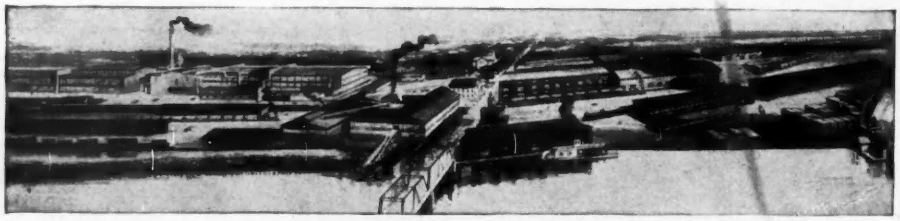
Price 20 cents JANUARY, 1908

AMERICAN CARPENTER AND BUILDER

THE WORLD'S GREATEST BUILDING PAPER

CONCRETE RESIDENCE

The Madisonville Lumber Co., Cincinnati, Ohio



From FACTORY

DIRECT

to YOU

Doors, Sash, Interior Trim, Stair Work, Mouldings. In

Birch
Oak
Southern Mahogany
Yellow Pine
AND
White Pine

Columns
Composition Caps
AND
Ornaments

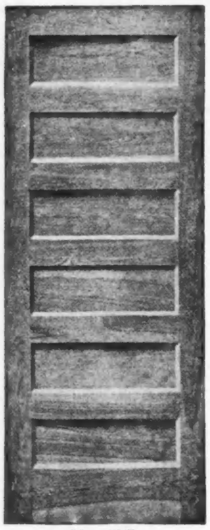
Window Glass
Mirrors
Paints, Oils
Varnish
Putty, Etc.

Roofing Paper

SCAMOZZI ITALIAN
8″ Column, 6½″ Neck
$0.70

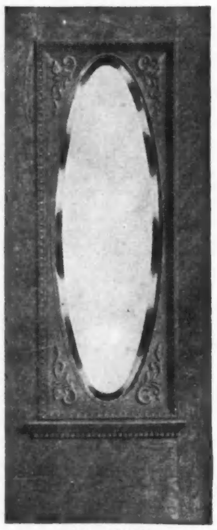
10″ Column, 8½″ Neck
$0.95

No. 12   No. 28

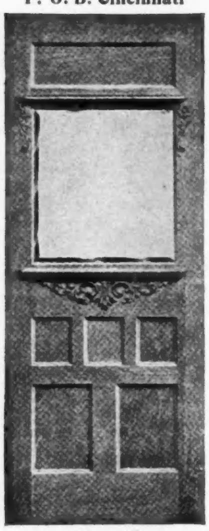


No. 377
All sizes in stock in Oak and Birch.
Birch, $\frac{2}{8}$x$\frac{6}{8}$.......$2.75
Oak, $\frac{2}{8}$x$\frac{6}{8}$....... 3.40
F. O. B. Cincinnati

No. 381
All sizes in stock in Oak, Birch and Southern Mahogany.
Birch, $\frac{2}{8}$x$\frac{6}{8}$.......$3.00
Oak $\frac{2}{8}$x$\frac{6}{8}$....... 3.80
F. O. B. Cincinnati



No. 1180
All sizes in stock in Oak and Birch.



No. 385
All sizes in stock in Oak and Birch.

All of our doors are guaranteed. Try 'Em

Write for our catalogue or send us a list and let us give you a figure.

ONE OF THE

BIG ADVANTAGES THE "LITTLE SHAVER"

has over all other scrapers is in that the knife can be sharpened while attached to the machine. Pulling the weight over and resting on the handle bar makes a strong and rigid vise, holding the knife at the right angle for filing and turning the edge, making it possible to finish a job with one knife and not have the trouble of bolting and unbolting every ten minutes.

AWARDED THE GOLD METAL AT THE JAMESTOWN EXPOSITION

Contractors Supply & Equipment Co.

Old Colony Building - - Chicago, U. S. A.

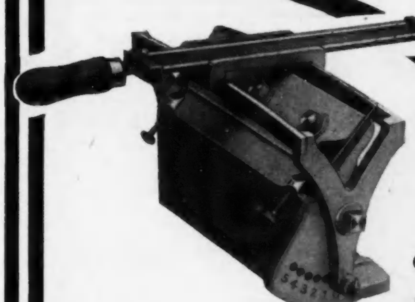
AN UNEXCELLED FLOOR SCRAPING OUTFIT

To whom it may concern:

This is to certify that I have deposited in the Marshall & Ilsey Bank of Milwaukee, One Hundred (100) Dollars, which amount I will pay to ANY PERSON proving the fact that the ACME FLOOR SCRAPER and ACME BLADE SHARPENER do not constitute the best equipment for floor scraping.

My previous advertisements state IT IS THE BEST, so now it is worth your time to investigate and prove that IT ISN'T.

Jos. Miotke



This is no idle boast, Mr. Carpenter and Builder, but an offer made in all sincerity, and is as much to your interest as mine. When buying a machine you naturally want the best the market offers, and if I haven't got it you do not want mine; but if I have, it is to your benefit to know it.

Upon request I will mail to you circulars fully describing these machines.

JOS. MIOTKE,

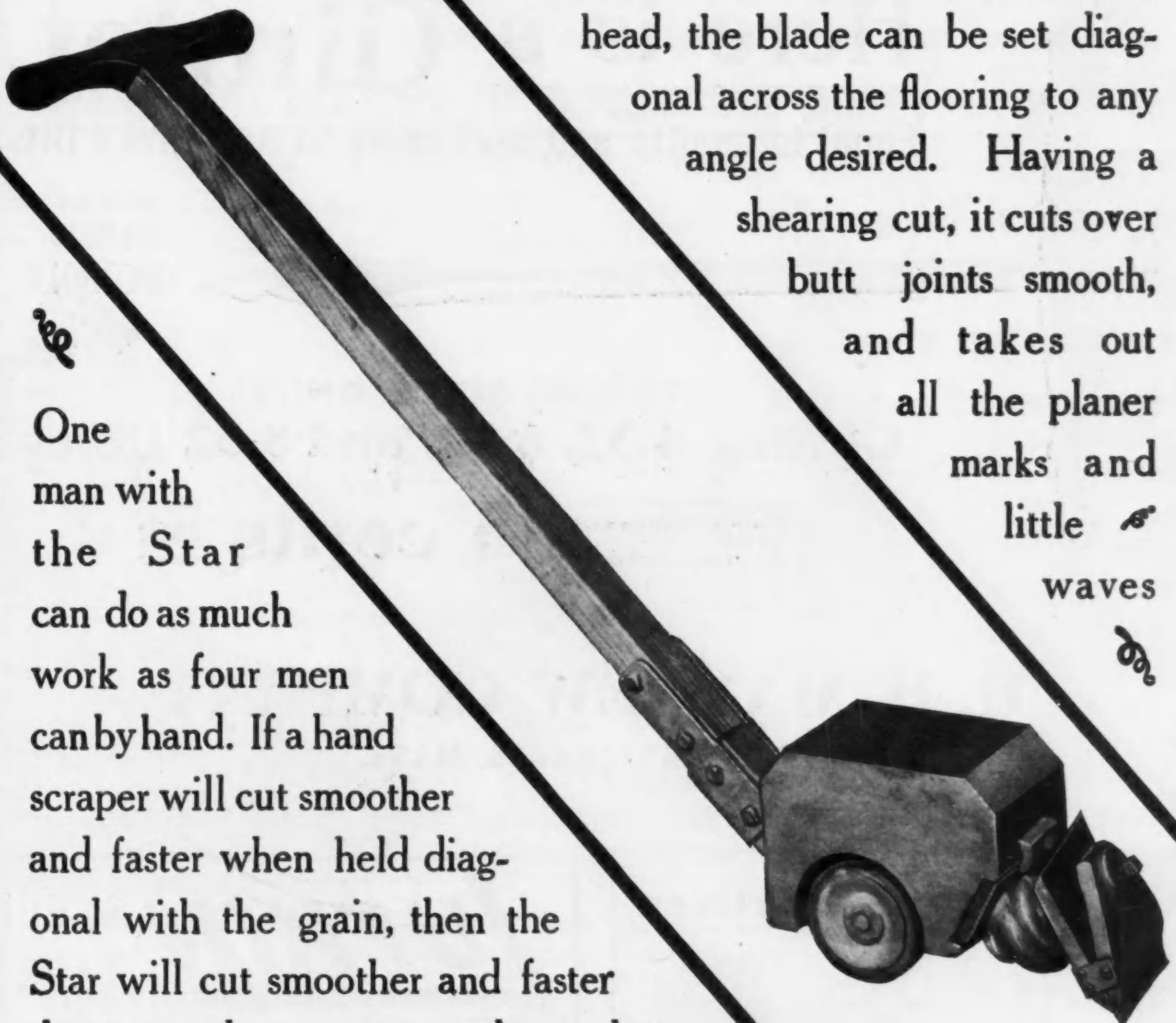
259 Lake St., MILWAUKEE, U. S. A. **Manufacturer and Inventor.**

The STAR FLOOR SCRAPER

Is the Latest Improved Hardwood Floor Scraper on the Market. And is one that is right.

The Ball and Socket

By the Ball and Socket connection between the blade and carrying head, the blade can be set diagonal across the flooring to any angle desired. Having a shearing cut, it cuts over butt joints smooth, and takes out all the planer marks and little waves



One man with the Star can do as much work as four men can by hand. If a hand scraper will cut smoother and faster when held diagonal with the grain, then the Star will cut smoother and faster than any other scraper on the market

SATISFACTION GUARANTEED

STAR FLOOR SCRAPER COMPANY

123 Marion Street ∴ ELKHART, INDIANA

TOOLS FOR SLATERS MANUFACTURED BY BELDEN ARE GUARANTEED

Their superiority over others is acknowledged by thousands of users. Made-to-order steel used in their manufacture adopted only after most careful experimenting gives them their value.

ONE HAMMER
ONE RIPPER
ONE STAKE
ONE PUNCH
Constitute a Set

OUR HAMMERS are perfectly balanced and are provided with **Leather Handles** to prevent hand from slipping

Our Tools Bear an International Reputation

If Your Dealer Cannot Supply You, Write Us Direct

THE BELDEN MCH. CO.,

Whalley Ave. and Tryon St.
NEW HAVEN, CONN., U. S. A.

Here is a Gimlet

Equal in quality and usefulness to any Brace Bit

HANDLE OF SELECTED COCOBOLO WOOD

THREE SIZES ONLY

Cutting 4-32, 6-32, and 8-32 Holes

Price Postpaid 15 cents each

H. H. MAYHEW COMPANY

SHELBURNE FALLS, MASS.

Miller's Hand Mortiser

WILL SEND ON APPROVAL

Its Work is to Make Openings in Doors for Mortise Locks.

The time is Three Minutes. The Material is Hard, Soft, Gross Grained and End Wood.

The job is clean, true and parallel with sides of door. The labor is performed with slight exertion. The care is practically none, as the tool does not get out of order. The adjustment is done in a moment's time for the different sizes. The cutters are five in number and cover locks from ½ inch to 1¾ inches thick. Thin doors are handled as easily as thick doors.

Riverside, Cal. A. W. MILLER MFG. CO. Cincinnati O.

LUFKIN STEEL TAPES and RULES

ARE INDISPENSABLE FOR ACCURATE WORK

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

For Sale Everywhere.
Send for Catalogue.

Good Carpenters Use

"Yankee Tools"

They are the most satisfactory and down-to-date Labor Saving Mechanics' Tools made; and the first high grade tools sold at a price every Carpenter can pay. They are accurately made of the very best material and workmanship obtainable, handsomely finished, thoroughly tested and fully guaranteed. They work like a watch.

RATCHET SCREW DRIVERS Nos. 10 and 11

AUTOMATIC DRILLS Nos. 40 41 and 44

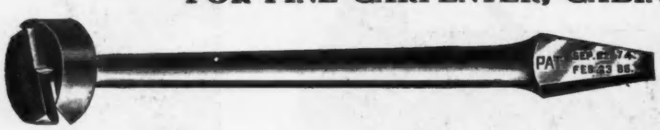
☞ We make over eighteen different styles of time-tested tools for driving screws and drilling holes. They are sold by the leading Hardware and Tool dealers throughout the country. If you already have a few of them you'll want to get acquainted with the full line. They are all as clever as those you have.

Write for our New TOOL BOOK Free

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

"FORSTNER" BRACE AND MACHINE BITS

FOR FINE CARPENTER, CABINET AND PATTERN WORK



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

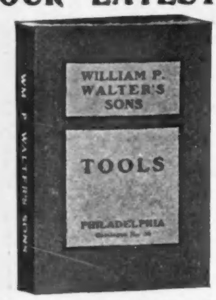
Manufactured by

THE PROGRESSIVE MFG. CO., Torrington, Conn.

Enquire of your Hardware Dealers or write us direct. Supplied in sets. Write for Catalogue.

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.

OUR LATEST CATALOGUE No. 20.



Handsomely printed on heavy paper, containing 450 pages, 2000 illustrations, including a full line of Woodworking and Metalworking Tools, Foot Power Machinery, Lathes, etc. This is the largest and most complete catalogue we have ever issued, being a valuable hand book for any mechanic. Sent on receipt of 20 cents postage.

WM. P. WALTER'S SONS
Tool Headquarters
1233 Market Street, PHILADELPHIA
(Please mention the American Carpenter and Builder)

Smooth, tough "leads" are the result of skilful and careful grinding, working and firing. It is this care and skill that make Dixon's Carpenter Pencils standard. Send 16c for generous sample lot 183 J.

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

ACKERMANN'S RAPID FLOOR SCRAPER

Patented by J. B. Ackermann, June, 1907

THIS MACHINE WILL DO

MORE
BETTER
EASIER
WORK

Than any other Scraper on the market.

Weight 120 lbs.

This Brush operates automatically. As the cutting stroke is made the brush sweeps away the shavings, grit, dust and other obstructions, keeping the floor free of anything that will cause the machine to vibrate or dull the cutting blade.

This Brush is an Exclusive, Patented feature. NO OTHER MACHINE HAS OR CAN USE IT.

Patent Allowed Nov. 1907

The Machine is FREE if the above statement is not strictly true. (See offer Below.)

Knife Advantages of the "Rapid"

By means of a simple eccentric device, the knife blades of the **"Rapid"** can be **instantly** moved or set at any angle, thus securing a **"drawing cut."** No floor scraper can be a success that does not bring the knife blade across the floor surface with a natural, **hand-like** movement. The **"Rapid"** does this perfectly. Any size blade up to 4½ x 8 inches can be used on this machine.

Exclusive Knife-Sharpening Feature

By simply reversing the position of the machine (turning it over) it forms its own knife-sharpening vise, the blade being brought into a perfect upright position, ready to sharpen, **without removing** it from the machine. This saves time, and time is money. The operator proceeds to sharpen the knife, then turns the machine over and goes ahead with his work.

Cut Showing Machine in Reverse Position Ready to Sharpen the Knife-Blade

My Special Guarantee Offer

I will ship a **Rapid Floor Scraper,** charges prepaid, subject to use **FREE** for three days, by any responsible person. If you are then satisfied the machine is all I claim for it you can purchase it, if not I will have the machine returned at my expense. Further; if, after you purchase this machine, you find that, at any time under equal conditions it will not do **"More," "Better" and "Easier"** work in a given number of hours than any other floor scraper, I will return your money and you can keep the machine free of cost. This is a straight offer, without any strings to it, made to anyone desiring to secure the best floor scraper made without risking their money until THEY KNOW what they are buying. I refer to the **State Bank of Michigan,** Grand Rapids, Mich., as to my guarantee and responsibility.

J. B. ACKERMANN Sole Manufacturer Board of Trade Bldg., 97-99 Pearl St., GRAND RAPIDS, MICH.

I contemplate purchasing a floor scraper and would like to see yours operate before agreeing to buy it. Please send me full details covering your manufacturer's guarantee and special terms.

Name ....

Town ....

State ....

How Koll's Patent Lock Joint Columns Are Made

The staves are cut from selected, thoroughly seasoned stock of extra thickness. The lock joint, which we originated and perfected, holds them together so they cannot come apart. Perfect joining is secured by our superior method of glueing and clamping under great pressure while the stock is hot. Columns and capitals are hollow, capable of being reinforced to bear any weight.

Each column has the greatest solidity and lasting qualities and conforms perfectly to classic proportions. They are made in all sizes and for every conceivable use.

Write today for our free illustrated catalogue M-29. Special catalogue on pages 488-492, "Sweet's Indexed Catalogue of Building Construction, 1907."

HENRY SANDERS COMPANY 940-1040 Elston Avenue, CHICAGO
Eastern Office, 1123 Broadway, NEW YORK

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 1900; Dec. 24 1902

We invite the Severest Comparative Tests

We want you to have a copy of our booklet

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

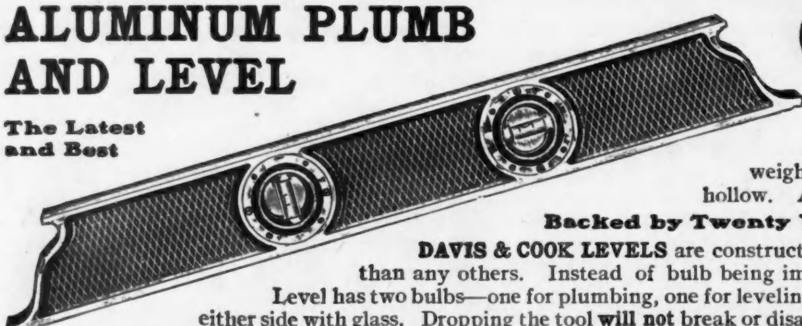
We want you to have a copy, for it is a booklet you really need in your business.

We'll gladly send you this booklet with our compliments, promptly upon receipt of your request.

Tower & Lyon Company, 95 Chambers Street, New York

ALUMINUM PLUMB AND LEVEL

The Latest and Best



Buy of Your Dealer

Or Write Us Direct

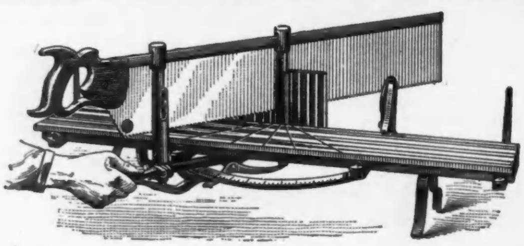
Our Aluminum Levels are one-third the weight of iron and lighter than wood. They are cast hollow. Are very strong and not affected by climate.

Backed by Twenty Years' Success in Making Levels

DAVIS & COOK LEVELS are constructed on a **better** principle and of **better** materials than any others. Instead of bulb being imbedded in the top of tool, the Davis & Cook Level has two bulbs—one for plumbing, one for leveling—set in solid; unbreakable frames, faced on either side with glass. Dropping the tool **will not** break or disarrange the bulbs. Can see them 10 feet awa y in any position, under or over. Buy a Davis & Cook and get away from the loss of time and trouble which is always the case in using the old style bulb-in-top levels.

Booklet on Levels for the Asking

Ask for DAVIS & COOK LEVELS | **Davis & Cook, Makers** | **13 High Street WATERTOWN, N. Y.**



Nicholls Common Sense Miter Box

We have endeavored to place on the market a Miter Box suitable for practical work, and having tested it thoroughly, we are satisfied we have succeeded in doing so, and are placing this Miter Box on the market warranted in every respect. :: :: :: :: :: :: :: :: ::

Nicholls Manufacturing Co. :: Ottumwa, Iowa

The S. & W. MITRE

Hand or Foot Power

2½, 3 and 4 inch Sizes

GUARANTEED ABSOLUTELY ACCURATE
Write us for particulars

SEYMOUR & WHITLOCK
1 GARDEN ST., NEWARK, N. J.

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Draftsmanship

TAUGHT PERSONALLY AND INDIVIDUALLY BY

CHIEF DRAFTSMAN

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Complete Drawing Outfit, Highest Quality, FREE

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VALUE $13.85

FREE TO MY STUDENTS Delivered at once

STARRETT

Universal Scraper

Eight sharp cutting edges. Instantly adjusted by ball joint connection. Blade may be instantly set at any angle. Neatest and best scraper made.

Send for free Catalogue No. 186

The L. S. Starrett Co. Athol, Mass. U.S.A.

OUR NEW STEEL SQUARE

Aside from excellence of material and workmanship, the greatest difference between the best Carpenter's Steel Square and the old iron square of the blacksmith, consists of the scales and markings on the improved tool. Our square, as recently improved, enables the carpenter to lay out all kinds of work and to calculate quantities with an ease and accuracy never before known.

Our Steel Square Book, describing the new tool, is a veritable

PRACTICAL TREATISE ON THE STEEL SQUARE

and we will send a copy, without charge, to anyone who in writing us will mention the American Carpenter and Builder.

SARGENT & COMPANY

1149 Leonard Street **NEW YORK**

CARPENTERS AND BUILDERS

WHY DON'T YOU

Build Incubators and Brooders

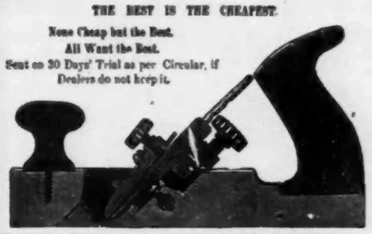
PLANS FREE

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

H. M. SHEER CO., 210 Hampshire St., Quincy, Ill.

ONLY SELF-SETTING PLANE

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

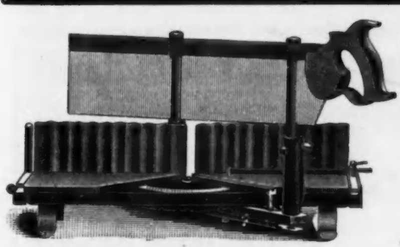


SECTIONAL VIEW—showing ADJUSTABLE IRON THROAT.

TRIAL COSTS NOTHING

if plane is returned at our expense as per circular. Circulars and a **Carpenter's Pencil FREE** if this advertisement is sent us within a month. If $3 is sent we will deliver a **Self-Setting Plane** all charges prepaid, and if returned at our expense within 30 days of receipt we will return your $3 and the trial will cost you nothing.

12-1-07 **GAGE TOOL CO., Vineland, N. J.**



GOODELL MITRE BOX

MADE OF STEEL
CANNOT BREAK

First in Quality and Improvements

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

GOODELL MFG. CO., Greenfield, Mass.

INSURE YOUR TOOLS WITH GUARANTEED TOOLS

GUARANTEED **SUPERIOR EDGE TOOLS** **GUARANTEED**

COMPLETE LINE

Star Drills	Firmer Socket Chisels	Floor and Box Chisels, Reamers
Cold Chisels	Tang Chisels, Gouges	Rose and Flat Countersinks
Screw Driver Bits	Turning Tools, Slaters	Shingle Rippers, Punches

I CATER TO THOSE WHO WANT THE BEST

WRITE FOR FULL INFORMATION
SPECIAL TOOLS MADE TO ORDER

BENJ. O. PAINE, MILLBURY, MASS.

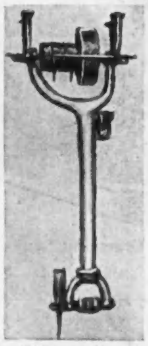
HERE THEY ARE

A Selection of Our Machines Will Make Complete Up-to-Date

WOOD-WORKING SHOPS

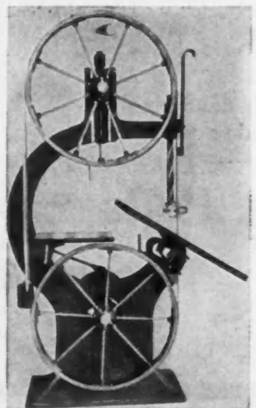
Practical Time-Savers

FOR **CARPENTERS**
CONTRACTORS
MILL-WORK MEN



Chicago No. 7
Improved Swing Saw

Chicago Nos. 16 and 17 Jointer
8″, 12″, 16″



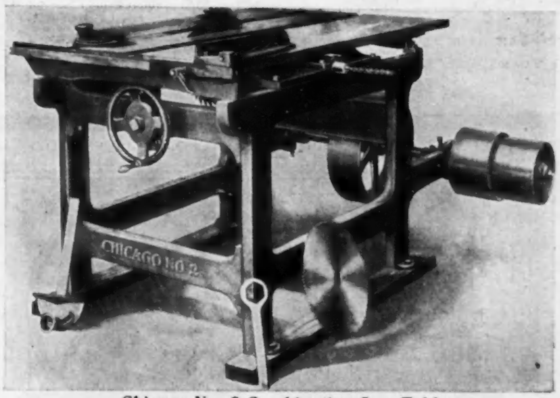
Chicago No. 1 Band Saw
36 inch

THINK OF THE

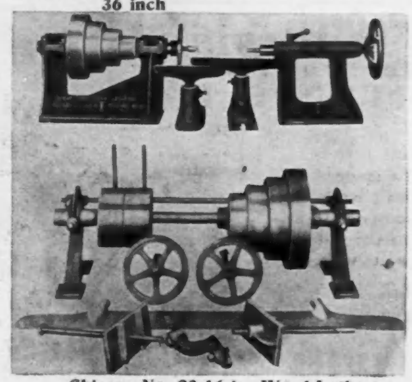
TIME and MONEY SAVED

Making Your Own Mill-Work

You will be surprised at the small investment required to make yourself independent.

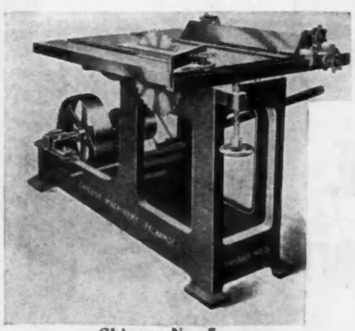


Chicago No. 2 Combination Saw Table
An excellent machine for ripping, cutting-off, mitering dadoing, etc.

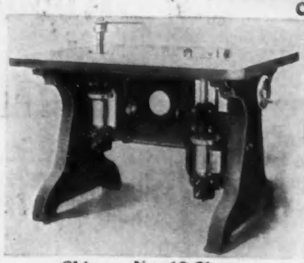


Chicago No. 23 16-in. Wood Lathe

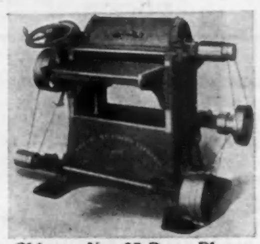
JUST WRITE US NOW—TO-DAY AND LET US TALK IT OVER BY MAIL



Chicago No. 5
Combination Rip and Cut-Off Saw



Chicago No. 19 Shaper



Chicago No. 35 Pony Planer

The first cost of our machines may be a little more than some others, but they are the cheapest in time, as you will have no repair-bills to pay. We will assist you to arrange for a shop. We have over 500 machines on exhibition. Come in and let us talk it over. We have also a large stock of modern slightly used machines conscientiously rebuilt.

EXCLUSIVE REPRESENTATIVES

Baxter D. Whitney & Son **Hermance Machine Co.** **Greaves Klusman & Co.**
McDonough Mfg. Co. **C. O. & A. D. Porter** **Jos. O. Colladay Co.**

CHICAGO MACHINERY EXCHANGE

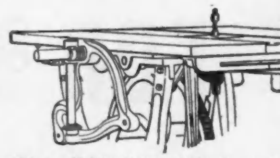
WOOD-WORKING MACHINERY MERCHANTS **7-11 N. Canal St., CHICAGO, U. S. A.**

One Man with the No. 5 Union Combination Self-Feed Rip and Cross-Cut Saw

can do the work of four men using hand tools, can do it with ease, can do it better. Consider the amount saved—three men's wages—and compare with the cost of the "Union" saw. In a short time the machine will pay for itself and then the wages saved will go into your pocket.

EVERY MACHINE is carefully tested before leaving factory. We guarantee entire satisfaction and machine may be returned at our expense if, after two week's trial, you prefer your money back.

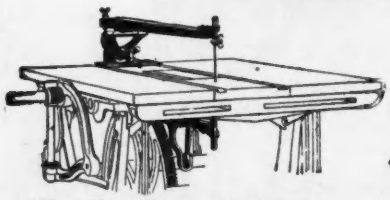
SUITABLE FOR various kinds of work—ripping, (up to 3½ inches thick), cross-cutting, mitering, etc., and with additional attachments rabbeting, grooving, dadoing, boring, scroll-sawing, edge-moulding, beading, etc., almost a complete workshop in one machine.



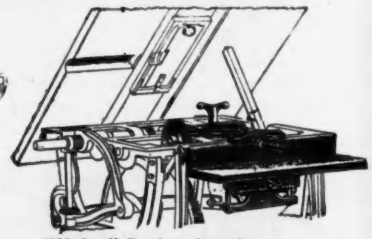
"Union" Moulding Attachment

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

Ask for Catalogue "A," fully describing our complete line of wood working machinery.



"Union" Scroll-Saw Attachment.



"Union" Boring Attachment.

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

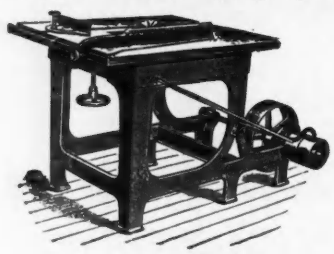
COMPLETE OUTFIT PRICE $15.00
HAND AND FOOT-POWER
MACHINERY

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

Send for Catalogue.

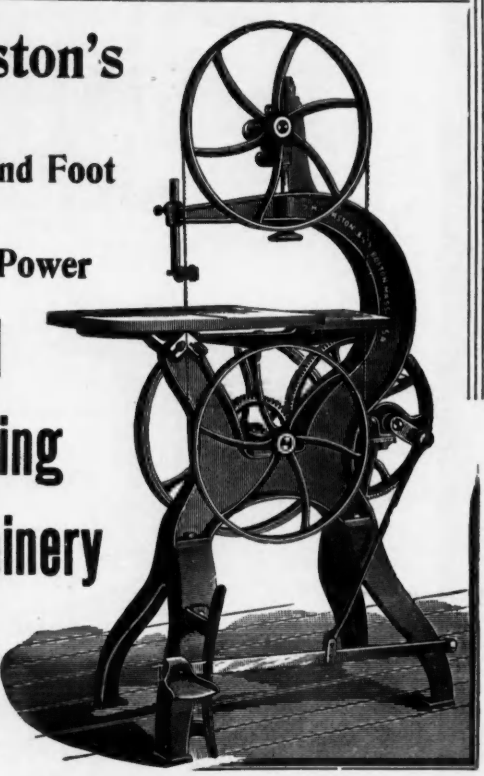
W.F. & Jno. Barnes Co.
74 Ruby St. ROCKFORD, ILL.

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



R. E. KIDDER,
6 Hermon St. - - WORCESTER, MASS.

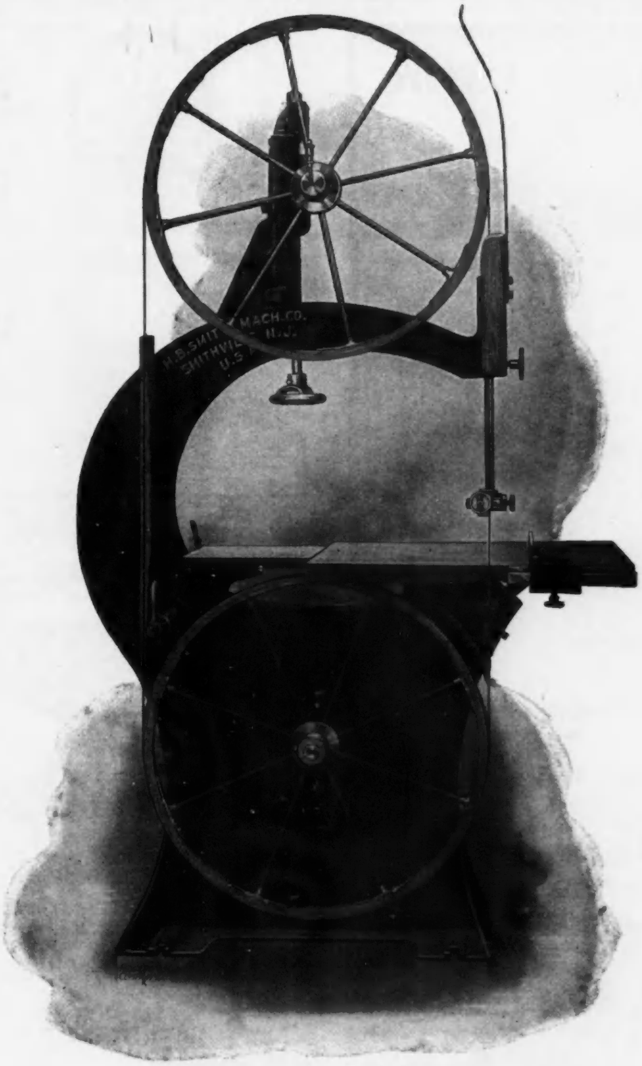
Marston's
Patent
Hand and Foot
and
Steam Power
Wood Working Machinery



20-in. Hand and Foot Power Band Saw.

J. M. MARSTON & CO.
227 Ruggles St., Boston, Mass., U. S. A.

A Band Saw of Quality



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OUR line is so very extensive—including over 150 machines—that it is impossible to attract every reader of this magazine by pictures only. If you have in mind any specific machine that you want to be advised about, write us. We have a great fund of information gathered from an experience of sixty years in manufacturing machinery for the most critical American woodworkers. The name SMITH is a synonym for quality and indicates the highest standard of excellence in design. Write us for circulars completely describing the above illustrated Band Saw.

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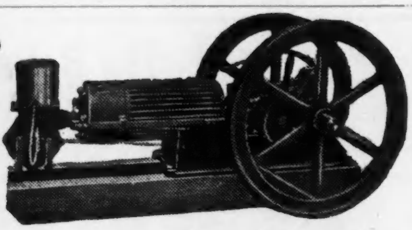

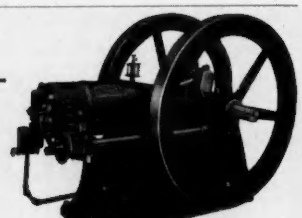

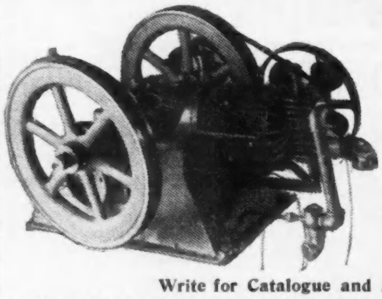

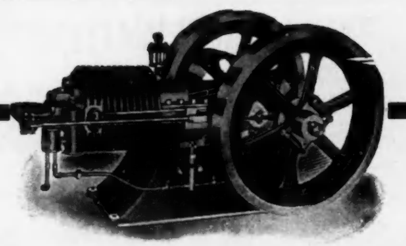

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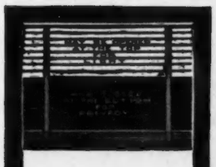

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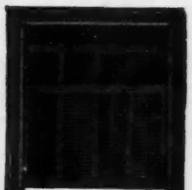

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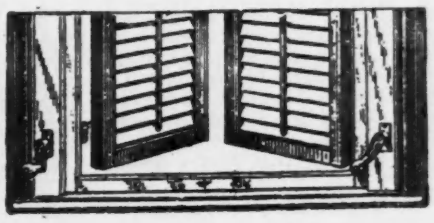

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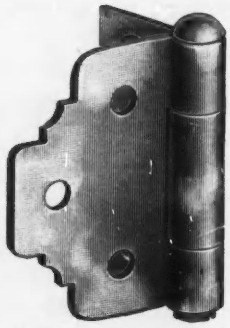

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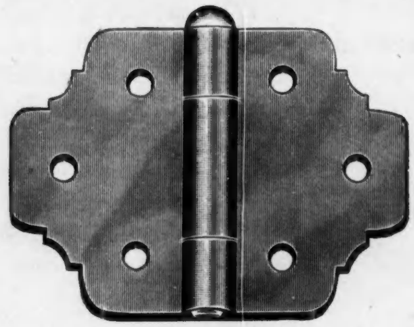

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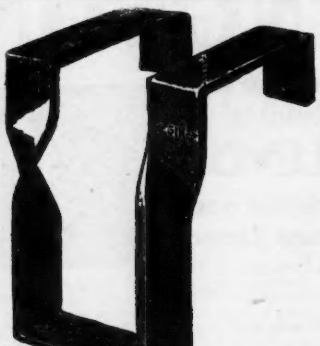

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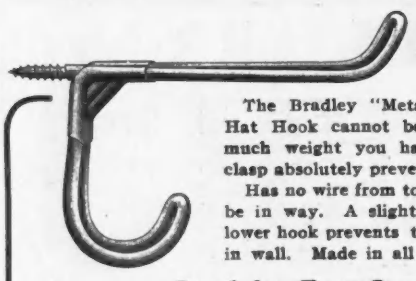

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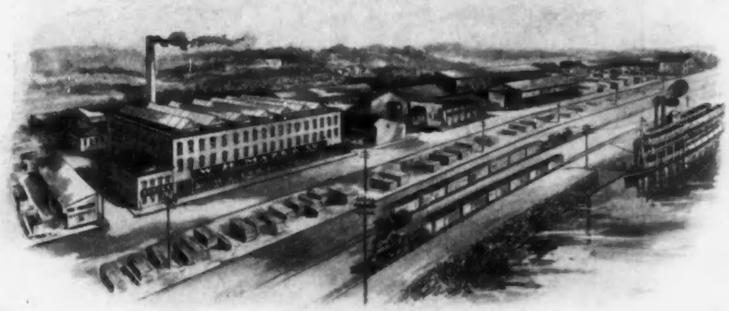

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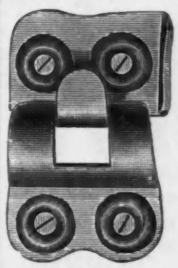

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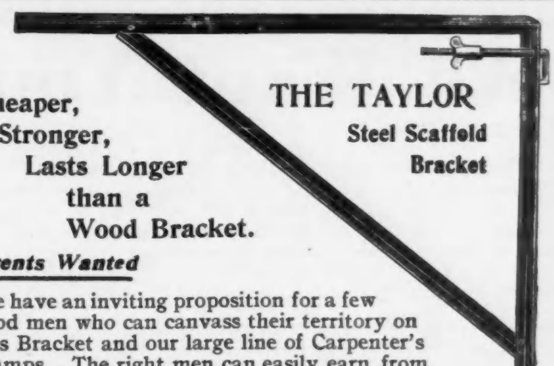

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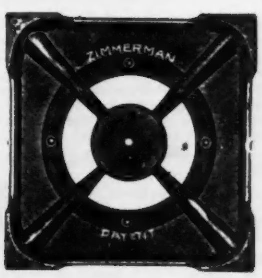

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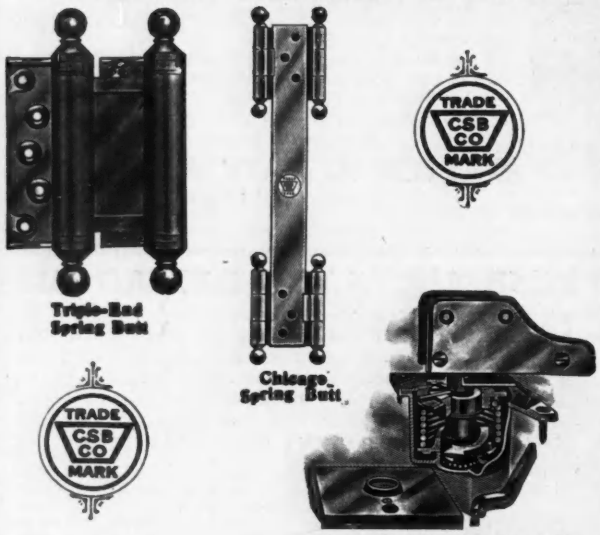

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American Carpenter and Builder
Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill under the Act of Congress of March 3, 1879.
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CHARLES W. RADFORD, Vice-President.
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Vol. IV JANUARY, 1908 No. 4

The American Carpenter and Builder is issued promptly on the first of each month. It aims to furnish the latest and the most practical and authoritative information on all matters relating to the carpentry and building trades.

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

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A NICE equipment of tools and a fair amount of spare time spent over a drafting board will contribute materially to the improvement of the chances of any carpenter, whether old or young.

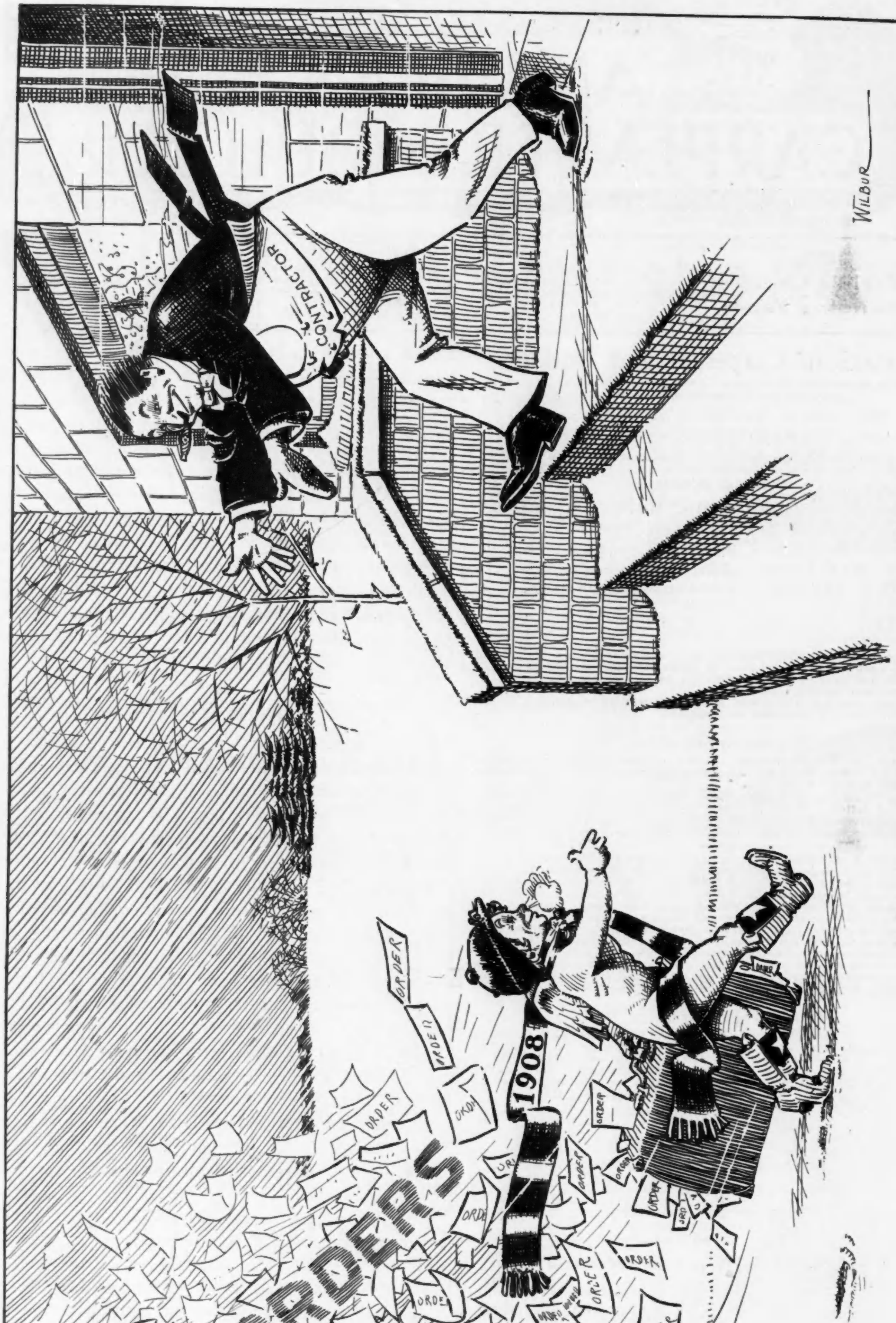
Bungalow Plans in Demand

OWING to the greater convenience, and the fact that floor space per square foot will average less in cost, the bungalow is coming greatly into favor with the average home builders. They are also more artistic than the average dwelling, and are more easily heated and ventilated. Another reason why bungalows are becoming more popular is because all rooms are located on one floor, and as the great majority of women do their own house work, it does away with the necessity of running up and down stairs, which in the past has been one of the hardest features in connection with housekeeping. In this respect they have all the advantages of a flat without any of the disadvantages which naturally go with living in an apartment house. A neat and artistic bunglow is much to be preferred to a flat, as it embodies all the conveniences and privacy of a home, and requires but a minimum amount of labor to keep it in good condition.

Future of Flats

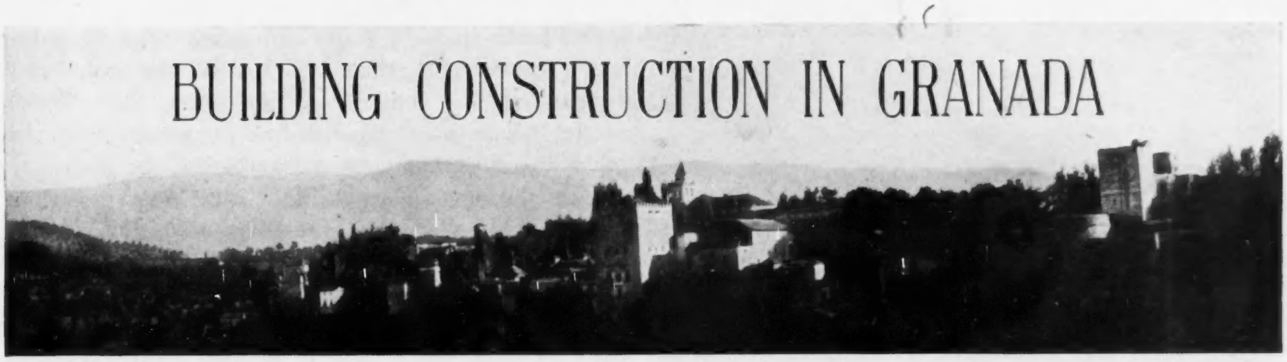
THE question is often asked, what will be the natural result if the construction of flat buildings continues at the present rate? Unfortunately, many of the buildings are very poorly constructed, and unless great care is taken in keeping them in good condition, they will, after five or ten years of service, become nothing more than a tenement. Many of them are built simply on speculation rather than an investment, and while their outward appearance may look well there is no real stability in the building itself. As soon as these apartments deteriorate the tenants will leave and the owner will not be so particular as to who rents the apartments. In this manner a nondesirable tenant is often brought into a large apartment house, and will eventually be the cause of all others leaving the building.

Another common practice is for owners to advance the rent rates after they get their buildings filled. They seem to forget that the wear and tear on a building, instead of warranting an advance in rents, should bring about a decrease. The best remedy is to erect good substantial buildings, making them as near sound proof as possible, and when the building is once filled with desirable tenants, to endeavor to keep them satisfied, and he will find that they will take better care of his building and cause less deterioration in value than if there is a continual change of occupants.



A Contractor's Idea of "Happy New Year"

BUILDING CONSTRUCTION IN GRANADA



WHETHER he be an American student of architecture and building construction or a dilletante traveler seeking recreation in the old world cities of Andulasia, the sunniest province in Spain, the most indelible impression gained of the country is of its wonderful buildings. The man from abroad sees them and asks: "Are they Spanish or are they Moorish?"

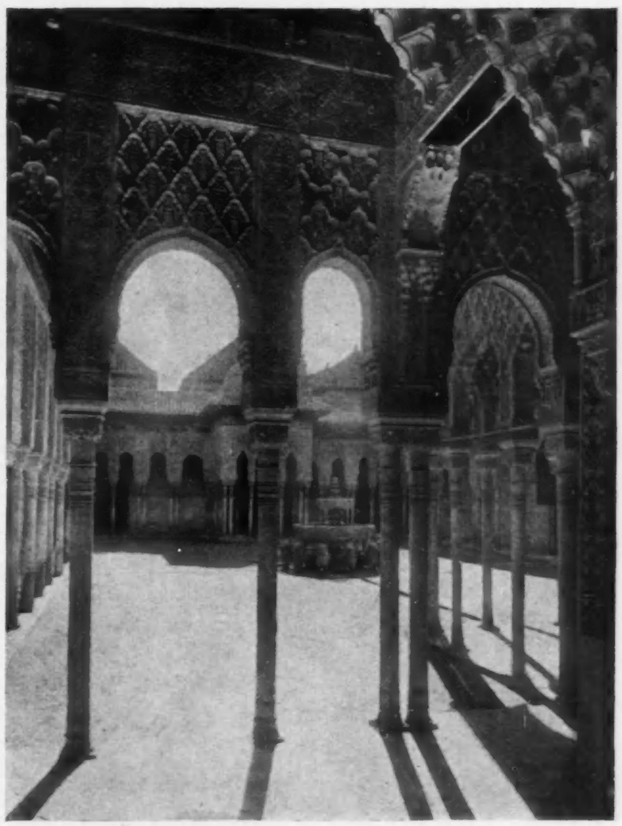
Spacious Court of the Myrtle

Were he to conclude that they are both he would be right. The ancient artisans who wrought in the glorious old pile of the Alhambra have transmitted the material record of their Oriental imagery to the children of their conquerors—the Spaniards of today.

