

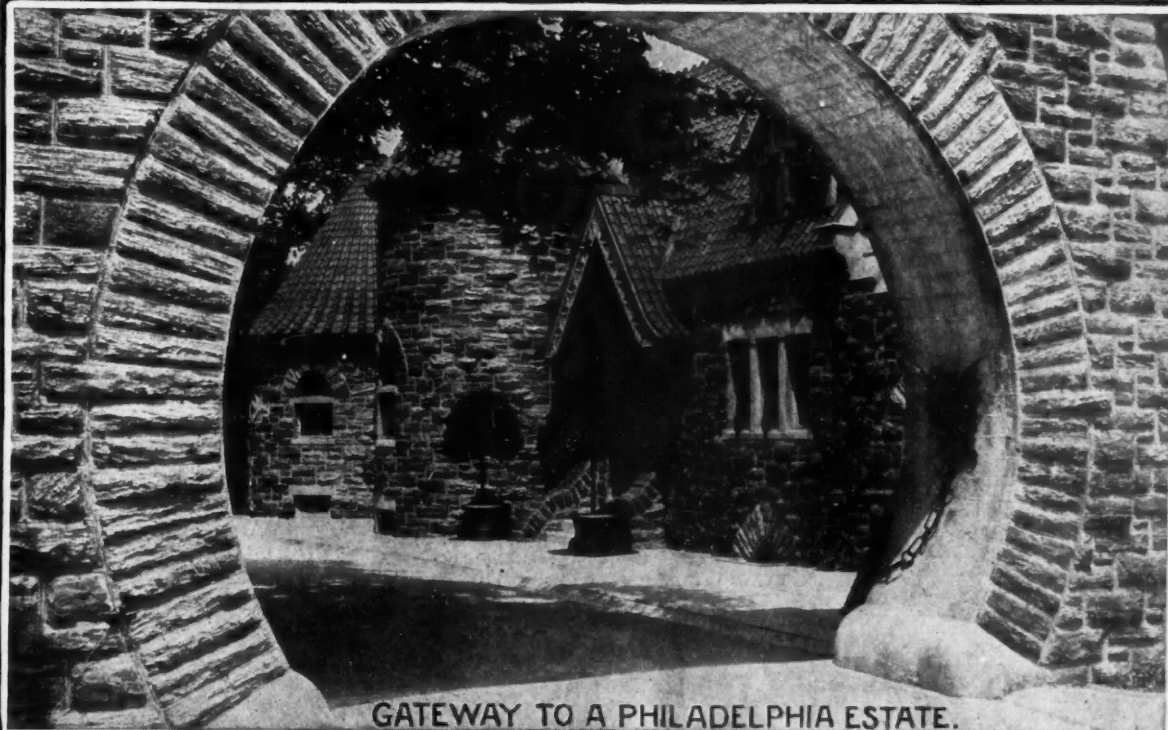
MAY, 1907

Price, 20 cents

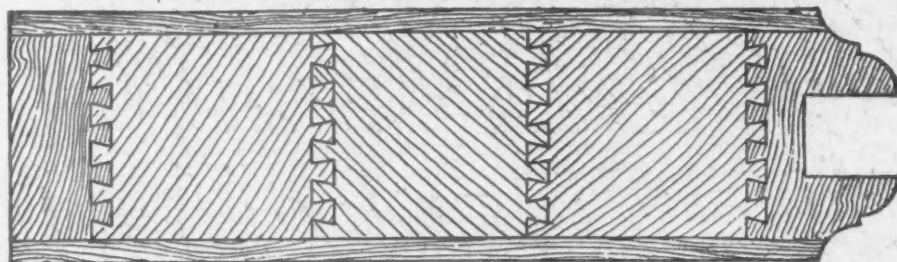
AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

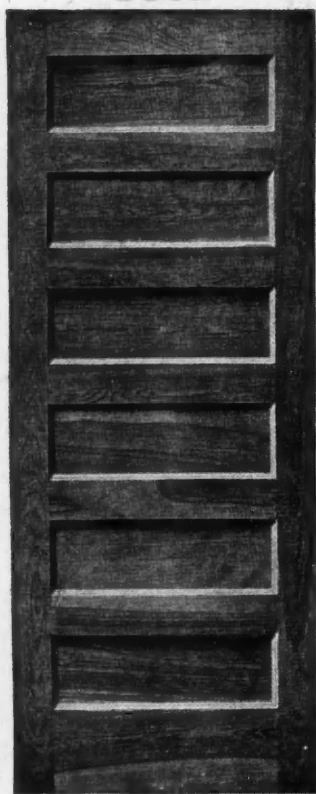


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The
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DOOR



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Birch, $\frac{3}{4}$ "x $\frac{1}{2}$ " — \$2.75, F. O. B. Cincinnati
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door is guaranteed not to
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or shrink.



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DOOR



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Write for full particulars and a sample

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The "LITTLE SHAVER"

Floor Scraper



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The "LITTLE SHAVER" floor scraper we bought from you some weeks ago has given more than satisfaction. We had some sixteen old bars which did not have attention for want of scraping, and the way the "LITTLE SHAVER" did the job was remarkable. If the machine can finish saloon top bars, it ought to be a winner on floors. We heartily recommend it.

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Complete with a dozen knives.

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32 POUNDS COATING

ROOFING TIN

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SHEET & TIN PLATE
COMPANY,**

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A BUILDING covered with roofing tin takes the lowest rate of insurance, while one covered with shingles, slag, gravel or composition roofing is forced to pay a greatly *increased rate because of the great fire risk.*

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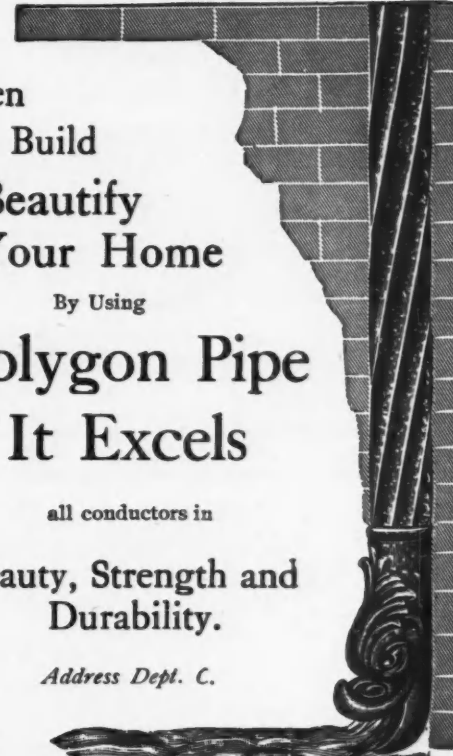
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 By Using
Polygon Pipe
 It Excels


all conductors in
 Beauty, Strength and
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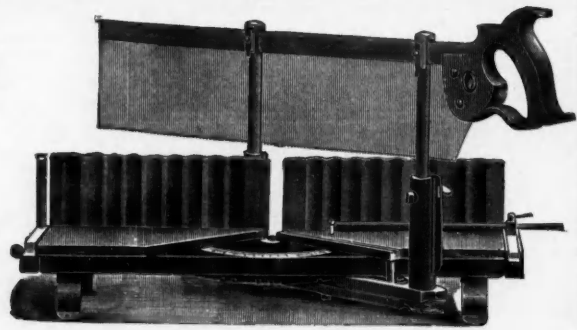
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NO MORE BREAKING  FIRST
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Automatic Stops for Holding up Saw. Corrugated
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If you want the best you will take no other
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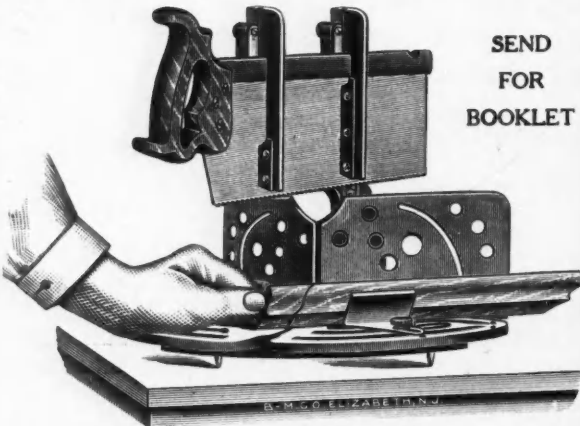


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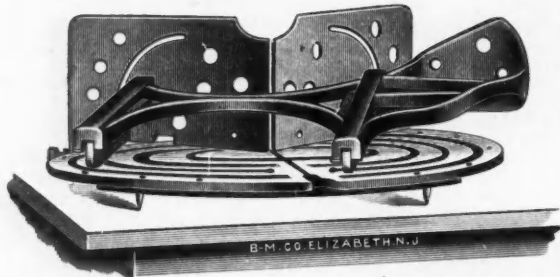
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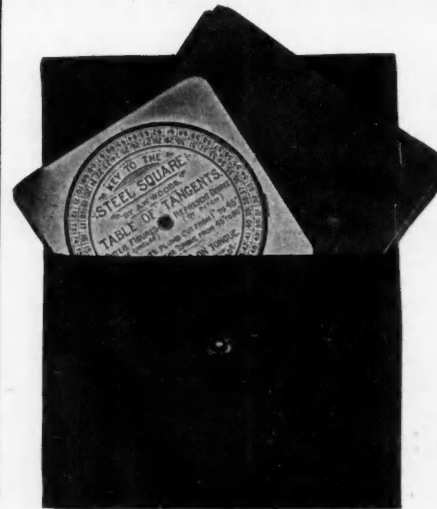
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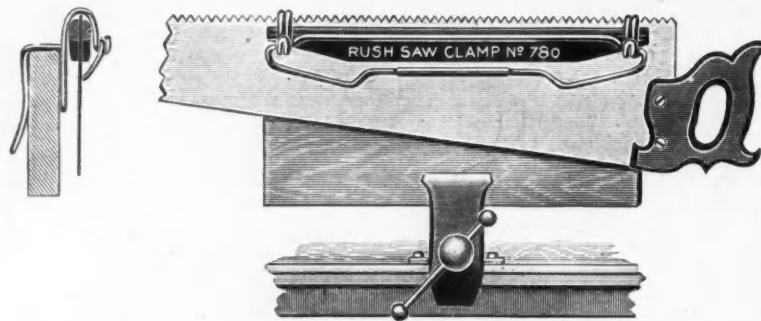
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It tells the whole story of how to use the com-
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Ten Thousand (10,000) Sold the First
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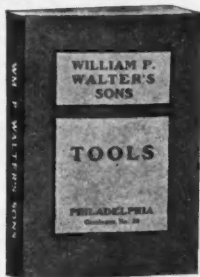
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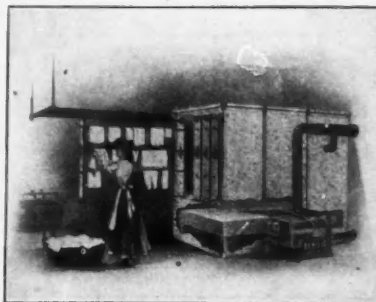


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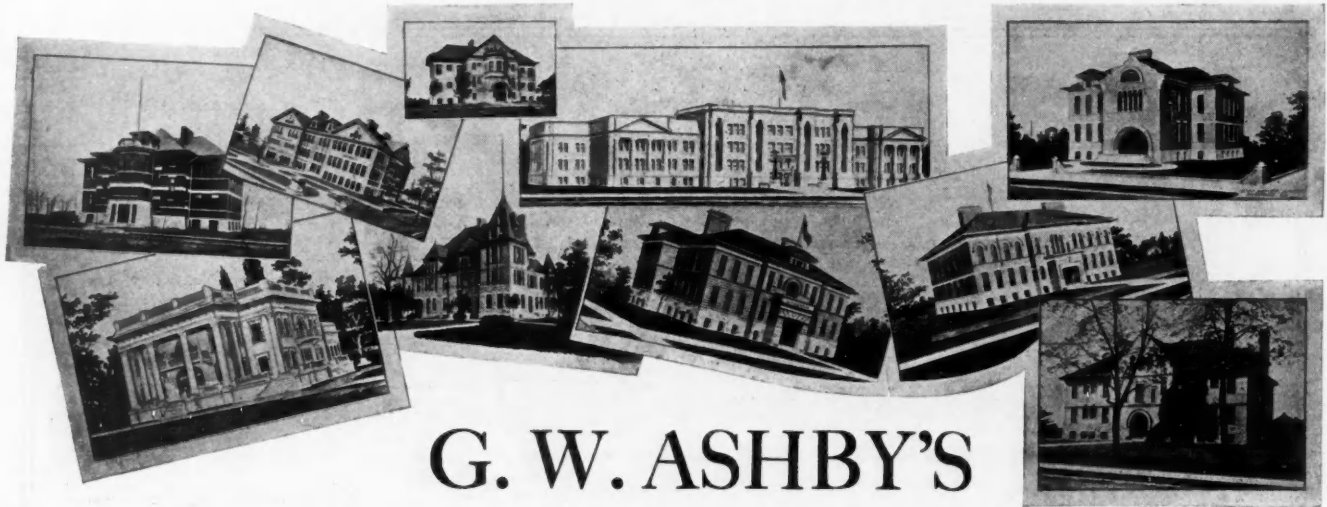


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Boils the Clothes
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Costs no more to operate than an ordinary laundry stove. No modern residence complete without it.

Write for full information

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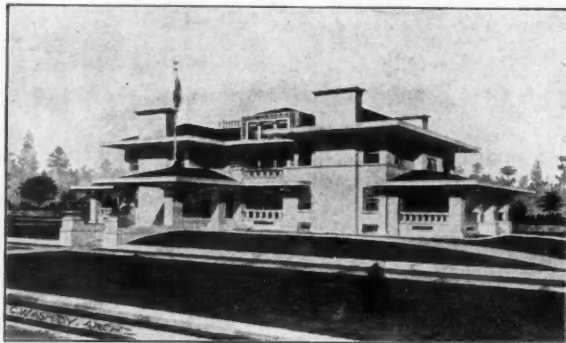


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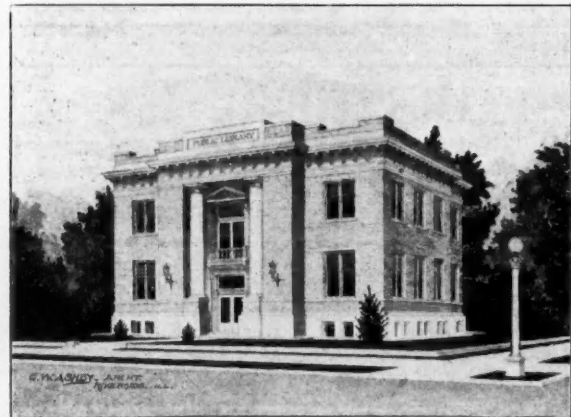
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We'll gladly send you this booklet with our compliments, promptly upon receipt of your request.

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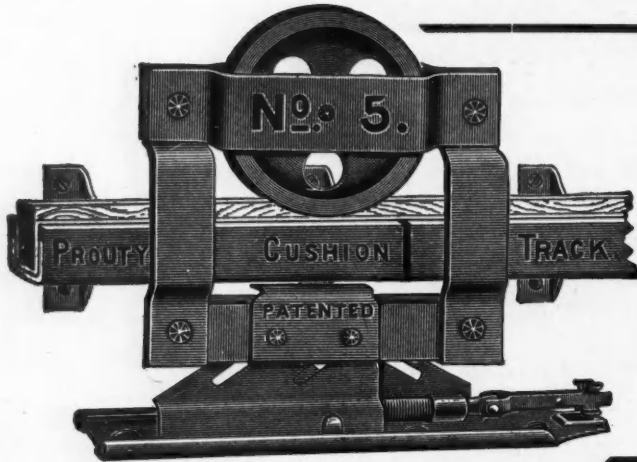
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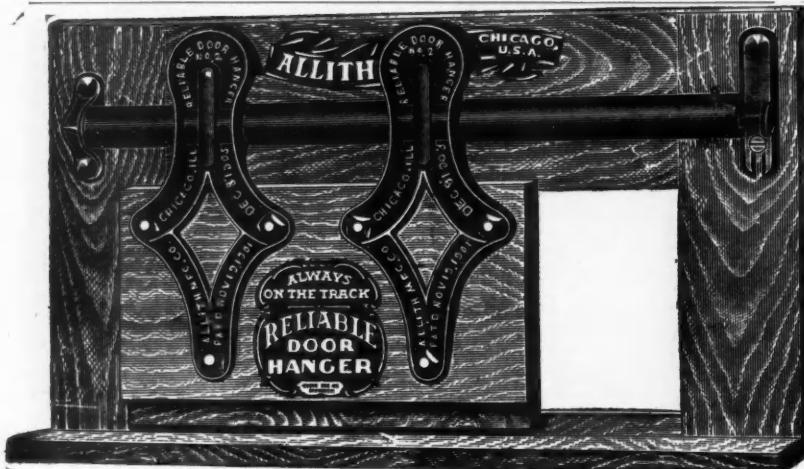
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ROUND TRACK DOOR HANGERS

Impossible to Derail
Easy Running, Great Strength

FOR
BARN, WAREHOUSE and FIRE DOORS

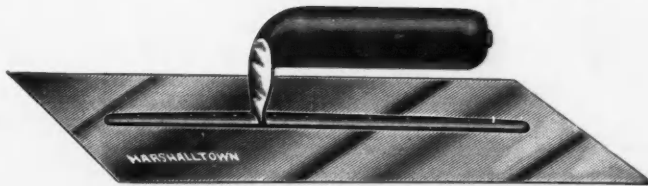
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All Sizes

BEST MADE



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Will pull any size nail.
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match them in merit
and beauty of finish.
Made in great variety
of sizes and grades.



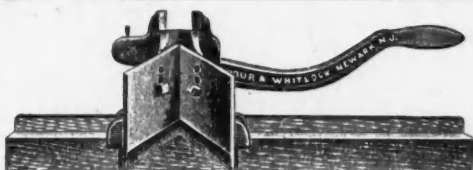
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Its Work is to Make Openings in Doors for
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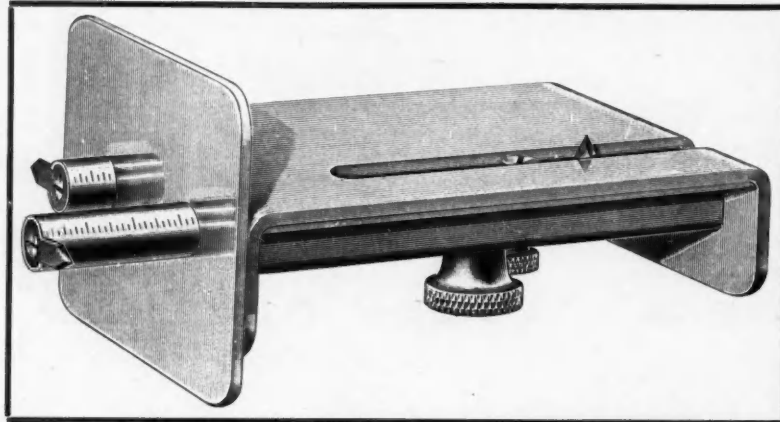
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The Job is Clean, True and Parallel with Sides
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are handled as easily as Thick Doors.

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Combined Gauge and Square

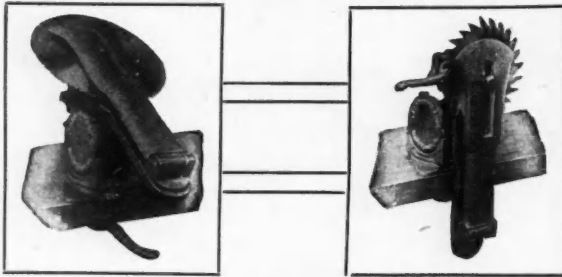


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Spurs Tem-
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YOU MAY HAVE 30 DAYS FREE USE OF THIS VISE.

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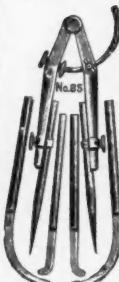

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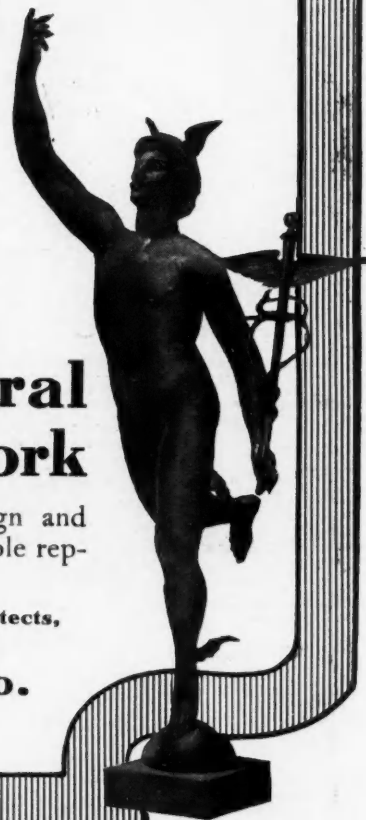
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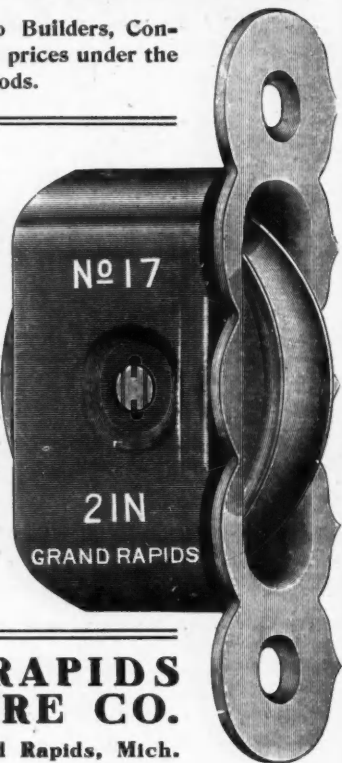
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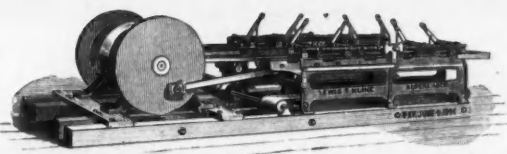
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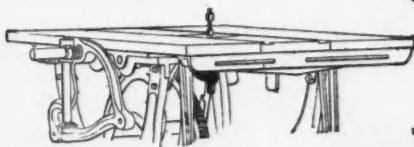
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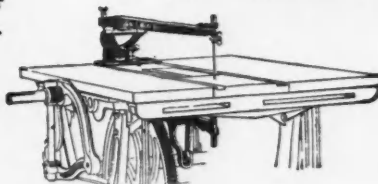
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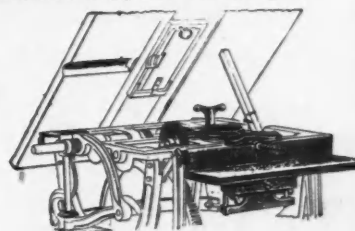
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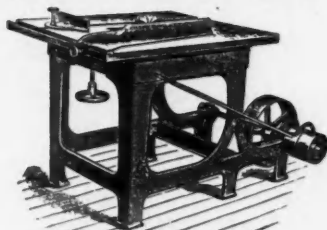


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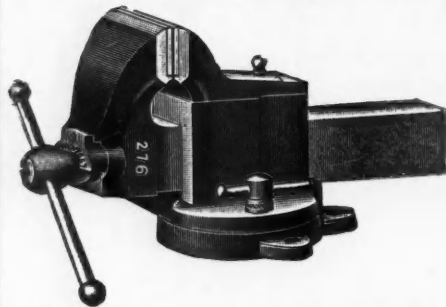
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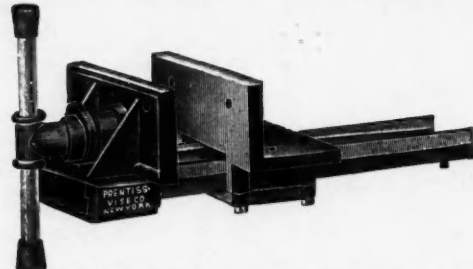
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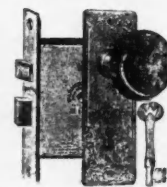
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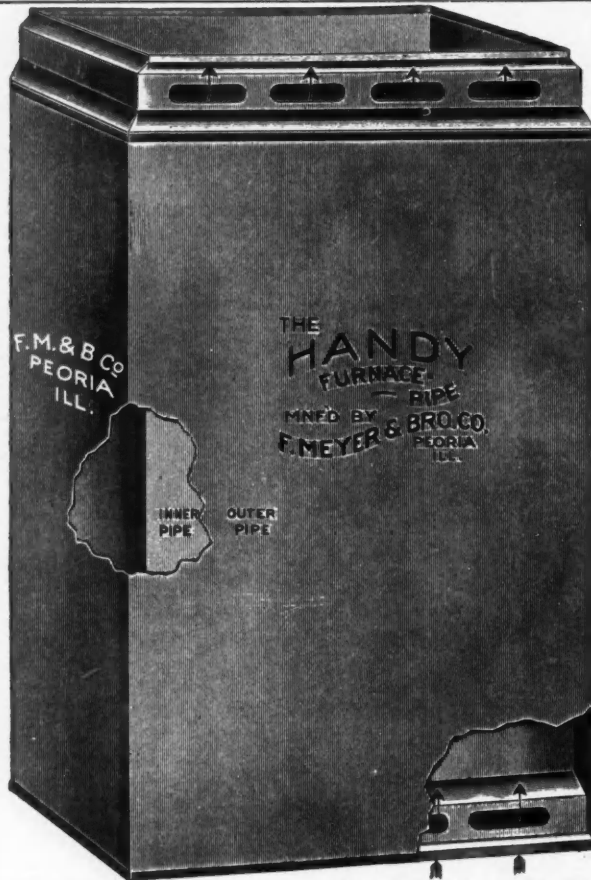
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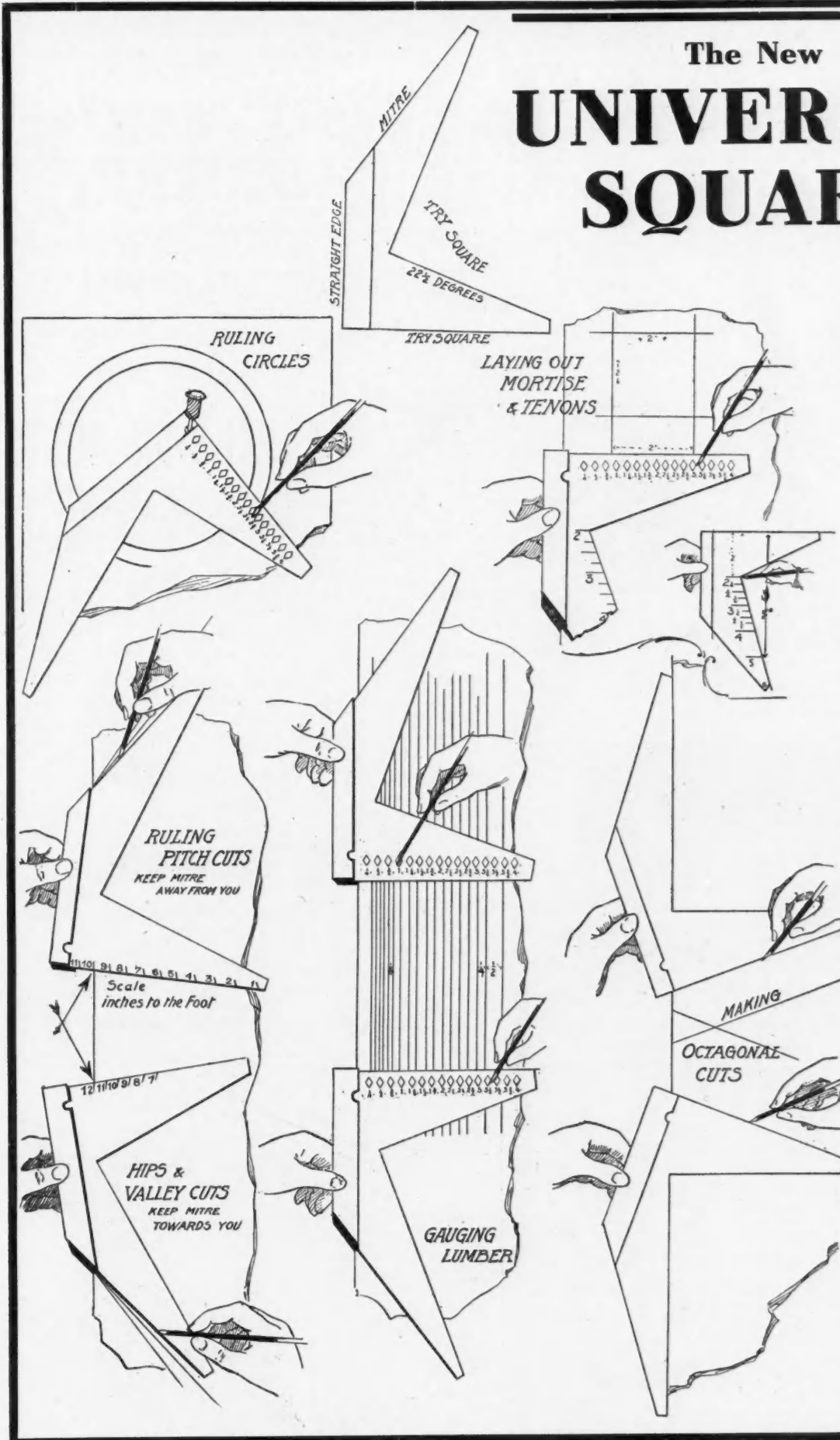
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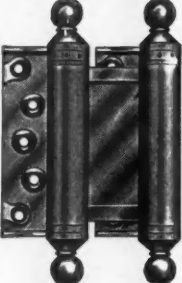

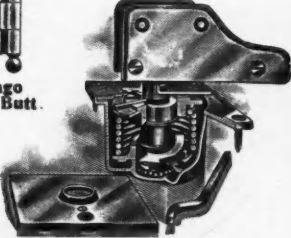
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Praise for Chicago

THE striking characteristic of Chicago at the present time is the great improvement from an architectural standpoint, is the opinion of Dr. Ernst E. von

Ihne, privy councilor and court architect to Emperor William of Germany.

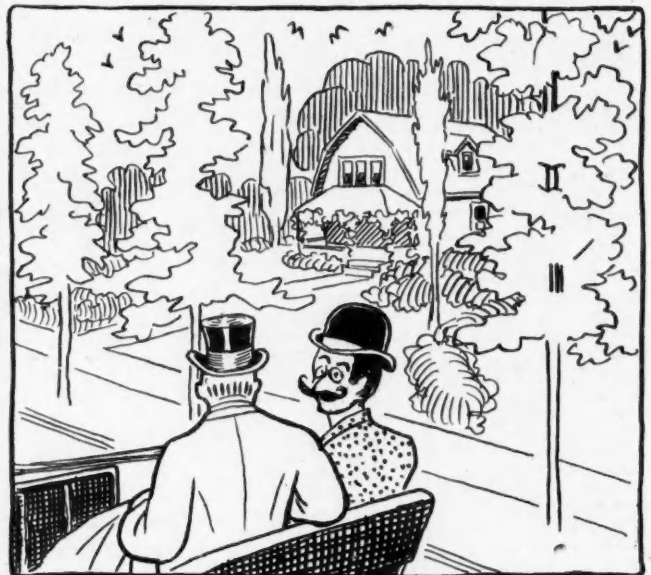
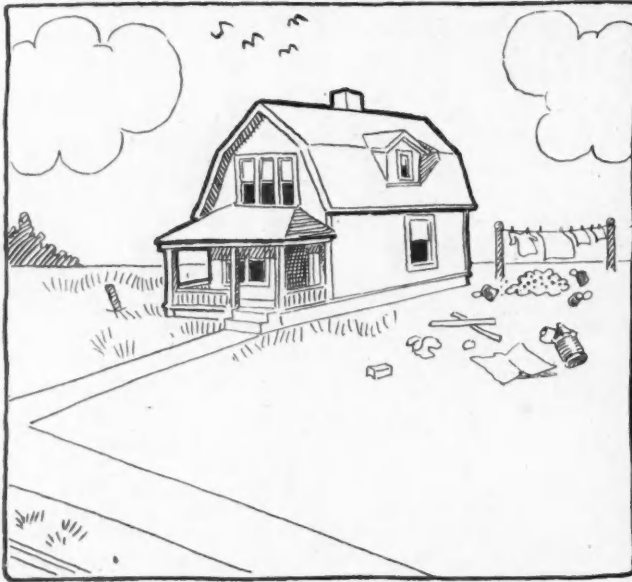
"Chicago has made decided progress in its architectural aspect," said the architect. "Especially is this noticeable in the present skyscraper construction. This class of buildings has been a great school to architects, not only in America, but also in Europe. It has taught us to avoid redundancy in ornamentation.

"In this regard Chicago architects have been particularly successful. The ornamentation seen on most of the tall buildings is good, as well as simplicity itself. That is the essential. Where a building cannot be seen above the fifth story, elaborate ornamentation becomes useless." This coming from an architect from one of the great European centers speaks well for the great structures which are continually going up in our midst, especially when the rapidity with which they are erected is taken into consideration.



Our June Issue

IT WILL undoubtedly be of interest to our readers to know what we have in store for them for the coming month. After considerable trouble and expense we have secured a nicely illustrated and comprehensive article on the "Timber Industry in New Zealand." The subject is handled in a thorough and practical manner by Mr. S. V. Bracher of New Zealand. He tells of the wiping out of the great timber forests until the day comes when the people realize that the climate is not as good as it used to be and the water supply is irregular. Then they begin to calculate how long the timber supply will last, they husband what is left and they plant where their fathers destroyed. The kinds and amount of timber now standing, and its use, are dwelt upon, together with the machinery used, which we are pleased to note, is mostly American. It is an article that is interesting, for it gives an insight into the timber conditions of that country which has heretofore never been published; it is instructive, for it not only gives the cause of the existing evil which is also threatening this country, but it also gives a remedy; it is entertaining, for it is written in a simple and pleasing style. Don't fail to get the June number.



Mr. Newhouse is bitten by the Landscape Garden Microbe

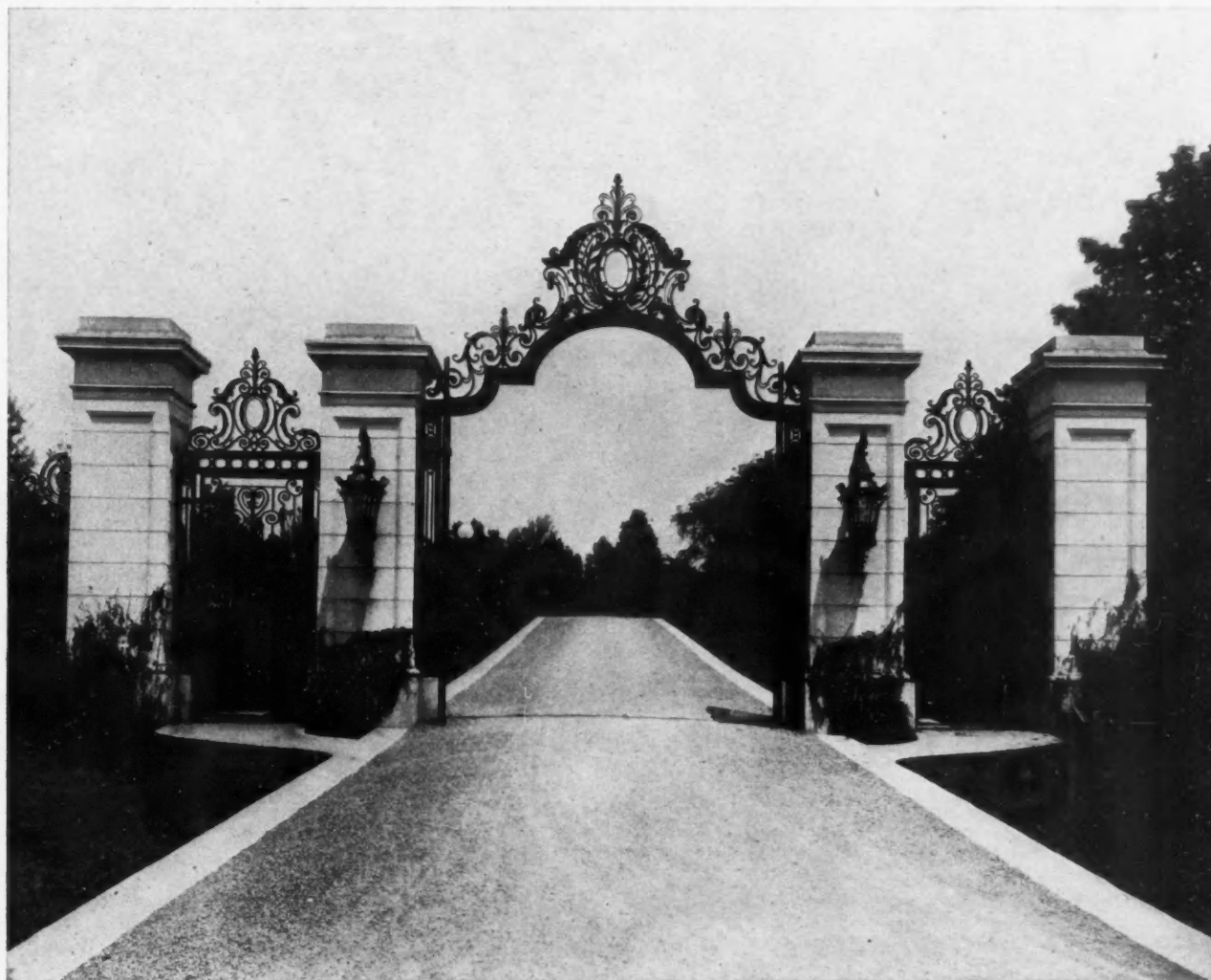
Gateways of American Estates

BY WALDON FAWCETT

IN THESE days when it is not sufficient that designers and builders of American residences be familiar with all the essentials of such structures, but this knowledge must needs be supplemented with a like insight into the technical details of various kinds of outbuildings, pergolas, etc., and no minor item is of greater consequence in the building scheme than that of gateways. The explanation of this whole

pointments as their acreage will permit or their purse allow, and since the average individual prefers to deal with but one contractor, instead of with a number of specialists, it behooves the wide-awake builder to be up-to-date with regard to all these incidental issues.

Obviously, the idea of the gateway, like so many other of our architectural traditions, is one which came



Gateway to P. A. B. Widener Estate, Philadelphia

tendency, and particularly the gateway phase of it, is found, of course, in the growing inclination of the American people toward residential establishments that are in a sense elaborate, even though worked out on a small scale.

Time was, and not so very many years ago either, when only the holders of property of truly baronial character went in for all the lesser architectural features mentioned, but this is so no longer. Nowadays the owners of country and suburban estates of very modest dimensions, as well as those of larger size, insist upon as many of these supplementary ap-

to America from the other side of the Atlantic, but oddly enough it did not find exemplification to any great extent in the early construction in the colonies. In New England, in New York and in the south we find as mementoes of this early period quaint homesteads and imposing manor houses that are models of their kind and still constitute a source of inspiration to architects and builders, but strangely enough the gateways which have come down to us are neither so numerous nor so interesting as types—and this, too, despite the fact that many of these old habitations were surrounded by ample grounds.

The best of the American gateways originating prior to the Revolution, and those most interesting from a builder's standpoint, are to be found in Virginia, notably in the region adjacent to the James and Potomac rivers. Most conspicuous of these portals is that at the carriage entrance to Westover, the seat of the famous Byrd family of Virginia. This

proportion are thoroughly original in character. Regretfully must it be confessed that by no means all of our present-day American gateways are in good taste, nor can this criticism by any means be confined to the newly rich. The owners of pretty little suburban homes, as well as the proprietors of vast estates, too often seem moved by an ambition to impress the



Gateway to Elkins Estate, near Philadelphia

gateway, which was constructed in the seventeenth century, has massive stone pillars, surmounted by leaden eagles. The gates are of iron, the curious and elaborate design embracing the monogram of the one-time owner of the estate, and it must be admitted that in form and execution they compare most favorably with the best practice of the present day. There were some highly artistic gateways in New England a century or two ago, but many of these being of wooden construction, have disappeared and few of those which have descended to the present generation are noteworthy, save for the purity of the colonial design.

Of the modern American gateways there are almost innumerable different classes. Some of the types are either exact copies of European productions or have derived their inspiration from that source, but a large

passerby rather than to produce a gateway in keeping with the residence and its surroundings. Happily the selection of a design is not infrequently left to the architect-builder in charge of construction, and since that individual usually possesses that indescribable something known as "sense of fitness of things" there is a likelihood of harmony in the ensemble whenever his advice is listened to.

In the case of one class of country and suburban houses for which Americans are manifesting increasing favoritism—namely the Colonial—the question of a gateway is all but settled beforehand, since there is no form of portal so appropriate as the quaintly roofed wooden gateway, examples of which may yet be seen at many homesteads built more than a century ago. A particularly pleasing type is that wherein a low wall

of stone is finished with plain wooden posts that are surmounted with a square shingled roof—supports and eaves being finished without the slightest suggestion of ornament.

Such roofed gateways of wooden construction are somewhat necessarily of moderate dimensions and are most effective as accompaniments of frame houses. It has been urged, truthfully, that they are scarcely appropriate for great mansions that are characterized by this same Colonial architecture, but there are avail-

haps the most highly illustrative example of this class of structure which could be cited is the imposing and massive stone entrance way to the Harrison estate in eastern Pennsylvania. Here the arched entrance is subordinate to a vast wall of stone with battlements and towers, and involving in its construction masonry work in excess of what would be required for the construction of two ordinary stone houses. Inasmuch, however, as the estate comprises several hundred acres and the mansion, stables, etc., are all in this same



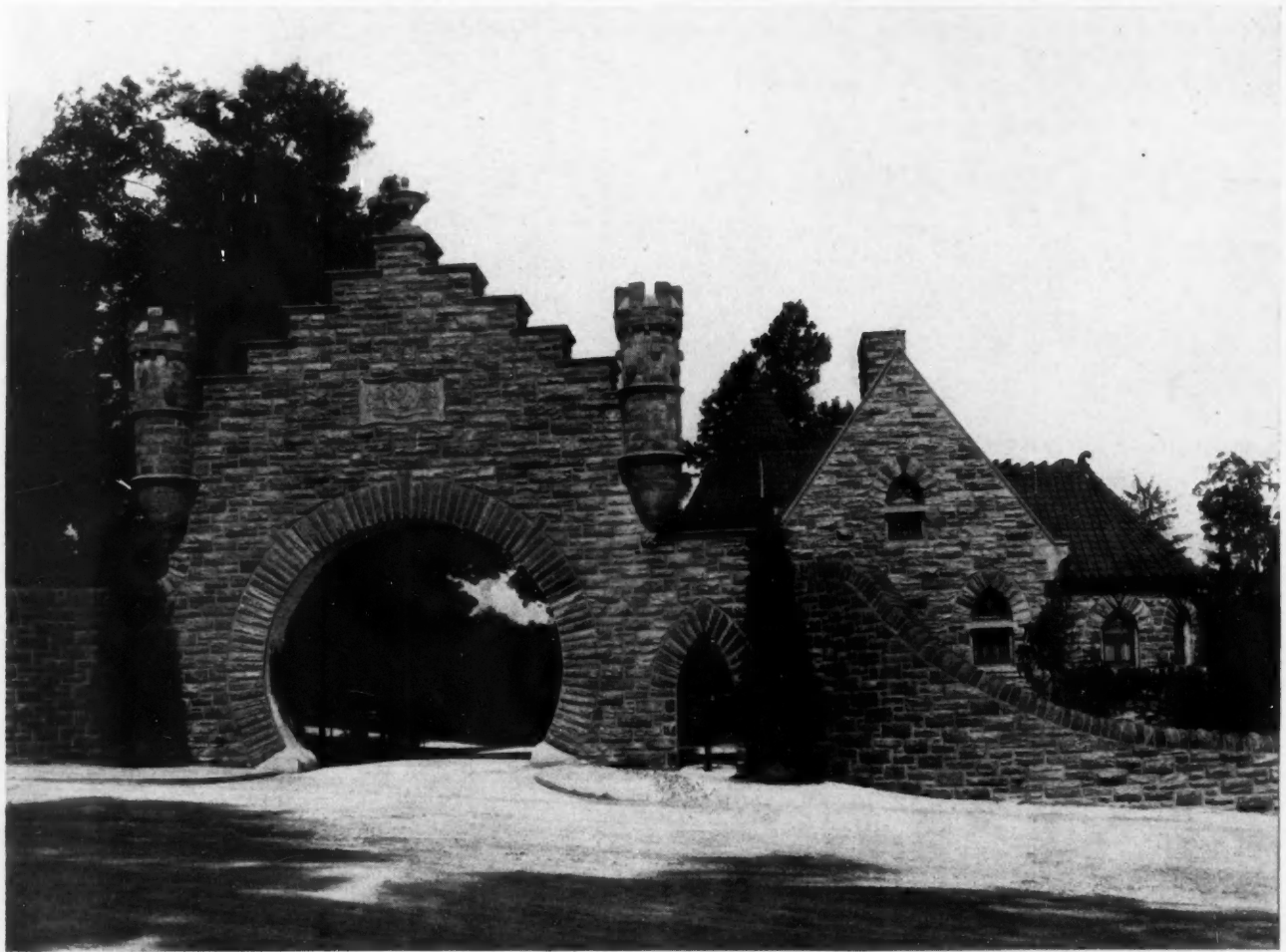
Rustic Gateway to an Adirondack Estate

able for such surroundings modifications of the same idea of severe simplicity that are equally effective. Take for instance, the gateway provided at the famous P. A. B. Widener estate near Philadelphia, Pa., where the residence is a Colonial-columned mansion of wide expanse. Here the gateway consists merely of stately white stone pillars, as supports for metal gates, the only relief from the simplicity of the theme being found in beds of evergreen shrubbery attractively grouped about the entrance way.

Among American owners of country or suburban estates who have means to indulge their preferences without much regard to cost, gateways in the English tower effects have attained a considerable vogue. Per-

medium, the gateway does not appear as unduly heavy when viewed in conjunction with the buildings as it might if individually considered.

After all, however, the advances which have taken place during recent years in American gateway construction are to be attributed in no small degree to the development of the industry for the provision of decorative work in wrought and cast iron, bronze and brass. In the case of almost all elaborate gateways, even though the gate posts be granite or other stone, concrete, or even wood, the gates are likely to be of metal, and there is a growing disposition in many quarters to employ ironwork as the sole medium for the entire gateway, the popular taste running to



Gateway to Lodge, Harrison Estate, near Philadelphia

very intricate designs and giving it an elaborate finish.

There are scattered about the country many excellent examples of the possibilities of gateways of exclusively iron construction—some of them highly ornate, such as that at the entrance to the Elkins estate near the Quaker City—but perhaps the crowning achievement in this field of construction is represented by the entrance gates to “Castlegould,” the estate of Howard Gould at Port Washington, Long Island, N. Y. The large driveway opening of this gateway is twenty feet in width and twenty-five feet in height, while the side gates have openings ten feet in width and fifteen feet in height. The height of the railing is ten feet. It will be readily appreciated that these gates are of really colossal proportions, and they are considered by many architects and builders to be the finest examples of hand-forged iron in the United States. Indeed the production of such a composition in iron illustrates the great strides America has made in the development of wrought iron forgings as a fine art.

The average architect or builder feels that every gateway should have a gate, just as every doorway should have a door, but there is a manifest tendency on the part of many people—actuated either by motives of economy or artistic perception—to dispense with

gates and make their gateways little more than ornamental posts to carriage ways. Of course this destroys any significance a gateway may possess as a deterrent to a curious or intrusive public, but since the protective principle of a gateway is in many instances not backed up by a fence, anyway, perhaps this consideration is not important.

An idea that has been extensively introduced in connection with the less pretentious suburban homes is that of curiously-roofed gate posts, which correspond in treatment, in many instances, with the conical roofing of the house towers. These portals are unlike those above described in which the quaint shingle roofs extend from post to post, covering the entire entranceway. Instead, only the individual gateposts are roofed. This shingle roofing, however, not only serves to protect the stonework of the posts from becoming weather-worn, but adds a distinctive decorative touch. Vine-clad gateways have many admirers, and it must be admitted that ivy or other climbing verdure can enhance the effect of great square posts with flat capping.

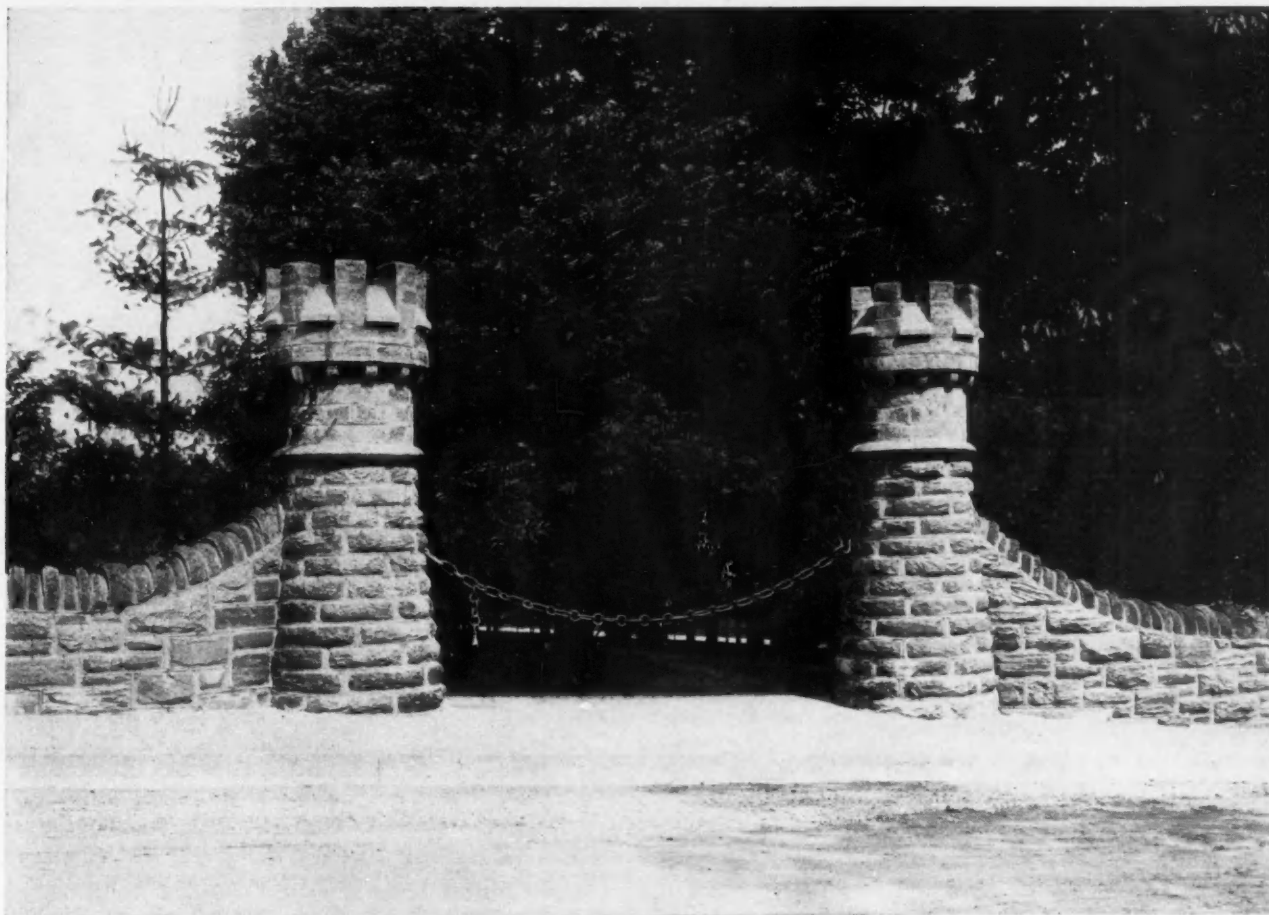
For both the technical considerations of construction and the sake of appearances, gateways should always be built with due regard to the characteristics of the walls in which they are set. Although con-

crete has of late come into more or less extensive use for boundary walls on American estates a majority of the walls are yet formed by the use of rough field stone, quarry-faced ashler, or brick. It is usually the custom to lay such work in one-third cement mortar owing to the exposure to the weather that is necessitated and care must, of course, be exercised that the joints are weather-struck, in the event of the employment of rough stone, so that water cannot gain access to the wall.

Contractors who make a specialty of this class of work go on the theory that the foundations of all walls and gate posts should extend at least three feet below grade in order to avoid heaving from frost and should be set on footing stones projecting not less than four inches on either side of the wall. Similarly the treatment of the top of a wall or built-up gate post is of no mean importance. In the case of ashler-faced stone and brick, stone caps are a virtual necessity. Such a cap, according to approved practice, ought to extend a full inch or more beyond the face of the wall or pier. If a cap is to be flat a slab of slate or North River stone affords admirable material. Obviously, it is the part of wisdom not to place a cap absolutely flat, but to give it a slight pitch in order to insure the proper shedding of water. This same pitch may profitably be introduced in all exposed work where the flat effect is desired.

Although the pitch obtained by the above-mentioned method is so slight that there is no appreciable detriment in the appearance of wall or gate post, some persons prefer to have capstones cut with a pitch both ways, after the fashion of a low roof. Both of these treatments look well, but it has been found that such a flat-top wall, if built low, is no barrier to trespassers unless topped by a durable wooden or iron fence. Some low stone walls are satisfactorily treated with upright pointed stones as coping, but wrought iron cresting is the most effective material. High walls which are designed to secure seclusion are not infrequently topped with broken glass bottles set in the cement in such a way as to deter invaders.

If durability is a consideration it is important that the bases of gate posts and all other woodwork other than the rough posts—which latter must, of course, be set in the soil—shall set clear of the ground, since otherwise rotting will speedily result. The cautious builder decrees that all wooden posts shall have the footing ends either charred or tarred and set upon a bed of small stones. As a matter of fact it is best to take the double precaution of first charring the ends and then covering them with tar two or three inches above the soil. In most parts of the country cedar is probably the preferred wood for posts, although there is considerable sentiment in favor of chestnut, which has great lasting qualities. For other portions of



Gateway to Harrison Estate, near Philadelphia

wooden gate or fence work white pine or chestnut seems to have the call. Spruce is used to some extent, but it is seldom recommended by the conscientious builder. Just here it may be added that the builder of gateways or fences must needs bestow a certain amount of attention upon the character of the soil in which the work is to be set down. For instance, clay should be looked upon with suspicion, and the builder will do well to ascertain whether the strata

ever the design or component material, should have posts sufficiently rigid to support the gates both open and shut. The gates themselves should be so braced that sagging is reduced to a minimum and the gate posts must, of necessity, be absolutely in plumb. To make a really satisfactory job it is desirable that there be provided some sort of rest to take the strain off the gates when they are either open or shut. For supporting the gates when closed an approved expe-



Gateway to Dun Estate, Narragansett Pier, R. I.

is a thin one, and if so, to set his foundations below it so as to reduce to a minimum the danger that rebuilding will be required.

Rustic work is coming into extensive use for gateways to estates which have a woodland setting. Some particularly effective examples can be found in the Adirondack region where are located the game preserves of the American multi-millionaires who have a taste for wilderness life. Logs and poles with the bark on are almost invariably employed, sometimes supplemented by rough stone, and the gateways in a majority of cases take the form of arches. Occasionally the name of the estate in rustic letters is worked in as a part of the design. The great drawback to rustic gateways is, of course, the lack of durability. To prevent deterioration in so far as possible all butts should be painted to repel moisture in the pores of the wood.

