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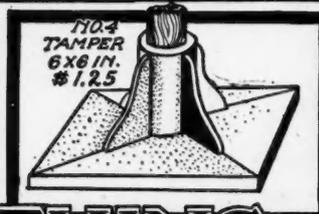
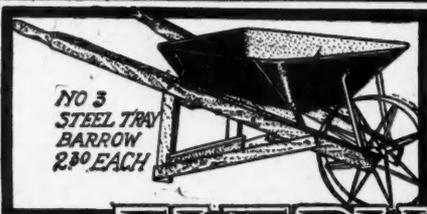
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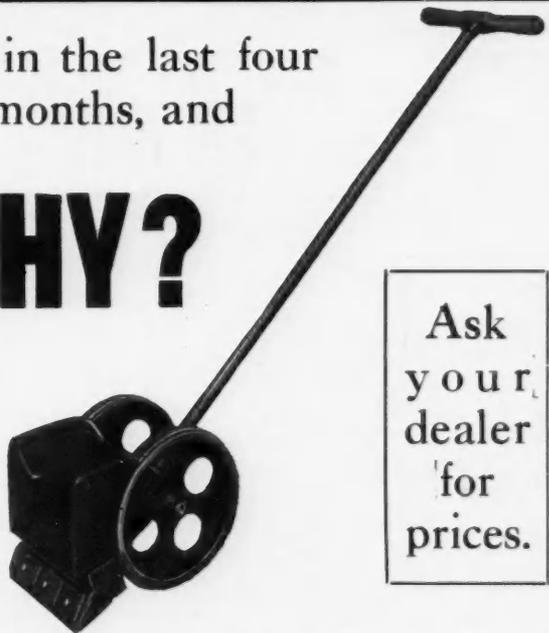
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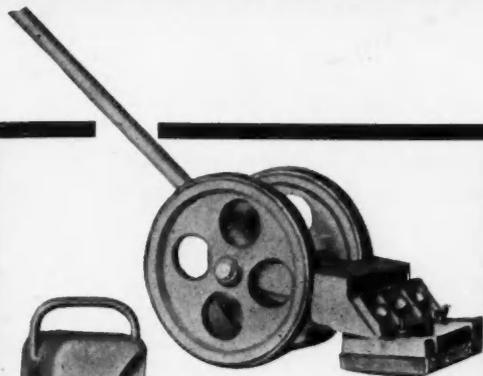


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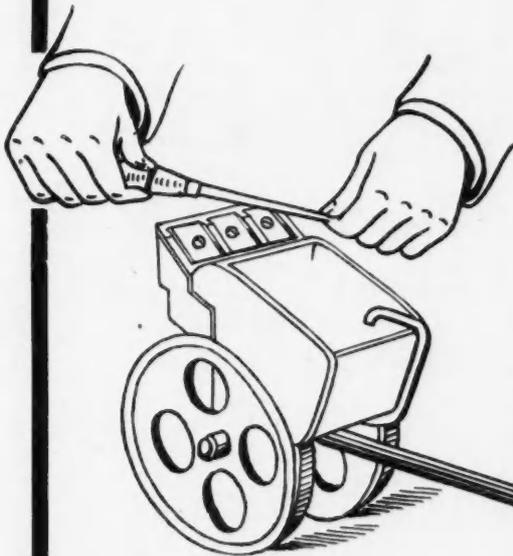
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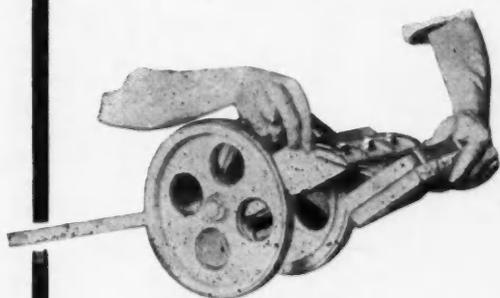
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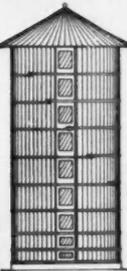
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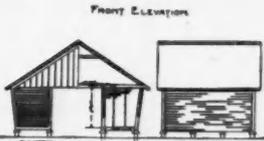
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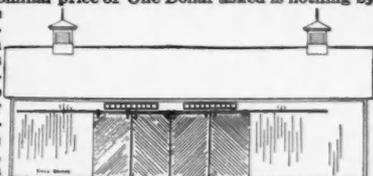
THE ILLUSTRATIONS on this page show but a very few of the many different kinds of barns and out-buildings in the book, and give no idea whatsoever as to cost or construction, as space will not permit here. But in the book itself each and every one of the buildings is shown by large drawings of floors, sides, ends and frame work, together with perspective views, sufficient to guide any carpenter or builder in the construction of same. The reduced illustrations here are only used to indicate, in a very incomplete way, just what might be expected from the book. It is a book which should be in every farm home, if you only intend to repair a little, or just build a small chicken coop. It is a good thing to even sit down and read, as the knowledge so gained will be highly valuable in hundreds of other ways.

