the window frame and the masonry opening should be made absolutely wind proof. In ordinary work this calking is done by calking the spaces with oakum and pointing up with mortar.

Fig. 141 is a section taken through the sill of the window. The wood sill is ploughed for the inside stool. The space under the projecting stool is an excellent place for a radiator. If one is put there, the underside of the stool should be covered with asbestos paper and tinned.



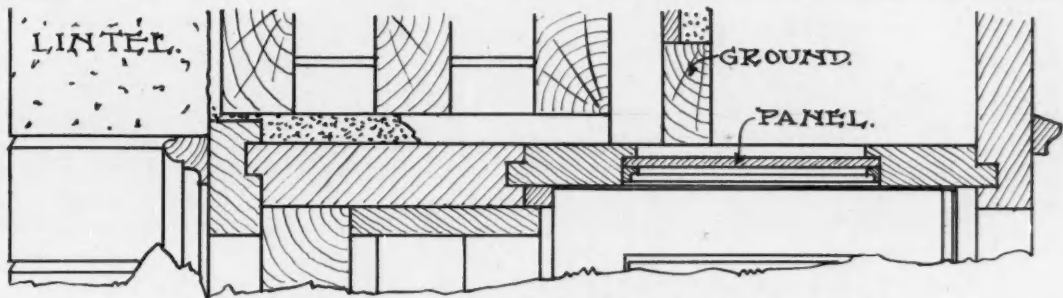


FIG. 139.

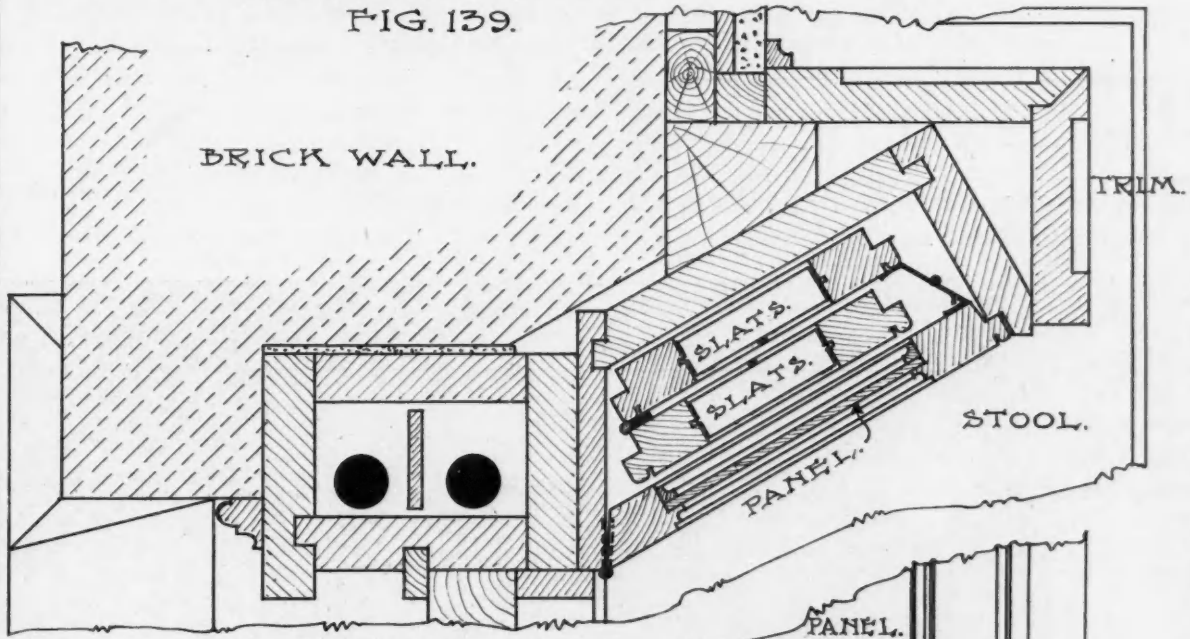


FIG. 140.

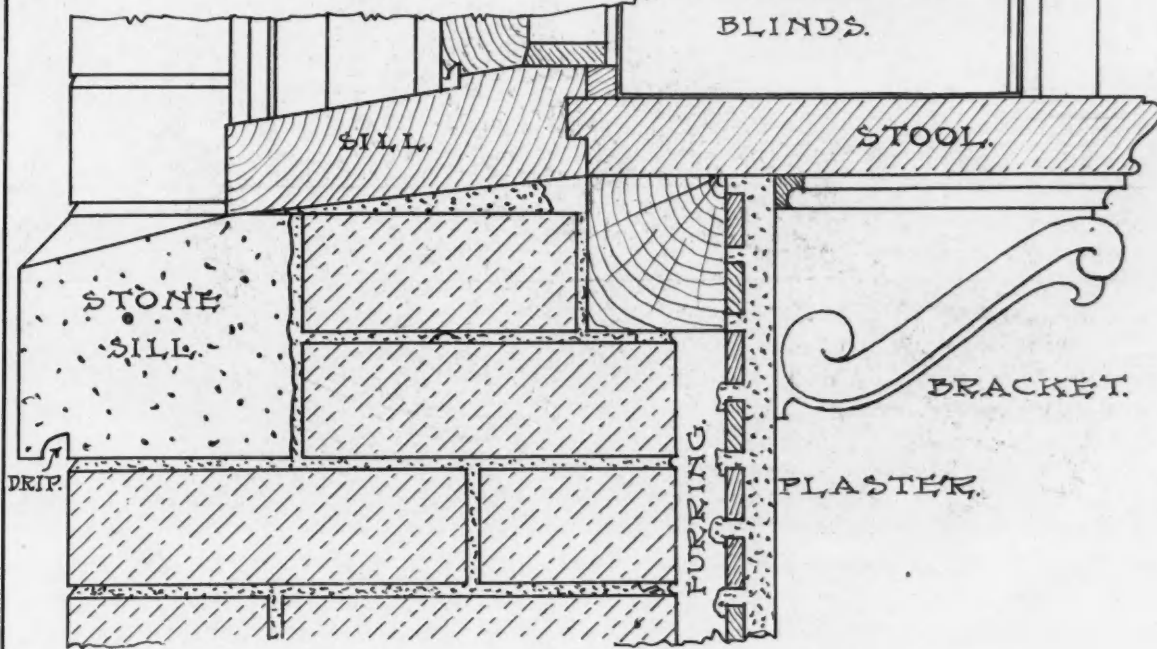


FIG. 141.

PLATE XXXII.

WINDOWS.



## Three Attractive Homes

PLANS AND ELEVATIONS OF THREE DISTINCT TYPES OF HOUSES—DESIRABLE FEATURES IN EACH BROUGHT OUT—CARPENTERS CAN OBTAIN VALUABLE SUGGESTIONS FROM SAME

**O**N this page we show a neat and economical cottage, the plans of which were prepared by John Y. Benfer, architect, of Seneca, Kans. It was erected for W. F. Thompson of that city. The size of the cottage is  $31\frac{1}{2}$  by 44 feet. The height of the different stories are, basement  $7\frac{1}{2}$  feet, first story

house, and is divided into a fuel room, furnace room, vegetable room and a laundry, which has a large window surrounded by an area wall. This basement has an inside as well as an outside entrance. The opening between the dining room and the parlor has Doric columns, and these, together with the mantel,



9 feet 8 inches, and second-story 8 feet. It is, so to speak, a two-story house within a cottage, as the one room in the upper story is cut in the ceiling which is so common on cottage work. The entire space over the kitchen is floored, but unfinished, and is used as an attic. The upper hall is well lighted by two leaded glass windows and a glass door from the balcony. The basement extends under the entire

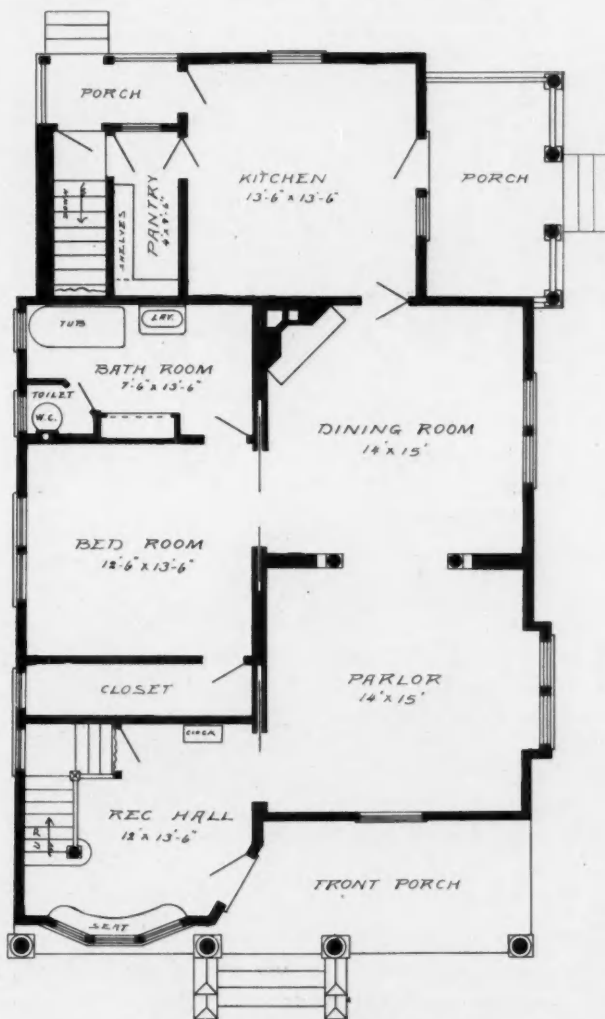
give these rooms a good finish. The interior finish of the first floor, with the exception of the kitchen, is white oak quarter sawed. All the floors are covered with  $\frac{3}{8}$  by  $1\frac{1}{8}$ -inch oak. All this work is highly polished. The second story is finished in yellow pine with the natural wood finish. The stairway is of a suitable design to match the high windows and the window seat. It depends altogether how all

the plans and specifications are carried out by the owner and contractor to make such a place as this a very desirable home. The plumbing and heating also have much to do in making the house complete. The

The living room and dining room have an exposure on the south, thus making them warm in winter and pleasant in summer. The dining room is light and cheerful in the morning, obtaining the morning sun, which in the afternoon lights the living room and casts long sheltering shadows in the garden.

From the dining room a charming vista is obtained of a terrace from which two or three steps lead down into a garden with a labyrinth of shrubs and flowers; at the lower end of the garden a beamed pergola is intended to form a quiet retreat. From the garden you may pass through a gate in the hedge to the service portion, which consists of a clothes yard and kitchen vegetable garden. As plainly shown by the land plan, the gardens and yard are surrounded by box hedges, which make it impossible for the public to obtain more than a passing glimpse of the interior of the garden.

The house is of wooden frame construction, covered



FIRST FLOOR PLAN

exterior of this house is plain white and the place is surrounded by numerous shade trees, which gives it a very pleasing effect.

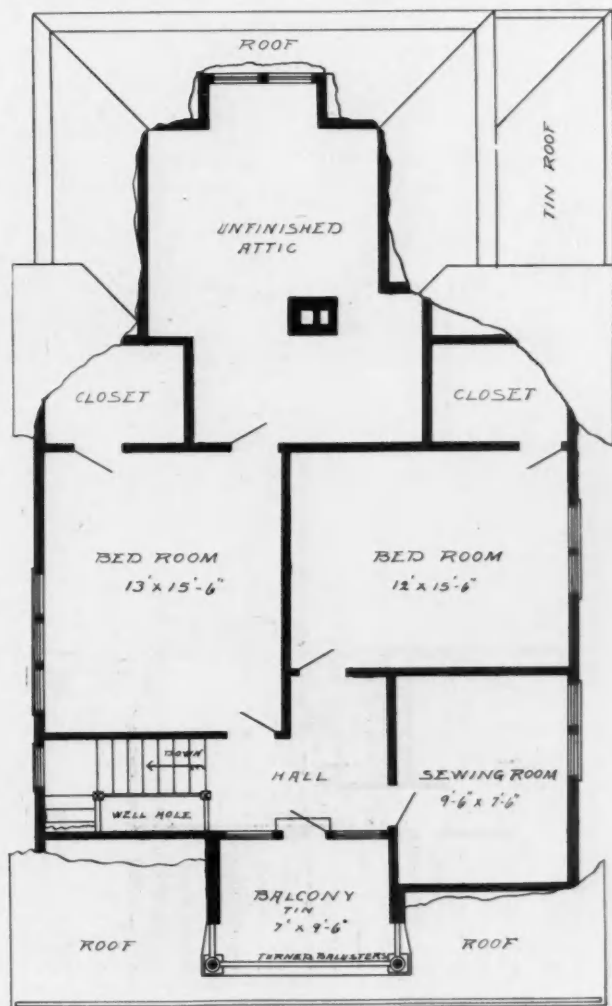
**A Colonial House**

The house shown on page 662 was designed by A. Raymond Ellis, Hartford, Conn., and he describes it as follows:

The style best adapted for a simple, as well as inexpensive house, is the "Colonial," with a plan almost a parallelogram, combined with simple yet effective detail.

This house could easily be built for \$4,000, with a dignity, beauty and refinement combined, that would appeal to a person wishing such a home.

The house is located on a lot 50 feet by 125 feet. I have assumed the lot has a frontage of 125 feet on a main street. The main entrance is direct from the main street, and the side entrance from the side street, the traffic of tradesmen of this entrance being well hidden by the hedge.



SECOND FLOOR PLAN

with cement plaster on furring strips, and roofed with shingles. The roof shingles are stained a slate green, the window blinds are green, and all the window casings and outside trim are a dark brown.

The interior is finished very simply; the hall has a 4-foot 6-inch matched wainscot; the living room ceiling beams are those which are required to carry the second floor, the stairs and trim of the hall and living

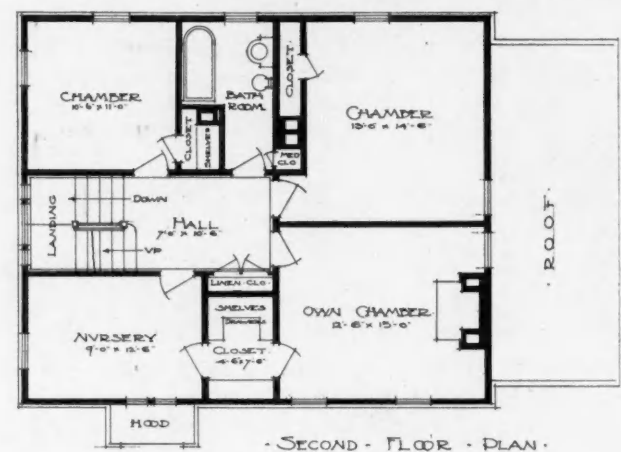
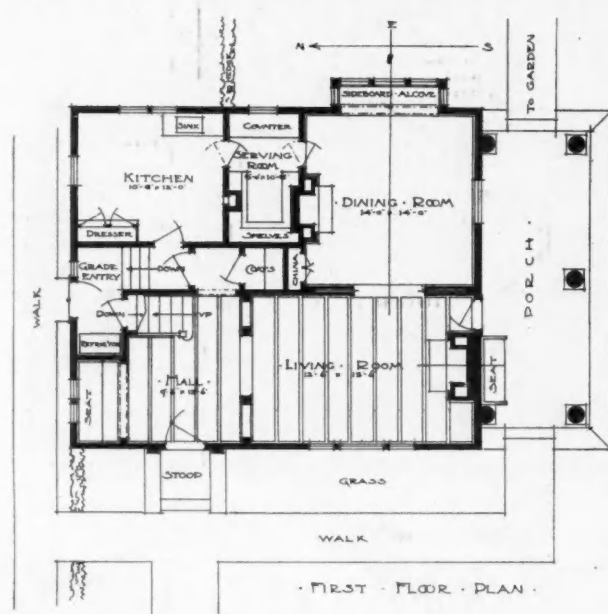
old colonial furniture to enrich the room. The service portion is entirely of pine, stained; all the floors in the living portion are of Georgia pine waxed.

The fireplaces are of red brick laid up with broad



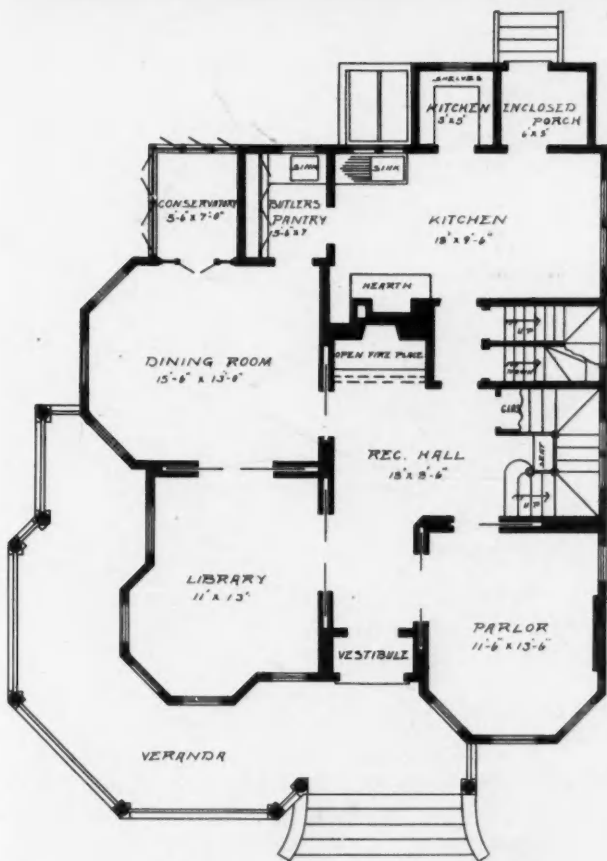
room are all stained a rich warm brown, with a water stain, made from aniline dye shellaced and rubbed

white joints; the mantel shelves are of simple detail, supported on wooden brackets and corbels. The connecting sliding doors between the dining room and living room are two panels high, the top panel to be leaded glass. A large coat closet and the usual ar-

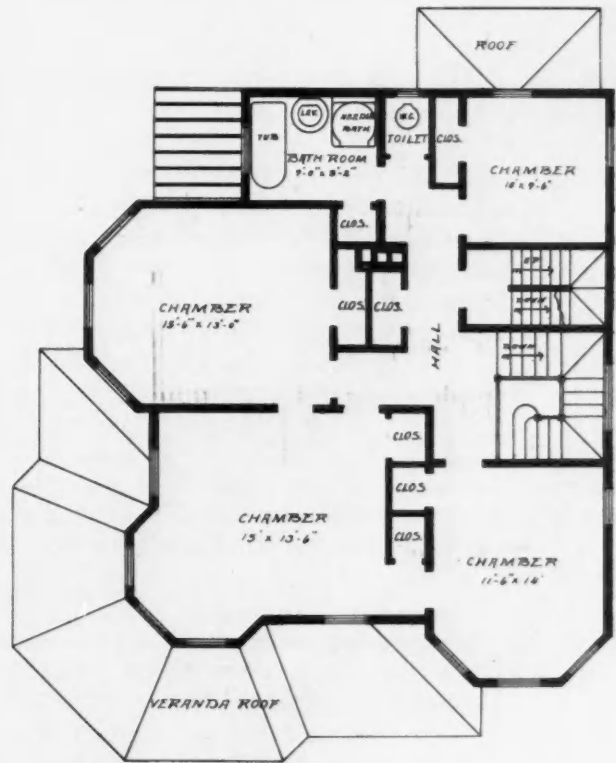


down. The dining room is painted a raw sienna, without any wainscoting, depending upon a few pieces of

rangements in the kitchen complete the first floor. When the living room, hall and dining room are all thrown open, an airy and spacious effect is obtained. The hall and living room are treated with the same



FIRST FLOOR PLAN



SECOND FLOOR PLAN

color scheme so that they can be used as one and each gains a little from the other.

On the second floor, there are three bedrooms, sewing room, bath room and linen closet. One servants' bedroom, trunk room and bath room in the attic complete the plans. The finish of second and third floors are of white wood, stained natural; Georgia pine floors are used throughout the second, shellaced, and spruce floors painted for the attic."

The main idea I have had in mind in designing this house is the fact that convenience and absolute necessities must be combined as simply as possible, and yet make the house attractive, by trying to avoid the meretricious vulgarity, that the usual simple dwelling has, in order to make it attractive.

**A Suburban Dwelling**

The house shown on page 663 was designed by Alfred H. Lee, New York City. There is a cellar under the entire house, and it is seven feet and one inch in depth. The cellar bottom is covered to a depth of three inches with cement concrete. The exterior of the house is finished in white pine and the roof is covered with eighteen-inch cypress shingles, which are stained dark gray. The shingles used on dormers

and gables are clear butt white pine laid five and one-half inches to the weather and stained light green. The first floor is covered with ship lapped hemlock, laid diagonally and finished over this with yellow pine planed smooth. Attic and second floor are covered with North Carolina pine. The porch floors are of white pine and the joints are well laid in white lead. The first floor is divided into parlor, library, dining room, kitchen, reception hall and a conservatory. There are two flights of stairs to the second floor which is a splendid feature. The reception hall is made more attractive by an open fire place and a stair seat. All the rooms are well lighted, which means considerable in any house. The four bedrooms and the bath room on the second floor all open directly into the hall.

The cost of the house is as follows:

Excavation .....	\$ 106.00
Mason Work .....	577.00
Carpenter Work .....	4,099.55
Plastering .....	210.00
Painting .....	370.00
Plumbing and Tinsmithing.....	1,010.00
Miscellaneous.....	126.00
<b>Total .....</b>	<b>\$6,498.55</b>

## How to Frame a Hood Rafter

ANSWERS TO TWO QUESTIONS ON A SUBJECT OF VITAL INTEREST TO ALL BUILDERS—ILLUSTRATED TO MAKE THINGS AS CLEAR AS POSSIBLE

By A. W. Woods

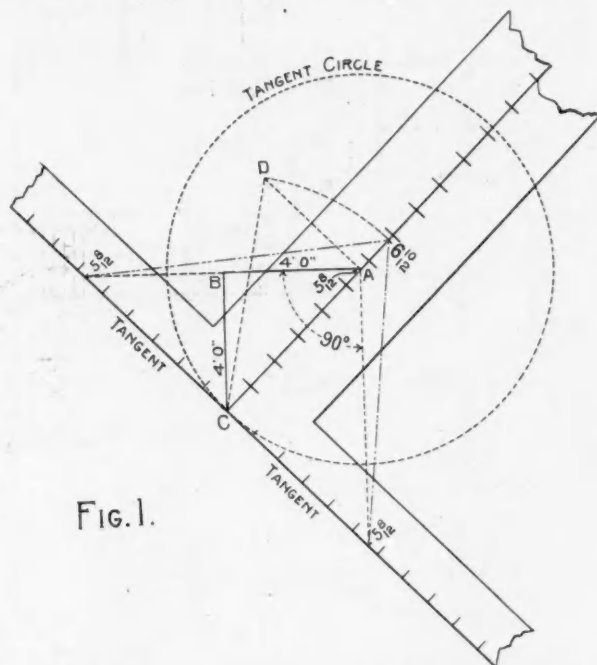
HERE are two questions pertaining to the same subject. The former is regular and the latter irregular. We say irregular, because in the second example the run and projection are of different lengths. Hence the rafter in question is irregular just the same as the intersection of different pitched roofs. In other words, the rafter in question occupies the same position in the roof as the corresponding hip or valley, not a jack rafter, as mentioned in one of the questions. Therefore, the figures to use on the steel square are just the same as for finding the lengths, plumb and side cuts for the corresponding hip. The former being regular, the side cuts are the same, but in the irregular they are different, yet they are found by the same method, but it requires different figures on the steel square for obtaining the cuts.

To the Editor: Slatersburg, Mo.  
Please give the figures to use to cut a hood rafter for a barn. The hood has an 8-foot span and extends out 4 feet. The rise is 11½ inches. Also give the length of the rafter.  
A. C. Brundige.

To the Editor: Scottville, Ill.  
We are building a barn 24 feet wide with 10½-foot rise and wish to cut a pair of jacks to form hood over end of track. The hood to extend 2 feet out from end of barn and to cover 7-foot span at base of jacks. We want to know how to cut them. Please make your answer as simple as possible.  
C. S. Patterson.

In Fig. 1 is shown the proportional figures to use on the steel square for the regular or first question.

The triangle bounded by A-B-C represents three measurements, as follows: A-B, run of the common rafter; B-C, projection of hood; C-A, the run of the rafter in question. From the latter, at A, erect the



rise given the common rafter as at A-D and draw line C-D, which will represent the length of the rafter. The diagram can be drawn to any convenient scale.

In this, we have used one inch to the foot. To this apply the steel squares as shown. Extend the line A-B till it intersects the tongue, and from A and at right angles from A-B draw a line till it intersects the tongue of the opposite square. It will be seen that

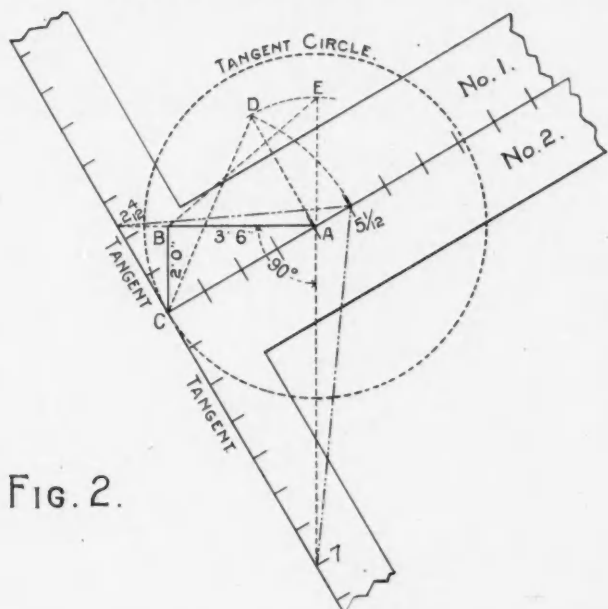


FIG. 2.

these lines in either case intersect the tongue and blade of the squares at like figures because the seat of the hip rests at an angle of 45 degrees from the common rafter and the ridge or projection, consequently the intersections on the steel squares are of like proportions. The figures on the tongue represent the length of the tangents—not that of the run of the hip, as is generally supposed. Having established the figures to use on the tongue for the top, or more generally side cut of the hip, we will now take the length of the hip C-E on the blade (6 10-12 inches) and the tangent

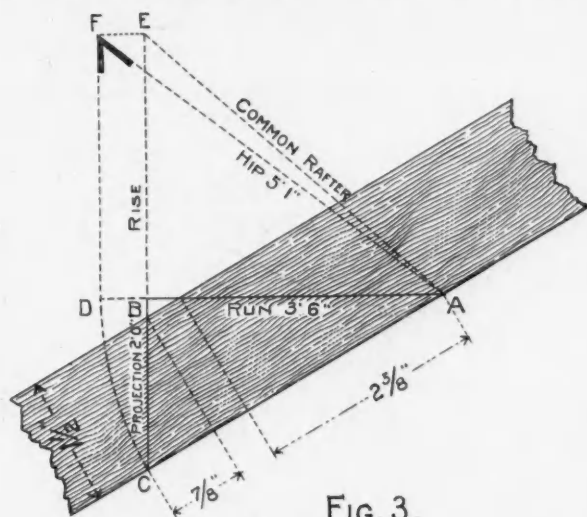


FIG. 3.

(5 8-12) on the tongue. The blade will give the side cut of the hip at either end across the top of the unbacked hip. The plumb cut, of course, being obtained from the run C-A and rise A-D of the hip. For a rafter of this kind, the backing should all be one way

and may be found by taking the length of the hip (6 10-12 inches) on the blade and the rise A-D (3 10-12 inches) on the tongue, and the latter will give the proper angle, or it may be found by setting off the full thickness on the seat cut line as described in Fig. 78 of the July number.

Now, we will take the second example as shown in Fig. 2 and proceed as in the above, but the tangents instead of being equal are found to be of different lengths. Consequently it will require the figures as shown on both squares as follows:

Square No. 1 will give the cut across the back to fit against the common rafter, while square No. 2 will give the cut across the back at the upper end. The blade giving the cut in both cases.

These cuts may also be had by first backing the rafter and applying the steel square with the figures that give the side cut of the corresponding jack as follows:

Length of projection C-B on tongue and length of common rafter B-E on the blade. The tongue will give the cut at the top and the blade at the bottom. Of course there are other ways of arriving at the same results, as by geometrical diagrams, but after all it requires the steel square to properly lay off the diagram. Then why not learn to use the square direct to the timber?

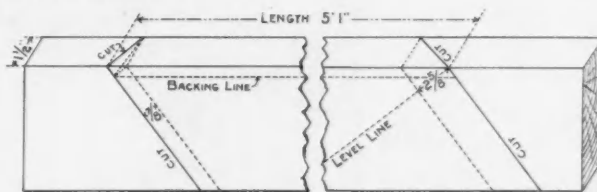
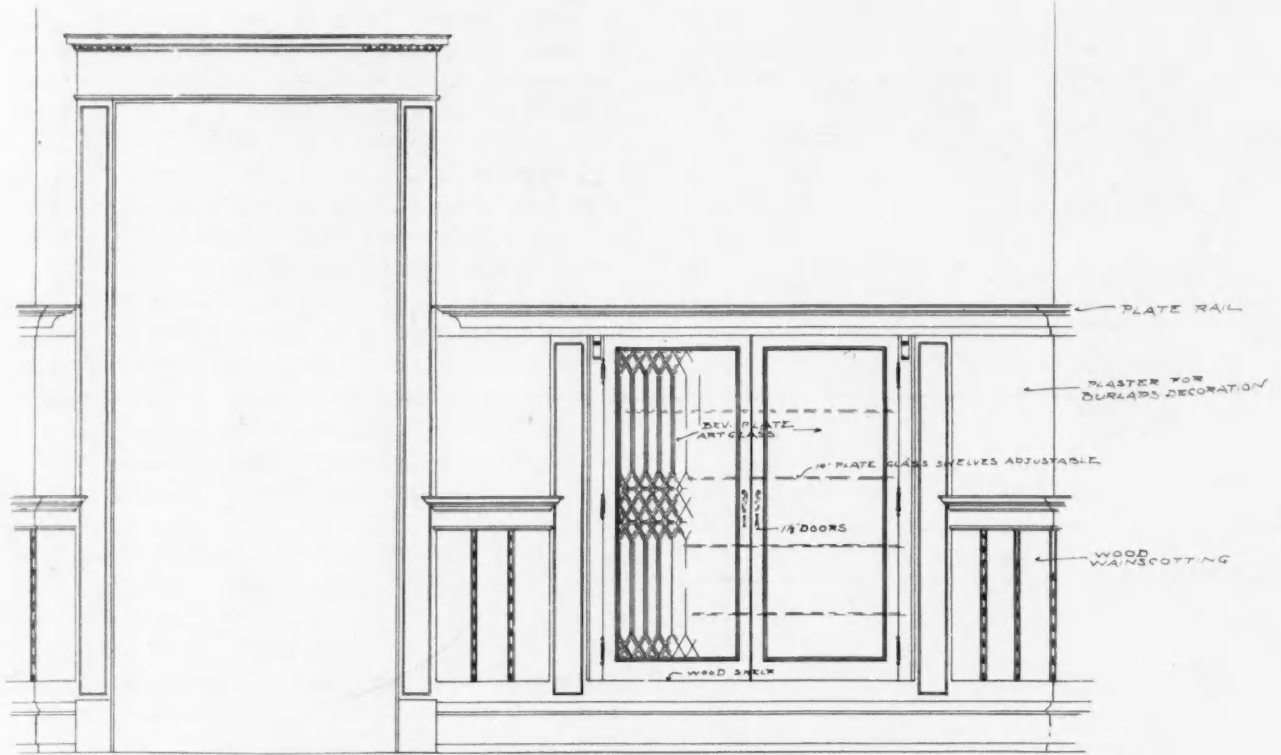


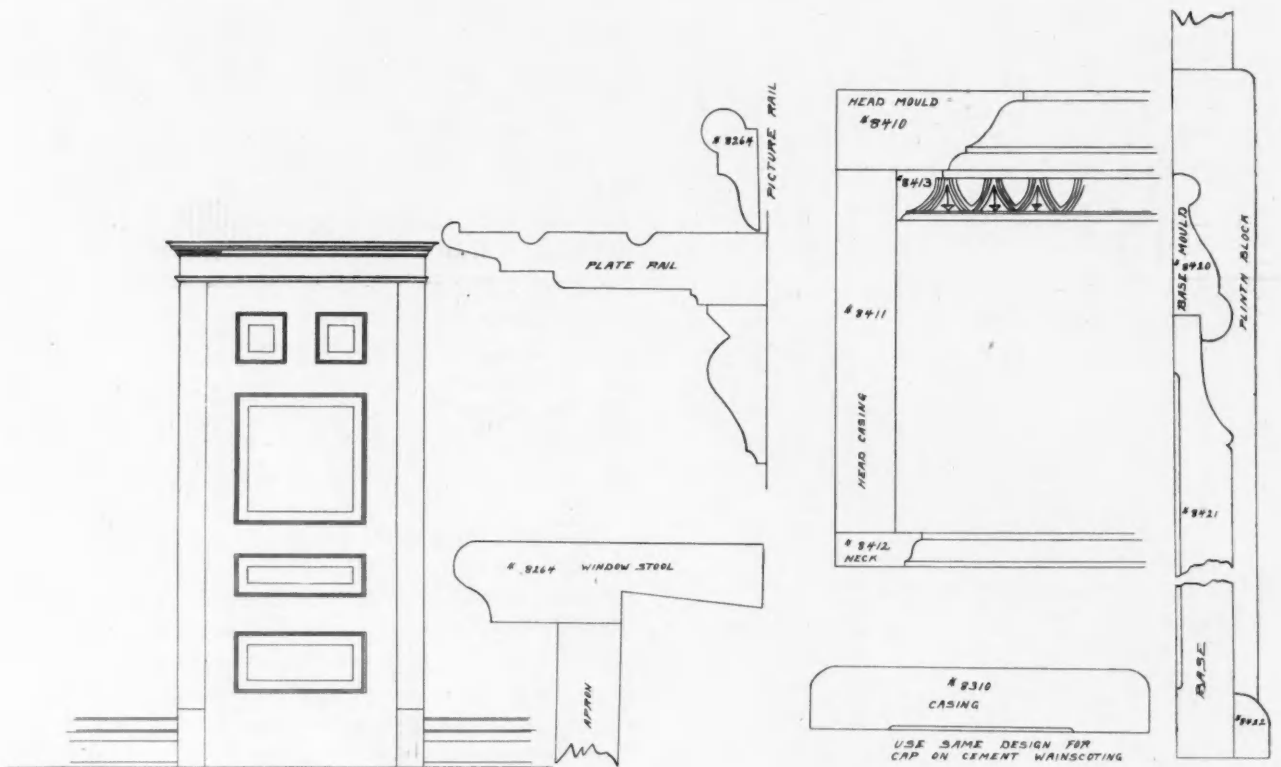
FIG. 4.