It goes without saying that every gateway, what-

dient is the provision of a piece of bound stone, eight inches square, set flush with the center of the driveway and with a mortise to receive a bolt fastened to the gate stile.

A rather ingenious utility for supporting massive iron gates is in use at the entrance to Friendship, the very beautiful estate of John R. McLean, near the city of Washington, D. C. These gates are the famous ones which were formerly in place at the Mount Royal entrance to Druid Hill park in Baltimore, and although they hang from piers of native granite towering to a height of twenty-five feet, the span is so great and the weight so excessive that sagging would assuredly ensue were not some intermediate support provided. Accordingly there has been attached to the base of each gate, near the extremity opposite from the gate post, a substantial iron wheel or roller, which performs for the gate much the same function that a caster does for a piece of furniture.

As previously noted, the open entrance, marked by posts more or less monumental in character, has during recent years, by right of numbers, won for itself a place in connection with the category of gateways proper. Such entrance posts when constructed, say, of rough field stone, and partly covered with vines, are very effective in appearance and are comparatively inexpensive. Posts to carriage ways may advantageously be protected by stone or iron guards placed against the bases on the jamb side as a protection against damage by careless drivers. Lamps or lanterns of iron or bronze are a useful and ornamental adjunct introduced in many instances in connection with either gateways or posted entrances. There are two popular schemes of arrangement. One is to place a lamp on top of either post or mayhap to affix the lamps to corresponding sides of the pillars by means of brackets. The other plan is to suspend a lantern from an ornamental iron support spanning the entranceway and the bases of which support rest upon the two flanking posts. The one pitfall to be avoided in this phase of gateway operations is the danger of procuring lamps or lanterns and supporting iron work of so massive a character as to cause the creation to appear top heavy.

With the tremendous extension of the past few years in the use of concrete it was inevitable that this material should come to be extensively employed in connection with gateways. A convincing demonstration of its possibilities is to be seen at the Gedney Farms at White Plains, N. Y., where not only the posts supporting heavy iron gates but also the fence posts and rails are of concrete. The gate and fence posts were cast in position with grooves into which the rails were afterward dropped.

An approved method of reinforcing concrete gate posts may be of interest. Before the form is filled with cement four steel bars, each three-fourths of an inch in diameter, are placed vertically so that they will be about two inches inside the corners of the completed post and around these at intervals of a foot are wound loops of one-eighth or one-fourth inch wire, these loops being tied to the steel rods with fine wire. For concrete gate posts excavation is carried well below the frost line and the foundation pier is made of somewhat greater dimensions than the form for the post proper which is to surmount it.

In conclusion it may be noted that some of the most attractive gateways in America are to be found at Newport, R. I., the favored Mecca of America's wealthy summer "cottagers." In many instances, however, these Newport portals offer more suggestion to the landscape gardener than to the builder. Carriage posts are more numerous than entrances with gates, although there are excellent examples of ironwork, stone and concrete construction on the island. In one respect, however, the Newport gateways are espe-

cially praiseworthy and that is in the harmony preserved between the gateways and the adjacent lodges. It has come to be generally realized that much of the beauty of an architecturally perfect gateway may be marred by an incongruous lodge. In the case of the massive masonry portals the gatekeeper's house should be built of the same class of stone and in the same general design. For a gateway exclusively of iron-work there is nothing more appropriate than a concrete house, and a truly rustic gateway should have the accompaniment of a log cabin.



Technical Education in Belgium

The immense practical benefits of technical education are shown better in the kingdom of Belgium than elsewhere in the world, according to the United States. The children of the working class have taken the lead in the public training of young men and boys for mechanical occupations, and schools are maintained for every trade or craft that is of any importance. The schools are created and maintained by the national government, and are directly under the control of the department of commerce and labor. Even in addition to these public institutions, which cover almost every line of mechanical activity, there are numerous private technical schools which receive large subsidies from the state. The children of the working classes invariably attend these schools, and the result is efficiency at an age when young men in most countries are just beginning to learn their trades. There are separate schools for mechanical and electrical engineering, iron and steel working, carpentry, wood cutting, joining, plumbing, watch making, jewelry making, fire arm manufacturing, bookbinding, painting, engraving, designing, weaving, dyeing, tanning, basket making, lace making, upholstery, tailoring, telegraphy and a few other less important lines of industry. The practical work in these schools is the same as would be supplied in the workshops, while the theoretical training is of a nature that the workshops could not provide. The eminence of Belgium in the textile manufactures, in the making of firearms and in iron and steel work is traced directly to the influence of these schools.

This work of technical education is calculated to help employer as well as employe. Skilled labor conditions in Belgium are of the best. There are few strikes. The workmen are intelligent and contented, and are never without employment. The wonderful industrial and commercial advancement of the country in recent years seems to be but the beginning of its growth in importance. In spite of its insignificant size, Belgium already stands fifth among the producing countries of the world.—*Cleveland Plain Dealer*.



Most of the so-called necessary evils are unnecessary.

Building Construction in Morocco

METHOD OF CONSTRUCTING BUILDINGS IN THE FAR EAST—MATERIAL USED AND HOW HANDLED—MANNER IN WHICH THEY DIFFER WITH US

By George E. Holt

MOORISH builders of cities may have had some definite plan to work upon, but if so it is too intricate and complex for the Occidental mind to comprehend. Tangier and other Moroccan towns are apparently built in much the same

sary to take into consideration the fact that time has practically no value in Morocco—everything moves slowly, there is no hurry, another day is always coming. Consequently buildings are never erected quickly in Morocco; sometimes I think that the work is begun

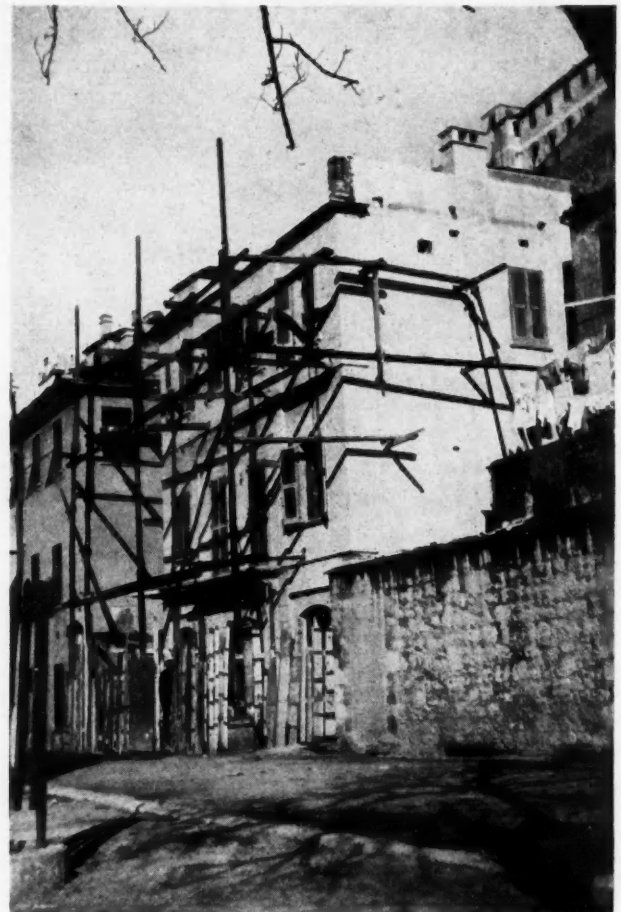
by the father and completed by the grandson. But when one considers the smallness of the number of workmen employed, the crudity of the tools with which they have to work, the primitiveness of their methods and the prevalence of the "tomorrow" fever, the surprising thing is not, that a building is put up slowly, but that it is ever completed. The hotel where I am stopping has been undergoing enlargement and renovation, and, though I have been here a month, the effect of the labor of the workmen is scarcely apparent. The proprietor is a cheerful man, with a strain of "Manana" in his make up, or he would have gone insane over the procrastination and snail



Excavating for a Building

way that plant cells grow: a nucleus was formed, other buildings added to it and so on, until a town was built, but as for streets or sidewalks or any care for location of buildings, view of surrounding—I am sure there is none, for a mosque will adjoin a market place, a private house will be sandwiched in between a stable and a butcher shop, and government buildings are liable to be found almost anywhere. Having to form some sort of ingress to the buildings, tunnel-like passages were made, some of them two feet wide, some four feet, and a few ten feet, frequently built over to economize space (or atmosphere) and usually dark and filthy. A birdseye view of the average Moroccan town would show only patches of white roofs, red tiled roofs, all sorts of roofs, but very, very few streets. My view of Tangier gives an idea of the manner in which the buildings adjoin each other. I do not know of a building in the limits of the town which stands separate from the others, no matter what it may be. The town being practically all of plaster, the resulting effect is that it appears to be cut out of one solid mass of mortar, rather than built up.

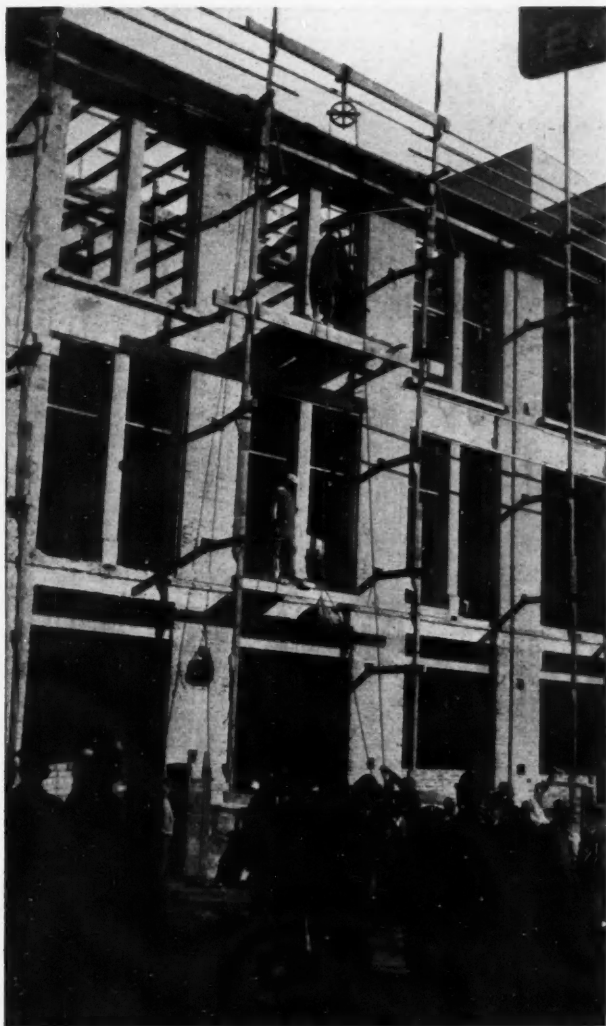
This understanding of the manner in which the Moorish town is built, is necessary to a proper comprehension of the buildings themselves, for it is manifestly true that to build a building where there are no streets is quite different from building it where there are broad ones and so forth. It is also neces-



Building in Course of Construction

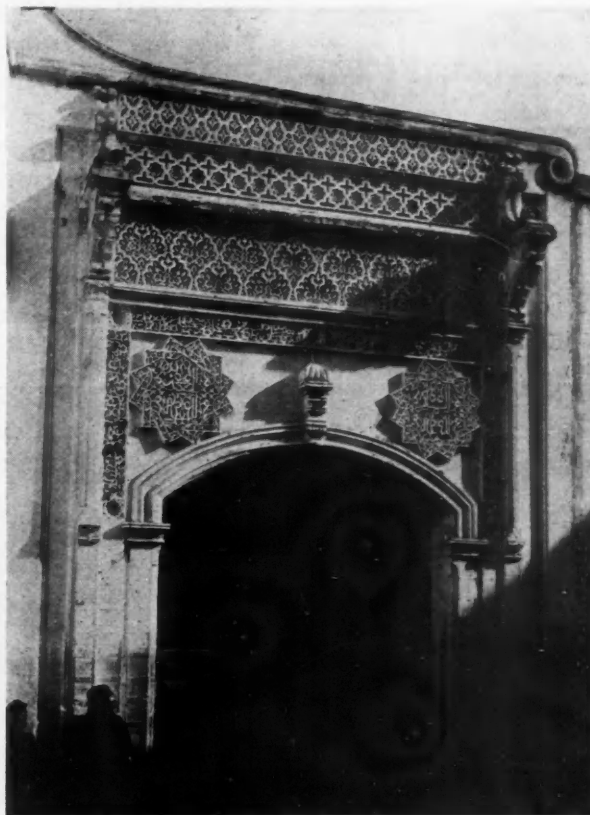
like pace of carpenters, painters and cleaners. The great objection to Moorish workmen is that they will work a day, or possibly two days, and then lay off an equal length of time, while the Spanish, who constitute the largest class of workmen in Tangier, are very leisurely. I find that in photographing Spaniards at work, that I can use the "time exposure" without having the picture show the motion.

Illustration No. 1 shows the work of excavation



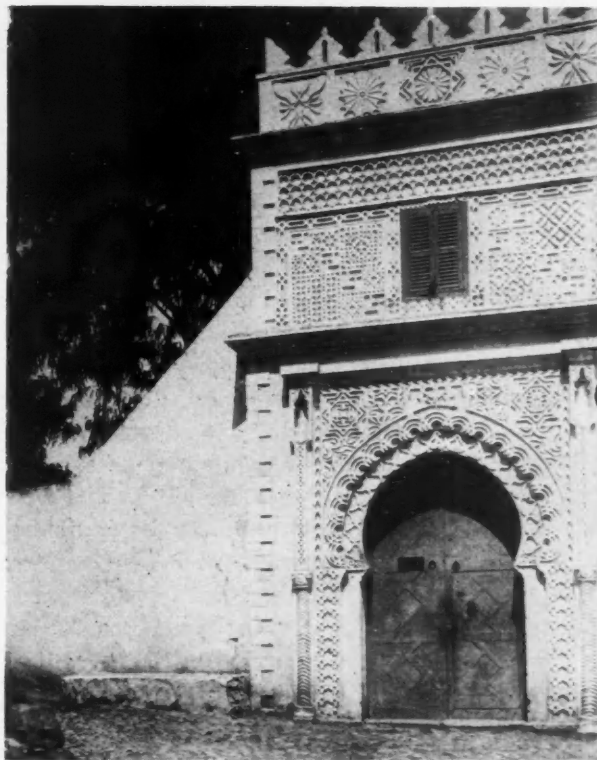
Workmen Hoisting Brick

for a building to be erected in Tangier, specifications of which call for completion some time during the twentieth century, I suspect. The workmen are Moors and the overseer Spanish. The earth is dug out with broad bladed picks and thrown into the small baskets seen lying beside the workmen. Sometimes a small spade is used to shovel the earth into the baskets, but more often the pick is the sole tool. It may interest some of my readers to figure out how long it would take a man to excavate a cellar say ten feet deep and a hundred feet each way, using a pick which will carry perhaps fifty cubic inches of earth. My estimate is that ten men could do it in a year and a half—but I may be wrong, that seems too quick.



Type of Moorish Doorway

After the earth is put into the baskets it is carried by other Moorish workmen out to the street and emptied into the larger panniers or baskets carried by the little donkeys. These panniers consist of two baskets or sacks woven together by a broad band which goes across the back of the beast. Each basket



Type of Moorish Doorway

holds from half a bushel to a bushel. When several of these donkeys have received their loads, the Moorish driver leads them from beside the building into the street and turns them loose. The leading donkey enters the swirl of traffic, followed by the others, the driver bringing up the rear beating the animals with a heavy stick and shouting "Ba-lak, Ba-lak," in warning to pedestrians and other donkey drivers.

The appearance of buildings in the course of construction is shown in Illustration 2. It is of a building destined to be a German beer hall, and several

he drops the one which he has just emptied. I was not able to ascertain the nature of the work of the Moor in the second story, as the only thing I have seen him do during the many hours I have watched the building operations from a little coffee house just across the street (this building is upon the only street of Tangier) is to watch the basket go up and come down. Perhaps he is a representative of the Sultan commissioned as a sort of building inspector.

It will be seen that considerable steel is used in this building. It is visible in the doorways below, and is



Fair Example of Moroccan Buildings

other things. The similarity of the manner in which the scaffolding is erected shows the work of the Moors in the Gibraltar building, although no workmen are visible. It is probable that they were taking their afternoon coffee in some nearby cafe. The holes left in the brickwork of the buildings to support the scaffolding are supposed to be filled up as the scaffolding is removed, but frequently they are left so that when repairs upon the building are needed, the scaffolding may be easily replaced.

The building shown in Illustration 3 has a frontage of about 80 feet, and approximately the same depth. Four workmen are busily engaged in hoisting bricks, with tackle, the nature of which is quite apparent. I may explain however that the baskets containing the brick are hung upon a double hook and as the workman in the third story receives the laden basket,

used in the floors as well. The ceilings are concave between each beam, and are made of tiling over curved steel bars, the under side being plastered, and the upper side being covered to form the floor. The brick used in construction is a coarse kiln-dried variety about ten inches long, five inches wide, and not more than one and a quarter to one and a half inches in thickness. It is rather yellow in color, and very irregular. Donkeys carry it to the scene of operation, just as they carry the earth from the excavation. Some of the brick is imported from Spain and some of it is brought from Moroccan ports to Tangier.

Moorish Houses

Moorish houses may be divided into two classes—town houses and country houses, but of the latter, example of which is shown in my illustration, little need be said. Although they are extremely pictur-

equé, they are just about as interesting or valuable architecturally or constructionally, as the little two room thatched cottages found in Scotland and Ireland. They are built of any sort of material the Moor can get, and a heavy thatch roof put on. Outside of the towns this is the only variety of house to be found, and a village containing several score of them is very curious, although at a distance it is almost indiscernable, the straw roofs much resembling the foliage of the trees.

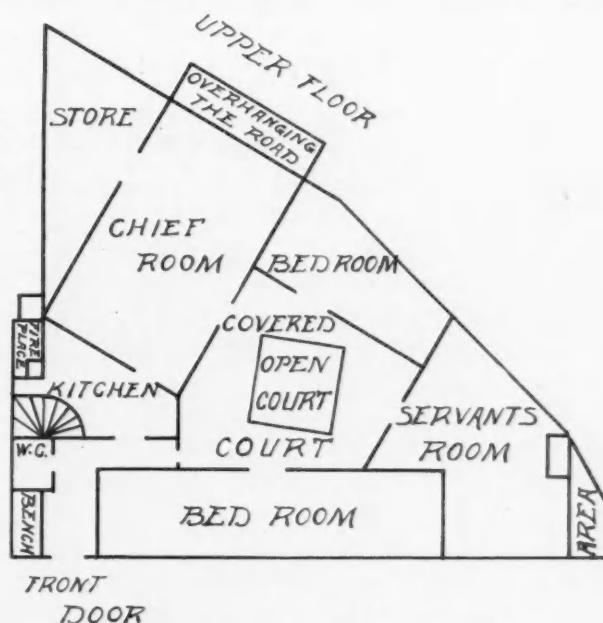
The town house is, however, another matter. All that a Moor must give up, because of the fact that his house is all "inside," he makes up for in that same interior. Whenever possible, the house contains an open court in the center, surrounded by a large cov-



Geo. E. Holt

ered court, although in many cases this is impossible. There is no more regularity about a Moorish house, than there is about a Moorish town. There being usually no roads, there are no outside windows, and when there are they are the exception rather than the rule. And when there does happen to be a road beside the house, and there are a few windows, they are so small and high as to be almost useless. They are built so to prevent the women of the house from being seen, and the same reason explains the maze like corridors which lead from the entrances. A person at the door can see only a blank wall a few steps in front of him. The plan of a Moorish house, shown herewith, is taken from a survey of a prominent writer on Moorish subjects, Mr. Budgett Meakin, who,

through his long period of residence among the Moors, was afforded opportunity for study of them denied to most people. The plan shown is, of course, only an example of the architectural style of Moorish houses, and can be no more given as the plan of Moorish houses, than could a plan of the Flatiron building be given as a plan of American buildings. However,



it serves to show very clearly the irregularity which is characteristic of all Moorish houses.

Immediately upon entering the doorway of a Moorish house of the better class, one is astonished by the taste displayed in interior decoration, in the harmony of the whole. Every art has been called upon to help make the house beautiful, and as the interior work alone is quite a sufficient subject upon which to write a whole volume, I will leave it until my next letter.

However, as we had reached the portals of the house, I will include herewith a few photographs showing some of the beautiful doorways to be seen in Moorish buildings, and then leave you standing before them.



A Mechanic

A genuine mechanic is a little more than a machine; he is a thinking, planning, ingenious man, who has mastered not only the use of tools, but the laws which govern the forces he commands. He is a student of the subtle laws of Nature, and learns from her how to add beauty to utility.



I am a subscriber to the AMERICAN CARPENTER AND BUILDER (charter member). Will say that I have received many valuable points by reading it and expect to learn more in the future. I cannot speak too highly and every apprentice and young mechanic should have it to read and study.

EDWARD A. BEAN, Roxbury, Mass.



STEEL SQUARE.

ALFRED W. WOODS

How to Use the Steel Square

SHOWING HOW TO FIND THE MITER AND SIDE OF AN OCTAGON, WITH THE AID OF THE STEEL SQUARE, ALSO BY MENTAL CALCULATION, VERSUS COMMON DIAGRAM IN GENERAL USE

BY REQUEST, we will devote this and perhaps the two following articles to octagon frame work. However, the subject has been covered in previous articles under the head of "Polygonal Work," and the rules given apply alike to all regular polygonal sided buildings, but as we have been asked

intersecting the circumference, locates the corners and these connected by straight or chord lines, form the true octagon, as shown at Fig. 113. The radial lines are to one another, as the octagonal miter, and stand at an angle of 45 degrees apart. To obtain this angle with the aid of the steel square, it is necessary to take one-half of 45 degrees, which is $22\frac{1}{2}$ on that instrument, and by letting 12 on the tongue represent the unit of measure, the radial line will intersect the blade at 4.9705+, or practically 5 inches, as shown at Fig. 114. These figures (12 and 5) form the basis from which the whole subject of octagonal framing may be solved, as we will proceed to show. The line referred to from 12 to 5, as shown in the last named figure, forms an angle which is the same as that formed by the runs of the common and hip rafter. The figures also give the octagon miter as shown. However, it must be remembered that 5 is not absolutely the correct figure to use, as it lacks .0295 of an inch of being 5 inches. This shortage is less than

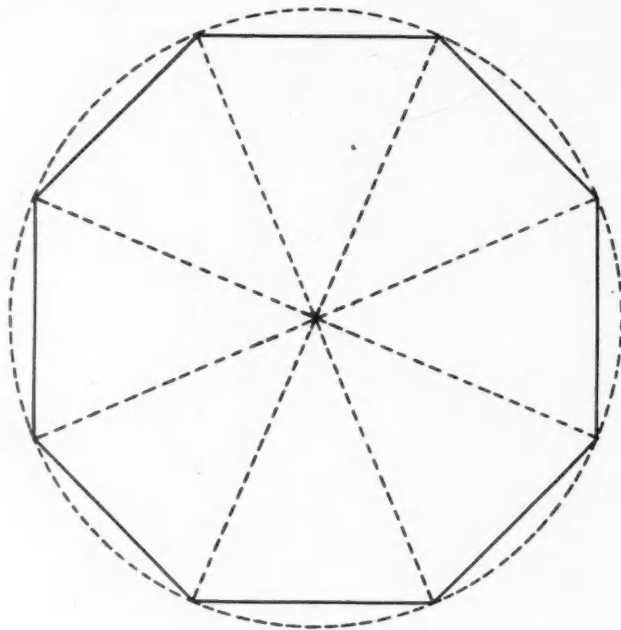


FIG. 113.

to exemplify the octagon in particular, since it is the one used most, aside from the common square cornered building, than all other polygonal shaped buildings combined, we have thought best to dwell upon this angle for the next few articles before passing on to other parts of our subject. While the octagon is the most beautiful of all the polygonal angles and works to the best advantage in building construction, its mathematical principles are not as well understood by the mechanics in general, as they should be. In saying this, it is not the intention to single out the octagon alone, but of all the polygons the octagon should be best understood, because it is more in demand for practical purposes.

The octagon partakes of eight equal parts of the circle and these divisions radiating from its center,

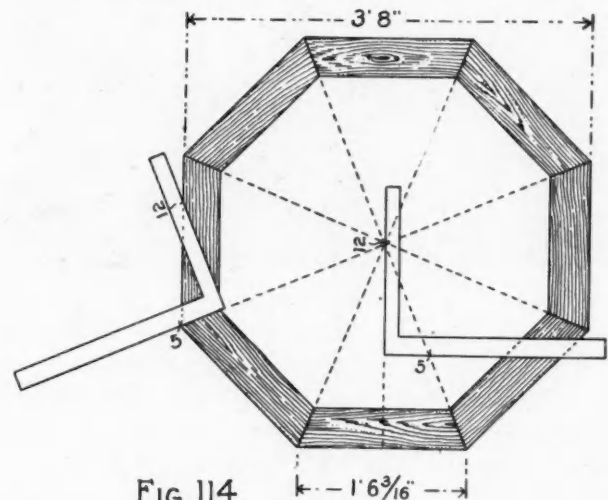


FIG. 114.

1-32 part of an inch and is therefore too small to take into consideration as far as the cuts and bevels are concerned; besides 12 and 5 will give as nearly the correct angle as could be arrived at, with the steel square on the average framing timbers, but for some other purposes it is better to retain the decimal, as we will have occasion to show later on. But for practical purposes, we will call it 5 inches.

Now let us study these figures. Referring to Fig. 114, we find that the line of the hip diverges from the tongue 5 inches in a one foot run. Hence, the side of an octagon one foot in diameter must be 5 inches, or 5-12 of its diameter. See Fig. 115. This proportion always exists whether it be inches, feet, yards or any other standard measurement. Thus, the side of an octagon one inch in diameter would be 5-12

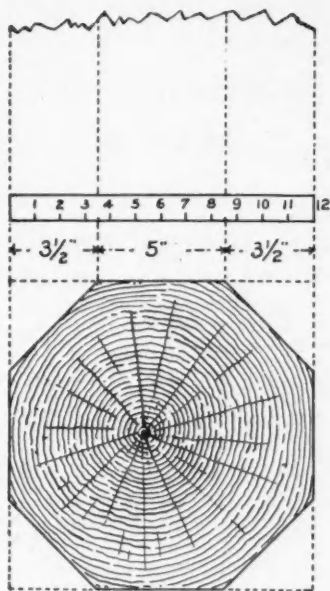


FIG. 115.

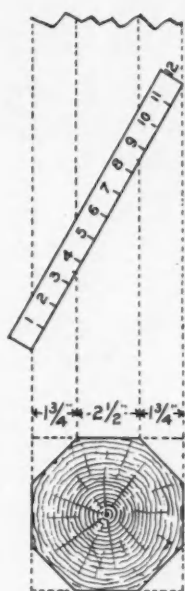


FIG. 116.

of an inch. A 6-inch diameter would be $6 \times 5 - 12 = 30 - 12 = 18$, or $2 \frac{1}{2}$ inches, as shown in Fig. 116. The above is a very useful rule, and we dare say that most every carpenter uses it to find the gauge lines, in changing a square timber to an octagon by placing the pocket rule or square across the timber with the 12-inch mark resting at one edge and the starting point touching the other; by pricking at $3 \frac{1}{2}$ and $8 \frac{1}{2}$, will give the points for the gauge lines from which to remove the wood. But how many ever stopped to think why these figures are employed? Referring to Fig. 115, it will be seen that the space from $3 \frac{1}{2}$ to $8 \frac{1}{2}$ is 5 inches. The timber being 12 inches square, the pocket rule is laid straight across and shows that the length of the sides is 5 inches, or 5-12 of the face of the timber, and it is therefore necessary to remove the other 7-12, or $3 \frac{1}{2}$ inches from each corner. Now let us apply this rule to a narrow timber, as shown in Fig. 116. In this case the timber is only one-half as wide as in the former illustration. Therefore, it is necessary to place the rule diagonally as shown, and by pricking at $3 \frac{1}{4}$ and $8 \frac{1}{4}$ as before, will give the proper points for the gauge lines. Since the diameter is reduced one-half it will be seen that the space between the lines is likewise reduced. If the timber be wider than 12 inches, the same proportion may be arrived at by laying a two-foot rule across the timber and by pricking at 7 and 17, the result will be the same, as it will be seen that the parts taken

are double those used on the one-foot rule, and therefore the ratio remains unchanged. This rule does not stop here in simply transforming a square stick of timber to an octagon, but holds good in laying out octagon bay-windows, towers, etc.

This calls to mind a little circumstance that happened a few years ago, while on our rounds among the builders. They were erecting a large building in which a square opening in the ceiling 20 feet in diameter was to be changed to an octagon by framing in pieces at the corners so that the eight sides would all be of the same length. It was at the noon hour and the men were figuring out the best way to find the proper length to cut the pieces. Some said one way, some another. The prevailing idea being to lay it out full size and with half the diagonal, as at A-B, Fig. 117, as radius, with center at A, with wire string strike the arcs as shown, repeating the operation from the four corners of the diagram. The intersections of the arcs with the sides giving the points, or corners of the octagon. Now, this formula is all right and if accurately done will give correct results, but see the time and labor lost. If these men had been asked to change a square stick to an octagon, without doubt would have called to use the rule given above for such work, but when looking up to that great square yawning opening, some 40 feet above, the rule for octagonizing the stick did not occur to them, yet if it is good for a small object, it must hold good on a larger one. Let us see. If the side of an octagon

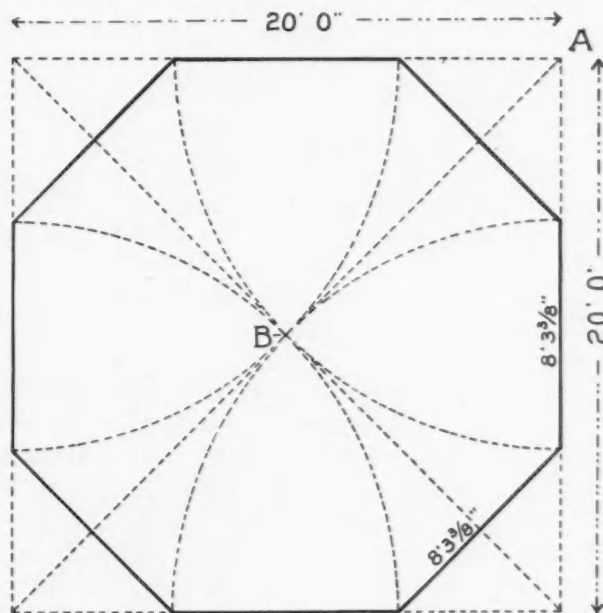


FIG. 117.

for one foot in diameter is 5 inches, for 20 feet it must be $5 \times 20 = 100$ inches, or 8 feet 4 inches. Now since the shortage as before stated is $1 - 32$ of an inch to the foot, for 20 feet it would be 20 of such parts or $\frac{5}{8}$ of an inch, which deducted would leave the correct length 8 feet $3 \frac{3}{8}$ inches for the long side of the

piece to fit in the angles. 12 and 12 giving the cuts.

Which is the easier, the large diagram with wire for striking arcs, etc., or a mental calculation? The calculation, however, may be more readily solved by multiplying the diameter by the decimal, $4.97 +$ as follows:

$20 \times 4.97 = 99.40$ inches (8 feet $3\frac{3}{8}$ inches). Now we will apply this to the example as given in Fig. 114. In this the diameter is 3 feet 8 inches, and is more

difficult because there is a fraction of a foot in the diameter which may be treated decimally as follows:

The 8 inches being $\frac{2}{3}$ of a foot, is equal to .66 of a foot. Then $3.66 \times 4.97 = 18.1902$ inches, or 1 foot 6 $\frac{3}{16}$ inches, will be the correct lengths to cut the eight pieces to form the octagon.

With this we will close for the present, but will continue our next on the same subject, taking up the cuts of rafters for octagonal roofs, etc.

Arches and Lintels for Fireproof Work

SOME MORE USEFUL REMARKS IN CONTINUATION OF THE ARTICLE IN THE APRIL NUMBER ON SEGMENTAL ARCHES—PRACTICAL METHOD OF ATTACHING WOODWORK TO CONCRETE OR STONE

By T. B. Kidner

THE consideration of relieving arches, or, as they are often termed, "discharging" arches, over a wooden lintel, naturally brings up a very important question. In these days of fireproof construction, when wood is being eliminated from the structural parts of buildings wherever possible, wooden lintels are not used in the best practice. Instead of wood, iron "I" beams and artificial stone lintels are now largely employed in the best class of work. But both of these have one defect; namely, from their nature it is impossible to nail grounds or other wooden finish to them. And as the chief purpose of a lintel is, of course, to form a square head for a window or door-frame, this consideration is important.

One of the best methods suggested for overcoming this little difficulty, and not only suggested, but widely used in some parts of Europe, is to form the lintel of coke breeze concrete. "Breeze" is the English term for the small cinders left from the fires used for burning bricks in a kiln, or from the manufacture of coke in gas ovens. Mixed with cement, it makes a concrete that is fireproof and that possesses another useful quality in that nails may driven into it with ease. This last property has led to the use of coke breeze in a variety of places where wood was formerly employed.

For instance, thirty or forty years ago it was still common to find bond timbers inserted in brick and stone walls at such heights as would render them convenient for fixing the trimmings and finishing woodwork to afterwards. These bond timbers were certain to shrink and were also very liable to rot, and as either of these contingencies made them a source of possible weakness to the wall, their use was gradually discontinued, until it has ceased altogether.

The substitute at first proposed for the bond timbers, and largely used for many years, was a thin strip of wood built into a joint of the masonry or brick work, thus reducing the possibility of failure from shrinkage. The strips were, however, in a great measure open to the same objections as the larger bond timbers, and many architects refused to allow

them to be used. Instead, they specified that hardwood (usually elm, on account of its non-liability to split) plugs or wedges should be driven into the joints at intervals, after the walls had set; the grounds, or other woodwork, being nailed to these plugs. (A very good development of this idea is to be seen in the advertising columns of this journal in the form of a metal grip to be placed in the joints of a wall.)

The invention of coke breeze concrete has, however, made it possible to substitute bricks and blocks made of it, which can be built into the wall during construction. They neither shrink nor rot, while their property of taking nails readily makes them ideal for the purpose of fixing woodwork.

The illustration (No. 1) shows the application of coke breeze in the lintel and fixing blocks round a revealed opening for a doorway in a 12 inch wall. The blocks are also shown at each side, where they would be continued to form a fixing for the grounds for the chair rail and base board. These blocks should be of the size of the bricks used in the building, and may, of course, be readily moulded in any suitable machine. Long before the use of machine for this purpose, however, many hundreds of such bricks were made in the roughest of wooden molds, improvised for the purpose. As coke slack or "breeze" is very often merely a nuisance to the gas manufacturer, its cost is next to nothing in many instances.

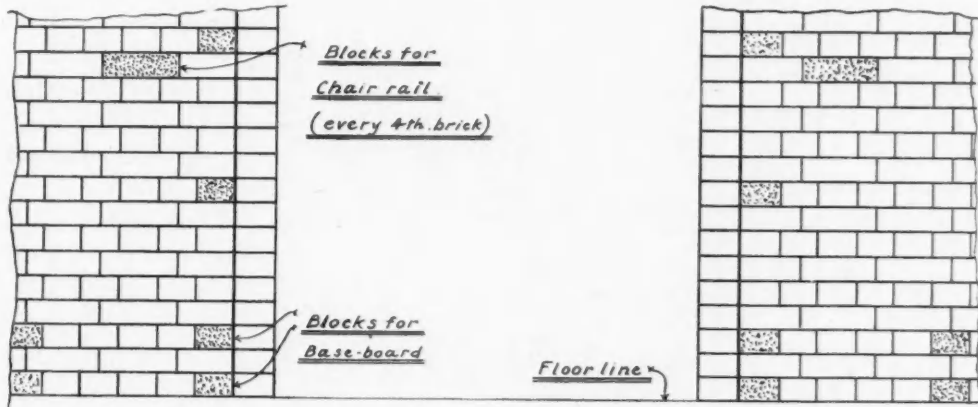
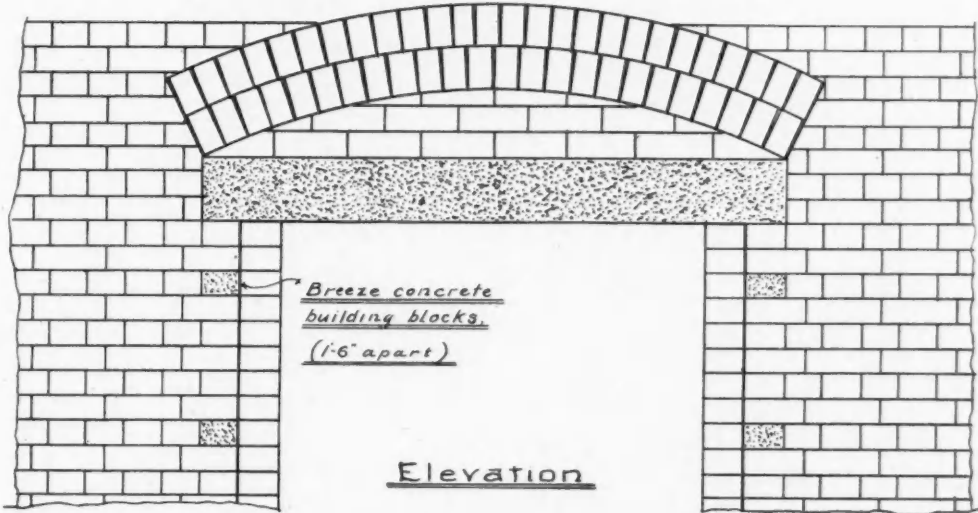
The question of fireproof construction is by no means a new one, although the builders of the present generation have probably seen more attention devoted to it than did their predecessors. As showing an interesting method of dealing with the lintel problem, the illustration (No. 2), taken from a German authority on building, published many years ago, is worthy of attention. A flat or "camber" arch takes the place of the wooden lintel and is supported by means of an iron rod from the crown of the relieving arch above. For first-class work it would be hard to surpass this scheme, but its cost would prevent its adoption in anything but the very best practice.

While on the subject of fireproofing, another useful application of coke breeze concrete may be given. The

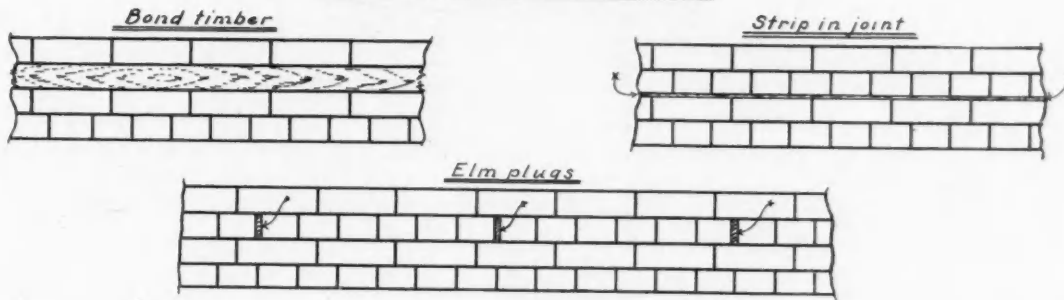
1

FIREPROOF CONSTRUCTION.

RELIEVING ARCH OVER BREEZE CONCRETE LINTEL,
BREEZE CONCRETE BLOCKS FOR FIXING.

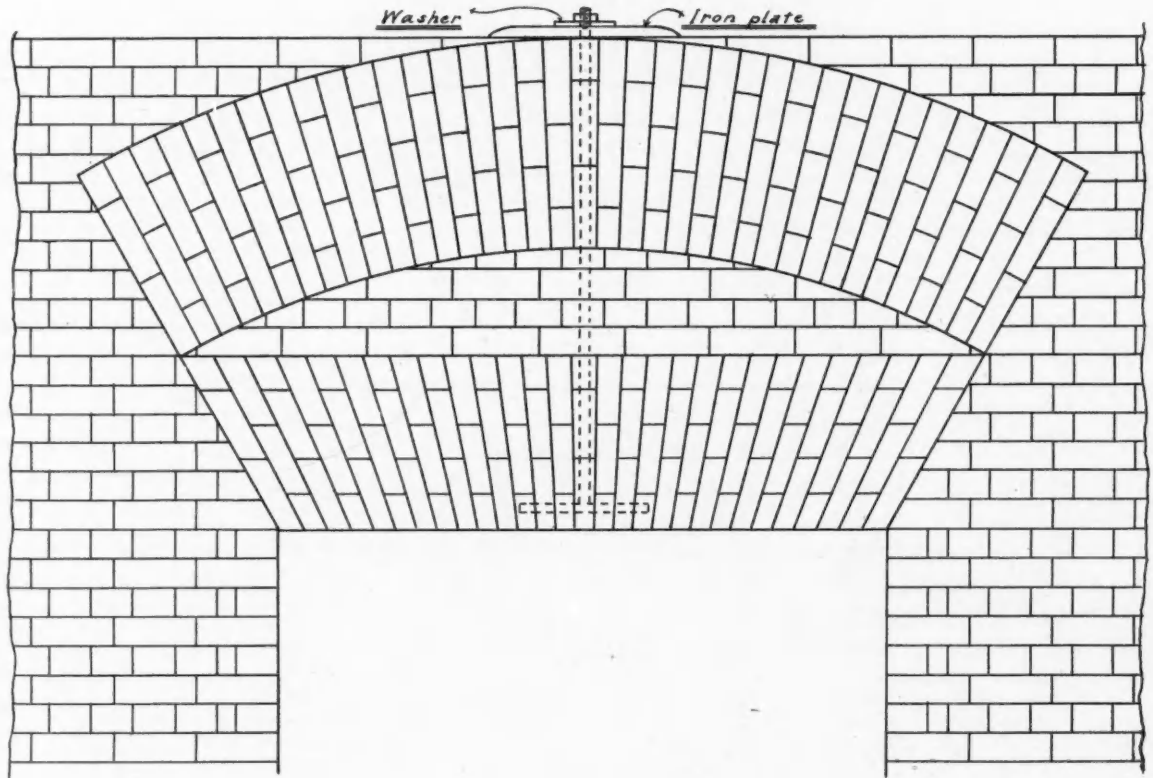


OLDER METHODS OF FIXING.

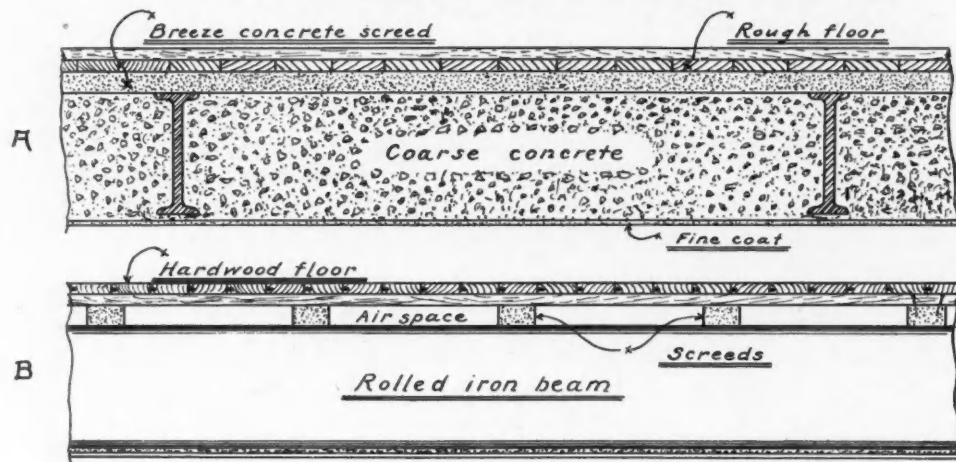


2

FIREPROOF CONSTRUCTION.
A GAUGED RELIEVING ARCH OVER A FLAT OR "CAMBER" ARCH
WITH SUPPORTING ROD



SIMPLE FIREPROOF FLOOR
SHOWING USE OF COKE BREEZE CONCRETE SCREDS



many forms of iron and concrete fireproof floors are, in the majority of cases, covered with wood blocks or battens for the surface. Wood block floors are usually laid right on the concrete of the fireproof construction; some pitch or tar compound being used as a bedding cement. When batten floors are used, however, strips of quartering are usually laid on, or imbedded in the concrete, and the battens nailed to them. But many first-class architects do not care for this method and prefer that breeze concrete screeds

should be laid in place of the quartering. If the screeds are run when the concrete below is still damp, they become an integral part of the body of the floor, and make a sounder job altogether. The illustration shows a simple rolled iron beam and concrete floor of the type generally known as "Dennett's," with board floor over. Fig. A shows a cross section through the iron beams, and B shows a cross section through the concrete screeds, the boards being nailed to these as suggested.

Use of Tile for Floors

REASONS WHY IT IS PREFERABLE TO ANY OTHER MATERIAL—IMPORTANCE OF HAVING SANITARY FLOORS IN ALL PUBLIC BUILDINGS

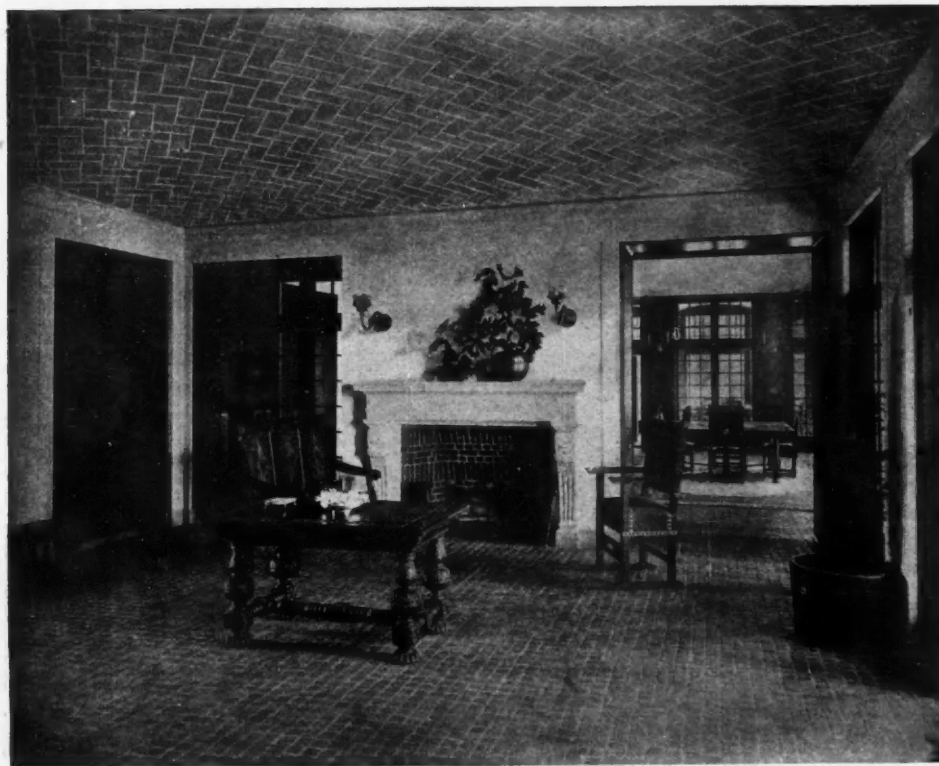
By C. J. Fox, Ph. B.

A EUROPEAN traveling in this country once remarked that although America was the land of comfort, luxury and conveniences, the people neglected even the laws of common decency in their utter disregard for things under foot. He referred to the unpaved and dirty streets, until within

cleaned ten times more often than it is done by the best of housekeepers, a carpet is a positive source of danger from its unsanitary condition.

Not only in our private houses but in our public buildings, such as schools, churches, hospitals, stores of all kinds, libraries, etc., we find far less attention

given to the floor than to any other part of the building. America is rich in wood, and this fact has led to the general adoption of wood as a flooring material, while as a matter of fact it is in many ways the most unsuitable covering for floors in any place that is subject to hard and continuous usage, and to frequent soiling from the street dirt or other vegetable or animal matter. Wood itself absorbs dirt and moisture, which causes it to decay and become the breeding places of countless numbers of infectious and bad smelling microorganisms. The musty odor characteristic of our older houses, no matter how well they are cleaned,

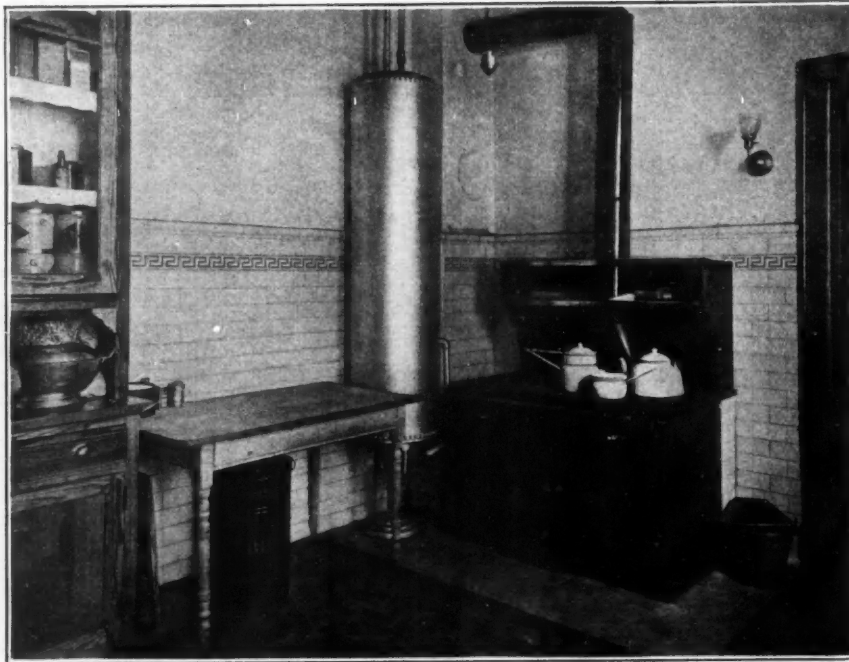


a few years so very common in our cities; and to the worn and unsanitary floors so common in many of our finest houses. In the matter of streets we have made considerable progress, and have in fact almost caught up with our European critics, but in the matter of flooring we have still considerable to do. America is even today the land of carpets, those highly unsanitary coverings for dirty and worn floors. A carpet is no doubt pleasant to walk upon, and it suggests warmth, but unless it is removed and thoroughly

and that peculiar and indescribable odor called the "institute smell," noticeable in many of our finest hospitals, schools and other institutions, are due solely to the fact that the wooden floors of these buildings have been for years absorbing filth of all kinds, which breed the anaerobic and other germs, not only in the cracks of the floor but in the wood itself. These germs live far beyond the reach of soap and water; or rather, thrive on the dampness which frequent washing of the floors brings about. In our modern

houses we should avoid the wooden floor above all places in the bath-room, kitchen, butler's pantry, laundry and vestibule.

Marble is a good flooring material; but it is easily scratched and worn by the steel nails of the shoes; is rather porous; is stained by ink and all acids, and



is likewise expensive. Rubber floors are agreeable to walk upon, but they have a disagreeable odor, especially in a hot room, and they cover up much dirt, which works its way under them. The rubber interlocking so-called tile is highly unsanitary owing to the fact that the joints are not filled with cement.

The ideal floor covering is beyond all question the baked clay tile or ceramic mosaic. Baked clay is harder than marble, slate, or any natural stone. Clay tiles last for hundreds, even thousands of years. They are non-porous and cannot absorb dirt or moisture. The sharpest steel point cannot scratch them. They are easily kept clean, and are absolutely germ-proof. Even the joints between them are completely filled with a very hard antiseptic cement, as non-porous and germ-proof as the tile itself, while the hardness of the tile prevents the cement in the joints becoming worn. Baked in the very hottest of fires the clay tile is of course fireproof. All that has been said of any tile applies with equal force to the ceramic mosaic, which is really nothing more than diminutive tile laid out in artistic or pictorial designs. Although the structural and sanitary properties of the tile are important, its artistic possibilities are equally significant. Clay tile can be made in almost unlimited

number of colors, designs and shapes. In this respect it is far superior to marble.

These valuable properties of the clay tile as a floor covering make its use in the modern dwelling house of utmost importance in the bath-room, kitchen, butler's pantry, laundry and in the vestibule, likewise in the fireplaces and hearths. The large amount of dampness and animal and vegetable matter which is unavoidably spilled upon the floors of the bath-room, kitchen, butler's pantry and laundry make the use of tiling or some other non-absorbent, inorganic floor a hygienic necessity. The rough usage to which the vestibule is put, and the amount of street dirt which is deposited upon it, make it necessary that this also should be of tile. The wear and tear of fireplace and hearth, due to knocks and blows of poker, tongs and coal-hod and to the ashes and hot coals, make the use of tile a necessity here also; not to mention that as a fire-resisting and warm appearing substance, clay tile is the most appropriate material for the fireplace, mantel and hearth.

The same demands for cleanliness and durability, not to mention the artistic effect, make the use of tile flooring imperative in hospitals, railway stations, churches, public buildings of all kinds, stores, espe-



cially butcher shops and dairies, and any other places that are subject to much traffic.

Tile are the cleanest, the most attractive, the most durable and consequently the best of all known flooring materials.

Short Talks with our Subscribers



Important Notice

When your subscription expires, renew at once, using the blank enclosed in your final copy. If it expires with this issue, your renewal must reach us before May 25 to avoid missing the June number. Use P. O. or Express Money Order if possible, but bills or 2-cent stamps may be sent at our risk.



WE have received so many complimentary letters in regard to our "Second Anniversary Number" that it is impossible to acknowledge them all personally, and we take this means of thanking our many friends for their encouraging words, and assure them that we will always endeavor to keep our magazine up to the high standard we have set.

It is certainly gratifying to know that our efforts are appreciated, and when readers and subscribers take the trouble to write us it is surely positive evidence that the AMERICAN CARPENTER AND BUILDER is "The World's Greatest Building Paper." We are determined not to let this title pass from us—in fact, we will keep so far ahead in the race for supremacy that there will be no danger of our being overtaken.

Articles for June

In an editorial on another page we describe an extremely interesting article, which will appear next month, on "Timbering in New Zealand." We have been negotiating for this and for the handsome photographs which accompany it, for several months, and are more than pleased with the information which we will be able to give our readers next month. As it takes nearly three months to get a reply to a letter mailed to our correspondent, the negotiations have been necessarily slow, but we are always on the alert for instructive and interesting articles.

You will undoubtedly be interested in the article on "Gateways of American Estates" in this issue. Mr. Waldon Fawcett never fails to give us instructive articles and his photographs are always exceptionally good.

We have a series of other manuscripts from this writer's pen, all of which are profusely illustrated with excellent photographs, which will appear in future numbers.

Suggestions Wanted

While we are thus trying to improve the magazine we may overlook some improvements which will come to your mind. We want our subscribers to feel that they are a part of our great organization and that they are at liberty to suggest any changes, improvements or additions which may occur to them. We at this end are trying to publish what you need, what you want, and what is best suited to your business. We may fail sometimes to publish just the right thing. Let us know if we do. If you find there is something needed which we have omitted, write us about it. What you need, others will need, and we are here to serve you to the best of our ability.

We have received many valuable suggestions from the members of our "great family" of subscribers. We are glad that they consider themselves so closely identified with us, and that they write us such encouraging letters. It is gratifying to know that they are so well pleased, but at the same time we will be equally glad to receive letters of criticism. Such letters have been extremely few, but our magazine is certainly not perfect. Help us to make it so (or as nearly so as possible) by pointing out any defect, no matter how slight, or a chance for improvement, no matter how small. If there are any rough edges we want to know it, as we feel sure the timber with which our magazine is constructed is capable of carrying the highest polish.