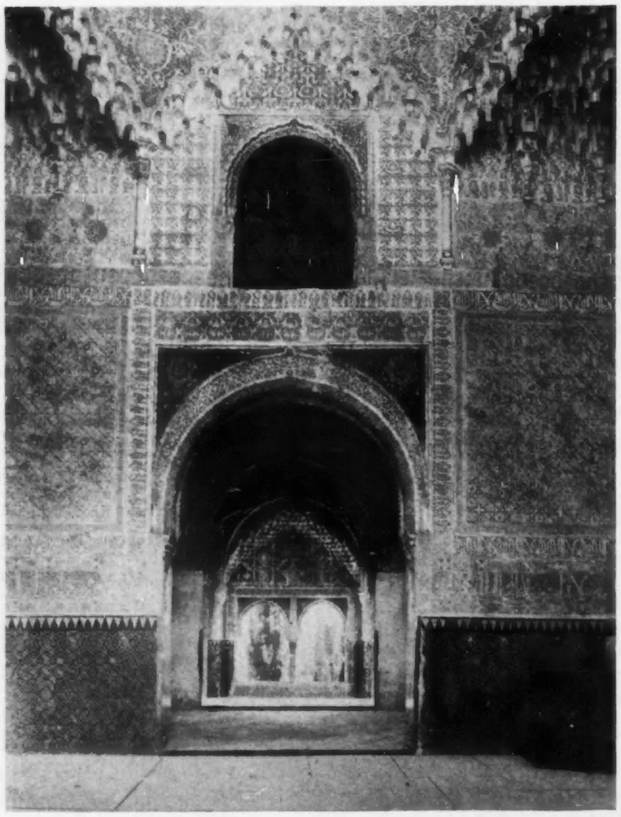
Wander through old Granada as you will, from the witching palace of the Garden of the Generalife wherein, tradition says, the sultana of a Moslem prince held illicit tryst, to the burrowed heights of the Albacin where the gypsies dwell in their caves, and naught will you find that has not in it somewhere a window or a tile, the original of which still exists in the wonderfully preserved palaces of the Moorish kings.

The delicacy of art with which the Moors reared slender pillars is equaled only by the consummate engineering skill and knowledges of stresses and strains by which these fabrics of the artists of olden times were made to support seemingly impossible weights in the forms of massive towers and heavy domes covered with cobweb tracery—the former for defense, the latter for worship or recreation.

Architects and builders of Granada have for their inpsiration the well restored palace of the Alhambra, and good use have they made of it. Cunningly carved molds have been utilized in reproducing in stucco the patterns, themselves apparently of imperishable cement, with which the interior of the Alhambra is decorated. Perhaps at the risk of repeating what has been told by travelers innumerable, it is well to enter into a short disquisition on the Alhambra itself



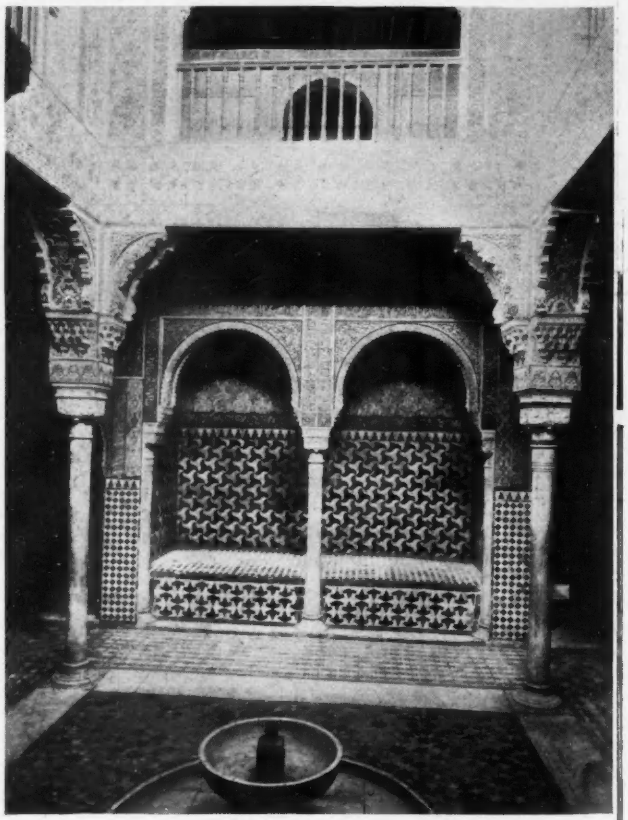
The Famous Court of Lions



Showing Ceiling and Wall Decoration

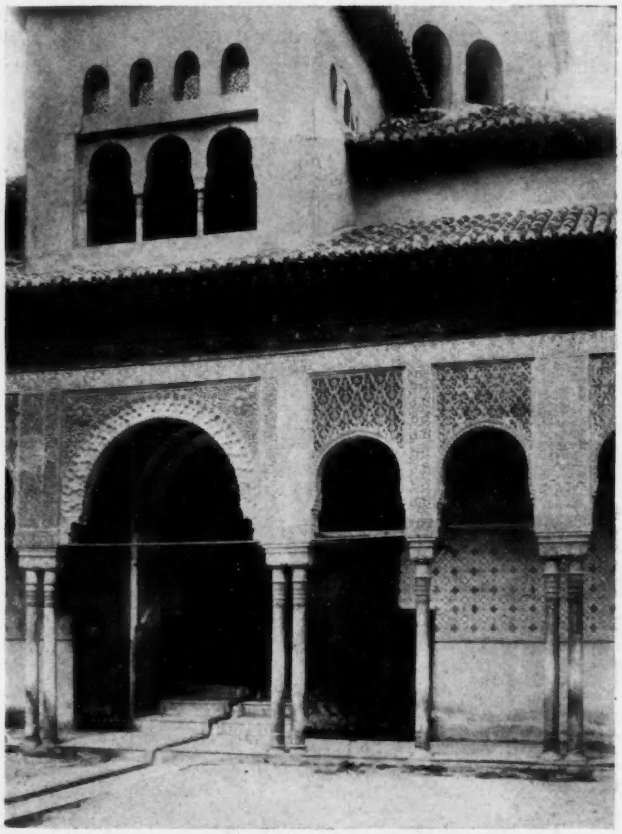
—the A B C and the lexicon of Spanish building construction.

The Alhambra of today presents an exterior of flat, reddish stone, rotting with age, cut through by gates which in their shape and massiveness rival the impressiveness of the Taj Mahal, the wonderful Indian temple. Aside from the gates, the exterior of the Alhambra is equaled and surpassed by many other fine old remains of architecture.



Room for Repose

Pass through an insignificant little door in one of the walls and you are in fairy-land—a setting for the tales of the "Thousand and One Nights." This spacious Court of the Myrtle, bounded by arched and pillared walks from which open doors into yet other halls of constructive beauty, is open to the sky. In the center the great tank, wherein the same fish have swam for hundreds of years, throws back the azure of the Andulasian heavens, and in its reflections



The Noble Hall of the Ambassadors

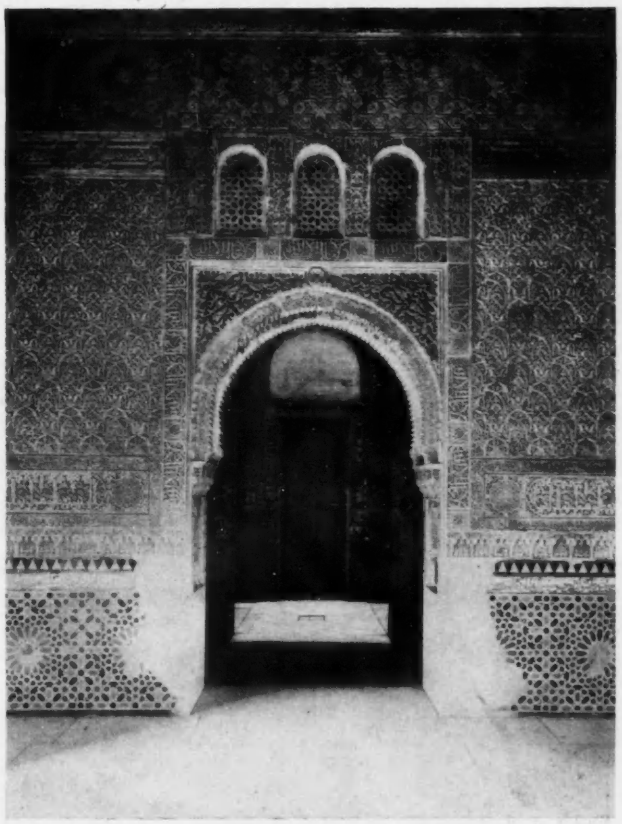
the astrologers of the Moorish domination saw the moon and stars from which they presumed to read the rise and fall of nations. Verily, it is a place for those artisans of today who have joined modern engineering skill with artistic perceptions to produce habitations of men wherein beauty and comfort are blended.

A sadly commercial but well meaning old gentleman of England, who accompanied us on one of our visits to the Alhambra, beheld the Court of the Myrtle and exclaimed:

"If I could transport this place to Hyde Park and charge a shilling a head for admission, I'd be a millionaire in a year."

So all the vulgarians are not American!

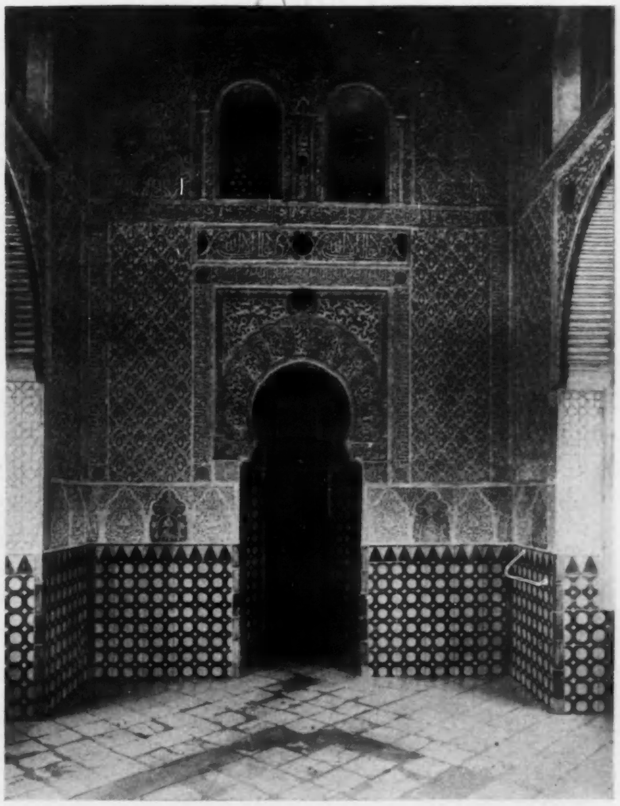
It is probable that the old gentleman was still more confirmed in his opinions when he inspected the slim, monolithic columns of marble and alabaster, the capitals of which are joined to Oriental arches covered with delicate tracery, which appears scarcely more stable than the delicate crust on a loaf of bread, and about the same color. It required close inspection of the graceful peristyles to see that these intricacies were produced and multiplied by pressing tough stucco into wooden molds which were carved with much labor by hand. Probably in the thousands of the panels of the Alhambra is wrought in Kufic characters the imomrtal motto of Sultan Muhammed Abu Alahman: *"Wa la Ghalib Ila Ala!"* which means, "There is No Conqueror but God."



Showing Interior Decoration

The Moors are believed to have possessed a superior knowlege of the properties of carbonate of selenite, and to have used it in their plasters and cements. Also they used a paint without oil for ceilings, and the condition of the paint today is the best testimonial to its durability. The woodwork and beams of the ceilings were treated with a preservative, the formula for which has been lost, but which was good enough to preserve the wood without sign of decay for a period of 600 years. Even today the wood seems to exude an aromatic fragrance that keeps flies and spiders at bay.

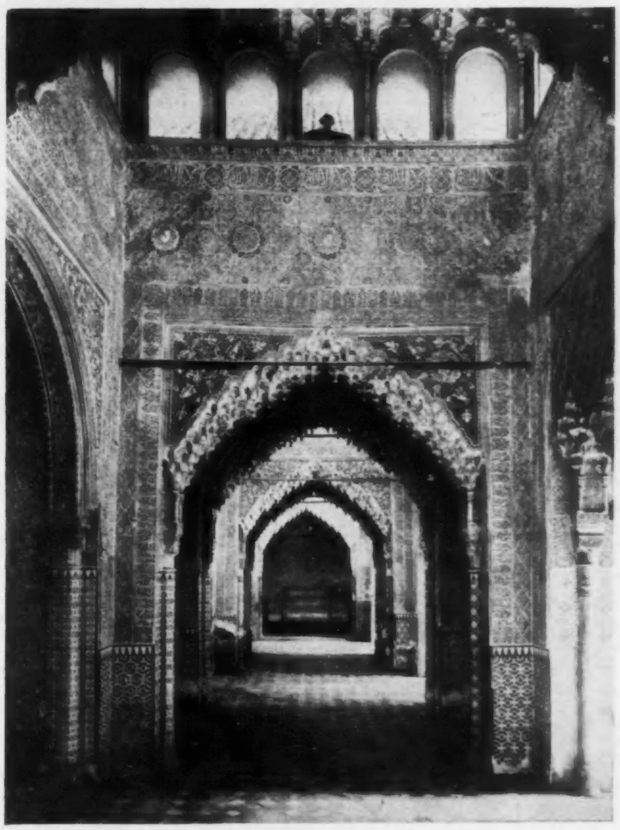
Of such value were the secrets of old that students from other lands came to Granada to study the building construction of the Moors. But with a lingering glance over the shoulder let us leave the Court of the Myrtle and pass into the famed Court of the Lions,



Room for Worship

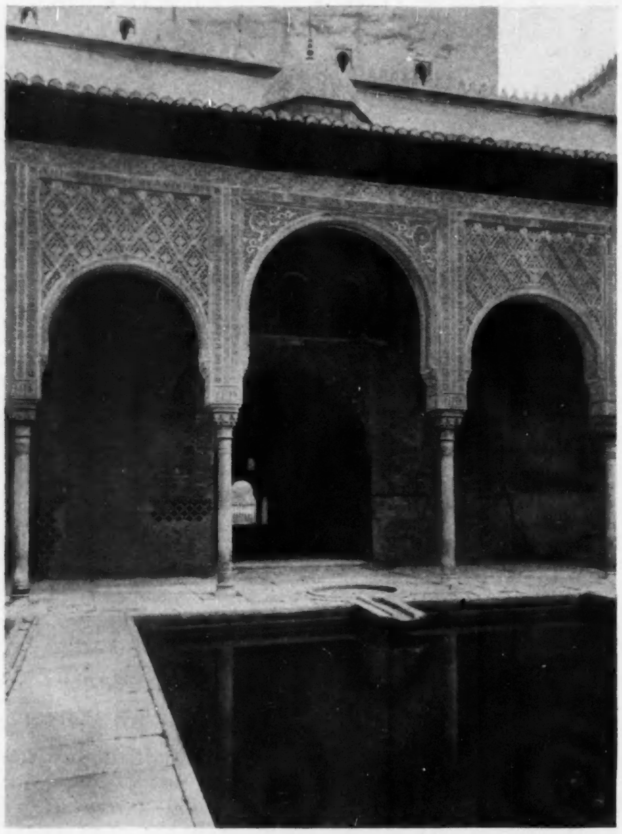
which we can see through yonder narrow doorway.

Here we have another open court with arched arcades, and in the center the fountain which gives the spacious apartment its name. At the time of our



Hall of Justice

visit the conduits of the fountain were undergoing renovation, so that there was no water in the great bowl. But the placing of the fountain was indication of the general scheme of architecture of the period —open courts with water in the center, either in a great pool bounded by flagged walks of marble and borders of roses along the open conduits conducted



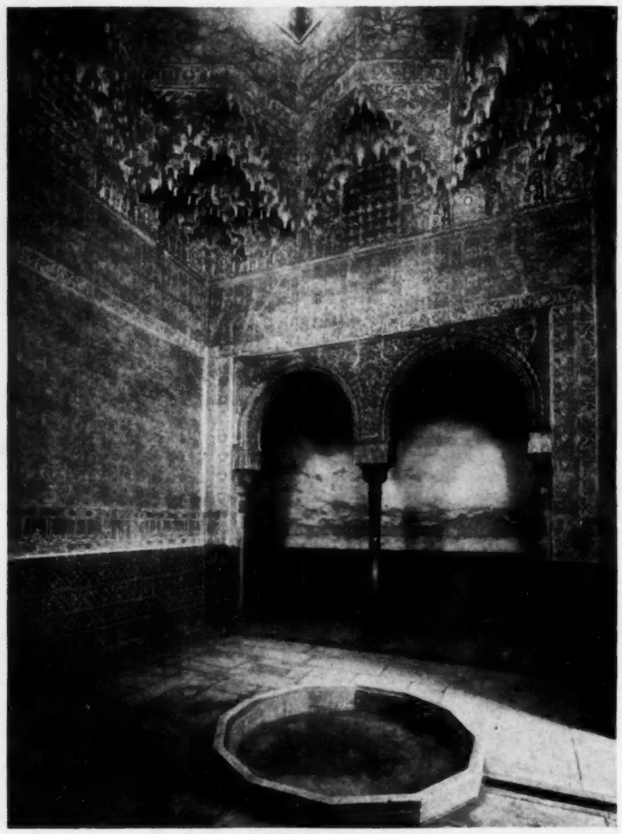
Another View of the Court of the Myrtle

to remote parts of the structure, or fountains throwing forth crystal sprays. The Moors were particular about their water. They took infinite pains to have it plentiful and pure—an interesting contrast to the filthy stuff that the Moors of modern Morocco drink. And an admirable system it was in this southern climate, the flow of the fountains being controlled at will, and tempering the aridity of the atmosphere in August and September, months termed by the Moors "the furnace of the year."

Let us pass from the Court of Lions to the roofed chamber known as La Sala de Dos Hermanas—the Hall of the Two Sisters. This lofty apartment is characteristic of the other apartments of the Alhambra. It is closed to the sky, and the domes have been commented upon by authorities on architecture as the most curious productions they have ever viewed. They appear to be slight, but the resistance was so well adjusted that there exists neither sign nor impression of strain. All arabesques, paintings and mosaics are finished with great care and accuracy. The jalousies exist as they were in the days of sultanas in Granada, and through them may be seen the verdant foliage of the gardens. The lower parts of the walls, to a height of about four feet, are covered with porcelain mosaics, done in designs of rich color. It is sad to relate that most of the originals of these tiles were carted away by vandalistic antiquaries and that most of those in the Alhambra at present are restorations made by a Spanish ceramic factory. Above the tiles is the finely-molded stucco. As far as the ceiling its intricacies are bewildering.

To imagination must be left a vision of what the place was when the floors were spread with Moorish carpets and the tenants were sumptuously appareled in silks, embroideries and fine linen, glittering with gold and gems, the spoils of a hundred conquests. Right well the richly illumined tapestries must have matched with furniture wrought from wood of citron, sandal and aloe, inlaid with sardonyx, ivory and mother-of-pearl mingled with the burnished gold and Cerulean blue. Had he Aladdin's lamp or ring, the beholder of today would hasten to rub the charm and summon again the days of the glory of the Alhambra.

Larger than the Sala de Dos Hermanas, though less intricate in its workmanship, is the noble Hall of the Embassadors—the hall of which an old chronicler remarked: "A giant might stand in it and keep his turban on." There are many other wonderful halls and gateways in the Alhambra—too many to



Detail Showing Ceiling Decoration

describe in a brief article, but one thing in connection with this marvelous building, which cannot be ignored, is the unfinished palace of Charles V., of Spain, to build which he destroyed a portion of the Alhambra. The accompanying photographs show a glimpse of the building, which seems to bear a strong resemblance to some of the new library buildings which are going up in the States, or to be seen upon the campuses of certain American universities. There are no hints that the Spanish government intends finishing the structure, which the average Spaniard will tell you is ugly.

The Alhambra usually is quitted by the great Gate of Justice. This huge passageway has carved upon the keystone of its outer arch a hand, and inside the arch is the figure of a key. According to the legend the Alhambra will fall when the hand grasps the key.

Of the old buildings connected with the Alhambra, the huge square towers built by the Moors as watch-towers, and for other purposes, have been converted into dwellings in a curious manner. Some of them have had floors added to the interior. These floors have been partitioned into box-like compartments, giving the entire interior the appearance of a squalid tenement house. Goodness knows how the tenants exist. If the visitor to Granada enters one of these towers and starts to climb the 80 feet of winding stairway, he will climb only a short distance in the ancient "sky scraper" before he meets with a locked door which bars further progress. The sound of his footsteps will cause some old crone to open the door of her compartment and look askance at him. As is usually the case in Spain, such a glance means that a peseta or less must be produced to secure the key which opens the door to permit free passage to the roof. But with it all the Alhambra is the Alhambra, and though men have tried for centuries, apparently, to degrade it, it still survives in a grandeur and beauty which is a source of inspiration to all builders who have the pleasure and privilege to view it.

The Generalife

The white walls and contrasting verdure of this old garden and palace of the sultans has a classic atmosphere about it, doubtless because of the deep blue sky seen through white arches, the formal arrangement of the gardens and the carefully clipped cypress trees. Although of Moorish origin, it causes the observer to think of Italy and the remains of the Romans.

The Generalife is situated on a high hill opposite the Alhambra. The site is such a one as the Moors delighted to build upon—a high hill, or natural terrace, surrounded by a flowing plain. The gardens are in the form of an amphitheater, and through them runs a conduit carrying water from the mountain behind. The interior decorations of the villa are not unlike those of the Alhambra, although on a much smaller scale, naturally.

This is, of course, a description of the older forms of building construction in Spain. In the succeeding article will be described the methods and results of the present day, but of such potent influence in the new has been the old, that one can no more discuss the subject of building construction in Spain without beginning with the Alhambra, than one can erect a building without foundation. Modern building methods in the lands of the Dons has much to interest, but its chief value lies in the lessons learned from the old Moorish methods. There are many admirable modern buildings in Spain, in Granada, in Seville, in Cadiz, in Barcelona, and the ways of the artisan are quite different from those of his American brother—but, as Kipling says—that is another story.

Cause of Fires

In Ohio the cost of fires from defective chimneys last year was $342,867, the number in winter being two or three each day.

The average date of the first killing frost is November 16. If each householder should inspect his chimneys before freezing weather arrives, and remedy defects in them, that amount would be reduced at least $250,000. Why not protect your property and its occupants by devoting ten minutes time to this commonest of all fire dangers?

Fires from defective chimneys usually begin in the attic, get a good start in the dryest of wood before the alarm is raised. Attics being difficult of access to one with a water bucket, the fire is likely to get beyond control.

The settling of its foundation may open a crevice between the bricks or stones, so that sparks can escape. Sometimes a new chimney in settling forms a crack because one side of it is held by floor timbers.

A chimney built up from joists or brackets is always a source of danger because of the liability of cracks from springing of the timbers. Chimneys so built often have as their base a plank whose only protection from sparks and heat is a layer of mortar on it. Many fires result from this practice.

Salmon-tinted bricks disintegrate. Poor mortar crumbles out, leaving openings. Nails driven into brick chimneys are likely to come out, leaving holes. A joist end should not rest in a chimney wall. Tile chimneys of all sorts are unsafe because they are very likely to crack off at the level of the roof where cold air strikes them. A hood should make no offset to hold soot. The chimney top should be inspected and soot swept down and removed from below.

This Is Our Busy Day

PRACTICAL CARPENTRY

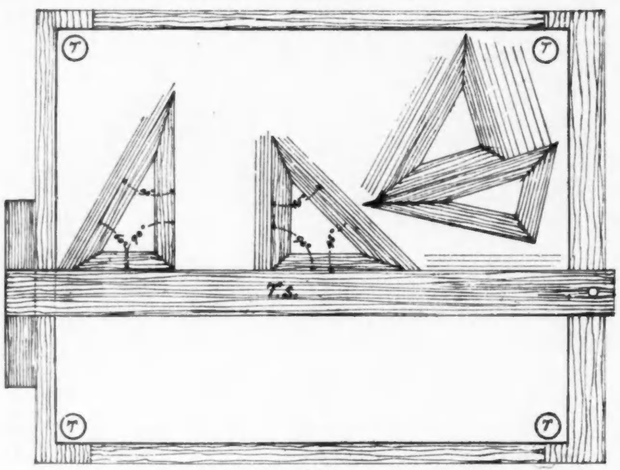
How to Make and Read Drawings

BEING THE SECOND OF A SERIES OF ARTICLES ON MAKING AND READING DRAWINGS FOR A BUILDING —BASEMENT AND GROUND PLAN SHOWN

By Wm. C. A. Stevenson

AS WAS outlined in the December issue, the intention of this series is to show how to make plans and details. Attention was called to the different lines used in drawing, and also the different manner of showing materials at Figs. 1 and 2, of that issue.

I would impress it upon the reader to study that article fully before he takes up this one. Bear in mind also that you cannot draw well without the proper instruments. At (A) is illustrated the drawing board with paper fastened onto it with thumb-tacks, T, at each corner; at T, S, is shown the T-square in position. The triangles are shown applied to the T-square to show how the different degree lines are obtained, etc. Note the two triangles applied together; they are used in this way to get lines other than those you can get by applying them to the T-square, by holding one firm and working the other to it. You will be surprised how quickly the use of the instruments will come to you when you once begin to practice. One point is to make sure that your board is perfectly square and true and your T-square is also true, for if they are not you will find it impossible to get your work true, and a great deal depends upon accuracy. This is what you must practice from the start to work to exact measurements. A good hard pencil is required, so that it can be kept sharp pointed and draw your lines fine The use of the ruling pen and other instruments will be discussed later. A convenient size for the drawing board is, say 24 inches by 30 inches; this will enable you to draw the foundation, ground floor, first floor, attic and roof plan of a moderate sized residence to one-fourth inch scale on the board at one time. As it is necessary to make sure that the arrangement of one floor does not interfere with the next, by having all the plans on the board side by side, you can pass the T-square across and get points on the same line on all plans without doing so much measuring. Such as the position of chimneys, stairs, soil pipes, etc., you must always see that one floor will work over the other in harmony. The writer has seen serious complications arise from this fault.



(A)

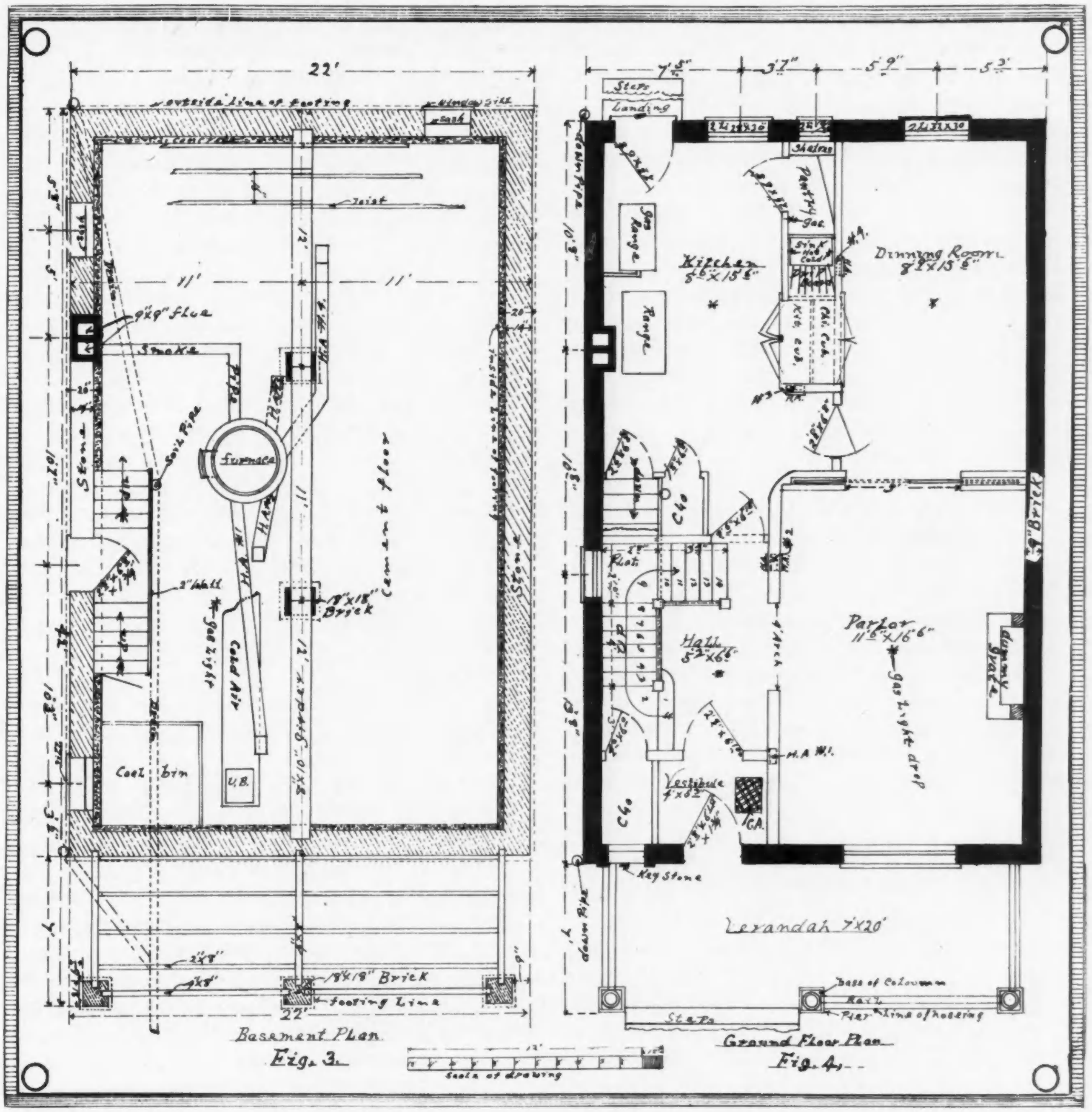
The plan we will illustrate in this series will be a solid brick house 22 feet by 35 feet, exclusive of the veranda, two stories and attic, resting upon a stone foundation. This will be a very nicely arranged residence. It is designed to be built on a narrow lot and against another building on the left side.

This month we show the foundation plan at Fig. 3, and the ground floor at Fig. 4. We will first study Fig. 3, which is a 14 inch stone wall resting upon a concrete footing 8 inches by 20 inches; you will see the concrete shown on the inside; the outside of the footing is shown by the doted line, as it is supposed to be below ground; there is an 8 inch by 10 inch girder running through the center supported upon 18 inch by 18 inch brick piers to carry the joist in the center of building. Note the dotted lines showing the footings under these piers and also how the girder is allowed to rest into the wall at each end. The position of the joist is shown at the rear end of plan.

There is a double flue chimney starting at the footings, one flue for the furnace and one for the kitchen range. We have three windows single sash—note the sash and sill line marked, these will be shown in detail later—the position they are to be put is all that can be shown on the plan. The side door is shown on this plan, because it opens onto a platform four steps and five risers below the ground floor, as will be seen by counting up from the platform at this door.

We also see that we go down five steps from this platform to the basement; this stair is closed from the cellar by a double board wall with paper between, with a door at the bottom. The position of the furnace is shown, showing the direction of the hot air flues H, A, the cold air shaft U, B, and the smoke pipe leading to the chimney; these hot air flues H, A, show where they stop in the cellar and turn up veranda, showing how they are supported by the wall and piers.

The front veranda joist is placed so that when the face board is put on and the projection of floor comes over it, it will not stand quite out to the edge of the pier. We have the broken lines in use here showing the distances from one point to another, showing that the pier is 7 feet from the wall to the outside of it



through the walls; they are numbered 1, 2, 3, 4. Follow these to the next floors and see how they come for the registers. The drain is shown by dotted lines as it is below the cellar floor. The coal bin is at the front cellar window so that it will be handy to put coal in

We show on this plan the piers for the veranda and the manner of framing the floor joist for the and 9 inches inside of the wall the other way; it is 3 feet 6 inches from the front of wall to the center of the window and so on along; this is the proper way to mark dimensions and always work from the centers when possible. There are other working features about this plan which will be explained on the section view later, which will show it in an upright position; this view is necessary to have, so that the workman can get a proper conception of the work to be done, as measurements that cannot be taken from the plan can be taken from the section view.

We will now go to the ground floor plan, Fig. 4; here we have the large veranda, 7 feet by 20 feet. As the floor is suupposed to be on here, we do not see the timbers, seeing only the piers and base of the column and the hand rail lines; the steps are not shown full, as will be seen by the zig-zag line indicating that only a portion is shown. (It is not customary to write pier, steps, rail, line of nosing, base of column, etc., on the plan; I simply do it here as a matter of instruction.)

We then have the vestibule, 4 feet by 5 feet 3 inches; note the cold air grate C, A, in the vestibule where the cold air is supplied to the furnace.

The hall is 5 feet 3 inches by 6 feet 6 inches, with the stairs on the left, and the 4 foot arch to the parlor on the right. The stair is where a great many get mixed up in planning; I have worked to plans where it was almost impossible to get the stairs into the space left for them on the plan and have head room or landing room. Let us do a little figuring to see how we come out here; we see that we have shown 15 risers and 14 steps; we are going to have a 9 foot ceiling with joist, lath and plaster and floor above, 10 inches; makes 9 times 12 equals 108 inches, plus 10 inches gives us a total rise of 118 inches divided by 15 risers, which gives us 7¾ inches rise nearly. We see that we have 4 feet or 48 inches from the first platform to the second; here we have six steps, which gives us a run of 8 inches each; from the second platform to the landing we have 3 feet 4 inches or 40 inches—here we have five steps, also 8 inches each. Now the next thing we see is that the side door platform is directly below the second platform of stairs. Have sufficient head room between these two platforms; by counting up from the main floor to the second platform we see that it is nine risers above the main floor; 9 times 7¾ inches equals 69¾ inches. Now we said that the side door platform was five risers below the main floor; by figuring these at the same rise, which will be near enough to it, gives us 5 times 7¾ inches, equal 38¾ inches, plus 69¾ inches equal 108½ inches; deducting 10 inches for floor joist and lath and plaster of the second platform leaves us 98½ inches, or 8 feet 2½ inches in the clear between these two platforms, which is plenty of room, in fact we could do with 7 feet. We also have a nice closet off the first platform of stairs which makes a splendid place to keep wearing apparel; the oval window which will appear in the front comes in this closet. Turning to the right we have the parlor, 11 feet 6 inches by 16 feet 6 inches. We have a dummy grate in here which will have a mantel and over mantel, the details of which will be shown later; we have sliding doors between the parlor and dining room; from dining room to kitchen we have a double swing door.

A special feature is the cupboards in both dining room and kitchen with the table shelf extending through from one room to the other, and also on a level with the drip board of sink in the pantry, so that dishes may be washed at the sink and passed through onto the table shelf, to be put away on either side desired, as seen by the dotted lines. The wall on the dining room side below the table shelf is solid, double doors are put on the kitchen side, which provides an excellent place for utensils under this table shelf. The dotted lines over the table shelf indicate the divisions between the two cupboards and pantry, which will be about 15 inches above the table shelf, dividing the cupboards from that up, with double doors on both sides. The working detail for these cupboards will come out later. We also see the position of the gas range, and kitchen range; then comes the door that leads from the kitchen to the side door down the steps. We also have another closet off the kitchen which can have shelves put up in it and will make an excellent place to keep groceries, etc.; we see that the soil pipe comes through this closet.

Some pointers to observe:

First. The arrow points are used to indicate the points that measurements are taken from when using the dimension lines, also to indicate the direction the stairs go up or down from the plan in question.

Second. In showing windows on the plan, if there are to be two sash, show two lines across the window; if one sash, only one line. The side that a door is to swing on should be shown as seen on the plan, Fig. 4, and it is better to mark the sizes as well, always bearing in mind to swing the door so as to take up as little room as possible when opened.

Third. Note the hot air flues. No. 1 goes up through the wall, as is shown on Fig. 4, to give registers on the next floor, as will be seen next month. No. 2 gives registers to the parlor and hall. On Fig. 4, No. 3 gives register for the kitchen and also goes up to supply the bath room, as will be seen. No. 4 gives register to the dining room and goes up to supply rooms above, as will be seen.

Fourth. Note the method of showing the lights, see gas light drop in parlor and bracket in pantry.

Fifth. Some architects do not line in or ink in the walls on the plan, but simply write brick, stone, concrete, etc., as the case may be, drawing the outlines the same as for partition walls only; this of course answers the purpose and saves considerable work, but when it is desired to do the work properly the only way is to line them or ink them in. I have left a place on Figs. 3 and 4, and printed it in this manner.

Sixth. It is better to mark all the dimensions on the plans as much as possible, as scaling is not always reliable, and if it is all figured out and marked on the plan it not only avoids mistakes but saves time for the workman.

In the next issue the first floor and attic and roof plan will be shown.

STEEL SQUARE.

ALFRED W. WOODS

How to Use the Steel Square

SHOWING WHAT DETERMINES THE FIGURES TO USE ON THE STEEL SQUARE FOR EQUAL AND UNEQUAL PITCHES—ALSO HOW THE SIDE CUTS MAY BE BOUND BY A SIMPLE DIAGRAM METHOD

IN OUR last article we illustrated the long and short valley for a dormer gable where the same and main roof were of like pitch. In this, we will take up the subject again, but using different pitches for that of the gable from that of the main roof. When the pitch is the same, the valleys will rest at right angles to each other, as shown in the

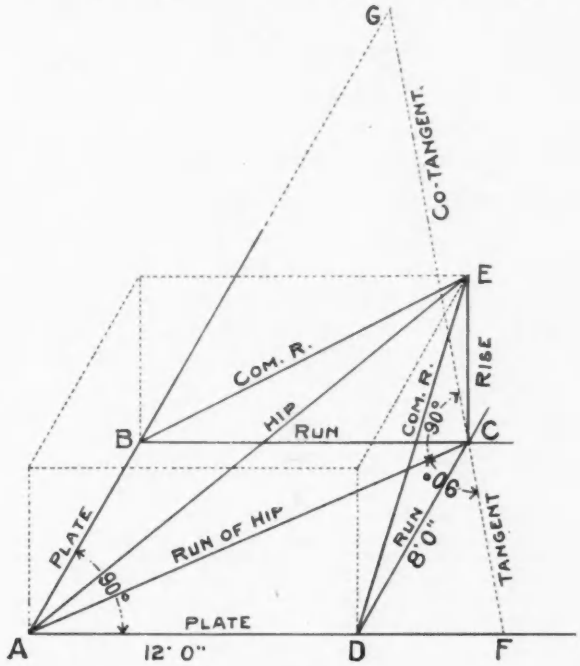


FIG. 167.

plan in Figs. 162 and 163 in our last article, but this is not the case where the pitches are different, which at once complicates the work. If it was hard to understand before, that is, where the pitches are the same for the gable and the main roof, it is doubly so now because the cuts are different for each set of rafters; the side cuts are interchanging because the parts to take on the steel square partake of both roofs or pitches. Yet the same rule applies to both equal and unequal pitches. Others may differ with us, but we claim that there is but the one fundamental rule. When this is once understood, it matters not what the shape of the building is or pitch given the roof. It may contain several pitches, but the one rule applies to them all; of course when different pitches are used it requires a different set of figures on the steel square for each pitch.

Fig. 166 is in part a reproduction of Fig. 162, but in this we have shown the lines for the one-half and one-fourth pitch in comparison with the three-eighths pitch, which is the same as the main roof. Thus it will be seen that the one-half pitch is steeper and the one-fourth lower than the main part. The upper part of the figure shows the plan of the different valleys, while the lower part shows them in the elevation. What we wish to bring out in this figure is to show what parts are taken on the steel square to obtain the side cuts of the valleys and jacks.

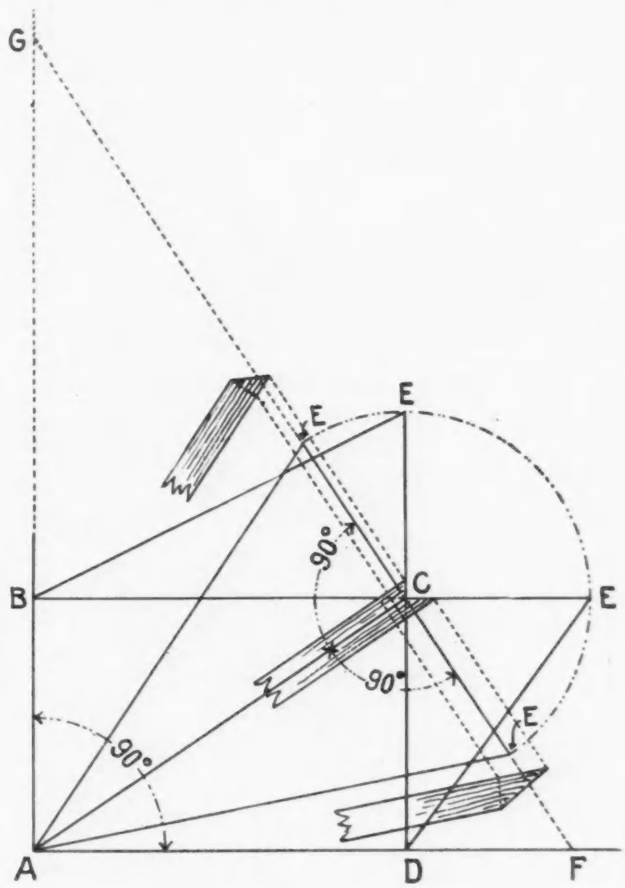
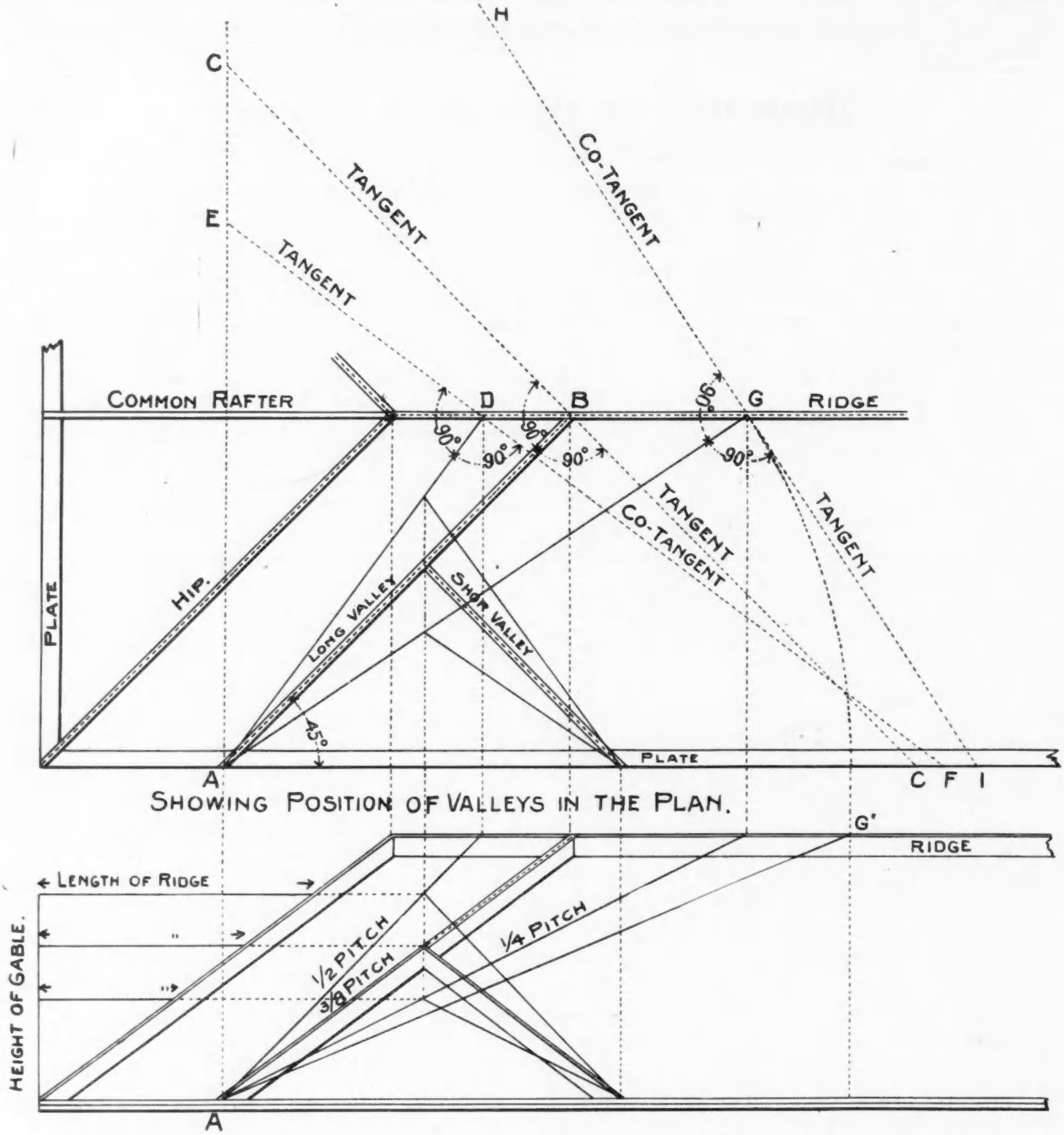


FIG. 168.

In Fig. 162 we illustrate this cut where the gable and main roof are of the same pitch—that is, for the three-eighths pitch, 17 taken on the tongue and 19¼ on the blade. The latter giving the cut. In other words, it is the same as its (the valley's) run and length taken to a scale on the square, the cut will be found on the side of the square that represents the length. This is an old, old rule, but is not a general rule —that is, it does not apply to the intersecting of different pitches. It is not the run of the hip or valley that pitch. But see the difference in the length of the tangents for the one-half and one-fourth pitch in comparison with their runs. A D represents the run or the intersecting line where the valley must rest for



ELEVATION OF VALLEYS SHOWN IN THE PLANE OF THE ROOF.

FIG. 166.

should be taken direct on the square, but it is the tangent to a circle whose radius equals the length of the run. In other words, it is a line at right angles from the run out to a continued line of the plate, as shown in the plan at Fig. 166. Here A B represents the run of the valley and B C the tangent on either side, and these lines are of equal length to the run, because the gable and the main roof are of the same the one-half pitch gable. D E represents the tangent and D F the co-tangent. That for the one-fourth pitch being less than the main roof, the tangents are reversed. Therefore, to find the side cut of the valley for the one-fourth pitch it would be its length as at A G' (see elevation of Fig. 166) and the tangent G I taken to a scale on the square and the cut will be found on the side representing the length. If the ridge runs the other way, then the co-tangent G H (which is a continuation out to the intersection of the line A C) should be used instead of the tangent G I. Proceed in like manner for any other pitch. Perhaps

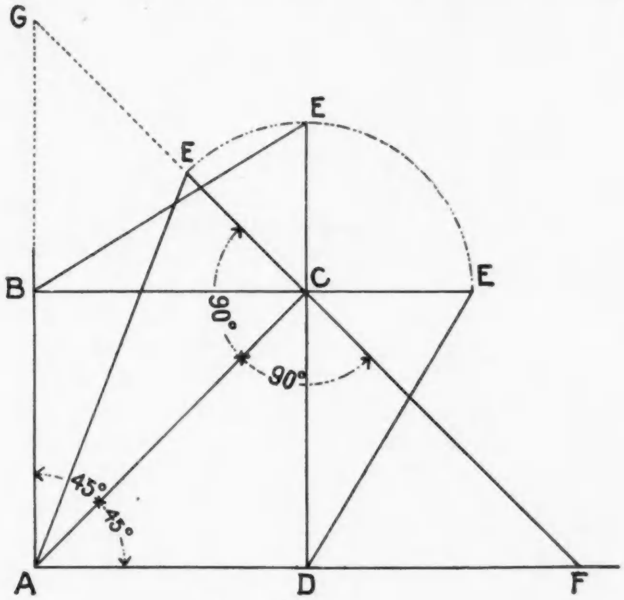


FIG. 169.

we can explain this more clearly by illustrating the angles in the cube, as shown in Fig. 167.

