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# AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER



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WE WILL PAY YOU WELL FOR PICTURES of homes which are pretty, attractive, and of moderate cost. Send as many as you can and we will forward our check promptly for all we accept for publication. If you erected the houses yourself, so much the better. Small photographs, similar to those on this page, will do, so long as they are clear and distinct. Write on the back of each photograph where the home is located, and give cost and other details if possible, although this is not necessary—what we want most is the photographs. All the photographs will be published in our big "Home Builders Number," in October. You can help make it a great success.



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OCTOBER, 1907

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185 Jackson Boulevard, Chicago

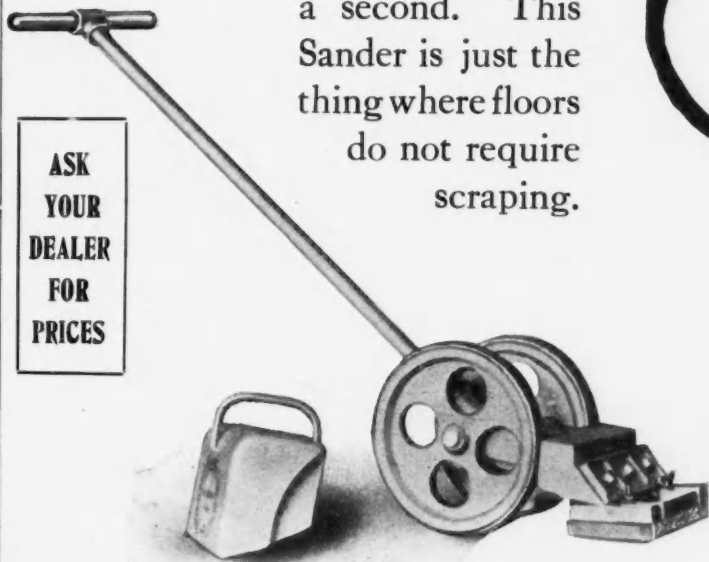
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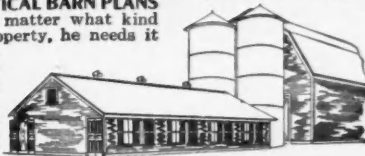
NEW \$5000<sup>00</sup> BOOK OF PRACTICAL

# BARN PLANS

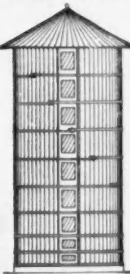


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A Model Dairy Barn With Silo.



Silo.

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Poultry House.



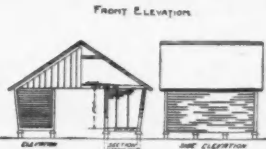
SECTION OF ICE HOUSE

### EACH AND EVERY PLAN

in the book is accompanied by a lengthy written description explaining and giving the details of the drawings, and so worded and arranged, numbered and indexed, that it must be readily understood by anyone who reads it. Your money back if you are dissatisfied.

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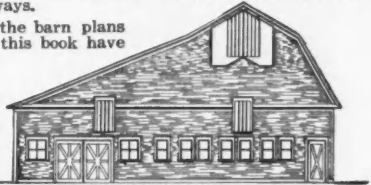


Smoke House

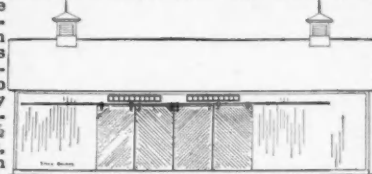
book. It is a book which should be in every farm home, if you only intend to repair a little, or just build a small chicken coop. It is a good thing to even sit down and read, as the knowledge so gained will be highly valuable in hundreds of other ways.

### A GREAT MANY

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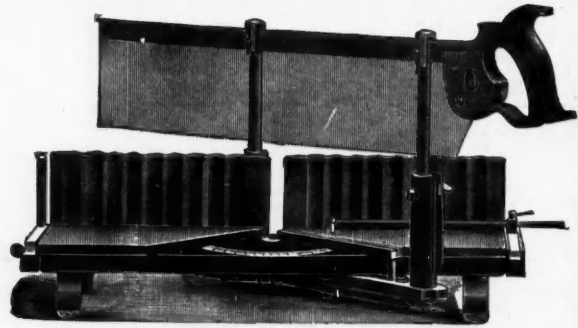
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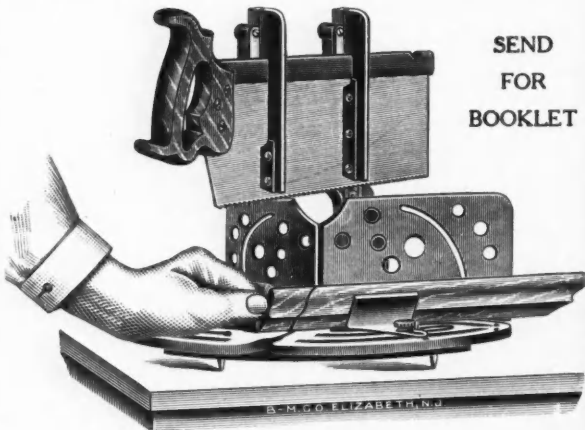
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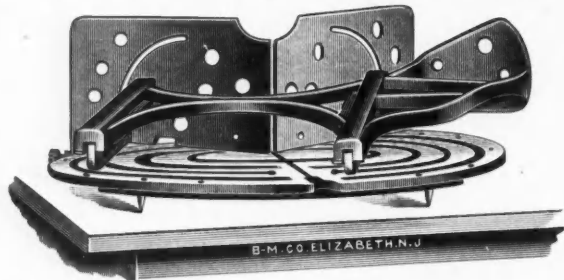
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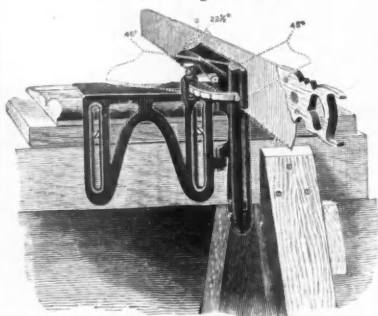
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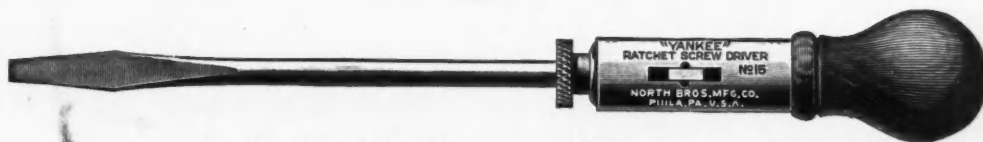
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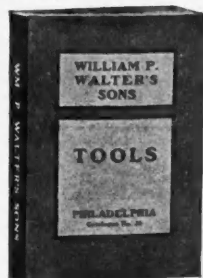
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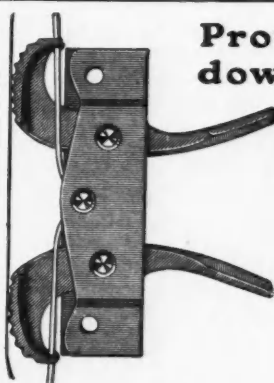
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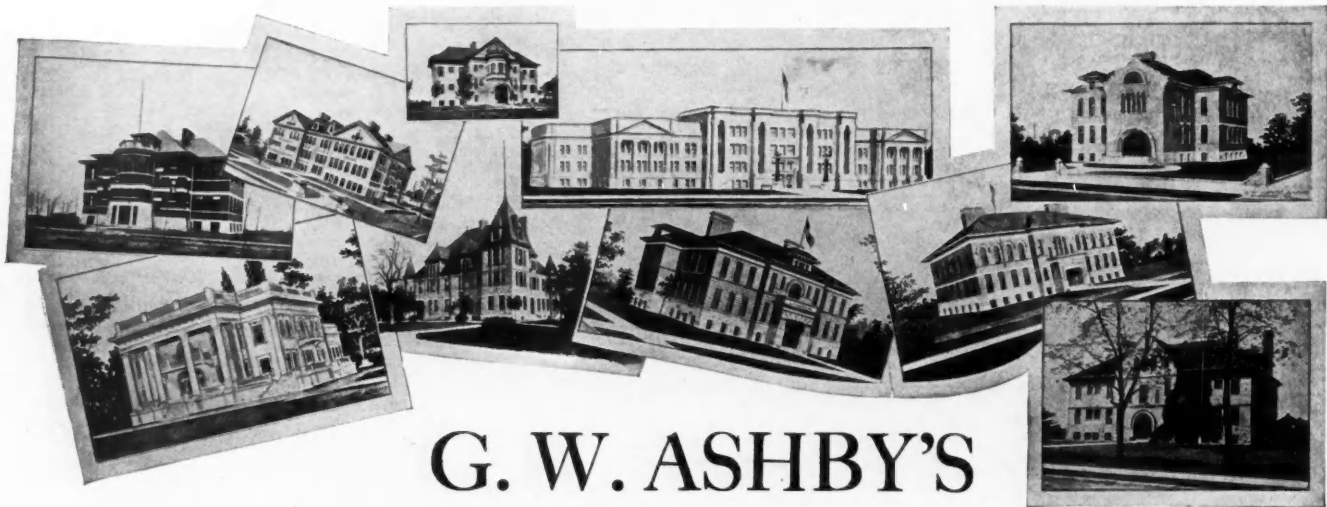


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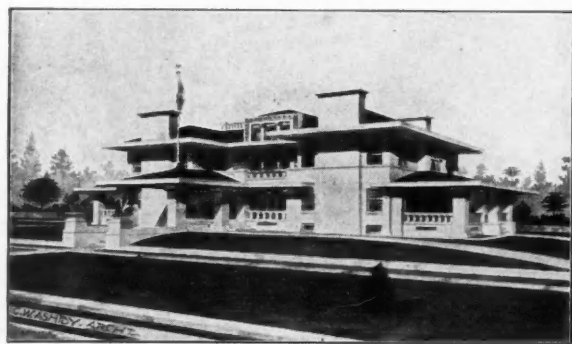


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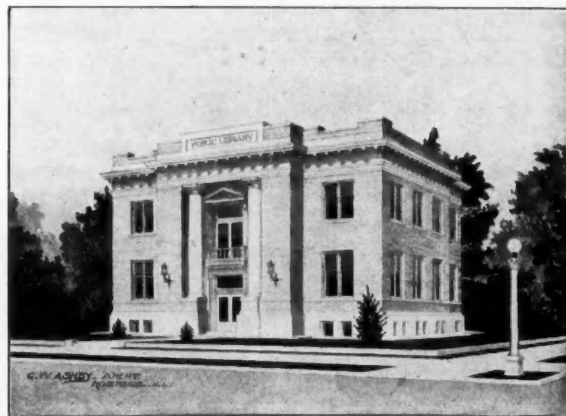
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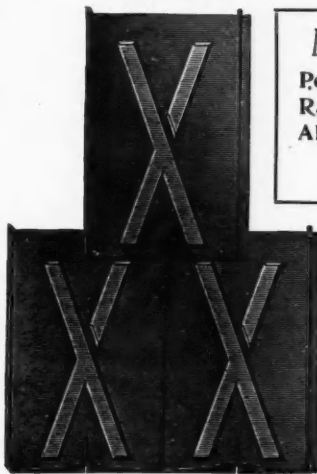


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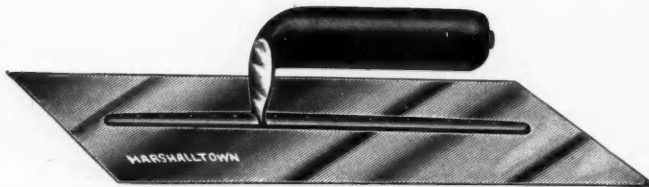
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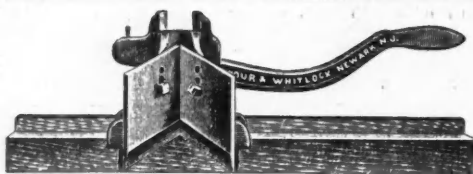
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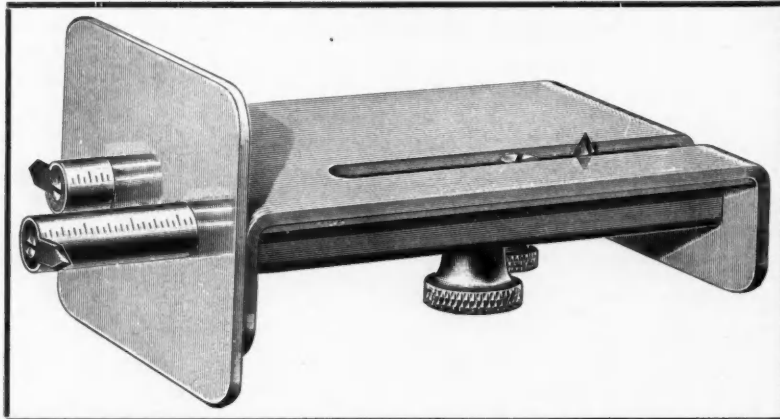
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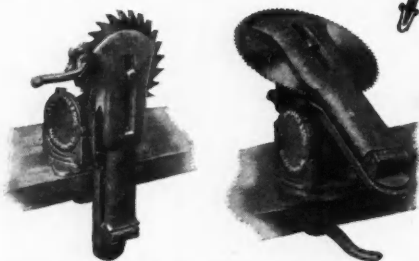
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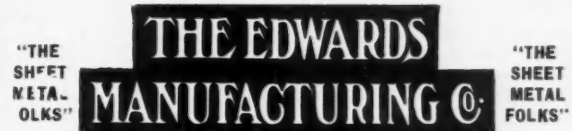
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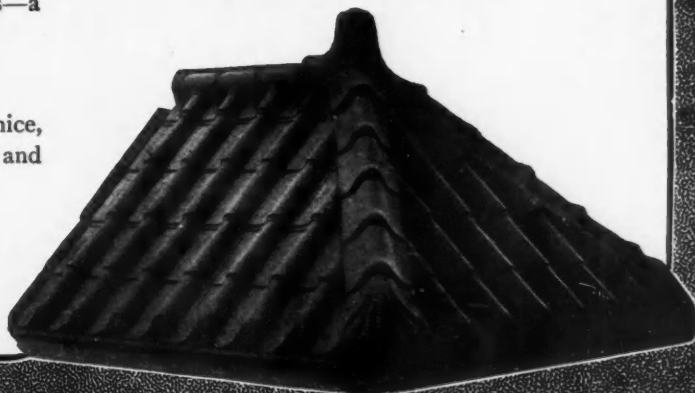
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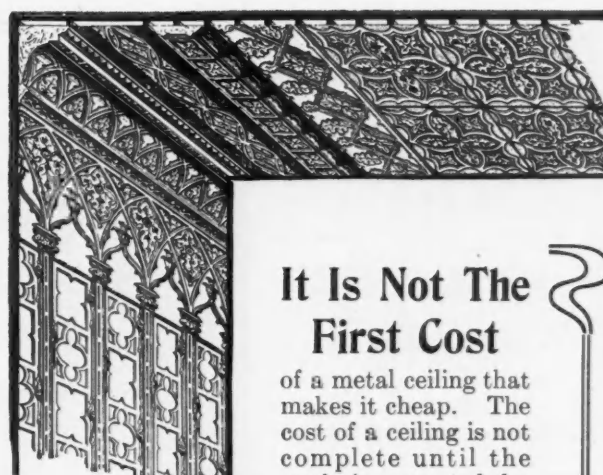
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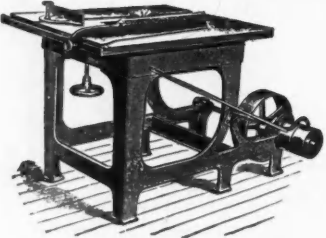
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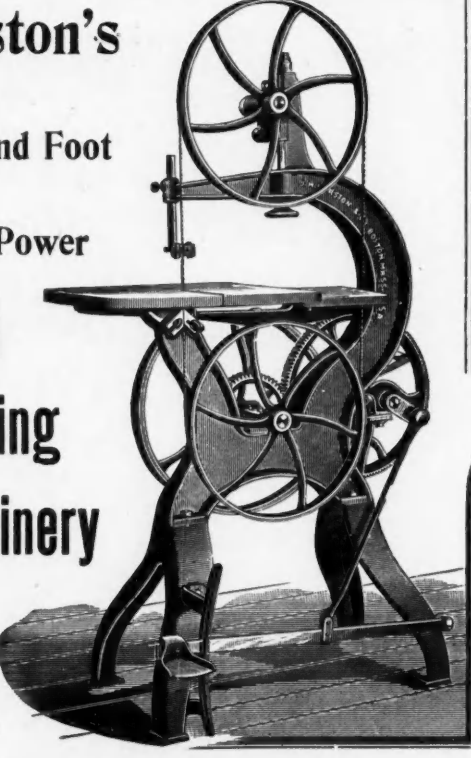
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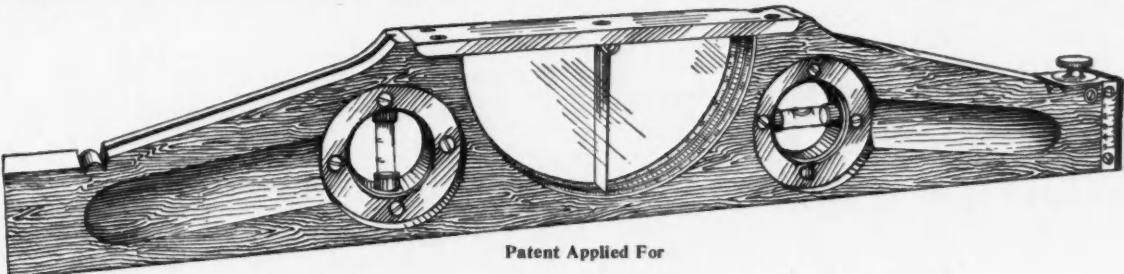
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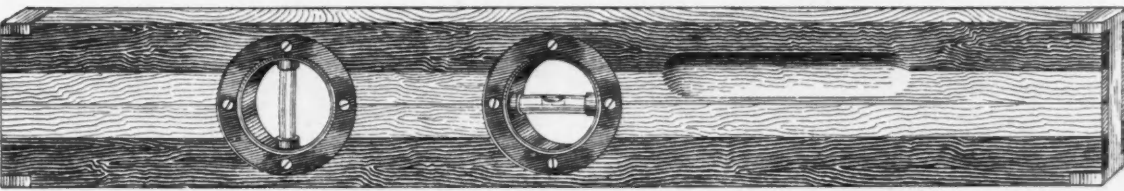
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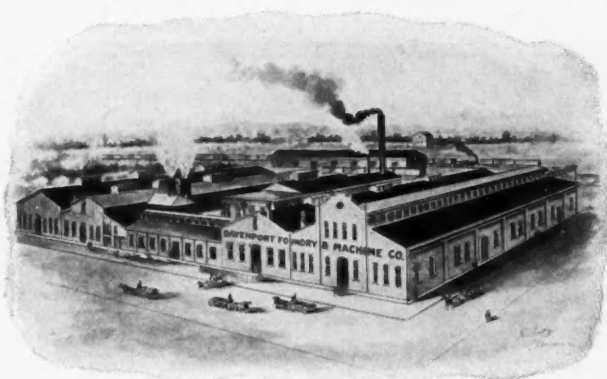
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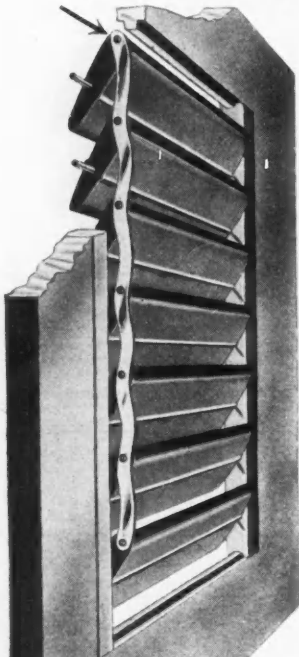
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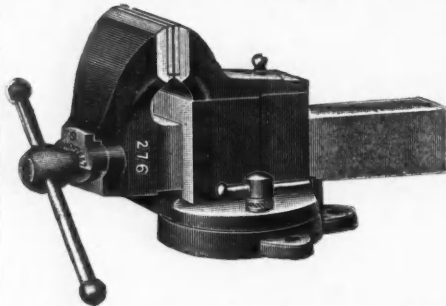
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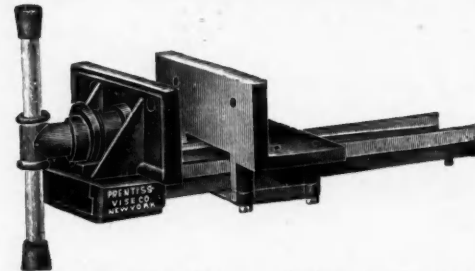
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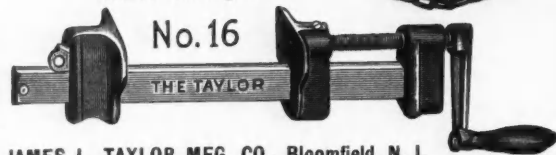
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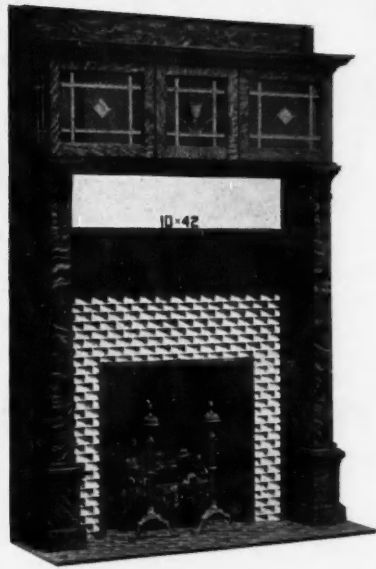
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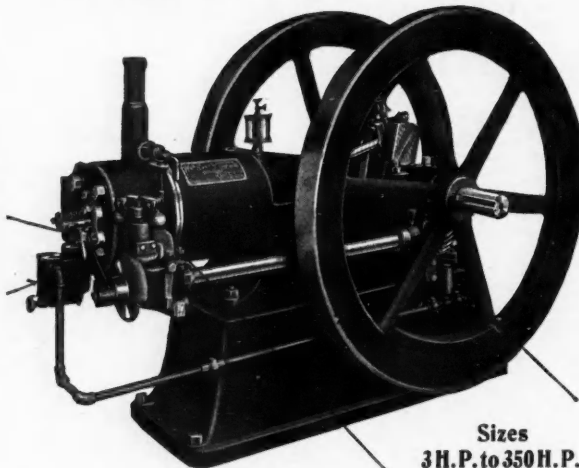
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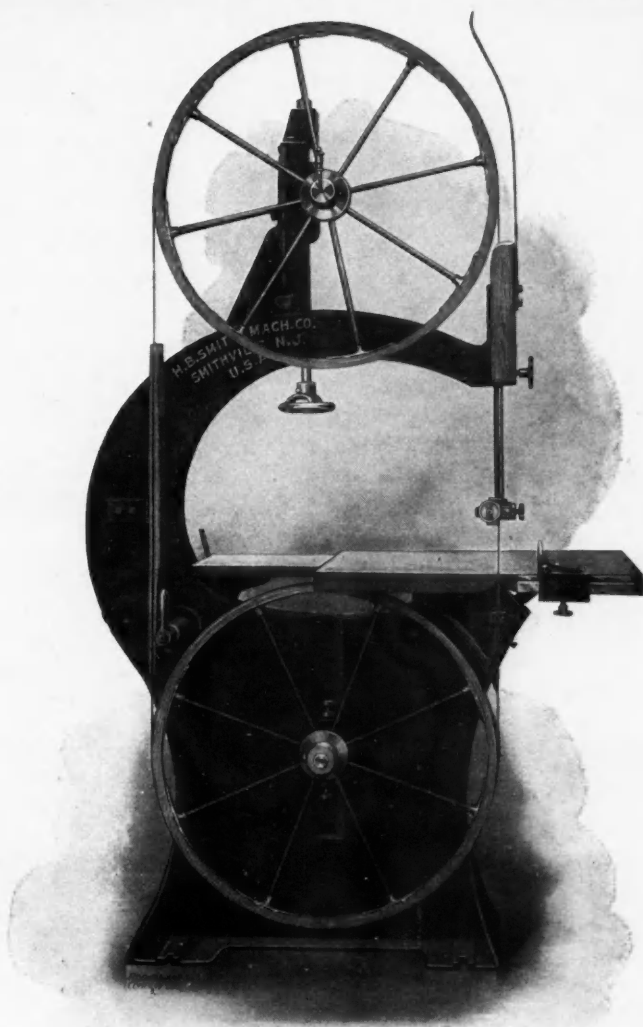
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The AMERICAN CARPENTER AND BUILDER is issued promptly on the first of each month. It aims to furnish the latest and the most practical and authoritative information on all matters relating to the carpentry and building trades.  
Short practical letters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

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### Conditions in the West

AS MANY of our readers wish to keep in touch with the building conditions in various parts of the country we take pleasure in publishing the following letter which recently came to us:

To the Editor: Vancouver, Wash.  
Portland, Ore., and its surrounding country is enjoying a season of unprecedented prosperity in building. On every side buildings are going up. In the business center steel framed,

also reinforced concrete buildings are going up, while, in the inside residence districts fine residences and apartment houses are under way, while the suburbs are filling up rapidly. Even with all this there is a severe residence and store room famine on.  
J. S. HUNT.

### An Important Request

A GOOD suggestion was recently sent us by one of our advertisers in which they say: "We wish there was some way that inquirers could be induced to mention the source from which they receive their first information about a new article."

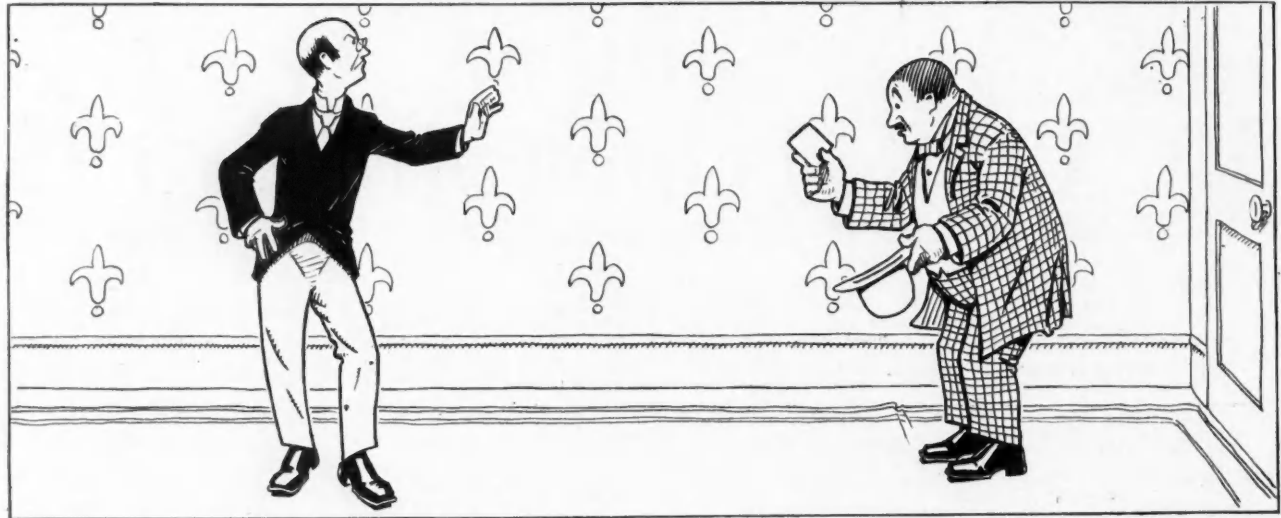
"A manufacturer feels more friendly toward the enquirer who in writing says, 'I saw your ad in the AMERICAN CARPENTER AND BUILDER,' or otherwise intimate the source of his information, and if any concessions are to be made it will be to those who comply with this request. It enables the advertiser to give credit just where it is due."

It means so much to both the advertiser and the paper and we feel sure our subscribers will, now that their attention is especially called to it, comply with this simple but important request.

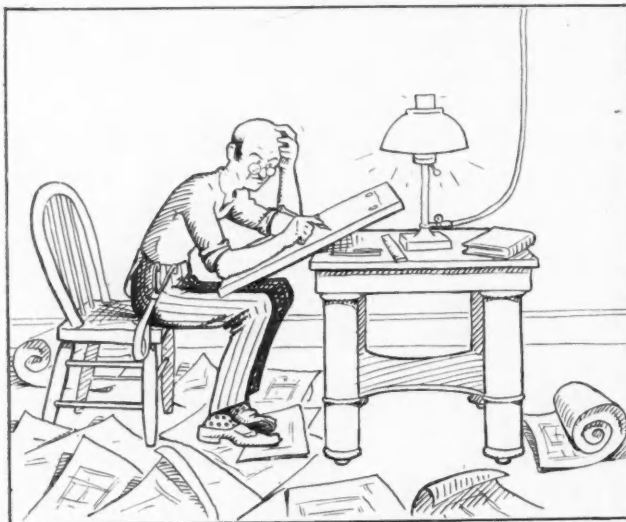
### The Home Builders' Number

THE October issue of our magazine will be known as the "Home Builders' Number" and bids fair to eclipse anything we have issued heretofore. We have had a special cover design drawn by one of the leading artists in Chicago and a number of articles are being prepared which will be of special interest to the home builder. To make it of more interest to all of our readers we ask you to send us photographs of houses you have constructed which we shall be pleased to use, giving you full credit. We have already received quite a number, but no one is barred and all photographs, especially of attractive, moderate priced homes will be gladly received. These will all be returned to you in good condition. Interior views are also desired as we intend to cover every phase of home building, and the interior arrangement is just as important, if not more so, as the exterior appearance. Send them as soon as you can so we will have ample opportunity to get up the magazine in a manner which will be a credit to all of us.

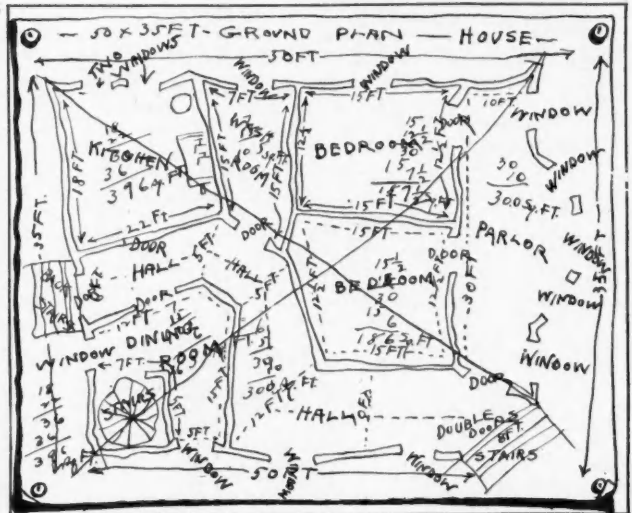
Biography of Mr. Thinks E. Knows.—No. 1



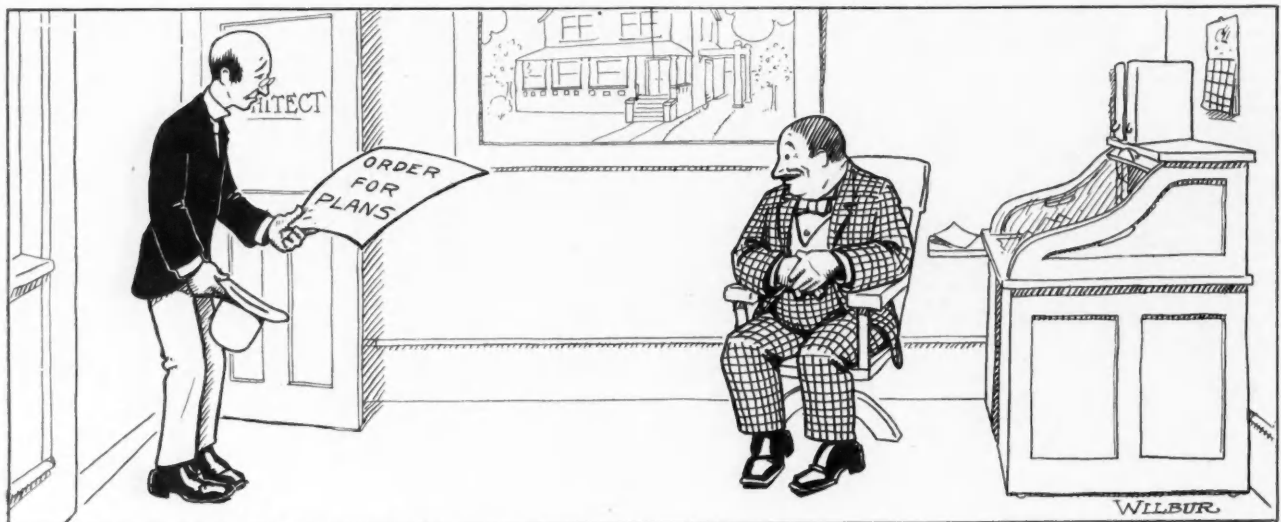
Mr. Thinks E. Knows decides to build. Declares he will not need the services of an Architect, as he is fully able to cope with such simple matters himself.



He burns the "midnight gas" and discovers it is not so simple as he thought.



The result of Mr. Thinks E. Knows' hard labor as an Architect.



He very humbly calls on the Architect and orders his plans.

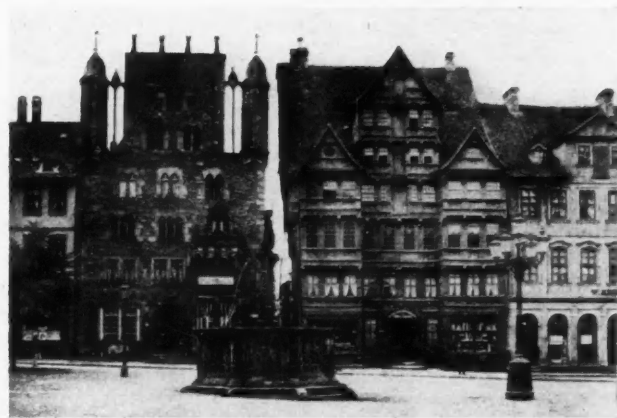


## Early German Architecture

HOUSES OF THE LABORING CLASS ARE BEST PRESERVED—PECULIAR FEATURES FOUND ON MANY HOUSES—ILLUSTRATIONS GIVE BUT MEAGER IDEA

By J. R. White

THE history of medieval times seems to concern itself so largely with warriors and crusaders, castles and robber strongholds, that the ordinary middle class is either crowded entirely out of our picture of that period, or exists only as an uninteresting background. One knows that this class determined the commercial and financial importance of



"Stone Towers Break Any Monotony of Outline"

many places—German centers of trade especially—but one does not realize until after a prolonged stay in Germany, how entirely the picturesque character of the old German cities is due to these thrifty tradespeople who stayed at home from useless wars, saved their money, and built houses fine enough and strong enough to defy half a dozen centuries of pitiless northern winters.

The tourist in Germany who has expended his first energy upon galleries, and then upon castles, preferably ruined ones, usually concedes after days spent in



"Where the Roof Windows Take the Form of Towers of Varying Sizes"

Nurnberg, Rothenburg or Hildesheim, that here after all is found the most interesting and the most picturesque glimpse of the Middle Ages. Nurnberg has its disadvantages, the modern element has intruded,

and it has become a noted manufacturing city for other things besides toys. If one does not mind dirt or expense, Rothenburg is delightful. The artists who go there yearly to paint keep their eyes upon its splendid towers and forget the dirty streets. Those who go during the week of Pentecost to see the famous Rothenburg play console themselves with the remark that the board bill was not too much considering everything—which means a lovely old town and an historical play that has been repeated year after year since nobody knows when. The citizens clothed in armor



"Some of the Tallest Buildings Hold out in Front Like a Shield, Little Duplicates of Themselves"

re-enact the siege of the city, and the hero of the day saves the town by complying with the seemingly impossible condition of drinking a tremendously tall glass of beer at one heroic gulp.

The outlying Harz towns have not the disadvantages of Nurnberg and Rothenburg, and are quite as interesting from an architectural point of view.

In Hildesheim the age of the wooden houses taxes the faith of the most credulous, but there the dates are deeply carved above every door, and the landlord of the hotel where we had taken up our abode assured

us that he could prove that his house was completed about the time when Columbus started out to find a building site for our ancestors. It was not easy to believe that people could have been so comfortably



**"Surmounted by Three Triangles, Each Story Projecting Farther Outward Than the One Below to Show Its Fine Wood Carving"**

housed when America was a wilderness—that homes elsewhere in the world were so attractive while John Smith and Pocahontas were moving from wigwam to shanty, and the Pilgrim fathers were being noble and uncomfortable in log cabins.

The houses in Germany of this period are not quaint and interesting merely because they are old; most of them are genuinely artistic and beautiful. The feature most distinctively characteristic of the architecture of this corner of Germany is the sharply pointed roof. The knife-like edge seems to cleave the blue sky above, and one is reminded of the sky scraping outline seen from the New York water front. The disjointed rows of buildings there need the shadows of dusk or moonlight to hide their ugly angles; here stone towers break any motony of outline, and age has softened all harshness of color or contour.

The exterior adornment of the house and the arrangement of windows was made dependent upon whether the oblong surface of the prism-like roof, or

the triangular end, faced the street. Owing to the fact that then as now, land was valued at so much a front foot, most of the houses were tall and narrow, but there are many with the great rectangular surface of red tiling sloping down toward the street—its long stretch broken by dormer windows of every shape and form. In the market place at Goslar is the best example of a house of this type, the "Kaiser Worth." The roof windows take the form of towers of varying sizes, and the larger central tower is prolonged into a bay window below. A photograph gives little idea of the grace and charm of this old house. Beneath the projecting roof between the windows stand knights in battle array carved from some dark wood; for five hundred years they have stood sentinel before the market place, looking fierce and brave in spite of passing centuries and evil times. It seemed pathetic that those who had been kindred spirits with kings and warriors were now only a spectacle for the curious tourist. When the enthusiastic American girl exclaimed to her father that she thought them as cute and dear as



**"A Roof That Looks Altogether Unhappy and Uncomfortable"**

ever they could be, the saddest of them shuddered—it may have been that he was shaken by the wind, but it seemed a sigh from his inmost being.

Beneath the arcades of this wonderfully attractive hotel you may sit and drink your afternoon coffee and study roofs turned the other way round. The

sharply triangular front is varied by many devices. Some of the tallest buildings hold out in front, like a shield, little duplicates of themselves. Another arrangement is to superimpose a second triangle upon the first. One old corner in Hildesheim is surmounted by three triangles of varying sizes, and no architect could have devised a more effective sky line, or a more harmonious whole. Each story projects farther outward than the one below in its eagerness to show its handsome windows and fine wood carving.

The sky line of roofs is not always so successful; sometimes the turning of a corner seems to have been

royal procession of a thousand years ago, for the friendly summer breeze scattered abroad now as then the delicate petals and the same faint rose odor. Never was there a more interesting family tree, for every stalk of the rose bush has a tablet affixed to mark the year when it branched out for itself from the old root. Here was a family with many ramifications that had no difficulty in tracing its genealogy back to a royal parent stem.

Near the clear, green little canal that flows through the town is a rookery of houses belonging to the poorer classes. These, too, are extremely old, but



"A Ruined Castle and the Cottages of the Peasantry"

a very painful affair, and the tiling is tortured into all sorts of angles so that the roof looks altogether unhappy and uncomfortable. The stories below refuse to accommodate themselves to this curving roadway, and one wonders how a builder could have given to these crooked, disjointed houses the stability and strength that has enabled them to stand for half a dozen centuries.

Hildesheim has had a living history since about the year 800. A painting in the old town hall shows one of its most interesting chapters—the presentation of the Cathedral to the Bishop of Hildesheim by Louis the Pious. The gray old church, partly covered by a climbing rose bush planted by that monarch, is still to be seen. As we passed through the cloistered courtyard it seemed that we ourselves were a part of that

picturesque because of the coloring. On the stone bridges that cross the canal the artists sit and sketch, enjoying the beauty of this "Little Venice," without smells or dirt or beggars. After days, but more especially after nights spent in small Italian towns, the cleanliness of even the most out-of-the-way corners of Germany seems refreshing.

On the humblest houses one often finds excellent examples of wood carving. When the architects of these old German dwellings did not rear their buildings to so great a height, they expended their energy upon the exterior decoration, and even the taller buildings often display a considerable amount of fine carving and fresco painting. Sometimes the medallions of the old kings fill in the wall space between the windows or below them. Friezes are decorated with dol-

phins, gods, mythical dragons and scenes from the chase. As times became more serious after the Reformation, moral maxims were carved often over the doorway and the figures were more liable to be Justice, Piety or some other personified virtue. The draperies of the carved figures were stained many colors, and the reds and purples have become softer and richer with the passing centuries.

The two finest examples of timber architecture in Europe are to be found in Hildesheim—the building famous for its wood carving—the “Kaiser House” and the “Guild House of the Dutchers.” Baedeker says



“The Guild House of the Dutchers—of all Treasures in Wood, the Chief Jewel”

of the latter, that of all treasures in wood this is the chief jewel.

There is usually a painter or two in the market place transferring to canvas this lovely bit of medieval and Gothic art. A photograph gives some idea of the overhanging stories and carved supports, the portal, the sharply-pointed roof and the elaborate design of the friezes, but one must study and enjoy in its presence the careful detail and the exquisite coloring.

The Guild House speaks of the wealth, spirit and artistic sense of the merchants of that period, and it

stands as one of the many proofs of how much more largely the working classes contributed toward what was worthy and enduring in the history of art, as well as the history of civilization, than the idle rich.

The nobles, too, have left their monuments everywhere in Germany—nearly every hilltop is crowned with a castle, usually a vine-covered gray ruin. If what a man creates is typical of his own life, then one may be thankful that he belongs to the class who work, and that the probability is that he will be to the end, like the old middle class houses—well preserved and useful. Wining and dining is too large a price to pay if one comes finally to the state of these tottering old ruins.

The generations of ruthless warriors who probably believed that the memory of their prowess, like the strength of their castles, could defy time, have left often not even a name. In the valley below are the green enclosures and brown and white cottages of the peasantry—not very different from what they were five hundred years ago. The laborer must occasionally look up to the hills and give thanks that he is no longer subject to the demands of a feudal lord, and his tribute to a government that protects him is not so grievous a burden. Any tax must be a hardship, for the exhausted soil yields unwillingly a meagre return for all the labor expended upon it. The farmers realize how different the conditions are in America. “All you have to do,” they say, “is to plant your seed, and the next moment a field of grain flies up in your face.”

No country has all the advantages. America may not be a great success from a picturesque point of view—we have no ruined castles nor quaint medieval cities—artists do not come from all corners of the world to sketch a town hall in Nebraska, but neither do we work over and over from morning until night a worn-out soil for its discouraging reward. In all conditions of life there are compensations.



### An Ingenious Fire Escape

A Swiss engineer announces a new fire escape. It consists of a series of folding ladders, contained in frames, attached to the window cases, each reaching to the window below. By merely turning a small winch on any floor all these frames are pushed outward from the building, the ladders extended and securely connected with each other, thus forming a continuous communication from the top floor to the ground. The manipulation is simple and takes less than a minute. When not in use the escape is barely visible, and does not disfigure the facade of the building in the manner that the ordinary outside iron staircase does. A public test of the new escape has proved successful, and the Vienna fire brigade representatives have expressed their approval of it.



The fruit derived from labor is the sweetest of all pleasures.—*Vaubenargues*.

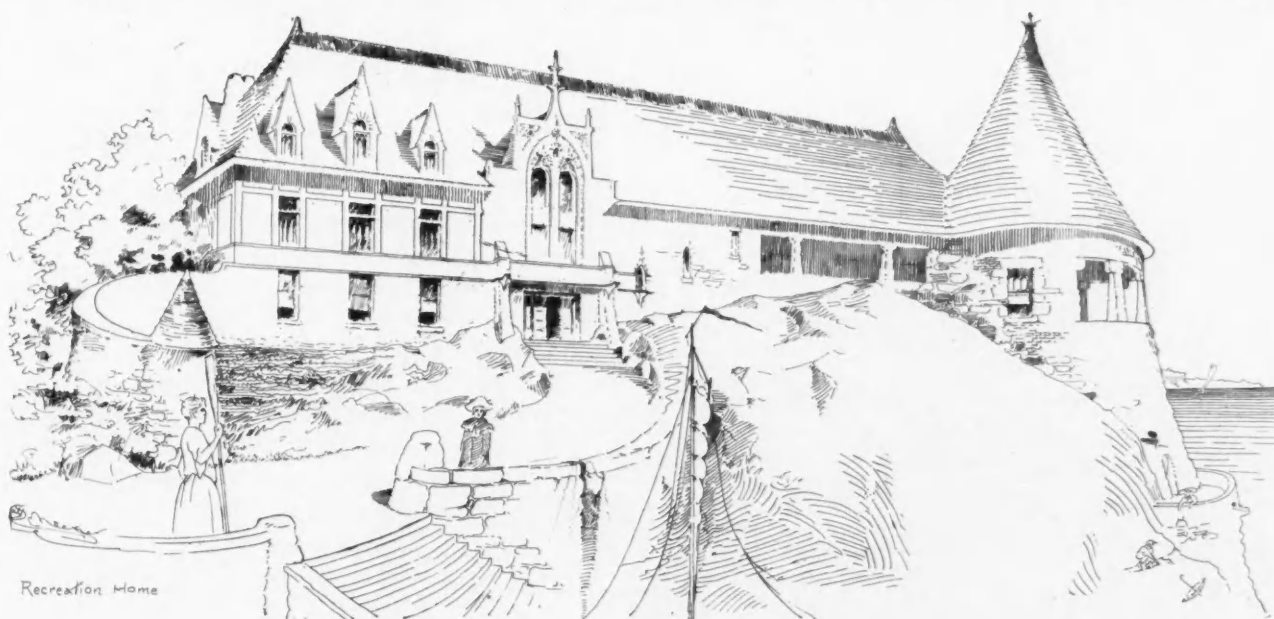
## Beautification of Water Fronts

SHOWING SKETCHES OF HOW TO BEAUTIFY OUR WATER FRONTS AND RIVER BANKS—HOW TO COMBINE ART AND UTILITY

By C. Bryant Schaefer

**T**HERE is much handy work to be done about the water. Insignificant jobs are the nourishment of enterprise, as the springs and creeks are tributary to the great stream. But if one looks about today the little wharves and little mills are found idle and the little rivers are no longer highways to market. The country loses its local business because people are driven to patronize the great centers where only it is practical to conduct great enterprises. The streams are allowed to become drains for great steam

wharves, robs great enterprises of their legitimate support and regulation. Private business that neglects to store its own goods but hands them over to railroads has in fact lost possession and control. No amount of legal representation, legislation or investigation can retain the authority actually relinquished. A man and a boy who recently took a schooner load of apples to South Chicago from up the lakes went where they chose, made their own terms, beat city prices and earned the wages of a dozen middle men and acces-



plants, pulp mills pour in their refuse and the fish flee the contamination. The water fronts are given over to sooty mills, cinders and shanties.

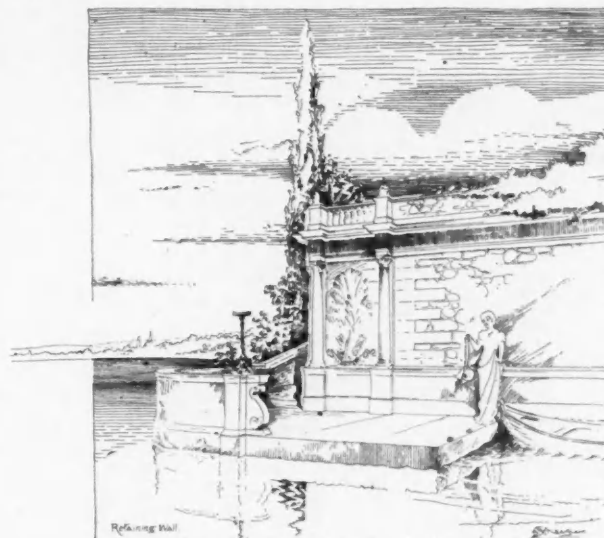
It is pretended that the local mill, the scow, the canal boat and schooner can not compete with the great factories, the ironclads and the railroads. Look into the history of these great inventions and it will be found they were designed to benefit the small interests. It is impractical for them alone to back up to every cabbage patch or to supply breakfast food just like grandfather's old mill used to.

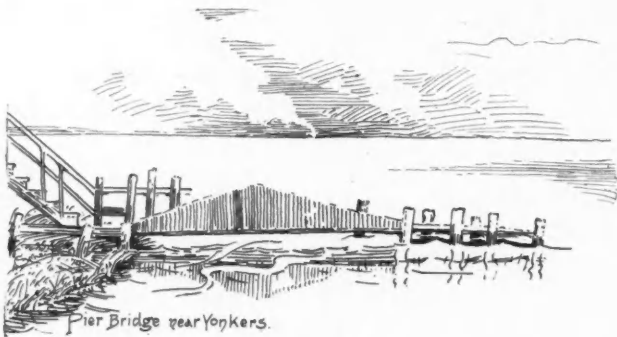
The public canals are maintained as a possible resource against railroad impositions. It is equally important to also keep the local carpenters and other trades busy as a resource against factory evils. Add to a trade the intelligence to look about and find what work helps others well, and the foundation of all trades is discovered. A person of that character does not have to wait for work and finally chooses his own labors, creates his business and becomes a benefit to the community.

Neglect of the wagons and ox teams, the punts and

sories. Every town or state should have facilities for such enterprise. There is no old-time river plantation in the South but what has its wharf—and the South is booming now!

Just before the freight car famine one of the great

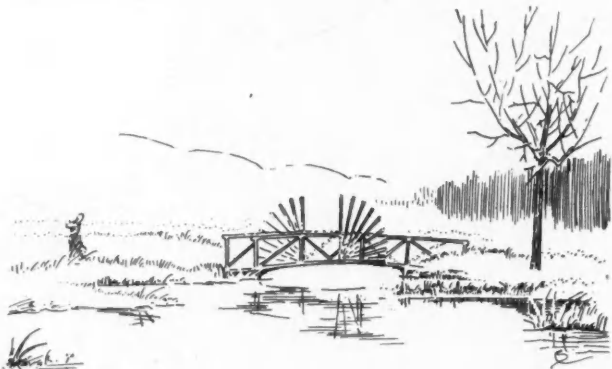




Pier Bridge near Yorkers.

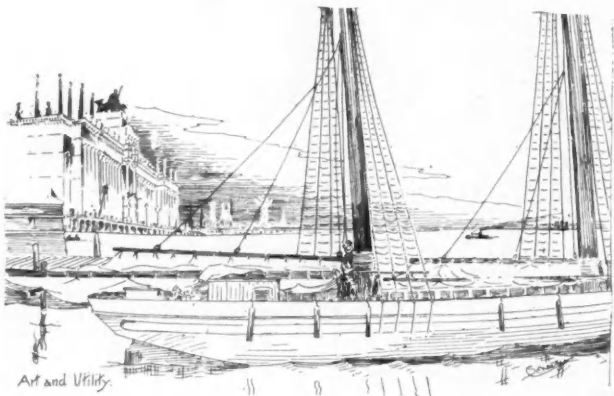
railroads shipped the old second hand lumber from its dismantled depots in Iowa hundreds of miles to build new depots right in the lumber camps of Minnesota. Does not the producer who carries his home-made goods past the railroads to market gain an equally moral force even if it does take longer? It is the same with any kind of individual effort. It brings good results.

We show some sketches taken on a trip through the East which illustrate what the older states have found



Gate Bridge near Hudson Riv.

useful in the past. These local contrivances constitute the commonwealth of communities. Without them there are no individual concerns, only great systems in which people move by habit. Eventually they are unable to extricate themselves, not because they are kept down by selfish leaders but because they themselves have made no alternative into which to extricate themselves. They are an opposition only. Yet they may choose their own course, little by little, in the way they occupy their spare seconds.



Art and Utility.

The pond or river bank is one of the most convenient places for dumping refuse. There is no shore but what its cleanliness will enhance great natural beauties. Debris may be used to good advantage for filling boggy land and with some consideration, may strengthen embankments and be formed into terraces. There are foot paths that need to be made more passable in places. It is not right to run fence barricades out into the water in order to obstruct the pathways. Every shore is part of the public channel. Possible bathing places

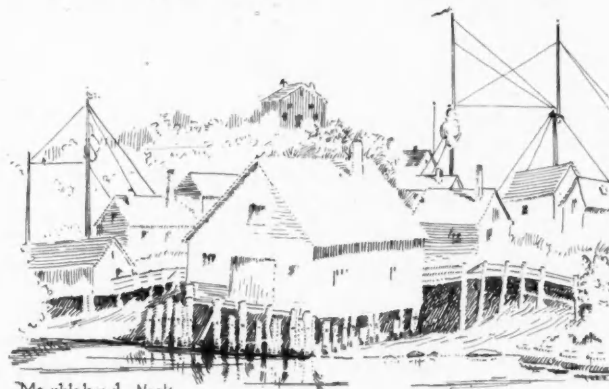


Mill near Worcester Mass

could be made acceptable to many people. Indeed, swimming, running and climbing ladders ought to be compulsory, for no fire escape or life preserver can do the work of weak limbs.

Lunch places might be cleared beneath great trees and stands provided and a landing for mooring boats would introduce a fleet. The doing of such work opens the way for others to add their part.