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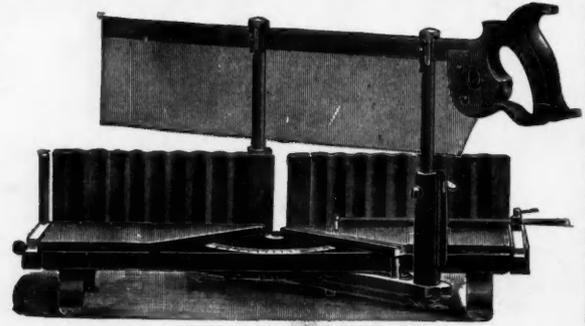
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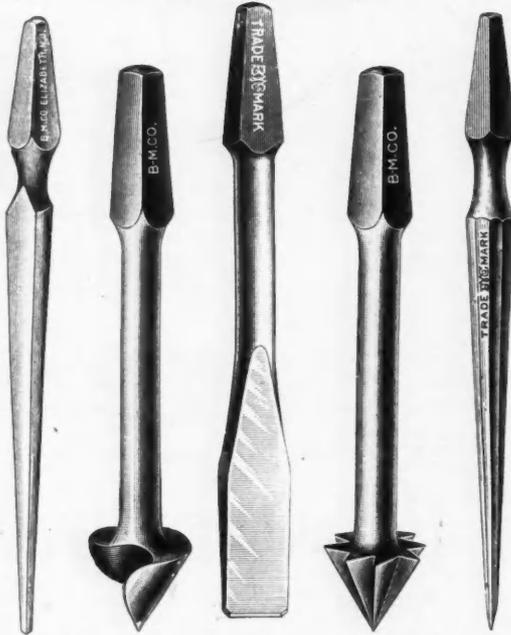
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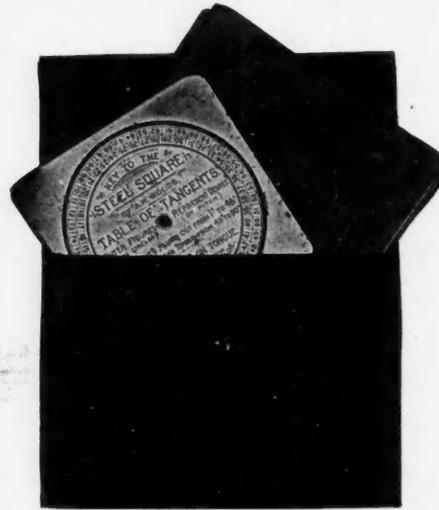
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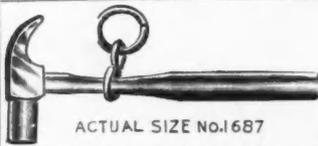
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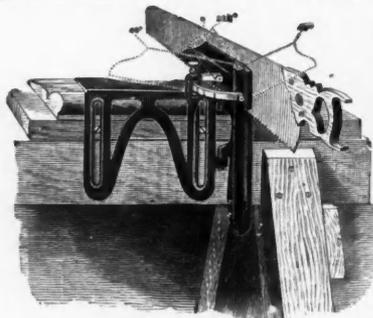