For convenience we will take a hip with a run on one side of 12 feet, as B C and, and 8 feet on the other, as C D and with rise equal to C E. Then A C represents the run of the hip and A E its length, B C the run of the common rafter for the long side and B E its length. On the other side, C D represents the run of the common rafter for the short side and D E its length. The tangents for the hip are represented by C F and C G. The tangents for the common rafter are represented by A D for the short side and A B for the long side. In other words, the common rafters simply swap runs. Now for the cuts. It is taken for granted that it is understood the individual run and rise of the rafters will give the seat and plumb cuts and needs no further explanation.

The side cut of the jack for the short side would be to the proportion of A D and D E taken on the square and the cut would be found along the side representing the length. For the other side it would be to the proportion of A B and B E taken on the square. The cut would be found along the side representing the length. For the side cut of the hip, it would be C G and A E on the square, provided the ridge rests in line with the short common rafter. On the other hand, if the ridge rests in line with the long common rafter, then the proportion C F and A E should be taken on the square. The cut in either case would be along the side containing A E. This illustration is given more to show the true positions of the rafters, but being drawn in perspective, their parts to scale are lost.

However, in Fig. 168 are shown these same parts to scale in a plan diagram. Like letters are used to

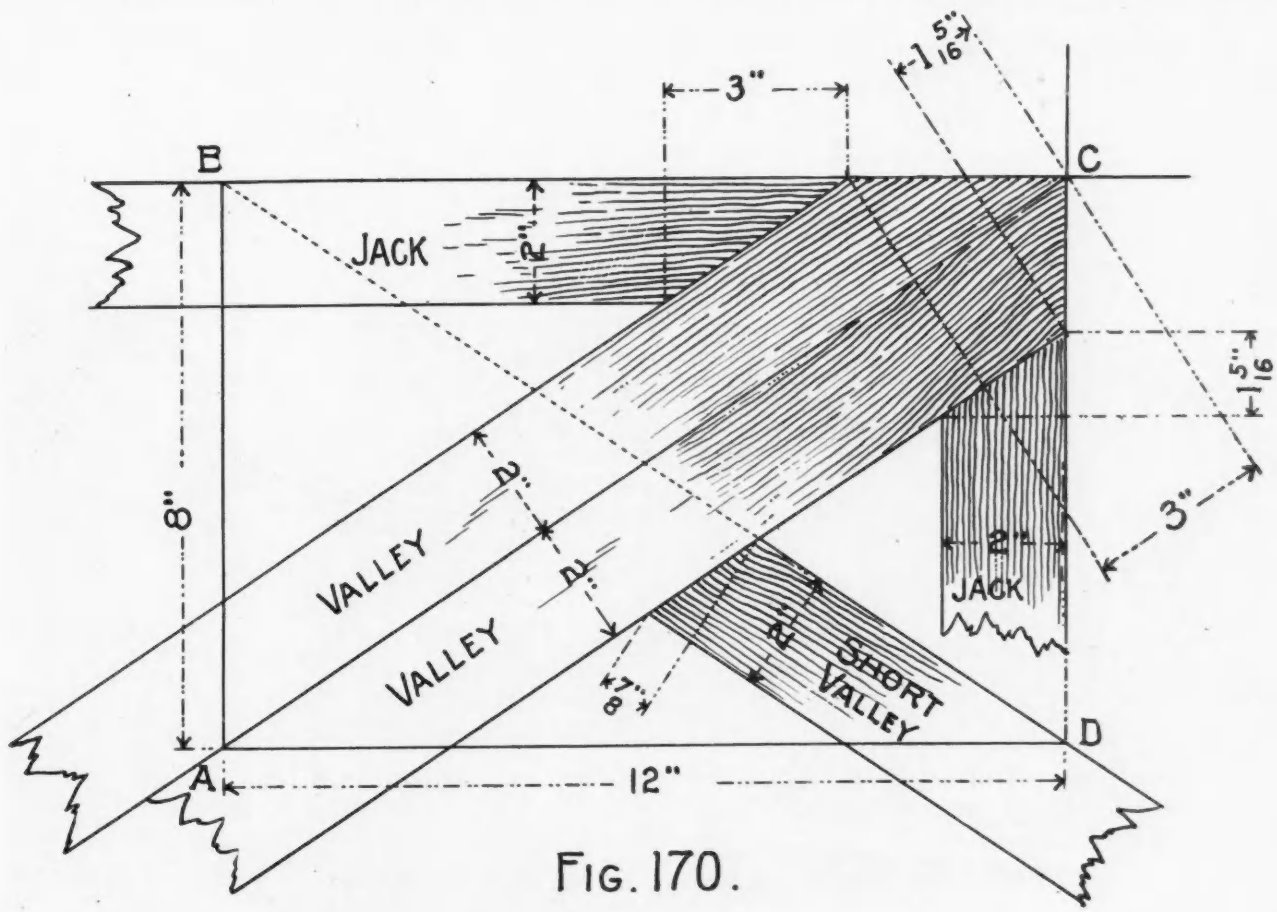


FIG. 170.

represent the same parts. Compare them and see their relation to one another. We have also shown in the latter figure by a simple diagram method what would be the actual side cuts of the hip to fit against the ridge running either way.

Fig. 169 is a diagram for an even pitch roof. Therefore the runs of the common rafter on both sides are of equal length; consequently the tangents are of equal length. Like letters are again used to represent like parts as in the two last illustrations.

In case of the one-half pitch, the rise would equal the run and the angles would all be right angle triangles of the same size, with the exception of the one representing the hip, which is bounded by A C E.

In the foregoing we have tried to make it clear what establishes the parts to take on the steel square to obtain the cuts, i. e., get back at the beginning, the foundation, as it were, upon which to base the proper proportions and we hope we have in a measure succeeded. That there are simpler ways of arriving at the same results, we do not question. If the operator does not care to enter into the cause and effect of the problem, then here is one, as shown in Fig. 170, taking the same example as shown in Fig. 168. Here is a simple diagram containing all of the side cuts that are described in the above illustration, as follows:

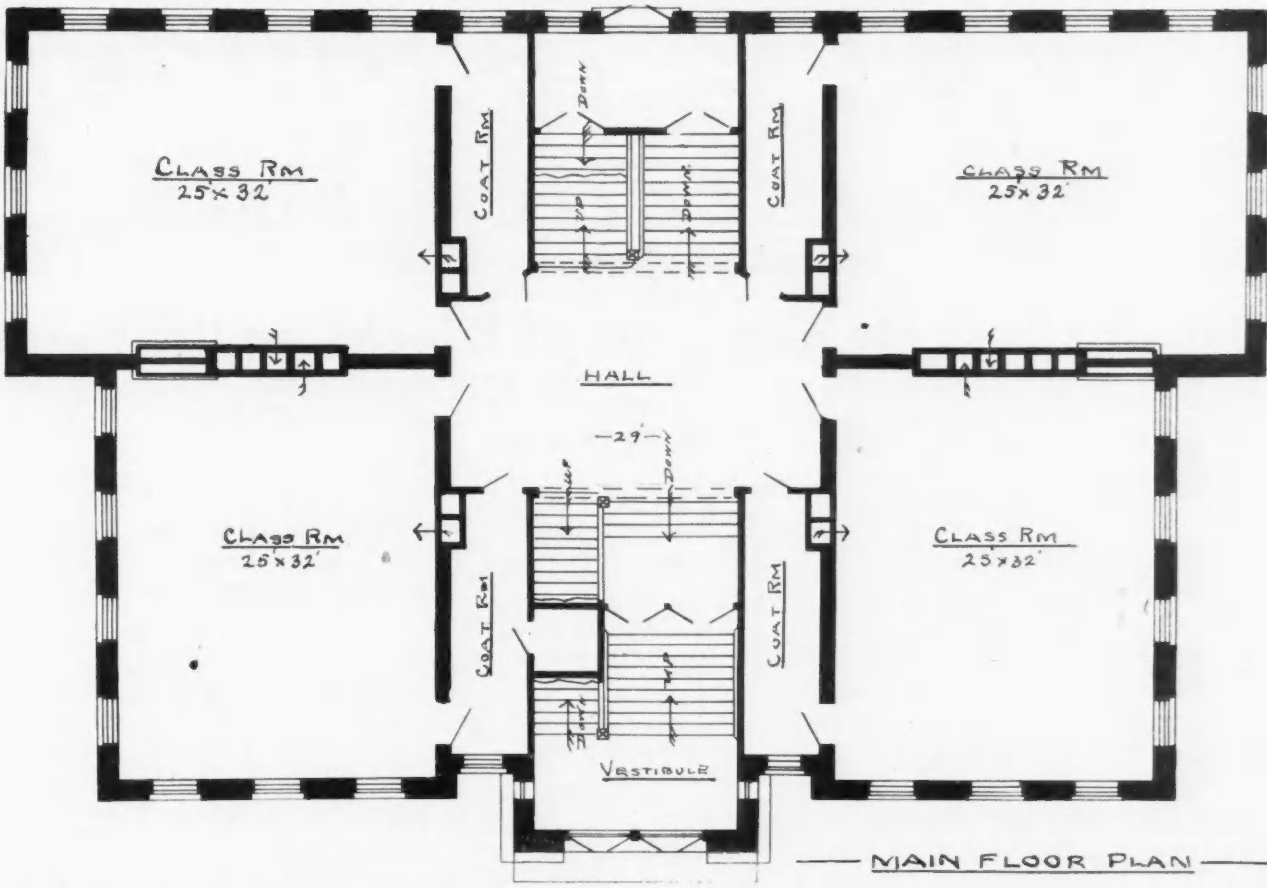
The runs of the common rafters being 12 and 8 feet, lay off a parallelogram 12 by 8 inches, and in this lay off the full thickness of the rafters, as shown. Lay off the valleys first and then the jacks. Next, square out as shown by the dotted lines, from the intersecting points. The rafters are supposed to be two inches thick and the distance between the above mentioned lines will be as shown in figures, and will be the amount to measure "square back" from the plumb cut on the long side. Carry the lines around the rafter and cut diagonally across the back from one plumb line to the other, and the side cut is obtained regardless of the pitch given the roof. The plumb cut being governed by the individual run and rise of the rafter, and by measuring back, as above described, regulates the proper points at the edge of the rafter for the angle across the back to form the side cut. If there was no pitch at all, then the actual cuts would be just as shown in the diagram. The above amounts to set back would be from the common square cut.

We trust the readers will not confound this last illustration with any so-called "A B C" system, for it belongs to the "P. D. Q." class.

An Eight-Room School House

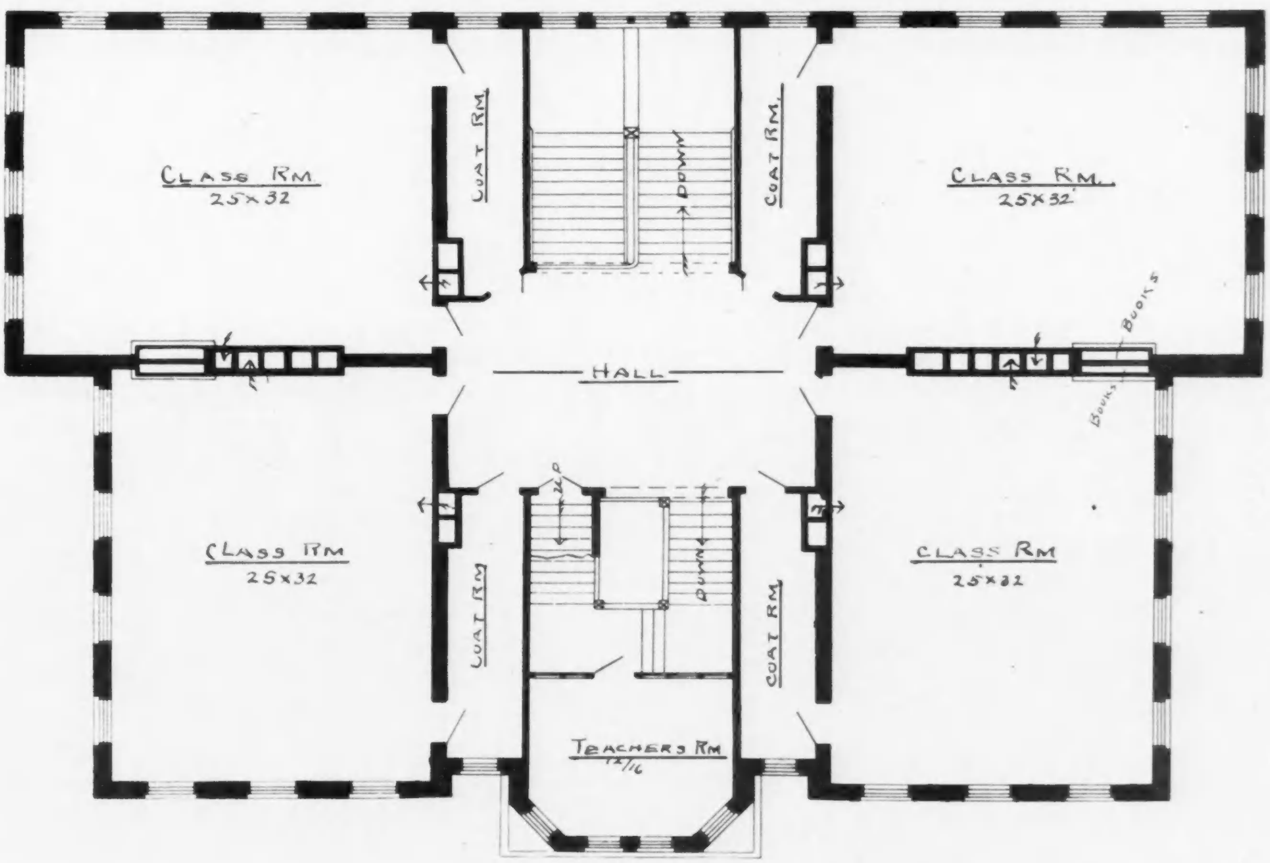
PLANS AND ELEVATIONS SHOWING CONSTRUCTION AND INTERIOR ARRANGEMENT—A NUMBER OF NEW FEATURES SHOWN

WE ARE showing herewith the perspective, plans and elevations of an eight-room school house, designed by G. W. Ashby, architect. It is of the very latest design and contains many features worthy of note. The rooms are all of uniform size, being 25 by 32 feet, there being four on each floor. Each room is equipped with a coat room and also a bookcase. There is plenty of blackboard

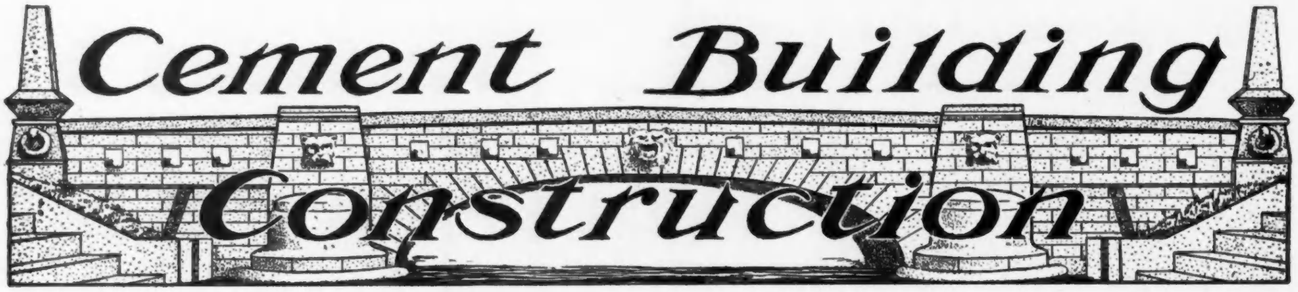


MAIN FLOOR PLAN

room and windows on two sides. The second floor also has a teachers' room, which is at the head of the stairway. A good feature is the two stairways, one on either side of the building.



2ND. FLOOR PLAN



Use of Concrete and Cement Blocks on the Farm

REASONS WHY THE FARMER IS ONE OF THE BEST CUSTOMERS OF THE CEMENT MAN—USES TO WHICH CONCRETE IS AND CAN BE PUT

By H. E. Murphy

AS A MARKET for cement products, the farm is well worth the serious consideration of any cement man who is located in an agricultural district. Your operations in any one instance may not be on a very grand scale, but if you are looking for a class of good steady customers, cultivate the farmer.

The farmer of today is as progressive as any of his city cousins. My experience among farmers has taught me that they are carrying on their business in a manner that is every bit as enlightened and up to date as the methods employed in any modern business. The farmer is quick to adopt any new device that will save labor or enable him to get a larger return on his investment.

The farm journals and agricultural schools are accomplishing great things in the improvement of farming conditions, and the average farmer is a ready—in fact, an eager student. And anyone who goes out to talk to the farmers on subjects that relate to the farm need not hesitate to use technical terms if he understands them, for he will find that farming is fast being reduced to a scientific basis, and most of the farmers are, to say the least, pretty well grounded in the rudiments of this science.

Another characteristic which makes the farmer a good customer for the cement man to cultivate is this: It is the ambition of all of them to see the farm stay in the family. The father wants to see the farm pass on to the son. And so he does not hesitate to make permanent improvements. He likes to feel that the things for which he is now struggling and sacrificing the best that is in him will be a source of profit or comfort to his children and his children's children.

The uses to which concrete may be put on the farm are as unlimited in their scope as in any other industry. You have a wide range from a dairy house to a piggery, from a residence to a root cellar. Foundations and barn floors, feeding troughs and mangers, water tanks and cisterns—you will find the farmer ready to put in all of these permanent improvements as fast as he can afford them.

And this reminds me of another point in favor of the farmer. He rarely enters into any undertaking which he cannot see his way clear to carrying out to a successful completion. He usually pays as he goes. The feeling of security as to the financial end of the transaction which this fact creates you will find a pleasant relief if you have been dealing with irresponsible and fly-by-night contractors.

The class of farms which the cement man finds most profitable are dairy farms, for concrete is the ideal building material for all buildings connected with this department. One of the first essentials to wholesome and successful dairying is cleanliness. So you can readily see that my point is well taken.

The cows in the first place must be kept as clean as possible, and it requires no argument of mine to show that a cement floor is best adapted to accomplish this. The advantages of a concrete manger are obvious, for cleanliness is just as important here as in any kitchen.

The dairy house must be kept clean and wholesome, and here again echo answers, "Concrete." And so on to the end of the chapter. In nearly every detail of permanent improvements concrete can be used to best advantage.

I have found the farmer very ready to take up the use of cement blocks in buildings of every kind. The manifold and manifest advantages of cement blocks, which we all know by heart and can repeat forward and backward, blindfolded or with one hand tied behind us, all apply to farm buildings. But there is one feature which makes them especially valuable for use on the farm. That is their fireproof qualities.

The farmer is, as a rule, more completely at the mercy of the fiery element than any other class. Marked advances have been made in all lines of agricultural methods and machinery, but the farmer of today is as helpless in case of fire as was his predecessor who cleared the land.

For this reason you will find that the fireproof qualities of cement blocks are a much stronger talking point in the country than in cities.

Another great point in your favor when you are figuring cement blocks on the farm is that the country mason as a rule takes very kindly to the blocks, and with very little trouble can be taught to do really good work with them. The country mason usually works by the day, and I have yet to find one who was not willing to do a full day's work, and I find that I can figure about 40 per cent less for mason labor here than with city masons, and can compete very comfortably with common clay brick.

These masons are accustomed to working with rough and heavy field stones and find it a pleasant relief to lay the lighter and accurately molded cement blocks. While introducing the cement blocks among the city masons I have met with no little hindrance from these wielders of the trowel, and I am sure that most of you have had the same sad experience. From the first I have met with a vastly different treatment from the country mason, and it is to him that I attribute very largely the success which we have met in introducing cement blocks among the farmers.

Approach the country mason in the right way and show him the mistakes he has made, when the owner is not too near the job, and you will find him a powerful ally, and one who is willing to learn the right way of laying your blocks to their best advantage.

The country storekeeper is another man who is worth cultivating. For here again the fire-resisting qualities as well as the superior appearance of the blocks are of special value. I have found the country storekeepers very easy to line up, for they are quick to see the advantages of cement blocks. Just get them to look over some of your good work and then tell them to compare it with the cheap galvanized iron imitations of their neighboring competitors, and you can start right in to draw up the contract.

Cheese factories and creameries are also very good fields for the cement man to browse in. For here, besides the fireproof qualities, you have the strong advantage of cleanliness in your favor.

Some of you may be inclined to think that I lay too much stress on the fireproof feature, but I assure you I am only telling you what experience has taught me to be true, and will give you an instance in support of this point.

Early last spring I was driving through the country hunting for trouble when I heard of a farmer whose house had burned down a short time before. I found him living with his family in a shed beside the ruins of the former home. I told him that I could build him a house superior in every way to the one he had lost. And further, if he did have the misfortune of another fire, he would, at least, have the walls of his house left. I left him in less than an hour with a contract in my inside pocket, and yet he had had no idea of building with cement blocks a few short minutes before. This proves, I think, the importance of dwelling on the fireproof qualities as well as what I said earlier in my talk about the readiness of the farmer to adopt a good thing when he sees it in the right light.

We have built quite a number of farm residences, country stores, cheese factories, etc., but there was nothing particularly distinctive about them to warrant my burdening you with the details of their construction. We have, however, specialized to a certain degree in one type of farm building which has attracted a small measure of not unpleasant notoriety among makers of cement blocks and block machinery. And while we make no pretensions to being pioneers, much less leaders in this branch of the industry, the chairman of the program committee has asked me to treat this subject somewhat in detail, as he thought it might prove interesting to at least some members of the association.

I refer to silos.

I want to apologize at the outset to those of my hearers—and I know there are many—who are better informed and better qualified to speak on this point than I am, for tiring you with details with which you are thoroughly familiar.

My authority for most of the statements I shall make are bulletins issued by the Agricultural Experiment Station of the University of Wisconsin. And if any of you desire to take issue with me on any of my points, I shall refer you to the source of my information. I shall quote several entire paragraphs from these bulletins and am advising you of it in advance so that no one can accuse me of plagiarism.

A silo is a building, usually circular in shape, which is designed for the storing of fodder while still green for subsequent feeding of cattle. The theory of a silo is identical with the canning of fresh fruits and vegetables for consumption by humans.

The silo is a cheap method canning grass on a large scale, to be used by domestic animals at times and in places where it could not otherwise be had.

The essential condition for making and preserving a good quality of silage is the close packing of a suitable material in a receptacle from which the air may be completely excluded.

The fodder is cut before it matures, so as to preserve its succulency, and is usually cut into small pieces so as to allow close packing.

As the silage settles there is a strong outward pressure, so that it is necessary to build the walls firm and rigid. This is the principal reason for building a silo circular instead of rectangular in shape.

While frost is not permanently harmful in silage, it is an advantage to make the walls as nearly frostproof as possible.

Silos are usually of stone, brick or frame construction. But of late there have been a great number of silos built of what are known as staves.

The stone silo, while making a very permanent and strong pile, is falling into disuse for the reason that in order to render the walls frostproof to even a small degree it is necessary to make the walls about two feet thick. Then, too, owing to the irregular shape and size of the ordinary field stone, the masonwork on this type of silo is a very expensive item.

The brick silo has not been very largely used for about the same reasons. Frame silos are not a success, because in the process of converting green fodder into silage acids and juices are liberated which cause a rapid decay of the lumber. The high prices of lumber also make this class of silos impracticable.

The class of silos which we have to compete with the hardest is what is known as the stave silo, and their sole advantage over the cement silo is their cheapness, but I regret to say that this advantage very often carries considerable weight.

A stave silo is built about on the same principle as a water tank. The staves are beveled so as to fit closely together and are fastened with hoops and bands. I will not attempt to go very deeply into the question of the defects of stave silos, for it is a point in which I feel so strongly and have talked so much that if I got thoroughly started and were not thrown out I am afraid I would take up the entire time of this meeting.

The stave silo is very much the same as a water tank, and as a silo is filled with its juicy contents about five months of the year and for the remaining seven months stands dry and empty, the effect is the same as if a wooden water-tank would be left dry and empty during the summer months.

It is clear to even the casual observer that the remedy for all these evils is a cement block silo. We glanced at this proposition casually and concluded that it would bear closer investigation, and as a result have engaged in the manufacture of cement silo blocks to quite a large extent.

We procured a set of circular plates, and by altering slightly the cores of the block machine we were using equipped ourselves with an outfit. We mold our blocks circular in form, so that when laid in the wall they make a true circle without any cutting or fitting.

Along the outer edge of the top of the block we put a one-half inch groove, in which we put a steel wire or band to assist in taking up the lateral pressure when the silage is settling.

The diameter of a silo depends, of course, on the capacity desired. It is better to increase the depth rather than the width within certain limits, for two reasons: Increased depth gives greater pressure and closer packing, resulting in a more thorough exclusion of the air. Then a silo should be so calculated that the surface will be fed off each day. For when the silo is once opened the top is, of course, exposed to the air and spoils rapidly.

However, when a very large capacity is desired, it is better to increase the diameter slightly, as a small increase in diameter gives a comparatively large increase in cubical contents, and thus reduces the ratio between the cost and the contents.

The average size silo that we build is 14 feet 6 inches inside diameter and 30 feet high. The construction of a silo of cement blocks is simple. The foundation is built very cheaply of field-stone, or preferably of concrete. Where concrete is used and the soil will permit, no form is required. We excavate a circular trench and fill it with concrete, and when the concrete sets, remove the earth from the center.

The blocks are laid in the same manner as in an ordinary building, except that steel-wire bands are put in the grooves at about every third course. A silo is usually built with a door up the entire height to allow for the removal of the silage as it is taken off the top. Across this opening we put five-eighths inch rods, which are tied with the steel wire about one inch from each side. This provides a good ladder and strengthens the wall.

We use no door frames, but make a special jamb block notched to receive a two inch plank, which is put in place as the silo is filled and held in position by the pressure of the silage. This provides a cheap but good door, and there is no frame to rot away. As the planks rot they can be replaced at very little trouble and expense.

It is well to plaster the inside of the silo with a one-half inch coat of cement plaster, finished as smooth as possible, as the acids of the silage attack the lime in the joints. This plaster also makes the walls smooth enough to allow free settling of the silage, and covers up defects in the workmanship of the masons.

The advantages which we claim for our silo are: It is a permanent building. The first cost is the limit of the outlay, and no painting or other repairs are required. It needs no adjusting of bands as is necessary to allow for the shrinkage and swelling of stave silos.

A cement block silo is not subject to decay, for so far as I have been able to ascertain the silage has no effect on it.

Our walls are dry and frostproof. They are fireproof.

And, finally, they are cheaper than brick and stone because of the ease with which they are laid. The cost of laying our blocks, using of course country masons, runs from 2½ cents to 4 cents a block, our block being 24 inches long, 8 inches high and 9 inches thick. This is for labor alone, the cost of mortar being the same as for any other form of block building.

I have tried to give you in a haphazard way facts regarding cement block silos and their advantages for the farmer, and now I want to give you some of their advantages for the cement-block maker.

In the first place they are an absolutely staple article. Your stock is always good and you have no odds and ends of shapes and styles to consign to your waste pile.

Make only one face and stick to it. We use the panel face.

The only variations you have are in the diameter of the silo. We usually try to run the one size, which is 14 feet 6 inches inside diameter. We find this is about the average. There is absolutely no cutting or fitting of blocks for odd-sized openings, and you are not made the victim of the whims of different architects.

All the figuring required is the number of regular blocks and door blocks. This being true, you can run silo blocks at any time, and after you have your market pretty well established you need not be afraid of overstocking.

We make silo blocks at this season of the year and get the farmers to haul the blocks during the winter. This has mutual advantages, as it provides work for you during the dull season and the farmer's time is worth less at this season than at any other season of the year.

And this reminds me of another point to which it might be well to call your attention. In figuring with farmers do not include their time in your estimate—of the cost to them of a silo or any other building, for you will find that the average farmer does not figure his time or the time of his teams as part of the cost. He merely figures the cost as the actual money expended.

I will give you an illustration of this: Last week I sold a silo to a farmer whose nearest railroad station is nine miles from his farm. Now in showing the cost of the silo to him I figured the cost of the blocks, freight, mason labor, mortar and roof, but made no mention of hauling about one thousand blocks a distance of nine miles.

I do not mention this fact as casting any reflections on the intelligence of the farmer. For any one who starts out with a poor idea of the intelligence of the average farmer will find before he has gone very far that he is sadly mistaken. This is simply an attitude that the farmer has gotten into from long habit and for reasons which it is not necessary for me to go into. And I merely state it as a fact which you will do well to consider.

The value of the trade in silo blocks is particularly apparent during the present period of business depression. We, like a great many others, are uncertain as to what conditions will prevail during the coming building season, and are a little afraid to make up a large stock of building blocks. We simply started to run silo blocks and are going out among the farmers. And I am glad to say we are selling enough to at least keep our molds from rusting.

The Northwestern Association

The meeting of the Northwestern Cement Products Association, which was held in conjunction with the Cement Show, was a great success. The papers which were read were interesting and instructive, and much valuable information was gained from them. The great majority of the members remained the balance of the week and derived all the benefit possible from the Cement Show.

The following officers were elected to serve for the ensuing year:

President—Martin T. Roche, St. Paul, Minn.

Vice Presidents—O. U. Miracle, Minneapolis, Minn.; Henry E. Murphy, Manitowoc, Wis.; C. A. P. Turner, Minneapolis, Minn.; O. H. Laughlin, Lisbon, N. D.; Lee Stover, Watertown, S. D.

Secretary—J. C. Van Dorn, Minneapolis, Minn.

Treasurer—J. M. Hazen.

The time and place for the next annual convention was left with the executive committee and officers of the association, with instructions that it shall be held in the northwest.

First Annual Cement Show

IT IS over, but the influence of it will never pass away. It was one of the greatest educators that Chicago has ever seen. The Cement Show was successful in every sense of the word. The visitors were surprised at the wonderful progress made by the industry, and the exhibitors were surprised at the interest shown by the people. Throughout the week the great Coliseum was crowded with interested people from every walk in life, anxious to learn more and see more of this wonderful material of which they had heard so much. In this they were not disappointed, for every conceivable form in which cement can be used was on exhibition, and with great patience and tireless energy, the exhibitors demonstrated and explained the seemingly wonderful material as it was cast into ever-varying forms.

That the visitors were not idle curiosity seekers is shown by the sales made by the exhibitors, as one of them remarked that they had sold more in twenty-four hours than they had ever done in an entire week. Great credit is due to the officers and manager of the show, who devoted their time and energy to make it such a success.

Officers: Edward M. Hagar, president; Norman D. Fraser, vice president; C. H. Wood, secretary-treasurer. Executive committee: B. F. Affleck, William Dickinson, J. U. C. McDaniel. Directors: A. St. John Newberry, D. McCool, E. W. Shirk. L. L. Fest, manager.

The papers which were read will be published from month to month, as they are of great value to the entire building world. They were practical above all things, and were filled with suggestions and experiences which will be of benefit to everyone.

Convention Notes

Sid L. Wiltse, representing the Cowham system of Portland cement mills and the Cement Machinery Company, almost created a panic by smoking loaded cigars. It's hard to account for tastes.

One interested party wanted to know how to make cement "set," when some wag suggested they put an egg under it. He is still at large, but we expect his capture any hour.

The P. B. Miles Company, Inc., Jackson, Mich., have established a Chicago agency. The Chicago Concrete Machinery Company, 20 Canal street, Chicago, will handle their products.

H. B. Morgan, of the waterproofing fame, was one of the busiest men at the convention. Ye editor learned much of ye famed material by listening to ye learned discussions on "Morganite" and "Coatine."

An eye opener at the Chicago convention was the Miracle booth. This firm demonstrated fully that they were not only keeping up with, but advancing a little ahead of the times, with concrete products and equipment. They show great improvement in their brick and block machines and also show samples of the fancy molds formerly manufactured by the Cement Working Machinery Company, of Detroit, which they recently purchased, and to which they have largely added.

Perhaps the most interesting and newest departure in the concrete line, which they were explaining, and which they assured us will be on exhibit at the Buffalo convention, were the tombstone molds. They have all kinds and all sizes for their manufacture, and the products of these molds are certainly pleasing to the eye, and will surely find a ready market anywhere.

The sewer pipe molds, while not a new thing, attracted their share of attention, and the remark was often heard from bystanders that this was a line that they would certainly add to their plant.

In talking with the various representatives of this enterprising firm during the convention, they all expressed their pleasure at the interest taken in their exhibit, and as invariably one of them had the order book and pencil in hand, and from the smiles that lit up their faces, the writer took it that they were booking very nice orders in their spare moments. This was afterwards verified by one member of the firm, who said they had taken more orders at the Chicago convention than at any previous gathering.

They extend a cordial invitation to all who contemplate visiting the Buffalo show, to send their mail in their care, leave their grips at the Miracle booth and, in fact, make the Miracle booth headquarters during their stay in Buffalo.

Mr. Knickerbocker, of the Knickerbocker Company, Jackson, Mich., paid us a call at our booth, but could stay but a few minutes, as he was in great demand explaining the good points about his mixer.

The Multiplex Concrete Machine Company, Toledo, O., presented a very fine appearance at the show. All connected with it were dressed in white.

Mr. Weatherwax, of the P. B. Miles Manufacturing Company, called on us and told us of the exhibit they were going to have at Buffalo—it will be worth seeing.

The Ashland Steel Range & Manufacturing Company, Ashland, O., were kept busy demonstrating the workings of the U. S. Standard cement block machine. It was one of the finest appearing machines on exhibition.

The Buffalo Convention

The fourth annual convention of the National Association of Cement Users, at Buffalo, January 20-25, 1908, promises to be the largest in its history, and we are publishing herewith a partial list of the exhibitors.

List of Exhibitors

American Carpenter and Builder, 185 Jackson boulevard, Chicago.

American Cement Company, 604 Penn building, Philadelphia.

American Steel & Wire Company, Chicago.

American System of Reinforcing, 189 LaSalle street, Chicago.

Anchor Concrete Stone Company, Rock Rapids, Ia.

Armstrong, H. H., 365 Jay street, Rochester, N. Y.

Ashland Steel Range & Manufacturing Company, The, Ashland, O.

Atlas Portland Cement Company, The, 30 Broad street, New York City.

Ballou Manufacturing Company, Belding, Mich.

Besser Manufacturing Company, The, Alpena, Mich.

Blanc Stainless Cement Company, 11 East 59th street, New York City.

Blaw Collapsible Steel Centering Company, Westinghouse building, Pittsburg.

California Artificial Stone Supply Company (James C. Beatty, pres.), 510 Board of Trade building, Toronto.

Cement Age, Penn building, Philadelphia.

Cement Machinery Company, Cooley block, Jackson, Mich.

Cement World, 185 Jackson boulevard, Chicago.

Century Cement Machine Company, 18 West Main street, Rochester, N. Y.

Chase Foundry & Manufacturing Company, The, Parsons avenue and Hocking Valley R. R., Columbus, O.

Chicago Concrete Machinery Company, 20 South Canal street, Chicago.

Clover Leaf Machine Company, South Bend, Ind.

Concrete Age, The, Box 846, Atlanta, Ga.

Concrete Publishing Company, 35 Newberry building, Detroit, Mich.

D. & A. Post Mould Company, The, Three Rivers, Mich.

Dealers' Building Material Record, 185 Jackson boulevard, Chicago.

Dietrichs, Chas., Kaufman avenue, Little Ferry, N. J.
Dykema Company, 14 Huron street, Grand Rapids, Mich.
Edmonson Concrete Machinery Company, William and Indiana streets, South Bend, Ind.
Eureka Machine Company, Lansing, Mich.
Garden City Sand Company, The, Fifth avenue and Madison street, Chicago.
Hartwick Machinery Company, Mechanic street, Jackson, Mich.
Horn Company, A. C., 8 Burling Slip, New York City.
Hydraulic Concrete Machine Company, 16 Builders' Exchange, Buffalo, N. Y.
Ideal Concrete Machinery Company, 106 Mill street, South Bend, Ind.
Simplex Manufacturing Company, 124 West Cortland street, Jackson, Mich.
Simpson Cement Mold Company, The, 496 North High street, Columbus, O.
Snell Manufacturing Company, R. Z., 1801 Ernsperger street, South Bend, Ind.
Standard Machine Company, The, Kent, O.
Star Cement Block Machine Company, Dallas City, Ill.
Svenson, John, 602 Bessemer building, Pittsburg, Pa.
Thompson Cement Stone Company, Box 358, Gowanda, N. Y.
Tock Brothers, New York City.
Universal Portland Cement Company, 524 Frick building, Pittsburg.

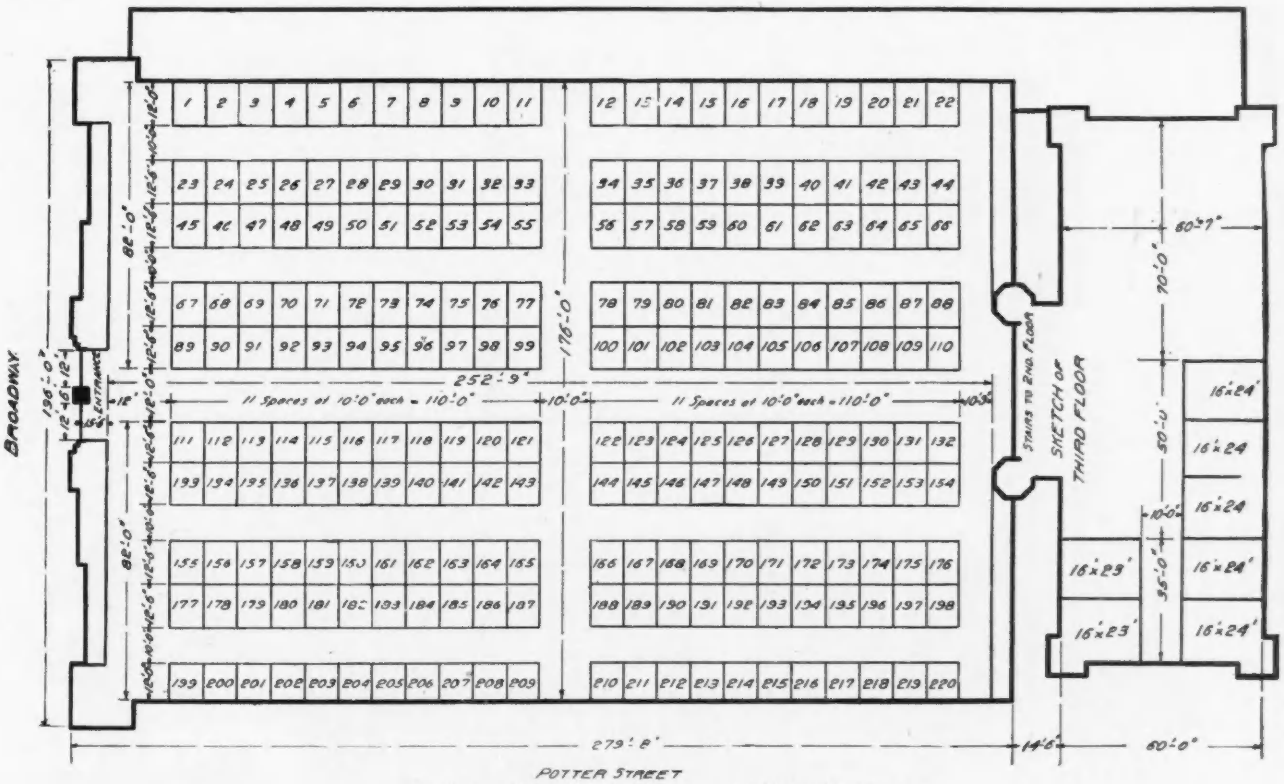


Diagram of the Exhibit Space at Buffalo, N. Y.

International Fence & Fireproofing Company, Buttles avenue, Columbus, O.
Knickerbocker Company, The, Jackson, Mich.
Koehring Machine Company, 502 Germania building, Milwaukee, Wis.
Kramer Automatic Tamper Company, 107 Franklin street, Peoria, Ill.
Lumen Bearing Company, Sycamore street and N. Y. C. tracks, Buffalo, N. Y.
McTarnaghan, S. G., Fillmore, N. Y.
Miles Manufacturing Company, The P. B., Jackson, Mich.
Miracle Pressed Stone Company, Nicollet Island, Minneapolis, Minn.
Multiplex Concrete Block Machine Company, The, Toledo, O.
Nicolai, S. F., 39 Sycamore street, Detroit, Mich.
New Way Motor Company, The, Lansing, Mich.
Northwestern Expanded Metal Company, 930 Old Colony building, Chicago.
Peerless Brick Machine Company, 13 6th street, North, Minneapolis, Minn.
Perfection Block Machine Company, The, Kasota building, Minneapolis, Minn.
Sandusky Portland Cement Company, Sandusky, O.
Wadsworth, Howland & Co., 84 Washington street, Boston, Mass.
Wettlaufer Brothers, 49 Ellicott street, Buffalo, N. Y.
Whitehall Portland Cement Company, The, 1722 Land Title building, Philadelphia.
Zimmerman, Chas. E., 204 Burnet avenue, Syracuse, N. Y.

Abstract Rather than Concrete

"I don't want to do any advertising," growls the merchant when the solicitor approaches him.

"But I am sure you will soon see the advantage of having your name and firm mentioned in our paper," argues the solicitor. "Let me show you our last circulation statement, and—"

"Now, look here, young man! Can't you take no for an answer? First thing you know, I'll lose my temper, and—"

"If you do," suggested the courteous solicitor, "try our lost and found column. You're sure to get quick results."—*Judge.*

RESIDENCES

Four Attractive Residences

PLANS AND ELEVATIONS SHOWING THE ARRANGEMENT OF ROOMS—MATERIAL USED IN THE CONSTRUCTION

IT IS seldom that an architect finds a client who makes known his wants and leaves the architect free to follow his own inclinations as to style and plan, and finally approves the scheme with hearty accord as exactly what he wanted, as in this case. The average client of today will not question the result obtained by his tailor, physician or lawyer—he may show a slight quiver at the size of the bill, but is complacent compared with the manner he receives the architect's preliminary sketches, bids from contractors, and finally the bill for the architect's well-earned commission. We all pretend to know something about everything in the present day; after receiving a dash of the sciences and arts, mixed in with out college education, and a little sight seeing to finish off with, we have nerve enough to criticise anything, even though it be the work of a genius.

Fortunately, the above design was worked out by the architect for people whose taste he knew to be in accord with his own, and capable of realizing the pure simple style of good architecture. Therefore, features will be found that the usual client spending the same amount of money would probably require the architect to omit, substituting a few of his own ideas entirely foreign to style and scheme.

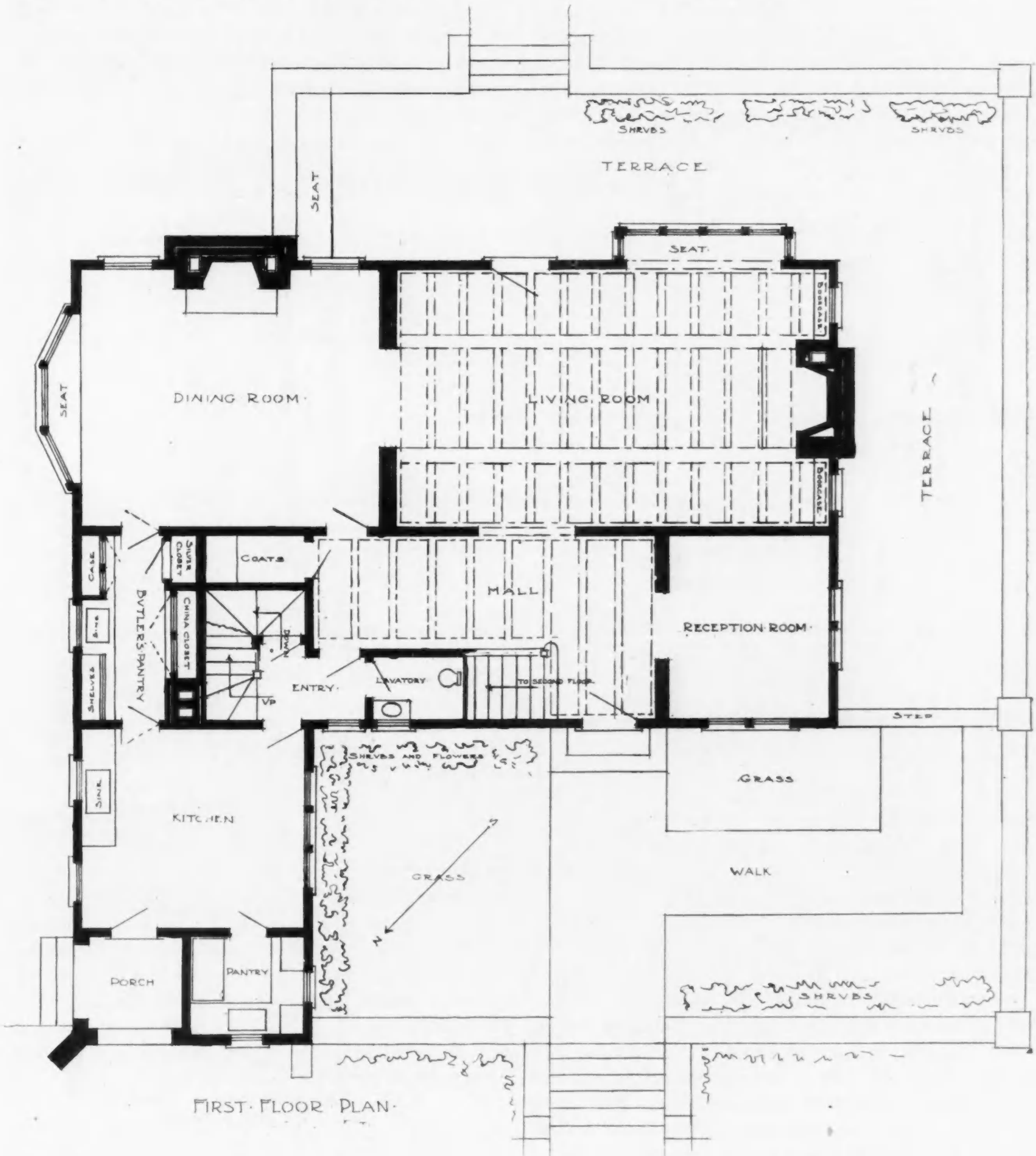
The first floor was given rooms of a comfortable size, opening up well into each other. The reception room admits formal guests without at least interfering with the privacy of the main household. The large fireplaces spread a cheering warmth from their fires in the fall or winter, and add a mellowness to the Flemish brown woodwork and heavy ceiling beams that is only acquired in rooms finished with somber and rich colors and sturdy oak furniture.

The service portion, located in an ell, confines the odors of cooking and clattering of dishes, and enables the servants to perform their duties easier and spend their hours of leisure more pleasantly than when relegated to the attic.

The second floor chambers of the main portion are conveniently arranged—the owner's suite comprising nursery, chamber, boudoir or den—with an extra chamber for guests. The attic affords an extra chamber, bath and billard room.

The finish of the first floor in the main portion is cypress trim and oak floors; the service portion trim and floors of North Carolina pine. The second floor and attic are finished in whitewood, painted or stained, with North Carolina pine floors throughout.

The exterior is plastered on wire lath, with cypress finish, and shingled—the trim painted a dark brown, with the sash in white and the roof a light red. The cellar contains laundry, hot water heating plant, vegetable closet and coal bins.



FIRST FLOOR PLAN

The terrace is one of the most desirable features of the whole house, and is made by retaining the earth as excavated within a rough masonry wall over which the vines can climb, softening its lines. Shrubs and flowers planted within the wall add to it the effect of a formal garden. This house would cost at the present time about $13,000, depending upon the locality in which it was being built.