A stream of water often serves for a boundary line. The gate bridge illustrated becomes serviceable in such



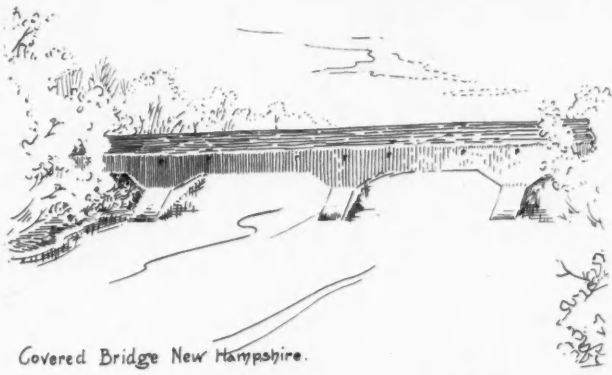
Marblehead Neck.

instances. The sides are bristling with guards to prevent climbing around.

Another sketch shows a pier bridge at the foot of a flight of steps leading up an embankment. Some air tight casks at the outer end would keep that point always the same level with the water.

The mill shown is one of a type that became numerous during the rebellion. Shoddy mills they came to be called.

New Hampshire has many long covered bridges that people used to go miles out of their way to drive through, just to hear the musical clatter of their horses' feet resounding through the board tunnel.



Covered Bridge New Hampshire.

The combination of art and utility is represented in the sketch of the Chicago World's Exposition lake front. The exclusive reservation of certain districts for conventional art development is only instructive after all, but may represent a better living art which people can cultivate inseparably from their daily lives. It begins with their cleanliness and the grace they may add to their strength. Hence it will be found that original beauty is also the most economical.

The prairie rivers with shores like ditches are difficult subjects for improvement. The retaining wall design is a good suggestion in this connection.

A class of buildings for out of doors summer life is represented in the recreation home. Their number would multiply faster if the expense was reduced by merely considering the requirements of simple life and finishing the interiors with hammer and saw from standard sizes of lumber.

It has taken many years and many workers to evolve the modern building with all its intricate appliances. It took generations to develop the steam planing mill. Many achievements in public works are the continuations of centuries. The progress of many great enterprises would be less halting or confused if there was more attention given preceding endeavors. This truth does not except the anticipations of aboriginal America. Inattention to ancient American precedents delays the development of an indigenous art.

Customs and associations are bound to reassert themselves even in strange surroundings, so in latter day America, in old Gloucester and Marblehead, the rule is equally well exemplified, for the buildings of these old fisher folks are located up and down, and at all angles of the street, every which way, like a fleet

of their own fishing schooners bobbing on the waves.

The design for a traffic building shows how all the different modes of conveyance may be accommodated. It represents the meeting of water, street and rail, and is devised to facilitate their interchange. There are overhead passages from the freight cars to the ironclads. The traffic highway is combined with the boulevard and many features result that are an outgrowth of usefulness. There is room for the row boat landing and the huge traveling crane. The scene is full of life and attractive to the promenader who is in turn a source of enthusiasm to the workers.

American water fronts are far behind what they might be in general utility and beauty. In this study it has been considered that freight should be received at the limits for distribution throughout the city. This mode has proven satisfactory in cities the growth of which has been well directed. Here at the outskirts,



Traffic Transfer.

steam should be exchanged for electric motive power.

This design is also a gateway. It indicates the boundary within which those from without come under the restrictions of city regulations, or beyond which those within may seek greater freedom, a difference in conditions that should not be allowed to escape notice.



## Construction of Casement Windows

CONSTRUCTION OF AN INWARD OPENING WINDOW IN FRAME WALL—ILLUSTRATIONS SHOW THE CONSTRUCTION IN DETAIL

IN this installment we will consider the construction of an inward opening casement window in a frame wall, with insect screens placed outside of the sashes and with blinds placed outside of the insect screens. It is also arranged so that when the screens are removed in winter, storm sashes may be installed in their place.

The frame is set in a very slight rebate in the

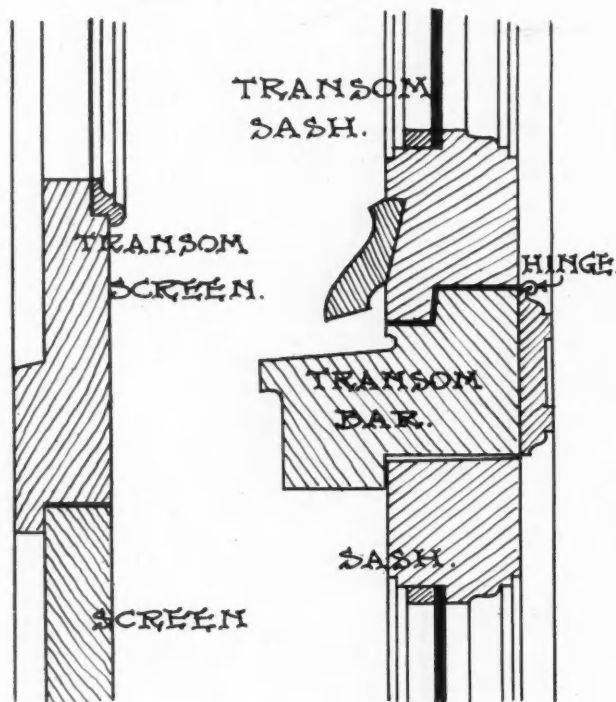


FIG. 185.

masonry wall and is secured in place by means of the lug on the jamb of the frame. This lug is built in as the brickwork is carried up.

The window frame is rebated for the sash and is also rebated for a tongue on the edge of the sash. This tongue is quarter-round to allow for the play of the sash when opened. The jamb lining is tongued into the frame and should be placed sufficiently back from the jamb of the frame to allow for the window shades which, in the case of inward opening casements, are placed on the top rail of the sash.

The top edge of the sash is slightly beveled so that there will be no chance of it striking the transom bar when being closed.

The sill construction is similar to that shown in the last number, with undercuts and drip mold to prevent the entrance of rain water at the joint of the sash and sill. This joint is usually the weak point of inward opening casements but if constructed in the manner shown will resist driving rainstorms. The inside stool is rebated over the sill.

The transom sash, which is hinged at the bottom and swings in at the top, is rebated over the transom bar and provided with a drip mold similar to the lower sashes. The top edge of the sash is slightly beveled to allow for the upward throw of the sash when being opened. The transom bar is molded and has an undercut just below the transom sash to cast off any water which may be driven against the joint.

The meeting rails are rebated and beveled and have inner and outer astragals or cover molds. At "X"

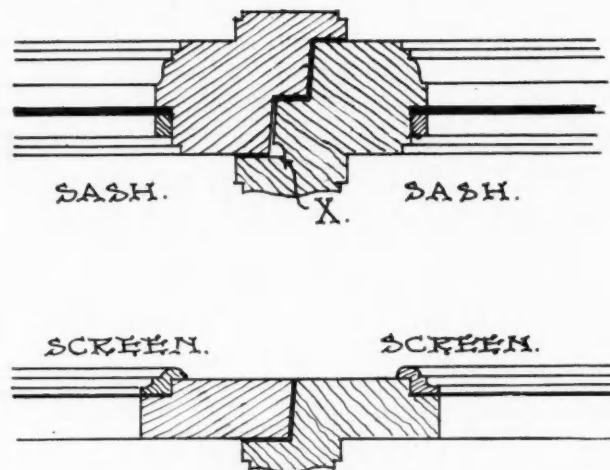


FIG. 186.

the sash is grooved to catch any water which may work partly in at the joint.

The construction of sash bars is shown in Fig. 183.

The window frame is rebated on the outer edge for the mosquito screen frame which is secured in place by means of brass lag screws. These screws are so



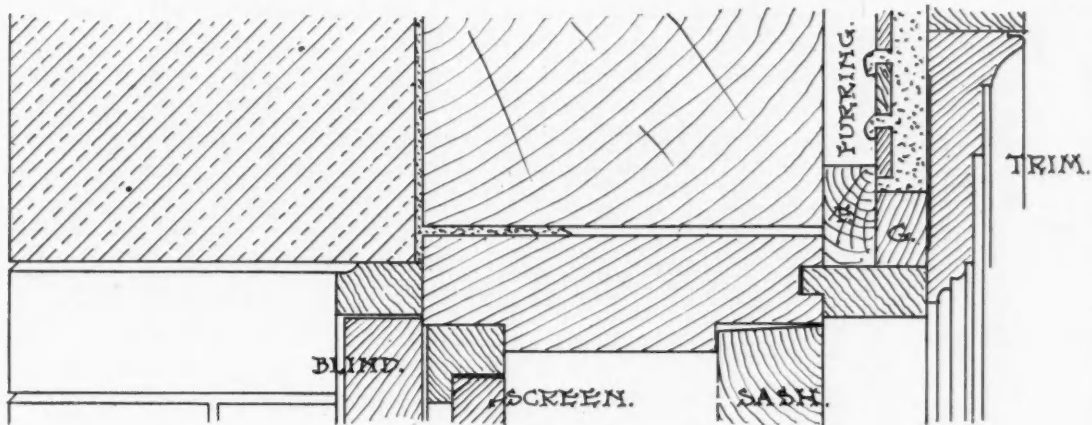


FIG. 182.

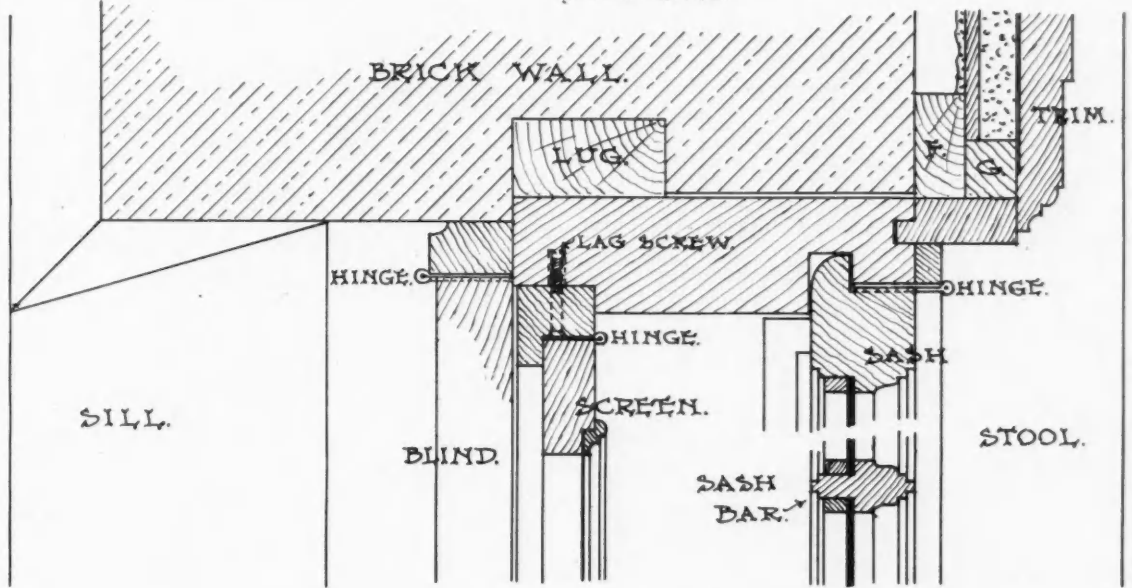


FIG. 183.

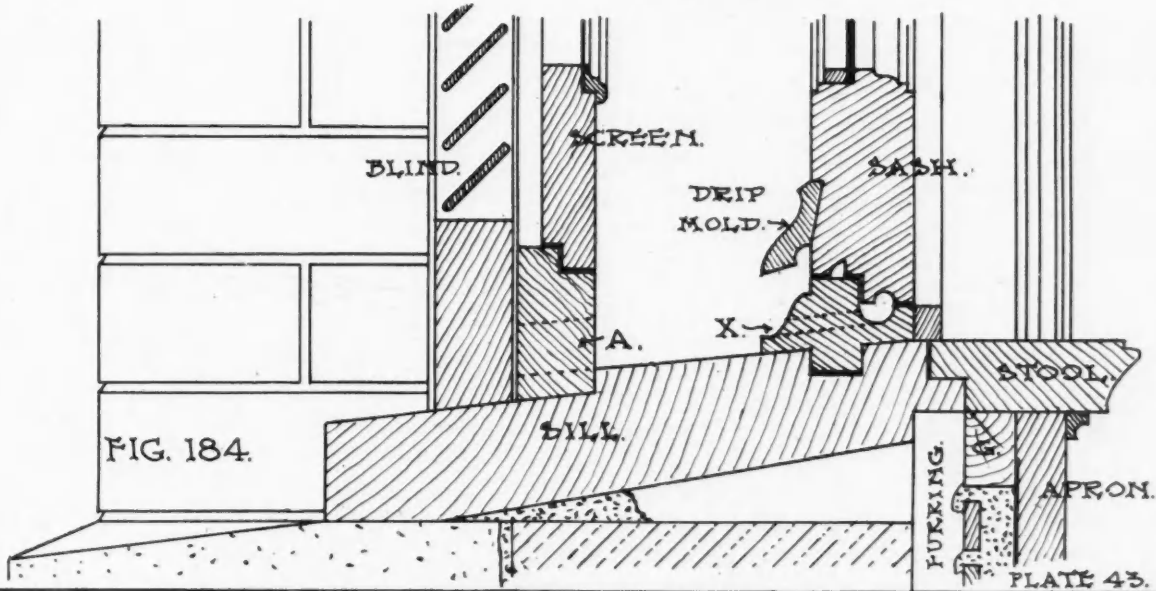


FIG. 184.

WINDOWS.

PLATE 43.

arranged that they may be used to secure storm sashes in place when the screens are removed in winter. When the storm sashes are in place the blinds cannot be operated from the inside, so they must remain open, unless the blinds are fitted with a device to open them from the inside of the house. There are several of these opening devices on the market and they consist of a worm-gear apparatus which opens the blinds by the turning of a crank within the room and without the necessity of opening the sashes. These devices are thoroughly practical and very useful, even in cases

where they are not absolutely necessary. They permit of opening and closing the blinds in stormy weather without opening the window and subjecting the person and the room to the storm.

The screens are rebated, and hinged at the side to open in. The opening in the frame at "A," Fig. 184, is covered with netting and allows any water which may come through the screen to pass out over the sill. The transom screen is stationary.

Figs. 182 to 186 are respectively sections through the head, jamb, sill, transom bar and meeting rails.

## Casement Window Construction

INCREASED DEMAND FOR CASEMENT WINDOWS—PREFERENCE OVER OTHER FORMS—REBATING CASEMENT NOT NECESSARY

By Robert C. Spencer, Jr.

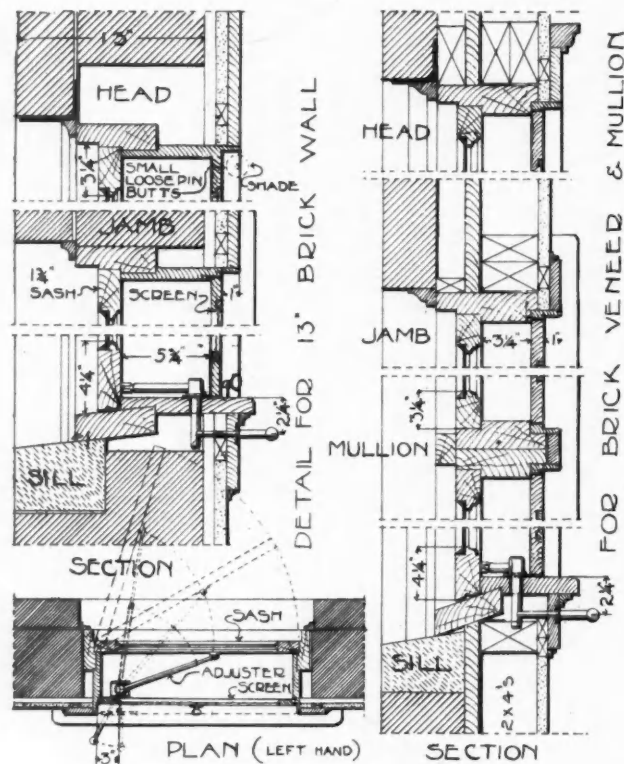
THE accompanying illustrations show several simple forms of window frames for casement sash which swing outward, adapted to the several types of wall construction, masonry, brick veneer and stud frame.

The writer has used casement windows for residence

old sash which have, for any reason, ceased to fit properly through shrinkage, swelling, settlement, sag or slight distortion of the sash. Casement sash should be strongly made. For good work sash should be 1 3/4 inches thick and the sides and top 3 inches wide exclusive of glass rebate; the bottom members should be 1 inch wider and all made of clear white pine stock thoroughly tongued and pinned together. There is little danger that sash so made will ever sag. Large sized butts should be used, preferably 4 by 4, galvanized with brass pins to insure their always working easily.

Except in the south and in California, casement windows should be equipped with weather strips. If they can be afforded, some good form of metal weather strips should be used. Both interlocking and friction strips are sufficiently tight.

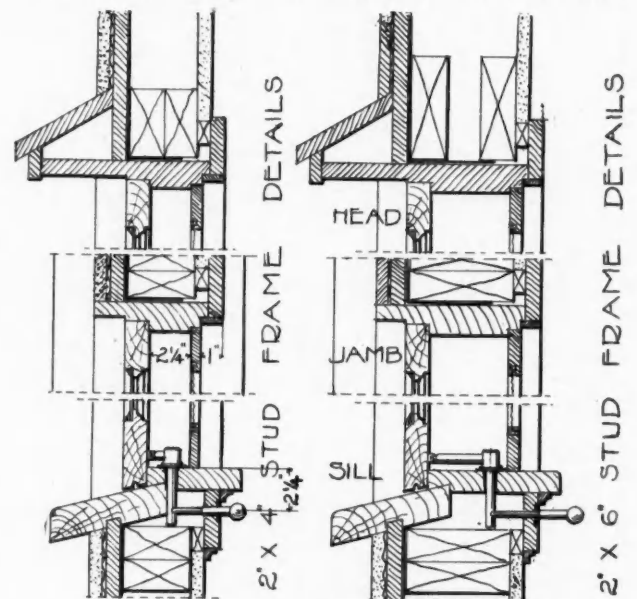
For the general run of residence work, however,



### CASEMENT WINDOW DETAILS

work almost exclusively during the past twelve years and his experience in regard to certain points in casement design may be helpful to the readers of this magazine.

Many architects think it necessary to rebate their casement sash. The writer has found in practice, that rebating your sash simply weakens it and adds practically nothing to its tightness against weather. Rebated sash are objectionable because of the difficulty of fitting them accurately and the difficulty of re-fitting



### CASEMENT WINDOW DETAILS

HEADS JAMBS & SILLS 1 3/4" STOCK  
 SASH 1 3/4" THICK 3 3/4" WIDE OVER ALL  
 BOTTOM RAILS 4 1/4" " "  
 SCREENS 7/8" STOCK HUNG AT TOP IN  
 SMALL LOOSE PIN BRASS BUTTS

the ordinary cheap wood and felt strip answers the purpose very well, making casements tighter than double hung sash. Wooden strips are not only cheap and easy of application, but they never cause the sash to stick as is often the case with metal strips if they are sufficiently weather tight. When the felts are worn out it costs little to put in new strips. For the better class of buildings casement frames should be rebated out of solid  $1\frac{3}{4}$  inch stock.

Where each mullion assists in supporting the weight of the floor or wall above, in other words where this weight is not entirely carried to the sides of a group of casement windows by means of a heavy lintel, at least one 2 by 4 stud should be inserted between the frames of each mullion. First story casement windows, unless otherwise protected, should be provided with projecting hoods in order that they may be left slightly open for ventilation in warm, rainy weather. The same is true of second story casements in gables or elsewhere where not protected by the eaves.

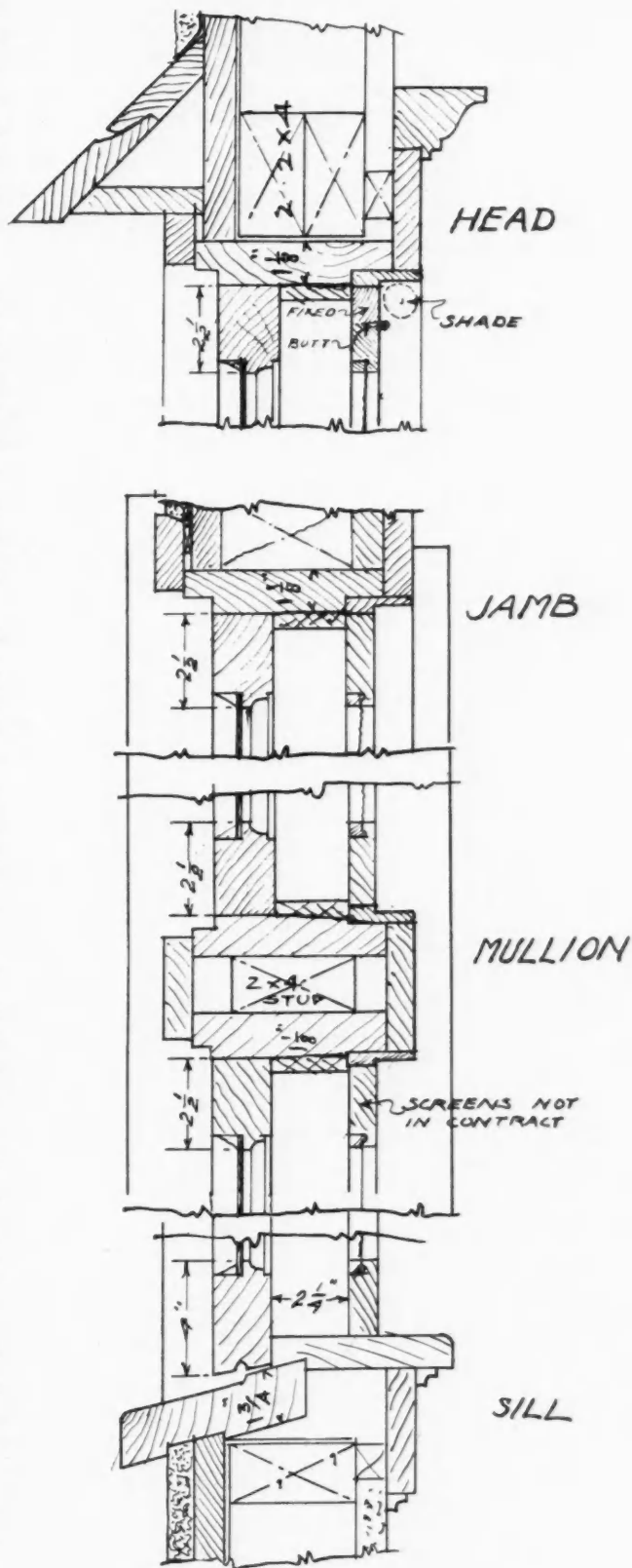
The best method of fitting screens and storm sash to casements is to hinge them at the top, fitting them with a small bolt or catch to hold them in position at the bottom so that they will not be blown in by the wind. Thus fitted they can be readily opened to give access to the hook or adjuster by which the sash is held open without interfering with curtains or shades.

The accompanying details all show sufficient space in the jamb-lining next to the screen for window shade fittings which are much neater so applied than on the face of the casing. The illustrations having been taken from our typical office details, show the application of one of the new forms of casement adjuster which operates the sash through a locking plate secured to the apron, doing away with the necessity of opening the screens in order to open, close or adjust the sash. Several devices which accomplish this have been placed on the market during the past two years and although more expensive than the old fashioned adjusters they are well worth the extra cost, as to open the screen in order to operate the sash, is always more or less of a nuisance. In fact the bother of doing this has been one of the chief reasons why the building public in the United States has been loth to adopt casement windows; in most parts of the United States insect screens being a necessity. In England where screens are seldom used, and little needed, casements are the universal window.

With the removal of the difficulty involved in the use of screens it is not improbable that casements will eventually replace largely the old fashioned double hung sash for residence work, as most people appreciate their beauty as well as their great superiority as ventilators, particularly during warm weather.

Your carpenter paper cannot be made any better to my knowledge and I wish you all success.

J. C. AUSTIN, Mabel, Minn.



TYPICAL CASEMENT WINDOW SECTION  
CHEAP FORM.  
FRAMES  $1\frac{1}{8}$ " STOCK



# STEEL SQUARE.

ALFRED W. WOODS

## How to Use the Steel Square

SHOWING HOW TO FRAME STEEL PITCHES SUITABLE FOR CHURCH SPIRES WITH AND WITHOUT THE AID OF THE STEEL SQUARE. HOW TO DEVELOP THE HIP FOR CURVED ROOFS

**T**AKING up the subject of octagon work where we left off last month, we will now apply the same rules to steep pitches, such as are often used in building spires for churches. The illustration in Fig. 138 shows the plan of an octagon, twelve feet

as shown by the bevel at C. The lines A and B always remain the same distance apart, regardless of the pitch given the roof, provided the jack rafters are of the same thickness. Therefore, if the rafter is  $1\frac{3}{4}$  inches thick, these lines (A and B) will be vertically  $4\frac{1}{4}$  inches apart; by squaring across the back of the jack and cutting diagonally across, will give the top or more generally known as the side cut of the jack to fit against the hip. These points are more clearly brought out in Fig. 139, which is drawn on a larger scale. But the question arises, what are the figures to use on the steel square? The proportions being such, that we cannot use the full scale for a one foot run, so it is necessary to reduce the scale, as 12 to 36. If we reduce the scale to  $\frac{1}{4}$  then 3 and 9 will

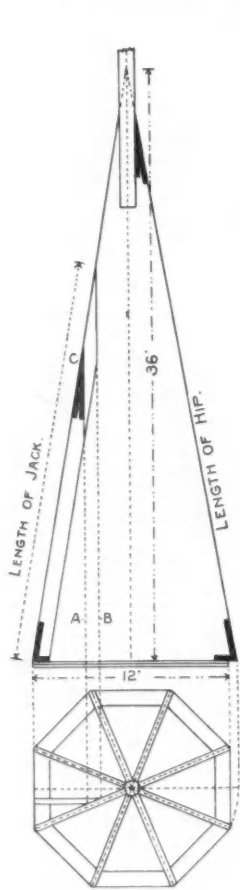


FIG. 138.

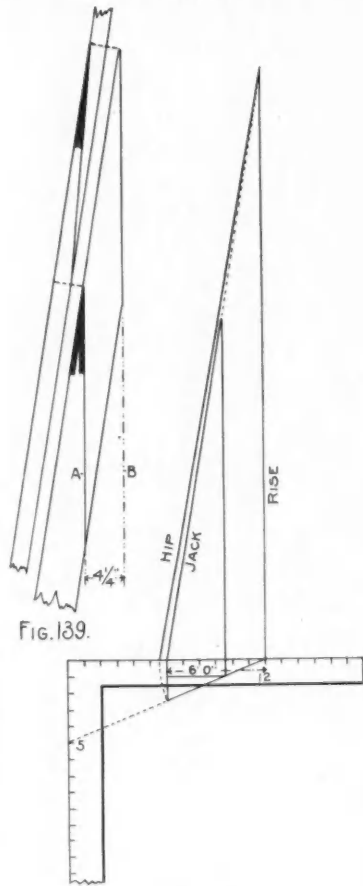


FIG. 140.

in diameter, while just above the plan is shown the elevation, having a rise of thirty-six feet, which by the long since established method of reckoning the pitch, would be three full pitches, because it has a rise equal to three times the diameter or span of the base of the spire. In the plan, only the hips are shown to run to the center. Between these, there would be two jack rafters, one of which is shown in place and the dotted lines A and B represent the distance apart the plumb cuts should be when laid off on the same side of the rafter. The intersection of these lines with the pitch given the roof, forms the angle of the plumb cut,

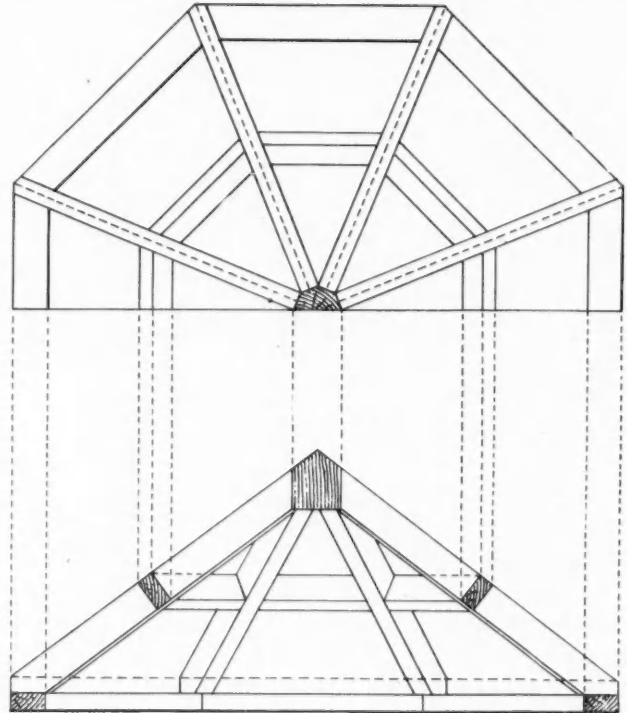


FIG. 141.

give the seat and plumb cuts of the jack. For the side cut of the jack, it would be 5 on the tongue and the length of the common rafter on the blade for a one foot run; the blade will give the cut. However, this length is found to be 36 inches. So it is necessary to take a proportion of 5 to 36 and by taking

one-half of these parts, it would be  $2\frac{1}{2}$  and 18 on the square. The 18 side giving the cut. Thus it will be seen that this angle in a steep roof is very sharp,—the steeper the roof, the sharper becomes the angle.

NOTE.—Fig. 140 is a modified diagram of Fig. 138.

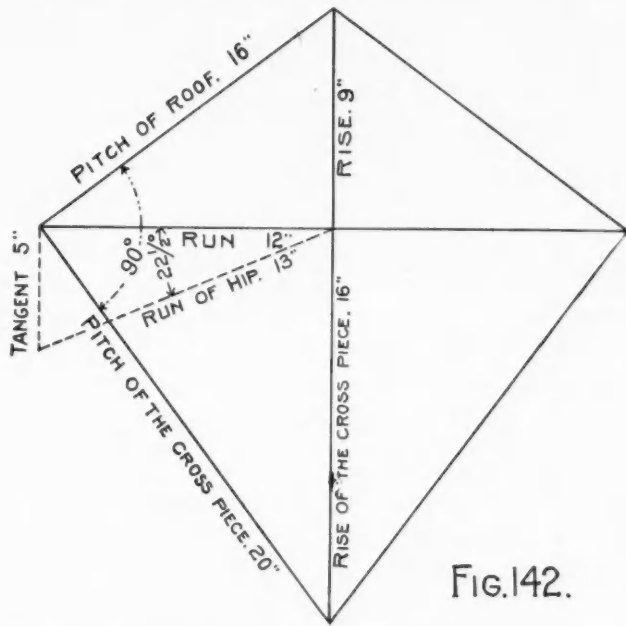


FIG. 142.

These few lines give all of the proportions required in framing a spire of the dimensions shown in Fig. 138, and is all that is necessary to arrive at the proportions to take on the steel square to obtain all of the cuts and bevels.

In case it is desired to sheath the spire vertically, or in other words, sheath up and down instead of horizontally, it is necessary to frame pieces in between the hips, as shown in the plan and elevation at Fig. 141. This furnishes a problem that taxes the ingenuity of most workmen as to how to obtain the cuts and especially so to arrive at the same with the aid of the steel square. The great trouble with most workmen is that they do not take time to reason or study out the relative position of one part to another.

Referring to this example, suppose the hips were removed; the cross pieces would fit together and form a perfect hopper, with sides resting at right angles from that of the roof, as will be seen by referring to the elevation in Fig. 141. However, the relative positions to one another is probably better illustrated in the simple lines, as shown in Fig. 142, which is self explanatory. The cuts may be found as follows:

Take 5 on the tongue and 20 on the blade. The tongue will give the cut across the face of the block. Take 5 on the tongue and 16 on the blade, the tongue will give the miter, or top cut across the back; or this cut may be found by the formula, as shown in Fig. 133 in the July number. There are other ways of arriving at this cut, but will not take up more time now as the same will come up again under another head—that of "Hoppers."

We will now take up another phrase of the subject—

that of curved roofs. To shape the hip so as to be in plane with the desired shape given the common rafter, is another one of those geometrical problems that often comes up in practical every-day work. While the same may be arrived at by different methods, we will only take up space to illustrate one of the many ways, believing the same to be about as good as any; in fact, far ahead of the rules in general use. However, this system is not new, but we believe it is here presented in a more practical way than has ever been published before. To arrive at the proper shape, it is necessary to lay off a diagram full size of the common rafter. The designer may suit his fancy as to the curve given the roof. Can strike them from centers, if he likes, but this cannot be done for the corresponding hip, for while their rise remains the same, the seat of the hip is necessarily longer, as will be seen by referring to Fig. 143. In this we have taken the octagon for illustration purposes. NOTE.—A line from 12 on the tongue and passing at 5 on the blade, forms an angle which is the same as that formed by the runs of the common and octagon hip rafters. We also find that this line diverges from the tongue 5 inches in a one-foot run. Again, the line from 12 to 5 measures 13 inches—a gain of one inch to one-foot run of the

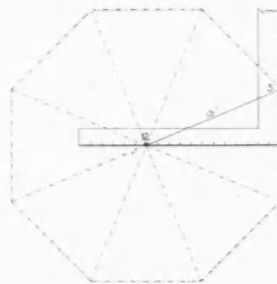


FIG. 143.

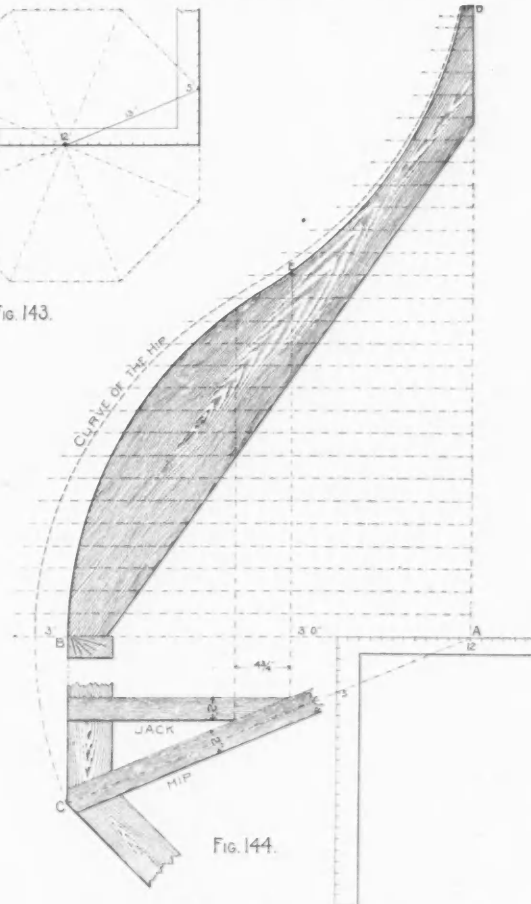


FIG. 144.

common rafter. Therefore, the run of an octagon hip is one-twelfth longer than that of the common rafter. Now, let us apply the above to a full size diagram, as shown in Fig. 144. Draw the line A-B equal to one-half the diameter of the octagon. Place the square, as

shown, draw the line A-C and square down from B to C. Then A-B represents the run of the common rafter; A-C the run of the hip and is one-twelfth longer than A-B; B-C is equal to one-half the length of the plate and is five-twelfths the length of A-B. The whole figure bounded by A, B and C is one-sixteenth of the plan of the octagon and is all that is necessary to form the base from which to develop the hip. Lay off the rise A D, and the desired curve for the common rafter; draw any number of lines parallel with A B from the rise to a few inches beyond the curve of the common rafter. Measure these lines from the rise to the curve, and for each foot and fraction of foot, add to same line as many inches and twelfths of inches as there are feet and inches in length. In other words,

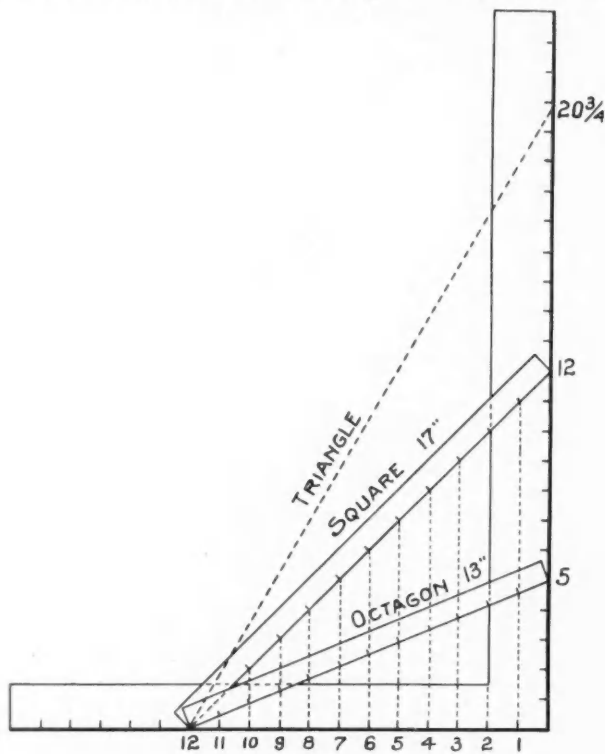


Fig. 145.

the run being three feet, then measure off beyond the curve three inches and check. If this line had been 3 feet 1 inch, then the measurement beyond the curve would be 3 1-12 inches. After measuring all of the parallel lines, add 5 inches, for each inch in the fraction through the checks and the corresponding hip is determined.

The jack being a part of the common rafter, its shape is easily found by laying off the run, squaring up as shown, and that part from B to E will be the shape of the jack. If the jack is 2 inches thick, then the lines for the plumb cut will be  $4\frac{3}{4}$  inches apart, from which the side cut may be obtained, the same as in the case of a straight roof, as before described.

The gauge line for the backing of the hip may be found by measuring back on the parallel lines five-twenty-fourths the thickness of the hip, or in this case (the hip being 2 inches), it would be five-twelfths of

an inch. By running an off-hand curve line through these points, will give the distance back to remove the wood at the sides to bring the back of the hip in plane with that of the common rafter, and the layout of the hip is complete.

This treatment for a hip resting on a square corner, the diagonal line on the square would be from 12 to 12 and its length would be practically 17 inches, which is a gain of five-twelfths over that for the run of the common rafter. Then for each foot in length of the parallel lines, in like manner run an off-hand curve of a foot, add five-twelfths of an inch and proceed as above. From this, it will be seen that the figures to use on the steel square are the same that give the respective miters for a frame, having the number of sides as contained in the desired building. The square and the octagon are the most used in this kind of work and are the easier to handle on account of the gain in their respective runs being in simple fractions of an inch.

The work may be simplified by making what we will call a miter rule. In Fig. 145 is shown the principle of these rules, which is self-explanatory. They can be made of any thin material; in the absence of something better, a piece of card board will do. By dividing one of the divisions in twelve parts, will make a complete rule for handling the fractional parts in the parallel lines. Now, we are ready to proceed.

First measure the lines to the curve of the common rafter, with the common standard rule, then remeasure the same number of feet and inches, with the miter rule and check. When all of the lines have been thus measured, run the off-hand curve through the check marks and the true shape has been determined.

If it is desired to develop a hip for a three-sided tower, the miter rule would be the length of the line from 12 to  $20\frac{3}{4}$ , as shown by the dotted line in Fig. 145, and this divided into twelve parts, would be the corresponding miter rule. While these miter rules are for polygonal angles, they can be made for any angle desired by laying off the same on the square and proceed as above.



In regard to the AMERICAN CARPENTER AND BUILDER, I will say that I have every number on my desk before me, and it has been one of my greatest pleasures in noting the rapid improvements of what might be termed a far-reaching venture. I am more than pleased to state that it far surpasses any conception of my mind, and is of so much material benefit to any builder or one connected with building, that I cannot see how they can afford to be without it, as every inch of reading matter is thoroughly practical and not theoretical.

O. F. MERRILL, Castle Rock, Wash.



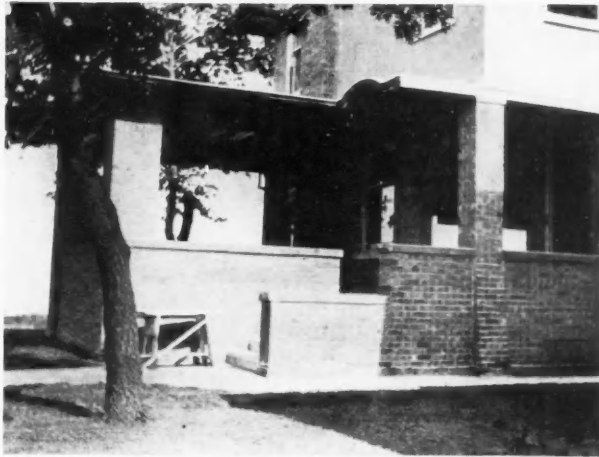
Keep your eye on the humble man; the chances are that he is setting a trap for you.

## Some Modern Porches and Verandas

BY HERBERT SHEARER

**T**HE wholesome fashion of living outdoors as much as possible in summer has greatly increased the demand for porch and veranda additions to our houses. Women have studied the attractive possibilities of furnishing a comfortable, almost luxurious outside parlor on the veranda and the innovation has proved popular.

We habitually use only the names porch and veranda to cover all the different new and old inventions in airy house attachments and annexes and I am sorry to notice of late that architects are trying to eliminate the word veranda. They deliberately label every house extension that has one or more sides open to the



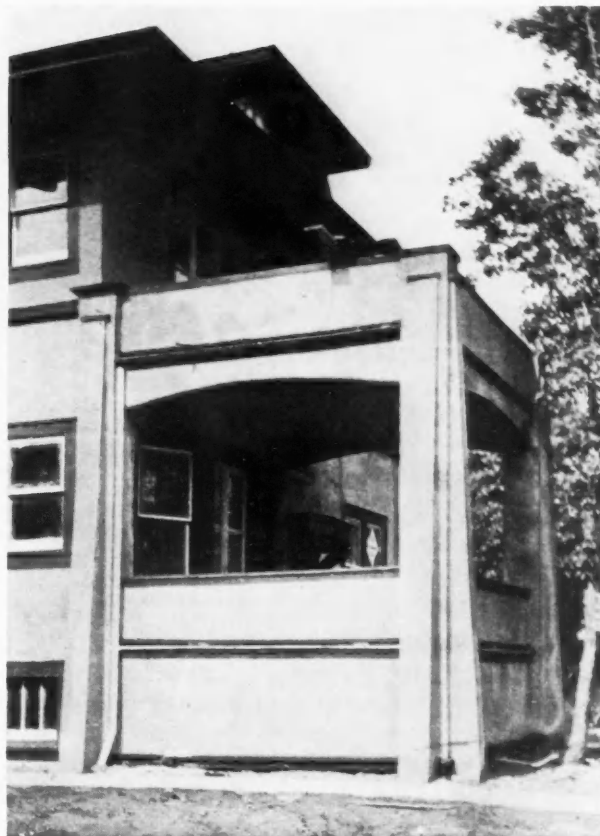
A heavy front porch on the loggia order. It does not belong to the entrance, but is connected with it at the side. It is enclosed somewhat on the parapet order with low walls. This is a style very much seen of late. The general idea makes for semi-privacy, especially when the openings are partially screened by growing plants in boxes. The enclosure may be nicely fitted up with high-grade summer furniture with impunity, because the ceiling is comparatively low and the roof is wide enough for ample protection in case of storms.

to-date whether they are right or not. These same men often are prolific in new exterior designs for ornament and for service, though they certainly are a little shy on names for the different creations. A modern thoroughly well-educated architect is a master



Portico at the entrance of a rather expensive residence. It might be styled a portico-colonnade, as it is complete with pilasters and columns placed in regular order together with entablature, stylobate, corbels and irregular consoles. The colonnade is topped with a flat roof and a balustrade. In the center on a level with the second floor is a fancy balcony.

weather a porch. It may be four feet square or it may extend all the way around the house, it may be a floor without a cover, or it may be a roof without floor or rail, but the same paucity of expression prevails. They have discarded the word veranda because they think it old fashioned and they lack the wit to coin a substitute—not that substitutes are necessary, because the English language is already sufficiently rich in expression if they take advantage of the recognized terms. We have many good sensible architects, but the profession is overloaded with such lopsided reformers, men who want to be considered up-



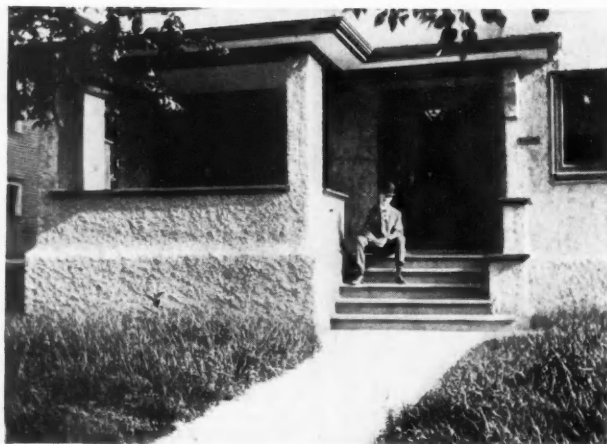
Another loggia. The piers are of cement with a buttressed effect. There is no entrance except from the house to either the upper or the lower floor.

hand at designing new outside building effects that are at once both artistic and comfortable. Many of them have an air of having grown up with the house and to belong there by right of birth rather than adoption, proving that such embellishments may be aesthetic as well as utilitarian.



This is a small arcade with an upper gallery supported by columns and piers. On the ground is a cemented floor which is raised a little above the level of the grass. It offers no seclusion whatever. There is no room for anything except small chairs below, and as the gallery is not roofed there is no incentive to make use of the upper part. It is hardly ornamental, and it is difficult to invent an excuse for its existence. Its only success is in producing an odd effect.

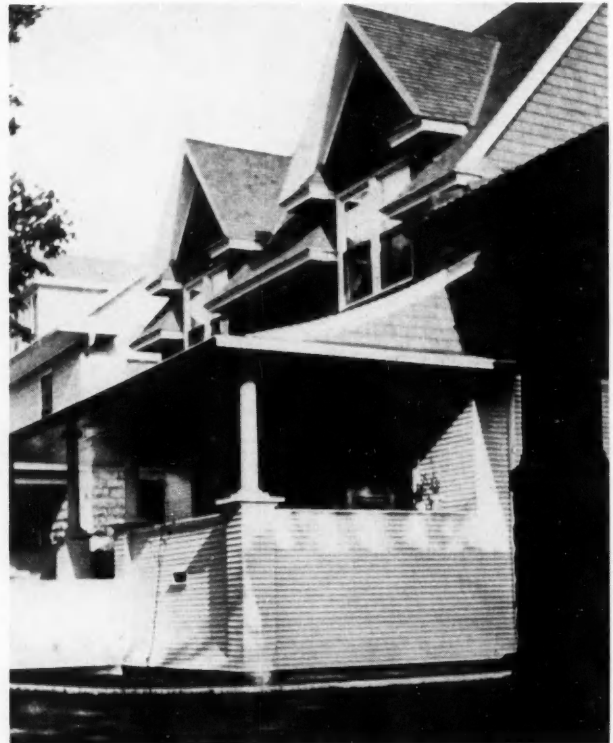
When I was a boy a porch was simply a shelter over an outside door which usually covered the old fashioned stoop with from three to a half a dozen steps leading up from the ground to within six inches of the house floor level. If this outside attachment extended sideways from the door far enough to make room for a chair the extension was entitled to a more dignified name and it was then called a veranda. It consisted usually of a narrow floor with a picket fence



Another modification of the loggia. A roofed recess forms a protection for the front door, and there is a narrow entrance to the loggia from this recess, but no opening into the house from the loggia. This arrangement lends itself to hot weather decoration very nicely.

in front and it was covered with a concave roof made by bending thin boards to fit rafters that were cut to a circular curve and placed belly down. These old fashioned verandas were usually an after-thought tacked fast to the side of a house after it had been built a year or two. They were too narrow to be taken seriously but they were always accepted as an evidence of prosperity.

People were slow to adopt any elaborate extension of the veranda idea, probably because our climate seldom smiles upon our efforts to enjoy ourselves out doors. I am a bit conservative myself, especially when the weather takes an interest. I have found the weather a very erratic partner in business. I have



An old-fashioned veranda revived. For neatness and simplicity it is a gem. The entrance to the house is in the center, and there is plenty of room at the ends for chairs, rugs, tables, a hanging seat and general comfort. considerable influence over the weather within four walls, but I have found it extremely arbitrary under a liberal rendering of the contract. On the other hand, fashion is still more unreliable, for June and August look very much alike each year and they will return with the revolving of the circle, but almost any kind of a fashion is liable to fly off at a tangent and lose itself to our little world indefinitely. The sensible fashion of building handsome fresh air porches, verandas, loggias, lodges, porticos, colonnades, peristyles, porte-cochere, and patios and dressing them



A little summer home which is about half veranda, but the veranda is enclosed at both ends and the side toward the lake is made of shutters which hinge at the top and form a roof projection when open. There are sliding windows inside of these shutters for better protection from cold lake winds.

comfortably with summer furniture and fancy rugs is good enough to last many years and I hope it will. At any rate, it has already made a demand upon architects and builders that has led to the construction of

(Continued on page 668)

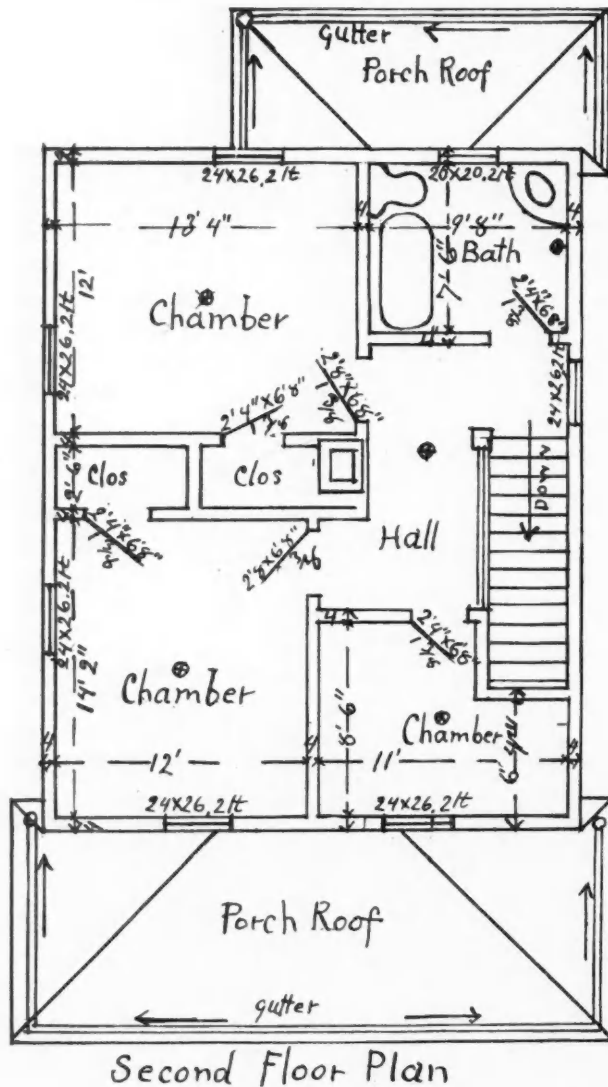




the plan. This is particularly true where hot air is used for heating.

Never swing a door so it will swing back against a side wall hot air register, for it is dead sure to spoil the door in a very short time.

We now come to the stairway, which seems to be a stumbling block for many, and even architects sometimes leave too little room for stairs. With the architect, this happens principally because he is in a hurry

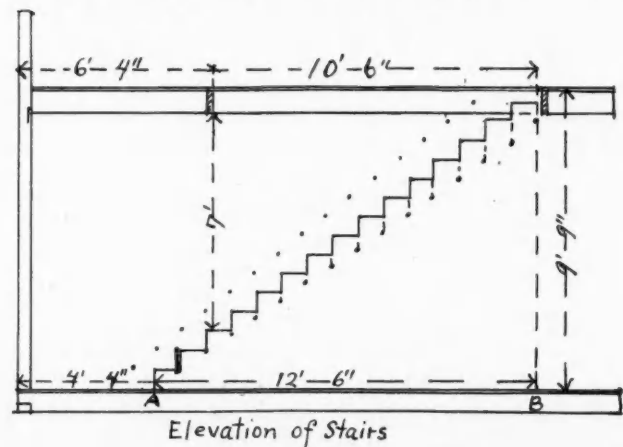


Second Floor Plan

and does not stop to figure, but rather resolves in his own mind that there will be head room enough. With the average carpenter, he simply guesses at the space to cut out, because he knows no way to figure it out, either by figures or by a drawing. We do not say that this is always the case, for there are mechanics who can master these problems, and then again there are many who cannot, and we have prepared a special drawing to accompany these floor plans to show the inexperienced just how to cut out for the stairs to leave sufficient head room. Referring to the first floor plan, it will be seen that the stairs start 4 feet 4 inches from the outside of front wall. We have figured for a straight run stair and for fifteen steps

with a 10-inch tread, as marked on the string board. The projection of a tread for the step nosing is not figured in cutting out for the stairs. Fifteen steps at 10 inches tread makes the run of the stair 12 feet 6 inches, as shown to the right side of the first floor plan. Two of these steps jog over into the kitchen, as shown by the dotted lines, but these steps are sufficiently high to allow a door under them to the cellar stairs, and the jog into the kitchen ceiling is very small and well up out of the way.

Referring now to the elevation of the stair which we have drawn to a  $\frac{1}{4}$ -inch scale and for a 9-foot ceiling, making the total height of the stair 9 feet 9 inches from floor to floor as shown. Now the elevation shows that the stair starts 4 feet 4 inches from the outside wall marked A, and the actual horizontal run is 12 feet 6 inches, as A to B, and plumb up from B to second story will locate the header next to the landing or the total of the two measurements will give it as 4 feet 4 inches plus 12 feet 6 inches equals 16 feet 10 inches. Thus 16 feet 10 inches from the



Elevation of Stairs

outside wall will give the location of the landing header, which of course should be cut back  $1\frac{1}{2}$  inches to give room for the step riser, which is usually  $\frac{7}{8}$  inches thick and a space of  $\frac{1}{2}$  inch is then left for the lee way to square up on, etc.