Constructing Casement Windows

SHOWING THE DETAILED CONSTRUCTION OF A CASEMENT WINDOW OPENING INWARD — MANNER OF MAKING AND APPLYING STUCCO ALSO SHOWN

IN THIS installment we will consider the first example of the construction of an inward opening casement, and at the same time will illustrate and describe the manner of making and applying stucco to the exterior surfaces of frame walls.

The only serious objection to the use of casement windows in general is that it is very difficult to make them proof against rain and wind, and with casements opening inward the difficulty is much greater than with those opening outward.

In the accompanying illustration, we show as simple a method as can well be employed in constructing an inward opening casement, and the type shown is not always thoroughly weather-tight during driving rain storms, when the house is in an exposed location.

The frame is made out of two-inch stock, rebated for the sash, and for outside blinds or storm sash. The channel at "B" on both jambs of the frame, is for the purpose of catching any water that may beat in between the sash and the frame and conveying it downward to the sill, on which it discharges in the manner indicated by the arrows at "B," Fig. 173. A filling piece, "A," of the same material and finish as the adjoining interior woodwork, is placed on the inner edge of the frame so that none of the frame will be exposed in the room.

The sill is usually the weak point of inward opening casements, owing to the fact that whatever rebate is made for the sash, must necessarily have its lower edge on the inside of the window, so that any water which once enters between the lower rail of the sash and the sill will leak into the room. To prevent the water from entering at this point, an undercut drip is provided on the lower rail of the sash so that any water which may trickle down the outside surface of the sash will drop to the sill from the lower edge, and the sill has a hollow in the raised portion just under the sash for the purpose of casting off any water which may be driven against it in severe weather.

The sill is rebated for the outside blinds and has an apron which is tongued into it.

The wall is frame, constructed in the usual manner

of two by four inch studs placed sixteen inches on centers, and doubled for jambs, heads and sills of openings. It is lathed and plastered on the inside, and grounds, "G," are set as a nailing for the inside finishing woodwork. The trim is molded and hollow backed and mitered at angles, and has a face mold, a rebated back band, and a small flexible wall mold. It finishes on wood plinth blocks of the same height as the adjoining base, and underneath the window a molded panel back is provided. Walls should be plastered behind panel backs, but the finish coat may be omitted. Panels should be set loose to allow for expansion and contraction, and the moldings should be nailed to the stiles and rails of the panel back. Also the joint of panels with the stiles and rails should be so constructed that the panel may be readily removed by taking off the molding. This is very essential, as panels frequently need replacing, owing to cracks and warping.

In order that the wall can be plastered behind the panel back without increasing its thickness, the studs between the floor and the sill are three by four inch, set flatwise.

The exterior of the wall is sheathed with matched boards surfaced on one side and is then covered with water proof building paper, well lapped and tacked. The surface is then furred with one by two inch strips placed twelve inches on centers and well nailed. Metal lath is then applied, well lapped, stretched and stapled to each furring strip. Galvanized wire lath is considered preferable by many to the expanded metal lath. The wire lath should be galvanized after being woven, and the expanded metal lath should be coated after being cut.

To this lath the first coat of stucco mortar is applied and it should be well troweled under pressure to secure a good "key" on the lath. A good mortar for this coat is made of one part domestic Portland cement, one part shell lime and five parts of clean sharp sand. This coat should be allowed to dry slowly and, if necessary to accomplish this, should be frequently sprinkled with water through a hose having a fine sprinkling nozzle, for the first twenty-

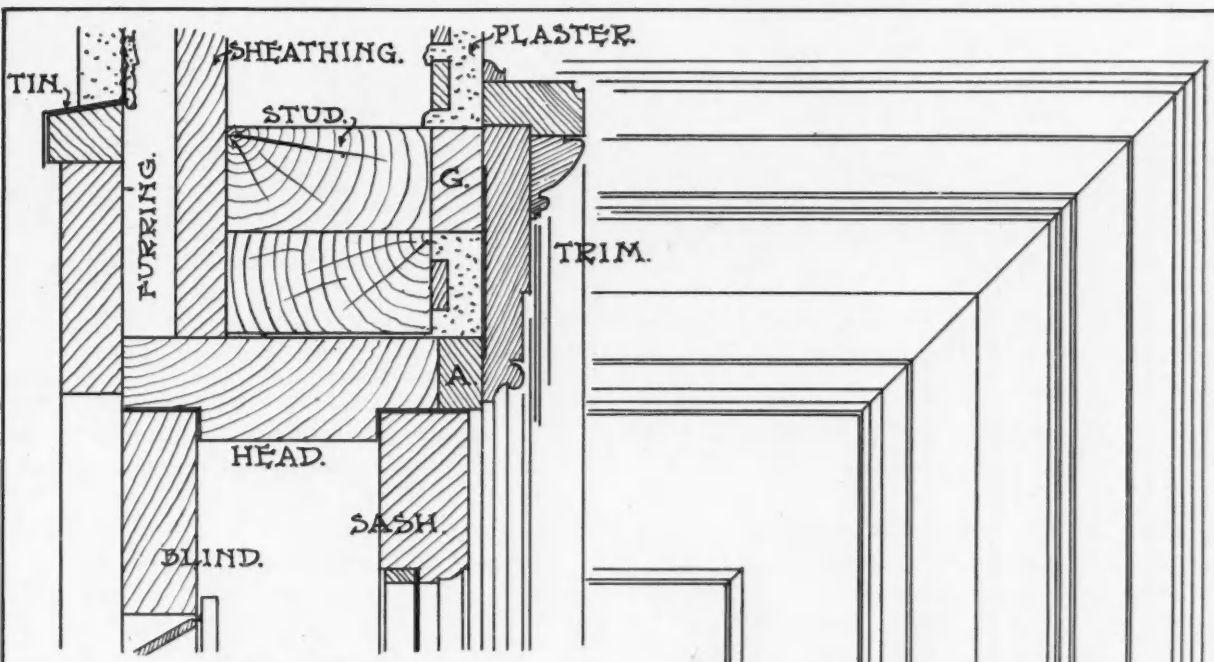


FIG. 171.

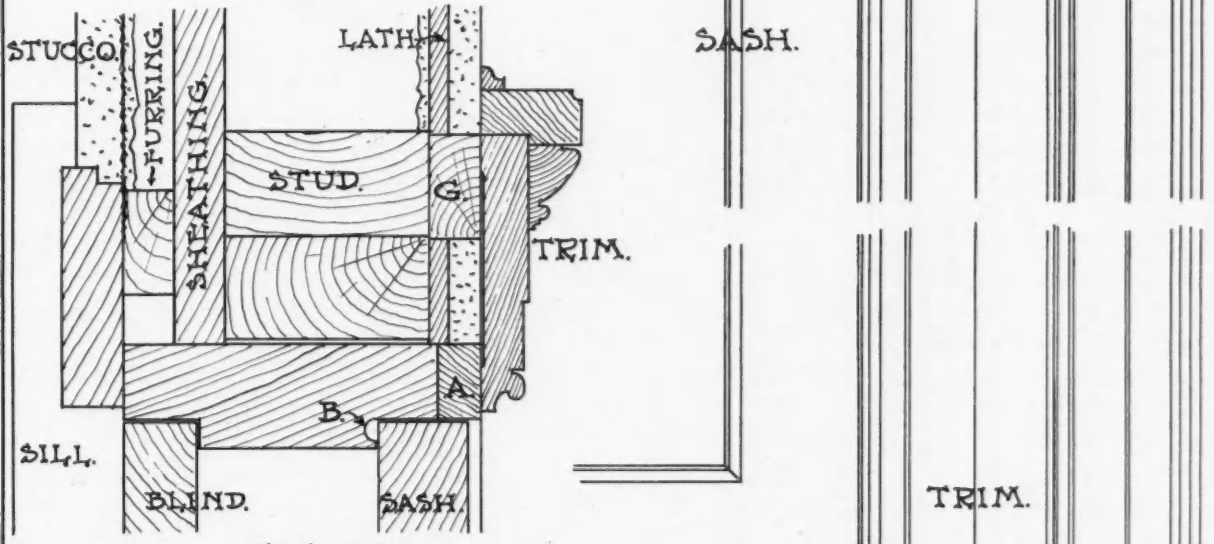


FIG. 172.

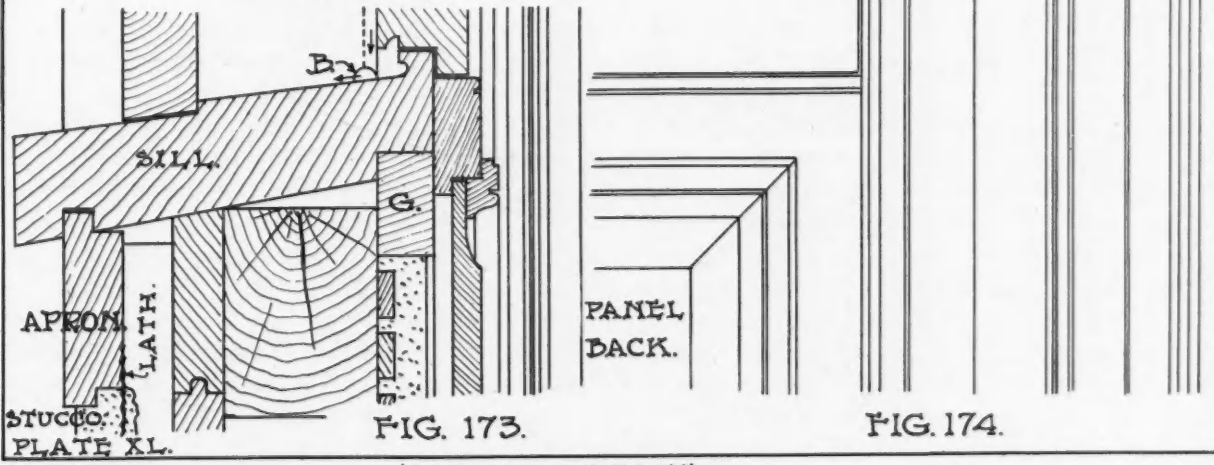


FIG. 173.

STUCCO.
PLATE XL.

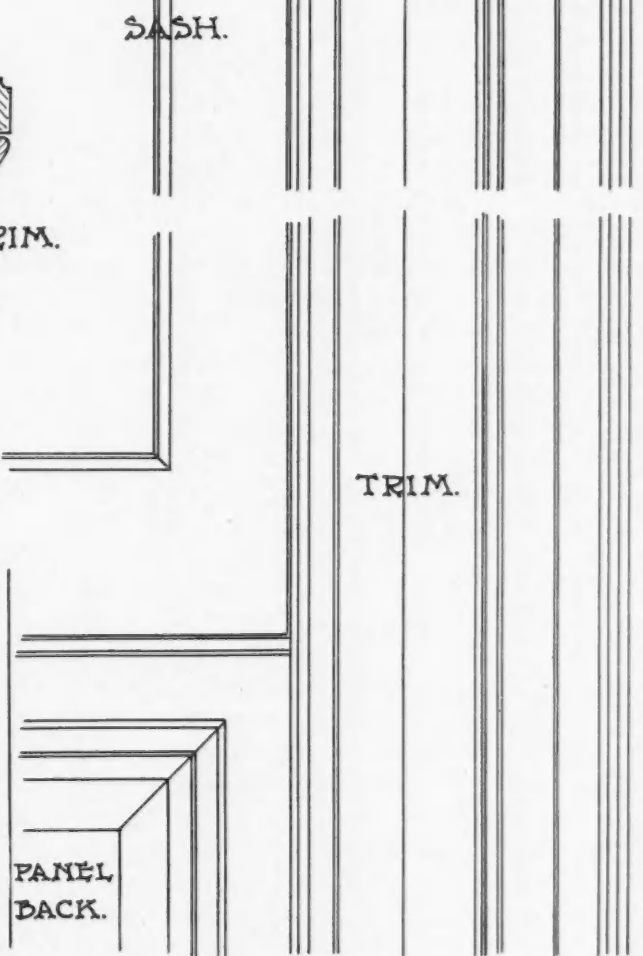


FIG. 174.

WINDOWS.

four hours. The surface should be lightly scratched, so as to provide a "key" for the second coat.

A good mixture for the second or finish coat is made in the proportions of one part domestic Portland cement, one part shell lime and five parts of clean white marble dust. This dust should not be the refuse of a marble quarry, but should consist of clean white marble especially ground for stucco

work. This coat should be allowed to dry slowly and, if necessary, dampened similarly to the undercoat.

Fig. 171 is a vertical section taken through the head of the window, Fig. 172 is a horizontal section taken through the jamb of the window, Fig. 173 is a vertical section taken through the sill of the window, and Fig. 174 is an inside elevation of the window.

Estimating Work on Buildings

DIFFICULTY IN FOLLOWING A CERTAIN PLAN OF FIGURING WORK—VALUE OF TAKING NOTES ON VARIOUS KINDS OF WORK

By A. G. Beard

THIS is one of the most difficult, and very often thankless, jobs that a builder has to contend with. He is expected to donate a certain amount of his time, which, to him, represents money, to enable a possible customer to decide upon a contemplated piece of work, and, in many cases, just to enable him to decide if the undertaking would be a paying investment. Should he consult a lawyer in regard to points of law, he would, very naturally, expect to pay for the advice. But how is it with the contractor? He is expected to donate his services in the way of much mental and physical labor.

Now I ask, in all fairness, is this as it should be? Calling your client the owner of a piece of property, and wishing to make some improvements upon it, is it any more than right that he should pay for the information which enables him to make a safe investment? Of course, if you should happen to get his work, you may possibly have a chance to get "even;" but would it not be better all around to have it understood beforehand that a charge of a certain per cent. would be made, and that if you were the successful bidder, then the amount of this charge to be deducted from the amount of your tender. If some such system could become established among builders, I feel safe in predicting that there would be much less running about and getting figures from every "Tom, Dick and Harry," on every job that is in the market.

Now, a few words in regard to "figuring" on work. Much has been said and written upon the subject of "estimating." Various books have been published treating on "Rapid," "Lightning," "Safe," and other systems. While some very good ideas may be obtained from some of those books, yet it is not always safe to be governed, in all cases, by the rules laid down. It requires a certain amount of "horse sense" to figure most any job, yet, on the other hand, I would not advocate following the system of a certain painter.

When he was asked to tell what he would paint a house for, he took his yard-stick and ran it across one side and an end. Taking out his book and pencil, he thus soliloquizes: "Naught is a naught; three into five two times, you can't." Then turning to the owner, said, "It will cost you just forty dollars." Here is

a case where a good guess is as good as any amount of figuring. Quantities may be very readily estimated, but when it comes to the labor part it is where many get let down.

In order to be a successful builder one should be possessed of a certain amount of "tact," good judgment and a fair knowledge of the fundamental rules of arithmetic. It does not always follow that because one man has done a certain amount of work on one job, that another man will do a like amount of the same work on a different job. Just here is where your "Rapid Estimators" show up. The theory laid down is that siding, for example, is worth so much a square to put on; so much for this width, so much for that, and hardly ever attempting to take into account the differences in the contour of the surfaces. While a man may put on three squares of siding on the plain broadside of a house, it does not follow that he can maintain the same average on a house that is cut up with innumerable corners and projections. This is where your "book learning" has to step aside and your good judgment come to the rescue.

I do not wish to be understood as advising to throw away those manuals; on the contrary, if you have one, keep it; study it, and try to become familiar with all its rules and tables.

I have, for many years past, kept memorandum books in which were entered items from day to day, as they were found to apply to the business. These books were pocket size, having marginal indexes, and under the heading of the different letters I jotted down prices of this and that kind of work or materials, rules, formulas, dimensions of various articles of furniture, number of bricks per foot for a certain size wall, chimney or cistern, and so on as you come in contact with different subjects. You may be required to put a shelf or window in a vacant house, or a new one, at a height just so as to clear a piano. The lady of the house is there and your men are waiting for you to lay out the opening; turn to the book, and under the marginal index "P" you have your data of standard sizes of pianos, height, width and length. You don't have to run home, or to some of the neighbors to help you out.



The Care and Operation of Turning Lathes

A MACHINE WHICH IS NEGLECTED AND THEREFORE CAUSES CONSIDERABLE TROUBLE—HOW TO REMEDY THEM—DETERMINING THE SPEED TO PRODUCE BEST RESULTS

A VERY useful machine that is common to all planing mills and most other wood working institutions is the turning lathe. It is a machine, too, that is probably more abused from neglect and careless use than any other. Take a planing mill in which the lathe is of any age to speak of, and generally it is out of order, and while it is made to do the work in a way, it is a very common thing to see one in a planing mill where nobody has a kind word for it, and everybody finds fault with it. It is a little difficult to understand why a turning lathe should be subject to such neglect and abuse, but that they are pretty generally neglected except in institutions where they are in almost continuous use is too well known for arguing. Then, when the lathe gets in bad shape, and gets to turning out indifferent work, the proprietor at times begins to wish for a good lathe man and to surround the lathe in his mind with a certain air of mystery, which in turn gives form to the idea that some peculiar complicated skill is required for the successful operation of the lathe, and that men who have acquired this skill are very scarce and hard to find.

The fact of the matter is, the ordinary turning lathe is one of the simplest machines going, and the amount of skill required to operate one can be acquired or attained by any intelligent mechanic who will apply himself diligently to the task. The trouble seems to be that where a man has a little lathe job to do he goes to the lathe and does it without giving special attention to the condition of the lathe or toward maintaining it in good order. His main idea is to get the job done and get away from there as soon as possible, and as a consequence he probably uses his tools duller than they should be, and practically always when he gets through he leaves the tools dull and in a bad shape generally. Then when the next man comes along or when he goes back again himself to do a little job the tools are naturally in bad shape and he does not want to stop and put them in order for the little work he has, so he laboriously gets it out the best he can and hopes it will be a long time before he has another lathe job. With people feeling and acting this way toward the lathe, it is no wonder that

it is abused and neglected, and that in the end it is more tolerated than appreciated in the shop.

What we need is more appreciation of the lathe, more live interest in it and in its possibilities in the way of doing nice work in such a satisfactory manner as to afford one a fair measure of pleasure to use the machine and turn out lathe work. Moreover, if people gave more attention to the machine and thought more of it and its work, they would also give more attention to their own actions while at work at it. As it is, many a man goes to the lathe with more or less apprehension about the results of his work, and because the lathe maybe is a little shaky he gets shaky and careless* in holding his tools, magnifying the errors and natural faults of the lathe, so that between the two the work and the manner in which it is done is enough to give a critical workman a spell of nerves. I have seen fairly good lathes that in the hands of certain operators could be made to do decent work, yet in the hands of others, what they reminded me of more than anything else was to see a driver take hold of a team that was scared half to death on tackling the job, the horses sensed this fact in some peculiar way and would behave abominably, whereas had the driver taken hold of them with firm hands and decision they would have behaved well. It seems like some men lay hold of a lathe or lathe tools as if they are afraid that the minute they touch it into the wood it will either jerk out of their hands or the work will fly up and hit them in the face, and as a consequence their efforts produce more chattering than good work. I observed this very trait once during my training days on the part of a new foreman who undertook to operate a latch lathe making neck yokes. He saw me watching him and knowing that I had had considerable experience he called me over and asked me if I could make his lathe go. He said the blamed thing shook and jumped until he could not get a thing out of it. I told him I thought he was a little afraid of it, and all it needed was a tight rein and a steady hand, and putting a new blank in I laid hold of his latch cutter and it walked through its work with a steady firm movement that caused him to ask me if I wasn't an old, experienced hand. I told him no, but

I had been experimenting a little with that lathe and had discovered a few things about it, one of which was that a man should hold his cutting tool firmly to do good work, for if it began shrinking and dodging the lathe seemed to become angry and simply chattered and jumped. I have thought of this little experience many times since and from observation have found that the man who is afraid of his lathe and holds his tool shakily makes out the poorest, and the man who holds his tool firmly and works with confidence in his ability to get good results generally gets them.

The lathe, as has been stated, is a very simple machine, one of the simplest to be found, and it is by proper attention easy to keep in good shape. It is simply a matter of careful attention to small things, and in connection with the lathe there are not a great many of them. The main points to watch out for are to see that the running parts are properly balanced, see that the centers are true, and to see that the journals of the driving spindles are closely adjusted in the boxes that there may not be any vibration or chattering, and to keep the journals well lubricated that they may not run hot.

Lack of balance in the lathe is inexcusable, and its existence is generally due perhaps to lack of understanding as to disastrous results of even a light pulley running at high speed unevenly balanced. Take a step cone pulley such as is generally used on a simple turning lathe, let it get the least bit out of balance and it will shake the whole lathe bench. One can generally get a pretty fair idea of whether or not his pulleys and head stock are out of balance by adjusting the journal boxes so that the spindle will turn freely, get it well lubricated and then throw the belt off and turn it over slowly empty. If there is a heavy side to it anywhere it will be found that through a certain part of the revolution this heavy side will tend to roll the spindle itself without any assistance and will finally settle down at the bottom. Chalk this side and test it until you are sure one certain place has weight enough to settle it down to the bottom when turning free then take some clay, putty or some similar substance which you can stick on the opposite side of the cone pulley inside and by trying and turning get enough weight to counterbalance this heavy side so that when it is set rolling the pulley will stop one place as well as another. After you have secured your balance in this way, the clay or putty, or whatever you use for temporary balancing purposes should be carefully weighed and a metal lug of exactly that weight made and attached to the light place in the pulley where the temporary weight was used for balancing. This will give you a permanent balance.

With pulleys and spindles firmly balanced, if there is any tendency to chatter on the part of the lathe it is very likely due to a play in the journals. Some people do not seem to appreciate the fact, but it is a fact nevertheless that the journals on the turning

lathe should be as closely adjusted as bearings on an engine. If there is the least bit of play, when in the course of operation, the work receives jerks with the wood coming in contact with the gouge, it will naturally start a chattering. The only safe remedy for this is to keep the journals as closely adjusted as is permissible and keep them well lubricated. Lathe bearings, because of the high speed and the strain, are prone to heat, but this heating is more frequently due to lack of lubrication than the bearings being too tight. When bearings are too loose the chattering will knock the oil out of the journals and thus run them dry earlier than if they were neatly fitted to the bearings. It is not a very difficult thing to determine when one has the bearings tight enough, as by throwing off the belt and turning the head stock by hand one can easily tell when the bearings begin to pinch, and by taking hold of the spindle one can shake it and tell when it is loose. The boxes should be gradually made tighter until the spindle will not have any perceptible shake, but not tight enough to pinch so as to make the spindle hard to turn. A little experimenting will soon enable one to understand this point clearly and by careful attention to it any one should be able to keep a lathe spindle properly adjusted in its boxes. It is not so much a matter of special skill as it is a matter of special attention, not only to the adjustment, but seeing that the journals are kept properly oiled so they may not run hot. With attention to these points as it should be given, and to the other details of keeping tools sharp and in order, any ordinary lathe should not only do good work, but it should be a pleasure to work at it.

Probably the most puzzling thing to those who are not old and experienced in the work is to determine what speed is necessary to give the best results. Speed is a matter than depends not only on the size of the stock being turned, but also on the kind of wood. Soft spongy wood requires a higher speed than a hard wood, and it is a little difficult to give specific rules that will fit the different kinds of wood. As a general thing, one may figure, however, on getting good practical results running at a surface speed of from 1,000 to 1,500 feet per minute. Say 1,000 to 1,200 for roughing off for the harder woods, and 1,500 for smoothing or finishing, especially for the softer woods. To state it another way, where a piece of work does not exceed one inch in diameter it may be given a speed of approximately 3,000 revolutions a minute, for 2 inches in diameter 2,500, for 3 inches in diameter 2,000 or a little less, and for larger diameters the speed should be decreased. Remembering the suggestion that the surface speed should not exceed 1,000 feet a minute for roughing off and 1,500 for finishing, one can by a little figuring arrive at precisely the speed at which the lathe should run to give the right amount of travel on different sizes. A rule for this work given by the International Library

of Technology says: "When the surface speed of the countershaft of a wood-turning lathe is known, the speed of the lathe spindle may be found for any step of the cone by means of the following rule: Multiply the revolutions per minute of the counter-

shaft by the diameter of the step on the countershaft cone, on which the belt is to run, and divide by the diameter of the corresponding step on the lathe cone. The result will be the revolutions per minute of the lathe spindle."

A Problem in Roof Framing

SHOWING HOW TO GET THE LENGTHS AND CUTS OF THE VARIOUS RAFTERS—FIGURES TO USE ON THE STEEL SQUARE TO OBTAIN CORRECT RESULTS

By I. P. Hicks

FIG. 1 is the plan of a hip roof with a gable extending out on the corner of one side. This figure shows the line and run of all the rafters, but not the length or any of the cuts.

Fig. 2 is the simplest diagram that can be made to show the lengths and cuts in the ordinary hip roof. In this figure let A B represent half the width of the main roof. From B erect a perpendicular line indefinitely. On the perpendicular line set off the rise of the roof, as at C, and connect A C, which will be the length of common rafter for the main roof. A bevel set at C will be the plumb cut and a bevel set at A will be the bottom cut. Take the length of common rafter A C and set off same length on the perpendicular line as B D, and connect A D, which will be the length of hip to correspond with

that we prefer not to spoil a good diagram by adding unnecessary lines. Just remember that the cuts of a hip or valley on a regular 45 degree angle hip or valley is always 17 inches on the blade of a square, and whatever the rise to the foot is of the common rafter on the tongue of the square; blade gives bottom cut and tongue top or plumb cut. For example, if the common rafter has a rise of 10 inches to the

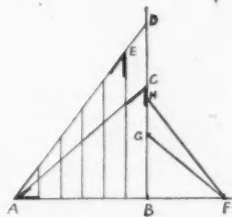


Fig. 2

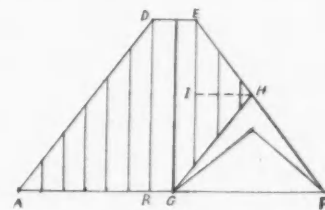


Fig. 3

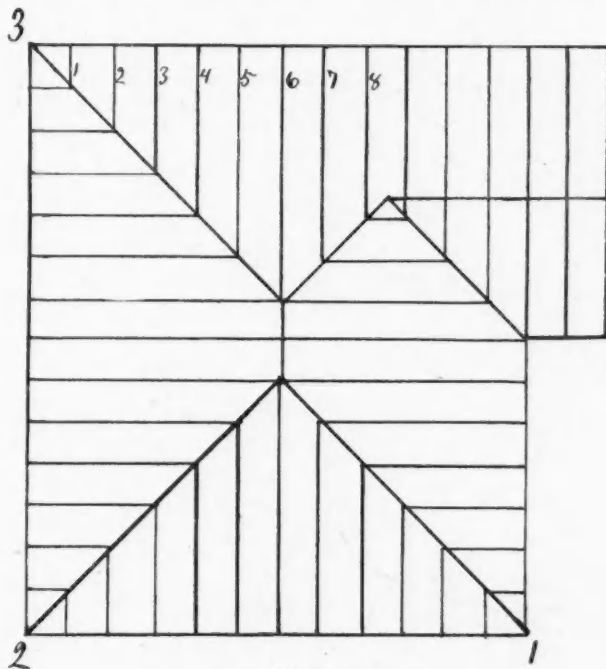


Fig. 1

the common rafter, A C. This also shows the hip in proper position to get length and cut of jacks. Space jacks on line A B and draw perpendicular lines to the hip line, A D, which will give the length of each jack. A bevel set in the angle at E will give the cut across the back of the jack rafter and the plumb and bottom cuts of the jacks are the same as the common rafter. In this diagram there is nothing to show the plumb cut and level cut of the hip. This could be done, but it would make such a confusion of lines

Fig. 2 shows the length of jacks and rafters for all three of the main hips, as 1, 2, 3. Now we have a short hip and some jacks cutting from hip to valley which we have yet to find the length of. Referring now to Fig. 3 we will make an elevation of the side of plan having the gable. Set off width of plan on this side, as A F, Fig. 3. Then draw A B D exactly the same as A B D in Fig. 2; draw the ridge D E, and connect E F. On the line E F set off the same distance as F H in Fig. 2; then the distance from H to E will be the length of the short hip from the ridge of main roof to ridge of gable. F G represents the width of gable and G H the valley rafter. Then the lines 1, 2, 3 will represent the lengths of the jacks which cut from hip to valley. We now have a few jacks from ridge of gable to valley to find the length of. The length of these will be from the dotted line H I to the valley line G H. The two rafters 7 and 8 in Fig. 1 will be the same length as 4 and 5, which were shown in Fig. 2.

foot run, then 10 and 12 are the figures which cut the common rafters, and 10 and 17 the hips or valleys. We will now refer to finding the length of the short valley as shown in the plan. Set off half the width of the gable as shown by B F in Fig. 2, then set off the rise on the perpendicular line as B G, and connect G F, which will be the length of common rafter for the gable. Next take the length of common rafter, G F, and set it off on the perpendicular line as B H and connect H F for length of valley rafter, which will correspond with the common rafter G F.

PRACTICAL CARPENTRY

Heavy Framing

CONTINUED DEMAND FOR HEAVY FRAME WORK — VALUABLE SUGGESTIONS ALONG THIS LINE — CONSTRUCTION OF A HEAVY CRANE DESCRIBED

By Dwight L. Stoddard.

WE WERE called on recently to make a crane to take iron from the car by the ton and place it into the large warehouse of a big wholesale dealer, and although he was a large dealer in practically all kinds of heavy iron, he preferred

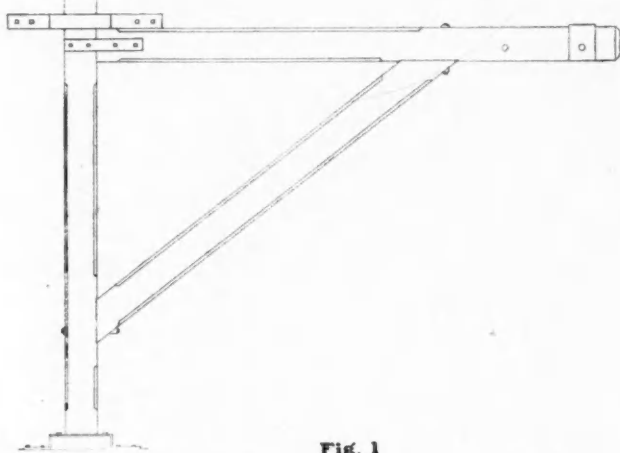


Fig. 1

to have his crane constructed of wood and it was very simply made with three pieces of 10 by 10 oak. Yet as simple as it was, it practically being a lost art, in the past year many requests have been made in the different building publications for information on heavy framing, and I have reason to believe that the readers of this most valuable paper will appreciate this little article, as simple as it may be.

Possibly some will want to know if I consider framing a lost art; to them I will say no, not by

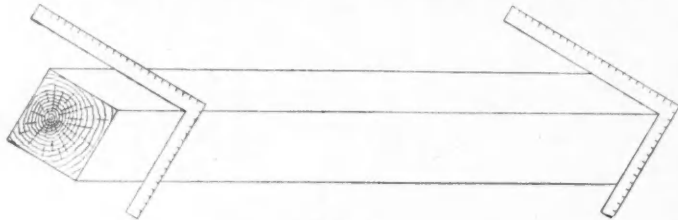


Fig. 2.

any means. Framing has been used in some form for ages and will be practically for all time to come in my opinion, yet I will admit there are great changes in building construction. A good illustration is Woods' article in the April issue, "The Home—Past and Present." We of the present day would hardly

know how to build a home of either style of architecture illustrated in his article, and it is true that the main thing necessary in the past generation to be a good carpenter was to be able to do heavy framing. Today, perhaps, the very best carpenters will work their whole life on practical carpenter work and not once be called upon to do heavy framing. I am content that even if hundreds of them are never called upon to do heavy framing some of them will be occa-

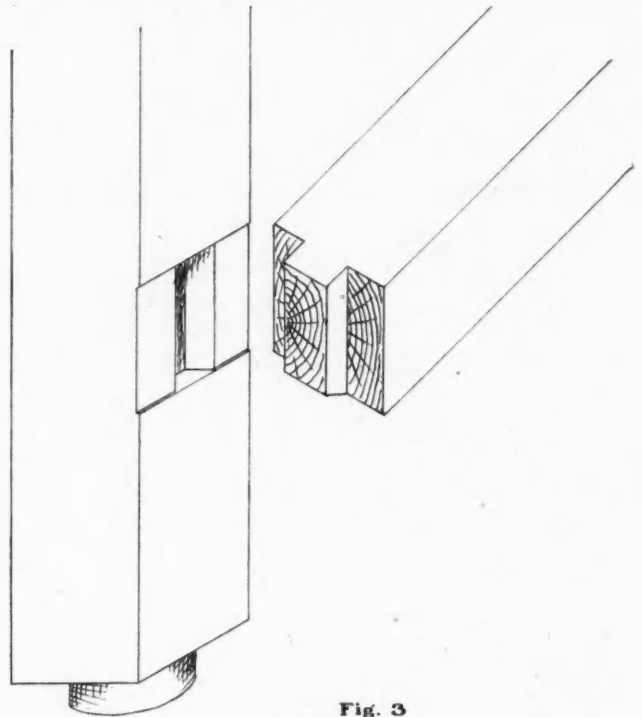


Fig. 3

sionally, not only in this generation but in the generations to follow.

Fig. 1 illustrates the crane complete. You will notice that all there is to it is just the three pieces of oak, as mentioned, with simply $\frac{1}{2}$ by 3 inch iron (or rather steel) bolted to the floor and walls to keep it in place. There were, however, other braces at the top that I did not show in the illustration, also plates to make the main joint more secure, and of course bolts to hold the brace in place, and also a cap to make it more secure to hold the pulley. You will notice there were two holes so the cap could be

shifted to be more handy in picking up the iron wherever it might lay.

Fig. 2 illustrates one thing that should always be borne in mind by the framer, and that is to see to it that the timbers are framed so as to take the timbers out of wind, for no matter how accurate lumber may be gotten out at the mill and all the care in the sea-

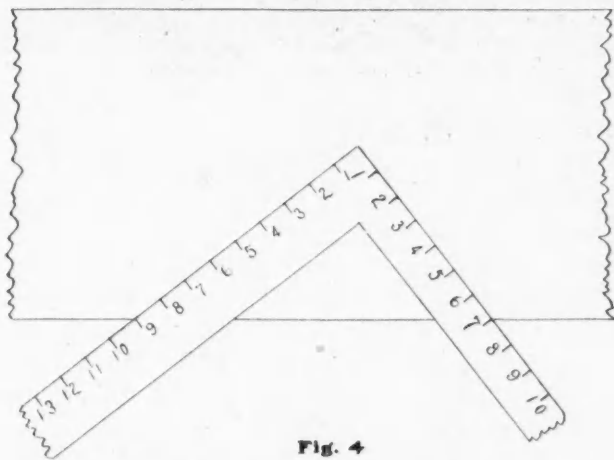


Fig. 4

soning, lumber is liable to get in wind and that must, therefore, always be considered. To see how much a timber is in wind I know of no better way than to place two square at each end, as illustrated, and sight over them, which will show at a glance just how much the timber is in wind and you can frame your work accordingly.

Fig. 3 illustrates how the brace was framed into the main post, as well as the round tenon at the bot-

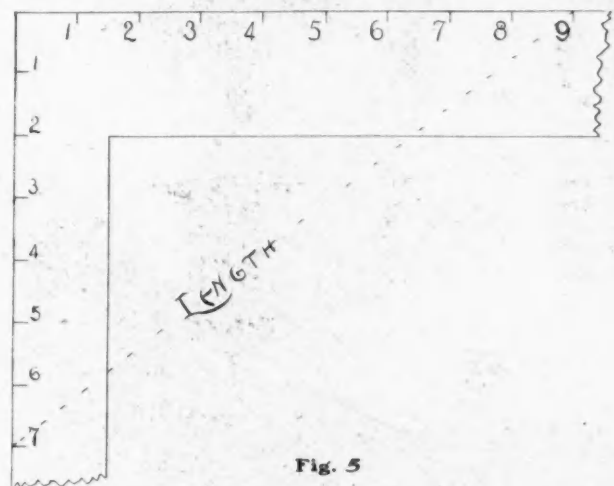


Fig. 5

tom which went into a big round hole too big to be bored with a bit, therefore it was sawed out of two pieces of heavy oak and one put on each side and securely fastened with the one-half inch bands as mentioned. It was easy to make this tenon as it could be laid out with compasses and worked to it, but the collar at the top was not quite as easy as there was no way to get at it with compasses and as it was too big to bother to get to a big turning lathe, it was worked out quite rapidly, accurately and easily by simply guessing it out roughly and then finishing it

up with the aid of a small piece of board with a half circle sawed in it. But in the main illustration you will notice the object in such a case is to weaken the main post as little as possible and at the same time make the brace and have all the strength possible. Now you will notice we made a large shallow mortise and then, sizing the timber, made about a half inch shoulder, which gives a solid support to the whole end of the brace. Of course, the top of the brace is framed the same way, while the two main timbers go together the mortise is made clear through and before the tenon is put through the mortise the hoels are bored for the draw pins, which are bored just enough different in the piece that contains the mortise and the one with the tenon, so they will draw the timbers tight together.

Fig. 4. As the brace extends down 7 feet and out 9 feet, place the blade of the square on 9 and the tongue on 7 and the blade gives the top cut, while the tongue gives the bottom. In this instance, where the square will not reach across the timber placed on in that way, it is well to double them and take 18 and 14.

Fig. 5. The length of the brace is found by simply measuring across the square from 7 to 9, suing inches as feet and 1-12 as inches, which is the simplest way I know of, although there are a good many ways. I have given this briefly, believing it will be of value to the many readers, and at the same time hoping it will be the means of getting many others to give their methods of how they are constructing heavy framing at the present time, and therefore show to the world that heavy framing is not yet a lost art, but is of great value to the young mechanic that has never had much heavy framing to do and unexpectedly strikes a heavy job that he has not otherwise been prepared for. The young mechanic is paying his subscription to not only see how to construct the modern work he comes in contact with in his daily work, but also to learn other practical things that he is liable to come in contact with any day. Although he does not come in contact with them daily, this paper will prepare him for the many emergencies, and I hope many of the writers will take up even more interesting subjects.

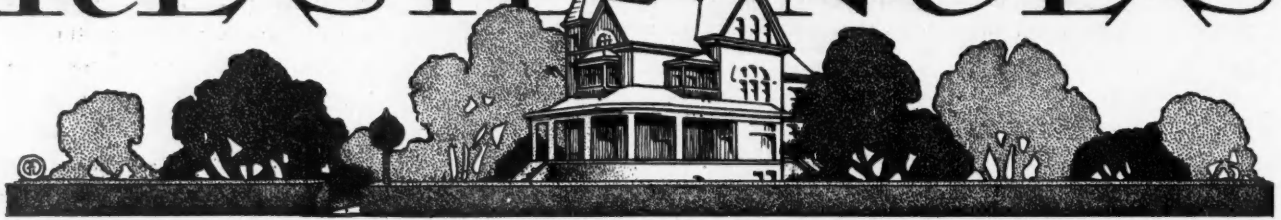


A wind pressure of 30 pounds per square foot is specified in the New York building laws for buildings more than 100 feet high, with an allowable unit stress of 50 per cent more than for dead or live loads. Fowler gives 20 pounds for buildings less than 20 feet high and 30 pounds for buildings 60 feet high; with no extra allowable unit stress.—*Scientific American*.



The Chilean government has placed \$165,000 at the disposal of the president, to be expended in securing immigrants for that republic.

RESIDENCES

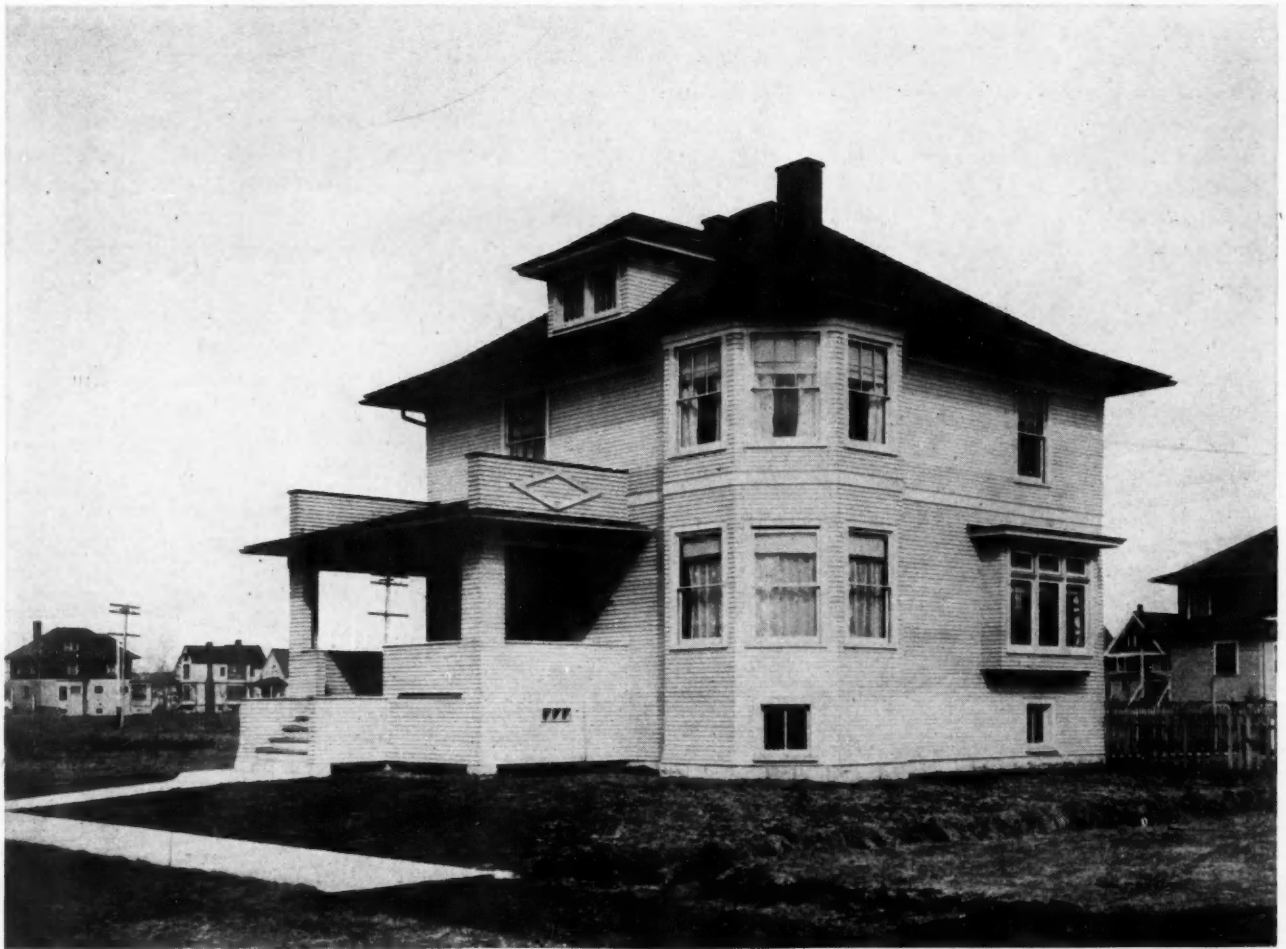


Attractive Practical Houses

ELEVATORS AND FLOOR PLANS OF A NUMBER OF ARTISTIC HOUSES SHOWN—SPECIAL FEATURES IN EACH POINTED OUT

THE house shown herewith was designed and built by Ira S. Griffith at Oak Park, Ill. The exterior is very attractive and this, together with the splendid interior arrangement, makes it one of the best designs that we have come in contact with.

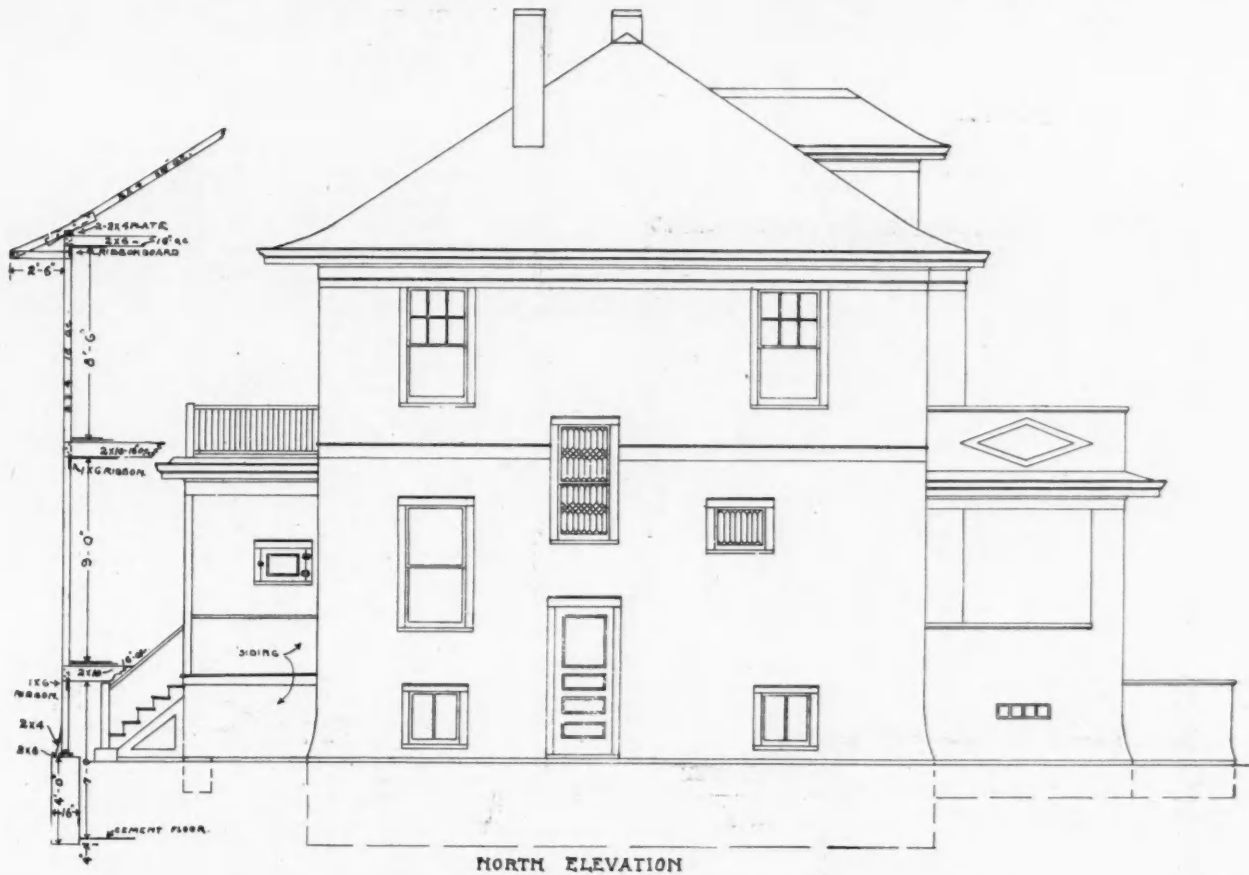
room, kitchen and hall. The living room is large and has a real fireplace, not one with a gas log, but where real logs can be burned. A gas log somehow takes all the sentiment out of a fireplace and always strikes us the same as when a hurdy gurdy on the street corner



Owing to the flatness of the surrounding country the basements cannot go deeper than two and one-half feet with safety from "backing-up." There is an advantage in having a shallow foundation in that they have plenty of good air and light in the basement. The plan shows the arrangement and location of the furnace, coal room and laundry.

The first floor is divided into a living room, dining

plays grand opera selections. The dining room is well supplied with drawer room for linen and is also equipped with a buffet and china closet. The serving table is movable and can be used for a tea table when occasion requires. The window seats in both living and dining room are well worthy of comment, as they are not only a great convenience, but an inexpensive luxury. The pantry is located between the dining



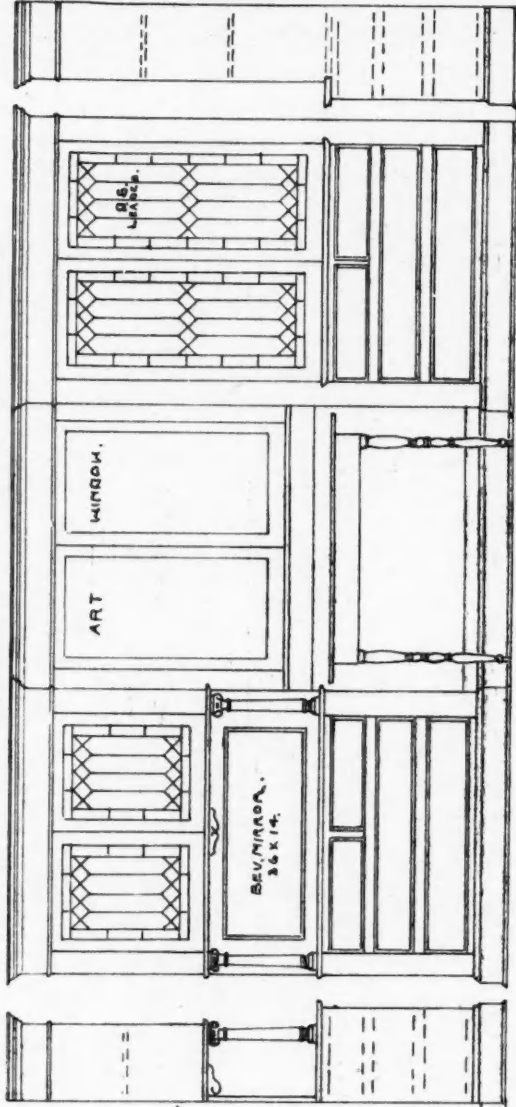
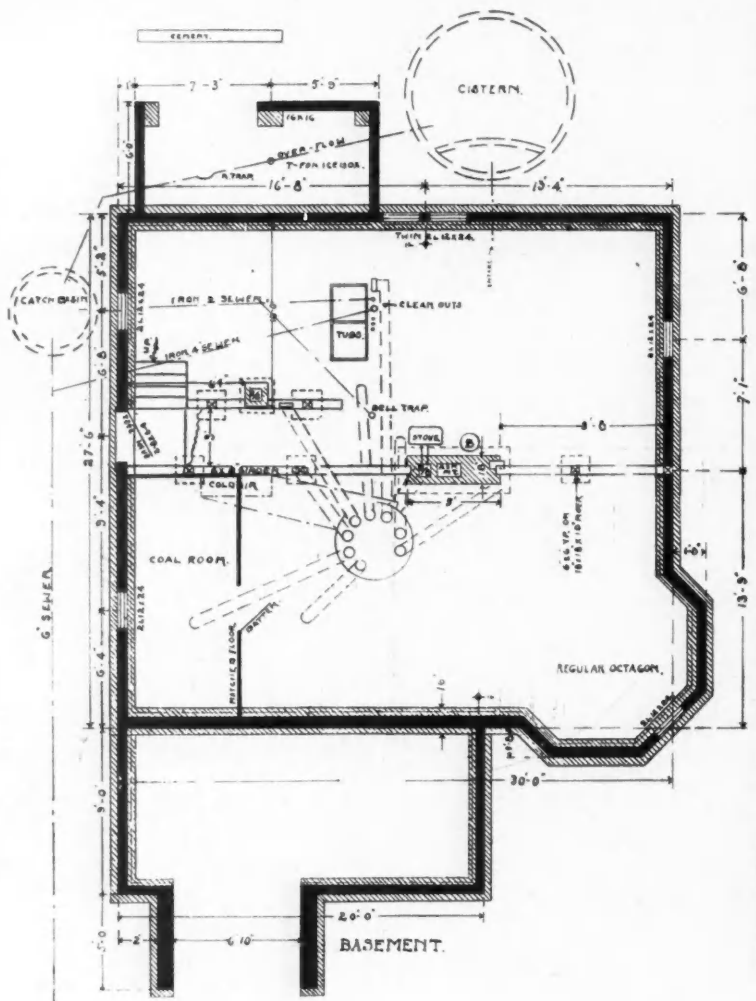
NORTH ELEVATION

room and kitchen and contains the refrigerator. Ice can be put in from the outside, thus avoiding all the dirt that is usually brought in by the ice man.

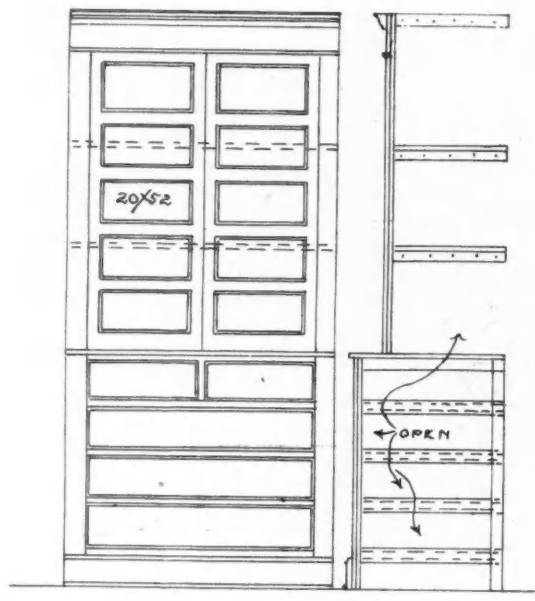
The stairway to the second floor starts both from the front hall and the kitchen, there being a landing in the front hall. The second floor shows a compact



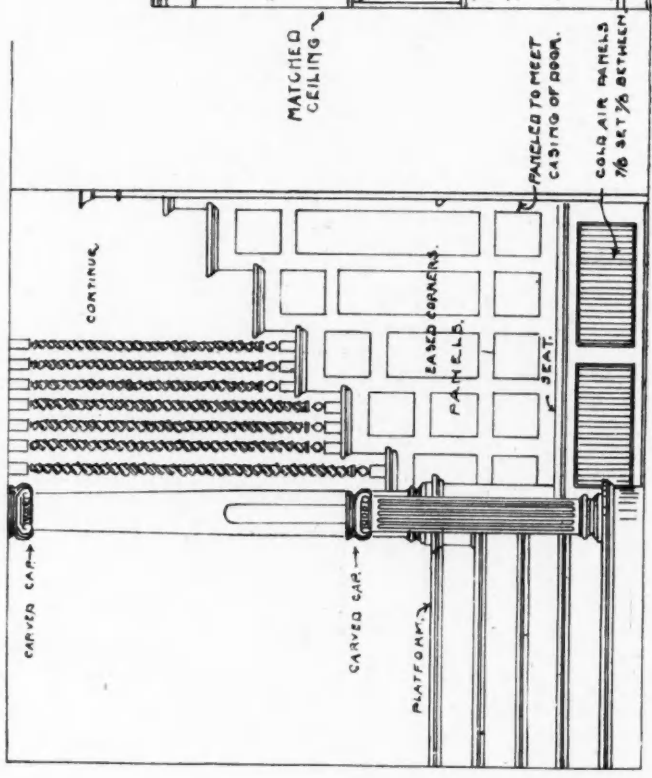
SOUTH ELEVATION



BUFFET. SERVING TABLE. CHINA CLOSET.



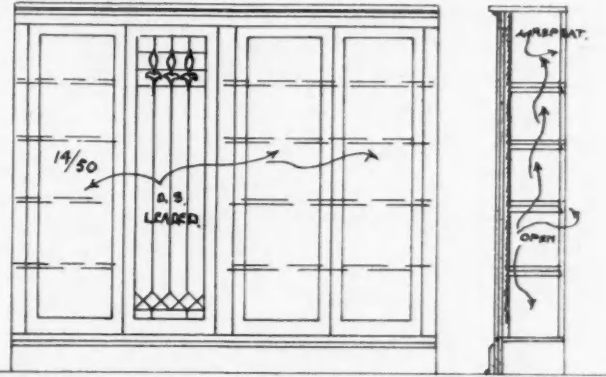
LINEN PRESS.