A Convenient Eight-Room House

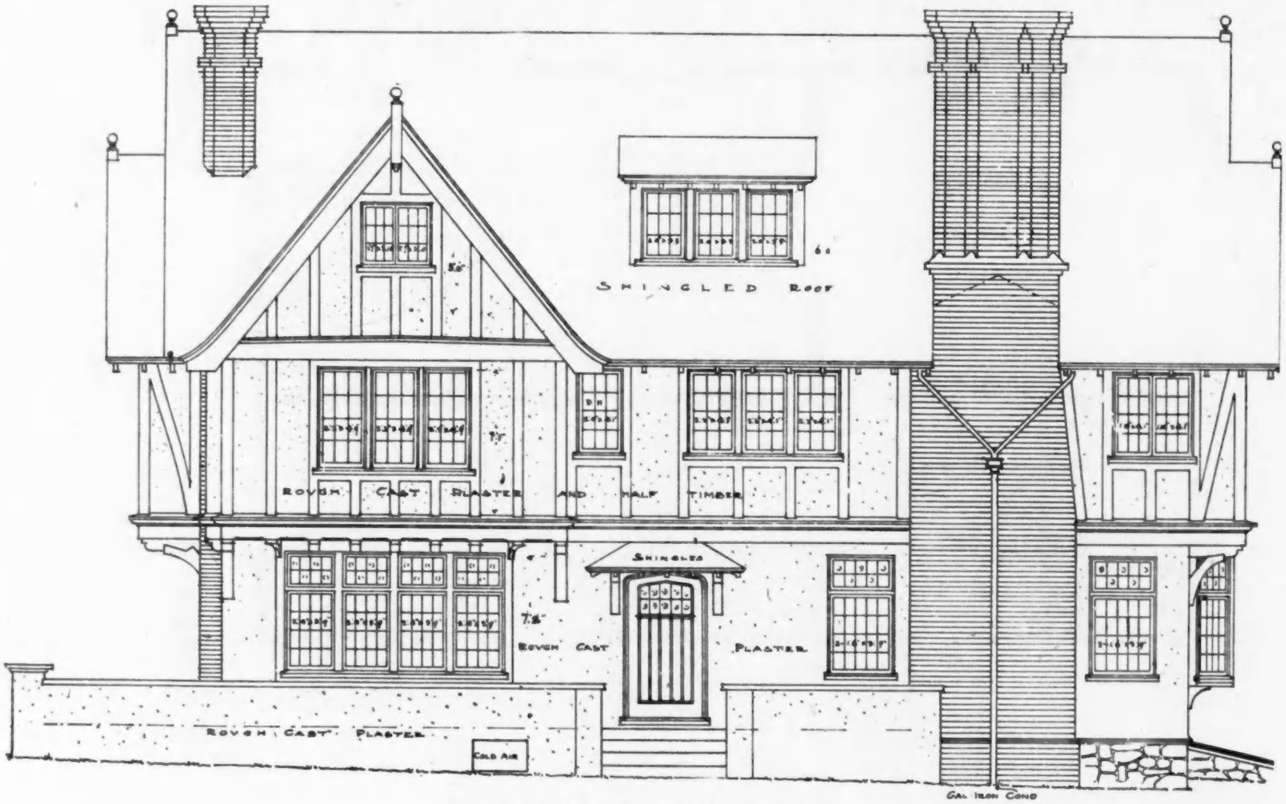
The perspective shown on page 466 with accompanying floor plans and interior details, is from plans prepared by Woods & Cordner, for a house recently built at Lincoln, Neb. This is a very convenient and well arranged house. While it is not a large house, it has good sized rooms. A spacious porch spans the front with central steps opposite the entrance. The first floor contains parlor, library, dining room and kitchen, besides pantry, closets, vestibule and a wide central hallway. A columned archway, as shown in detail, separates the hall from the parlor. A large brick fireplace in the parlor lends to the cheerfulness of the surroundings. The stairs, which are more clearly shown in detail drawings, start from the rear part of the hall and land in the central part of the second floor. On this floor are three good sleeping rooms and all containing large closets, while one has in connection with same a large dressing room. A large bath room is also on this floor, which also has in connection with same a large closet for linens, etc.

The basement extends under the whole house and contains laundry, vegetable cellar, furnace and fuel rooms. The entrance to same is had by a door at grade, which is shown on the first floor plan. This door also serves as a back entrance to the main floor.

The two pages of details show some of the interior finish in the way of stairs, cupboards and flour bins, casings, picture mould, plate rack, etc.

Cement Plaster House

The residence shown on page 468 is that of the proposed home for G. W. Ashby, to be constructed at Thirty-fourth and Oak Park avenue, in Berwyn, the Chicago suburb famous for its beautiful homes. The design embodies the latest application of architectural creative skill and is notable for the sharp individuality shown in treatment. All moldings are eliminated and every angle in the building is square and sharp. The residence is to be constructed of frame with a rough cast cement plaster exterior. The plan provides a distinctive feature on the first floor in the large paneled living room that will be 15 by 26 feet in size with a large alcove and fireplace, on each side of which are seats. The other rooms on this floor are a den, the reception hall, dining room, kitchen and pantry. At each end of the building is a loggia. The second floor will contain four chambers, ample closet room, the bath and dressing rooms and over the loggia at each end of the building will be balconies opening off the chambers. In the attic will be two storage rooms and a large floor space, 20 by 28 feet, that will be either a gymnasium or a play room. Two store rooms are also provided in the attic.



Elevation of Rough Cast Plaster House

Concrete Block House

On page 469 we are showing the perspective, elevations and floor plans of an artistic concrete block house. Owing to the great number of inquiries received, desiring plans of a house of this kind, we have decided to devote more space to designs of this kind in the future. This house is a good type of what can be done with concrete blocks. It contains all the artistic angles that any frame house has, besides having greater lasting qualities. With the greater knowledge obtained about cement and concrete, the blocks can be made almost any desired shade, thus imitating stone of every description. The plans and elevations show the arrangement and construction, making it unnecessary to enter into a full description of the same.

American Goods in China

Vice-Consul Ernest Vollmer, of Tsingtau, states that there is a variety of American goods, most of which are to be found on the market in China, which should receive more careful attention by the home manufacturers in order to increase our foreign trade. Some of the articles are mentioned by Mr. Vollmer, as follows:

With the general rise in the price of building material the east naturally does not remain unaffected, and everything used in construction work is constantly getting higher. German manufacturers of roofing material are already advertising and securing agents here, and a few warehouses and other buildings have been covered with their material. If manufacturers of American roofing materials are figuring on extending their trade to the Orient, they will find no better time than the present to go after the business.

Sales of American lumber are undoubtedly greatly declining. When Tsingtau started a few years ago, many Pacific coast cargoes came here, but there have been no ships in for a long while, and the stock on hand is large. The cause is probably the high price, for while the better quality of our lumber is well recognized, most of the building at present is being done by natives, and they prefer the Japanese wood, mainly because it is cheaper.

Second Floor Plan. Rough Cast Plaster Houes

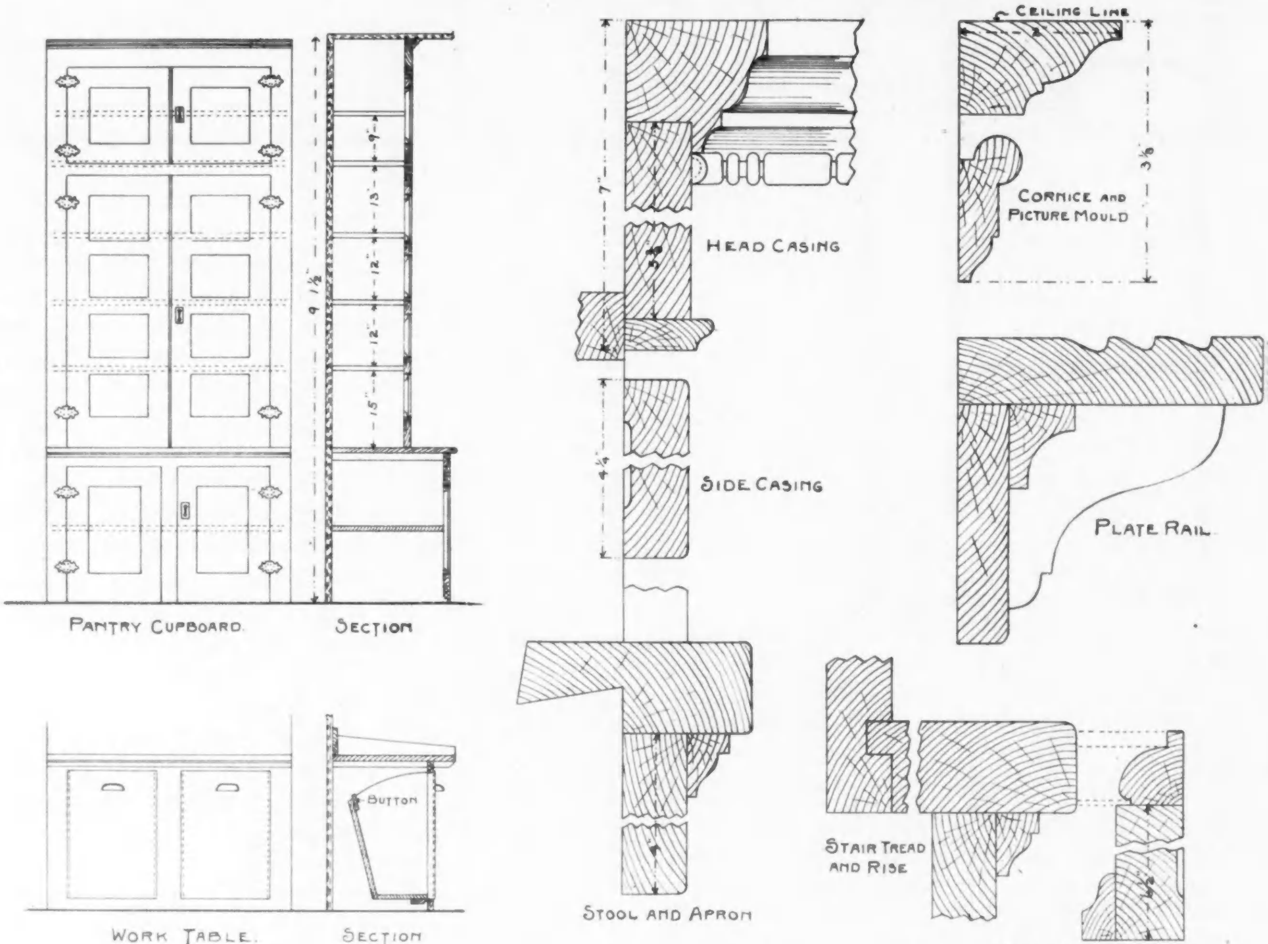
Holding Heat with Sawdust

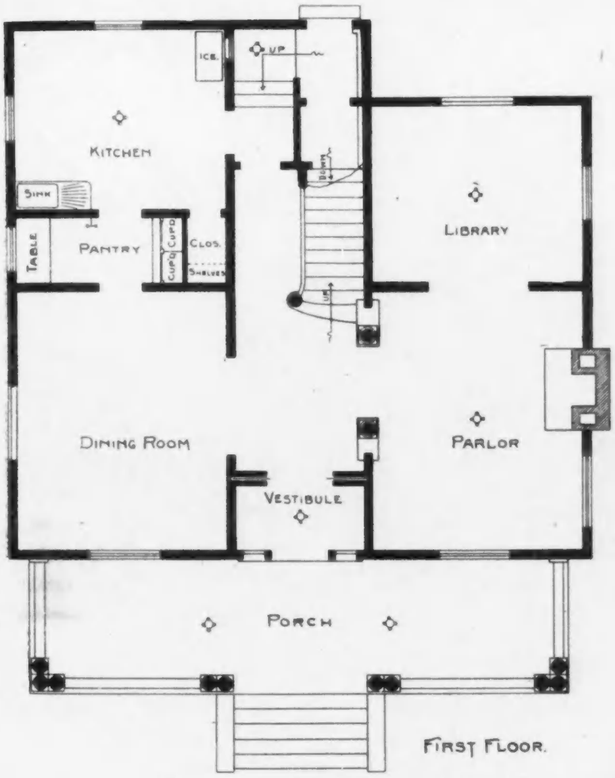
A. K. Campbell, a builder of Indianapolis, believes that if the American people could be brought to see the value of sawdust as a packing for walls and ceilings they would be able to keep their houses warmer in winter and cooler in summer.

Mr. Campbell's idea is that the sawdust shall be used as an insulator, filled into the crevices of the walls and the ceilings while the buidling operation is in progress.

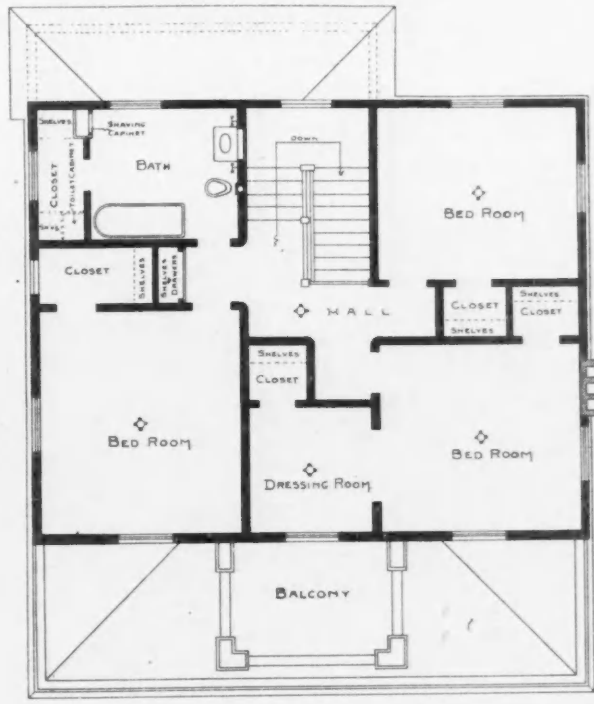
This, he argues, would prevent the heat from escaping during the winter, and would, of course, retard the entrance of heat in the summer.

Recognizing that sawdust does not meet with popular favor because it is generally believed to be damp, combustible spontaneously and likely to decay, to emit

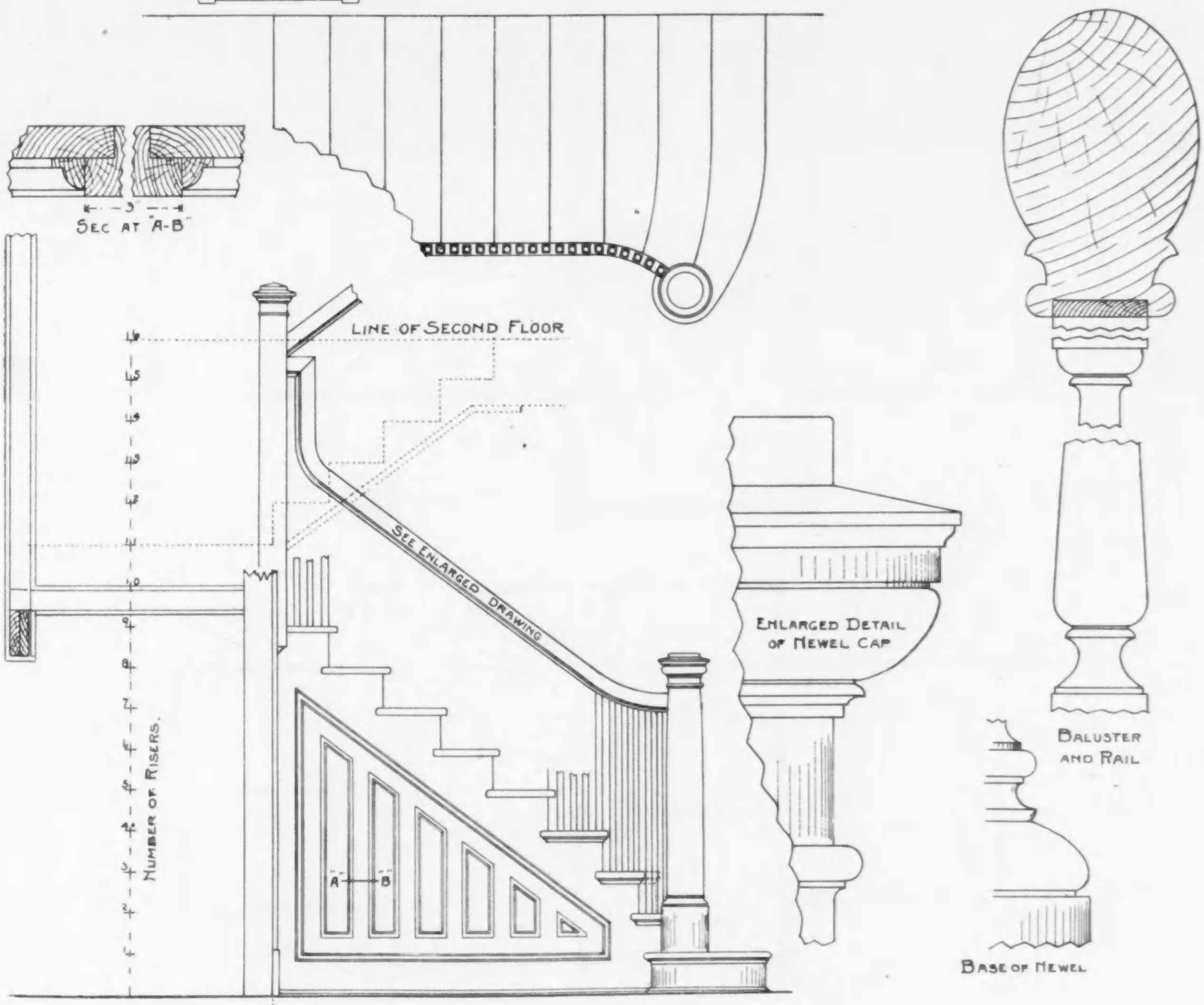

PANTRY CUPBOARD
SECTION
WORK TABLE.
BUTTON
SECTION
HEAD CASING
SIDE CASING
STOOL AND APRON
CEILING LINE
CORNICE AND PICTURE MOULD
PLATE RAIL
STAIR TREAD AND RISE
BASE SHOWING HOW MOULD STRIKES NOSE OF FIRST STAIR TREAD "SEE STAIR DETAIL"



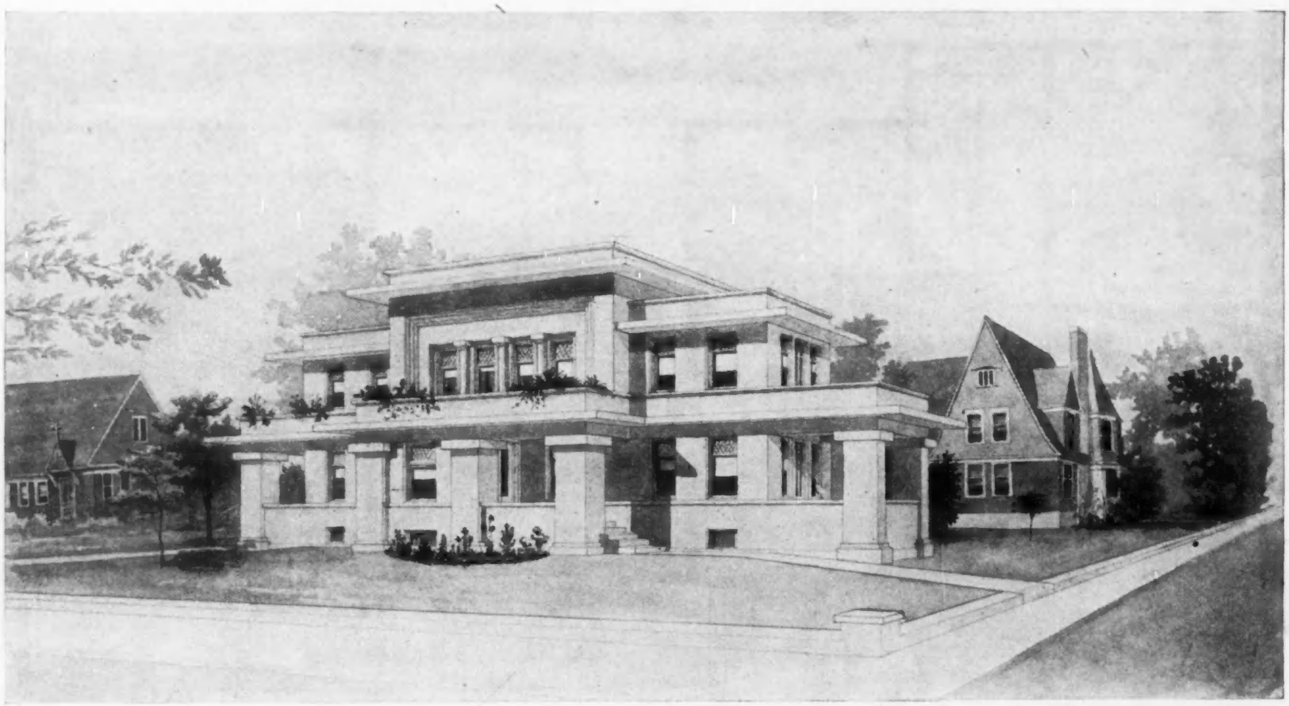
FIRST FLOOR.



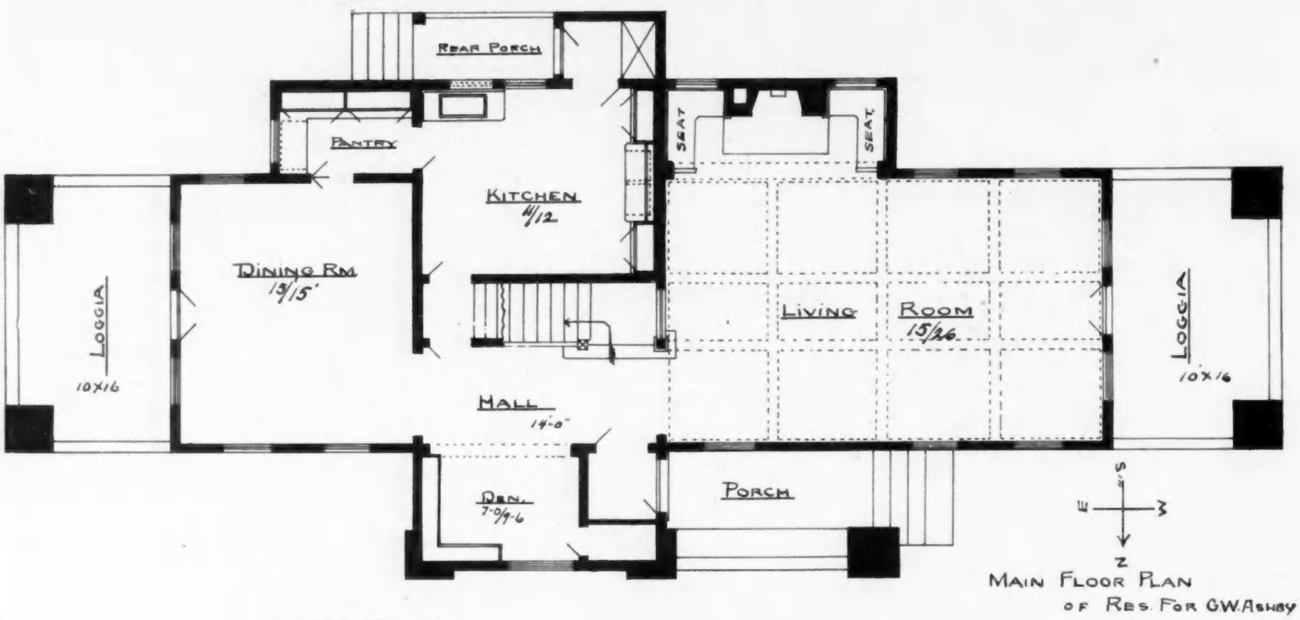
SECOND FLOOR

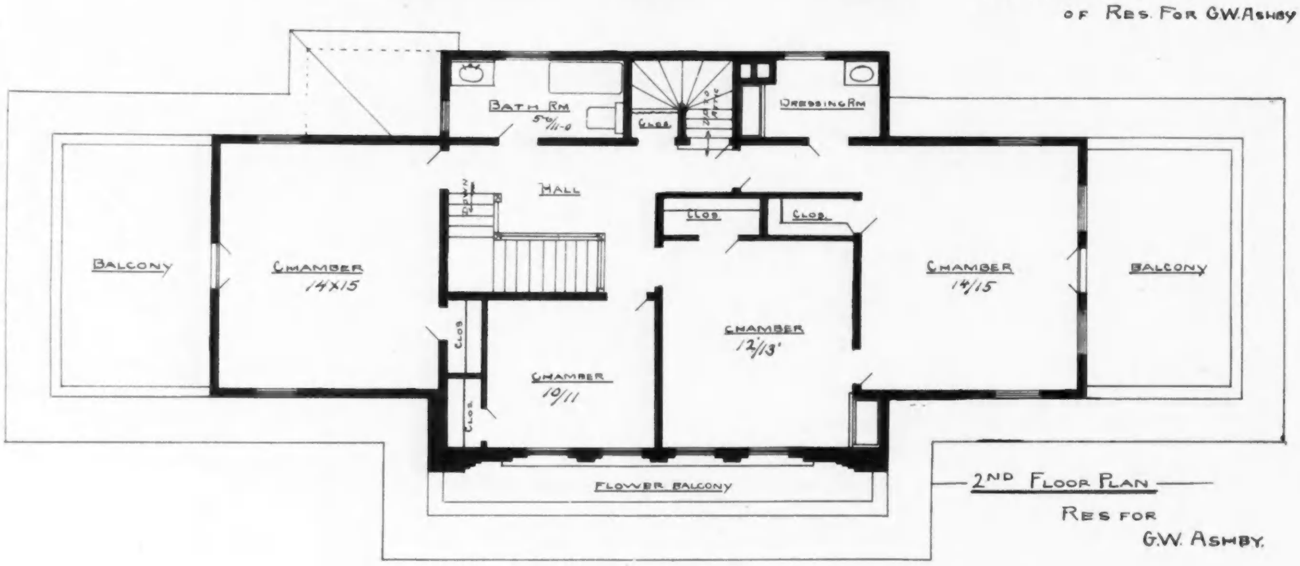


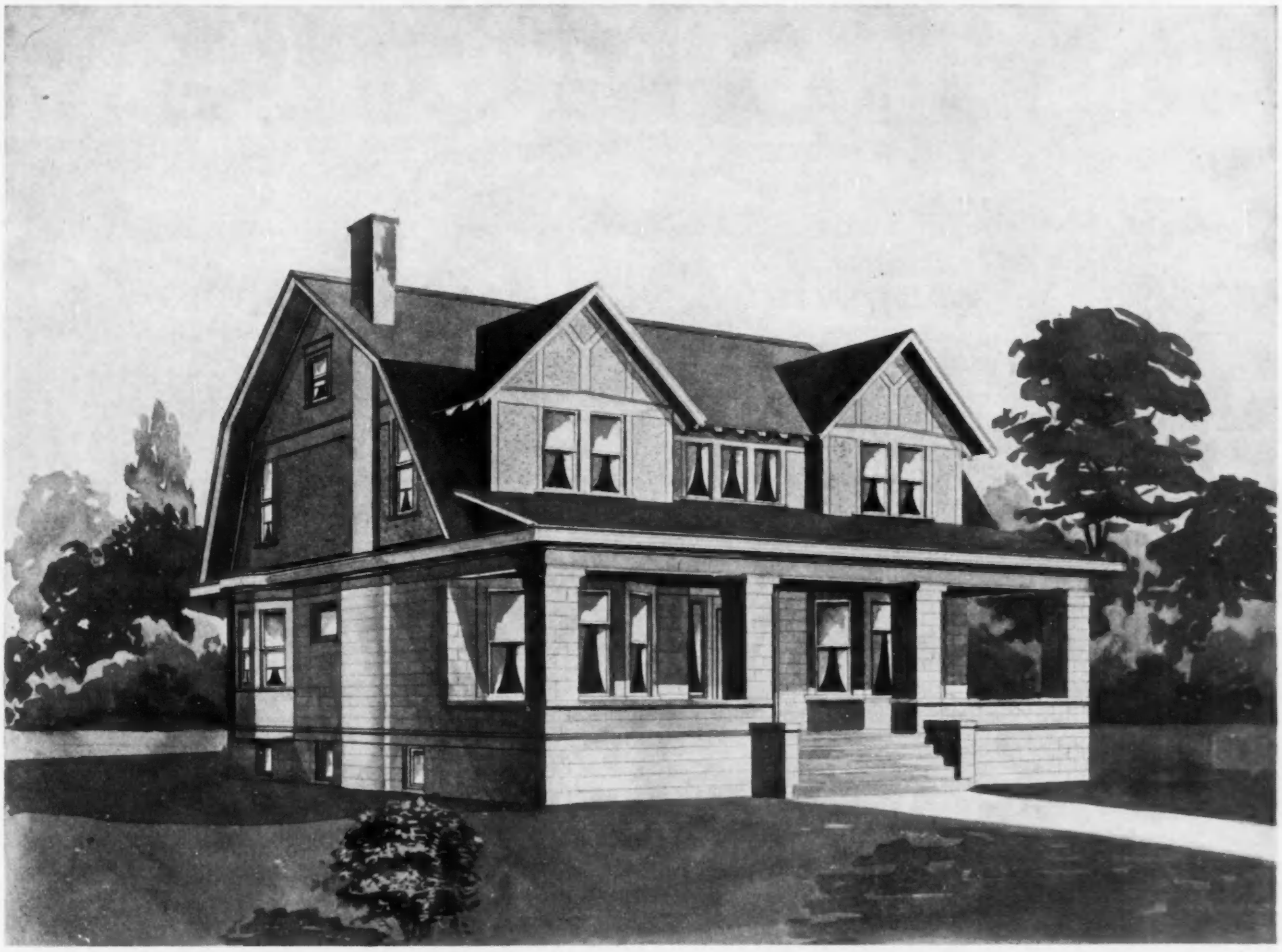
DETAIL OF STAIR



Proposed Residence for G. W. Ashby at Berwyn, Ill.



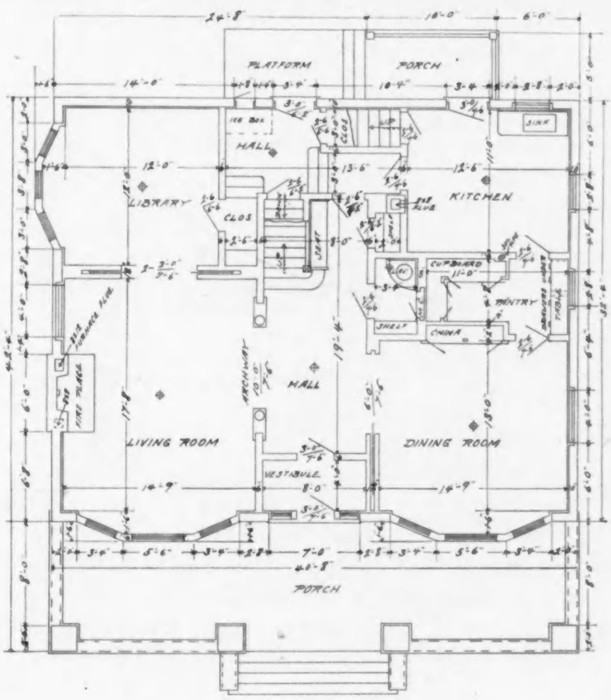


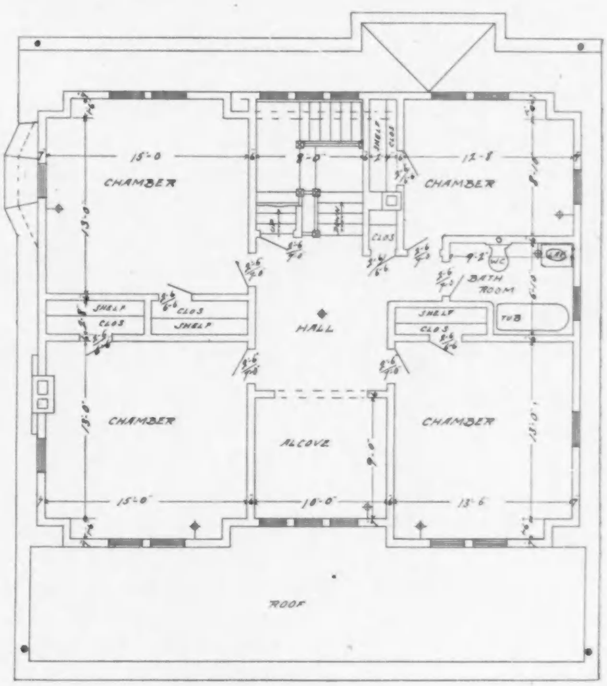


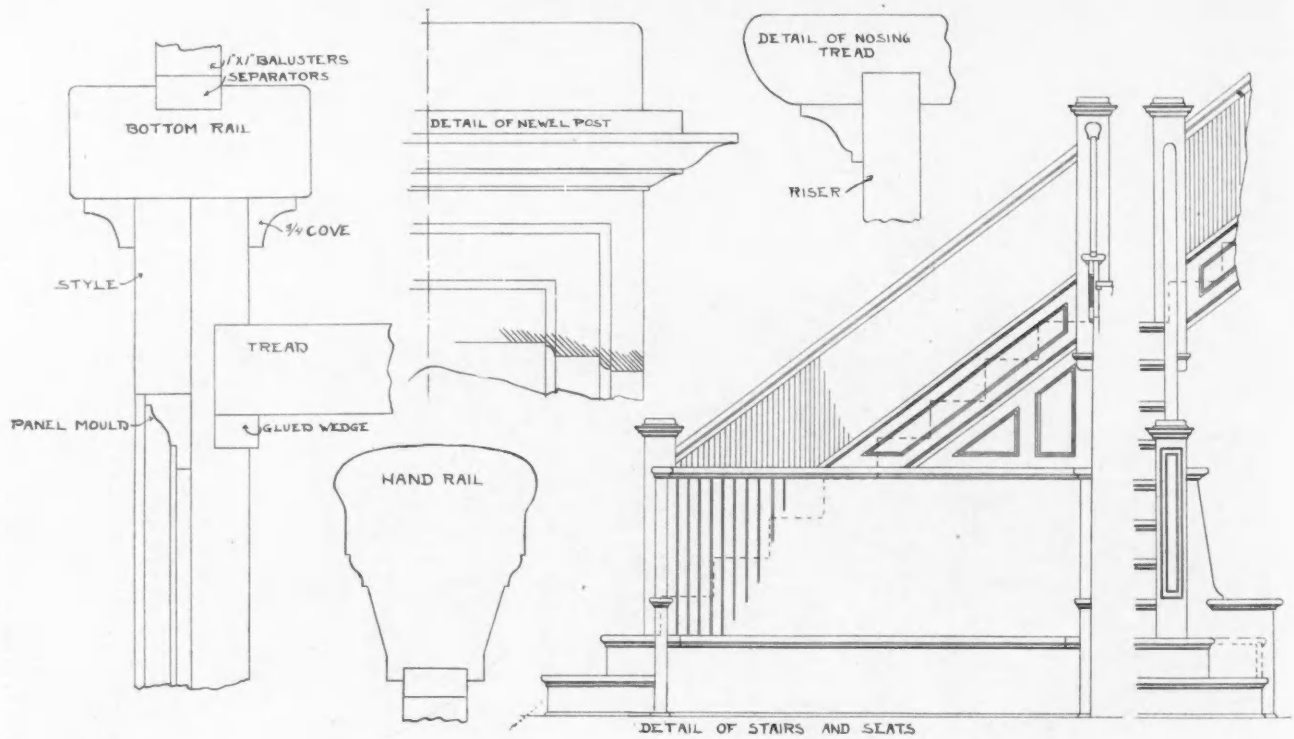
odors, and to serve as a nesting place for rats, he replies that thirty-seven years' experience has shown him that none of these objections are tenable.

In discussing the subject for the *Indianapolis "Star"* Mr. Campbell had this to say about these objections:

"Sawdust does not decay where there is no moisture, and as it is a slow combustible it is an actual protection against fire. Rats cannot live in walls when they are tightly stuffed, and any slight odor from the wood is dispelled in a few weeks. And, furthermore, I want to point out that it costs only a few dollars to fill the walls of an entire house."



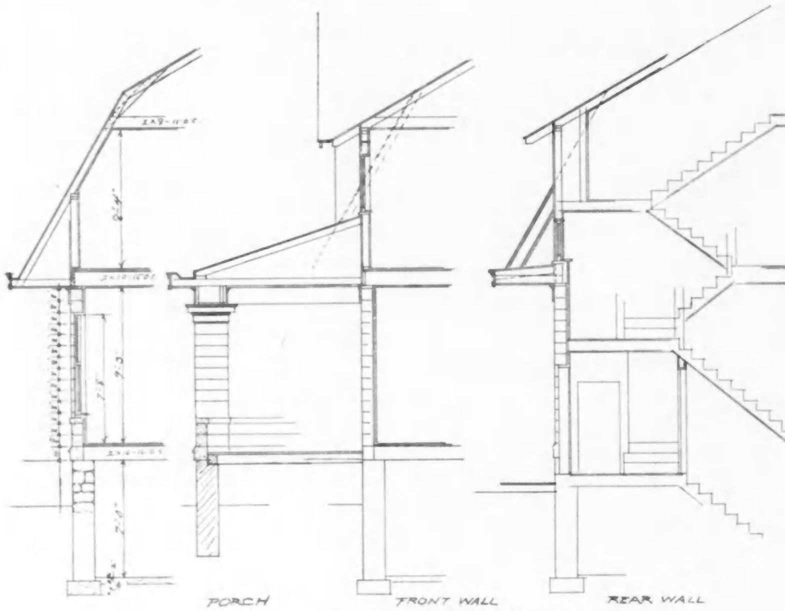




DETAIL OF STAIRS AND SEATS

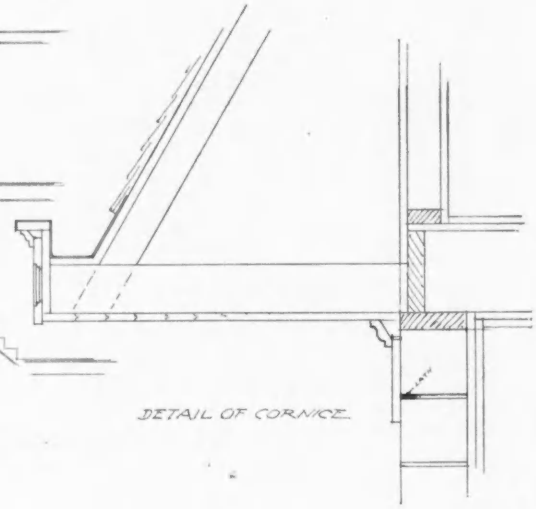
Front Elevation

REAR ELEVATION

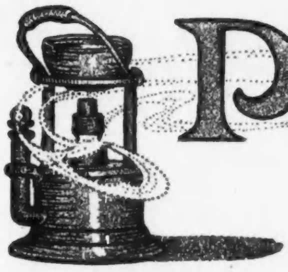


PORCH FRONT WALL REAR WALL

SECTIONS THROUGH WALLS



DETAIL OF CORNICE



PLUMBING

WM R. MARSHALL

New Sanitary Appliances

VALUABLE APPLIANCES RECENTLY INVENTED — WHERE AND HOW APPLIED — ADVANTAGES OVER FORMER METHODS

WHEN it is desirable to provide a floor drain in the basement for carrying off the water used in cleaning the basement, the ordinary practice is to run a line of 4 inch vitrified sewer pipe from the main sewer line of the building to a point where the opening in the floor is desired. At this

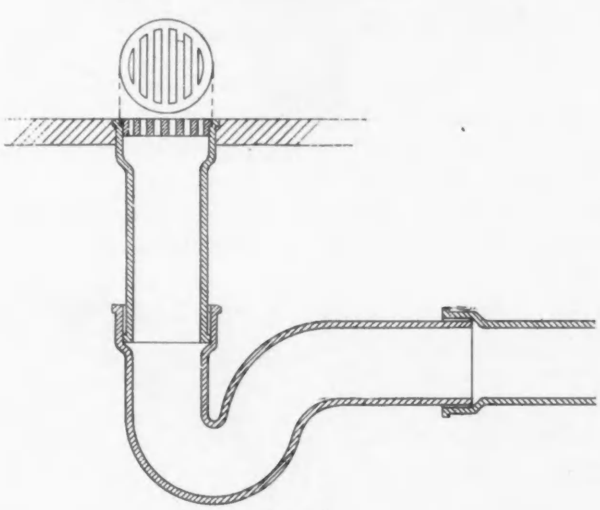


Fig. 1

point an ordinary P tray is installed, and a length of pipe with a hub top cemented into it, extending to the floor level. Into this hub a common cast iron grate is inserted, as in Fig. 1. In large basements there are generally two or three of these openings, and it is good practice to install one in the area way of the building to take care of the rain water which may run into the area way during storms. This answers very well where there is no chance of back water, and where the floor is washed frequently, so as to provide sufficient water at all times to keep the trap replenished with water. The disadvantages are, that in case of stoppage in the trap it is so far from the point of inlet that it is a difficult matter to rod it out thoroughly; and in case of stoppage in the main sewer pipe, the sewerage on the house end, not finding any outlet, will back up through this opening into the basement. In case of extensive rainfall, if the main sewer pipe is not large enough to carry the water away, it will back up into the basement through this opening.

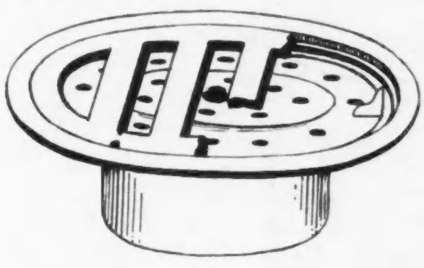
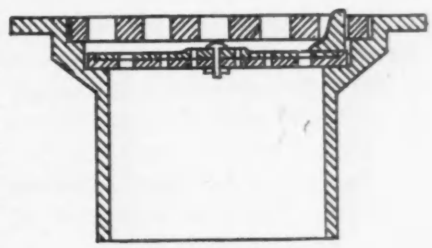


Fig. 2



Section of Fig. 3

Another disadvantage is that in cases where the floors are washed infrequently the water in the trap is liable to be evaporated, which would allow the gas from the main sewer to escape into the basement. The proper correction for a fault of this kind is to install a back water gate valve and a deep seal trap, as previously explained in this magazine; but where it is desirable to rectify an error of this kind without going to the expense of tearing up the floor and making new connections, the No Flud back water stop, as shown in Fig. 2, can be substituted for the bar strainer, as shown in Fig. 1. This fitting is a cast iron thimble with a cast iron grate, and as shown in sectional cut has two perforated brass strainer plates which have ground faces and are fitted tightly together. When opened, the two strainer plate holes are directly opposite. When closed, the top strainer is moved so that the holes in the top plate are covered by the solid portion of the under plate, making an absolutely water and air tight shut-off.

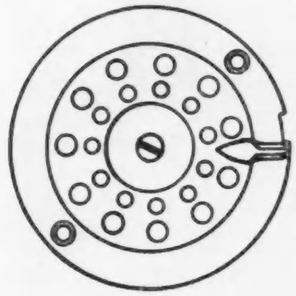


Fig. 3

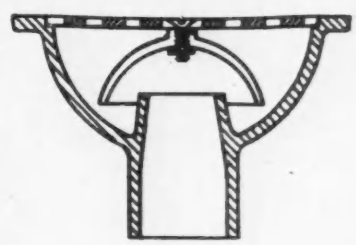


Fig. 4

Fig. 3 shows a sink strainer made on the same principle. This strainer will take the place of an ordinary sink strainer or plug. It can be opened and shut, which makes it possible to fill the sink with water for many purposes. It is also very handy when the sink is used for cleaning vegetables and the like; the strainer can be closed, preventing parings, tea grounds, etc., from going down into the pipe and clogging it up with refuse, thus causing considerable annoyance, as it is a difficult place to clean out.

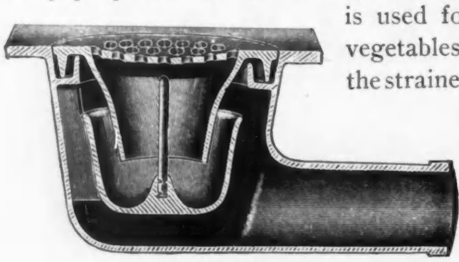


Fig. 5

Cesspools

The ordinary cess pool, such as shown in Fig. 4, has a great many objectionable features; the small amount of water it retains as a seal constitues a danger, as the water will evaporate unless frequently replenished. The lack of provision for cleaning the trap makes it impossible to clean the trap without digging the dirt out of it. A new style cess pool trap has been recently patented which rectifies the defects in the ordinary cess pool. This trap is designed for use in all places where surface traps are required. This new trap consists of three pieces, the body, grate and sealing bowl. This sealing bowl is one of the features of the trap. It rests on three ribs in the body of the trap and is provided with a special spindle to permit of the bowl being lifted out of the trap so it can be cleaned. The external flange of the grate rests firmly on the bottom of the top seal in the body; this is also a water seal. Fig. 5 shows the principle of construction of this trap, and also the style of a side outlet, which is designed especially for places where the sewer drain pipe is near the surface. Fig. 6 is of the same construction, with a straight outlet. Fig. 7 is a combination slop sink and a trap embodying the same features. The accessibility of the trap of this kind makes it very desirable where the traps are used in places where the water in the trap is liable to be heavily mixed with dirt or refuse. Fig. 8 is the same type with an auxiliary flange. This trap is very popular in concrete construction work, and for floor drains on the upper floors of factories it is very desirable, inasmuch as the joint around the flange of the floor drain can be made tight, to prevent leakage from the ceiling.

Fig. 6

Fig. 7

Pump Brackets

In Fig. 9 we show a newly patented apparatus to be attached to the side of the sink for a house pump rest. Fig. 10 shows installation of the bracket with a combination arm, which can be used either as a leg

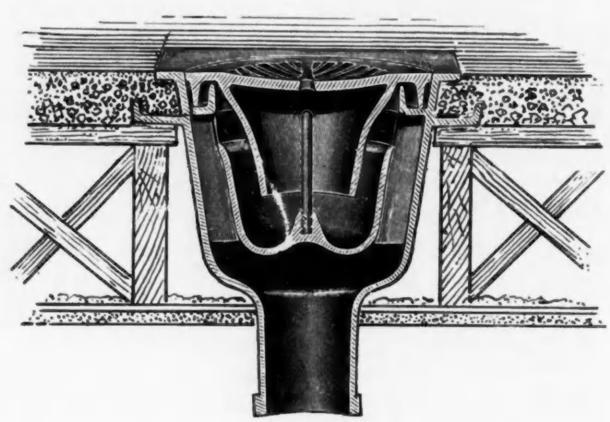


Fig. 8

or a bracket. These arms are tee shaped and very strong, and being hinged at convenient points they can be used in various ways. The leg measures 31 inches from the top of the horizontal arm so that the sink, when installed, will be approximately this height from floor. Another specialty shown in this sketch is the cast iron sink trap all in one piece. It is made in 1¼ inch and 1½ inch sizes, and the length over all is 2 feet, about the right length to reach from the ordinary kitchen sink to the floor. The outlet is screwed to fit iron pipe fittings, so that ordinary pipe and fittings can be used or, preferably, the cast iron floor flange should be used as a rest, and the connecting pipe coming through the floor can be screwed into this flange. The thread on the bottom of the trap gives an adjustment of about 1 inch, so that there will be no difficulty in making connections

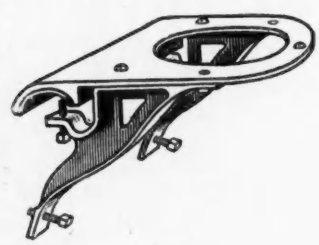


Fig. 9

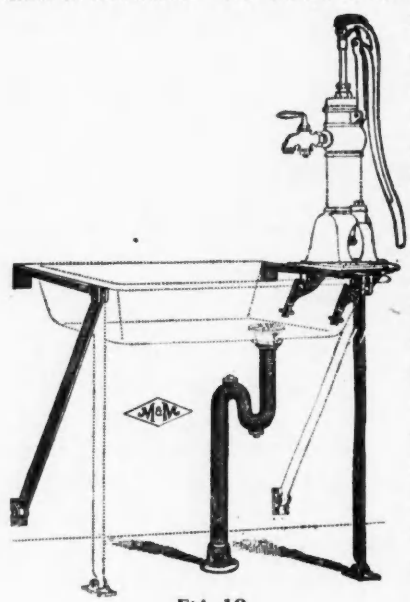


Fig. 10

at the floor line if the pipe is a little long or short. This trap is provided with a brass trap screw on the top and the bottom of the bend, for cleaning out purposes. Another recent invention is the automatic floor drain and back water stop valve, as shown in Fig. 11, which is entirely new. The aluminum cup float has a brass spindle which is seated in the center cylinder. In operation the aluminum cap is always down, permitting the water to flow through the stop. In case of back water, the aluminum cup is floated to the seat, making a tight joint automatically. In case of trouble, drain can be removed without breaking joint at floor by loosening screws in top flange. This is strictly a back water valve and can be used where floors are washed often and there is danger of back water rising suddenly.