In Fig. 3 is shown a diagram of this kind. Taking the above problem for example, lay off the triangle bounded by A-B-C and across this lay off the full thickness of the rafter and square across the back from the intersection of the triangle lines as shown. The 7/8-inch and 2 5/8-inch are the distances to set square back from the plumb cut lines to obtain the angle across the back. The plumb cut is found by erecting the rise as from D on extended line B-A equal to B-E. Then F-A will represent the length of the rafter and the cut may be had by applying the steel square with the proportions A-D and D-F, or it may be had by applying a bevel at F as shown.

In Fig. 4 is shown the lay out on the rafter, which, we trust, needs no further explanation. But, after all, there is nothing better for such work than a thorough knowledge of how to use the common steel square. There are a number of patented instruments now on the market for which are claimed the simplification of framing in general. Some even go so far as to claim superiority over the steel square. To such they only expose their ignorance. At best these instruments are only limited to the more common things in regular work and their scope are necessarily limited.



ELEVATION OF SILVER CASE



DESIGN OF INSIDE DOORS





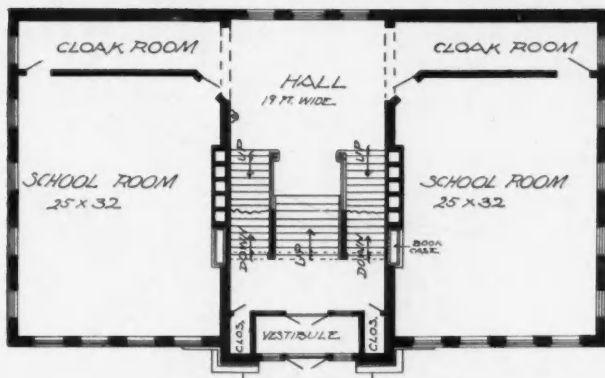
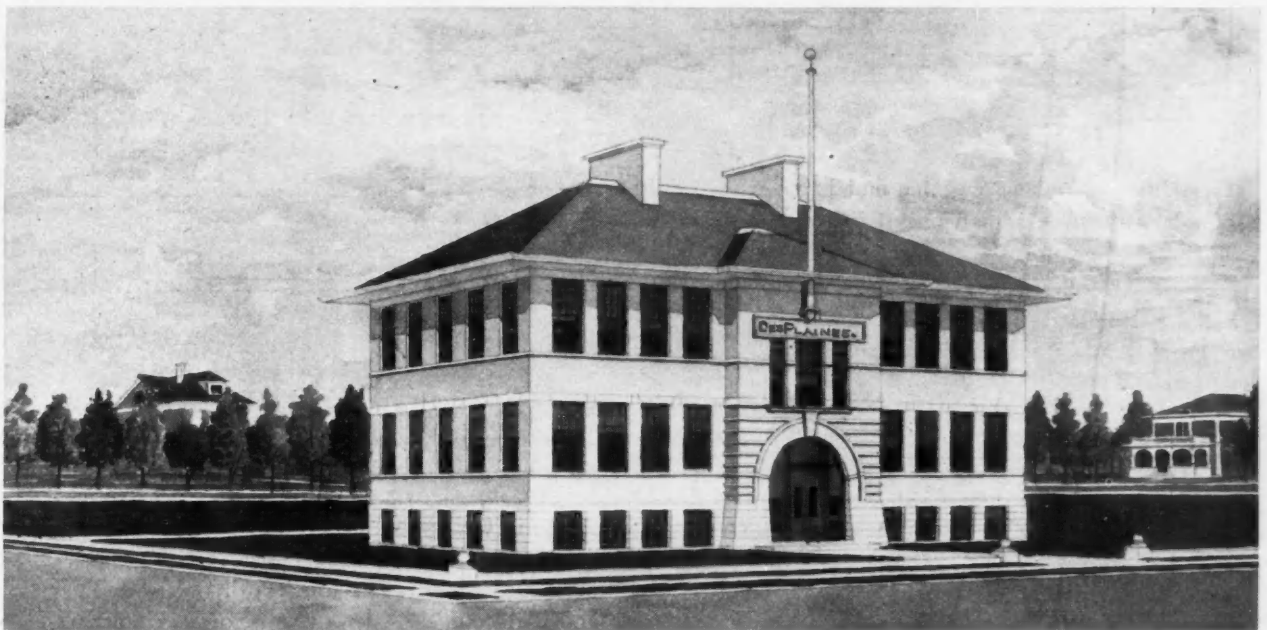
## A Four-Room Grade School

ARRANGED SO THAT AN ADDITION CAN BE ADDED TO IT—SEATING ARRANGED TO AFFORD MOST COMFORT TO THE CHILDREN

**T**HE four-room grade school shown on this page was designed by G. W. Ashby, architect, and built at Des Plaines, Ill. The rear wall of the building is constructed of veneer on wood. This was done so that an addition of four rooms can be added

The arrangement of the seats in all of the rooms is such that the children face a blank wall instead of windows. There is nothing harder on children than to sit with the light striking them in the eyes.

In two of the rooms the children face the cloak



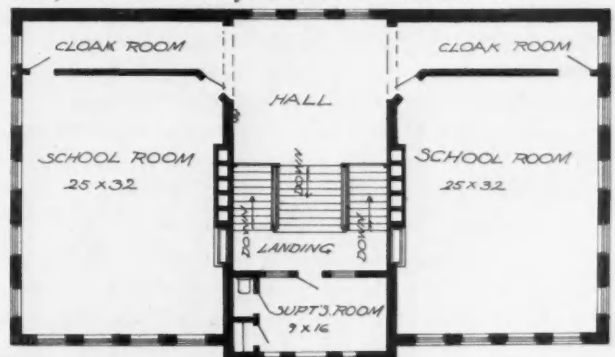
FIRST FLOOR PLAN

any time necessity demands. This is being done more and more throughout the country, as school boards are looking into the future and planning accordingly. The exterior walls are constructed of paving brick, while the trimming is of buff-colored Bedford stone.

The entire interior finish is in cypress and is very satisfactory.

room, while in the other two they face the inside wall. This brings the light in both cases from the rear and left side of the children. These things are very important and must be considered, as the light very important and must be considered, as the light has much to do with children being nervous and restless.

The superintendent's office is at the head of the first stair, and in that way he has a view of the hall.



SECOND FLOOR PLAN



## Soil, Waste and Vent Pipes

PROPER SIZED PIPES TO USE IN VARIOUS PARTS OF THE HOUSE—BEST ARRANGEMENT TO PREVENT SOIL PIPE FROM BECOMING CLOSED WITH HOAR FROST

**A** SUBJECT which is of great importance and which does not receive the attention it ought is the proper sizes of waste and vent pipes. The following are the correct sizes for various uses:

	WASTE PIPE.	VENT PIPE.
Bath Tubs.....	2" in diameter	1½" in diameter
Lavatories .....	1½" in diameter	1½" in diameter
Laundry Tray.....	1½" in diameter	1½" in diameter
Kitchen Sink.....	1½" to 2" in diameter	2" in diameter
Water Closets.....	3" to 4" in diameter	2" in diameter
Refrigerator .....	1½" in diameter	

Waste pipes from fixtures to the stack should be given as much fall as possible and in no case should they be inclined less than one-fourth inch to the foot

and not more than twelve inches. As the object of increasing the size of the vent stack is to prevent it becoming choked with hoar frost any height over twelve inches increases the probability.

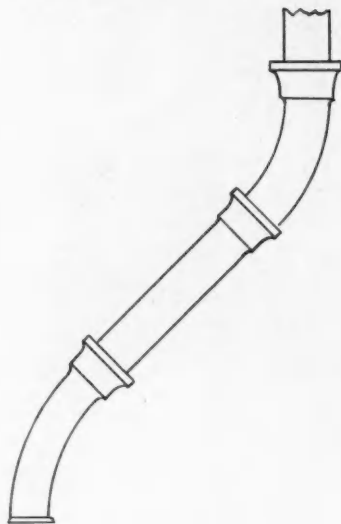


FIG. 1.

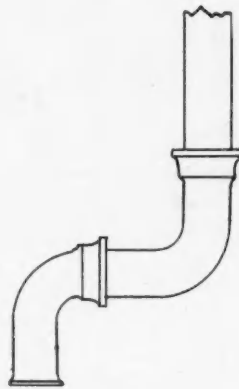


FIG. 2.

—making the grade in the direction of the outlet. Soil and vent pipes should run as near vertical as possible and if they must run otherwise all bends and curves should be made of large radius as shown in Fig. 1. Right angle turns, Fig. 2, should not be used. All soil pipes should extend through and above the roof. In cold climates the stacks should be increased in size (before it passes through the roof) at least one inch greater than that of the pipe proper, and in no case should be less than four inches through and above the roof. The increase in size should be made at least twelve inches below the under side of the roof and extend above the roof not less than eight inches

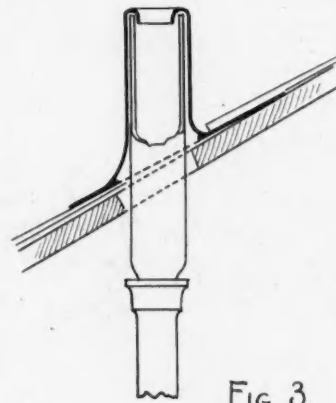


FIG. 3.

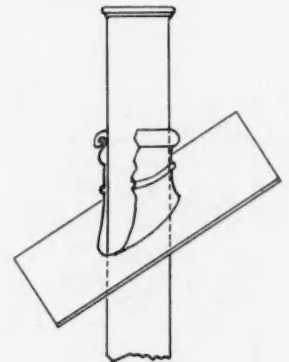


FIG. 4.

The object of enlarging the pipe is that the warm air and vapor rising in the stack condenses when it reaches the outlet end and forms a coating of ice, the formation of ice will continue until the outlet of the stack may be choked. Hence the enlarging of the pipe greatly increases the length of time required to choke it completely. Caps or cowls should never be used, as they are easily choked with hoar frost. All openings cut in the roof for vent pipes have to be made watertight by means known as flashing. The

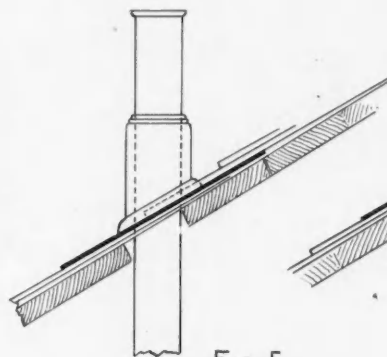


FIG. 5.

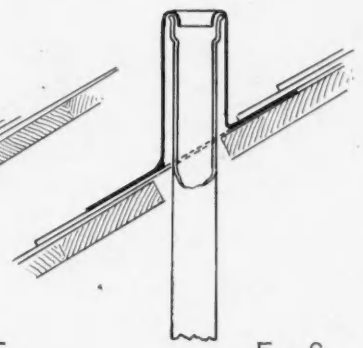
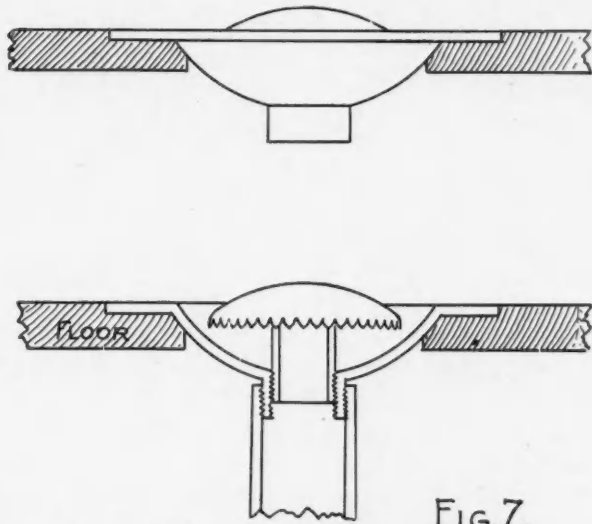


FIG. 6.

manner shown in Fig. 3 is the common way of doing this. A lead collar is soldered to a lead flange, which should be not less than six inches on all sides from the collar and the lead used should weigh six pounds



to the square foot—commonly known as six-pound sheet lead. The flange is laid under the shingles and the top of the collar is beaten into the top of the vent pipe. There are several factory made appliances on the market for roof flanging, the one shown in Fig. 4 is adjustable—the collar marked adjustable can be turned so that the flange can be adjusted from flat to one-half pitch roof. The top collar is of lead. This flange is made in copper and galvanized iron.

Fig. 5 is another style, the flange is made of copper and the collar of lead—the collar is made water-tight around the iron vent pipe with an iron ring. In extreme cold climates, where there is great possibility of the vent pipes becoming choked with hoar frost, the manner of installation, such as shown in Fig. 6, reduces the possibility to a great extent.

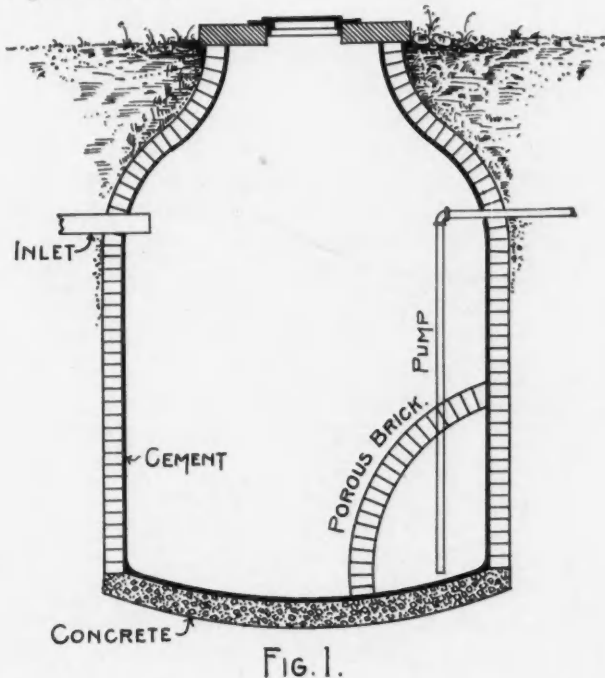


FIG. 1.

By cutting an opening in the roof about two inches larger than the vent pipe it will leave a one-inch air space all around the pipe that is open to the attic and will keep the temperature of the vent pipe at nearly the same temperature as the attic. Vent pipes extending through a flat roof should extend above the height of the side walls and the top should be protected from having any debris thrown into them by fastening a wire grating over them.

Refrigerator wastes—the waste pipe from a refrigerator or ice box should not be directly connected into any soil or waste pipe or directly into any drain or sewer pipe, but should discharge into an open sink or over a deep sealed trap in the basement.

The waste pipe should not be connected to the refrigerator or ice box, but a space should be left between them of at least four inches. Where there are

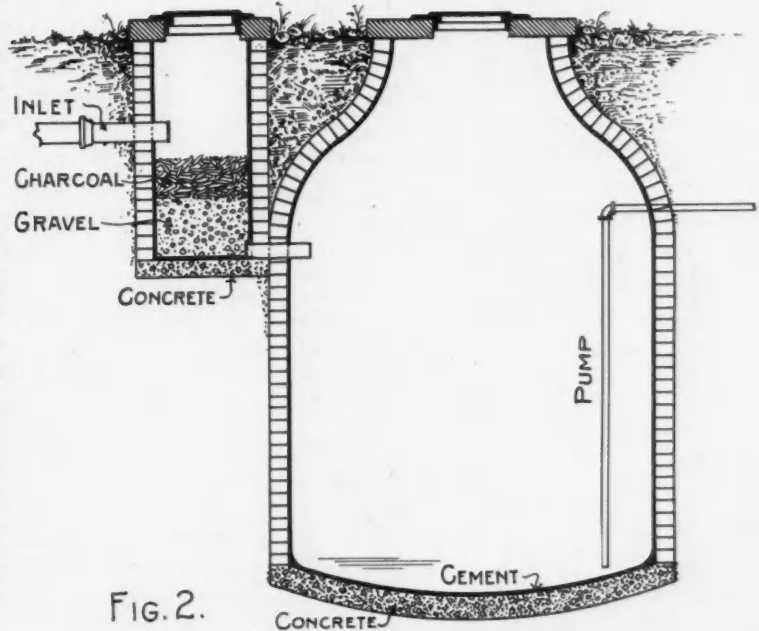


FIG. 2.

two or more refrigerators upon two or more floors the waste pipe should extend through the roof. Care should be taken that this vent is as far as possible from any soil vent pipe. One and one-half inch pipe is large enough for one or two refrigerators, three to five should have a two-inch pipe. Refrigerator waste pipes should be provided with a trap near the refrigerator. The one shown in Fig. 7 is a recently patented article. The refrigerator drain pipe trap screws into the receiving end of the waste, besides trapping the waste pipe it is also a receiver for the drip. The bell forming the seal is hinged so that same can be easily lifted and cleaned out. The traps for refrigerator waste pipes need not be vented.

**Filtering a Cistern**

To the Editor: Springfield, Ohio.  
I would like to be informed through the columns of the AMERICAN CARPENTER AND BUILDER as to the best methods of filtering a cistern, giving details. MORGAN D. MOON.

Answer: In reply to Mr. Morgan D. Moon's inquiry (Springfield, Ohio) would say there are a great

many ways of filtering a cistern. The cheapest way is to build a tight hood in one corner of the cistern of common porous red brick, so that it will be porous and allow the filtration of soft water into the small chamber, from which the supply is furnished to the house. A better way, however, is to construct a filtering chamber on the side of the basin, as per sketch No. 2. This basin should be one-half filled with clean, wash gravel and with a layer of charcoal, about six or eight inches thick. In this construction it would be an easy matter to make the filtering chamber accessible, so that at any time the contents can be removed and renewed.

#### Connecting Bathtub and Kitchen Boiler

To the Editor: Raymond, Wash.

Please tell me through your valuable paper how to properly connect bath tub and kitchen boiler, the bath tub is on the second floor and the storage tank in the attic.

F. E. PEPPER.

In answer to the above we show herewith a simple

way in which to make the connections inquired about. In the first place do not forget to provide an overflow pipe from the attic tank, this can extend out through the side of the wall and empty on the roof hence back into the cistern. The supply pipe must be run directly from attic tank to the boiler, care being taken to connect it to the circulating tube in the boiler. On the way down insert a tee at the second floor and run the cold water supply to the cold water side of bath tub faucet. Cold water supply to water back in range is taken from the bottom of the boiler and if range is used constantly connection from water back should be made into side of boiler. If not and hot water is wanted quickly, connection can be made into top of boiler using a tee as shown. The return pipe as shown by dotted lines is not necessary on a small job like this one, but when added, insures hot water at the faucet immediately. The waste pipe should be put in in case it is necessary to drain the system.

#### Boston Tenements

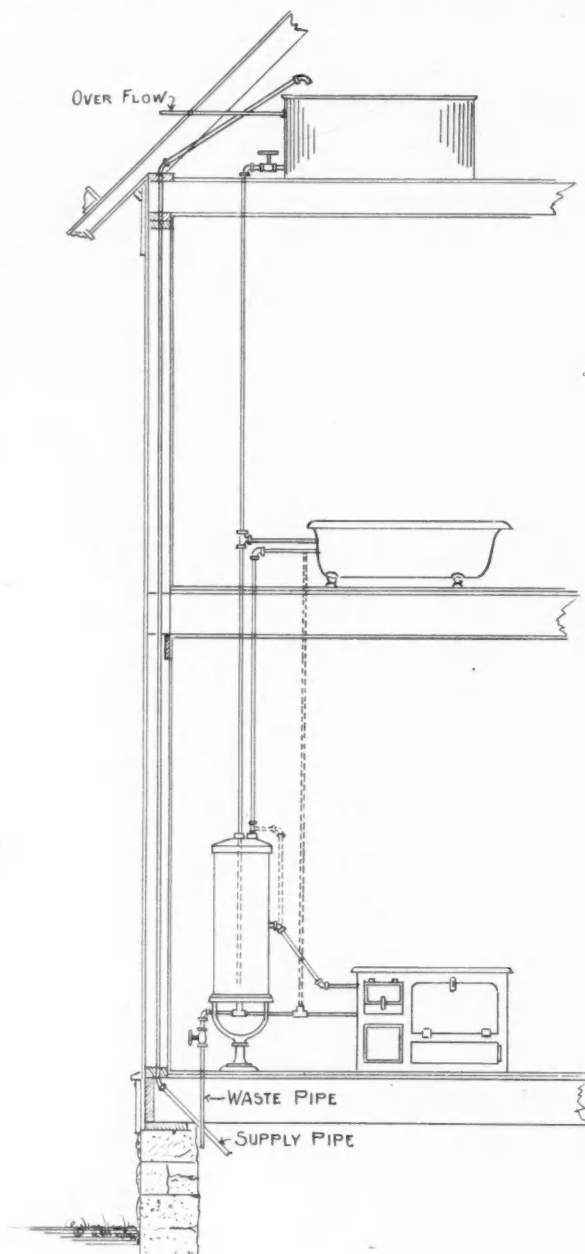
Boston is said to have better tenement houses and a more thorough system of inspection and control of these houses, than any other city of its size in the country.

The state of Massachusetts has no separate tenement-house act, and a very wide discretion is given to the health commissioner in the matter of governing the tenement-houses. In Boston there are four policemen detailed to the health department. When the health commissioner decides that a tenement house is so unsanitary that it ought to be closed, he simply gives the order. One of his inspectors, accompanied by one of the policemen, goes to the building and has it vacated forthwith. They stay until the goods are moved out. There is no delay for legal proceedings. What the health commissioner says goes.

Boston doesn't allow tenants to cook and sleep in one and the same room. The New York tenement-house law specifies that there shall be 400 cubic feet of air space in sleeping rooms for each adult, and 200 cubic feet for each child. So long as that rule is adhered to they can sleep, cook, eat and do almost anything else in a single room, and the health department has no power to interfere.

Every building in Boston proper (excluding the suburbs) is either whitewashed or repapered at least once every year. A rule of the health department requires this, and the department strictly enforces it.

The health commissioner of Boston is better equipped to enforce a rigid inspection and regulation of the tenement-houses than in many other cities. He has seventeen inspectors. They are called health inspectors. They are not for tenements alone. Each inspector has a district of his own, and it is his business not merely to watch the tenement houses therein, but to attend to any other premises where unsanitary conditions are found.





## Handling a Hand Jointer

SOME POINTERS ON HOW TO GET THE BEST OUT OF SOME GENERALLY NEGLECTED MACHINES—WHERE THE TROUBLE LIES AND HOW TO REMEDY IT

**O**F THE hand jointer or top smoothing planer seen in nearly every planing mill there are many sizes and kinds; some simple and some complicated, some plain and some combined. The greatest field of usefulness, of course, is in the elaborate combined machine which is a sort of double machine carrying a great number of combinations on both the jointer side and the molder side. In fact, so many combinations has this machine that it is considered by some as being almost a complete planing mill in itself. To others this series of combinations in one machine does not especially appeal, because they prefer specific machines for doing certain lines of work which a combination machine can be made to do by going to the trouble of setting it up and adjusting it. Generally speaking, it is probably safe to assume that where a planing mill is doing a great quantity of work it is better to have a number of different machines than to have so many combinations in one machine, while, on the other hand, where the work of the shop is limited in quantity and widely varied as to kind, the combination machine becomes a very useful thing, because it enables one to machine out certain things that are not made in sufficient quantity to justify the purchasing of a machine for that purpose.

The present purpose, however, is not so much to discuss the relative merits of combination machines and specific machines as it is to remind the readers of certain points about the ordinary hand jointer or top smoother which should have attention to get the best results out of the machine. Ordinarily these machines are sorely neglected. Knives are allowed to get dull, the tables out of tram and the fences out of true. This is due to the fact that the machine is one which everybody about the place uses more or less, it's every man's property in a way, and like every man's business, is looked after by nobody except when it gets so bad that it must be given a little attention, and then it never gets the same elaborate attention as if it were being used by one man exclusively.

To begin with, then, some man must be directed or inspired to give his special attention to this machine. When that point is settled then we can turn

to detail and talk about what to do and how to do it to the best advantage.

### Knives Need Attention

The first thing to give attention to is the knives. They must be kept not only smooth on the edge but sharp; otherwise the machine will never give the satisfaction it should, because when knives get a little dull they have a tendency to crowd the stock up and not cut full and free, the consequence being at the best a gradual tapering out of the cut at the back end and frequently also the making of waves in the surface of a cut which should be both smooth and straight.

To facilitate keeping the knives sharp, they should be selected originally with the temper soft enough to permit filing and whetting freely so they won't have to be taken off and put on the grinder every time they begin to get a little slick and to crowd stock. The knife makers supply knives in any temper desired, making specific tempers for certain kinds of wood and certain kinds of machines so as to insure the longest possible service without regrinding, but the tendency in carrying out this idea has been to make knives somewhat hard so that they will carry an edge good. This is all right for some kind of work, but it does not belong to the hand jointer. You want it to carry an edge as long as possible, of course, but if a knife is made very hard for this purpose it has a tendency to crumble and this makes a saw-like edge that does not leave a nice surface, and besides when the time comes to whet it off a little you can not do it with any satisfaction. Neither can you file it. The best thing to do is to have your temper made low enough that you can file readily with a sharp clean file, then grind your knife with a little concave in it so that it does not require excessive work with the file and whetstone to put a fresh edge on it, and then you will have a knife that you can sharpen several times without removing it from the cutter head. But when the time comes to give it another grinding, don't hesitate, but grind it at once, for a dull knife in a hand jointer or top smoother is as bad a tool as a dull bit in a hand planer, and we all know what that means—hard work for the operator and a poor job after all.

In setting the knives on the head the first thing to

determine one is, how far you want them to extend over the lip. In this work be governed by the same logic you would in setting a hand plane with this difference: In the hand plane you have two tools to do the work that must be done here with one. You have the jack plane on which you set the cap back say one-eighth from the edge so that it will cut easy and shed freely, and then you have your smoother in which you set the cap down close to the edge to insure smooth work. In setting the knives on your hand jointer you must bear in mind that you have made it do both the work of the jack plane and the smoothing plane, so what you want to do is to make a compromise of this extension beyond the lip of the cutter head somewhere say between one-sixteenth and one-eighth. At first it would probably be a good idea to experiment for a while by extending it different distances for settling on what shall be the permanent extension. After you have once found the point you want, the point that gives the best service in the way of cutting freely and making a smooth joint, making a permanent gauge to set by. Don't trust to your memory and to your rule, but take a piece of metal, a piece of sheet steel or old saw blade will do, and make a stirrup gauge that will hook over the corner of the cutter head at the back of the knife and form a positive gauge to set the edge up to. Keep this hung up near the machine and use it every time, for it will not only insure a more accurate setting of the knife, but it has other advantages, as we shall see in the consideration of the question of adjusting the tables.

#### Proper Adjustment of Tables

Probably more hand jointers fail to do the work they should from lack of proper adjustment of the tables than from any other one thing. The tables must be put and kept in absolute tram to insure good results. Without this, no matter what else you do, how carefully you adjust them, you will not be able to get the quality of work out of the top smoother you should. Now, the term tram may suggest one thing to some of you, and another thing to others, while to still others it may not have any sufficiently specific meaning. Nor will the dictionary assist you in finding the true meaning of this term as used mechanically, nor will its definition of the word trammel, from which it is taken, furnish the proper light. The meaning of it is, that they should be on an exact plane with each other and with the knives as they are set in the cutter head. It is of minor importance whether the table as a whole is exactly level or not, but as compared to each other and to the knife they must be in a line or in exactly the same plane both crosswise and lengthwise. The front end, or the end of the table next to the operator as he starts to feed the piece over the machine must of course be as much lower than the back table as the depth of the cut it is intended to make. Then feeding the stock along past the cutter the back table must be set up so that it will receive the stock snugly on the table, not be too high

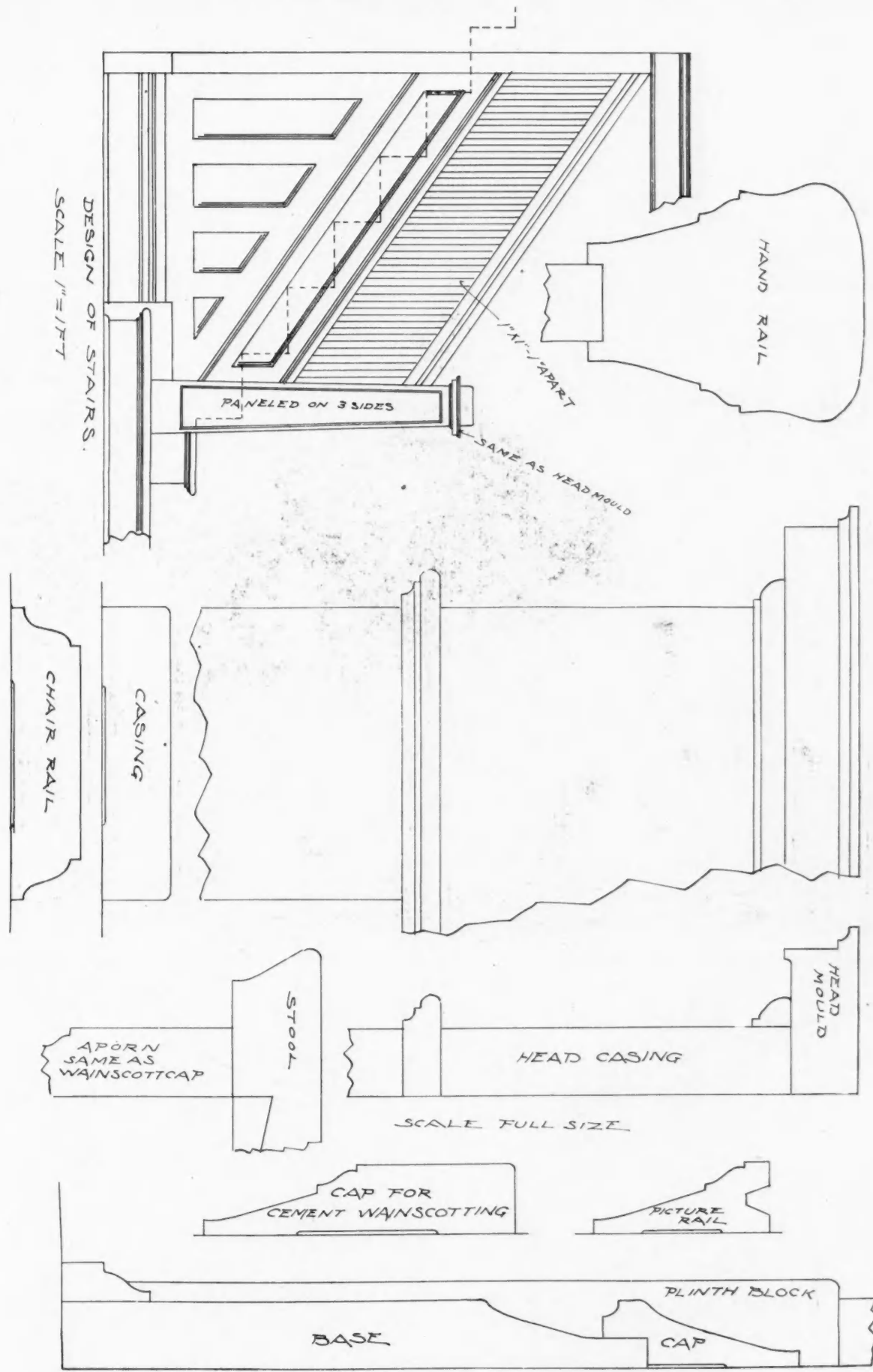
so as to bump against it and stop it, or too low so that as the stock passes by it will have no support on that end. Then, as the stock passes along the tables if the back end of the back table is too high it will gradually raise the stock up, with the result that the finished joint instead of being straight will be convexed. On the other hand, should the back end of the big table be low just the reverse would happen, the tendency would be to concave the surface. By studying this a minute you will begin to understand they must be aligned crosswise to prevent wind and lengthwise to prevent curve.

Naturally then, the first thing to do is to test your tables for tram and if they are found to be out any make a careful examination of their supports before undertaking to remedy the trouble by any temporary adjustment, as from the study of these you can usually find a way to make an adjustment that will be permanent and hold them in tram regardless of how much you may lower or raise them for different classes of work. In this matter of adjusting the tables is where we realize, too, that it is important to have the knives set to one gauge all the time, for no matter how carefully the tables may be adjusted to tram with each other, if the knives are put on the cutter heads so that one end of the edge extends a little further beyond the lip than the other end, the result will be the cutter at work showing up out of line with the bed, necessitating a readjustment either of the knives or of the beds. Where the beds are already in tram, the thing to do is to readjust the knives, because this can be done much the easier. But, as stated above, the right thing to do is to figure out the extension you want on your knife edge by a little experimenting as thought best, and then make a gage as indicated above and keep it hung up by the machine for use in setting the knives so that when you take them off, grind them and put them back on again you can feel assured that they are all right and that your machine is in proper alignment all over without going to the trouble of testing it and then the additional trouble of resetting.

If these few points are properly observed, if the knives are kept sharp, kept set in the same position and the tables are kept carefully in tram, the little hand jointer which is frequently so sadly neglected that it does indifferent work, can not only be made more useful, but can be made a machine at which it is a pleasure to work, and one on which the accuracy of work can not be exceeded in the task of jointing and planing out of wind by any machine made, or any method in use in any planing mill.



The foundations of the new County Building, Chicago, will consist of 126 cylindrical concrete piers, resting upon bed rock at an average depth of 115 feet below the street level and varying from 4 to 12 feet in diameter.