HALL-STAIR.

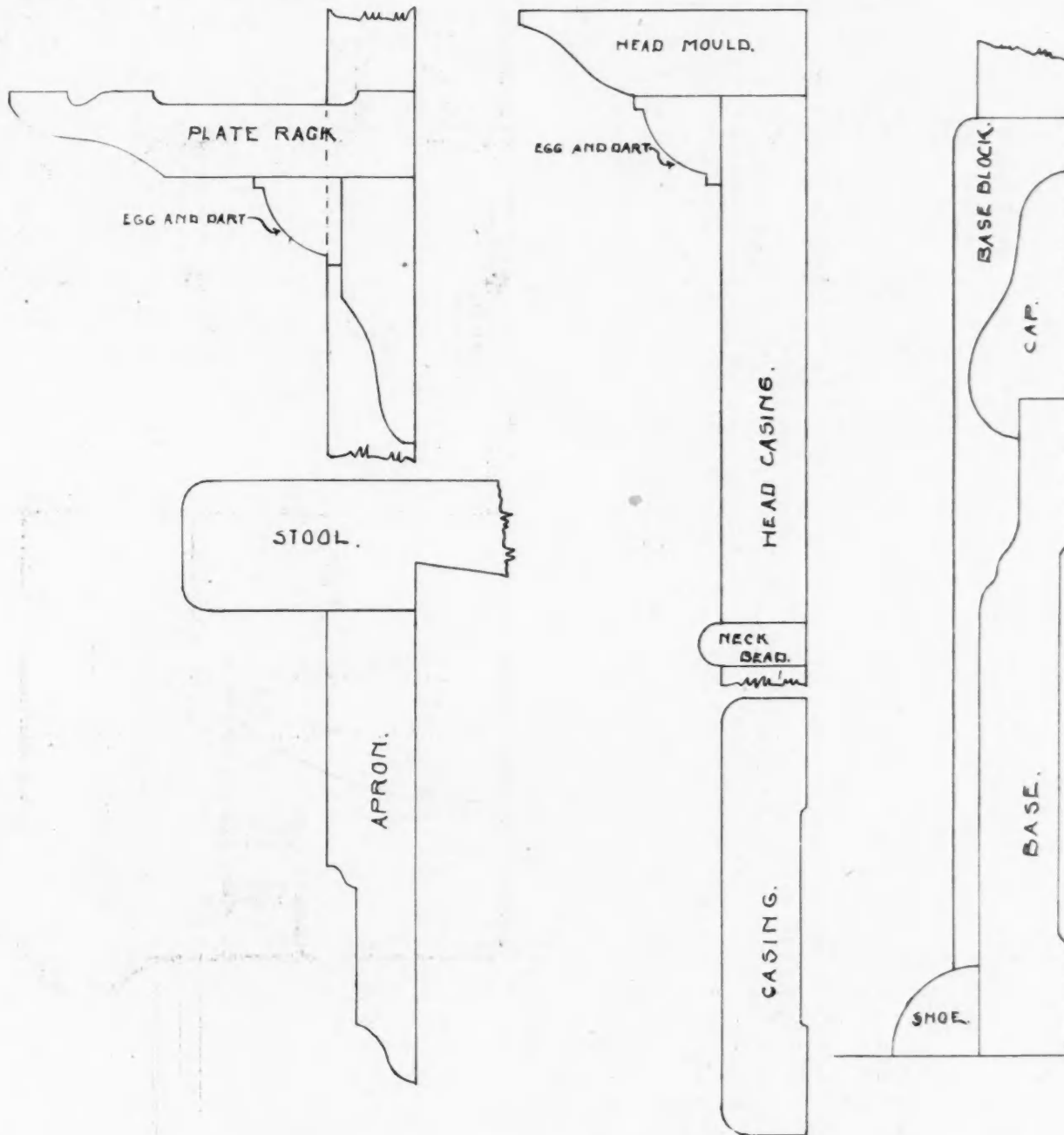
arrangement, there being no waste room in the hall. It is divided into three bedrooms, a study and a bathroom. The study can be changed to a bedroom or sewing room, as all the shelves in the bookcases are removable. Off from the study is a large balcony, where bedding can be aired or rugs cleaned. At one end of the hall is a large clothes press for bed linen, and is located so as to be convenient to all the rooms. Another feature is the clothes chute, which extends from the second floor into the basement. The attic can also be used for storage purposes and there is a stair leading to it from the study room.

The entire house is lighted with both gas and electric lights. The plumbing system is complete, both hot and cold water in all parts of the house. The first floor is finished in oak and the rest of the house in Georgia pine with maple floors.



BOOK CASE.

The walls are finished in oil fresco with stenciled designs and the exterior of the house is painted white. The details show the finish around the buffet and china closet and also the hall stair.

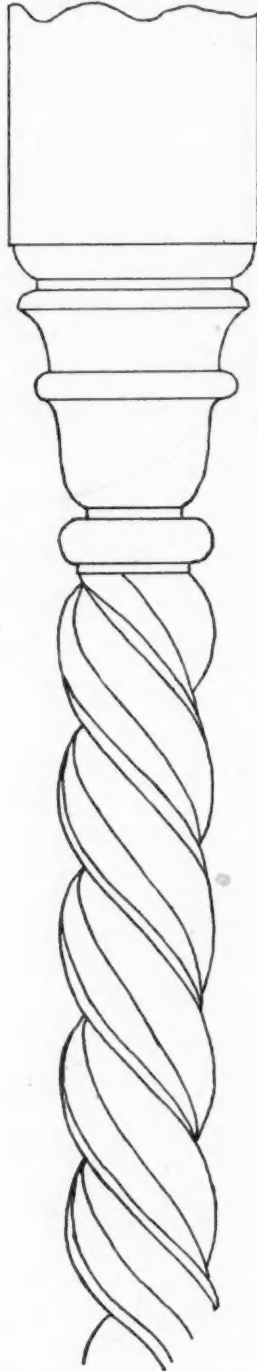


The bungalow on page 241 was designed by A. Raymond Ellis and described by him as follows:

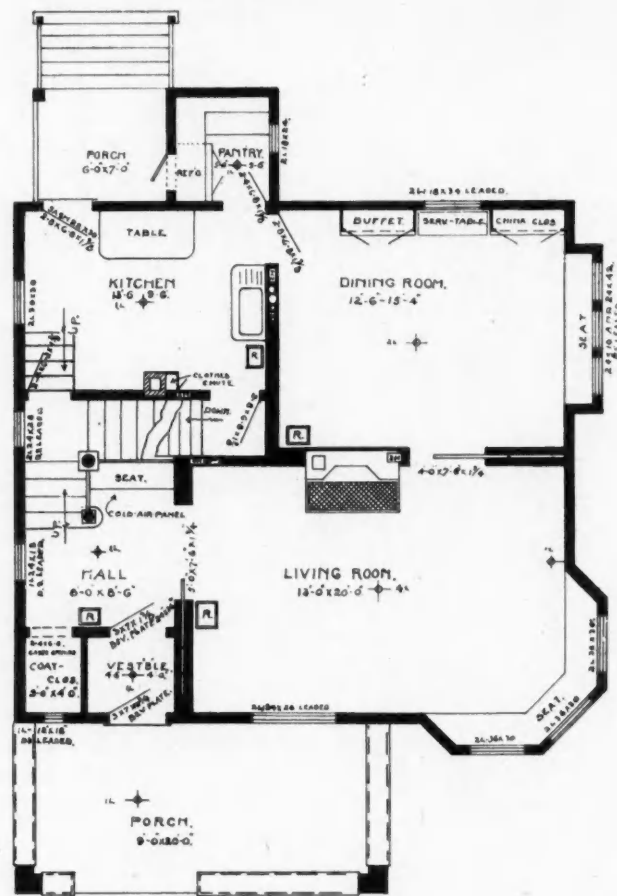
A bungalow is no more than a summer cottage, used two or three months of the year, and therefore, should be planned to meet the requirements of light housekeeping only.

This was planned on these lines. The main feature of the first floor is the large living room, open to the

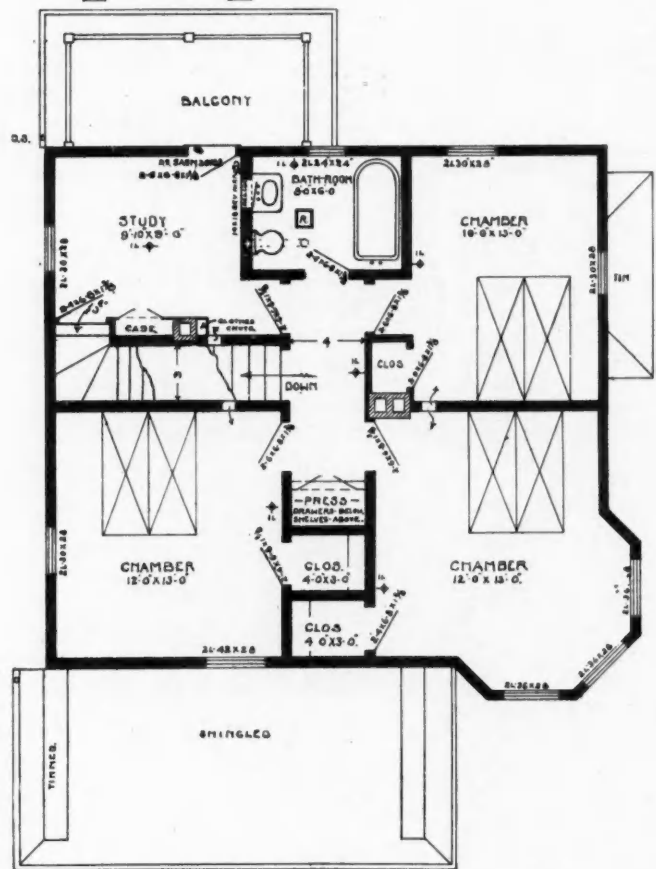
SPIRAL
BALUSTER.



roof and showing the heavy roof construction, the gallery across the side is a feature which allows the display of hunting trophies and skins over the balustrade. The dining room lends additional size to the living room and should be built in the same style, that is with rough hewn timber of heavy dimensions and wainscoted with wide boards set vertically with a broad shelf at top for old pewter and plates or steins



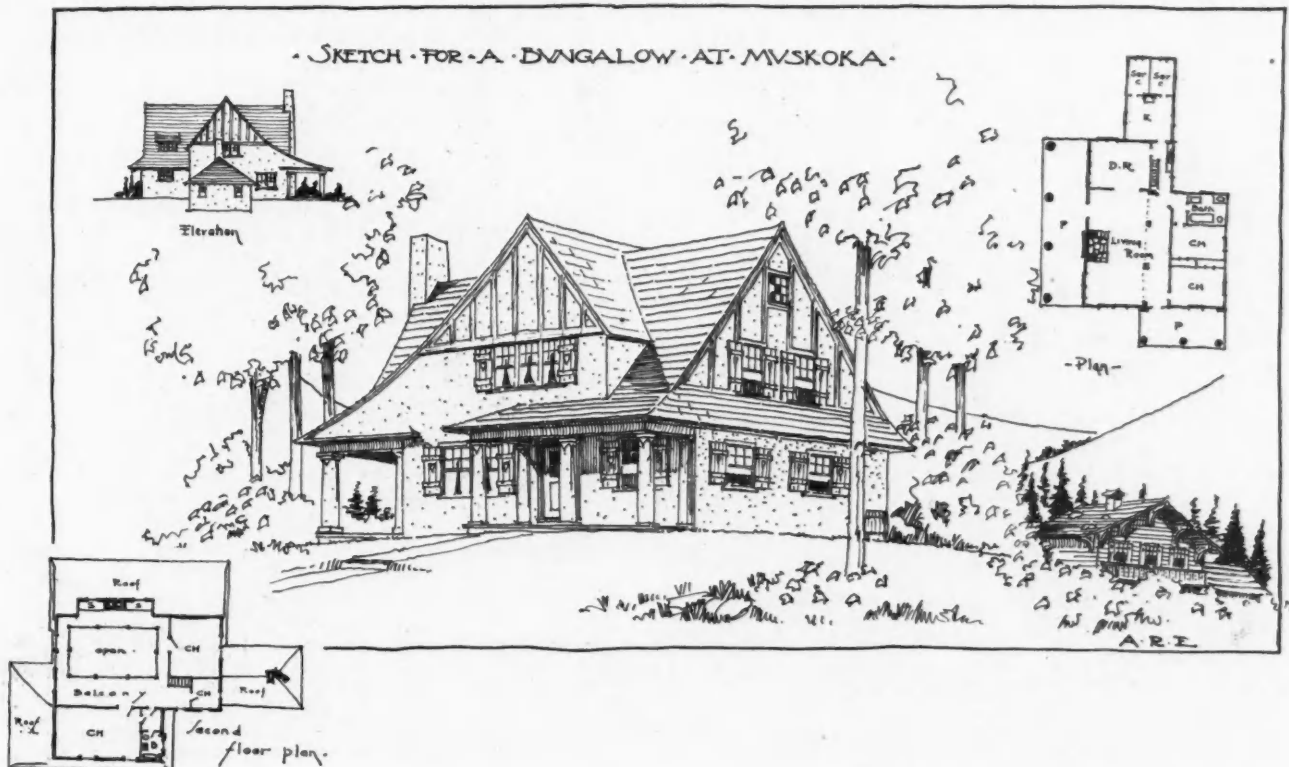
FIRST FLOOR PLAN



SECOND FLOOR PLAN

and pipes, above this rough cast plaster is used with just enough coloring in it to soften its texture. Special attention should be paid to the color scheme of these two rooms, in order to have them harmonious, a weather beaten or Flemish brown stain for the

wainscot four or five feet high unfinished. All of the foundations and chimneys are built of large local stone, roughly laid with broad white joints of mortar. The outside walls are rough cast plaster, stippled with a stiff broom. All of the outside trim, rafter ends



woodwork, beams, etc., with a touch of color in the rugs and curtains, is sufficient with the rough stone chimney and sienna tinted plaster.

The kitchen, chambers and bath rooms should be



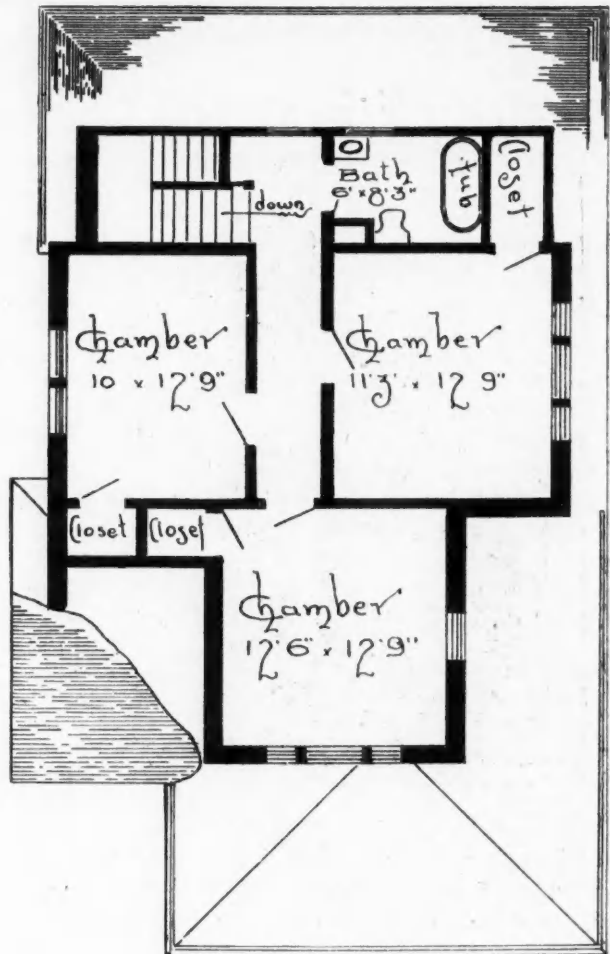
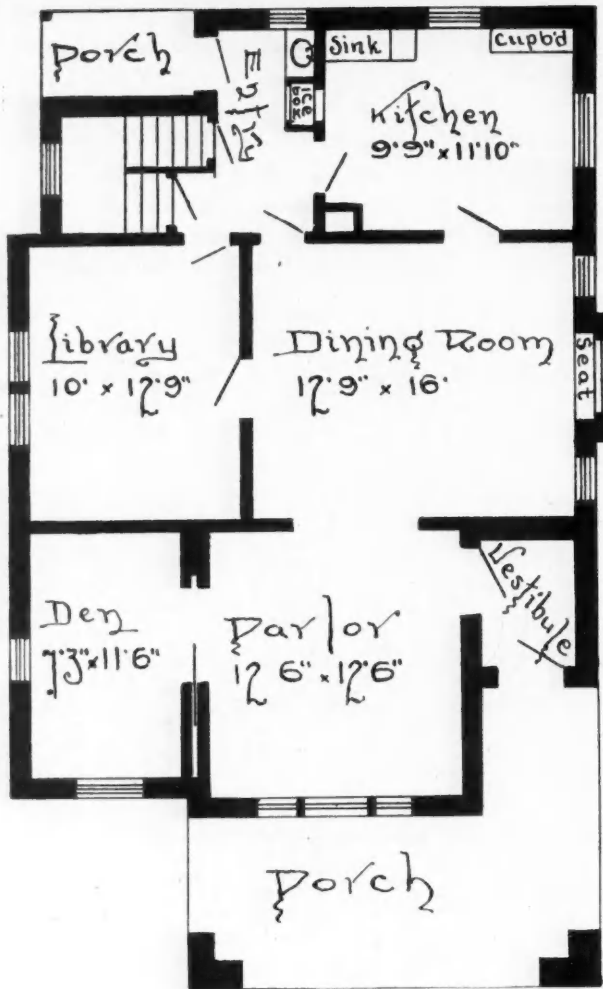
treated with any ordinary finish that is obtainable locally, in fact the studs can show, using no inside finish except casings about the doors and windows necessary for the construction, or perhaps a sheathed

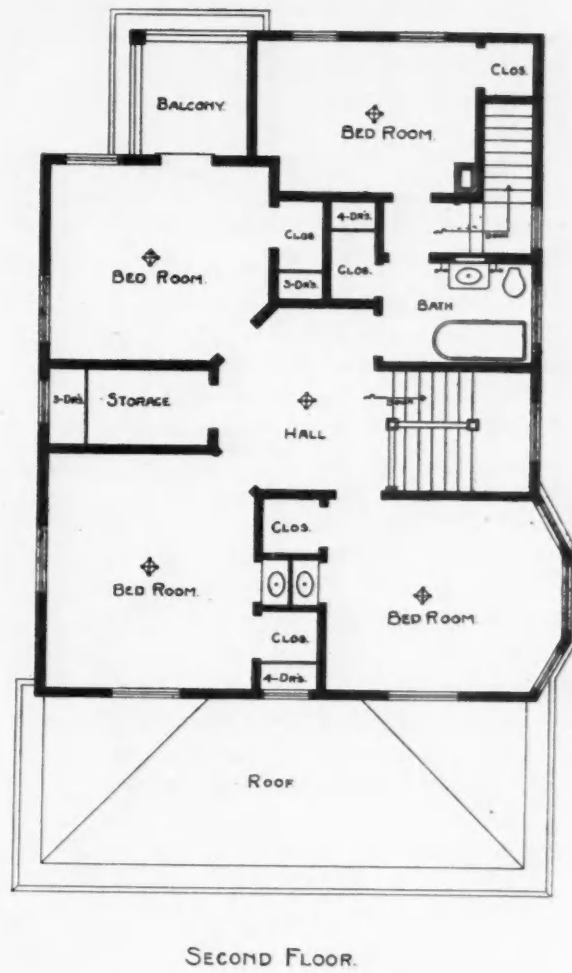
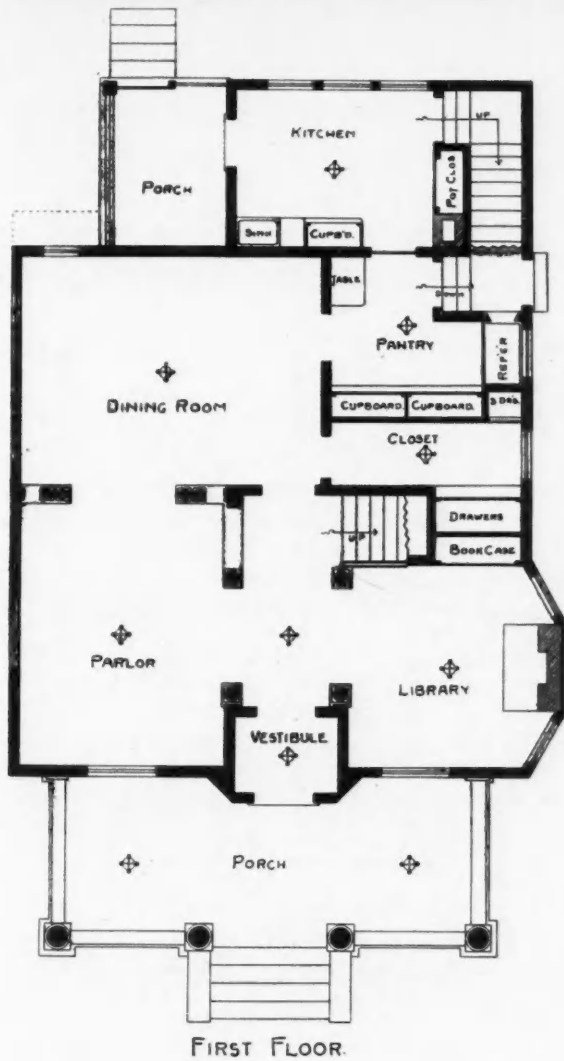
and cornice mouldings are stained a dark brown, with a moss green shingle stain on roof. Throughout the detail used is very simple but of heavy mouldings. The above could be greatly elaborated upon, producing a lodge which could be used during the hunting season and for week-end visits during the winter, or for house parties and numerous winter sports; but in such a case more finish would be required on the walls to keep out the cold.

A word more on the interior finish may not come amiss. Matched cypress dressed and stained makes a fine finish on account of its excellent grain, is inexpensive; but must be stained and set in place as soon as received at the job or the dampness will raise the grain and spoil any attempt at finish. All exposed construction is rough hewn as it comes from the mill, the trusses are bolted and strapped with black iron. For the floors spruce is serviceable and could be used temporarily, and at a later date lay over it a new floor of perhaps matched North Carolina pine. Strong, characteristic hardware will be obtained by using black iron, with straps for hinges, running across the baton doors. The rest I will leave to your architect, who should be skilled in this line of work.

Brick Veneered House

The house shown on page 242 was designed by B. A. Wickham, Iowa City, Ia., and has many good features which are worthy of attention. The house





is of frame construction and brick veneered. The corner blocks and windows are trimmed with rock faced cement blocks four inches in thickness. The porch piers are also of cement blocks, while the columns are of cement, being round with smooth face. The first floor is divided into a parlor, dining room, library, kitchen and den. The den is a very desirable corner in the house and can be devoted to numerous purposes. The library has plenty of wall space where book cases can be arranged, which will add to rather than detract from the appearance of the room. The plan of the rear entry is a good feature, giving access to the stairs, cellarway and three principal rooms.

There is a cellar under the entire house which is well lighted and ventilated and partitioned off for heater, laundry and vegetables.

The second floor is divided into three bedrooms and a bathroom. The rooms are all equipped with plenty of closet room and the bathroom is at the head of the stairs.

The house is heated by hot water and piped for gas throughout. Cost complete, \$2,900.00.

A Well Arranged House

The perspective with floor plans shown on page 243 are from plans prepared by Woods & Corder, of Lincoln, Nebraska, and is being erected at that place. This is a compact and well arranged house, suitable for a moderate sized family. The library, parlor, vestibule and dining room are being finished in hard woods. This also includes the stairway and hall on the second floor. All other rooms will be finished in select yellow pine. The main rooms on first floor are separated by large openings with columns and pedestal finish. The library contains a large gas mantel with art windows on either side. The stairway, while simple in design, is highly wrought in the woodworkers' art. The dining room is large, well lighted and conveniently arranged with kitchen and pantry. A large closet opens off the dining room, is well supplied with shelves and drawers. The kitchen and pantry too, are well supplied with modern conveniences. A door at grade serves as an outside door to the rear part of the house, as well as to the basement. The refrigerator is located adjacent to this door and can be iced without having to go into the house proper to get to it. The doors to the refrigerator opening into the pantry and a window opening from the outside give ample light and ventilation. The rear stair leads from the kitchen and lands in a small hall adjacent to the rear chamber and bathroom, this making it possible to cut off the rear part of the house when desired.

There are four sleeping rooms on the second floor, with three principal rooms opening off the central hall. All of these rooms are supplied with closets, while the two front rooms are supplied with wash basins, enclosed in separate closets. These closets

are supplied with doors, same as other closets, so that the basins are not exposed to view, except when the doors are open. There is also a large storage closet opening off the hall, which makes it convenient for all of the rooms. There is a large balcony in connection with the rear bed room and over the rear porch, which makes it convenient for sunning bed clothing, etc. The main roof extends over this part for storm protection.

The basement extends under the entire house with cement floors and divided into the usual rooms that go to make a complete and up-to-date house.

The exterior is simple in design and with its wide projecting cornices and porch running across the entire front, gives the house a home-like inviting appearance. The total cost will be about \$5,500.00.



The Breaking of the Rollways

Oh, the breaking of the rollways is here, when the earth shall be shaken with noise,
Yet the skies that are clear shall be clear and the land shall be glad with the joys
Of the coming again of the Spring, of the warming again of the sun—
For the roar of its thunder shall sing of a winter of laboring done.

Yea, the thunder shall rise from the earth, shall not shout from tempestuous sky,
And its noise be the music of mirth, not the moan of the elements' cry—
For the thunder shall rise from the land, and the river shall tremble with song,
And the ice that imprisons the strand shall burst with the weight of the strong.

On the slope of the sentinel hill now are waiting the ranks of the pine,
They are waiting unspeaking and still—an attentive and disciplined line
That shall leap like the ranks of the bold when the bugle has sounded the call,
That shall leap like the heroes of old and shall charge on the boreal wall.

And before it the ice shall give way, yea, from slumber the river shall wake
And shall greet with baptisms of spray the new force that its fountain shall shake.
Then the channel long sealed shall unseal, and the waters long still run again
And a foam-crested current reveal us a path to the cities of men!
—American Lumberman.



I cannot get along without the AMERICAN CARPENTER AND BUILDER. It is one of the best papers on carpentry and building that I have ever seen, and every carpenter ought to be a subscriber as it would be good money well spent.

C. E. HEATH, Urbana, Ia.



What is there that is illustrious that is not also attended by labor?—Cicero.

The Harmony of Color

DIAGRAM SHOWING THE RELATION THAT ONE COLOR BEARS TO ANOTHER—HARMONIOUS AND DISCORDANT COMBINATIONS

By Emery H. Chase

A GOOD knowledge of the harmony of color is so useful to everyone, especially to those engaged in the building trades, and is so easy to attain, that a thorough knowledge of the subject should be acquired by all.

In explaining the principles of the accompanying color chart I will say that black and white are, by some people, not considered as colors; I know very well the scientific version of the matter is that white is a combination of all colors and that black is a void, a space that absorbs rays; nevertheless, so far as the practical use of pigments is concerned, quite the reverse order prevails.

The argument that since white contains more rays than one it is not a color, would apply also to green and other secondary colors, since they are each composed of more than one ray of light; and let someone just tell an Irishman that green is not a color and see what will happen!

In explaining the principles of the accompanying chart we will begin with the large face; all the colors except black and white are represented by the different radial lines running from center to circumference. The center (W) being white and the outer circle black, and the various degrees of intensity of each are represented by the intermediate circles, four of which are dotted. Thus, starting at the center (W) which is white and increasing or getting darker by degrees I, II, III, etc., until midway outward the "color circle" is reached, where a full and perfect color obtains, whether red, blue or other color. Then passing still farther outward the color grows more intense, until at the outer circle complete blackness is reached.

It must be remembered that red, blue and yellow are called the primary colors; and from these, in combinations with each other, and with black and white, every known color can be produced. And so the primary colors are represented by heavy radial lines.

Now, if we mix two primary colors together we produce a secondary color. The secondary colors are therefore orange, green and violet. If we mix a secondary and a primary color together we do not produce a tertiary color but a variation of secondary color; but two secondary colors mixed produce a tertiary color, as shown by the face in the lower left-hand corner; and two tertiary colors will produce quaternary colors, shown by the lower right-hand face.

Going back to the large face it will be seen that diametrically opposite each color will be found the reverse color or color of perfect contrast, whether primary, secondary or otherwise. Thus red (R) is

the opposite of green (G); orange (O) contrasts with blue (B); or red-violet (RV), with yellow-green (YG).

Now there are two kinds of color-harmony; the harmony of contrast as just described, and the harmony of analogy. But only one kind of discord. The harmony of analogy is most perfectly represented by different shades of the same color or of slight variation from it. Thus a dark, a light and a medium blue represent perfect agreement. Or a medium blue with a dark or a light blue-violet (BV) are very good; and so on around the circle.

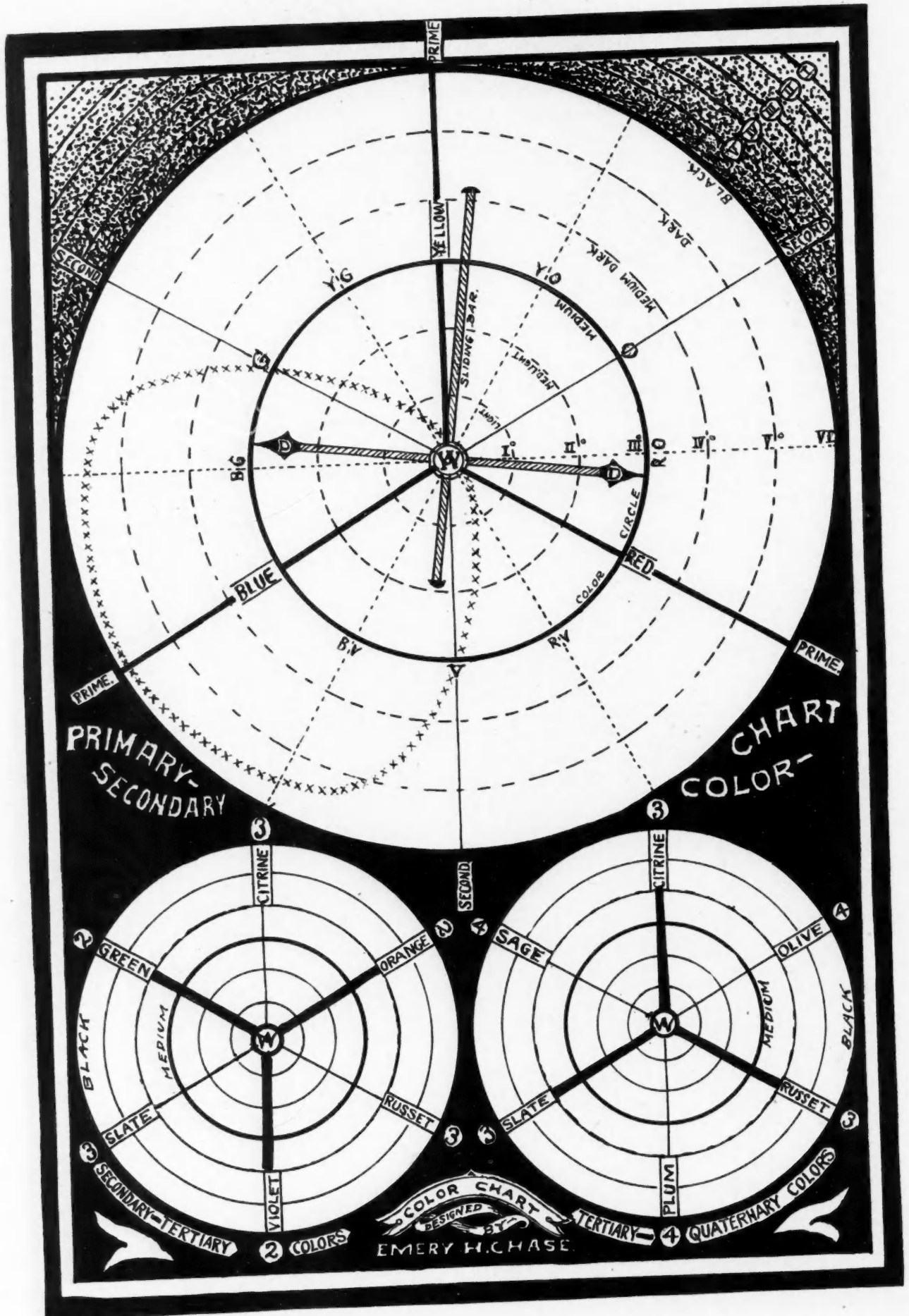
Now for the discordant combination: let a given color be represented by its proper radial; then with it place the color represented by the radials at exact right angles with the radial of the given color, and you will then have the height of discord. Thus violet (V) with blue-green (BG) or violet with red-orange (RO); yellow-green with orange, etc.; all these and similar combinations are discordant in the highest degree. But contrary to the opinion of many people who suppose harmony and discord to be separated by a sharply-defined line, I would say that such is not the case; there are varying degrees of discord or of harmony as we approach or depart from the radial at right angles from that of the given color.

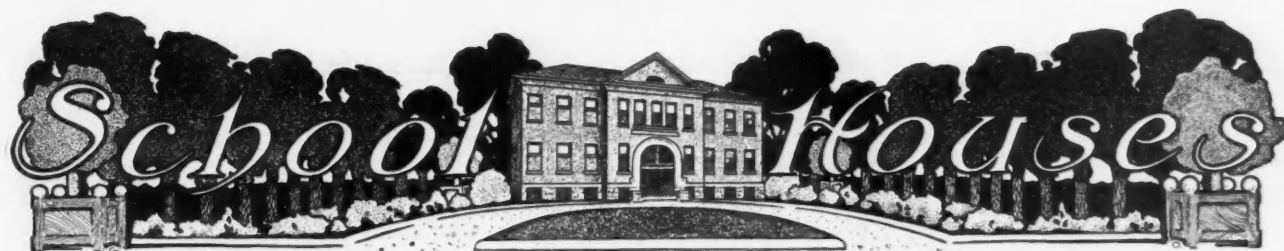
In the center of the large face, which might be called the primary secondary color-chart, will be seen an index hand similar to that of a compass; the purpose of which is for the two ends to point to colors representing discordant combination with all those under the sliding bar shown in connection with it. Both hand and bar remain at right angles to each other as they turn on the pivot (W) about the face. The bar also can be slid through the pivot its full length; and the colors under the two ends of the bar are always the exact opposite of each other, while the index hands point out the discords.

The irregularly curved line, XXXXX, encloses the "cold" colors, with blue as the center; all the rest within the face being called "warm."

Outside of the large face in the upper corners is shown the result of directly mixing pure black and white and producing all shades of normal gray (when finely blended). These normal grays with black and white represent perfect harmony among themselves; and they are always in harmony with all the other colors, and since they especially favor none they are sometimes called the "neutrals."

While it is believed this explains the principles of the color chart, much more could be written upon the philosophy of color—that is to say the proper and modern use of them.





Eight Room School House

PERSPECTIVE AND FLOOR PLANS OF A WELL DESIGNED GRADE SCHOOL — ADVANTAGES IN THE ARRANGEMENT POINTED OUT

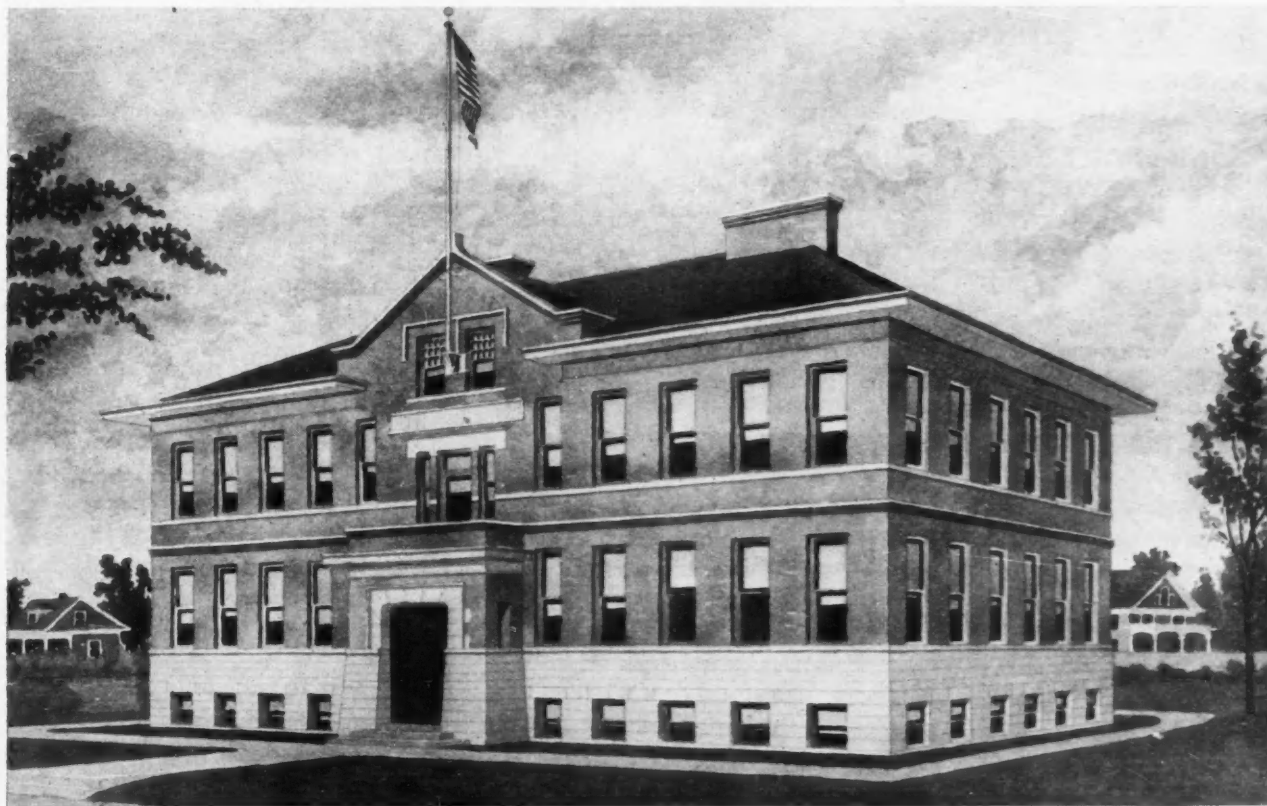
WE ARE this month showing the perspective and floor plans of an eight room school house designed by G. W. Ashby.

It has a concrete foundation to the grade line and from there to the first story window sill it is constructed of ashlar stone. The balance of the exterior is buff pressed brick and a slate roof covering the building.

that grade and thus prevent children reading books like Dickens, Shakespeare and others when they are only prepared to comprehend books by Aldrich, Alcott, Cooper and books of that nature.

Each hallway is equipped with wire partitions for the wraps of the children, besides a closet where the teacher can put her hat and coat.

The second floor is arranged very much like the

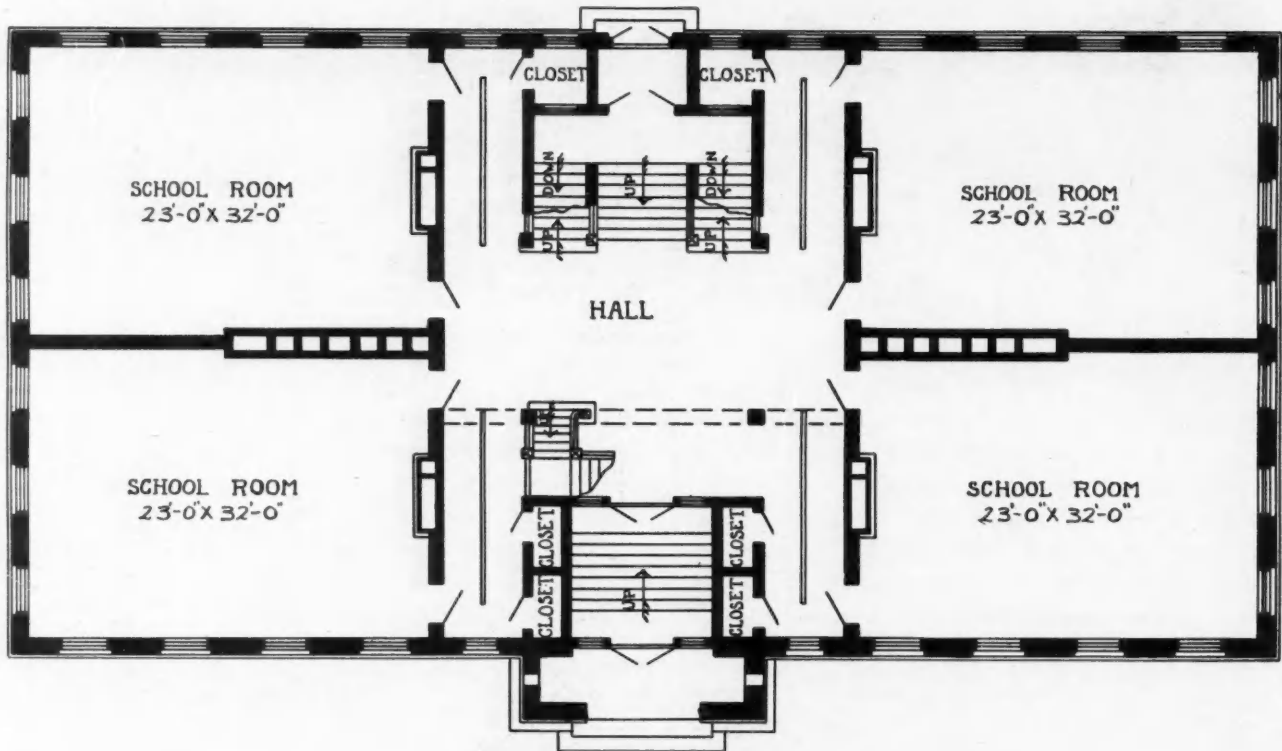


There is a basement under the entire building which is divided into boiler and fuel room, boys' and girls' toilet and play rooms and a manual training room. The heating system throughout the building is low pressure steam. The first floor is divided into four class rooms, each 23 by 32 feet and can comfortably seat 45 pupils. Each room is equipped with a book case and a locker where the teacher can keep her records and other private matters. The individual book cases are an advantage, as each room can keep the books that are best adapted for the children of

first floor, with the exception of the teachers' room, which is located at the head of the stairs. This enables them to have a complete view of the entire hall and also gives them a place to meet and talk matters over privately.

+

The carpenter is a pillar of society, and, though coping with all sorts of difficulties, is seldom floored. He writes no political articles for the columns of the press, excepting now and then something relating to "cabinet work."

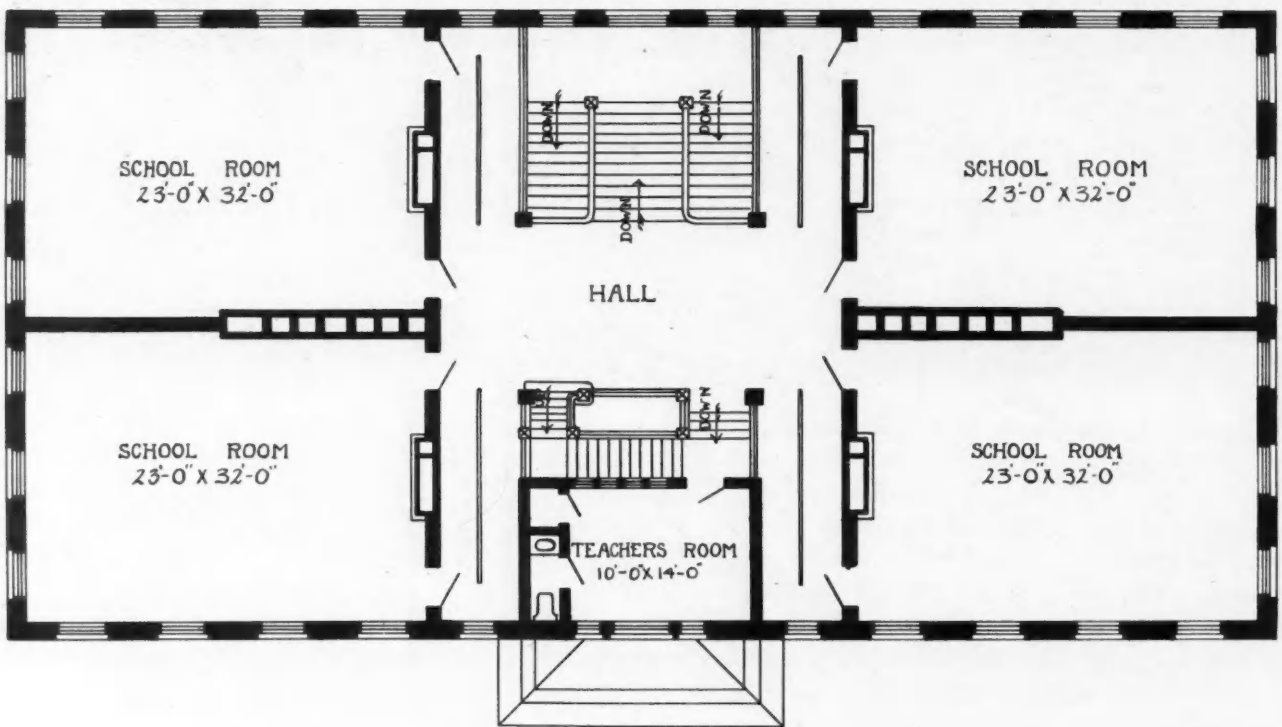


FIRST FLOOR PLAN

Ontario's Large Timber Output

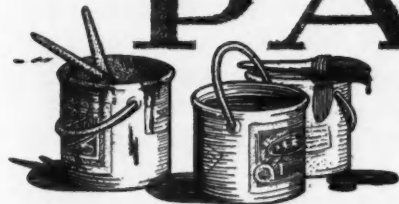
Consul E. A. Wakefield writes from Orillia that an estimate of the quantity of timber which will be cut in the forests of the province during the winter of 1906-7 has been made by the officials of the department of lands, forests and mines. It is believed that more lumber will be taken out this spring than was taken out last season. It is said that the lumbermen

will fell 1,000,000,000 feet b. m. of pine this year, 70,000,000 feet b. m. of hemlock, 1,500,000 feet b. m. of spruce, 1,250,000 cubic feet of square timber, 100,000 cords of pulp wood and 4,500,000 railway ties. The activity in railway construction throughout the country has created a great demand for ties, and the production in Ontario will in consequence increase this year.



SECOND FLOOR PLAN

PAINTING



Edward Hurst Brown



Estimating the Cost of Painting

SOME SUGGESTIONS IN REGARD TO METHODS OF ESTIMATING — THINGS TO BE CONSIDERED WHICH MATERIALLY AFFECT THE COST

ONE of the most important things for the contractor is to be able to determine in advance, as nearly as may be, the cost of the work that is to be done. Probably no class of building work presents so many difficulties in this respect as painting. The character and quality of the woodwork determines largely the quantity of material that will be required to cover it, and this is something that the painter is unable always to determine in advance. Another very important factor is the weather. It not infrequently happens that a sudden shower will so damage a newly painted surface that it must be entirely repainted, and this is something that cannot be foreseen. Sometimes everything will go along smoothly; the woodwork will be of good quality, well finished and smoothly sandpapered, requiring very little work on the part of the painters to put it in condition for painting, and the weather conditions will be such that the work will dry properly and out of the way of all chance of washing off before rains or dust damage it. Perhaps on another house built from the same plans and specifications, the woodwork will be inferior and full of knots and sap, requiring more shellacing; it will be rough and uneven, needing considerable sandpapering, and the carpenters may be careless in their work, leaving many places that need to be puttied in order to bring them up to a smooth and level surface or to fill up nail holes or cracks. All these things mean a great deal of additional labor for the painters. Then the uncertainties of the weather may well add an additional ten per cent to the cost of the work. So it is small wonder that painters' estimates for new work differ so much, even though they have endeavored to figure carefully on the quality of work indicated by the specifications.

In figuring on old work, many painters get into the habit of guessing at the materials and labor that will be required, taking into account, of course, the condition of the surface and the amount of work that will be needed to put it into proper condition for repainting. While some painters will roughly measure an old house, very few indeed make any accurate measurements, depending largely upon experience to determine the price that they shall set upon the work.

Although it is undoubtedly true that many men become so expert that they can guess very close to the cost of the work to be done, this is at best a crude and unscientific way of arriving at the result; yet in view of the many uncertainties that surround a job of painting, it is perhaps reasonably satisfactory for average work on the ordinary village house, where one house does not differ very much in size and general character from many others in the same town. In city brick houses, counting the number of windows and doors, and measuring the cornice, gives a fairly satisfactory basis upon which to base a bid for repainting the woodwork, while it is easy to measure the number of square feet or yards of brickwork, since consideration of the openings is usually omitted, because it takes nearly as much work to finish round an opening as it would require to cover the entire surface, were the opening omitted.

The cost of the labor, as a rule, is from two-thirds to three-fourths the total cost of the work, and will sometimes, as in the case of painting a greenhouse or other building where there are large numbers of sash, or in penciling the lines upon a brick wall, far exceed this. Sometimes, in a special job of this kind, a man may work for a whole day and use up only a pound or two of paint, costing not to exceed the tenth part of his wages. In other cases where the surface is plain and flat, such as a broad expanse of brick wall or a long fence of tongued and grooved boards, the work will be done so rapidly that the cost of the labor will drop almost to that of the material, but these are exceptions. Again, a man standing upon the ground will cover much more surface in the course of an hour than he can when working from a ladder, since the time spent in moving ladders must be taken into account. High buildings, where a swing staging must be lowered down a tall blank wall, such as one meets in painting party walls and light wells in large office and flat buildings in cities, make an entirely different problem. Experience is the only safe guide in cases that demand unusual labor conditions.

The writer has often been asked whether there was not some book of prices or list by which a man might

figure up the cost of painting. When the uncertainties mentioned above are taken into consideration, together with the varying cost of labor in different sections of the country, it will be seen that any book of prices or tables for computing the cost of painters' work would be utterly valueless to the contractor since they could not be depended upon, except in the roughest way. If such tables were made high enough to cover all possible contingencies, the results obtained by their use would be too high to enable the contractor to figure successfully; while on the other hand, if based on too low prices, the contractor who would estimate by means of such a table would soon find the sheriff at his doors. On the whole, then, there is no safe guide but experience upon which to base a price per square yard for plain painting, varnishing, calcimining or what not. This is something which the individual contractor must determine for himself, after having found out the average quantity of work which the mechanics of his locality are capable of doing in an hour, and it must be based upon the current rate of wages. Nor is any man safe in figuring upon the basis of the work which he expects will be done by some exceptionally speedy mechanics that may for the time being, be in his employ. Sickness, death, the temptation of higher wages elsewhere, or many other causes may intervene between tendering the bid and doing the work, which will necessitate doing the job with journeymen of only average ability and intelligence; so it is never safe to figure upon any other basis. The extra good man merely gives an uncertain opportunity for greater profit than might reasonably be expected.

In beginning his career as a business man, the contracting painter should carefully note the time that it takes to do certain jobs where the surface is plain, and should by this means obtain an average cost per square yard for such surfaces. Upon this price or cost, when once obtained, it is possible to base an estimate for all other classes of work. In order to give some basis by which estimates for painting work could be intelligently made, the National Association (now the International Association) of Master House Painters and Decorators appointed a committee, about the year 1892, to devise a System of Measurements, which would be practicable for the entire country. This committee took two years to perform their work, and finally reported at the convention held in Baltimore, February, 1894, giving a very practical system whereby all classes of work were reduced to a basis of square yards of plain painting. For example, lattice-work, when painted on one side only, is to be measured by multiplying three times the height by the length. In their report they said:

"We were not appointed to take prices into consideration, and it would have been hopeless and absurd to have done so. Prices are and will be governed by locality and local considerations, and supply and de-

mand, and can be adapted to suit a uniform system of measurements. The master painter of New York is no better able to make more than a square yard from nine square feet, than is the master painter of Wayback. But the New York brother may, by local considerations, and supply and demand, be enabled to charge as much per square yard for painting as his brother from Wayback would get for three or four square yards. A uniform scale of prices for all parts of this great country will never be feasible, but a national system of measurements and local price-lists for work can certainly be brought together with advantage for all concerned."

The System of Measurements adopted by the association was printed in book form, and illustrated with large scale working drawings, so that even the man unacquainted with plans might be enabled to understand the system and to govern his estimating by its rules. The book met with a ready sale among the members of the association, as well as among many other painters, and as its rules were founded on experience and common sense, no doubt they have been largely adopted as a method of estimating. Unfortunately the book is now out of print, and the association has made no move toward printing another edition; hence it cannot be obtained at the present time. It may be well, however, to briefly summarize some of its more important rules.

Outside Measurements

Clapboarded walls; add one square foot to each square yard of measurement to allow for under edges of boards.

Flat brick, wood, cement or stone walls; measure height by width and add the area of openings.

Cornices; if plain, multiply the length by one and one-half times the girth; on high buildings, where the walls are not to be painted, by four times the girth.

Bracket cornices; the length to be measured by from three to eight times the girth, according to ornamentation and height above ground.

Outside blinds; multiply the height by twice the girth for stationary, and by three times the girth for rolling slat blinds. Height by twice girth for shutters.

Door frames; if six inches or less in girth, the girth to be counted as one foot, and allow double girth for all in excess of six inches, multiplying by the length all around.

Doors; batten doors, add one inch to girth for each bead or batten and measure square. Paneled doors, double the area. Measure edges twice on account of lock face and butts.

Window sash; if plain, measure the height by one and one-half times the width; if fancy, by three times the width.

Balustrades; take four times the height of one side, with the top surface of upper and lower rail added and multiply by the length of the baluster rail.

Columns; when plain multiply the height by one and one-half times the girth; when fluted, by twice the girth, pressing the tape into the flutes. Capitals, the height by from three to ten times the girth.

Tin roofs; measured square.

Plain or beaded sheathing ceilings; twice the length by the width, adding one inch to the width for each bead.

In dipping shingles, estimate at four hundred square feet for each thousand shingles.

Floors; square measurement.

Chimneys, conductors, spouts, barge boards, crests; four times the girth multiplied by the length.

Inside Measurements

Ceilings; if washed and tinted, double surface. If washed, sized and tinted, three times the surface.

Walls; make no allowance for openings if the finish is of hardwood, and allow one-half the area of openings if the finish is to be painted. If walls have to be washed and tinted, add one-fourth to surface measurement and make no deduction for openings.

Interior wood finish, if from four to six inches in girth, count as one foot; between six and twelve inches, allow two feet for girth; between twelve and eighteen inches, count as three feet. Add one foot to the perpendicular height for corner blocks.

For baseboard, allow not less than one foot for height and when base and moulding exceed ten inches, count them as fifteen.

Paneled dados; two or three times the area.

Painted floors; one and one-half times the area; double area for hardwood floors. Parquet floors from three to five times the area.

Mouldings less than four inches in width, and separated from other finish, to be counted as one foot.

Doors, window frames, columns, etc.; the same rules as for outside measurements.

The above rules are only the most important. They have been obtained as the result of experience of practical men from all parts of this country, and represent, as near as may be, the equivalent cost, as compared with a plain surface of the same kind of work.