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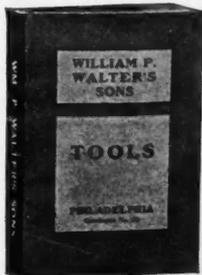
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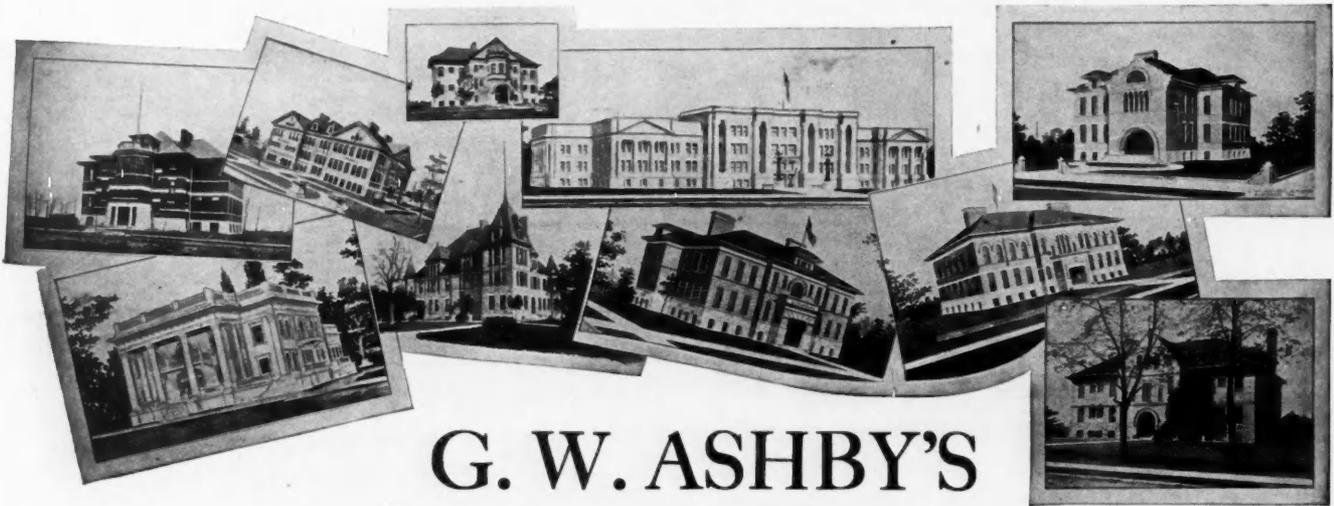
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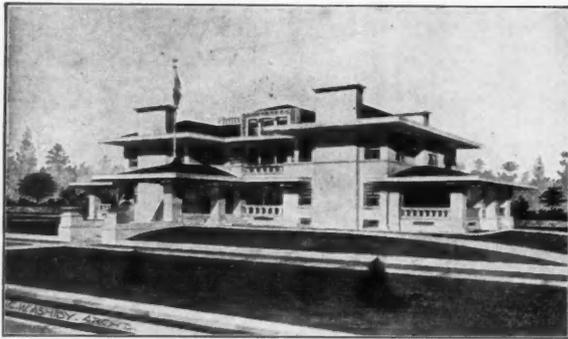


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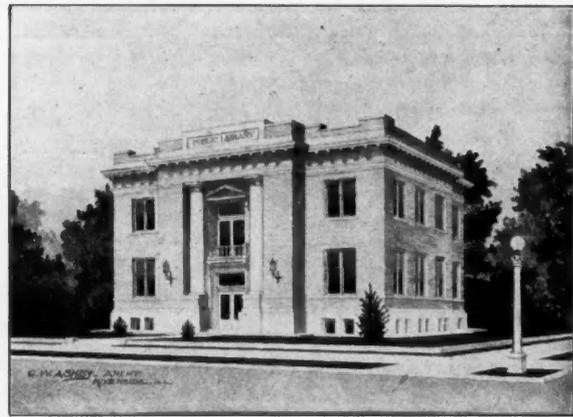
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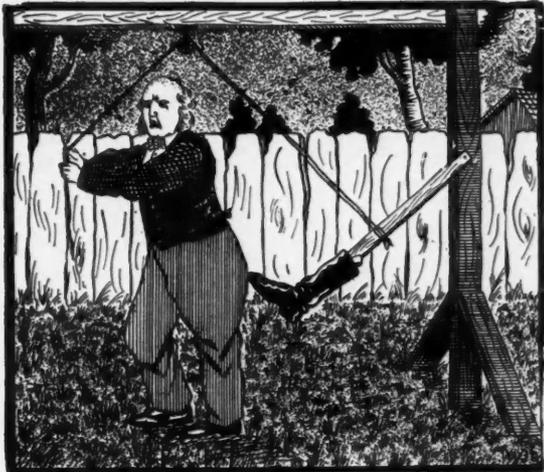
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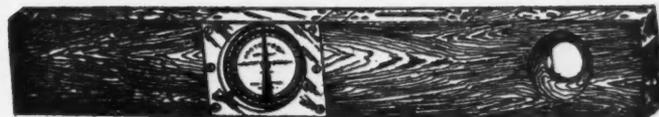