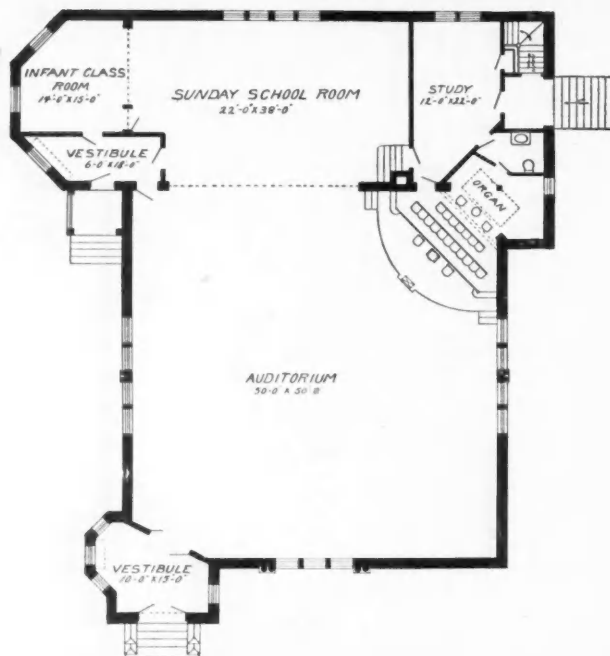


## A Modern Church

ELEVATION AND FLOOR PLAN GIVEN SHOWING THE EXTERIOR APPEARANCE AND THE INTERIOR ARRANGEMENT—ADVANTAGES OF THIS PARTICULAR ARRANGEMENT.

**T**HIS month we show on page . . . a design of a very neat and attractive church, which was erected from the plans drawn by John Y. Benfer, at Hiawatha, Kansas, by the Presbyterian de-

nomination at a cost of about \$9,000. It is a stone veneered building, which is the most desirable kind for a detached building. They use the native stone, a very dark gray, and the arrangements of the same are



very ornamental. The large windows were hung with weights in the usual way and are still in the shape of a large single window. The style of the building is on the low-down order, with posts 14 feet, while the ceiling in the main auditorium is 24 feet high. This ceiling has a high cut over the windows, all four sides alike, giving it a symmetrical shape, which makes the acoustics perfect. The auditorium is 50 by 50 feet and can seat 600 people. The arrangements of the seats are in a semi-circle, which brings the entire congregation nearer to the speaker and makes it easy for him. The organ and the place for the choir are in the front of the church, and the floor of the study is on a level with that of the choir. This is a good feature, as it gives a high ceiling for a basement kitchen, which may be used very advantageously for different church affairs.

The Sunday school room is shut off from the main auditorium and they have a separate exit.



## Concrete Machinery Manufacturers

SECOND ANNUAL MEETING OF THE ORGANIZATION WHICH IS DOING MUCH TO FURTHER THE CONCRETE INDUSTRY—IMPORTANT PLANS LAID AND BUSINESS TRANSACTED

**T**HE recent convention of the Concrete Block Machine Manufacturers' Association of the United States, which was held at Detroit, Mich., August 8 and 9, was very successful and everyone who attended felt amply repaid for the time devoted to it.

The meeting was attended by nearly all the machine manufacturers of the country and many valuable and instructive papers were read and discussed.

Among the topics discussed were:

"Sales of Concrete Block Machines, the Uses of Its Produce and the Industry in General," by O. U. Miracle, of the Miracle Pressed Stone Co., Minneapolis, Minn. He gave the various methods used by dealers in selling machines and condemned the ways used by many as it was detrimental to the entire business. The credit system and long trials were condemned as they were being abused by the purchasers.

An interesting discussion followed—during which many experiences were related.

Richard L. Humphrey, president of the National Cement Users of America, spoke on "Concrete Block; Its Possibilities and What the Government Is Doing in the Investigation of Its Qualities." He spoke of the tests which were being made in St. Louis and Chicago finding out the kinds and quantities of material to use to make a concrete block which will be acceptable to everyone. The work will be continued and much good ought to result from it, as it would establish a uniform standard.

"Concrete Block Insurance" was ably discussed by Sid. L. Wiltse, of the Cement Machinery Co., Jackson, Mich. He urged the hearty co-operation of the machine manufacturers with the fire underwriters so as to bring about a just rate on concrete blocks, which so far has not been accomplished. In the discussion which followed it was suggested that whenever a fire occurred which showed the fire-resisting qualities of concrete blocks a photograph of the same should be taken and a complete description of it written and sent to the secretary of the organization for the purpose of furthering the work.

"Specifications for Concrete Blocks and Brick" was the subject of an able paper by Frank L. Dykema of The Dykema Company, Grand Rapids, Mich. He gave the kinds, quality and quantity of material to use to make good concrete blocks and cement brick.

R. R. Fish of the Sandusky Portland Cement Co., Sandusky, Ohio, gave an interesting talk on "Special Demonstration of Madusa Compound." Among the many instructive experiments shown was one which struck everyone present very forcibly. Mr. Fish put some Madusa compound into a glass and then poured water onto it until the glass was filled. The com-

ound rose to the top and was not affected in any way by the water. He then put a feather through the compound and into the water and it came out as dry as before insertion. It demonstrated the waterproofing qualities of Madusa compound more forcibly than would have been possible in any other way. He fully discussed the method of using it and the advantages which result, among which are, thoroughly waterproofing concrete blocks, roofing tile, reservoir linings, and sewer pipes; preventing white efflorescence and also preventing the appearance of hair-cracks.

J. F. Angel, of the Winget Concrete Machine, Columbus, Ohio, gave an instructive paper on "Freight Classification for Concrete Machinery." Owing to his having previously been with a railroad company made him more capable than any other in discussing this problem. He spoke of the trouble some of the machine men were having in getting a suitable rate for their machines but this was beginning to adjust itself to the satisfaction of the manufacturers.

"Foreign Trade" was extensively taken up by M. Wetzstein, of the Ideal Concrete Machinery Co., South Bend, Ind. They have shipped machines to many foreign countries, many of which were sold direct, but most of them through the export offices. He spoke of the increasing demand for concrete block machinery in foreign countries and especially in the tropical zone. The complete paper will appear in the October issue.

"Concrete Block Architecture," by A. T. Bradley, of the Century Cement Machine Co., Rochester, N. Y., is given complete in another part of the magazine.

"Ornamental Products," by E. G. Harter, of the Cement Working Machinery Co., Detroit, Mich., brought out the ways of making columns and other ornamental work by means of casting stone in molds. The various kinds of molds were discussed and many practical suggestions made.

"Advertising" was the subject of an instructive paper by S. J. Young of the P. B. Miles Mfg. Co., Jackson, Mich. He spoke of the various methods used and the conclusion was that trade papers brought the best results. The methods of keying the ads. were taken up and also how to keep track of the inquiries and sales from each publication.

The able paper on "Cast Stone," by C. W. Stevens, Harvey, Ill., is given in another part of the magazine.

W. G. Sanderson, inspector and member of committee on cement for building construction of the National Fire Protection Association, Chicago, Ill., gave the members an interesting talk on what was being done to give concrete blocks a fair insurance rating. He approved getting up standard specifications, as that

would do away with many of the poor blocks which are made to-day.

Among the important business transacted in the business meeting was changing the name from Concrete Block Machine Manufacturers' Association of



J. F. ANGELL

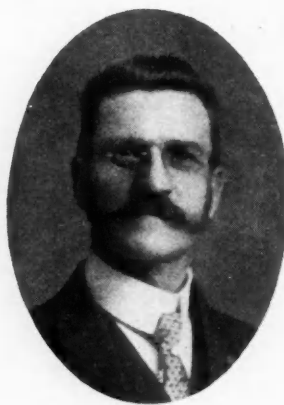


O. U. MIRACLE

the United States to National Concrete Machine Manufacturers' Association. The reason for making the change was that many manufacturers of concrete mixers and other concrete machinery were under the impression that the membership was limited to block machine manufacturers. The following officers were elected: President, J. F. Angell, Winget Con-



S. L. WILTSE



M. WETZSTEIN

crete Machine Co., Columbus, Ohio; vice-president, O. U. Miracle, Miracle Pressed Stone Co., Minneapolis, Minn.; secretary, Sid. L. Wiltse, Cement Machinery Co., Jackson, Mich.; treasurer, M. Wetzstein, Ideal Concrete Machinery Co., South Bend, Ind.

#### Convention Notes

They say a number of the members explored the beautiful Belle Isle by moonlight. A number of bear stories were in circulation but no deer were reported.

Sid. L. Wiltse of the Cement Machinery Co. spoiled a new straw hat by his gallantry. He sat on it while offering a lady his seat in the street car. As the cause was a good one he does not regret the loss.

After R. R. Fish of the Sandusky Portland Cement Co. got through with his demonstration of Madusa

compound he so thoroughly convinced the members of its waterproofing qualities that they all got dry and adjourned to the water tank (?).

The Blakeslee Block and Machine Co., Columbus, Ohio, was well represented by Messrs. Green and Frederick. They made a host of friends among the members present.

B. H. Rader represented the cement department of the Illinois Steel Company at the convention.

Harman S. Palmer of Washington, D. C., while not taking an active part in the meetings, made a pleasing address upon request.

C. W. Stevens of Harvey, Ill., not only read a good paper at the convention but also had a fund of good stories which were very much appreciated.



#### Terra Cotta and the Frisco Fire

Architectural terra cotta is too well established in the East to yield its own place to the onslaughts of the reinforced concrete men. I know full well that reinforced concrete has a very valuable place in structural work and will receive, at the hands of our architects, the full measure of recognition, no doubt, but owners and everybody else will find that the class "A" buildings will not be put up without their full share of terra cotta ornamentation. Our best buildings here stand as monuments to its worth to-day, and are the best possible arguments that can be placed.

We, of course, have made a mistake in California, that is not likely to be repeated, in fire proofing. It has been well known for some years that terra cotta fire proofing should be porous and not dense, but owners and architects have been loath to incur the slight additional expense necessary to produce porous terra cotta. All of these facts will now have their proper recognition among the best class of architects, and the new buildings of San Francisco, where fire proofing of this nature is required, will be up to date with the best Eastern practices.—W. E. Dennison.



#### Cement Mortar for Plastering

In plastering with cement a few precautions must be observed to insure good and permanent results. The surface to receive the plaster should be rough, perfectly clean, and well saturated with water. A mortar very rich in cement is rather a drawback than otherwise on account of shrinkage cracks, which frequently appear. The mortar, consisting of two or three parts sand to one of cement, should be mixed with as little water as possible and well worked, to produce plasticity. It is essential that the plaster be kept moist until it has thoroughly hardened.



Too many of us seem to have acquired the habit of interpreting the word "success" to mean that we must outdo the other fellow.

## Concrete Block Architecture\*

IMPROVEMENTS THAT MUST BE MADE TO MAKE CONCRETE BLOCKS MORE POPULAR—THINGS TO BE CONSIDERED IN MAKING GOOD BLOCKS

By A. T. Bradley

**T**HE Egyptians were probably the first cement makers nearly 4,000 years ago, but nothing important was discovered until about 2,000 years later, when the Romans discovered its great value as a building material and found extensive use for it in building their palaces, vaults, etc. The art, however, perished with the Romans, and nothing important in the use of cement occurred until the erection of the famous Eddystone lighthouse, which was completed in 1759.

Upon this wonderful discovery we have by invention found a thousand uses to which cement can be applied, and it is now fashioned into shapes never dreamed of years ago. The wonderful plastic qualities of concrete making it possible to produce any number of different effects, and the finest of ornamental designs can be made at small cost. One of the latest uses to which cement has been put has been the making of it in the form of a building block, and the uses for these blocks cover the whole field of building.

The use of the concrete block as a building material is fast becoming general. Buildings erected of them do not require continual painting and repairing as is the case with those built of wood or brick. They are cheaper to use, and instead of deteriorating from year to year, continue to grow stronger and better with age. Like any other building material, however, they must be handled intelligently, and the real success of the concrete building block depends not only on the way it is made but also on the manner in which it is used. Good taste is as essential in the erection of a building as good material and we are all agreed that a concrete block properly made is not only good material but the best of material. It should, however, be placed in a wall in a manner that is attractive. The great complaint seems to be that a majority of the buildings erected in the past, show too much of a sameness in appearance. Where one design of rock face is used throughout, it is not at all difficult for the inexperienced eye to detect an artificial appearance. Such buildings do not please the fastidious builder, and he sometimes becomes imbued with the idea that cement blocks will not make a handsome building. We often hear it stated that the architect is not favorable to the cement block, and while this may be true in some cases it is doubtless due to the fact that the blocks he has been asked to specify were not properly made.

It is true the cement block has had hard treatment

from many ignorant makers who have rushed blindly into the business and failed to make good stone. This class of block makers, however, are fast being weeded out and in their place we find a more substantial class with reputations of their own at stake. These makers will give us good stone and we as machinery manufacturers must give the stone maker a variety in the way of design.

The cement block generally used has been one made to imitate cut stone and there has been some strong objections brought to bear on this style of block. One well known engineer having even gone so far as to say: "That in imitating rock face stone we are credited with the most monotonous building material ever produced." This statement, while somewhat harsh on the surface, should nevertheless be taken as a sample of the feeling existing with many prospective builders. The cause, doubtless, lies mainly with the stone maker, who is satisfied to use one design of face for each size of stone and as a result the stone produced has a stereotyped appearance, which we cannot but admit is far from pleasing. In order to overcome this bad feature, we as manufacturers should urge upon the stone maker the advisability of using a number of designs and so place him in a position to put out a variety of faces and not one face for each size.

The architect must also be considered as he occupies a most important position in the matter and he alone is responsible for the buildings he designs, therefore we must endeavor to give him what he wants, even though it means an added expense, as by this means only can we gain his confidence and through him reach the most particular builder. The architect should also do his part by insisting that a variety of faces be used.

Another thing for the block maker to consider is the quality of his sand. Only too often have we seen most attractively designed buildings spoiled by the use of inferior, dirty sand. Some block makers appear careless in this respect, and while they are unusually particular as to the make of machine they will use, they seem to lose sight of the fact that no matter how good the machine may be it can only produce according to what is placed in it. It is pleasing, however, to note that the concrete blocks manufactured this season, show great improvement over those formerly made. Scores of handsome churches have been erected. Large factories, warehouses, power houses, etc., are found on every hand and many exceptionally fine residences can be seen in almost every city.

In one of the leading cities of Connecticut blocks are now being made to be used in the erection of a large

\*Address made at the Concrete Machine Manufacturers' Convention held at Detroit, Mich. August 8 and 9.

handsome theater. Fifty thousand concrete blocks will be required, together with 500 feet of water table and sills. I have it on reliable authority that this is to be the first of a chain of theaters to be built of concrete

blocks. All of this goes to prove that we are steadily forging ahead in the right direction. The concrete block is in great demand, and if properly made and intelligently used its success is assured.

## Cast Stone\*

AMOUNT OF WORK THAT CAN BE ACCOMPLISHED BY THIS PROCESS—CARE NECESSARY IN COLORING STONE TO PREVENT FADING

By C. W. Stevens

**A**RTIFICIAL stone, according to the process of manufacture, may be classified under the two heads—cast stone and moulded stone. Both of these have advantages and perhaps some disadvantages. The more common method of manufacture and that which is followed by those using machines sold by the majority of the members of this association is what I have styled moulded stone, in which the material only slightly moist is shaped in cast iron moulding machines. While it is possible to have a great deal of discussion as to the quantity of water used, it is absolutely necessary to have the material sufficiently dry so that the block can be removed immediately from the machine.

All attempts to make poured stone until recently were by pouring the material into rigid moulds. This left the stone badly honeycombed and the appearance was such that it was unfitted for a high-class building stone. An objection was raised by a well-known writer that in poured stone you first poured it into the mould, then sat down and waited for it to harden before removing it from the mould. Recent improvements have overcome all these objections, as six men will make at least one thousand two-foot stone 4 by 6, requiring but ten or twelve moulds in a day. This includes the mixing of the material and piling of the stone. After the stones are moulded they require no more care, as we never sprinkle or wet the stone after it is made under this process.

The writer does not wish to condemn what is known as the dry process, as there is no question but that a good durable stone can be made under the dry or tamped process, the writer having furnished stone for at least one thousand buildings in Michigan during the past 25 years under this process and to the best of his knowledge the stone has given perfect satisfaction so far as the durability is concerned. Quite a number of these buildings for which the writer furnished the stone were colored either brown or red, and in no instance has there ever been a complaint of the stone fading in color or efflorescence appearing on the same. We have recently heard many complaints from manufactured stone under the dry process, of the stone discoloring or fading, and it is generally laid to the cement or the coloring material used. I dare say the trouble lies entirely in the manufacture of the stone and the method of curing the same. To prevent the stone from discoloring or fading no more water

should be used in wetting the stone than will disappear in the stone at once. The writer, some 25 years ago, had trouble with stone, the efflorescence appearing on the face of the stone. This invariably occurred where the stone were paneled or ornamental faced, on which the water was allowed to remain until it gradually soaked into the stone or evaporated. We found by taking a sponge and removing all the surplus water from the stone immediately after it was wet we entirely overcame these objections.

### Coloring Stone

I would say that in the making of colored stone too much care cannot be taken in selecting your coloring material. The writer has had but little experience in coloring stone except red or brown. There recently appeared in some of the journals an article from an engineer saying the only way to imitate Bedford stone was to use yellow ochre. This is entirely unnecessary, as you can produce a perfect imitation of this stone by using the proper aggregates without any coloring at all.

Under the wet process, during the past three or four years, this stone has been used in the construction of over \$10,000,000 worth of buildings including some forty banks, eight or ten libraries, many fine flat buildings, churches and residences, among the latter of which we might mention Secretary Root's new residence at New York. Quite a number of factories employing this process have been using imported cement, not that it was superior to the American cement, but that they were sure of getting it well seasoned, and we all know that a cement that has been aged is far superior to a fresh made cement for high class work. We all know, too, how difficult it is to get cement properly aged, as the manufacturers find it impossible to supply the market with it and so ship it fresh from the mill as this cement gives entire satisfaction for ordinary concrete work in which the majority of the cement goes. The writer believes it is not necessary to use the imported cement as by washing fresh cement, which is easily done under the wet process, much is done to overcome the objections to using a fresh cement, and the writer believes that many of the objections raised to the cement by the manufacturers of stone are due largely to their not knowing how to manipulate or meet the conditions which they have to meet. As the work turned out does not come up to the standard we expect, the first thing the manufacturer of the stone does is to lay the

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blame on the cement. The writer himself will plead guilty to this, for he knows of two instances where he condemned cement when the fault was not with the cement. We once condemned a carload of cement because at the end of a week the stone did not crystallize and in pitching it off or rock facing it it did not have the life and appearance of the cement we had been using, but at the end of four weeks we found this cement equal to any we had ever used. We have had other cement fresh from the factory and we found that the stone would be quite warm at two or three days old. The writer believes that if this cement had been properly washed and mixed sometime before using that this objection would have been entirely overcome. The great objection to this cement was that it crazed or hair checked. The writer does not claim that the washing of the cement will entirely overcome this objection, but from our experience along this line we are sure that it will do much toward overcoming it. We are now having tests made by the cement manufacturers of the materials we wash out of the cement and one of them has reported that as far as they have gone with their analysis they find that it consists of nothing but fresh lime. The writer believes that if we do our part to overcome the objections which are raised to the manufacture of cement stone as well as the cement manufacturers have done theirs, it will be only a short time before every objection that can be raised to a made stone will be eliminated. As Mr. Jones of Brooklyn, N. Y., one of the oldest manufacturers of stone in this country, has well said, "To be a cement worker you must be a cement doctor," and we must learn to overcome every objection which is now being raised and not look to the cement manufacturers to do what we should do ourselves. The writer does not believe that there is a cement to-day on the market that will efflorescence or discolor if it is properly handled.

#### Cause of Failures

The cement manufacturer has chemists and experts to look after every department, while we as stone manufacturers have gone onto the market and interested in the stone business doctors, lawyers and preachers, many of whom have failed in their own profession and are sure to make a failure of the stone business. I can state one instance where a party I interested in the manufacture of stone insisted upon the use of a magnesia limestone for facing. I assured him that he would fail and went so far as to refuse to sell him if he insisted upon using the material. He promised not to use it but afterwards used it in one building and naturally the work was not at all satisfactory. There is no limestone that the writer knows of that will not weather good that will make a good artificial stone, such stone for instance as was used in our court house in Chicago, which in a few years badly disintegrated and went to pieces. This does not hold good with sandstones, however, as the writer some 20 years ago used sandstone for facing of stone

that would disintegrate and go to pieces in its natural state, and now this stone after 20 years of use is as perfect as when first used. We should all remember that we are in practically a new business. There is much to learn, and while nearly all industries, if not all, are taught in the schools and the businesses established by men well versed along their lines, we have no schools to teach us in the manufacture of stone except the school of experience. I believe such meetings as we are holding here now for the exchange of ideas will do much to establish the business, and those who go into it and follow out the well laid down rules of the parties selling the machines will succeed while others will fail.



#### Only Nine Story Buildings in Denver

If there is any very great increase in the values of Denver downtown property the property owners are going to build office buildings in excess of the prescribed nine stories, and in case the building inspector attempts to stop them the courts doubtless will be appealed to to decide the constitutionality of the ordinance.

Reports from Denver indicate that this will be one of the best years the office building owners have experienced for some time. Practically every building in the city is filled with tenants and the waiting lists are growing right along. The new buildings recently completed have had no appreciable effect on the situation, nor is it expected that those now under construction, and which will soon be completed will check the demand for space.

Several new buildings will soon be in process of erection, according to announcements recently made, and will no doubt be all under lease long before they are finished.



#### Decorating Glass by New Process

Cloisonne glass is a pet of modern glass-makers. It is not a wall decoration, but a kind of substitute for stained glass, different in effect and in quality from any of the paper imitations. It is genuine glass. A sheet of plain glass is put over the drawing to be executed, and on this the outlines of the design are traced in wire, black, silver or gilt, as the case may be. These wire outlines, which are semi-circular in section, are fixed firmly to the background sheet, and into the cells formed by the cloisons are shoveled countless little glass beads, which are cemented on the ground, and the entire panel is then covered with a second sheet of glass. The great point of the invention is that, along with a pleasant variety of surface, it is possible and easy to get an almost limitless variety of color, as well as the most delicate and gradual shading, in which one color melts almost imperceptibly into another.



Prejudice prophesies the failure of about as many enterprises as generosity anticipates to success.

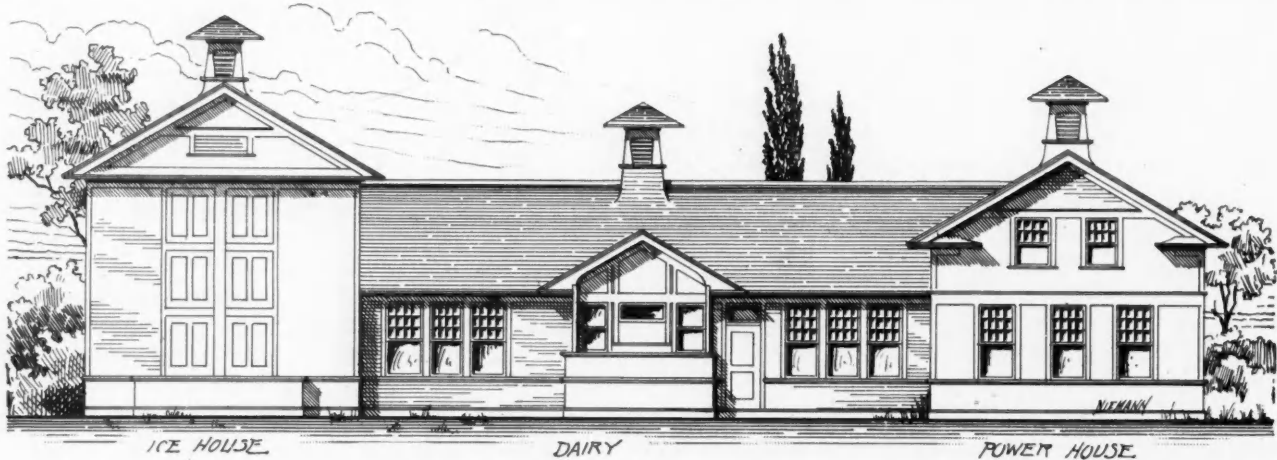
# Farm Buildings

Henry H. Niemann

## A Model Dairy Building

COMPLETE EQUIPMENT FOR RUNNING A DAIRY FARM — INTERIOR ARRANGEMENT AND FINISH OF WALLS AND FLOORS

WE ARE this month illustrating a dairy building which is very complete and answers all the requirements for a country dairy. It has a waterworks, power and electric light plant of parts; the left hand wing is the ice storage house and also contains two cold storage rooms for butter, cream, milk, etc.; the central part is the dairy containing the churn room, bottling room, washing room, etc., and



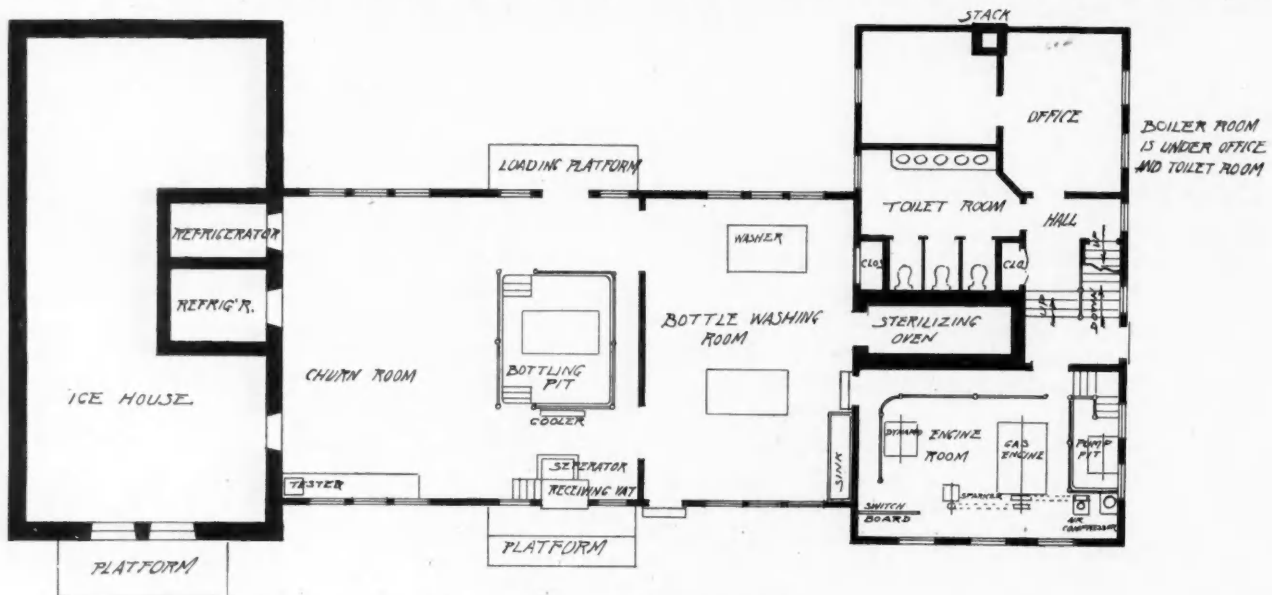
ICE HOUSE

DAIRY

POWER HOUSE

sufficient capacity to supply heat, water, light and power for the various purposes required on a large dairy and stock farm. The building consists of three

the right hand wing is the power and pumping station. This building is built on a concrete foundation, above which it is of the regular balloon frame con-



GROUND FLOOR PLAN OF DAIRY

struction. The walls are of two-inch by six-inch studding sheathed on the outside with matched sheathing then papered and covered with drop siding. The space between the studding of the dairy and wash rooms from the floor to the window sills is filled with concrete and then cemented on the inside forming a cement wainscoting as well as strengthening the building. Above this cement work the side walls and ceilings are ceiled with beaded yellow pine ceiling. The roof is of moss green stained shingles and has large

ventilators, which makes it hygienic as well as adding to the appearance and giving comfort.

The icehouse is insulated with several thicknesses of hair felt, air spaces and matched sheathing and insulating, waterproof paper.

The power house has a basement which contains the boilers, which are sunk below the ground level in order to admit steam pipes to be run under ground to the other farm buildings for heating purposes. The pumps and dynamo are run by a gas engine.

## Painting Cedar Lumber

DIFFICULTY EXPERIENCED IN PAINTING CERTAIN KINDS OF CEDAR LUMBER—BEST METHOD TO USE TO OVERCOME THIS DIFFICULTY

By Edward Hurst Brown

**T**HE painting of cedar is a difficult problem which is met with by painters in certain sections of the country, although it is one that causes no trouble along the Eastern Seaboard, because in that section cedar wood is practically never used except for shingles, and then is either left unfinished or stained with oil or creosote stains. There are several varieties of cedar, which differ somewhat in their characteristics and require somewhat different treatment in painting.

The white cedar or juniper, used for shingles in certain parts of the East, is soft, close grained and of compact structure, with the sapwood light in color and the heartwood brownish. When well seasoned, it absorbs oil uniformly and is not a difficult wood to paint. It takes oil and creosote stains evenly and uniformly and presents no unusual difficulties. The Oregon white cedar is a different wood, being hard, strong and very close grained and more resinous than the eastern white cedar. The surface, when the wood is well seasoned, being very absorbent, a great deal of oil should be used in the priming coat, which should be mixed to a very thin consistency and should contain sufficient turpentine to enable the paint to penetrate well into the pores of the wood. The priming should be applied with a full brush and well and evenly brushed out, and ample time must be allowed for the paint to dry, as it takes longer to harden on this wood than on ordinary surfaces. Two coats will not produce satisfactory results on cedar wood, owing to its porous character, and three thin coats should be given, the middle coat being reduced to a medium thin consistency.

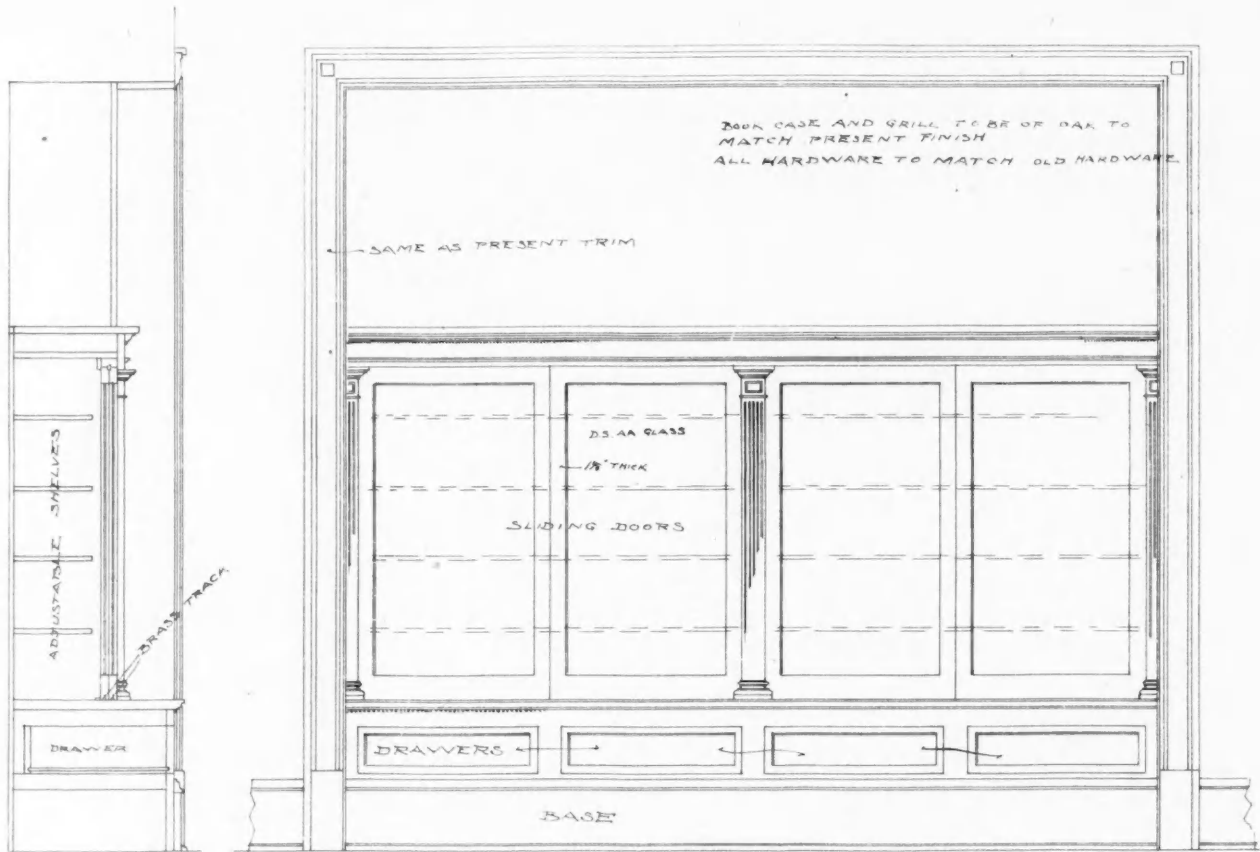
California and Oregon cedar, while hard in structural qualities, are soft, close grained woods, absorbing paint very rapidly. Consequently the priming coat must be mixed very thin, with abundant oil and enough turpentine to assist the penetration. The large amount of oil needed in the priming coat makes drying very slow and ample time must be allowed for thorough hardening before applying the second and third coats.

Red cedar, although a light, soft, weak wood, is

used in some localities for exterior building. It differs from the preceding varieties in being less absorbent. The priming coat, therefore, must be mixed very thin, using a liberal proportion of turpentine to promote its penetration into the pores of the wood. It must be applied with a medium full brush, using the utmost care in applying it, and so thoroughly brushing it out that there will be no excess of paint on the surface. Ample time must be allowed between coats for thorough hardening.