It was stated above that no tables of prices would be practical for ordinary estimating, but there is one circumstance where they may be of great value, provided they have been authoritatively established; and that is in case of disputes in regard to charges for extra work, or for work done by the day or by measurement. If a price list can be shown as having been established and accepted by the trade the courts will almost invariably hold that such a price list is binding, or at least is a fair and reasonable valuation, in the absence of any agreement to the contrary, even though this price list may be in excess of estimates furnished for the work by other painters. For this reason, a number of the local associations of master house painters and decorators have adopted elaborate price lists, basing them upon the best workmanship

and material; revising them from time to time as wages have advanced. The New York City association has had a standard price list for many years, and in Philadelphia and Pittsburg, price lists of this character were first adopted nearly half a century ago. In many cases these price lists have been published in book form for the use of members, architects and others. A comprehensive book of this character was, for example, published by the Chicago association within a year or so past.

As a matter of interest, we will quote in parallel columns some of the prices from the lists established by the Toronto, Canada, and the New Orleans, La., associations:

| Plain Painting, Per Square Yard. | Toronto. | New Orleans. |
|---|----------|--------------|
| New work, one coat..... | \$.10 | \$.10 |
| New work, two coats..... | .20 | .20 |
| New work, three coats..... | .30 | .25 |
| New work, each additional coat..... | .10 | .08 |
| Old work, one coat..... | .15 | .12 |
| Old work, two coats..... | .25 | .20 |
| Old work, three coats..... | .35 | .25 |
| New brickwork, one coat..... | .15 | .15 |
| New brickwork, two coats..... | .20 | .20 |
| New brickwork, three coats..... | .26 | .26 |
| New cement work, one coat..... | .15 | .15 |
| New cement work, two coats..... | .20 | .20 |
| New cement work, each additional coat..... | .10 | .10 |
| Varnishing, one coat..... | .15 | .16 |
| Varnishing, two coats..... | .30 | .25 |
| Additional cost for high grade varnishes. | | |
| Hardwood trim, filling and two coats of hard oil, rubbed..... | .75 | .40 |
| For each additional coat of varnish..... | .15 | .10 |

Extra prices are charged for parti-colors, or for work involving extra labor.

The foregoing, of course, are but a few of the prices contained in the complete lists, but they will give some idea of the prices which have been considered fair in two widely distant cities. Of course, in every locality there will be more or less variation.

Where the contractor has by experience learned to judge reasonably well as to the time which will be required to do a given piece of work, then the labor and material may be figured separately. It then becomes needful to know the average covering capacity of white lead—or such other paint as it may be determined to use. Of course this depends very much on the condition of the surface to be covered and the amount of absorption which it possesses, as well as upon the particular material employed and the fineness to which it is ground. For white lead, under average conditions of surface, the area in square feet divided by 18 will give, approximately, the number of pounds of white lead in oil that will be needed to do a good three coat job of painting. The area in square feet divided by 200 will give, approximately, the number of gallons of white lead paint that will be required to do the work, two coats. There would be very little difference in the number of gallons of any good mixed paint that would be needed.

According to an old painter of more than fifty years' experience in a town near New York City, the cost of the interior painting of an average frame house, not including any floor, wall or ceiling painting, and assuming that there are no wainscots, mantels or furniture fittings to be finished by the painter, will almost exactly equal the cost of the work on the exterior of the house, so that all that is necessary is to estimate the cost of painting the outside and then to double it. While this may answer in most cases, it is not a very accurate method, and in any line of work that could be estimated more closely than painting, it would be entirely out of the question.

In figuring on plans, the painter needs to look not only over the specifications for his own work, but he must also examine carefully the specifications for other mechanics, for there are often items called for, which do not appear on the plans, but which require painting or hardwood finishing. Sometimes the mantels are furnished by the owner ready finished from the factory, while at other times the painter must finish them. It is well to read carefully the specifications for the plasterer, the plumber and the steam fitter. Among other things that he should carefully consider are the kinds of wood for interior finish; the kinds of wood for the floors and whether they are to be finished; whether the cellar woodwork is to be finished by the painter, or whether he has whitewashing to include in his estimate. Who is to finish the radiators? Is the kitchen sink to be bronzed with aluminum—and the same of the outside of the sink? What walls, if any,

are to be calcimined or frescoed? Are there wood or plaster cornices to be finished? Look out for wainscots, kitchen dressers, pantry fittings, seats or other wood fittings requiring finishing.

It is very easy to forget something in estimating the painting, and the only safe way to avoid it is to go about the matter systematically, taking room by room. A book should be ruled for estimating so as to show the superficial measurements, the number of square feet and the allowances or corrections, so that the last column shows the equivalent number of square feet of plain surface. The different kinds of wood and the different classes of workmanship should of course be kept entirely separate, in order to avoid confusion.

The foregoing article by no means includes all that might be said on the subject of estimating the cost of painting, but it may serve to give some hints and suggestions that will be valuable. The most important thing for the contractor to do is to keep a record of the cost of every job, and to keep in tabulated form an exact statement of the number of hours work and the amount of materials required. Wherever possible, it is well to keep records of the cost of painting the doors, the baseboards, etc., of the work which you do, in such a form that you can ascertain for future reference the average cost of painting a door, a window or a running foot of wainscot. These are things that you must find out for yourself, because the methods of handling work in different shops are so unlike, that each man must fix his own prices.

Shop Front Decoration

SOME NOVEL IDEAS FOR MAKING THE SHOW FRONTS OF STORES MORE ARTISTIC AND ATTRACTIVE—
SUITABLE COLOR SCHEMES SUGGESTED

By Sidney Phillips

PROBABLY a good many of the readers of the *AMERICAN CARPENTER AND BUILDER* are more or less frequently called upon to remodel store fronts for their customers, and in doing so, they have no doubt found that the wide awake merchant is always on the watch for some novel and attractive idea to make his store front more attractive, and welcomes any suggestion that may be made to him, provided, of course, that the expense is not prohibitive. In France and England, it has become quite common for the builder and the decorator to work together to produce attractive results, and there is no reason why they should not oftener co-operate in our American towns. The writer has seen buildings that have been more or less completely covered with painted decorations, which were very pleasing when executed upon the smooth stucco surface of the average European building. It is more difficult to produce equally effective decorations on a brick front, unless it is first coated with a thin skim of cement, and on a wooden building, it is practically impossible, because

the lines of the clapboards will break up unpleasantly almost any general scheme of decoration that may be attempted. Therefore the American decorator is restricted more particularly to the actual store front, and the rest of the building is ordinarily left to take care of itself.

In a great many of the smaller towns and cities, there is a tendency to disfigure the store front with large and often commonplace signs, which hide or at least detract from the efforts of the builder and decorator to produce a store front that shall of itself be an attractive advertisement of the establishment. In New York City, many leading stores confine their sign display to the simple name of the firm, which is made a part of the architectural detail of the building, or may be set forth in gilded wooden letters against a wire network background, set upon the roof. Others again confine themselves to the firm name and business artistically lettered in gold leaf on the plate glass windows. The goods in the window tell the story of what is sold, while the firm name and the

street number are sufficient to indicate to the passer that this is the particular store that may be sought. As a rule, those firms which spend the most money on newspaper advertising are most modest in their display of signs, but whatever is done in this particular is of the very best and most artistic character.

The Art Nouveau, or modern art that has taken such a hold in Europe, as well as in this country, is well adapted for the store front, because it enables the designer to work out new and attractive ideas

which the decorator and the carpenter are both needed to produce the effect.

In Fig. 1, we have a comparatively plain, yet effective and novel store front, which would be well adapted for a jewelry store, or for a dry goods store, or in fact, for almost any line of business. The cornice is broken by an ornamental tablet or panel, giving space on either side for the sign to be lettered. The signboard, itself, is convex and the lettering would be most effective in some quaint, yet none the less



Fig. 1

without being bound by any conventional precedents. If a curved line seems effective and appropriate in any particular place, there is nothing to prevent the use of a curve. Moldings may be of any shape the designer prefers and in short, there are no set rules to be followed, except that there is a general tendency to broad and simple effects and to the avoidance of small and intricate members in moldings or to elaborate carving with carefully executed details. There is a peculiar sweep to the curved lines that is very attractive and gives a decided character to the style. The ornament is conventional, yet at the same time much of it is naturalistic, resembling the methods of Japanese art. Moreover, very effective results can be obtained at comparatively little expense. For this reason, and because the New Art is apt to be a departure from the average store front, we have illustrated here some examples of Art Nouveau shop fronts in

legible, style such as has been indicated. The long, sweeping curve, which is carried through the two show windows and the door transom, gives a distinct character to the whole design, which is further emphasized by the curved transom sash and the quaint lines of the door. This, it will be noticed, is ornamented with wrought iron strap hinges and a large key plate. A broad single door is very effective, although double doors could of course be substituted, if the owner preferred. The decorative features are very simple, consisting of the stencilled ornament in the central panel and the ornaments on the two boxes covering the walls. These boxes may either be of cast iron or of wood, according to whether there is the necessity for supporting beams to carry the upper story of a brick building or whether the store be of frame construction. The door is shown flush with the rest of the front, but it may be kept back in a

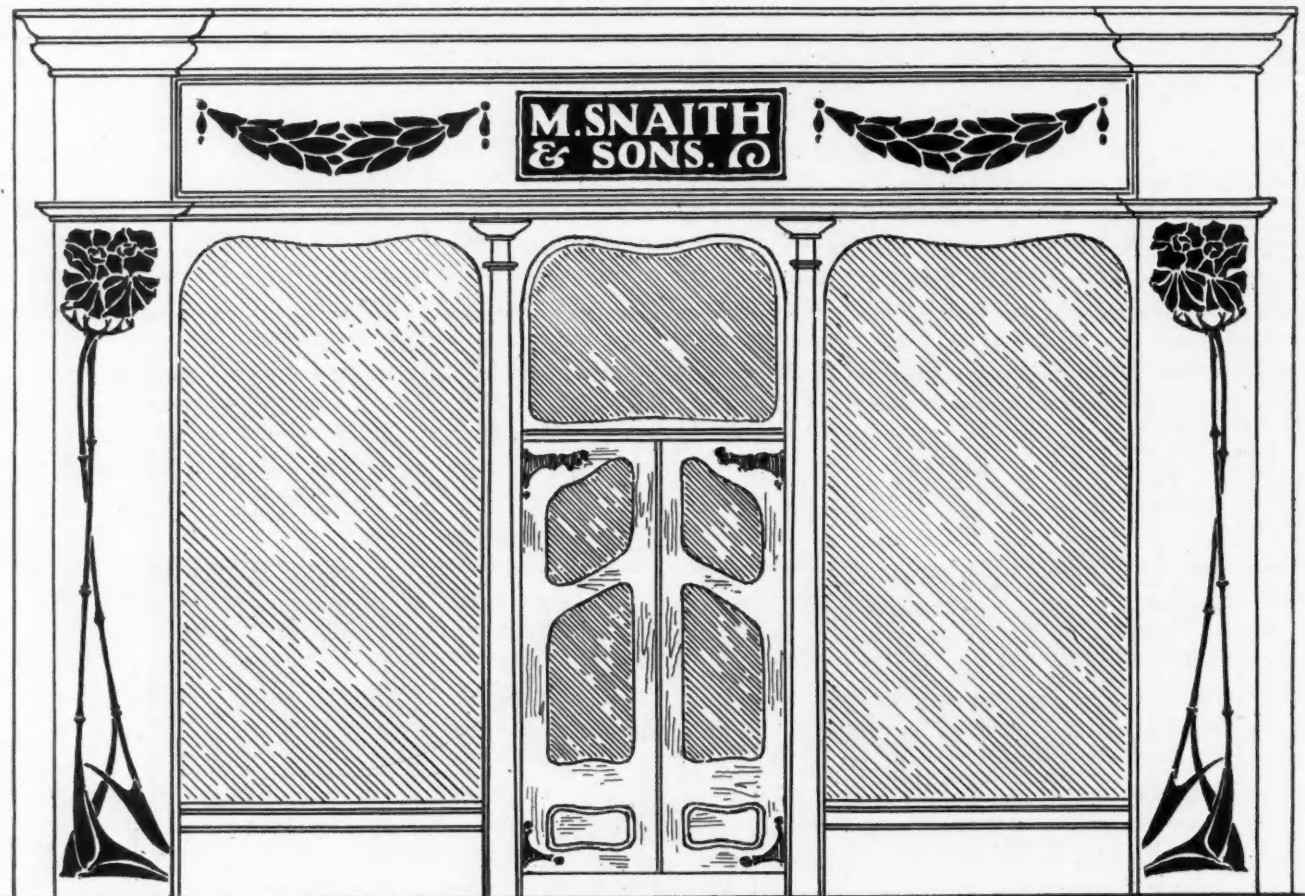


Fig. 2

recessed vestibule if desired, in which case, of course, the long sweeping curve must be kept out on the front line. The windows are shown with inside curtains of silk or of some heavier material, that may be drawn across the window at night or on Sundays. This is done in several of the leading stores in New York, Philadelphia and Pittsburg. At the back of the windows, curtains are draped on brass rods to give an appropriate background for the display of goods in the windows. These, however, are details with which the carpenter has but little concern, but which may be explained as a part of the general scheme. Several color effects are possible. For example, the cornice, boxes and framework generally, may be finished in dark green, the ornaments being stenciled in gold size and afterward gilded with gold leaf and outlined with a fine black line, or left without the outlining if desired. The door may be either of mahogany, oak or cherry. If oak, it should either be finished in antique or in forest green. The finish may either be in colored enamel or it may be finished like a railroad car, in coach body colors and afterward varnished. If well done, this would make an attractive front, but would require renewal after two or three years. But this should be done anyhow, by every progressive merchant, for he cannot afford to permit his store to look shabby. A thin coat of varnish, after the front has been well washed down

with an oil soap, once a year, will keep the finish in good condition for several years. Another color scheme would be to finish the entire front in white or ivory white enamel, stenciling the ornaments in bright red, the lettering of the sign being done in gold with a fine line of red for an outline.

A striking front that is well adapted for any kind of merchandise is shown in Fig. 2. More of its effectiveness depends on the work of the decorator than in the previous example, yet it is, nevertheless, novel enough in its lines to attract attention. The quaint doorway, which should be set in a recessed vestibule, is a feature that would be noticed at once. The tall tapering columns, with their spreading capitals are characteristic of the Art Nouveau. Very careful attention should be given to the details of the mouldings in executing these designs, as much of their character depends upon them and would be lost if the ordinary stock mill mouldings were employed. A novel and effective color scheme in this case would be to use a rich shade of dark blue, such as is used in high class carriages, the lettering and ornaments being done in gold or in aluminum. The door should be in light oak, with brass or silvered hinge plates. Another color effect would be to use a light shade of gray green, stenciling the tall reed-like plants in grass green, with a burst of bright red or deep yellow flowers at the top. The swags in the cornice should

also be of grass green, while the sign panel should be a dark bottle green, with the lettering in gold. The door in this case should be in forest green oak. Another treatment would be in Pullman color, with the lettering in gold and the door in mahogany with polished brass hinge plates.

The shop front shown in Fig. 3 is specially adapted for a florist, a drug store, a cigar store, a stationer and news dealer or a decorator. It would make a remarkably showy front, both by day and by night, for at night the lights from within would make the illuminated windows show even more brilliantly. In this design the effect is largely obtained by the use of painted glass. Where this is too expensive an appropriate pattern of stained glass substitute may be used. Another method of working up the design is to stencil it upon ground glass, and then to set these sheets of stenciled glass just inside of the plate glass. It must always be kept in mind that the design is to be looked at from the outside, and in this way differs from the ordinary leaded glass window which is intended to be seen from inside. Hence the right side of the stained glass substitute, if this be used, must be kept next to the glass, instead of facing inwards. Still another plan would be to stencil the design on a thin sheet of transparent celluloid, such

as is used for the shields in front of automobiles. A job that will require a good deal of nicety of work, but which would be effective and not prohibitive in price, would be to cut the design carefully from thin sheets of transparent celluloid or insoluble gelatine of the proper colors and cement them to the window. The cornice and the side boxes should be of a dark olive green, with the ornaments gilded. The balance of the front is to be of ivory white enamel, with the door of mahogany, darkened by an alkali stain. The lettering on the glass, which has been indicated in quaint Modern Art characters, should be gilded, with an outline of black.

The designs we have shown, while novel, are not eccentric, but are such as would be well adapted to the needs of the average American business man. When it comes to cafés, restaurants or other business buildings in which the display window is not a paramount feature, the opportunities for quaint and striking designs are almost limitless. Many very striking buildings of this character have been erected in Paris and in some of the German cities, and these might well be modified and adapted to the use of our American builders. Perhaps, if our readers desire any suggestions along these lines, we may be able to show some illustrations of this character in a future issue.



Fig. 3

Manual Training



Ira S. Griffith

Something the Boys Can Make

COMPLETE PLANS AND DIMENSIONS GIVEN OF HOW TO MAKE A KNIFE BOX AND A KNIFE POLISHING BOX—
KIND OF WOOD TO USE AND PROPER FINISH FOR THE SAME

THE knife box and knife polishing box described this month are intended for the beginners who have mastered the directions for squaring up stock as given in the making of the counting board and ring toss in the February, 1907, number.

The design of the knife box, Fig. 1, is a slight modification of one which originated with the Sloyd Training School, Boston. The knife polishing box, Fig. 3, slightly modified, is by W. M. Murray, and both originals can be found in Problems in Woodworking, Manual Arts Press, Peoria, Ill.

These boxes are especially suited for beginners, as they require no fine finishing to make them serviceable and satisfactory.

The knife box, as its name implies, is a box in which the kitchen knives and forks may be kept. It can be placed in any ordinary drawer when not in use, as the handle extends but three and three-fourths inches above the bottom.

The most suitable wood, probably, is yellow poplar. It is soft, easily got and, when finished with shellac, always looks clean. Almost any other wood will do, but the young worker will do well to keep in the soft woods until some skill in handling the tools is acquired.

Get a board mill-planed to three-eighths of an inch in thickness.

Yellow poplar usually comes in wide boards. The board ought at least to be wide enough to get out the bottom in one whole piece—eight and three-quarters inches in the rough.

Lay out with try-square and pencil on your board the different sizes you will need. Try to arrange so as to have as little waste of material as possible.

Measure so as to allow one-quarter of an inch to the width of each piece and one-half an inch to the length when cutting the pieces out of the

board. Do not allow more than this, unless it would make waste anyway, and lay out the lines somewhat carefully. It is a very bad habit to get into to try cutting out stock without carefully placed lines to guide your saw.

Fig. 2 shows the "lay out" for the knife box where the board is a foot in width.

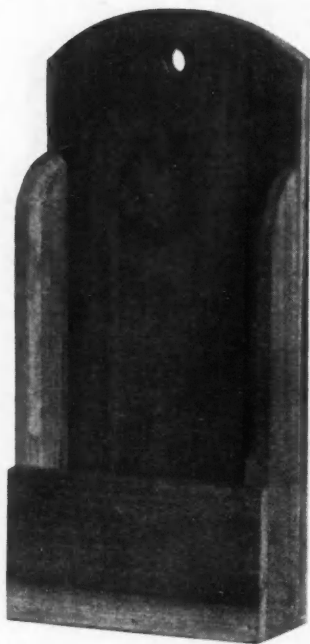


Rip first, then cross-cut to meet the rip-saw lines. Do no more sawing than is necessary and leave on the whole board all stock that you are not intending to use. To illustrate, if you should need a piece but two and one-half inches wide, and must saw it out of a six-inch board, don't cross-cut entirely across the board first. Rip first, then cross-cut to the rip-saw line. You will see the reason if you will stop to think.

Again, if you are in a shop where there are pieces of stock as well as whole boards, look over and select what pieces you can use before you touch the whole boards. In other words, get into the habits of a good workman and you will find your elders pleased to have you around, while if you waste material and cause extra work you will soon find yourself "in the way."

After the rough stock has been sawed out, the separate pieces may be planed to the dimensions required.

In a previous number of the magazine, when beginners were told how to square up stock, the first direction was to plane one of the broad surfaces smooth and level for a working face. In the making of these boxes we shall give an exception to that rule—a very common one, too, by asking that the working-face be smoothed but not leveled. The stock to be used in making the knife box is supposed to be mill-planed



to three-eighths of an inch in thickness. The broad surfaces should be planed just enough to remove these mill-marks, no more. After the surfaces have been planed, straighten and square one edge for a joint-edge; gauge for width, rip and then plane to the gauge line. Now, square one end to working-face and joint-edge; measure for length and mark knife lines around the four smoothed surfaces; saw just outside these lines and plane to them. These are

from this center line, along the edge opposite the joint-edge. Connect with straight-edge the points just located and the points two and one-quarter inches up from the joint-edge, on the ends. Rip saw and plane carefully to these lines.

To lay out the opening in the handle gauge a light pencil line two and five-eighths inches from the joint-edge. Measure along this line one and one-eighth inch each way from the center line. These points so

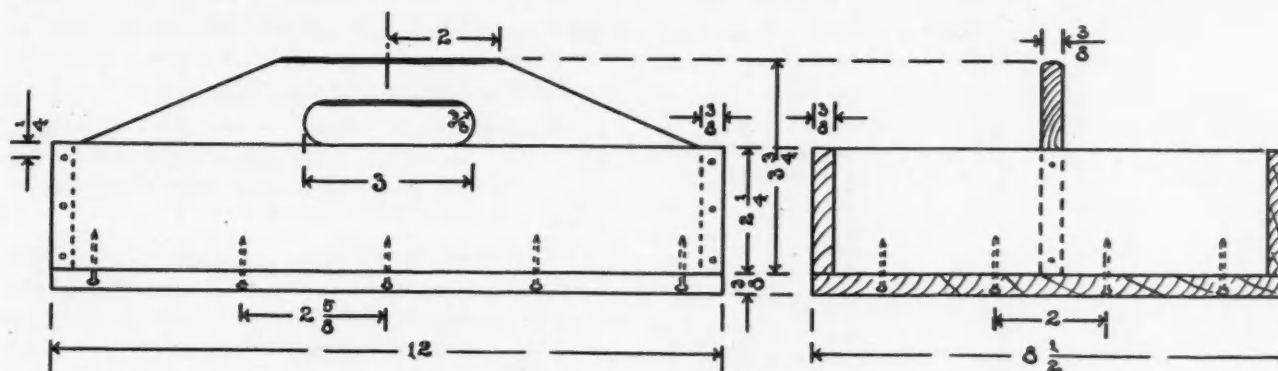


FIG. 1.

the steps to be followed in all pieces where the stock is mill-planed to the desired thickness.

Carpenters in their work seldom level rough stock. They buy mill-planed stock and depend upon the frame to which the boards are nailed to do the necessary leveling where the boards are slightly warped. The thin stock for this box will easily "draw up" when properly nailed.

The rough stock-bill for the knife box will be two pieces $\frac{3}{8}$ by $2\frac{1}{2}$ by $8\frac{3}{4}$ inches, two pieces $\frac{3}{8}$ by $2\frac{1}{2}$ by $12\frac{1}{2}$ inches, one piece $\frac{3}{8}$ by 4 by $11\frac{3}{4}$ inches, one piece $\frac{3}{8}$ by $8\frac{3}{4}$ by $12\frac{1}{2}$ inches.

Nothing is allowed for thickness; for width, one-quarter of an inch is allowed for straightening and squaring; for length, one-half an inch is added.

The finished stock bill will be, therefore, two pieces $\frac{3}{8}$ by $2\frac{1}{4}$ by $7\frac{3}{4}$ inches, two pieces $\frac{3}{8}$ by $2\frac{1}{4}$ by 12 inches, one piece $\frac{3}{8}$ by $3\frac{3}{4}$ by $11\frac{1}{4}$ inches, one piece $\frac{3}{8}$ by $8\frac{1}{2}$ by 12 inches.

In making out a bill for lumber, thickness is given first, then width, then length.

With the squaring up of the pieces to the sizes given in the finished stock bill, sand papering may begin, except on the piece $\frac{3}{8}$ by $3\frac{3}{4}$ by $11\frac{1}{4}$ inches, which is intended for the middle partition.

Keep the sand paper on a block, and be sure you do not sand paper any of the ends or edges which help to make the joints. The reason is obvious, sand papering would round these edges and ends so that they would not fit squarely.

To shape the top of the partition, gauge a light pencil line on the working-face two and one-quarter inches from the joint-edge. With the try-square and pencil, draw a light line across the face mid-way between the two ends. Measure two inches each way

located give the centers for the two three-quarter inch holes which form the ends of the opening.

Connect the sides of these holes and chisel carefully to the lines.

A third hole will make the chiseling easier, the center being at the point where the center line crosses the gauge line made for the other centers.

In chiseling remove the wood in the middle first, gradually working out to the lines.

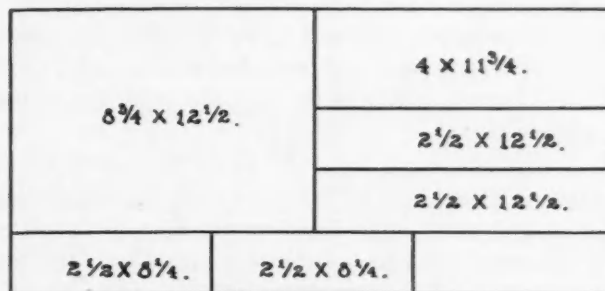


FIG. 2.

If desired, the edges may be slightly rounded as shown in Fig. 1.

The edges of the opening can be sand papered by placing the sand paper on a tool handle or a round rod of about three-quarter inch diameter.

Before any nailing is done, in fact, before any sand papering is done, the parts must be tested one with another to make sure they are of the correct relative sizes. It is quite likely that some of the pieces are under size, due to trouble in getting them squared properly. No great harm will have been done, providing the parts are not greatly reduced, if they but answer to the following tests. Of course, it wouldn't

do to get in the habit of cutting below dimensions. A carpenter who couldn't work to dimensions and at the same time have his work squared properly would not be considered much of a workman.

The two sides and two ends must be of the same width. The two ends must be of the same length.

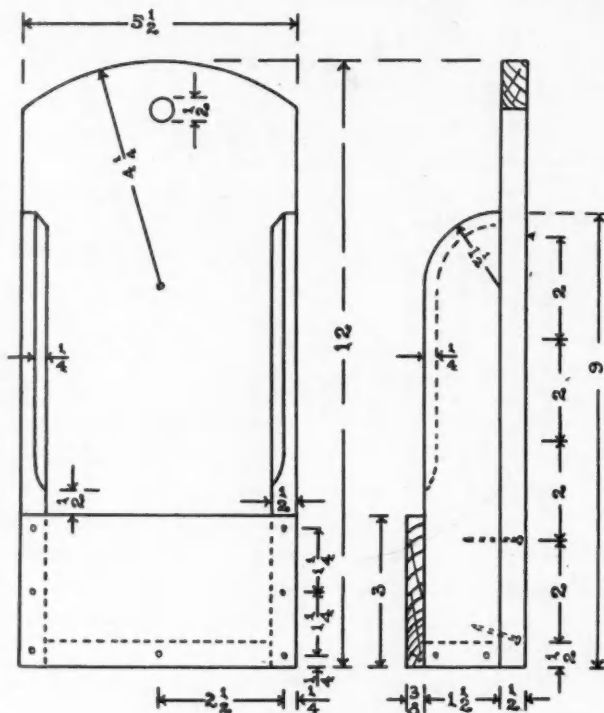


FIG. 3.

The two sides must be of the same length. The length of the partition must be equal to the length of the side pieces minus the thickness of the two end pieces, and its slope must begin at point of equal height to that of the sides and ends. The bottom must have a length equal to that of the sides and a width equal to the length of the ends plus the thickness of the sides.

To nail the parts together, locate the middle of the two end pieces and square light lines three-sixteenths of an inch each side. Nail the end pieces to the partition, then the sides to the ends, and, last, the bottom to the sides and ends.

Make sure the edges and ends are even while nailing. In nailing the bottom, nail along one edge, then across one end, down the other edge, finishing across the second end. As the bottom is supposed to be square, the frame should be moved, after the first edge is nailed, before nailing the first end, in order to even bottom and frame.

If the nails persist in coming out the sides, you are not "in position." Stand so as to look along the piece into which you are nailing and sight the nail accordingly.

Set all the heads slightly with the nail punch and finish the box with a thin coat of shellac.

The knife polishing box, Fig. 3, is a box in which the polishing powder can be kept. When it is in

use it lies on its back, the knife, fork or spoon being placed thereon. When not in use, it can be hung upon a convenient nail. The powder falls into its place as the box is lifted from the table.

Fig. 4 shows the "lay out" for the rough stock. Half-inch mill-planed poplar should be used. This lay out includes one piece of three-eighths inch stock. If three-eighths inch stock is not at hand, it is better to get all of it one-half inch stock and then plane this piece to the required thickness.

The rough stock bill is obtained by adding one-half an inch to the length of each finished piece and one-quarter of an inch to the width.

The finished stock bill will be one piece $\frac{3}{8}$ by 3 by $5\frac{1}{2}$ inches, one piece $\frac{1}{2}$ by $1\frac{1}{2}$ by $4\frac{1}{2}$ inches, two pieces $\frac{1}{2}$ by $1\frac{1}{2}$ by 9 inches, one piece $\frac{1}{2}$ by $5\frac{1}{2}$ by 12 inches.

For the back of the box square up the two edges of the largest piece to a width of five and one-half inches; square one end also. With the dividers set to four and one-half inches, describe an arc of a circle at the other end so that the extreme length of the piece shall be twelve inches. Chisel close to the curve and finish with the spokeshave.

Bore a one-half inch hole mid-way between the edges and on a line connecting the points at which the curve joins the edges.

For the bottom, square the piece to one and one-half inches by four and one-half inches.

The piece for the front should be squared to three-eighths by three by five and one-half inches.

The side pieces should have a width of one and

| | |
|---------------------------------------|--------------------------------------|
| $1\frac{3}{4} \times 9\frac{1}{2}$. | $1\frac{3}{4} \times 9\frac{1}{2}$. |
| $5\frac{3}{4} \times 12\frac{1}{2}$. | $3\frac{3}{4} \times 6$. |
| | $1\frac{3}{4} \times 5$. |

FIG. 4.

one-half inches each and one end of each squared. Place the two pieces with the working faces up and the squared ends evened; measure along the adjoining edges from the squared ends seven and one-half inches; set the dividers to one and one-half inches and, holding the pieces firmly, describe the half circle so that a quarter will fall on each piece. Chisel and spokeshave the curve.

Three and one-half inches from the squared end begin to lay off, with pencil gauge, the chamfer. Mark on the inside surfaces and edges, making sure the pieces pair. The chisel will be needed to start the chamfer, the remainder being cut with the spokeshave.

All surfaces having been planed smooth, sand paper the pieces.

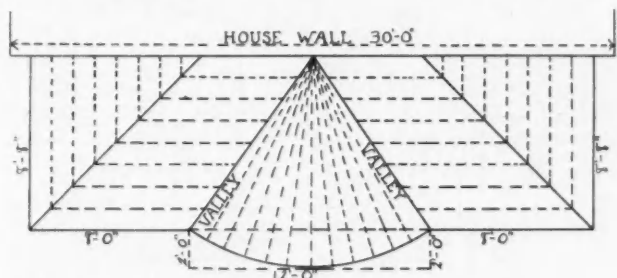
Nail the sides to the bottom first; then the back to one side, to the bottom, and to the other side. What was said about nailing the knife box should be read.

Correspondence



Sheathing a Circle

To the Editor: Columbiana, O.
 I am submitting herewith a rough sketch of a porch plan. You will notice that there is a circle in the roof as in the floor. I would like to have the idea of some of your best men how to sheath this circle. This is my plan to sheath a circle: Kindly notice that the heavy lines represent two hips and two valley rafters. You will also notice that the dotted lines are to represent the sheathing. Where the valleys come together is the height of the roof in line with the bottom of



the window with allowance for sheathing and slate. I suppose the corners of each sheathing board would have to be cut off a little to make the surface more round and better for the slate.

I notice in the AMERICAN CARPENTER AND BUILDER that there are other carpenters asking questions, therefore I do not hesitate to ask this one.

I notice in the February number the question asked, "How can I make a twenty-foot studding out of two ten-foot studs when I have no more lumber?" I would take a stud 2 by 4 ten feet long, rip in four feet from one end, take that piece off, which would be 2 by 2 by 4 feet long. Then at the other end of the same stud, on the opposite side of the stud, I would rip a piece off 2 by 2 by 2 feet long. Now, I will take the other full stud and also rip off a piece from one end 2 by 2 by 2 feet long. Now I have two pieces 2 by 2 by 2 feet long, and one piece 2 by 2 by 4 feet long. I would then take my two short pieces and put them in the place where I took off my long pieces. I will now butt the two ends of the studs together that have the short pieces taken off and put my long pieces in place. Now I have a stud twenty feet long made of two ten-foot studs. I think the stud could be made stronger by making the pieces longer. I only give that length for illustration. HENRY W. KELLER.

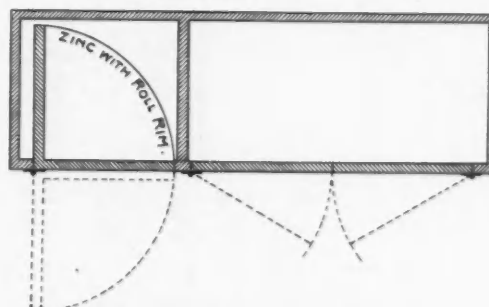
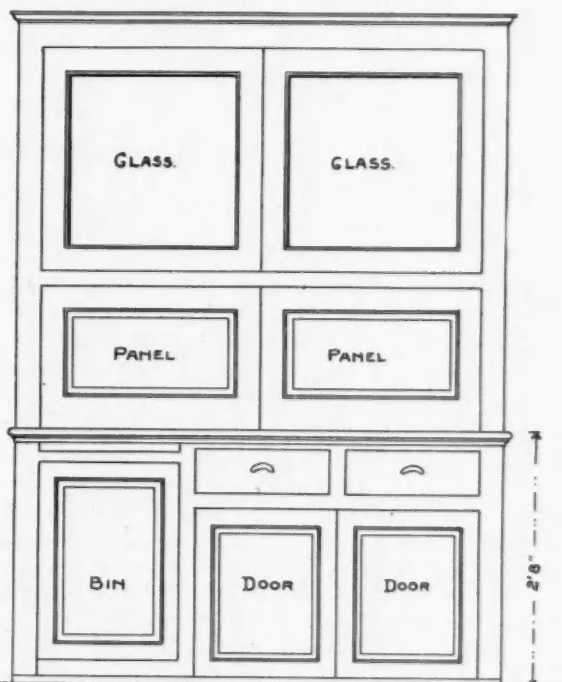
Answer to Problem

To the Editor: Grand Junction, Col.
 I will endeavor to answer the catch problem of A. H. Kosier in the March number. Mr. Kosier uses the wood exactly, but I do not think that wood explains exactly what he means, as I cannot conceive of any non-plastic material which can be made to fit each of the three holes exactly; but

to the point, presuming that the perpendicular and horizontal dimensions of the three are the same, a square, the side of which shall be equal to the hypotenuse of a right angle triangle whose base and perpendicular are each equal to the radius of the circular figure will also fit the other figures as nearly as any plane figure can. GEO. PEARSON.

Constructing a Cupboard

To the Editor: Monticello, Wis.
 Enclosed find a sketch of a cupboard that I built. It makes a very complete fixture for the kitchen and is easily made. The flour bin is hung the same as a door and swings outward,



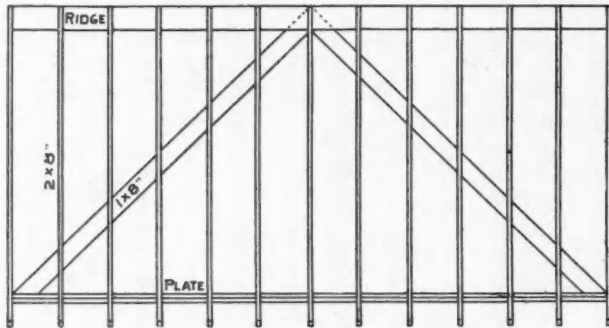
as shown by the dotted lines in the plan. It is quarter circle in shape; the back being made with zinc with a roll rim at upper edge. I usually take a board 1 1/2 inch thick

and 16 or 18 inches wide for the front and back. The bottom is grooved in about 1½ inches from the bottom ends of these pieces and gained in about 5⁄8 inch deep. The front and back edges are grooved about 5⁄8 inch wide by ¼ inch deep to receive the zinc back, which is made fast by nailing with round headed tacks. The front may be paneled, as shown in the drawing, if a better finish is desired.

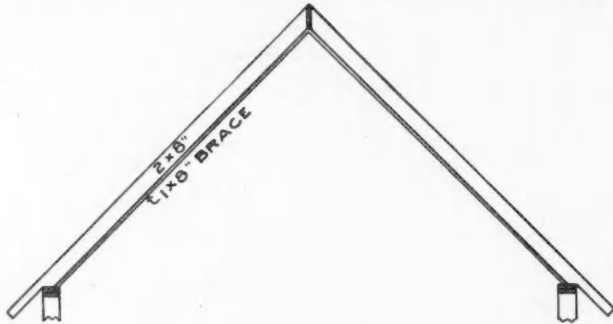
F. D. TAFT.

Preventing Ridge from Sagging

To the Editor: Readsboro, Vt.
Please find enclosed sketch to prevent ridge from sagging



or plates from bulging out on sides. The board, 1⁄8 inch, nailed on under side of rafter, will prevent roof from sagging,

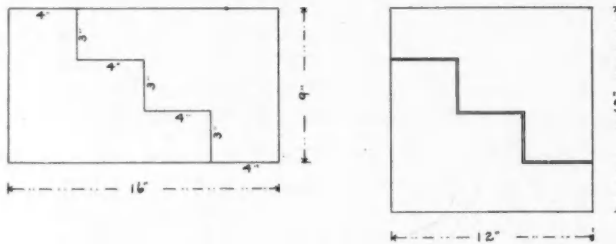


No collar beams required. The board extends from end of plate at corner of building diagonal to center of ridge.

A. M. HICKS.

Answer to a Problem

To the Editor: Pittsfield, Ill.
I am sending you an answer to that problem of Mr. Henry Goetz, which is published in the March number of the AMERI-



CAN CARPENTER AND BUILDER. The magazine gets better every month. I am a charter member, and you may expect to still keep me on your list.

BEN. JOHNSON.

Problem to Solve

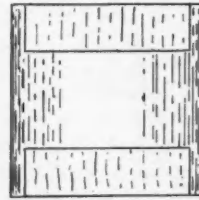
To the Editor: Chicago, O.
A boy was making a cover for a box and had just picked up a board when a man came in where he was at work, and

after watching him a few minutes, he asked the boy how many inches there were in the board. The boy replied, "This board is perfectly square. After I saw off a strip clear around the board one inch wide, I will have one-half the board sawed off." How many inches were there in the board?

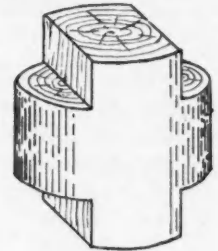
WILL STRIMPLE.

Answer to Problem

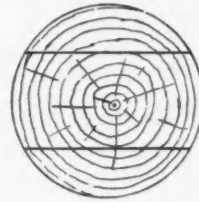
To the Editor: Crichton, Ala.
In answer to Mr. A. H. Kosier's problem, I submit the



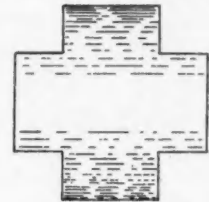
FRONT ELEVATION.



PERSPECTIVE.



PLAN.



SIDE ELEVATION.

enclosed sketch of a block which seems to fill all the conditions, i. e., the holes.

VERE D. SCOTT.

Finishing Rosewood

To the Editor: Seward, Neb.
I have a little matter in the line of wood finish that has happened to a piece of furniture which I am unable to explain to my own satisfaction, and after I have stated it I would like to have you tell me what has caused the trouble, or submit the affair to some experienced cabinet maker and have him explain it. The piece of furniture I refer to is rosewood, very highly polished, has what is called a piano finish. It stands in our living room, which is heated by a stove, but not near the stove. The room is dry and the atmosphere is subject to only the ordinary changes of heat and cold. In certain pieces of wood composing this article there appears to have oozed from the pores small particles or flakes of rosin which glisten under the varnish, but here and there have pricked through the varnish and can be brushed away, leaving small indentations in the polished surface with a yellowish substance below extending down into the pore of the wood. The pieces of wood so affected have the appearance of being very porous, sometimes large seamy pores where the rosin flakes are thickest and largest. In furnishing any information in this matter you will confer a favor upon the writer that will be greatly appreciated. I would also like to know what the remedy would be in a case of this kind.

C. A. BEMIS.

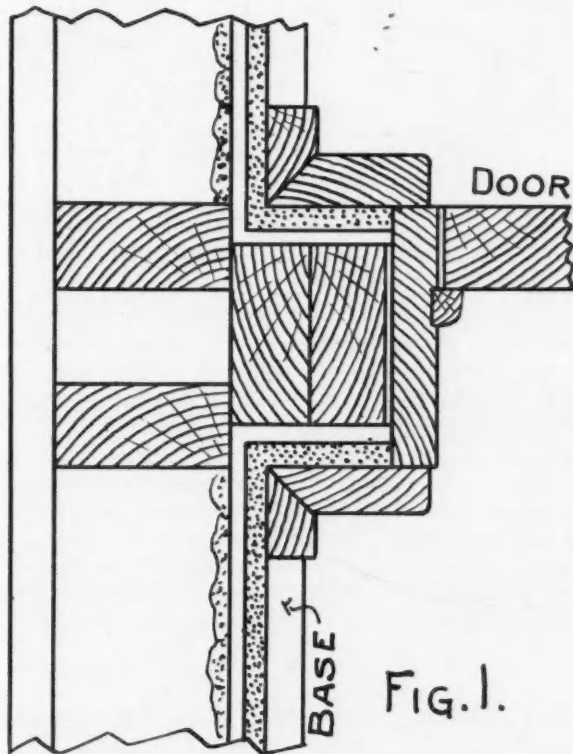
Answer: The genuine rosewood contains an oil which makes it one of the most difficult of all woods to finish properly. This wood, however, has grown quite scarce, or at least is very little used, other woods being sold as rosewood,

after being stained to imitate it. The trouble may be due to the oily nature of the wood, if genuine rosewood, or if an imitation, some wood of a resinous nature may have been used, or a cheap varnish containing rosin may have been used for the first coater. Again, trouble is sometimes caused by coal gas escaping from the open door of a stove, especially at night, when the fire is low. This acts chemically upon the varnish, partially destroying it. Similar experience to that mentioned has been noted by wood finishers, who say that the trouble is caused by the neglect of the original finisher to neutralize the oil of the rosewood before applying the first coat of varnish. This should be done by washing the wood with vinegar. The proper way to treat the piece of furniture in question is to first remove all the varnish by scraping, or by means of a varnish remover, after which the wood should be washed with benzine or naphtha to neutralize the remover, and then when this has dried it should be thoroughly washed with alcohol and vinegar, after which it can be stained and finished with varnish as though it were a new piece of wood. The piano polish, of course, is obtained by rubbing the final coat of polishing varnish first with rotten stone and afterward with rubbing oil on the palm of the hand. It requires an expert to produce a good job.

EDWARD HURST BROWN.

A Few Trade Kinks

To the Editor: Farnam, Neb.
I want to say that I am a charter member of the AMERICAN CARPENTER AND BUILDER, the greatest trade journal published. I desire to contribute a few trade kinks for the correspond-

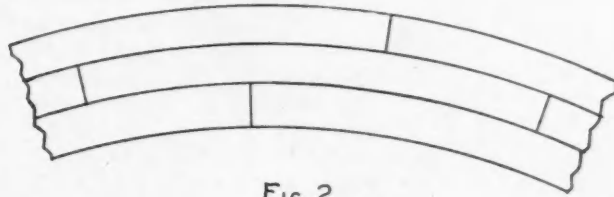


ence columns. Will say to my eastern brothers, that while we live "way out west," we are keeping pace with the times and are erecting some fine buildings. I find in laying floors that it is not best to nail the ends of the boards separately, but after the other nails are driven, drive a nail at the union of the two boards, thus drawing both ends back even and prevent splitting the ends of either.

Some carpenters put a base angle against the face of the

base block, or where no angle corner blocks are used, to fit the base against the face of the base block where the door is close to the corner of the room. Fig. 1 shows how I do it.

In preparing the ground work for a circular porch, I strike

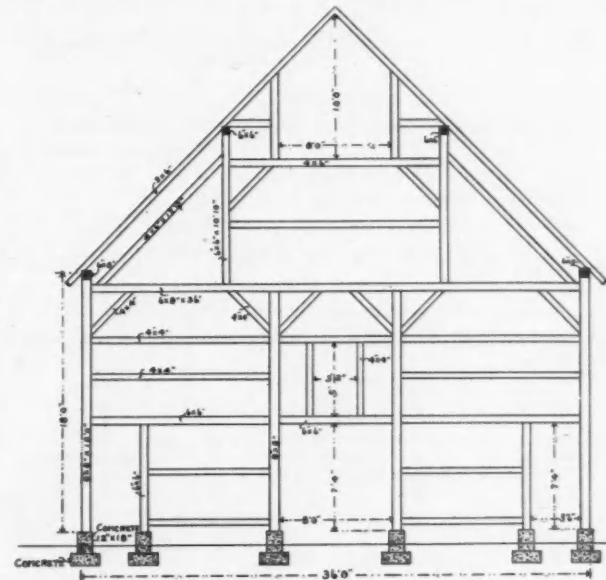


the required circle, or a portion of it, on a 2 by 6 inch or 2 by 8 inch, and rip out pieces 1 3/8 inch wide and nail them together, breaking joints as shown in Fig 2 till I get the width desired for size and strength.

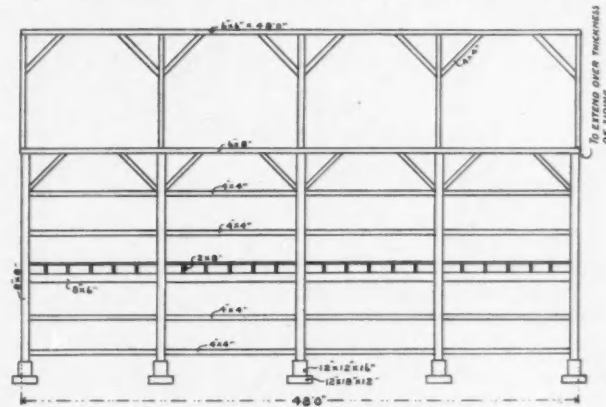
J. S. K.

Plan of Hay Barn

To the Editor: Flora, Ill.
I am sending you herewith a description of the plan to hay barn which I sent you a while ago. It is a very handy

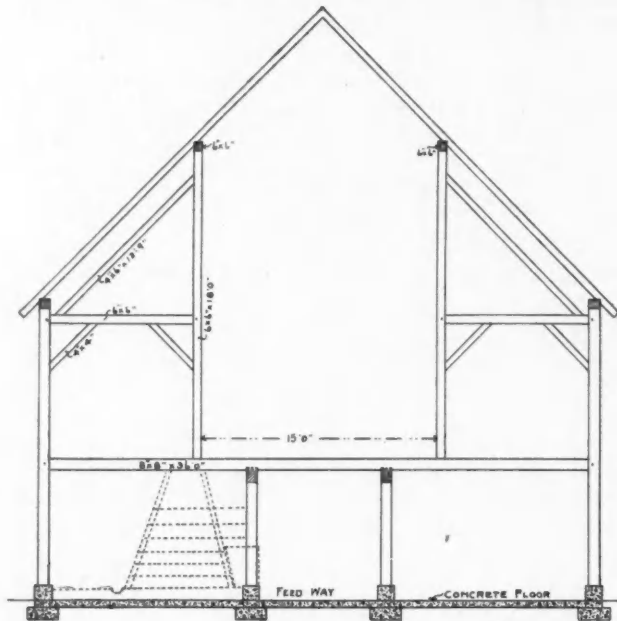


plan, having no timbers in the way if a fork is used in mowing hay, and is one I have built a number of barns from. All floors to be of concrete and it can have sills, or let the posts rest on concrete blocks. All main posts to



be 8 by 8 inches; girders, 6 by 8 inches; plates, 6 by 8 inches; purline plates, 6 by 6 inches; purline posts, 6 by 6 inches; joist bearers, 6 by 8 inches; cross ties, 6 by 6 inches; rail ties, braces, etc., 4 by 4 inches; rafters, 2 by

6 inches; joist, 2 by 8 inches, spaced two feet apart. To be sided with No. 1 barn siding and cracks battened with



bevel batten. To be entirely mortised frame. The barn is 36 feet by 48 feet. It was drawn on a quarter inch scale.

EDGAR KITLEY.

specified, wish to say, as to demanding of the lumbermen that they furnish full sizes, don't think this can be done. The only thing we can do is to make them specify exact sizes, as the sash and door manufacturers do. They call a door made of 1½ inch stock, 1¾ inch, etc., and it would only change the figures and not the price. Again, all boards listed as "inch" are always less. The Northwestern Grading Rules specify 2-4s to be S. I. S. and I. E. to be 1¾ by 3¾. The Coast Manufacturers and Southern Manufacturers specify same 1¾ by 3¾ inch, and most all manufacturers specify boards to S. I. S. to 13-16, so you see it would be useless to ask that they be forced to furnish full size, but if this could be brought about it would only increase the price, as two inch stuff would have to be cut 2¼ inches thick to allow for shrinkage and surfacing. If we want two inch stuff we must order in the rough, then it usually nearly holds out, but most builders prefer sized stuff and expect to lose a part of the strength, same as one does when buying a spilt leather shoe.

I have read lumber and building papers for twenty-five years, but yours is the neatest, most practical and helpful of anything I have yet read.

J. V. LEYDIG.

Barn Construction

To the Editor:

Miles, Ia.

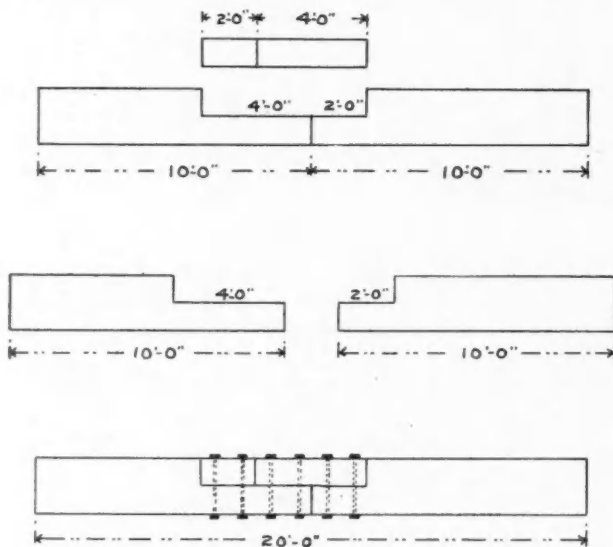
In the March number of the AMERICAN CARPENTER AND BUILDER, I find a sketch of the inside crossbent of a barn from W. E. H. of Pittfield, Ill. I have been wondering how

Answer to Problem

To the Editor:

Calais, O.

I herewith send you answer to my splice problem, so if any one answers it you will know whether it is right or



not. It is a rough sketch, but will serve to give you an idea of what I mean. You can shape it up a little better if you conclude to publish the answer. This is for a two foot splice, but it can be made any length up to half the length of ten feet in this case.

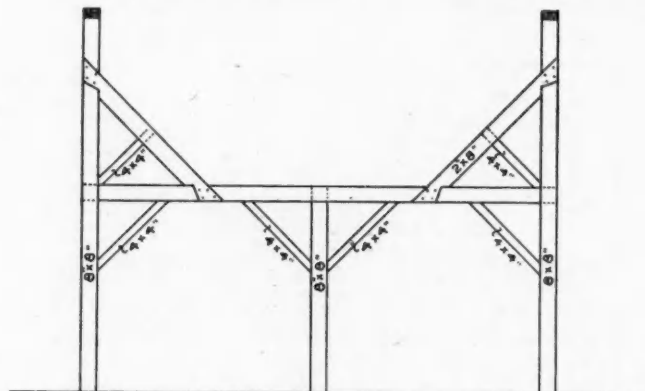
C. T. EVERETT.

Size of Dimension Lumber

To the Editor:

Spokane, Wash.

Seeing considerable discussion in your paper as to the size of dimension lumber not being up to size generally



he keeps the building from spreading in the hay-mow. The plan is all right for outside pressure, but I do not think it will hold or stand the hay pressure from the inside. I have seen so many give out and have fixed them over and have found it not a very desirable job. I herewith submit a small sketch which I believe makes a stronger frame than the other and with less braces. The long braces go in between the 2 by 8 inch braces and to be well spiked. There should be braces between bents to keep the posts from twisting, in case the foundation should settle.

V. DENICK.

Attaching Woodwork to Concrete

To the Editor:

Unionville, Mich.

Kindly advise me through the columns of your valuable paper as to which is the best method of securing furring to brick or cement wall. Some contractors prefer plucks instead of joint strips, as the strips expand when built in the wall, and afterward become loose on account of shrinkage.

S. C. M.

Answer: The use of a heavily barbed nail driven into the mortar joints has proven as durable as any and requires no previous preparation, and I have lately adopted this method

almost entirely. The use of small hardwood (well seasoned) wedges driven into the mortar joints also serves for attaching casing. I have long since ceased to fur on concrete blocks and apply plaster direct, this saves plaster, makes a solid job and then waterproofing on the outside when wall is fully seasoned.

FRED W. HAGLOCH.

Trussing a Roof

To the Editor:

Logan, Utah.

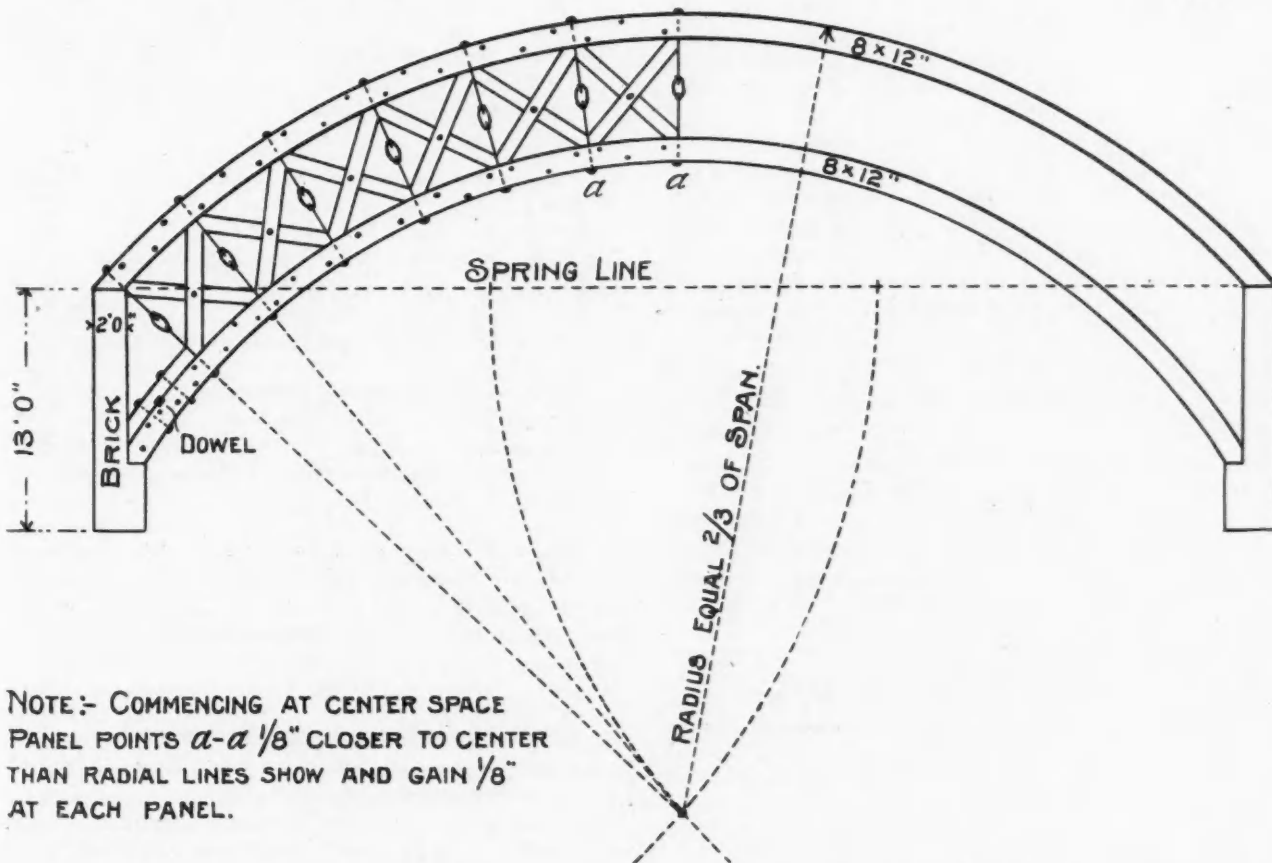
What in your opinion is the cheapest and best wood truss for a span about 65 feet wide intended to carry nothing

same by return mail or publish it in the next number of the magazine?