The space from A to B must be divided up evenly to represent fifteen steps, and the easiest way to accomplish this is to place a rule at A and raise one end up on the perpendicular line till the space from A to the point on the perpendicular line is represented by 15 quarter inches; then a dot made at each quarter inch mark on the rule will represent the width of the fifteen steps uniformly spaced. The dots are shown just under the steps. There will be sixteen dots, including the bottom one; this is what it takes to represent fifteen steps. Now the height, 9 feet 9 inches, must be divided up into sixteen spaces, for there is always one more riser than steps in a stair. These spaces can be uniformly spaced in the same easy manner as the steps were. Place the rule on obliquely from floor to floor so that the space is represented by sixteen quarter-inch marks, then a dot at each quarter-inch mark will represent the rise of each successive

step from bottom to top. The rule can be placed to bring this line of dots just in front of the steps and horizontal lines can be drawn which will represent the steps and risers. It is now an easy matter to locate the front header where it will give plenty of head room by measuring from the steps up to the second story joists. We find from the third step up to joist it is 7 feet, which is ample head room, and we find that this brings the header 6 feet 4 inches back from the front and makes the space between headers 10 feet 6 inches. To some it might look as though the header could be set plumb over the front of the fourth step, but if this was done it would be found that the wall would be staring you right in the face in descending the stairs. Seven feet is not too much for good head room, 6 feet 6 inches will do in emergency cases, but in no case should it be less. Scant head room is noticed more descending stairs than in going up, because in going up it is natural

for one to lean forward quite a little and the scant head room is not noticed so much till one descends the stair and he finds his head against the header, or gets into difficulty getting furniture up the stair for lack of head room.

The stairs as figured in this plan are very easy, being 7 5-16 inches rise to 10 inches of tread. The tread could be reduced to 9 inches and still the stair would be good. If this was done then the front header could be moved 15 inches nearer the landing, making 9 feet 3 inches between headers, and making it possible to put 1 foot 3 inches more into the front room on second floor where the stair cuts into the room. This might be desirable in this case for it would help out the room and not to any very great extent cramp the stairs. Although for easy residence stairs keep as close to the figures 7 and 10 as is possible and you will not have complaints of making hard stairs to climb.

## Constructing a Fireplace

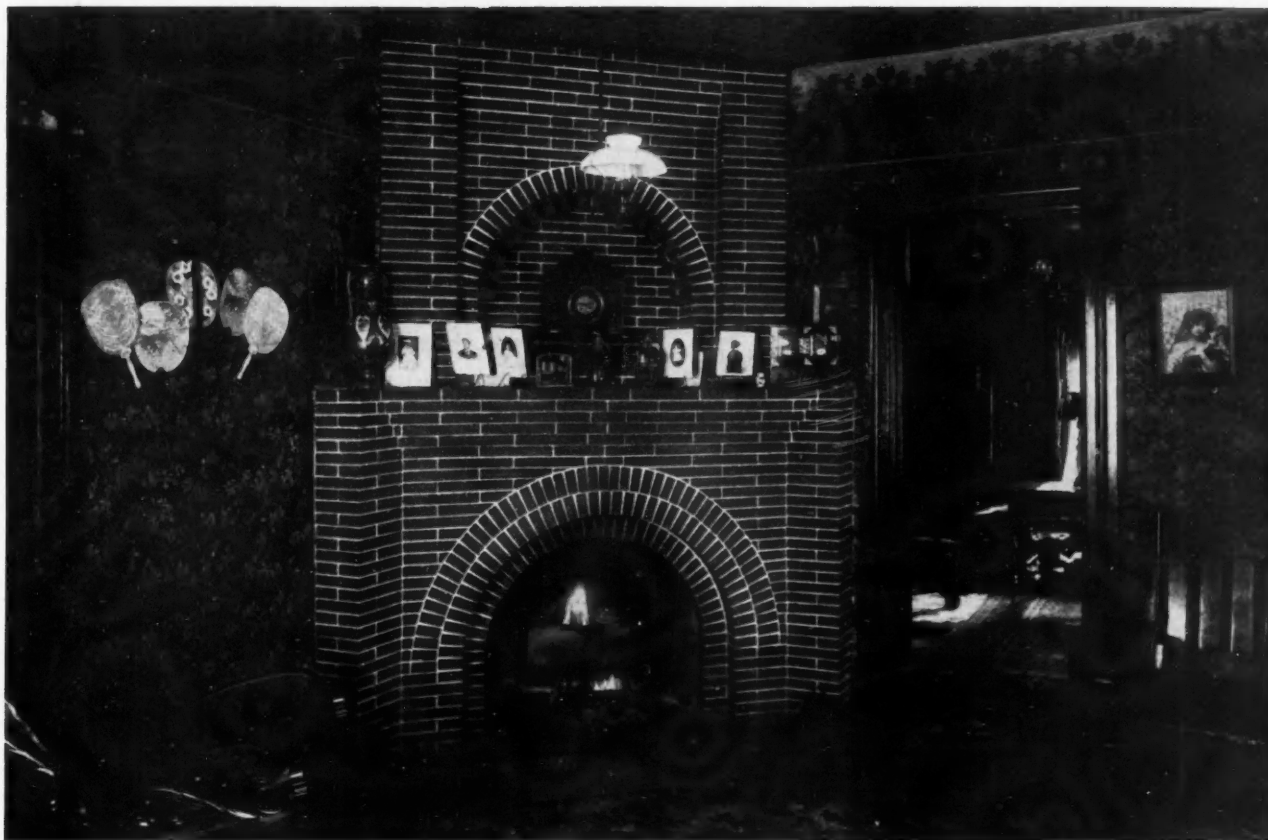
DETAILED DESCRIPTION OF HOW TO CONSTRUCT A BRICK FIREPLACE—AMOUNT AND COST OF MATERIAL NECESSARY

FOR centuries the hearth has been lauded by optimists and poets, who have lavished upon it the most endearing words, and have associated it with most delightful thoughts. It has always been and in all probability always will be, the "camping ground" of the household. What the sun is to the outside world so is the fireplace to the home. Its ruddy glow, its genial warmth, its cheering qualities

all tend to make it the most desirable place in the home.

Outside of the fireplace as a household adornment, it is also a great benefit, as it makes the best of ventilators.

In many homes the fireplace has been made the central point of the decorative scheme, and many are the elaborate chimney pieces that adorn the modern mansions of today. However, it is not the object of this



article to show how expensively they can be made, but rather how reasonably one can be constructed by one who is a master of the bricklaying trade.

The fireplace above is one built in the home of Joseph H. Edgcumbe, Benton Harbor, Michigan, by himself, and for the benefit of those who consider building a fireplace, we give a detailed description. While the expense attached to the construction of such a fireplace would be rather too great for the ordinary home, if you are a brickmason, during your spare time you can build one very inexpensively, although for a mantel of this size rather a large room is necessary.

The brick used in this are of the Red Roman variety, although that being a matter purely of taste, you can suit yourself.

The breast of the above is 5 feet 4 inches between the wings which extend from the breast outward  $9\frac{1}{4}$  inches by  $8\frac{1}{2}$  inches in width. The opening is 3 feet and 1 inch wide by 2 feet and 7 inches in height, and 1 foot 9 inches in depth. The back of the fireplace is built entirely different from those in ordinary use today. Instead of being built squarely it is semi-circular, the circle growing steadily smaller until the flue is reached. This seemingly gives a much better draught. To the left of the opening are two eyelets built into the brick work to support a crane in case you wish to hang a kettle over the fire. The mantel shelf proper is formed by corbeling out the top five courses between the wings.

The hearth is 2 feet wide by 6 feet and 4 inches in length and is laid in red tile, 2 inches wide by 6 inches long, and instead of the ordinary fender, there is a red sandstone curb, this being made from an ordinary block of red sandstone with a rounded top, 6 inches in height by 4 inches in width.

The upper mantel is almost identical with the lower, only of course it being considerably smaller. The breast of the upper mantel is 3 feet and 9 inches between the two pilasters which project from the breast, about 4 inches by 12 inches in width. A very pleasing effect is introduced in the opening on the upper mantel by the drop brick around the arch. The indent of the upper mantel is 8 inches and in the center of which is built a brick pedestal to support a clock, or any other ornament. To correspond with the lower part of the mantel top, five courses of the breast of the upper mantel are corbeled out flush with the pilasters. The back of the indent on the upper mantel is finished the same as the rest of the fireplace, although if preferred a minor could be used.

The draught to this fireplace is exceptionally good; a flue lining 13 by 13 being used.

To anyone accustomed to laying pressed brick, the fireplace above is not at all expensive. In its construction about five hundred pressed bricks were used, costing \$30 per thousand, one hundred fire-brick at \$3 per hundred, eighteen square feet of tiling at forty

cents per foot, and for foundation and ash-pit, about 2,000 common bricks were used. In fact, the actual expense of all material used is less than \$35 and this amount will even cover the cost of stone curb to harmonize with the brick used.



### Some Modern Porches and Verandas

(Continued from page 664)

a great variety of house annexes. Some are very wide with handsome curved roofs supported by heavy stone abutments with a comparatively low ceiling. Others take the form of a colonnade with a floor only a few inches above the ground level. Others consist of fluted columns which reach from the ground to the roof. Some are walled in loggias with no entrance except from the house. The steps leading to the front door may go up at the side of the porch wall, but to get into the loggia you must first go into the house. Before the summer is out I expect to see some of



A veranda which extends nearly across the front of the house and well down one side. It belongs to a recent fashion of leaving the space underneath open. The idea seems to be that an under circulation of air is an advantage. The ground, however, is unsightly unless it is paved, because nothing will grow under there and the bare earth is not attractive even when it is kept free from rubbish.

these loggias walled in or verandas inclosed with fancy wrought-iron prison bars, something after the fashion of the Spanish ladies' bower, where the fair damsel could smile graciously down upon her fandango lover and his guitar. It is to be hoped that nothing very silly will come and creep on the American public, because our fresh air annexes as they are used today are sensible and almost perfect.



## Smooth Work From a Shaper

WHAT IS NECESSARY IN OPERATING A SHAPER TO SECURE GOOD WORK—MISTAKES MOST COMMONLY MADE

**A**N INTERESTED reader of the AMERICAN CARPENTER AND BUILDER says: "Can you devote more, say two pages of each issue of the paper to the interests of mill men by giving them illustrated articles on odd work, as in my experience this is where it will be of the most help to the average man. Such as odd styles of sash, molding and how to make and set bits for the same. How to work an easement return and vamp, showing how to set bits and how to adjust molder for this work. I have worked over sixteen years in planing mills and have worked with men who after over thirty years' experience were unable to set a shaper so that they could get a smooth cut."

Some of the information asked for is difficult to give because it is practically impossible to describe or picture by the use of words and drawings, too, in detail, the various shop kinks resorted to in doing odd jobs of mill work and in operating a shaper and other machines which have a wide range of work. Some of the things, some of the special jacks and appliances might be shown in a way, but it's a very difficult thing to show some of the simple kinks by writing and drawing, some that could be understood and comprehended in a moment, if one could only see them in actual use.

As to getting smooth work out of the shaper there really is not much excuse for not doing that, yet as this reader says, there are some men who spend years and years at the work and yet never attain the point of getting smooth jobs. The trouble is that some men are constitutionally lacking in the faculty of carefully looking after details and the finer manipulation generally. With men of this kind it is a little difficult to tell what form their vagaries might take, whether it would be a failure to recognize the importance of balancing carefully, whether it would be poor grinding of the knives, poor arrangement of the jacks, or poor handling of the stock in doing the work. It may take any, or many of these forms, and then some. Probably the most prolific cause of rough work at the shaper is the same thing that causes most rough work in planers of all kinds, and that is lack of proper balance. The great percentage of planer troubles and troubles with shapers and other machines cutting on

the same principle is directly traceable to this element of balance, or rather to the lack of it. It seems very difficult to sufficiently impress on the public minds, not only the importance, but the absolute necessity of having a perfect balance in a high speed revolving cutter of any kind. Just the least fraction makes a big difference when the feed gets high and in shaper work it is quite frequently the case that the operator does not consider it of sufficient importance to give enough time to carefully balancing up his head, especially if he is using a single knife. Of course, no man should use a single knife or cutter if he can keep from it, but there come times once in a while when it is necessary to do a comparatively small job of special shape that it would take too long to grind up two cutters to that shape, consequently the work is done with one. Doing it with one, and this one being of odd shape, naturally it is a little difficult to put a blank on the other side of the head that will correctly balance it up. It were better if a smooth job is wanted to take the time and make a pair of cutters and thus insure a true balance. In other words, all shaper cutters should be made in exact pairs.

There is one theory about getting smooth work with a shaper which should be taken, not exactly with a grain of salt, but better, with two grains of thoughtfulness. And that is, the theory that dull or blunt bits will do smoother work than keenly ground, long chamfered ones. It's a theory we run across every once in a while in planer practice, and we also find it backed up with demonstrations which apparently prove its correctness, yet the theory is open to criticism. In other words, the saving factor in it is not a commendable one. Take the blunt cutter in shaper work for example, and the tendency of it is to not cut cleanly but to ride heavily on the stock, and the consequence is as the stock passes it has its riding bearing against the cutter rather than against the slide or guide, whereas if the cutters were keen and cutting freely the stock and its movement would be influenced by the guide and the manner in which it is handled and every deviation would, of course, show on the face of the cut. Small deviations when the cutters are blunt instead of showing up sharply on the face are simply graduated so they disappear apparently, and

that's why work done on a blunt cutter sometimes looks better than that done on sharp, thin cutters. The way to get what is really the best results is to have cutters as keen as possible and cutting as freely as possible so that it takes only a minimum of pressure against them to do the work, and then let the operator train himself in handling his stock carefully so that there may be practically no deviation in its movement, and consequently very little unevenness in the finished surface. That is the way to get a good job.

One trouble with the shaper practice in many shops comes from a tendency to use only one spindle and make it do work which logically should be done on two. A properly equipped shop for general job work has usually a shaper with two spindles, one right hand and one left hand, so that the operator is provided with means to cut with the grain in any kind of work, curves or angles, by working alternately on the right hand spindle and the left hand spindle, as the run of the grain makes changes necessary. It takes more work to keep both spindles fitted up and running so that there is a natural tendency to venture further with one even though crossing the grain, for by this means one can frequently finish up a small job and have it done and off hands in less time than it would take to set up both the right and left hand spindles. It is true, too, that a certain amount of this latitude is not only advisable, but practically necessary, but the trouble comes from the fact that the habit grows on one until by and by one spindle of the shaper is practically put out of commission altogether in regular

work which heretofore has been properly done on both spindles. Practically the same habit development is true where single shaper spindles of the reversible type are used. There are single spindle shapers to meet in a way the same requirements of the double spindle machines by having the drive and the cutters reversible so that the spindles can in a few moments be reversed both in drive and in cutters so that it cuts the other way. It takes time to make these changes, and while the time is not much, there grows on one if let go unchecked, the habit of neglecting to make these changes and doing work across the grain to save a little time in the work. This not only means comparatively rough work, but it actually partakes of a strong element of danger at times. It is catching into cross grained stock that makes the shaper do things that frequently result in a damaged hand, and for this alone, for the element of danger contained in working stock across the grain it is worth while to keep a caution notice in one's mind against it, even though it may take a little longer to do the work. It's not doing the work in the shortest possible time that is the only thing we are after. Time is an object always, and we are always striving to reduce the time necessary for a given amount of work, but time is not the only element. There is quality to consider, and also there is that thing that is known as satisfaction in one's work, without which no man ever becomes a really good workman, and you can not get satisfaction so long as the main point you are striving at is to save time.

## The Strength of Beams

A FURTHER CONTRIBUTION DEALING IN A CLEAR AND SIMPLE WAY WITH ANOTHER PHASE OF THIS IMPORTANT MATTER—MAKE A NOTE OF IT

By T. B. Kidner.

"**M**ORE work for the calculator," was the remark which greeted the writer the other day, as his two carpenter friends once more came into the office. "We have been applying your last little lesson on the strength of beams (see June number) to several cases which have occurred in our work lately and have found no difficulty in arriving at correct results. In fact, we have been 'showing off' a little amongst our mates, in consequence," continued the spokesman. "But we are up against another little problem now and shall be glad of another lesson if you can give us half an hour or so."

Proud of his apt pupils and their evident appreciation of his efforts, the writer was only too pleased to put his services again at their disposal, and, after a brief talk, found the problem to be as follows:

A wooden beam was to be fixed so as to project some five feet from the face of a building for the purpose of hoisting goods from the street level to a ware house on the upper floor. (The technical term for a beam in this position is a "cantilever" and it will be referred to by that name throughout this article.)

A piece of pitch pine 7 inches by 5 inches had been selected for the job and the question arose as to the amount of weight which could safely be hoisted upon it.

First of all, we ran over our last lesson on the strength of a beam when supported at both ends, and found out what load a piece of pitch pine, 7 inches by 5 inches and 5 feet long, would carry if placed on edge, when supported at both ends and carrying a central load. Our rule, or formula, used in the last lesson was, of course, required and may be repeated here to save the trouble of turning up the back number.

This gave us the result shown in Fig. 1, namely, 245 cwt. as the breaking weight required. It will be remembered that in the previous article it was stated that a beam with a distributed load will carry twice as much as the same beam with a central load and that therefore the answer to this sum could be doubled for such conditions. But it is obvious that the strength of a beam supported at both ends is much greater than that of one supported (or fixed) at one end only and is, relatively, as 4 is to 1.

THE STRENGTH OF BEAMS

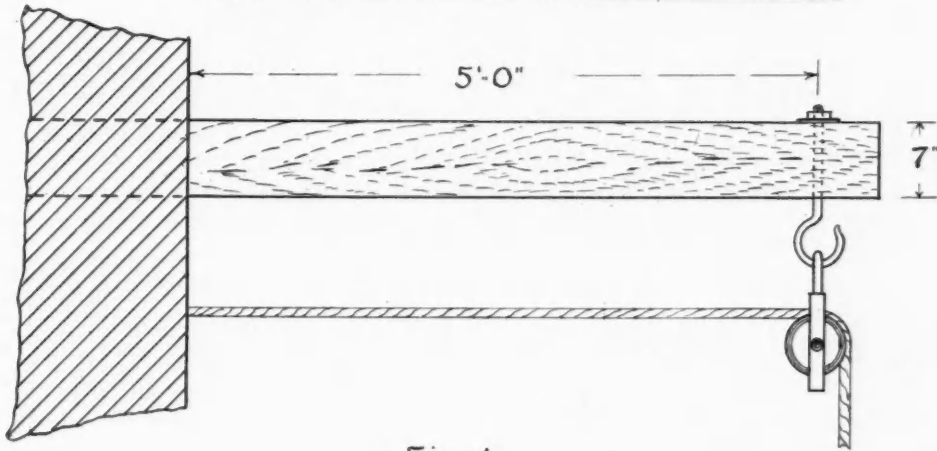


Fig. 1

$$\frac{5 \times 5 \times 7 \times 7}{5} = 245 \text{ cwts.}$$

Breaking weight when supported at both ends and loaded in centre.

$$4 \sqrt[4]{245} = 61 \frac{1}{4} \text{ cwts.}$$

Breaking weight as cantilever

$$\frac{8}{61 \frac{1}{4}} = 7 \frac{7}{8} \text{ cwts. (nearly)}$$

Safe live load for same

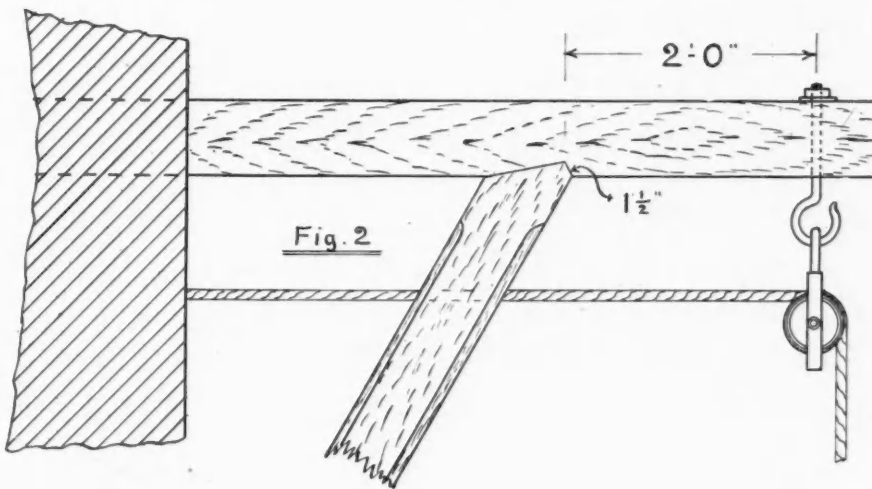


Fig. 2

Fig. 3

$$\frac{5 \times 5 \times 5 \frac{1}{2} \times 5 \frac{1}{2}}{2} = 378 \frac{3}{8} \text{ cwts.}$$

B.W when supported both ends

$$\frac{4}{378} = 94 \frac{1}{2} \text{ cwts.}$$

B.W as cantilever

$$\frac{8}{94 \frac{1}{2}} = 11 \frac{7}{8} \text{ cwts. (nearly)}$$

Safe live load

Therefore, to find the breaking weight of our piece of 5 by 7 when fixed as a cantilever, we divided our result by 4, giving us  $(245 \div 4) 61\frac{1}{4}$  cwts. But it was the amount our cantilever would carry which we wanted to find and that brought in the question of the relation between the breaking weight and safe load or, as it is termed, the "factor of safety," to which reference was made in the June article.

In this connection, the nature of the load or stress to which the beam is to be subjected is important, and

Taking the sketch of the strutted cantilever (Fig. 2) we found that the amount overhanging the end of the strut was 2 feet. But the under side had been weakened at the joint where the strut had been let into the cantilever and the effective depth of the beam was thereby reduced by  $1\frac{1}{2}$  inches, the depth of the shoulder. Our sum, therefore, was changed and read as in Fig. 3, and gave us for result  $378\frac{1}{8}$  cwts. as the breaking weight of a pitch pine beam 2 feet long,  $5\frac{1}{2}$  by 5 inches. Dividing this by (neglecting the odd

**REMEMBER THE RULE !!**

WRITE DOWN →

Figure for wood  $\times$  breadth  $\times$  depth  $\times$  depth = ANSWER  
in cwts.  B.W.  
Opening (in feet) in  
Divide by cwts.

$\times$  means multiply by.

may cause the safe load to vary from one-fifth to one-tenth of the breaking weight, accordingly as the load is a live or dead one. Our load in this case was, of course, a live one, but another consideration entered into the question; namely, the manner of applying the hoisting force. That is to say, we had to consider whether the force was to be applied in a series of jerks such as given by sailors in pulling on a block and tackle, or to be steadily and continuously applied as by a winch or hoisting drum. If in the first manner, the greatest margin of safety would have to be allowed, and at most only one-tenth of the breaking weight should be carried. For the continuous steady pull, however, a factor of safety of one-eighth would probably be sufficient. As the power in this case was a drum driven by an electric motor, we decided upon eight as our factor and applied it to our breaking weight  $(61\frac{1}{4} \div 8)$  obtaining, approximately,  $7\frac{5}{8}$  cwts.

As this was a much greater weight than was generally to be hoisted to the warehouse in question, my two carpenter friends felt quite satisfied when our calculations showed that their guess at the size of the cantilever had been on the safe side and that it was strong enough for any emergency.

On inquiring as to the reason why the point of suspension for the load was so far out, it was explained that bulky packages were carried up and down and it was therefore necessary that they should swing well clear of the stories below. That led to the suggestion that a strut or brace could be used under the cantilever; and, as this would increase its strength very materially, it was decided to calculate just what would be gained by so doing.

$\frac{1}{8}$  cwt.) we obtained our breaking weight for the cantilever  $(378 \div 4) 94\frac{1}{2}$  cwts. Again dividing this by 8 we obtained as our safe load  $(94\frac{1}{2} \div 8) 11\frac{5}{8}$  cwts., approximately; thus showing a considerable increase of strength over the cantilever without the strut.

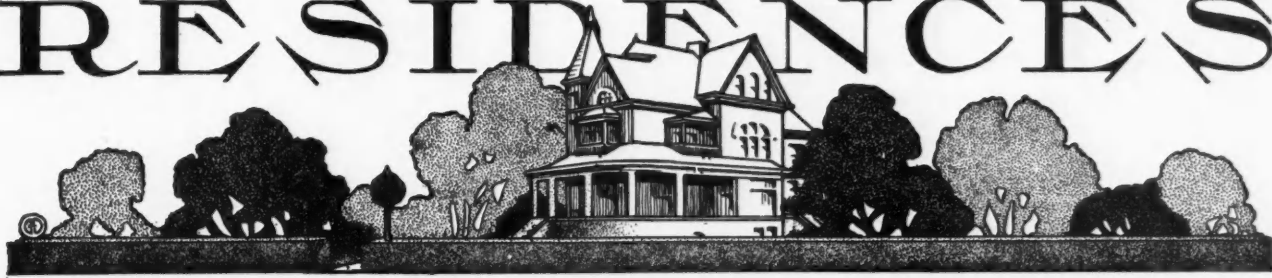
The foregoing example of a cantilever used for permanent hoisting purposes is not, perhaps, met with so commonly today as formerly; elevators inside of the buildings having largely superseded them. For purposes of temporary work, however, such as the raising of some heavy article to the upper floor of a building, the piece of timber projecting from some opening is still frequently in evidence. The nearest carpenter is generally called upon to rig up the affair, and the formula worked out here is an exceedingly useful one to have at hand in such cases. For, unlike beams, girders, joists, etc., the sizes of which are calculated in most cases by the designer of the building, these temporary rigs are left wholly to the skill and ingenuity of the carpenter, who may be called upon at a moment's notice to supply something upon which the lives of some of his fellows and the safety of some valuable piece of work may depend.

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The AMERICAN CARPENTER AND BUILDER is second to none, devoting the space for the welfare of the craft. The points that appear in each issue are very beneficial to the trade. In fact, I consider it the leading journal for the carpenter who desires advancement in the trade. In each issue I observe better and deeper points of interest taken up for explanation. I look forward each month for the welcome AMERICAN CARPENTER AND BUILDER.—C. M. DILLER, Cleveland, O.



# RESIDENCES



## Artistic House Designs

COMPLETE PLANS AND ELEVATIONS SHOWN—DESIRABLE FEATURES POINTED OUT—ARRANGEMENT ALONG MOST MODERN LINES

**T**HE HOUSE shown herewith was designed by A. Raymond Ellis, architect, Hartford Conn., and was built at Boston several years ago, costing at that time about \$4,500.

Its finish comprised hardwood floors and finish in

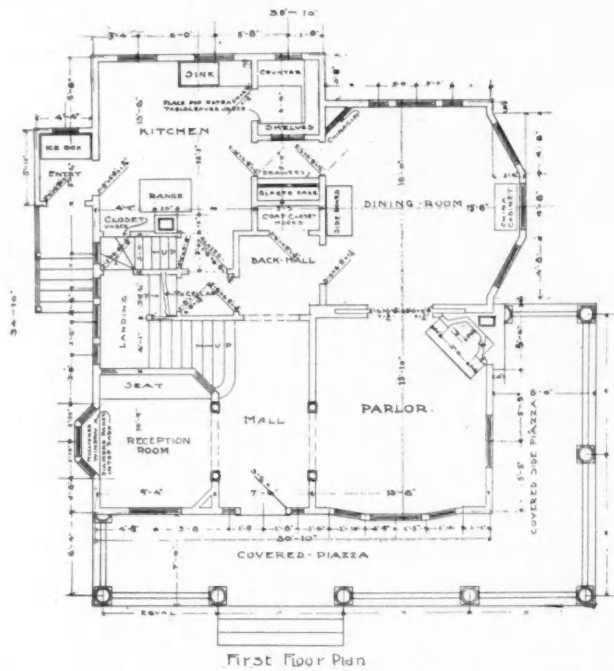
The house was heated with a hot air furnace which has given entire satisfaction. It can readily be seen by a careful observer that this house contains every bit of available space for practical use.

The dining room and living room opening into each



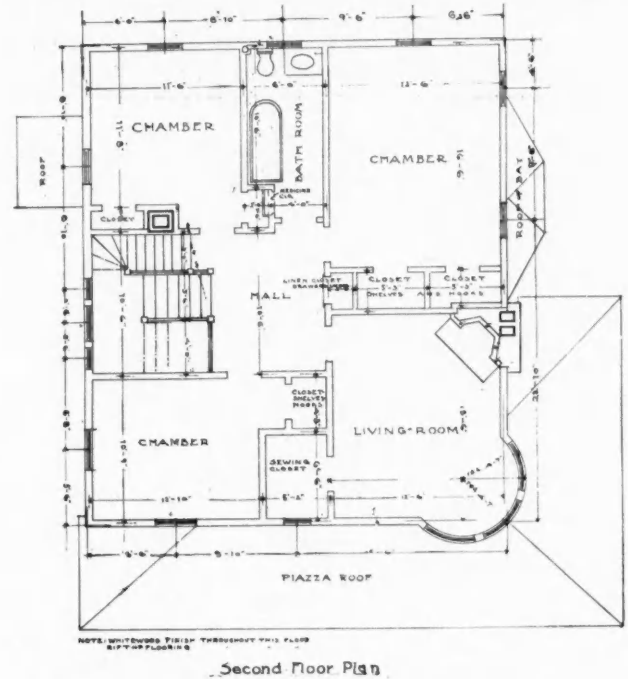
the main rooms of the first floor with stairs of the same material. The balance of the finish consisted of white wood, painted or stained for the chambers, and yellow pine floors. The plumbing system consisted of a thoroughly up-to-date job, with all exposed pipe nickel plated and enameled iron fixtures.

other gives a broad, spacious effect. From the living room through the hall a very charming view is obtained of the reception room and the stairs. The second floor is very practical, contains good closet room and good chambers. The attic has been utilized to its full extent, and the chambers are very large and airy.

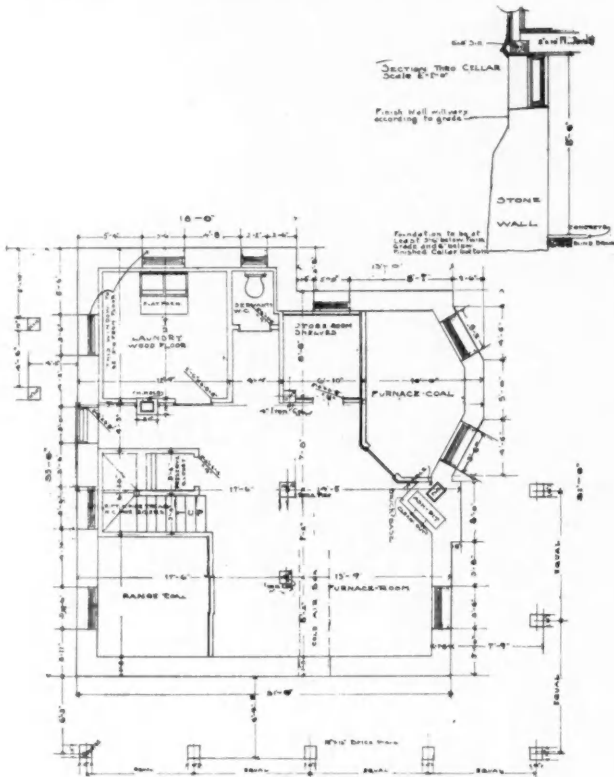


The construction consisted of a balloon frame of 2 by 4 studding with the exterior shingled with white cedar shingles left in their natural state to weather. This gives a very beautiful, soft and silvery effect which is very harmonious with the landscape.

The reception hall is large and well arranged, containing a gas mantel and an alcove. The main stairway is entered from this hall under a large columned archway, also one of same design between the hall and sitting room. The dining-room is well connected. It contains a fire-place and lavatory, and its octagon

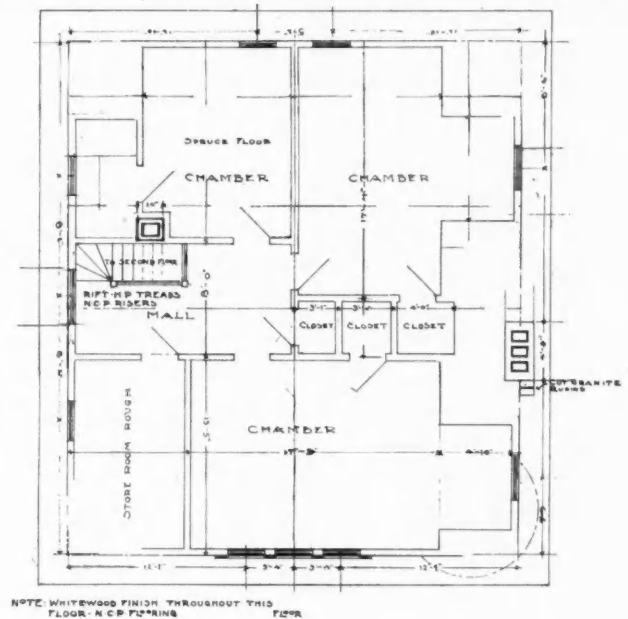


end with art glass windows, furnishes plenty of light. The pantry contains cupboards, china closet and work table. The ice chest is also located in this room with an outside door to same for icing purposes. The entrance to the dining-room from the kitchen can be had either through the pantry or by passageway. This passage also serves as a general hallway, as the rear stairs start from this hall, besides it contains an outside entrance at grade. The basement stair also leads from this hall or passageway. A door at the landing of the rear stair opens to the landing of the main



**A Well Arranged House**

The perspective and floor plans shown on page 676 shows them to be a well arranged and desirable dwelling place suitable for any part of the country. Its wide cornices and spacious porch give it an inviting appearance, as well as an architectural effect. The entrance is by a vestibule with a single sliding door.





stairway and from there to the second floor is a combination stairway. A box stairway is located over the rear stairs and leads to the attic.

The second floor contains three large bed-rooms, one smaller one and all well supplied with closets. The bath-room is large and conveniently arranged for the other rooms.

The interior finish is of quartered red oak for the main rooms on first floor and clear yellow pine for all other parts of the house.

The lighting is by both gas and electricity and the heating is by hot water, the cost complete being in the neighborhood of \$6,000.

**Southwestern Cement Users' Association**

The Southwestern Cement Users' Association, with headquarters at Topeka, Kansas, is sending out a circular giving the object of the association, which is as follows:

- 1st. Mutual improvement of its membership as cement workers, and the dissemination of useful information.
- 2d. A united opposition to any trust agreements between cement manufacturers, and the punishment of violators of the anti-trust laws by cement manufacturers and dealers.
- 3d. To protect cement users from irresponsible manufacturers of cement work of various kinds.
- 4th. To prevent large corpora-

tions from injuring in any way, small but honest users and manufacturers of cement products.

5th. The planning and arranging for annual gatherings of cement users and manufacturers.

6th. Also to arrange for exhibits of cement tools and machinery so inexperienced purchasers may not be led into procuring worthless articles.

7th. To adopt standards and specifications for different kinds of work.

8th. To create a more brotherly feeling among the cement users, and to better understand each other and help each other instead of finding fault with the work of others. All are to share equally and alike in its benefits and expenses, and no special favors will be asked for or granted. Are you one with us?

**Anti-rust for Screws**

A writer in one of our journals tells us that if wood screws "are anointed with a mixture of graphite and soft tallow they will remain unruined and unaltered for years." This would no doubt be true if the anointing matter would stick to the screw during the process of inserting it in its seat, but the difficulty is that the threads of the screw are wiped off under great pressure when they are driven home, and the metal is left bare.





## Estimating Excavating Work

SIMPLE METHOD USED TO FIGURE OUT COST OF EXCAVATING TRENCHES AND CELLARS—WHAT MUST BE TAKEN INTO CONSIDERATION

By R. D. Connell

I WOULD like to call the attention of the readers of this paper to the subject of estimating excavating.

Suppose we have a trench to dig which is 100 feet long and 16 feet deep. How would you arrive at what it would be worth to dig such a trench? Or suppose you had a cellar to excavate 25 by 100 by 6 feet deep, in which the dirt should be removed one-half mile from the lot? Could you tell the probable cost without asking some excavating contractor?

Now what I wish to do in this article is not to give a rule for specific cases or the price per yard, but rather to outline a method in which it will enable any one to estimate any problem in excavating whether he has done the like before or not.

Referring to the first problem mentioned above, we will have to decide on how the work should be done. It is evident that teams cannot be employed and the extent of the work will not warrant the use of trench machinery, so about the only thing left is to dig it by hand. In estimating the cost of any proposed work it is necessary to have some unit by which the work may be measured. No standard unit can be given as one can readily see that the unit will change or vary as the men vary in their capacity to do work. But this unit of labor we must have and each estimator must establish his own unit by which he can measure the work to be done.

It has been my experience that a man will handle a cubic yard of dirt in one hour providing this dirt can be readily dug with spade and shovel. Now by placing a money value on this hour's labor, we have a unit by which to measure the proposed work: Let us suppose the wages paid for common labor is 20 cents per hour, we would have the cost per cubic yard. If the dirt requires but one handling, this cost per yard may be multiplied by the number of cubic yards, and we will have the cost of the work. Now the question will arise how often will this dirt require to be handled?

The first six feet of the trench may be dug with one handling, providing the top is thrown a considerable distance from the trench, leaving room close to the trench for the dirt which is lower down. After the trench is six feet deep it will require another man to keep the dirt away on top; in this way the trench may be dug two feet deeper, and then by placing a platform in the trench two or three feet below the top, so the man in the trench can throw the dirt on the platform and the top man can throw the dirt from the platform out of the trench. We see that with two men the trench can be dug about 5 feet deeper. Then by adding a third man we can go 5 feet more, which will bring us to the bottom. Now assuming that the

trench will have to be two feet wide at the top and perhaps for the first 11 feet, and about 18 inches for the last 5 feet. We have all the data necessary to calculate the cost of digging the trench in the first six feet. We have 1,200 cubic feet, or 44½ cubic yards nearly at 20 cents per yard, would be \$8.90. The next five feet will contain 1,000 cubic feet or 37 yards. This at 40 cents a cubic yard, as it takes two men to do the same work that one man did on top, would figure up to \$14.80 and the last 5 feet would contain 750 cubic feet, or 28 yards nearly at 60 cents, would be \$16.80, making a total of \$40.50. To this we should add the use of platform and placing of same, which would be safe to put at \$3.00. This added to the \$40.50 would be \$43.50, which would be the total cost of excavation.

If the nature of the soil should require sheet piling, this should be taken into account, also the extra width of trench due to the piling.

The problem of excavating the cellar should be taken up in the same way. It will be necessary to have two units of value, one for a man and team, and one for a man alone which we have already established. A team will walk about four miles an hour, and with a suitable dump wagon can haul four yards of dirt one-half mile in one hour, and if the wages of 40 cents per hour is paid, we would have a cost of 10 cents a yard for hauling and this added to 20 cents for loading the wagons we would have a total cost per yard of 30 cents. This multiplied by the number of yards in the cellar would be the probable cost of excavation. If the estimate is made under the most favorable circumstances, then allowance should be made to offset unforeseen things, or you may be able to employ team in loading wagons, in which case the cost per yard would be reduced. As I said at the start the object of this article is offered more to suggest a method than to lay down a rule, and may be of help to some.

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### Cheerfulness at Work

Never did Thomas Carlyle write nobler lines than these: "Give us, O give us, the man who sings at his work, be his occupation what it may! He will do more in the same time, he will do it better. One is scarcely sensible to fatigue whilst one marches to music. Wondrous is the strength of cheerfulness, altogether past calculation its power of endurance."

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I consider the AMERICAN CARPENTER AND BUILDER a real sky-scraper in comparison with other journals in the same line. L. PINICK, Threemotch, Ala.

## The Problem of the Old House

WHAT CAN BE DONE IN REMODELING AN OLD HOUSE—HOW CHANGES CAN BE MADE WITHOUT CONSIDERABLE EXPENSE

By Ira S. Griffith

**W**HAT shall be done with the old house? This question comes home with equal force to builder and to householder.

One prominent architect puts forth the view that no home should ever be changed, that it should be so planned and so constructed with regard to the principles of beauty and truth that it will forever be a thing of beauty and a convenience to those who dwell

are other considerations as evidenced by the dilemma which will sometimes confront a congregation which is building a church of solid concrete—walls, floors, roofs and all so thoroughly reinforced with steel that the boast is made that it might be lifted by one corner, if sufficient force were available, and swung around in the air and be replaced with no injury to any part. In this building the laws of the beautiful have ever



therein. How fortunate we should be were this true. No householder wishes to own an old out-of-date structure, possessed of every inconvenience imaginable, the changing of which necessitates the expenditure of money enough to build anew; and no builder, at least his workman, wants the task of pulling the old building to pieces or of working in the resulting debris.

The serious drawback to this architect's proposition lies in the fact that a knowledge of the principles of beauty and truth, and, what is more, the feeling, is possessed but by few mortals and even they must acknowledge serious limitations. Even were we able to know and to build the beautiful and the true, there

been given thoughtful consideration. But, this congregation will sometime outgrow this building. Then move, suggests the architect. But sentiment and the emotions demand consideration and no congregation which has worshipped in one place any length of time is going to be moved so easily.

So it is with individuals and families. Possibly we have more change than is desirable or necessary but changes will come and with our lack of foresight in what the future will demand, changes must be made. Granting this, what then shall be done with the old house? Shall it be torn down and the old material used in the new building as far as possible? Shall it

be sold to a speculator and moved off? Shall it be remodeled? It all depends! Every house is a problem unto itself and the answers to the above questions will depend upon what *is*, and what is *wanted* and the relation of the two.

If the house is old, the material in bad shape, the foundations poor and the improvements of such a nature as to demand new walls and much tearing out of old, it will be better to dispose of the old house by tearing it down, or, if it will stand it, moving it off. An architect, experienced in the making over of old buildings, and a conscientious builder, will be needed in determining what is best—even then, there will be

safe to say that most old frame houses are possessed of better lumber and much more of it than the frame houses of today. If the house is quite old one may find solid sills of hardwood, often hewn, studding of the same material, sized with the hatchet and adz, siding of hardwood with no sheathing. These houses, if the wood is solid and the work honestly done, can be remodeled, but the wood which is taken out cannot be used to any great advantage in the new work. Houses of a later period are more easily "worked over."

It would seem that a decided improvement might be made to the advantage of builder and householder if, instead of the householder's demanding of the

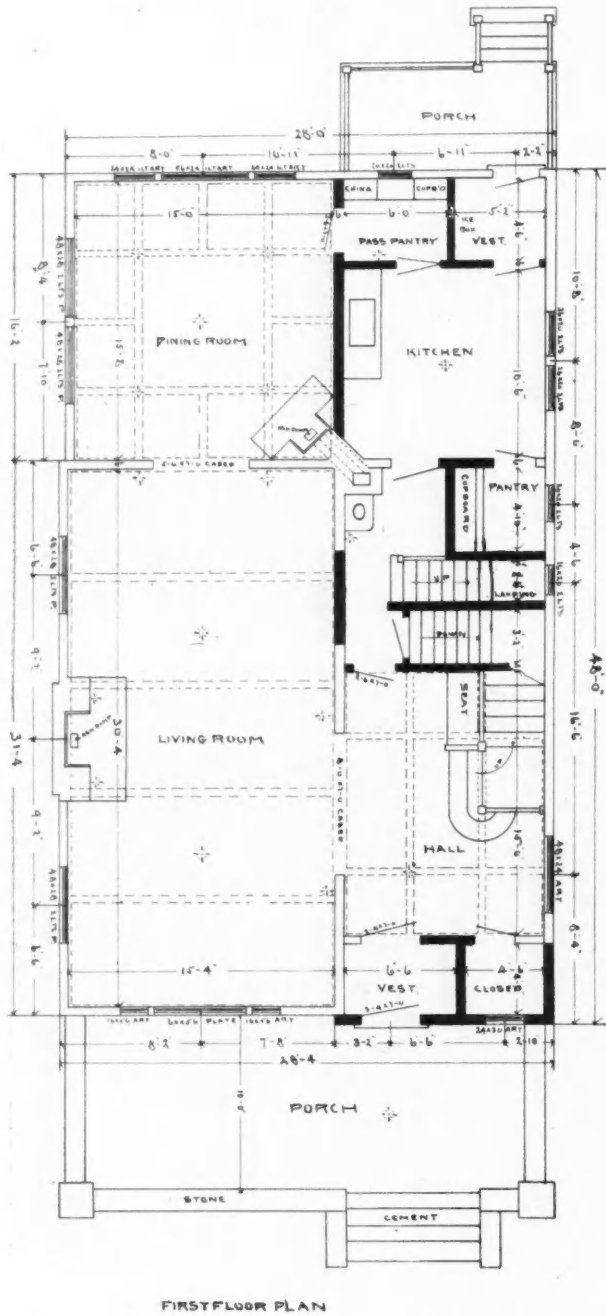


more or less uncertainty, which will disappear only as the work progresses.

The opinion of the housewife should be given every consideration when it comes to planning the changes, if changes are to be made. Mr. Robert C. Spencer, architect, aptly says: "The successful improving of an old house for comfort and convenience depends in no small degree on the intelligence and ability of the woman who has lived in it for years, who knows all its good and bad points by daily contact, and who has seen many visions of what might be done if the necessary funds were only forthcoming."

While every house is a problem unto itself, it is

builder a "flat figure" for the work, he would select an honest, conscientious builder and allow him to do the work on a percentage basis. No builder, however carefully he may examine the old building, can tell just what difficulties he is going to meet. He may be asked to remove a portion of the first floor and find when his men begin work that it is a supporting partition when he had thought it was free, which, if taken out, will drop the floor above. He will be put to much greater expense than he had calculated in having to put in supporting beams, posts, and sometimes, piers. In justice to himself he must make an allowance for just such contingencies when he makes his bid. In



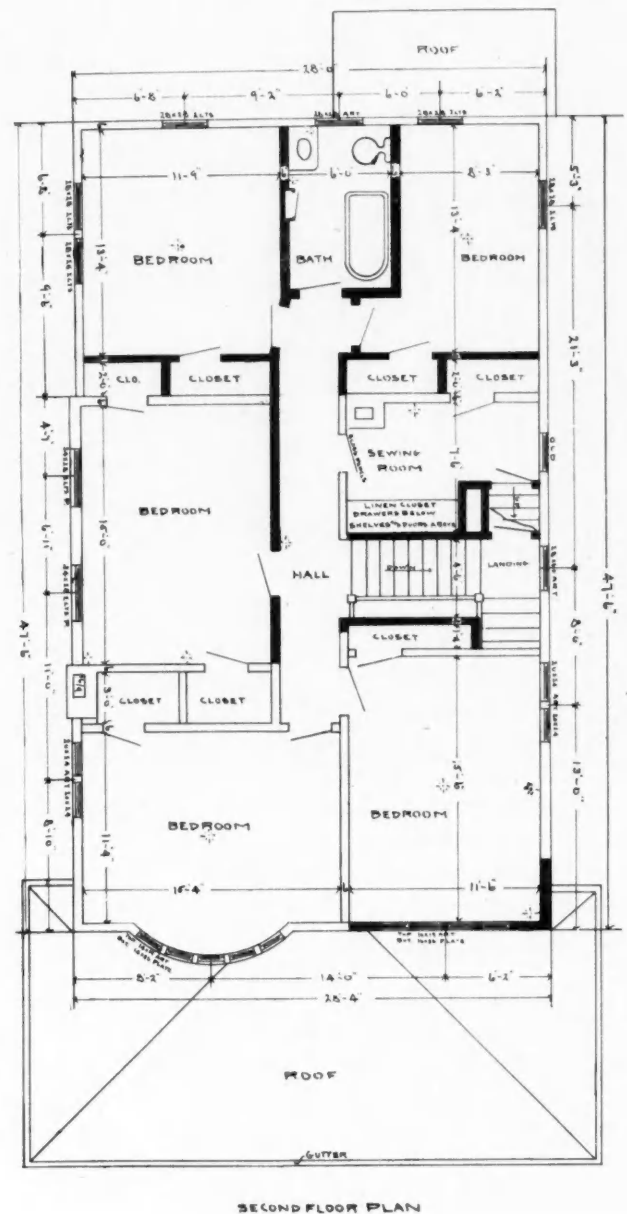
this way "old work" becomes more or less of a gamble. Builders are not gamblers. They expect pay for only what they do, and repair work and alterations would not be shunned as they are if the work were freed of this phase. Where there is confidence on the part of owner and builder, the builder should make an approximate estimate of the cost of the work and the owner pay him a percentage based on the actual cost of labor and materials involved in the work, the builder to hire and pay the men, let sub-contracts, purchase material and supplies, furnish itemized accounts and vouchers, etc. Most contractors would be willing to do this at the usual 10 per cent.

The accompanying illustrations are of a house in which conditions were favorable to remodeling. It is typical of a style quite common some years ago. The ease with which it was changed to a strictly mod-

ern and up-to-date house makes it worthy of study as showing the possibilities of this kind of work. It illustrates what can be done when the owners and the builders are alike interested in the problem. The residence belongs to Mr. I. M. Smith, of Oak Park, Ill., and the work was done by Rias and Grenfel. In this case both Mr. and Mrs. Smith had made a careful study of the situation, of what was and what they wanted. Frequent excursions to houses under construction brought new ideas until, when they were ready to consult the builder, they knew quite well the possibilities of the old place.

It was found that remodeling offered the best solution of what should be done with a house—quite satisfactory in itself, but not at all in keeping with the improvements which had grown all about it.

In the floor plans, the shaded lines indicate new work. It will be seen that the foundation required comparatively no attention except "pointing up." This with the cost of excavation was a very great saving.





The exterior walls were changed no more. The off-set at the vestibule was carried out flush with the front wall and the studding cut so as to lower the plate somewhat. The sheathing remained intact. The siding was removed to make way for the rough-cast cement.

The first floor of the old house was typical with its "parlor," "sitting-room" or back parlor, etc. The parlor had its mantel of white marble, beautiful in its coldness and uninviting in its appearance. Of the hall,



what shall we say? Who does not remember when the sign of aristocracy was the spiral stair, the lack of which was sufficient to cause the finest residence to lose caste? Shall we ever be forgiven for the cold-hearted manner in which we tortured the product of the forests in those twisted monstrosities! We were speaking of truth and beauty a few moments ago. Shades of all that is truthful and beautiful; let us hope that we sinned ignorantly when we set those things in the best parts of our houses, pulled the blinds and kept them sacred for the use of our dearest friends only! Quite true, we are not entirely free yet, but we have just cause for congratulation.

There was a dining-room just back of the hall, connected to the back parlor by three swinging doors. The maid's room was on the first floor just back of the back parlor. Not a bad arrangement were it not for the fact that first floor space is more valuable for other uses and the added fact that maids desire a little more privacy, etc.

In rearranging, it will be seen from the plans, a vestibule and coat closet were obtained, a new stair that could be climbed easily, a back stair with private

entrance for the service portion of the house, and a stair to the basement. Also there were secured two good pantries, well lighted, and a rear vestibule. The advantages of having two well-lighted pantries will be appreciated by those who have had to decide between a pass pantry and a pantry separate. There are advantages and disadvantages, but by having two there are advantages only. The lavatory is nicely placed for a house of this size, where a separate room is not warranted. The large living-room, with its great brick fire-place, made of the two parlors by simply removing a partition, is one of the features. The dining-room, which takes the place of the bed-room, is as well placed and of as good size as could have been desired had the house been planned anew.

It is needless to say that the interior trim is entirely new. The windows also have been replaced by new ones in keeping with the rest of the improvements, but for the most part occupying positions of the old. No window was sacrificed, however, in its placing, as the



plans show. The windows of the hall and dining-room are especially noticeable for their beauty.

All the first floor rooms, except the kitchen, have beamed ceilings, the spacings of which are worth noticing.

The hall and stair is finished in quarter-sawed oak, and the living-room in mahogany. The floors are of oak laid over the old floors. The fire-place of the dining-room is brick, capped with wood. The wall decorations are in keeping with the woodwork.

On the second floor a hall was added and the bed-

*(Continued on page 687)*

# PLUMBING

W<sup>m</sup> R. MARSHALL

## Installation of Waste and Vent Pipes

PLAN SHOWING THE INSTALLATION OF WASTE AND VENT PIPES—SIZE OF PIPES TO USE IN VARIOUS PARTS OF THE HOUSE

AS THE following question is one which is of interest to all our readers, we deemed it best to have it explained in detail.