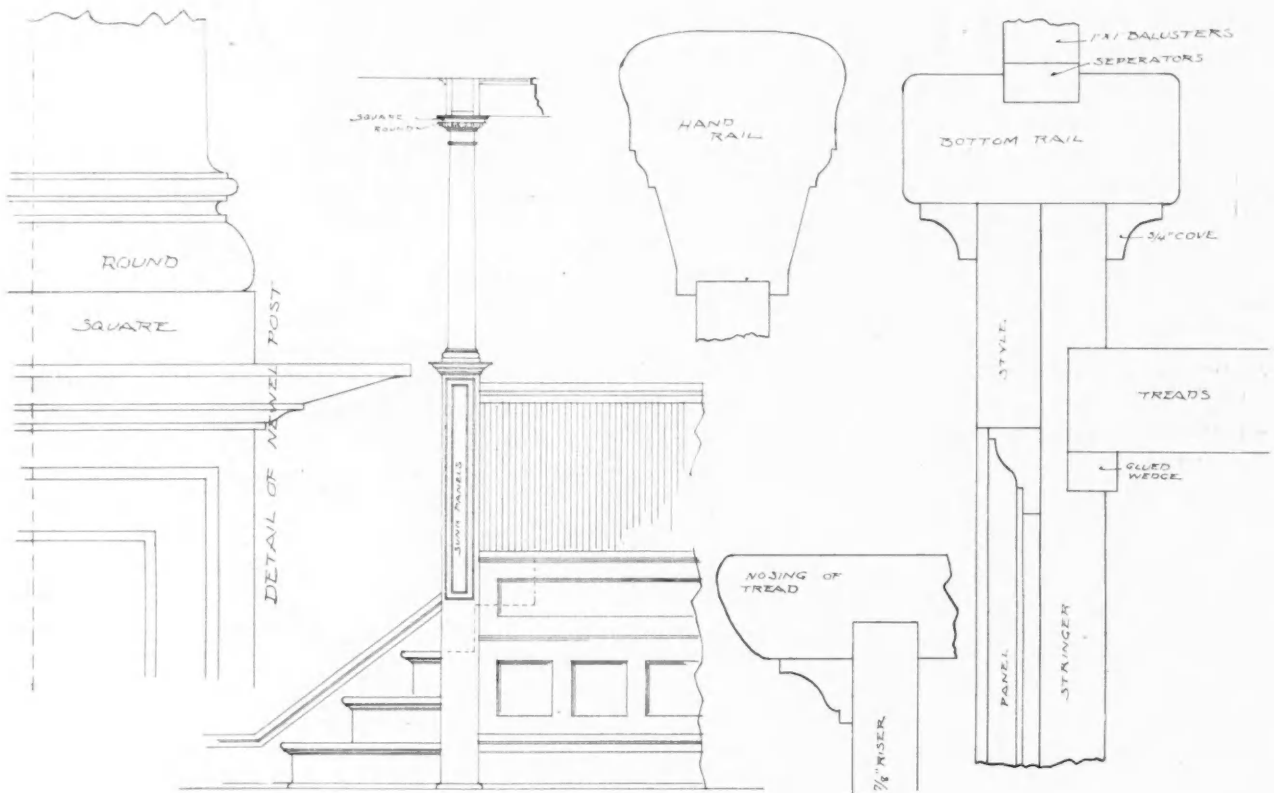
Washington cedar has an uneven absorption, parts of the wood being hard and non-absorbent, while other portions are soft and easily penetrable. It is a very difficult lumber to paint. The priming must be mixed thin, applied with a full brush and well and evenly brushed out. A liberal amount of turpentine must be used to assist penetration, and as the paint dries very slowly on the hard part of the grain particular attention must be paid to allowing sufficient time for the priming coat to thoroughly harden before the second coat is applied.

In painting any variety of cedar wood trouble will almost invariably occur if an attempt is made to do the work with less than three coats. The paint must always be applied thin and well brushed out and a much longer time must be allowed for the priming to dry than for ordinary lumber. It is more than likely that most of the peeling and failure of the paint to hold to the surface complained of in the case of cedar wood is due to the use of too heavy bodied priming and to the priming coat not being sufficiently hardened when the second coat is applied. Pure white lead should be used for priming, without the addition of any other pigment except possibly lampblack, and pure raw linseed oil and pure turpentine must be used in thinning the paint. The use of ochre, zinc white or any other hard drying paint, or any mixed paint containing zinc white cannot be too strongly condemned as a priming coat on any wood so difficult to paint as cedar. Only white lead of the finest possible grinding should be employed in order that it may penetrate as far as possible into the pores of the wood and assist in binding the paint to the surface.



SECTION

ELEVATION OF BOOK CASE



ELEVATION OF STAIRS





Edward Hurst Brown.

## Painting the New House

FORMER METHOD OF PUTTING ENAMEL FINISH ON WOODWORK—PRESENT METHOD MORE RAPID BUT NOT AS LASTING—KIND OF MATERIAL TO USE AND MANNER OF APPLYING IT

THE past few years have seen a revival of enamel finish, that in some sections of the country had been comparatively neglected owing to the prevailing use of hardwoods. But with the coming into general use of the Colonial and the French styles, the use of white or tinted enamel or colored gloss paint became necessary in order to properly carry out the style. In the old Colonial work, with the exception of the mahogany doors and handrails, the wood was nearly always finished in enamel, or as it was frequently called "china gloss," and this work was done with such care that it has stood the ravages of time remarkably well. The writer has seen one house in Richmond, Va., where the enamel finish was over one hundred years old, yet it was in almost as perfect condition as though it were done but a year or so ago. In Philadelphia there are many once fine old houses in the one-time fashionable part of the city that have long since been given up to cheap boarding houses or have been turned into tenements for low class Italians, that show fine examples of china glossing which have stood the abuse of time and hard use with excellent results. This old work was done in the days when it was possible to get mechanics who took pride in the quality of their work and who were not afraid to put elbow grease into their brush work. It was done, too, when people were not in so much of a hurry as they are now and were willing to allow the painter sufficient time to produce a durable job. It was not thought unreasonable, in these days, for a painter to spend several weeks in enameling the woodwork of a single room, while nowadays the house owner finds fault if he has not finished in a day or two. Hence the present day practice of resorting to every possible method of hastening the work and of cutting down the coats to the least possible number, often applying the second coat before the first is thoroughly dry, in order to satisfy the owner's demand for haste. So long as such conditions exist, it will be impossible to expect to obtain the durability of the old work. Nevertheless a fair quality of finish can be obtained by modern methods that will pass the inspection of the architect, satisfy the ordinary owner, and will last for

a reasonable time, if treated with ordinary care, before it cracks and needs refinishing.

### Method of China Glossing

The following method for china glossing was given to the writer some twenty years ago by an old-time Philadelphia painter, when this kind of work was just beginning to be revived, and was the method that had been in common use some thirty or forty years before that when every parlor in a first-class dwelling house was invariably finished with china gloss woodwork. For the most ordinary work, four coats were required. The first coat was a thin one of white shellac, which was thoroughly sandpapered before applying the second coat of pure white lead thinned with half turpentine and half linseed oil. This again was sandpapered well, and a third coat of white lead was given which must be perfectly flat; that is, all the oil must first be drawn off by covering the lead with turpentine, and after allowing it to stand over night, the oil is skimmed off and the lead is then thinned to the required consistency with turpentine. This coat must be laid on very smooth and evenly, and after it has become hard must be sandpapered smooth. The last coat was French zinc white ground in damar varnish, flowed on—or applied in the same manner as varnish and not brushed out. It will be observed that the first three coats were intended to give a foundation and only the last one was the enamel or gloss coat proper. In order to make the work seem whiter and to counteract any yellowness from the damar varnish—although this is the whitest varnish that can be obtained—a trifle of cobalt blue was often added.

It must not be supposed that this quality of china glossing was considered good enough for a first-class residence. Far from it. The method outlined above was considered the least possible work that could be given and was usually much enlarged upon. It was not considered that good work could be done with less than six coats and frequently from ten to twelve coats were given, and at least forty-eight hours were allowed between coats. Modern architects often specify but three or four coats and expect a first-class job to be done in as many days. When high-grade

work was to be done a coat of half white lead and half zinc white thinned with turpentine was often given after the last lead coat mentioned above, following this with one or two coats of zinc white ground in damar varnish and finishing with from one to three coats of clear damar varnish. The work was sandpapered smooth after each coat and was rubbed with pumice and water on the last coat of zinc in damar, and was mossed down with curled hair between the damar coats.

When tinted china gloss was desired, it was customary to tint the last lead coat to a pretty strong tint, say of blue, green or red. The application of one or two coats of zinc white, ground in damar, on top of this gave a very pleasing effect, the color showing through the semi-transparent gloss coats and being modified by them. This required great judgment on the part of the painter, but the result is much softer than the present method of using tinted enamels. It is hardly to be supposed, however, that this old formula will ever be extensively revived, for in spite of the fact that the results obtained were excellent, it requires too much time to satisfy us in this hustling age, and there are comparatively few skilled mechanics who could do work of this character. Moreover, damar varnish has been largely abandoned because it is difficult to get pure.

One thing must be remembered and that is that it is impossible to do a passably good job of enamel finish with less than four coats and a first-class job requires at least eight coats.

#### Specifications for Enamel Finish

The following method for enamel finish was recommended by the International Association of Master Painters and Decorators of the United States and Canada, at the convention held in Richmond, Va., in 1903, after a lengthy discussion on a report presented by a committee on specifications, of which the writer was chairman:

First coat—White lead mixed with turpentine and linseed oil, equal proportions.

Second coat—White shellac, grain alcohol.

Third coat—White lead mixed in pure turpentine.

Fourth coat—Two parts of lead, one part zinc, mixed in turpentine.

Fifth coat—Lead and zinc, equal proportions, mixed in turpentine.

Sixth coat—Pure zinc and turpentine with small proportions of white varnish.

Seventh coat—Pure zinc thinned in white varnish.

Eighth coat—Flowing coat of white enamel finishing varnish, full body.

Rub between coats with curled hair or 00 sandpaper. After allowing three days to harden, rub to a dull, even finish with pumice stone and water. If a high polish is desired this is to be given by rubbing with rotten stone and water.

It is essential that the portions of the building to be enameled should be closed to all persons except

those employed on the work. Mantels, tiling, etc., should be completed and floor given at least one scouring before the work is begun. Finishing hardware should be left off until after the enameling is completed.

When the method above given is carried out by thoroughly competent mechanics and plenty of time is allowed, a good and durable job should result. The white varnish referred to is a special varnish made by most manufacturers of high grade varnishes for this particular purpose, from selected gums, using only the clearest pieces of hard gum and bleached linseed oil. Such a varnish is quite expensive, but is more satisfactory than damar varnish, because the latter is soft and cannot be rubbed to a dull gloss with pumice nor can it be polished. For the seventh coat in the above formula it is better to substitute French zinc white ground in the white varnish referred to rather than merely thinned or mixed with it. The dry zinc should be taken and run through a mill with the varnish in order to thoroughly incorporate the two together. As very few painters possess the necessary machinery to do this, it is better to use the white enamel made by a reputable manufacturer, which is really nothing more than zinc white ground in such a varnish. If tints are required, the coloring matter can be added to this coat or a suitable colored enamel may be used. Coach colors ground in japan should be used for the tinting colors.

It will be observed in both of the processes given above that there are two distinct parts to the work of enameling. The first consists in the preparation of the base or foundation, which is used to cover or hide the wood. This starts with an elastic priming of white lead—the shellac coat being used to kill any possible sap or resinous matter in the wood—and after this comes a hard, inelastic foundation for the enamel coats. It is an axiom in painting that a varnish coat must never be applied over an oily undercoat or it will not adhere, and it is for this reason that all the coats but the priming are mixed or thinned with turpentine.

The methods already described involve greater expense than most people care to incur, and for this reason many special enamels are put upon the market which will produce a reasonably fair job with four coats and for cheap work three coats may be deemed sufficient. Each manufacturer offers his product under a different name, but all are substantially the same thing—zinc white and the necessary coloring matter ground in a special white varnish. Of course the composition of this varnish varies with each manufacturer, as it is a well-known fact that there are no standard formulas for varnish, and each manufacturer depends largely upon experience and even upon the judgment of the varnish maker to produce satisfactory results.

With any of these special enamels the process should be about the same. A ground or foundation should be prepared by the use of two or three coats of

pure white lead, the first coat thinned with half oil and half turpentine, the second coat with pure turpentine and the third coat with pure turpentine. These priming coats should be allowed to thoroughly harden and then should be made perfectly smooth with fine sandpaper, and for good work with pumice and water, and should then be followed by one or two coats of the special enamel to be employed, of the color selected. The last coat may be rubbed to a dull gloss or to a polish if desired. For the cheapest work, two coats of white lead and one coat of enamel flowed on in a good heavy coat will be reasonably satisfactory, but it must be well understood that this three or four coat work will not give a finish that can be compared in any way with a fine enameled white mantel or piece of furniture.

#### **Method Employed by Manufacturers**

The methods above given are those employed by the house painter. The manufacturers of picture frames and furniture have, however, succeeded in producing very beautiful results by a different process, which, while scarcely so durable, is less expensive in proportion to the finish obtained, although it requires skilled mechanics and a room of the proper temperature to obtain the results, and in some cases the coatings must be applied hot. As an example of the methods adopted, several panels of ivory finish were submitted to a convention of the International Association of Master House Painters and Decorators some years ago, which were prepared as follows:

The first panel was given a preparatory coat of warm glue size; then was given three coats of glue and whiting, also applied warm. This was followed by three coats of dry zinc and white shellac. This can be finished to a high gloss or to a furniture polish and dries very hard. To give it the requisite polish it is rubbed with a polishing bag and alcohol and a little sweet oil.

The second panel was prepared with three coats of whiting and glue and finished with three coats of Zanzibar gum varnish and zinc white. The dry zinc and white shellac mentioned above could have been used for finishing this panel with equally good results. The disadvantage of both of the above methods for finishing the standing trim of a house is that the priming coat, using glue as a binder, would be softened by any moisture which might soak into the wood from the back, causing the finish to crack and peel.

If the eight coats needed to produce a good job of enameling, according to the formula accepted by the International Association of Master Painters and Decorators, is looked upon as involving too much labor and expense and requiring too long a time to suit the average American, what would be thought of the Japanese lacquering, which is practically only another form of wood enameling? In plain lacquering thirty-five different processes are involved, requiring from three to five weeks to complete, and for the more

expensive articles a much greater time and amount of work is required. This, however, is confined to small articles, it not being customary to lacquer the woodwork of their houses, or doubtless the Japanese would have evolved some less laborious method for accomplishing the result.

The best woods for enamel finish are either cherry or whitewood, but as the former is practically prohibited for the average house on account of its high price, the latter should wherever possible be used for the wood finish where it is intended to be enameled. The next best wood is white pine, but all pine wood at times contains more or less resinous sap, which is not always apparent on the surface. The writer remembers a house in Philadelphia whose painting he was superintending some years ago. The room was to be finished in a pale blue tint and the method was employed of using a deep blue tint under the zinc and damar coat. The entire room was perfect with the exception of one panel of one door, which looked all right until the varnish coats were applied, when it turned a greenish cast. Every possible method was tried to overcome the difficulty, but without avail, and the door had finally to be sent back to the mill and a new panel inserted to replace the defective one, which was found to contain sap that appeared to be drawn to the surface by the action of the varnish and because of its yellow color to cause the blue to appear greenish.

In the foregoing no mention has been made of a class of enamels which many paint manufacturers put on the market and which are known as household enamels. They are usually packed in small cans with press tops enabling them to be easily opened and closed again, and are made in various popular colors for enameling the odd objects about the house which the average woman or amateur tinker is apt to endeavor to improve. These enamels are usually made with a quick drying varnish and are suited only for the purpose for which they are manufactured. On large surfaces they cannot, as a rule, be used without showing laps, and are generally so heavy bodied that it is difficult to apply them to a vertical surface without sagging.

Special enamels are also made for use on the interior of refrigerators and ice manufacturing plants and for breweries. These are made with varnishes that resemble outside or spar varnishes in their character, being more elastic, tougher and slower drying than the white varnishes used in the manufacture of enamels for house work. Such enamels are more expensive than those ordinarily used and take a longer time to dry. Special enamels are also made for finishing the interior of bath tubs and others are made for radiators and other surfaces required to stand high temperatures. As with varnish, so with enamel, the particular article made for the purpose must always be used if satisfactory results are looked for.

## Use of Mouldings in Decoration

SHOWING HOW MOULDINGS IN THE HANDS OF THE DECORATOR MAY BE MADE TO GIVE CHARACTER TO A COMMONPLACE APARTMENT

By Sidney Phillips

IT IS not so very many years ago that decorators began to see the possibilities of mouldings as a part of the decorative scheme, entirely independent of their use in connection with the ordinary wood trim that is put up by the carpenter. Even the best paper hangers had no thought beyond that of neatly hanging the combinations provided by the wall paper manufacturers, and sidewalls, borders and ceil-

for this was that these picture mouldings were put up, as a rule, by the carpenters at the same time as the other wood trim; the decorator found them in place when he came to the building and was obliged to accommodate his work to them. Occasionally the architect would specify a chair rail and a picture rail, which he would carry round the room at any height he saw fit, and the decorator found himself in trouble

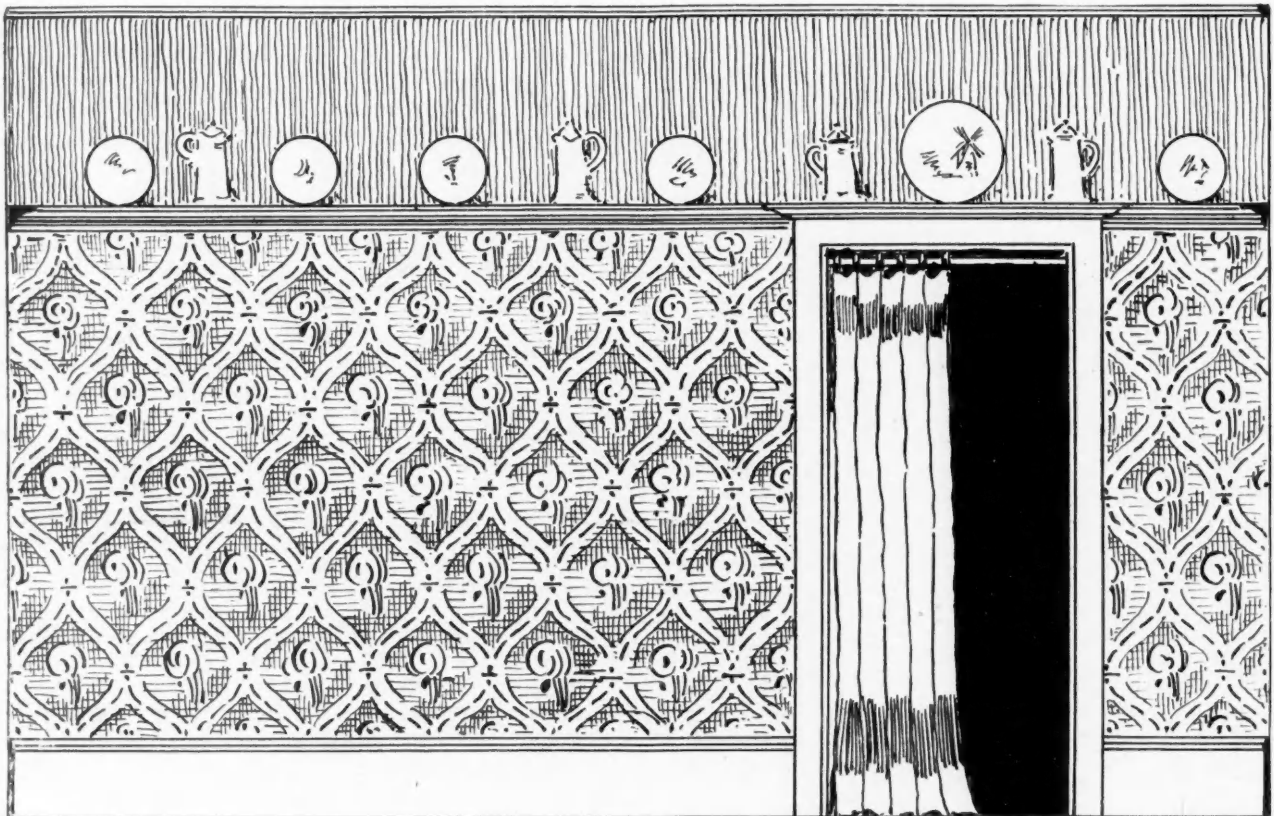


FIG. 1.

ings were hung with monotonous and commonplace regularity. If a man wanted to hang a picture, he drove a nail into the wall and covered the top of it with an ornamental rosette, suspending the picture from this nail by a heavy silk cord, with a pair of tassels hanging down in the center of the triangle. Pictures, too, were hung with monotonous regularity and the whole aspect of the average apartment was commonplace in the extreme. Finally some one hit upon the idea of running a moulding round the room from which pictures might be suspended by means of a hook that could be lifted off at pleasure. This was a great step in advance. The earlier picture rails were usually put just under the plaster cornice, if there was one, or in the ceiling angle, if there was no cornice. The wires or cords by which the pictures were suspended crossed the frieze or border, producing a decidedly unpleasant effect. One reason

because he was obliged to cut his paper against the moulding, both top and bottom, a matter of considerable difficulty from the mechanical standpoint. Presently it began to be understood that the more logical plan was to let the mouldings form dividing lines in the decorative treatment; to make them of such form and color as to harmonize with the wall paper or other decorations; and to put the mouldings up after the paper in order that they might cover and hide the joints between sidewall and frieze or border. It seemed natural then to recognize the decorator as the proper man to put up those mouldings which are of a decorative character, as apart from those which are necessary, such as the door and window trims and the baseboards. To-day there are numerous factories which make a specialty of plain and ornamental room mouldings and picture mouldings, doing no general woodworking business at all. These mouldings are

furnished to the trade in the white or tinted, and finished in any desired colors, and are usually kept in stock in the prevailing wall paper colors of the season. The plain shapes are ordinarily made of wood, while the ornamental mouldings are made of "compo" on a wood base. This "compo" is a composition of

tended for use as stiles for paneling, either on walls or ceilings; shelf mouldings either with or without supporting brackets or in combination with picture mouldings, and mouldings of thin wood that can be built out on a ceiling to give the effect of heavy beams, are also kept in stock.

Of late years the plastic cornices and the mouldings and center pieces for the ceiling that were formerly so much used, even in inexpensive houses, have been almost entirely abandoned except in the case of elaborate or expensive buildings of a more or less public character, or in some of the handsome colonial houses. The average room, especially in houses of moderate price, is simply a plastered box, with holes for doors and windows, bound around with wooden mouldings to hide the rough edges of the plastering and having a baseboard as a matter of practical utility. Nothing more bare and commonplace can be imagined. The log cabin is more artistic. Covering the walls and ceiling with an ordinary combination wall paper hides the bare plaster with colored decoration, but it gives no shadow lines, nor any accent to relieve the box-like nature of the room, and at the very best is characterless.

By the aid of mouldings the decorator can at once give character to the room that would otherwise be uninteresting and ordinary. The decorator need no longer be limited to the combinations made by the wall paper manufacturer, but can strike out and originate for himself. It is noticeable that each year the manufacturers are offering an increasing number of independent sidewall papers, without borders or ceil-

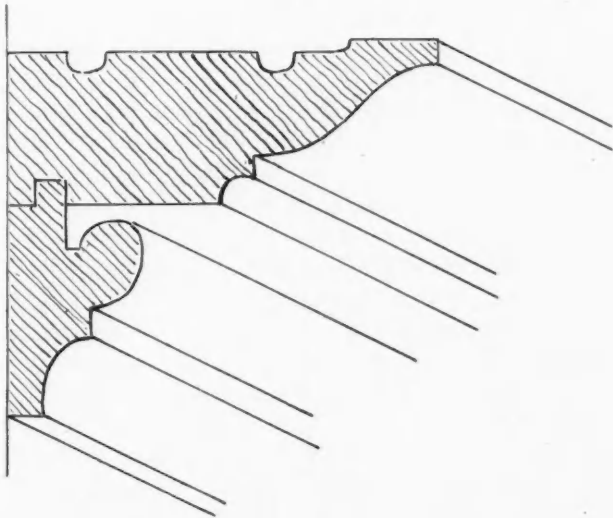


Fig. 2

glue and plaster and is cast in various ornamental forms. It is the same material that is used in making picture frames. It gets very hard, will stand a good deal of wear and tear and will last for years before the ornament begins to chip from the wood base. Plain shapes of various patterns are also made, in-

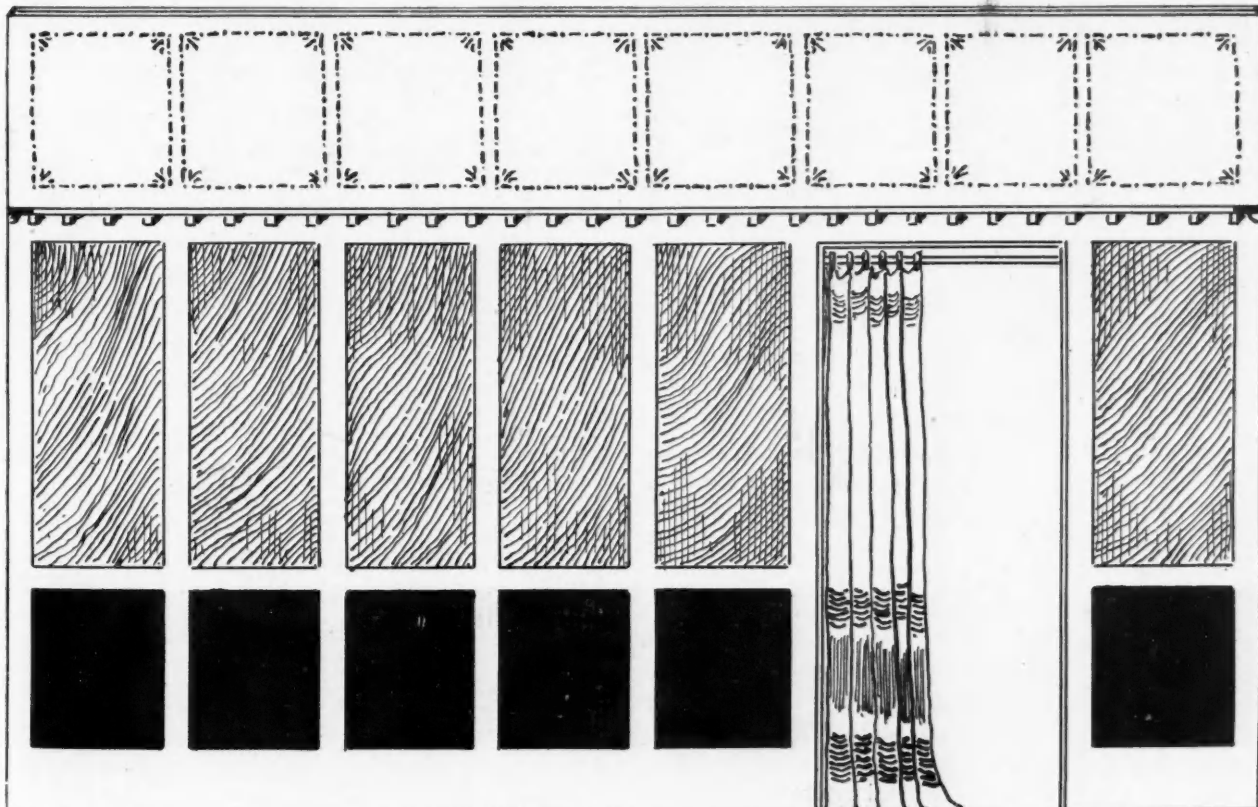


FIG. 3.

ings to match, and of special patterns having clothly effects, for use in various combinations with more pronounced patterns. Designs adapted for paneling are also produced, and the advance wall paper display of the present season, shown in New York City in

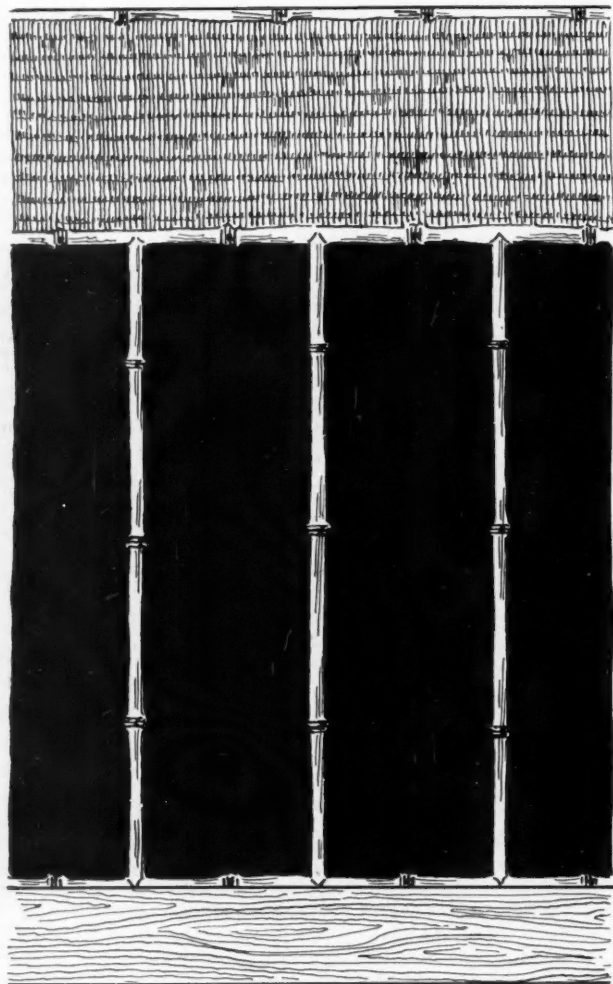


FIG. 4.

August, was notable for its artistic excellence and the opportunities that the new papers will afford the decorator of original ideas.

The simplest treatment which has been made possible by the use of decorative mouldings is known as the "upper third," as shown in Fig. 1. Here, as an illustration, we have taken the side of an ordinary room with a ten-foot ceiling, and have run a combination plate rail and picture moulding round the room, at the height of the top of the door trim, butting the lower section of the moulding against the side of the trim. Fig. 2 is a sketch, showing an ordinary moulding of this character. Two grooves are usually run in the top to prevent plates or photographs from sliding off the shelf when resting against the wall. At the ceiling angle a small cove or quarter round moulding is used to cover the edges of the paper. The ceiling paper is hung first, then the upper third and finally the side wall, and after the paper has been hung the mouldings are put up. In this case we

have shown a plain ingrain or burlap pattern for the upper third, while for the side wall a large figure imitation leather paper or stained duplex paper in two tones of the same color, has been selected. This would make a very pleasing dining room treatment. In some rooms, especially where many pictures are to be used, the treatment may be reversed and a plain ingrain paper or a small pattern with a clothly effect or a two toned stripe hung on the lower walls, while the upper third may have a paper with a strong treatment in several colors. In this case a simple picture moulding can advantageously be used instead of the plate rail, and this can be kept down a little lower so that it strikes the side of the door trim. With a cretonne paper for the upper third and a plain ingrain for the lower wall, we can produce exceedingly pleasing bedroom combination.

With flat mouldings used in panel effects, we can obtain a much greater range of original treatments, as will be seen by Fig. 3, where the same wall has been shown. Here there is a dado of dark red burlap (or a dark red leather paper or imitation leather fabric might be used), while the upper panels are filled in with a greenish gray or soft brown buckram. The wood mouldings are capped by a narrow shelf supported by bracket. The upper third

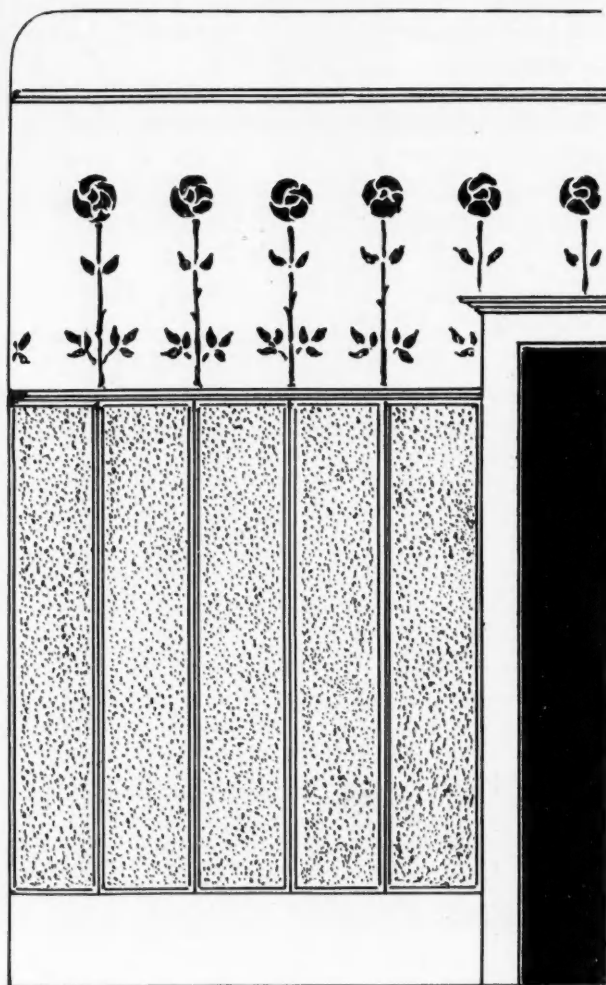


FIG. 5.

is hung with a plain ingrain in a light tone of warm yellow brown or leather color, or with a plain tint of sanitas, stenciled in panels, using a narrow bead and pearl pattern or some similar broken line design with corner pieces. In this case, if further elaboration is desired, the ceiling also may be divided into square panels by means of flat mouldings. As previously described, all the paper and fabrics are hung first and the joints are covered by the mouldings. If the latter are bought in the white, they should be painted before being put up, to avoid any danger of getting brush marks on the paper. They are fastened by means of long thin wire nails, and great care must be exercised to avoid marring the face of the mouldings or the paper. In hanging the paper no special care need be taken to keep the edges straight or smooth, since they are covered up afterward.

An original treatment for a den or smoking room is shown in Fig. 4. Here the lower wall is covered with a dark red burlap, divided into panels by strips of bamboo. These come split into half round and quarter round sections specially for this purpose. Bamboo curtain rods are also made to harmonize with the bamboo mouldings. The upper third is hung with a coarse Japanese matting. Considerable variation may be made in this idea; the lower panels, for example, may be hung with grass cloth, or with the coarse wire grass matting. A matting cannot be pasted to the wall, but must be tacked up—the tacks, of course, are covered with the bamboo mouldings. The vertical mouldings can be spaced much closer together than shown in our sketch, if desired; or the effect may be altered by introducing square or oblong panels to cap the tall ones.