J. W. BARRETT.

Answer: Top and bottom chord will have to be built up segmental. Use 1/2 by 4 inch iron jib strap on bolts so as to catch all the timbers. Braces and counters can be dressed and chord left rough and boxed afterward. Have all rods fitted with turnbuckle in the center, as the end will not be exposed. Have tension on all rods as near the same as possible. Make first panel point 1/8 inch closer than radial lines show, which will make the next one 1/4 and next 3/8 and so on, to allow for compression in the top chord. Brace bottom transversely to prevent warping.

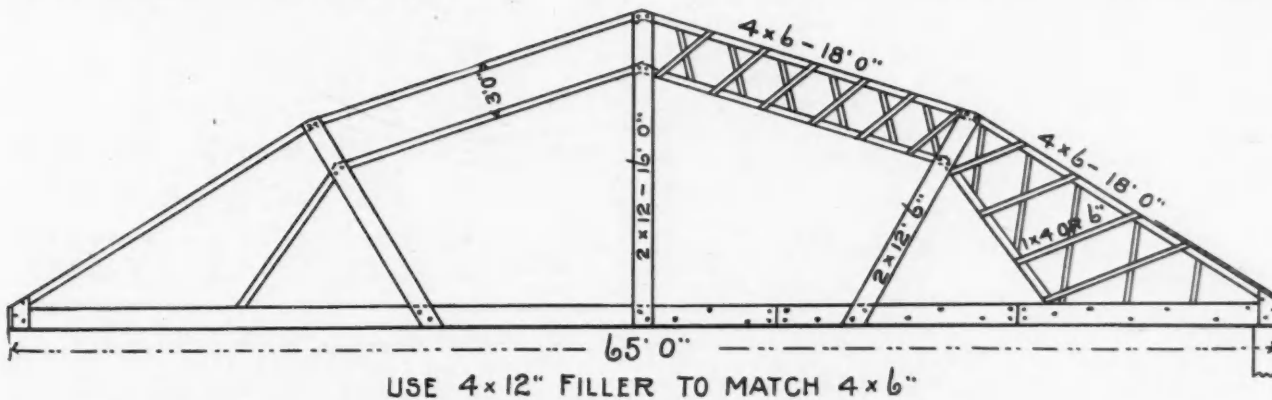
If it is not desired to have finished appearance, a good cheap truss may be made as per sketch shown herewith.



NOTE:- COMMENCING AT CENTER SPACE PANEL POINTS $a-a$ 1/8" CLOSER TO CENTER THAN RADIAL LINES SHOW AND GAIN 1/8" AT EACH PANEL.

but the roof. The truss I prefer to be like the sketch below and the second choice as diagram shown herewith. I thought

which will carry roof put on as mentioned, and which will also brace the trusses at the top, but they will have to be



USE 4x12" FILLER TO MATCH 4x6"

if oval truss was used I could take 1 3/4 T. & G. ceiling and make same answer for ceiling and sheathing and spring same over top of trusses and not use any rafters. Will use Malthead roofing. Can you send me a rough pencil sketch of

braced at the bottom. A couple of 2 by 6 will be sufficient for this. Build in place if you haven't a chance to raise them whole, in which case they may be built on a template.

T. P. ELLIS.

Supporting Roof Trusses

To the Editor: Grandfalls, Tex.
 I am going to do the carpenter work on a store building, fifty feet wide and ninety feet long. The roof is to be flat and covered with tin, the span to reach entirely across the building. How should I frame the truss and of what size material? Kindly make a pencil sketch and send it to me; also state as to what size the blocks for the first story should be, the walls of same being: Lower story, twelve feet in the clear, and the second floor being ten feet in the clear, or between floor and ceiling?

I trust that I have not asked too much for your compliance.
 FRED L. PARKER.

Answer: Ten-inch blocks for first story and eight-inch blocks for second story is sufficient for ordinary buildings, but if second story is to be used for heavy storage or manufacturing purposes where the live floor load may exceed 350 pounds per square foot, then use twelve-inch blocks for first story.

The cheapest and safest way of supporting the roof trusses is to run an eight by sixteen-inch pilaster on either the cut or inside of the block wall at each place where an end of roof truss will rest on the wall. Two years ago I placed sixty-foot roof span trusses on eight-inch walls with eight by sixteen-inch pilasters and same proved very satisfactory. The building is being used for manufacturing heavy machinery.
 FRED W. HAGLOCH.

Answer to Problem

To the Editor: Johnstown, Pa.
 I will submit an answer, also rough sketch, to C. T. Everett's question: Rip out on dotted line, Fig. 1, A and B, C and D, making A longer than the piece B, and making the piece D longer than the piece C. Now join your two 10

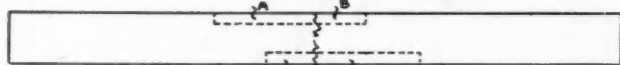


FIG. 1.

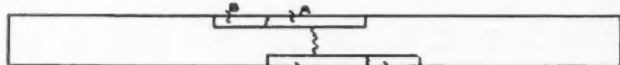


FIG. 2.

foot pieces of timber as in Fig. 2 and put A over to B. Take the piece B and fill in at A; take D and put over to C; take C and fill in at D. The long pieces you will see will reach past the joint, when you have your pieces in the proper place. Then fasten with bolts. It is a way I have used and found it very good. I made the long piece twice the length of the short one. The size of the pieces can be made to suit the piece of timber, as also the length of the splice. If I am wrong, or some one of the readers of the A. C. and B. has a better way, let yourself be heard from, for I, as no doubt the others are, am interested in the work.

O. D. WEIGLE.

What is a Neck Mould?

To the Editor: Newport, Wash.
 Please give description of a neck mould and settle a dispute.
 JOHN CRICKMORE.

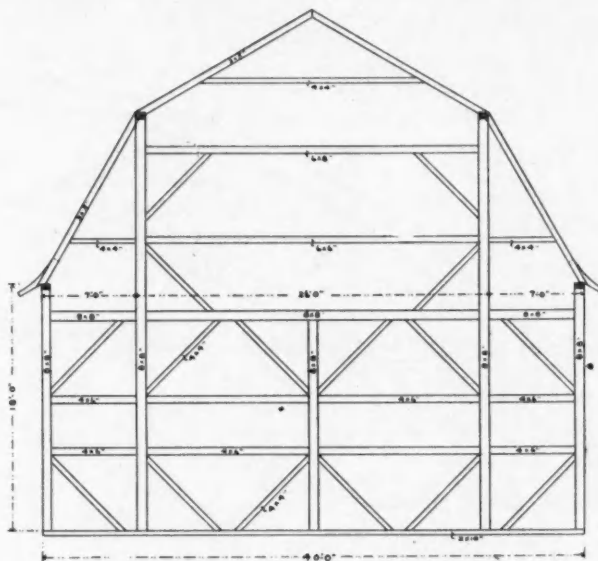
Answer: The neck mould is generally understood to be the lower member at the neck of the column, but it is not known by that name in works by the old-time masters. They give it as being composed of two parts, spoken of as the astragal and fillet. Therefore, the term "neck mould" seems to be a modernized name for astragal and fillet.

Then, again, the astragal, as known in the present day, is applied to the mouldings for the joining of sliding doors. Thus, it will be seen, it is a different shape mould and used for an entirely different purpose from that given in the classics.
 A. W. WOODS.



Barn Construction

To the Editor: Williamsburg, Mich.
 After seeing Mr. Stomm's barn bents I thought I would send a rough drawing of the way I have been building barns. The end shows for itself. The center bents we line the floor

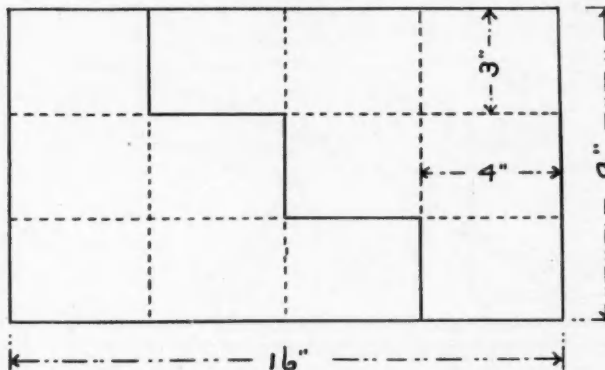


and spike 2 by 8 together, breaking joints. We only make the peak two thicknesses and can put scaffold beam over floor out of 2 by 8 if parties want it. In my opinion the center bent is the one I think the strongest and most simple.
 F. E. ORCUTT.



Question and Answer

To the Editor: San Francisco, Cal.
 In the March number of the AMERICAN CARPENTER AND BUILDER I noticed a problem to solve as follows: "Take a board 9 by 16 inches, then cut it in two. It should give 12 by 12 inches. The board should be cut only one time."
 I can do it this way, as per drawing shown herewith.



Cut at dotted lines; in other words, four threes are twelve on one side and three fours are twelve on the other side. You will observe that I have square corners. This problem seems easy to me so far, but if I wanted to fill an opening 12 inches square and the material was say, 2 inches

thick, so I could not cut it with a coping saw, I wish you would ask Mr. J. Henry Goetz to please make me a diagram whereby I can take a key hole saw and cut this board without boring holes in the corners; in other words, mark it out with round corners.

This is an old problem and I have heard it asked something like this:

Some time ago I was a ship carpenter aboard a ship and she had a hole stove into her 12 by 12 inches, and she would certainly sink if I didn't fill it. Now it happened I had only one piece of board in the ship that I could use and it measured 9 by 16 inches. I cut the board in two and it filled the 12 by 12 leak, and all on board were saved from a watery grave.

C. W. MOORE.

Splicing Two Timbers

To the Editor: Jamaica, N. Y.
I think I can solve the problem of splicing the two ten-foot sticks. After cutting out the pieces A, Fig. 1, turn

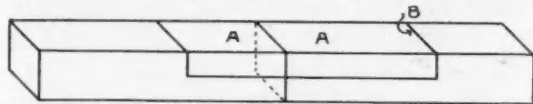


FIG. 1.

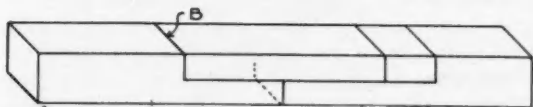


FIG. 2.

them end for end, placing end B, Fig. 1, at B, Fig. 2, thus breaking the joint. Then by bolting or spiking together, the stick may be used for many purposes.

JOHN BRECKENRIDGE.

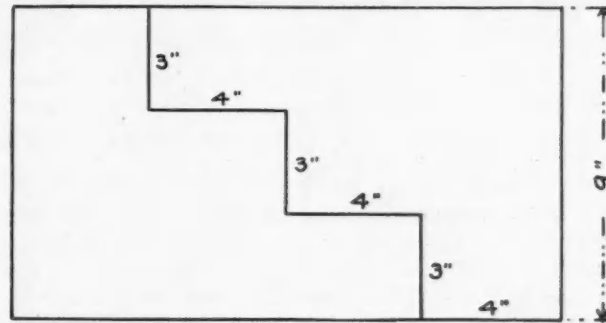
Height of Plate Rail

To the Editor: Frankinton, La.
Referring to your answer to the second question of Geo. L. Niebuhr in the March number of the AMERICAN CARPENTER AND BUILDER, I was looking at one of the best finished houses in this section of the country recently. Going into the dining room with my hand on the door knob, I turned first to the end of the room toward which the door swung, and when the door was about three-fourths the way back to the wall it struck something, although I was not pushing, only holding the knob. I felt the door twist and strain on the butts. Thinking something had accidentally been left behind the door, I looked and found bumpers had been put there to prevent the door from striking the plate rail, and to do so, had to

be placed so close to the casing that it would not require much force against those doors, with the bumpers as a fulcrum, to tear them from their hinges. How many times will that door stand being thrown open by hungry children from school or play before it will go down? To return the shelf against the face of the casing looks better, but how about opening the door if hung? J. W. KINGSBURY.

Answer to Problem

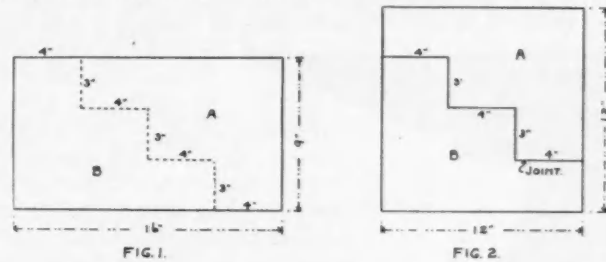
To the Editor: Sibley, Ia.
I thought I would answer one of your problems, the one



by Harry Goetz. The board must cut as represented in my illustration and it will make a perfect square 12 by 12 inches. CHARLES W. EBERT.

Answer to Problem

To the Editor: Elgin, Ill.
In answer to Henry Goetz's problem of cutting a board 9 by 16 and putting it together again to measure 12 by 12,



I respectfully submit above sketches. Cut on dotted line, Fig. 1. Separate pieces A and B and put together as shown at Fig. 2. M. J. SULLIVAN.

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Practical Trade Appliances

Rural Telephones

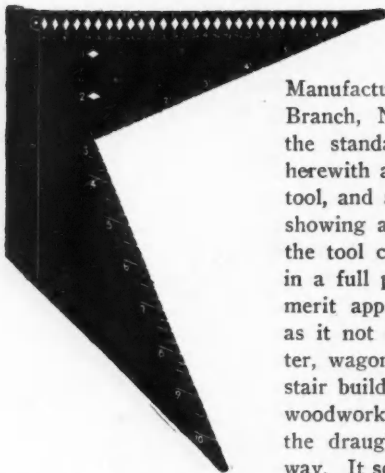
In these days of general prosperity and modern inventions the telephone is no longer considered a luxury—it is almost an absolute necessity. In these days time is money and what is a better time-saver than a telephone?

On the farm it brings your neighbor or store-keeper miles away within immediate speaking distance, in the private residence it saves running up and down stairs, to say nothing of outdoor errands, in the shop or factory the head of the firm can communicate with the foreman of any department without summoning him from some remote part of the building; all these and more are the reasons that can be advanced for the use of private telephone systems.

The Wesco Co., whose advertisement appears on page 284, can tell you many more reasons why you should have a private telephone, besides giving you the exact cost. They will also make contractors, carpenters and builders special inducements that will be appreciated by our readers. Write them today for their Bulletin F. It is free for the asking.

Success of the Universal Square

It is brought to the attention of our readers the success and growing demand by all classes of mechanics that the



New Universal Square, manufactured by the Duby & Shinn Manufacturing Co., of Long Branch, N. J., is fast becoming the standard square. We show herewith a fair photograph of the tool, and a more illustrated plate, showing a few of the many uses the tool can be put to, is shown in a full page advertisement. Its merit appears to be undefinable, as it not only serves the carpenter, wagon maker, cabinet maker, stair builder, all bench hands and woodworkers, but is called for by the draughtsman in a gratifying way. It serves all in the perform-

ances of their ordinary every day duties, as well as opens an avenue of rapid manipulation in the way of small and fancy work, giving all elliptics, etc., in a most easy manner. Duby & Shinn will be glad to give you any further information desired.

The Finished Work

The making of molds along the line of artistic concrete work is being developed. Schools, periodicals, and art societies are doing much to educate popular taste and the influence is spreading rapidly. The designers will appreciate the necessity of combining beauty with utility in visible construction. This is simplified by being molded at will. Beauty in structural design is worthy of name only when it has

character. It must express an individuality of its own. The Halteman Mold Co., of Dayton, O., having made patterns for the following machines, Cottom, Perfection, Knoxall and Superior, are now taking up the ornamental mold work. They have a well equipped shop and are in position to figure with any one wanting special molds for large or small work. See their ad. in the next issue. Address Halteman Mold Co., 10 Michigan avenue, Dayton, O.

The Goetz Box Anchor

The Goetz Box Anchor Co. of New Albany, Ind., has been on the market furnishing joist hangers, box anchors and post caps to some of the largest buildings constructed in the past twelve years. Their goods are specified by a great many of the most prominent architects of the United States and Canada. They issue a fine catalogue showing their devices and any architect or builder wishing one needs only to write to them. We might refer to thousands of buildings all over the United States where their goods were used, but that is not necessary. The greatest reason these goods are used is because they are sold a little cheaper than other competitors' goods. Their business increased 50 per cent over 1905 and their 1907 records bid fair to exceed 1906 by more than that. Their catalogue tells the story, so send for one and see if they are not saying what is the truth. Address Goetz Box Anchor Co., 117 East Spring street, New Albany, Ind.

Combined Door Rail and Cap

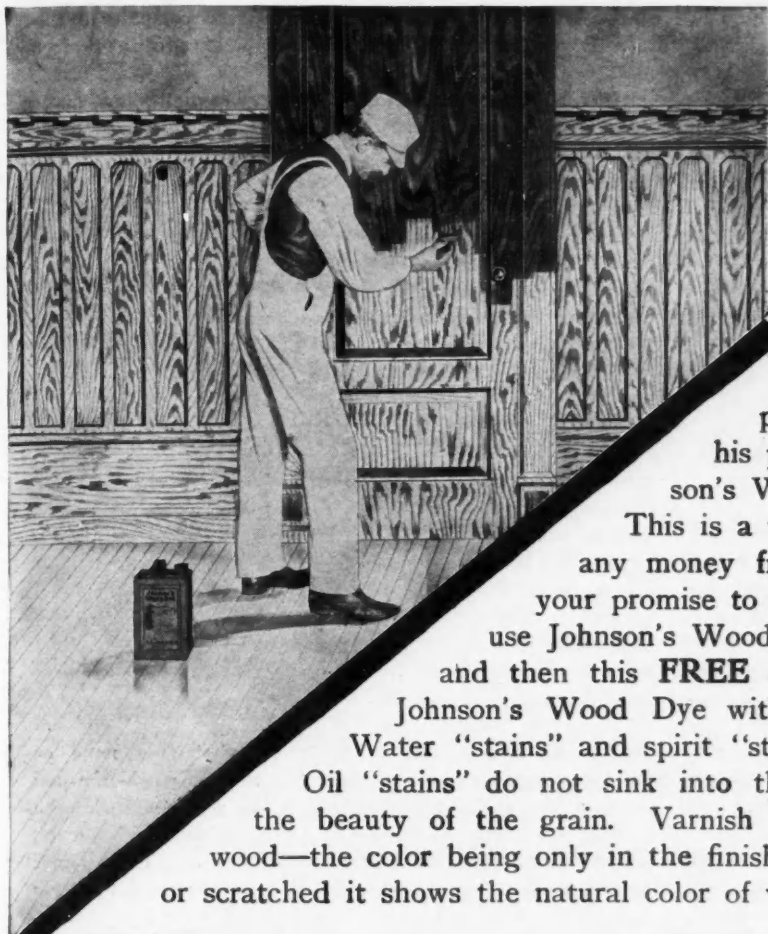
The Automatic Door Rail Co. has recently moved from Chicago, Ill., into their new up-to-date factory building in Hillsdale, Mich., where they have a fine equipment for the manufacture of their combined Track and Cap for sliding doors, which is absolutely sleet and bird-proof. They also make a hanger so constructed that it is impossible for it to jump the track. Their facilities for the manufacture of this product are excellent, they having constructed a pair of roller mills with large capacity for the formation of their combined track and cap. They have a neat 1907 catalogue which explains the workings of their rail and they will mail one of them to all interested parties for the asking. Their motto is "Live and Let Live." They invite your patronage and assure you a square deal, with goods that have honest value for your money. Write them. Address Automatic Door Rail Co., Hillsdale, Mich., mentioning the AMERICAN CARPENTER AND BUILDER.

Wall Plaster and Mason Supplies

The wall plaster manufactured by Boutell Bros. & Co., of Bay City, Mich., is made from the very best of materials and is cheaper and as durable as any on the market today. It spreads freely, is fireproof, elastic, non-porous and a non-conductor of sound. Using it will save you time, labor and money.

Should it become wet from leaky roofs or from burst water pipes, the plaster will not be injured, but will dry out as good as new. It is absolutely guaranteed.

This firm also carries a complete line of masons' supplies,



3 Cans FREE

We will send **FREE** to every painter, who gives us the name of his paint dealer, two (2) cans of Johnson's Wood Dye to try at our expense. This is a very liberal offer—we do not want any money from you now or in the future, or your promise to buy. We feel sure that once you use Johnson's Wood Dye you will continue to use it and then this **FREE** offer will pay us. Don't confuse Johnson's Wood Dye with various "stains" now on sale. Water "stains" and spirit "stains" raise the grain of the wood. Oil "stains" do not sink into the wood, nor do they bring out the beauty of the grain. Varnish stains do not properly color the wood—the color being only in the finish. When varnish finish is marred or scratched it shows the natural color of wood—revealing the sham.

Johnson's Wood Dye

is a dye. It penetrates the wood; does not raise the grain; retains the high lights and brings out the beauty of the wood.

Johnson's Wood Dye is prepared in all Shades as follows: No. 131, Brown Weathered Oak; No. 129, Dark Mahogany; No. 172, Flemish Oak; No. 140, Manilla Oak; No. 126, Light Oak; No. 110, Bog Oak; No. 123, Dark Oak; No. 128, Light Mahogany; No. 121, Moss Green; No. 125, Mission Oak; No. 178, Brown Flemish Oak; No. 130, Weathered Oak. Sold by the leading paint dealers. Insist on getting the genuine—don't take a substitute.

We will also send you **FREE** one can of Johnson's Electric Solvo with the two cans of dye. This is the finest preparation in the world for removing all finish from wood, metal and glass.

Be sure to send us your paint dealer's name and the name of paint jobber with whom your dealer does business so we can make it easy for you and your dealer to get our preparations.

Use Coupon to the right—cut it out and send today.

S. C. JOHNSON & SON,
Racine, Wis.

"The Wood-Finishing Authorities."

S. C.
Johnson
& Son,
Racine, Wis.

Gentlemen: My paint
dealer's name is

.....
His address is

My paint dealer's jobber's name is

.....
His address is.....
for which please send me **FREE**, prepaid, 2 cans
of Johnson's Wood Dye..... shades,
and 1 can of Johnson's Electric Solvo, and copy of your
new 25c book, "The Proper Treatment for Floors, Woodwork
and Furniture." Edition ACB5, all **FREE** as per your offer.

My name is

Address

**Use
Coupon**



and they will be pleased to have you write them, stating your needs, when they will send you descriptive catalogue of their entire line.

The Passing of the Wood Shingle

In the old days when time did not count, the wood shingle was hand grooved and drawn and made from well matured timber, straight grained, free from sap, five-eighths of an



A Metal Shingle Roof, "The Edwards Kind."

inch thick at butt and four inches wide. Those shingles made good roofs.

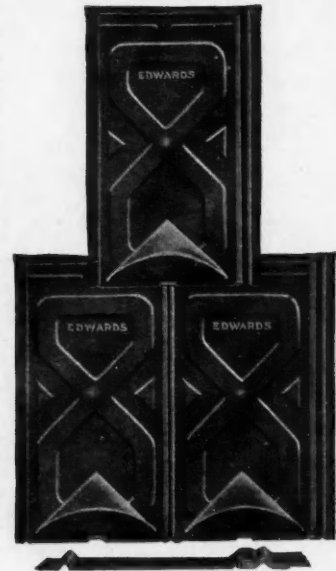
Today the wood shingles are made by machinery, you can guess the rest—sappy timber, grain does not count, there is not time to examine and sort it. Those shingles may last two or three years without much repairing, then with much and constant repairing the roof may last eight, sometimes even ten years.

The contractor and builder is offered a field for profitable enterprise in the variety of metal shingles that have come into favor on account of the architectural effects which can be produced with them.

In the accompanying illustration we show "A Metal Shingle Roof," "The Edwards Kind," the very best obtainable for

the reason that no other roof covering can compare in the essential features that constitute the making of a perfect roof.

"The Edwards" Metal Shingles are made of the best quality Worcester Grade Terne plate, painted or galvanized (galvanized after being formed) in sizes 7 by 10, 10 by 14 and 14 by 20 inches, the 10 by 14 being by far the most popular size. They can be applied without soldering, the use of special tools, and by an ordinary mechanic, and are guaranteed to be an absolute protection against fire and the elements, taking a very low rate of insurance, and from the very nature of their manufacture will last as long as the roof itself, having no soldered joints, can be readily taken off of one building and placed on another if desired. On pitched roofs of every description the Edwards Shingles, being considerably lighter than slate, and having none of the disagreeable features—i. e., rotting and warping—of wood shingles, are especially recommended to any one seeking a roof covering that shall be at once conspicuously beautiful, practically indestructible and of moderate cost. The manner of locking the sheets together forms the only perfect system



"New 80-page Catalogue Free"

We have just issued a new book, finely illustrated and beautifully printed. It is a veritable mine of information in the vital and interesting subject of Ventilation, and is full of handsome illustrations and useful data concerning

The Burt Ventilators

A very large number of fine illustrations showing the Burt Ventilators installed on important buildings and the opinions of men who are today using them on mills, factories, shops, foundries and residences are also given a place in this book as being extremely valuable to the prospective buyer.

Send a postal today for a copy

The Burt Mfg. Co.

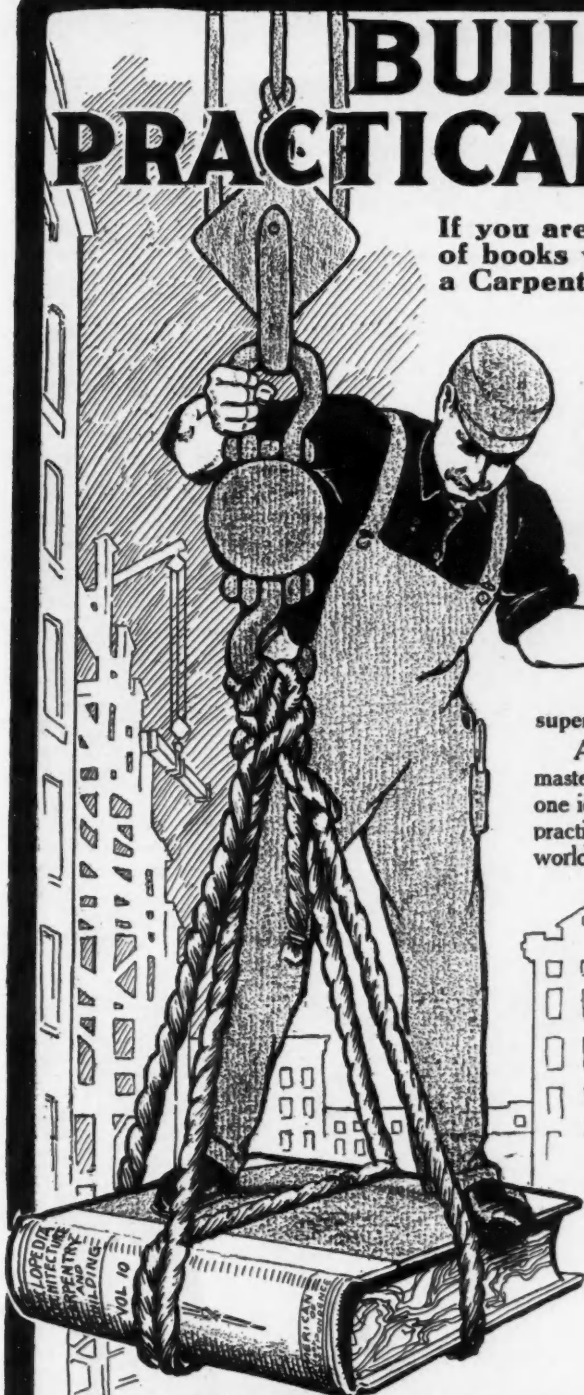
500 Main Street, Akron, Ohio.

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



Notice Sliding Sleeve Damper. Patented.

BUILD WITH PRACTICAL KNOWLEDGE



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. The truest test of your present efficiency is the amount of money earned by you from week to week. 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. Learn now to turn your spare time into money.

Cyclopedia of Architecture Carpentry and Building

Compiled from representative instruction papers of American School of Correspondence. This offer is made primarily to demonstrate the

superiority of the School's courses.

An absolutely new work prepared by a staff of 39 practical writers. A masterpiece of complete, concise, practical, "ready-to-use" information. Not one iota of theory in its 4,000 pages. Every demonstration derived from the practical experience of the greatest experts in the building industries of the world.

We increased the size of the first edition in order to save on the first cost, and 1,000 sets will be offered at a

Special Advance Sale

LESS THAN $\frac{1}{3}$ REGULAR PRICE
IMMEDIATE DELIVERY

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—DE LUXE books in every particular. Merely ask us to send you a set at the

Special \$19.80 Price

Regular Price \$60

Sent by prepaid express. Pay \$2 within 5 days, and \$2 a month if satisfactory; otherwise notify us to send for them. In any case you lose nothing.

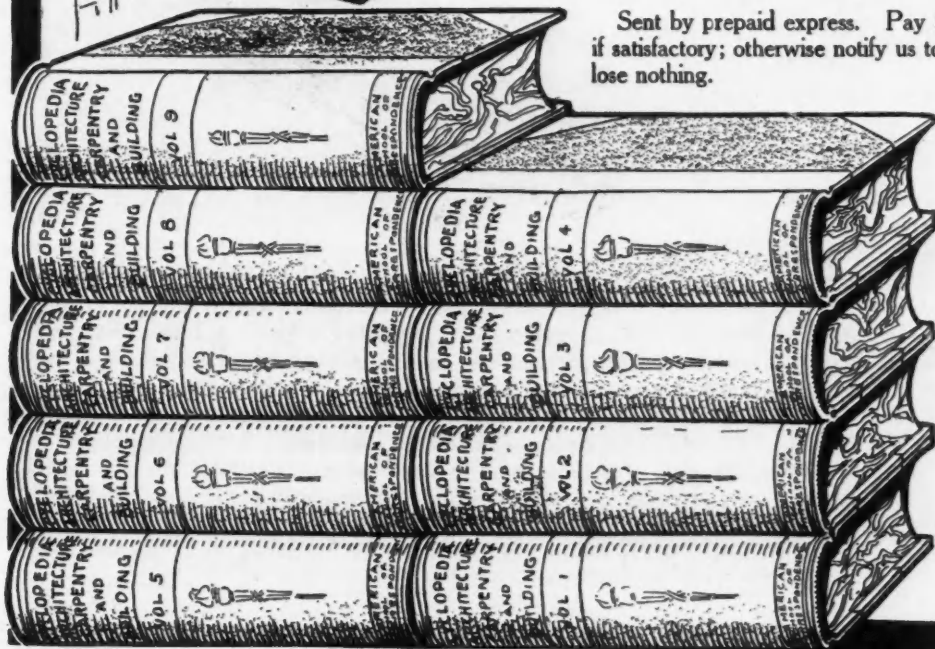
Absolutely no orders accepted if postmarked later than June 25, 1907.

AMONG THE CHAPTERS:

Reinforced Concrete Construction — Carpentry — The Steel Square — Building Law — Fire-proofing — Stair Building — Superintendence — Estimating — Contracts — Specifications — Strength of Materials — Architectural Drawing — Masonry — Electric Wiring — Plumbing — Steam-fitting — Heating — Ventilating — Cornice Work — Skylight Work — Roofing — Steel Construction.

AMERICAN SCHOOL
of CORRESPONDENCE

CHICAGO



of contraction and expansion so essential in securing water tight roofs.

The shingles are packed one square (covering 100 sq. ft.) in a box ready for shipping.

Manufactured by the Edwards Manufacturing Co., "The Sheet Metal Folks," 401 to 417 Eggleston avenue, Cincinnati, O. The company advise us that they will be pleased to forward samples and prices on request.

The Eastlake Metal Shingle

The extent to which tin and galvanized sheet metal are replacing wood in building construction is a sure indication of the progress that is being made toward eliminating inflammable finish and trim. One of the oldest firms making sheet metal work is the W. J. Burton Co., 160-166 West Larned street, Detroit, Mich.

One of the most famous of the company's products is the Eastlake Metal Shingle for roofing, stamped in imitation of slate. These shingles are manufactured under patent, and have a national reputation. They appear to be almost indestructible, as buildings roofed with them twenty years ago are still as good as when put on. They are easily laid, as any carpenter or mechanic can lay them with hammer and shears. Enterprising builders everywhere are making money with these shingles. The company's markets are found all over the country. Write for catalogues and prices. The W. J. Burton Co. Detroit, Mich.

Bedford Cut Stone

John A. Rowe Cut Stone Works, Bedford, Ind., are well prepared to take care of any contract for cut stone work—making prompt deliveries. Plans requested and promptly returned.

Modern Residence Refrigerators

Under the present specifications very few modern residences are planned without provision being made for a refrigerator. Homes in which the refrigerator was formerly considered a luxury now use them as a necessity, and they should be given more consideration than the finish or other furniture, for are not health, convenience and economy three cardinal refinements? The people generally do not realize the great advance made in the modern residence refrigerator, but it, like nearly all articles for the home, health and comfort, has been greatly improved, from the old style ice box without insulation or circulation, to the present luxurious, sanitary, outside icing refrigerators of scientific system and construction.

These modern residence refrigerators are the result of years of scientific experiment, and the absolutely dry air system found in the Herrick refrigerators, together with the heavy insulated walls and doors, positive circulation, superior material and construction, places them far in advance of the general style.

Most refrigerators have a certain amount of this circulation, but it is necessary, to secure best results, to force this circulation to every part of the interior, making it dry, pure and clean. The Herrick has this circulation, keeping the interior as pure and dry as mountain air, and is especially efficient in the insulation, insuring the saving of ice and economy of operation.

The modern equipment consists of our latest improved outside icing refrigerator, which we build in white odorless spruce, white enamel, or opal plate glass linings. This outside icing feature is recognized as one of the most valuable equipments ever installed owing to the fact that this most excellent refrigerator can be used the year around; during cold weather without ice. It also keeps the ice man out of

the house, saving many inconveniences resulting from his visits.

Write for our plans and specifications "free," and we will give you some valuable information which will save extra expense in placing the refrigerator. The Herrick with the latest improvements means a luxury at practically no additional cost, adding materially to the value and convenience of the home equipment, promoting the general health, as well as being a factor in household economics.

Their No. 37 Miniature Catalogue gives full plans and specifications and will be mailed to any address upon request. Ask also for their No. 17 Catalogue of refrigerators. Address Herrick Refrigerator Co., Dept. A, Waterloo, Ia.

The "Little Shaver" Floor Scraper

The Contractors' Supply & Equipment Co., Chicago, whose advertisement appears in this issue, are putting on the market a floor scraper called the "Little Shaver," a scraper which they claim can be worked by any one, without any practice.

The knife pressure is not controlled by the handle, inasmuch as the weight is directly on the knife while in operation, making an absolutely even surface. The "Little Shaver" has an advantage over other



"A Crying Need"



machines in there being no possible chance of jumping and making a wavy floor. The machine carries out the principle of the carpenter on his hands and knees, and is so constructed that the knife is set at the same angle as that of a hand scraper. Instead of the carpenter putting his shoulder weight on the hand scraper, the "Little Shaver" has the weight on the knife. The handle works on a patent hinge, its purpose being never to lift the wheels from the floor. The wheels have rubber tires and with the machine go a dozen knives.

"A Crying Need" is the title of an attractive folder issued by the company. This folder contains a lot of valuable infor-



Fire-Resisting Walls and Ceilings

SACKETT PLASTER BOARD does the work of lathing, fire-proofing and partial plastering in one operation.

The cost is little or no more than good work on the ordinary, antiquated wood lath.

The results are quicker and better in every way.

Sackett Plaster Board comes in sheets 32x36 inches. These are nailed direct to the furring, studding or beams and the finishing plaster applied.

As compared with lath, less than one-half the quantity of water is required, thus giving a seasoned house in the shortest possible time. The finished Sackett Plaster Board wall and ceiling are fire-resisting and will never fall.

For fire-proofing it is also used under roofs, beneath outside sheathing, under floors, and for protecting exposed wooden surfaces generally.

The Owner, the Architect, the Builder, and the Landlord are interested in the economy and betterments of this construction.

Carried in stock by up-to-date Building Material Dealers everywhere.

A letter to any of the General Distributors named below will bring a *Sample*, a Booklet telling all about it, and name of nearest dealer, by return mail.

United States Gypsum Co.
CHICAGO CLEVELAND MINNEAPOLIS

Grand Rapids Plaster Co.
GRAND RAPIDS, MICH.

Sackett Plaster Board Company, 17 Battery Pl. N. Y. City

mation and will be sent to all interested. Address, Contractors' Supply & Equipment Co., 520 Old Colony building, Chicago.

A Moisture-Proof Concrete Wall

The No-Touch System Patent Concrete Wall, which was exhibited by drawings only at the Cement Users' convention, was a center of attraction during the entire week. The inventors have realized the fact that it is not so much moisture coming through the wall that does damage on the inner surface, but moisture from the room that condenses wherever the inner surface is cooled off by connection with a cold exterior. The No-Touch System does away with any lapping over of inner with outer blocks, and with all metallic ties. There is a complete air blanket in all directions uninterrupted except at doors, windows and floors, thus insuring a house cool in summer, warm in winter, with no chance for moisture to come through the walls or condense on the interior. Those wishing state, county or city rights should address Little & Gavett, 508 University avenue, Ithaca, N. Y.

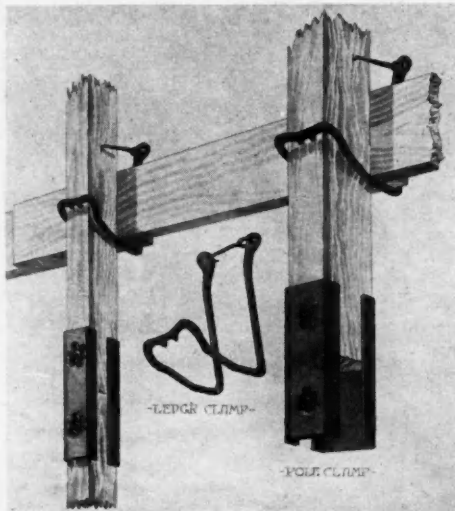
Start Right

If you are interested in the manufacture of concrete building blocks, or cement bricks—in fact anything that has to do with concrete, you can save money by writing to J. H. Emery, 807 West Midland street, Bay City, Mich. Money, with the average contractor, talks, and in the construction of concrete blocks, and cement bricks, there has been a great deal of money, while not totally lost, at least misspent, owing to the fact that the beginner in this line of work does not know exactly how to handle the manufactured article, while he may know perfectly well all about its construction. Mr. Emery, with years of experience, knows how, and is willing to start you out right, and show you how to save money where others sustain a loss. He will sell you plans

for either a large or small concrete block or cement brick plant and show in these plans every detail of handling blocks and bricks. It will cost you practically nothing to write Mr. Emery for details of his plans and it will surely work for your own benefit.

Two New Labor Saving Devices

Kingston has added two of the greatest labor saving devices to his inventions that have yet been discovered—a ledger and



pole clamp for building a stage outside or inside of a brick, stone or cement building, enabling the builder to do away with all nails, splitting and breaking ledger poles and also saving very much time and expensive labor by putting up a stage with these simple

but effective devices. As they are much cheaper to use for inside work than the old-fashioned horses and make a much stiffer stage, it is absolutely necessary for the up-to-date builder to use them, and when not in use they take up less room and are handled more quickly than the old wooden

THE REASON WHY



Amatite ROOFING

Needs
No
Paint—



The enlarged diagram above tells the story.

If you examine it you will notice that it is composed of five different layers.

In fact, Amatite is made on a different principle from any other roofing. Instead of a smooth skin coating *made to receive a coat of paint*, Amatite has a rough surface of small particles of hard silicious rock such as seen in quartz or other hard stone when examined under a microscope.

This mineral surface is chosen for its weather-resisting qualities, and does away *absolutely* with *painting and coating*.

Underneath the mineral surface are alternate layers of long-fibre, wool-stock felt of the best grade, and between each sheet and under the mineral surface on the top is a layer of a specially prepared Coal Tar Pitch, *the greatest waterproofing material known*.

This short description will give you some idea of how carefully Amatite is constructed and what effective protection it will give against weather of all kinds.

FREE SAMPLE

The best proof, however, is to see a Sample, which we will send to any one free upon receipt of name and address. Write to nearest office.

Barrett Manufacturing Company

New York Chicago Cleveland Allegheny Kansas City St. Louis Boston
Minneapolis Philadelphia New Orleans Cincinnati London, Eng.
Paterson Mfg. Co. Ltd., Canadian Agents, Toronto and Montreal.

ANDREWS HOT-WATER HEATING

YOU WILL UNDERSTAND OUR PROPOSITION BEST, PERHAPS, if you will think of our Business as divided into 2 BRANCHES.

As a matter of practical operation these two branches intertwine and overlap considerably—there are many economies and advantages which one branch affords the other—and, as you get the benefit of these economies, we feel it will interest you to know why and how it is possible for us to give you more real value and efficiency for your money than can any other heating concern in America—this we believe we are doing every working day of the year.

As we started to say, you will understand us best when you divide our business in your mind's eye into two:

ONE BRANCH IS—

Selling Andrews Hot-Water Systems (all ready to erect—from factory to user).

These are heating plants for residences, banks, stores and average-size buildings; say up to 24 rooms (although it is hard to draw the line). The full particulars about these plants, cost, simplicity and fuel economy, are given in our 72-page Book, "Home Heating," which we will send postage paid, if you will send us your name and the names of two other persons likely to be interested in the purchase of a heating plant.

THE OTHER BRANCH IS—

The Heating of Big Buildings or Groups of Buildings—Contracts \$5,000—\$10,000; up to \$50,000 or more—embracing high pressure and vacuum steam heating, hot blast ventilating and large hot-water forced-circulation heating plants;—in short, the most approved modern appliances for heating, adapted to every requirement. We design, manufacture and erect. We assume the responsibility for the entire heating undertaking and deliver plant in full operation.



Clarence H. Johnston, Arch't.

Main Building, University of Minnesota.

Elliot Bros., Contractors.

ON LARGE WORK.

We have two plans of operation—two methods of handling the business intrusted to us—the matter of choice is in the hands of the purchaser.

(1) We believe the modern method of "Cost-plus-a-fixed-sum" is, on the whole, the fairest and most satisfactory. Among its advantages are that the purchaser gets at a reasonable cost our highest skill and best service; and, also the greatest expedition, without paying a bonus for those elements of risk which are a necessary incident to contracting—that is, a "margin to go and come on", which every contractor must add to his estimate of the cost, in order to enable him to "play safe." If you are interested, we will be pleased to go over the advantages and disadvantages of the "cost-plus-a-fixed-sum" plan. It is certainly worth consideration.

(2) Our other plan is the commonly recognized method of fixed contracts according to plans and specifications prepared in advance.

We do business upon both these plans, according to the wishes of the purchaser.

HAVE YOU A LARGE BUILDING TO HEAT?

Let us give you plans, specifications and an estimate.

We will either undertake the job under a contract, or build on the "cost-plus-a-fixed-sum" plan; you to determine after we have made a preliminary estimate. We are the largest manufacturing contracting heating concern in America, equipped to install large heating plants promptly for any purpose.

Among our recent contracts are: exhaust and vacuum steam heating and ventilating plants for two new buildings of the University of Minnesota (one of which is shown on this page); business blocks and school buildings in several dozen cities and towns from Winnipeg, Manitoba, to Atlanta, Georgia; a steam vacuum plant containing over 10 miles of pipe for the new shops of the Chicago City Railroad, the largest single building of this kind in the world; and the new shops of the Minneapolis and St. Paul Street Railway System (lying between these two Cities) consisting of a number of large manufacturing buildings, the entire establishment, acres in extent, to be heated from a central heating plant.

ADVANTAGES OF THIS DUAL BUSINESS.

It must be apparent that there are many advantages to the purchaser from the combination of the two branches. We used over five million pounds of iron and steel in our business during the year 1906. The mere saving in prices in pipe, radiation and fittings below what would be paid by the small dealer, it must be apparent, give us a decided advantage. Our factory is equipped with the latest devices for handling



all the work with the least cost—not to mention doing better work than can be done under any circumstances, even by the best intention on the part of the small dealer. With our high salaried engineering force and our perfect system of checks and supervision it is practically impossible to make the mistakes incident to the average mechanic's cut-and-try methods.

All this is more clearly demonstrated in the 72-page Book "Home Heating." Your own name with those of two others interested in heating will bring it to you free.

616 Heating Bldg.
MINNEAPOLIS

ANDREWS HEATING CO.

559 LaSalle Bldg.
CHICAGO

horses. Mr. Kingston is now associated with the Boston Bolt Company, 40 Farnsworth street, Boston, Mass., and a postal to them will bring a descriptive circular of all Mr. Kingston's money and labor saving devices and any other information wanted.

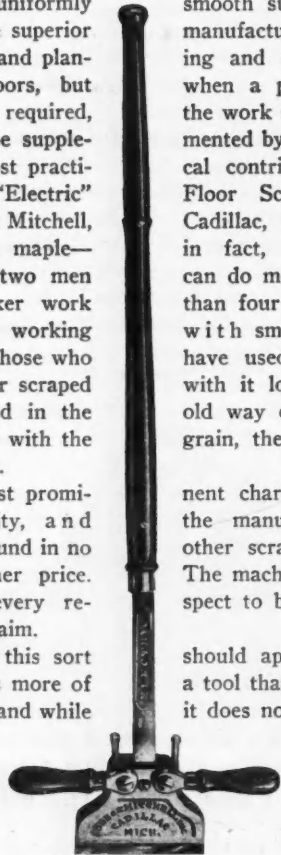
The "Electric" Floor Scraper

One of the many perplexing problems which confronts the builder is how to get a satisfactory and inexpensive method of producing a uniformly smooth surface after lay-manufacture of modern flooring makes hand planing and scraping useless when a perfectly smooth polished floor is required, the work of the best man-ufacturer must be supplemented by the builder.

One of the most practical contrivances ever invented is the "Electric" Floor Scraper manufactured by Cobbs & Mitchell, dress pine, oak, maple—and by its use two men work, and quicker work the old process, working hand scrapers. Those who claim that a floor scraped any floor scraped in the and then planing with the hand scraper.

One of its most prominent characteristics is its extreme simplicity, and the manufacturers claim other scraper, even those for it, abilities found in no The machine is absolutely guaranteed in every spect to be just what the remanufacturers claim.

A machine of this sort inasmuch as it is more of a much higher price. is not expensive, and while it does not require an expert to run a machine of this sort, still experience brings more satisfactory results. The investment is very small and consequently the machine is paid for after having been used but a few times.



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Write for their illustrated catalogue, which shows you the "Electric" in all detail.

A Wonderful Combination Tool

The combination tool advertised by the Macomber Manufacturing Co., of Plainfield, Ind., is made of iron and steel, there being no wood to warp or split, and each tool is just as effective and valuable as one made for that purpose alone. It is quickly adjusted from one tool to the other, and can be knocked down or set up in a few seconds. It can be fastened to any bench, counter, beam or any flat surface 6 inches in diameter. The total weight is about forty pounds. Any ordinary saw may be used from either the front or rear of the machine, it turns on a round post, and can be tightened anywhere in the circle, by a set screw. The wood-worker's vise has 8 inch jaws, and the front jaw is swung on spring ratchets, and may be adjusted to hold odd shaped pieces when desired. The saw filing clamp has a rubber cushion in the rear, which makes filing a pleasure. A revolving miter box is attached in five seconds and set to different angles by a graduated arc, and held by a thumb screw. By removing the saw roller, material up to the capacity of the saw may be operated on. The corner clamp is one of the most valuable features about the machine, it clamps and holds rigid anything coming together at right angles, all kinds of frames, boxes, buggy beds, etc., while being fastened or braced. The two carriage clamps are good and strong, weighing about

What are You Worth from the Neck Up ?



It is estimated that the average man is worth \$2 a day from the neck down—what is he worth from the neck up?

That depends entirely upon training. If you are trained so that you can plan and direct the work of others, you are worth ten times as much as the man who can only do the work that others plan.

The INTERNATIONAL CORRESPONDENCE SCHOOLS go to the man who is struggling along on small pay and say to him, "We will train you for promotion right where you are, or we will qualify you to take up a more congenial line of work at a much higher salary."

What the I. C. S. says it can do, it will do, which is proved by the fact that it has already enabled thousands upon thousands of others to advance as you wish to advance and can if you have sufficient will-power. These men have multiplied their wages many times simply as a result of marking an I. C. S. coupon.

In this day of demand for leaders a young man has no reason whatever for thinking he can only earn small wages. The I. C. S. can readily qualify him for a higher salary.

Back your trained hand with a trained head. It pays big. This coupon is for YOU. Mark and mail it at once.

International Correspondence Schools
Box 910, Scranton, Pa.

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

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

Name _____
Street and No. _____
City _____ State _____

This 59-Year-Old Tin Roof illustrates the old-time Quality of "TARGET-AND-ARROW OLD STYLE" TIN



IT is the home of Mr. D. W. White at Hebron, Connecticut. Although laid fifty-nine years ago, the tin is still in good condition, there being no leaks except in the gutters. In arranging to repair them, the owner wrote us for prices on our tin.

"Target-and-Arrow Old Style" tin is the only kind now made by the old hand-dipped process, and this process is the only one which has produced tin giving the service above presented.

Another instance of the durability of our "Target-and-Arrow" brand comes to us from Spring City, Pa. Two roofs laid with this tin by Mr. John McFeat, a roofer of that place, in 1865 and 1869, respectively, are still giving good service.

Our booklet, "A Guide to Good Roofs," sheds a good deal of light on the roofing question. We send it free to any architect, builder, roofer or houseowner who asks for it.



This trade mark stamped on each sheet of genuine, original "old style" tin.

N. & G. TAYLOR COMPANY

Established 1810

Philadelphia

six and one-half pounds each, and are not the kind to get out of alignment. The picture frame mitering machine and nailing vise clutches and holds any size or shaped moulding up to six inches wide while being either mitered or nailed, and the saw may be used from either the front or rear as the moulding requires. The machine is worth twice the price asked, and its merits should be investigated by every woodworker. Write them for Folder B, giving further particulars.

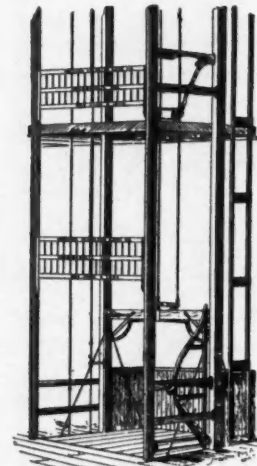
Tile Ready to Lay

The Wisconsin Mantel & Tile Co. have an attractive advertisement on page 282 of this issue, in which they offer to furnish tile in white, colors, or designs, delivered to any part of the country, all ready to lay. Send them a plan of floor or wall space to be tiled and they will quote prices delivered to your station, and will also submit designs if desired. They carry a complete stock and can make prompt shipments. This firm makes a specialty of laying tile floors or supplying tile for them, and is prepared to execute work in any locality. They also carry mantels and everything pertaining to them in the way of trimmings, such as andirons, fire sets, screens, etc. Write them for further information. Address Wisconsin Mantel & Tile Co., 420 Milwaukee street, Milwaukee, Wis.

Safety Gates for Elevators

In this day and age when every man who has the skin scraped from his knuckles is looking for damages, it certainly pays the man who owns a building with an elevator in it to have safety gates on each floor at the elevator hatchway. Some men think a bar laid across the opening will do, but such an arrangement is worse than nothing. If you have nothing to protect the hatchway your men will try to keep that fact in mind. If they forget and step from the third or fourth floor into the cellar, then look for a damage

suit. If you have a bar for the hatchway and someone forgets to put it up, your men are depending on it being up and the first thing you know someone goes down the shaft, and the owner of the building is good pay—at least the building is good for a judgment.



The above cut shows two floors of a building with Full Automatic Gates at each floor, the elevator being at the lower floor and the gate open.

There is only one safe and sure way to have protection for an elevator shaft, and that is by having gates that work automatically. A full-automatic gate opens as the car comes to a floor and closes as the car leaves the floor. A half-automatic gate is opened by hand when the car stops at a floor and closes automatically as the car leaves the floor, and if it is the right kind of a half-automatic gate it will not stay open unless the car is at the floor to keep it open. The Elder Manufacturing Co., of Indianapolis, Ind., are furnishing gate irons for both their full-automatic and half-automatic gates, to elevator builders, contractors and repairers, and furnish them blue prints showing how to make the wood-work

and how to erect the gates. Any carpenter or mill can make the wood-work and any good carpenter can erect the gates by the blue prints. By buying the irons for the gates and making his own wood-work the purchaser saves both the freight and damage in shipment on that part. The Elder gates have the most simple and effective device of any on the market and neither their full-automatic or half-automatic has a

No. 577

GRILLES

NET PRICE

in pine, plain sawed oak, birch, cypress or woods of equal value, for opening 8' x 8' **\$24.00** in white.

Other sizes in proportion. Extension from wall 16." Posts 3 1/2" dia.

We show 190 new designs in new catalog. SENT FREE.

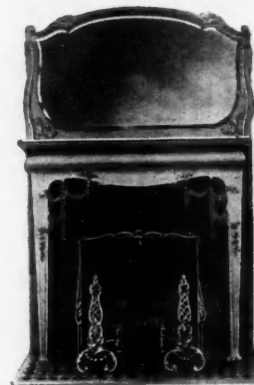
No. 528

5' x 1' **\$4.75** in white.

Decorators Supply Co.

Archer Ave. and Leo St. CHICAGO, ILL.

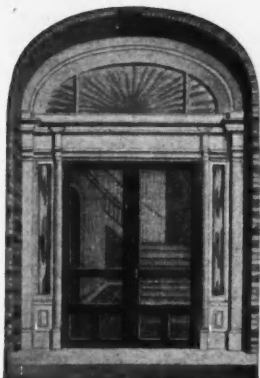
Mantels of Quality
Direct From Factory To Consumer



An artistic mantel adds a tone of luxury and refinement to a room that is afforded by no other piece of furniture. When buying it is well to select from a line that is designed by the world's most famous artists and designers. We employ the most skilled talent in every department and are equipped to turn out strictly high grade goods and by making them in large quantities and selling "direct to the consumer" we are able to save you from 35% to 50% on your purchase. Send 10 cts. in stamps for our large book entitled "Science of Mantel Making" which illustrates 100 up-to-date designs.

CENTRAL MANTEL CO.,

1247 Olive Street, St. Louis, Mo.



Good Screens Pay

With ordinary care "Cincinnati" Fly Screens will last as long as your house itself. They always work smoothly, never stick, for the frames are made of thoroughly seasoned wood which will not warp.

"Cincinnati" Screen Doors conform in design to house door.