Fig. 11

The Vanishing of the White Pine

The rapid settling of this continent, the ease and speed with which new towns were built almost overnight, and its fertile prairies dotted with comfortable homes, were largely due to the white pine. No tree gave timber in which the qualities of sufficient strength and ease of working were so combined.

The white pine of New England first won national and international renown. Edward Everett Hale recalls how in his own lifetime "the masts of every vessel that sailed the Seven Seas were made from New England pine, while today very little white pine is cut in New England big enough to furnish a good sized spar."

But the great empire of the white pine was that which stretched from southeastern Michigan northwestward into Minnesota. The attack upon this empire was a splendid spectacle. The writer of this recalls how he stood on a summer day in 1880 and counted more than 100 pine laden vessels crowding all sail for Chicago.

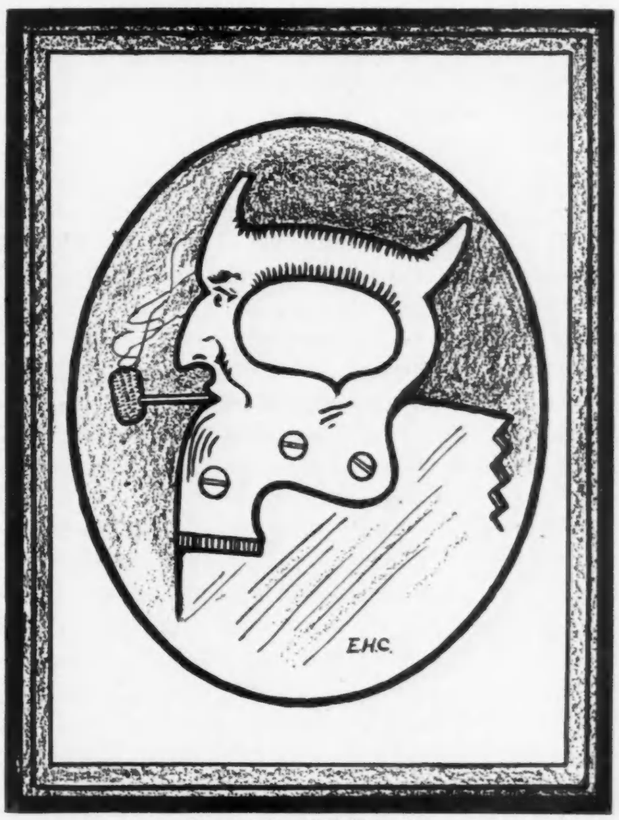
The spoil of the conquest was enormous. From 1870 to 1890 the cut was 160,000,000,000 feet, worth at the mill not less than $2,000,000,000, or half as much again as all the gold taken from California's mines from their discovery until now. But these resources were not inexhaustible, though for years treated as if they were.

Suddenly the people of the pine states awoke to the fact that the reckless destruction of the trees had thrown 6,000,000 acres of land upon the delinquent tax list. These "pine barrens," deserts almost wholly useless for agriculture, show the penalty of wasting forest resources which, if properly used, would have been a continuous fountain of wealth.

As a result, it is almost impossible to buy white pine, except at the prices of woods brought from the tropics and hitherto regarded as the emblems of luxury. A recent bulletin from the national forestry bureau shows that present prices of white pine "uppers," the best grade of boards, in the New York market are from $97 to $114 per 1,000 feet. Doctor Hale tells how, on ordering some book shelves, the cabinet maker, after naming his price, asked whether he would have them of white pine or mahogany!

There is very little white pine left. There are scattered stands in New England and in the lake and mountain states. Most of the high grade white pine lumber now comes from Idaho and from Indian reservations in Wisconsin and Minnesota, where it has been held in trust for the nation's wards. At the present rate of cutting this splendid and useful tree will soon be extinct for commercial purposes.

There is, however, hope that in time the white pine may be brought back for all necessary uses. The small stands in the national forests will be carefully preserved and enlarged as rapidly as possible. But even with the most active work toward reforestation, and even though the pine states give far greater encouragement than is now the case toward the replanting of lands which will grow pines as they will nothing else, in the market places of the present generation white pine lumber will be a thing remembered rather than known.



One of Our Old Friends

Wedges in Woodwork

SOMES CONSIDERATION CONCERNING THE USE AND PROPER FORM OF THESE NECESSARY LITTLE ARTICLES—ILLUSTRATIONS SHOWING RIGHT AND WRONG METHOD OF MAKING THEM

By T. B. Kidner

ALTHOUGH wedges are daily used in enormous quantities by woodworkers in the various trades, considerable ignorance as to their form and properties exists amongst many craftsmen. Who is there that has not seen, at some time or other, a man seize a heavy hammer or mallet with which to lag into a mortise a wedge that persisted in popping out a little after each stroke with a lighter tool?

The reason for the wedge coming back after each light stroke is, of course, that it is cut at too great an angle, and while such wedges may eventually be forced home, their effectiveness is small and the appearance of the work is often marred through their use. A pair of such wedges is shown in Fig. 1, and it will be seen that they catch only on the corners of the mortise, and before they can be driven home, a great compression of the fibers, both of tenon and wedge, must take place. But even if the wedging allowance at the back of the mortise had been cut at an angle similar to that of the wedges, such wedges are wrong and ineffectual. (Fig. 2 shows the proper form for wedges.)

All materials have what is called an angle of repose; that is, if two pieces of the same material are placed in an inclined position, they may be tilted to a certain angle without sliding one on the other. When tilted beyond this angle, the upper piece slides on the lower; therefore, the limit of slope at which any material will remain on a piece of similar material without moving by the force of gravity is termed its "angle of repose." This angle varies considerably in different materials. Loose earth may be thrown up until the sides of the heap slope at 45 degrees. In fact, that is the slope at which engineers calculate their embankments for railway cuttings, etc., because of the property loose earth has of reposing safely at that angle. At the other extreme may be instanced the case of two polished surfaces of iron or steel, where the angle of repose would be extremely low—four or five degrees only. A familiar application of this is in keys for attaching pulleys, etc., to shafting, the taper of such keys being very slight indeed. Another example of the application of the knowledge of the angle of repose of a material can be seen in properly designed wooden centerings for the support of large masonry arches during construction. It has been found by experiment that cut stones do not slide on one another until an angle of from 25 to 30 degrees has been reached. Therefore, in carrying up the haunches of a masonry arch, no weight comes upon the wooden centering until that angle has been exceeded. Beyond that angle special precautions are taken by having proper struts and braces built into the centering, also by carrying up the arch evenly on each side, to prevent the buckling and failure of the supporting framing, and, in consequence, of the arch itself.

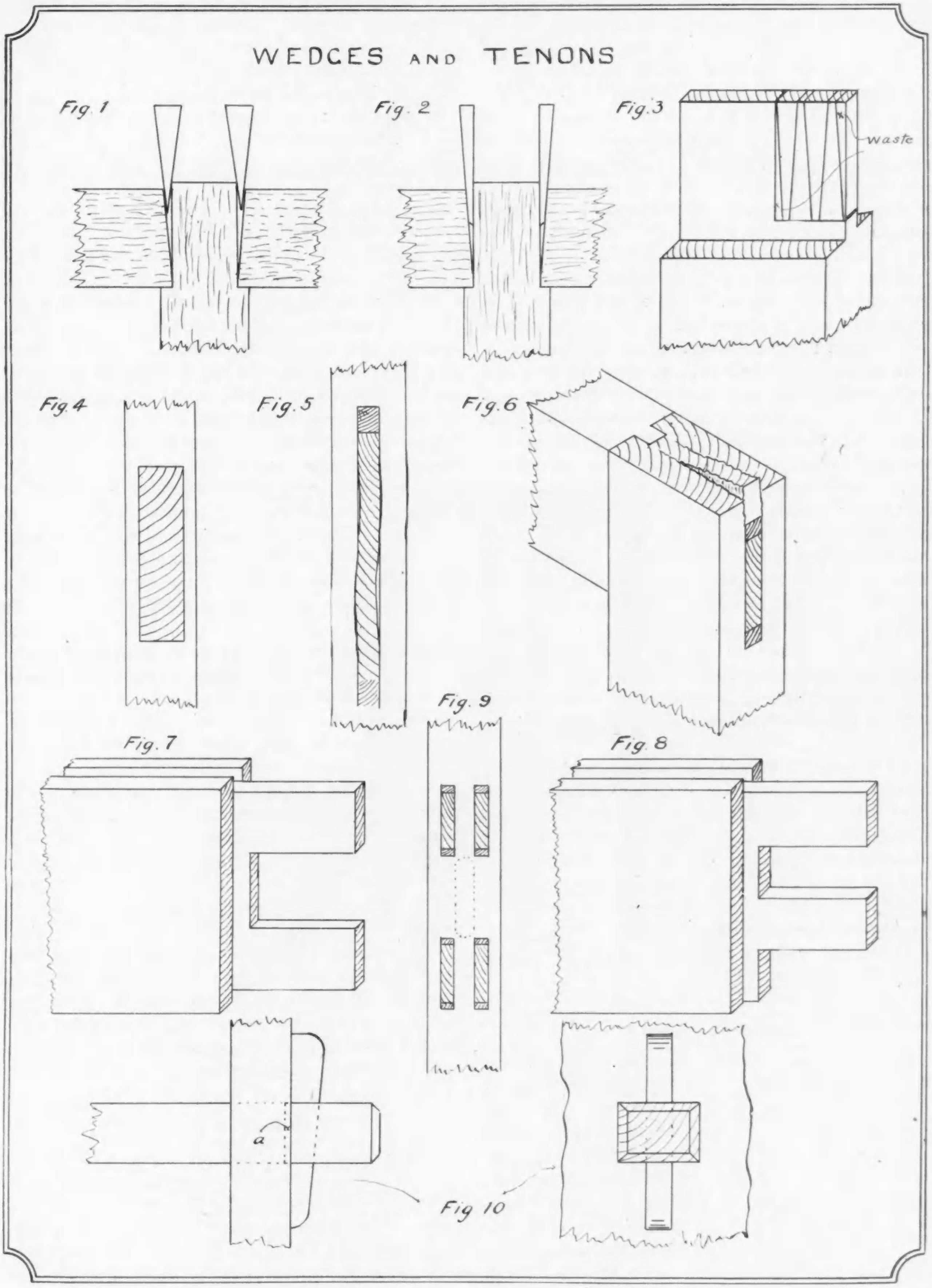
This may seem somewhat far off from the question of wedges, but the principle of the angle of repose bears directly upon it, and to apply it we require to know the angle of repose of two surfaces of wood. This is generally taken at from 7 to 10 degrees, according to the smoothness, or otherwise, of the surface. In designing a wedge for framing purposes, it is imperative then, that the angle should be less than 7 degrees, the safe rule being to make it not over 5.

As this may sound like a theoretical rule out of a book, rather than one of easy application in the shop, readers of this journal may be reminded that on several occasion Mr. Woods, in his admirable articles, has shown how to find the various degrees by means of the steel square. A rule near enough for all practical purposes in designing wedges is, however, to allow a full eighth of an inch on three inches for the taper. To put it in another way, a wedge 3 inches long should have about 1/8 inch taper to be most effective.

Before the days of machinery the workman used to cut his wedges for doors, sashes, etc., out of the haunching or relishing of the broad tenons. In doing this, good workmen were careful to make "one cut for nothing," so as to bring the straight grain through the center of each wedge, as shown in Fig. 3. This is an important point, for the breaking of a cross-grained wedge at a critical moment is most annoying and may mar a good job.

While upon the subject of wedges and tenons, some points on the designing or laying out of the latter may be mentioned. An important point is the proper thickness of tenons. For heavy constructional work the tenons should be one-third of the thickness of the framing, but in joinery and fine framing, about one-fourth only. Of course in sashes the thickness of the tenon is conditioned by the size of the molding and rabbet, and in doors by the thickness of the panels, but the proper proportion should be borne in mind.

Fig. 4 shows a decidedly wrong tenon, inasmuch as the amount left on each side of the mortise makes the mortised piece weak and liable to split under a twisting strain; the tenon being also much stronger than necessary. The manual training schools are sometimes offenders in respect to badly designed joints, from the fact that many of their instructors have had merely a school training and are weak in



the technique and practice of commercial shops.

The width of tenons is also of importance, and as in the matter of the thickness, may be reduced to a fairly definite rule. To give the best results a tenon should not have a greater width than 5 or 6 times its thickness. Fig. 5 shows the effect (sketched from an actual example) of having a tenon too wide in proportion to its thickness. The pressure of the wedges has resulted in buckling the tenon badly and in forcing the sides of the mortise outwards.

In laying out tenons for the top rails of doors it is important that this rule as to the width of tenons be observed, and the proportion of one to five not exceeded. For, if the tenon be made too wide, there will not be enough solid wood at the head of the stile to withstand the pressure of the wedge, which will tend to force out the small piece remaining beyond the mortise, as in Fig. 6.

In the top rails of sashes, the width may be much less than this proportion. A tenon 1⅛ inch wide is ample for the 2 inch top rail of the ordinary sash, with a tenon of probably half an inch in thickness.

In the case of broad rails, such as the lock and bottom rails of paneled doors, the proportions of 1 to 5 or 6 can be adhered to for the tenons with advantage. A 10 inch lock rail with ½ inch tenons having a width of 6 to 1 is shown in Fig. 7, and will be seen to be correctly laid out. Bottom rails should have rather narrower tenons to allow for the haunching or relish at the lower end of the stile, as in Fig. 8.

For first class doors, double tenons should be insisted on for the lock rail in the lock stile, otherwise the tenon will be cut away by the insertion of the mortise lock. In designing double tenons it is usual to take the thickness of the lock in the middle and lay out the tenons on either side about half the thickness of the remaining material, the proportions of width to thickness being observed as in single tenons. (See Fig. 9.)

A great deal of work is now being constructed with through tenons held by key wedges in what is sometimes termed "mission" style. In designing the key wedges the rule as to the angle should be observed and care should also be taken that the tenon is left long enough to prevent the shearing force of the key forcing out the piece beyond the key mortise. The key must also be given a chance to do its work by having its mortise back inside the face of the framing, as shown in Fig. 10 (a).

Concrete Roofs

A very useful and interesting note on the problem of roofs in the United Provinces of India has been written by Mr. H. S. Wildeblood, superintending engineer, at present under secretary to the government of India in the P. W. D. The question of the best form of roof for the plains of India, says the Indian engineer, has lately been engaging the attention of the engineers of these provinces, and though the matter is still more or less at an experimental stage, certain definite conclusions have been arrived at, and the object of the note is, the writer says, to help junior officers who are interested in the subject, and who are willing to profit from experiments carried out by their predecessors without waste of time in traversing old ground. The writer also expresses the hope that it may lead to an exchange of ideas on this and kindred subjects, which would be of interest to the consulting archtiect to the government of India and to others who are making a study of the improvement of house building in India, though Mr. Wildeblood's note deals only with one small part of the larger question.

The writer briefly traces the history of the various forms of roof in use from the last century, and of the attempts made to effect improvements in this direction. The serious disadvantages, not the least of which is its high cost, of the "jack arch" roof, perhaps the most permanent form of roof construction known till recently, are very clearly brought out. The writer then goes on to explain that the introduction in Europe and America of reinforced concrete gave engineers in India the idea of improving their roofs by means of this most useful form of construction. The experiments which have been carried out, and which are described in the note, have been attended by the most satisfactory results, and show that the reinforced concrete roof is by far and away the best in every way. It was found that with forty parts of the ordinary pure kankar lime mortar of the plains and 100 parts of brick ballast, broken to a gauge of one inch, a concrete roof eight inches thick, with even strand wires running through it at intervals of a foot, and having a span of six feet between joists, was capable of bearing distributed loads of over 900 pounds to the square foot. Larger spans, which are no doubt possible, are now being tried. Roofs made thus of reinforced concrete proved cheaper than those of jack arches, and flat ceilings can easily be given to the rooms by merely plastering the lower surface of the concrete slabs, while expansion joints, which are necessary to prevent irregular cracking, can very easily be arranged for. The concrete roof has also been proved to be infinitely cooler than the jack arch or any other form of roof in use in India.

For verandas, where the chief function of the roof is to shade the walls of the main building at a minimum of cost, the light sloping roof of "lock" tiles laid on angle steel battens, resting on steel joist rafters and light stone, or, where stone is too expensive, castiron columns, is recommended.

Building in Japan

There are no hodcarriers in Japan. The native builders have a method of transporting mortar which makes it seem more like play than work—to the onlooker. The mortar is mixed in a pile in the street. One man makes this up into balls of about six pounds each, which he tosses to a man who stands on a ladder midway between the roof and the ground. This man catches the ball, and tosses it up to a man who stands on the roof.

Manual  Training

Ira S. Griffith

Something the Boys Can Make

GIVING COMPLETE DESCRIPTION AND DETAILS OF MAKING A STEP LADDER—MATERIAL TO USE AND DIMENSIONS OF THE SAME

A LIGHT step ladder, one that can be folded up and set out of the way, is described this month. As it is not extremely difficult to make and is such a necessary household article, the boys will find it a good way to do something for mother. With one of these ladders in the house, mother will not find it necessary to make use of a chair when she wishes to get above the floor level in the course of her house work. If a curtain is to be hung, or the pictures dusted or any other of the many things which require climbing, the chairs need not suffer. Most likely the chair would not be high enough anyway.

This piece affords an opportunity to do some lathe work in wood turning. Many of the boys, no doubt, have access to lathes in their fathers' shops. If a lathe is not to be had, or if the boy has had no experience in turning, these parts calling for lathe work may be planed to the form of cylinders and will look very well.

The step ladder should be made of oak, red oak will do, but white oak, thoroughly seasoned, will be better. In ordering, or in getting out the stock, add one-half an inch in length and one-quarter of an inch in width for planing. For the legs there will be needed four pieces seven-eighths, by two and one-eighth, by twenty-six and three-eighths inches. If these four legs are got in one piece, or even two legs in one piece, material may be saved, for they may be sawed out with the ends reversed; that is, the top or narrow end of one may be laid out along side the bottom or wide end of the other. For the side rails, two pieces seven-eighths by two by nine and one-quarter inches, also two pieces seven-eighths by one and one-quarter by ten inches. On the back of the ladder will be needed two pieces that can be turned to a diameter of one and three-eighths inches, with a length of fourteen inches.

For the top, one piece seven-eighths by ten and one-half by fourteen and one-half inches.

The ladder part will require two pieces seven-eighths by seven by twenty-one inches. Also two pieces one-half by four and five-eighths by eleven and five-eighths inches.

A bolt of one-quarter inch diameter, with a length of fourteen and one-quarter inches, should be purchased. This bolt should have washers enough to fill in spaces of three-sixteenths of an inch between ladder and frame on each side; also, washers for the outside of the frame between the head, the nut and the wood of the frame.

Begin the work by planing the uprights. (1) If the stock was got mill-planed to thickness — that is the most convenient way to get it — set the plane very shallow and take off just enough to clear the surface of the mill-marks. (2) Joint one edge of each of the four pieces straight and square to the face marked for the work face. (3) Mark these edges for joint edges. (4) Square the ends, making each piece twenty-six and three-eighths inches long. It is a good way to plane one end of each, then setting the pieces on edge, even these ends with the try-square, measure the length on one and square a knife line across all four at once. The pieces may then be separated and the lines knifed across the working face. (5) Lay off the pieces for width. Each is to be one inch wide at one end and two and one-eighth inches at the other end. A straight-edge may be used to connect the points laid off at each end. (6) The slope at the lower end of each leg is laid off by connecting with a straight-edge two points; one, measured along the lower end three-quarters of an inch from the joint edge, the other measured along the joint edge nine and one-half inches from the lower end.

Fig. 2 shows the layout of the tenons and mortises of the legs. Lay the pieces on edge, the inner or joint edges up, even the lower ends with the try-square and measure as follows: From the lower ends, twenty-five and three-quarter inches for the shoulders of the tenons at the top; from these shoulders measure back along the joint edge fourteen and one-fourth inches for the top of the mortise; from this point measure on one and one-half inches for the lower end of the mortise. On two of the legs, measure for a line two and one-quarter inches below the lower end of the mortise and on the others a line two and one-quarter inches above the top of the mortise. With try-square, carry these lines across the four pieces at the points marked, with the exception of the two last named.

The gauge settings from the working face, of tenons and mortises, are one-quarter and then five-eighths of an inch. The tenons require, in addition, a setting of three-quarters of an inch from the joint edge. The mortises are to be cut fully one inch deep.

The three-quarter inch holes, Fig. 2, should be placed centering from edge to edge—above the mortises on two of the legs and below on the other two—according to lines squared across the faces from the joint edges.

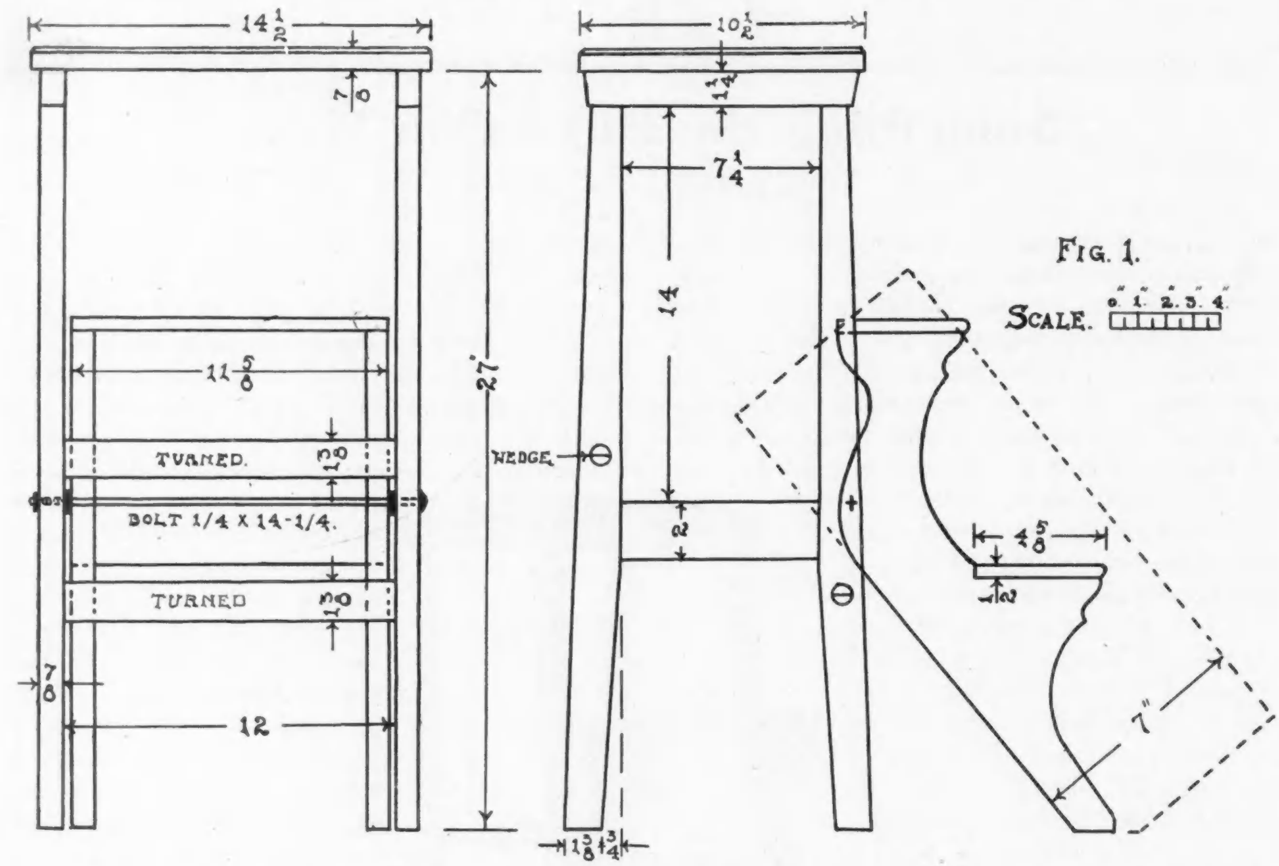


Fig. 1.

The two lower rails, Fig. 3, should be stood on edge and laid off together, measuring one inch from the end, then seven and one-quarter inches. Having squared lines across the edges at these points, separate the pieces and knife entirely around for the shoulders of the tenons. The gauge settings from the working face are one-quarter and then five-eighths of an inch; from the joint edge they are one-quarter, then one and three-quarters inches.

The two top rails, Fig. 4, should have their ends cut on a bevel. Three-sixteenths of an inch, measured from the ends along the joint edge, is the amount.

The mortises are measured seven and one-quarter inches between and are each three-quarters inch long.

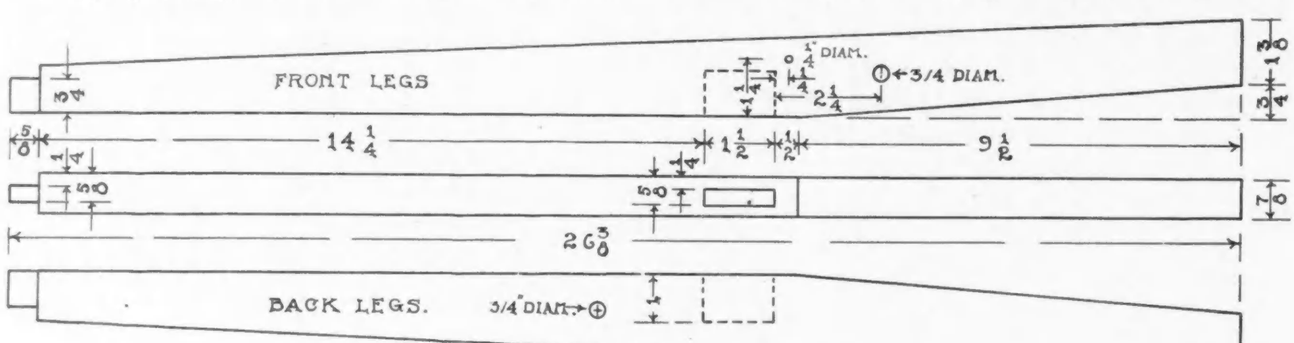


Fig. 2.

The gauge settings from the working face are one-quarter and five-eighths of an inch respectively. The mortises are to be cut to a depth of five-eighths of an inch.

The two turned pieces are to be made fourteen inches long each. Their diameter should be made one and three-eighths inches.

The ends should be turned down to a three-quarter inch diameter, each one inch long, or so that there

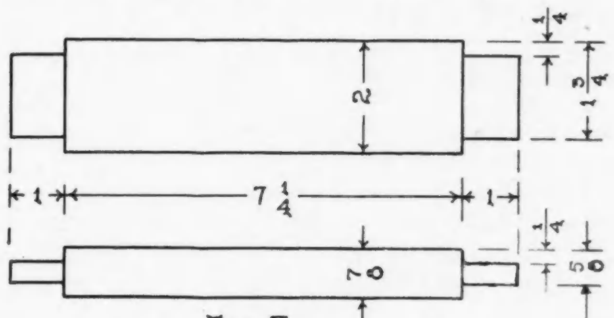


Fig. 3.

shall be twelve inches from shoulder to shoulder. The form which these cylinders shall take is left to the judgment of the worker. The ends of the cylinders should be sawed with the back-saw, as indicated in Fig. 5, to allow for wedging.

If these pieces must be shaped without the lathe: (1) Plane each to a square prism with sides one and three-eighths inches each and a length of fourteen inches. (2) Lay off the shoulders twelve inches apart. (3) With gauge settings of five-sixteenths and one and one sixteenth, gauge the ends from both joint edge and working face for the three-quarter inch spindles. (4) Rip these gauge lines and cross-cut the shoulder lines. (5) Shape spindles and prisms to octagonal prisms. The gauge settings will be one-half the diagonal of the end of the prism. (6) Plane the octagonal prisms to cylinders.

Scrape, sandpaper, glue and clamp the sides of the stand in pairs.

While the glue is hardening, the top may be squared

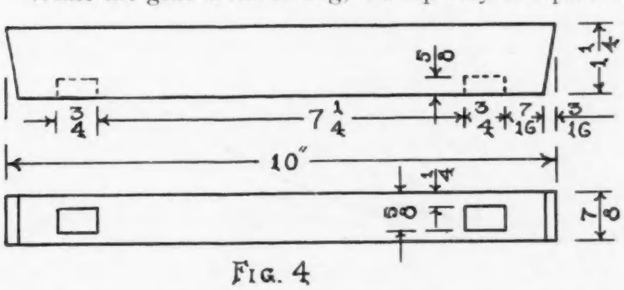


Fig. 4

to size, ten and one-half by fourteen and one-half inches, out of seven-eighths inch stock. Plane off the mill-marks, and put a one-quarter inch bevel on the top side.

When the glue has set, glue the ends of the turned pieces, put them in place and drive home the wedges previously prepared. The top should be fastened at this time. Brads driven from the top side may be used or, better, holes may be bored through the side rails and screws inserted from the under side. The ends of the turned pieces will need to be planed off to make them flush, or even, with the surface of the leg.

The ladder part, Fig. 1, may next be made. By getting the two side pieces in one length and properly placing the templet some material may be saved. A scale is given with Fig. 1, that the proportions of these side pieces or stringers may the more readily be determined. This scale may be transferred to the edge of a piece of papr, and by means of this the drawing may be measured as with a rule.

The curves must be laid off free hand. A good way would be to make a pattern or templet of thin wood or heavy paper from which to mark off the wood.

The treads should be made by planing off the mill-marks from the one-half inch stock and squaring it to four and five-eighths, by eleven and five-eighths inches. The front edges may be rounded slightly as shown in Fig. 1.

Fasten the treads to the stringers by means of light nails, keeping the ends of the treads and the sides of the stringers flush.

The holes for the bolt are to be bored in the front legs at points one-quarter inch below the lower edge of the mortise, on a line one and one-quarter inches from the joint edge. (Fig. 2.) A one-quarter inch bit is used.

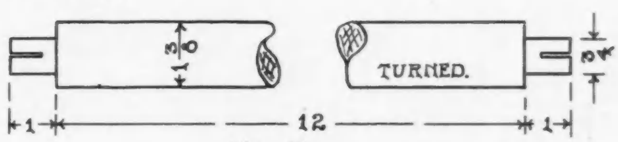


Fig. 5.

Set the steps in position, Fig. 1, level the steps, mark and bore the holes in the stringers for the bolt.

Before placing the washers and bolt it will be a good plan to put on the wood finish. A light paste filler, followed by three or four coats of shellac well rubbed, will make a satisfactory finish.

The appearance, and safety too, may further be improved by tacking upon the treads and the top pieces of Brussels carpet somewhat smaller in size than the parts upon which they are placed. A narrow binding may be sewed around the carpet to keep the edges from fraying.

Novelty in Apartment Construction

An Omaha architect is planning the latest novelty in the way of an apartment house. This is to be run somewhat on the communistic plan. There is to be a billiard room on the top floor for the men of all the apartments in the building. There will be six apartments. Another innovation will be the icebox built right into the house and for the use of all. This will be divided into six compartments, one belonging to each family and each opening with a separate door. The ice will be put in from the outside, thus doing away with any disturbance from the visits of the ice-man. The outcome of the experiment will be watched with interest.

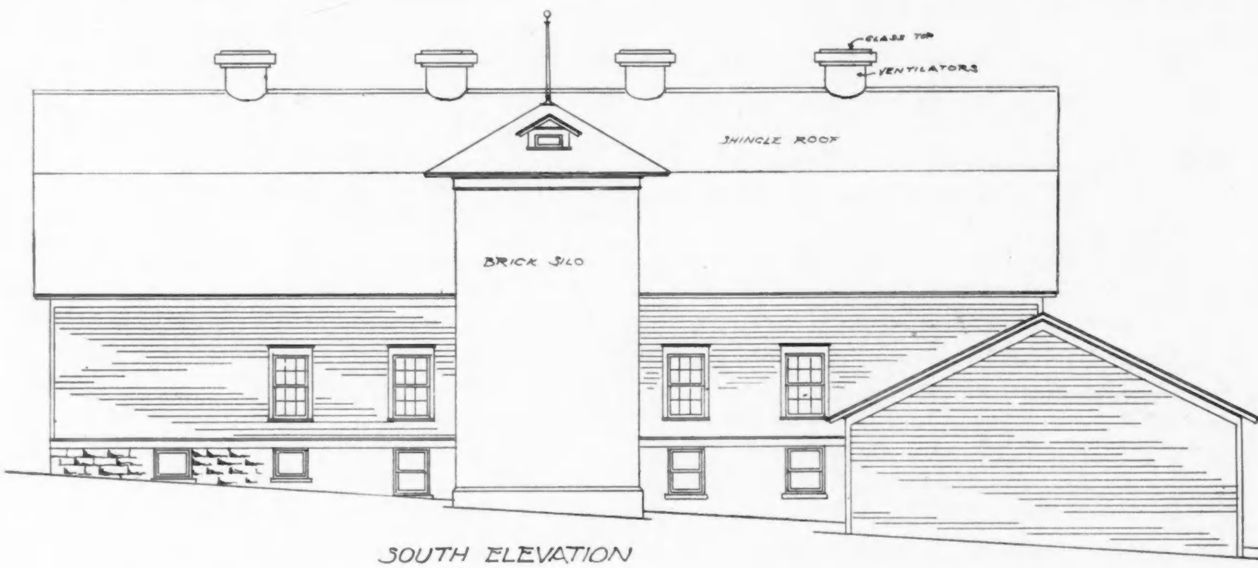
FARM BUILDINGS

HENRY H. NIEMANN

Practical Cow Barn

BUILT FOR A COLD CLIMATE ALD SPECIAL ATTENTION WAS PAID TO THE VENTILATION—ELEVATIONS AND FLOOR PLANS SHOW ARRANGEMENT AND CONSTRUCTION

THIS cow barn is designed for a cold climate and a special effort was made to protect the stock from the cold, and at the same time giving them proper ventilation and a continuous supply of fresh air by means of air ducts built in the walls, which receive the air near the ground level and, conducting it to the inside of the barn, entering the stock room near the ceiling. Other ducts exhaust all the foul air from the floor and carry it to the ventilators on the roof, which are controlled by a cord, regulating the flow of air as desired.



SOUTH ELEVATION

The barn is located on the slope of a hill so that the hay can be hauled directly into the upper floor, and the walls of the stock room are built of rubble stone 18 inches thick; this, together with the hay above, makes a warm stock room.

The silo is located at the center of the south side, where it is convenient for feeding and also protected from the north winds. The shelter shed is also located on the south and at right angles to the main barn, so that the stock is well protected when out of the barn in severe weather. As will be seen from the drawings, this barn is 40 by 100 feet, and contains stalls for forty-six milch cows, besides loose stalls for calves, dry stock, bull, etc. At the west end is a feed room with bins connected by spouts to larger bins on the floor above; also stairway to the upper floor, and on the east end is a manure pit covered by an extension of the shelter shed roof.

The cross section clearly shows the general arrangement of stalls, mangers, gutters, etc., all constructed out of cement laid on solid ground. The stall partitions are built up out of wrought iron bars and pipes, leaving nothing to get out of order or decay. The wood superstructure is constructed out of plank, and the roof is self-supporting, without posts or purlins, by each set of rafters braced, forming a continuous arch from one sill to the other.

This roof gives an enormous capacity to the hay room and is well braced against sagging and wind pressure.

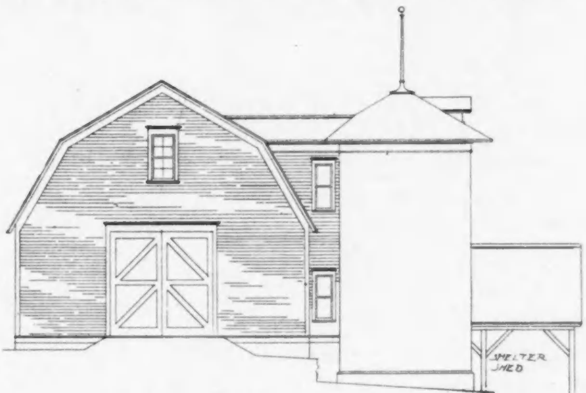
The exterior of the barn is sided with matched siding and the roof is of shingles, making a very durable and good looking building, and at the same time a barn that can be built within a reasonable figure.

Kitchenette Comes Into Favor

"There is a great unsatisfied demand at present for apartments and rooms with kitchenettes," said a woman real estate agent who caters to tenants in the theater and hotel district.

"A real kitchenette is a perfectly appointed kitchen on a small scale, fitted rather prettily for the use of tenants rather than servants, with plenty of light, ventilation, porcelain sink and icebox, and provided with drains, electric cooking apparatus and fans, or else an up-to-date gas range.

"But the average kitchenette that one finds in the reconstructed dwelling is merely a small room, or else a large cupboard, provided with an icebox, a sink, a cupboard and some means for cooking.



WEST ELEVATION

"Kitchenetting is a good deal of an art, though, and not so much of a picnic as it seems. It does not go on of itself, for instance, but requires a little thought and care and planning to be a success."

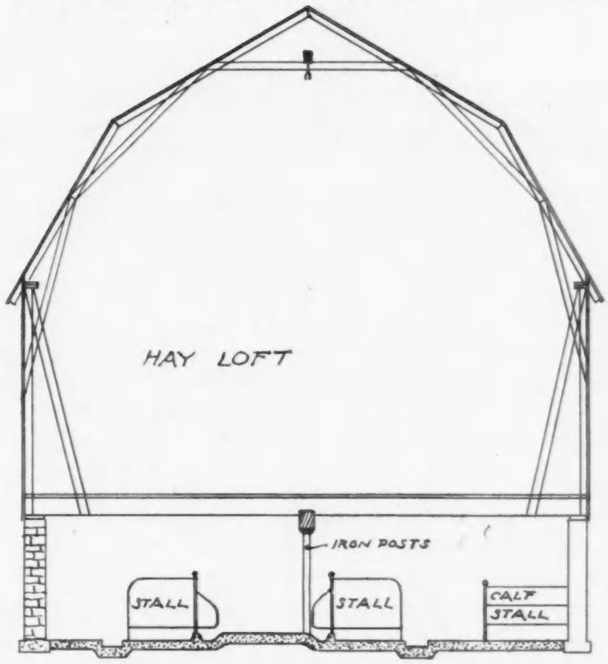
✣

Wanted an Ad. with His Subscription

An inquiry came into the office of a technical electrical paper, on a postal card, from a little fellow over in Flatbush, asking for a sample copy and the subscription price.

They looked him up and found that he made a line of specialites for the electrical trade, so an advertising solicitor went over to see him, thinking that perhaps there might be some advertising back of it.

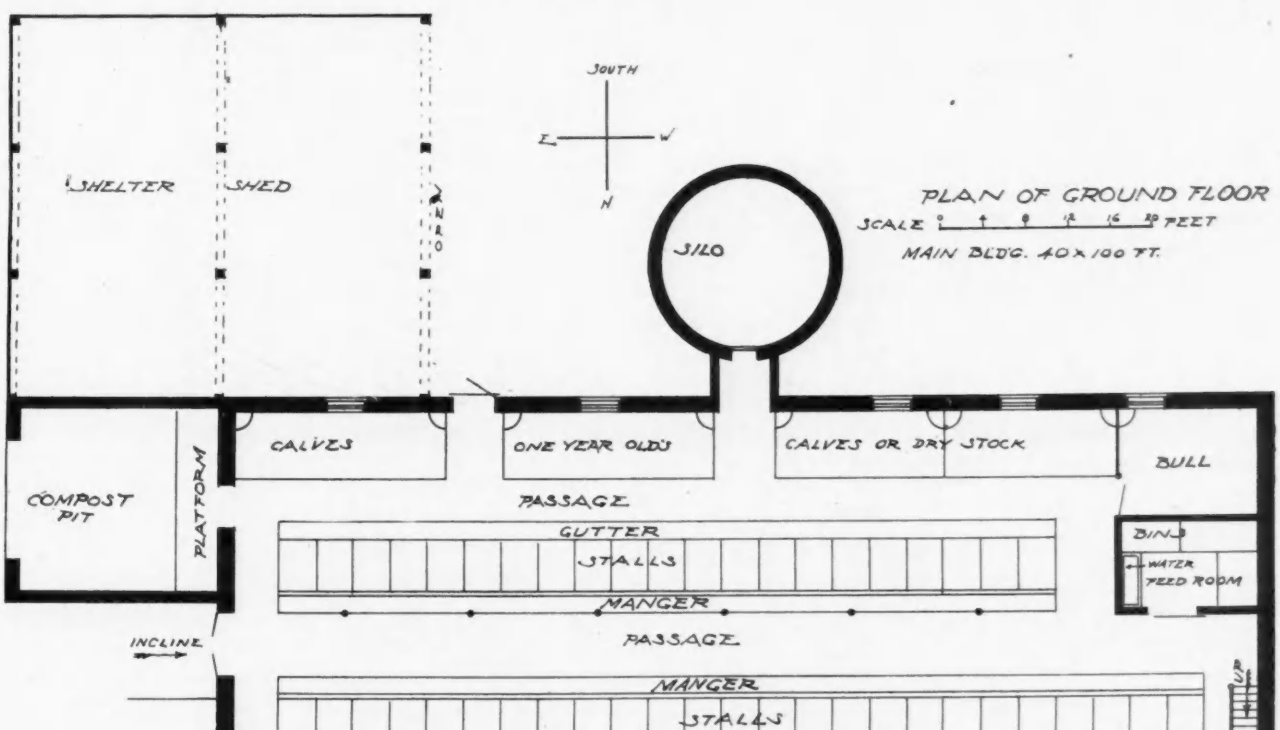
He told the man his story, gave him a sample copy



CROSS SECTION

and told him the subscription price was $3.00 a year.

The man looked the paper all over, sized up the ads. and came back at the solicitor with the questions. "How do you work this thing anyway? If I subscribe to the paper how big an ad. do I get? I see some of the ads. are small and some are large. What I want to know is, how big a one do I get with my subscription?"



Heating in Modern Residence

BEING THE FIRST OF A SERIES OF ARTICLES ON HEATING VARIOUS CLASSES OF BUILDINGS—TWO-PIPE HOT WATER SYSTEM FOR RESIDENCES SHOWN HEREWITH

By P. Weber Rathbun

IT IS the intention of the author of the following six different articles to place before the readers of the AMERICAN CARPENTER AND BUILDER a series of simple, complete and absolutely practical plans of the most advanced forms of hot water and steam heating.

There is no feature connected with the material conditions of modern life, that demands more careful study than the ways and means employed in heating and ventilating our homes and public buildings, and though money may be poured out with a Midas hand, in procuring hangings, decorations, and the thousand and one things that go toward the making up of a home—too often the element that is most essential to an atmosphere of genial, liberal warmth, is left wholly to chance.

It is conceded by all the up-to-date heating and ventilating engineers that the two-pipe system of hot water heating is the ideal plant for a residence or small public building. No one can afford to use hot air furnaces, stoves or fireplaces, if only economy of fuel is considered. For the waste of fuel alone, not to mention the disagreeable conditions attending the use of the above, would in a few years pay the first cost of installing a first-class heating plant.

Further, the simplicity of a modern hot water or steam heating apparatus, and the ways and means employed in modern installation of same, has brought the first cost within the reach of nearly all house-owners.

The first of this series of articles will be devoted to the best form of two-pipe system of hot water heating for residence, and the rules and tables given are those which, based on good practice, have been found best suited to all ordinary conditions.

There are three methods of using hot water (or steam) for the transmission of heat, namely: Direct, indirect, and direct-indirect, and, although the three may be used on one system if necessity requires, for convenience sake, we will consider but the first and simplest form in this article, taking up the other forms in some of the later articles.

The rule of 2—15 and 150, is the one ordinarily used in estimating the amount of radiation required for steam. The above formula means one square foot of radiation to each two square feet of glass and door surface in a room; one square foot of radiation for each 15 square feet of exposed wall surface and one square foot of radiation for each 150 cubic feet of contents, or air space. It being taken for granted that the range of temperature is to be 70 degrees interior in zero weather.

For water it would be necessary to add 60 per cent to the amount of radiation as figured for steam, and when it is necessary to make provisions for a wider range of temperature, 1½ per cent of radiation should be added for each degree below zero.

In figuring the amount of radiation for rooms that require either a high or low temperature, it is only necessary to change the percentage that is added to the amount figured for steam.

To demonstrate the above rule, let us take, for example, the living room in the house plan shown here. The windows in the room approximate 46 square feet of glass surface, and as we allow 1 foot of radiation for each 2 square feet of glass we have 23 feet of radiation, which amount would be required to balance the heat lost through this source. Next take the exposed wall—this room has an exposure of 17 feet on one side and 15 feet on the other, adding these together and multiplying by 10, the height of the first floor ceiling, we have 320 square feet from which deduct the 46 square feet of glass surface, leaving 274 square feet of exposed wall. Allowing one foot of radiation for each 15 square feet of exposed wall, we have 18 square feet, the amount of radiation required to offset the heat lost through this source.

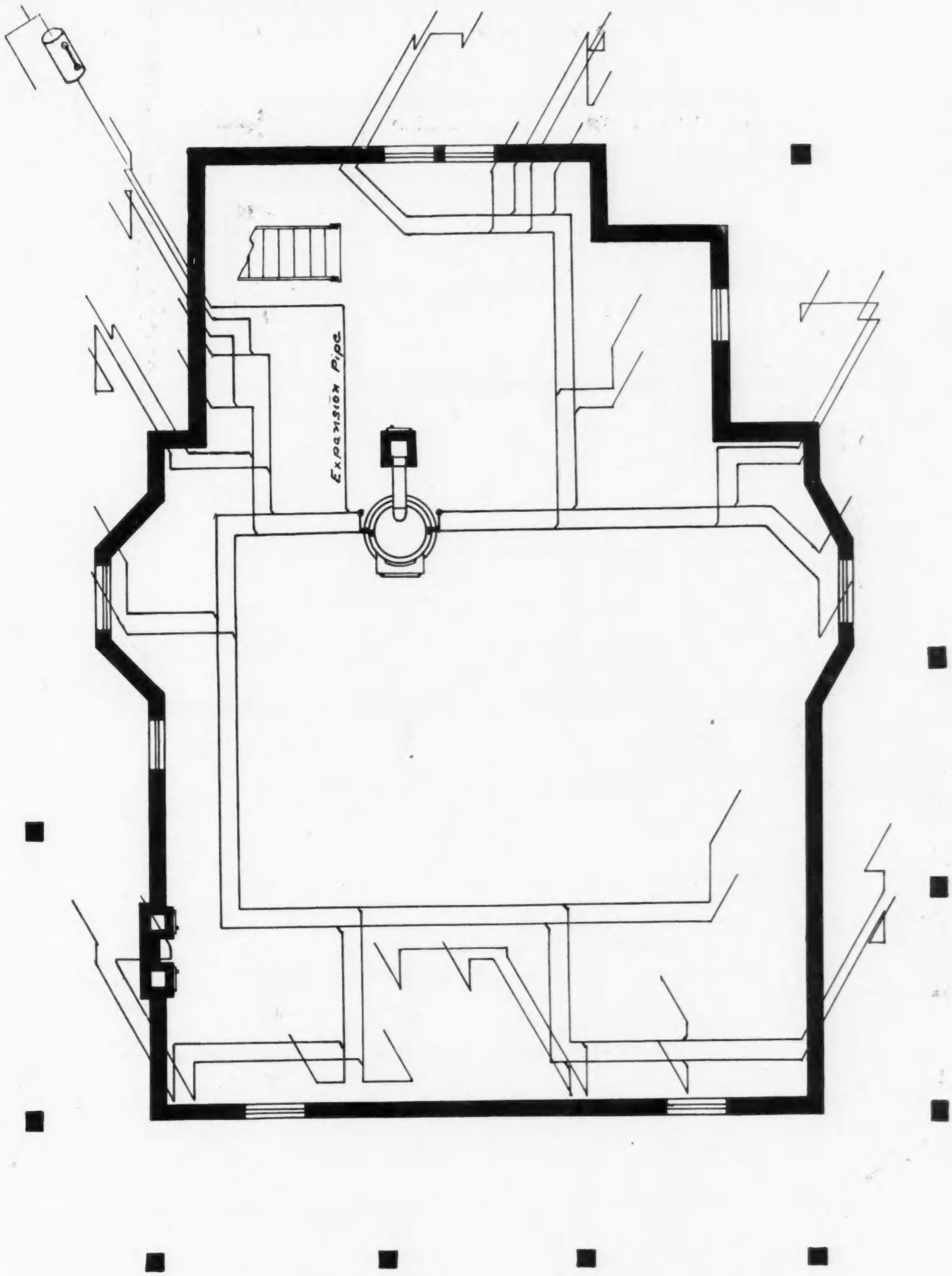
Now we come to the amount of radiation required for the actual heating of the room; this room being 17 by 15 by 10, we have 2,550 feet of cubic contents. Allowing one foot of radiation for each 150 feet of cubic contents, we have 17 square feet of heating surface, the amount actually required to heat the cubic contents of this room.