To the Editor:

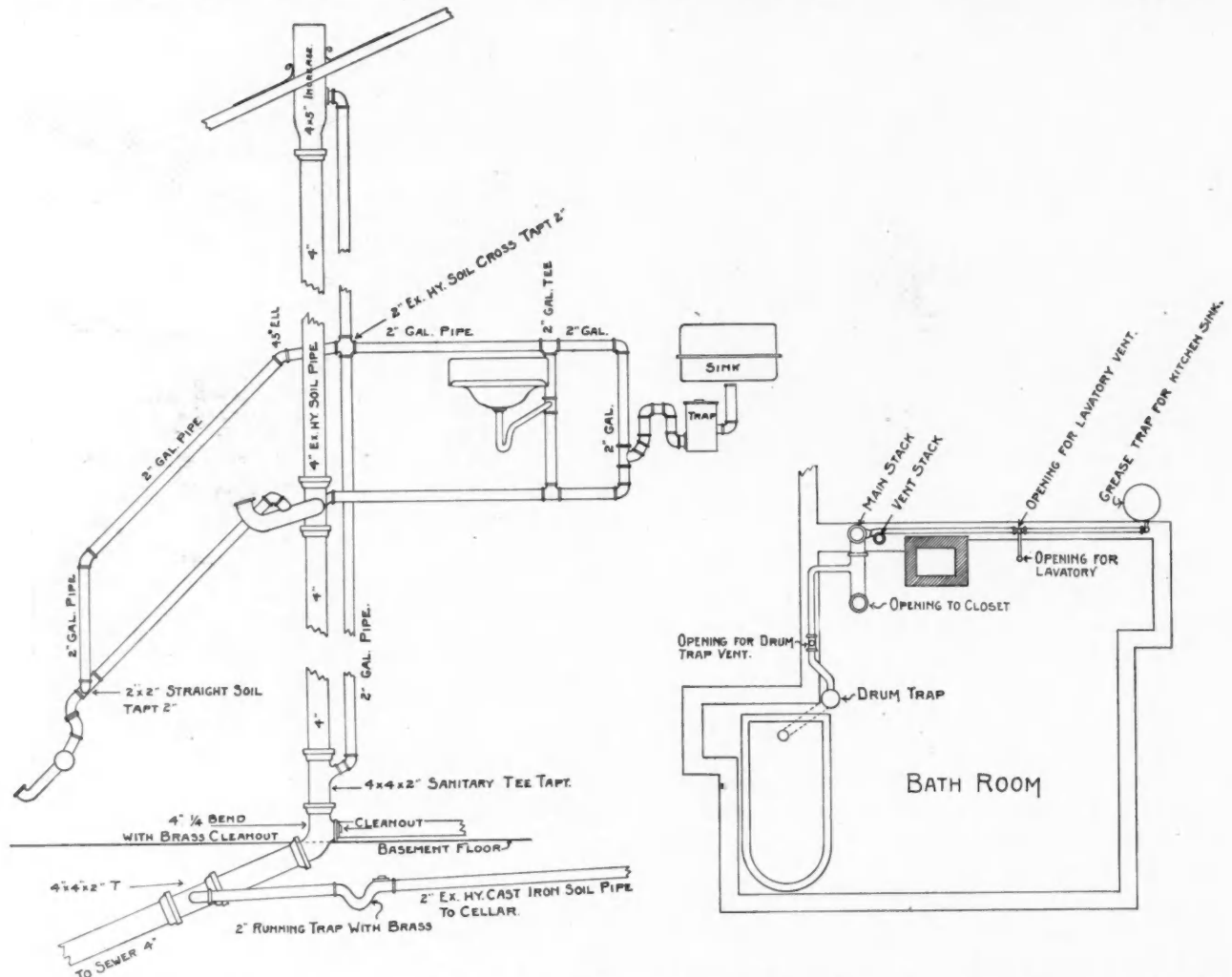
London, Ohio.

As a charter member I desire to use the privilege offered of information by mail. Please inform me where the Tucker patent grease trap described in the AMERICAN CARPENTER AND

my house. You publish the best building paper I have seen and I have been a subscriber for several of them.

THOMAS CLOUD.

In reply to above, would say as regards grease trap, it is always preferable to vent all fixtures where possible; circumstances and conditions sometimes make it impossible and in such cases special fixtures and



BUILDER for May, 1906, can be bought. I also send you plan of cellar and bathrooms and have attempted to draw installation of waste and vent pipes. Should there be a vent pipe from drum trap? What part of pipe should be cast iron? Are the 2-inch soil pipes large enough for the purpose marked in cellar plan? Please mark size vent pipes should be. Any suggestions from Mr. Marshall will be thankfully received.

The town has just installed a sewer system and this is for

types of anti-syphon traps should be used. In this instance, it is not necessary to run a special or extra re-vent pipe for the grease trap. In the system shown herewith (which is known as the loop system), provision is made for the re-vent of the grease trap. The trap should be placed directly under the sink, and long runs of waste pipe between the fixtures and traps

should always be avoided, as every unnecessary inch is so much fouling space.

#### Lavatory

A plain P trap should be used connecting into a tee of special pattern, which is made with an inclined partition. This partition deflects the flow of waste water into the outlet pipe in a downward course and prevents splashing against the opposite side of the wall of the tee. Where an ordinary or straight tee is used, this splashing in time leaves a coating on the tee and hair and lint are liable to adhere to the walls and eventually choke up the vent outlet.

#### Closet

In this particular job, I would recommend the use of a cast iron closet bend, which has a flange on the top to which the closet can be bolted. This bend can be had with a tapped opening on the side, into which the waste water of the bath tub can empty if a good type of closet is used; no re-vent is necessary, as there will be a sufficient amount of water left in the bowl to properly trap the sewer gas from the main stack, there being no fixture above it emptying into the same stack; the danger of syphoning is eliminated. If the flanged long closet bend is not available, a bend with a hub top can be used, into which a combination lead bend and iron ferrule can be extended to the floor level, where a brass closet flange of approved type can be soldered. The subject of connections between closet and closet bend outlets has been very carefully described and illustrated in a recent article in the AMERICAN CARPENTER AND BUILDER, so it is unnecessary at this time to go into any further details.

#### Bath Tub

On account of the bath tub being placed partially in a recess, it is necessary to run the waste on an angle of about 45°, in order to place the drum trap in accessible place. I take it, from the plan submitted, that it is not possible to move the bath tub back from the alcove far enough to permit of the drum trap being placed at the end of the tub and running the waste down the partition to a point where it could turn and connect directly into the closet bend, which, if possible, would be preferable, as it would eliminate the off-setting of the waste pipe, which seems to be absolutely unavoidable in this case.

#### System

In this system the main stack is 4-inch extra heavy soil pipe, the fitting at floor level in bath room is a 4 by 4 extra heavy sanitary tee, with a 2-inch R. H. opening to receive waste in lavatory and grease trap. The fitting at the top of the stack, extending from the roof, is a 4 by 5 increaser. All stacks should be increased at the roof outlet to provide provision against the opening being choked with hoar frost. The tee in basement is 4 by 4 extra heavy sanitary tee with 2-inch top inlet into which a 2-inch galv. re-vent pipe is connected. At the foot of the stack the fitting

is 4-inch extra heavy  $\frac{1}{4}$  bend with brass cleanout. It should be placed on the floor level for cleanout purposes. The connecting of the drain pipe from the cellar drain and motor pump should be made into a 4 by 2 Y as shown, and the drain pipe should be tapped with 2-inch running trap with the cleanout opening extending to the floor and capped with a 2-inch brass cleanout ferrule. This trap is absolutely necessary to prevent the escape of sewer gas into the house from the opening at pump and cellar drainer. In regard to trap on main outlet, would advise that it be omitted, as the fallacy of such a trap on the main sewer outlet has been long recognized by the sanitary engineers. The exhaustive tests have proved that the air in the sewer pipes of the house are fouler than those of the main sewer; therefore why should provision be made to confine them within the house boundary? In a system such as shown, perfect ventilation is possible through the system and the gases will escape from the outlet of the roof.

#### Re-vents

The re-vent as shown in plan is 2-inch galv. pipe. The main re-vent stack connects into the increaser at the top and into the tee in basement and affords a loop for the circulation of air gases. The vent of the drum trap is taken off of the drain in partition and run to the main stack, where it connects into the cross fitting. The re-vent for lavatory and grease trap is taken care of in the loop, extending from the other side of this cross fitting and reconnecting into the 2-inch waste pipe of these fixtures. The test for leakage is made by closing the outlets and filling the pipes with water. After this test is satisfactorily made the pipes can be covered and the fixtures set, after which the system should be subjected to a final test.

The test is made by closing up the openings, pouring a few ounces of peppermint into the increaser at the top of the main stack and wash it down with a kettle of hot water. Close up the increaser outlet with a rag, and if any peppermint odor is evident within the house, there is naturally a leak some place which must be discovered.



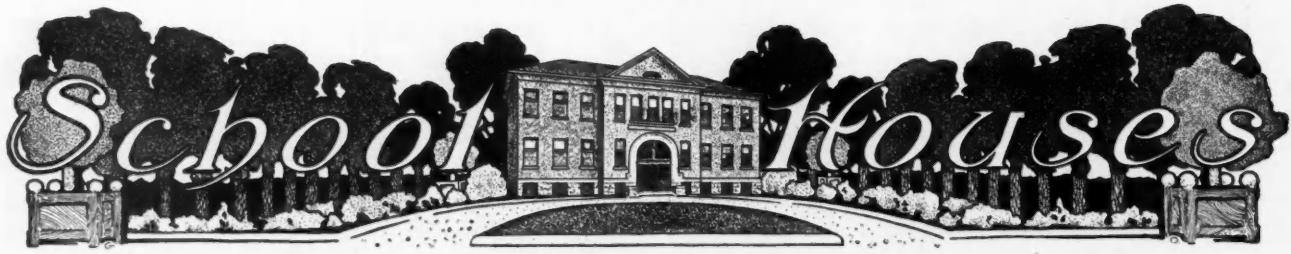
I must congratulate you and the whole staff for the continued efforts of making the AMERICAN CARPENTER AND BUILDER the leader of all. It is full of the most valuable information, instructions and reading matter, and I wish that every American carpenter would not only keep it but study it thoroughly, because it will make better mechanics and makes practical work lighter and easier for them, as well as for the architect, builder and contractor.—ANTON H. BACHMANN, State Center, Ia.



Don't give the same dimension twice, for it is liable to lead to errors when this dimension is changed.



"There is no failure for the good and the wise."



## Four-Room School House

PERSPECTIVE AND FLOOR PLANS TOGETHER WITH DESCRIPTION BRINGING OUT SPECIAL FEATURES—  
MATERIAL USED IN ITS CONSTRUCTION

**W**E ARE this month showing the perspective and floor plans of a school house which is being built at the present time in School District 100, at Clyde, Ill. It was designed and is being superintended by G. W. Ashby, architect. This building is so constructed that four additional rooms can

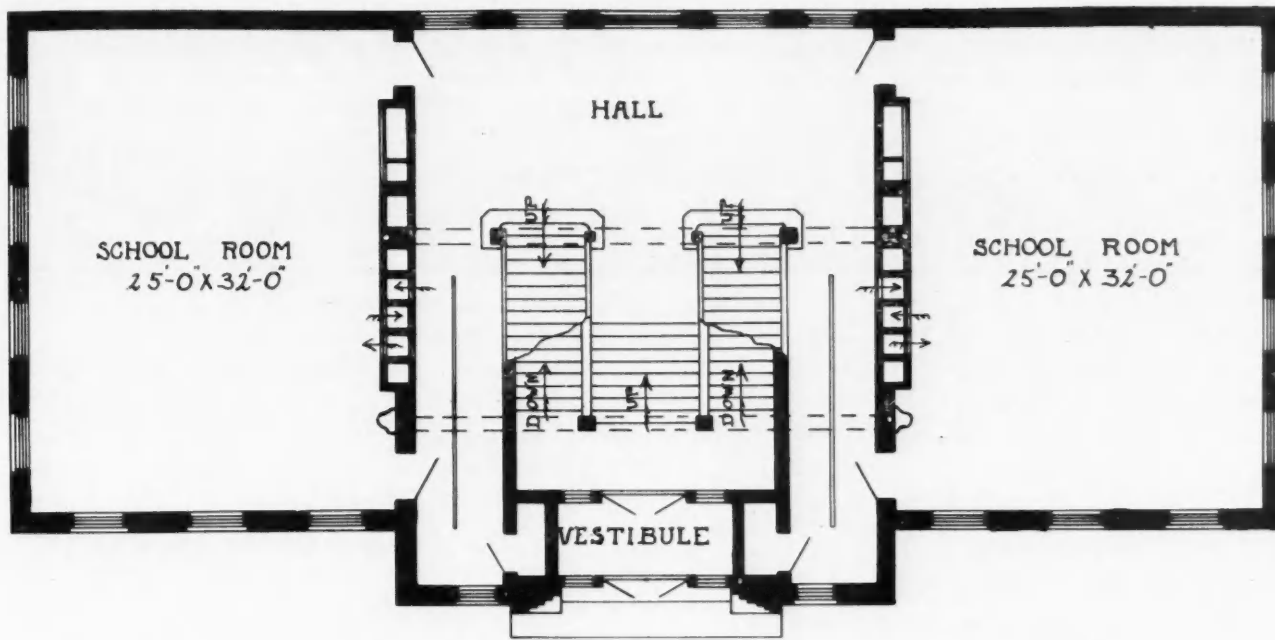
Attention is called to the entrance and front projection to the roof which is different from the usual style of school architecture. The doors are set back so as to protect them against the weather.

The basement has an entire cement floor and contains boys' and girls' toilet and play rooms, a boiler



be easily added, thereby making it an eight-room school building. The basement is constructed of stone up to the grade line and from the grade line to the water table Bedford stone is used. The balance of the vertical walls from this point are of dark, cherry red brick, finished with concave joints. The cornices are of metal and the roof is of slate.

and fuel room, and two fresh air rooms. On the first floor there are two school rooms 25 by 32, both equipped with foul and fresh air vent flues. There are also two stairways from the front vestibule to the basement, one going to the boys' side and the other to the girls'. The halls contain screen partitions for the children's hats and coats. These are 7 feet high,



FIRST FLOOR PLAN OF A FOUR ROOM SCHOOL HOUSE

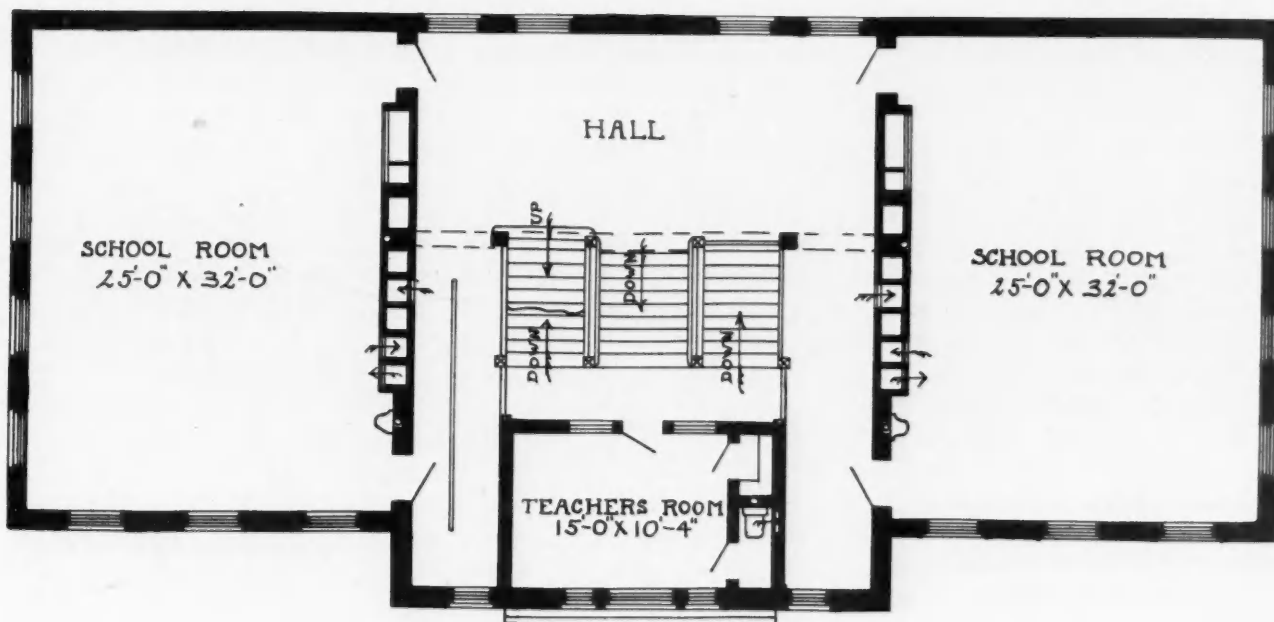
constructed of galvanized iron wire and iron frame work, wood hat and coat strips are bolted to the iron frame work. These are being installed in preference to the old wooden partitions as they are more sanitary in every respect.

The second floor is the same as the first with the exception of having a teachers' room 10 feet 4 inches by 15 feet at the head of the stairs. This room is also equipped with a wash and toilet room. From the second floor hall way there is a stairway leading to the attic where another room is equipped midway between the second floor and the attic of the same size as the teachers' room, and can be used for a library,

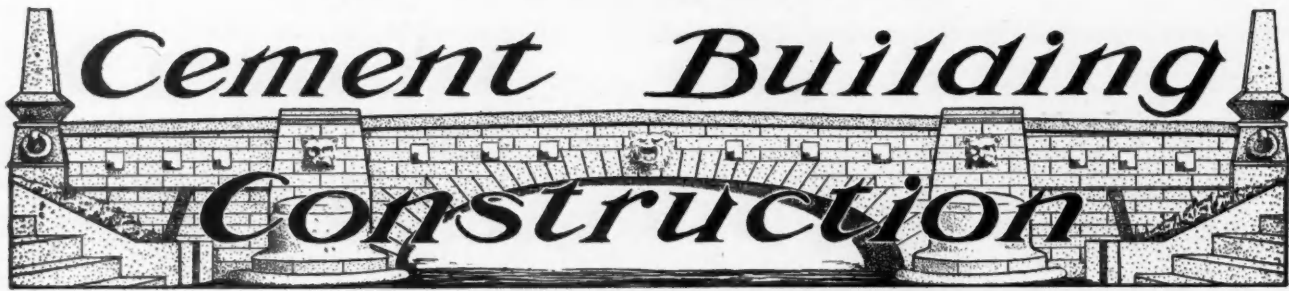
exhibit room, or storage room. The building is heated with low pressure steam, as this has been found by experience to be the best system for heating school houses. It is neither too dry or too wet and gives an even temperature.

+

I am a very busy man, and I give you the credit for it to some extent. Since I subscribed for your paper my business has increased, my mind broadened and extended. We now have a cement plant with the necessary machinery and employ six men, and I used to do my work mostly alone.—N. P. HESS & SONS, San Luis, Col.



SECOND FLOOR PLAN OF A FOUR ROOM SCHOOL HOUSE



## Practical Building Code

BEING THE SECOND PART OF A COMPLETE BUILDING CODE WHICH WILL BE PUBLISHED FROM MONTH TO MONTH—COVERS THE WORK IN ANY CITY

By Fred W. Hagloch

**C**LASSIFICATION and grading of buildings and qualifications of building materials.

**SECTION 1.** All buildings shall be classed according to the kind of material with which they are erected and graded according to the use and purpose the buildings are intended.

**Class A.** Buildings erected entirely of incombustible materials and all structural metal protected with no less than two inches fireproofing with metal window and door frames, metal window sash and metal outside doors, wire glass lights in all windows facing all openings less than twelve feet in width shall be known as absolutely fireproof buildings and are limited in height to 180 feet or sixteen stories or six times as high as the shortest horizontal width of such building.

**Class B.** Similar to Class A, except that the interior and exterior finish and trim and all doors, windows and frames are wood and wood floor laid on fireproof supporting shall be termed fireproof buildings and are limited in height to 140 feet or twelve stories or five times as high as the shortest horizontal width of such building.

**Class C.** Buildings having fireproof walls, exposed structural metal, fireproof roof, metal or fireproof stairways, slow burning floors and wood doors, windows and frames shall be termed as semi-fireproof construction and limited to 90 feet or six stories in height, and shall not exceed in height four times its short horizontal width.

**Class D.** Buildings with walls and roof of fireproof or incombustible walls and roof, solid wood (not built) columns and beams and wood floors not less than four inches thick and wood studded partitions with metal lath and plaster are termed slow burning construction and are limited in height to 80 feet or six stories and shall not exceed in height four times the shortest horizontal width of said building.

**Class E.** Buildings having incombustible walls, fireproof or composite roofing, wood joist and floors, wood studded partitions are termed protected combustible buildings and shall not exceed 54 feet or four stories in height and shall not be higher than four times the shortest horizontal width of said building.

**Class F.** All frame and combustible material buildings are termed combustible buildings and shall not be higher than three stories or 42 feet, and not to exceed in height three times the shortest horizontal width of said building.

**SECTION 2.** Grading of buildings.

Buildings are graded according to their uses and United States Government buildings are regarded as buildings of the first grade, but are beyond the jurisdiction of this code.

**First Grade.**—All buildings occupied whole or in part by state, county or city administration offices, court rooms, libraries, schools, colleges, art galleries, council chambers, theaters, assembly halls and all public utility buildings, are excluded from Classes D, E and F.

**Second Grade.** Hotels, office buildings, store buildings, warehouses, manufacturing buildings and public sheltering buildings. This grade of buildings is excluded from Classes D, E and F within the fire limits of the city.

**Third Grade.** Apartment, club and tenement houses. This grade of buildings is excluded from Classes E and F within the fire limits of the city.

**Fourth Grade.** All dwellings not exceeding two families to each building. This grade of buildings is excluded from Class F within the fire limits of the city.

**Fifth Grade.** All livery, transfer, public and private barns, stock yards, carriage houses, sheds, pens and coops for slaughter houses. This grade of buildings is excluded from Classes D, E and F within the fire limits of the city.

**SECTION 3.** Qualifications of Materials.

**Absolutely Fireproof Materials.** Porous terra cotta, hard burned brick, silica sand, basic and granulated slag, Portland cement burned above 1,200 degrees in the process of its manufacture, asbestos, sand stone, metal columns, beams, etc., protected with not less than two inches of terra cotta or one and one-half inches concrete, terra cotta arched flooring, reinforced concrete columns, beams and floor slabs, brick, terra cotta, concrete block, monolithic concrete and sandstone walls, ceramic, concrete and marble flooring and

wainscoting, metal window and door frames, metal sash, metal composition and asbestos doors and curtains, wire glass of less than 640 square inches area per light, plaster on metal lath and metal studding or hollow tile for partitions, metal sheeting and cornices when attached to metal, composition or terra cotta supports, metal ceilings and asbestos wall coverings.

**Fireproof Materials.** Include all materials mentioned as absolutely fireproof above and the following: Common brick, limestone concrete, all Portland cement, lime, crushed marble and granite, non porous terra cotta, shale tile and brick, fireproofed woods and textile fabrics, unprotected or exposed structural metals and fireproof paints and compositions.

**Combustible Materials.** Wood, fibers, textile fabrics, leather, oilcloth, rubber, insulations, composition packings (not containing oils).

**ARTICLE VI. QUALITY OF RAW MATERIALS.** All materials must be of good quality for the purpose they are intended to be used, and must be up to the manufacturers' standards.

Imperfections in any materials that impair the strength and durability shall not be used, nor shall any material be classed as good when its strength falls below 90 per cent of that of the best of kind. The following shall be the minimum standard of materials used.

**SECTION I.** Brick, stone, terra cotta, sand, cement, lime, plaster, concrete and other materials used in masonry, etc.

**Brick.** All brick to be merchantable common brick, of a standard size about  $8\frac{1}{2}$  by 4 by  $2\frac{3}{8}$  inches.

All bricks must be of sufficient quality that the usual handling will not produce more than four (4) per cent of bats.

**Stone.** All stone must equal in quality the best Bedford, Ind., limestone, or Cleveland, O., sandstone, or the product of any of the following quarries: McDermott, O.; Joliet, Ill.; Warrensburg, DeWitt and Carthage, Mo.; Cottonwood Falls and Ft. Scott, Kan.

**Gravel and Stone.** Stone and gravel used for concrete must be clean and hard; samples should be tested of all stone used in buildings of Class A and must not disintegrate at a temperature of 1,200 degrees Fahrenheit.

**Sand.** Crushed, bank, bar (lake or river) or slag sand free from organic matter.

**Cement.** Any natural cement such as Rosendale, Louisville, Akron and other hydraulic cements. These cements must not be used in any work on buildings of Classes A, B, C and D, except for cellar and basement floors.

**Portland Cement.** The standard American or imported Portland which, when tested neat, after one day's set in air shall without rupture, sustain a tensile strain of 180 pounds per square inch, and after one day in air and six days in water sustain, without rupture, 480 pounds per square inch tensile strain.

**Fireproof Portland Cement.** For all work in buildings of Class A, and all reinforced and fireproof work in all classes, the cement must be of such fineness that no less than ninety (90) per cent will pass a screen of 2,500 meshes per square inch; must be calcined in the process of its manufacture to no less than 1,200 degrees Fahrenheit, and sustain without rupture at least 600 pounds tensile strain after one day set in air and twenty-seven days set in water; also see test of materials.

**Slags and Smelter Refuse.**—Furnace and smelter slag of a basic (not granulated) character can be used in all classes of buildings and kinds of construction, provided it be of such sized grains as specified in test of materials.

Granulated slag can be used in all construction concrete, where the tensile strain is less than 250 pounds per square inch at a safety factor of one to four.

**Terra Cotta.** Terra cotta used for walls and facings, shall be well burned and sufficiently webbed to keep same out of wind.

**Tile Fireproofing.** Well burned shale hollow tile, clay and ceramic fireproofing may be used in all places where it is free from tensile strains and the compression load does not exceed two tons per square foot of sectional area of wall or arching.

**Wood.** All wood used for studs, joists and all other bearing and framing parts shall be of rough stock sizes and equal in quality to No. 1 Norway or white pine bill stuff in buildings of Classes C and D, and equal to No. 1 Hemlock in buildings of Classes E and F.

**Iron.** All cast iron must be good tough gray iron, clean and sound. All wrought iron shall be fibrous, tough and ductile.

**Steel.** All steel shall be made by the open hearth or Bessemer process.

(CONTINUED IN SEPTEMBER ISSUE.)

### + The Problem of the Old House

*(Continued from page 682)*

rooms rearranged. Plenty of closet room and the sewing-room with its linen closet are noticeable. The lighting and ventilation of the bed-rooms deserve attention. The windows are arranged for cross-ventilation in every room except one.

The front of the new house shows what careful study will do. The new windows of the second story, their design and location, the porch with its pleasing proportions, not the least of which is the large panel, show taste and foresight. The placing of the steps at the side instead of the front is especially fortunate in that it keeps intact the paneling of the front.

The floor of this porch is of marble mosaic, as is that of the vestibule. The patterns are quite simple and just enough color is used to emphasize the work. This porch will never need its floor replaced because of decay and one cannot but compare it with the old one with its superabundance of "features" which are subject to quick disintegration.

# FARM BUILDINGS

HENRY H. NIEMANN

## A Modern Poultry House

ESSENTIAL THINGS IN POULTRY HOUSE CONSTRUCTION—COMPLETE EXPLANATION OF A PERFECT VENTILATING SYSTEM

**F**RESH eggs in winter are always in demand and the poultry men that can supply the winter market are the most successful because they can make the most profit. To secure them it is necessary to have poultry houses that are warm, well ventilated and easily kept clean; with all provisions for

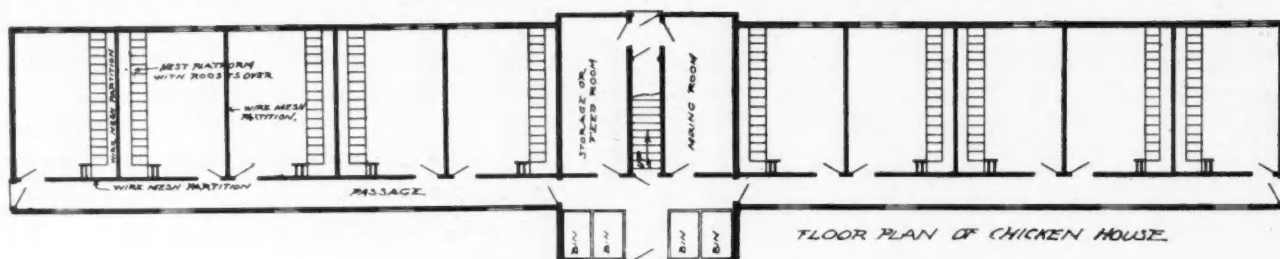
comfortably close together for winter weather, the floor should be dry and warm and there should be plenty of windows that will let in sunshine. As the nights are always colder than the days the fowls suffer mostly at night from the cold and the house should therefore be made perfectly wind proof, with several layers of



dusting, feed, water and exercise. Warmth is one of the most important of these requirements. It is therefore necessary to pay particular attention to the construction of the poultry house so as to make it warm and snug in the coldest weather without the application of artificial heat. Chickens depend for their warmth upon the heat of their bodies, the heat of the earth and of the sun, and by close observance we find that they warm themselves by huddling together on their roosts, by sitting flat upon the ground or by standing in the sun. Hence the roosts should be com-

heavy building paper between the sheathing and siding of the walls, which must fit tightly around all openings and be well lapped at all angles and corners. Another important requirement is sufficient and correct ventilation. For best results it is necessary to have healthy fowls and their health depends as much upon the air they breathe as the food they eat. Too much study therefore cannot be given to this important point.

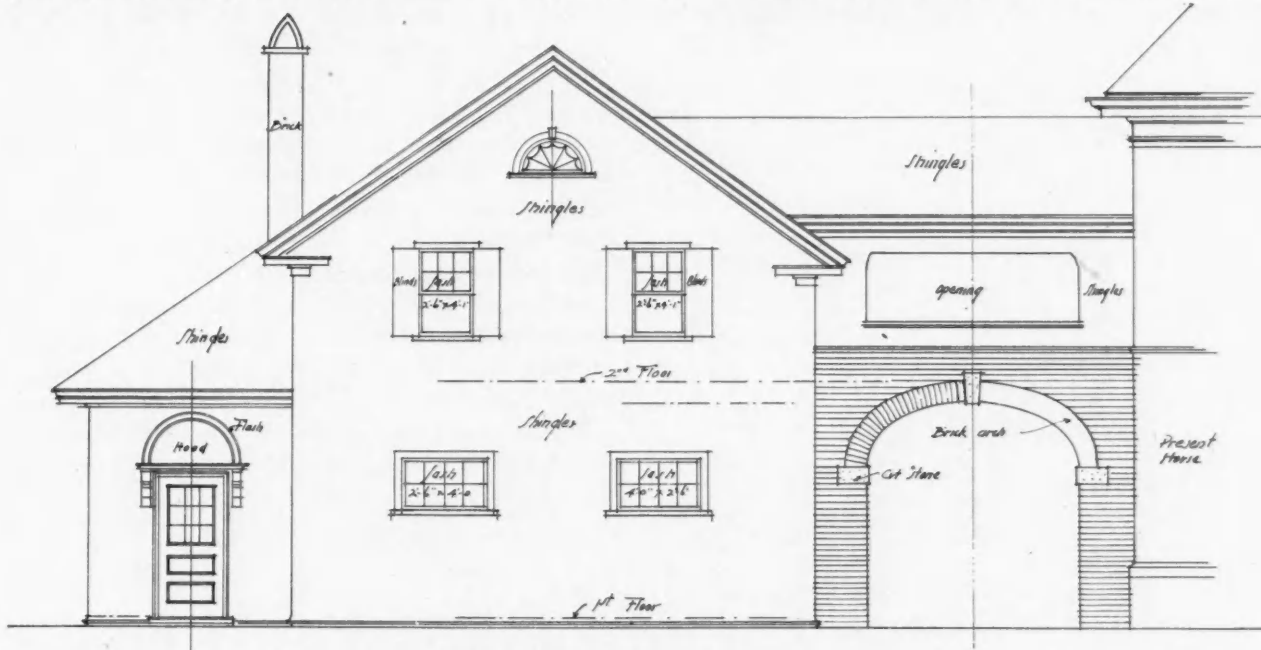
In roughly constructed poultry houses enough fresh air and wind passes through the ill fitting doors, windows and other cracks for all ventilation that is neces-





sary. But in a building that is well put together for warmth and comfort the air will only enter through such ducts as are provided for this purpose. The fresh air ducts are built in the outside walls with exterior openings near the ground where the air enters, then

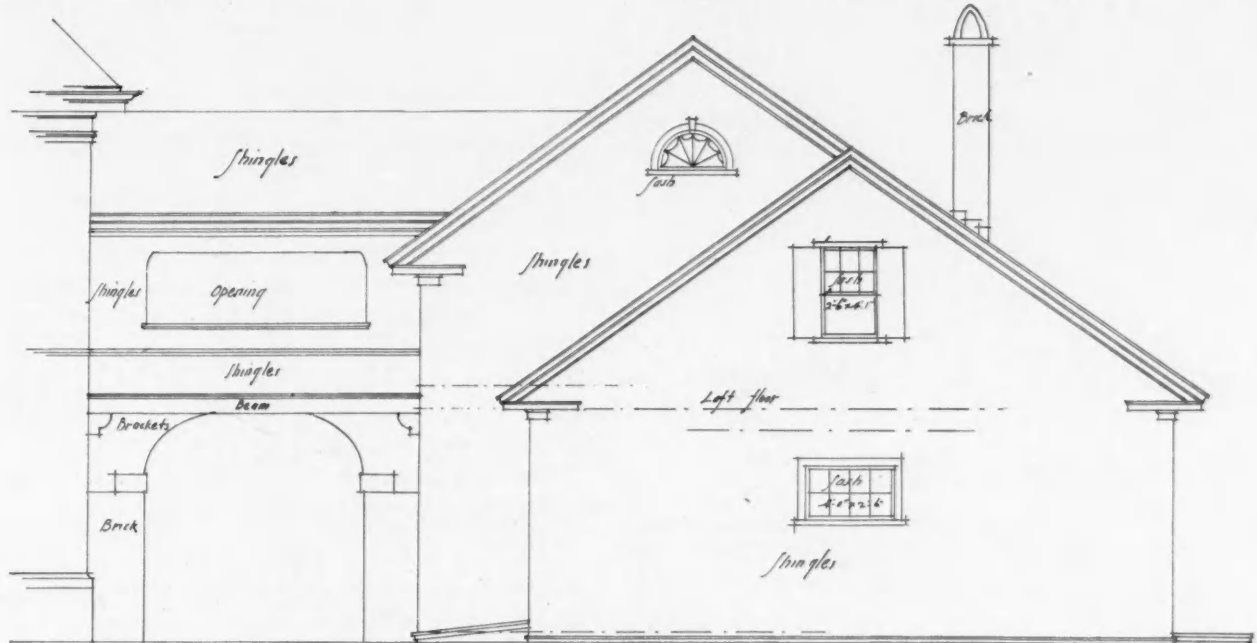
it heavy and causes it to sink to the floor. Hence to gather up the impure air it is necessary to start the foul air duct as near to the floor as practical. The duct should then run up above the highest point of the roof so there will be no down draft and there should



FIRST FLOOR PLAN

slowly passes up to the top of the duct and enters the poultry room near the ceiling. The air is gradually warmed when passing through the duct by the warmth of the wall, but still being colder than the interior air when it enters it gradually drops down near the floor and about the fowls.

be a storm-proof cap on top to keep out all snow, rain and ice; this storm cap should also be provided with a wire mesh that will prevent bird nests. The foul air ducts should be located at some good and convenient central point of sufficient size to make the total foul air duct area about 25 per cent larger than the total



East Elevation -

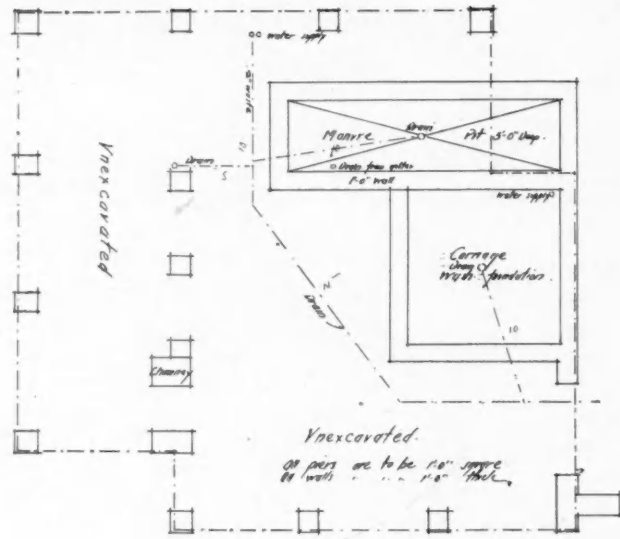
In order to induce a continuous flow of fresh air it is necessary to have an outlet for the foul air. The foul air must be taken out continually in order to make room for new air to enter.

All foul air is saturated with impurities which make

fresh air inlets; there should be proper dampers in these ducts to control the flow of air in severe weather.

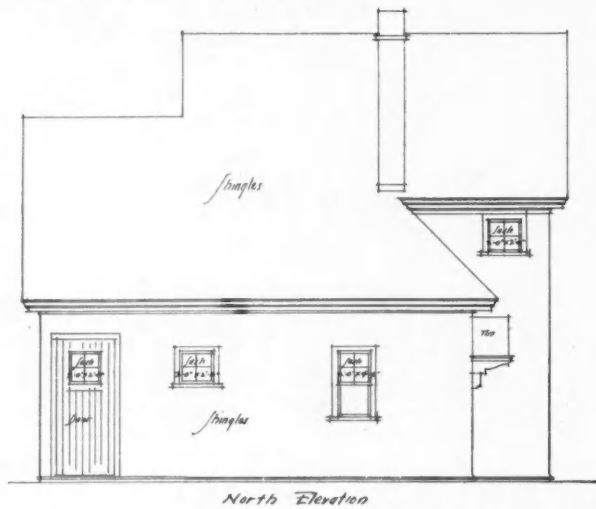
Experience has shown that flocks of from twenty to thirty fowls will do better than large flocks of sixty to eighty. It is therefore necessary to divide the poultry

house into several compartments with wire mesh partitions, each compartment accommodating say thirty chickens. The barn herewith illustrated shows an arrangement of this kind and has proved to be practical in every respect. It is built in Du Page County, Illinois, in connection with other farm buildings which will be published later.



Foundation Plan -  
Plan of Stable

The stable, the plans and elevation showing on page 689, was designed by A. Raymond Ellis and built in Hartford, Conn., for Mr. John B. Knox. The site made a difficult problem of it, as the building line and restrictions made the space limited. In order to gain access and yet screen the stable yard from the street, it was necessary to make the plan in the form of an ell. The arch connecting the stable to the house forms a Porte Cochere with an open balcony above. In the winter this is to be closed in with sliding sash, forming a sun parlor or conservatory.



The large carriage room will accommodate a coupe, cabriolette, brougham and one other light wagon if required. The carriage wash in front of the main door is the most convenient place for cleaning a carriage as it enters from the street.

The stalls, located in a wing formed of heavy plank partitions with iron guards on top, make it light and airy. This part being isolated confines the plumbing to one portion only, making it thoroughly sanitary. In the floor of each stall is placed a cast iron stall pan, pitched to drain toward the rear of the stall, and connected with a cast iron drain to the manure pit. This is drained into the main sewer, all properly trapped and vented. The flooring over these pans consists of 3 by 4 maple slats, thereby assuring dry stalls and clean bedding.

The floor of carriage room is of matched maple. The carriage room, stable and harness room are sheathed in hard pine, and given two coats of varnish. The harness room contains a glazed case for livery and harness. The chimney extends through this room and the room above, allowing a stove to be placed in each. Low down feed racks are placed in the stalls.

The second floor contains the coachman's room and one extra room, plastered and finished in white wood,



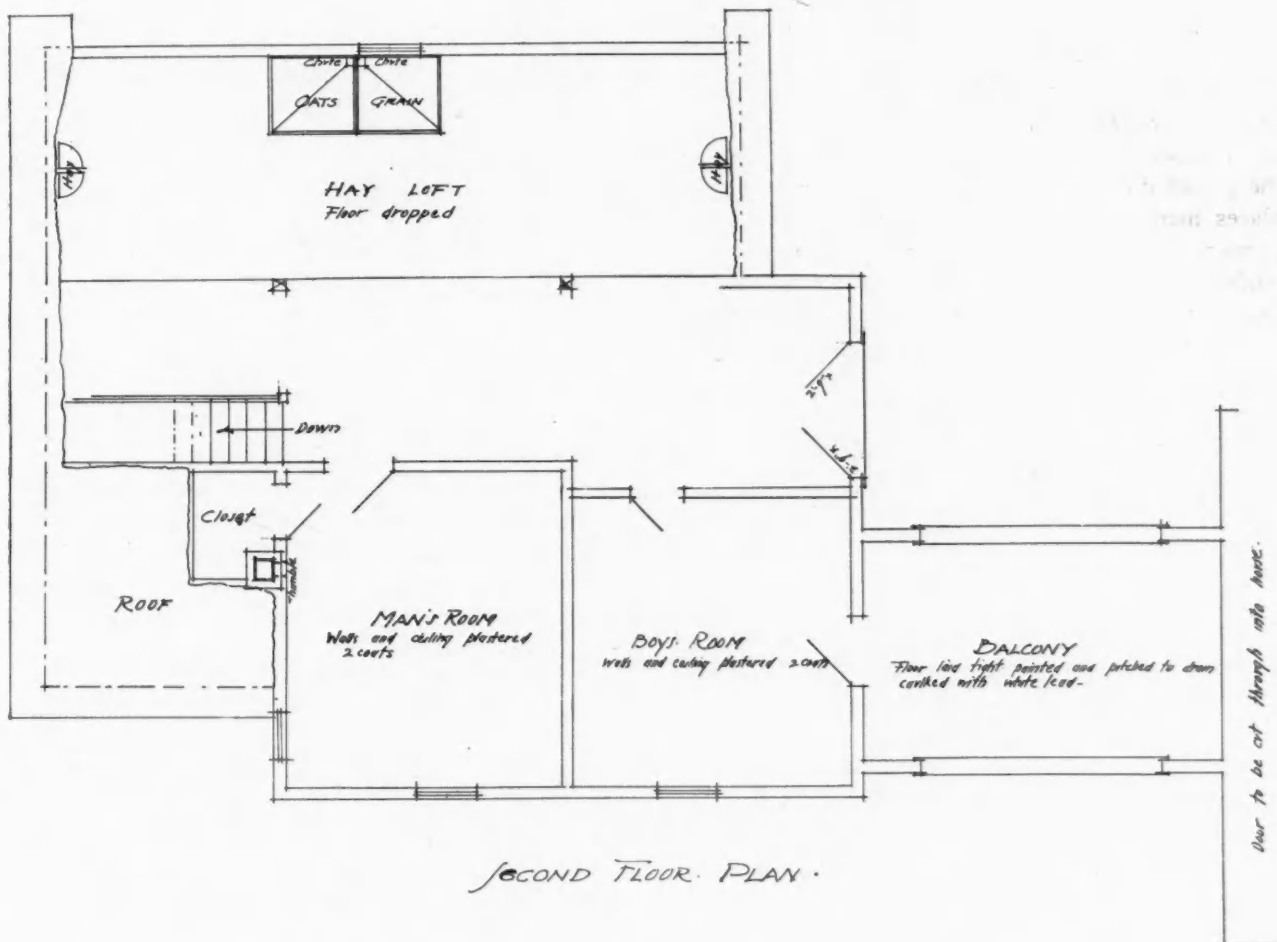
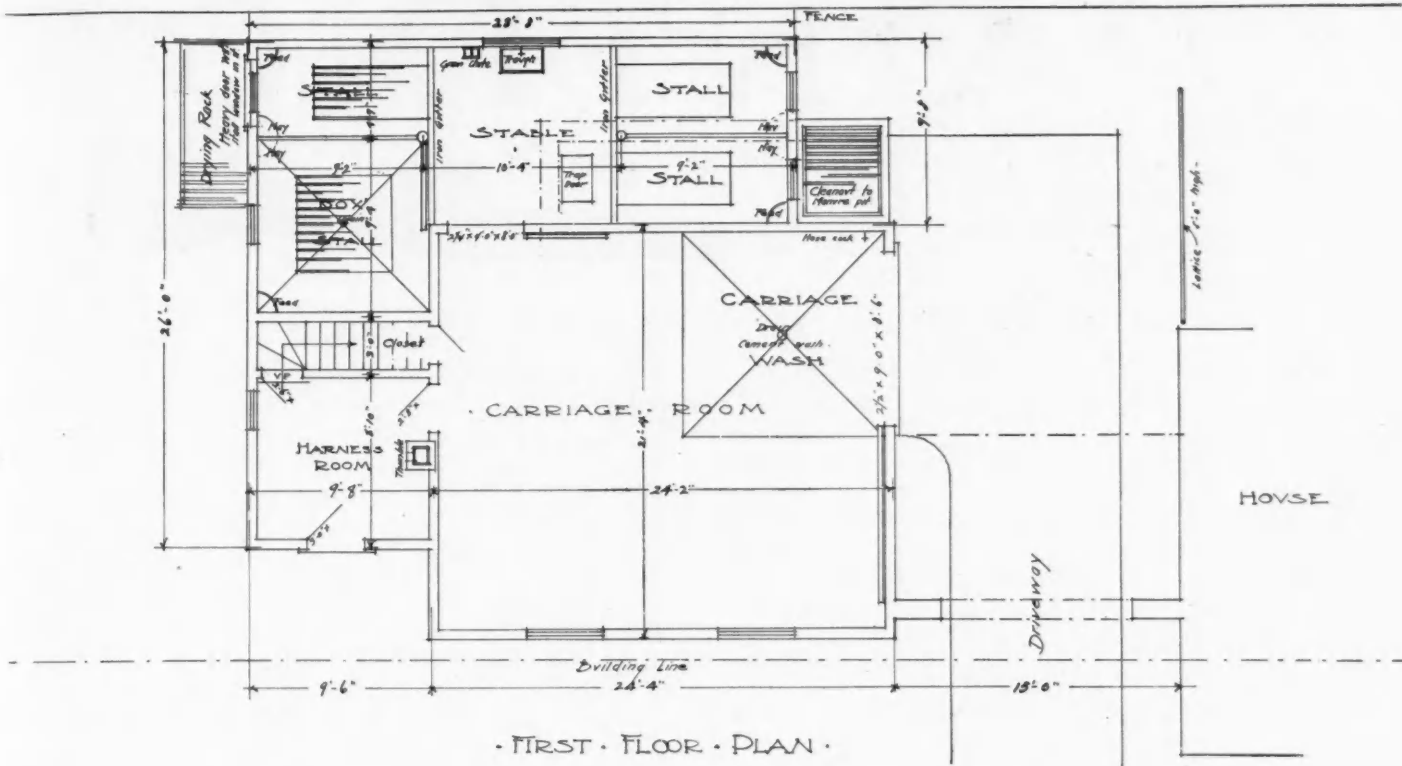
stained. Over the stable are placed the hay loft, grain and oat bins, lined with galvanized iron with chutes to the first floor. A fall and tackle for the raising of hay, etc., is placed over the door to the hay loft. The second floor is finished in spruce.

The exterior is shingled and stained to match the brick work of the house. The corners and outside trim are painted a dark green.

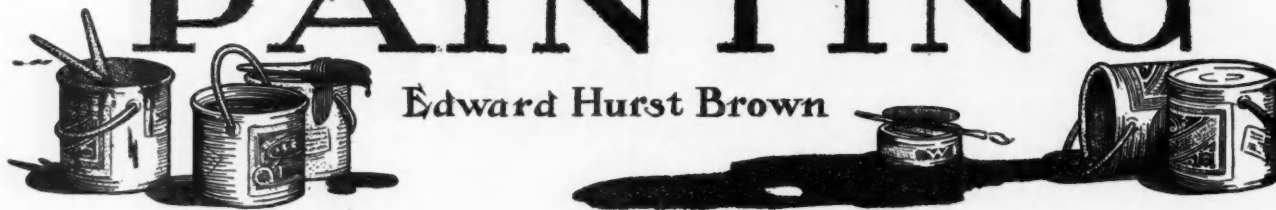
The accompanying plans show plainly anything that may have been omitted in this brief description.

We think the AMERICAN CARPENTER AND BUILDER is the best thing in trade journalism we have ever seen. We have received many hints and helpful suggestions from reading it and intend to always keep it on file in our office.—CHILD BROS., Tallahassee, Fla.

Don't use too many large words on a drawing, but use plain and simple language in all cases.



# PAINTING



Edward Hurst Brown

## Difficulties the Painter Meets

SOME OF THE PUZZLING PAINT PROBLEMS THAT PERPLEX OUR READERS—BEST TIME TO PAINT—  
PAINTING GALVANIZED IRON

**I**N THE finishing of new houses, the painter today meets many difficulties that were unknown only a few years ago, and he is compelled to solve many perplexing problems in some of which he cannot be guided altogether by experience, because he has had no past experience along these lines to guide him to the correct solution. Not the least of these difficulties comes from the quality of the wood and of the plaster that will be found in most new houses. Only a few years ago, a man who wanted to build himself a good house expected the siding to be clear white pine, free from sap and unsound knots, and thoroughly seasoned. Such siding could scarcely be found in the market today, no matter what price one were willing to pay for it. Instead of this we get an inferior grade of pine or of other lumber which was scarcely used at all a dozen years ago. The wood is full of sap, imperfectly seasoned, or at best only kiln dried to expel the moisture, leaving the sap acids in the pores of the wood. Hard in some places and soft in others, the planer does not make a smooth even cut, but in places merely compresses the wood, and practically burns the surface till it becomes hard and non-absorbent, while in other places the natural texture is left. On such a surface the paint will sink in and dry dead in spots, while in other places it will lay on the surface and retain its gloss. To add to the difficulty of the painter, the contractor is so anxious to get the knots, dark streaks and other defects which the wood contains, covered up and hidden from his customer, that he insists that the painter shall work upon the same scaffold with the carpenters, and prime the house, bit by bit, as it is erected. No greater mistake than this could be made, for the paint—which is usually applied in an entirely too heavy coat through mistaken ideas of economy—serves to seal up the sap in the lumber, only to work destruction to the paint later on. Moreover, painting the house before it is plastered, especially in winter time, is almost certain to cause blistering or scaling of the paint. If the paint is of such a composition that it dries to form an elastic paint film, then it will blister; while if it dries to form a hard and brittle paint film, as most mixed paints or paints containing zinc white do, then it will crack and

peel off. For in plastering, tons of water are carried into the house. In order to dry the plaster quickly, stoves are placed in the rooms and often kept at a red heat. The moisture is driven out through the clap-boards and cannot well help raising the paint surface into blisters or cracking it off altogether. This could be largely prevented by waiting until the plastering is entirely finished before beginning to paint the house. Indeed, if the owner could be induced to let his house stand for at least two months before any paint at all is applied, he would secure a much better and more durable job of painting, because the rain would soak out the sap acids and render them harmless. Suppose some of the boards should split, it would do no harm for putty will cure any cracks or other defects.

There are many people who attempt to paint a new house with two heavy coats of paint. On the modern lumber this cannot be done and get satisfactory or even half-way satisfactory results. Three coats are needed. It is necessary to use a primer that is mixed very thin with linseed oil, with a little of the best turpentine driers, and there should be a sufficient proportion of pure turpentine to carry the priming coat into the wood and give it a clinch. The pigment should form a very thin film on the surface of the wood, and it should be well brushed into the wood with a six-naught (6-0) round or oval brush to get the best results. Unfortunately many painters seem to think that it is priming if they smear on a coat of any odds and ends of color that the shop may contain, no matter how long it has been allowed to stand and grow fatty. No part of the whole work of the painter requires more careful attention than the priming, because it is the foundation upon which the paint superstructure is to be erected. Unless the priming be right the whole of the painting will be wrong.

Ochre is largely used for priming, or at least we might say that a material sold to the painters as ochre is used. This stuff can be bought, by the barrel, in the dry state, for about two cents a pound. Such ochres are obtained from the so-called paint mines that we so frequently see mentioned in the newspapers as wonderful discoveries, but in addition to being of

inferior grade, they frequently are adulterated with the cheapest grade of barytes. The painter will put some of this stuff in a tub or barrel, pour oil over it and allow it to soak for two or three days. He then stirs the mass, as well as he can, with a paint paddle, puts some of it in a pot, adds more oil, stirs it round and starts to prime the cellar window frames. This same tub of ochre is allowed to stand all through the erection of the house. It is drawn on from time to time for the material for the priming, as it may be needed. Of course this paint is continually growing more and more fatty by exposure to the air, and when the porch columns are to be painted, usually about the last thing, they are smeared with a sticky mess that will never thoroughly dry, but will remain soft and tacky to cause blisters. Every here and there little lumps of ochre that have not become incorporated with the oil, will be brushed out upon the surface of the wood. It is small wonder that such a priming coat will surely cause subsequent coats of paint to peel, throwing off all the paint down to the priming. Good results cannot possibly be obtained by the use of an ochre priming of this character, although some first class painters claim that a high-grade ochre, ground in oil, and properly thinned as wanted, will make a good priming coat on the inferior wood that is now found everywhere. Nevertheless, we cannot recommend ochre in any form, and advise the painter to stick to a priming of pure white lead, mixed with enough pure lamp black to produce a light lead color—about one pound of lamp black to the hundred of white lead will usually be ample. A good ochre priming will cost as much as a white lead priming, so there is no economy in using it. Pure, raw linseed oil, pure turpentine and the best turpentine driers should be used as thinners.

#### When to Paint

Painting may be done at any time of the year, provided the painter adapts his material to the weather conditions. The best season, however, is the fall, because the sun is not hot enough in the day time to cause the fresh paint to blister, and the paint film dries more slowly and uniformly. Moreover, there is usually less dust in the fall than in the summer time, and less chance for sudden showers that will injure the newly applied paint. In summer nights there is apt to be more or less dew, and there is a mugginess in August that will often take the gloss off paint. The spring is the next best time to the fall, but there is more danger from showers or from dust. In winter, painting can be done, provided the air is dry and there is no frost on the surface. At any time of year the surface of the woodwork should be absolutely dry. The paint should be well brushed on, using three thin coats in preference to two heavy coats. Allow plenty of time between coats, especially in summer, and proportion the quantity of drier and turpentine to the atmospheric condition. There is then no difficulty in

painting at any time of year. An extra coat of paint in summer time is no special advantage.