Our netting (enameled steel or bronze) is fine enough to **exclude mosquitoes** and insects as well as flies. Its dull finish prevents any "glare." The method of holding this netting in place, construction of frames, springs, etc., have all been developed by years of experience.

No two doors or windows are exactly alike. Cincinnati Fly Screens are, therefore, built to order only and shipped direct from factory to you.

Our illustrated booklet "How to Screen Your Home" will save you money and add to your comfort. Write for it.

The Cincinnati Fly Screen Co.

1050 Evans Street

CINCINNATI, - - - OHIO

Show Your Customers

The latest popular effects on oak and pine. We will send to every contractor and painter one of our cases containing samples of these woods finished with our **EZYFLO DURABLE VARNISH**.

Write for them today, they are free for the asking.

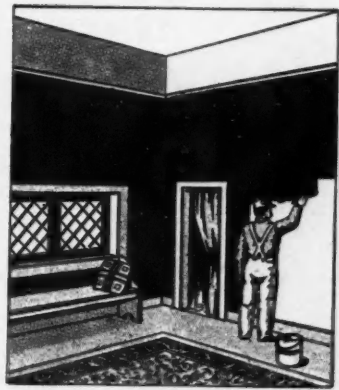
We make a variety of wood-finishing materials and it will pay you to get our prices and trial proposition.

The Excelsior Varnish Works

1228-1238 W. 74th Street

CLEVELAND, O.

N. B.—Note our address; we are not connected with any other companies of similar names.



WHY NOT BEAUTIFY YOUR HOME WITH

Ashbaugh's

Sanitary Wall Finish

A high grade flat finish, Lead and Oil Paint. Harder than Enamel or Varnish and will wash better. ✻ ✻

For further information and prices write

THE COLUMBUS WHITE LEAD COMPANY

142-144 S. Front St. COLUMBUS, O.



Rosenberg's Automatic Ventilating Sash Lock

Side Line for Carpenters Big Money In It

(Absolutely Burglar Proof.) Easily and quickly applied without cutting sashes. Impossible to pry off or to pick from outside.

Prevents Rattling of Windows

as it draws the sashes tightly together no matter how far separated.

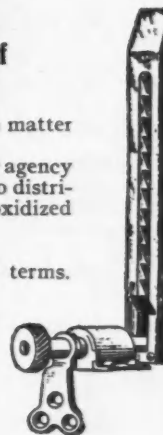
Will send to any carpenter who applies for agency a mounted Model Sash, printed literature to distribute among his customers and 4 locks in oxidized copper finish on receipt of \$2.00.

Write for our booklet—it is free.

It gives full description and wholesale terms.

Safety Window Lock & Ventilator Co.

17-21 Quincy Street, Chicago

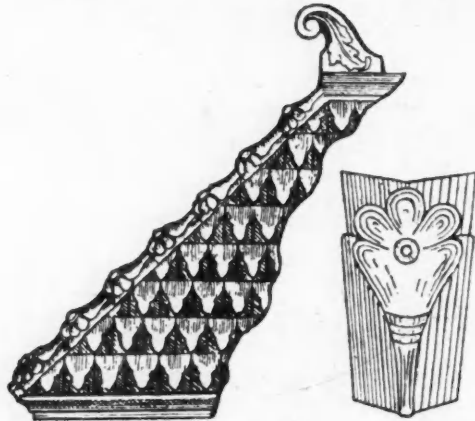


spring in their make up—the longer they work the better they work.

There is a good profit in selling automatic gates, not only for new work, but for putting up gates for old elevators already in. If you write to the Elder Manufacturing Co., of Indianapolis, Ind., they will be pleased to quote you prices and send you circulars.

An Ornamental Hip Covering

The illustration below shows a most practical hip covering, manufactured by the Indianapolis Steel Roofing and Corrugating Co., of Indianapolis, Ind. While it is absolutely water proof, and can be laid water tight at a saving



of expense, it is at the same time very ornamental. The illustration shows what a neat finish it gives the roof. These hip shingles are adjustable to the length the roof shingles lay to the weather and they lay perfectly flat on the roof, so that there are no openings as in the case of metal strips

or metal rolls. The prices quoted include delivery to any point in the United States east of the Rocky mountains: 4-inch by 7-inch hip shingle, 1,000, \$20; 500, \$11; 250, \$5.75. 4-inch by 9-inch, 1,000, \$22; 500, \$12.50; 250, \$6.50. 5-inch by 12-inch, 1,000, \$37.50; 500, \$19.50; 250, \$10. Freight will be prepaid upon receipt of price. The 4-inch by 7-inch hip shingles are to be used where the roof shingles lay 5 inches to 6 inches to the weather, and the 4-inch by 9-inch where the roof shingles lay 6 inches to 7 inches to the weather. The 5-inch by 12-inch shingles are for use on slate roofs.

This company has a very attractive advertisement on another page on steel ceilings. They will be glad to give further information regarding either their hip shingles or steel ceilings if you will write direct to their plant, 23-25 East South street, Indianapolis, Ind.

Fly Screen Agents Wanted

The Cincinnati Fly Screen Co., 1050 Evans street, Cincinnati, O., are looking for agents for their fly screen. This is an excellent opportunity for you if you are an enterprising carpenter or builder. By writing now you can secure the agency of this well known fly screen company in your section. Write them direct, mentioning the AMERICAN CARPENTER AND BUILDER. In any event, get their new booklet, "How to Screen Your Home," which is sent free.

Case of Wood Samples Free

The Excelsior Varnish Works of Cleveland, O., make an offer that is especially interesting to contractors and painters. They will send, free of charge, one of their neat and attractive cases of wood samples, showing the different effects that can be produced on oak and pine. These cases are especially valuable in showing customers the finishes that are artistic and popular. The samples are finished with their Magic Surfacer, as a first coater, and Ezyflo Durable Varnish

Get This Gold Pair Free!



SPECTACLE-WEARERS Listen! I want to prove to you positively that the Dr. Haux famous Perfect Vision Spectacles are ever so much better than any you have ever used before—and that is the reason why I am making the following very extraordinary proposition, whereby you can get a handsome Rolled Gold pair absolutely free.

HERE IS MY SPECIAL ADVERTISING OFFER:

Send me your name and address and I will mail you my Perfect Home Eye Tester, free.

Then when you return me the Eye Tester with your test, I will send you a complete five dollar family set of the Dr. Haux famous Perfect Vision Spectacles for only \$1, and this will include a handsome pair of Rolled Gold Spectacles absolutely free of charge.

I also hereby positively agree to return you your dollar willingly if you yourself don't find them to be the most perfect-fitting, clearest and best you have ever bought anywhere, at any price.

Send for my free Eye Tester today. Address

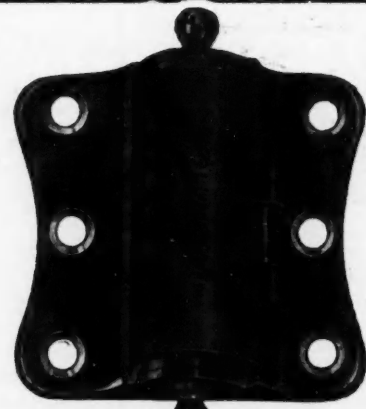
DR. HAUX SPECTACLE CO.

Haux Building,

St. Louis, Mo.

I WANT AGENTS ALSO

(NOTE—The above is the largest Mail Order Spectacle House in the world, and absolutely reliable.)



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

BURLINGTON



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

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

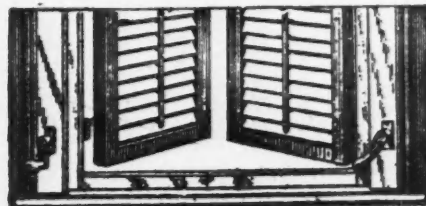
Equal 500 miles northward. Perfect privacy with doors and windows open. Darkness and breezes in sleeping rooms. Write for our catalogue, price list and proposition to you.



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

BURLINGTON VENETIAN BLIND COMPANY
950 Lake Street, Burlington, Vermont

MALLORY'S



Standard Shutter Worker

New and improved patterns and designs.

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

YOU CAN BUILD YOUR HOUSE BUT ONCE

SO have a care how you build it. Don't try to practice economy by letting price instead of quality influence selection of materials.

Use good materials all through. To save on first cost usually means to pay the difference many times over in the years that follow.

For example, every house should be covered from foundation to ridge-pole with

LINOFELT

Linofelt will keep your house warm and comfortable in winter. It will save more than its entire cost in your heating expense. Linofelt will keep your house cool in summer, too, for Linofelt is the best non-conductor of heat and cold made.

It will cost you a little more, but, by actual test, quarter-inch Linofelt has been proven to resist the passage of heat 40 per cent more than ordinary rosin-sized building paper.

Linofelt is made of **degummed flax fibre** encased between two sheets of rosin-sized paper. Degummed flax fibre is the fibre of flax straw from which all the gum has been extracted, leaving millions of minute air spaces, through which heat or cold passes only with greatest difficulty.

Linofelt is like a blanket, and it's warmer than any blanket you ever saw. ¶ It is clean, antiseptic and odorless, and is vermin proof. ¶ This testimonial is like hundreds of others in our possession, telling what users think of Linofelt.

IVES GROVE, Wis., January 28, 1907.

UNION FIBRE COMPANY, Winona, Minn.

Gentlemen:—I have your letter of recent date, inquiring as to results obtained from your No. 1 and "Frost Proof" Linofelt, and in reply will say that we have used this for three winters in the house and for two winters in the barn. Our two large rooms are 44x18 feet, 9½ feet high, and we have only used one large base-burner stove and in the coldest days we have had (being 28 degrees below zero), the further end of the room was never colder than 58 degrees.

In the barn, which is 62x38 feet, with cement floor, and an eight-inch air space, we have also used this material, and find that the barn is never colder than 38 to 40 degrees above, with the cattle and horses therein. In this barn we have King's system of in and out ventilation, so that the barn is absolutely odorless. I would recommend your materials to every one wishing a warm building of any kind. I am now going to erect an ice house for farm purposes, and also a home creamery, and will use your materials throughout.

Very respectfully yours,

C. O. OLSON.

Send for free sample and booklet which tells more about Linofelt, and more about its uses. It's just the thing, too, for barns and poultry houses.

UNION FIBRE CO. 106 Mechanic St. WINONA, MINN.



The Ewing Cement Fence Post is the New Universal Post

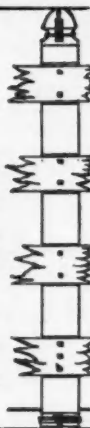
Any kind of Fencing material, either singly or in combination, can easily be fastened to this post by either wiring, stapling or nailing. Each Post forms a Lightning Conductor

To quickly introduce our Post, the first 100 county rights will be sold at \$10 each, the second 100 at \$15 each. Regular price, \$25.

The above price includes blue prints showing method of constructing mold box. A Three-post Wooden Mold Box will be furnished for \$5 additional.

The sale of a farm right or two will give you the balance of the territory free.

This Post makes a great side line for the Concrete man.



Ewing Fence Post Co., Akron, O.

ON THE SQUARE Thousands have my works. Have U?

STEEL SQUARE POCKET BOOK, second edition, 159 pages, 150 cuts, cloth bound 50 cents.
FOLDER, third edition, 25 cents.
BOOKLET on DESIGNING, second edition, 30 cents, all for \$1.00.

DWIGHT L. STODDARD

328 W. Raymond Street

INDIANAPOLIS, IND.

PATENTS

C. L. PARKER

Attorney-at-Law and Solicitor of Patents

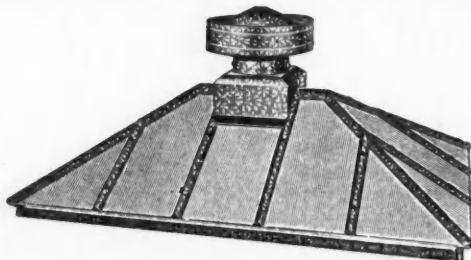
American and foreign patents secured promptly and with special regard to the legal protection of the invention. Handbook for inventors sent upon request.

20 Dietz Building :: :: Washington, D. C.

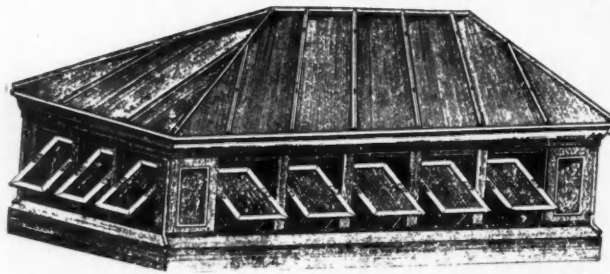
as a finishing coat, and they illustrate what can be accomplished with finishes that are of the highest quality and reasonable in price. Their trial proposition and prices are well worth inquiring for. In writing to them, note their address—they are located in Cleveland, O., and have no connection with other companies of similar names.

Satisfactory Skylights

Nearly every contractor and builder has use for metal skylights. The Willis Manufacturing Company, of Galesburg, Ill., manufactures a full line of these goods, and the illustrations herewith give a very good idea of the strength and durability of their product. The skylights are provided with condensation gutters and bars and are guaranteed not to leak. Putty is not necessary except to keep the dust from sifting through. Their No. 20 can be made knocked down and it is advisable that they be shipped in that way, as the freight



charges and chances of damage are much reduced. These skylights can be set up by any person of ordinary ability without the use of soldering outfit or any other tools except a hammer. Simple instructions are forwarded with each shipment. The side sash on No. 70 C are operated in batteries by a mechanical device manufactured by the Willis Manufacturing Company. For ventilating purposes these sash can be opened from the floor with a cord. This enables the sash to be placed in any position desired. The skylight



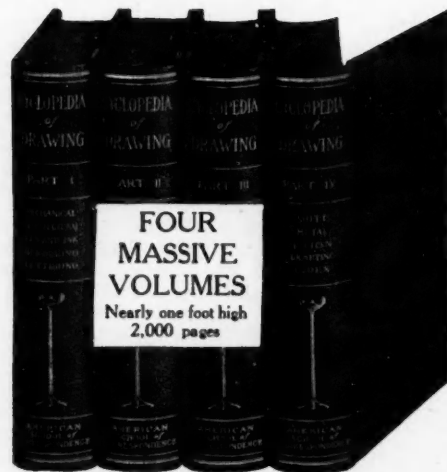
can be made with each sash operated separately, if it is desired, but it is found that the battery system gives better satisfaction and the manufacturers strongly advise its use in this way. The Willis Manufacturing Company also turn out photographers' skylights in all sizes which can be erected

by local mechanics. They will be pleased to name prices upon receipt of size and style of openings desired. Either ribbed or ground glass can be used. All glass is cut to fit and packed in separate crates.

The Willis Manufacturing Company is also the originator of the famous Willis Hip Shingle. This is a metal shingle so formed as to make a hip roof absolutely water tight and give a decorative appearance. This shingle is being used by up-to-date contractors throughout the entire United States. Catalogues and full information will be forwarded on request.

Concrete Machinery

A line of concrete machinery is being offered by the Queen City Brick Machine Company, of Traverse City, Mich., which will prove especially interesting to the contractor and builder. This line is comprised of machinery necessary to make products which will meet satisfactorily the needs in all classes of structures. Many home builders do not feel inclined to build with blocks without furring and lathing in order to prevent moisture from showing on the inner surfaces. This is entirely obviated by the dry wall block system presented by this company. The wall consists of a hollow outer wall, a hollow inner wall and a continuous air space between the two, yet each block binds on three others, thus making a very substantial wall, while at no point is there a bond of



FREE
for five days' Examination.

Turn Your Spare Time Into Money

FOUR MASSIVE VOLUMES
Nearly one foot high
2,000 pages

CYCLOPEDIA OF DRAWING

Especially prepared for The Carpenter and Builder

Handsomely bound in red morocco. Type is large, new, easy to read—fully indexed—most practical work on drawing published. The Cyclopaedia is compiled from our regular instruction books, which have been tested by thousands of practical men. Each volume contains a series of test questions to emphasize vital points. Prepared especially for HOME study in a simple, understandable way.

HALF PRICE FOR 30 DAYS

Now \$12. Regular Price, \$24

Sent, express prepaid if you mention May, '07, American Carpenter and Builder. Pay \$2 cash and \$2 a month, for five months, if you keep the books. We send for them at our expense if they do not meet your needs.

The only reason we offer the CYCLOPEDIA OF DRAWING at such a low price is to interest the public in the extraordinary advantages offered by the regular courses of the American School. A 900-page handbook sent free on request if you mention the American Carpenter and Builder.

Among the Chapters

Architectural Lettering, Pen and Ink Rendering, Architectural Drawing, Perspective Drawing, Shades and Shadows, Roman Orders of Architecture, Working Drawings, Mechanical Drawing, Machine Drawing, Shop Drawings, Machine Design, Tinsmithing, Sheet Metal Work, Skylights, Roofing, Cornice Work, etc.

**AMERICAN SCHOOL OF CORRESPONDENCE
CHICAGO**

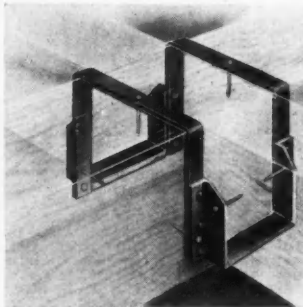
PREVENTS DRAFTS, DUST AND WINDOW RATTLING.
IVES' PATENT Window Stop Adjuster.

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.)

**JOHN A. ROWE
CUT STONE WORKS
Bedford, Ind.**

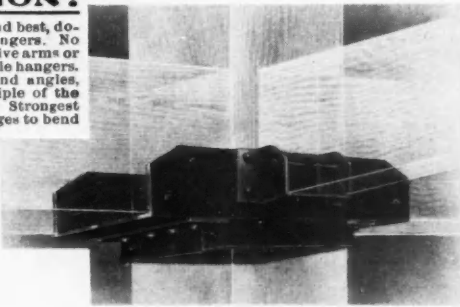
Cut, Planed and Turned Bedford Stone in any quantity

**THE "HEUGHES" PATENT STEEL JOIST HANGER AND STEEL POST CAP
STEEL CONSTRUCTION!**



The "HEUGHES" STEEL JOIST HANGERS are the latest and best, doing away with the faulty construction of old method hangers. No need of using the old single joist hanger, with its defective arms or flanges, or paying extra for splicing together of two single hangers. Modern steel construction—the uniting of steel plates and angles, through the medium of rivets, is the strong principle of the "HEUGHES" Hangers! Simplest construction! Strongest carrying capacity! Most reliable! Has no flanges to bend or straighten out! Is easiest and quickest attached.

The "HEUGHES" STEEL POST CAP does away with the weakness developed by heating and bending steel plates, as practiced in other makes of steel post caps, which do not have the fillet of rolled angles. The "HEUGHES" STEEL POST CAP of structural angles with fillet is far superior in strength and form to the bent plate without a fillet.



SEND FOR BOOKLET.

F. L. HEUGHES

"Heughes" Double Joist Steel Hanger

190 South Avenue.

ROCHESTER, N. Y.

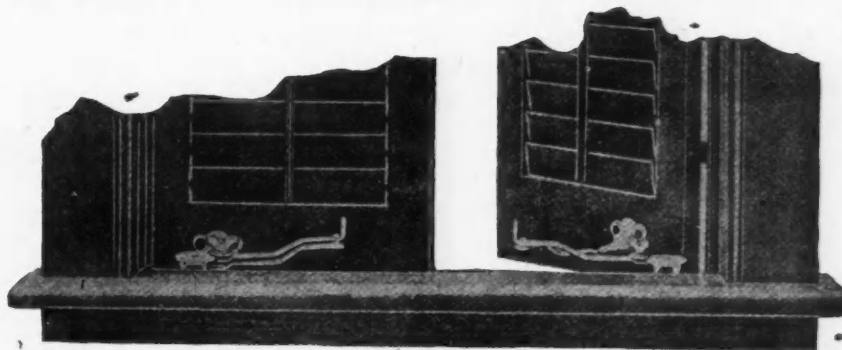
"Heughes" 4-Way Steel Post Cap

"A Daily Comfort"

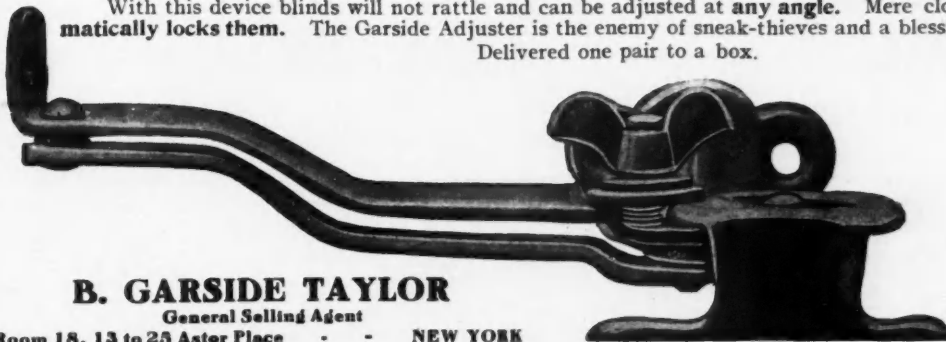
"A Protector in Time of Need"

The Garside Blind Adjuster

Neat,
Strong,
Durable
and
Moderate
in Price



With this device blinds will not rattle and can be adjusted at any angle. Mere closing of the blinds automatically locks them. The Garside Adjuster is the enemy of sneak-thieves and a blessing to the householder. Delivered one pair to a box.



Put on in one-fifth the time necessary with any other adjuster on the market.

It is your interest to investigate our claims. Will you drop us a postal

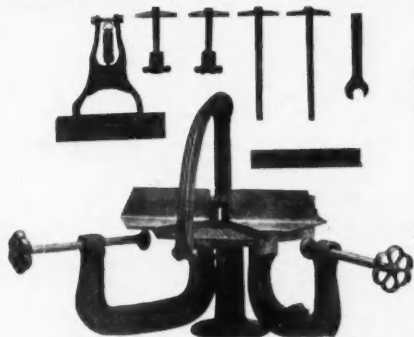
NOW?

B. GARSIDE TAYLOR

General Selling Agent

Room 18, 13 to 25 Astor Place - - NEW YORK

SOMETHING NEW, WONDERFUL, VALUABLE AND USEFUL



7 combined in 1---1 divided into 7

Never in the annals of tool history has as valuable a tool been offered as cheap. High Grade Tools as follows:

- 2 "C" Clamps. 1 Saw Filing Vise. 1 Revolving Miter Box.
 - 1 Wood-worker's Vise. 1 Picture Frame Mitering Machine and Nailing Vise. 1 Universal Corner Clamp.
- \$33.00 worth of tools, from the factory direct, Special Offer, \$13.95.

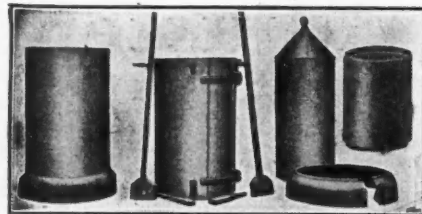
SEND FOR FOLDER B

Macomber Mfg. Co., Plainfield, Indiana, U. S. A.

concrete reaching from one surface to the other, thus providing no means for moisture to pass to the inner surface. This necessarily means quite a saving in construction. Cement brick need no introduction to our readers, as their merits and advantages have been fully demonstrated. For the Helm Cement Brick Press a superior quality of product is claimed, since the brick are pressed under a strong uniform pressure, thereby securing uniform density in the product with the least possible porosity. It is recognized that a medium wet mix tends to make a stronger product as well as more impervious to moisture. The rapid pressing operation of this machine makes it possible to use a very wet material. This company is mailing out some very attractive booklets illustrating and describing their complete line, which includes everything for the brick and block plant.

Wolverine Sewer Pipe and Tile Molds

Making cement pipe and tile is the most profitable branch of the whole concrete industry. The Cement Machinery Co., of Jackson, Mich., have just put on the market the Wolverine Drain Tile Molds.



For \$44.50 they furnish a complete outfit for making 18-inch bell end pipe. When you have sold fifty pieces of 18-inch pipe (100 feet) you will have paid

for your outfit and have a nice profit besides. For \$57.50 they 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.

Webster's International Dictionary

Every carpenter and builder who has not a dictionary in his home should secure a copy of Webster's International Dictionary, an advertisement of which appears on another page. It contains 2,380 pages and 5,000 illustrations, and in addition a supplement containing 25,000 new words recently added. Write to G. & C. Merriam Co., Springfield, Mass., for a neat little descriptive booklet, "The Story of a Book." It will be sent you free.

Classified Advertisements.

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

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WANTED—Carpenters to read our ad. on page 288. Gage Tool Co.

LUMBERMEN WANTED—In all branches of the lumber trade positions are open and waiting. If you are open to engagement or advancement with a good company let us represent your interests. We have written agreements with over 600 glitgedge lumber concerns in the United States, Cuba, Canada and Mexico. 5,000 lumbermen indorse our methods. We guarantee positions to men of ability in the following: Superintendents Saw and Planing Mill Foremen, Inspectors, Yard Managers, Machinists, Logging Superintendents, Sawyers, Filers, Managers, Estimators, Buyers, Salesmen, Draughtsmen, Bookkeepers, Office Managers, Stenographers, Woodsforemen, etc. Write us today, enclosing stamp, for full information. Mason's Agency, Nashville, Tenn.

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LEARN BY MAIL—Law, Bookkeeping, Shorthand, Mechanical Drawing, Illustrating, English, Penmanship, Arithmetic, Business Forms, etc. **MONEY BACK** if not satisfied. 28 Colleges in 16 States; 17 years' success. 70,000 students. Indorsed by business men. For "Catalog H. S." on Home Study, or "Catalog C" on Attending College, write **DRAUGHON'S BUSINESS COLLEGE CO.**, Nashville, Tenn.; St. Louis, Mo.; Raleigh, N. C.; Dallas, Tex.; Atlanta, Ga., or Evansville, Ind.—U. S. A.

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WOOD WORKING MACHINERY—Band Saws, Jlg 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.

Sealed Proposals.

NOTICE TO CONTRACTORS. Sealed proposals will be received at the office of the Loyal Guard, 2nd floor, Citizen Building, No. 112 South Saginaw St., Flint, Michigan, until twelve o'clock noon on the 20th day of May, 1907, for the erection and completion, excepting Heating, Plumbing and Electric Wiring of a stone office building, for the Loyal Guard, Flint, Michigan, according to plans and specifications as prepared by Pratt & Koeppel, Architects, Bay City, Mich.

A certified check in the sum of six hundred dollars, made payable to the order of F. H. Rankin, Supreme Recorder, must accompany each proposal as a guarantee that the contractor awarded the contract will furnish a good and sufficient bond, within ten days, in the sum of fifteen thousand dollars, that he will complete said contract in accordance with said plans and specifications. Plans and specifications will be on file on and after April 22nd, 1907, at the office of the Loyal Guard, in Flint, Michigan, and at the office of the architects, Pratt & Koeppel, Bay City, Michigan. Also with James Findlater, General Manager for Detroit, Room 302 Loyal Guard Building Detroit, Mich.

The right is reserved to reject any and all bids.
 For all information desired, apply to F. H. Rankin, Supreme Recorder Loyal Guard, Flint, Mich.

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We Employ No Agents to bother 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.

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— CHICAGO

— American Carpenter and Builder, May 1, 1907.



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Our Catalog Explains All

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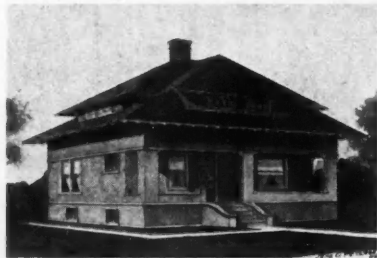
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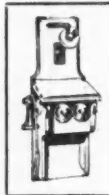
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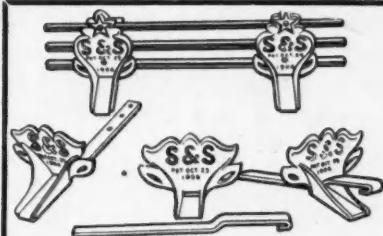


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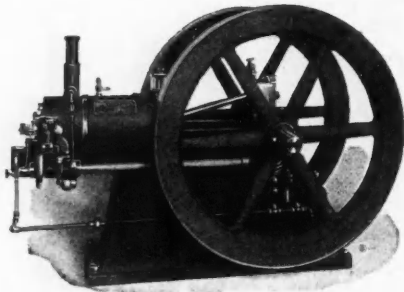
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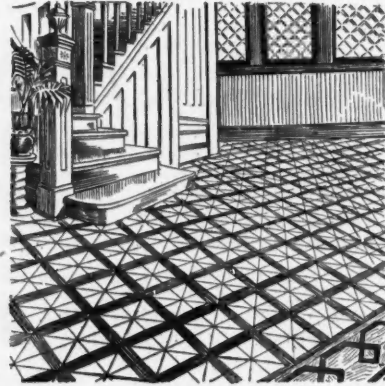
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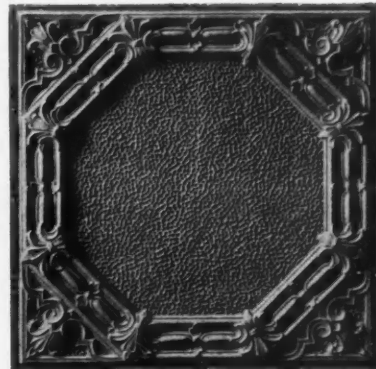
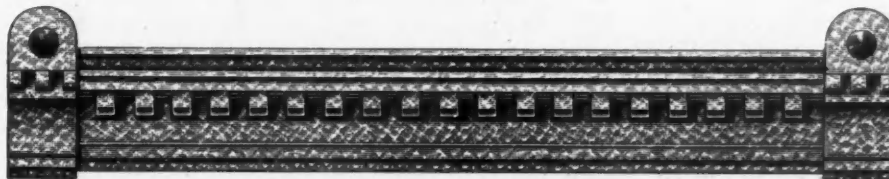


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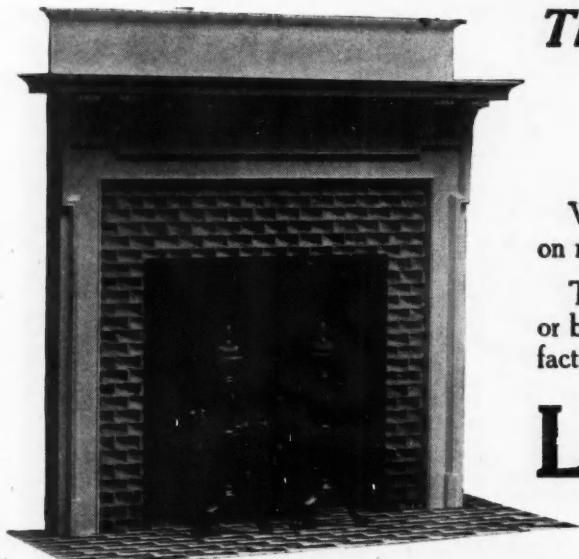
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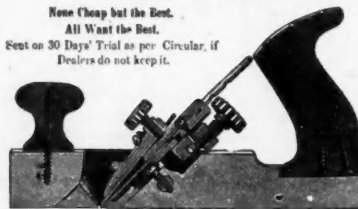
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HAS AN ADJUSTABLE IRON THROAT.
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Costs
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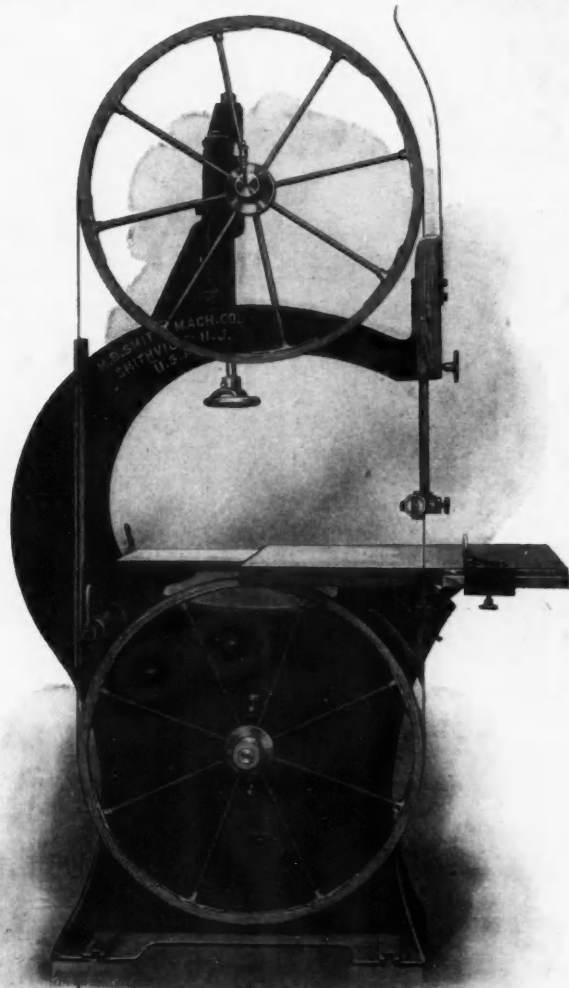
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The Smith Band Saw

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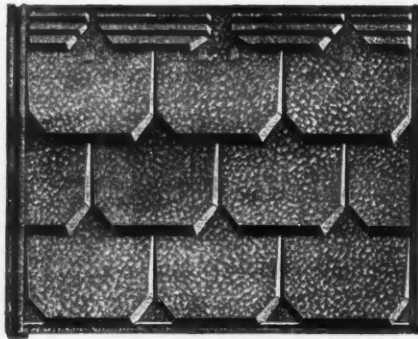
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don't you think it is worth while to investigate our claim that KING MANTELS are the best high-grade dependable mantels for the money in the country? **FREE:** our 64-page proof book called “Evidence.” Shows 37 leaders in KING MANTELS and tells what others say.

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Do it now!

KING MANTEL CO.

551-553 West Jackson Av.
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The Emery Cement Brick Machine

THE “TAMPING” PROCESS

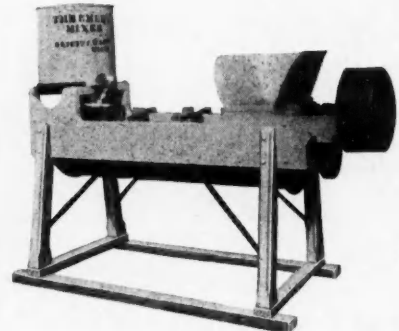
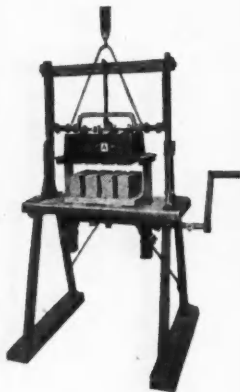
There is but one way to make a perfectly sound Cement Brick, and that way is by the tamping process. Tamping excludes the air, leaving the Brick Solid to the core. Tamping is our process. Results: Solid Brick, Sound Brick, Brick that are perfectly square and all of exactly the same size. No material handled the second time. Each mold holds just enough material to make a perfect brick, no more, no less. Every moment with our machine accomplishes something.

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Are built in conformity with the most conservative engineering principles and the safest mechanical laws. This insures a strength that supports the full tank of water indefinitely without collapsing, and a staunchness that easily resists any pressure exerted by nature.

Their stability is recognized and recommended by Architects and Engineers of the highest standing as well as by scores of users all over the country. Let us tell you where some of our outfits are in use in your section, and also send you illustrated catalogue.

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AGENT IS ALL IT COSTS to write postal for our big **Free Bicycle** catalogue 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, prepay 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.**

WHO WANTS SLATE?

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

K.C. WIRE & IRON WORKS.

Home Telephone 611 Main

Bell Telephone 87 Grand

Tree Boxes
Stall Guards
Fencing
Poultry Netting
Desk Rails
Riddles
Hay Racks

STEEL BEAMS and CHANNELS

Architectural Castings Architectural Wrought Iron

Feed Boxes
Coal Screens
Window Guards
Jail Cells
Columns
Wire Cloth
Joist Hangers
Lintels, etc.

Foundry and Machine Shop,
Rosedale, Kansas

WIRE WORK OF ALL DESCRIPTIONS

Desk A, Kansas City

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.

Our Catalogue contains over 500 illustrations of Ornamental Glass and Glass Signs



Local Agents Wanted Can handle this line to advantage. Correspondence solicited

Established 1876

Western Sand Blast Mfg. Co.

Ornamental Glass
Ground Chipped Enameled Figured Embossed Silvered Sand Blast Leaded

Ornamental Glass AND GLASS SIGNS OF ALL KINDS

Glass Signs
Business Advertising Display Electric

21st Street and Marshall Boulevard CHICAGO, ILLINOIS



Elevator Repair Bills

Reduced 25% By Using

THE EATON & PRINCE

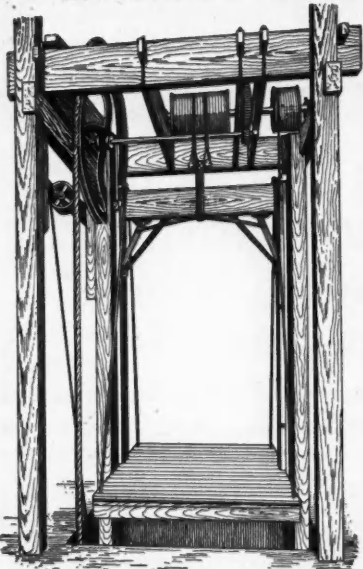
We Pay the Freight—You Install Elevator Yourself

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

We are also extensive makers of Passenger and Freight Elevators, for direct and alternating current. Send for catalogue.

EATON & PRINCE COMPANY

70-76 MICHIGAN STREET, CHICAGO.



Center Lift Store Hoist

MASONS' TOOL BAGS

Carpenters' Tool Bags

Carpenters' Aprons



Excelsior Brand

Carpenters Bit Bags

SEND FOR CATALOG EXCELSIOR IMPLEMENT CO.

TROY, NEW YORK



CO-OPERATIVE WIRE & IRON WORKS

Architectural and Ornamental Wire and Iron. Bank and Office Railings Window Guards Fences Wire Lockers Elevator Enclosures

51st and Halsted Sts. CHICAGO

Send for Catalog 34

NO. XI JOINTER
\$42

NO. X3 DRIVEWAY GROOVER
\$.85

NO. X5 STRAIGHT END JOINTER
\$.54

NO. X2 3/4 INCH EDGER
\$.42

NO. X4 3/4 INCH EDGER
\$.48

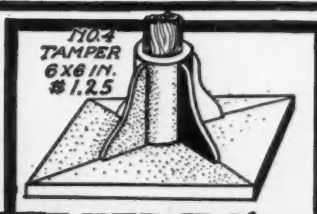
NO. X7 SQUARE EDGER
\$.60

NO. X8 BEVEL EDGER
\$.48

NO. X10 CURBING EDGER
\$.85

NO. X8 GUTTER TOOL
\$.85

NO. X6 CORNER TOOL
\$.48



ADJUSTABLE NAME PLATES.
ANY SIZE ANY SHAPE

ASK FOR PRICES

EVERYTHING IN 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 lots 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 3,000 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 \$150, F. O. B. Minneapolis.

Read the following letter from a well pleased customer:
Roswell, New Mexico, June 29, 1906.
Miracle Pressed Stone Company, Minneapolis, Minn.
Gentlemen:—We want to express the utmost satisfaction we have experienced with your \$150.00 Brick Machine. Your claims as to capacity are 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, Hondo 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 \$57.50 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 Tile manufacturers.
Clarinda, Iowa, Dec. 17, 1906.
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 late 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 69 different sizes and styles of blocks, \$250. Has wider range and greater capacity than any other machine made at anywhere near the price.

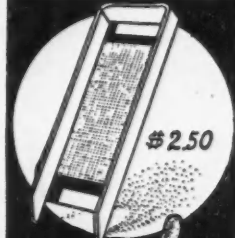
PNEUMATIC TAMPING EQUIPMENT

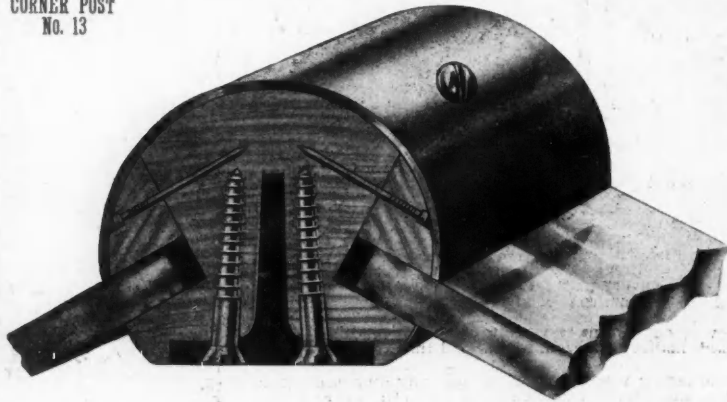
We are headquarters for pneumatic tamping tools and equipment, and Gas or Gasoline Engines for operating same. Our tools are adjusted for tamping concrete blocks, brick and sewer pipe. Ask for prices and complete description.

OUR 1907 CATALOG

We publish a large book on concrete—pages 9x12, 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 principles of concrete construction, air spaces, 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 several low-priced single air space machines. 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.



CORNER POST
No. 13

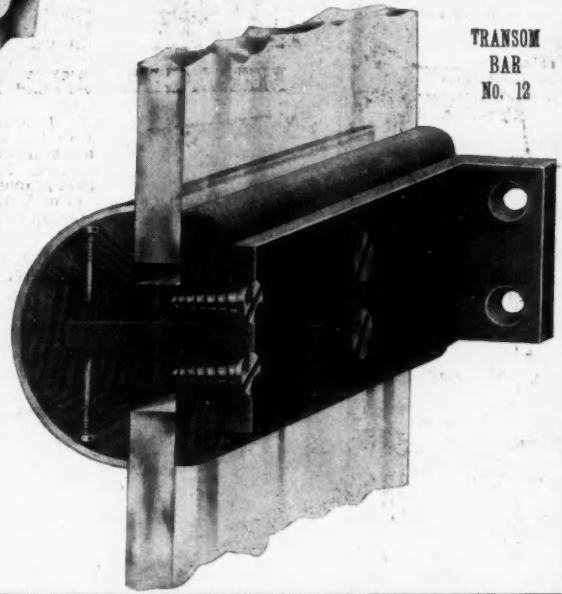
THE COULSON PATENT STORE FRONT CONSTRUCTION

This is the most practical store front construction, and for beauty, strength and durability, is superior to any other. If you want the best, use "The Coulson." If you want to be convinced that it is the best, write for our illustrated catalogue, "D-800."

J. W. COULSON & COMPANY

COLUMBUS, OHIO.

Main Office, 96-98 North Third St., Columbus, Ohio
Branch Office, 1123 Broadway, New York.

TRANSOM
BAR
No. 12

Are You Looking for a Cement Block Machine



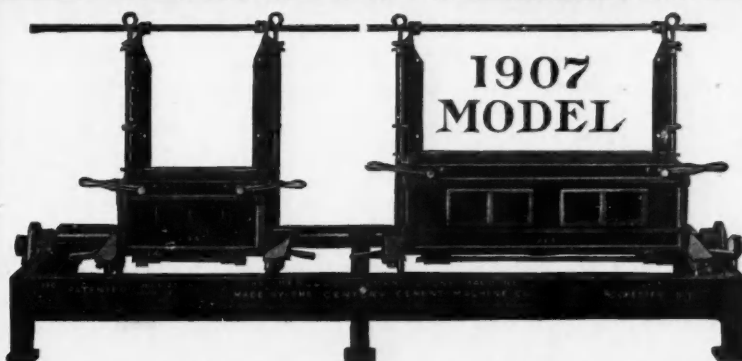
which makes the best block in the shortest time, the greatest variety of styles as well as of sizes, a full line of veneer work as well as of regular blocks, etc., etc.? Then write for our descriptive Catalogue "A" and let us give you our reasons for these claims.

The Ashland Steel Range & Mfg. Co.,

Ashland, Ohio

Hercules

Only
Machine
that can
Use a Wet
Mixture of
Coarse
Material

**Hercules**

Makes Two
Blocks at
One Time.
Simplest
Strongest
Best
Machine

The Hercules

A Machine That Makes a Really Concrete Block

With the Hercules you can make true Concrete Blocks—make strong blocks by using a coarse aggregate of crushed stone or coarse gravel mixed WET.

Cement or sand mixed dry or only dampened, produces a sand-mortar block — NOT a Concrete Block.

The very term "Concrete" suggests coarse material and plenty of water. It has been proved by actual tests that blocks composed of this coarser WET mixture five to one, will out-test a sand block mixed damp, made three to one.

It is a fact that the Hercules is the only machine so constructed as to allow for a really wet mixture.

To men going into the Concrete Block Business we say, "INVESTIGATE, send for our catalog." It will prove to you that the Hercules can do everything that any other machine can do, and do lots of things that no other machine can do. It is the simplest and strongest machine on the market.



The Hercules Makes This Variety

Ask for Catalog XX

**Century
Cement Machine Co.**

**273 West Main Street
Rochester, N. Y.**



The Noble Cement Mill

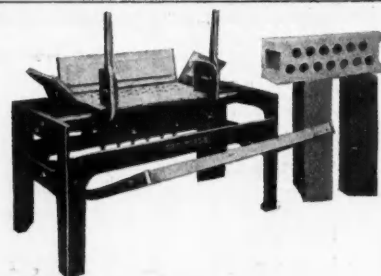
Is the Cement User's Friend

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

- 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.'

National Cement Machine Company,
BAY CITY, MICHIGAN

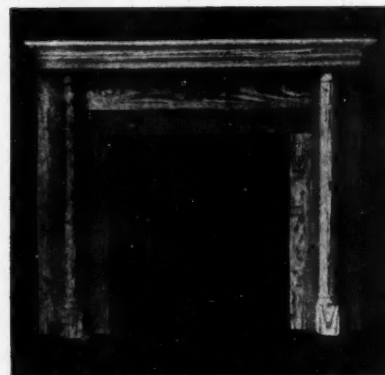
Woodruff Bros., Old Forge, N. Y., Agents for New York State.

HOLD! STOP!

Give us an opportunity to quote you on some item on this list

WINDOW FRAMES

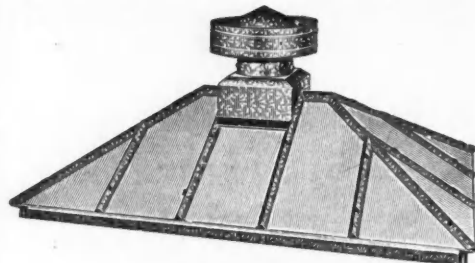
- Oak, Y. Pine and Poplar Balusters
- Poplar Brackets
- Poplar Porch Rail
- Oak and Y. Pine Newel and Angle Posts
- Oak and Y. Pine Corner and Base Blocks
- Oak, Y. Pine
- Birch and Cypress Finish
- Oak and Maple Flooring



YELLOW PINE MANTELS, PRICE, \$4.00

WE ARE PLEASED TO QUOTE YOU ON ANY LIST YOU MAY SEND TO US

The Malta Manufacturing Co.
MALTA, OHIO



SKYLIGHTS

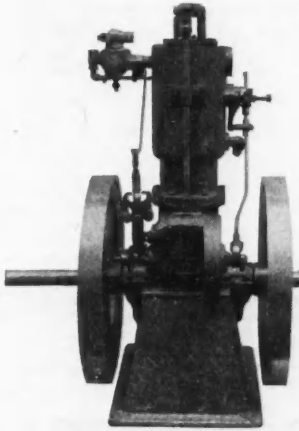
DO YOU WANT PERFECT LIGHT COMBINED WITH PERFECT VENTILATION?

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.



The POWER for the CONTRACTOR and BUILDER

FROM 2-50 HORSE POWER—PORTABLE OR STATIONARY

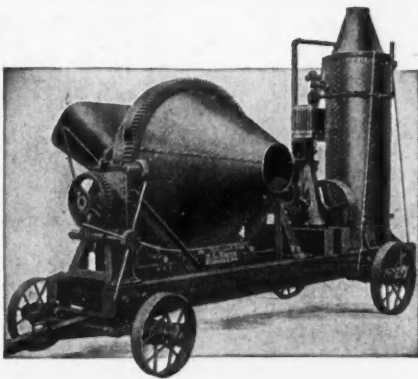
DISTINGUISHING POINTS OF THE MECKLENBERG ENGINE

An Absolute and Simple Governor. Either Make and Break or Jump Spark Ignition. A Certain and Reliable Cooling System. Best Workmanship and Materials.

RELIABILITY

An ABSOLUTE GUARANTEE goes with every Engine. We can refer you to any number of satisfied contractors who are using our engines.
Write for Illustrated Catalogue No. 204-C, stating the horse power needed.†

THE MECKLENBERG GAS AND GASOLINE ENGINE CO.
SOUTH BEND, IND., U. S. A.



WHAT IS MIXING?

Mixing is tearing apart two particles of the same material and placing a particle of a different material between them.

Blades in a Mixing Drum act as disintegrators. They help tear the particles apart, permitting other particles to fall between them, thus producing a thorough and uniform mixture.

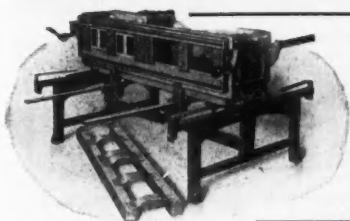
Disintegration must always precede mixing. This is the way the

Smith Mixer Mixes

Kneading is not mixing. Some mixers subject the aggregation to a kneading process and then claim that they mix. Write for catalog.

Contractors' Supply and Equipment Co.

MAIN OFFICES: 525 Old Colony Building, CHICAGO, ILL.



THE FRANCISCO BLOCK MACHINE IS A WONDER

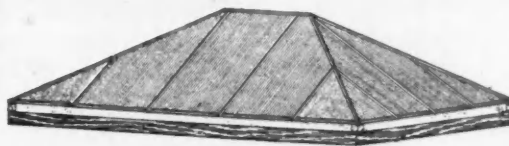
NOTE WHAT IT MAKES. Two 24-inch blocks at one operation, or one 32-inch and one 16-inch, or two 20-inch and one 8-inch, or three 16-inch, all made on one pallets and off-bearers at once. By placing in extension, makes caps, sills, lintels and water-table, any length up to 5 feet 6 inches long, 8, 9, 10 and 12-inch blocks for width of wall. All made from the adjustments on the machine. No additional parts required, which means a big saving in the cost of your equipment. Also makes circles, octagons, angles, chimney blocks, porch columns, veneered slabs, sidewalk blocks, and sectional blocks. Is a face-down machine, using crushed stone, gravel or sand, wet process and wood pallets. **Machine on Ten Days' Trial.** Send for Catalogue "G" showing six different sizes of machines, prices ranging from \$25.00 up. Also Fence Post Machine. Agents wanted. Don't delay.

FRANCISCO BLOCK MACHINE CO., 338 No. 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.





SUCCESS BEGETS SUCCESS

Nearly 50% of all orders during 1907 have come from old users of "Miles" Machines. There is a reason. Principle is right. Construction is guaranteed. Vertical cores. Blocks can be made of wetter material than can possibly be produced with horizontally withdrawn cores or side face principle. Pallet cost practically annihilated. One size for all blocks. Same principle employed by us for four years. Patents never questioned. Let us show you the machine with the greatest range of work yet produced.

OUR ADVICE--"Make good blocks or stay out of the business." Our Catalog "D" tells some things.

THE P. B. MILES MFG. CO., INC.

109 W. Cortland St.

JACKSON, MICH., U. S. A.

The Largest Exclusive Cement Block Machine Manufacturers in the World.



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 WAREROOMS 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 and Batch Mixers cannot be equaled in results and price. OUR OFFER—We pay railroad fares that you may see any or all of these 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.

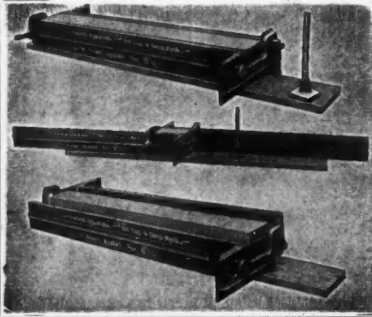
Front and Maple Streets

COLUMBUS, OHIO, U. S. A.

The Practical, Adjustable Sill, Cap and Step Mold

Superior. New Invention. Unequaled. The Best. Unexcelled. Has Merit.

By adjustable, we mean ABSOLUTELY ADJUSTABLE for any length between 12 and 72 inches, and for any width between 5 and 14 inches. It is 8 inches high. Just think how practical this mold is with this range of adjustment. It is certainly designed to save labor, material and expense, and does it as long as you use it.



With this mold you remove the mold and not the product, thus preventing possible cracking, damage or disintegration of product. One man can operate it. Simple and quick, no weak points, made of best material.

Ask for Catalog No 90
CEMENT MACHINERY COMPANY
Mfgs. Block, Brick and Mixing Machines, Cement Workers' Tools, Drain and Sewer Pipe Molds
JACKSON, MICH., U.S.A.

Contractors Make a Splendid Profit

BY USING THE

Simpson Cement Molds

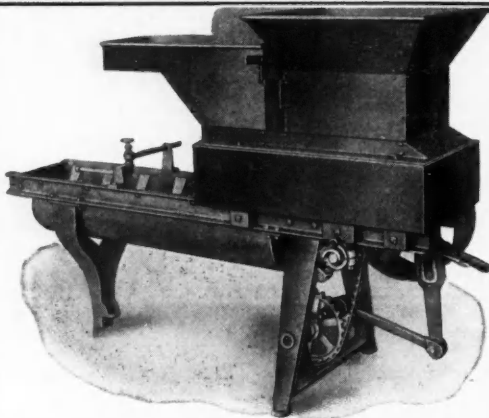
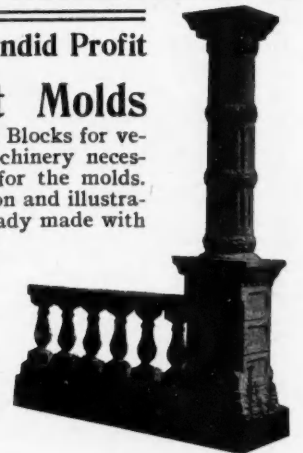
to produce Ornamental Cement Blocks for veranda work. No power or machinery necessary; only a small investment for the molds.

Write now for full information and illustrations of verandas of beauty already made with our molds. Also ask about waterproofing; cost 15c a gallon at your door.

Simpson Cement Mold Co.

496 N. High St.
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.



THE Standard Continuous Concrete Mixer

"The Mixer that Measures and Mixes."

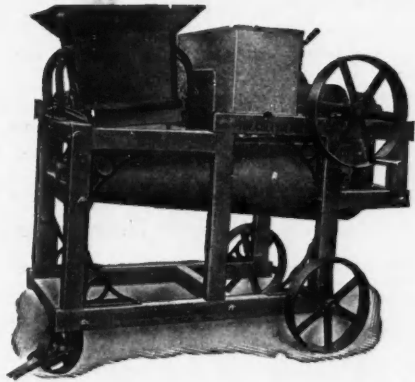
"You fill the Hoppers, the Mixer does the rest."

Continuous, Automatic Feed: Exact Proportions

A perfect mix, both wet and dry. Output instantly variable from 0 to Maximum at will of operator, thus insuring fresh material for each block. Feeds accurately sand and gravel, dry or wet. Simple, efficient, reliable, economical, durable and moderate in price. Write for description and prices to

The Standard Machine Co. KENT, OHIO

Power Required Too Small to Consider. Runs Night and Day



The KNICKERBOCKER CO.,
Jackson, Mich. Adrian, Mich., April 15, 1907.