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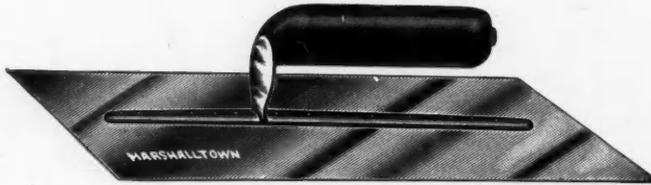


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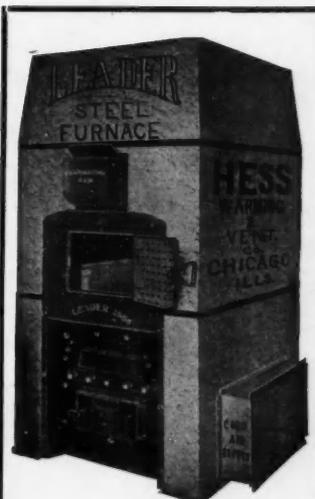
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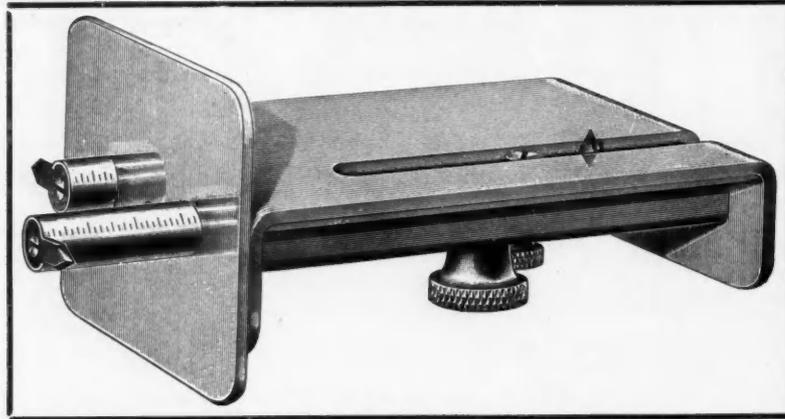
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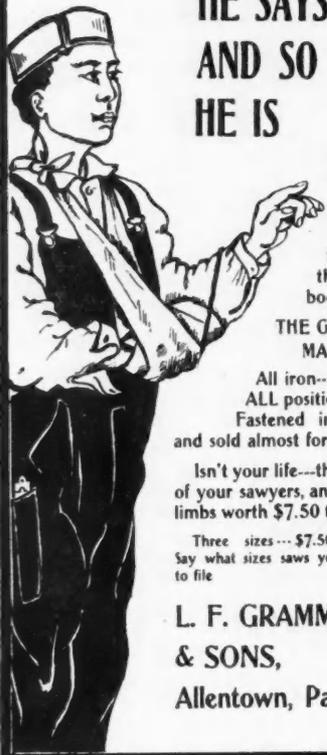


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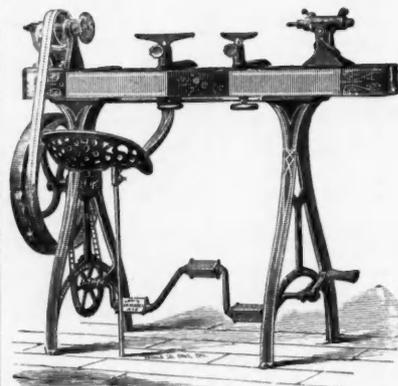