#### Paint Flaking from a Brick House

One of our readers has had difficulty with paint flaking and peeling off from a brick house that was built some forty years ago and has been painted several times, always with good results, until two years ago some amateur gave it two coats of a mixed paint, which was reduced with boiled oil. Four months later the paint began to peel off in large flakes. The probability is that the paint film had grown thick enough on the house to begin to lose its hold, or at any rate, the oil had perished. If a priming coat of white lead with an extra amount of raw oil and some turpentine had been given, the oil would have given life to the old paint and bound it to the brick. Instead of this a mixed paint composed chiefly of zinc white and inert pigments was applied, the natural tendency of such a paint being to perish in the manner described. This perishing was hastened because boiled oil was used for reducing the paint. While boiled oil appears to dry quickly, it dries only on the surface, the body of the film remaining soft and tacky. But the probability is that instead of its being genuine kettle boiled oil that was used, it was raw oil overloaded with driers, which would have added another tendency to crack. So it is small wonder that the paint perished in the manner described. Indeed, it would have been remarkable if it had not done so. There is but one remedy: to remove the old paint with scrapers and wire brushes, or if that is not sufficient, use a paint burner, and begin all over again, using a white lead and linseed oil priming coat. Or if the walls are to be painted red, use a good Venetian red, ground in linseed oil, thinned with pure linseed oil and a little drier as a first coat. After the priming has dried, putty up any defects with a pure whiting and linseed oil putty that has been colored with Venetian red. For the second coat use one-fourth pure white lead and three-fourths Venetian red, thinned with two parts linseed oil to one part of turpentine, and as much drier as may be needed, using the best grade of oil drier only. For the last coat use pure Venetian red, pure linseed oil and drier. This gives a gloss coat. For a flat brick red effect buy one of the prepared flat brick reds in paste form, thinning it with pure turpentine. It may be well to mention that should there be any dampness in the bricks, from any cause whatever, as for example, from a leaky gutter, there is nothing that can prevent the paint from scaling.



I would not think of getting along without the AMERICAN CARPENTER AND BUILDER any more than I would the history of the United States. Therefore you can count me every year as long as I live.

AVERY C. SMITH, Spokane, Wash.



The oldest head has to keep learning something.

# Manual Training



Ira S. Griffith

## Something the Boys Can Make

COMPLETE DESCRIPTION OF HOW TO MAKE A HANGING CLOCK—MATERIAL TO USE AND DIMENSIONS OF THE SAME—PROPER FINISH TO PUT ON

**T**HE hanging clock, the picture of which is shown this month, makes an appropriate piece for office or home. Weights furnish the motive power though a movement in which one spring might be used. This clock must be fastened firmly to the wall and be properly leveled and the movements adjusted if the best results are to be expected.

There are two ways of fastening the parts together, with lag screws and square butt joints with small dowels or with lag screws and stub tenons. The latter makes the best work but the former is easier. The second method is advised and will be described.

We may begin by making the four posts, square, in the usual manner, two pieces to a width and thickness of one and one-half inches each, with a length roughly sawed to forty-three inches. These are for the back posts. Square two more pieces for the front posts to the same width and thickness but with a length of twenty-nine inches. Point one end of each of these pieces to an angle of forty-five degrees. Use the bevel square in marking the slopes and in testing and do not work by guess. Measure from the end of each piece about a thirty-second more than three-quarters of an inch and square light, sharp pencil lines around the four sides, remembering to keep the trysquare handle against the joint-edge or working face. These lines give the shoulders for the slopes. From these lines lay off the slopes on opposite sides. Saw close to these lines and plane smooth. Locate the middle of the resulting ridge and again saw and plane. To set the bevel square to forty-five degrees, hold the handle against the beam of the steel square and move its blade until it marks the corresponding figures on beam and blade. From these shoulders measure forty and three-quarters inches on two of the pieces and square lines around for the shoulders. On the other two measure twenty-six and one-half inches. Shape these ends as were the others.

Before laying out or cutting the mortises, the other stock may be squared up. The cross-bars are of seven-

eighths inch stock. Square up for the front and back five pieces to a width of one and three-quarters inches and a length of fifteen inches. As these bars all have tenons on the ends, it is necessary to saw them, only they should be sawed carefully, however.

While the seven-eighths inch stock is out, cut and square four pieces to an inch and three-quarters with a length of nine and one-half inches. Also square four pieces of the same stock to a width of one and one-eighth inches and a length of nine and one-half inches. These eight pieces are for the cross-bars on the sides of the clock.

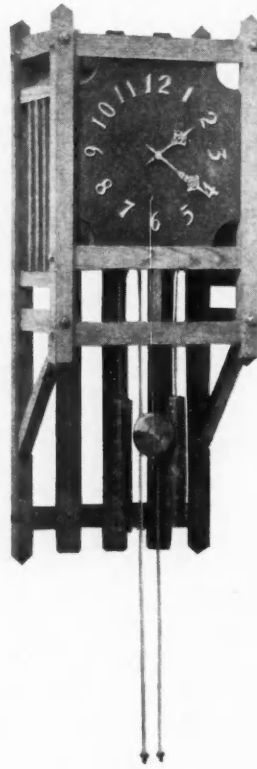
The vertical bars are of three-quarters inch stock and there will be needed six pieces with a width of three-quarters and a length of thirteen and three-eighths inches for the sides. For the front there will be three pieces three-quarters inches square with a length of four and one-half inches.

The two braces are to be one and one-eighth inches square, with a length of fourteen inches.

The slats for the back are to be made of three-eighths inch stock squared to a width of two inches and a length of forty and three-quarters inches. There will be three of them.

Fig. 2 shows the manner of laying out the mortises on the posts. Place the posts as they are to go and mark roughly with pencil the approximate positions of the mortises. The face marks are to be turned in. Now lay the two long pieces (Fig. 2 A) on the bench and even the top ends at the shoulder of the bevel with the trysquare, keeping the inside surfaces of the back posts upward. Begin at the top bevel and measure one and five-eighths inches, then one and one-quarter inches, thirty-five inches, one and one-quarter inches. If no mistake has been made, one and five-eighths inches will remain. Square sharp pencil lines across at these points.

Place the same pieces (Fig. 2 B) with the front surfaces upward, even the top ends and mark off one and one-eighth inches, one and one-fourth inches, two



and nine-sixteenths, five-eighths, thirteen and three-eighths, five-eighths, two and nine-sixteenths, one and one-quarter inches. There should remain seventeen and three-eighths inches. Square sharp pencil lines across at these points.

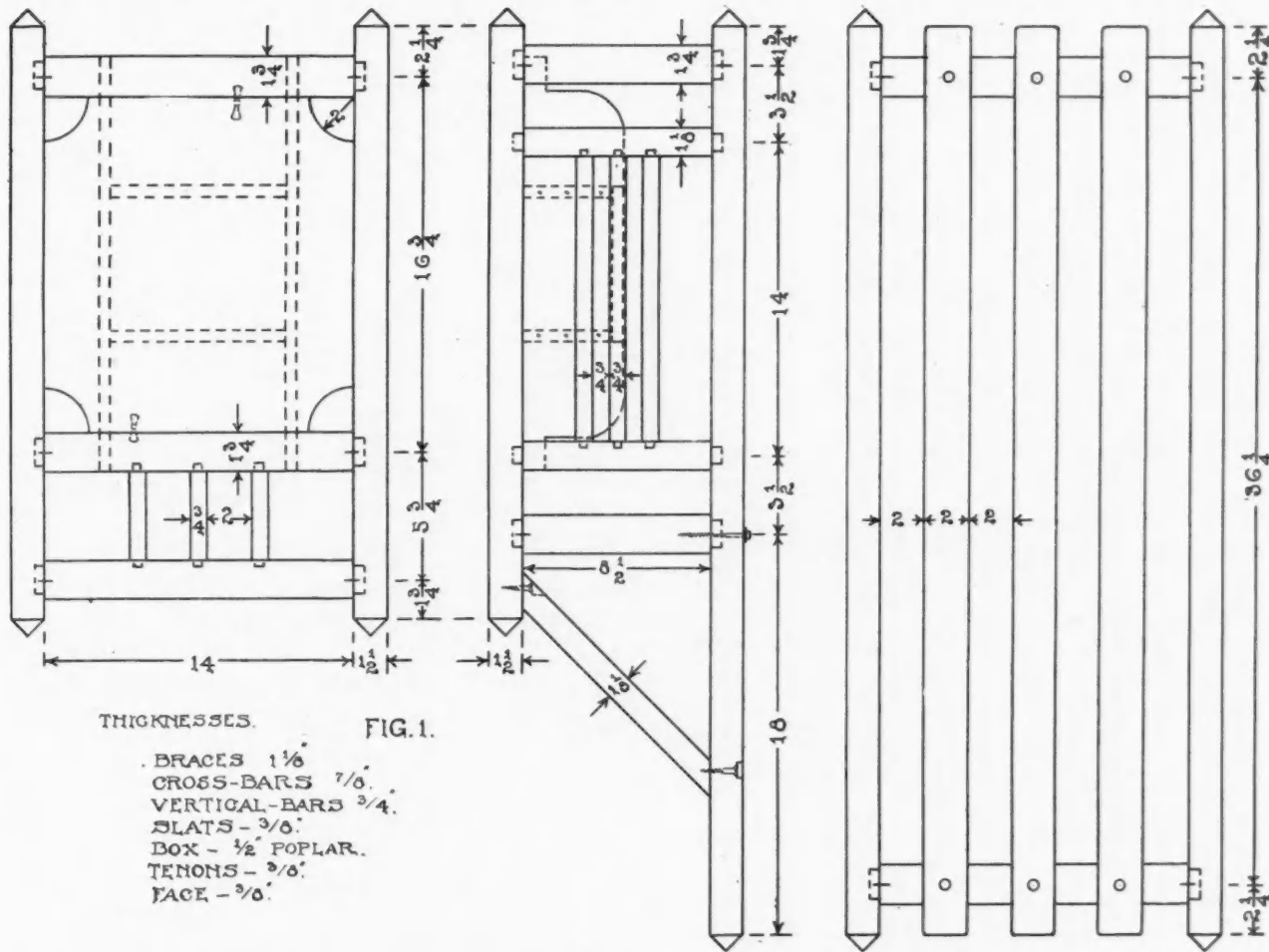
Place the two short posts (Fig. 3 A) together with the inside surfaces upward. Even the top ends and mark off one and five-eighths inches, one and one-fourth inches, fifteen and one-half, one and one-fourth, four and one-half and one and one-fourth inches. There should remain one and one-eighth inches.

Fig. 3 B. Place the back surfaces of these posts upward, even the top ends and mark off and square

this setting. The second setting is obtained from the first post by placing the block as was first done, placing the spur in the second knife mark. These mortises are to be three-eighths of an inch wide and nine-sixteenths deep. The gauge block, in all gauging, must be held against an x x surface at all times. If the pieces are of the correct width and thickness, the first setting will be nine-sixteenths of an inch and the second fifteen-sixteenths.

A three-eighths inch chisel should be used in cutting these mortises, care being taken not to mar the ends or sides. No boring is necessary.

Fig. 4 gives the layout for the tenons of the cross-



light pencil lines across, one and one-eighth inches, one and one-fourth, two and nine-sixteenths, five-eighths, thirteen and three-eighths, five-eighths, two and nine-sixteenths, one and one-fourth inches.

These pencil lines locate the ends of the various mortises. All of the pieces were penciled before any gauging was done so that the gauging might all be done at once. But two settings of the gauge are necessary. More are a waste of time. To set the gauge, find and mark with the knife point the middle of one of the pieces. Measure to each side of this mark three-sixteenths of an inch. Set the gauge on the piece so that the block is against a face and the spur on one of the knife marks. Tighten the set-screw and gauge for all mortises on all posts with

bars. Even the ends of the five pieces after having placed them on edge, side by side. Measure and mark with a knife a point one-half an inch from the evened ends, then, from this point, fourteen inches. Square knife lines across the edges of all these pieces at these two points. Separate them and carry the knife lines around the other smoothed surfaces. These lines mark the shoulders of the tenons.

The gauging for the sides of the tenons is as follows: Set the gauge to one-quarter of an inch and gauge on ends, on surfaces and on edges as far back as the knife lines, keeping the gauge block against a joint-edge or a working-face. Next set it to five-eighths of an inch and gauge from the working-face only. Again, set the gauge to one and one-half inches

and finish, this time with the block against the joint-edge.

The shoulders for the side-bars (Fig. 5) should be laid out before any gauging is done so that these pieces may be gauged at the same time those of Fig. 4 are, for the tenons are of the same size. The distance between the shoulders is eight and one-half inches. There will be four of these pieces.

The tenons of the four pieces (Fig. 6) differ from those of Fig. 5 in width only. The second setting of

glue up the back and front. When these parts have remained in the clamps long enough for the glue to harden put in the side-bars.

The slats (Fig. 1) should be put on before the side-bars are put in, however. They are spaced two inches apart and may be fastened with light brads at the middle of the piece and these covered with ornamental wrought nails. Blued screws may be used.

The braces have one end of each cut to an angle of forty-five degrees. They are then held in place

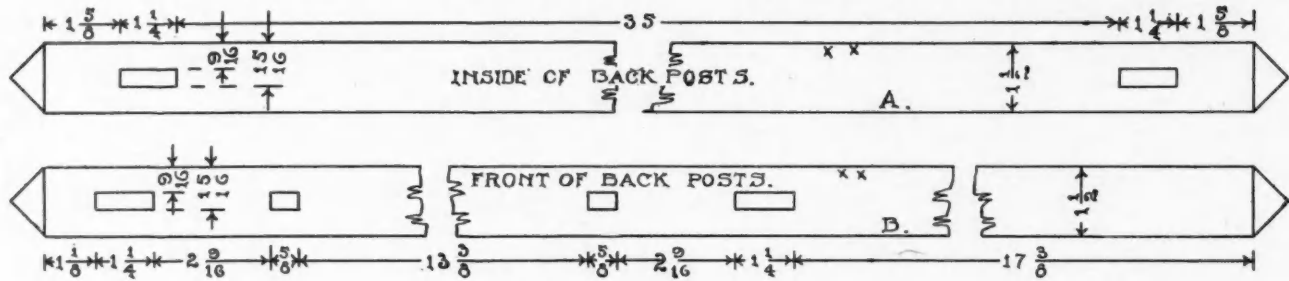


FIG. 2.

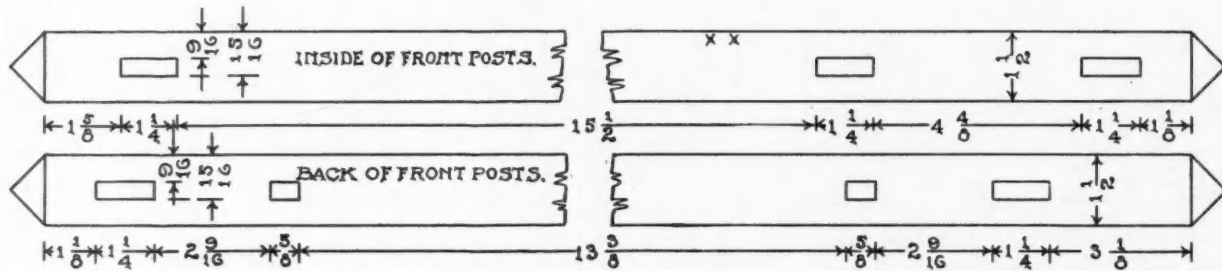


FIG. 3.

the gauge, when the block is held against the joint-edge, is seven-eighths of an inch instead of one and one-half.

In Fig. 7 there are three pieces, and the distance between the shoulders is four inches, the tenons being one-quarter of an inch long. As the tenons of the six pieces (Fig. 8) are of the same size as those of Fig. 7, their shoulders should be marked before beginning any gauging on the short pieces. The distance between the shoulders will be twelve and seven-eighths inches. The gauge is set first to three-sixteenths of an inch and all the pieces gauged from both joint-edge and working-face. It is then set to nine-sixteenths of an inch.

The mortises (Fig. 4) are to be cut in two of the pieces only. They are laid off from the middle towards each end. Measure three-sixteenths each side of the middle and mark with knife point, then two and three-eighths and three-eighths. Square knife lines across the two pieces at once.

The mortises (Fig. 6) should be laid off now; three-sixteenths each side the middle, one and one-eighth inches, then three-eighths. The gauging for Fig. 5 and 6 may be done at the same time. The first setting will be one-quarter of an inch, the second five-eighths, as for the tenons on these pieces. They, the mortises, are to be cut a little deeper than one-quarter of an inch.

Clean all pieces with scraper and sandpaper and

(Fig. 1), and the length marked. They are fastened in place with screws put through from the back so that they will not show from the front.

In the clock shown, lag-screws, one-quarter by three inches, were put through the posts into the center of the tenons of each one and three-quarters inch bar.

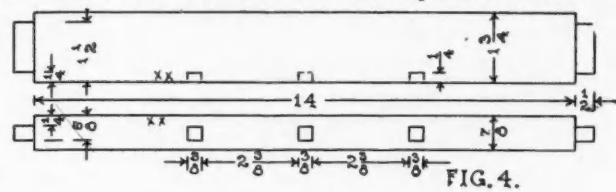


FIG. 4.

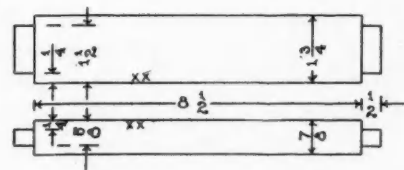


FIG. 5.

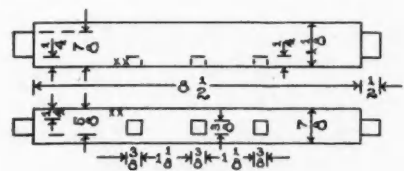


FIG. 6.

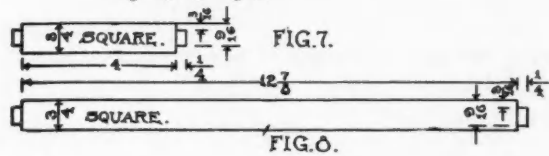


FIG. 8.



Washers were used and the effect was quite pleasing. The posts should be bored with a one-quarter inch bit, the tenons with a three-sixteenths to the depth the screw will enter.

The face may be fitted in place. It is better to fit a side and an end, then mark with a knife while holding it in place rather than to square to dimensions. The corners are cut, a two-inch circle being described from each corner as a center. The figures should not be placed upon the face until it has been stained. They are a part of the movement and will be put on by the one who sets the movement. The dotted lines (Fig. 1) show the shape of the box which is to hold the clock works. The size of it will depend upon the kind of movement, but sides should be made so they can be fastened with screws to the cross-bars. The back should be put on with screws.

The face should have metal buttons fastened at top and bottom on the back, to turn over the cross-bars to keep the face from falling forward, and to permit of its easy removal.

A medium dark mission stain, followed when dry by a very thin coat of shellac will be suitable.



J. W. Sanderson, general manager of the United Cement Machinery Manufacturing Company, Columbus, O., has just returned from Waterloo, Ia., where he effected the absorption of several of the concrete machinery concerns operating in that city. He says that a fine business year is now opening up in the line of concrete machinery and his big company is getting its full share of the trade. The thing that interests him most at the present time is the arrangement of his company's exhibit on the main floor of the grand machinery hall at the Jamestown Exposition. The United Cement Machinery Manufacturing Company has secured the largest space conceded to one exhibitor at the exposition. It is 50 by 60 feet and will show a full line of concrete block machines, mixers, power and hand tampers, and every part of the exhibit will be in active operation throughout the entire period of the exposition.

Colonel John P. Given, who is now representative of this concern at Norfolk, will have personal charge of the exhibit. For several years Colonel Given has been actively interested in the development of concrete machinery. He assisted in organizing the National Cement Users' Association and was the temporary chairman at its first meeting at Indianapolis.

Mr. Sanderson has just shipped two carloads of machinery from the Waterloo branch, and the completion of the shipment of machinery from the home

plant at Columbus will be accomplished within the present week.

The exhibit at the Jamestown Exposition will embrace many models of concrete block construction and everybody who "wants to be shown" just how it is done will have the chance of his life, for a regular factory proposition will be carried on, producing blocks that will be sold and go into actual construction.

The Simpson Cement Mold Company, of Columbus, O., have just issued another in their series of illustrated sheets showing notable porches made from their molds. It is attracting much attention in the trade and the company reports large returns from it in the form of orders from all over the country. This firm has made a recent shipment of a large outfit of their molds to Honolulu, and their reports from that remote point indicate that the cement proposition is taking strong hold on the builders there. A shipment of the molds made some weeks ago to Sunderland, England, has resulted in many inquiries from interested Englishmen, who have seen the work, and the prospects are for a good volume of business in the "tight little isle."

At the executive board meeting of the Architectural League of America, held in Toronto June 19th, the permanent headquarters of the Architectural League were established at 729 Fifteenth street, N. W., Washington, D. C., and Mr. H. S. McAllister, the ex-secretary of the Washington Architectural Club and now vice president of the same, was appointed permanent secretary of the league. The executive board wishes to announce that all communications with the league may henceforth be directed to Mr. McAllister at the above address.

The Stewart Iron Works, of Cincinnati, Ohio, have just started a series of very interesting bulletins containing valuable suggestions regarding the use of their products. These bulletins are illustrated with handsome photographs.



### Mixing Concrete

In discussing concrete construction with an engineer in that line recently, he said: "There is danger involved in careless machine mixing, especially with continuous mixers. Some part of the feeding apparatus is likely to stop, unnoticed by the workmen, and a mixture may result weak in cement or otherwise deficient. The workmen may neglect to feed the hoppers punctually with the same result. I have myself witnessed an incident where a mixture was turned out entirely lacking in cement. You can readily see what turned out entirely lacking in cement. You can readily see what effect this might have on a building if the concrete should be placed in a location subject to heavy stress. Batch mixers are the best, and these should be thoroughly emptied after mixing a batch and before being fed with new materials. This matter is often neglected.

## Fireproof Construction in London

HOW THE LAWS DIFFER FROM THOSE IN THE UNITED STATES—HIGH STAGE OF DEVELOPMENT REACHED IN FOREIGN COUNTRIES

By George E. Walsh

**T**HE effort being made in this country to standardize the different methods of fireproof construction so that uniform building laws for the different cities can be adopted is steadily achieving desirable results, but there is still sufficient chaos and difference of methods to cause a good deal of confusion. A building that is classed as fireproof in one city would in another frequently be condemned as such, and at the best catalogued simply as "semi-fireproof." Insurance underwriters by insisting upon conformity to certain strict rules regarding fireproofing of buildings are greatly helping the movement and eventually building laws of leading cities must practically cover the same ground in all the important details.

There is even a broader view of the question which may be reasonably entertained, and that is a uniform adoption of certain fireproofing methods for all the leading cities of the world. Sometimes foreign builders and engineers may achieve notable improvements which are of vital concern to all, and to ignore them would be showing lack of progress. Both in London and Berlin fireproofing has reached a high stage of development, and the building laws are somewhat drastic in their requirements. London and New York are not so different in their needs as to make the application of different building laws essential. Building methods differ somewhat, and the organization of building companies and architectural firms is based upon somewhat divergent lines, but the aim to be achieved is identical, and that is the construction of first-class fireproof buildings that will be readily accepted by the insurance companies as such.

### Building Laws in London

The building laws of London are stricter in some respects than those of any American city, and their enforcement is rigid. Those which pertain to fireproof buildings contain much that is of value to American builders. The question of restriction of height of buildings is one that can not be adopted in such American cities as New York and Chicago. London restricts the office buildings to 80 feet from the ground level to the highest part of the roof; but New York builders have not found greater height than this a danger from a fire. On the contrary, some of the higher fireproof buildings are of actual service in checking the spread of a conflagration. If properly built they act as huge fire walls to stop the spread of a fire.

Restrictions in regard to the materials for walls and partitions are sufficiently rigid to insure good work, and yet pliable enough to suit the needs of all honest builders. The materials specified for the walls and partitions are brick, terra cotta and cement concrete composed of broken stone, furnace slag, clinker or burnt ballast. These include most of the fireproof ma-

terials suitable for fireproof walls, and when it is further specified that all external party walls must be at least 13 inches thick, if of brick and terra cotta, and 20 inches if of concrete, the provisions insure good protection. The inside partitions must be composed of incombustible materials, which, of course, includes a great variety of compositions. The only exception to this rule is the use of non-resinous wood for office inclosures. In this country even such inclosures are now being made quite generally of fireproofed wood or wood sheathed with copper or other metal.

The protection of structural steel and iron must be secured in London by a covering of at least two inches of terra cotta or brickwork, or of cement or concrete plaster. The fireproof coverings of columns must be keyed into metal supports and protected by a metal guard at least four feet from the floor. This provision is to prevent damage to the brittle fireproofing material by blows from hand trucks or other instruments. Numerous instances are on record where bad fires and collapses of buildings were caused by the column covering being injured and not repaired so that the metal was exposed to the flames. A metal guard outside is provided simply to hold the fireproofing in position.

Girders, joists and lintels have to be covered with fireproof materials and keyed or anchored in position, but there is no rule requiring outside metal covering. Provision is made for expansion by a space at the ends of all girders. The rules regarding the fireproofing of the metal work of the buildings are not thus very different from the best practice in this country, although far ahead of the requirements of some municipal building laws where extreme latitude is left to the builder. It is no more than fair to say that if every so-called fireproof building in San Francisco had been built according to such requirements there would have been fewer collapses and much less loss.

The construction of floors in a fireproof building is a vital point. Slight neglect here may nullify the best results obtained in building walls properly. If the fire can eat in through the walls it will attack a vulnerable part of the building and cause great damage. In London the floors must be carried on metal joists, girders and columns or brick walls and piers. The floors must in no part be less than six inches thick. Where wooden floors are laid on concrete no space is permitted between the wood and the bed of concrete. An air space between would give a fire a chance to spread and gain great headway. The metal supports must be fireproofed the same as any other part of the steel work so that the presence of wood does not in any way weaken the power of the girders and beams. Where the under part of the wall or ceiling is plastered metal lathing must be employed.

More importance is attached to the value of fire-

proof roofs in London than is common in this country. The roofs must be composed entirely of incombustible materials, and they must be at least four inches in thickness. If glass is used it must be wired glass or electro copper glazing with an average thickness of not less than a quarter of an inch for each section of 36 inches of superficial area. The glass must be set in iron or other hard metal. If there are any outlets on the roofs they must be provided with frames of iron or cased in iron plate at least one-eighth of an inch thick. All doors and windows must be self-closing. No lining of wood whatever is allowed in ceilings, roofs, walls or partitions.

The fires which start near defective flues are legion, but in the modern construction of first-class buildings there is no reason for this, and the danger can be entirely eliminated by using right materials and work. In order to economize in a part of a building which does not show, builders may use inferior material or employ it in such limited quantity that a fire may at any time occur. In London's building laws the flues must be at least nine inches thick at the narrowest place. The flues must be built of brick and lined with first-class firebrick, at least twenty feet from the furnace. The use of timber or woodwork of any character in or near the flue, or plugged in it for any purpose, is absolutely prohibited. Flues built in this manner are absolutely safe against any hot interior fire in the furnace, and they are commonly built in this way in this country by the better class of architects and contractors. Whether or not our city building laws prescribe such methods of construction, it should be the natural aim of every reputable architect to adopt similar systems.

The openings in walls, floors and communications between different stories of a structure are all vulnerable points, and unless closely guarded the fire danger is always present. The laws regulating them in London are very minute and are the result of careful study and experiment. All windows and doors in the walls are required to be of metal sash or frames, and all windows above the ground floor must be glazed with glass at least one-quarter of an inch thick. The superficial feet of each section of glass must not be more than two unless made of wired glass or electro copper glazing. The use of fireproof shutters and fireproof doors is demanded for all openings overlooking other buildings or within twenty feet of the roof of an adjacent structure. A wide latitude is left for the interpretation of the words fireproof shutters and fireproof doors, but almost any metal will suffice.

All staircases, shafts, openings for hoists and elevators must contain no wood trimmings of any kind, and all stair landings must be constructed of incombustible materials. If the staircases and hoist openings extend to the roof they must be provided with a glass roof protected with strong wire work. Where wired glass is used the external guard is not insisted upon. Where such a staircase has a roof opening with a skylight the walls forming it must be carried a foot

and a half above the roof level. All pipes for electric wires, vent pipes, gas pipes and steam and hot water pipes must be carried through openings as far as possible from metal framework and inclosed in fireproof material. Elaborate rules regarding the placing of wires so that light and heavy currents of electricity will not come in contact are formulated.

The question of what constitutes fireproof or incombustible materials is always a complicated one, and scarcely any two cities define them alike. However, the tendency is to adopt more rigid rules regarding the composition and making of such materials. In this country the more general use of concrete demands some explicit set of rules to define its mixture and employment in fireproof construction. Likewise there is needed a more definite standard of what constitutes fire brick and fireproof bricks. Even terra cotta varies considerable in composition and burning. Some are burnt in a temperature exceeding 2500 degrees, and others are rarely subjected to a heat of more than 1500 degrees.

In attempting to define fireproof material as specified for the different work in building operations, the London laws have been modified to suit local conditions, and at the same time kept strict enough to make good work possible. In dealing with concrete and reinforced concrete, the London laws demand that the cement must be equal to the British standard of Portland cement. Concrete must be composed of 6 hundredweight of cement to each cubic yard of composition. The composition must be fine enough to pass through a three-quarter inch mesh. If the building is made of reinforced concrete the metal rods or bars must be imbedded in the mixture not less than 12 inches apart, connecting or overlapping at least six inches at all abutments and intersections. If flues are built of reinforced concrete they must be at least four inches thick and lined throughout with fire clay tubes not less than one and a half inches thick. Floors constructed of reinforced concrete must be at least five inches thick, supported on beams or columns, and without any wood imbedded in them. Roofs are similarly built, except that the thickness may be made only three inches. Staircases and elevator hoists may be inclosed with concrete walls, but the thickness must be at least six inches.

There is no question that London's building laws achieve for that city an excellent, uniform system of fireproof construction, and these laws are enforced more rigidly than in almost any other city in the world. A builder or architect studying the conditions there may be impressed by the apparently slow work of construction, but it is also evident that care and thoroughness are exercised throughout. Possibly we might easily sacrifice some speed of building for absolutely perfect work, but then speed of construction is not incompatible with perfect fireproof work.



The AMERICAN CARPENTER AND BUILDER we think is the best. J. C. CORBETT & Co., Chatsworth, Ill.

# Correspondence



## Getting Cambre in Howe Truss

To the Editor:

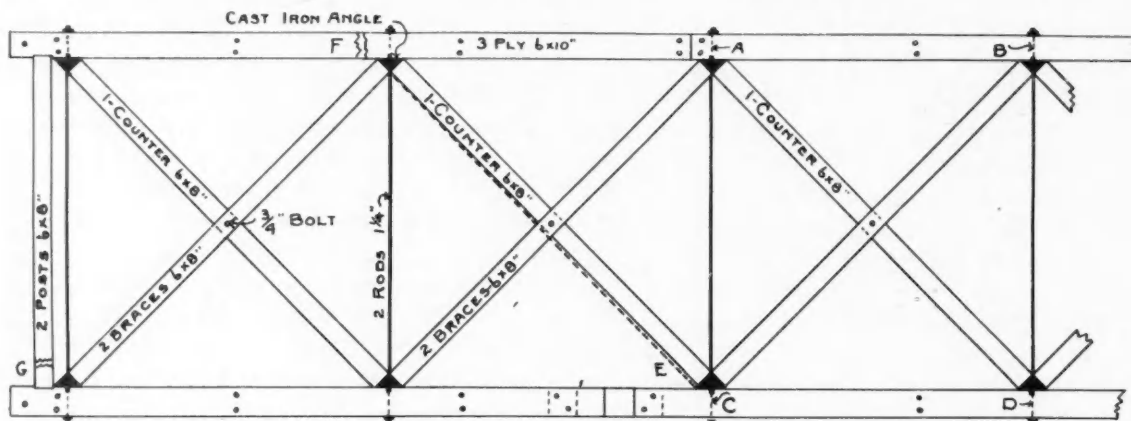
Avalon, Pa.

Please give me the proper way to get cambre in a Howe truss as I have to carry a large church roof without any posts; and what weight will it carry? I would like to cambre it three inches, or have you a truss to carry more than this?

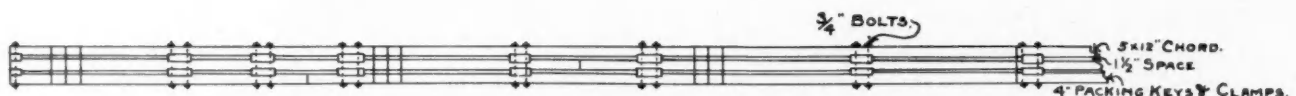
D. H. McWILLIAMS.

Answer: Bottom chord should be built up three ply of 5 by 12 and clamped at all joints. Clamp to be placed between panel joints, otherwise hole for rods will cut them in two; clamps and key laps or gains should fit close. For a span of 72 feet a cambre of two inches would be about right, as the

with chalk on a floor, draw the angle block and move the brace half the desired cambre on the lower chord as shown by dotted line.) The angle blocks should have the holes for rods so that rod will pass between the timbers in chord so as not to cut same. In heavy trusses they should have a pair of tubes extending through between the chord timbers and a gusset iron on below and above, but a gain 1 by 1 inches in the center of angle block and the iron extending down into it will prevent it from shifting. Braces will lead toward center of truss on top and counters will lead away from center of same. As the top chord is a member in compression it is not necessary to clamp it, but it should be built with key



SIDE ELEVATION.



PLAN OF BOTTOM CHORD.

deflection in a well-built Howe truss should not be more than one in six hundred. However, the old-fashioned way of framing a Howe truss that has stood the test for years is to divide the length of the span by six for the height of truss (although it can be made lower) and divide the amount of cambre desired by the number of angle blocks in truss which will be the difference in the distance from A. B. to C. D.; so that if you wanted three inches cambre in your truss you would divide that by the six angle blocks, which will place the angle blocks one-half inch farther apart in the top chord than in the bottom. This will be enough to take care of the compression in top chord and give you the cambre. As the cast iron angle block is a 45-degree angle it would require the braces and counters to be cut square if bottom of truss was on a straight line, but as you will have three-inch cambre in truss, divide this by two which will give you one and one-half inches to cut out of square in the length of brace. See E. (The old custom was to strike out the chord and braces

and same as lower chord as the top chord is not in compression from F. to G. That part may be left out together with the last counter on the end if it interferes with your roof in any way, for bridge trusses make the lateral braces come half way between panel points. Have tension on all rods as near equal as possible.

T. P. ELLIS.

## Repainting Frame Building

To the Editor:

Toledo, Ohio.

I would be pleased if you will give me some information in regard to paint. I have several large frame buildings to paint this summer which were painted about four years ago and I wish to use the best material on them and would like to know what kind of a mixture and how the same should be mixed to give me the best paint. The colors desired are white and steel gray.

JOHN F. SYFANG.

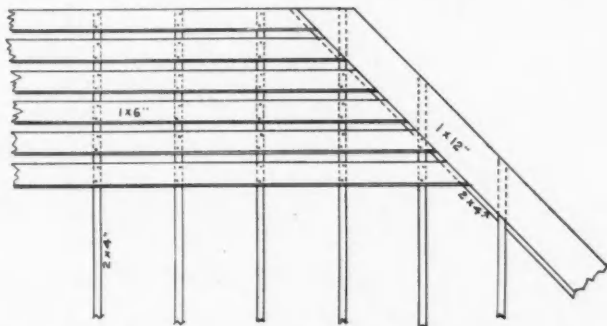
Answer: In re-painting old buildings that have been painted four years previously the surface must first be ex-

amined to determine its condition. If the old paint has chalked or powdered off no further preparation is required than a dusting off before painting. On the other hand, if the old paint is peeling or scaling from the surface all the loose paint must be scraped off with steel scrapers, and if this is not sufficient sandpaper or steel wool must be used in addition. For the white paint pure white lead, thinned with pure raw linseed oil, pure turpentine and pure liquid driers should be used. The first coat should be mixed somewhat thinner than the second coat, especially if the old paint is powdering off, as the old paint will suck some of the oil out of the newly applied coat.

The instructions given in the Painting Department in the June issue fully describes the method of mixing the white lead. For the second coat only about one-half the quantity of turpentine is required. If the buildings were formerly painted some other color than white it is better to tint the first coat with a little lamp black, just enough to make a very light lead color. The second coat will show out whiter over this than it will over a pure white priming coat. Steel gray is made by tinting white lead with a mixture of lemon chrome and medium chrome yellow and lamp black. This tinting is done after the white lead has been broken up and before all the thinners have been added. EDWARD HURST BROWN.

**Sheathing a Hip**

To the Editor: Hattiesburg, Miss.  
I submit a rough sketch showing my plan for sheathing a hip. After all of the rafters are spiked into place, I parallel the hip on each side with 1 by 12 inch boards. Then cut in



pieces of 2 by 4 inches between the rafters at the lower edge of the 1 by 12 inches to catch the ends of the sheathing boards. By this method I get a solid and firm bearing for the hip shingles. The same plan is good for the valley tin. T. J. PITTMAN.

**Questions by a Member**

To the Editor: Rathdrum, Idaho.  
I would like to have the opinion of others on a few questions. In the case of trim for a door where plinth and head blocks are used, should the blocks be of the same width as casing or wider? Also, should locks on doors be placed a certain height or be governed by the panels or make-up of the door? GEO. W. AUSTINE.

**Framing Rafters for a Dome**

To the Editor: Elreno, Okla.  
Last season I was called on to frame the rafters for a dome on a public building. The plans called for an octagon dome 24 feet in diameter at the base, with an octagon deck 7 feet 3 inches in diameter, the main rafters having a rise of 13 feet 4 inches curved to a radius of 16 feet 3 inches. How should I proceed to determine the radius of the hip, so that

it would hold its true octagon angle at the corners? Also how obtain the seat and plumb cuts? H. E. MCCREIGHT.

Answer: Fig. 1 shows a plan of the dome according to

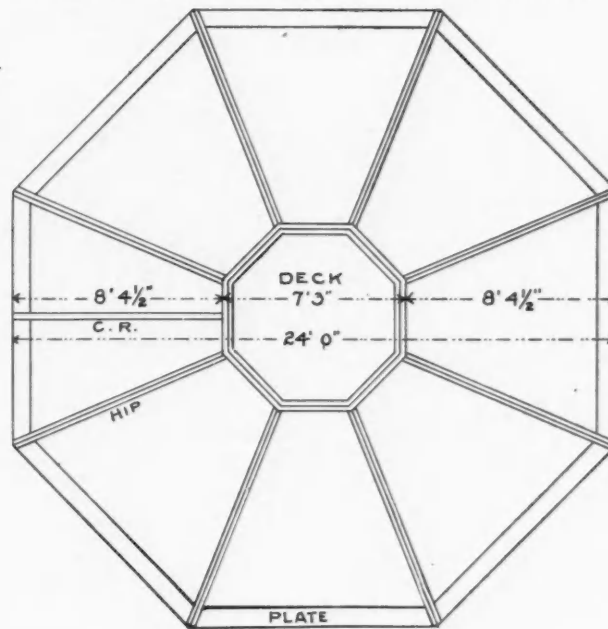


FIG. 1.

the dimensions given, while Fig. 2 shows how to proceed to lay out the curve for the common rafter, which should be made full size. From this it will be seen that the method is the same as for finding a segment arch for an opening equal to A, B. This cannot be done for the curve of the corres-

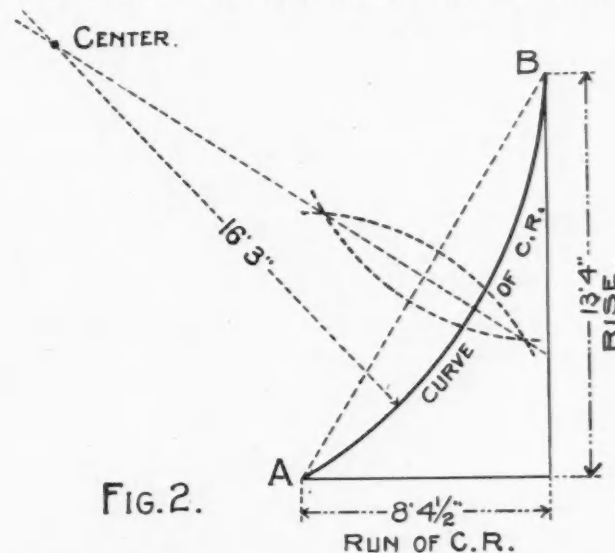


FIG. 2.

ponding hip, because it is not a part of a true circle, as it partakes more of the oval shape and consequently has no fixed center from which to strike the curve. Therefore, to arrive at the correct curve, it should be worked out geometrically by some other method, one of which we publish in connection with our regular article at Fig. 144, of this month's magazine. As for the seat and plumb cuts, they should be reckoned from the line A-B (Fig. 2), applying the square to the same as if it were the gauge line of the rafter. A. W. WOODS.

**Making a Tool Chest**

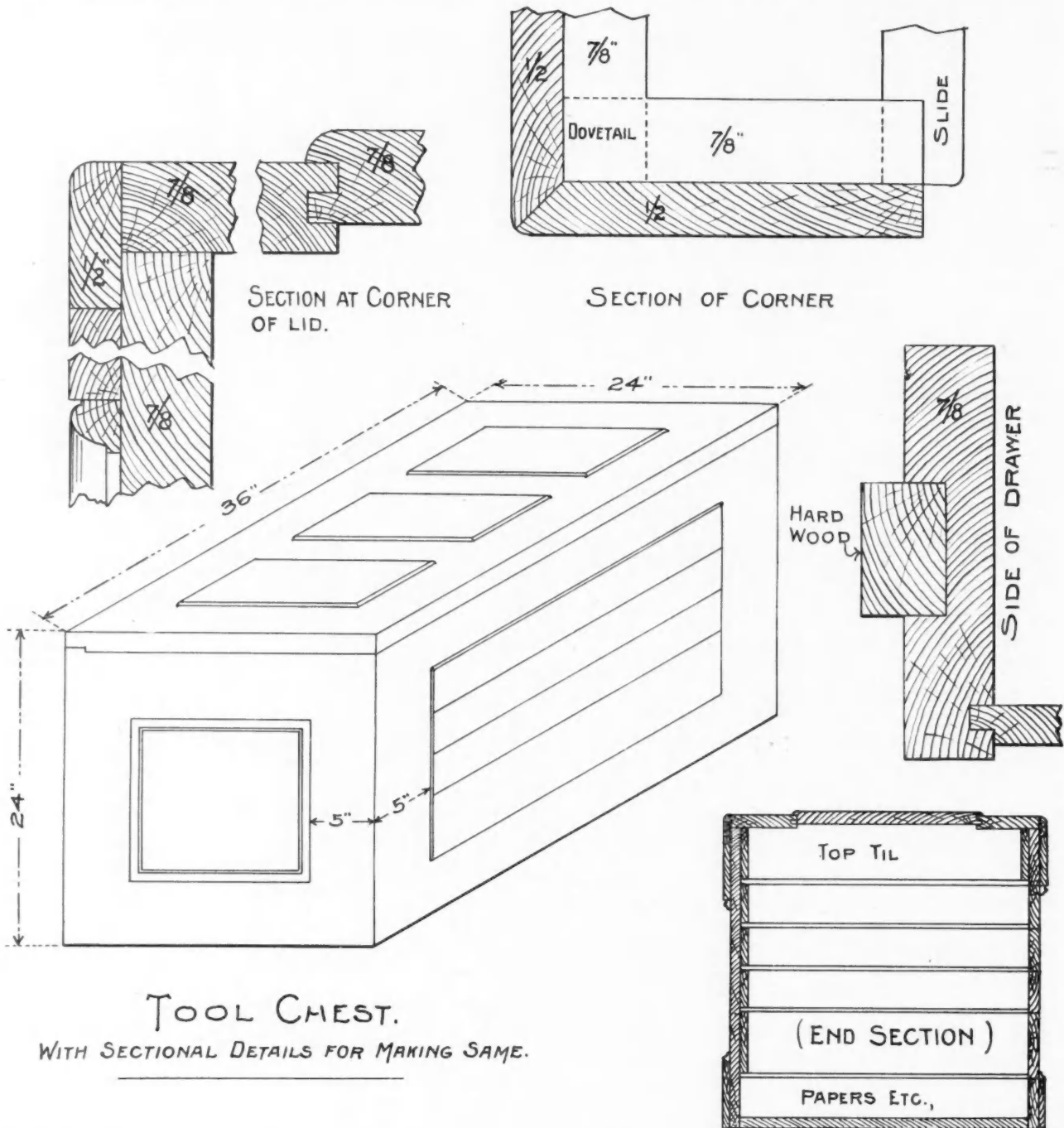
To the Editor: Warren, Ind.  
I write you in regard to a convenient tool chest, one that

is so arranged as to get any tool out without moving any of the other tools. I want to make one on that plan. The tool chest proposition is one we are all up against and think it is a valuable subject.

E. M. SHIDELER.

Answer: In answer to Mr. Shideler, thinking it might be of general interest, I enclose an illustration of a tool chest,

pocket at each end, which can also be utilized for special tools. These pockets could be done away with by making drawers the full length of chest, but it makes a much stronger chest as shown and we think it also looks better. Each drawer should have a lock as well as the lid, and also flush pulls. For extra security during shipment, there should be a lock-



**TOOL CHEST.**

WITH SECTIONAL DETAILS FOR MAKING SAME.

which I think comes as near meeting his requirements as anything I have seen in that line. By referring to the drawings, it will be seen that the top till is stationary and the lid covering it hinged the same as the ordinary chest. The body of the chest is simply a nest of drawers, which each mechanic would naturally make of depths to suit his tools, and by partitioning them off he can make special places for each of his tools, so that no tool need be removed, except the one he wants; as soon as he becomes acquainted with his chest, he can go in the dark and get any tool he wants (providing, of course, that his order bump is properly developed). By making the top till the same length of the drawers, there is a

ing device on the inside at the front end of the above mentioned pockets, which with a straight twist of the wrist would lock all the drawers at once. This can be done in a number of ways, which will readily suggest themselves to the mechanical mind.



J. G. CORDNER.

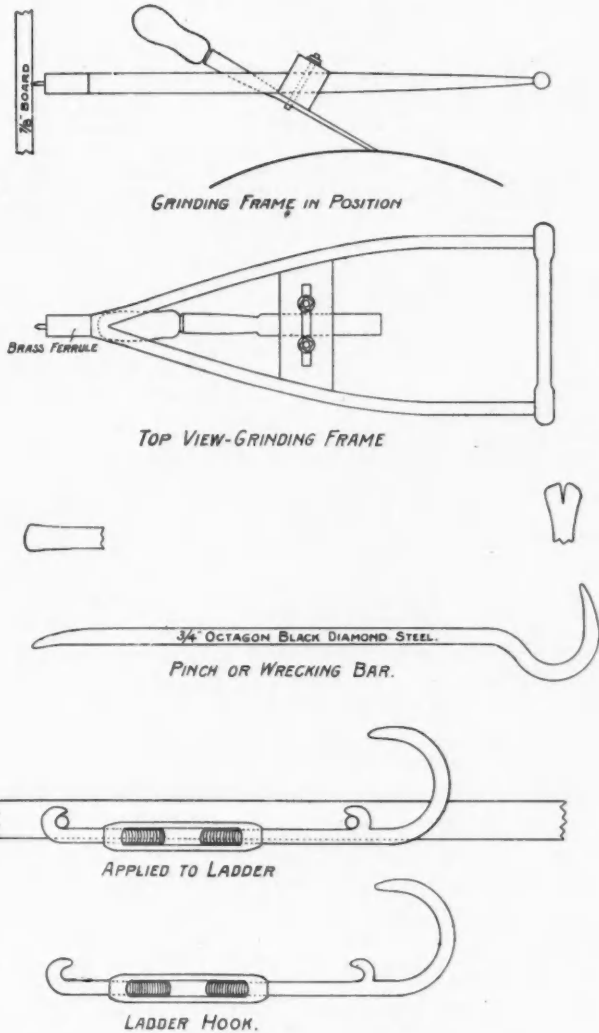
**Handy Tools for the Trade**

To the Editor:

McHenry, Ill.

Have sent you under separate cover full-size drawing of ladder hook, pinch or wrecking bar, and grinding frame. These three tools are our own get-up and have used them for years.

The ladder hook can be put on any ladder and on any two rungs, making a handy roof ladder where there are valleys, etc. The pinch or wrecking bar is a good tool for pulling



nails and is handy to work on any job. Every contractor should have one.

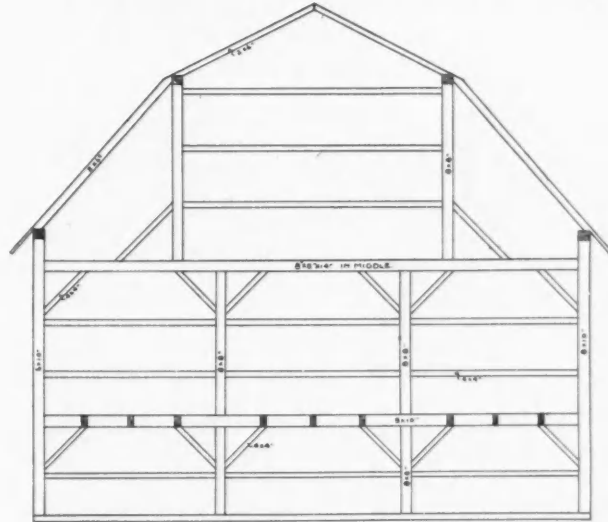
The grinding frame works on the same principle as Mr. Courtney's of Excelsior Springs, Mo. See March number.  
M. WEBER & SON.

**Plan of a Barn**

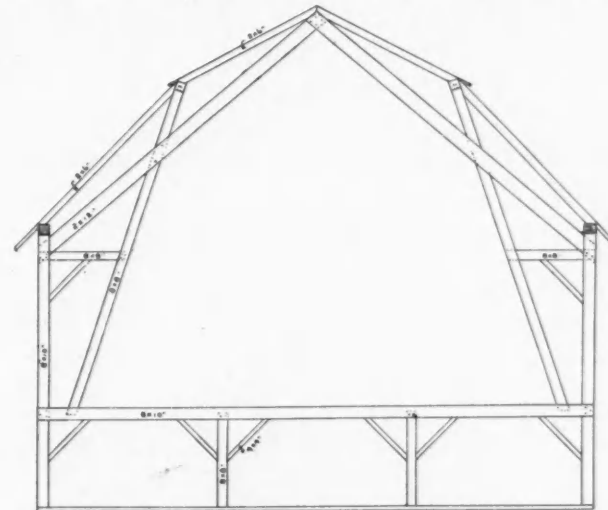
To the Editor:

La Grange, Ohio.

I am sending you a plan of a barn which I have built and I think it is stronger than any I have ever seen in any magazine. All main posts and main plates 8 by 10. All other



timber 8 by 8. All girts and braces 4 by 4. It can have sills or set on wall. This barn is 40 by 80, 20-foot post to be en-



tirely mortised frame. It was drawn on 1/4-inch scale. This makes a good frame for a bank barn. J. H. Hastings.

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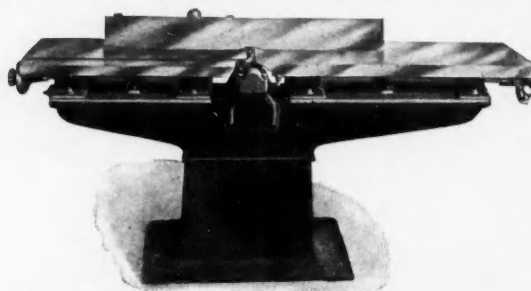
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# Practical Trade Appliances

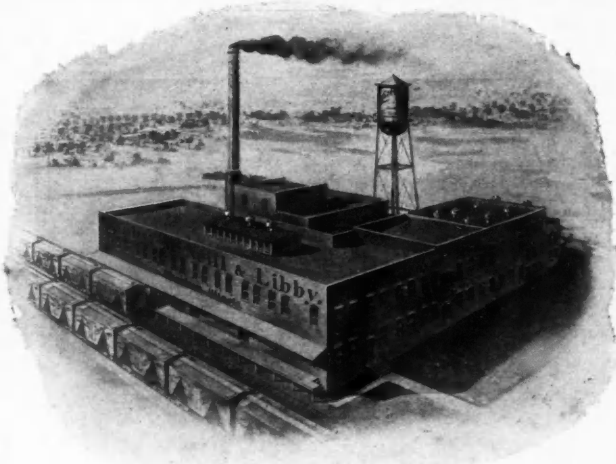
## A New Hand Jointer

The accompanying cut represents the new hand jointer, which is built by the Sidney Tool Company, of Sidney, Ohio, especially for contractors and builders. The designer of this machine has been acquainted with the contracting and building business for a number of years and has had a great deal of personal experience, therefore he has been able to design a tool to meet the requirements of this trade. This machine is also adapted for large planing mills and cabinet makers' shops. It has special features for joining, rabbitting and similar work. The fencing gauge is placed on the short top and can be tilted to an angle of 45 degrees. It requires very little time to adjust it, as this is done by hand screws on back of guide. It can also be locked at any desired bevel. This machine is built in three sizes: Eight inches, 12 inches and 16 inches. The 8 inch has a table over all 6 feet 2 inches; the 12-inch and 16-inch machines have tables over all of 7 feet 4 inches. All of the tables are 4 inches wider than the knives, thus enabling the operator to use the fence so he can

get full cutting width without removing it. The tables are adjusted at either corner and are easily kept in alignment. The hand wheels for raising and lowering the top are at the ends of the machine, being out of the way of the operator, at the same time convenient for use. These are also fitted



with extra locking wheels so the table can be locked in any position and at the same time avoid jarring down with the motion of the machine. The short top has a rabbitt in the front



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Plum. & Heat. Con.	Stationary Eng.	Ad Writer
Supt. of Plumbing	Electrical Engineer	Window Trimmer
For. Steam Fitter	Electrician	Illustrator
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Street and No. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

side and both tops can be drawn back away from the cylinder to any distance without having them tipped off the frame. This is accomplished by a mitre gibb for the operator to change the knives on cylinder. There are convenient stops on slides to prevent the tables from being shoved into the knives. These machines are all guaranteed to be first-class in every way. The manufacturers call attention to the advertisement on page 721 and will take pleasure in forwarding one of their catalogues illustrating and describing their entire line of wood working machinery. In designing this line they paid special attention to building absolutely the best machines that could be built at a reasonable figure, as this is the kind of tools that the contracting and building trade demands. Address Sidney Tool Company, Sidney, Ohio.