Gentlemen:

After using your Mixer almost continuously for six months, and a good share of the time both night and day, I consider it but justice to you to write you my opinion of the Coltrin Mixer. I operate it by electric motor and it runs so easily that the expense for power is too small to consider in the cost of mixing. I have not paid out one cent for repairs, and to all appearances the machine is as good today as when I first bought it. The mixing has been inspected by several expert Engineers, especially for thoroughness of mixture and for proportions of mixture, and has not only escaped censure, but has been heartily approved by several reputable Engineers. I already own a — and a — Mixer, but expect to add another of your Mixers to my equipment soon.

Yours very truly,
A. P. SOUTHWORTH,
Adrian, Mich.

Contractors' Friend

THIS MACHINE IS SEVERAL IN ONE



It makes over 300 different kinds of blocks in all styles and sizes from 8x8x24 inch to brick sizes. The 4x5x12 and the 4x4x12 are the recognized sizes for building nice residences and cottages.

This machine makes two blocks at a time on one pallet, 800-1000 blocks per day.

ONE MAN CAN WORK IT.

It is a Down Face Machine for every style of block. Two sizes of pallets will make every kind of block. Pallets made of wood.

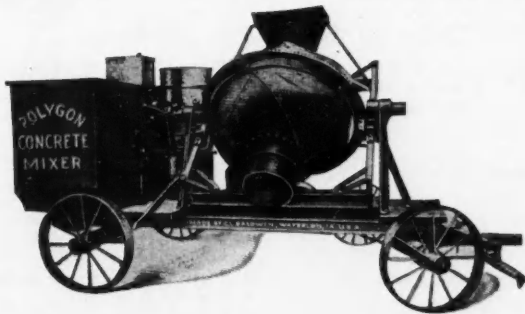
The only machine that will make WATER-PROOF CEMENT BLOCKS and BRICK. Strong statements, aren't they? Write us and find out why they are so.

The price of this Machine for all Face Plates and Fractions, and for all Styles of Blocks is ONE HUNDRED DOLLARS, F. O. B. cars at Mansfield, Ohio.

Without the Attachment for Hollow, 8x8x24 inch Blocks SEVENTY-FIVE DOLLARS.

Our Guarantee: If not exactly as represented, return the machine and receive your money back. Good Bank References.

Address **L. L. PARRY,** Mansfield, Ohio.



"Birds of a feather"—

and they are not old crows, either:

Polygon Concrete Mixer

Yale Gasoline Engine

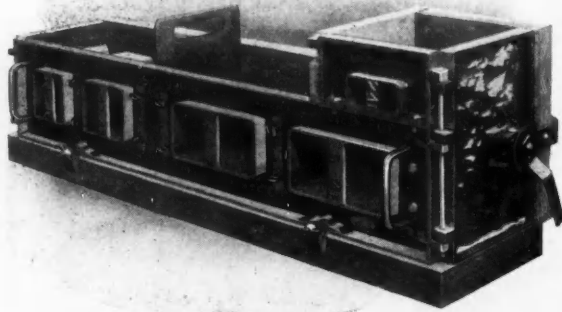
Stewart Cement Block Machine

We are proud of them all; each is a success and one sells the other. Once our customer, always our customer. We know what is needed by the cement contractor and are filling those needs with machines of genuine merit at prices that enable our customers to eat cake as well as for us to eat cookies. We sell everything on a solid guarantee.

Write for Bulletin No. 5.

Waterloo Cement Machinery Co.
Waterloo, Iowa





THE TANDEM INVINCIBLE BLOCK MACHINE
Set up for making one 24 in. L. corner and one 16 in. stretcher at one operation.

The Pettyjohn Tandem Invincible

(FACE DOWN TYPE, 40 inches long)

The Greatest of Stone-Making-Money-Making Machines

MAKES TWO 20-INCH STONES AT ONE OPERATION, or one 24 and one 16, or any other fractional combination from 4 to 40 inches, thus economizing the labor of off-bearing.

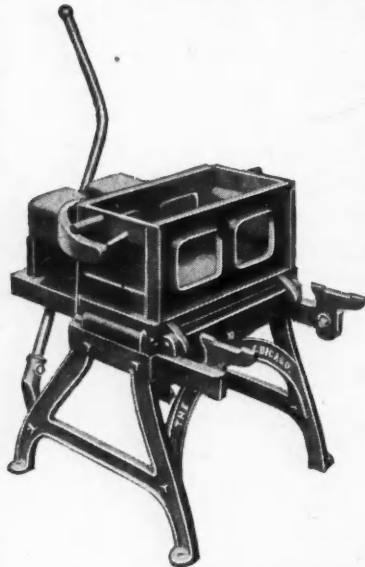
THE WET PROCESS. A wetter mixture may be used on the Invincible than any other machine. Cores withdrawn perpendicularly.

ADJUSTMENTS. Extremely versatile. Face plates may be used in any part of the face plate holder, and be placed horizontally, vertically or perpendicularly.

The Tandem Invincible has been pronounced by every contractor who has seen it to be the greatest block producer and biggest money maker in the field. The Invincible, like all of the Pettyjohn machines, is guaranteed to give satisfaction or money refunded, and will be shipped on 15 days trial subject to approval. Price, 40 in. length, \$65.00, \$150.00, \$215.00, according to equipment. Also 8x16x8 Invincible for only \$35.00, or \$33.25 if cash accompanies the order. Send for catalog.

THE PETTYJOHN CO., 634 N. 6th St., Terre Haute, Ind.

The Best is The Cheapest



The 1907 Brandell Concrete Block Machine is the most improved one-man face-down machine on the market. Its automatically self-locking mould is the greatest saver of labor and time.

Famous for its
SIMPLICITY in
OPERATION and
CONSTRUCTION
RAPIDITY
DURABILITY
ECONOMY

Send for booklet D

Capacity, 240 blocks a day

Brandell Concrete Block Machine Co.
130 Dearborn Street, Chicago, Ill.

THE SNELL MIXERS

Easy to {
LOAD
OPERATE
DISCHARGE
CLEAN



The Snell Mixers are Adapted

For all Classes of Concrete. For Wet or Dry Mixture.
For Heavy Concrete Construction.
For Sidewalk and Curb Work.
For Cement Blocks. For Cement Brick.

It will mix the finest of sand and cement together, any moisture desired, from a mealy dry to a sloppy wet, without balling.

Do not fail to meet us at the Third Convention of the National Association of Cement Users which will be held in Chicago, Jan. 7-12, 1907, where we will have a complete exhibit of our product.

The R. Z. Snell Mfg. Company
SOUTH BEND INDIANA

THE HAYDEN AUTOMATIC BLOCK MACHINE CO.

Manufacturers of High Grade

112 W. Broad St., Columbus, Ohio

CONCRETE BLOCK MACHINES, MIXERS, STONE CRUSHERS, ETC.

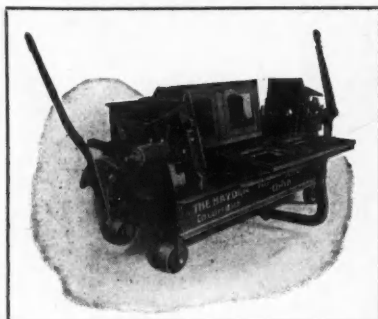
The Most Simple and Effective Mechanical Principles Embodied in this Mixer

POINTS OF SUPERIORITY IN THE HAYDEN MACHINE

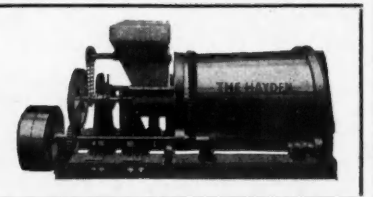
Great Strength ... Limitless Range ... Rapidity
Ease of Operation ... Simplicity of Construction
The only Block Machine on the market strong enough to withstand the heavy strain of pneumatic tamping

BUY A HAYDEN FOR RESULTS

Send for Catalogue M Today



The Hayden Down Face Machine.



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

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

Defy Competition

The Ideal Concrete Machine for the manufacture of Concrete Building Blocks makes it possible to profitably undersell all other building materials in all localities. Ideal Blocks can be sold far below the cost of brick, lumber or natural stone. Excel them all in durability and fire and weather-proof qualities. Adaptable to any possible architectural design.

IDEAL CONCRETE MACHINERY

Wonderfully simple in construction. No chains, springs or gears. Embody the only principle (face down) permitting the practical use of rich facing material in back of blocks. Adaptable to any size block within capacity.

The same machine makes blocks in countless ornamental designs and natural stone effects.

Write and learn how easily, rapidly and profitably one man can turn out Concrete Building Blocks with an Ideal machine.

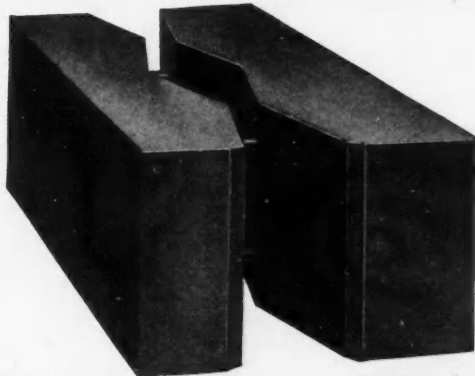


Ideal Concrete Machinery Co., Ltd.
 Department A. T.,
 South Bend, Indiana

MUSSEN'S LIMITED
 Montreal, Canada
 Sole Agents for
 Canada

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
 Eastern Agency, No. 1 Madison Ave., New York City, ALBERT OLIVER, Mgr.

Chase Roller Bearing Cars

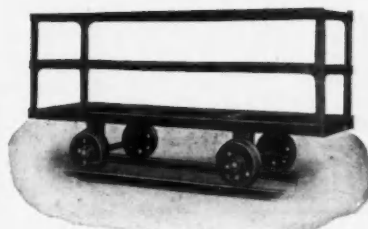


FIG. 202 DRYING CAR

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.

The Peerless

(ONE-MAN)

Cement Brick Machine



Write for Our 1907 Catalogue

This popular one-man machine is now in general use all over the United States, and giving universal satisfaction in large as well as small plants. While simple in operation, it is a wonder for fast and perfect work. Capacity, 3,000 to 4,000 per day. Price is right. Manufactured by the

Peerless Brick Machine Co.

No. 7 Sixth Street North

MINNEAPOLIS, MINN.

THE KING CEMENT BRICK MACHINE

One Man Machine



Makes 10 Brick at Each Operation

Price \$40.00

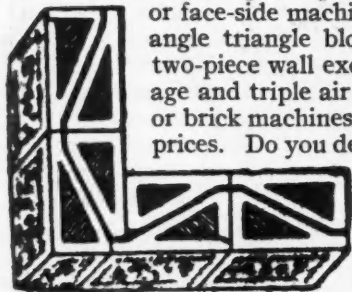
Why pay more? This machine makes brick equal to the best. In speed it is not excelled by the highest priced machines. Write for catalog.

W. E. DUNN & CO.,

339 Grand Avenue,
CHICAGO

The "Reed" Machines are in the "Lead"

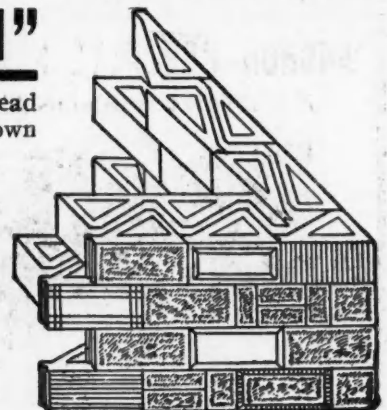
The adjustability of our 1907 machines is a marvel, putting them far in the lead of others. Most simple, rapid, up-to-date machines on the market. Face-down or face-side machines, producing single, double, hollow or right-angle triangle blocks. Best brick machines out. Our system of two-piece wall excels all others on account of the natural bondage and triple air space. When in the market for concrete block or brick machines, as well as concrete mixer, get our catalogue and prices. Do you desire to make \$\$\$\$\$\$\$? We can start you right.



Triple Hollow Wall

Reliable Agents wanted. One Agent earned \$365.00 in thirty days.

Wichita Coal & Material Co.
WICHITA, KANSAS U. S. A.



Right Angle Blocks

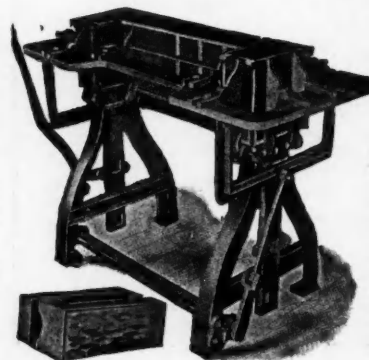
Concrete Blocks

WE HAVE a very Beautiful Album containing over Sixty views of Houses, Churches, Factories, Plants, etc., taken from different parts of the country. These are printed on heavy enameled paper with original halftones, and these halftones are made from original photographs—not wash drawings. Size 9 x 12 inches.

PRICE, ONE DOLLAR

If unsatisfactory, money promptly and cheerfully refunded. Write for Machine Catalogue—FREE.

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THE WALTON Stone Machine

Two-piece wall system makes DRY WALLS

Makes lengths from 4 to 22 in. and 3, 4 1-2, 6 and 9 in. heights. 10, 12, 14 and 16 ft circles. 30 and 45 degree angles.

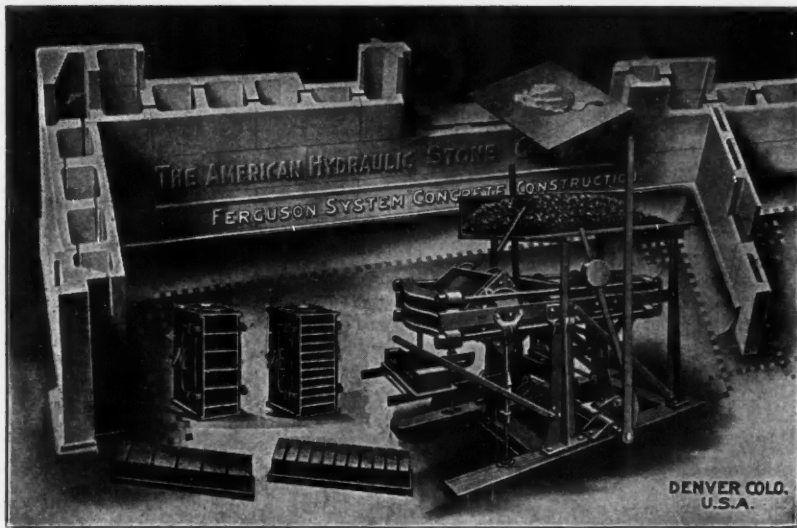
All widths by lapping blocks. All shapes, lengths and width made on the same pallet. Reducing cores save material.

LET US TELL YOU how we save labor, save material, save pallets, save expensive facings, save 8c. per cubic foot over other machines by our method. Send for illustrated catalogue

WALTON STONE MACHINE CO.

2502 East 18th Street,

KANSAS CITY, MO.



DENVER COLO. U.S.A.

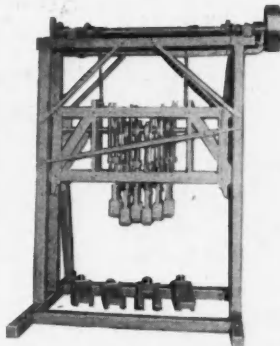
TWO-Piece Hollow Concrete Wall and Partition, containing Header Bond and Continuous Horizontal Air Space. Impervious to Heat, Cold, Moisture and Sound. Fire and Vermin-Proof. Walls of all widths; blocks of all shapes and sizes. New Hand Press enables three men (mixture supplied) to

make 1200 blocks, 10000 brick or 5000 paving blocks in 10 hours. **THE WALLS OF A COTTAGE ARE THE WORK OF A SINGLE DAY.** 80 page catalog, fully illustrated, mailed upon request.

The American Hydraulic Stone Co. Century Building Denver, Colo.

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HANDLED BY ONE MAN



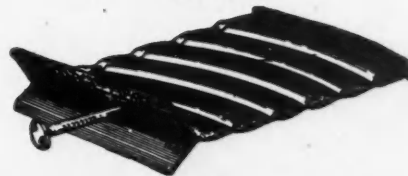
CAPACITY UNLIMITED

If you knew of a man that you could hire, that could tamp eight or ten times as many blocks in one day as the man you now employ you would hire him at two or three times the salary you now pay. You would not be a business man if you did not. Here is another such proposition: The Kramer Tamper will tamp 8 or 10 times as many blocks as one man and produce a better article, only requiring one man to operate. Write for particulars today. Give name and size of block machine you wish to have tamper work on.

KRAMER AUTOMATIC TAMPER CO.
DEPT. 7A PEORIA, ILL.

Concrete Construction is Incomplete

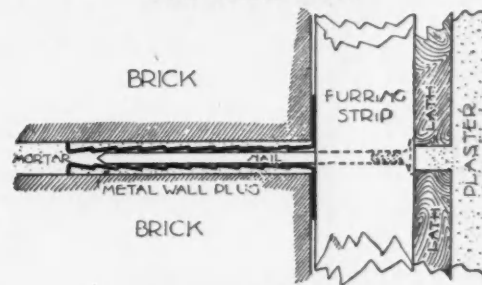
Without Our



RUTTY METAL WALL PLUGS

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

We make also Morse Steel Wall Ties and Prescott Steel Corner Beads



Furring Out on Brick or Concrete

Send for Samples and Catalog

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Standard Concrete Machinery



Pat. in U.S., Canada & Abroad

Made in Four Sizes—5, 10, 20 and 40

THE STANDARD CEMENT BRICK MACHINE is the fastest hand brick machine on the market; will make plain, veneered, and ornamental face and shape; all perfect, smooth brick, true to size and design.

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

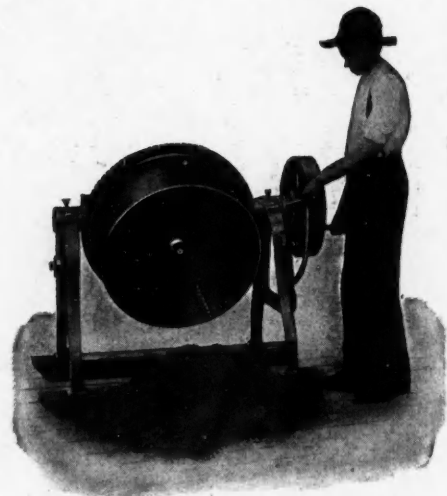
THE STANDARD GAS AND GASOLINE ENGINE is made in all sizes. Especially adapted to running concrete machinery.

THE STANDARD PORTABLE MIXER AND ENGINE are mounted on suitable truck; well designed; convenient to operate.

WRITE FOR CATALOGUE AND PRICES

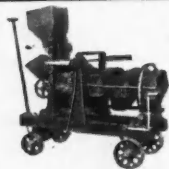
SOUTH BEND MACHINE MANUFACTURING CO.

803 South Franklin Street : : : SOUTH BEND, IND. Weight 600 lbs.



Hand Power STANDARD Concrete Mixer, Ball Bearing, especially adapted to brick and block work where large capacity is unnecessary

Price \$95.00



Dykema Continuous Cube Concrete Mixer \$115.00.

A hand power, continuous cube mixer, perfect mix, low feed, "Direct to you" price, mixer with engine \$250 up.



Dykema Cement Brick Machine \$35.00.

Makes five face down brick. A quick, handy machine at a low price. Ten brick machine, same style, \$65.00.

Send for 1907 Catalog, just out. Book cement building plans 30c.

DYKEMA COMPANY

2627 Huron St. : : GRAND RAPIDS, MICH.

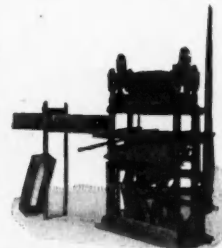
Our Guaranteed Dry Wall Block Appeals to the Builder because moisture cannot penetrate it. No furring and lathing, waterproofing or expensive facing required. It means a cheaper and better wall. Booklet E-6 gives full particulars about this low price, guaranteed outfit.

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 brick, veneer blocks, two-piece blocks and sidewalk tile. Booklets A-6.

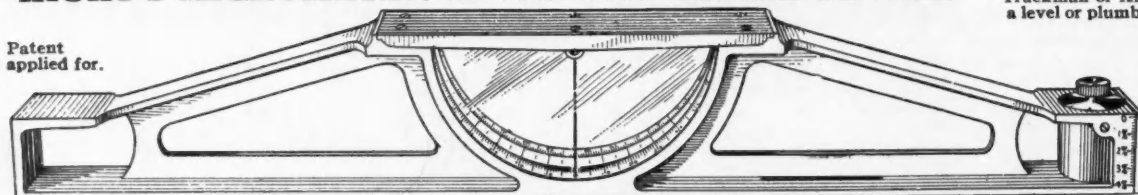
Mixers and Ornamental Moulds bring additional profits. Mixers \$100 and up. Moulds \$7.50 and up. Ask for booklets. Use full address.

Queen City Brick Machine Co., Bank Bldg., Traverse City, Mich.



HIGHT'S MICROMETER LEVEL AND GRADE FINDER

Patent applied for.



Mr. Carpenter, Steamfitter, Trackman or Anybody using a level or plumb:

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

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

Made of aluminum it weighs two and three-quarter pounds and of mahogany three pounds. There is nothing about it that can get out of order or become untrue. When you see one of these levels, you will wonder how you have managed so long to get along without it. In aluminum it sells for \$8.00 and in mahogany for \$5.50, and many times in a year will save you many times its cost in time, work and worry. It will be sold only by myself or my son for the present until the hardware trade demands it, and upon receipt of enough to guarantee express charges, I will send it to you C. O. D., subject to your inspection.

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The Owner wants a real Roof

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The Owner doesn't want a roof that rusts like tin; crumbles and leaks like tile; rots like shingles; cracks and tears like a fancy-name patent roofing.

Genuine Bangor Slate Roofs outlive the building without paint or repairs.

Can you say more of a roof?

Can the owner ask more?

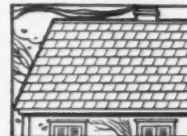
The Roof Volume of the "Illustrated Carpenter & Builder Series of Technical Manuals" says: "We think it safe to say that nothing beats slate. A slate roof when properly put on is practically permanent, and requires comparatively no repairs or attention."

Our Free Roof Book

Gives all the facts about all the roofs—the words of the tin people about tin roofs
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Genuine Bangor Slate Co.
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Afford you the largest profit and your customers the greatest satisfaction. Keep abreast of the times by laying these handsome hardy shingles—we'll help you. Drop us a line.



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But they need a man handy with hammer and nails to put them on, and that sounds very much like "Carpenter" to us. Anyway, we notice it's the carpenters who are making the money laying tin nowadays. Write for particulars. Send for 56-page booklet, "Rightly Roofed Buildings," free.

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Practical Art Metal Ceilings



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Oolitic (Bedford) Limestone

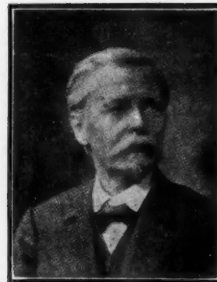
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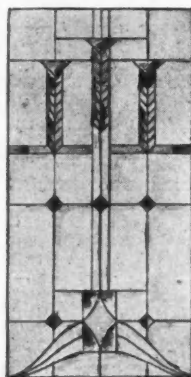
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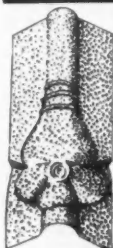
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57 to 63 Illinois St. CHICAGO, ILL.
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Telephone North 218.

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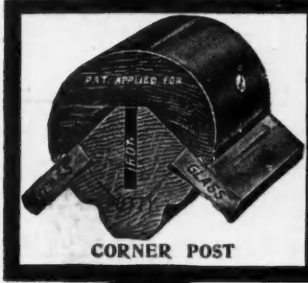
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Send us your plans for estimates on special work

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unites great strength with neat artistic appearance—takes up minimum space—gives most display room. Can be had in any finish.

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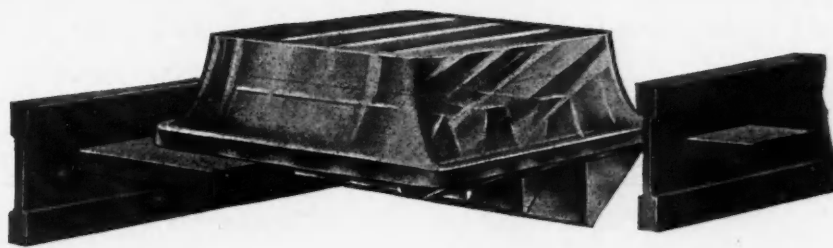
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100% More

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3-Way Prisms

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Prism Glass of All Kinds

Vault Lights, Window Lights, Skylights, Wired Prisms

See pages 522-23-24-25 in Sweet's Index, at all Architects' and Builders' offices

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Structural Slate

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BEAMS,
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LIGHTS, CAST CONDUCTOR CONNECTIONS,
BOOTS & GUTTER BOXES,
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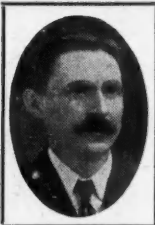
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Has an Octagon Rule for Framing Octagon Roofs. It is found on back of body of square, and on face of body of square is our COMMON FRAMING RULE. Have you seen one? If not you ought to. Go to your hardware dealer and ask him to show you one, and if he hasn't one write us and we will send particulars.

NICHOLLS MANUFACTURING CO. :: Ottumwa, Iowa

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WILCOX-PROUTY House Door Hangers

FREE

Note the Conditions!



No. 106

If the dealer hasn't them and you are a DEALER, we will furnish a sample free of charge.

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Only one of 300 Specialties **AURORA, ILL.** Dept A

Note the Conditions!

American Carpenters and Builders

Say of

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NORTH. Illinois. "They are the best I have ever seen for the purpose. Those that got them last year think they are fine."

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WEST. Arizona. "The best we have ever used. Unusually adapted to the needs of this country where screens are left on houses the entire year, as they can easily be removed to wash the windows.

(Names and addresses furnished on request.)

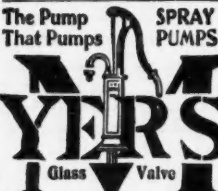
If Gossett Hinges pleased their customers, won't they please yours? Send for free sample pair for actual test—there's nothing so convincing. Sold by hardware dealers. Price per dozen pairs, \$1.20, express prepaid.

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PUMPS, DOOR-HANGERS, STORE LADDERS

The Pump That Pumps



MYERS

Glass Valve

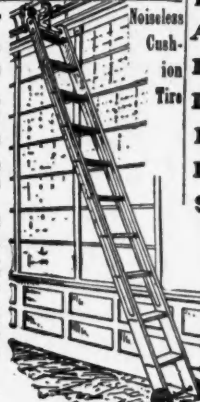
Double-acting, Lift, Tank and Spray PUMPS

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of all kinds. Write for Circulars and Prices.

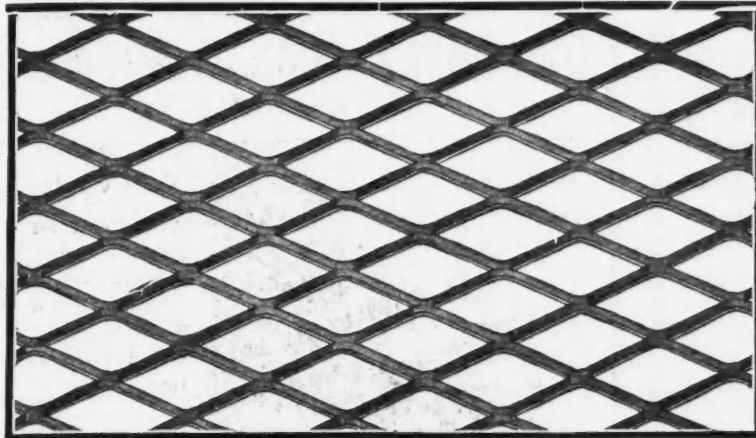
Myers Stayon Flexible Door Hangers with steel roller bearings, easy to push and to pull, cannot be thrown off the track—hence its name—"Stayon." Write for descriptive circular and prices. Exclusive agency given to right party who will buy in quantity.

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PLASTERING LATH

No. 27 Gauge, Weight per Square Yard 2 1/2 Lbs.
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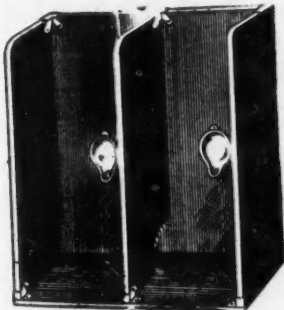
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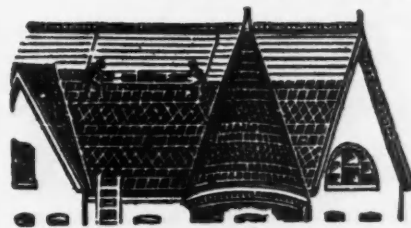
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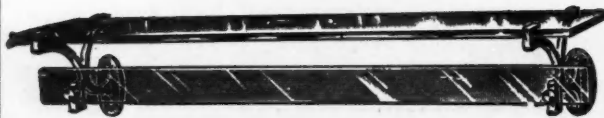
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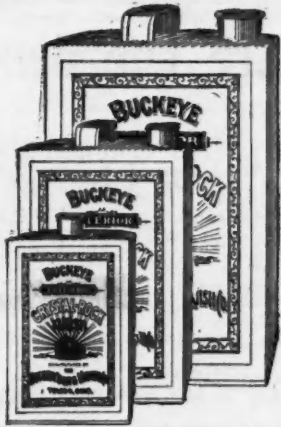
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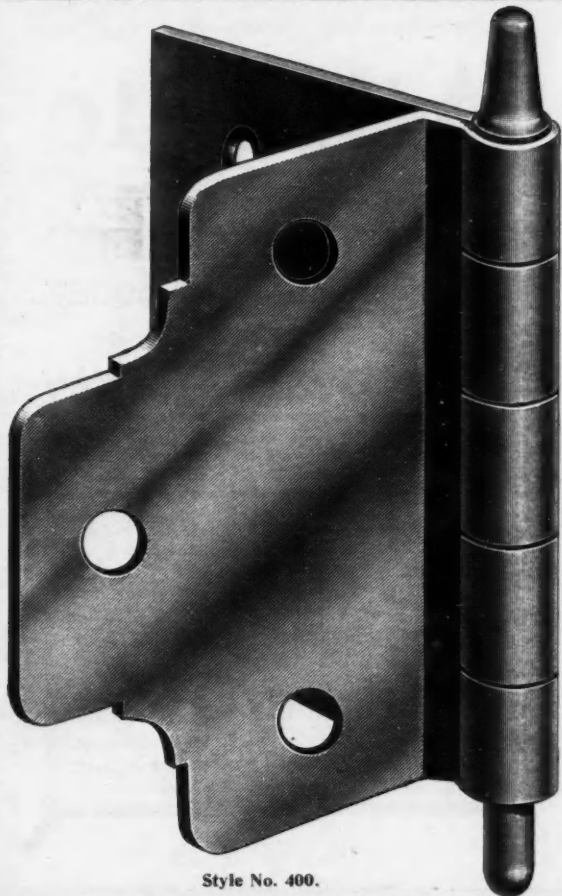
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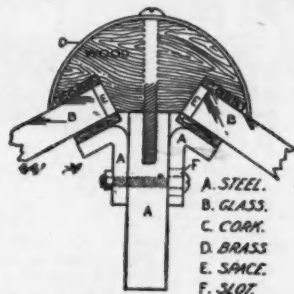
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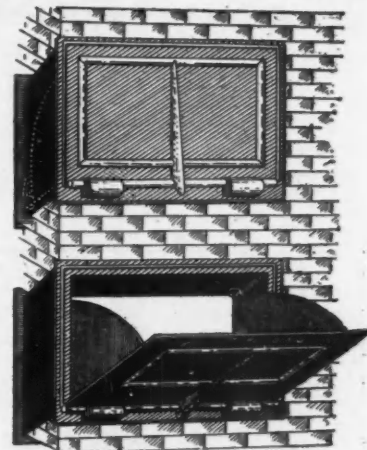
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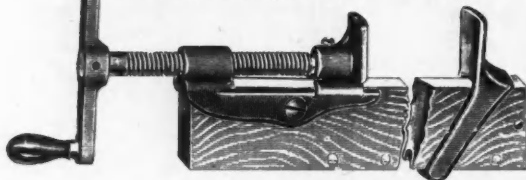


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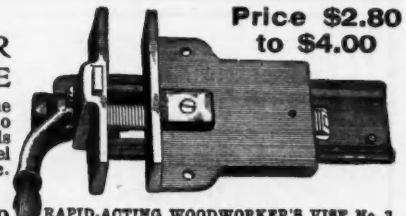


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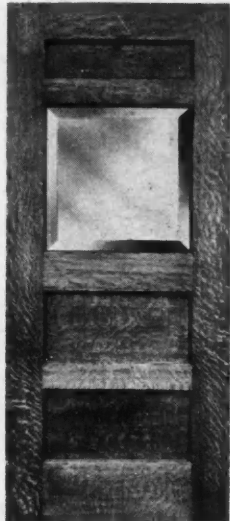
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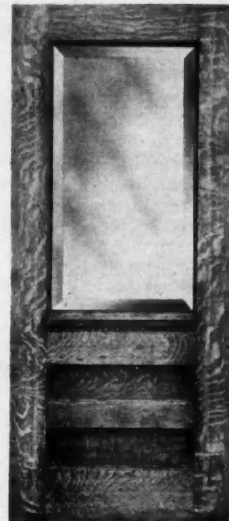
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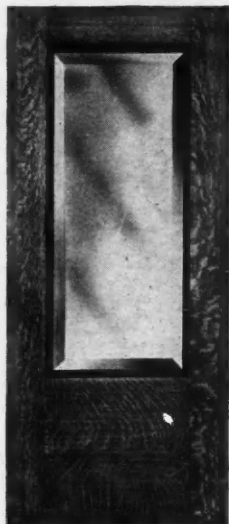


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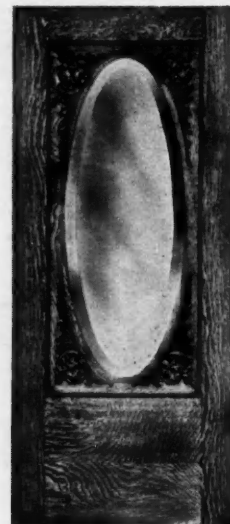
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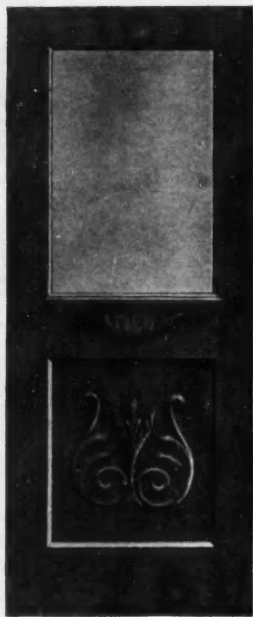
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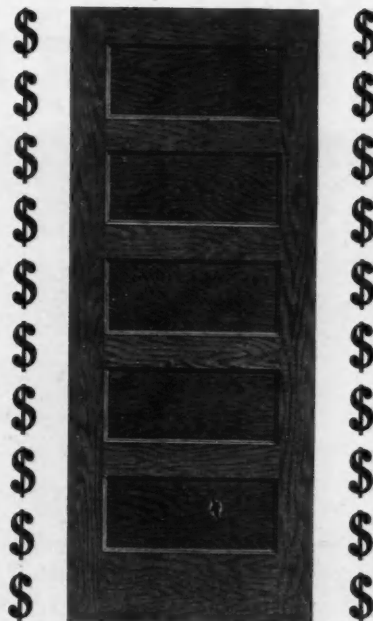
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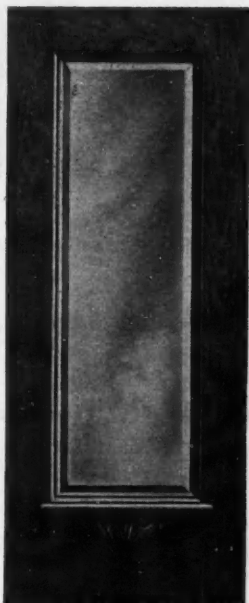
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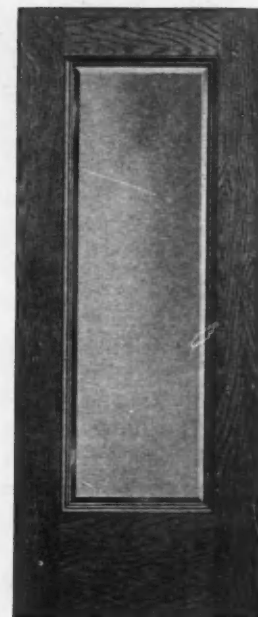
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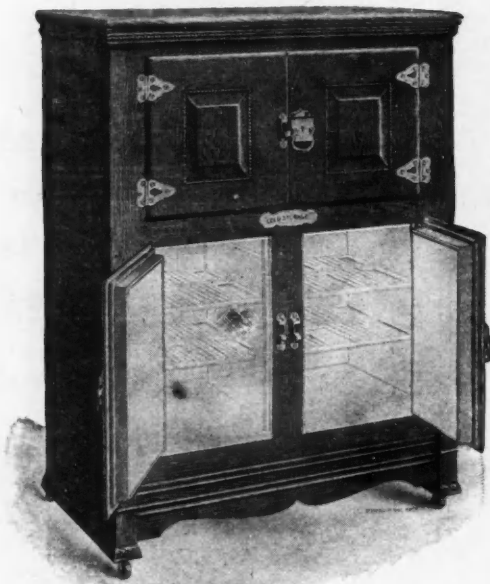
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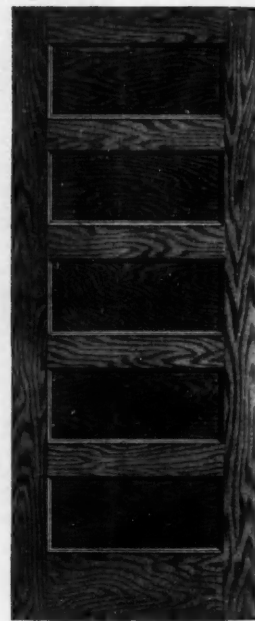
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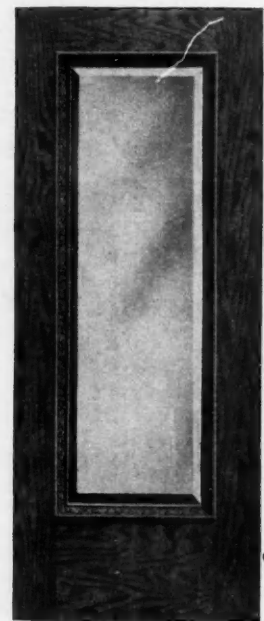
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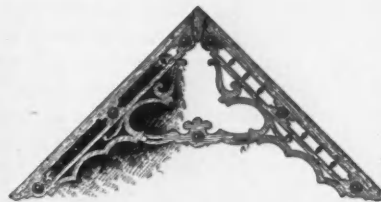
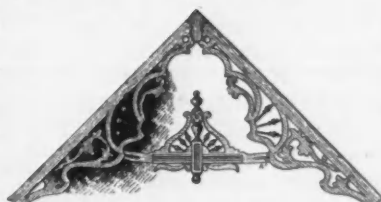
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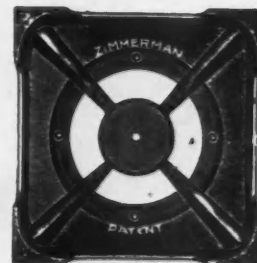
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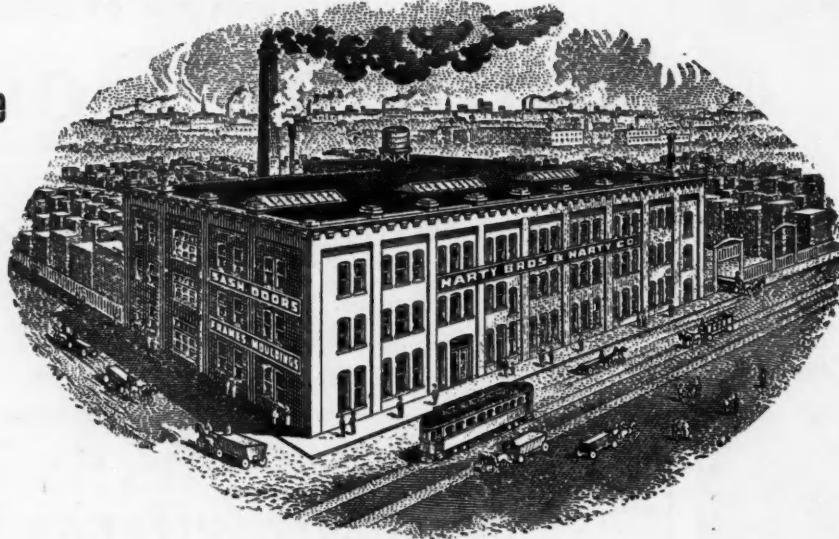
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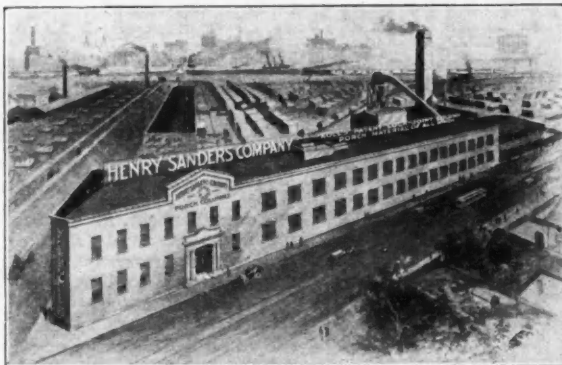
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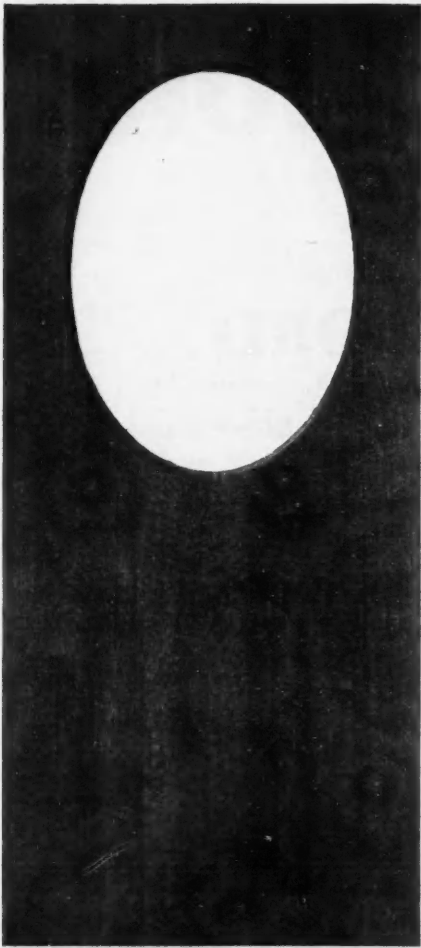


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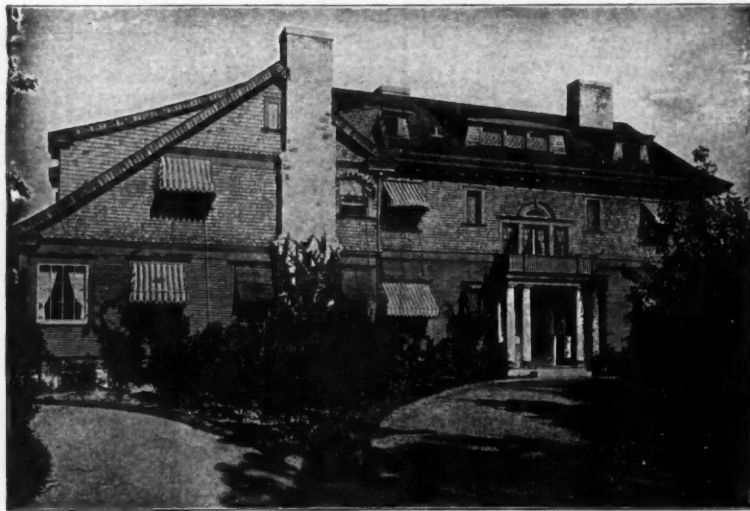
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This picture of Mr. Heppes (weight 155 pounds) sitting upon a sheet of 1 ply No-Tar Roofing (made also 2 and 3 ply) stretched between two chairs, shows its wonderful strength.

No-Tar Roofing is Equal to Every Test

No-Tar Roofing is made from strong long-fibre wool felt, specially toughened by our waterproofing process. The felt possesses such remarkable absorbent properties that it takes to itself the maximum amount of water and weather proofing. **THERE IS 200 PER CENT WATERPROOFING IN EVERY SQUARE OF ROOFING. WEIGHT AND TOUGHNESS TELL THE STORY.**

Many other roofings are simply oil-soaked wood or cotton felt. No-Tar Roofing is **ROOFING—NOT "BUILDING PAPER!"** It is made strong enough to stand any test to which roofing is subjected in actual use.

FIRE RESISTING TEST.

Send for our circular showing different ways of proving the fire resisting qualities of No-Tar Roofing.

WATERPROOF TEST

Bend the edges of a sample of No-Tar Roofing so that water will remain in the dish so formed and it will hold the water until it evaporates.

ACID-PROOF TEST

No-Tar Roofing is not harmed by being soaked in any strong acid, such as Muriatic or Sulphuric.

ALKALI LYE OR AMMONIA TEST

Lye will eat the skin off your hands and the paint off the wood, but it has no effect on No-Tar Roofing. You can soak No-Tar in pure liquid ammonia without injuring it. Barns where animals are kept are full of this ammonia in gas form, which in time will eat up a metal roof, or the nails in a shingle roof.

THE "NO-TAR" TEST

You can tell by smelling No-Tar Roofing that it is free from Tar. We do not use a single drop of tar (1) because a tar roofing will not stay waterproof, and (2) because the tar in this country is controlled by a trust and we are not.

We use the best grade of Asphalts known.

THE FIRE INSURANCE TEST

No-Tar Roofing is accepted by all Fire Insurance Companies, who charge 25 per cent less for insuring buildings protected by it than for buildings with shingle roofs.

New and Good

"NO-TAR" Gutter and Valley

Made to save tinner's bills—cannot rot or rust—Made of asphalt—cheaper and better than metal—seamless—anybody can apply it—can be used with any kind of roofing—Send for Book V and samples—Good on steep or flat surfaces.

"No-Tar" Roofing is a non-conductor of heat or cold, hence when used for roofing or siding barns, sheds, etc., it keeps the stock and poultry cool in summer and warm in winter.

MADE IN VARIOUS WEIGHTS

for all purposes, from 1-ply to 3-ply. Each roll contains two squares, or 216 square feet. A square will cover 100 square feet of surface, independent of a two-inch lap. Cement for the seams, nails, tin caps and instructions FREE in every roll.

A GUARANTEED ROOFING

NO-TAR is not a temporary roofing. It's good for any kind of a building, and is so guaranteed by us. Think of a material as strong as this picture proves it to be—that is absolutely waterproof—absolutely acid-proof—spark and cinder proof—rust proof and rot proof—low priced—good on a steep or flat roof—easy to lay—guaranteed to last—all in one. Send for the FREE ROOF BOOK and our test circular that tells how you can prove all we say.

Write for FREE ROOF BOOK

The Roof Book tells all about roofing and tells "How to Cut Flashings and Apply on all Buildings," "How to Do Your Own Roofing," "How to Measure a Roof." Everything made plain by reproduction from actual photographs. It's yours for a postal.

Dealers—Send for Our Trade Building Plan by which we build up your Roofing Business Quickly.

COSTS LESS AND LASTS LONGER THAN SHINGLES, TIN, IRON, STEEL OR TAR

FOR FREE BOOK
AND SAMPLE WRITE

THE HEPPES COMPANY
CHICAGO, U. S. A.

605 SOUTH
FORTY-FIFTH AVENUE

Special Spring Announcement to Contractors, Carpenters and Builders

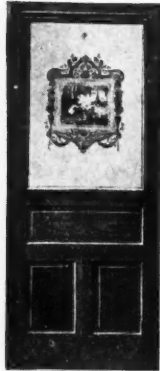
WE QUOTE and illustrate on this page of **American Carpenter and Builder**, specimen items just as they appear in our Grand Millwork catalog. These items are not leaders. They are **regular quotations** and are selected only because we believe they will be of particular interest to the readers of this publication at this moment. All qualities up to or above the grade of the North-western Sash and Door Manufacturers. We sell by **mail order**. We sell to the **individual purchaser**. We quote **factory prices—America's greatest millwork factory prices**—direct to the **contractor, carpenter and builder**. We ship **promptly**, we guarantee **safe delivery**, we guarantee **satisfaction**, we guarantee a **saving of 50 per cent.** at least on the dealer's price on practically all millwork, and we carry in stock for **immediate delivery** not only all the **staple goods**, but **thousands of pieces, styles and sizes** previously made only to order. Our mammoth business in selling, our sales from stock goods, our ownership of timber lands, our own factories (enabling us to supervise seasoning, manufacture and handling), our quick turning of capital, all combine to produce a business that has **revolutionized all millwork conditions**. Now we want to send you our

GRAND MILLWORK CATALOG FREE!
All we ask you to do is to spend a postal—to send a postal—to find out the truth of our claims. It is a fortune for you if our claims are true—you are one cent out if our big, carefully printed, truthfully illustrated millwork encyclopedia doesn't back up our claims made here.

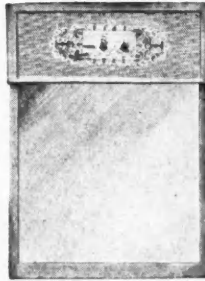
| VARIOUS DOORS | |
|------------------------------|------------------------------|
| "A" Qual., 4 Pan. | "B" Qual., 4 Pan. |
| THICK | THICK |
| 2-0x6-0, 1 1/2" . . . \$1.36 | 2-0x6-0, 1 3/8" . . . \$0.80 |
| 2-6x6-6, 1 1/2" . . . 1.57 | 2-0x6-0, 1 1/4" . . . 1.30 |
| 2-6x6-6, 1 3/8" . . . 1.77 | 2-6x6-6, 1 1/2" . . . 1.49 |
| 2-8x6-8, 1 1/2" . . . 1.85 | 2-6x6-6, 1 3/8" . . . 1.58 |
| | 2-8x6-8, 1 3/8" . . . 1.68 |
| Painted, 4 Panel | |
| THICK | THICK |
| 2-0x6-0, 1 1/2" . . . \$0.74 | 2-6x6-6, 1 1/2" . . . \$1.07 |
| 2-6x6-6, 1 1/2" . . . 1.02 | 2-8x6-8, 1 1/2" . . . 1.12 |
| Grained, add 11 cents net. | |



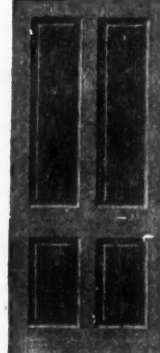
SUPERIOR
2-8x6-8, 1 1/4" glazed as above \$4.50
Glazed D. S. Glass . . . \$4.20



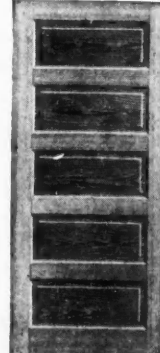
NEVADA PAINTED
2-6x6-6, 1 1/4" \$2.35
2-8x6-8, 1 1/4" \$2.45



NEPTUNE
Top Glazed, Battenberg Lace.
Bottom Glazed D. S. A. Glass.
3-8x5-0, 1 1/4" \$3.56
3-8x5-2, 1 1/4" \$3.68



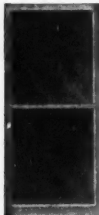
FOUR PANEL DOOR
We carry the largest stock of Doors in America, comprising over 300 sizes and kinds in White Pine, Yellow Pine, Cypress, Yellow Pine Panel and Oak.



FIVE CROSS PANEL DOOR

5000 BARGAINS IN SASH, DOORS Windows and Millwork of Guaranteed Quality Shipped Direct to Carpenters, Contractors and Builders

VARIOUS WINDOWS



2 Lt. Window

A Few Prices

| | |
|--------------------|--------|
| 16x20, 2 lts . . . | \$0.65 |
| 20x24, 2 lts . . . | .81 |
| 20x28, 2 lts . . . | .89 |
| 22x20, 2 lts . . . | .96 |
| 22x30, 2 lts . . . | 1.04 |
| 24x24, 2 lts . . . | .94 |
| 24x28, 2 lts . . . | .98 |
| 24x30, 2 lts . . . | 1.06 |
| 24x32, 2 lts . . . | 1.19 |

Above Prices are Glazed S. S.



4 Lt. Window

More Prices

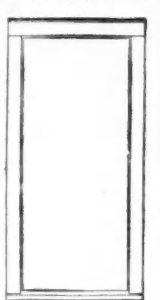
| | |
|--------------------|--------|
| 10x20, 4 lts . . . | \$0.66 |
| 10x24, 4 lts . . . | .75 |
| 10x28, 4 lts . . . | .87 |
| 10x30, 4 lts . . . | .98 |
| 12x28, 4 lts . . . | .95 |
| 12x30, 4 lts . . . | 1.10 |
| 12x32, 4 lts . . . | 1.17 |

Above Prices are Glazed S. S.

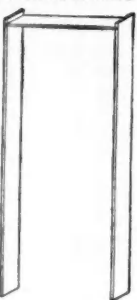
DOOR AND WINDOW FRAMES



No. R 314
For Windows 2 ft. 5 inch. wide by 5 ft. 6 inch. high. \$1.29
For Windows 2 ft. 11 inch. wide by 6 ft. 2 inch. high. \$1.35



No. R 315
For Doors 2-8x6-8 and smaller \$1.65
For Doors 3-0x7-0 and smaller \$1.78

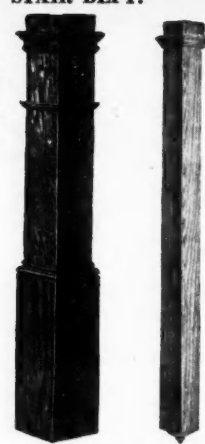


No. R 316
Yellow Pine Doors 2-8x6-8, or smaller \$4c
Doors 3-0x7-0, or smaller 60c

We carry these Frames, as well as thousands of other items in stock. Write for our Free Roofing Catalog and Samples and let us save dollar for dollar—Half.

For Grand Free Catalog address

STAIR DEPT.



| | |
|--|--|
| No. R 335 Yellow Pine \$2.30 Red Oak \$2.50 | No. R 341 Yellow Pine \$1.65 Red Oak \$1.75 |
|--|--|

CASING

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



Prices on above Casing, 13-16x4 1/2

| | |
|-----------------------|--------|
| Yellow Pine | \$1.75 |
| White Pine | 1.90 |
| Cypress | 1.90 |

BUILDING PAPER



Our Building Paper is the best quality. We do not believe in cheap, shoddy goods at any price. We can save you half.
C Brand Red Rosin, weighs about 20 lbs. to a roll, per roll of 500 sq. ft. **33c**
B Brand Red Rosin, weighs about 25 lbs. to a roll, per roll of 500 sq. ft. **42c**
A Brand Red Rosin, weighs about 30 lbs. to a roll, per roll of 500 sq. ft. **50c**
AA Brand Red Rosin, weighs about 35 lbs. to a roll, per roll of 500 sq. ft. **57c**

ROOFING

"What is worth roofing is worth roofing well."



Less Than Half What Shingles Cost You

| PRICE | Per Square (108 sq. foot) |
|-----------------|---------------------------|
| 7-Ply | \$1.41 per Roll |
| 2-Ply | 1.98 per Roll |
| 3-Ply | 2.29 per Roll |

GORDON, VAN TINE CO. 140 FEDERAL ST. DAVENPORT, IOWA