This gives a total of 58 square feet, the radiation necessary to heat the room to 70 degrees, with steam, in zero weather. Then by adding 60 per cent we have 93 square feet of radiation, the required amount to heat this living room to 70 degrees with hot water.

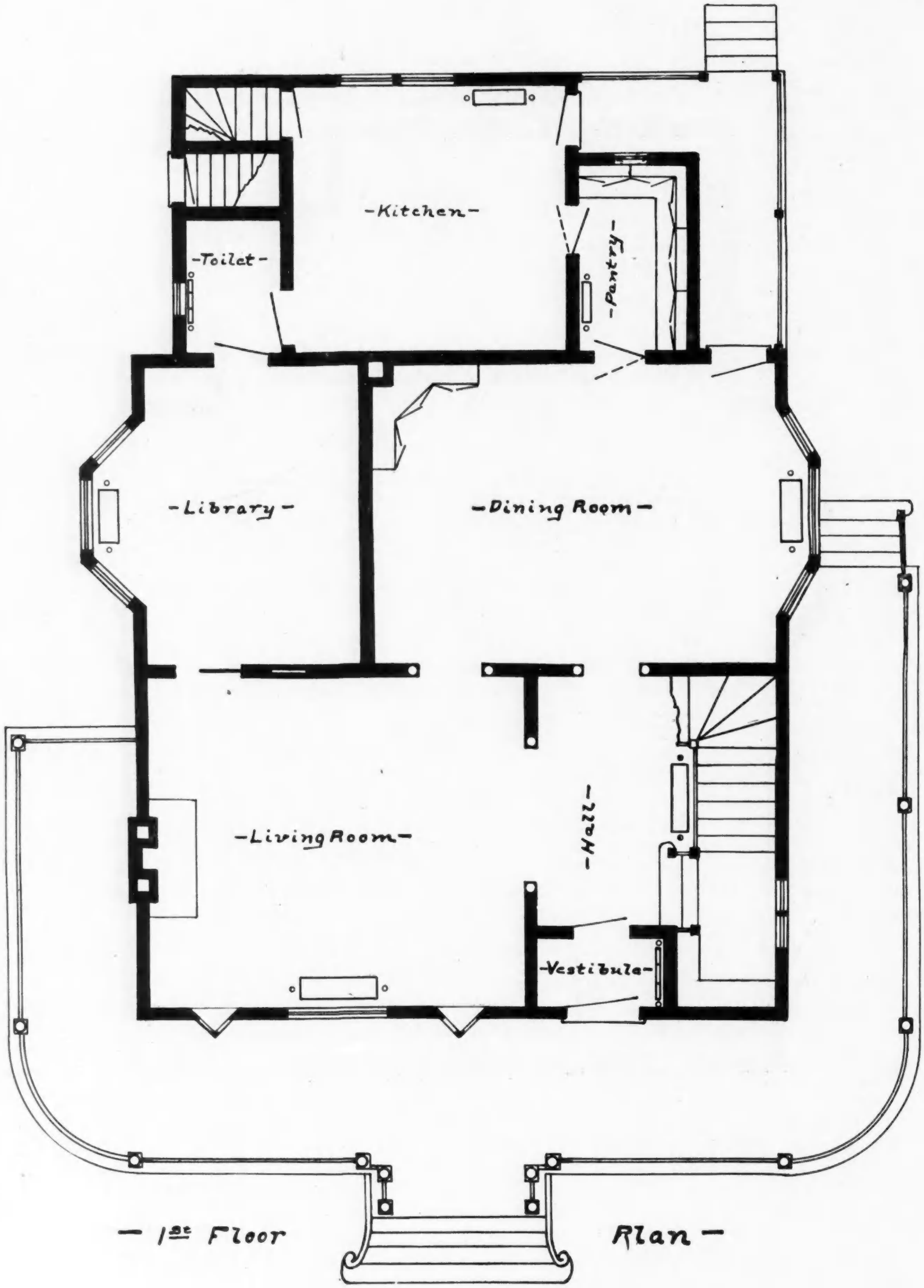
In making this estimate of radiation for the living room, we have, for convenience, counted all fractions as one square foot, and will do the same in other rooms except where, in our judgment, we consider it would make but little, if any, difference to drop them entirely.

By going over the following table, a very good idea may be obtained of one of the best rules in practice today for estimating hot water and steam radiation, and bear in mind that this estimate is based on the use of any standard make of cast iron radiation.

Now that we have the radiation figured, the next thing is how large a boiler is necessary to carry this amount and do it under all conditions. As the footing shows, the house requires 747 square feet of hot water radiation. To this add 25 per cent for the loss of heat by transmission through mains and also a factor



—Basement Pipe Plan—



— 1st Floor Plan —

of safety of 25 per cent, making in all an addition of 50 per cent, which brings the capacity of the boiler up to 1,271 square feet, or for convenience, to 1,275 square feet. Now as to the kind of a boiler, it is considered good practice to use a round boiler for any heating plant that requires less than 1,300 feet of radiation, and this plant coming within this limit, it would be best from an economical standpoint to use any good, reliable cast iron sectional hot water boiler of this description.

One of the most important points that must not be overlooked in planning a heating apparatus is to be sure that the flue to which you are connecting your boiler is large enough to handle a boiler of sufficient capacity to heat your building.

A table showing the areas of flues required for boilers of different capacities will be given in a later number.

Some of our later articles will contain a detailed description of both hot water and steam boilers, and will give specific reasons why one will give better results under certain conditions than others.

Schedule of Radiation

First Floor

ROOMS	Square Feet of Glass	Square Feet Except Wall	Cubic Contents	Square Feet of Steam Radiation	Percentage Added for Hot Water	Radiation Required for Heating With Hot Water
Vestibule	21	39	180	14	50	21
Reception hall	33	221	2,975	52	60	83
Living room	46	274	2,550	58	60	93
Dining room	40	100	2,560	44	60	70
Library	38	122	1,490	37	60	59
Kitchen	28	192	1,560	38	50	57
Toilet room	8	52	270	10	50	15
Pantry	14	116	400	18	50	27
Second Floor						
Family room	35	190	1,350	40	60	64
Family bed room	33	66	1,098	27	50	40
Alcove	15	120	504	19	50	29
Guests' room	25	128	1,521	31	50	46
Chamber	18	125	1,350	26	50	39
Servant's room	18	153	810	25	55	39
Hall	24	147	945	28	50	42
Bath room	8	46	486	13	70	23 747

Problems of Modern City Building

Prof. Charles Zueblin, of the Chicago University, has been delivering a series of lectures on twentieth century city building which are of interest in Terre Haute, where the problem of interurbans is yet to be solved.

Before a gathering of Kansas Cityans at the Central high school there he said the other day:

"To build a twentieth century city we have first to do a whole lot of making over. Our cities grew without plan or system, surrendering every valuable asset they possessed to meet the needs of the hour, until today every great city in America finds itself dominated by outside forces which it created but which it can no longer control. In their eagerness to secure railways, our cities gave up everything. The result has been that other great natural means of transportation have everywhere been neglected. New York and San Francisco are both in the grasp of railroads that have retarded their growth, and necessitated the expenditure of vast sums by the people to get back rights recklessly given away."

But instead of having learned a lesson, the same thing is being repeated, Professor Zueblin said, in the case of interurban electric lines:

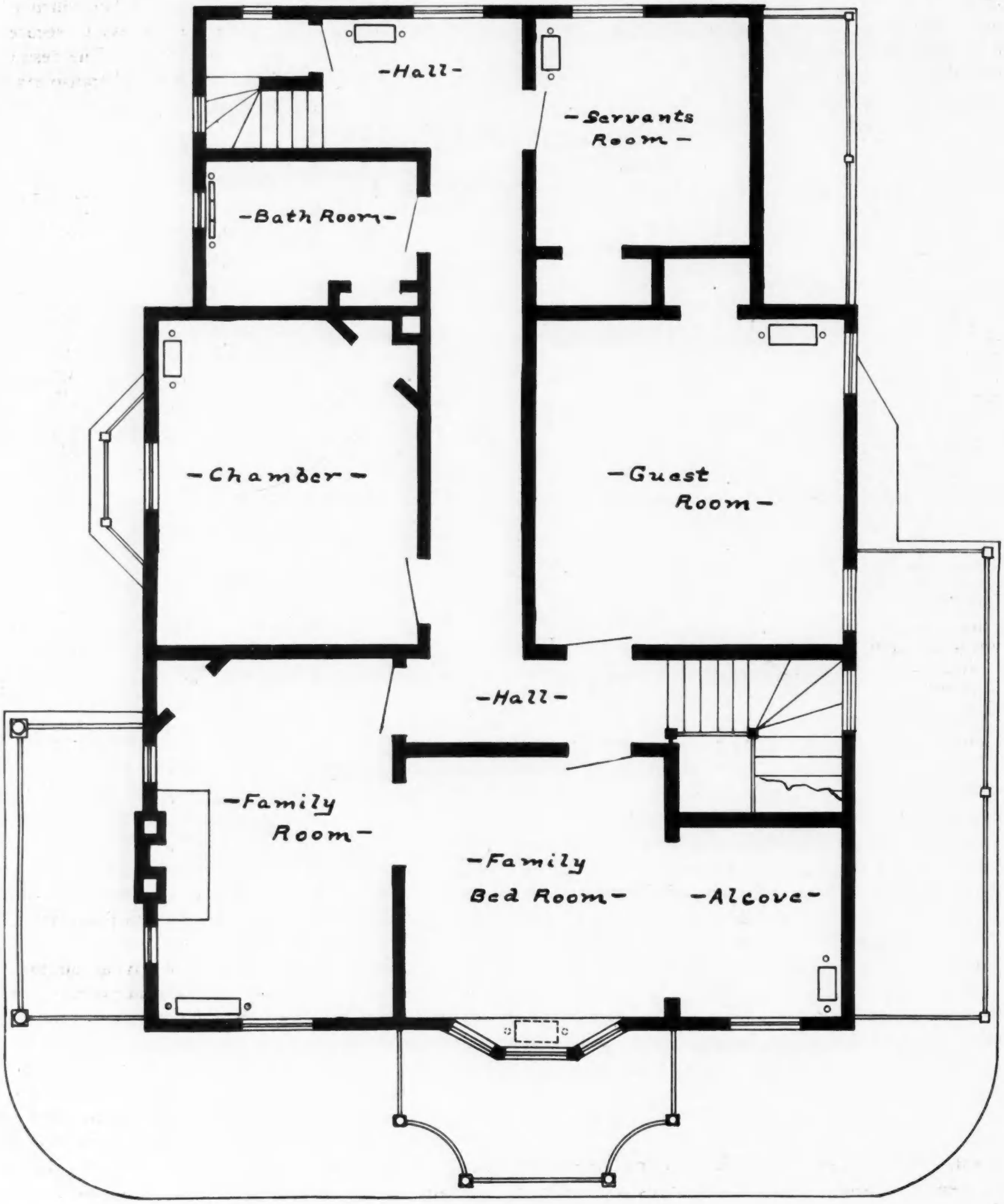
"The cities are now engaged in giving up their streets to electric lines," he said, "and in twenty years we will have the same problems confronting us that the steam roads brought to our doors.

"The city must control the streets absolutely, the space above them and the ground under them. When its right in this matter comes to be recognized it can make its own terms as to what disposition shall be made of them. The city of the future will construct spacious conduits under its streets and rent them to the public utility companies to carry their wires.

"Washington and New York have done away with the overhead trolley. No street can be beautiful that is marred by poles and wires. Streets must also be properly paved, kept repaired and cleaned daily. Billboards must be restricted. Building lines and sky lines must be regulated. Better means of disposing of sewage than polluting our rivers with it must be found. In London this waste is now chemically reduced and used to furnish light and heat."

was all I could do to get it open. You ought to have it trimmed, or greased, or something."

Mr. Edison laughed. "Oh, no," he said, "Oh, no.



— 2ND Floor Plan —

Using His Friends

When Thomas A. Edison was living in Menlo Park, a visitor from New York said to him one day:

"By the way, your front gate needs repairing. It

"Why not?" asked the visitor.

"Because," was the reply, "every one who comes through that gate pumps two buckets of water into the tank on the roof."—*Washington Star.*

PAINTING

Edward Hurst Brown

Useful Paint Suggestions

PAINTERS AS SANITARIANS—CARE OF LADDERS AND ROPES—PAINTING STEAM PIPES AND RADIATORS —KINDS OF PAINT TO USE—MOST DURABLE MATERIAL

THE painter is often called upon to play a very important part as a sanitarian; in other words, it frequently becomes necessary to paint and repaper, after a case of contagious or infectious disease, in order to prevent the spread of such disease to other members of the family. Modern scientific investigation has determined that nearly all diseases owe their origin, or are spread by means of microscopic organisms called germs. These germs multiply very rapidly in a person affected with any disease, and are cast off, either in the breath or from the body, and find a lodgment on any surface that offers sufficient inequalities to hold them. Draperies, fabric hangings, calcimine, wall papers, blankets and similar surfaces will catch and hold the germs thrown off from the sick person, where they will lie dormant for an indefinite period, depending upon the nature of the disease. In some cases, the danger of infection lasts but a few days, while in the case of such persistent diseases as cancer, diphtheria or scarlet fever, the germs may retain their life for months, or even years. The painter who is called upon to refinish a room where a case of disease of this kind has occurred should use special precautions, not only for the sake of those who are to live in the apartment, but as a matter of safety to himself. Nature's disinfectants are sunlight and plenty of pure, fresh air; and the very first thing, therefore, to do, is to remove all shades, open the windows and keep them open, night and day, if possible. But there are many rooms which never receive the light of the sun, and it is wise to disinfect these rooms by spraying formaldehyde solution on sheets and hanging them up in the room for at least six hours; first thoroughly stopping up all cracks in doors or windows. Another method of disinfection is to burn sulphur in open vessels, supported on bricks in pans of water. But unfortunately, the sulphur gases will darken silver and other bright metal work, and discolor any paint containing white lead. Corrosive sublimate or the bichloride of mercury is a very powerful disinfectant. It can be obtained in tablets, which are dissolved in water, to form a solution of one to five thousand, and with this, all the woodwork should be washed down before repainting or revarnishing. The same tablets should be used in the water that is employed to wash off old calcimine, or to saturate the old wall paper, preparatory to scraping it off. To make assurance doubly sure it is well to add carbolic acid to the glue size which is used to prepare the wall, preparatory to calcimining or repapering.

The absolute neglect of sanitary precaution in repapering over old wall paper is surprising and almost criminal. Disease germs are buried under a layer of paste and paper, and the houses or rooms are afterward rented to people entirely ignorant of the fact that cases of contagious disease had ever been in the room. Moreover, the decaying paste, under several layers of paper, becomes a favorite lurking place for bed bugs and other vermin. In New York there is a law requiring old wall paper to be removed from tenements before they are repapered. A similar law, only broader in its scope, so that it would require the removal of all old paper before repapering, should be on the statutes of every state, and should be rigidly enforced by the board of health.

Care of Scaffolding, Ladders and Ropes

During the winter the painter should carefully examine his scaffolding, ladders and ropes, and see that they are all in fit condition for the next season's work. Care taken now to attend to these matters may save one from a damage suit, brought by an injured workman or his widow, that might easily sweep away the savings of a lifetime. There are always plenty of sharp lawyers waiting for the opportunity to bring such a suit, whenever they hear of an accident, offering to take the case on condition that they are given half the amount they recover, and that the injured man is to pay them nothing unless the jury awards damages against the employer.

Ladders and scaffold boards ought always to be stored away under cover. Every rung should be examined for possible defects, and if any are weak or broken, their places should be supplied by new ones. Small pressed steel sockets are made that can be screwed to the inside of the uprights of a ladder to hold a new inch and a half rung. They are inexpensive and practically make a new ladder out of an old one. If the upright itself is broken, a strip of seven-eighths inch hardwood may be screwed on the inside of the upright and these sockets fastened to this piece. This is a much neater and stronger way to repair a broken ladder than by nailing a one by three inch piece of board on the face. A good way to test a ladder is to lay it flat on the ground and then to get a heavy man to walk up and down it, bearing his whole weight on each round. If he carries something heavy in his hands so much the better. It is cheaper for you, if a rung is broken in this way, than if it should break later on, while a man is standing on it painting the side of a house. The first case means only the cost of a new rung. The second means a lawyer's fee for defending a damage suit, and the possible payment of several hundred dollars damages.

All ladders and scaffold boards should be painted some one color, such as blue, green, red or yellow, which will enable you to keep track of them at a building and prevent them from being carried away by the masons, the carpenters or the roofers. Each piece should also be stenciled with your name and address in black, white or some contrasting color. The expense of doing this is slight, as it can be done during inclement days in winter time that would otherwise be wasted sitting in front of the shop stove.

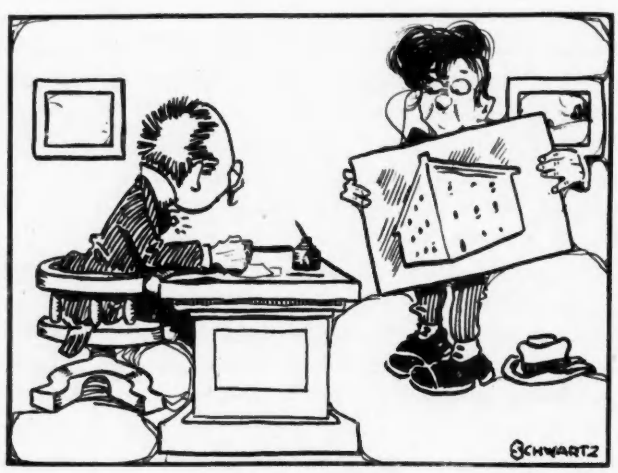
It is a good idea to send for catalogues of ladders and scaffolds. Perhaps you will find something new that will save you a good deal of money. Every minute lost by your men in handling clumsy, cumbersome and out-of-date ladders and scaffold jacks is money out of your pocket. A well-known painter told the writer that until two years ago he had never used an extension ladder. He had a good supply of old-fashioned long ladders that were in good condition, and it had seemed a waste of money to buy new and improved ones. He sees now that the time wasted by his men in lashing together separate ladders and in lifting his old heavy ladders would have paid for extension ladders many times over, and earned him a good profit besides. Speaking of ladders, many people do not know that it racks them badly to raise them up on edge. They should always be lifted square, with both feet on the ground.

Ropes should never be kept in a cellar or damp place or unnecessarily exposed to the weather, as this will cause them to rot. If a set of blocks and falls are left out in the rain, the ropes will afterwards dry upon the surface, but the water that has soaked into them and is hidden beneath the dry exterior may be slowly destroying the fiber. Tarred ropes, such as are used on ship board, cannot be employed in house painting because they would discolor a freshly painted surface, if they happened to touch it. It is a good plan to occasionally pull the entire length of the rope out of the blocks and put it in again in the opposite direction. This brings a new portion of the rope in the pulley blocks and distributes the wear more evenly, adding considerable to the life of the rope.

Finishing Radiators

One of the most durable finishes for radiators and steam pipes that are exposed to great heat is aluminum bronze, mixed to the consistency of paint in the so-called banana liquid. This is a solution of celluloid in amyl acetate, and is very explosive if brought in contact with fire, hence should never be used in a room lit by gas or lamps, or in which a fire may be burning. It has a very peculiar and pungent odor that is disagreeable to many people, but it passes off within a day or two. Bronzes thinned with this medium hold their color well, and stand exposure to the weather. It may be used with gold, copper and colored bronzes, as well as with aluminum, but the latter is most durable, especially when subjected to great heat, as in the case of radiators, besides presenting a very pleasing appearance.

For painted radiators and steam pipes, zinc white should be used as the base, and it should be colored with some pigment not easily affected by heat. For a light buff, Italian sienna may be used; lightened, if desired, with permanent yellow (zinc yellow). For other tints, such colors as ultramarine blue, drop black, burnt sienna, red oxide or Tuscan red, Indian red, yellow ochre, chrome red or madder lake may be used; but on no account should chrome yellow, chrome green, Prussian blue, or other colors affected by heat, be selected. The zinc white should be of the best quality, ground in damar varnish. If only zinc white ground in linseed oil can be obtained it should be washed with turpentine to draw off the surplus oil. The colors should be ground in japan. When the proper tint has been obtained, it should be thinned with turpentine to a creamy consistency and a good pale baking varnish added to give a glossy surface. The pipes should be painted while fairly cool, and steam should not be turned on until the paint is dry and hard to the touch.



MR. KNOWITAALL (to artist who has made a drawing of the building): "And you call yourself an artist, eh? Why, this building is just as high on one side as it is on the other, and it don't run down hill either!"

A Suburban Home

DESIGN OF A MODERATE PRICED HOME WITH GREAT INDIVIDUALITY — ARRANGEMENT OF ROOMS AND FINISH OF SAME

TO BUILD a home of moderate cost that shall have the advantages of the time tested conventional arrangement, yet show the touch of individuality, is the problem that confronts the great majority of people.

It requires no great degree of skill to plan a home where the supply of money is unlimited. It requires no genius to plan a house that shall be original, pro-

viding all thought of the practical is eliminated. Most any builder can put up a house of stock design.

To that class of people of moderate means who are striving for individuality without the sacrifice of the practical, the home of Mr. E. H. Sheldon, Wilmette, Ill., will prove suggestive.

This house is fortunate in having its setting among the native oaks and elms which abound along the shore of Lake Michigan. It is of frame construction with cement exterior. The roof is gabled, with a roof of good pitch, providing room on the third floor for a servant and giving the exterior a suitable dignity. After all, how much more satisfactory is the plain gabled or the plain hipped roof than one abounding in hips and gables, towers and whatnots; and in how much better taste architecturally. The cornice is of the skeleton type, showing the rafter ends. In this day when the demand is for construction which seeks to hide nothing, this kind of cornice is especially appropriate, in addition to its being capable of more artistic treatment. The fact that it is squirrel proof is no mean advantage in a place where squirrels are public pests, where every householder is expected to suffer injury to fruit and property if necessary, for the sake of having them about.

The front of this house is interesting because of the enclosed porch and the separate entrance with its Revere light. This arrangement is becoming quite popular and has many commendable features about it. The separate entrance gives a privacy to the porch that cannot be obtained where access to the house is obtained through the porch alone.

The enclosed porch is furnished with porch furniture, and thus provides the outdoor living room so desirable in warm weather. Furniture dealers are beginning to place upon the market special porch furniture, of such variety and design that the taste of the most fastidious may be satisfied. Special chairs, rockers, tables and porch swings are much in evidence among the furniture displays.

This porch is screened to keep out flies during the day and mosquitoes at night. A porch of any kind is of little use after sunset in the lake regions without its being screened because of the mosquitoes. Access to this porch may be had from the lawn by a screen door and steps concealed from the front.

The entrance is on a level with a broad cement step. This effectually does away with wet or slippery steps, as does the arrangement of the rear entrance, where the basement stair is made to serve a double purpose. The hood overhead serves as a "repeat" of the lines of the main gable. It is placed upon brackets of heavy timber which gives the whole the appearance of a thorough piece of artistic construction. These timbers,

as well as the other exterior woodwork, are rough and are creosoted a warm brown color to harmonize with the soft gray color of the cement.

The Revere light at the side of the entrance is unique, and is useful as well as artistic, for it affords protected illumination to the front entrance and walk at night.

While the first floor plan retains all the advantages of the conventional, individual treatment will be seen

in the large living room with its comfortable fireplace and in the manner of placing the entrance stair. The placing of casement windows in living room and dining room is an additional sign of idividual treatment.

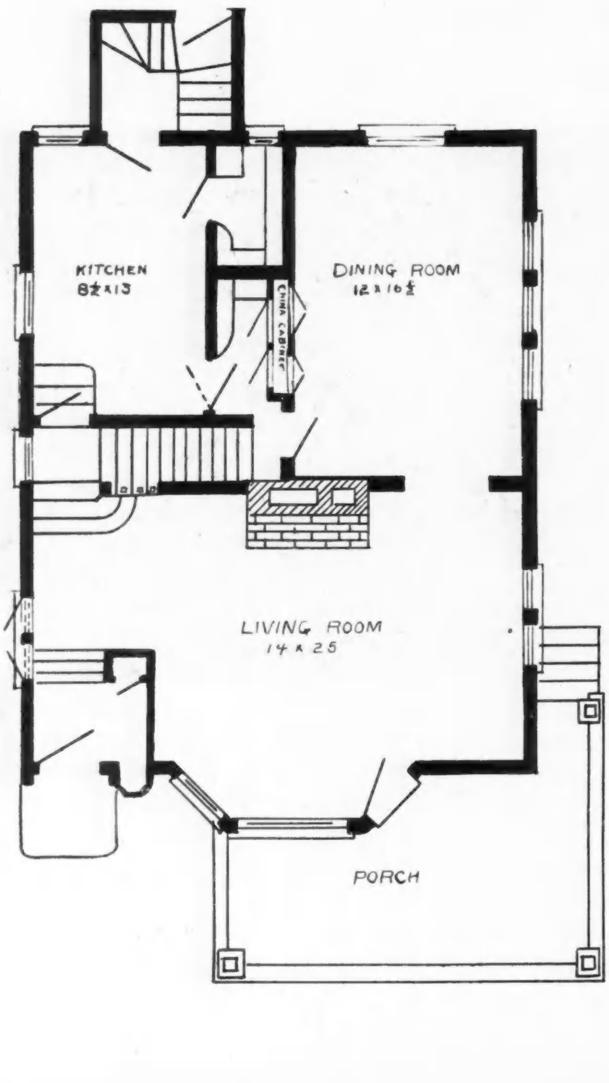
The coat closet is convenient to the front door and is on a level with it. The woodwork about this stair is paneled and is carried up into the living room, of which the entrance is a part, in such a way as to make a tabled effect.

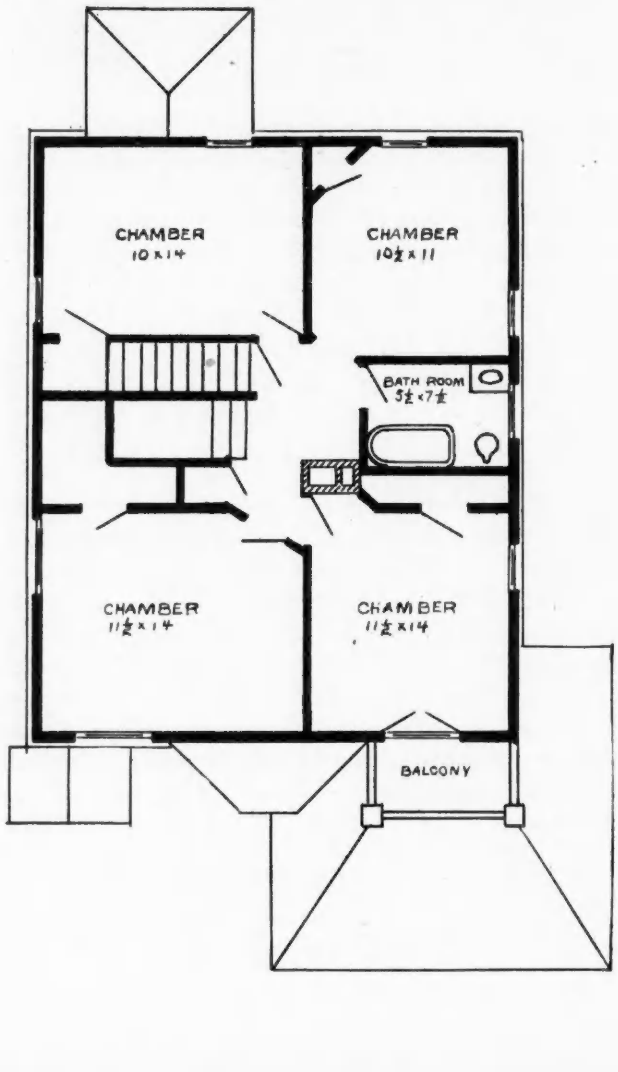
The main stair is well lighted and its platform is reached from the service portion of the house as well as from the front. In a house of this size, a combination stair is a very satisfactory arrangement providing, as it does, for both front and rear.

The dining room is provided with built-in china and linen closets. The walls of the room are paneled with burlap. Triple casement windows, placed high, furnish light with privacy from the north, while the large guillotine in the rear provides a view window.

The kitchen is provided with a pantry and a pass pantry, each with plenty of shelving and drawer room.

The first floor is finished in oak with dull mission stains, a very thin coat of shellac being applied over the stain. On the second story, the floors are of oak, but the other finish is of bass wood, stained in various soft colors. These stains are the result of recent investigation on the part of the big paint manufacturers in their efforts to meet the demand of the art crafts people, and are quite worthy of attention. The art crafts people demanded a stain which should not obscure the grain of the wood and which should be in, not on the wood. The tones, of course, were to be soft and the colors such as would harmonize well. Some of the results obtained on bass, Georgia pine, cypress and other of the less expensive woods are really quite pleasing.





Tells Its Own Story

To the Editor: Grand Island, Neb.

I am ten years old. I wrote the poem on the other page.

The American Carpenter and
Builder is the very best paper on
earth
For nations and nations around
us can tell of its wonderful worth
Men may come and man may
go but still there is the youth.
The American Carpenter and
Builder stands at the head with
truth
There are papers and paper and
papers but none have such
fame as the American Carpenter
and Builder, Who does not know
the name

I have been getting subscribers for the AMERICAN CARPENTER AND BUILDER and get one every time I can. LEWIS RICE.

Truss Construction

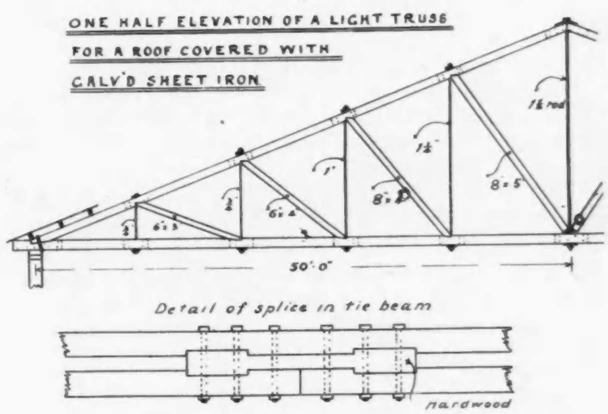
To the Editor: Ravia, I. T.

Being a Charter Member of the AMERICAN CARPENTER AND BUILDER I want to avail myself of your kind offer of assistance and ask you to kindly do a little figuring for me. I have to make a truss for a roof of a farmer's union cotton wave house, 100 feet wide and 170 feet long. I want to make eleven of these trusses, spacing them 12 feet, except the center one, which will come 10 feet from centers of the next one on each side. The rafters are 2 by 6 inches, spaced 3 feet, and iron nailed to them. The studs are 2 by 6 inches, spaced 20 inches. Place doubled studs same where they stand under the truss. The cord is 2 by 8 inches; all other lumber is 2 by 6 inches. Please figure out what the trusses will carry. We do not have any snow to amount to anything in this country, and the pitch is about 2 inches to the foot, so the wind load will not be great.

I have marked X at points where there will be a block, securely nailed from both sides, and the bolts are 1 inch iron with cast washer on each end. The braces stand at 60 degrees, except the 4 on the center, 2 on each side, at about 30 degrees. Also please let me know how much comb I should give them. P. D. ROACH.

Answer: The truss described in the foregoing letter and in your sketch (not reproduced), will not be nearly strong enough to do the work for which it was designed. Strictly speaking, it is not a truss, as the principle of triangulation is not carried out. Instead of joining your struts and braces to form triangular panels, your design gives a number of quadrilateral figures which offer little resistance to change of form, and would easily be racked by an extra force acting on one side, such as a gale of wind. The very low pitch also throws a great strain on the tie beam, and you would be wiser to make your roof a little steeper.

The annexed sketch gives a better form of truss, but your



sizes of members must be considerably increased. Instead of two pieces of 8 inch by 2 inch, as suggested in your letter for the bottom chord (tie beam), two pieces of 9 inch by four inch, at least, will be necessary. The splicing of the pieces to obtain length enough for your span will reduce the sectional area considerably, and must be allowed for. The system of tension rods and struts must be carried out carefully as to joints. "Secure railing," which you speak of, will not be sufficient, bolts being necessary, as well as good shoulders on the raking struts. The blades or rafters (top chords) should be of two pieces of 8 inch by 3 inch, blocked and bolted together at frequent intervals. The sizes of the other members are shown in the diagram. It is very much better to use iron rods for all the tension members as shown. If wood is used, straps and bolts at top and bottom of each member will be required to hold up the weight of tie beam and thrust of strut. If your rods are upset at the ends and a plus thread cut upon them, you can use slightly smaller iron.

It is usual to allow on trusses of this description a camber of half an inch for every ten feet of span. Five inches may seem a lot for this truss but is none too much when the number of joints is considered. T. B. KIDNER.

Solution to Problem

To the Editor: Mondamin, Ia.

I am sending you herewith a solution to the problem given in the November number by Mr. M. W. Leininger, Elverson, Pa., in which he says to take a board 8 inches square and cut

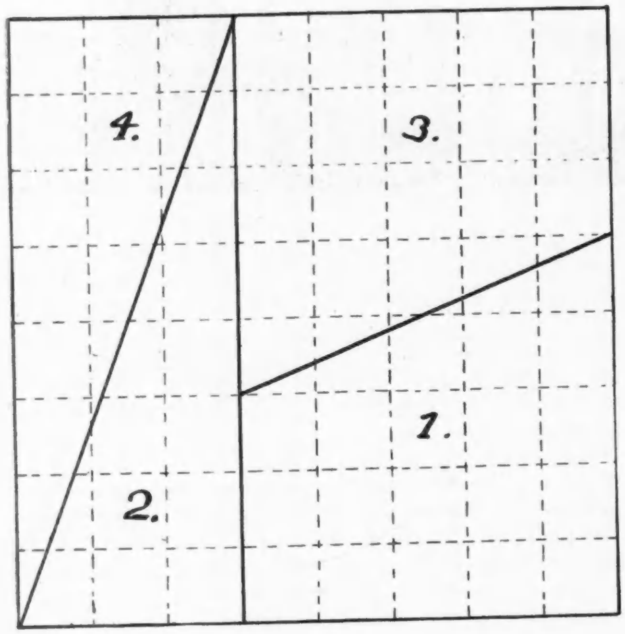


FIG. 1

into four pieces, or to make three cuts and make a strip 5 inches wide and 13 inches long. The illustrations show the square 8 inches on the side and also the one 5 by 13 inches. In the latter you can see where the discrepancy is. Now

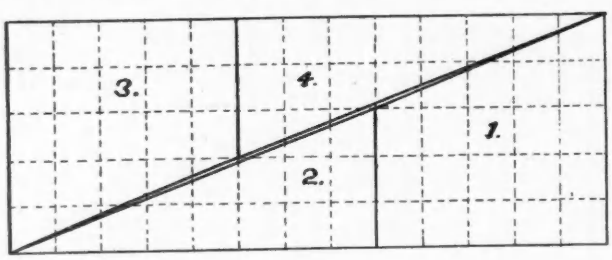


FIG. 2.

if you will measure the strip across the middle you will find that it is wider than at the ends. The angles are not the same, but as the average person invariably measures across at the corners, it makes a very nice deception. I never believed in making something out of nothing and it ought to hold good here. A. S. Worth.

A number of other correct answers were received, but lack of space prevents us from publishing them all. The above is a good solution to the problem. Editor.

Running a Sticker

To the Editor: Breckenridge, Mich.

In reading the September number of the American Carpenter and Builder, I was quite interested in the article on running a sticker, having had about twelve years' experience in a planing mill, and was impressed to write a little about my way of setting up a sticker.

I have found it, in my experience, that the best way to hold a trade in a custom planing mill is to do a job as soon as you can and let your customer go, but always do your work good and then they will come back again.

It is very hard sometimes to have to change a machine for a small job, but it sometimes means getting a good big job from the same customer. I have always tried to do my work the quickest and best way; by so doing, have never had to look for a job.

This is how I set up a sticker quick. I took a piece of board 3 inches wide and planed it down to ⅛ inch thick and put it by the sticker, so it would be handy when I set up the sticker. I sawed off a piece of my ⅛ by 3 inches long enough to reach from the inside of the head to the outside of the knife I had bolted on. I took this piece I sawed off and placed it under the knife, back against the face of the head, the end even with the inside of the head. Then I took a sharp pencil and marked the pattern on the piece of board. I took and bored a hole in it to hang it up. A good way to do is to have a box partitioned off so that each knife or set of knives will be by themselves. Then number them and your pattern, hang your pattern up, and then you can see at a glance what you want. By doing this every time you set up your machine you will soon have all of your patterns so you can set up your machine without any trouble to get the same pattern. When you have an odd job make a pattern of it the same as you did for regular stock. Then if the same man wants some gotten out the same way, you will have the pattern to make the last job the same as the first, and not have to do any cutting and try work.

The same way may be adopted on the shaper just by placing the piece down to the table. Then you will always have the same pattern.

I worked for a man at one time that always dreaded to set up the sticker for a job of molding. He would bolt his knives on the sticker at randon, then start it up and run in a piece, stop his machine, adjust his knives a little, and start up again. I have seen him work like this for three hours, and then guess it was all right, and have that batch put in a different place in the shed, because it would not be like the last batch.

From that time on I made up my mind it would not do to work like this, and began to figure out a better way to do my work. This man whom I just told you about did not last long in business. He soon worked himself out of business. I have always found it that a man has to be cut out for his business if he succeeds. If he is not, he had better quit and try something else, and keep trying, until he finds something which appeals to him. A man may work as hard as he can but he is not working at his calling. He will fail.

E. F. Sensabaugh.

Treating Smoked Walls

To the Editor: San Antonio, Tex.

I read with great interest the article in your last month's magazine regarding the treatment of smoky woodwork for painting, and I will give you a method that we have tried with good success in treating walls that have been smoked up and are to be re-kalsomined and brick that have been smoked up that are to be plastered, hoping thereby to benefit some of my fellow contractors.

If you take one part of shellac and mix it with three to four parts of ordinary gasoline, apply same as paint to the damaged parts and kalsomine over that, you will be surprised at the results. We completed a large store and office building last spring and on the side stood an old brick building which we had to tear down, and were allowed to use all old brick for filling in and backing up and some brick that were in the old flues got on the inside of the walls. They were good and black. We scraped off as much as possible with a steel brush, then applied just common gloss-oil to same and they never did show through the plaster. Just to experiment we left one spot, and it not only came through the size of the brick, but made a spot over two feet square. We removed the plaster, treated same as stated, and it was then all right, and has never shown through since.

GUS F. NIGGLI.

Attractive House and Barn

To the Editor: Dodge Center, Minn.

I am sending you herewith two photographs of buildings erected for Mr. Edward Trapp. The first shows the home

alone, and it has a full basement under the house. The first floor has the hall, sitting room, dining room, bed room, kitchen and bath room. The second floor has four bed rooms

with closets. The finish throughout is in yellow pine. The cost was $2,500.

The second shows the house and barn. The barn is 58 by 88 by 20 feet, and cost $1,500.

E. A. SANFORD.

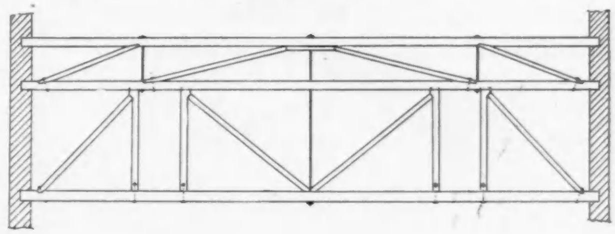
Truss for Concrete Building

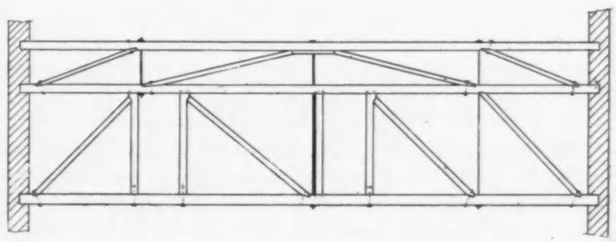
To the Editor: Van Buren, Me.

I would be pleased to have some information in regard to a truss for a concrete block building 42 by 72, walls 17 inches thick. It is a four-story building and the first floor one large room without posts. I want to put in two trusses on the second floor each in a partition running across the building. The enclosed sketch shows where the doors are to be and the location of the partitions. The ceiling on the second floor is ten feet. What is the strongest form of truss to put in and please give proper size of chords. ARCHIE CAMPBELL.

Answer: The diagrams show two trussed partitions, 42 feet by 10 feet, with the doors arranged as you ask. The studding is omitted for the sake of clearness, but would be cut in between the ties and braces and spiked to them at proper distances apart.

You do not state whether or not your trussed partitions are to carry both floors. The sizes given here are calculated for the partitions to carry simply their own weight. Bottom





member, 10 inches by 5 inches; intertie and top member, 8 inches by 5 inches; long struts, 4 inches by 5 inches; upright members, 4 inches by 5 inches; tension rods, 1¼ inch iron; other bolts, ⅝ inch.

If you wish to calculate for carrying floors it would be necessary to give the particulars of what your building is to be used for; whether the upper floors are to be used for storing heavy goods; as public rooms for meetings, dancing, etc., or merely for living rooms.

Recently, the writer saw a store with rooms above, which were originally intended for living rooms, but had been turned into a piano storage warehouse, with the consequence that all the floors commenced to sag badly, and posts had to be placed underneath.

T. B. KIDNER.

How to Find the Length of Jack with the Square

To the Editor: Plainview, Tex.

Will you tell me how to find the length of a jack by measuring across the square? Say I want to find the length for an 8 inch rise to the foot and with a 20 inch spacing.

W. F. BERRY.

Answer: For one foot it is 12 and 8 on the square. Now, since the rise is 8 inches for one foot, for one inch it is 8-12 of an inch. Therefore, for 20 inches, the rise would be 20 times 8-12, equals 13 1-3 inches. Then by measuring from 20 to 13 1-3 on the square, the length will be found to be practically 24 inches, and represents the length of the first jack or the common difference.

However, this required a mental calculation that is not readily solved by the average workman on the spur of the moment. The calculation may be avoided by making the square solve the question, as shown in Fig. 1. Here the rafter is shown in its position with the square applied at 12 and 8. Now mark along the blade, which will be the same angle as the seat cut. Then move the blade along this line till 20 rests at the edge of the rafter, or where 12 did before moving the square, the tongue being moved along accordingly, as shown by the dotted lines indicating the square, and it will

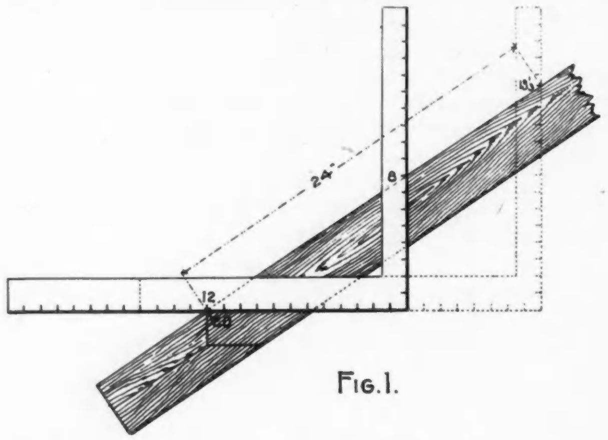


FIG. 1.

be seen that the edge of the rafter passes at 13 1-3 inches. Then 20 and 13 1-3 will give the seat and plumb cut. The side cut of the jack may be obtained by taking 24 and 20 on the square. But you say these figures are beyond the inch divisions on the square. Then take their proportions as 12 and 10 and the member of the square on which the larger number is taken will give the cut.

There are other ways of solving this question. Probably as simple a way as any is as shown in Fig. 2, by applying the square at 12 and 8 and then square out as shown, the additional amount to equal the desired spacing, which in this case is 8 inches, check and move the square without changing figures up to this point and the blade will give the plumb cut. This is a good way to handle fractions in the run or spacing of the rafters, as the square will solve the problem as to the length of the rafter without further mental calculation upon the part of the operator. The length is supposed to be taken along the center of the back, but if it is made to represent the long side of the jack, then after it is cut, it will occupy its proper spacing from the corner of the plate, provided the jack and the hip are of the same thickness. The cuts are founded by the triangle formed by the square on the timber of the dimensions 12 and 8 and 14⅜, and are as follows:

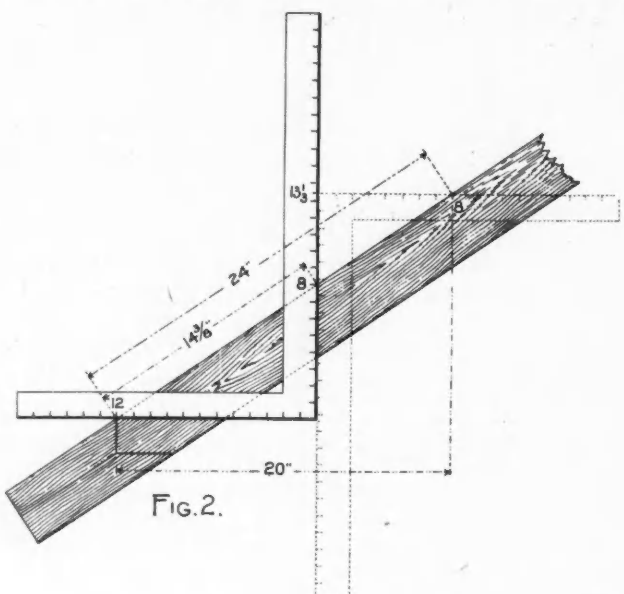


FIG. 2.

Take 12 on the tongue and 14⅜ on the blade and the latter will give the side cut of the jack, and the tongue will give the cut across the face of the roof sheathing to fit in the valley, or over the hip, and by taking 8 on the blade and 14⅜ on the tongue, the blade will give the miter or edge cut of these boards. Of course, it will be readily seen that 12 and 8 will give the seat and plumb cuts. With this system the base remains the same for any pitch or run given the rafters, provided the building is square and the incline the same on both sides of the hip.

A. W. WOODS.

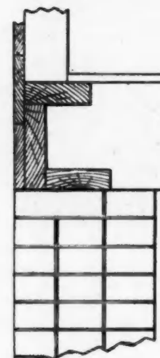
Rat-Proof Sill

To the Editor: Equality, Ill.

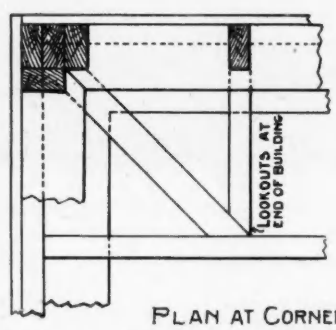
I see in the November number an article by Mr. W. A. Foster, criticising my way of making a rat-proof sill.

Well, I admit that the article, as it stands, leaves good grounds for criticism and I thank Mr. Foster for calling my attention to the same, as I did not properly explain myself, and should have illustrated my plan by drawings, so I send herewith a drawing of the same which explains and eliminates the objections that Mr. Foster finds to it, and, at the same time, I wish to call attention to one weak place in his mode of construction which is overcome in mine.

By referring to the drawings in question, it will be seen



SECTION



PLAN AT CORNER.

that by his plan the building is only tied together by the nails being driven through the 2 by 10 into ends of joists, and should a pillar settle unevenly or creel from any cause, it will throw a strain on the nails that might pull them out and cause the building to spread.