An interesting treatment is suggested by Fig. 5 in which a series of tall narrow panels is used to form a high wainscot. The background is a gray green buckram, the panels being formed by using three-quarter inch scotia mouldings of hardwood, turned on edge, so that the narrow end projects and the shadow lines are strongly marked. The backs of the two mouldings come together at the verticals, and they are returned round, top and bottom, like a picture frame. The cap is made by means of a flat moulding projecting perhaps an inch and a quarter. The upper part of the wall may be painted a dull ivory or hung with an old rose paper and stenciled with stiff conventional roses, as suggested, or a narrow pictorial border may be used above the dado. A moulding is used at the base of the cove cornice that has been indicated. The ceiling paper mould then may be run down to this line with a canopy effect.

These few suggestions give only a faint idea of the possibilities for original and novel treatments open to the progressive decorator by the use of the various decorative mouldings that can now be obtained without difficulty



Let thoroughness characterize everything you do.

## The Jamestown Exposition

(Continued from page 652.)

instance, not only serve as a rendezvous for the people of the state represented, but will provide space for the display of historic relics together with other exhibits showing what each state has done in the upbuilding of the country. All the state buildings will be located directly on the water front and sums ranging from \$25,000 to \$300,000 will be expended in the erection of these state structures.

### Naval Exhibit of all Nations

The location of the exposition grounds on the greatest natural harbor in the world has served to give the whole show a naval and maritime flavor, and all the principal nations of the world have accepted invitations to send their latest and most representative war vessels to an international naval rendezvous to be held in connection with the exposition. Accordingly the United States government has arranged to erect on the grounds a club house for the entertainment of the visiting soldiers and sailors, and a similar structure where Yankee military and naval officers can entertain their brethren of other nationalities.

Not all of the new building projects, it may be added, are to be carried out on the exposition grounds. New hotels are projected or in course of erection all along the extensive shore line that surrounds Hampton Roads and adjacent waters. At Jamestown Island, thirty miles up the James River, the United States government is to construct a pier and to provide rest stations, retiring rooms, etc., for tourists—for, of course, every sightseer who journeys to the exposition will also wish to visit the historic locality where Anglo-Saxon civilization first took root on this continent.

It will be noted that much of the building construction at the exposition will have to be pursued during the winter months, but this is not the disadvantage that it would prove in some other sections of the country. The climate of tidewater Virginia is very equable. Even in January and February the average temperature does not reach the freezing point and there is comparatively little snowfall to interfere with work. An excellent system of interurban trolleys, supplementing steam railroads, and an unequalled system of water transportation render the delivery of material and supplies a simple problem.



### Inexpensive Homes

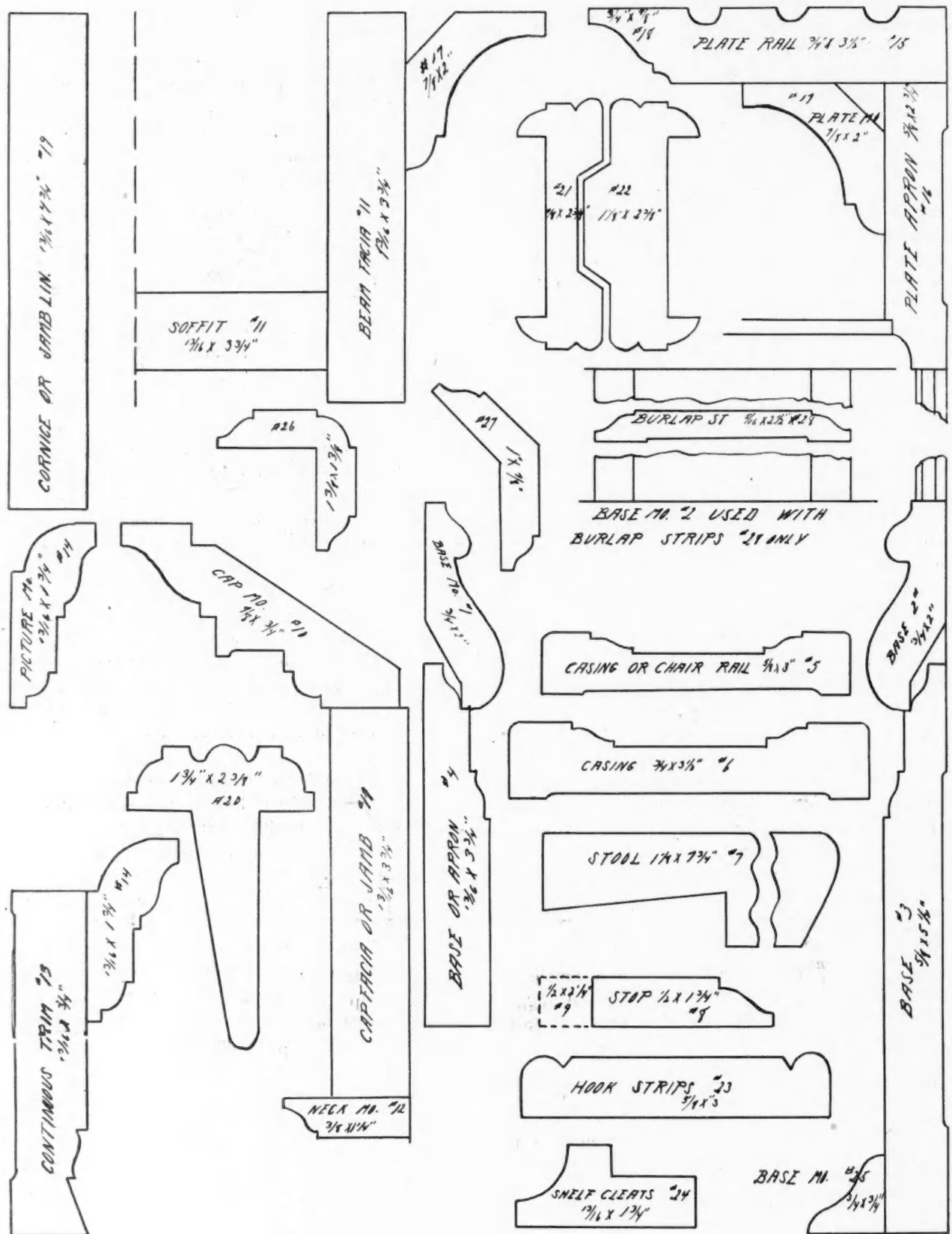
Two wretched looking tramps were brought up before a justice of the peace. Addressing the worst looking one, the justice said:

"Where do you live?"

"I've got the room above him, your honor."

"And where do you live?" said the justice, addressing the other.

"Nowhere."







## Something the Boys Can Make

COMPLETE DESCRIPTION OF HOW TO MAKE A PIANO BENCH—KIND OF WOOD TO USE AND PROPER DIMENSIONS FOR PRACTICAL PURPOSES

A FAVORITE piece of woodwork with most boys is the piano bench. Not that the boys desire it for their own use, necessarily; but there seems to be a demand on the part of the ones at home which the boys seek to meet.

At first thought, it seems an easy thing to design such a piece of furniture. It must needs be of a certain height, length, and width; and, if these conditions were all, it would be a problem easily solved.

A piano bench such as boys can make must be sim-

The dimensions here given may be varied to suit the individual, though the proportions will be found quite satisfactory if no change is made.

Secure if possible a plank of oak, mill-dressed to one and one-eighth inches, having a width of fully fourteen inches and a length of six feet.

If a plank of the required width cannot be obtained then the width must be got by doweling two pieces together. A description of how this can be done will be found in the March, 1906, number of this journal.

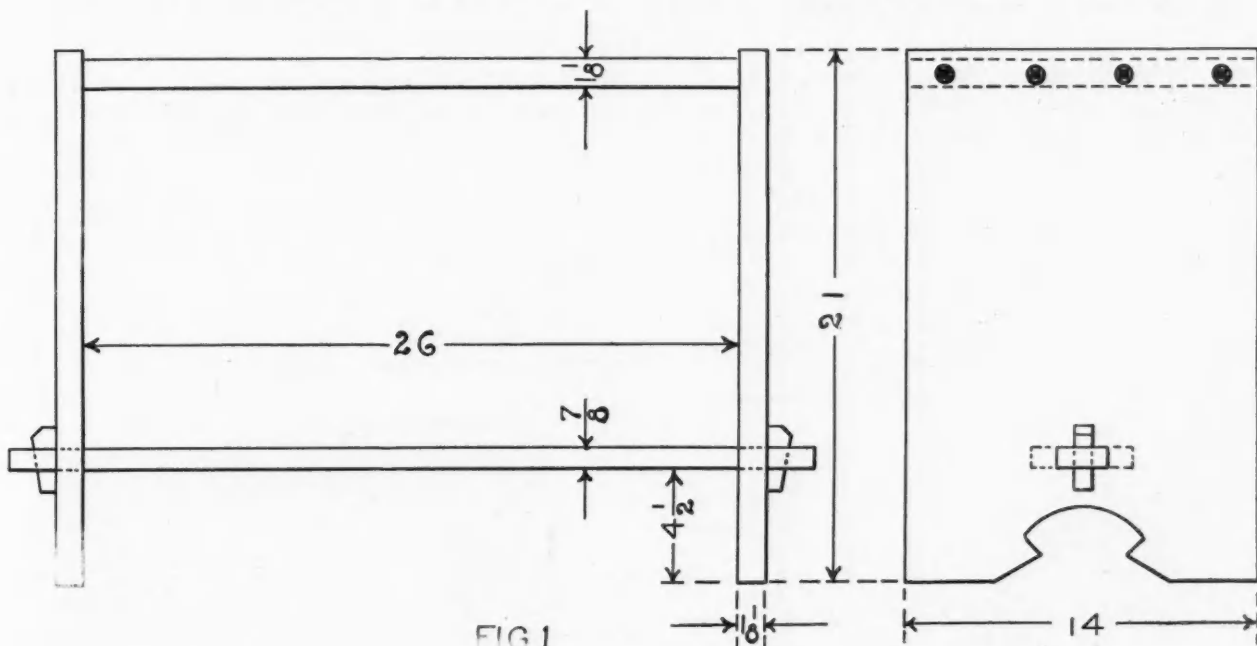


FIG. 1.

ple in its construction, yet it must not be so simple that one might mistake it for the wash-bench. A suggestion of a wash-bench in a music room or a parlor would hardly be agreeable. The piano bench must be so well constructed and finished that it may "hold its own" with the piano which it is to serve.

The design, Fig. 1, is extremely simple in its construction, yet the keyed tenon, together with the unusual lapping of the sides on the top instead of the top over the sides, is interesting enough to keep one from thinking of wash benches. This bench is made of heavy oak and finished so that the beauty of the grain shows to the best advantage. The structural lines are simple and the general appearance such that solidity with great strength is suggested.

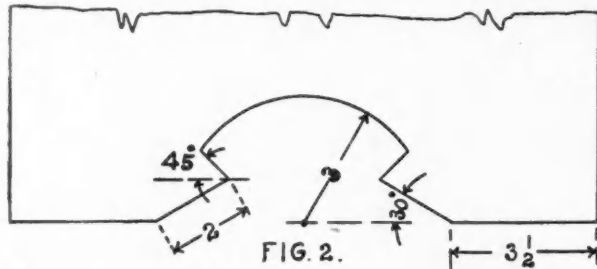
Saw this plank into three pieces; one, so that it can be squared up with a length of twenty-six inches, and two pieces each with a length of twenty-one inches.

With the smooth plane and steel scraper, smooth the broad surfaces. Square each piece in the usual way, the one to fourteen inches by twenty-six inches, the other to fourteen inches by twenty-one inches each.

For the cross tie, secure a piece of seven-eighths inch oak and, after smoothing the surfaces, square it to four by thirty-two inches.

For the keys, surface a piece of three-quarter inch oak. Plain one edge square to the working face and straight and make it about six inches long by one and one-quarter inches wide.

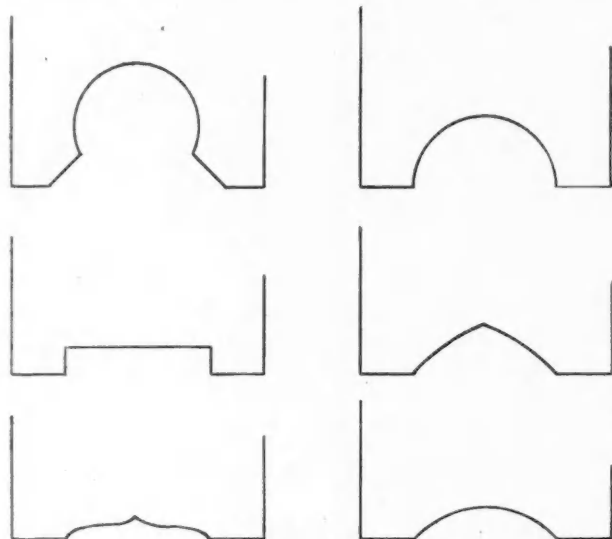
Prepare the top of the bench by carefully squaring it to fourteen inches by twenty-six inches. Set the pencil gauge to three-eighths of an inch and mark upon what is to become the top surface, keeping the gauge block against the edges only. Also gauge on



the edges, keeping the gauge block against the top surface. With the plane and scraper, round these two corners to the gauge lines.

The design for the lower ends of the legs as shown in Fig. 1, originated with a boy, who was making one of the benches. It is simple, of pleasing form, and is especially well suited for this particular place, as it allows the mortise for the keyed tenon to be brought near the bottom of the leg.

It is made by means of the dividers and the thirty and forty-five degree triangles. A good way would be to make a template, or pattern, of stiff paper. Draw a straight line fourteen inches long to represent the bottom of the leg, Fig. 2. Mark points upon this line three and one-half inches from each end and draw lines through these points at thirty degrees to the base. Measure two inches from the base line along each of these lines and through the points thus located draw lines at forty-five degrees to the horizontal base



line. Mark the middle of the base line, seven inches from either end, and with the dividers set to three inches between the points describe an arc of a circle to meet the lines last drawn.

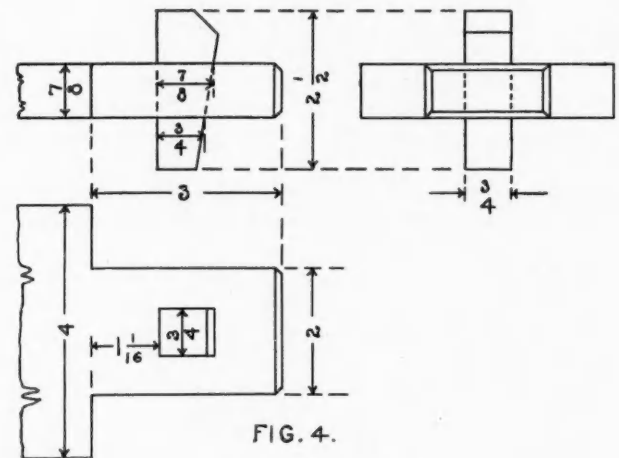
Fig. 3 shows a variety of suggestions for designs.

Most of them can be drawn by mechanical means. Those that cannot are to be made by drawing one-half of the design freehand and, after folding the paper along a center line, tracing the first half of the design upon the second half of the paper; or by cutting the two parts at once while in the folded condition.

Cut the curves, after they have been laid out upon the wood, with the turning saw and finish with the rasp and scraper.

The cross-tie has a through tenon at each end. From one end measure three inches and mark; from this mark measure twenty-six inches. There should remain three inches from this last mark to the end of the piece.

Square sharp pencil lines around the piece at these marks, keeping the beam of the try-square against the working face and joint edge in so doing.



Set the gauge to one inch and gauge from the joint edge upon the two faces, as far back from the ends as the pencil lines, Fig. 4. Again, set the gauge to three inches and, keeping the gauge block against the same edge, gauge as before.

Rip carefully along these gauge lines and cross-cut along the pencil lines to meet them. Chamfer the ends of the tenons about one-eighth of an inch, using the plane.

To lay out the mortises which are to receive the keys, measure out from each of the shoulders one and one-sixteenth inches on the upper and under surfaces and mark; then, from these marks, measure seven-eighths of an inch on the upper surface but three-quarters of an inch on the under surface. Square sharp pencil lines across at these points.

Set the gauge to five-eighths of an inch and gauge between these pencil lines on the two surfaces and at each end. Next set the gauge to one and three-eighths inches and gauge as before, gauging from the same edge—the joint edge.

Another way, and probably a better way should the tenon not be accurately cut, would be to find the middle of the tenon as to its width; measure in each direction three-eighths of an inch and locate points. Do this at each end and on each side of the piece. Lay a long

straight edge so that its edge coincides with the corresponding points on the two ends and mark where the gauge lines would have been made.

Chisel carefully to these lines, working from each

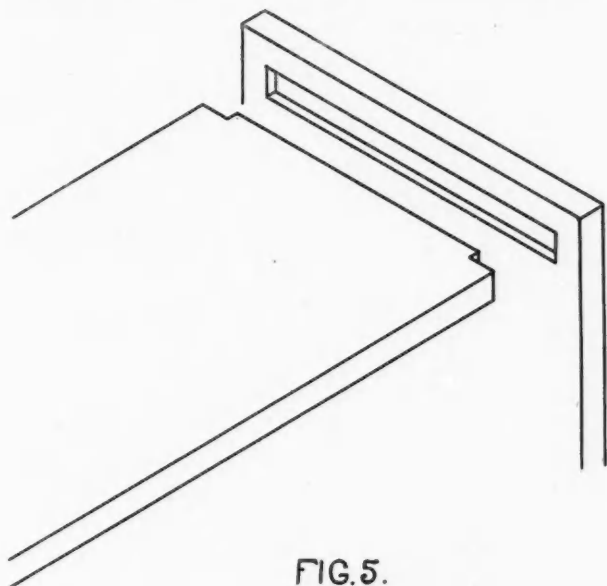
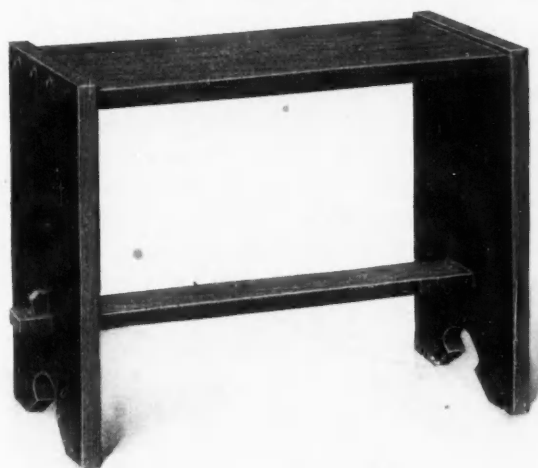


FIG. 5.

surface alternately. Only one surface of the mortise slopes with reference to the surface of the piece.

The keys may be laid out next. Square one end of the piece of stock which was prepared for them so that it shall be at right angles to the joint edge and working face.

Measure from this end two and one-half inches; saw the piece off and plane the end square. Measure again from the end of the piece thirteen-sixteenths of an inch and square a sharp pencil line across. From



the line last drawn measure seven-eighths of an inch and square another line across.

On one of the cross lines just drawn, measure out from the joint edge seven-eighths of an inch and place a point; on the other, measure three-fourths of an inch. Draw a straight line through these points the length of the key.

Saw close to the line and plane smooth. The corner

at the top of the key is cut at an angle of forty-five degrees.

In putting the parts together, fasten one of the legs to the top using lag, or carriage screws, and washers. Prepare the pieces by boring holes one-quarter of an inch in diameter through the legs.

Locate them, as shown in Fig. 1, on a line parallel to the top of the leg and fifteen-sixteenths of an inch from it. Measure one inch from the edges for the holes nearest the edge and place the others so as to make the intervening spaces equal.

Bore the holes in the ends of the top to correspond using a three-sixteenths of an inch bit. Bore two inches deep.

The lag screws for these holes should be one-quarter of an inch in diameter and three inches long.

Place the tenon of the cross-tie in the leg and put in the key. Now put the second leg on in the same way as the first.

Fig. 5 shows a second way of fastening the top to the legs. A closed gain three-eighths of an inch deep and one and one-eighth inches wide is chiseled in the leg. The opening lacks one inch of extending out to the edges.

It will be necessary if this construction is used to keep the top lower on the legs—about one inch from the top; otherwise, there would be danger of the gains splitting out.

Cut the top according to the dimensions given for the gain. It should be twenty-six and three-fourths inches long instead of the original twenty-six inches.

In fitting the parts together, plane off the under side of the top should it require planing.

A finish should be selected that will harmonize with the piano. It need not be the same necessarily.



### Artificial Granite

Consul Liefeld of Freiburg, Baden, reports a method for the manufacture of artificial granite. He writes:

"An invention which relates to the manufacture of artificial granite for use in building and other purposes was recently registered. The object of the invention is the production of a cheap and durable material, which, when set, has the appearance of granite, and which can be used for many, if not all, the purposes for which natural granite is employed. For the purposes of the invention, granite or marble chips, or both, are taken and mixed with a suitable proportion of cement, water, coloring matter, and other ingredients, if desired, until it forms a hard consistent paste. The mixture is then placed in molds, in which it is allowed to remain until set, after which the blocks are removed and immersed in water until they have absorbed sufficient moisture. They are then removed and placed in a warm and shady place until they have attained the required dryness and hardness, after which they are polished."

## Fireproof Masonry

IMPORTANCE OF GOOD MASONRY WORK IN MAKING WALL FIREPROOF—STRENGTH OF WALL DEPENDS  
LARGELY ON MORTAR JOINTS

By Geo. E. Walsh

**I**N THE modern improvements of fireproof building materials, masonry plays an important part. Not infrequently it is considered of secondary importance by builders and structural engineers, but in the various large conflagrations of our cities the condition of the masonry after a collapse of a building has determined to some extent the relative value of the mortar employed. In the Baltimore fire a good many collapsed buildings indicated that inferior mortar was used, and the weakness of the buildings was due to this fully as much as to the quality of bricks, stone or tiles.

It has become an axiom of modern building laws that the mortar should approximate the same resistance to heat and pressure when hardened and set as the building materials which it binds together. The truth of this was never better exemplified than in the construction of modern fireproof buildings of the first class. Here we have burnt tiles and bricks which are supposed to withstand a temperature of 1,500 to 2,000 degrees Fahrenheit. Many of them will resist even much higher temperatures without showing any signs of cracking or disintegrating, and in addition to this test they are supposed to withstand a stream of water from a fire engine and still not give way under the sudden cooling of their surfaces. Furthermore, the high-grade fireproof building materials are required to withstand a pressure of 2,000 pounds to the square inch without crushing, and this load must be carried while the materials are growing with the intense heat.

It has been one of the triumphs of modern building methods that fireproof structures of burnt tile and bricks can be constructed which will successfully resist these remarkable tests, and their employment on a wider scale for structural purposes is assured. It may be only a question of time when frame houses, and houses built of any except the most imperishable materials, shall disappear entirely from the face of the earth. An era of permanency in building is rapidly approaching, and everything that will contribute toward its encouragement should be welcome.

In the employment of cement and other mortars for building fireproof structures of the highest grade, the mason has problems to solve that require the very best of ability. The functions of mortar, as have been described, are to unite building materials in such a way as to give the maximum surface of friction to the blocks or bricks with the minimum amount of mortar. In other words, too much mortar is as bad as too little. Mortar when employed between bricks or stones sets much harder than when tested alone. This makes it easier for the expert mason to supply cement mortar which will set as hard as the building materials used. Unless mortar thus forms a compact wall as

hard as the blocks or bricks, it becomes the weakest part of the structure. In fireproof buildings many defects have been found in the mortar simply through the neglect of this point. In the old buildings where little attempt was given to fireproofing, it was sufficient that mortar should be strong and adhesive. It performed its purpose if it held the walls securely together.

But in modern buildings the mortar must be fireproof as well as hard as the building materials. It must resist temperature of a very high degree, and also refuse to disintegrate and crumble when a stream of water is played upon it. The fireproof qualities of the best Portland cement is well known, and in this we have the basic principle of a cement mortar which will resist fire. But much depends upon the quantity and quality of the cement, the methods of mixing, and the skill of the masons.

In regard to the first we find that cements show a variation in grades according to the fineness of grinding and the method of burning. Even the coarse parts of the best Portland are inert and do not adhere to sand or broken stone when moistened. It is thus necessary that grinding should be perfect as well as burning, and to secure the best results very uniform powdered Portland cement should be used. A too large mixture of sand with the cement to form concrete for binding purposes weakens the fire-resisting quality of the mixture. Likewise mixing requires expert workmanship, for a too free use of water weakens the concrete to a low point of adhesiveness.

In building walls of fireproof buildings masons accustomed to handling tiles and burnt bricks of a high grade are desirable. A good many fireproof buildings have had their weakness intensified by bad masonry. Unless all the spaces between the tiles or blocks are completely filled with fireproof cement mortar, the heat from a conflagration may penetrate through these air spaces to the iron work inside or even to the interior of the building. If the weakness of the walls depends upon the masonry work it is evident that the very best skilled labor is none too good for laying the courses of tiles, bricks or concrete blocks.

Another class of masonry work in the modern fireproof structures is that pertaining to the protection of structural steel. Where burnt clay tiles or bricks are used for simple protection of the steel structure, and not for carrying any floor loads, the chief consideration is that the walls shall possess a very high degree of fire resisting qualities. As there is no great pressure to resist, and no particular need of strength, the porous terra cotta or tiles are used specifically for this purpose. These porous tiles and

bricks absorb moisture in excess, and thus protect the steel work from dampness. There is one point about mortars used for this purpose that demands emphasizing. They must be extremely high in their fire-resisting properties. In this respect they should equal the clay tiles or the porous terra cotta bricks. The mortar must be placed in the courses so thoroughly that every interstice is filled, and no part of the heat can then penetrate to the steel work.

This class of interior and exterior masonry work is fully as important as the former, but it is generally classified as second or third rate owing to the fact that great pressure and moisture-proof qualities are not considered. To mix and use a perfectly fireproof mortar, however, is not an easy matter. The ordinary brick mason may be expert in all except this one important knowledge. Mortar for this work should be able to withstand a temperature of at least 2,000 degrees Fahrenheit, and unless tested beforehand to this point it should have no place in the modern fireproof building of steel skeleton work.

The relative expansion and contraction of mortar with heat and cold is a point that interests the mason of to-day fully as much as any question in modern building operations. The cement mortars of the highest grade are relatively stronger in their adaptation to the changing effects of heat and cold in solid walls than any of the cheaper grades. The proper crystallizing and hardening of Portland cement depends upon the mixing and amount of water used, but in using such mortars with tiles and porous terra cotta any excess of moisture is generally absorbed by the building materials. This leaves the mortar in the very best condition for setting permanently. It also accounts for the more firmer setting of mortar when placed between two bricks or tiles than when left exposed on a surface. After the proper crystallizing of the cement, the quicker it sets the better must the results prove.

The destruction of mortar by heat is due more to the action of the fire upon the sand and broken stone incorporated with it than upon the cement itself. This has been demonstrated many times in tests and in actual experience. Where there is an excess of sand or broken stones mixed with the cement, there is sure to be a lower degree of fireproofing in the mortar. This fact is not always sufficiently emphasized. In the effort to cheapen the cost of the mortar masons are tempted to add sand too freely in proportion to the amount of cement, but not to such an extent as to actually weaken the strength or adhesiveness of the mortar. Those not accustomed to dealing with fireproof work of the highest order may not realize the enormity of their sin. The fact that they must consider the fireproof qualities of their mortar as well as its strength should indicate to them that exact proportions of cement and sand should always be used.

In the past few years methods of constructing fireproof buildings have advanced so that their technical value is seldom disputed to-day. Many of the ob-

solete fireproof building methods in vogue a dozen years ago have been found lacking in critical moments when the fire from outside sources has been very intense. While some disparaging remarks were made relative to the destructive effects upon the Baltimore fireproof buildings, it should be understood that had one-half the structures been built of fireproof material the conflagration could never have spread as it did. A single tall fireproof building offers a barrier to the spread of flames that is of vital importance. Even though such a building is partially destroyed in a great sweeping fire such as destroyed half of Baltimore, its value would be inestimable if it should check the flames long enough for the firemen to get the fire under control. This fact has not been properly appreciated by lay writers on fire destruction in considering the effects of the fire, but it is one that stands out as a pre-eminent factor in the situation.

Now the mason should look upon himself as one of the links in the chain which makes such a fireproof barrier permanent, unyielding and effectual. It is up to him to make the fire wall of tile and bricks perfect in construction. If his work is faulty the best fireproof material in the world must yield to the onslaught of the elements. Likewise the disintegrating effects of rain, frost and heat must add to the injury of the building.

Heretofore tests of fireproof building materials have not been extended sufficiently to include cement mortars, but engineers and builders have been awakened to such needs, and there is a tendency to discriminate between the mason of ordinary ability skilled in building with ordinary bricks and stone blocks and the expert who understands the particular needs of a fireproof wall construction. It is one of those little things which mark the specializing of an old trade. The mason of the future must be intelligent enough to keep abreast of modern developments in the whole line of building operations.

The present movement to utilize hollow and solid concrete building blocks and briquettes for fireproof structures calls equally for masonry work of the first order. In a great many instances the mason becomes the manufacturer of the concrete blocks, and his knowledge of cement and concrete cannot be too extensive. This material is somewhat uncertain as yet in its ultimate value for building uses, but that it is destined to play an important part in the future of our buildings cannot be questioned. The use of proper mortars and cement mixtures for laying the different courses of concrete blocks is a matter that should be exact and according to uniform rules. In all tests with these blocks, the crushing strength has been dependent upon the proportions of cement and sand mixed together, and upon the time of hardening. In a similar way the cement mortars employed for laying the blocks are weak or strong according to their general composition and the way in which they are applied before they have a chance to set in the courses.



### Reinforcing Concrete

To the Editor: Ghent, Minn.

I would be pleased if you let me know through the columns of your paper how to reinforce concrete for horse partitions, mangers and floors. What shape and size steel do you use for partitions? How does cinder concrete do for horse stable floors? Please send a sketch or outline of same if convenient.

ARNOLD HUISENFELDT.

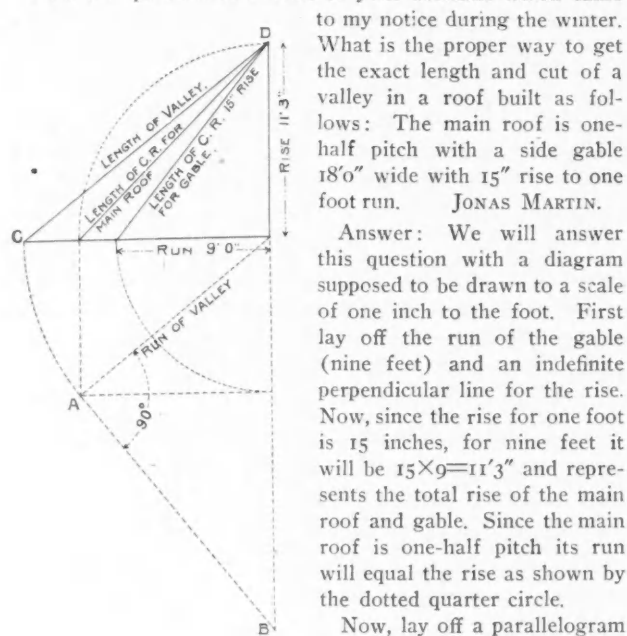
Answer: The best partitions for barns, stalls, etc., are made by stapling expanded metal lathing to two by four-inch studding, set sixteen-inch centers and covering with three coats of cement mortar (one part cement to three parts sand) all applied at the same time. This will make the concrete one inch thick and when thirty days old will not be injured by the kick of a horse. Expanded metal of three-fourths inch mesh made of twenty-four sheet gauge steel makes very substantial work. Concrete made of one part cement, two and one-half parts sand and three parts clean (washed) cinders makes a good flooring, but it should be covered with a wearing surface of one part cement to two parts sand, and should a rough surface be desired sprinkle after trowling with fine cinders and roll with a light wood roller.

EDITOR.

### Exact Length and Cut of Valley

To the Editor: Burton City, O.

I have a question to submit to your columns which came



run of the common rafters, and a diagonal line through

to my notice during the winter. What is the proper way to get the exact length and cut of a valley in a roof built as follows: The main roof is one-half pitch with a side gable 18'0" wide with 15" rise to one foot run. JONAS MARTIN.

Answer: We will answer this question with a diagram supposed to be drawn to a scale of one inch to the foot. First lay off the run of the gable (nine feet) and an indefinite perpendicular line for the rise. Now, since the rise for one foot is 15 inches, for nine feet it will be  $15 \times 9 = 11'3"$  and represents the total rise of the main roof and gable. Since the main roof is one-half pitch its run will equal the rise as shown by the dotted quarter circle.

Now, lay off a parallelogram with side and end equal the

this will equal the run of the valley, and this taken on a continued line of the runs of the common rafter as at C, then C-D will equal the length of the valley.

For the side cut, draw a line at right angles from the run of the valley intersecting the plumb line of the rise as at B. Then A-B taken on the tongue of the square and C-D on the blade will give the cut. The latter giving the cut.

If the two roofs were of the same pitch, the tangent line (A-B) would equal the run of the valley in length. For that reason many suppose it is the run that is used on one arm of the square instead of the tangent for obtaining the cut in question.

A. W. WOODS.

### Keeping Out Dampness

To the Editor: Smithfield, Va.

There is a store front here built of concrete blocks with a concave core and in which the hollow space does not go clear through the block and it leaks and gives trouble. I am making concrete blocks eight by ten face and the core goes through the block and makes a solid air space through the block. Do you think my walls will be damp if I plaster right on to my stone work? Is there any way to overcome it if it should be damp? The proportions I am using are five to one of cement well tamped.

JOHN W. ENGLISH.

Answer: The wall you speak of may have solid mortar joints from exterior to interior which will carry dampness, large solid (webs) withes tying the two walls of the block together as well as porous concrete conduct dampness. A composition of one part cement, two parts sharp, fine sand and three parts coarse, sharp sand, properly tamped and kept damp for eight days, will make a sound block, but to be positive waterproof the wall.

EDITOR.

### Compressibility of Concrete

To the Editor: Hartington, Neb.

How much can you compress a mass of concrete 12 inches square?