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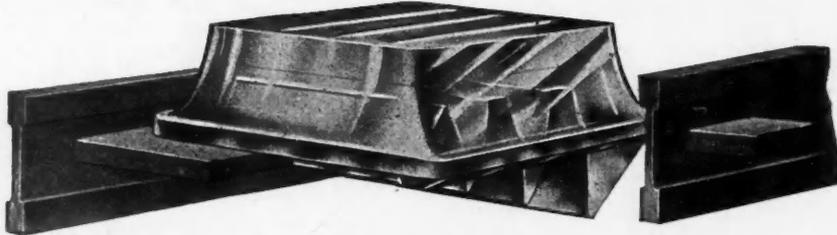
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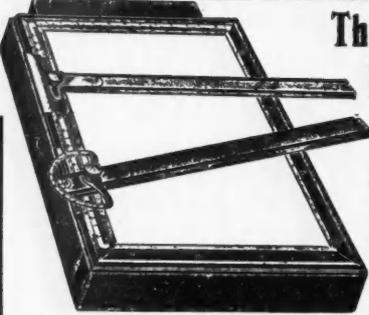
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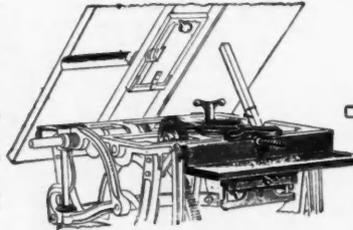
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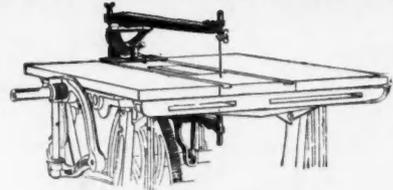
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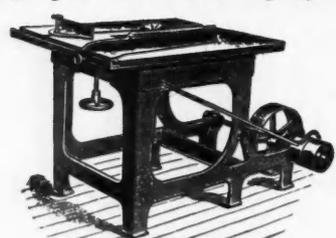