## Warmth With a Furman

"It was not like this in the olden days"—  
It was not like this at all,  
Then the stoves did just what they shouldn't do  
In the Winter, Spring and Fall.

But now with a FURMAN FURNACE  
To heat your home, you know,  
That annual stove-pipe session  
Is a thing of the long ago.

Probably no field of human endeavor has had closer study or more experiment than that of heating. Like every other problem having to do with the betterment of living conditions,



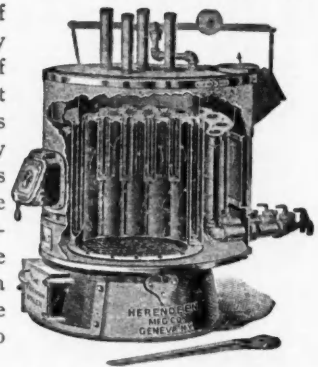
The Semi-Annual Stove-Pipe Session

there have been many fads and failures while successes have been few. Most of the failures can be charged up to a public too eager to secure "something for nothing" and manufacturers that are ever ready to supply that demand.

The road from the open fireplace of "ye olden days" to the modern hot-water or steam heated home of today, covers generations of experience and the expenditure of countless millions of dollars to prove to the world that for all three essentials, viz., health, comfort and economy, hot-water or steam are the only safe and sane systems of home heating worthy of consideration.

It is to the owner, contractor, and all those having to do with the demand for better things that the message of the manufacturers of Furman boilers is intended. Our story is honest and backed by forty years of successful manufacture.

It proves beyond question of doubt, that the opinion held by a considerable proportion of the public to the effect that hot-water and steam heating is a luxury to be enjoyed only by the comparatively rich, is wrong. We can demonstrate that a Furman Steam or Hot-Water Boiler is one of the most profitable investments a thrifty man can make. We only ask the opportunity to show the reasons why.



Interior View Furman Portable Water-Tube Hot-Water Boiler

Furman Portable Water-Tube Boilers have been manu-

# ANDREWS HOT-WATER HEATING



## BANKS AND STORES APARTMENT HOUSES AND RESIDENCES

BUILT OF CONCRETE, BRICK OR WOOD  
AND WARMED BY THE CELEBRATED

## ANDREWS SYSTEM OF HOT WATER HEATING

A house well planned and well built with a heating plant well planned and well built will  
**CUT YOUR FUEL BILL IN 2**

The man wise enough to build right may be depended upon to judge the merits of a heating plant. The best judges are those who have experience—as, for instance, a boiler inspector for one of the nation's largest boiler insurance companies. One of these bought the Andrews System and he writes:

**THE BOILER** is the stomach of the heating plant; if it does not get the heat out of the fuel and transmit it into the water circulation, you are burning money to make smoke go up the chimney. Examine the construction of the Andrews Steel Boiler—locomotive type. See how it gets the maximum contact with the flame and gases, how easily all the flues can be kept clean and free from soot and note how thin are the steel plates through which the heat passes to the water.

**PRICES THAT TELL.** Investigate them, it will pay you. We have built up a national business in selling heating plants at prices that the local dealer cannot meet. We do it by factory methods of production in every department. We make the boilers in hundred lots and can thus cut the regular price in two. Our pipe is all cut to fit by machinery at our factory, so that we ship the plant complete ready to erect. Any handy man can do it. We furnish complete working plans and instructions for erection. Thousands of purchasers put up their own.

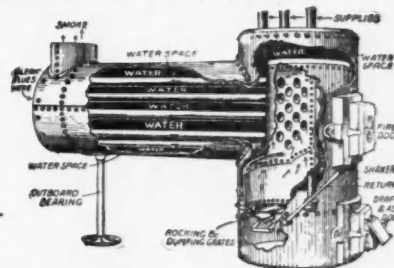
**WE DO IT RIGHT IN 44 STATES, CANADA AND ALASKA.**

**ESTIMATES FREE.** Send us your plans or rough sketch with dimensions and let us make an estimate for you. This does not commit you, but it gives you information that will be worth money to you.

**SEND FOR THIS 72-PAGE BOOK.** We will send this valuable book to any one who will give us the names of two other persons likely to be interested in the purchase of a heating plant. Write for it today.

### LARGE CONTRACT DEPARTMENT

Our large contract department is independent of our cut-to-fit ready to erect heating plant department. But each gives advantages to the other. Parties having large heating contracts to let are invited to submit propositions upon which we can submit bids.



**THE ANDREWS STEEL LOCOMOTIVE BOILER.**

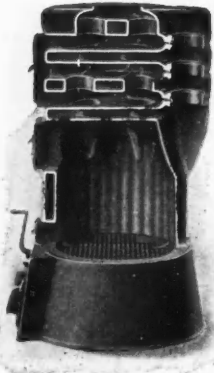


658 Heating Bldg.  
MINNEAPOLIS

# ANDREWS HEATING CO.

600 LaSalle Bldg.  
CHICAGO

factured by the Herendeen Manufacturing Co., of Geneva, N. Y., since 1886, have gained a lasting reputation and over 25,000 are now in use. They are made of the best cast iron—the most durable material to avoid *deterioration* from rust when not in use during the Summer. Their construction is such that they cannot be affected by variations in temperature and consequent expansion and contraction. They will last a life time. They are made for either steam or hot-water, as



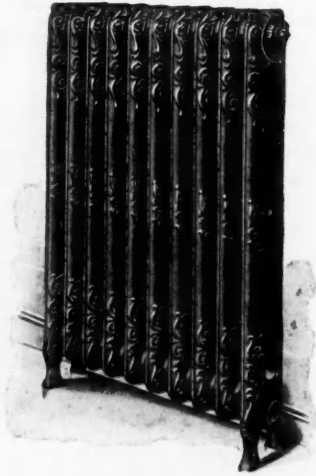
Furman Round Sectional Boiler  
Interior View

magazine or surface burners can be furnished for burning either hard or soft coal, coke, wood or gas. From eighty different styles and sizes, embracing capacities as high as 1,200 square feet of steam radiation, and 2,000 square feet if hot-water radiation, a selection suitable for each particular installation can be easily made.

**STRONG FURMAN POINTS.**—All water connections are made with our celebrated *Iron to Iron* screw joints, which never leak. Circular base, roomy ash-pit, holding the Furman improved finger bar rocking and shaking grate. Deep fire pot formed by circle of elliptical water tubes so constructed as to divide tube into two parts, thus *separating the water* into two thin columns. Rear return tubes. Trifle jackets preventing radiation and loss of heat in cellar. Exclusive *lateral*, or side draft, preventing waste or poor combustion and providing greatest fire travel.

**FURMAN ROUND SECTIONAL BOILERS.**—This boiler is made of best cast iron. It has few parts, which are assembled readily and compactly. The operation of these boilers is simple and management easy. They do not require an experi-

enced operator, as the house-owner or servant can easily take care of them. They are safe, durable, economical, noiseless and free from dust, gas or smoke. They are made in five sizes of grate, with capacities from 300 to 1,200 square feet of steam radiation and from 500 to 2,000 square feet of hot-water radiation. This boiler is particularly designed for the successful burning of coke, which is light in weight and bulky, and to give satisfaction the fire box of the boiler must be *roomy and deep*, so as to hold a good large charge at one firing. Crushed coal is an *ideal fuel* as it is



One of Many Styles of Radiators

*nearly pure carbon.* There is a lot you should know about the economy, cleanliness, desirability and use of coal or fuel. The Herendeen Manufacturing Company, No. 6 Monroe street, Geneva, N. Y., will be glad to send you valuable information about coke and suggestions as to hot-water and steam heating. If you contemplate the purchase of a furnace, or are interested in the heating of a home, church, store or school, write them. It will be to your advantage.

### Elaborate New Catalogues

The new iron fence and gate, lawn and drinking fountains, iron reservoir vase and stable fitting catalogues to be issued by the Stewart Iron Works Company, of Cincinnati,

# Amatite

## ROOFING

Needs

No

Paint

Amatite is a ready roofing of superior durability with a mineral surface requiring no paint or coating.

There is the whole story of Amatite in a nutshell.

Its low price, combined with the fact that it requires no paint, makes Amatite the *most economical ready roofing on the market.* Our roofings require constant attention and care. Failure to paint regularly means a leaky roof. If you count the cost of this periodical painting and add it to the first

cost of these roofings, the total makes Amatite seem cheap indeed.

The first cost of Amatite is the only cost. The first cost of the "paint-me-quick-or-I'll-leak" roofing is only the beginning.

There is nothing flimsy about Amatite. It is made to last. There is twice as much material in it as there is in most roofings—the weight of a roll tells that. It is easy to lay, requiring no skilled labor or special tools. Investigate the facts. They are in our new, free booklet. We send it free with sample of Amatite. Write at once.

## Barrett Manufacturing Co.

NEW YORK CHICAGO  
MINNEAPOLIS

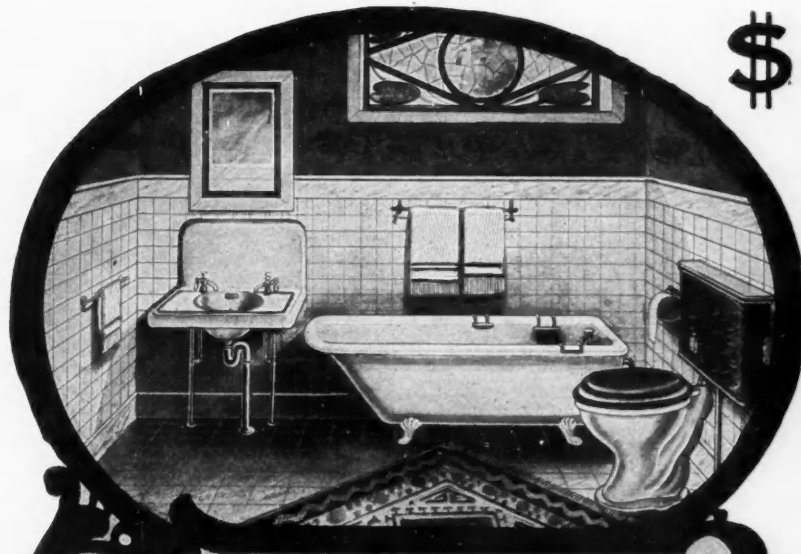
CLEVELAND  
PHILADELPHIA

ALLEGHENY  
NEW ORLEANS

KANSAS CITY  
CINCINNATI

ST. LOUIS  
LONDON, ENG.

BOSTON



**\$ 50.<sup>00</sup>**  
**FOR THIS**  
**COMPLETE**  
**BATH**  
**ROOM**  
**OUTFIT**

**Clean--Sanitary--Odorless--Newest Designs--**  
**Best Appliances--Finest Nickel Trimmings**

Here is an example of our ability to save you 40 to 60 per cent in the purchase of high grade plumbing fixtures. We guarantee that every article used in this outfit is absolutely brand new and first class in every particular.

**THE BATH TUB** is spotless white porcelain enameled, with heavy roll rim, and of very graceful shape.

**THE LAVATORY** is beautiful, spotless white porcelain enameled, with full set of nickel plated trimmings

**THE CLOSET** is the latest and most sanitary, vitreous syphon jet; polished solid oak seat and tank.

**THE ACCESSORIES** include bath seat, nickel plated soap cup, two towel bars, and toilet paper holder.

**NO JOINTS TO WIPE**, all threaded pipe connections.

This is our No. 3½ outfit, and our price of \$50.00 absolutely includes all of the plumbing fixtures shown in the illustration, properly crated and packed for shipment.

This is but a sample of the many different styles that we offer for sale. Fifteen different combinations ranging in price from, \$25.00 to \$200.00. Our prices will save you one-half what your plumber would ordinarily charge you.

We furnish a written binding guarantee with every outfit that we sell. If any material is not fully up to our representations or your expectations, we will exchange at our freight expense or refund your money.

**OUR BOOK ON PLUMBING MATERIAL** contains charts, drawings and diagrams; shows how any ordinary mechanic can install plumbing fixtures without wiping joint, also tells how to secure perfect sanitation. We send it free if you mention where you have seen this advertisement.

**HEATING PLANTS FROM \$100.00 UP.**

We save you from 30 to 50 per cent.  
 Send us a sketch or diagram of your house for our estimate.

Steam and hot water heating plants of modern construction furnished you complete, ready to install. Our efficient Engineering Department furnishes you correct heating ideas. Any handy man can install our plants, either in new or old buildings. Our complete, yet simple instructions, sent with each plan.

**Write for our Book "COLD WEATHER COMFORT"**

A useful heating guide. Gives full and necessary information on the care of your plant. Contains one thousand heating hints. Mailed free to any one mentioning this publication.

Our 500-page catalogue, No. F. A. 742 on merchandise for the Home, the Field and the work shop, is mailed free.

We buy our goods at Sheriffs' and Receivers' sales.

**CHICAGO HOUSE WRECKING COMPANY**  
 35th and Iron Streets, Chicago.



O., are to be models in every way. Advance proofs of these "Decorative Catalogues," as they are called, show the most complete line of iron fence and lawn furniture, for both public and private use, that has ever been catalogued. The typographical work is good, and the general effect is pleasing. This literature should be the means of securing a great deal of new business for the "World's Greatest Makers of Iron Fence and Lawn Furniture."

### "Holdfast" Casement Sash Adjuster

Casement windows have been rapidly increasing in popularity in the United States during the past few years for several reasons. Their outside appearance is very attractive, there is no ugly meeting rail to spoil the views from within, they are warmer and tighter than ordinary sash when properly made and are wonderful ventilators in warm weather, they give a full instead of a half window opening and the sash when opened act as vanes to throw the air inward.

For many years, however, architects and owners have had to contend with one serious difficulty peculiar to this country and which does not exist in England where casements are the regulation window and where, owing to the absence or scarcity of flies and mosquitoes, window screens are very rarely used.

With us, however, insect screens are an almost universal necessity and with casements which swing out (the only proper way) and with the screens on the inside, it was necessary to open screens to get at the adjuster whenever the sash had to be opened, closed or adjusted in position.

It is rather surprising that American originality did not long ago produce a practical adjuster which would do away with this serious difficulty in the use of casement windows. Less than two years ago, however, a well-known architect who had grown tired of arguing with his clients about the difficulties involved with the use of casements, in connection

with the screens, succeeded in solving this problem and the Holdfast Adjuster illustrated herewith is the result. Its introduction will doubtless increase the use and popularity of casement windows.

This device, as well as the Hookfast Casement Sash Fastener, is made and sold through the retail hardware trade by the Casement Hardware Company, 154 Washington street, Chicago.

Its strong points may be summed up as follows: It does not interfere with screens or storm sash; no other lock and adjuster overcomes this difficulty; locks firmly at any desired angle or closed; holds sash rigid in severest storm; neat in appearance—does not mar the finest interior; easy to operate—a child can open or close and lock the window with one hand; even in case of extremely high wind with sash open as far as possible it is not difficult to close window; opens to nearly 90 degrees; in short, an ideal casement-sash lock and adjuster for convenience, ease of operation, durability and simplicity of construction. All bearings are machine made and accurately fitted and all exposed parts are solid brass.

### "Roof Guaranty"

Under this title appears an article in the June issue of the Cortright Metal Shingle Advocate, the substance of which is the emphasizing of a letter received from an architect, Mr. D. C. Hughes, Buckhannon, W. Va. This letter is worth reading as testimony to the wearing qualities of the Cortright Metal Shingle, so we re-print it herewith:

Buckhannon, W. Va., April 5th, 1907.

Gentlemen: I have shipped today by express three shingles taken from the house of F. C. Piper, this city, which have been in use for almost 19 years. These shingles have not been painted for seven or eight years. The old shingles have been nailed on roof again, after remodeling house, and look as

## The Only Practical Floor Scraper



It Looks like a floor scraper, don't it?

It is stronger in construction, lighter in weight and is guaranteed to do more and better work than any other machine of the kind on the market.

The difference between the Fox Floor Scraper and other floor scrapers is the difference between a practical and impractical machine.

## What Are These Men Doing?



Come to think of it, isn't it foolish to break your back and waste your money.

Buy a Fox Floor Scraper. It will pay for itself in a couple of days' work and last a life time.

**FOX MFG. CO.**  
187 Second St Milwaukee, Wis.



# The KEYSTONE OF SUCCESS

No  
Advance  
Payment

**COUPON**  
Cut on Dotted Line.

**American School of Correspondence**  
CHICAGO, ILL.

Please send set Cyclopaedia Architecture, Carpentry and Building for week's free examination. I will send \$2 within a week and \$2 a month until \$19.80 is paid; otherwise I will notify you to send for the books.

Name.....  
Address.....  
Am. Carp. and Bu'ld., 8-'07.

Free  
For  
Examination

In order to advertise the superior methods of instruction of the American School of Correspondence, 1,000 sets of Architecture, Carpentry and Building will be sold at one-third regular price, \$19.80 instead of \$60. This work is compiled from representative instruction papers of the American School of Correspondence. The method adopted in the preparation of the work is that which the School has developed and employed so successfully for many years.

We employ no agents, believing our books offer the best method of acquainting the public with the superiority of our regular courses of instruction. We feel sure that every purchaser will later become a student in some regular course. The work itself is a masterpiece of complete, concise, practical, "ready-to-use" information. There is not one iota of theory in its 4,000 pages. Every demonstration is derived from the practical experience of the greatest experts in the building industries of the world.

This is an unusual opportunity for ambitious young men to get a working knowledge of a well-paid trade. If you are a House-Owner or planning to build, this set of books will save you many times its cost. If you are a Carpenter, Contractor, Builder, Architect, Draftsman or Mechanic it offers you an exceptional chance to advance in your present occupation. Unless you are advancing and earning more and more money as you grow older, there must come a time when younger and more ambitious men will crowd you out.

## CYCLOPEDIA OF Architecture, Carpentry and Building

TEN MASSIVE VOLUMES, each nearly one foot high. Handsomely bound in red half morocco. Over 4,000 pages; 3,000 illustrations, full page plates, plans, sections, etc. Printed on highest grade paper; entirely new type—DELUXE books in every particular.

Sent prepaid by express. Pay \$2 within one week, and \$2 a month if satisfactory; otherwise notify us to send for them.

No Orders Accepted at this Price if Post-Marked Later Than Sept. 15, 1907.

American School of Correspondence  
CHICAGO



though they will last many years longer. It gives me pleasure to be able to make such a favorable report concerning your roofing.

Yours truly,

D. C. HUGHES, Architect.

### The "Front Rank" in a New Home

We are pleased to present to our readers in this issue a view of the new large factory and offices of The Haynes-Langenberg Manufacturing Company, manufacturers of the famous Front Rank Steel Furnaces, located at 4057 Forest Park boulevard, St. Louis, Mo.

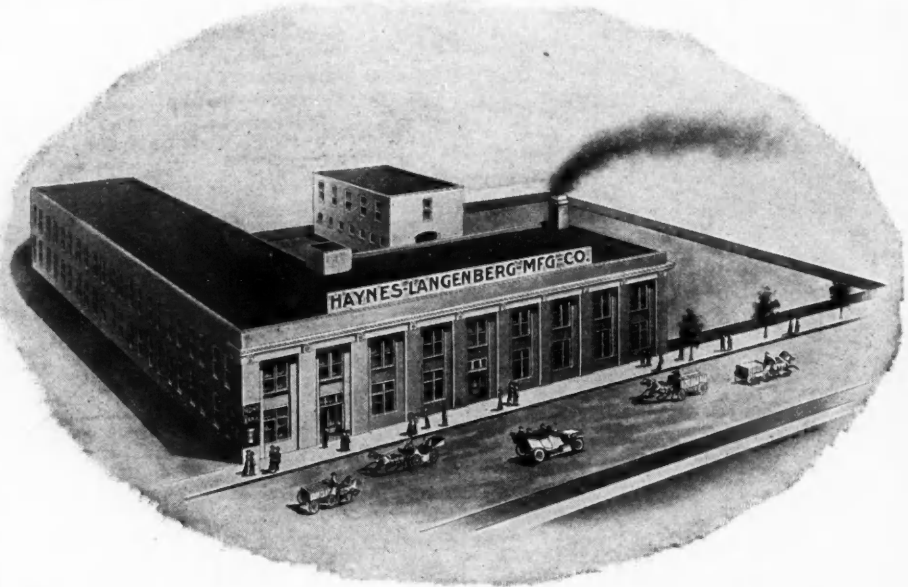
Established in 1888—almost twenty years ago—this enterprising concern has by close attention and study of heating appliances, adding such improvements from time to time as this study warranted, produced a furnace the sale of which has grown to such proportions as to necessitate this large new plant, occupying a total of 33,000 square feet and employing nearly 100 people.

That "a prophet is without honor in his own country" has been proved an exception in this case, since in the city of St. Louis alone more than 10,000 Front Rank Steel Furnaces are in use, many of them in residences which are considered among the finest in the United States.

Built on principles that are based on scientific results the

Front Rank Furnace is said to give the greatest amount of heat at the least cost for fuel. There is no gas leakage, no heat waste, no need for repair bills every season and it burns any kind of fuel from the rich man's hard coal to the poor man's soft coal or wood.

Quoting from their catalogue on the subject of Steel vs. Cast Iron Furnaces, they state: "We believe we can say nothing better under this head than quote an unbiased and unquestioned authority on this subject: 'There is a source of



gas leakage which is quite serious, that is, the passage of carbon monoxide through the walls of the fire pot and com-



## Points Worth Remembering—

**Klymax** Boilers are equipped with Automatic Side Draft Dampers, while the long fire travel over self-cleaning surfaces guarantees maximum heat at minimum cost.

**KEWANEE** Radiators are designed along thoroughly modern lines, lending themselves to the architect's scheme of decoration—as if built to order.

### Kellogg-Mackay-Cameron Co.

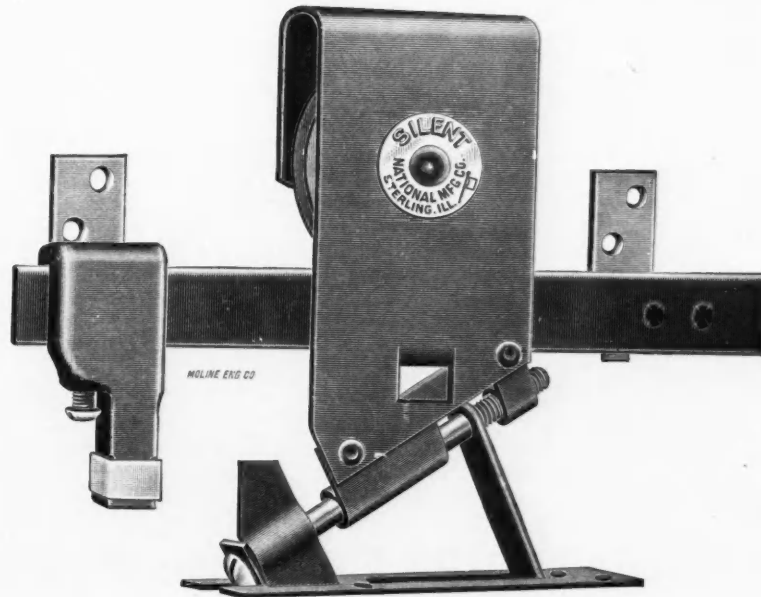
MINNEAPOLIS  
100-106  
2nd St. South

General Offices: Michigan Avenue and 12th St.  
K.-M.-C. Building, CHICAGO  
SEATTLE, 639 New York Block

KANSAS CITY  
N. W. Corner  
2nd and Main Sts.



# They're Easy to Hang



No 28

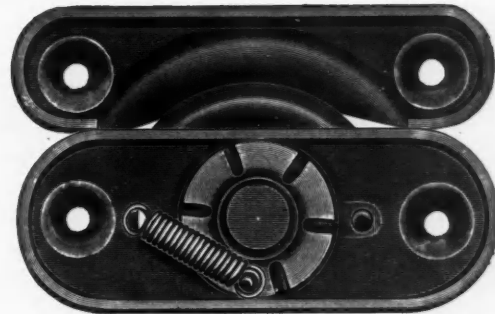
Wherein the **"Silent" Parlor Door Hangers** Excel all Others

The flexible Hinge Joint permits the Hanger to adjust itself to the top of the door whether square or not. No planing necessary. Unlike others the "SILENT" PARLOR DOOR HANGER supports the full weight of the door on the adjusting screw, which fits into a THREADED STEEL SPRING BURR and will not work loose, permitting the door to drop down. Easily adjusted. Wheel has vulcanized fibre tread and is supplied with roller bearings. Each set packed with screws, stops and guides.

## "All-Steel" Sash Lock



No. 600—Cut full size



Bottom view of Sash Lock

Made entirely of cold-rolled steel. Takes extra fine finish. Coil spring made of finest grade steel piano wire. Owing to its simple construction, friction is reduced to the minimum and the rigidity of the lock retained. :: :: :: :: :: :: :: ::

**National Manufacturing Co.**  
Sterling, Illinois

bustion chamber, which are usually made of cast iron. Unfortunately, this metal is permeable to carbon monoxide, which is a very poisonous gas.

"At moderate temperature the amount of carbon monoxide which can filter through is trifling, but at red hot it soaks through the metal quite rapidly. Cast iron, therefore, is not a proper material for construction of any part of an air heater which is liable to become hot. Metal which has undergone the process of rolling, such as steel and wrought iron plates, is impervious to these gases at all temperatures.

"In order to really make gas-tight furnaces it is necessary to abandon the use of cast iron fire pots and combustion chambers and to construct of iron and steel plates all the parts which enclose the fire or the gases of combustion."

Front Rank Furnaces are sold by dealers throughout the country and in such places where an agency is not established an excellent proposition is offered. As the present new factory affords facilities for filling orders promptly and shipments can be made to any part of the United States or foreign countries, for that matter, mail orders are respectfully solicited.

For the benefit of those who have always known of this firm under the title of Front Rank Furnace Company mention is made that the manufacturers recently adopted the new title of Haynes, Langenberg Mfg. Co., manufacturers of Front Rank Steel Furnaces, the members of the firm being Mr. W.


J. Haynes, president; H. F. Langenberg, vice-president, and Geo. F. Langenberg, secretary and treasurer.

To those of our readers interested we suggest sending for the new catalogue just issued by this firm since it not only contains much valuable information about Front Rank Furnaces, but about furnaces in general, their location, care, etc. It is sent free and all they ask is that you kindly mention when writing them the name of your local furnace dealer.

### Special Requirements in Roofing Slate

A roofing slate other than the "stock" grade is being sought after by the architect of today, to comply with his individual ideas and special requirements. To arrive at a proper conclusion, it is desirable to consult with the man who makes the slate so that questions of what can be done at the quarry, cost, etc., may be determined. This information E. J. Johnson Company, of 38 Park Row, New York, are prepared to supply. At the several quarries of this company they are making a specialty of roofing slate "out of the ordinary," and will cheerfully assist the architect and builder to carry out any individual ideas they may have. A few of the buildings near New York to use the Johnson roofing slate are: The Hotel Astor, architects Clinton & Russell; College of the City of New York, architect Geo. B. Post; Richmond Borough Town Hall, Staten Island, architects Carrere & Hastings; The Lorington Apartments, New York City, architect Henri Fouchaux; Church of Annunciation, New York City,

Specify **Petz** Patent Store Front Construction "Made in Detroit"




if you want the strongest, best finished and most practical store front. Glass set from outside without disturbing window trim. Our handsome

**NEW BOOK, "METAL STORE FRONTS"**

mailed on request, explains why the Petz construction is preferred by progressive merchants and endorsed as safest and best by leading Architects and Plate Glass Insurance companies; shows recent examples of attractive store fronts.

Illustrated in "Sweet's Index". Sold at all branches of Pittsburgh Plate Glass Co.

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





## HEAT YOUR HOUSE

With one of our new Smoke Consumers. The air which becomes heated by passing through the slots in the fire bowl, converts the smoke and gases into heat, instead of allowing them to escape up the chimney, and the saving in the coal bills will make your furnace cheaper than the cheapest. No more black smoke. We place a **five year guarantee** on this fire bowl.

By a special device we can now heat the room farthest from the furnace as easily as the room having the shortest pipe.

**Double feed doors** which admit large chunks of coal.

Special grate bars with no loss of fuel in mild weather, as each bar operates independent of the others.

Deep ash pit. Heavy substantial castings.

### GREEN'S NEW COLONIAL FURNACE

costs no more than any other good furnace, but the saving in fuel will make it the cheapest furnace.

Plans and estimates furnished in towns where we are not represented.

We will send you our catalogue showing our complete line for all kinds of fuel if you will send us the name of your local furnace man.

## Green Foundry & Furnace Works

SECOND and VINE STREETS, DES MOINES, IOWA

A Maximum of  
Heat  
Service  
at a  
Minimum  
of Fuel Cost



Built on a  
Foundation that  
Has Placed  
it on the  
Highest Plane of  
Heating  
Appliances

# FRONT RANK STEEL FURNACES

## Contractors AND Builders!

Air travels in straight lines unless it meets an obstruction, and will not go out of its course to pass such obstructions. Most cast furnaces are built in zig-zag shape. The **Front Rank Furnace** is built on straight vertical lines, thus causing the air in its ascent to come in direct contact with the entire surface.

**Front Rank Furnaces** have no direct draft to warp out of place and let heat escape up the chimney. The products of combustion in **Front Rank Furnaces** must pass through the two radiators and the dust-box before making their exit into the chimney.

The **Front Rank Drum or Fire Chamber** is made of solid sheet of heavy armor plate with but a single seam, closely riveted like a boiler, and is absolutely gas-tight. Heavy cast flanges are placed around the openings where the smoke passes from the drum into the radiators to protect the steel.

The fire-pot is lined with genuine fire-clay tiling, which is more durable than cast fire-pots, besides enduring a heat that causes perfect combustion.

The cost of replacing a set of fire-tile in a steel furnace is less than one-tenth the cost of a cast iron pot, and the time required to install them does not exceed ten minutes.

Triangular Grate Bars which may be turned to either side of the fire, thus permitting the air to pass not only over but exactly through the center of the bars, and thus prevent warping.

Each bar works independently making it easy to remove the ashes around the edges without disturbing the fire in the center.

Will burn **any** kind of fuel successfully. Radiators being three times the capacity of the smoke pipe, prevents choking up even when dirtiest soft coal is used. The increasing price of hard coal makes this an important, economical feature.

You should have our latest catalogue on file. It contains general information about furnaces that you'll appreciate.

Send us a postal today and we'll reply by return mail.

Kindly mention the name of your local furnace dealer.

**20 Years of Furnace Making.**

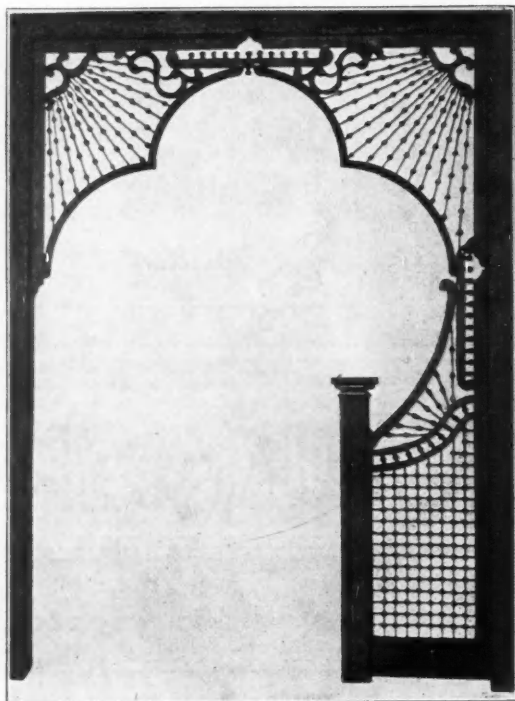
**Over 10,000 in use in our home city, alone.**

**HAYNES AND LANGENBERG MFG. Co.**  
**4057 FOREST PARK BOULEVARD ST. LOUIS, MO.**

architects Lynch & Orchard, and the Colony Club of New York City, architects McKim, Mead & White.

### Handsome Adjustable Grille

The illustration herewith is of an adjustable grille manufactured by the Cleveland Grille & Manufacturing Company, of Cleveland, O. The grille will fit any opening from 5 by 7 feet to 6 feet 6 inches by 8 feet 6 inches and can be



made in any design. In addition this company are manufacturers of plate racks, window and door screens, and parquette floors. Their nicely illustrated catalogue contains a large number of attractive and modern designs of grilles.

### Plumbing Supplies

A house being built to-day—and it matters not in what locality—can be built modern, at least partially so. Mr. John

Hardin, 4547 Cottage Grove avenue, Chicago, Ill., wishes to put into the hands of all builders his 238-page descriptive catalogue of plumbing supplies. He is financially in a position where he can buy in large quantities and being an expert in his line he is enabled to give the best values at lowest prices.

He carries a very complete line of porcelain lined roll in bath tubs, slate and soapstone laundry tubs, white enameled iron lavatories, siphon washdowns, water closets, etc. He has been at his present location for a quarter of a century and as he sells direct to the consumer it would be wise to send for one of his catalogues. Drop him a card mentioning the AMERICAN CARPENTER AND BUILDER and this with other literature will be sent you.

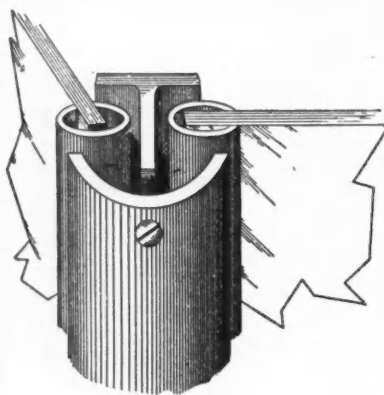
### "Ideal" Machines in the Lead

Our readers will recall an announcement a few months ago, to the effect that the Ideal Concrete Machinery Company, of South Bend, Ind., had closed up what was said to be the largest contract for concrete machinery ever secured, the contract involving \$250,000 worth of "Ideal" block machines. From time to time we have had additional evidences of the progress of this company, and are now advised that within the past six months, they have shipped six full carloads of "Ideal" machinery into one Spanish-American country, and it may also be of interest to note that in the last shipment were included eight "Ideal" Continuous Batch Mixers, fully equipped with power. With these mixers are included two large sill machines, ten 24-inch block machines, six brick machines, and a great many accessories and attachments were sold to one concern.

This record is not remarkable for the "Ideal" company, and we are further advised of large orders now in hand and recently shipped to Auckland, N. Z.; Sydney, Australia; Kobe, Japan; Calcutta, India; Shanghai, China; Buenos Ayres, Argentine Republic; Rio de Janeiro, Brazil; Lima, Peru; Montevideo, Uruguay; Budapest, Hungary; Valparaiso, Chile, and other places.

The "Ideal" people send out the most complete and comprehensive catalogs—regular encyclopedias of information—and their catalogs are fully "coded" and indicate gross and net weight, cubic measurements, and other data particularly helpful to domestic and foreign buyers.

The great popularity of "Ideal" products is evidenced by



## Universal Store Front Construction

### ALL METAL BAR

The first bar made to set glass from the outside! Others follow.

All corners and angles look alike. Bar comes fitted ready to screw to building.

### Our Universal Sash Bar Meets Every Condition of Store Front Construction

ALWAYS A SURE FITTER. Used for Corners, Divisions, Transoms, Mullions, Sills, Jams, Circles, Domes and ANY AND ALL ANGLES. Send us your blue prints for estimates. We deliver the goods.

**VOLTZ MANUFACTURING COMPANY, St. Joseph, Mo.**

1101 and 1103 S. Eighth Street : Two Blocks East of Union Station

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OUR PATENTED

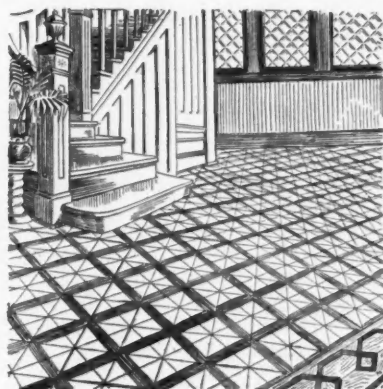
## Parquet Flooring

is considered by architects to be

**The Best**

... ON ...

**The Market**



Handsomely Illustrated

## Catalog Free

From it you may get some valuable pointers.

**Write To-day**

WILL LAST A LIFETIME

## Parquetry Floors, Wood Carpets, Borders

Warping and Twisting Absolutely Avoided by Our Method

We carry also a complete line of Architectural Finish

**Wax Brushes  
Felt Brooms**

### Moore's Reviver

is used to restore the color in parts of a varnished Floor where finish is worn off.



30 years 30  
of successful FloorLaying has taught us how.

**Why Not Profit by Our Experience**  
**It Is Yours for the Asking**

Moore's Floor Wax Is Unequaled for  
**Floors—Furniture—Woodwork**

SEND FOR CATALOG

# E. B. Moore and Company

76 Wabash Avenue, Chicago, Ill.

the following letter taken from hundreds on file of similar tenor:

Minneapolis, Minn., June 13, 1907.

Gentlemen: A year ago last May I purchased a Model "A" 8 by 8 by 16 inch machine, and built a two story house of "Ideal" blocks. Everyone stops to admire my home, saying it is the only concrete block house they ever say that they admired.

I never saw a block made until I set up the "Ideal" machine you sent me. I drew my own plans and made every block and laid them up with no experience whatever in that line.

I have delayed writing you to let you know how well pleased I am with the machine, as I wanted to send you a photograph of what it was possible for a man to do who has had no experience in the building line.

Building my own house has thrown me into the concrete business, and now I can hardly keep up with my orders.

Respectfully,

IDEAL CEMENT STONE & SIDEWALK CO.

The comprehensive scope and character of the "Ideal" line can only be understood by getting their catalog. "Ideal" block machines are made in two types, Model "A" 16 inch, and Model "E" 24 inch. The bases of these machines are interchangeable to receive attachments for making the blocks 6 inches, 8 inches, 10 and 12 inches thick, also 4 inches, 6 inches and 8 inches high, and any length from 1 inch to 24 inches. Other attachments are cleverly worked out to produce all kinds of special blocks, such as octagons, circles, water tables, ornamental belt courses, caps, etc.

In addition to the special line of concrete block machines, these people also have a large trade on their "Ideal Special" sill and lintel machine, for making solid or reinforced blocks, 8 inches high, 18 inches thick and 60 inches long. The ma-

chine is also adjustable for any smaller size, in height, thickness and length, and is a very desirable adjunct to the block business for producing sills, caps, water tables, curbing or any special ornamental designs needed.

The "Ideal" people also produce their Model "A" brick machine, which has jumped into popularity. Fancy faced brick are made as easily and as rapidly as plain bricks, on this clever little machine. The brick attachment may also be had for the Model "A" 16 inch block machine sets, constructed on the interchangeable plan.

In the line of ornamental molds, such as balls, spindles, columns, lawn vases, fancy cap and belt course designs, the "Ideal" people have a most complete variety.

For the past year they have been working on a mixer, designed particularly for the needs of the concrete block manufacturer. The "Ideal" Continuous Batch Mixer is now on the market, and we are advised that before a photograph could be taken of the machine a large number of orders were booked. The mixer is unlike any other on the market, and is fully protected by patent. The materials are mixed dry in a revolving drum of peculiar construction, and by the simple action of throwing in a clutch, the drum is reversed, which automatically and quickly discharges the contents into a lower mixing trough; water is added, and the entire batch is mixed and discharged in a few moments ready for use. While this is being done, the drum is receiving the next batch, hence the name, "Ideal Continuous Batch Mixer." The mixer is symmetrical in appearance, and is substantially built of steel and angle iron. It is operated by a two horse power engine.

Every block maker or man contemplating engaging in the business will do well to send to the Ideal Concrete Machinery Company, of South Bend, Ind., for their Primary Catalogue.

PREVENTS DRAFTS, DUST AND WINDOW RATTLING.  
**IVES' PATENT**  
Window Stop Adjuster.



PATENTED.

The only Stop Adjuster made from one piece of metal with solid ribs and heavy bed that will not cup, turn or bend in tightening the screw. Manufactured only by **The H. B. IVES CO., New Haven, Conn., U. S. A.** (Fifty-page Catalogue Mailed Free.)



## Art Leaded Glass

\*\* Makers of Memorial Figures and plain Decorative Windows, also residence work in L'Art Nouveau styles and beveled plate in metal copper finish. Designs submitted on application. *Grand Prix Louisiana Exposition, Grand Prize*. Correspondence solicited. Established in 1883.

The FLANAGAN & BIEDENWEG COMPANY

57 to 63 Illinois St. CHICAGO, ILL.  
(Near Franklin)  
Telephone North 218.



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**4 Volumes, each nearly one foot high—2000 pages**

Bound in red morocco. Type is large, new, easy-to-read. Fully indexed. Not only is this Cyclopedic a complete, authoritative reference library for the architect superintendent, foreman of construction and master carpenters who wish to "brush up" on their weak points, but it is also a practical home study library for the apprentice. It is entirely free from purely technical descriptive matter so easily misunderstood. Each chapter is complete in itself—every subject is thoroughly analyzed, dissected and discussed by competent authority from every point of view. Each volume contains a series of test questions to emphasize the vital points and bring out more clearly the relative importance of the different subjects discussed.

**GREAT HALF-PRICE SALE**  
Regular Price, \$24. Special Price, \$12.

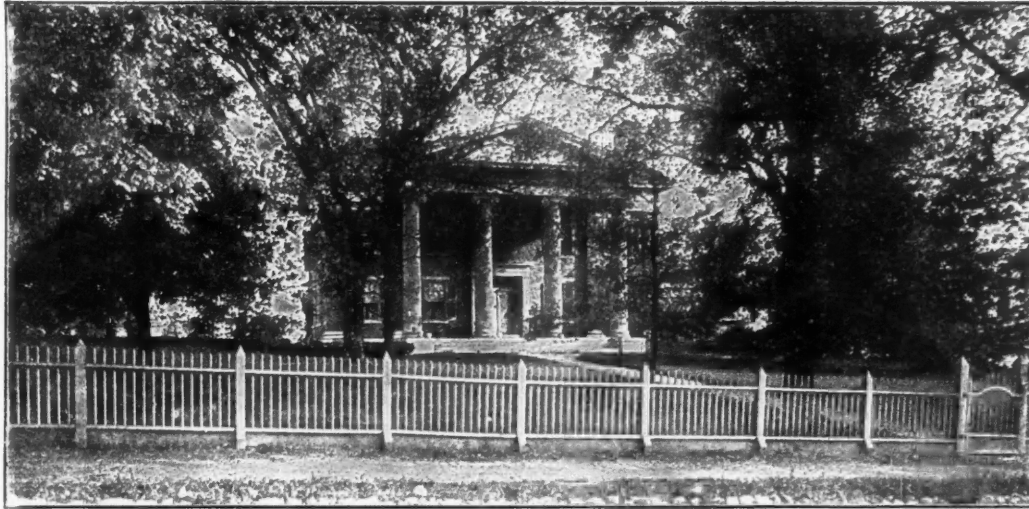
The material in the books was compiled from representative instruction papers of the American School of Correspondence. We wish to acquaint the public with the high grade character of the instruction of our school and for this reason we are willing to make such a great offer. Thousands of sets have been sold—every set absolutely on approval—and yet we have not had even one per cent of the books returned.

The books will be sent FREE, express prepaid, for one week's examination. Pay \$2 cash and \$2 a month for five months if you keep them. We send for them at our expense if they do not meet your needs.

A 200-page handbook describing our correspondence courses sent free on request if you mention American Carpenter and Builder, August, 07.

**AMERICAN SCHOOL OF CORRESPONDENCE**  
CHICAGO

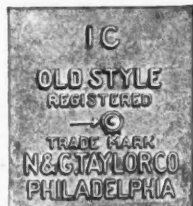
WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



A 40-YEAR RECORD BRINGS ANOTHER ORDER FOR

## "TARGET & ARROW OLD STYLE" TIN

THE RESIDENCE of Miss Jane Bierne of Huntsville, Alabama, is one of the show places of the South.



This trade-mark stamped on each sheet of the genuine original "old style" tin

A portion of the house was covered with our "Target-and-Arrow Old Style" tin forty years ago and because of the remarkable service it has given, "Target-and-Arrow" tin has been selected

to replace the shingles on the main building. That part of the roof which is covered with our tin will not be disturbed, as it is still good for many years to come.

Forty-year records for "Target-and-Arrow Old Style" tin are not uncommon, nor will they be forty years hence, for this brand of tin offers the same durability to-day as it did in the past. Before you put money into a roof you should send for and read our free booklet, "A Guide to Good Roofs."

**N. & G. TAYLOR COMPANY, PHILADELPHIA**

Established 1810



## HEAD AND SHOULDERS OVER HIS FELLOWS

looms the man who has a *specialized education*. There is more opportunity for the Technical man today than for workers in any other line of industry. There are not enough Technical schools to supply the demand for trained Electricians, Engineers, Architects, Draftsmen, etc. Turn to the "Help Wanted" columns of any daily newspaper and compare the number of clerks, cashiers, book-keepers, stenographers, etc., looking for work with the large number of employers seeking to engage men having technical training.

No matter what your age, location, or present employment may be you can start now to fit yourself for a well paid position of trust and responsibility, where you will be the *directing force* instead of a mere piece of machinery.

We employ no agents to annoy you with repeated calls at your home or place of business. We talk to you only by mail. The money you pay us is not used to maintain an expensive organization of high priced agents, but is used to give you better instruction at a lower cost.

### AMERICAN SCHOOL OF CORRESPONDENCE Chicago, Ill., U. S. A.

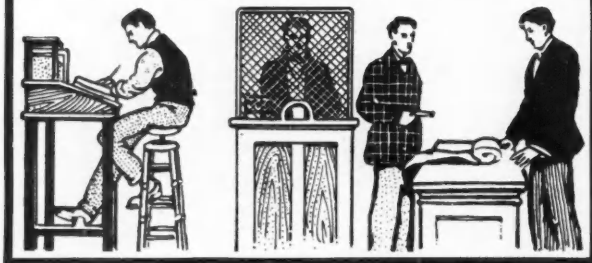
#### COUPON—Cut out and mail today

Please send me 200 page hand-book. I am interested in the course marked "X."  
A. C. & B. 8-07.

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| ...Carpenter's Course                | ...Tinsmithing                                |
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| ...Complete Architecture             | ...Mechanical Engineering                     |
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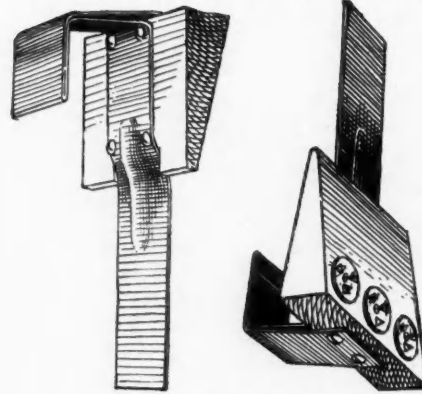
ADDRESS .....



We are informed that with every machine sold a very large and comprehensive book of instructions is sent to the purchaser, which contains information of particular value to the users of "Ideal" machinery.

### Shingling Made Safe and Easy

A device which has recently been invented, and one which has caused no little stir among its users, is Stowe's shingling kit. It consists of:



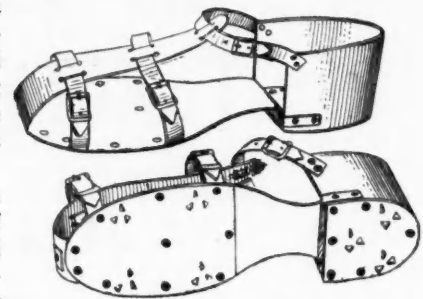
Shingling Brackets.

1. Shingle brackets which firmly hold the 2 by 4 in position without the use of nails, and the benefit of these is clearly apparent.

2. Sandals, enabling the worker to walk up any roof without the slightest danger and these sandals also save their cost

in shoes as they protect the shoe very effectively.

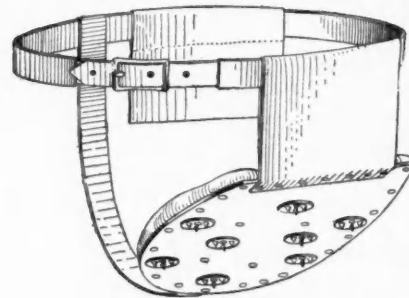
3. The roof saddle. This is arranged so the operator may shift from one hip to the other without adjusting, and it insures not only a safe and comfortable seat but also will save the clothing from wear. The roofing saddle has also a nail pocket.



Sandals

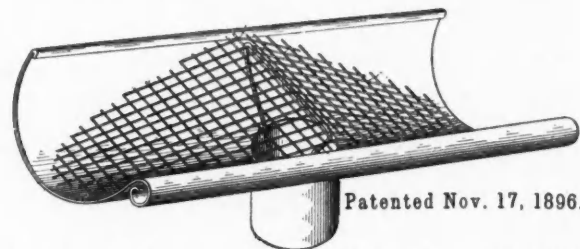
One who has even a small amount of shingling to do will find that by purchasing a shingling kit his money is

very well invested, and invested in a way that will pay good interest on the investment, for it entirely eliminates danger and protects shoes and clothing. Stowe's Shingling Kit is manufactured by the Coldwater Specialty Manufacturing Co., 24 Chicago street, Coldwater, Mich., who would be pleased to forward you further information.



Roof Saddle

This company are also manufacturing an eave trough strainer, which is so constructed that it may be readily applied over the downspout and will be equally effective whether



Patented Nov. 17, 1896.

such downspout communicates with the eaves trough at one end or at a point intermediate of the ends. It prevents leaves, twigs, sparrows, etc., from entering the spout and conducts



## Judging Mantels

Nearly everyone knows how hard it is to choose a mantel-piece; and hard to buy intelligently too.

To meet both difficulties we have published a beautiful little book, done in embossed gold and color work, called our "Suggestion Book," illustrating the different schemes of interior decoration, color harmony, proper contrasts, etc. Tells you just how to finish the interior of parlors, rooms, reception halls, etc., in perfect taste.

This "Suggestion Book"

we send you FREE. Our Catalogue, which is the largest published, the heaviest and most superbly illustrated, will be sent for 12c. to cover postage.

ROYAL MANTELS are sold by mail only. Order from catalogue—prices are given in plain figures—shipments direct from factory to fireside. Result, an Art Mantel at one-third the usual cost, and every ROYAL a masterpiece.

WHITE MANTEL & TILE CO., 507 White Bldg., Knoxville, Tenn



## ROYAL MANTELS

## MONITOR SASH LOCKS



(PATENTED)

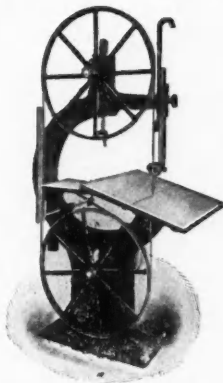
### NEVER BREAK

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

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

MADE IN TWO SIZES AND ALL FINISHES BY

The Champion Safety Lock Co.  
Geneva, Ohio



## "DEFIANCE" Wood-Working Machinery

BAND SAWS  
CUT-OFF SAWS  
SWING SAWS  
RIP SAWS  
JOINTERS  
LATHES

Write for Prices and Other Particulars

The Sidney Tool Co.  
SIDNEY, OHIO

## PLUMBERS' SUPPLIES AT WHOLESALE



If you need anything in my line, and wish to

**SAVE**

**20 to 40 Per Cent**

on every article, write for my free illustrated Catalog. Shipments promptly made from a very complete stock of guaranteed goods.

Small orders are as carefully handled as large ones.

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



## MILBRADT'S Rolling Step Ladders

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

Write for Catalogue No. 24

Special Discount to  
Contractors and Builders

MILBRADT  
MANUFACTURING CO.

1436 North 9th Street, ST. LOUIS, MO.

the refuse to the level of the top edges of the trough, whereby it may be carried by the force of water over the edges.

Write for further information and in writing mention the AMERICAN CARPENTER AND BUILDER.

**A Big Paint Transfer**

The paint trade will be interested in the announcement that the Adams & Elting Co., of Chicago, have purchased the entire paint, kalsomine and paint specialty business of the Rubber Paint Co., of the same city. This is one of the largest transfers in the history of the paint business and seems a fitting climax to the steady growth of the Adams & Elting Co., who by this consolidation become the largest paint specialty and wood finishers' supply house in the world. They are already well known, having offices both in Chicago and in the East, their own specialties having gained an international reputation.

The Rubber Paint Co., being established in 1868, were the oldest manufacturers of mixed paints in America, the superior merits of their brands having been recognized as long ago as 1875, when they secured the first award at the Chilian International Exposition. The first award also went to them at the World's Columbian Exposition in 1893 and a similar premium at the Louisiana Purchase Exposition in 1904.

This purchase also includes the taking over of the Eureka Elastic Paint Co., a subsidiary of the Rubber Paint Co. This latter concern has long been celebrated for its Rubber Paint, Naples Velvet Finish, Eureka Elastic, Gutta Percha and Mirror Back Paints and also for its Hygeinic Kalsomine, the finest kalsomine on the market today. Its goods will continue to be manufactured under the same formulae and their established brands, continued and sold as heretofore, their business simply being merged with that of the A. & E. Co. The "AD-EL-ITE People" are a most extensive "House Complete," everything that goes on with a brush can be secured

from them. All the innumerable little accessories needed in the paint shop and finishing room they supply. Quality and good service seem to have been their watch-words and they are to be congratulated upon this splendid outcome of their industry and efficiency.

Wm. Porter Adams is president; Jos. Gale, vice-president; Phillip L'F. Elting, general manager and treasurer and Howard Elting, secretary. These gentlemen will continue in the same offices with the enlarged business.