W. J. OLSON.

Answer: One cubic foot of loose composition made of one part cement and five parts sand will be reduced to two-thirds of a cubic foot by good hard tamping. One cubic foot of loose composition made of one part cement, one part sharp fine sand, one part coarse sand and two parts gravel will be reduced to about five-sixths of a cubic foot, but different materials give different results. In pressing loose material two inches is often pressed into a one-inch space, while it is almost impossible to reduce a 12-inch depth to 9 inches by the same method.

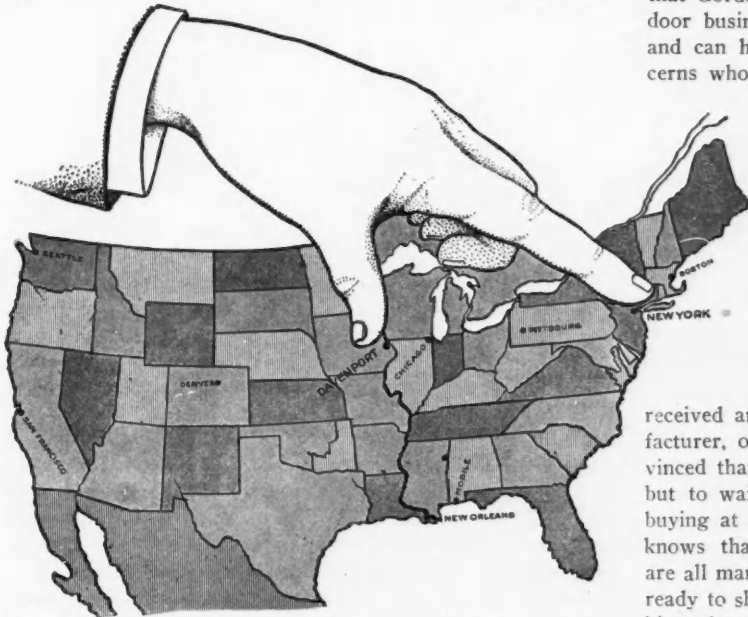
EDITOR.

# PRACTICAL TRADE APPLIANCES

## Millwork Direct from Manufacturer to Consumer

There never was a move more to the direct interest of the carpenter and builder than the tendency toward selling millwork direct to the consumer. This means a saving of hundreds of dollars to the builder and a corresponding increase in his profits.

Gordon, Van Tine & Co., of Davenport, Iowa, who own



their own timber lands, saw their own logs, and manufacture their own millwork, are selling direct to the consumer at prices which any dealer or manufacturer will find difficult to meet on account of the superior advantages of this firm. Their location is such, as shown by the illustration, as to reduce the question of freight rates to a minimum. They are soliciting trade from any point in the United States and Canada, and being located in the center of the entire country they can not only ship at the lowest rate, but can place the goods in the hands of their customers in the shortest possible time.

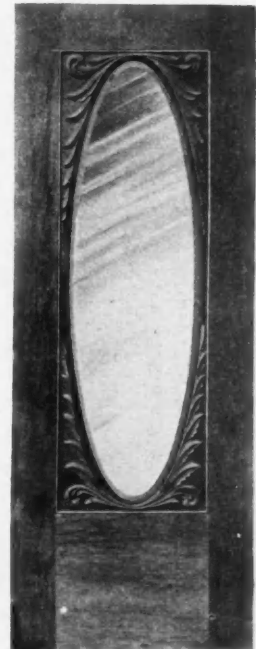
Price is what naturally appeals to the contractor and builder, and when he is assured of getting the best goods (as he certainly can be when dealing with a concern so large and responsible) he will not hesitate to place his orders. There are several reasons why Gordon, Van Tine & Co. are in a position to name such astoundingly low prices. First, owning their own timber lands they cut out a profit which other manufacturers must pay. Second, they saw their own logs, cutting out another profit. Third, they have no salesmen with tremendous expense accounts and to whom percentage must be paid. Fourth, they sell for cash with order, thus doing away with the percentage of loss from bad debts and expensive bookkeepers—others are obliged to add to every bill a percentage to cover the loss of some accounts every year, thus making the man who pays his bills also pay the bills of

the man who does not pay. Counting all this saving, Gordon, Van Tine & Co. are able to save their customers from 25 to 50 per cent. As an example of what this mill can furnish is shown an illustration of their "Graceland" door, in 2' 8" by 6' 8" at \$12.50. This price includes the glass, which is polished plate.

Next to the price, the contractor is interested in getting his goods promptly. In this connection it is important to note that Gordon, Van Tine & Co. are specialists in the sash and door business. They give their whole attention to millwork and can handle orders more promptly than mail order concerns who divide their attention among a hundred different lines. They pride themselves on prompt and satisfactory shipments. Their warehouses contain 163,000 feet of floor space (more than four acres) and everything shown in their complete catalogue (except art glass, which is always made to order) is carried in stock and will be shipped immediately. Every contractor has had experience in waiting for millwork and can appreciate the saving to him to be able to know to a certainty that he can secure what he needs at once. He may place an order with a dealer and delivery is promised on a certain date. The goods are not

received and he is told that the blame rests with the manufacturer, or even further back with the sawmill. He is convinced that the dealer is doing his best, and has no redress but to wait. In buying of Gordon, Van Tine & Co., he is buying at first hands, and all this bother is eliminated. He knows that the goods he wants are all manufactured, in stock, and ready to ship. He has but to place his order and he knows that they will be in his hands as soon as expert shippers and modern transportation can get them there.

After considering price and prompt service, the contractor wants to be assured that he is dealing with a reliable house. On this point, in buying of Gordon, Van Tine & Co. there is no question. They guarantee safe delivery and promptly replace broken glass or damaged goods. They are shipping every day to the largest contractors, carpenters and builders in the country, which is in itself proof of their responsibility. It requires but one bill of goods to convince any contractor that he gets the best goods and the best treatment when buying of them. They have been manufacturing millwork for nearly fifty years and have a reputation for high quality to maintain. They see that all goods are carefully crated and delivered in as bright, clean conditions as when they left the factory.



Graceland

A new catalogue has just been issued by Gordon, Van Tine & Co., containing illustrations and prices of their sash doors and other millwork which they carry in stock. This will be sent free on application. It is surprising, but nevertheless true, that many of the prices are from 25 per cent to 50 per cent less than those quoted by others for the identical goods. On the back cover page of this issue are illustrated a few of their leading articles, and the catalogue contains hundreds of others of equal merit. Don't fail to secure a copy and compare with other prices. Address, Gordon, Van Tine & Co., Davenport, Iowa.

### Bricks for Use and Ornament

This picture of an ornamental concrete column represents brick turned out with the Favorite brick machines, which are manufactured exclusively by the Cement Machinery Company, Jackson, Mich., who are well known manufacturers of strictly high grade concrete block, brick, post and mixing machinery.

Each and every brick and block shown in this column were tamped with the mechanical tamper which this company places on each Favorite machine they ship out. It requires but one blow of this tamper to tamp twenty brick, and each and every brick is depressed seven-eighths of an inch by this tamper, and, as it will strike a blow 200 pounds or over, it makes a very durable brick. The government has tested it, and in this test the brick stood a crushing strength of 2,300 pounds to the square inch and something like 89,000 pounds pressure before they would break in the testing machine. Different governments have adopted this Favorite machine for some of their best work, and hundreds of them are in operation.

As far as we can learn, it is the only machine on the market having a mechanical tamper of this kind which tamper requires no power and can be operated by a boy if desired.

The column shown herewith represents twenty different designs in rock, plain and circle brick as well as front, corner and veneer brick. This company makes an attachment to the Favorite brick machine for making concrete

blocks, as shown in the base of this column, also a paving brick attachment, all of which are tamped with the mechanical tamper. They have a very large assortment of designs which are furnished with each machine. Two sizes of the Favorite machines are made, one called the "No. 2" for making ten

brick and the other called "No. 1" for making twenty brick at one operation.

For further particulars we would suggest that our readers write this company and they will be pleased to send catalogue and full detailed information.

### Milbradt Rolling Step Ladders

The Milbradt Manufacturing Co., St. Louis, Mo., who have manufactured the Milbradt Rolling Step Ladders for the past twenty years, say it has always been their aim to make the most perfect rolling ladders on the market; and the fact that they are now selling more ladders than all other houses combined and that they daily receive, unsolicited, the highest recommendations for them, is sufficient evidence to prove that they have succeeded in their object.

The Milbradt Rolling Step Ladders are all made to order, and to fit each particular place, of good oak lumber, in the most artistic and neatest style; they are handsomely finished, are durable and perfectly safe, as they cannot jump the track. They take up the least possible space, run noiselessly and so easily, either empty or with operator upon them, that a slight push will propel a ladder the length of an ordinary store. All ladders have an extra wide shelf at the top, which affords great convenience in handling stock. All iron work on ladders, as well as the brackets to hold up steel track, is malleable, made artistic and strong and aluminum finished.

All ladders are shipped on trial and subject to approval, and the company does not ask one cent pay for them unless they prove just as represented and perfectly satisfactory in all respects, and, therefore, it is not necessary for prospective buyers to take into consideration recommendations for the goods. Should testimonials be desired, they will most cheerfully mail a printed list of them as well as original letters from their latest customers.

When ordering ladders and referring to any figures, always mention the AMERICAN CARPENTER AND BUILDER, and it is important that measurements for ladders and track are sent.

Besides the different styles of ladders shown in their catalogue, they can manufacture any special style of ladder that may be wanted, of any kind of wood, and finish them as desired. For all special styles of ladders and special finish of ladders and track estimates will be cheerfully furnished.

A catalogue of their latest styles of rolling step ladders will be sent\* to any reader of this paper.

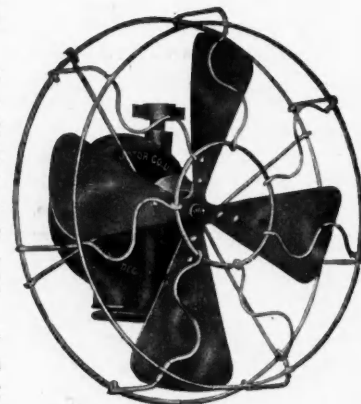
### Divine Water Motor

We herewith illustrate a new and very useful article offered by the Smith & Hemenway Company of 108-110 Duane Street, publishers of the Green Book of Hardware Specialties.

The illustration on next page shows the motor attached to a screw sink faucet in a private residence and can be adjusted to either the right or the left hand side.

We are informed that the motor is almost indestructible. Being strongly built, it will last for years without any repairs, and is so perfectly made that all the parts are interchangeable. Extras can be had at nominal expense.

The total weight complete, put up one in a box, with polishing wheel or buffing wheel, emery wheel, stick of polish, is six and one-half pounds. It is a water motor which actually develops one-eighth

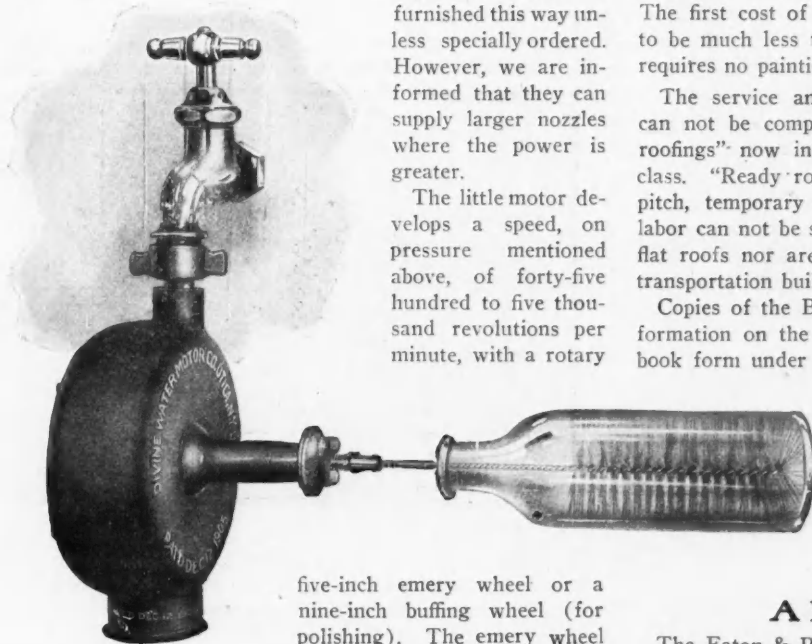




break horse power on eighty pounds pressure from a city main, using No. 150 nozzle, or about one-eighth inch at stream; eighty pounds being the ordinary pressure from a

city main. Motors are furnished this way unless specially ordered. However, we are informed that they can supply larger nozzles where the power is greater.

The little motor develops a speed, on pressure mentioned above, of forty-five hundred to five thousand revolutions per minute, with a rotary



five-inch emery wheel or a nine-inch buffing wheel (for polishing). The emery wheel is suitable for grinding knives,

scissors, razors, axes, hatchets, hammers, or in fact any edged tool. The buffing wheel is suitable for polishing, cleaning and buffing any metal surface motor; will also wash bottles and run electric fans. This will be found a valuable addition to any boarding house, restaurant, dentist, butcher or private house where any grinding is to be done. It also has sufficient power for running sewing machines, small lathes, scroll saws, dynamos, etc.

Printed matter and prices will be sent on application.

**The Barrett Specification as Applied to Tar and Gravel Roofs**

For upwards of fifty years, roofs of coal tar pitch, felt and slag or gravel, or, as they are more popularly called, tar and gravel roofs, have been largely used throughout the United States.

On large manufacturing structures the use of these materials has been very general on account of the fact that such a roof requires no painting or coating and has a low first cost.

There has often been misunderstanding as to the value of this kind of roofing on account of the fact that no two contractors would lay the roof in the same way. Various thicknesses of felt have been used, the pitch has been mopped on generously and sparingly, as the case might be, and the felt has been laid two, three, four, five and six ply.

The result has been that even architects well versed in their profession have had difficulty in specifying a roof of coal tar pitch, tarred felt and gravel which would give the best results for the least expenditure.

The leading manufacturers of these materials have now put forward a standard specification for using these materials known as the Barrett Specification. It calls for a five-ply roof, employing 120 pounds of pitch per 100 square feet of completed roof and felt of not less than 14 pounds per 100 square feet, single thickness.

If the specification is properly followed the contractor will guarantee his work for ten years. This is a safe thing for him to do because it has been repeatedly demonstrated that such a five-ply roof will endure much longer than that period. Instances are quoted where such roofs have lasted over thirty

years without leaking and without requiring repairs or attention of any kind.

In preparing the specification due attention was given to cost, in order to make such roofs commercially practicable. The first cost of a Barrett Specification Roof will be found to be much less than that of tin, slate or copper; and as it requires no painting the comparative cost grows less yearly.

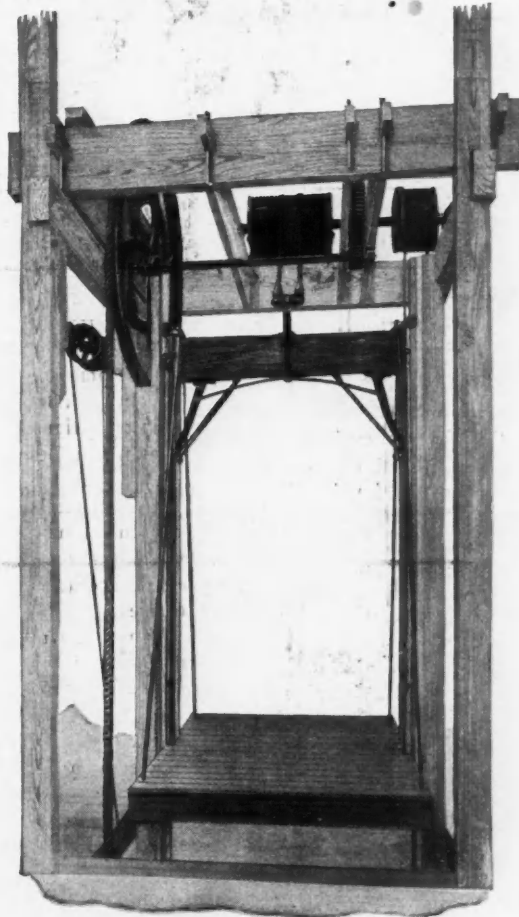
The service and economy of Barrett Specification Roofs can not be compared with the many "prepared" or "ready roofings" now in the market, as they are not in the same class. "Ready roofings" are excellent on buildings of great pitch, temporary structures and in locations where skilled labor can not be secured, but they are not adapted for use on flat roofs nor are they economical on manufacturing plants, transportation buildings and on structures of the first class.

Copies of the Barrett Specification, together with other information on the roofing question, have been compiled into book form under the title of the Barrett Hand Book. This

book will be mailed free to any architect, engineer or owner of buildings on request to the nearest office of the Barrett Manufacturing Company of New York, Chicago, Cleveland, Allegheny, Kansas City, St. Louis, Minneapolis, Philadelphia, Boston, New Orleans and Cincinnati.

**A Modern Store Hoist**

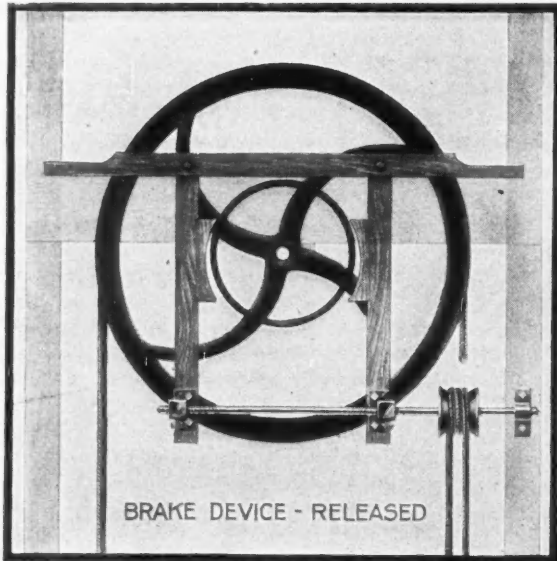
The Eaton & Prince hand power elevator possesses several distinctive and business bringing features which will merit the interest of any consumer desiring an elevator of this sort. This company has been building elevators of all de-



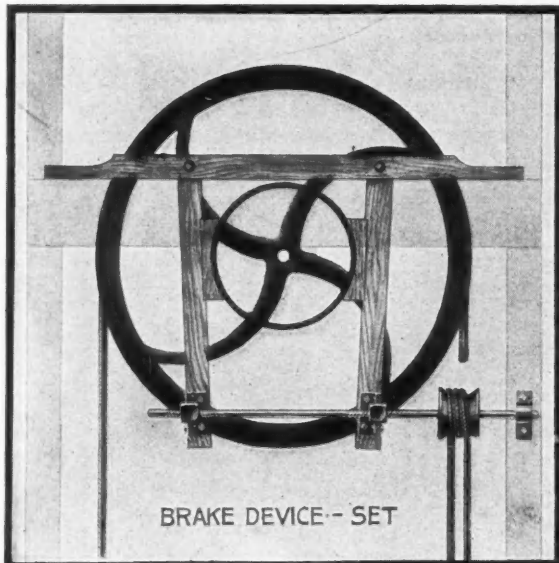
**Store Hoist**

scriptions for twenty-five years and has spared neither pains nor expense to perfect their product. One of the most inter-

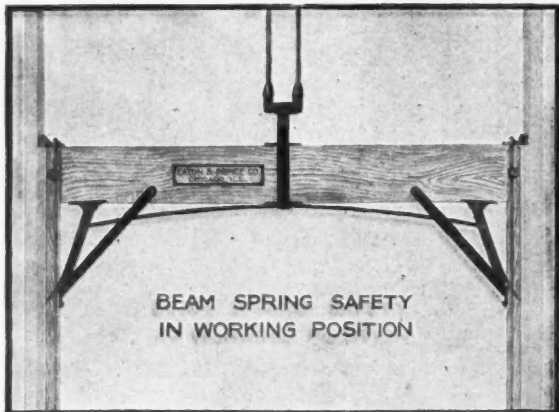
esting, practical and essentially important features of their Store Hoist is the brake device. It consists of a double



shoe working on each side of the band which is cast to the arms of the rope-wheel. Each shoe has a bearing on the



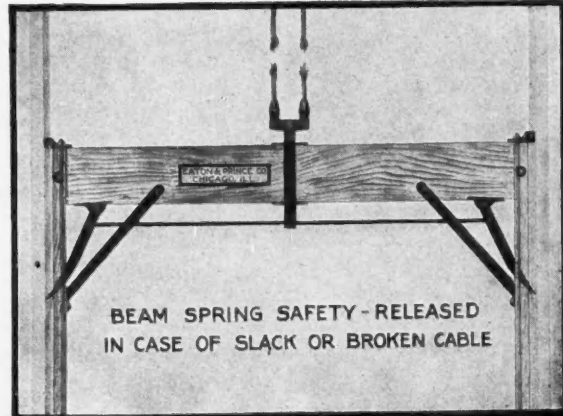
band; this feature enables the operator of the elevator to lower his car filled to its utmost capacity with the aid of the forefinger and thumb only, on the brake-line. This brake



device is operated by means of an endless cord running around the sheave on the screw shaft of the brake (see illustration). A very clever locking device is a feature which

absolutely prevents the car from running up into the ceiling and smashing things up generally. The car is at all times under the perfect control of the operator and cannot possibly move in either direction until brake is released by the operator.

Another exclusive feature is a beam spring safety device (see illustration). In the event of the cables breaking this



locks the car to the guides, thus preventing its dropping. This company has issued an interesting booklet, fully illustrated, which they are sending out to any one interested and which explains in detail their hand power elevators.

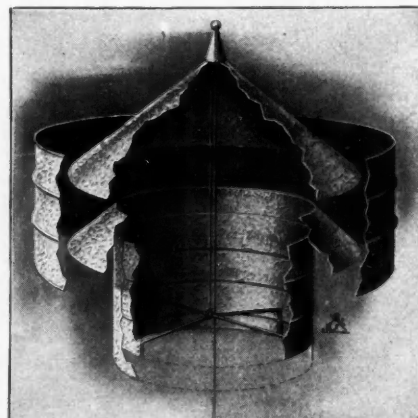
### Has Purchased Another Company

The H. S. Palmer Hollow Concrete Building Block Company of Washington, D. C., has purchased the entire interests of the Cement Machinery Company of Burlington, Iowa, including all their patterns, patents, office fixtures and good will, and Mr. J. W. Sanderson, manager of the Cement Machinery Company for the past three years, will be identified with the H. S. Palmer Company. Mr. Sanderson has made quite a success of the hollow block business and is a most influential man in the field. Mr. Sanderson is energetic and is known everywhere hollow blocks have been used.

The Palmer Company will shortly issue a catalogue of both new and second hand machinery, which has been taken from the Cement Machinery Company and which will be sold cheap and guaranteed to be first class.

### Perfection in Ventilators

Among the many excellent systems of ventilation, that have been devised, developed and put on the market, the Burt combination skylight and ventilator is not only entitled to,



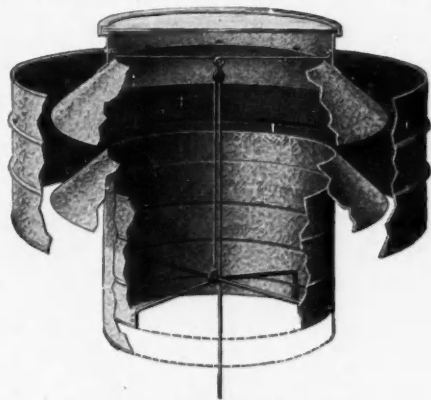
Sectional View Metal Top

but has won and securely holds, a foremost place. This remarkable combination for effecting two very important things is designed for factories, boiler houses, power houses,

residences, school houses, apartments and all other buildings where light and ventilation are needed.

One of the most important features of the Burt Ventilator is that it constitutes both a skylight and a ventilator. In most cases it makes unnecessary any other form of skylight. Owing to the condition of the weather it is sometimes advisable to close a ventilator, in which case the "Burt" can be entirely closed without in the slightest degree obstructing or affecting the light.

In every other make of ventilator in which a glass top is used the common flat damper is employed and when that damper is closed the light is wholly shut off. Thus the value

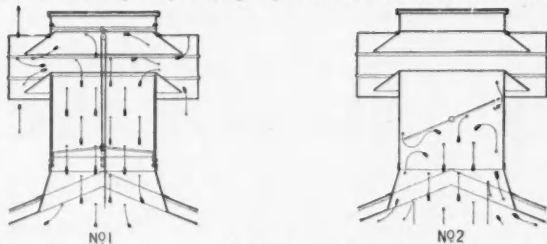


Sectional View Glass Top

of the skylight feature is lost at the precise time when it is most needed, because in stormy weather the light of the sun is always more or less obscured.

The "Burt" is the only ventilator on the market having this important feature, which is fully protected by patents.

A very important feature of this damper is that it leaves the air shaft of the "Burt" always free and unobstructed, whether the ventilator is closed or not. In other ventilators, when the flat damper commonly used is partly closed the air current strikes the damper (see Fig. 2) and is deflected back into the



room; while in the "Burt" (the air shaft being always open—see Fig. 1) the air current flows unobstructed to the top of the air shaft, where it escapes from the ventilator. Thus the "pulling power" of the "Burt" is far greater than that of any other stationary ventilator. The Burt Damper never moves when set in any position, being unaffected by air currents, whereas the flat damper used in other ventilators is in constant movement and therefore requires frequent attention.

**For the Canadian Trade**

The Ideal Concrete Machinery Co. of South Bend, Ind., has started to manufacture their famous Ideal block machines in Canada, the factory and office being situated at 124 York street, London, Ontario. So many inquiries were pouring in from the Canadian provinces that the company found it an absolute necessity to start the manufacture of them and has opened an office, which is in charge of Mr. F. M. Leach. Machines have already been produced and shipments of Canadian orders are being made.

**I. H. C. Engines and Trades Workers**

There seems to be very good reason why machinists and men of related callings are drawn to the line of small powers

manufactured by the International Harvester Co., 7 BB Monroe St., Chicago. This great company has but recently taken up the building of gas and gasoline engines. Its reputation would not permit it to turn out anything but high class machines. When put to the test, their engines fully meet all expectations. First of all, they are dependable. That fact

**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.

**For Sale.**

STEEL SQUARE POCKET FOLDER, with booklet, in leather case, 25 cents. Dwight L. Stoddard, 328 Raymond St., Indianapolis, Ind.

FOR SALE.—A sash and door factory and planing mill for sale. Run by excellent water power. Located in a prosperous Wisconsin town of 4,500 inhabitants. Address, Planing Mill, care of American Carpenter and Builder, Chicago.

PATENT secured or no fee; opinion free. Write about any legal business. Including United States Supreme Court. E. W. R. Ewing, Attorney, Washington, D. C.

**Wanted.**

WANTED experienced all-round planing mill foreman for mill doing odd work principally; good estimator, detailer, etc., capable of making cutting bills from plans; best of references required. Address Z, American Carpenter and Builder.

WANTED—Position as foreman or general superintendent of house building; ten years' experience in same place; desire to change location; best references; practical mechanic and draftsman; age 35. Address Mechanic, care American Carpenter and Builder.

WANTED men with money to invest in the concrete block and machinery business; have a two-piece system; also a power press of 100 tons pressure. Send \$1.00 for blue prints. Chas. A. Meyers, 2202 Locust St., Toledo, Ohio.

SALESMAN with experience in Concrete Machinery line. The Edmundson Concrete Machinery Co., South Bend, Ind. S-1

**Miscellaneous.**

RHEUMATISM CURED by drinking and bathing in the living waters of Eden Hot Springs, Redlands, Cal.; rates \$9.00 to \$12.00 per week. Surrey leaves Redlands Wednesdays and Saturdays at 3 p. m. for the springs. S-3

WATCH TACOMA GROW. Population in 1880, 1098; in 1900, 37,714; January 1, 1906, 85,000. Send ten cents in postage for illustrated booklet descriptive of the Electric City of the Pacific Coast to Secretary Chamber of Commerce and Board of Trade, Tacoma, Washington.

**SPECIAL OFFER TO CARPENTERS**  
**BUILDERS AND OWNERS OF HOMES**

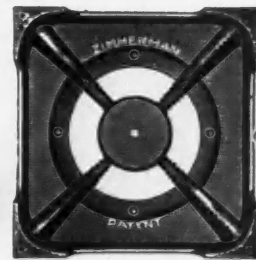
Ives Patent Window Ventilating Lock, a Safe-Guard for Ventilating Rooms, Pure Air, Good Health and Rest Assured.

To introduce this article, Four Ventilating Locks in Genuine Bronze, Brass or Antique Copper Finish will be mailed to any address prepaid for One Dollar. Will include a fifty page Hardware Catalogue and Working Model to Carpenters who wish the agency to canvass for its sale. Address,

**THE H. B. IVES CO.**  
 NEW HAVEN, CONN., U. S. A.

**The "Zimmermann" Iron Base**  
 FOR WOOD COLUMNS

"The Column Never Rot's"  
 All Sizes for Round or Square Columns. Thousands in use. Send rfo Circular "Z"



**C. E. ZIMMERMANN, : Syracuse, N. Y**

will be greatly appreciated by small power users. They can not all connect with line shafting operated from central stations. Individual steam powers for them are too slow and expensive. The I. H. C. engines furnish ready power. They are reliable. They furnish power at a moment's notice. They stop the instant the work is done, and all expense stops also. They are, therefore, much more economical than steam or other old style powers.

Another important fact is that the I. H. C. engines are adapted to use alcohol as well as gas or gasoline. This enables power users to operate with greater economy than ever, now that the tariff is off of denatured alcohol.

The I. H. C. engines are made in various sizes in portable and stationary horizontals and in uprights or verticals, thus adapting them in size and style to almost any use.

An advertisement of these engines is, now running in this paper. Power users would do well to read it and procure the I. H. C. book on the power question before placing orders.

### A Revised Price List of Slate

David McKenna of Slatington, Pa., has just issued his new price list, covering all kinds of slate and slaters' supplies, a copy of which has just reached us. The price list covers all grades of roofing slate, natural slate blackboards, mantels, shelves, hearths, register stones, etc., as well as special machinery for working of this necessary building material. He writes that he will be pleased to send the revised price list to any of our readers who will mention that they saw his advertisement in the AMERICAN CARPENTER AND BUILDER.

### Nuggets of Information

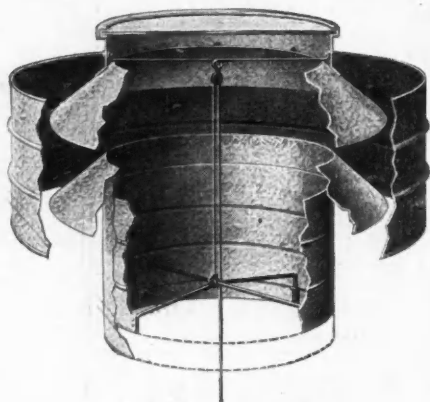
Many practical hints of value to cement users are contained in a booklet, "American Concrete Mixers," just issued from the offices of the International F. & Fireproofing Company, Columbus, Ohio. The catalogue is a gem of the printer's art and the subject matter is replete with nuggets of

information clearly set forth, which most concrete workers have to pick up by costly experience. As a dissertation upon concrete mixing in general the booklet is of value, and as an exposition of the methods of this particular mixer it cannot but prove of interest to those interested in the purchase of a machine. A postal card sent to the company will insure your getting one of the booklets.

### Paint that Has a Record

"The paint that beautified the World's Fair" has always stood well with building contractors, as with practical painters, some of the largest in the country using it exclusively, as evidenced in the testimonials published by the Kinloch Paint Company, St. Louis. But though their product is generally marketed only through regular dealers, they find the easiest way to secure the best contractor in that town is to first sell the best contractor in each town a year or two—and they make it worth that contractor's while to thus demonstrate "Kinloch quality and economy." This paint is not the ordinary "ready-mixed"; instead, it is ready to mix, each gallon making two gallons ready for use by the mere admixture of raw linseed oil, gallon for gallon, and nothing else. This ensures the freshness and purity of the oil—"the whole life of any paint"—and makes buyer pay only the oil price instead of the paint price for that oil. It is also argued that this plan greatly increases the durability, as well as the working qualities of the paint.

The manufacturers are anxious to interest our building contractor readers in their special introductory proposition, but decline to make this offer except to a contractor who "buys and tries" the paint as an evidence of good faith, though such trial order may be for as little as five gallons, on which they prepay the freight. It will be well for our readers who use paint to communicate with this firm, the Kinloch Paint Co., St. Louis, Mo.



Notice Sliding Sleeve Damper.

## THE BURT VENTILATOR

takes impure air, smoke, steam or gas out of any building automatically and without any expense other than the first cost of the Ventilators. When the glass top is used it makes a combination skylight and ventilator. The "BURT" has a sliding sleeve damper (patented) instead of the common flat damper, so that the Ventilator can be closed, yet the light is **never** affected. In other makes when the ventilator is closed the light is instantly shut off. The sliding sleeve damper does not collect dust, does not move with the air currents; temperature can be regulated better and a less number of Ventilators are required to ventilate a build-

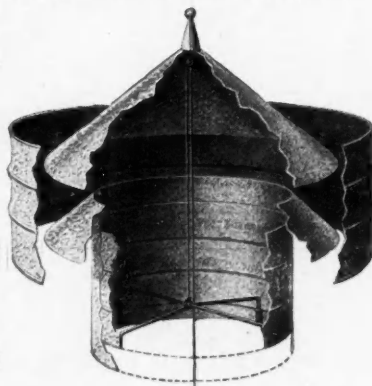
ing owing to the fact that by the use of the round damper the air shaft is unobstructed, thus the "pulling powers" in the "BURT" are greater than in other makes.

The "BURT" is ideal for residences. By the use of one or more glass tops the attic or third story is made comfortable.

Send for list of recent sales, also 20 page booklet illustrating and describing the "BURT"  
Made in all sizes, with Glass and Metal Tops

## THE BURT MANUFACTURING CO.

Largest Manufacturers of Oil Filters in the World. 500 Main St., AKRON, OHIO, U. S. A.



Notice Sliding Sleeve Damper.

# This Mitt

# FREE

This is a genuine offer—no strings attached to it.