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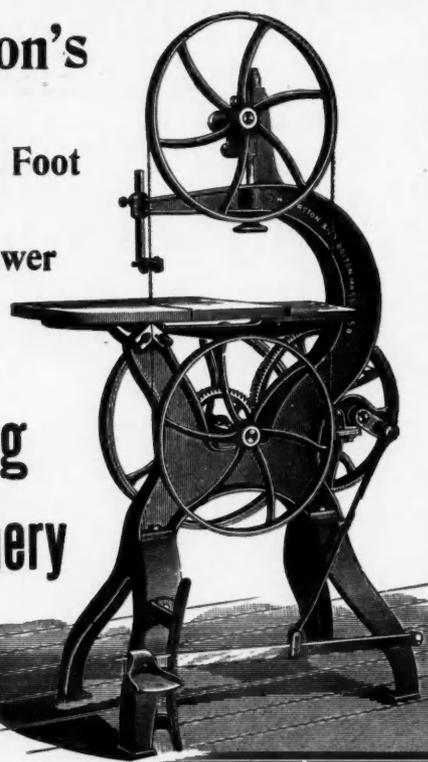


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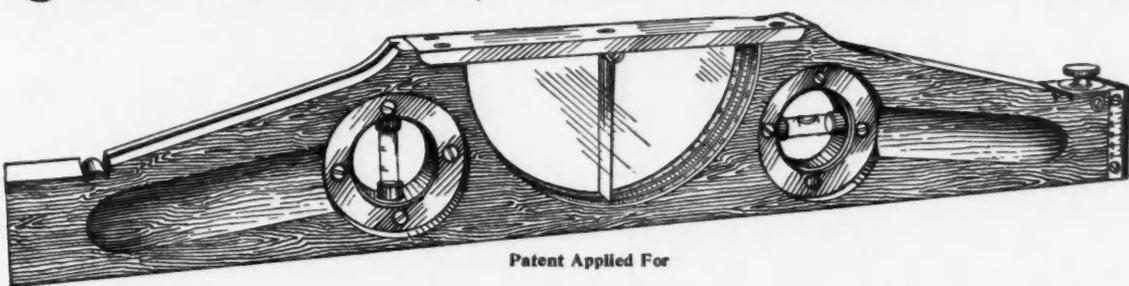
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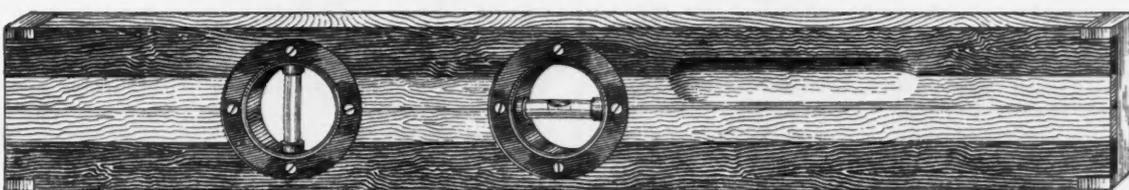
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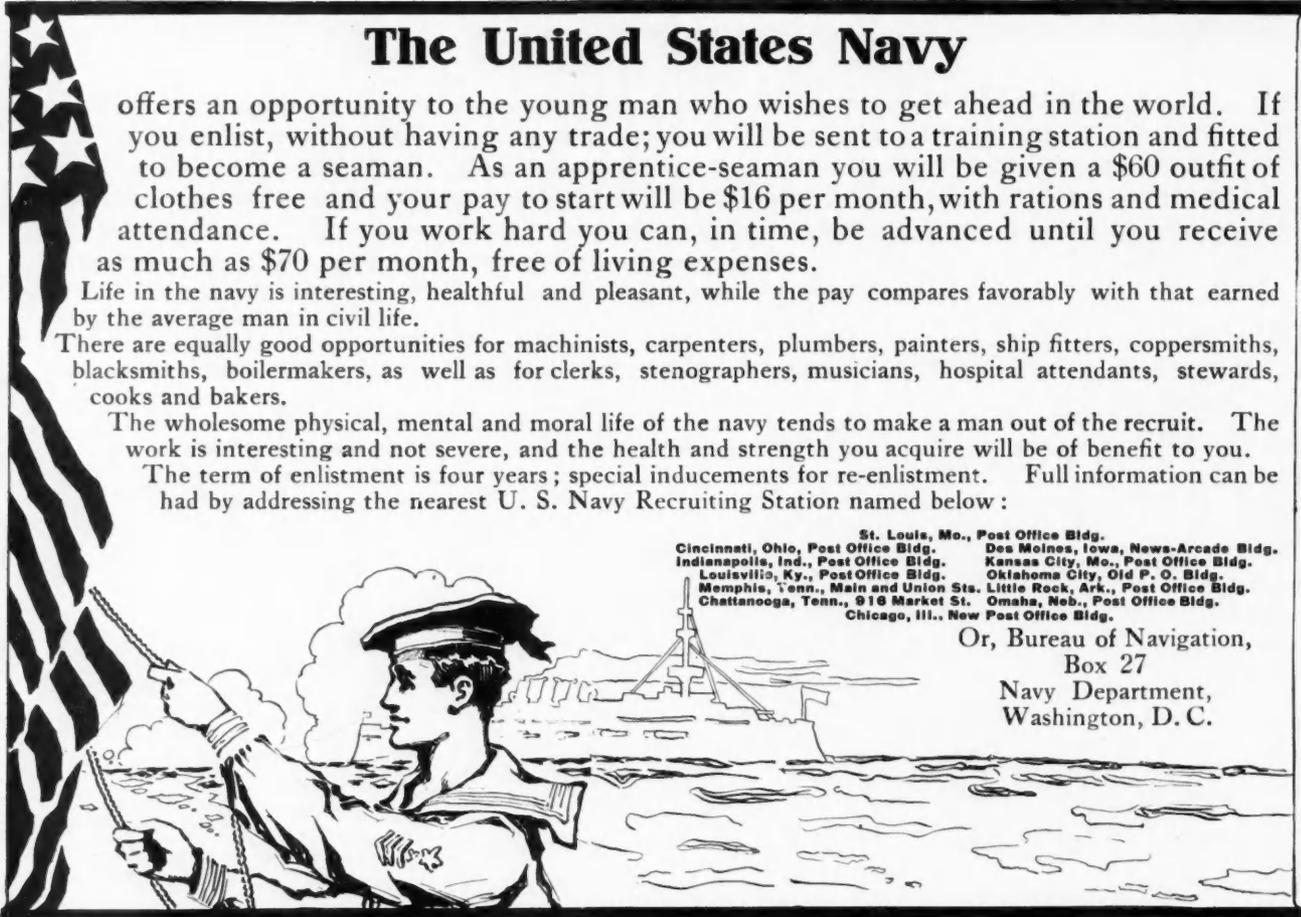
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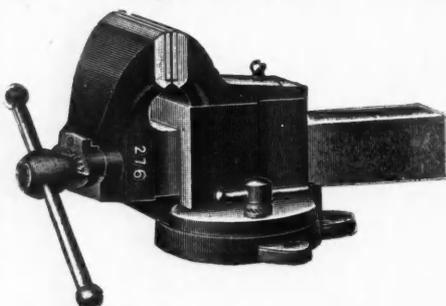