**Complete Heating Equipment**

The Hess Warming & Ventilating Company calls attention on another page to the very attractive offer it is able to make in complete furnace heating equipments.

This company, seven years ago, reduced its prices to consumers to the same rates that it had been making to dealers, thus cutting off all middlemen and agents, and establishing its trade direct with consumers, supplying furnaces, pipes, registers, etc., all ready for installing with full directions for setting, which enables anyone to place the work without help.

It was a venturesome and expensive undertaking, but the results have fully proved the wisdom of the plan. The first two years showed a heavy loss, but later years have witnessed wonderful gains, until now the business outside of Chicago is fully seven times greater than ever before, and this year each month shows an increase of 50 to 100 per cent upon the sales of corresponding months in 1906. Not only are the middlemen's profits saved to the consumer, but the middlemen's mistakes are avoided, and this feature alone is responsible for a very large share of the company's increase in orders.

With a rich experience gained in thirty-four years' constant application to the heating of buildings, the company is enabled so to plan and advise in the matter of heating that complete success is assured in every case. Satisfied customers

**PUMPS, DOOR-HANGERS, STORE LADDERS**

The Pump That Pumps  
 SPRAY PUMPS  
 Double-acting, Lift, Tank and Spray  
**MYERS PUMPS**  
 Store Ladders, Etc.  
**MYERS HAY TOOLS**  
 of all kinds. Write for Circulars and Prices.  
**Myers Stayon Flexible Door Hangers**  
 with steel roller bearings, easy to push and to pull, cannot be thrown off the track—hence its name—"Stayon." Write for descriptive circular and prices. Exclusive agency given to right party who will buy in quantity.  
**F. E. MYERS & BRO.**  
 Ashland, Ohio

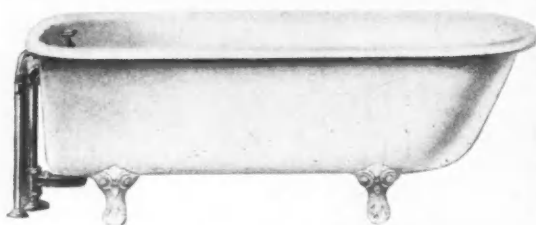


**HEAT YOUR HOUSE STORE, CHURCH OR SCHOOL HOUSE WITH BOVEE'S COMPOUND RADIATOR FURNACE**

Thousands in use. 11 years on the market. Having Bovee's improved HOT BLAST VENTILATING SYSTEM and RETURN CIRCULATING RADIATOR, which gives perfectly pure air and Saves One-Third of the Fuel. Bovee's Horizontal. Bovee's Upright. Any handy man can properly install either of these furnaces with all connections in a short time. These furnaces absolutely make the best and most durable heating plant in use. Everything guaranteed to be first-class. We can save you 40 per cent on the cost of your heating plant, our prices being but little more than good stoves. Send for catalogue



We have the largest and best line of furnaces in use, including our Celebrated Waterloo Furnace, complete, for **\$45** Bovee's Upright. Burns any kind of fuel.  
 Manufac'd and sold by the Bovee Grinder and Furnace Works, Waterloo, Ia.



\$12.50

**PLUMBING GOODS**

Best Values. Lowest Prices.

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**JOHN HARDIN**

Quarter of a Century at

4547 Cottage Grove Ave., Chicago

\$12.50



ESTABLISHED 1884

**THE E. J. JOHNSON CO.**

38 PARK ROW  
 New York

**Slate Blackboards**

Producers of

Branch Office  
 626 Park Building, Pittsburg, Pa.

Large Stocks

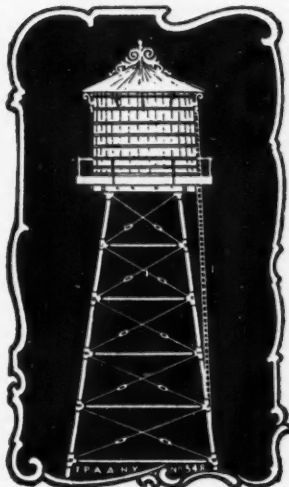
Prompt Shipments  
 Correspondence Solicited

**ROOFING SLATE**

ALWAYS SAFE AND RELIABLE :: ASK YOUR FRIENDS

## CALDWELL TANK and TOWER

NOTHING SEEMS TO BE ABLE TO PUT THE



out of commission. They have been through cyclones galore without a scratch; fire has failed to cripple them, and lightning has often struck them with only insignificant damage to the tank; while the strongest winds and fiercest gales are too common to attract attention.

Caldwell outfits are designed with an enormous reserve strength for just such emergencies, and constructed to withstand them. Wherever you are, Caldwell outfits are all about you proving their stability. Investigate them and get our illustrated catalogue.

**W. E. CALDWELL CO.,**

**Tanks** STEEL - WOOD **Towers**  
GALVANIZED

WINDMILLS--GAS ENGINES--PUMPS

LOUISVILLE :: :: KENTUCKY

**PLASTER=====PLASTER**

**IOWA HARD PLASTER CO.**

**HARD BY NAME  
HARD BY NATURE  
HARD TO BEAT  
NOT HARD TO GET**

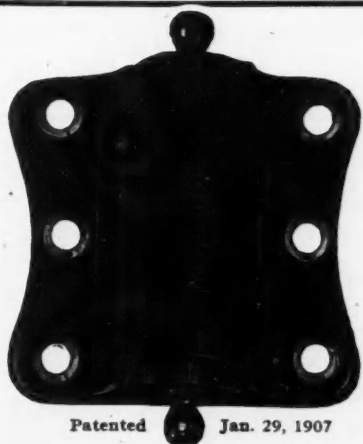
If your Dealer doesn't handle it, send us his name and we'll see that he is supplied

Costs No More Than Inferior Brands

**IOWA HARD PLASTER CO.**

Room 1 Mason Block

**FT. DODGE, : : IOWA**



Patented Jan. 29, 1907

### A MONEY-MAKING SPRING HINGE BECAUSE

It is new.  
It has no loose parts.  
It's all-steel from tip to tip.  
Spring is covered and protected from the weather.  
It's extremely simple—just five parts in all; Two tips two leaves, one spring.

Two tips—wrought steel, turned by automatic machinery—used as rivets—hold the two flanges firmly in position and allow the hinge to work freely.

Two flanges—wrought steel—formed by presses—symmetrical—edges drawn down, leaving no rough parts to be torn or bent—broad giving firm hold on the casing of door, prevents sagging or warping.

One spring—triple coiled—snappy acting—covered—made of No. 8 oil-tempered wire—hold-back at 140 degrees—fastened at both ends securely—cannot slip or spring out of place.

Their shipping weight is just two-thirds of that of cast iron—saves money in freight.

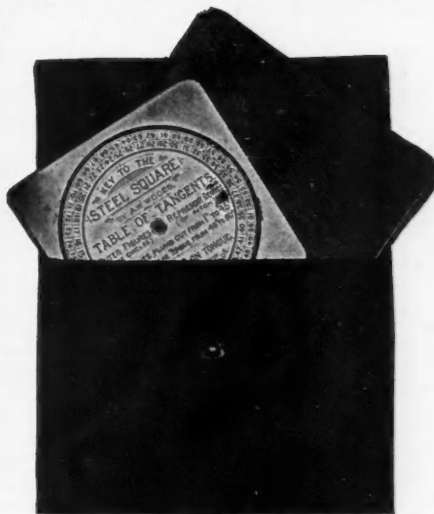
Heavy smooth coat of glossy black enamel is carefully applied and properly baked.

Not cheap—but sell at a good profit.

If you are one of our customers, you know the high quality of our products. If you are not, 'twill pay you to learn it. Either way write for the "Book of Reasons," you will be interested in it. We send it free. Also our Catalog No. 12.

**The COLUMBIAN HARDWARE CO., Cleveland, Ohio**

## ALFRED W. WOODS' KEY TO THE STEEL SQUARE.



This is it.

The Key,  
Book of  
Instruction  
and  
Morocco  
Case.

Full Size  
4x5 inches.

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

Price \$1.50, Postpaid

**American Carpenter and Builder**

185 Jackson Boulevard, CHICAGO

have done the rest, fully one-half of the company's business being directly due to recommendations of and repeated orders from its customers.

Free plans and a free booklet are offered to any requesting information, and carpenters' pencils of the best grade are sent free to any one who will supply names of three or more owners who may need furnaces. See advertisement page 635.



### Of Interest to Architects

For a great many years the problem of proper support for plaster has been given much attention by architects seeking to find an efficient substitute for the common inflammable wooden lath construction.

This construction requires a long time to dry out on account of the great amount of water which is required, and the dampness frequently does much damage by warping the timbers and trim.

The plaster with its open backing of lath is porous, and permits the ready passage of heat and cold, making necessary additional insulation for outside walls and even then houses are cold in certain corners and exposed rooms.

The bond between the plaster and the lath is not always satisfactory, and ceilings, especially in old houses, fall to the peril of the occupants of the house.

All told, the ordinary wooden-lath-and-plaster construction has not been satisfactory.

Metal lath has been frequently used and the very best grades are as unsatisfactory as wooden lath, while the cheaper grades are very inferior, due to their liability to rust and thereby deprive the plaster of the intended support.

Of late years a method for applying part of the plaster in sheets or slabs combined with felt so that part of the plaster thickness could be nailed directly to the studding has been enjoying great popularity.

This device is known as the Sackett Plaster Board. The

simplicity of it is admirable, as it consists of nothing more or less than sheets of wool felt combined with alternate layers of plaster, so as to make light weight boards about one-quarter of an inch in thickness. These boards can be sawed like wood, and fastened to the studding with ordinary nails. They make a smooth, solid wall without interstices, on which can be applied the final finish of plaster. Sackett Plaster Boards are fire-proof, more so in fact than metal lath, which is very thin and readily heated. They are good sound deadeners and are always tight, thereby providing excellent insulation against heat and cold. The finishing plaster unites with them perfectly, and the work is quickly done.

Sackett Plaster Boards have now been in use for several years, and have been especially in demand for large hotels and public buildings, where the comparative cost of materials has been most carefully studied out.

The cost of Sackett Plaster Boards is about the same as that of the wooden lath and plaster construction, varying of course slightly with the locality.

### WHO WANTS SLATE?

**Roofing Slate** for Houses, Barns, etc. Always clean, beautiful and fireproof.  
**Blackboards** for Schools, Colleges, etc. Needs no commendation; universally used all over this and other countries.  
**Structural Slate**. Electrical Stock, Sinks, Troughs, Wash-tubs, etc. Superior to all stone for such purposes.  
**Slaters' Supplies**. Handmade Slating Tools, Felt, Cement, Nails, Snow-guards, Punching Machines, etc.  
 Write for prices and I will tell you all about Slate.  
**DAVID MCKENNA, Slatington, Pa., U. S. A.**



**AGENT IS ALL IT COSTS**  
 to write postal for our big  
**Free Bicycle** catalog showing all models at lowest prices.  
**DO NOT BUY** a bicycle or a pair of tires until you learn our marvelous new offers. We ship on approval without a cent deposit, prepaid freight, allow 10 Days Free Trial—All our new and wonderful propositions with catalogues and much valuable information sent you FREE for the asking.  
**WE WILL CONVINC** you that we sell a better bicycle for less money than any other house. Buy direct from the factory. If you want to **Make Money or Earn a Bicycle** write for our Special Offer. **TIRES, Coaster-Brakes, built-up-wheels** and all sundries at half usual prices. **Do Not Wait**, but write us a postal today and learn everything. Write it now.  
**MEAD CYCLE CO. Dept. P-122, Chicago, Ill.**

### Classified Advertisements.

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

#### Help Wanted.

WANTED—Carpenters to read our ad. on page 735. Gage Tool Co.

#### Notice to Contractors

NOTICE is hereby given that the undersigned will receive bids until August 8, 1907, at 7 o'clock p. m., for building a brick M. E. church in McLeansboro, Illinois. Plans and specifications will be found at A. J. Foulk's in McLeansboro. By order of committee:

J. H. WILSON,  
 J. H. LANE,  
 A. LASATER,  
 A. F. COTTREL,  
 A. J. FOULK.

#### Business Opportunity

ASTORIA is an exceptionally good place for street and general contractor to locate permanently. Address Chamber of Commerce, room 712, Astoria, Oregon.

#### Instruction.

LEARN CEMENT CONSTRUCTION in all its branches for \$1.50. Building Blocks Water Proof, white or any color. Bridges, Roof, Floors, etc. Write for descriptive circular No. 30. Cement Institute, St. Louis, Mo.

LEARN ADVERTISEMENT-WRITING and you can positively earn from \$25 to \$100 a week. Write today for illustrated prospectus, sent free upon request. Tells everything. PAGE-DAVIS CO., Dept. 117, Chicago.

#### Furnaces

\$100 FURNACE \$59. Contractors' Favorite. America's Highest Grade Mall Order Heater. Book free. Century Furnace Co., Box E., Youngstown, O.

#### Wood Working Machinery.

WOOD WORKING MACHINERY—Band Saws, Jig Saws, Planers, Molders, Shapers, Wood Lathes, Rip and Cut-Off Saws, Engines, Boilers, Gas Engines. Above in both New and Second-Hand Rebuilt Machines. Send for Stock Sheet and Catalog. Hanna-Brackenridge Company, Box 463, Fort Wayne, Ind.

#### Patents.

C. L. PARKER, Solicitor of Patents, 20 Diets Bldg., Washington, D. C. Handbook for inventors sent free upon request.

## SLATE WE HAVE WHAT YOU WANT

*In Roofing Slate, Slate Blackboards  
 Structural and Plumbers' Slate*

SATISFACTION GUARANTEED IN QUALITY AND PRICE  
 ASK FOR DELIVERED PRICES

**J. K. HOWER, Station C., Slatington, Pa.**

H. J. KICHLINE, Sales Agent

## Thunder and Lightning

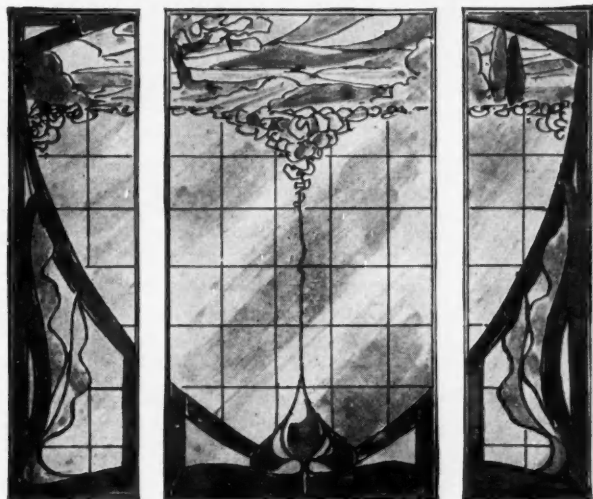


Get out of the rain and buy Lightning Block Machine that defies all competition. Has wonderful capacity.

Write and Do It Now

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

# GLASS Our Art Nouveau Designs in Glass



ARE SELLERS

This Design No. 1814, \$2.00 net per Sq. Foot

## MAKE MONEY

By Dealing Direct

LET US SHOW YOU HOW

We are Designers and Makers, having Superior Facilities for the production of all your wants in

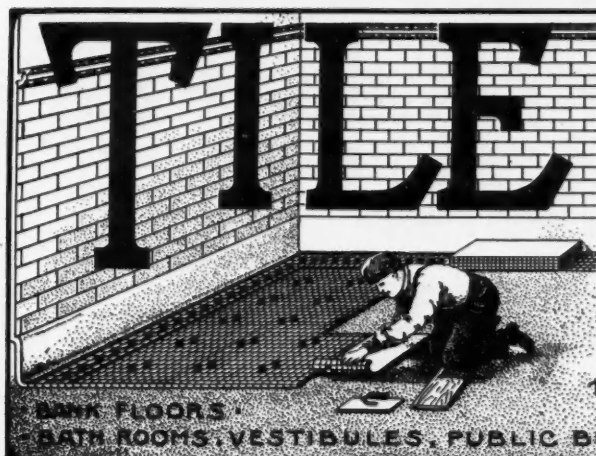
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**SAND BLAST AND CHIPPED WINDOW AND PLATE GLASS**

Short Orders on Sand Blast Designs Shipped in 3 to 5 Days.

MOST ARTISTIC CATALOG EVER ISSUED SENT FREE

**Suess Ornamental Glass Co.**  
Dept. C. Throop and 21st Sts., CHICAGO.



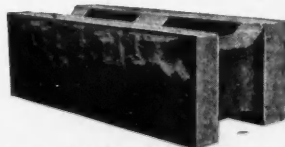
SEND US PLAN OF SPACE TO BE TILED, WE WILL QUOTE LOWEST PRICE DELIVERED AT YOUR STATION ~ CERAMIC - MOSAIC - & ENCAUSTIC TILE for FLOORS in WHITE AND COLORS ~ DESIGNS SUBMITTED ~

WORK EXECUTED IN ANY PART of the COUNTRY  
MANTELS · GRATES · FIRE-PLACE · GOODS

**WISCONSIN MANTEL & TILE CO.**

TILE LAST FOREVER · 420 MILWAUKEE ST. MILWAUKEE, WIS.

SEND FOR OUR SPECIAL OFFER OF THE MOST COMPLETE OUTFIT EVER OFFERED FOR \$100.00.



down-face, using coarse wet mixture, which enables you to turn out a block for almost one-half less money than can be produced from the sand and dry process. No matter how many machines you have, if you will let us send you a sample machine with pallets to demonstrate the advantages over and above competitive machines, you will not allow it to be returned. It makes all widths up to 20 in.; lengths up to 4 ft. 6 in. The machine is also adjustable to make the 8, 10 and 12 in. block for width of wall, with no additional expense for parts. This special offer includes two styles of rock-face plates, circle, octagon, broken ashley, sheet metal, pebble, corrugated and plain plate.

Do not stand in your own light and refuse to profit by this offer. Write at once for our special offer "G."  
**THE FRANCISCO BLOCK MACHINE CO., 338 North High St., Columbus, Ohio.**

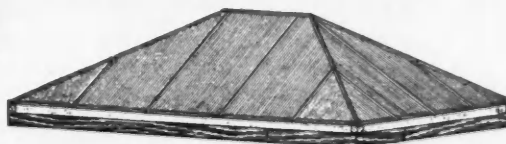
## KNOCKED DOWN SKYLIGHTS

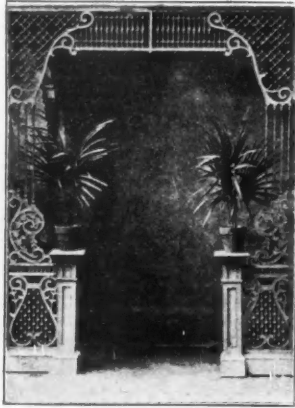
Can be shipped anywhere safely at a low freight rate. Can be set up by any handy man, no soldering, no putty and no leaks.  
CATALOG FOR THE ASKING.

**GALESBURG CORNICE WORKS,**

140 E. Ferris Street,

GALESBURG, ILL.

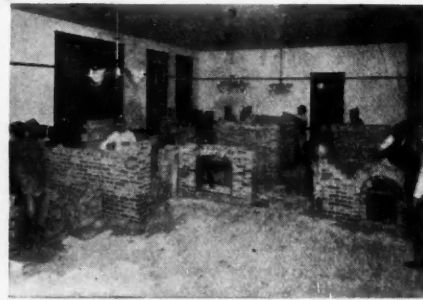




**Cleveland Grille & Mfg. Co.**  
**Artistic Grilles**

Made in Elaborate and Attractive Designs.  
ILLUSTRATED CATALOGUE FREE.  
Cleveland Grille & Mfg. Co.  
CLEVELAND, O.  
Special Designs on Request.

**Bricklaying Taught by Practical Bricklayer**



**In Two to Three Months**

Begin now. Bricklayers are in big demand. As we teach bricklaying exclusively we turn out the most expert mechanics. Individual Instructions. You start right in with the tools and learn how to lay brick.

Write for Circular

**CHICAGO SCHOOL OF PRACTICAL BRICKLAYING**  
Henry T. Kies, Prop. 2115-17 W. Adams St., Chicago

*"Keep the Quality Up."*

**A WAY TO PREVENT DAMP WALLS**

Francis Portable Automatic Hollow 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. The adjustment permits the making of every length, shape or size Building Block, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 and 24 inches long. Chimney and Octagon Blocks, Well Curbing.

**OUR FACE DOWN MACHINE IS**

For July and August

**\$30**

Equipment "E" and "F" is Sent on 15 Days Trial

**FRANCIS MACHINERY COMPANY,**



**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."**

Room 12, 806 Chestnut St., St. Louis, U. S. A.



**Ideal Concrete Machinery Co.**

of South Bend, Indiana

**Concrete Block Machines**

**Concrete Brick Machines**

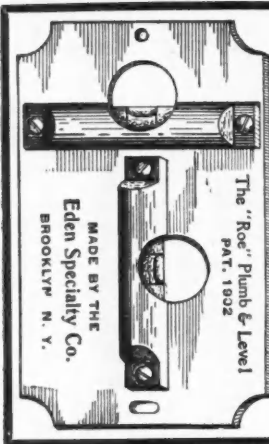
**Concrete Mixers**

**Chicago Office and Display Room,  
1311 Chamber of Commerce Building,**

**FRED M. BENNIGSEN,**

Gen'l Representative

Telephone, Main 82



**THE "ROE" PATENT PLUMB AND LEVEL**

An up-to-date tool; can be easily attached to a plumb-rule or straight-edge at a moment's notice. Very simple to adjust, always held rigidly in place; just the tool for all mechanics, carpenters, tile-layers, masons, etc. Saves space and weight in tool-chest; our guarantee with every one. For sale at all first class hardware stores, or will be sent by mail on receipt of price.  
Polished Bronze, by mail. \$1.30  
Polished Brass, by mail. . . 1.20  
Nickled Steel, by mail. . . 1.00  
Japanned Steel, by mail. . . 1.00  
Mounted on boards 4x18 in. 15c extra  
**SEND FOR CATALOG**

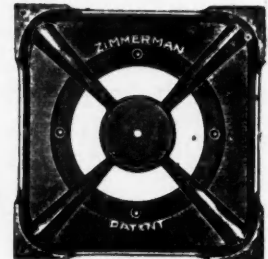
**The Eden Specialty Co.**  
954 Third Av., Brooklyn, N.Y.

**THE "ZIMMERMANN" IRON BASE**

**FOR WOOD COLUMNS**

**"The Column Never Rot"**

All Sizes for Round or Square Columns. Thousands in use. Send for Circular "Z."



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

<p><b>MANTELS</b></p>  <p><b>\$15.25</b> buys this Solid Oak Column Mantel. 80 inches high, 54 or 60 in. wide, 28x16 bevel edge mirror. Quarter oak Columns with neat Capitals. Tile facing and hearth with Plated Frame and Club House Grate, \$10, extra.</p>	<p><b>TILE and MOSAIC</b></p>  <p>We are prepared to furnish Ceramic Mosaic, vitreous and encaustic unglazed Floor Tile, also Plain, White or Ivory Glazed Wall Tile, for Bath Rooms, Halls, Vestibules, Kitchens, Banks and Public Bldgs., Drug Stores, Ice Cream Parlors, etc.</p>	<p><b>FLOORING</b></p> <p>Parquetry and Hardwood. We furnish Plain and Quartered Oak strips, also every design Parquetry floors.</p> <p><b>HARDWOOD FLOORS</b> will last as long as the house. Any carpenter can lay it easier than ordinary flooring. Get our designs and prices.</p> <p>Write for catalog of Mantels, Grates, Tiles for floors and baths, Slate Laundry Tubs, Grilles, etc. It is FREE. Or send 10 cents to pay postage on our Art Mantel Catalog. Mantel outfits from \$12 to \$200.</p> <p><b>W. A. OSTENDORF,</b> 2923 N. Broad St., Philadelphia, Pa.</p>	<p><b>GRILLES</b></p> <p>The prices we quote on these Grilles are astonishingly low, and we are only able to quote them for the reason that we manufacture them in large quantities.</p>  <p>No. 225 No. 230 No. 18</p> <p>No. 225. Up to 4 feet, \$3.60; 5 feet, \$4.50 No. 230. Up to 4 feet, 4.50; 5 feet, 5.63 No. 18. Up to 4 feet, 4.50; 5 feet, 5.00</p> <p>We make Grilles for anywhere and everywhere, and show more than 100 designs.</p>
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# SELF-SETTING PLANE



SOLD BY  
**ORR & LOCKETT**  
Hardware Co.  
CHICAGO, ILL.



Send \$3.00 and get one on trial as below.

This SELF-SETTING PLANE, made in Vinland, N. J., is the ONLY SELF-SETTING PLANE—no other SELF-SETTING PLANE was ever made.

- It differs from every other plane BECAUSE—IT IS THE—
- ONLY PLANE WITH an ADJUSTABLE IRON THROAT.
  - an iron that moves up and down, without moving the cap.
  - a cap that don't move up and down when the cut iron does.
  - a cap that is set when it is dropped back into its place.
  - an iron that is set by dropping into its place in the throat.
  - a CAP & IRON that can't go back ONLY IN THEIR RIGHT PLACE.
  - a HARDENED STEEL CAP that is SHARP like a plane iron.
  - its handle screwed to its round iron base.
  - its stock saturated with hot linseed oil when made.
  - that the cap and cutter can be removed and RESET IN FIVE SECONDS.
  - the cap and cutter are not fastened together.
  - you don't have to spend months to learn to set properly.
  - a girl, woman, boy or man, without experience can set.
  - is set and ready to use when it leaves the factory.
  - is SELF-SETTING.
  - every man before using says, "it costs too much."
  - every man after using says, "IT IS CHEAP AT TWICE ITS COST."
  - we know of that you can get on 30 days trial and after using it a month return it without expense, and get back all the money it cost you.

We send SELF-SETTING PLANES, where not sold, on 30 DAYS TRIAL, EXPRESS PREPAID, on receipt of list price. IF RETURNED to us AT OUR EXPENSE, within 30 days of receipt, we will return you the entire amount you sent us and the trial will cost you absolutely nothing, except your trouble.

Yours for the BEST plane ever shov'd, and the ONLY SELF-SETTING PLANE made,

**GAGE TOOL CO., Vinland, N. J.**



**DUMB WAITERS AND HAND ELEVATORS**  
OF THE MOST IMPROVED AUTOMATIC CONSTRUCTION

INVALID LIFTS  
TRUNK, CARRIAGE,  
SIDEWALK AND  
FREIGHT ELEVATORS

**SEDGWICK MACHINE WORKS**  
POUGHKEEPSIE, N. Y.  
AND  
128 LIBERTY ST. NEW YORK

CATALOGS AND ESTIMATES FURNISHED  
SEE SWEET'S INDEX



**The GADE Air Cooled Gasoline Engines**

Made in 2, 3 and 6 horse power sizes. What's the use of paying good money for an old style engine, when you can get something better in the "Gade Air Cooled" at the same cost? Buy one. It will not freeze up or go back on you in cold weather. It's ready for business all the time. We know it will please. By all means write for descriptive circulars and price list of the "Gade." Address, **GADE BROS. MFG. COMPANY, 15 Sherman St., Iowa Falls, Iowa**



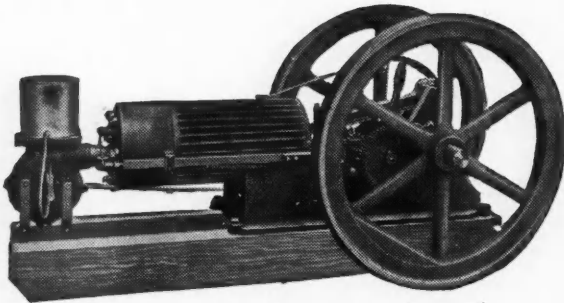
**CORTRIGHT METAL SHINGLES  
ARE LIGHTNING PROOF**

That's another reason they are supplanting the wood shingle,—it's a good thing for you carpenters, because you can make more money laying them. Send for 56-page booklet—"Rightly Roofed Buildings."

**Cortright Metal Roofing Co.**  
Philadelphia and Chicago.

## The WATERLOO Vapor Cooled Gasoline Engine

THE ONLY HORIZONTAL VAPOR COOLED GASOLINE ENGINE IN THE WORLD



Patented May 15, 1906.

ABSOLUTELY FROST PROOF AND CANNOT FREEZE. REMEMBER! NOT AN AIR COOLED, BUT A VAPOR COOLED ENGINE. OUR FREE ILLUSTRATED CATALOGUE WILL TELL YOU ALL

**Waterloo Gasoline Engine Co.**  
175 Third Avenue West, - Waterloo, Iowa

## Health Ceilings Health Side Walls



They might well be termed as above, for they do not gather moisture, are not filled with poisonous coloring matter and cannot fall, crack or become unsightly. Eller's Steel Ceilings and Side Walls have for many years been the standard of quality—look for the trade-mark—it means perfection in every feature.

**Eller Manufacturing Company**  
Canton, Ohio

## Practical Art Metal Ceilings



Quickly and easily applied. We are the only manufacturers who cut the beads in the dies after casting. RESULT—Square and accurate plates—which will save you time and labor in cost of erection.

Send for Catalogue No. 2, which shows 200 new and original designs.

MANUFACTURED BY  
**Wm. Foster & Sons Co., Inc.**  
Springfield, Illinois

Also manufacturers of Radiator Shields, Fire Proof Window Frames and Sash, Gal. Iron Fronts, Hip Shingles, Cornice, Skylights.

PATTERNS-MAKERS FOUNDRERS & MACHINISTS

BEAMS,  
IRON COLUMNS, SIDEWALK  
LIGHTS, CAST CONDUCTOR CONNECTIONS,  
BOOTS & GUTTER BOXES,  
FLUSH HINGE DOORS,  
COAL HOLE COVERS & GRATINGS

ALL KINDS OF CONTRACTORS  
IRON WORK TO ORDER

THE CANTON FOUNDRY  
AND MACHINE COMPANY  
CANTON, OHIO, U.S.A.

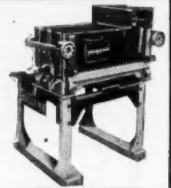
603 E. 8th St.



## HERCULES CEMENT BLOCK HOUSES

with their artistic face designs and superior finish, show to great advantage alongside all others. Contractors are welcoming the machine that gives their houses a "distinctive appearance". The Success Machine supplies great variety in faces and shapes, blocks 16 in., 24 in. and 5 ft. in length. See our Scientific air space, latest out Double Vertical, Double Lateral ventilation, all blocks made face down. Write for catalog and circulars.

**HERCULES MFG. CO., Dept. A-216. Centerville, Iowa.**







Model A  
Ideal Concrete Block Machine

# IDEAL CONCRETE MACHINERY CO.

Manufacturers of  
"Ideal" Concrete Machinery

Block Machines, 16 to 24 inch Lengths  
(Interchangeable)

Brick Machines

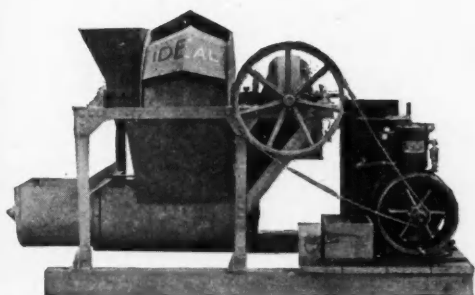
Sill and Lintel Machines      Mixers

Pier Molds      Column Molds

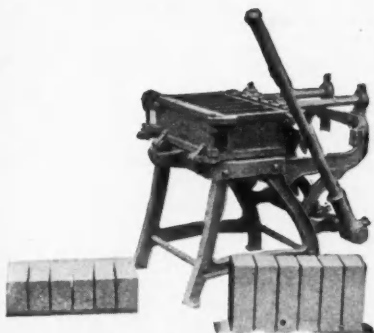
Step, Sidewalk and Sill Molds

Ornamental Molds for

Shafts, Capitals, Vases, Etc.



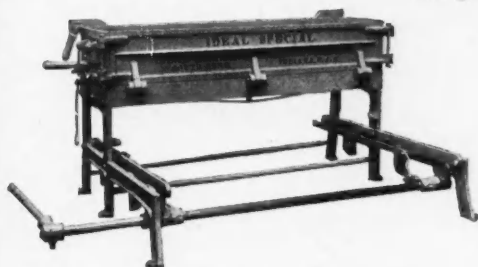
Ideal Concrete Mixer



Ideal Concrete Brick Machine



Ideal Cement Sill Mold



Ideal Special Sill and Lintel Machine

Largest exclusive manufacturers of Concrete Machinery in the world. Originators of the "down face" horizontal core concrete Block Machine. Model "A," 16 inch; Model "E," 24 inch. Machines are interchangeable to 8, 10 or 12 inch widths, and produce whole or solid blocks in full or fractional sizes, within capacity.

Manufacturers of the IDEAL Sill and Lintel Machine, IDEAL Continuous Batch Mixer, IDEAL Cement Brick Machine, IDEAL Sill and Cap Molds, IDEAL Cement Step Molds, IDEAL Sidewalk Molds, IDEAL Ornamental Column Molds with Ionic or Doric Capitals, IDEAL Ornamental Spindle Molds, Porch Column Block Molds, Concrete Lawn Vases, Fancy Belt Courses, Ornamental Caps, Ornamental Ball Molds, and everything in regular and special designs.

More than *two thousand* of our block machines alone are being successfully operated in the United States. Exclusively used by all up-to-date manufacturing plants. Importing houses of reputation and reliability are "IDEAL" agents in every country on earth. Largest exporters of concrete block machinery in the United States.

Write for catalogue. Magnificently illustrated. Shows gross and net weights of all machinery and supplies; gives weights and cubic measurements of materials. Tells how to make exact calculations of cost of manufacture of Ideal Concrete Blocks in any locality. The most comprehensive encyclopedia on concrete machinery and its allied interests ever published. Sent free on application.

IDEAL CONCRETE MACHINERY CO.

Dept. A. T.

South Bend, Indiana, U. S. A.



is known as the best.

¶ The builder who knows Stewart's Iron Fence is the builder who has tried to get the same service out of other kinds of fence.

¶ A builder may know Stewart's Iron Fence or he may know some other kind, but the builder who really knows fence is the one who knows the difference between Stewart's Iron Fence and others.

¶ He knows from actual experience that it has many features which are lacking in other makes, and for this reason, he specifies it.

¶ Why don't you do the same? We can furnish fence that is superior to anything in the market and **SAVE MONEY FOR YOU AND FOR YOUR CUSTOMER.**

¶ These reasons in themselves should be sufficient for you to write us for Catalog 120-D and be convinced.

**The Stewart Iron Works Co.**

CINCINNATI, OHIO

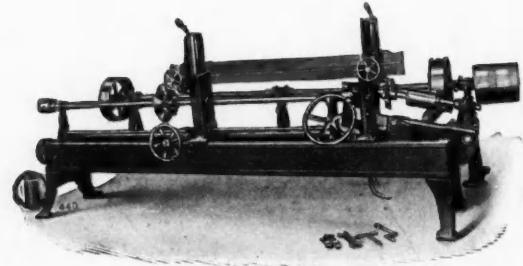
"The World's Greatest Iron Fence Works"

## 400 JAMBS Per HOUR EASILY DADOED AND CUT TO LENGTH

on a "New Britain" Dado Machine. Its capacity is limited only by the ability of operator to supply work.

At a single operation it dadoes and cuts to length a pair of jambs, thus eliminating error in measurements and insuring perfect mating. And there's no chance for spoiled work.

It is also equally efficient on headers or sills.



Send for Catalogue No. 145

**The New Britain Machine Co.**

100 Chestnut Street, New Britain, Conn.

## "STANDARD" Brick Machines Batch Mixers Gasoline Engines



"Standard" Batch Mixer, belt driven.

The only ball bearing concrete mixer on the market. Mixing drum entirely open to view, hence is easily kept clean—very important. Material completely visible and accessible during entire period of mixing—very desirable. Mixing, charging and dumping may be done with mixing drum tilted to either side—points of convenience. There is no clogging. Every machine fully guaranteed. Hand and power sizes, on truck or skids, with or without power. If interested, we want you to have our new illustrated descriptive catalog, giving equipment, capacity (batch and daily), shipping weights and prices. Free for the asking.

**SOUTH BEND MACHINE MFG. CO.**

1803 S. Franklin St., SOUTH BEND, IND.

## HERCULES SPECIAL Concrete Block Machine

COMPLETE OUTFIT FOR ONLY \$120.00

THE HERCULES SPECIAL is now offered to the trade. It is built exactly like the famous Hercules, but is smaller in size. The Hercules Special will make blocks from 3 inches to 32 inches in length, and these blocks will be equally as high grade as those made on the regular Hercules.

To those with limited capital who wish to engage in the concrete block business, or for people wishing to do their own building the Hercules Special is without doubt the best machine to buy.

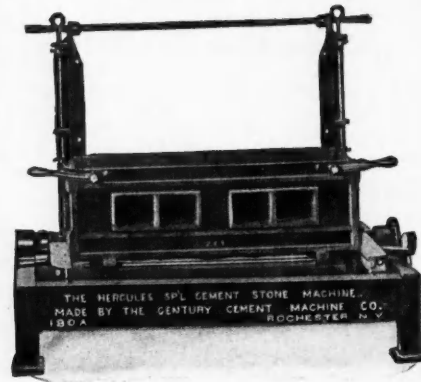
You get a complete outfit that will start you in the business for only \$120.00, Net F. O. B., Rochester.

With this outfit you can make blocks 8x8x16, or if you desire parts for making stone 8x8x20 will be substituted.

We also allow you choice of any width, either 8 inches, 10 inches or 12 inches.

The Hercules Special is an adjustable machine. If at any time you want to make blocks of a different size than your outfit calls for, all you have to do is to purchase a few extra plates; you do not have to buy a new machine.

We will be glad to send you full particulars about the Hercules Special upon request.



ADDRESS

**Century Cement Machine Co.**

273 West Main Street, - Rochester, N. Y.



## The American Floor Surfacing Machine

Has solved the perplexing problem that has confronted Architects, Builders and Owners for years, "AN EVENLY AND PROPERLY SURFACED FLOOR." In the past there has been but one method, the unsatisfactory, tedious and expensive one of hand labor.

It is now no longer necessary to employ a small army of men to surface a floor.— THE AMERICAN FLOOR SURFACING MACHINE will do the work of from FIFTEEN to TWENTY men, depending upon the size and condition of the floor, and do it **QUICKER, CHEAPER, BETTER**, whether of a dwelling, school house, skating rink, dancing hall, office building, decks of steamers, hotels, bowling alleys or store buildings.

The American Floor Surfacing machine does the work with ABSOLUTE EVENNESS and at a small fraction of the cost of hand labor. It is at once efficient, reliable and consequently has met with unqualified success wherever it has been operated. The machine is built on correct mechanical principles, is SELF-PROPELLING and the epitome of simplicity. It is MODERN METHODS SUPPLYING MODERN DEMANDS, and a MONEY SAVER, and so simple in operation that any person of ordinary intelligence can quickly learn how to successfully handle it.

Illustrated Booklet and Details upon Request

AMERICAN FLOOR SURFACING MACHINE CO.  
TOLEDO, OHIO

"Buy Sash and Doors from Schaller-Hoerr's"

## We Pay the Freight to Your City

Basing our prices on those shown in the "ad" plus the actual freight to your station. We guarantee safe arrival of goods. We guarantee our quality to be the highest.

### PROOF OF QUALITY

Gentlemen:

Everything received in first-class condition. It is a pleasure to do business with you fellows. You will hear from me in a little while again and all my friends and acquaintances. I'll tell them about you.

Yours respectfully,

Signed, F. KAZNUIRSIK  
Saddle River, N. J.



**THIS DOOR ONLY**  
Glazed **\$2.00**  
D. S.  
and  
Painted  
2-6x6-6-1 3-8  
inch thick

Take out the glass and you will find it to be D. S. No one else will tell you to do this.

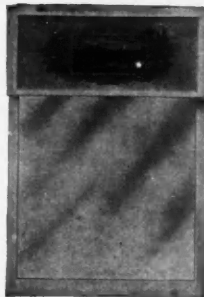
Wonderfully Low Prices on Pana Doors

Price	Price Glazed
2-6x6-6-1 1/2	\$2.00
2-8x8-8-1 1/2	2.12
	2.24

Our wonderful complete catalog shows the most beautiful line of doors ever shown at prices extremely low. Write for it today.

### We protect the Contractor and Builder

We have the interest of every user of millwork and builders' supplies at heart, and we put forth every effort to protect you, the consumer, from the rapacious LUMBER TRUST. Buy from us and you keep the profit of this trust and its allies in your own pockets, and at the same time you get a better assortment and better stock than you can secure from anyone else.



**THIS WINDOW 3.00**  
40x16-40-1 1/2-2 lights,  
check rail, glazed D.  
S. A. top and bottom  
light. Prices Lower than Ever  
Before.

2 Light Cottage Front Windows 1 1/2 inch. thick opening	Price D. S. S. & D. S. A. Sand blast top & D. S. A. bottom light	Price D. S. A. top and bottom light
3-8x5-2	40x16-40... \$3.20	\$3.00
3-8x5-6	40x16-44... 3.70	3.50
4-8x5-2	44x16-40... 3.85	3.65
4-8x5-6	48x18-42... 4.70	4.50
5-8x6-2	56x18-50... 7.65	7.45

ILLION

The best windows ever made.

COMPARE THESE PRICES WITH OTHERS.

### Quickest Shippers of Millwork in the World

**THIS WINDOW**  
12x20—  
1 3-8  
2 lights  
open **29c**

Our windows are absolutely clear stock. Every window we sell is dipped in linseed oil before glazing. You can thus use them for either oil finish or paint. When you order D. S. glass from us you get D. S. glass. Many concerns do not use D. S. glass in the smaller sizes at all. Take out the glass and examine it, both from our window and any one else's. You will then know who is the honest, reliable house you should deal with.

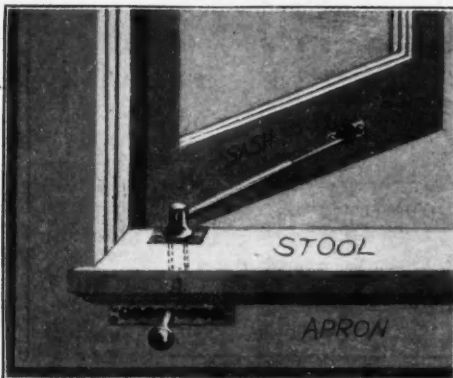
### SEE THESE PRICES

2 Light Windows	Price Glazed S. S. A.	Price Glazed D. S. A.
12x20, 1 1/2	\$.61	\$.61
16x24, 1 1/2	.70	.95
18x20, 1 1/2	.70	.92
20x30, 1 1/2	.98	1.26
24x26, 1 1/2	.96	1.27
28x28, 1 1/2	1.24	1.61
28x30, 1 1/2	1.29	1.70
30x28, 1 1/2	1.40	1.90
40x28, 1 1/2	2.78	3.59
44x30, 1 1/2	3.59	3.52
48x36, 1 1/2		

Our Wonderful 224-page Catalog is Free.

If you are interested in building, or if you contemplate purchasing anything in the millwork or builders' supply line, you should write for it at once. Address,

**Schaller-Hoerr Company, 331 Pilsen Station Chicago, Illinois**



## CASEMENT SASH

ARE THE BEST FOR RESIDENCES

Tight and Warm in Winter. Great House Coolers in Summer.  
ALWAYS HANDY TO WORK

**IF YOU USE THE HOLD FAST** OUR NEW CASEMENT ADJUSTER AND LOCK IT WORKS ENTIRELY FROM INSIDE THE SCREEN

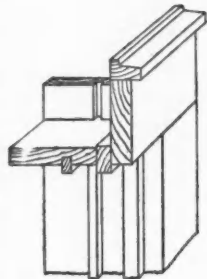
Simple, Durable, Adjustable. Easy to Put On New or Old Work.

GET OUR ILLUSTRATED BOOKLET.

**THE CASEMENT HARDWARE CO.**  
154 Washington St., Chicago

# Special Prices

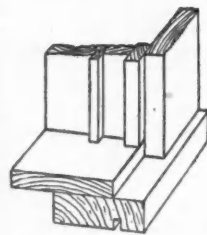
For This Month Only



Window Frame Dimensions

Pulley Stile, . . . . .	$\frac{7}{8} \times 4 \frac{1}{2}$	} Poplar, Yellow Pine or Cypress
Outside Stop, . . . . .	$\frac{7}{8} \times 1 \frac{3}{4}$	
Sill, . . . . .	$\frac{7}{8} \times 5 \frac{1}{4}$	
Subsill, . . . . .	$1 \frac{1}{4} \times 3 \frac{1}{4}$	
Outside Casing, 1 . . . . .	$\frac{1}{2} \times 4 \frac{1}{2}$	
Water Table . . . . .	$\frac{7}{8} \times 1 \frac{3}{4}$	

Prices F. O. B. Your City



Section.

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

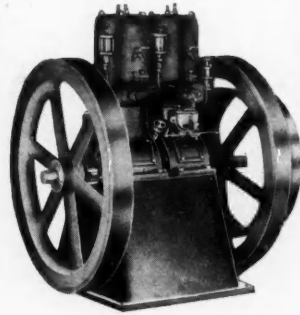
Crown Mould Caps 15 cents each additional.

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

All Frames Complete with Pulleys

**The Malta Manufacturing Co.**  
MALTA, OHIO

# POWER THAT PAYS!



WE MAKE IT!  
DO YOU WANT IT?

**Gasoline Engines**  
FROM  
**3 to 50 H. P.**

Few Parts. Well made and guaranteed free from defects and breakage for one year

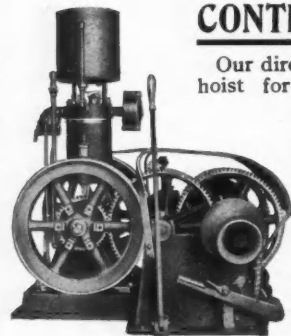
In the working parts of a Goshen Engine there are no valves, cams, gears or springs. As the pistons pass up and down in the cylinder they open and close the torts of the engine, thus exhausting the burnt gases and admitting the new charge. We make special piston rings that we guarantee for three years. An honest, reliable engine for any purpose.

Marine Engines from 3 to 50 H. P. which are really all engine and one that will please you

WRITE TODAY FOR CATALOGUE

**Goshen Motor Works,**  
GOSHEN, INDIANA

## CONTRACTORS' HOIST

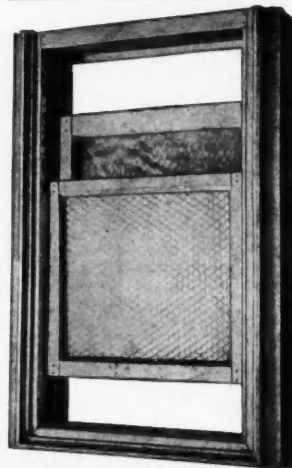


Our direct connected, self contained hoist for double platform elevator work can't be beaten.

Equipped with our Standard Gasoline Engine it certainly is the most economical method of elevating building material known.

Write for our Bulletin No. 5, and let us name you price. We also make a full line of Gas and Gasoline Engines, from 1 1/2 to 25 H.P.

**Bates & Edmonds Motor Company** Lansing, Mich.

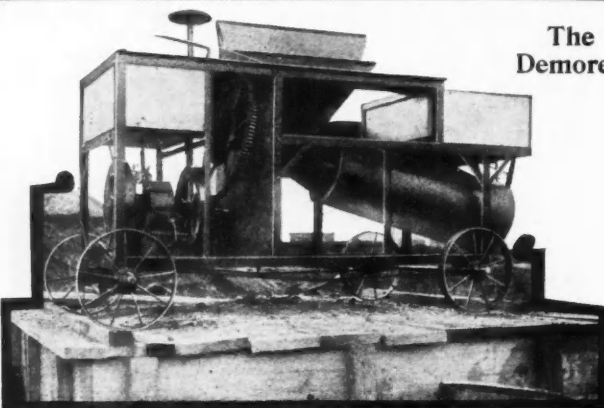


Fireproof Windows,  
Metal Ceilings,  
Cornices, Skylights, etc.

## Genasco Roofing

Write for Catalog

**Valley Cornice & Slate Company, Ltd.**  
Saginaw, Mich.



The Demorest

# Little Giant Mixer

automatically proportions—mixes dry, then wets. Product approved by engineers. Capacity greater than any Mixer costing twice its price. Easily portable. One customer claims \$15.00 per day saving over one of the best known Batch Mixers.

Send for Booklet "a"

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50 High Street : : BELDING, MICH.

# BURLINGTON



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

## Venetian and Sliding BLINDS Screens and Screen Doors

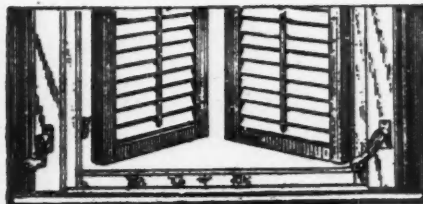
Equal 500 miles northward. Perfect privacy with doors and windows open. Darkness and breezes in sleeping rooms. Write for our catalogue, price list and proposition to you.



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

**BURLINGTON VENETIAN BLIND COMPANY**  
950 Lake Street, Burlington, Vermont

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## Standard Shutter Worker

New and improved patterns and designs.

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

**SHELTER** is one of the elemental needs of our race.

From the rude shelters of the cave man, we have evolved, through ages, the modern dwelling. We first guarded against deadly cold, then we required privacy. The modern dwelling must shelter us from heat as well as cold, and from distracting noises. Brick and stone keep out the wind and rain, and some of the heat, and some of the noise.

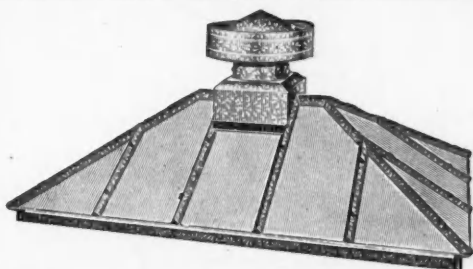
But the only material which keeps them out entirely is **LINOFELT**.

**LINOFELT** is a scientific non-conductor of heat, cold and sound, a blanket of flax fibres (unbleached linen threads) applied inside or outside the building.

We have in use today over half a billion square feet—we can not make it fast enough.

Every builder can learn about it from our booklet, sent on request, and he needs to learn, for he may have to put it up any day.

**UNION FIBRE COMPANY,**  
Dept G  
**WINONA, MINNESOTA.**



## SKYLIGHTS

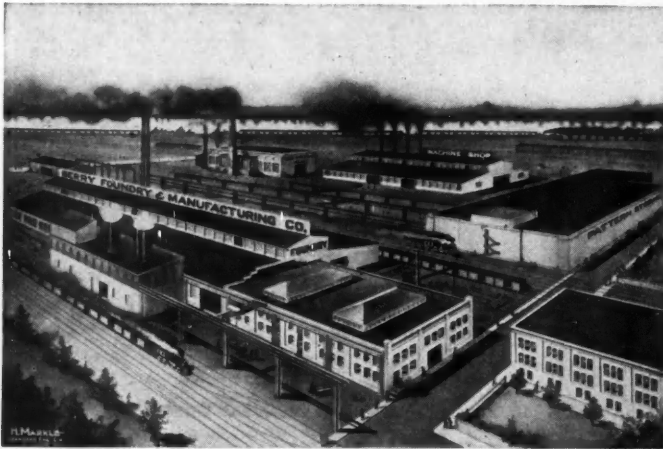
### DO YOU WANT PERFECT LIGHT COMBINED WITH PERFECT VENTILATION?

If so, investigate the **WILLIS Ventilators and Skylights**. Our Skylights are made in seven different styles, and can be set up by any person of ordinary ability without the use of tools or solder and have a perfectly water-tight job.

Send for Catalogue No. 5 of Skylights, Cornices, Crestings, Finials, etc.

**WILLIS MFG. CO.**  
**GALESBURG, ILL.**

Original makers of the Willis Hip Shingle.



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Structural and Ornamental Iron.  
 Fabrication of Structural Steel  
 Standard Sizes Steel Shapes in Stock.  
 Builders Supplies  
 Estimates Furnished

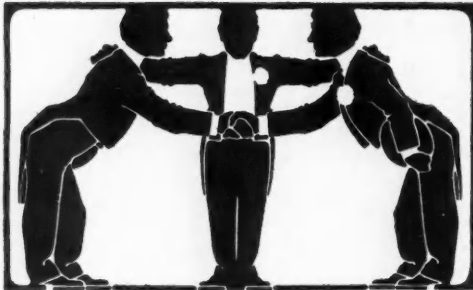
Office and Works St. Joseph, Mo. Fifth and Oak Sts.

## Success to Concrete Block and Brick Makers

If you contemplate the making of Concrete Blocks and Brick, I can show you how to save money—at least \$1.50 per hundred blocks and \$1.25 per thousand brick. Blue Print Drawings, scale  $\frac{1}{4}$  inch to the foot, with a complete itemized bill to construct a Money Saving Plant, for the sum of \$1.00. (Money order or bill.) For references as to my experience and success, address The Old Second National Bank of Bay City.

**J. H. EMERY**

807 W. Midland Street, : : : BAY CITY, MICH.



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to **HARDWARE DEALERS, GENERAL-STORE PROPRIETORS and CONTRACTORS:**

*We want you to become acquainted with the center-lift hand-power elevators we are now carrying in stock.*

They are built in various *satisfactory* sizes—at also *satisfactory* prices—can be shipped *immediately* upon receipt of accepted specifications.

Write us for illustrated plans, details, sizes and prices in Folder No. 99, which will permit you to intelligently order by return mail.