Send us name of your paint supply house and we will send you **FREE** prepaid one of **Johnson's Polishing Mitts** illustrated

herewith for polishing Furniture and Woodwork. You are familiar with Johnson's Prepared Wax for floors. Have you tried it on furniture? If not, you ought to. You apply our wax with a cloth over varnish, shellac or any other finish or to the bare wood and polish with Johnson's Polishing Mitt. You immediately obtain a beautiful artistic and lasting polish. You can polish with a dry cloth, but our polishing mitt is much better.

## Write For it To-day



Johnson's Polishing Mitt will not only enable you to do better work in less time and with less effort than with any other polishing device, but it will be a continual and pleasant reminder of Johnson's Prepared Wax. That's one good reason why we send it **FREE**. Johnson's Polishing Mitt is made of sheepskin, with the wool on;

is open across the back and slips on the hand; is far ahead of cloth, brushes, or anything for similar use and will last for years. When dirty it may be cleaned with benzine or gasoline. Always use



## Johnson's Prepared Wax

*"A Complete Finish and Polish for All Wood"*

with Johnson's Polishing Mitt on Furniture, Woodwork and Floors and you will always obtain best results. Johnson's Prepared Wax is **sold by all dealers in paint**—Universal size 1½ oz. 10 cents; Household size, 4 oz. 25 cents; 1 and 2 lb. cans 60 cents per pound; 4, 5 and 8 lb. cans 50 cents per pound.

### FREE OFFER

Send us name of your paint supply house and we will send you **FREE** prepaid one Johnson Polishing Mitt.

Don't delay — send coupon today. You will also get a copy of our new book "The Proper Treatment for Floors, Woodwork and Furniture." It will interest you. Regular 25 cent edition, but **FREE** for limited time. Forty-eight pages—printed in six colors,

## S. C. Johnson & Son, Racine, Wisconsin

*"The Wood-Finishing Authorities"*

Common A.C.B.9  
S. C. Johnson & Son  
Racine, Wis.

Gentlemen: My paint dealer's name is

His address is

for which please send me **Free** prepaid one Johnson Polishing Mitt and copy of your new book "The Proper Treatment for Floors, Woodwork and Furniture," as per your offer.

My name is

Address

## MY FREE BOOK ABOUT NO-TAR ROOFING



tells you how to lay a roof with no tools but a sharp knife and a hammer.

Send me your name and address on a post card and I will send you a copy of this book and tell you all about my roofing. I will also send you a sample of "No-Tar" Roofing to test. Then you will understand why it is the only roofing that is weather, water, acid, fire and almost wear proof.

It won't crack in cold weather, won't melt in hot, and, being made without tar, gives best protection against fire. This means that you get lower Fire Insurance rates on buildings with "No-Tar" roofs.

You ought to send for my book at once if you are putting up a new building, need any patching done, or want to put a new roof on an old building. I can save you a lot of money and give you the best roofing you ever heard of into the bargain. Write me today. Don't put it off.

**H. W. BINNIE, Pres.**

## The Heppes Company

2399 Fillmore St.,

CHICAGO



## India Oilstones

**HARD SHARP QUICK**

Used Daily with Satisfaction  
by Up-to-Date Mechanics

**Made in 59 Different Shapes and  
Coarse, Medium and Fine Grits**

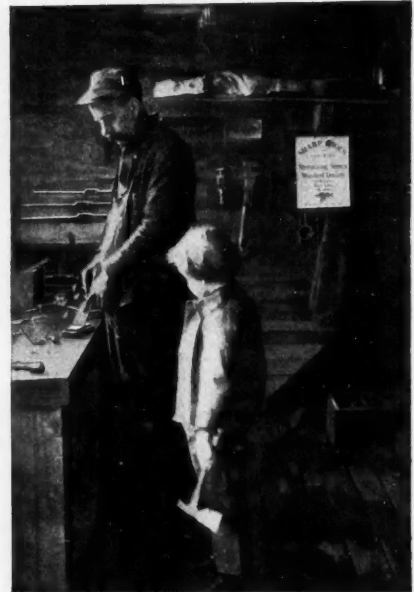
**SOLD UNDER  
THE FOLLOWING  
GUARANTEE**

"If this article should prove in any respect unsatisfactory, we agree to exchange or refund the full price paid for same."

Send for New  
Descriptive Booklet  
and Price List

Manufactured by  
**The Norton Co.,**  
Worcester, Mass.

Exclusive  
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PIKE MANUFACTURING CO., Pike, N. H.

# You Need Power

**Either for your own work  
or to fulfill that contract.**

In either case you want power that can be absolutely depended upon—power that will respond to immediate needs and to every requirement.

You want power that is easy to control, that will save time and do the work right with the least trouble and expense.

## THE I. H. C. Gas and Gasoline ENGINE

**Furnishes just that kind of power.**

The gasoline engine is universally recognized as the most economical and desirable source of power **when the engine is right.**

All we ask is an opportunity to prove to you that the I. H. C. gasoline engine is exactly right in every particular. Let us show you why it will do all kinds of work more quickly, more steadily, more economically and with less trouble and attention than any other engine made.

The I. H. C. engine is simple, compact, easily kept in order and needs no expert or experienced man to run it. It develops full rated horse power under the heaviest load, is absolutely safe and doesn't use a single charge more of fuel than the load requires.

Adaptable to Gasoline, Gas or Denatured Alcohol.

Made in the following styles and sizes:

### Horizontal Engines:

Stationary 4, 6, 8, 10, 12 and 15 H. P.

Portable 6, 8, 10, 12, and 15 H. P.

### Vertical,

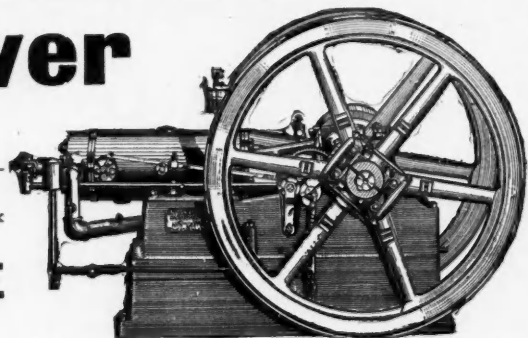
2, 3, and 5 H. P.

Send for catalogue before installing any other power.

## International Harvester Company of America

(INCORPORATED)

**No. 7-B B Monroe St., CHICAGO, ILL.**



SEND FOR OUR CATALOG. "HOME HEATING"

# HOT-WATER HEATED \$198

by **ANDREWS SYSTEM** EACH



14 ANDREWS HEATERS IN ONE BLOCK

AVERAGE PRICE \$198<sup>00</sup>

IT IS WELL WORTH READING

## 1908 CATALOG Of Hot Water and Steam Heating

Our new catalog explains fully the principles and advantages of hot water heating, based on 18 years' experience in the cold Northwest, and describes how any carpenter or mechanic can erect the Andrews System in any building from complete plans and directions which we send with each heating plant, saving plumbers' charges.

This book should be in the hands of every contractor and builder. Send your address and names and addresses of two other people who expect to buy heating plants, and we will send our catalog postpaid.

**WE DO IT RIGHT IN 44 STATES, CANADA AND ALASKA.** Our catalog contains a partial list of our customers from all parts of the country. Look them up and examine the Andrews System in your vicinity.

**PRICES.** We will sell you the plant with all material complete pipe cut to fit so you can erect it yourself. The cost of each heating plant here shown is based on Minnesota climate and includes an Andrews Steel Boiler, richly ornamented radiators, for every room except the kitchen, pipe cut to fit, fittings, valves, gold bronze, brushes and all other material ready for use, with diagrams and directions so plain and simple that any man handy with tools can erect the plant and save money. You can in this way include the heating plant in your general contract for the building.

**FACTORY TO USER.** We design, manufacture, guarantee and sell each plant direct from Factory to User, giving you the lowest price for the value. Estimates free. **ALL PLANTS GUARANTEED AND SOLD ON 360 DAYS' TRIAL FREE.** Freight rates equalized. **Old Houses Easily Heated.**

**ANDREWS HEATING CO.** 97 LaSalle Building, Chicago  
397 Hennepin Ave., Minneapolis

MANUFACTURERS CONTRACTORS CONSULTING ENGINEERS

UNITED STATES

ALASKA

NEW FOUNDLAND

CANADA



## Builders and Architects

If you are not using our

### Improved Hero Furnaces

or our

### Combination Heaters

in your buildings, you are neglecting something that will add to their value and to your success.

We can give you valuable suggestions and assistance in this line. Let us prove it to you.

Your Letters Will Receive Our Prompt Attention

**CHARLES SMITH COMPANY, 40 Dearborn Street CHICAGO**

# TWO for ONE CENT

# Dixon's Best, Seven Inch Carpenter's Pencils

Don't send us the Cent. Take it and buy a postal card. Address it to us; mention this ad; give us the names of three or more home builders who will buy furnaces, and your own name and post office, and then mail it. We will then send you, postage paid, two of the pencils. They're the best quality, largest size lead, and will remind you of us every time you use them.

This is to advertise our **Leader Steel Furnaces**, and our **factory-to-user** system of selling them, which saves the middleman's profits to the buyer.

If you ever need a furnace it will pay you to buy another card, describe your wants, and ask for our free booklet, "Modern Furnace Heating."

This forty page booklet not only fully describes our goods, but it is a complete guide to furnace heating and contains much valuable information for builders. It is free. Ask for one.



**HESS WARMING AND VENTILATING COMPANY**  
920 Tacoma Building Chicago

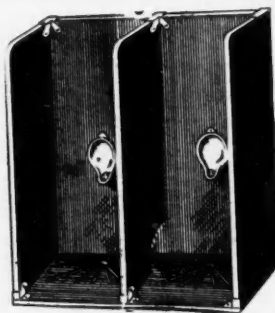



**BEST HOT WATER RESIDENCE HEATING BOILER MADE**

Capacity of Heater nearly double without additional fuel by use of Center Pipe carrying water up through the center of deep fire pot. Heats from both sides.

12 FOX STREET  
**T. L. PHILLIPS AURORA, ILLINOIS**

## ROOFING, GENUINE BANGOR BLACKBOARDS & STRUCTURAL SLATE



**ALL ORDERS FILLED PROMPTLY.**

Order direct from the miners and manufacturers

HEADQUARTERS FOR SLATE BURIAL VAULTS, CATACOMBS, ETC.

**THE BANGOR STRUCTURAL SLATE CO.**  
LOCK BOX 48 BANGOR, PA.

## SLATE SLATE

GENUINE BANGOR



Roofing  
Blackboards  
Structural

Write us before ordering elsewhere.

**The Bangor Slate Co.**  
Miners and Mfgs. BANGOR, PA.



1 Gal. Kinloch Paints Ready to Mix.  
The Two Mixed Make  
1 Gal. Raw Linseed Oil.

**2 Gallons PAINT Ready to Apply.**

KINLOCH PAINT CO. ST. LOUIS

**Kinloch**  
READY TO MIX, NOT READY MIXED  
**HOUSE PAINT**

### A TRIAL OFFER

(where we have no local agent)  
Send \$9 and we will send you our Special Introductory Offer for Kinloch Agency, and will ship you, FREIGHT PREPAID, 6 gallon cans of the THICK Kinloch Pigment, ready to mix, each gallon making TWO gallons ready for the brush by adding one gallon fresh pure, raw linseed oil and nothing else. Made in White, Black, Slate, Shutter Green, Colonial Yellow, Ceiling Blue, and all other standard shades shown on our color card, mailed on request. 5-GALLON KITS (makes 10 gals.) \$7.25 each, freight prepaid. HALF-BARRELS (about 30 gals.) for \$1.40 per gal., freight prepaid. BARRELS (about 50 gals.) \$1.35 per gal., freight prepaid.

REMEMBER—Each gallon Kinloch at above prices makes TWO gallons ready for use, by merely adding one gallon pure, raw linseed oil, and nothing else.

Cash with order unless buyer is satisfactorily rated.  
**KINLOCH PAINT COMPANY,**  
St. Louis, Mo.

# Bedford Stone

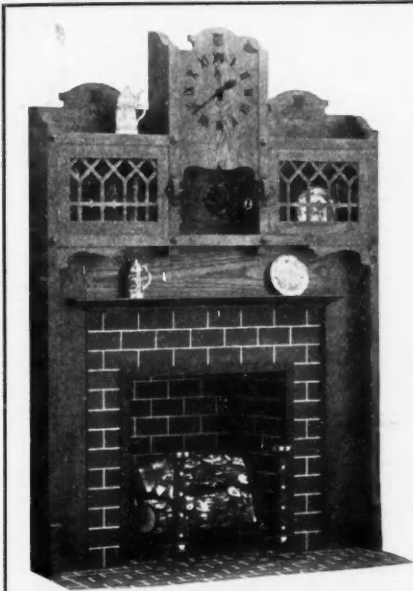
BUFF AND BLUE

Sawed, Planed, Turned  
Cut Ready to Set

Estimates promptly made for stone delivered to any point. Plans sent for estimate, promptly returned.

**Bedford Steam Stone Works**  
Bedford : : Indiana





IF  
U R  
Building  
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Ought to  
Write  
To-day  
FOR OUR  
Mantel  
Catalog

SENT FREE TO  
THOSE WHO  
ARE  
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Decide the Mantel Question Right  
BY SELECTING A

**BURRITT MANTEL**

Rich in design, of elegant finish and thorough workmanship, they never fail to give satisfaction. Write us concerning your needs.

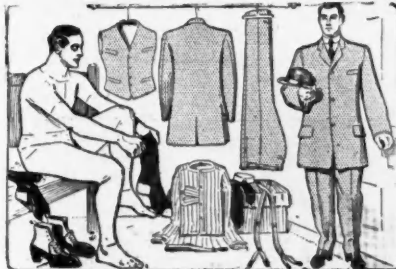
**THE A. W. BURRITT CO.**  
"The Mantel Folks"

450 Knowlton Street :: BRIDGEPORT, CONN.

**LORENZEN**



**THIS TO THIS \$10.00**



To increase the number of our customers, we will send without extra charges, with every suit ordered, all that is needed to dress you complete in latest style from head to toe, with hat, shirt, collars, cuffs, necktie, suspenders, socks and shoes—all of reliable quality and selected to look best with each suit. These free articles have a cash value of at least \$5. Our new sack suit shown above, is cut after the latest Fall and Winter fashion, the coat has the long body effect, being the newest fabrics in coloring and pattern and above outfit, all for... \$10. Let us send you our latest fashion plate, with large illustrations of our sack suit, showing every detail of suit in back and front, also our new Fall and Winter samples, latest catalogue of men's furnishings, etc.; all will be sent free.

The Gents' Complete Outfitting Co., Dept. A-57, 242-244 MARKET ST., CHICAGO  
Ref.: Royal Trust Co. Bank, Chicago, Capital, \$1,000,000

**A \$20 Watch for \$5.45**



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 them 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. The Evington Watch, which we offer at \$5.45 is a rubied 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-laid and handsomely engraved. Each watch is thoroughly timed, tested and regulated, before leaving the factory and both the case and movement are guaranteed for 25 years.

Clip out this advertisement and mail it to us today with your name, postoffice address and nearest express office. 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 25-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-laid watch chain free. We refer to the First National Bank of Chicago, Capital \$10,000,000.  
**NATIONAL CONSOLIDATED WATCH CO., Dep. 461, Chicago**

**MANTELS**

This quaint conception in Old Mission style Weathered Oak represents but one of the hundreds of beautiful designs we manufacture.

A Lorenzen Mantel goes far towards the making of a room. It bears the stamp of individuality—far different from the commonplace productions offered by many manufacturers.

**\$10 to \$250**

Between these two prices are patterns and styles in Craftsman, Modern Mission, Colonial, and innumerable other designs, to suit the taste and purse of every one who owns a home.

We are at all times prepared to furnish designs of mantels and fireplaces in the historic periods of architecture, such as Louis XIV, Louis XV, Louis XVI, Renaissance, Gothic, Rococco, Empire, Early English, Colonial, Chippendale, Sheraton, Adam, etc. You increase the money value of your house when you install a Lorenzen Mantel. It adds comfort and distinctiveness far in excess of the price you pay.

**OUR BEAUTIFUL CATALOGUE FREE**

We have issued at great expense, a new 100 page catalogue, handsomely illustrated by half tones, showing our line of mantels, fire-places, grilles, etc. Also contains colored plans for harmonious home interiors and decorations. Write for it today. We send it FREE.

**CHAS. F. LORENZEN & CO., Inc.**  
271 N. Ashland Ave., CHICAGO.



**No. 108**  
**Automatic**  
**Drill**



**One You**  
**Can Talk**  
**About.....**

In this Drill are embodied all the worthy features of other drills, together with many improvements, making it without exception the best on the market.

"Its good points are its talking points."

No. 108 Automatic Drill is fully described in our

**New Free Catalog No. 7**

If you haven't it write for it at once.

**Goodell-Pratt Co.,** GREENFIELD, MASS.  
U. S. A.

**"Best" Cement Sidewalk Tools**



Brass Rollers, Bronze Edge Groovers and Center Groovers, Spring Tempered Edge Groovers and Center Groovers, Step Finishing Tools, Iron Tampers, etc.

SEND FOR 1906 CATALOGUE AND PRICE LIST  
The Most Satisfactory CEMENT SIDEWALK TOOLS in the World  
**THE WOODHOUSE HARDWARE MFG. CO.**  
2618 So. 13th Street, St. Louis, Mo.

**None Better**

Cement & Concrete Workers', Contractors Asphalt and Pavtors' : : : :



Steel Blade Jointer

**TOOLS**

Rollers, Jointers, Groovers Concrete Knives, Tampers, Name Plates Stamps, Shovels, Picks, Etc., Etc. Complete line and low prices

Write for Catalogue



Dot Roller

**JOHN STORTZ & SON, Mfrs.**  
224 Vine Street, Philadelphia, Pa.

**PENNSYLVANIA PAINT & GLASS CO.**

Wholesale Dealers in

Paints, Varnishes, Brushes, Colors, Painters' Supplies, Plate, Window and Ornamental Glass, Rough, Ribbed and Wire Glass, Beveled Plates and Mirrors, Art Glass

Exclusive Distributors for  
Acme White Lead and Color Works' Products

890-902 SECOND AVENUE, PITTSBURGH, PENNSYLVANIA



### An Irish Contractor in Ireland

bought a Hercules early in 1905. Later he bought two more and a few months ago he ordered four more.

What does this prove? It proves that the Hercules delivers the goods—that it makes absolutely perfect blocks. You can fool an Irishman but once, and if the first Hercules was not satisfactory the other orders would not have followed.

Why did the Contractor who is building the immense power station for the N. Y., N. H. & H. Railroad at Cos Cob, Conn., order Hercules Machines to do the work with?

Because after a thorough study of every other Concrete Block Machine he convinced himself that the Machine that would make the most perfect blocks and make them the most economically was the

#### HERCULES CONCRETE BLOCK MACHINE.

If you are going to buy a Concrete Block Machine and you want the very best to be had you've got to buy the simple Hercules—the machine that makes two blocks at one time—the machine that an unskilled laborer can easily operate.

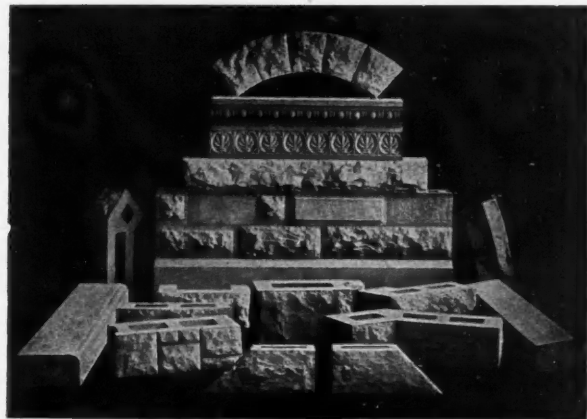
The Hercules can produce more blocks, a larger variety of blocks and better blocks in one day than any other machine and produce them for less money.

Isn't that the kind of a machine you want? If it isn't, your competitors will have a walk-over.

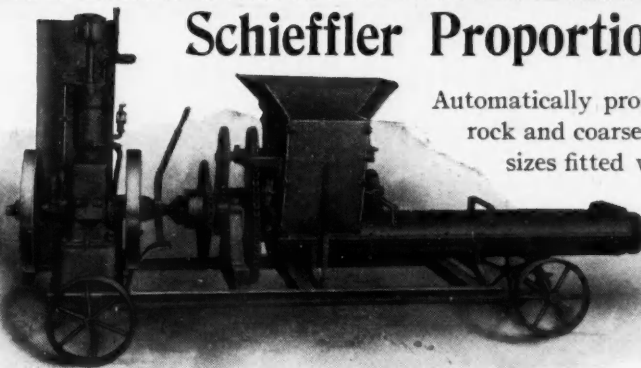
Send for our beautifully illustrated catalogue. Be sure and ask for Catalogue XX.

**CENTURY CEMENT MACHINE CO.,**

273 West Main St.,  
ROCHESTER, N. Y.



### Schieffler Proportioning Continuous Mixer



Automatically proportions any three different materials, Crushed rock and coarse aggregates for large contract work. Made in all sizes fitted with any kind of power. For Street Paving; Sidewalk; Reinforced Construction, Block and Brick plants. There is no Mixer to equal it: A greater capacity and better mix with exact proportions and requires less amount of power than any other Mixer. All parts made extra heavy, strong and lasting.

HARTWICK MACHINERY CO., 228 Washington St.,

JACKSON, MICH.



### GET A MACHINE THAT WILL DO THE BUSINESS

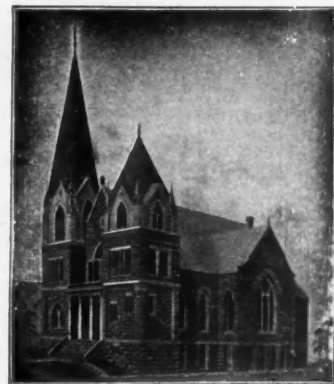
The cut of the church shows what can be done with the Stewart Machine, as this church was erected of blocks made on a Stewart. You can make blocks in any old box, but if you want to make good blocks,

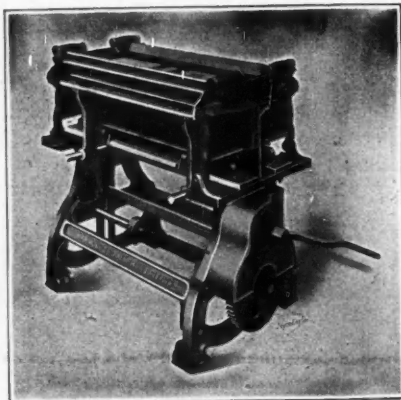
### GET A STEWART

Write for catalogue to the  
**STEWART CEMENT BLOCK MACHINE CO.**

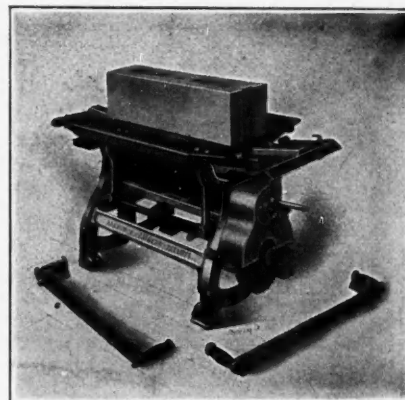
888 Lafayette Block, WATERLOO, IOWA

The OHIO CERAMIC ENGINEERING CO., Cleveland, Ohio  
Agents east of Wisconsin, Illinois and the Mississippi River.





**Only  
Machine that  
can make  
Water-Proof  
Work**



The original inventor's latest production in Hollow Concrete Building Block Machines; advancing the industry one hundred per cent

## **Harmon S. Palmer's Self-Closing-Automatic-Adjustable**

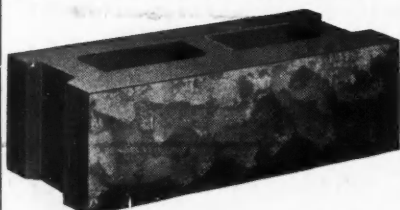
The Crystallization of Every Merit in the industry to date. Blocks of every size, length, angle, height and contour produced with astonishing ease and rapidity. Also brick. A marvel of ingenious attachments to the machine which has made more buildings than all infringers and imitators combined. We gave the world the Hollow Concrete Block Industry, the first machine and the first practical block. In the race for advancement and business, we are still in the lead.

Two Highest Awards at St. Louis Exposition. Adopted by the United States Government and Panama Canal Commissioners.

**Wanted!—Live Agents, Good Factories and Local Lawyers**

We agree to prosecute infringers. Many already enjoined. Many suits pending.

**Write for Catalogue "A."  
Washington, D. C.**



## **We Move the Machine NOT THE BLOCKS**

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.



## **The Latest in Concrete Stone Machinery**

These three great labor saving machines are unequalled in economy, practicability and efficiency

The X-L Stone Machine can be operated by a boy. None speedier. Makes a variety of over 1000 blocks, which form all width walls over 2 inches four thickness of veneer blocks. 3-4-6 and 9 inch heights. 2-3-4-5-6-7-8-9-10-11-12-14-16-18-20 and 24 inch lengths. Circles, Panels, and from 20 to 64 degree angles.

Outfit furnished will make more than any four other machine outfits of same price.

Our Off-Bearing Car saves one-half of time and labor in removing blocks.

Our Automatic Truck (lever movement) a boy can handle, unload and load 8 to 12 blocks in one-eighth of the time required by two men in the old way.

Dry Inner Wall without the use of expensive facings or washes.

**THE X-L CONCRETE STONE MACHINE COMPANY**

111 and 113 West 18th St. KANSAS CITY, MO.





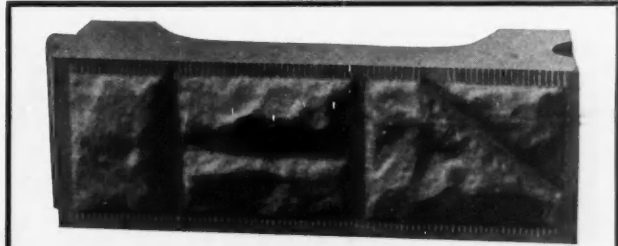
Right  
ON  
TOP

Where they are seen and admired by everyone

Made of Cement and in DIFFERENT COLORS

Absolutely Waterproof. Our Roofing Tile Machine will manufacture enough roofing in one day to make it pay you to go into the Cement Tile Roofing Business. Write for our illustrated catalogue and be ready for business.

The Leusch Manufacturing Company  
WATERLOO, IOWA



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

AS SOLD AS THE PYRAMIDS

CONCRETE IS NOT NEW

[The concrete construction of the ancients has outlived all other building materials, and after hundreds of years remains better than when built.]

PHYSICS, CHEMISTRY and MECHANICS

COMBINE TO GIVE TO MODERN MAN A SUPERIOR MATERIAL.

THE HOLLOW CONCRETE BUILDING BLOCK  
AS MADE ON THE "IDEAL" MACHINE IS PERFECTION.

The "Ideal" Concrete Building Block Machine is made in the simplest form known to mechanics. Its movements are simple, direct and positive; no waste energy. Its parts are all machine made and fashioned of the best material obtainable. Its operation and methods of making blocks are approved by the best authorities. There are more "Ideal" machines sold than any other machine made. Catalog "R" will prove it.

THE IDEAL CONCRETE MACHINERY CO.

STATION H.

SOUTH BEND, INDIANA.



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.

950 Majestic Building, DETROIT, MICH.



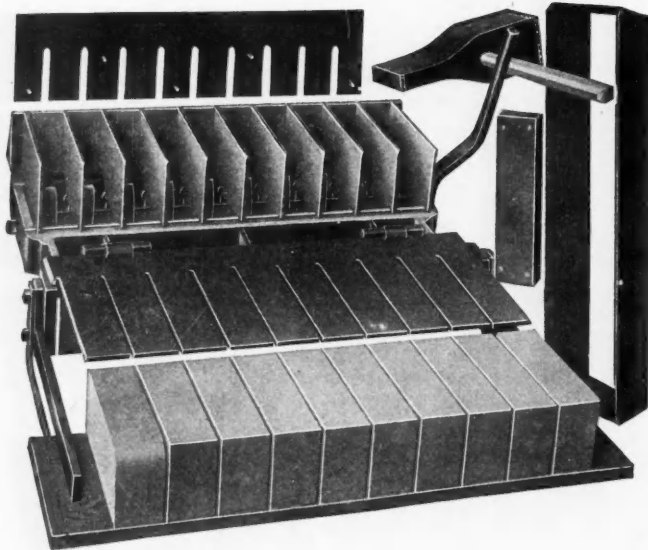
EUREKA  
We have found it

Automatic, quick, and perfect operating concrete machinery. Six kinds of block machines stationary and portable, side face and face down. Four kinds of brick machines. Two kinds of drain tile machines for small tile. The best mold for round sewer pipe from 6 to 24 inches. Reinforced three piece construction for large sewers, conduits, etc. Fence post and sill machines. Mixers and gas engines. Send 25 cents for Catalogue and instructions on concrete work

THE BESSER MANUFACTURING CO.,  
302 South Second Ave., Alpena, Mich.

# THE PEERLESS CEMENT BRICK MACHINE

PATENT No. 811, 518



**A ONE MAN MACHINE.**  
 Made of iron and steel.  
 Has few parts but produces more good brick per day than others costing twice as much.  
 Makes perfect face, ornamental or common brick, and ONE MAN operates it.  
 Send for catalogue and prices.

**PEERLESS BRICK MACHINE CO.**

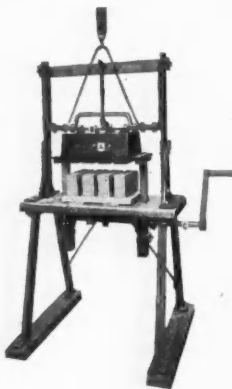
102 Lumber Exchange,  
 MINNEAPOLIS

## 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.

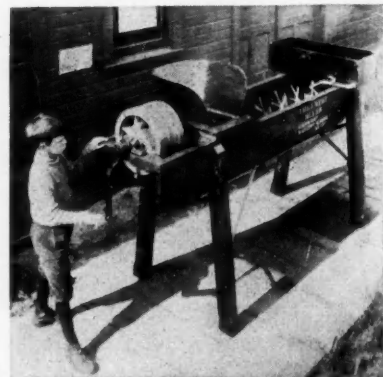
Three men 10 hours 6,280 perfect Brick. Ordinary daily output 5,000. We prove our claim. Positively no machine on earth is as well adapted for making cement Brick. Cement Brick are the most durable that can be made. You probably would like our catalogue.



Emery  
 Cement  
 Brick  
 Machine

**Emery & McKerlie**  
 301 E. Jane St., Bay City, Mich.

Emery  
 Mixer



## 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 watertable, 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

# Antihydrine

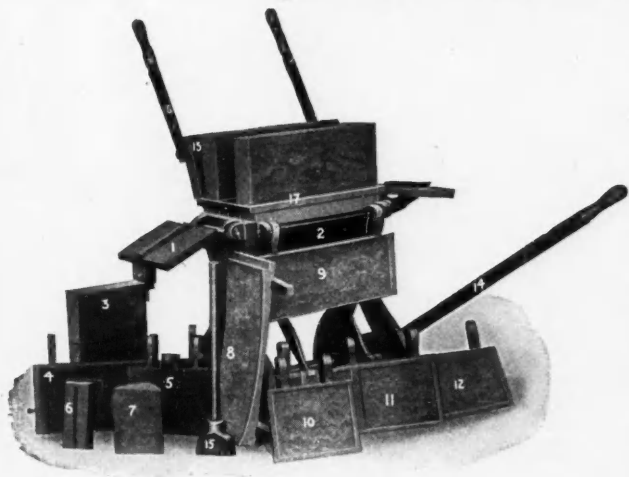
## DAMP PROOF AND STAIN PROOF COATING

Only and Original Material for Making Walls Damp Proof and Stain Proof.

Address ANTIHYDRINE CO., NEW HAVEN, CONN.

# NOT BETTER THAN THE BEST

*BUT AS GOOD AS THE BEST*



**WE** KNOW that the block made on the Coryell Machine will make a dry inside wall, because they have been tested out the past winter.

**The Machine is Right  
The Block is Right, The Price is Right**

We give you more for your money than you can buy anywhere. We have placed a large number of these machines the past season, and all are giving the very best satisfaction. We make the price right, because we sell

direct to the customer, saving all salesmen's commissions, and give the purchaser the benefit. Ask and you shall receive a catalogue.

**Manufactured by KELLS FOUNDRY & MACHINE COMPANY  
ADRIAN, MICH, U. S. A.**

## Medusa Water-Proof Compound

Solves the problem of making moisture-proof hollow concrete blocks

Does away with furring and lathing; plastering done direct on the blocks.

Many leading block manufacturers using it in their entire output.

Indispensable also for cistern and reservoir linings, and all water-proof cement work.

Will absolutely prevent efflorescence.

Write for pamphlet giving comparative long-time water absorption tests and testimonials

**SANDUSKY PORTLAND CEMENT CO.  
SANDUSKY, OHIO**

## 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, PierBlocks 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 350 W. FULLERTON AVE. in the U. S. CHICAGO



# CEMENT BRICK

**BE YOUR OWN BRICK MAKER**

LARGE CAPACITY — 5,000 BRICK PER DAY  
SKILLED LABOR UNNECESSARY. SIMPLE AND INEXPENSIVE

**Seaman's Cement Brick Machine Co.**

23 Fountain Street . . . . . Grand Rapids, Michigan

# Standard Concrete Machinery



Made in Four Sizes—5, 10, 20 and 40

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 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.



Made in Three Sizes—One-Eighth, One-Quarter and One-Third Yard

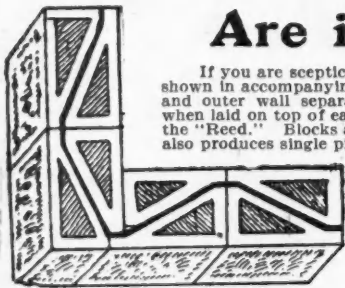
THE STANDARD CONCRETE MIXER handles wet or dry mix; requires little power to operate; mixes batch perfectly in one minute; self-cleaning; easily charged and dumped.