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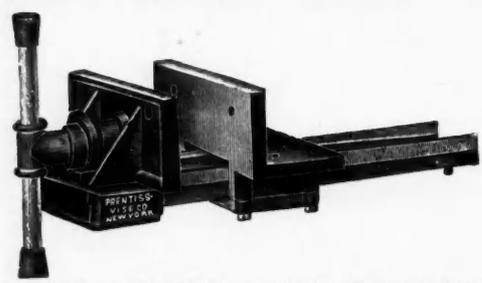
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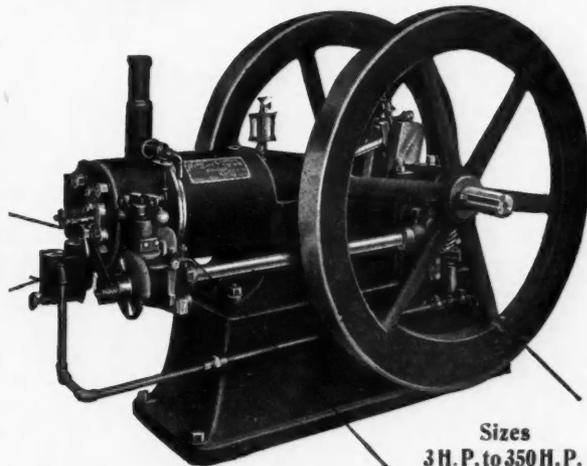
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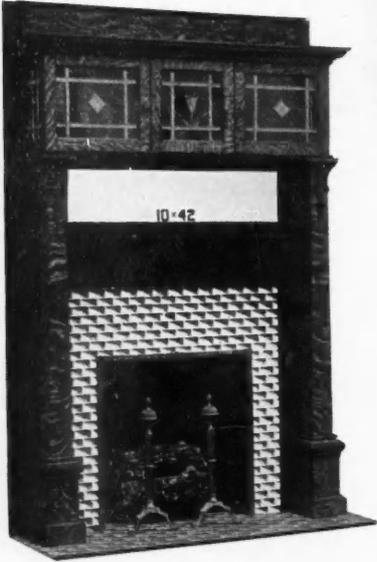
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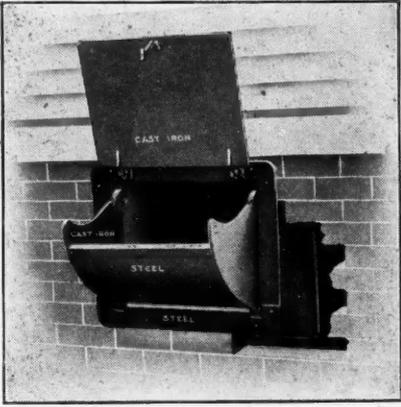
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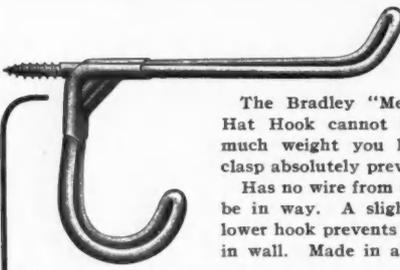
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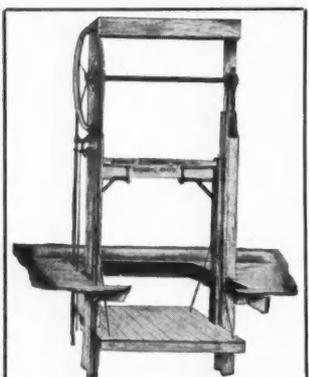