**EATON & PRINCE COMPANY**  
 CHICAGO

## Artistic Mantels



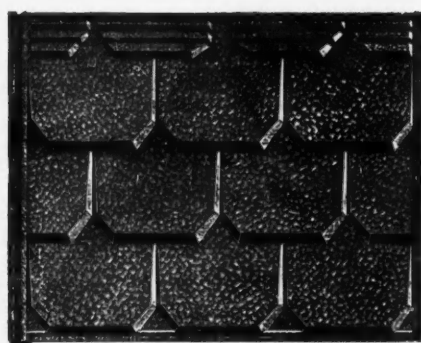
in Mission, Colonial, White, Mahogany and Oak.

Everything from the cheapest to the best. Fireplace hardware and tiling of every description. Large catalogue and wholesale price list sent on receipt of 25c in stamps.

**The Geo. W. Clark Co.**

No. 79 Dearborn Street  
 Chicago

306 Main St., Jacksonville, Fla.



The roofing with a reputation has been used for more than 20 years, and still in good condition. Will last a life time

## “EASTLAKE” METAL SHINGLES

For roofing all buildings with one-quarter pitch or more.

### NEVER LEAK

They reduce the fire risk, and cost of insurance. Superior and cheaper than wood shingles. Any good carpenter or mechanic can lay our shingles.

**Tools Required—Hammer and Shears.**

## THE W. J. BURTON CO.

Manufacturers of all kinds of roof trimmings.

**DETROIT, MICH.**

Write for Catalogue and Prices.

## SUCCESSFUL ESTIMATING

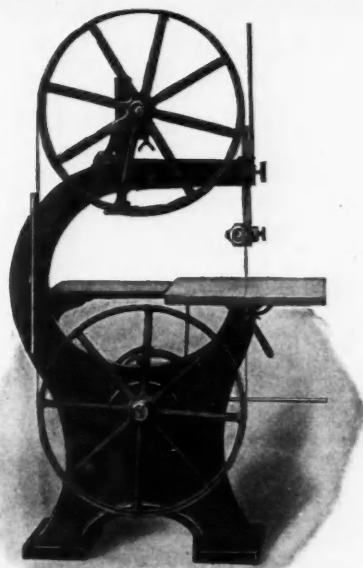
Is the vital problem that confronts every builder. His success depends upon his ability to estimate the cost safely and accurately. The *Lightning Estimator* (fourth edition) prepared by a successful contractor, teaches the builder to estimate the cost in an easy, simple, safe, reliable, accurate and concise manner. A point much appreciated by builders is the great rapidity of this method over all others. Many builders using our methods have written us that they are estimating the cost of an ordinary building in 30 to 60 minutes.

**Based on actual experience, not theory.**

Gives the actual cost of labor and material for each separate part of the work, so that it may be easily adjusted to any locality. Guards against errors and omissions. Brief and handy. Each subject can be found at a glance. No unnecessary lingo, but clean-cut data enabling the builder to accomplish his work at once. This is the new edition amply illustrated and bound in waterproof covers. Price \$1.00 (money order).

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NOTE.—This book is for estimating wood and veneered buildings and covers residence work from start to finish with the exception of plumbing and heating.



The rigid construction and modern design of the new 32-inch

### Crescent Band Saw

insure a machine of the very highest efficiency as a rapid producer of accurate work.

**Crescent machines cost less than others of equal merit.** They are best because they are strong, durable and practical.

They are low in price because they are in big demand and we have to build them in large quantities.

Send at once for catalogue describing our complete line of Band Saws, Saw Tables and Jointers.

**THE CRESCENT MACHINE COMPANY**

224 Main St., Leetonia, Ohio, U.S.A.

**SAMSON SPOT CORD WEARS LONGER**

SEND FOR TESTS, CATALOG, "B" AND SAMPLES

**NO WASTE FROM ROUGH PLACES, CHEAPEST IN LONG RUN.**

**SAMSON CORDAGE WORKS, BOSTON, MASS.**

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Send us two or more names of persons who are interested in or want to buy Hot Water Heating Plants and we will send this scale. Back inches are divided into 6, 10, 12, 16, 20 and 40 parts. Also free catalog on request. See our two-page ad in American Carpenter and Builder for January, 1907.

## EVERY TIME

you pass a bundle of Galvanized Sheets, look for this mark—



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Nine times out of ten, you'll find it on the top sheet—for Apollo Best Bloom Galvanized Sheets are popular everywhere, and here is the way to find out for yourself how universal is their use. This suggestion is only intended for the man who never used them; for the thousands who *do* know how even in gauge, how pliable, how thoroughly coated, and how easily applied Apollo Best Bloom Galvanized Sheets are—no new arguments are necessary. They know from experience, and think only "Apollo" when Galvanized Sheets are on their mind.

If you would like to know the size of every sheet, its weight, the number in each bundle and the various gauges—send for our Apollo Weight Card. There's no charge for the card and we pay the postage. Address our Advertising Department.

AMERICAN  
SHEET & TIN PLATE  
COMPANY,

FRICK BUILDING,

PITTSBURGH, PA.

### American Carpenters and Builders

Say of

#### "Gossett" Hinges for Window Screens:

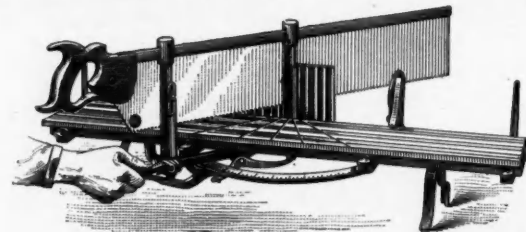
- NORTH. Illinois. "They are the best I have ever seen for the purpose. Those that got them last year think they are fine."  
 SOUTH. Alabama. "Of all the hangers I have seen I like yours the best."  
 EAST. Pennsylvania. "My customers last year were delighted with them."  
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(Names and addresses furnished on request.)

If Gossett Hinges pleased their customers, won't they please yours? Send for free sample pair for actual test—there's nothing so convincing. Sold by hardware dealers. Price per dozen pairs, \$1.20, express prepaid.

Six Years of Growing Sales Prove Their Worth

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#### 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



## Columbia Mineral Wool Company

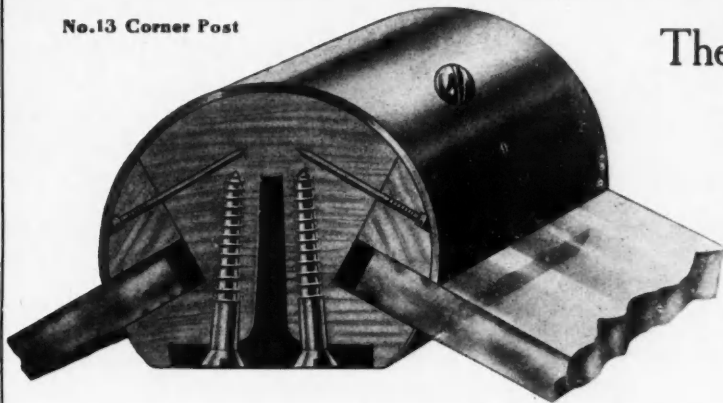
Standard Mineral Wool makes buildings fire, sound and vermin proof. Send for circulars and samples--free

LOOKING ALL WAYS FOR BUSINESS OFFICES: 918 Opera House Bldg., 112 Clark Street, Chicago, Ill.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



No. 13 Corner Post



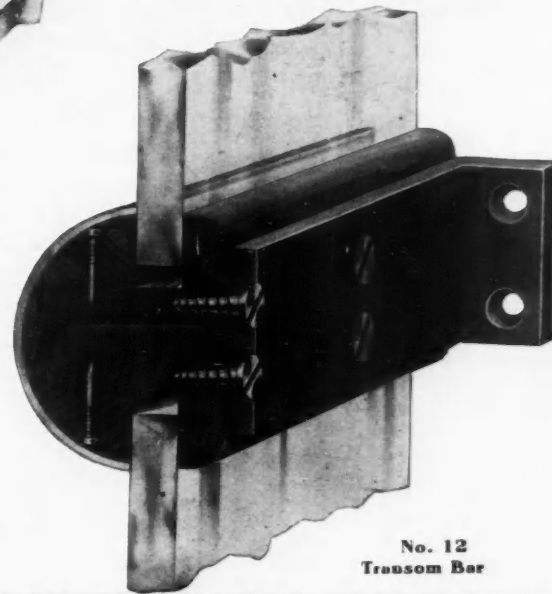
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## STORE FRONT CONSTRUCTION

Makes the most practical, complete and modern store fronts, and enables the merchant to display his goods to the best advantage.

It is recommended by Plate Glass Insurance Companies and specified by many leading Architects.

Write for illustrated catalogue "D-800", which thoroughly describes it.



No. 12  
Transom Bar

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Sole Owners and Manufacturers

Main Office:  
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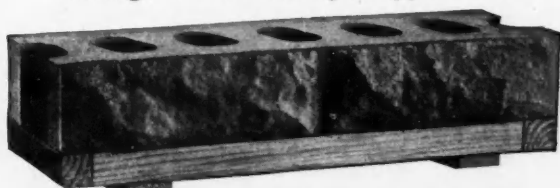
### Are you looking for a Cement Block Machine

which makes the best block in the shortest time, the greatest variety of styles as well as of sizes, a full line of veneer work as well as of regular heavy blocks, etc., then buy

#### The U. S. STANDARD MACHINE

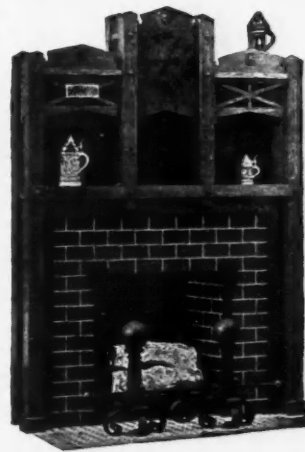
Manufactured by  
**The Ashland Steel Range & Mfg. Co.**  
Ashland, Ohio

Catalog "A" sent free upon application.



4" X 8" X 24" ROCK FACE IN 12" & 12" SECTIONS

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Do you want a copy of our 1907 catalogue, showing the most complete line of Wood and Brick Mantels, Grates, Tile and Fire-Place Fixtures on the market?

We pay the freight and offer contractors special inducements. Write for particulars.


Our Patented Grates will heat from 8,000 to 10,000 cubic feet of space in zero weather, and furnish the most perfect ventilation.

Contracts taken for Tile Floors and Wainscoting—Special illustrations at request.

### HEITLEND GRATE & MANTEL CO.

827 Main St., QUINCY, ILL.

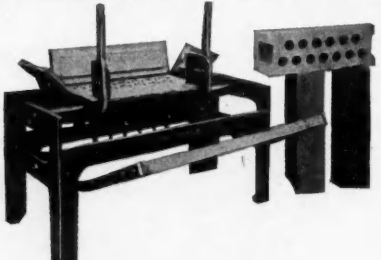
Mention American Carpenter and Builder.



## The Noble Cement Mill

Is the Cement User's Friend

It puts new life into old cement, and makes lumpy cement smooth and fluffy as the freshest.  
No mote riddling; no more waste.  
The mill is built on scientific principles, milled steel rolls, differential gear, large hopper and bin, with a drawer ample for 1-4 bbl.  
Capacity, one bbl. in 8 minutes. Price so low you cannot afford to be without it.



## The Noble Cement Block Machine

makes rough hewn stone all day and never repeats a design, and our wall looks just what it is—rough hewn stone. No two blocks alike. No other machine has this feature.

**NOBLE CONCRETE MACHINERY CO.** - - - Fostoria, Ohio

THE CELEBRATED

# "National" Block Machine

IS A WONDER

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DO YOU WANT the greatest value for your money ?

DO YOU WANT the block machine that will give you a pride in your work—and bring you more work ?

DO YOU WANT the simplest face down block machine on Earth made on scientific principles ?

DO YOU WANT the block machine with the fewest parts with nothing that can get out of order ?

DO YOU WANT the block machine that can make all sizes of blocks on the one pallet board ?

DO YOU WANT a completed block machine that will make blocks of all angles and all sizes without having to buy extras ?

DO YOU WANT the block machine that produces the best work, that is a constant advertisement for your business ?

DO YOU WANT the block machine that is easiest in operation and of greatest capacity ?

DO YOU WANT the block machine that will last a life time ?

DO YOU WANT the only block machine that, judged by its product, is the best ?

If you want all these you must have a 'NATIONAL.'

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**National Cement Machine Company,**  
BAY CITY, MICHIGAN  
Woodruff Bros., Old Forge, N. Y., Agents for New York State.

**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 lengths 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.**


## Simpson Cement Molds

for porch and other ornamental work have become standard. They are in use in every one of the United States and territories, in Canada, England, Porto Rico, Cuba, Buenos Aires, and Sandwich Islands. They are giving complete satisfaction to all block makers and contractors making their own blocks.

**PORCH PHOTOGRAPHS FREE**

We have a large number of half-tone engravings from photographs of porches which we send with information as to details, upon request.

**Simpson Cement Mold Co.**  
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Department S. COLUMBUS, O.  
W. E. DISBROW, Eastern Sales Agt.  
47 Lispenard St. New York City.  
GEO. B. THOMAS, Pacific Coast Sales  
Agt. 340 College St. - Portland, Ore.



# Stone Making is Money Making

## By the Pettyjohn System

Portland Cement is as old as the hills, but its modern use in the molding of concrete blocks is practically a new industry—an industry with wonderful possibilities for money making. Block making offers to any energetic man anywhere an opportunity to establish a profitable, permanent, independent business. It may be YOUR opportunity. Write us and we will tell YOU how to start a "stone-making-money-making" factory in YOUR town.

**THE TRUTH ABOUT BLOCK MACHINES:** Any block machine will, of course, make building blocks—wooden forms will do that, but the best machine will make the BEST blocks and the GREATEST PROFIT. The PETTYJOHN machines are recognized generally as the standard on the market. They are the best by test. There are more Pettyjohn machines in use than any other—there's a reason. They are the choice of the practical, hard-headed contractor who knows the best and insists on having it. We are pioneer manufacturers of concrete molding machinery and our line is the most complete on the market, embracing both side face and face down machines, ranging in price from \$35.00 to \$275.00, according to equipment. Our latest model is our Tandem Invincible, a wet process machine, face down, 40 inches long, at \$65.00, \$150.00 and \$215.00. An 8x16x8 Invincible at \$35.00—an ideal home builder's outfit.

Every Pettyjohn machine is sold on trial absolutely guaranteed to give satisfaction or money refunded. Write for our interesting booklet, "Stone Making." It's free.

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



## "The Miles" Face Down One Size Pallet

Makes all styles and sizes of blocks  
Get Our Price Book and Catalog D

**P. B. Miles Manufacturing Company**  
Jackson, Michigan  
109 W. Cortland St.

## THE HAYDEN AUTOMATIC BLOCK MACHINE CO.

Manufacturers of High Grade

112 W. Broad St., Columbus, Ohio

CONCRETE BLOCK MACHINES, MIXERS, STONE CRUSHERS, ETC.

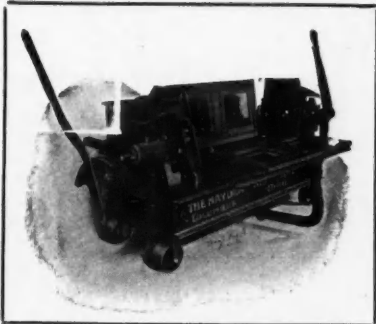
The Most Simple and Effective Mechanical Principles  
Embodied in this Mixer

### POINTS OF SUPERIORITY IN THE HAYDEN MACHINE

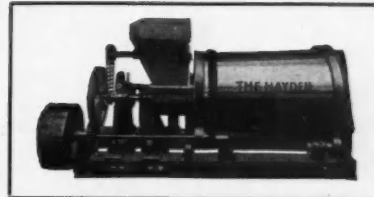
Great Strength ... Limitless Range ... Rapidity  
Ease of Operation ... Simplicity of Construction  
The only Block Machine on the market strong enough  
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The Hayden Down Face Machine.



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

**Our Guaranteed Dry Wall Block Appeals to the Builder**  
because moisture cannot penetrate it. No furring and lathing,  
waterproofing or expensive facing required. It means a cheaper  
and better wall. Booklet E-6 gives full particulars about this  
low price, guaranteed outfit.

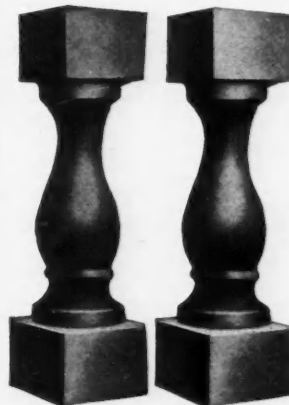
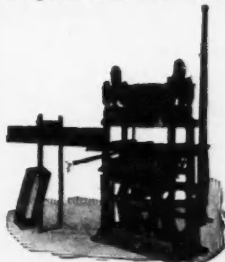
### The Products of the Helm Press Get the Contracts

because the highest quality is secured  
with lowest labor and material cost. Plain, faced, colored and ornamental  
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bring additional profits. Mixers \$100  
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### Halteman Twin Molds

in your porch work. They will  
save you time, add to your  
profits, and will suit varieties  
of decorations. If you are think-  
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want to know more about it,  
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**The Halteman Mold Co.**  
10-12 Michigan Avenue  
DAYTON, O.



## Cement Machinery Mfg. Co.

COLUMBUS, OHIO



Manufacturers under the original and fundamental patents of H. S. Palmer, Winget,  
Sanderson, McDowell and a number of others.

The best of everything in the Cement Moulding and Mixing Machinery and Tools.

**WE HAVE THE LARGEST WAREHOUSES AND DEMONSTRATING PLANT IN THE WORLD.** We have 40 different kinds of Cement  
Working Machines ready to show in practical operation.

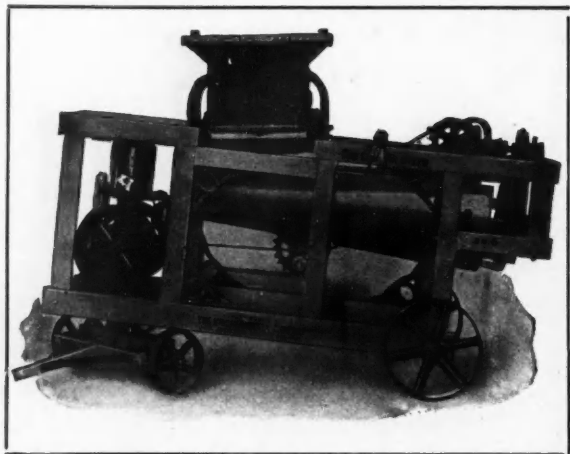
In our large assortment we have the best Block Machines in both Face-down and Side-face that can be bought. Our Continuous Mixers  
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machines in operation before deciding what you want. If we cannot satisfy you we have the best, we still pay your fares.

**DO NOT FAIL TO SEND FOR OUR DESCRIPTIVE CATALOG.**

Front and Maple Streets

COLUMBUS, OHIO, U. S. A.

**"If I Had Known What I Know Now"**



Cleveland, Ohio, May 8, 1907.

THE KNICKERBOCKER CO., Jackson, Mich.

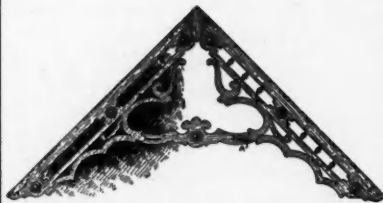
Gentlemen:—I am so pleased with your No. 6 Coltrin Mixer that I thought it would not be just if I did not tell you about it. I have used it on one apartment, putting in a concrete foundation, and I have saved its price in labor. It turns out concrete faster than the men can use it. If I had known what I do now, I would have purchased one of your Mixers long ago. It is the best on the market.

A. D. W. M.

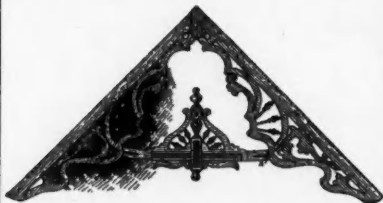
Yours truly, CHARLES MILES.

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Adjustable Gable  
Ornaments



No. 20. Extends 5 feet down gable. Adjustable to any pitch.



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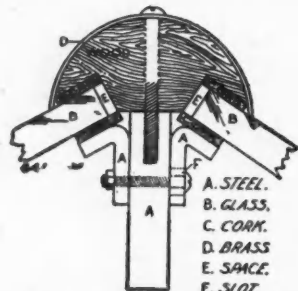
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PROMPT  
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Chicago Embossed Molding Co.

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598 Austin Ave., Chicago



All Steel Cork Bedded Corner Post

**SHULTZ'S**

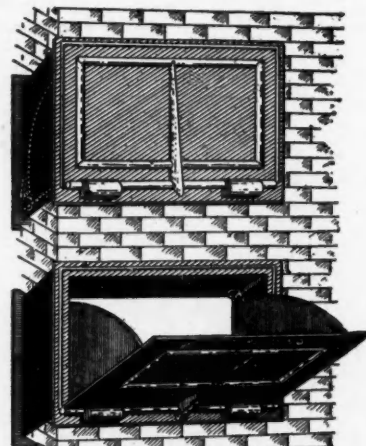
Patent All Steel, Cork Bedded Corner Posts, Mullions and Transom Bars.

Also my new Acme Steel Post and Bars, in which the Glass is Bedded Between Wood.

They are the handsomest and strongest bars made. The glass is bedded on both sides, either between Spanish cork or wood, preventing any cracking or crushing of glass. No putty. Are absolutely water and dust proof.  
**BURGLAR PROOF COAL CHUTE.** Locks itself automatically when closed up. Can only be opened from inside. Face of Chute flush with wall. Write

**C. H. SHULTZ,** Patentee and Manufacturer **St. Joseph, Mo.**

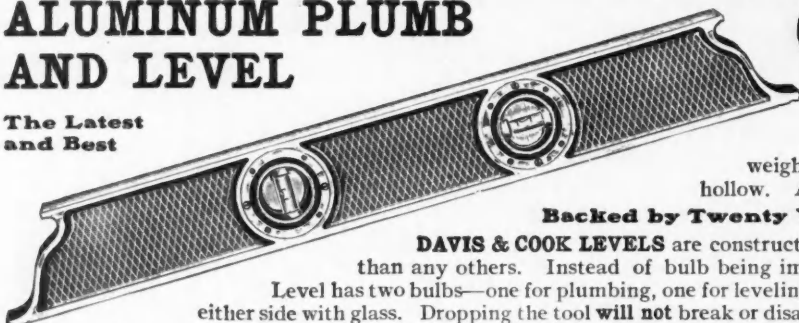
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Coal or Wood Chute

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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.

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Ask for **DAVIS & COOK LEVELS**

**Davis & Cook, Makers**

**13 High Street**  
**WATERTOWN, N. Y.**

# Waterloo Concrete Brick & Block Mach. Co.

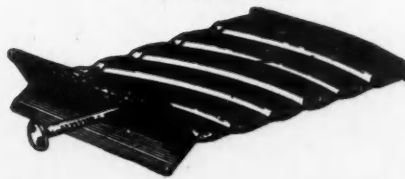


**ONE** movement of the lever operates the **ENTIRE** machine, consuming the least time for operation of any machine. Two men will make 250 blocks per day.  
 Our block is patented. Has double, a vertical and horizontal air space.  
 The brick attachment makes 18 brick as easily as a block. No gears or chains to clog or break.  
 Write for catalogue "B."

**O. H. SWEENEY, Secretary**  
 101 E. 4th St., Waterloo, Iowa

## CONCRETE CONSTRUCTION IS INCOMPLETE

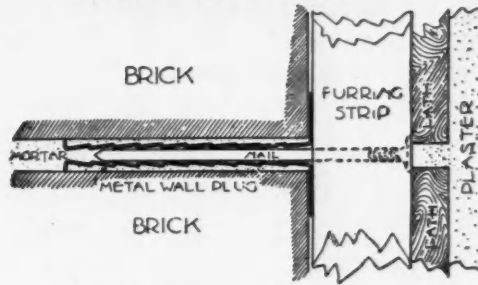
WITHOUT OUR



### 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 Ratty Plug.

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



Furring out on Brick or Concrete

SEND FOR SAMPLES AND CATALOG

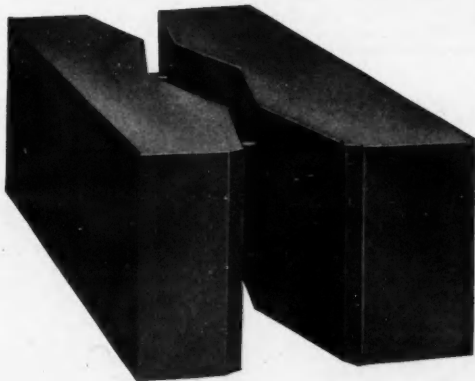
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Foundry Ave.

Webster, Mass.

## ANCHOR CONCRETE STONE MACHINES

Make This Continuous Air-Space Block



TWO SLABS OF CONCRETE TIED TOGETHER with four one-quarter inch galvanized iron rods firmly imbedded in the block in its construction. Blocks lay in the wall 8 in. high, 24 in. long, 8 to 16 in. wide.

**Easy to Make Easy to Lay Look Fine**  
**Very Strong Frost Proof Moisture Proof**

Capacity of Machine:  
**300 PERFECT BLOCKS PER DAY**

Write for Special Low Prices and Catalog of Machines

**ANCHOR CONCRETE STONE COMPANY**  
 ROCK RAPIDS : : : : IOWA

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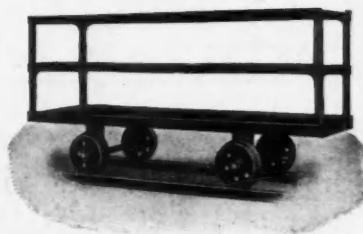
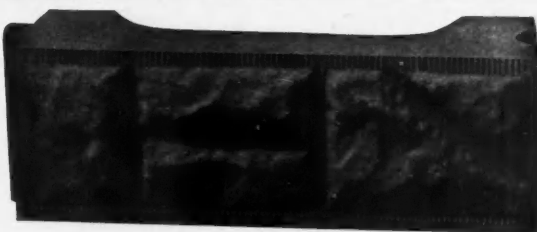


FIG. 202 DRYING CAR

**Chase Foundry & Mfg. Co.**  
 COLUMBUS " " " OHIO

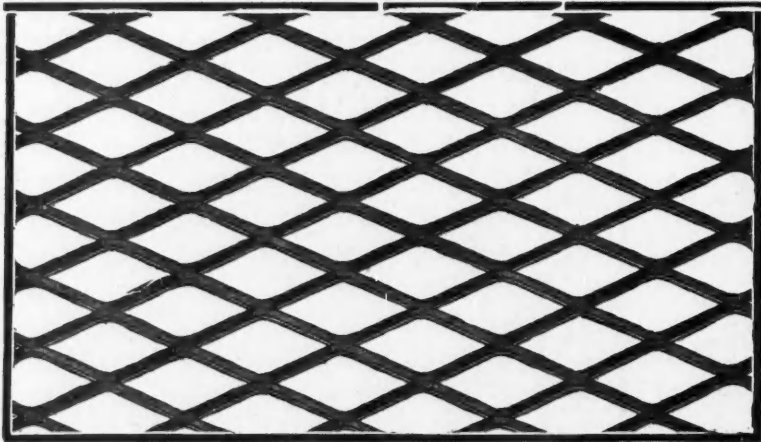
For Concrete Block and Brick.  
 Transfer Cars and Trucks of all kinds.  
 Write us for Catalog.



## The Beavers' Fast Building Machine

The outfit includes twenty-four different molds, each ranging in length from 10 to 24 inches and 8 inches wide. We have 30 other molds in stock. We have the facilities for casting any design you desire. Write us your wants. We will gladly give you any information about our machine or the concrete business in general. This machine has a capacity of 900 blocks per day.

**Olson & Richardson**  
 Stoughton, Wis., U. S. A.



Northwestern Expanded Metal Company

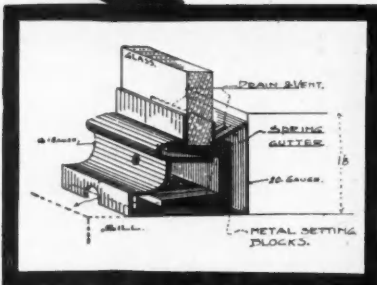
D. D.

Expanded Steel Plastering Lath

	Weight per Bundle	Yards per Bundle	Sheets per Bundle	Weight per Yard	Yards in 100 lbs.
No. 27 Gauge	27½ lbs.	12	9	2½ lbs.	43
No. 26 "	30 lbs.	12	9	2½ lbs.	40
No. 24 "	40½ lbs.	12	9	3.4 lbs.	29½

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 Write for Catalogue, Samples and Prices

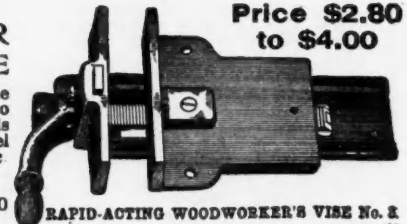


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OVER 12,000 OF OUR STEEL RACK VISES IN USE

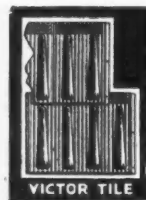
25 doz. Clamp Fixtures bought by one mill last year. We ship on approval to rated firms, and guarantee our goods unconditionally. Write for list of Steel Bar Clamps, Vises, Bench Stops, etc.

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MONTROSS METAL SHINGLES

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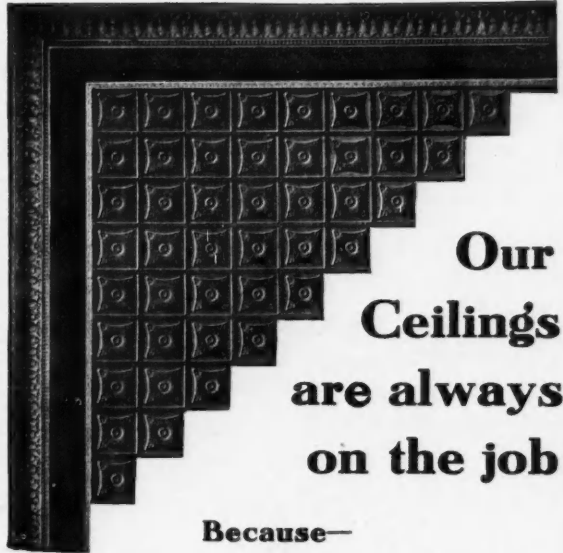
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Ceilings  
are always  
on the job**

**Because—**

They have the style and quality, and best of all, they will fit, and fit perfectly.  
 They are the lowest in cost and cheapest to erect.  
 They save time and money and get you the most business and at the best profit.  
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Let us send you our catalogue "Metal Ceilings."

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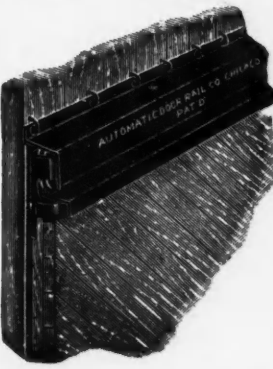
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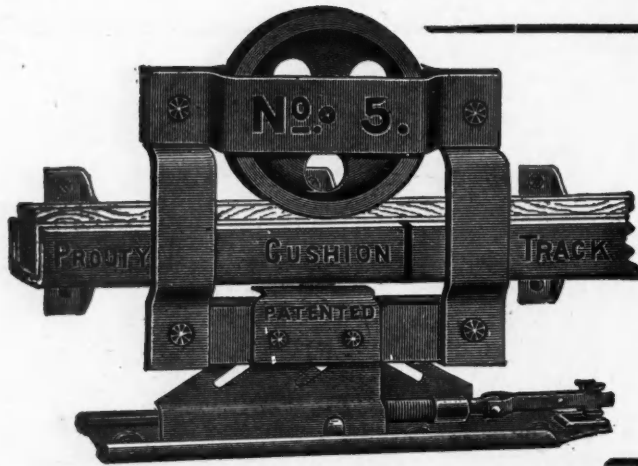
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In all Colors, Dry Press and Impervious

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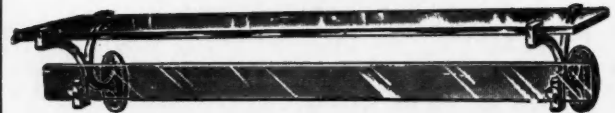
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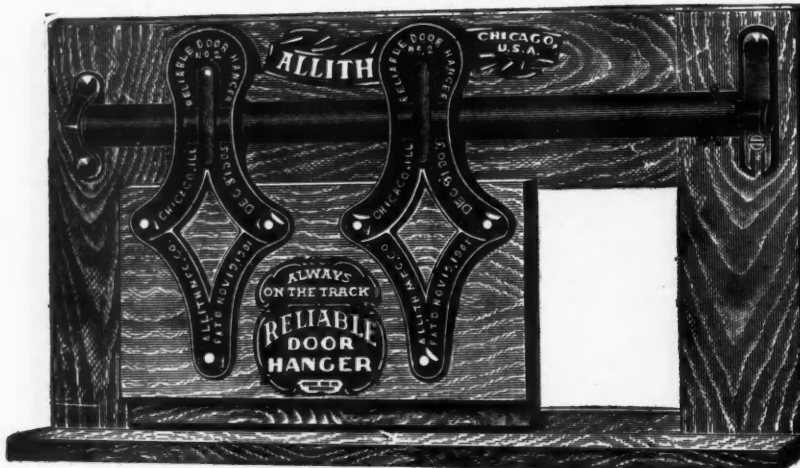
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Impossible to Derail  
Easy Running, Great Strength

FOR  
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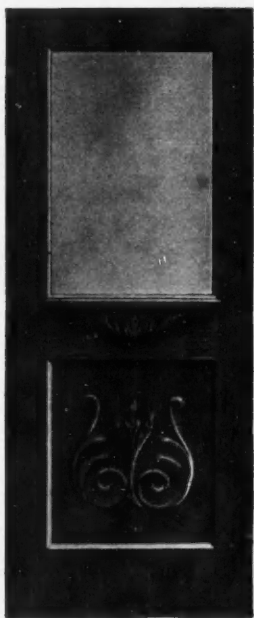
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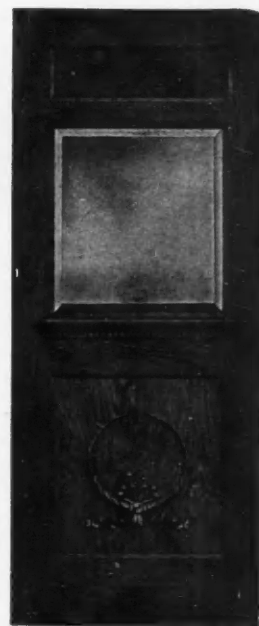


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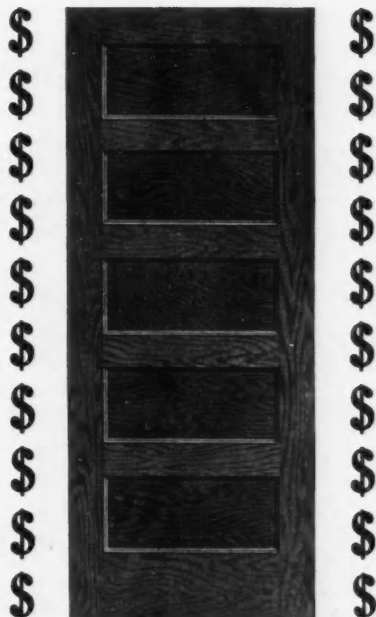
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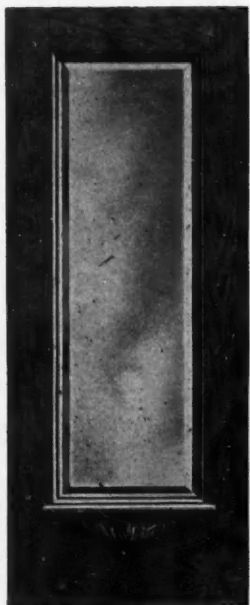
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Doors at  
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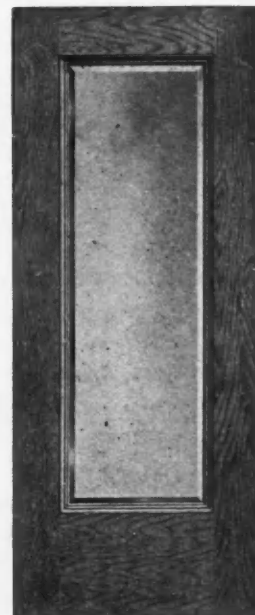
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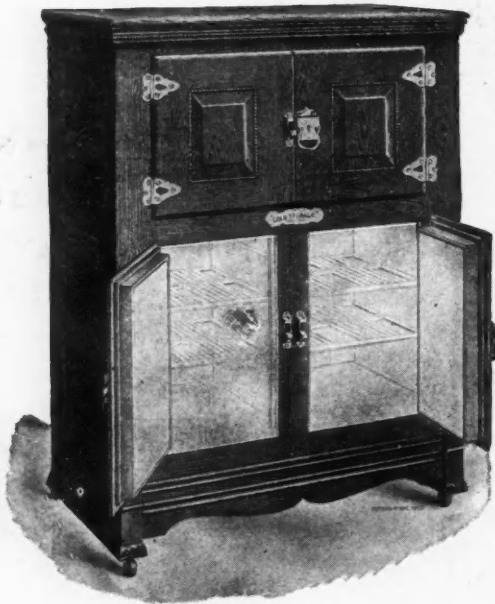
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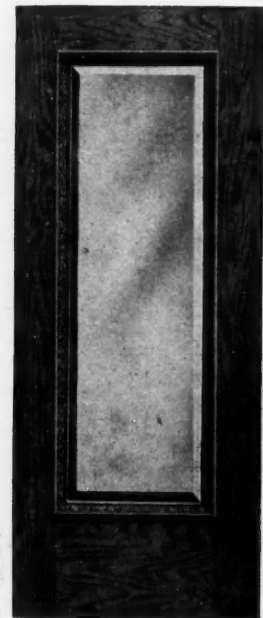
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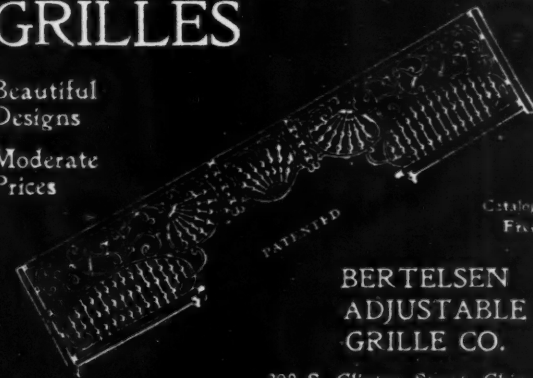
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CHICAGO

# GRILLES

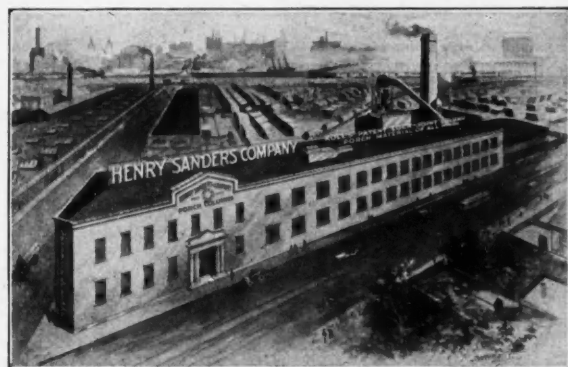
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The staves **CAN NOT COME APART** or open at the joints.

Their **CLASSIC PROPORTIONS** are **ABSOLUTELY TRUE**.

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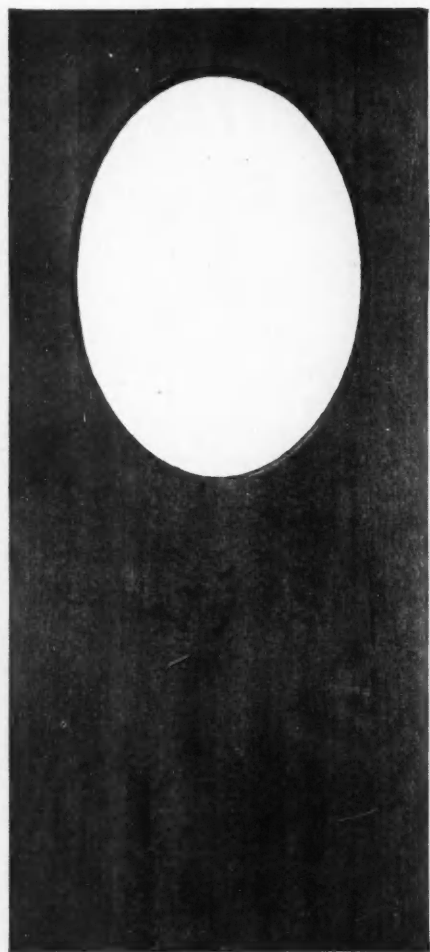
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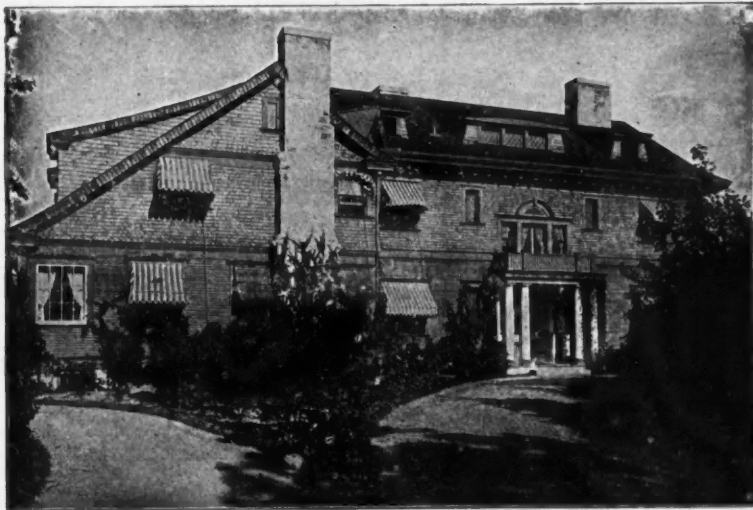
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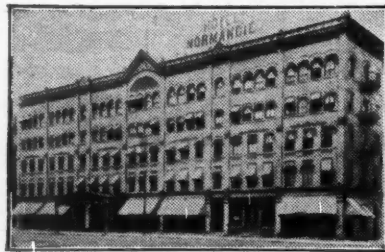
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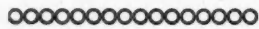
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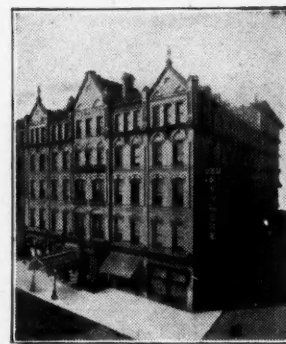
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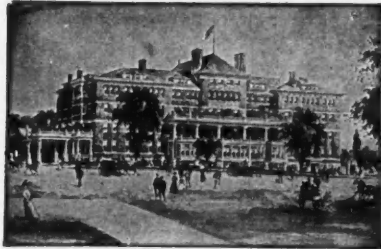
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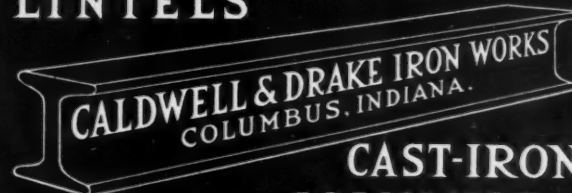
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Compound Door Co.	748	Marston & Co., J. M.	640	Vilas Bros.	749
Contractors' Supply & Equipment Co.	627	Mayhew Co., H. H.	636	Voltz Manufacturing Co.	716
Cortright Metal Roofing Co.	728	McKenna, David	724	Walters & Sons, W. P.	631
Coulson & Co., J. W.	737	Mead Cycle Co.	724	Waterloo Concrete Brick & Block Machine Co.	741
Crescent Machine Co., The	735	Miles Manufacturing Co., P. B.	739	Waterloo Gasoline Engine Co.	723
		Millbradt Manufacturing Co.	721	Weber Gas Engine Co.	644
Davenport Foundry & Machine Co.	641	Miller Manufacturing Co., A. W.	634	White Mantel & Tile Co.	721
Davis & Cook	740	Millers Falls Co.	634	Willis Manufacturing Co.	733
Detrick, D. F.	724	Millers Sons Co., Henry J.	639	Wisconsin Mantel & Tile Co.	725
Detroit Show Case Co.	714	Miracle Pressed Stone Co.	Cover	Woods, A. W.	630
Dixon Crucible Co., Jos.	639	Montross Metal Shingle Co.	742	Zimmerman, Chas. E.	726
Dunn & Co., W. E.	738	Moore & Co., E. B.	717		
		Morrill, Chas.	646		
Eaton & Prince Co.	734	Mullins Co., W. H.	637		
Eden Specialty Co.	726	Mulvey Manufacturing Co., Chas.	748		
Edwards Manufacturing Co.	723	Myers & Bro., F. E.	722		
Eller Manufacturing Co.	728				
Emery, J. H.	734				

**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 August 20 in order to insure insertion in the September number.

- NO. 21 JOINTER \$42
- NO. 13 DRIVEWAY GADGET \$85
- NO. 15 STRAIGHT END JOINTER \$54
- NO. 14-1/2 INCH EDGER \$42
- NO. 12-1/2 INCH EDGER \$48
- NO. 17 SQUARE EDGER \$50
- NO. 10-1/2 BEVEL EDGER \$48
- NO. 1000 ROUND EDGER \$85
- NO. 18 BUTTER TOOL \$85
- NO. 16 CORNER TOOL \$48



# EVERYTHING CEMENT MACHINERY

## MIRACLE ONE-MAN BRICK MACHINE



In selecting a Brick Machine one wants the very best. He wants one that will stand hard usage and last of it. He wants one that will not be constantly calling for expensive repairs. The Miracle Machine answers these requirements. It is strong in every part. From the heavy iron standard to the delicate mechanism of its molding parts, it is a most durable machine. It is made for a capacity of 1,000 to 4,000 brick every day for many years to come and must be of the very best quality or it would not stand the wear. The man who buys a brick machine expects to use it for all there is in it and he cannot therefore afford to buy anything else but the very best and strongest machine made. Better to pay a little more, if necessary, at the start and buy a good machine that will last for years without repairs than to save a few dollars at the start and be squandering money for repairs for a year or two and then be obliged to buy another machine. Price \$20, F. O. B. Minneapolis.

Read the following letter from a well pleased customer:  
Roswell, New Mexico, June 23, 1906.  
Miracle Pressed Stone Company, Minneapolis, Minn.  
Gentlemen:—We want to express the utmost satisfaction we have experienced with your \$150.00 Brick Machine. Last season as to capacity and none too large, and it is a business proposition that is certainly a good one.  
When we need any more brick machines, we are going to buy a Miracle.  
Very truly yours, Honda Stone Mfg. Co.

## MIRACLE SEWER PIPE AND TILE MOLDS

Making Cement Pipe and Tile is the most profitable branch of the whole concrete industry. For \$44.50 we furnish you a complete outfit for making 18-inch Bell-End Pipe. When you have sold fifty pieces of 18-inch pipe (100 feet), you have paid for your outfit and have a nice profit besides. For \$62.50 we equip you with complete outfit for making 24-inch 2-foot Bell-End Pipe. The sale of fifty pieces of this size pipe will bring back your total investment and a profit besides.

The following is a letter from one of our The manufacturers.  
Charlottesville, Iowa, Dec. 17, 1903.  
Miracle Pressed Stone Co., Minneapolis, Minn.  
Gents:—The tile molds I find to be just the thing. We had a good sale of the tile, it was laid in the year to buy these tile molds, but we have had a good trade. We made about 3,000 feet of a 12-inch tile; 2,500 feet of 15-inch tile; and about 1,500 feet of 24-inch tile. I think they are better than clay tile. They will stand frost better, and the older they get the better they are. A clay tile is no better than the day it is put in the ground—cement gets better the longer it is in the ground. I know this to be true; I have made clay tile for sixteen years and am still making them.  
Yours, Paul O. Cook.

## THE MIRACLE DOUBLE STAGGERED AIR SPACE BLOCK

The Miracle Double Staggered Air Space Block, always at the front, is advertised in the leading magazines so that people demand it. Price of complete equipment making 50 different sizes and styles of blocks, \$250. Has wider range and greater capacity than any other machine made at anywhere near the price.

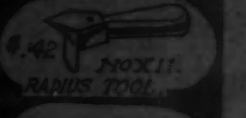
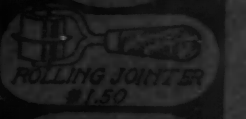
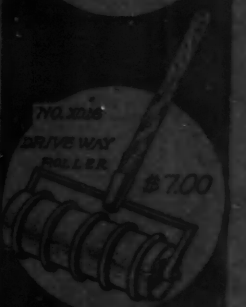
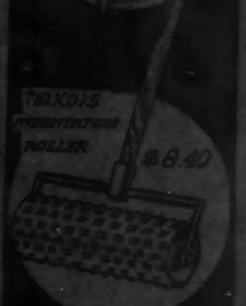
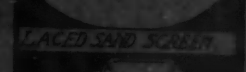
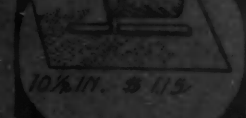
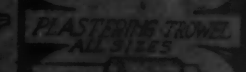
## PNEUMATIC TAMPING EQUIPMENT

We are headquarters for pneumatic tamping tools and equipment, and Gas or Gasoline Engines for operating same. Our tools are adjusted for tamping concrete blocks, brick and sewer pipe. Ask for prices and complete description.

## OUR 1907 CATALOG

We publish a large book on concrete—pages 9215, with over 500 illustrations. It thoroughly covers the concrete industry, shows numerous buildings with size and cost, over 100 designs of blocks and the process of manufacturing; the proper mixing, curing, laying or coloring of the concrete, the proper procedure of concrete construction, air space, etc.; full details on the manufacture, sale, use and the best machines for making Double Staggered Air Space Building Block, Cement Sewer Pipe and Drain Tile, Ornamental Stone, etc.; listing also everything in tools and appliances from a sidewalk jointer to an air tamper, and hand and power concrete mixers, including also a very low priced electric air space machine. Regular price, 25 cents. Sent free, provided you say in which line you are interested, and ask for catalog "K."

**Miracle Pressed Stone Co.**  
LARGEST MANUFACTURERS OF CEMENT MACHINERY IN THE WORLD  
MINNEAPOLIS, U.S.A.



# Just Write for 1000 Paint Bargains and Grand Paint Catalog and 58 Color Plates

**We Show You 50% Saved on all our Paints and Painters' Supplies at Low Factory Prices. High Quality Guaranteed or YOUR MONEY BACK.**

## A FEW LOW PRICES

Ready Mixed House Paints, \$1.10 per Gallon Can (Regular Price \$1.75).  
5 gallon Buckets, \$1.05 per gallon; Barn Paints, 73c per gallon; Floor Paints, \$1.10 per gallon; Floor Varnish, \$1.73 per gallon; Wagon Paints, \$1.50 per gallon; Wall Paper Cleaner for one room; 10 cents.

**DIRECT TO YOU**



Just write us and give us the chance to prove to you how many paint dollars we will save you. We'll promptly show you how you can save half your money on what you'd have to pay local dealers for Paint. We'll show you 1000 bargains in Paints of every kind of high quality. Paints that paint right and last longest.

Don't think of painting any house, barn or out-buildings, or floors, walls, ceilings or chairs, tables, or any piece of furniture, or wagons, or anything else, until you write us. Just enclose 10c postage (refunded on first order of \$5.00 or more) for our Grand Saving Paint Catalog, sent with 58 Free Color Plates.

We'll also show you half savings on all painters' and glaziers' tools—everything in the painter's line, from a 2-cent brush to half savings on Highest Quality Paint to cover a \$10,000 home or the biggest building in the world. We'll sell you any paint you want—from a quart can to paint of the same high quality by the barrel—at prices that will astonish you. We can only begin to show you sample bargains here on the left.

Our prices are way below what you have to pay anywhere else for good paints—ours are factory prices—save you many dollars, freight included, under what any other people charge you for any good paint. Poor paints—"ordinary" paints—cost high because they last no time at all. Gordon Van Tine & Co.'s paints are ready mixed to use—cost you less in price and give you the longest wear. You'll see why from our catalog and color plates. You'll be interested as a practical person. You'll be surprised at the great savings and rich quality paints we offer you absolutely guaranteed or your money back. You know us. Or neighbors of yours do. Because we sell Paint, Millwork and Roof-

ing of highest quality at lowest prices direct from the largest mill in the world to users all over the U. S. Established 1865. Our capital of \$250,000 backs our guarantee. Just write us and see how well paid you'll be. Do it. It will pay you. You hold us, the reliable makers, responsible for what we say our paints will PROVE to be to you.

**We sell at these low factory prices to either Painters or Dealers, or direct to the users themselves. Write today. It will pay you big.**

# GORDON, VAN TINE COMPANY

176 FEDERAL STREET

DAVENPORT, IOWA

Read What the

## LUMBER TRUST

is trying to do to prevent our selling direct to

**YOU**

The Lumber Trust is trying its worst to prevent our saving you HALF LOCAL DEALER PRICES by getting local dealers everywhere to write us for thousands and thousands of our Grand FREE Catalog—sending in "fake" orders, etc.—trying to compel us to charge the user higher prices than we do or lose our small margin of profit. The Lumber Trust can't do it. We'll send you an interesting pamphlet telling why it can't when you send for our catalog.

We ask you to send 10c postage for our Paint Catalog because the Lumber Trust is trying its worst to prevent us from selling direct to the user by sending us "fake" orders—getting local dealers to write for thousands of FREE Catalogs and Samples and trying to make us lose money. Now if you want roofing, paint or building material, and like a square deal, write us and enclose catalog postage. It will be the best investment you ever made. All postage refunded on first order of \$5.00 or more.