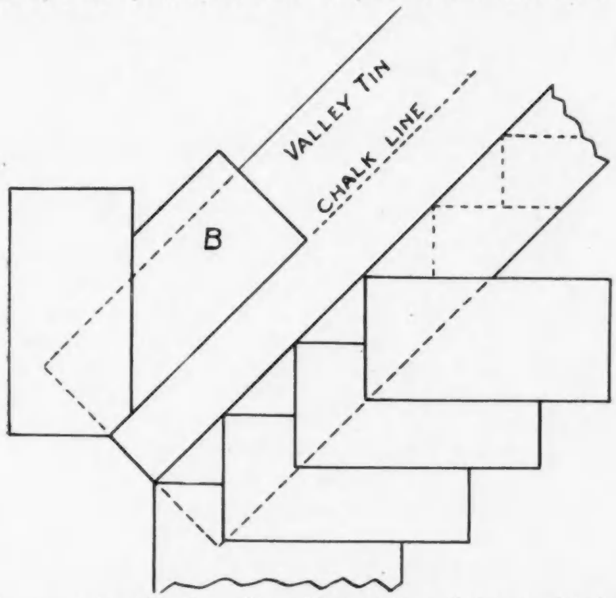
I do not use a box sill or built up sill of any kind for pillar foundations, as too much dependence is thereby placed on the nails, for in a climate like ours, and especially in oak timber, the nails, in the course of a few years, become very weak and brittle from rust.

Some time ago some asked how to run a valley properly, and I have seen very few answers to this query, and possibly from the reason that a valley is a very hard thing to explain by drawing unless one is better at drawing than the average carpenter, but I will attempt to explain my way of doing this, which has proven very satisfactory to me, and may be of some benefit to some of the craft.

Many of the roof troubles are caused by this one weak place, and it is surprising how many otherwise good carpenters do not know how to run a valley properly.

In the first place, see that the valley is perfectly straight and that the sheathing along the valley is of even thickness, then bend your valley-tin over the edge of a 2 by 4, or something with a square and straight edge, to nearly a right angle. Now lay the valley tin in the valley, being very careful that it fits the sheathing closely and nail along the outer edge. Now if the valley buckles or crimps at any place, something is wrong, and must be seen to at once, for either your valley is not straight or the sheathing is uneven. Don't be too economical in the width of valley-tin, as many do, and thereby spoil a good roof for a few cents' cost. Never use less than 12 inches, and wider in proportion to the length of the valley to be run.

Next measure out from center of valley, at bottom of valley, 3 inches on each side and 1½ inches at top, and strike a chalk line along the valley from these points. This makes a taper valley that is not so likely to become choked with



leaves, and makes the valley widest at the end that carries the most water. Next select valley shingles, taking care to use none but the best, and of a width to suit the pitch of your roof, i. e., the steeper the roof the narrower the valley shingle may be. To get cut of valley shingle, lay it in valley with one edge on chalk line, then lay a straight edge parallel with common rafter and crossing the shingle to lower corner at chalk line, mark, cut and use this for a pattern, and if the roof is of even pitch this pattern may be used for all the valley shingles on the roof.

Cut a valley shingle for each course by this pattern; measure from point of shingle (up cut) the distance you want to show to the weather and square across to edge along chalk line; this gives gauge line to lay by. Now begin as at Fig. 1 in drawing, cutting an extra shingle like Fig. 1 to start with at bottom of double course, and laying a regular valley shingle above, as at Fig. 2, with edge on chalk-line and grain running parallel and touching chalk line; place another on top of this one with point at gauge line, and proceed in like manner to top of valley, but be very careful not to drive any nails closer than three inches of chalk line; now the point of each valley shingle is the bottom line of each course of common shingles.

Now if you have never tried this plan, just try it once and see what a nice even valley you have. A merry Christmas to all and success to the American Carpenter and Builder.

J. H. Godfrey.

Practical Method of Roof Framing

To the Editor: Highland, Mich.

The article by Dwight L. Stoddard in the September issue, entitled "Getting the Length of Rrafters," was interesting, but after having tried several methods during twetny years devoted to building I find that for me the best way is to dispense with drafting and measuring and depend on the square. Fig. 1 shows how to lay out the common rafter, which in this case is 9 inches rise to 12 inches run, and for a building 16 feet in width. Simply lay the square on at 9 and 12 eight times, which will give the exact length, and at the same time is in position to mark rise and run cuts. The length and cuts of hip rafter are got in the same manner, only using 17 inches for the run instead of 12. (Fig. 2.) Now measuring across the square with your rule, from 9 to 12 (Fig. 3),

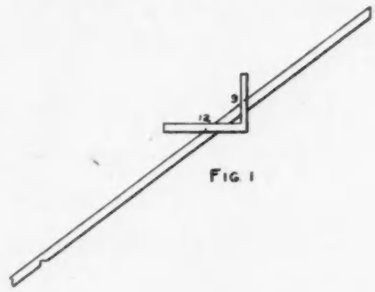


Fig. 1

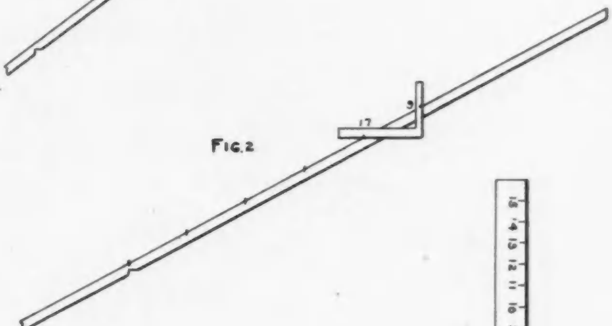


Fig. 2

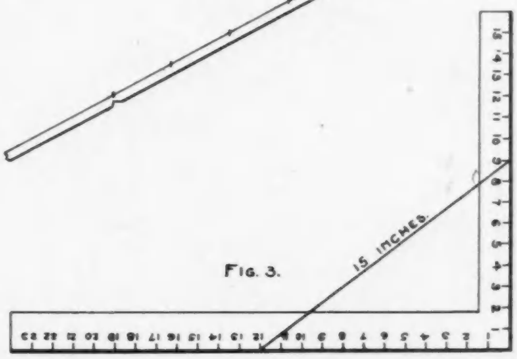


Fig. 3.

you will find it to be 15, therefore, by laying your square on top of your hip rafter at 12 and 15, marking on the 15 side, it will give the bevel for the points of hip rafter and jack rafters. Always deduct from the length of hip rafter whatever is taken up by the common rafters where they come together at the points. (Fig. 4.)

To get the lengths of jack rafters I divide the common pattern into as many spaces as there will be between the

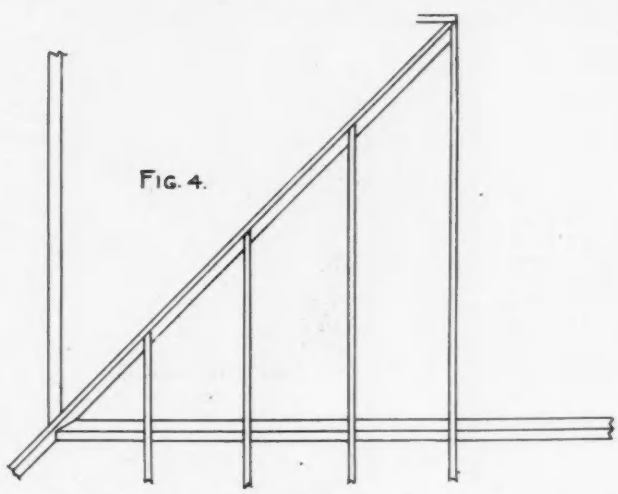


Fig. 4.

corner and the first common rafter and frame as many pairs of each length as required. (Fig. 4.)

The lengths and cuts of valley rafters are got by same method and the same figures, 12 and 15, reversed, or marking on 12 side, will give the cut for cornice and roof boards.

I have framed rafters by this method for roofs having several hips and valleys and every rafter went to place without refitting. The important points in roof framing are accuracy and close attention to the business in hand. There are easy methods for getting lengths and bevels for rafters, roof boards and cornice where two roofs of different pitch come together, but will not try to give them in this article. Albert Gonne.

Practical Trade Appliances

A Most Interesting Exhibit

The Besser Manufacturing Company will show at the National Buffalo Show what is probably the most complete line of concrete machinery made today. They make a very wide variety of machines for every purpose, ranging from the small one-man machine to their big automatic tamper tile machine, and the prices, of course, correspond. Some of their machines being as low as $20.

The automatic tamper tile machine has brought them more testimonials than any other machine which they have ever put out. J. T. Lewis a Co., Eustis, Fla., after the first half hour they had their automatic tamper tile machine, made tile at the rate of 1,500 per day, with one man to tamp and two colored boys to carry away the tile, which is a remarkable record, considering this was a single tamper machine. Mr. Lilles, also in Florida, made 4,800 tile per day with three men and four boys on a two-tamper machine, and the experience of their other users have been similar. It would certainly pay anyone who is looking into the drain tile proposition, which is one of the most profitable in the concrete industry, to investigate the automatic tamper tile machine, which is a unique proposition.

The Besser people also make another machine very different from most on the market in their face-down machine, which not only works very fast, but which makes waterproof blocks of a very wet mixture with very little cement.

It would by all means pay any of our readers who are going to the Buffalo Show to call at the Besser Manufacturing Company booth.

Eureka's Handsome New Catalogue

One of the most rich and practical little pamphlets to be gotten out by a concrete machinery manufacturer has just been issued by the Eureka Machine Company, of Lansing, Mich., giving descriptions and specifications of the Eureka concrete mixers. There are several large full-page illustrations, very handsomely executed, and these are interspersed with most complete and clear descriptions.

Some of the more important advantages of the Eureka mixers are summarized as follows: Material handled but once—less labor; material automatically measured—no poor

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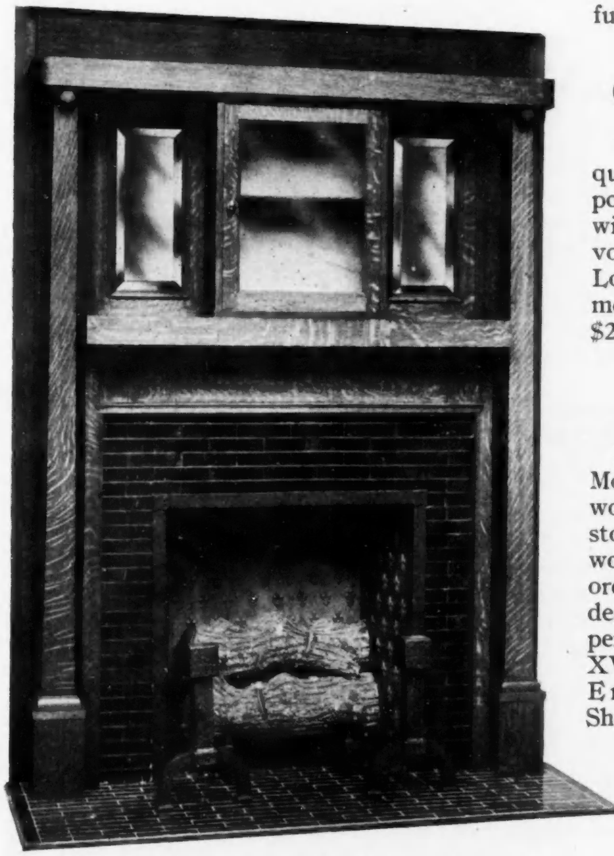
YOUR HOME—Everybody's home should have a mantel. A mantel is useful as well as artistic and decorative. It saves you furnace heat on chill Spring and Autumn days, and diffuses cheer and comfort more than does any other piece of furniture in the house.



A unique mantel of great merit that looks well in any finish 5 feet wide, 6 feet 10 inches high. French beveled plate mirrors 8 x 18 inches. Clear beveled glass 14 x 18 inches in cup board.

CHARACTER and QUALITY

Lorenzen Mantels have a distinct character and quality both in design and workmanship, not possessed by others. This has made for them world-wide reputation and enormous sales. The great volume of our output is what enables us to sell Lorenzen Mantels at such low prices. We have more than 100 designs and styles selling at from $2.50 to $250.00.

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Lorenzen Mantels embrace Colonial, Craftsman, Modern Mission and numerous other styles, and all woods and finishes. Our modern factory, large stock of air-seasoned lumber, and expert, skilled workmen all mean beautiful mantels, far above the ordinary. 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, Rococo, Empire, Early English, Colonial, Chippendale, Sheraton, Adam, etc.

FREE CATALOGUE—The largest and finest catalogue of wood mantels ever issued, with photographic reproductions. Each copy costs us nearly a dollar to issue, but we send it **free** to all Carpenters and Builders. If you write for it now you won't forget.

CHAS. F. LORENZEN & CO., Inc.
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mixtures; keeps crew busy all the time—no waiting; compact, self-contained and handy—easily moved; handles any class of material in any proportions to suit conditions; change from one proportion to another simple and rapid; mixing in plain sight; friction belt drive—an absolute safety device; single lever control—stopped and started instantly; all steel and iron construction, giving great strength and minimum weight.

This handsome pamphlet will be sent free to those interested.

Superior Edge Tools

Years ago, according to accepted belief, it was imperative that to buy a good steel product, the foreign market should be patronized, but late years have proven the fallacy of that belief. Today a large percentage of our steel product, such as edge tools, etc., is manufactured throughout the east. Benj. O. Paine, of Millbury, Mass., very recently has started an edge tool plant. Personally he has been allied with the steel industry for the past forty years, and since starting out a few months ago, his business has been constantly forging ahead. The manufactured line is a superior line of star drills, cold, fumer socket, tang, floor and box chisels, screw drivers, bits, gouges, reamers, slaters, solid and center punches, rose and flat countersinks. He writes us that "Though pain may be not always a pleasure, it is always a pleasure to use Paine's tools, for they are honestly made by honest workmen at an honest price." A postal will bring full information.

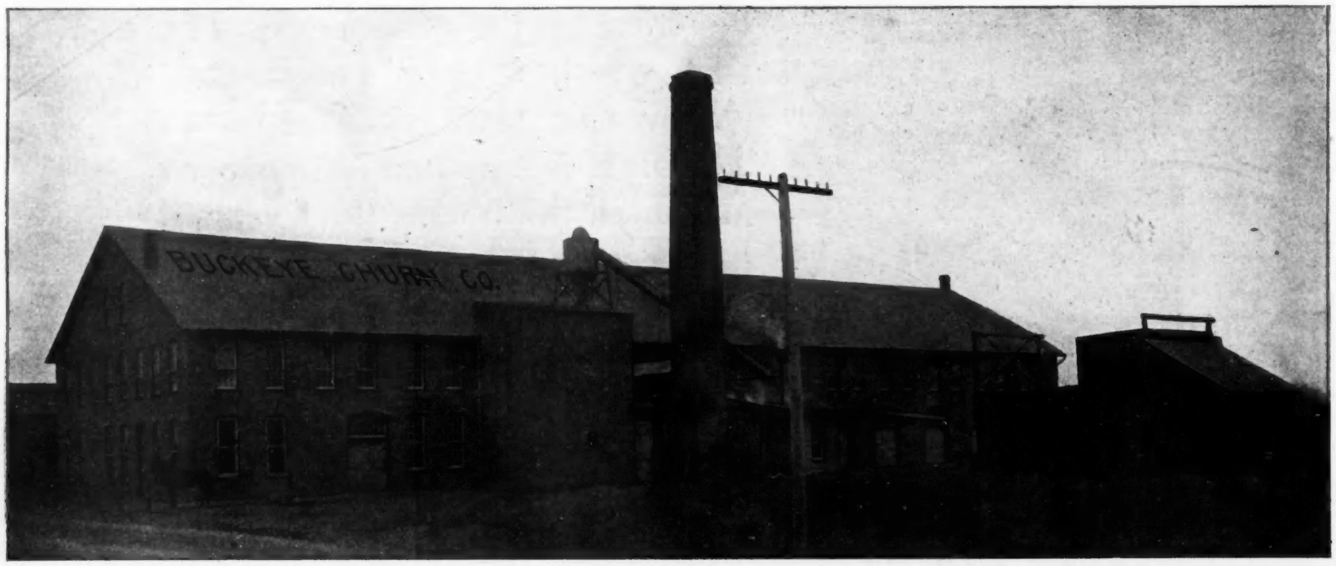
An Adjustable Concrete Mixer

If you are interested in the latest, most modern, and in every way the most practical medium-priced concrete mixer, write to the Ashland Steel Range & Manufacturing Company, of Ashland, O., who have recently placed on the market a mixer which is sure to meet with a big demand. Among other attractive features, the machine contains two adjustable slides by means of which the proportion of cement to sand is regulated, which can readily be made to vary from one to two, and as high as one to twelve. This device also provides a simple but effective method for increasing or decreasing the amount of material which passes through it in a given length of time. For example, if you want to make a one to six mixture, you can set the slides as follows: One-fourth of cement to 1½ of sand, or ½ of cement to 3 of sand, or 1 of cement to 6 of sand, or 2 of cement to 12 of sand. Thus you may maintain the same proportion, but by the last adjustment you turn out eight times as much material as by the first adjustment without changing the speed of your engine. The importance of this feature arises from the fact that concrete should be used as quickly as possible after mixing. Very soon after sand, water and cement are brought in contact with each other, a chemical action takes place known as the initial set. Blocks built of concrete after this process has taken place are materially reduced in their crushing strength. Now, today you may have one man operating a small 16-inch machine; tomorrow you may have four men operating two 24-inch or 32-inch machines. Your mixer should be constructed so as to be easily adjustable to turn out material just fast enough to meet these varied demands. The U. S. Standard Concrete Mixer, which is the name of this new machine, is the only mixer which will produce these results without unduly reducing the speed of the engine.

It will pay those intending to purchase mixers to write for full information concerning this new machine.

Solid Colonial Columns

We illustrate herewith the plant of the Buckeye Churn Company, of Sidney, O. This company manufactures Colonial columns made from the solid wood with a three and four inch hole bored through the center to prevent cracking and checking. This is the only practical Colonial column, as all manufactured columns will sooner or later open up where the joints are glued.



The column sheds of the Buckeye Churn Company have a floor space of 10,000 square feet, the floors are all slatted, and the columns stood on end, so that they are thoroughly dry before shipping. They carry in stock between 10,000 and 12,000 columns, and the capacity of their plant is 200 columns per day. These columns are manufactured principally of blue ash and white pine. The white pine shafts are bought in northern Michigan and Wisconsin and are shipped to them in solid sticks. The columns are hand-turned and hand-smoothed. Then they are taken to the boring machine and bored out; then to the dry kiln and afterwards to the painting department, where they are given two coats. After painting they are piled in the open air for three weeks, and then stood on end on the slatted floor until shipment. All columns are crated before shipping so as to insure their being delivered in perfect condition.

The Buckeye Churn Company also manufactures all their own hardwood, having a first-class saw mill which cuts about 2,000,000 feet per year. Most of this is used by the company themselves. They have one of the largest planing mills manufacturing sash, doors, blinds and interior finish in the state of Ohio. They are also the largest manufacturers of churns

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We have purchased, for **spot cash at a forced sale, over 50,000,000 feet of new lumber.** We are making special concessions to those who buy at once. Our prices to-day are far **lower than lumber prices have been for years.** Order now for immediate or future use. Quick action will save you **big profits.** Remember, prices elsewhere which are even now high, are bound to rise. We can quote 30to60 per cent. better price than your local dealer. We guarantee every carload to be exactly as represented. Closest inspection of our lumber stock invited.

Call at our warehouse and yards at Chicago and see the lumber we are offering, and you will recognize that it is all we say of it. Make your own selection and see it loaded. It is not necessary to come to Chicago, however, unless you wish to. **We can fill your order by mail with just what you want and guarantee you absolute satisfaction.** Ours is the largest direct to consumer **lumber headquarters in the world.** We sell millions of feet annually. Orders filled for every part of the United States. No matter where you live you can save money by supplying your building wants here.

We do not figure fancy prices, but quote figures **that command your patronage.** Whether your order is large or small, we can save you money on it. Our tremendous business of millions of dollars annually is your best guarantee of complete satisfaction of every purchase from us. In our enormous stock of new lumber of every kind we have just what you need for every purpose. Don't buy a stick of material until you get our prices. We offer you everything in the lumber and building supply line needed for **residences, farm homes, stores, churches, barns, out-buildings of every kind, sidewalks and fencing.** In short, **any kind of a structure requiring lumber at from 30 to 60 per cent. less than local dealers' prices.**

IMPORTANT! Send Us Your Lumber Bill for Our Estimate

Make up a list of what you need. Send it to us for our price. If you are putting up a building of any kind whatsoever let us figure with you. **Our prices talk louder than words.** Have your carpenter or contractor send us your list of what is needed if he has charge of your building. Don't pay exorbitant prices to the lumber trust with their long line of lumber yards all over the country. Don't let the local dealer soak you with his heavy profit. Remember, **CHICAGO HOUSE WRECKING COMPANY** buys millions of feet at a time under circumstances of forced sales which mean sacrificed prices and enables us to sell even as low as cost without loss. You take no chances in dealing with the **CHICAGO HOUSE WRECKING COMPANY.** Whether for $1 or $10,000 your order will be filled carefully. Your lumber and supplies are guaranteed exactly as represented.

If you have no need for a whole carload yourself, **get your neighbors to club in with you.** By buying a carload you can **save all kinds of money on freight charges.** We have railroad trains running through our main warehouses and buildings and can load a car to good advantage for you. You can include in this same car, **pipe, plumbing material, roofing, wire, fencing, furniture, hardware and merchandise of every kind.**

We also furnish you building and barn plans absolutely free upon request. Write us for any information or advice you want and we will have our staff of architects answer every inquiry promptly without a cent charge for suggestions. **We simplify your building proposition.**

Our business demands quick action. We must keep our stocks moving. This means prompt shipment—no annoying delays. Let us help you lay out your plans. We will relieve you of every detail. That is what our **special builder service** is for. Be sure and send us your lumber bill for estimate. Feel free to write anything you want to know along the line of building and building supplies.

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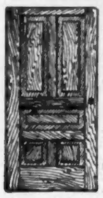

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10,000 Good doors in various sizes, secured by us in connection with our dismantling operations. Most of them with hardware. Prices range from **40c** up.

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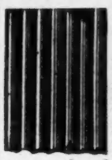
200	10 ft. x14 ft.	2.60
300	2 ft. 8 in. x 2 ft. 10 in.	1.20
500	2 ft. 5 in. x19 ft. 5 in.	4.70



$1.50 Per 100 Square Feet STEEL ROOFING

Most economical and durable roof covering known. Easy to put on; requires no tools but a hatchet or a hammer. With ordinary care, will last many years. Suitable for covering buildings of any kind. Also used for ceiling and siding. Fire-proof and water-proof. Cheaper and more lasting than shingles. Will not taint rain-water. Makes your building cooler in summer and warmer in winter. Absolutely perfect, brand new, straight from the factory. **$1.50** is our price for our No. 15 grade of Flat Semi-Hardened steel roofing and siding, each sheet 24 in. wide and 24 in. long. Our price on the corrugated, like illustration, sheets 22 in. wide and 24 in. long, **$1.75.** At 25 cents per square additional we will furnish sheets 6 and 8 ft. long. **Steel Pressed Brick Siding** per square, **$2.00. Fine Steel Beaded Ceiling** per square, **$2.00.** Can also furnish Standing Seam or "V" crimped roofing. ***WE PAY THE FREIGHT*** to all points East of Colorado except Oklahoma, Texas and Indian Territory. Quotations to other points on application. This freight prepaid proposition only refers to the steel roofing offered in this advertisement. Satisfaction guaranteed or money refunded. We will send this roofing to any one answering this advertisement C. O. D., with privilege of examination if you will send 25 per cent. of the amount you order in cash; balance to be paid after material reaches your station. If not found as represented refuse the shipment and we will refund your deposit.

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Barn Paint, in bbl. lots per gal., 30c; Cold Water Paints, celebrated Asbestine brand, outside use, fully guaranteed, best assortment colors, 50 lb. lots, per lb., 3c. "Perfection" Mixed Paints, per gal., 75c. "Premier" Brand, 3 year guarantee, per gal., 95c. Varnishes.

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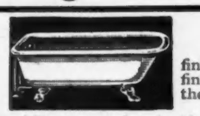
"EAGLE" BRAND PREPARED ROOFING

Composed of two and three sheets of carefully saturated felt; between sheets water-proof insoluble cement; compressed together making a solid flexible sheet with layers of composition thoroughly combined. Practically fire-proof against sparks and cinders. 32 in. wide, about 40 ft. long. 108 sq. ft. to the roll.

2 ply per square . . . **60c** 3 ply per square . . . **90c**
Roofing cement, caps and nails, additional per sq., **35c**

"Rubberized Galvo" Roofing

This is highest grade roof covering manufactured. Absolutely nothing finer. No coating necessary. Practically indestructible. WATER-PROOF, FIRE and LIGHTNING-PROOF. Brand new. Its base is the strongest and best wool felt obtainable, closely woven and especially made to meet severe roofing conditions. It is weather-proof, fire resisting. No tar, asphaltum or paper used in its manufacture. It will last from 20 to 50 years, depending upon the ply you purchase and local condition. It is easy to lay. We furnish nails and caps, as well as sufficient cement to make laps. Our price is per 108 sq. ft. as follows: 1 ply . . . **$1.35** 2 ply . . . **$1.55** 3 ply . . . **$1.75**



BATH TUBS $6.00

300 "New Style" Bath Tubs, finest galvanized steel finished inside with special white japanned enamel. Nicely finished outside. Heavy wood rim. Length, 5 ft. While they last, ***$6.00,*** 5½ ft. ***$6.40.***

Handsome porcelain tubs with 3-in. roll rim. Seamless white enameled on inside, finest nickel-plated fittings, each **$14.00.** Full line of other tubs up to **$25.00.**

LIVE IN CITY COMFORT

Even though your home be on a farm, we can furnish complete pneumatic water works system at from $35.00 up.

PLUMBING MATERIAL, All Kinds

at prices that do not represent original cost of production. We buy at Sheriffs' and Receivers' sales only.

Cast Iron Enameled Sinks, up from . . . . **$1.25.** One Piece Enameled Iron Sinks with backs and nickel-plated faucets, **$11.00.**

OUR NEW 500-PAGE CATALOG No.742 FREE

THIS WONDERFUL BARGAIN BOOK is just out and ready to be sent to you at once. It is a book such as every shrewd buyer must have. **500 pages** with thousands of items of the very best merchandise and supplies bought by us at **Sheriffs' and Receivers' Sales.** It will pay you to keep it handy. Its pages contain a full record of what we still have on hand from the wonderful St. Louis World's Fair. Merchandise, machinery and supplies, articles for every one. You will find it useful in the home, in the field, in the workshop or in the office. Write us to-day.

Mention you have seen this advertisement in American Carpenter and Builder and what items interest you most.

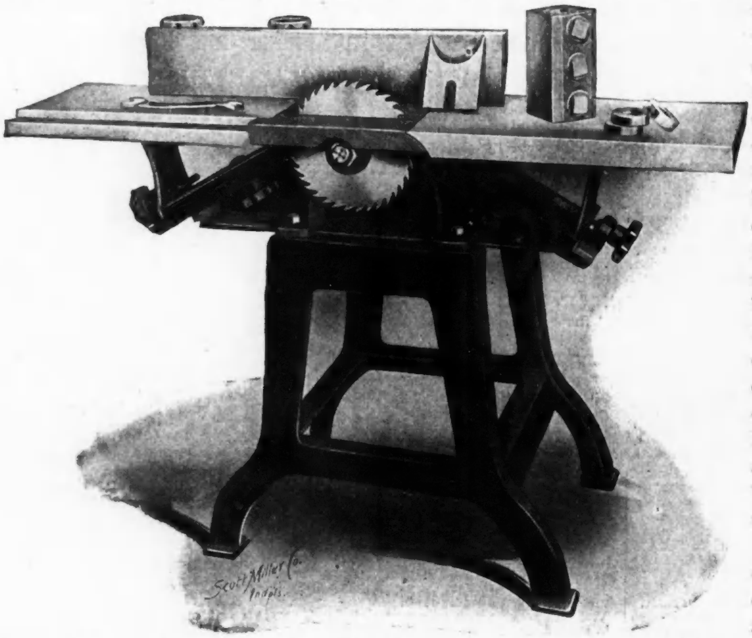
CHICAGO HOUSE WRECKING CO., 35th and Iron Sts., CHICAGO

in the United States, as well as extensive manufacturers of washing machines, etc.

Those wishing to secure porch columns should write to this company for full information.

A Practical Machine

This combination saw table and jointer, manufactured by the Sidney Tool Company, Sidney, O., is designed especially



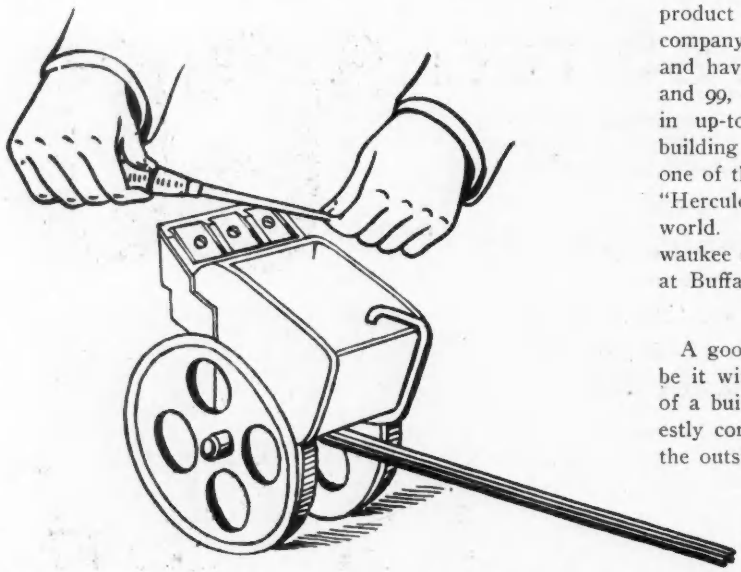
to meet the requirements of the contracting and building trade, where large tools are not required, and where the contractor merely wishes a small machine for joining and ripping, such as door and window frames, and also plowing same. As this tool is built with a removable head, so that the 6 inch cutting knives can be taken off and you can put in a grooving head, dado head, and also a molding bit, you can make all kinds of small molds and do all kinds of work on window and door frames. This machine is furnished either on iron legs, or arranged so it can be put on an ordinary bench, complete with the countershaft. They also make a complete boring attachment to go with this machine which fastens on at the back, also a wooden table that goes on in place of the iron table which is used for joining and ordinary ripping. By means of lifting the iron table off and placing the wood table on you will have a complete rip and cut-off saw. This additional table is made of wood, fitted with rip and cut-off gauges, both straight and miter. The length of jointer table over all is 36 inches, the length of cutting head 6 inches, size of saws it will take up to 10 inch. This machine is all built in first-class manner, journals being bound and fitted with self-oiling bearings—in fact it is made in a first-class condition in every detail. Where a small combination machine is required there is no machine on the market that will equal this little combination jointer and rip saw. Kindly note their ad. on page 433, which gives you an idea of the different machines which they make. Their catalogue is free and they would be pleased to send you one.

The Sidney Tool Company also wish to say to the contracting and building trade that all of their machines are made with special materials throughout and put up by first-class workmen. The reason their tools are so reasonable in price is because they build them in large quantities and with the most up-to-date machinery that can be obtained. The reason they are popular is because they

give perfect satisfaction. There is nothing on the market that will equal the Defiance machines in both workmanship and accuracy for any where near the price. Do not fail to write them before purchasing.

The Little Shaver Floor Scraper

The Little Shaver Floor Scraper, sold by the Contractors' Supply & Equipment Company, Old Colony building, Chicago, has one feature which stands way above other floor scrapers now on the market, in that the knife can be sharpened while attached to the machine.



This is a great advantage, inasmuch as the blade does not have to be unbolted and bolted in order to put on a new edge. The hinged blade bar of the Little Shaver Floor Scraper makes this point possible, for the heavy weight of the scraper can be turned over and rest on the handle bar, putting the blade at the right angle.

Hercules Machines at the Convention

The Century Cement Machine Company will have an unusually attractive exhibit of "Hercules" machines and their product at the coming convention in Buffalo, N. Y. This company believes in the old maxim, "Seeing is believing," and have accordingly arranged for sections 94, 95, 96, 97, 98 and 99, where they will be glad to meet all those interested in up-to-date appliances for the manufacture of concrete building stone. The Century Cement Machine Company is one of the oldest concerns making block machinery, and their "Hercules" machines are used in all parts of the civilized world. Judging from former displays at Indianapolis, Milwaukee and Chicago, it goes without saying that their exhibit at Buffalo will be one of the big features of the convention.

Put Up a Good Front

A good appearance is one of the first essentials in this life, be it with man or with things material. In the construction of a building of any description, next to its being built honestly comes its appearance. Take for instance the store. If the outside be ill-looking, trade is lost, no matter how handsomely the interior be decorated. There is nothing that adds so much to the outside appearance of a business place as an all-glass front, and there are at present on the market many different ways of installing them. The Whitney Manufacturing Company, of Waltham, Mass., is selling the Simplicity Expansion Fastener, which shows an entirely new principle in store-front construction. Among its exclusive features are: 1, Protection from

Millions in Increased Salaries

Can we really bring **YOU** a substantial increase in salary? Just read the following: During the last year over 4,000 I. C. S. students have ***voluntarily*** reported advancement in position and salary to us. This is but a small percentage of the whole number of our students whom we have thus helped; but to this small percentage we have brought increased salaries amounting in one year to over ***two million dollars!*** To be more exact, $2,221,332. You can imagine the enormous amount brought to our entire student body—easily more than ten times this much.

Are **YOU** getting your share of these millions?

Are you willing to make a slight effort to secure it?

It requires only a slight effort. The simple marking and mailing of the coupon below will bring, without further obligation to you, full explanation as to how we can adapt our plan to your personal needs and income—the plan of an institution whose sole business for 16 years has been to provide ambitious wage earners with the means to advance their positions and double, triple, and quadruple their salaries. Surely it is more practical and sensible to pursue a definite, systematic plan for promotion than to trust to luck for it. At least let us tell how you can increase your salary in the surest, quickest, and easiest way in the world. ***Mark and mail this coupon*** **NOW.**

International Correspondence Schools
Box 910, Scranton, Pa.

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

Architect	Estimating Clerk	Foreman Mach'st
Arch'l Draftsman	Bridge Engineer	Sh.-Met. Pat. Drfts.
Contr. & Builder	Civil Engineer	Mining Engineer
Building Inspector	Surveyor	Textile Expert
Struct'l Engineer	Mechanical Eng.	Bookkeeper
Struct'l Draftsman	Mechanical Drafts.	Stenographer
Plum. & Heat. Con.	Stationary Eng.	Ad Writer
Supt. of Plumbing	Electrical Engineer	Window Trimmer
Form. Steam Fitter	Electrician	Illustrator
Plumbing Inspect'r	Elec.-Light. Supt.	Civ. Ser. Exams.
Heat. & Vent. Eng.	Elec.-Ry. Supt.	Chemist

Name ______________________

Street and No. ______________________

City ______________ *State* ______________ strains afforded to each drilled hole in the glass plates; 2, convenience with which they are put onto the glass; 3, neat and trim appearance it gives; 4, set it up as tight as you will and glass will not break if properly put on; 5, it accommodates itself for variation in the position of any two registering holes; 6, any required angle can be obtained; 7, inasmuch as all parts are of brass, heavily nickeled, they will not corrode; 8, they are especially adapted for mitered corners, and are equally as successful in show-case work as they are in patent store fronts.

A letter or card addressed to the above firm will bring you a free sample, together with full information regarding the Simplicity fastener, and if you are interested it will be money in your pocket to write them.

A Georgia Marble Test

Georgia marble is famed for its beauty, durability and strength and for these reasons is in great demand for building construction. Its various qualities are highly attested to in the following report made by J. B. Johnson, professor of civil engineering and director of testing laboratory, etc., of Washington University, of St. Louis, Mo.:

WASHINGTON UNIVERSITY TESTING LABORATORY

St. Louis, Mo., Feb. 28, 1889.

Mr. R. J. Lackland, President Boatman's Bank, St. Louis, Mo.—Dear Sir: I have the honor to report to you the results of certain physical tests made by me on specimens of Kennesaw (Georgia) marble submitted to me by Messrs. Bradbury & Jones, of this city.

CRUSHING STRENGTH.—Six three inch cubes were tested upon a U. S. Standard Riehle testing machine of 100,000 pounds capacity. The details of these tests are given in the accompanying certificate. I was only able to break four of the specimens. The other two stood 112,000 and 109,300 pounds respectively without crushing; which was a much greater load than the machine should be allowed to carry.

The lowest test was 76,200 pounds, or 8,330 pounds per square inch, but since two of the six specimens remained uncrushed, it is perhaps fair to say the average crushing strength is not less than 10,500 pounds per square inch. This is equivalent to 750 tons per square foot.

The fractures showed a remarkably uniform composition without seams or lines of cleverage.

The strength of granite is from 700 to 1,000 tons per square foot; the strength of limestone and marble varies from 350 to 700 tons per square foot.

The average strength of the best sandstone is about 500 tons per square foot.

The average strength of the St. Louis pressed brick is about 250 tons per square foot.

It is thus seen that the strength of Kennesaw marble is about equal to that of granite, and greater than any other form of building stone or brick.

DURABILITY AND MAINTENANCE OF COLOR.—When a building stone is free from disintegration and discoloring agents in its own composition, as this stone certainly is, its durabilty and also its permanency of color depends almost wholly on its solidity or on its freedom from porous cavities which will absorb water.

This density and solidity of structure I have examined in three ways, by determining the amount of water it will absorb, by microscopic analysis and by finding its specific gravity.

A three-inch cube was soaked in water twenty-four hours and then weighed, it was then dried over a steam coil at a temperature of about 215 degrees F., for twenty-four hours, and weighed again. The difference in weight divided by its dry weight is the percentage of its weight which it will absorb, as shown by the accompanying certificate, the absorption is but six one-hundredths of one per cent.

This is by far the smallest absorption I ever knew any building stone to have.

Granite absorbs from 2-10 to 3 per cent.

Limestone absorbs from 3-10 to 6½ per cent.

This remarkable density is borne out, however, by the other two tests.

A specimen of the stone was prepared on a glass slide of a thickness about one one-thousandth of an inch, and examined under a microscope having a magnifying power of 150 diameters. It was found to be composed entirely of crystals, with no visible openings or crevices of any kind for the absorption and retention of water.

This is one of the most crucial tests for the density or solidity of a stone, and it stood the test perfectly.

The specific gravity was found to be 2,724, or its weight is 170 pounds per cubic foot. This is a remarkable weight for such a material, being almost the same as granite.

All three of the tests agree, therefore, in showing the stone to be almost absolutely non-porous.

This is a very important fact. It shows that it is absolutely proof against the action of frost, and what is of greater importance in a dusty and smoky city like ours, it will not absorb the dirty or sooty water which runs down the walls of all our buildings, and hence will not be stained by it. This is the great cause of gradual darkening of most building stones in this city, but I am of the opinion that this stone will be washed clean by every rain like so much glass, and that the soot will not be absorbed into it.

I have made no chemical tests of the stone, but it is evidently a


The CORNER STONE IS KNOWLEDGE
Do what you do *well*. Build what you build *well*, whether it is your life's career, your home or a mammoth business block. No matter what you undertake, first learn to do it right. Knowledge—practical knowledge, should be the corner stone upon which to rear your structure, no matter what that structure is.
CYCLOPEDIA OF
ARCHITECTURE, CARPENTRY AND BUILDING
Ten volumes, page size 7 x 10 inches. Handsomely bound in red half morocco. Over 4,000 pages; 1500 illustrations, full page plates, plans, sections, etc. De Luxe books in every particular. The chapters on estimating, the law of building contracts, plumbing, heating, including steam, hot water and furnace, ventilation, wiring, etc., are very complete. The work contains numberless practical examples, tables, "short cuts," etc.
There are over 200 plans of artistic moderate priced houses, chosen by a staff of architects as typical of the best work of the best architects of the entire country—invaluable to anyone contemplating building or alterations. Also over 40 practical problems in construction, based on the Rotch Scholarship Examinations of Boston, compiled and solved by S. T. Strickland, Ecole des Beaux Arts, Paris, with Chas. H. Rutan, of Shepley, Rutan & Coolidge, the well known firm of Architects, as collaborator.
The work contains not only a complete index to the subjects, but also a complete index of the plans and elevations together with the names of the architects.
The progressive architect, carpenter or builder is eagerly seeking all the information possible on ***Reinforced Concrete.*** Concrete is being used more and more in construction of dwellings and business buildings, factories, etc. It is a subject that is right in the public eye. Many architects and builders are specializing in reinforced concrete work. It will pay you to secure the Cyclopedia if for no other reason than to get the information it contains on this important subject. If you are a young man, it opens up an exceptional field of study for you which will repay you well for your investment of time and money.
In order to advertise the ***superior methods of instruction*** of the American School of Correspondence, Chicago, a limited number of sets of this great Cyclopedia will be sold at ***one-third regular price.*** We believe our books offer the best method of acquainting the public with the superiority of our regular courses of instruction. ***We employ no agents.***
LESS THAN 1/3 REGULAR PRICE
Free for Examination
——$19.80 instead of $60.00——
Sent by prepaid express Pay $2.00 within 5 days and $2.00 a month thereafter. If not adapted to your needs, notify us to send for them at our expense.
A Few of the Many Subjects Included in this Work
Estimating, Superintendence, Contracts, and Specifications, the Law of Building Contracts, Carpentry, Materials, Masonry, ***Reinforced Concrete,*** Cement, Testing, Mixing, Frost Effects, Finishing, Construction Forms, Elasticity, Resistance, Retaining Walls, etc., Foundations, Stair Building, Framing, Steel Square, Plastering, Hardware, Painting, Glazing, Heating, Furnace, Steam, Hot Water, Plumbing, Ventilation, ***Electric Wiring,*** Bells, Lights, Burglar Alarms, Steel Construction, Elevators, Practical Problems in Construction, Architectural, Mechanical, Freehand and Perspective Drawing, Blue Printing, Shades and Shadows, Architectural Lettering, Rendering in Pen and Ink and Wash, Water Color Hints for Draftsmen, The Greek and Roman Orders of Architecture, Sheet Metal Pattern Drafting, Roofing, Tinsmithing, Sheet Metal Cornices, Skylights, Test Questions.
AMERICAN SCHOOL OF CORRESPONDENCE
CHICAGO
PLUCK
AMBITION
ENERGY
1-08. A.C. & B.
AMERICAN SCHOOL OF CORRESPONDENCE
Please send set Cyclopedia Architecture, Carpentry and Building for five days' free examination. I will send $2 within five days and $2 a month until $19.80 is paid; otherwise I will notify you to send for the books.
Name ....
Address ....
Employer ....

pure calc-spar or carbonate of lime, entirely free from foreign or hurtful ingredients.

Since its strength is far beyond the need of any building material, and since it seems so perfectly adapted to resist the disintegrating action of frost, and to be proof against the absorption of all discoloring matter, I do not hesitate to pronounce it a material eminently fitted for building purposes on a large scale in the city.

Very respectfully yours,
(Signed) J. B. JOHNSON,
Prof. Civil Engineering and Director of Testing Laboratory, Etc.

Successful Draftsmanship

Often a contractor or builder is called upon to submit a plain sketch or a complete business-like looking set of plans, for which he could charge a good price or in return receive a good fat contract, but is unable to do so on account of not having the ability which he would have, if he had taken a course of thorough practical training along this line.

Mr. F. V. Dobe, M. E., and chief draftsman of the Engineer's Equipment Company, 99 Washington street, Chicago, has for many years been giving personal and individual instruction in complete architectural drawing and building design, and is meeting with remarkable results and success in qualifying the most inexperienced man with ability, in a short time, to make A-1 drawings, designs and all details.

Many a contractor and builder is wasting a lot of time in studying over plans and drawings submitted, in order that he may fully understand the details. A course of instruction under Mr. Dobe will prepare him to look rapidly over drawings and to thoroughly understand them at a glance, thus saving loss of money by mistakes, embarrassment and time.

His instructions are given by mail, but must not be compared with the ordinary correspondence school instructions, as all the work is laid out personally by himself and prepared especially for the student's individual requirements. With his method he is able to satisfy and educate any absolutely inexperienced or experienced man who is willing to better himself.

Mr. Dobe sells no diplomas, but insists on your work being a more practical diploma and a proof of your proficiency. He guarantees by contract to qualify you in a few months' instruction to be able to turn out absolutely perfect plans, designs and complete details, or to hold a first class draftsman's position, as he instructs you until competent.

Mr. Dobe furnishes his students, as a premium for best drawings and to make best drawings with, one of the finest complete drawing outfits, which is herewith illustrated. It contains a full set of German silver instruments, worth $13.85. He offers this free to students starting this month.

His successful draftsmanship book, size 6 by 9, will be sent to any one interested for 4 cents in stamps to cover cost of mailing.

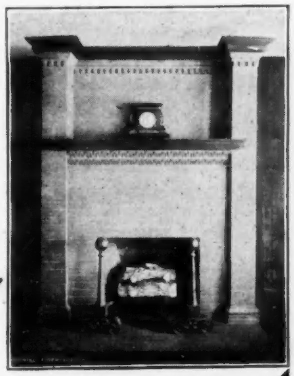
A Practical Device

On page 436 appears the advertisement of one of the most practical devices that has come to our notice for some time—a door knob and door bell combined in one. It is ornamental as well as useful, easily put on and never gets out of order. As its price is within reach of all it makes a ready seller. Here is an opportunity for our readers to secure the agency

WE HAVE A SPECIAL PROPOSITION

OF INTEREST TO CONTRACTORS AND BUILDERS

This Colonial Fireplace



Designed by a Leading Architect

WILL NOT SMOKE

By our peculiar methods ot construction you can build a roaring fire on the bleak, cheerless days in this beautiful brick fireplace, and enjoy the warmth and cheer that a fireplace should give forth—and without fear of annoyance from smoke, if you follow our instructions. It goes up the chimney—where it belongs.

We Make and Sell Fireplaces for New or Old Houses that combine the greatest utility with beauty of design and honesty of construction. The designs are from America's foremost architects; the plans from a practical fireplace builder; color schemes suggested to harmonize with any room, whether it be in cottage or castle.

Out fireplaces are found in the homes of many men of national fame. Our designs have a dignity and artistic value peculiarly their own, are built of finest specially made brick, and are therefore not to be confused with the cheap wooden mantels you see advertised.

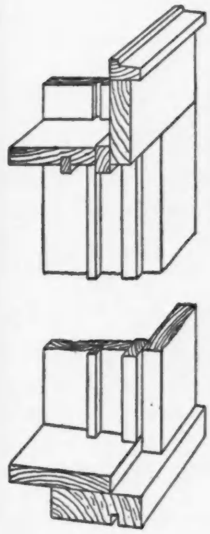
FREE DESIGN BOOK will be a valuable aid to you in choosing a suitable fireplace. Let us send it to you today. You should see it befoie making a purchase.

Prices from $18.00 Upwards.

COLONIAL FIREPLACE CO., 2539 W. 12th Street, CHICAGO

Special Prices

For This Month Only



Section.

Window Frame Dimensions

Pulley Stile, .	$\frac{7}{8}$x4$\frac{7}{8}$	Poplar, Yellow Pine or Cypress
Outside Stop, .	$\frac{7}{8}$x1$\frac{3}{8}$	
Sill, ...	$\frac{7}{8}$x5$\frac{3}{4}$	
Subsill, ...	1$\frac{3}{4}$x3$\frac{3}{4}$	
Outside Casing,	1$\frac{1}{8}$x4$\frac{1}{2}$	
Water Table .	$\frac{7}{8}$x1$\frac{3}{4}$	

Prices F. O. B. Your City

Opening 2 feet 5 inch wide, by 5 feet 6 inch high or smaller, each, ... $1.45

Opening 2 feet 11 inch wide, by 6 feet 2 inch high or smaller, each, ... $1.65

Crown Mould Caps 15 cents each additional.

With $\frac{7}{8}$ inch Outside Casing 10 cents each less.

All Frames Complete with Pulleys

The Malta Manufacturing Co.
MALTA, OHIO

SPECIFY **PETZ** PATENT STORE FRONT CONSTRUCTION

Made in Detroit

Saves time and money in glazing. Glass can be set from the outside and reset without disturbing window display or removing the window enclosure. Lets in every ray of light and gives every inch for display.