WRITE FOR CATALOGUE AND PRICES

**SOUTH BEND MACHINE MANUFACTURING CO.**

1803 South Franklin Street : : SOUTH BEND, IND.

# The Reed Machines Are in the Lead



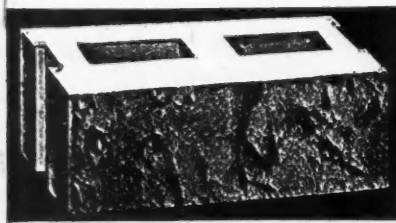
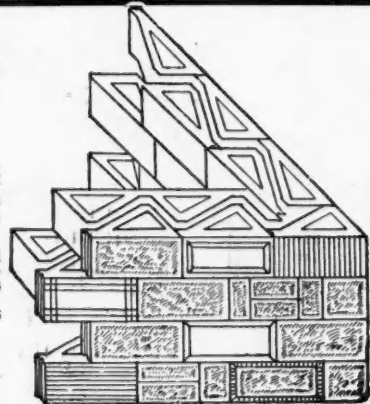
Triple Hollow Wall

If you are sceptical as to dry walls from concrete blocks, examine the wall shown in accompanying cut; it settles the question. Continuous air space, inner and outer wall separate. Look at the bondage, stronger than any other blocks when laid on top of each other. *Two* blocks produced at the same operation on the "Reed." Blocks are hollow which lays up a triple hollow wall. The "Reed" also produces single piece blocks. All machines adjustable.

The "Reed" has the advantage of a stationary mould box which admits of the use of a wetter mixture of material. *All other machines* are taken away from the blocks and brick.

Let us tell you more about it. If interested write us at once as others are doing.

The Wichita Coal and Material Co.  
Wichita, Kansas



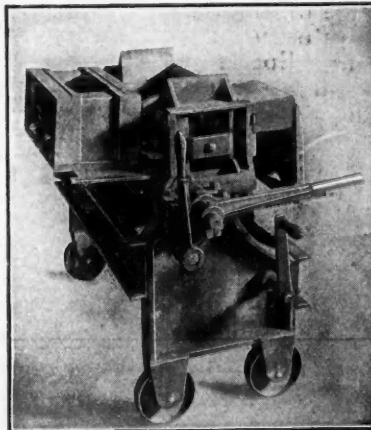
## CEMENT BUILDING STONE

The Finest Grade  
Ever Produced

### "LAKE PATENTS" A WET SYSTEM

Easily, cheaply, and readily made with crushed stone and cement, **WITHOUT A MACHINE.** Thoroughly tested and now extensively used. **Waterproof** Territorial rights for sale.

**H. A. MONTFORT** 45 Clinton St.  
NEWARK, N. J.



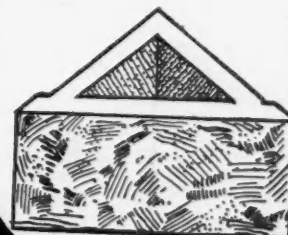
## The Wonder Of the "Age"

Being a face down machine produces neater and necessarily cheaper blocks. Makes blocks 4 in. up to 24 in. in length, 8 in. to 12 in. in width. Machine is adjustable, positive in action, guaranteed in every respect. Write for catalog.

**Keystone Cement  
Block Machine Co.**  
PHOENIXVILLE, PA



# The Cement Block For You



If you are planning to go into the concrete block business, don't buy an expensive machine that makes blocks of questionable quality. Don't do it, because you can make more blocks, better blocks and cheaper blocks with

## The Mandt Hand Tamping Outfit.

We can't tell you all about it here—you must send for the catalogue to learn of its many points of excellence and superiority. But look at the blocks that it makes. See how one block binds three others. See the continuous air-space throughout the wall and in addition note that the blocks themselves are hollow, making a TRIPLE AIR-SPACE.

With this outfit you can make blocks for every possible use, in Smooth, Rock, Chiseled, Paneled and Corrugated faces. Every size, too—all fractions of an inch from the regular mold

Write for the catalogue today—now. Learn more about this system which is heartily endorsed by Architects and Contractors everywhere. Remember our outfit costs about one-fourth of what others do. Your name on a postal will bring booklet by return mail. Send today and learn the best way to make blocks—

and  
Money.

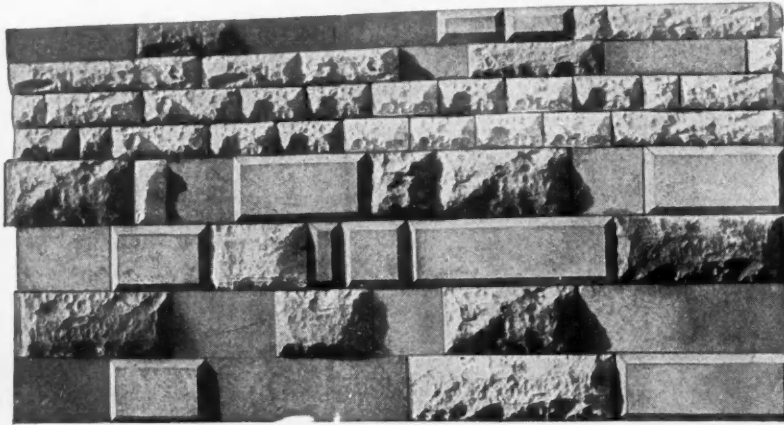
# MANDT- POWELL

Concrete Machinery  
and Foundry Co.  
STOUGHTON, WISCONSIN.

## A FACE DOWN PLUNGER CORE MACHINE MAKING A BLOCK OF EQUAL DENSITY THROUGHOUT

Sounds odd, doesn't it? Most plunger core machines are so constructed that after the cores are inserted it is impossible to tamp on the face. Naturally then, the density of the material under the cores is very uncertain—and just where it ought not to be.

### THE U. S. STANDARD



has five cores with seven cross bands. This allows tamping on the face after cores are inserted and makes a block of equal density throughout. There are other reasons why you should investigate the "U. S. Standard" Send for catalog—"A".

**Ashland Steel  
Range & Mfg. Co.**

Ashland, - - - - Ohio

## NOTICE!

Hollow Concrete Block Machines leased or rented with the privilege of buying. No better Blocks, Lintels, Sills, etc., can be made by any method, wet or dry system. We also make built-up Steel Girders, Beams, Columns, etc., for Reinforced Concrete Construction Buildings. No better or cheaper floors can be made than by our Hollow Reinforced Concrete System.

Write us for full particulars.

**The National Hollow  
Concrete Machine Co.**

**921 F Street, N. W.  
Washington, D. C.**

## Waterloo Concrete Brick & Block Machine 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 chain to clog or break.

Write for catalogue "B." Agents wanted.

**O. H. SWEENEY, Secretary**

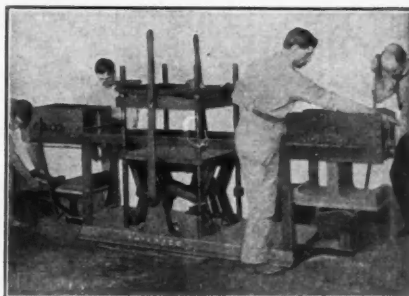
101 East 4th Street, Waterloo, Iowa.

Southern Agts., SILVERA & GADSDEN, Savannah, Ga.

Agents for the the Pacific Coast, C. J. TALLON & CO.,  
618 Bailey Bldg., Seattle, Wash.

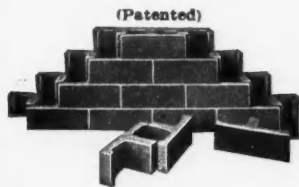
## Hollow Concrete Walls and Partitions—Two Piece System

**WHEN YOU FIND**—That one piece hand tamped blocks make wet walls,  
That such walls are not stone but cemented sand,  
That damp sand and cement will not make true concrete,  
That tamping damp sand displaces that already tamped adjoining,  
That this produces a block lacking in density,  
That you cannot safely plaster on such a wall without expense of furring,  
That you have a soggy wet wall for days succeeding every storm,  
That you have a wall with only thirty per cent of air space,  
That you have no continuous horizontal air space,  
That you have a wall with no cross bond,  
That you have a system, requiring two men to handle a block and a derrick to put it in the wall,  
That you have a system slow and laborious in manufacture and laying,  
That you have no way of facing your work : (Patented)  
Then write to—



### THE AMERICAN HYDRAULIC STONE CO., Century Building, Denver, Colo.

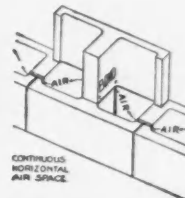
Ask for a prospectus describing the two piece wall containing the header bond, made of True Concrete, stronger in a 1 to 10 mixture than hand tamped damp sand and cement is in a 1 to 3 mixture. Every block made under heavy pressure, in steel moulds, in one set of which all the different widths of wall from 2 1/4" to 17" can be made by simply changing the adjustment, making a wall 50% hollow containing an air chamber both in the horizontal and perpendicular, through which moisture, heat and cold cannot penetrate—a block easily handled by one man—to which any facing desired 1/2" thick is applied before the block is pressed; one thousand square feet of wall per ten hour day made, cured, and cared for with nine men—three times the daily product possible under any other system.



(Patented)

UNIVERSITY OF ILLINOIS Champaign, Ill., Sept. 29, 1904.

Gentlemen:— \* \* \* I have, I believe, investigated all the principal systems of hollow concrete wall and partition construction now on the market, and have no hesitation in saying that your system of manufacturing is the only one I know of that obtains perfectly satisfactory results both in the block and in the finished wall.  
Very truly yours, (Signed) JAMES M. WHITE,  
Professor of Architectural Engineering.

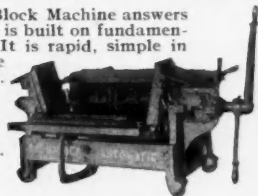


### No Specification too Difficult for the Down-Face HAYDEN

The Hayden Automatic Building Block Machine answers every purpose in block making. It is built on fundamental principles and built to wear. It is rapid, simple in operation and never fails to make good. Cores are worked by lever.

ALL PARTS OF THE HAYDEN ARE INTERCHANGEABLE.

Highest award, gold medal at St. Louis World's Fair.  
Ask for Catalog "M."



BUY A HAYDEN FOR RESULTS.

Hayden Automatic Block Machine Co., Columbus, Ohio.  
NEW YORK AND FOREIGN OFFICE:  
Hayden Automatic & Equipment Co., 26 Cortlandt St., New York City.

### Favorite Bricks Are Standard

When contractors and architects the world over adopt the product of the

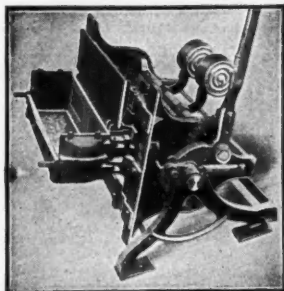
#### Favorite Brick Machines

it means that the machines are leaders. Patents protect their efficient methods of tamping, and of raising and lowering the division blades. The bricks are clear cut and flawless.



A CATALOG WILL BE SENT TO ANY ADDRESS

CEMENT MACHINERY CO., JACKSON, MICH.



Showing Face-Down Position

## THE LATEST 4 CONCRETE MACHINES IN 1

1. A Face-Down Machine  
None equal it in advantages.
2. An Upright Machine  
A marvel of speed, economy and wide range of adjustments.
3. A Two-Piece Block Machine  
Exceedingly practical and makes two blocks at once.
4. A Cement Brick Machine  
Meets all requirements.

So perfect and convenient is each phase that it operates as though made for each type alone. WONDERFUL in its AUTOMATIC FEATURES—ALL phases operated by ONE SIMPLE LEVER. THIS MACHINE received the GOLD MEDAL at the Portland Exposition over ALL competitors.

#### ANOTHER VALUABLE FEATURE

Its product makes the only triple air space wall. The latest and best thing out. Absolutely moisture proof.

The Winget Company furnishes all necessary machinery for a complete up-to-date Concrete Block Plant, including mixers and tampers. For full information address

The Winget Concrete Machine Company, Columbus, Ohio

## It Makes Good

To be a Mixer, a machine must be able to MIX something.

The market is full of cylinders on wheels that will roll mud into balls and discharge a lump mass intended to be concrete, but they are not mixers.

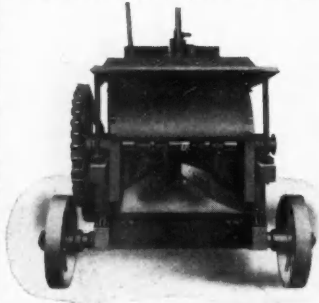
We have dozens of letters in our office—unsolicited letters—from contractors who have operated

## The American Mixer

saying that for jobs, big and little—sidewalks, fence posts, pavements, bridges and reinforced concrete construction—The American Mixer is the one dependable one. There are no others.

Our machine is not simple at the expense of efficiency, nor is it complicated or of delicate mechanism, but it has enough parts to insure a thorough mix of **anything** that is put into the hopper, whether it be plaster, cement or mortar.

We want to tell you what actual users think of The American Mixer. We want to send you some of those letters, some half tone cuts, descriptive matter and **OUR GUARANTEE.**



You owe it to yourself to investigate this before buying. It costs nothing to investigate—investigations are common nowadays. Just give us a chance to **SHOW** you. We'll sell you a mixer then.

Ask for Catalog "O."

**International F. & Fireproofing Co.**  
Columbus, Ohio.

# THE HOOSIER

CONCRETE BLOCK MACHINE



MAKES  
ALL  
BLOCKS  
FACE  
DOWN

ADJUST-  
ABLE  
TO  
GREAT-  
EST  
RANGE  
OF  
WORK

THE HOOSIER uses the same plates and pallets for all sizes and designs of blocks. Priced complete, including Iron Pallets.

PRICE, \$... --This is Attractive

**HOOSIER MFG. CO.** AUBURN, IND.  
... U. S. A. ...

Canadian Office and Factory:  
28 REDAN STREET, LONDON, ONT.

## The Improved Coltrin Concrete Mixer

DOUBLE DRIVE—AUTOMATIC FEED



Pat'd, Feb. 21, '05.

**THE KNICKERBOCKER CO.,** Jackson, Michigan.  
525 LIBERTY STREET



## THE IMPROVED "MILES"

CONCRETE BUILDING BLOCK MACHINE

MOLDS ALL BLOCKS FACE DOWN

Makes circles, octagons, gables and water table blocks for hollow, solid or veneer walls.

Write us today for circulars and descriptive matter

**THE P. B. MILES MFG. CO.**  
214 S. Mechanic St.  
JACKSON, MICH.

**For FIRE PROTECTION**

— USE —

**Refractory Concrete**

So called because it is worked the same as cement or plaster, and will endure heat equal to fire clay products.

For flue linings, chimney blocks and tops, floor and partition blocks, conduits for electric wires, fire proof plaster for wood and metal lath, or as a scratch coat for stucco, this is the ideal material.

A finished product of this composition can always be had in less than twenty-four hours, this permits the formation of the product on the job, and to fit any requirement.

A ventilated flue or chimney from this composition is positively fire proof, and at the same time ventilates all rooms which it enters. Cheap to construct, and will meet the requirement of any size buildings.

Refractory Concrete will prove a profitable proposition for any concrete worker, contractor or builder.

For full information address

**E. R. STOWELL : New Corydon, Ind.**

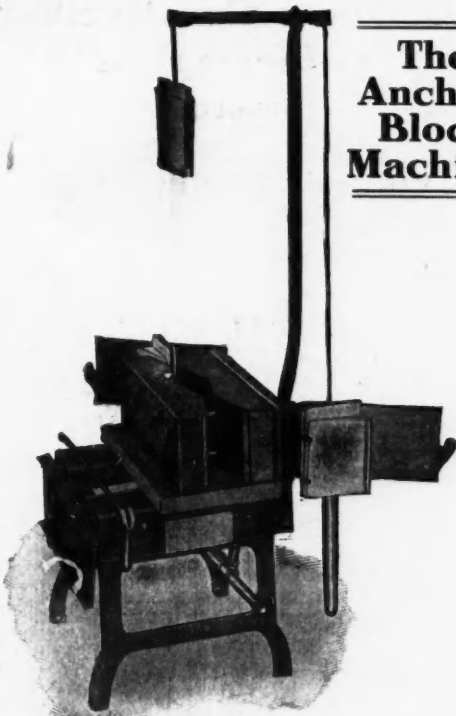
**\$ 25 00**  
**WILL START**  
**YOU**

**In a Profitable Business**

Can you spend the small sum of \$25 or \$35 for machinery that will bring you in a living income? If you are a carpenter, a brick mason, a hod carrier or a laborer, write us at once for our plan. You can make easy money working with our machinery at odd times, or you can establish a good paying business without any delay. **Write us today** telling us what line of work you have followed and we will tell you how to make money.

**MEDINA CONCRETE CO.**  
**30 Court St. Medina, Ohio**

**The Anchor Block Machine**



makes the only block with a continuous air space; makes blocks 8, 9, 10, 11 and 12 inches in width on the same solid wooden pallet without changing a plate on the machine. Capacity of machine, 200 blocks per day. Write for catalogue and prices to the

**ANCHOR CONCRETE STONE CO., Rock Rapids, Ia.**

**WHEN A MAN**

throws away a \$300 concrete block machine, in working order, to install a National, he has found a good reason.

**THERE ARE SEVERAL REASONS**

for buying a National Machine that cannot be claimed by other machines. Fewest parts; all sizes of blocks on one pallet board; all sizes and angles without buying extras; made entirely of iron and steel; lasts a lifetime; all parts interchangeable. Ask for details and catalog "E."

**NATIONAL CEMENT MACHINE CO.**  
**BAY CITY, MICHIGAN**

**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.

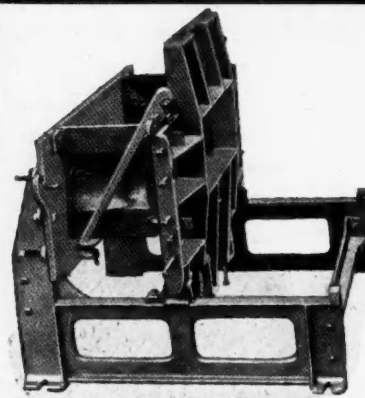
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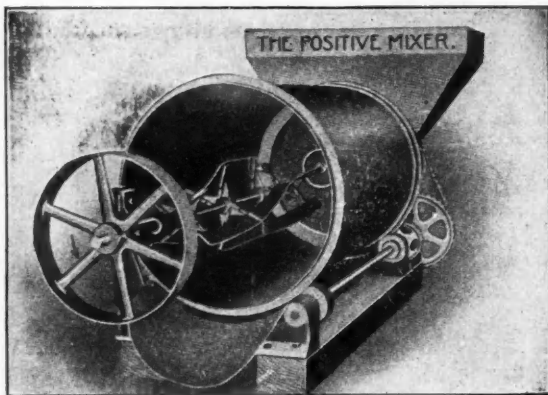
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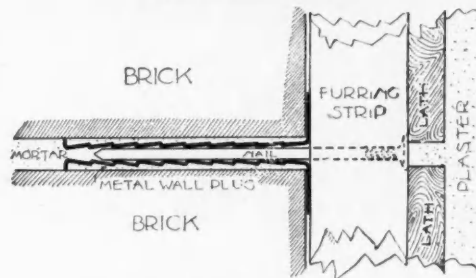
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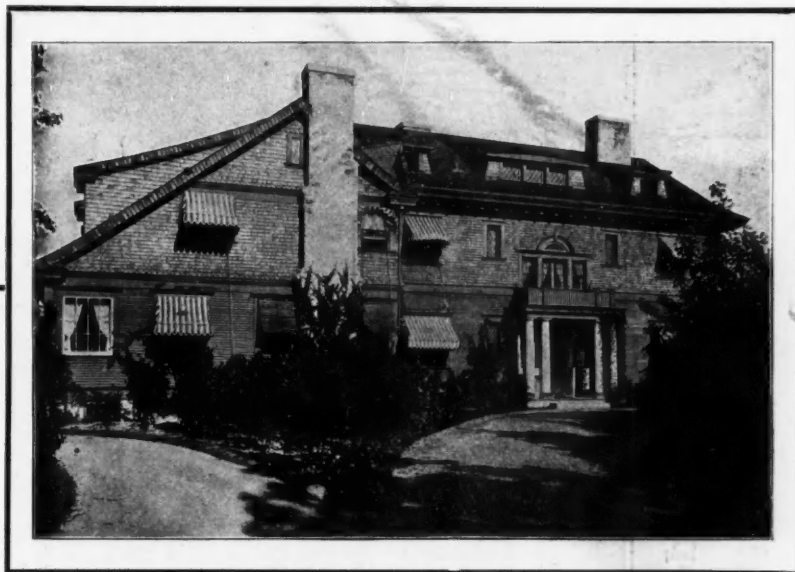
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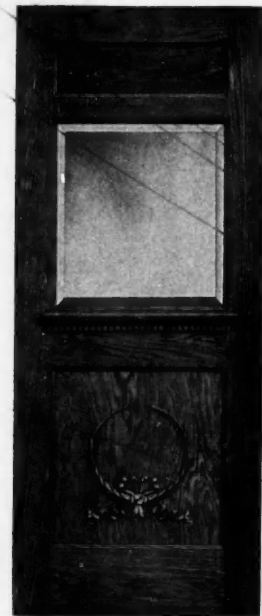
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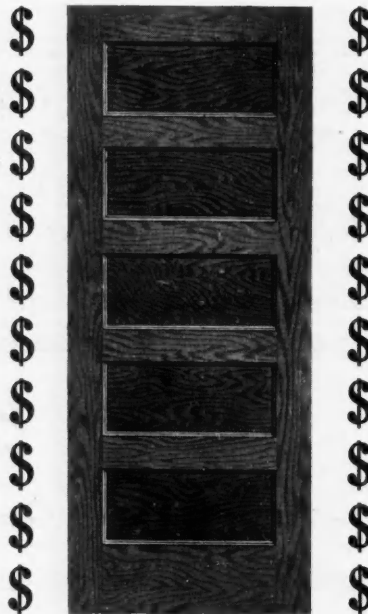
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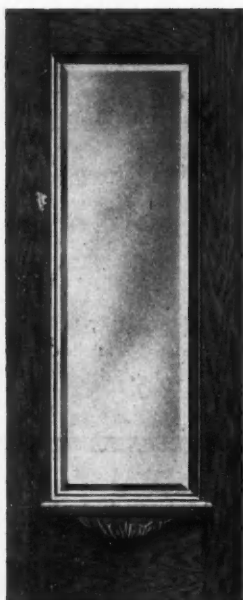
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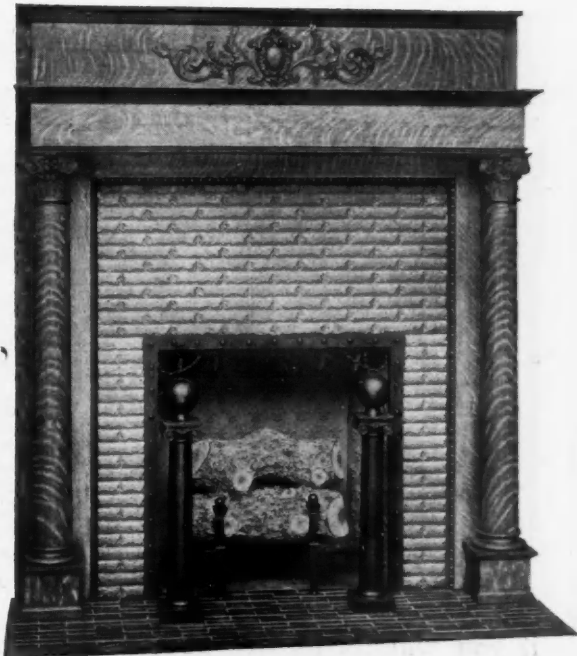
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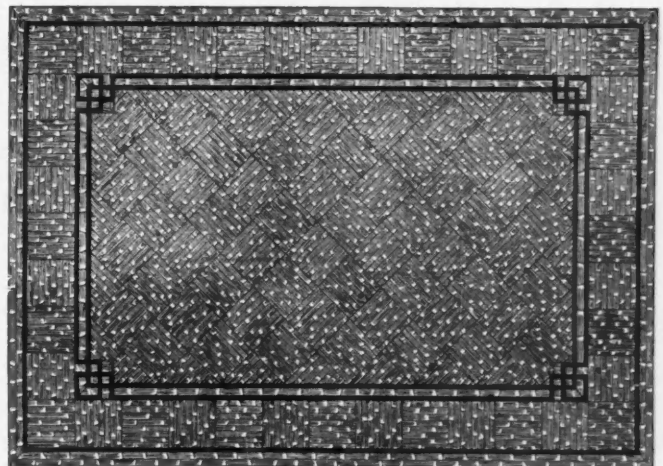


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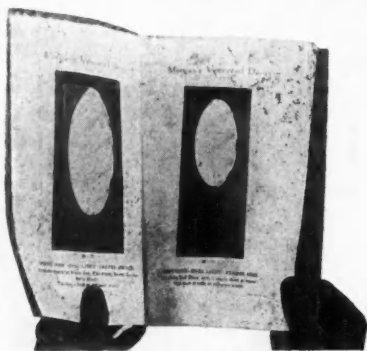
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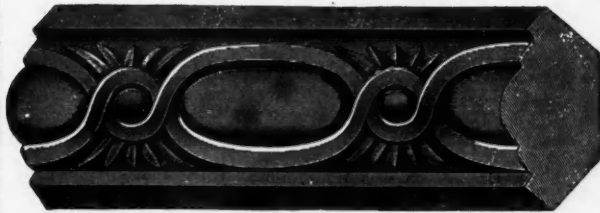
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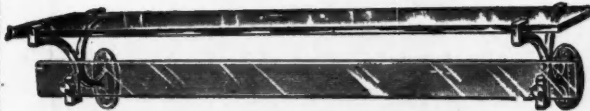
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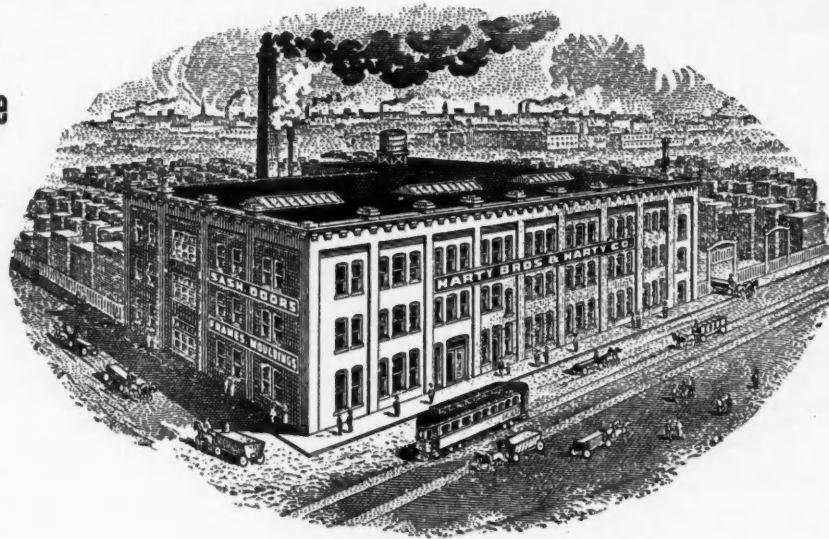
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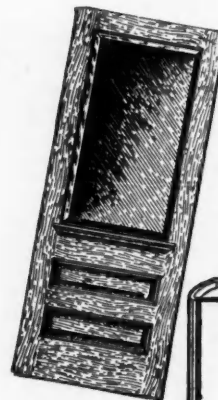
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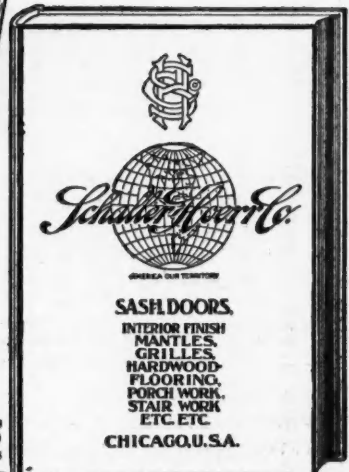
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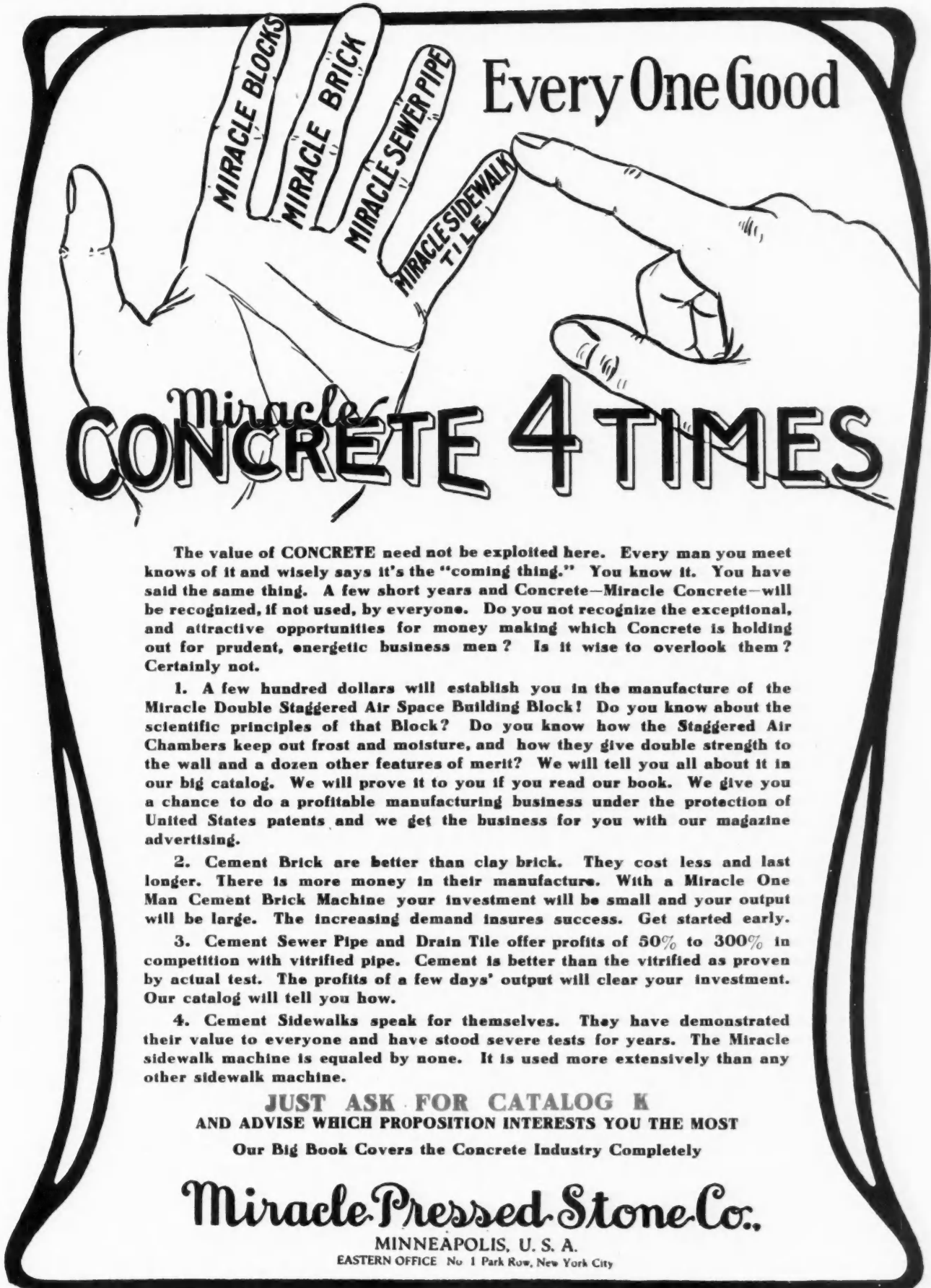
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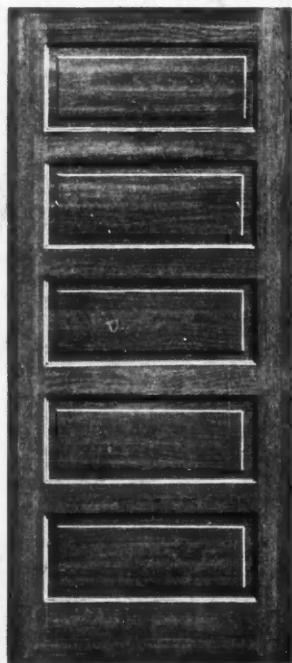
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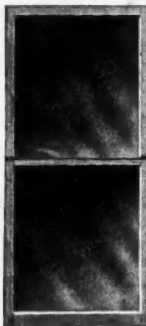


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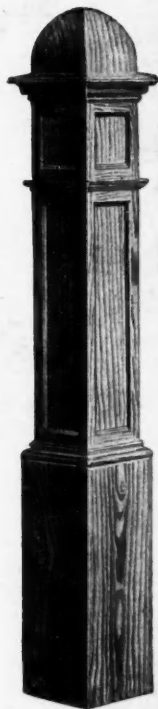


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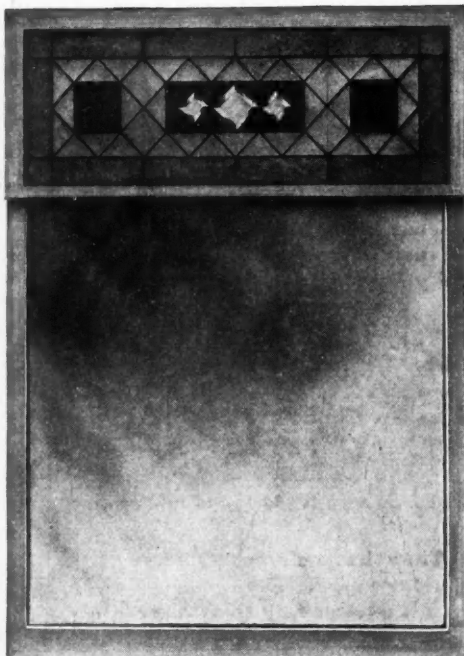
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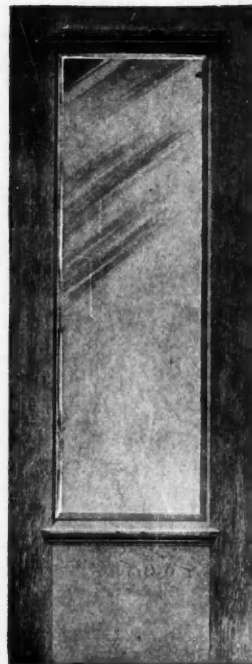
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