Endorsed by Plate Glass Insurance Companies because of its many practical advantages. Made in all finishes, but our new book—

"METAL STORE FRONTS"

tells all about it—gives interesting facts and full size illustrations. Write for a copy.

Detroit Show Case Co., 491 West Fort Street, Detroit, Mich.

"NICE" LIQUID WOOD FILLER

THE RECOGNIZED STANDARD SURFACER

It dries flat, works freely, does not show laps and requires little, if any, sandpapering. Light shade is perfectly transparent and will not mar the color of the lightest woods. It enables the finisher every time to make a high-class job with two coats, one of "Nice" Filler and one of Varnish or Hard Oil. It makes the very best flat stain by simply adding color in oil to suit. It has remarkable covering capacity (800 square feet to gallon) and is the most durable coating known for natural woods.

Will you let us send you our booklet "Natural Wood Finishing," just off the press? It's worth having and will only cost you a postal.

EUGENE E. NICE, Manufacturer of everything in Paints, Fillers and Varnishes for interior and exterior painting and finishing **272-274 S. 2d St., Philadelphia**

of this bell for their locality and make money during odd times. Write F. B. Black Company, 1211 Union avenue, Kansas City, Mo., for agents' terms and territory, and in doing so please mention the AMERICAN CARPENTER AND BUILDER.

Extra to Our Readers

Any reader of this paper who will write to The Heppes Company, 2993 Fillmore street, Chicago, and mention this publication, can secure their new, valuable book telling how to put the best ready-to-lay roofing on any kind of a building or structure.

This book covers the whole roofing subject, tells all about the Heppes No-Tar Roofing, how it is made, how fireproofed, and how it should be laid, how it can be done by any man following directions, and it should be in the hands of every one of our readers because of the value of this roofing to every man who has a building to cover.

Mention this paper and you will get prompt attention.

Does the Work of Four Men

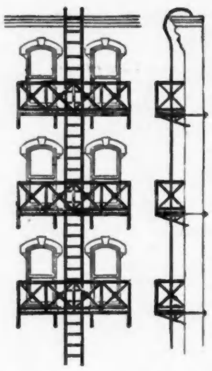
One man with a Star Floor Scraper can scrape as much floor in a day as four men can in the old way, and do it better and easier. This is a strong assertion, but it has been proven many times. The machine will pay for itself in a few days.

The Star Floor Scraper is the latest improved hardwood floor scraper on the market, and has been tested and perfected until it is safe to say that it has no equal. By means of the ball and socket connection, between the cutting blade and the carrying head, the knife or cutting blade can be adjusted diagonally across the flooring at any angle desired. Thus having a shearing cut it takes out all the waves that other scrapers leave, which causes so much dissatisfaction among carpenters when using a heavy floor scraper. The Star scraper weighs eighty pounds, just the right "heft," and is properly balanced, having always enough weight on the wheels to guide it, so no trouble is experienced by it sheering to one side. There is nothing to wear out. It is made of cast iron and steel, except the rubber tires and hardwood handle. It works fine on either old or new floors. It is worth considering to have a scraper that peels a shaving off an old-finished floor that is equal to a shaving from a smoothing plane.

The Star Floor Scraper is guaranteed in every respect. The price complete, with one dozen knives, is $50.00. Its merits should be thoroughly investigated before buying any other. Address the Star Floor Scraper Company, 123 Marion street, Elkhart, Ind.

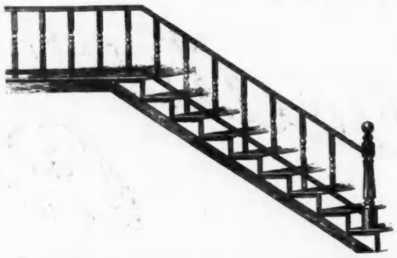
The Ohio Structural Iron Company

Our readers will do well to get in touch with the Ohio Structural Iron Company, manufacturers of ornamental and light structural iron, steel and wire work.



They make a specialty of jail cells for the smaller towns, having the latest improved machinery and skilled mechanics constantly employed, and are enabled to furnish superior work at a moderate cost. These cells are so cheap that no intelligent "board" in this age can afford to use brick, stone or wood, from which a prisoner with an accomplice can escape very easily. You will find illustrations of these cells in the advertisement below. The company will be glad to send their catalogue and full information. Some of their other specialties are: Fire escapes,

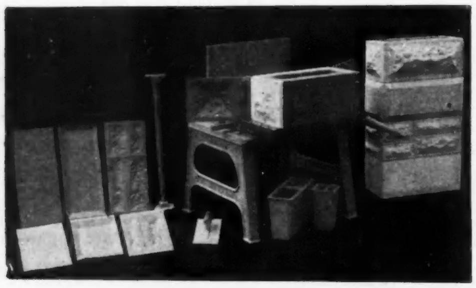
iron stairs, balconies, window guards, wire work, grilles, stable fixtures and iron and steel doors.



The Ohio Structural Iron Company, of Sandusky, O., is exclusively engaged in supplying the demands of contractors in the smaller towns throughout the United States. Write for their catalogue, it will save you money.

Grumman Block Machine

The illustration herewith shows some of the products of the Grumman Concrete Block Machine. This machine is the standard of perfection, and the Grumman Manufacturing Co. would like the opportunity of explaining its many valuable points. All they ask is a thorough inspection of their method, feeling sure that those who inspect the machine or learn of its points of excellence will not be satisfied with any other. Write them before purchasing, addressing the Grumman Manufacturing Co., Zanesville, O.



What Man's Lap Was It?

A girl recently sent this extraordinary request to the editor of her church paper:

"Do you think it is right for a girl to sit in a man's lap, even if she is engaged?"

The editor answered her question thus:

"If it were *our* girl and *our* lap, yes; if it were *another* fellow's girl and *our* lap, yes; but if it were *our* girl and *another* fellow's lap, *never!* NEVER! NEVER!"—*Ladies' Home Journal.*

"Ah, that's pretty!" said Snooks, looking over a number of architectural designs. "What is that?"

"That," said the architect, "is a fifteen-hundred-dollar bungalow."

"What will it cost to build it?" asked Mr. Snooks.

"About $8,000," said the architect.—*Judge.*

The First Step

It is the first step that counts. Whether you are learning to walk or trying to get on in life. You didn't learn to walk by watching others, but by striking out for yourself and by keeping at it in spite of bumps and failures. The first step was hard, but ***it gave you confidence.*** Don't stand hesitating now, dissatisfied with the present, dreading the future; make up your mind to advance in your present position, or if it has become distasteful, select some other field of effort where you can adapt your own taste to your work.

The American School of Correspondence, Chicago, is constantly fitting thousands of ambitious young men in architects' offices or in the employ of contractors or builders, to obtain practical information which ordinarily could be acquired only after long apprenticeship. The instruction is of great value to the carpenter, contractor and others engaged in building, as great stress is laid on the practical as well as the artistic side of the work. The courses offer experienced draftsman and practicing architects an opportunity to make up deficiences in their early professional training.

The information on reinforced concrete will be found especially valuable. In the architectural courses the student is taught the theory of the design of columns, beams, girders and trusses. Building materials; building construction and details, especially steel construction as applied to work in reinforced concrete; framing; sheet metal work; fire-proofing; wiring; piping; heating and ventilating systems — building superintendence; specifications and contracts; building laws and permits and general office practice are thoroughly discussed.

Take the first step today. Put some of your spare time into self improvement. Half an hour a day spent in study instead of amusement will give you more time, more money, more pleasure, more opportunities later in life. The American School offers you the opportunity if you only have the ambition to grasp it.

We employ no agents. We carry on our work by correspondence only. Your tuition money is paid to competent teachers for instructing you, not to agents for annoying you.

WITHOUT COST TO YOU

We will send you, without extra charge, a set of the "Reference Library of Modern Engineering Practice," in 12 volumes, 6,000 pages, page size 7 x 10 inches, *provided* you enroll in a full course before February 1st, 1908. This is the most complete and authoritative reference work on Engineering Practice ever published.

Mark the subject on the coupon that interests you most, sign your name and address plainly, and mail at once. ***Take the first step today.***

AMERICAN SCHOOL OF CORRESPONDENCE
CHICAGO

COUPON

Am. Carp. & Bldr., 1-08

American School of Correspondence

Send me 200 page hand-book describing over 60 courses. I am interested in the course marked X.

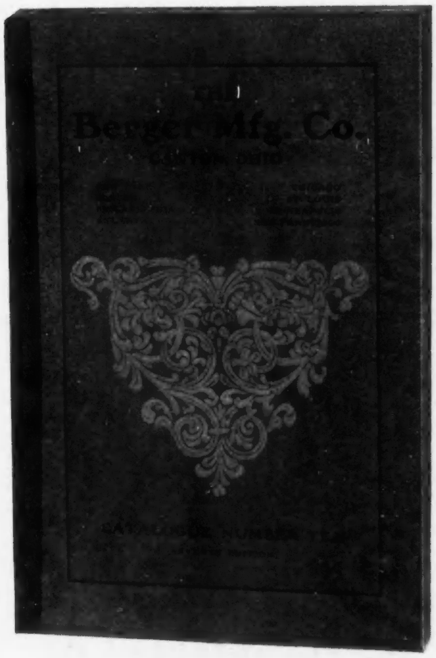
....Carpenter's Course.	....Heating, Ventilating and Plumbing.
....Contractors' and Builders' Course.	....Cornice Work.
....Reinforced Concrete	....Tinsmithing.
....Steel Construction.	....Structural Eng.
....Complete Architecture.	....Mechanical Eng.
....Architectural Eng.	....Civil Engineering.
....Architectural Drawing.	....Tool Maker's Course
....Metal Roofing.	....Electrical Eng.
	....College Preparatory Course.

Name..

Address..

Employer..

Write TODAY for our New Catalog of BERGER Sheet Metal Products



170 Pages About

Roofing;
Siding;
Cornices;
Eaves Trough;
Conductor Pipe;
Steel and Iron Sheets;
Tin and Terne Plate;
Skylights;
Ventilators;
Etc.

You want this Catalog, ask for A55.

We also make Steel Ceilings, ask for Catalog D55.

THE BERGER MFG. CO. CANTON OHIO

New York, St. Louis, Philadelphia, Minneapolis, Boston, Atlanta, Chicago, San Francisco

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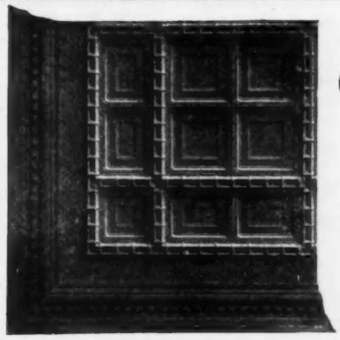


Edwards Embossed

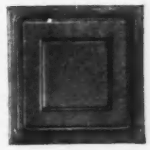
METAL CEILINGS AND SIDE WALLS

Artistic taste and specially devised machinery have made it possible to use Steel for Ceiling and Side Wall decoration. It is more healthful than plaster; does away with dampness in buildings incident to the use of plaster; takes a low rate of insurance, being Fire and Water Proof, very easily applied; it improves the acoustic properties of a room, and by the artistic arrangement of panels and mouldings, offers possibilities or treatment hitherto unattained.

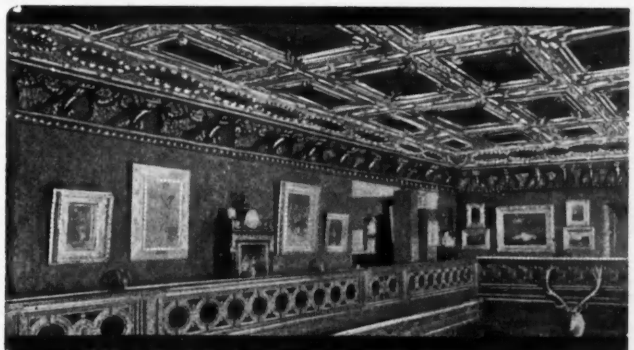
Catalog "A" sent free to those in the market

THE EDWARDS MANUFACTURING CO.

"THE SHEET METAL FOLKS"



401-417 Eggleston St.
CINCINNATI - - U. S. A.



THE NEW CEILING AND SIDE WALL ON THAT ROOM

What shall it be? **Steel,** of course—because it is the **most modern, sanitary** and **inexpensive,** practically **lasts forever.**

Write to-day, giving dimensions and particulars. We will go into the matter with you thoroughly.

"When it has the Eller trade-mark, it's the best in steel."

ELLER MANUFACTURING CO.
Canton, Ohio

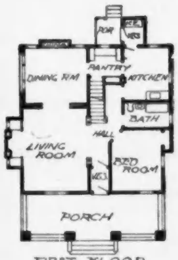
Stung Again

Didn't Buy Kannebergs Ceiling

We can satisfy you in quality of material, beauty and large number of Classified Designs and Prompt Shipments. You can save money by dealing with us. Write today for prices and our Ceiling Catalog DD. We also Manufacture Metal Shingles, all styles Roofing, Cornices, Skylights, Finials, Ventilators, Trough and Pipe, etc. Roofing Catalog GG. Let us figure with you.

The Kanneberg Roofing & Ceiling Co.
Manufacturers
Canton, - - - Ohio.

PLANS AND SPECIFICATIONS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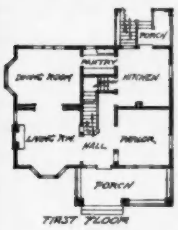
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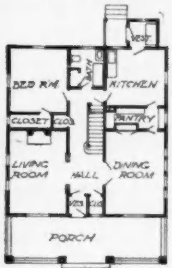
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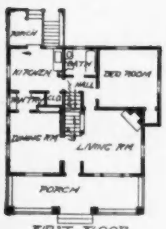
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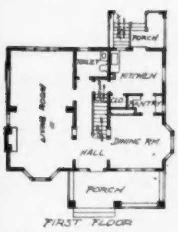
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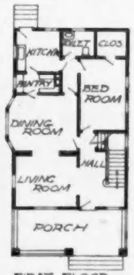
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OF MODERN

Bungalows

DRAWN UP TO SUIT YOUR OWN IDEAS AND REQUIREMENTS

WE DESIGN all classes of residences from the large city mansion to the smallest cottage and with our up-to-date system of handling this class of work by expert designers, we can give you service equal to your best local architects at extremely low prices.

We Develop Your Ideas

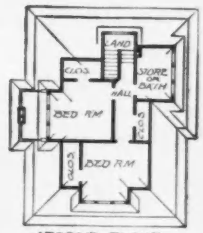
Into a practical set of plans and specifications with which they can be executed to the smallest details into a home that can be BUILT WITHIN YOUR MEANS and to your entire satisfaction.

Write Us for Prices

And compare them with others for plans drawn up for your special purpose and you will be convinced that our terms are reasonable compared with the high class work that we do and the prompt and personal attention given all orders. We will draw up pencil sketches at a small cost and when plans are ordered we will deduct this cost from the price charged for plans; so you will finally be at no expense for all preliminary work necessary to convey our conception of your ideas to you by mail for approval.

G. W. Ashby, Architect

Eleventh Floor, Medinah Building
CHICAGO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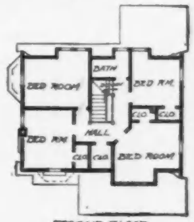
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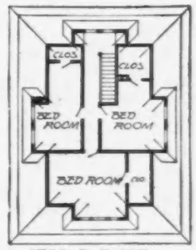
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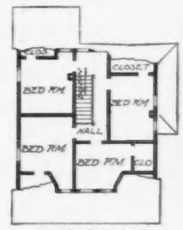
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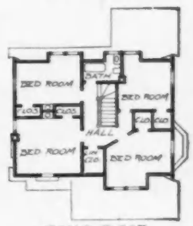
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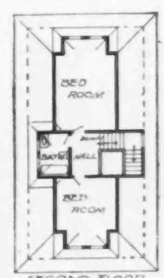
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SEA GREEN AND PURPLE SLATE ROOFS

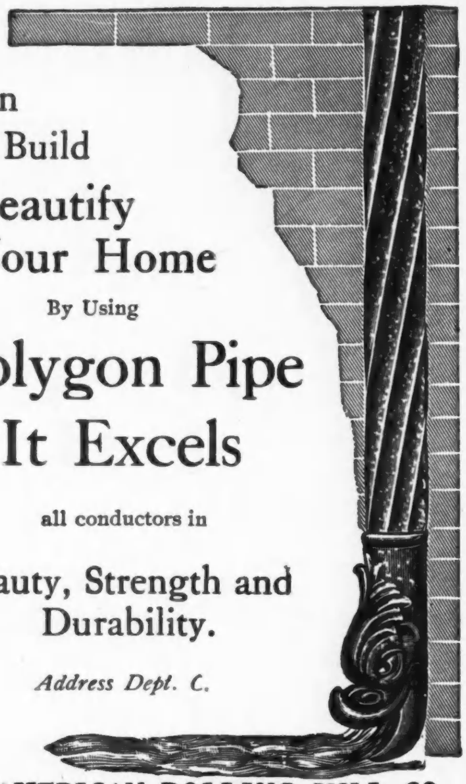
Outlast any building. They won't wear, rust or decay, but last forever. Are spark and fire proof. Afford clean, pure cistern water. Don't require constant paintings, recoatings and repairs. Cost but a **trifle** more than short lived roofing and suitable for **ALL** buildings, new or old. **Write immediately for prices.**

WANTED: Carpenters and Builders to take up Slate Roofing in **UNOCCUPIED** territory everywhere. Only a few inexpensive tools required. Slating easy to learn. A profitable, growing Slate Roofing business can be established **anywhere.** Besides new work, there are hundreds of wornout Shingle, Tin, Metal ond Composition roofs to be replaced. Your neighbors are tired of paying out good money for short lived roofings. Furnish them with handsome, sanitary, fire-proof, **NEVER-WEAR-OUT**

SEA GREEN AND PURPLE ROOFING SLATE

Write us immediately for prices on Slate, Tools and FREE book of instructions. WRITE TODAY

American Sea Green Slate Company, Box 36 Granville, N. Y.



When You Build

Beautify Your Home

By Using

Polygon Pipe It Excels

all conductors in

Beauty, Strength and Durability.

Address Dept. C.

THE AMERICAN ROLLING MILL CO.

MIDDLETOWN, OHIO.

Roofing Slate

TRY A CAN FROM THIS LINE

Genuine Peach Bottom	Keystone Chapman
Genuine Bangor	Jackson Bangor
Big Bed Lehigh	Penn. Hard Vein

Jobber in Sea Green, Unfading Green, Mottled Purple, Variegated Purple and Bright Red Slates

Sales Agent, Eastern Pennsylvania and Southern New Jersey, for

AKRON ROOFING TILE CO.,
Manufacturers of Vitrified Roofing and Floor Tiles.
NO BETTER LINE OF ROOFING COMMODITIES ANYWHERE

Write me at 303 Builders' Exchange, Philadelphia, Pa.

R. T. CROPPER

PHONE: Bell 4693, Filbert; Keystone 1525 Main

ESTABLISHED 1884

THE E. J. JOHNSON CO.

38 PARK ROW
New York

Branch Office
626 Park Building, Pittsburg, Pa.

Slate Blackboards

Producers of

Large Stocks
Prompt Shipments
Correspondence Solicited

ROOFING SLATE

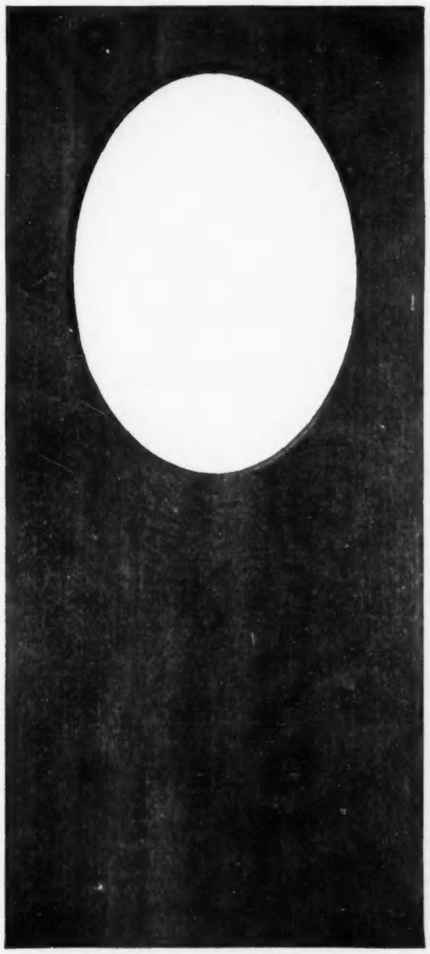
CLEAR
LEHIGH
BLACK
TRADE MARK

Lehigh Structural Slate Mfg. Co., Inc.

Manufacturers of Genuine

LEHIGH CLEAR BLACK STRUCTURAL SLATE

Write for Price Lists :: :: SLATINGTON, PA.



Compound doors are specified by Leading Architects and used by Leading Contractors in many important buildings throughout the country.

Send us your lists for estimate.
Our Design Book free for the asking.

The Compound Door Co.

ST. JOSEPH, MICH.

EVERYTHING
IN
CEMENT MACHINERY

TO BE in the concrete making business in the Miracle way is to be in it in the most profitable way—the most satisfactory all round. For example, in tile and sewerpipe making—With

MIRACLE SEWERPIPE AND TILE MOLDS

you can start upon a small and inexpensive scale — say $57.50 for a complete outfit for making 24-inch pipe.

You can make 110 feet of this pipe per day, and when you consider that the first 68 feet you sell pays for the entire equipment you can judge how quickly you will be making clear profit on your outfit.

And you will make Tile that will sell at the same price as burnt clay at about 150 per cent profit.

OUR NEW CATALOG

We have just received our new catalog, which is more complete and attractive than ever before, has over 500 illustrations, pages 9 x 12. We want to place this catalog in the hands of all our cement working friends and while the regular price is 25 cents, if you will tell us what line you are interested in and ask for Catalog K we will be glad to mail it free.

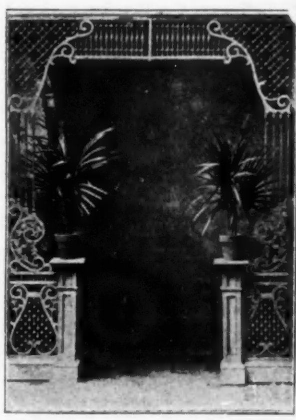
ADDRESS

Miracle Pressed Stone Co.

Largest Manufacturers of Cement Machinery in the World

Minneapolis, - - U. S. A.

Miracle Concrete is our new little trade magazine, published "when the spirit moves us." Send in your name and we will place it on our complimentary list.



Cleveland Grille & Mfg. Co.

Artistic Grilles

Made in Elaborate and Attractive Designs.

ILLUSTRATED CATALOGUE FREE.

Cleveland Grille & Mfg. Co.
CLEVELAND, O.

Special Designs on Request.

"Keep the Quality Up" *Get Our Special Low Prices this Month*

A WAY TO PREVENT DAMP WALLS

Francis Concrete Block Machine Using Medium Wet (Plastic) Concrete.

"Quality is the watchword." The watchword of manufacturing today is economy. Competition necessitates reduced expenses, and at the same time "Keep the Quality Up."

Berlin System means Quality. But it takes price to clinch your sales. This is the decided advantage of the Francis machine.

Hollow Building Block Machines.

Window Sill Machines.

Fence Post Machines.

Cement Brick Machines.

Get Our Present Low Prices.

All prices advanced Jan. 15th, 1908.

Best, Fastest, Simplest and Cheapest.

Move the Machine--Not the Block.

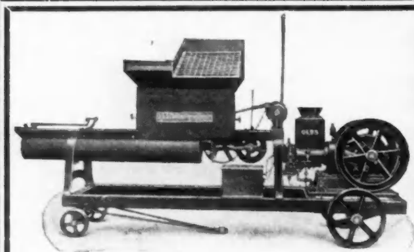
When you want a block that is guaranteed to be absolutely damp-proof,
That will not sweat,
That will make a dry wall,
That is hard and durable,
That looks like stone,
That can be made at a lower cost than by any other method.

Use the "Berlin System."

There is an elegance of appearance about stone made by this system that puts it in a class by itself.

Wanted, Concrete Block Manufacturers who are not satisfied with their present methods to use the "BERLIN SYSTEM."

FRANCIS MACHINERY COMPANY, 806 Chestnut St., ST. LOUIS, MO., U. S. A.



The U. S. Standard Concrete Mixer

CLAIMS

1. To mix as well as the best.
2. To divide the different ingredients more reliably into any desired proportion.
3. To measure the ingredients more accurately than any known mixer.

The U. S. Standard Cement Block Machine Claims Superiority

1. For accuracy and perfection in construction.
2. For adaptability to an almost endless variety of blocks.
3. For strength and beauty of blocks.
4. For speed.
5. For moderation in price.

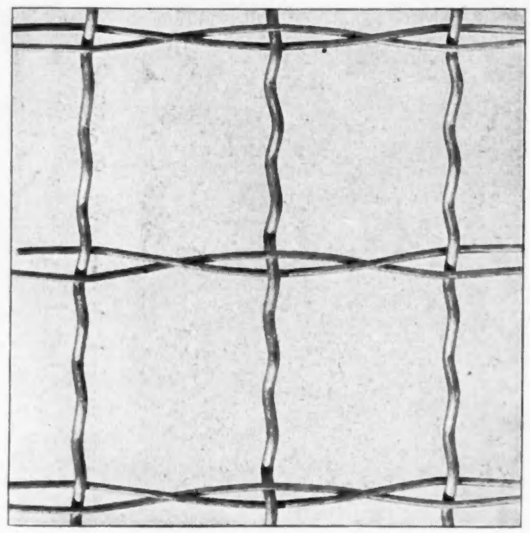
Manufactured by

THE ASHLAND STEEL RANGE & MFG. CO.

Ashland, Ohio

Catalogue A sent free upon application.

See our exhibit at National Cement Users Convention, Buffalo, January 20-25.



CABLED WIRE

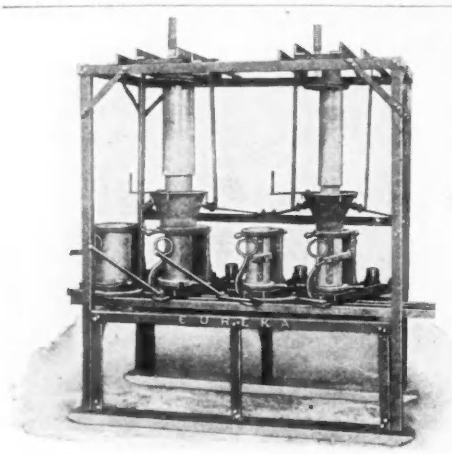
Concrete Reinforcement

Thoroughly Galvanized, **High Carbon, Steel Wire,** Great Tensile Strength, is Elastic and conforms to any surface readily. Saves 15% to 20% in labor.

ASK FOR SAMPLES

UNION WIRE FENCE LOOM CO.

Cor. Antoine and Atwater Sts. DETROIT, MICH.



Automatic Tamper Tile Machine

We Will Prove to You at the Buffalo Convention

that the only perfect and cheap way of making Cement Blocks is by the use of the **Eureka No. 2 Face-Down Machine,** because it is the only machine that uses wet material for the body of the block, the only machine that makes a waterproof block that hardens in less time, with less cement than any other.

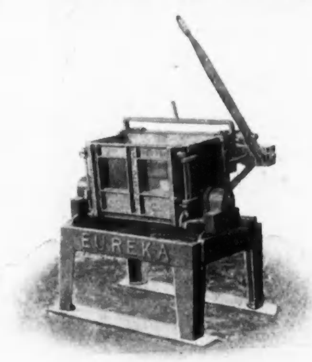
We will also prove that the

AUTOMATIC TAMPER DRAIN TILE MACHINE

is the only drain tile machine in existence for making drain tile from 2 to 6 in. very fast in large quantities and at a low cost (3 in. tile can be made at $8.00 per 1000).

We will show in Buffalo the most complete perfect working line of concrete machinery ever made. Don't fail to see us there. If you are not going to be in Buffalo—don't fail to send for our descriptive catalogue, which lists all our machinery and gives many valuable hints to cement workers.

Besser Mfg. Co. Dept. F 1 601 Eighth St. ALPENA, MICH.



Eureka Face Down Machine

Wet Process Concrete Blocks

By the Pettyjohn System

The manufacturing of Concrete Blocks is rapidly nearing perfection, but the up-to-date manufacturer must use modern machinery and employ improved methods. Three features are important in perfect block making:

WET PROCESS FACE DOWN DAMP CURING

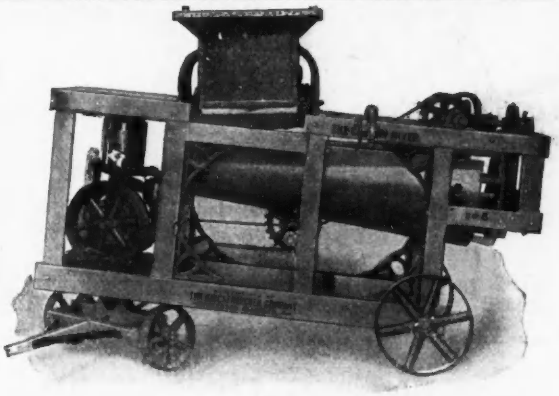
These splendid features are combined in the new Pettyjohn Invincible Machine, and no other. Made in three lengths, 16-inch, 24-inch and 40-inch. Tandem Invincible makes two blocks at once. Price $65 and up. Single Invincibles, $35 and up. Sold on trial always, guaranteed to give satisfaction or money refunded.

With our TRIPLE TIER RACKING SYSTEM green blocks can be stacked three high direct from machine with inexpensive home-made rigging. This economizes space, reduces off-bearing distance, and above all insures slow, even, damp, perfect curing and bleaching. Plans and blue prints free to customers.

Send for our latest edition of "Stone Making" (just published), a book of valuable data for the block maker—FREE.

THE PETTYJOHN COMPANY, - - - - 634 No. Sixth St., Terre Haute, Ind.

"Will Do More Work with Less Power Than Any Other Machine on the Market"



GREELY, COL. July 18, 1907.

CEMENT MACH. SUPPLY CO.
Denver, Col.

Gentlemen:—During the past year we have purchased from you two Improved Coltrin Concrete Mixers and have had them in almost constant use ever since; we find they will do more work with less power than any other machine on the market. We believe the Coltrin is the most practical mixer made; we are well satisfied with the mixers in every way and knowing they will do any work required of them we are glad to recommend the Coltrin to any one who is in need of a first class mixer,

Respectfully yours, MINER & FAIRCHILDS.

We will occupy Sections No. 208 and 209 at the Buffalo Convention, showing our Coltrin Mixers

Manufactured Exclusively by
THE KNICKERBOCKER COMPANY
JACKSON, MICH.

DUNN'S MASONS' and BUILDERS' BLOCK MACHINE

In use in all parts of the world. Satisfaction universal.

Blocks made face down and side face. Every block perfect with true sharp corners.

PRICE $40.00

Makes blocks in widths of 8, 10 and 12 inches, and in lenghts up to 20 inches, and in a variety of designs. No expensive iron pallets required. A practical, rapid and economical machine. No machine at any price will give you better satisfaction.
Write for catalog today.

W. E. DUNN & CO., 339 Grand Avenue, CHICAGO, ILL.

Thunder and Lightning

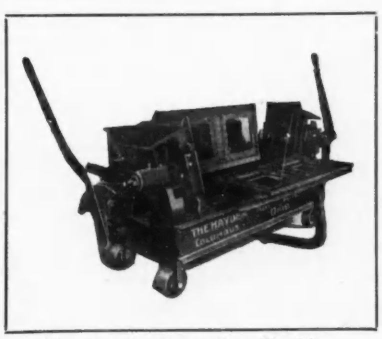
Get out of the rain and buy a Lightning Block Machine that defies all competition. Has wonderful capacity.

Write and Do It Now

D. F. DETRICK
No. 8 S. Canal St.
DAYTON, OHIO

THE HAYDEN AUTOMATIC BLOCK MACHINE CO.

112 W. Broad St., Columbus, Ohio



The Hayden Down Face Machine.

Manufacturers of High Grade
Concrete Block Machines, Mixers, Stone Crushers, Etc.

The Most Simple and Effective Mechanical Principles Embodied in this Mixer

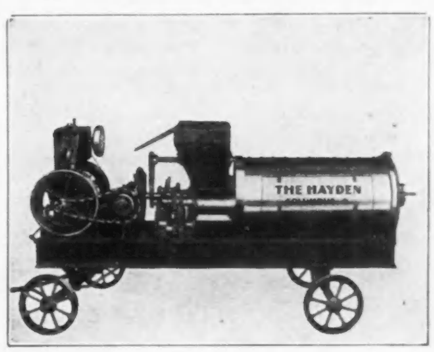
POINTS OF SUPERIORITY IN THE HAYDEN MACHINE—Great Strength, Limitless Range, Rapidity, Ease of Operation, Simplicity of Construction.

The only Block Machine on the market strong enough to withstand the heavy strain of pneumatic tamping.

BUY A HAYDEN FOR RESULTS

Send for Catalogue M Today

Eastern and Foreign Sales Agent, H. W. Remington, 19 South St., New York City

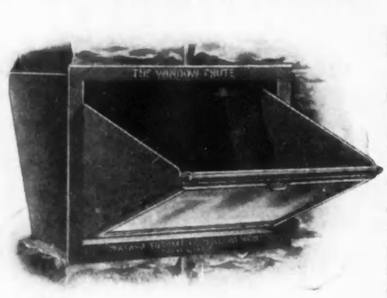


The Hayden Improved Mixer.

"THE WINDOW CHUTE"

A WINDOW AND A COAL CHUTE

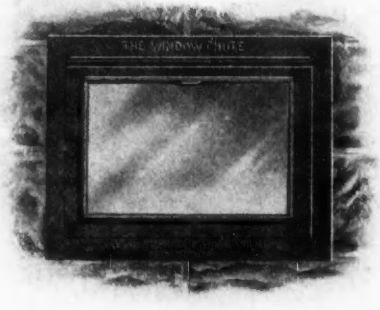
ALL IN ONE



A Perfect and Unequalled Coal or Vegetable Chute when open.

Coal Chutes HAVE BECOME A MODERN CONVENIENCE without which no building is really ***"Up-to-date."***

The Window Chute closes and locks automatically from the outside by simply raising steel bottom and pushing it over lugs provided at top. Has Cast-iron Frame and Hopper with continuous heavy Sheet Steel Bottom, which, when chute is open, completely covers and absolutely protects the Window Glass below it from breaking. **Useful every day in the year for light,** or as a Chute. Saves the price of an extra window frame and sash, which would be necessary for light with any other Chute. **The Window Chute** is the only combination Chute and Window on the market, which feature is fully protected under United States patent law.



A Fine, Unobstructed Basement Window when Closed and Locked.

It Is Burglar Proof, for it cannot be opened except from the inside, by lifting sheet off of locking lugs. **The Window Chute** is made to last, and for practical utility and service has no equal. No more excuse for unsightly, soiled and blackened walls, battered frames and sash, littered walks and grass plats always found where coal and wood are put through a basement window. Equally suitable for frame, brick, stone or concrete walls, and for new or old buildings.

Standard Sizes		Hopper Opening.	Outside Rim.	Prices
	Size "A"	22 wide—16 high	25x19	Just Write
	Size "G"	32 " 24 "	35x27	

E. W. RITTER & CO., 601 Monadnock Block, Chicago

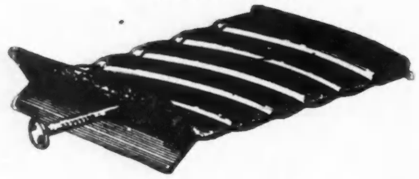
EDW. MUEHLENBROCK & CO., 400 N. Main St., St. Louis, Mo.

MANUFACTURED BY

HOLLAND FURNACE CO. HOLLAND, MICH.

CONCRETE CONSTRUCTION IS INCOMPLETE

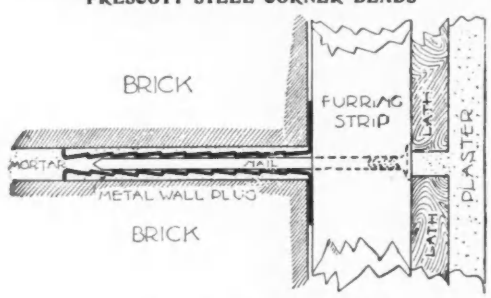
WITHOUT OUR



RUTTY METAL WALL PLUGS

They are laid instantly, are indestructible, yet cost less than any other method. Previous difficulties of securing interior finish are entirely overcome by the use of the Rutty Plug.

WE MAKE ALSO MORSE STEEL WALL TIES AND PRESCOTT STEEL CORNER BEADS



Furring out on Brick or Concrete

SEND FOR SAMPLES AND CATALOG

J. B. PRESCOTT & SON

Foundry Ave. Webster, Mass.

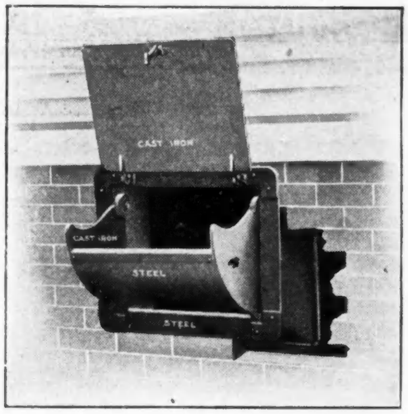
The Majestic COAL OR WOOD Chute

No. 1. $8.00 Wall Opening 22 Wide 16 High

No. 2. $10.00 Wall Opening 27 Wide 16 High

No. 3. $15.00 Wall Opening 33x22

WRITE FOR CATALOGUE



Made of heavy wrought steel and cast iron, and has an adjustable hopper, which swings into the chute, allowing the door to close flush with the wall. Also has a self-locking device for holding door open and for locking when closed. Can be placed in old walls as well as new.

MANUFACTURED BY

MAJESTIC FURNACE & FOUNDRY CO.

HUNTINGTON, IND.

Successors to THE CHAPPELL FURNACE CO., Morenci, Mich.

Classified List of Advertisers

For Index See Next Page

CONTENTS FOR JANUARY, 1908

INDEX TO ADVERTISEMENTS, JANUARY, 1908

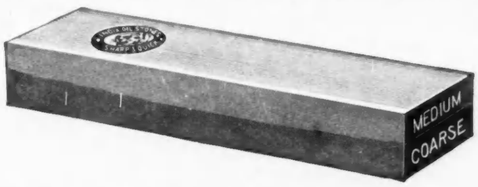
For Classified List of Advertisers see preceding page

NOTICE TO ADVERTISERS.

New copy, changes and corrections for advertisements must reach office of American Carpenter and Builder, 185 Jackson Boulevard, Chicago, not later than January 20 in order to insure insertion in the February number.

Combination
INDIA OILSTONE

Size 7 x 2 x 1



2 GRITS

CARPENTERS
This Is the Best All Round

Oilstone
On the Market

WHY ?

Because, —The India Oilstone is made by a special process which makes it sharp and quick cutting.
Because, —They are the Most Durable.
Because, —Each Stone is Guaranteed.

Secure one from your dealer. Take no substitute. If your dealer does not keep the India Line, we will gladly tell you where you can get it. Send for Booklet on Oilstones showing other shapes.

Sole Selling Agents, Dept. 6

PIKE MFG. CO., Pike, N. H.
NORTON CO., Worcester, Mass., Manufacturers

Sanitary Metal Tile

ARTISTIC, DURABLE
ECONOMICAL, NONCORROSIVE

For
Walls and Ceilings of Bath Rooms, Kitchens, Lavatories, Stores, Hospitals, etc.

More durable than Clay Tile. No blow can break it. Germ Proof, Water Proof. Design and colors equal to the most artistic ceramics.

Set in Special Cement, No Nails Being Used.

Manufactured Exclusively by

SANITARY METAL TILE CO.
33 Prospect Street
BROOKLYN, N. Y.

Agencies in all principal cities
Wiite for catalogue

IT'S UP TO YOU

We have the best Mill Work Facilities in Chicago

If you are one of those not familiar with the HARTY standard of quality, price and promptness, it's up to you to send us your lists for estimates

OUR SERVICE IS AT YOUR SERVICE

We make complete shipment of an ordinary house bill within one week

JUST TEST US

HARTY BROS. & HARTY COMPANY
21st and Loomis Sts. CHICAGO

WRITE US for ESTIMATE

On that Bill of Sash, Doors, Millwork and other Building Material

SAVE AN AVERAGE (Freight Included) OF 50%

Just give us a chance to figure with you and prove the truth of our claims that we sell everything in Millwork and Building Material 50% below dealers' prices—freight included.

We operate the largest plant in the world—163,000 feet of floor space (four acres)—own our timber lands, sawmills and lumber yards. We are the only large manufacturers of sash, doors and blinds, selling direct to carpenters, contractors and builders.

Write for FREE MILLWORK CATALOG

Of 5,000 Bargains Averaging 50% Below Dealers' Prices

QUALITY GUARANTEED. We guarantee our goods to be strictly up to the official grade adopted by the Sash, Door and Blind Manufacturers of the Northwest.

HERE ARE A FEW ITEMS FROM OUR MILLWORK CATALOG:

Doors

We carry in stock 223 sizes of doors in White Pine, Yellow Pine, Cypress & Oak.

4. P. "B" Quality, 4 Panel

2-0 x 6-0, 7/8	$0.80
2-0 x 6-0, 1 1/8	1.29
2-0 x 6-6, 1 1/8	1.43
2-6 x 6-6, 1 1/8	1.49
2-0 x 6-0, 1 3/8	1.40
2-0 x 6-6, 1 3/8	1.49
2-6 x 6-6, 1 3/8	1.58
2-8 x 6-8, 1 3/8	1.67

W.P. "A" Quality, 4 Panel

2-0 x 6-0, 1 1/8	$1.52
2-0 x 6-6, 1 1/8	1.68
2-6 x 6-6, 1 1/8	1.77
2-0 x 6-0, 1 3/8	1.77
2-6 x 6-6, 1 3/8	2.00
2-6 x 6-8, 1 3/8	2.10
2-8 x 6-8, 1 3/8	2.11
2-8 x 6-8, 1 3/4	3.15

W.P. "A" Quality, 5 Panel

2-0 x 6-0, 1 3/8	$1.88
2-0 x 6-6, 1 3/8	1.98
2-6 x 6-6, 1 3/8	2.1
2-8 x 6-8, 1 3/8	2.21
2-8 x 7-0, 1 3/8	2.72
2-8 x 6-8, 1 3/4	3.26

Various Windows

We carry over 550 sizes in windows, cellar sash, transoms, barn sash and hot bed sash.

2 Lt. Glazed Windows

Check Rail, 1 3/8 in. thick

16 x 20, 2	Light	$0.69
16 x 24, 2	"	.74
18 x 24, 2	"	.83
18 x 28, 2	"	.91
20 x 24, 2	"	.86
20 x 28, 2	"	.96
22 x 24, 2	"	.90
22 x 26, 2	"	.95
22 x 28, 2	"	1.01
24 x 24, 2	"	.99
24 x 26, 2	"	1.00
24 x 28, 2	"	1.10
24 x 30, 2	"	1.19
24 x 32, 2	"	1.27
28 x 30, 2	"	1.35
28 x 32, 2	"	1.60
30 x 32, 2	"	1.76

1 Lt. Transoms

1 3/8 in. thick

2-6 x 12, 1	Light	$0.41
2-8 x 12, 1	"	.43
2-8 x 14, 1	"	.45

4 Lt. Glazed Windows

Check Rail, 1 3/8 in. thick

10 x 20, 4	Light	$0.70
10 x 24, 4	"	.80
10 x 28, 4	"	.94
10 x 30, 4	"	1.05
12 x 20, 4	"	.78
12 x 24, 4	"	.95
12 x 28, 4	"	1.06
12 x 30, 4	"	1.18
12 x 32, 4	"	1.23

8 Lt. Glazed Windows

Check Rail, 1 3/8 in. thick

9 x 12, 8	Light	$0.77
10 x 12, 8	"	.79
10 x 14, 8	"	.88
12 x 14, 8	"	1.03

12 Lt. Glazed Windows

Check Rail, 1 3/8 in. thick

8 x 10, 12	Light	$0.79
9 x 12, 12	"	1.00
10 x 12, 12	"	1.09
10 x 14, 12	"	1.21

Interior Finish

BASE

R 8426

13/16 x 7 1/4 inches

Price is per 100 lineal feet, random lengths.

Yellow Pine **$2.84**

White Pine **$3.16**

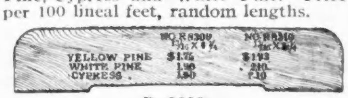
DOOR AND WINDOW STOPS

Price is per 100 lineal feet, random lengths in Yellow Pine.

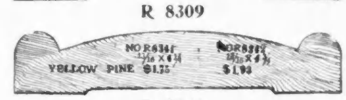
3/8 x 1 1/8 .... $0.30
3/8 x 1 3/8 .... .33
3/8 x 1 3/4 .... .42

CASING

We carry this design casing in Yellow Pine, Cypress and White Pine. Price per 100 lineal feet, random lengths.



R 8309



R 8341

Prices on above casings, 13/16 x 4 1/4.

Y. P...$1.75 W. P...$1.90 Cyp...$1.90

DRIP CAP

R 8284

White Pine

1 1/8 x 2 in......$1.50

OAK THRESHOLDS

Size 5/8 x 3 3/4, 3 feet long .... 5c each

Read What Carpenters and Builders Say of Our Methods and Prices

GORDON, VAN TINE & CO., Davenport, Ia.

Gentlemen:—I have just got in some of your doors and windows and millwork, and find them first-class in every respect, and at prices that a contractor cannot afford to let pass unheeded, as they are just half the present retail prices. Yours truly, D. C. MARKER,

Gen. Contractor, Lamar, Colo.

TO WHOM IT MAY CONCERN:

I have bought goods of Messrs. Gordon, Van Tine & Co. and find them of a good grade, quite up to their representation, their business methods prompt and entirely satisfactory. They are good people to do business with.

Yours truly, ROBT. GIBBS,

Carpenter and Builder, Monticello, N. Y.

GORDON, VAN TINE & CO., Davenport, Ia.

Gentlemen:—The material I bought of you was entirely satisfactory, and I like your method of doing business.

Yours truly, J. M. WIBLE,

Contractor and Builder, Chanute, Kas.

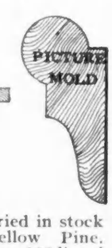
GORDON, VAN TINE & CO., Davenport, Ia.

Gentlemen:—I take pleasure in acknowledging the receipt of "Millwork," which arrived a few days ago, and has proven far beyond my expectations, both in quality and prices. I have saved at least 40 per cent by dealing with you, and you can rest assured that my future orders will go to Gordon, Van Tine & Co., Davenport, Iowa.

J. IRWIN HOWELL,

Contractor and Builder, Alliance, Ohio.

DOOR AND WINDOW CAP TRIM



Carried in stock in Yellow Pine. Price per 100 lineal feet, random lengths.

Cap Mould'g. $1.99
Head Casing. 1.93
Fillet .... .35

NOTICE!

We only carry in stock the above sizes and designs. At prices noted we furnish mouldings in regular lengths, from 8 to 16 feet, in one piece.

PICTURE MOLD

R 8264

Picture Moulding, size 1 3/4 inches. Price is for 100 lineal feet, random lengths.......... **$0.65**

QUARTER ROUND

R 8065

Is carried in stock in Y. P., W. P., and Cyp. Price per 100 lineal feet, random lengths.

Y. P...**25c** W. P..**40c** Cyp...**40c**

CROWN MOULDING

R 8011

Carried in White Pine. Price is for 100 lineal feet, random lengths.

3/4 x 2 1/4 ..... **$1.00**
13/16 x 2 3/4 ..... **1.20**
13/16 x 3 1/4 ..... **1.40**
13/16 x 3 3/4 ..... **1.60**

SEND A TRIAL ORDER You can order direct from the Sample Bargains on this page or on the back cover page of the November issue of this magazine. Quality, Satisfaction and Safe Delivery Guaranteed. Write today for Millwork Catalog and save 50 per cent.

GORDON, VAN TINE & CO. 390 FEDERAL ST. DAVENPORT, IOWA

Largest Mill in America Selling Direct to Carpenters and Builders

WE ALWAYS HAVE SPECIAL BARGAINS ON THIS PAGE See Previous Issues for Doors, Windows, etc.