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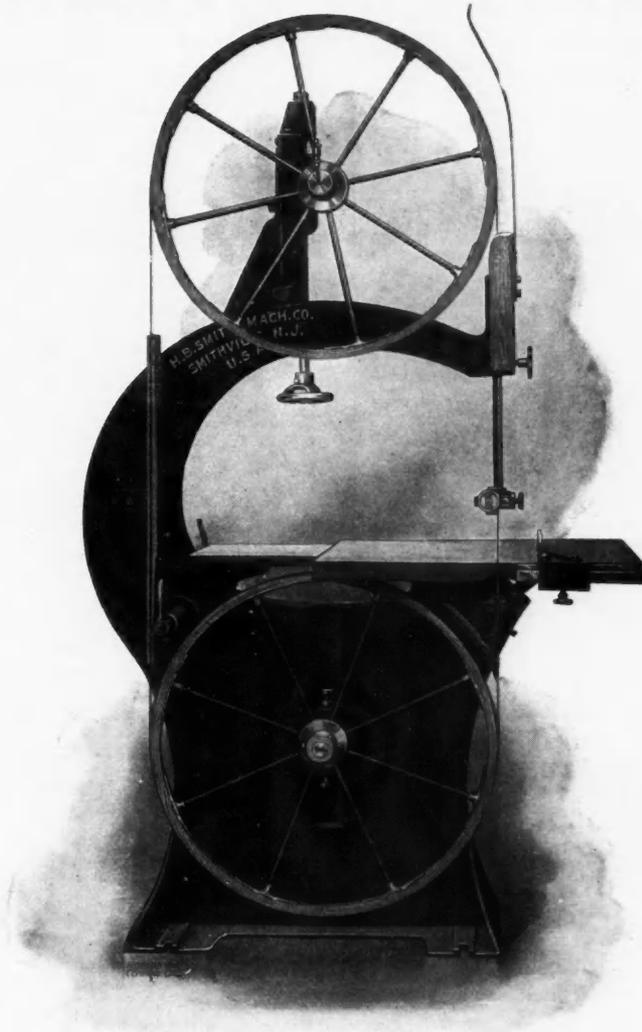
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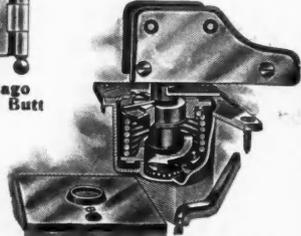
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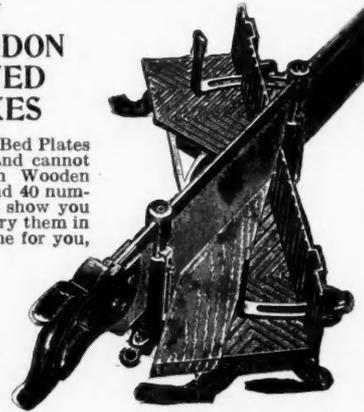
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American Carpenter and Builder

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

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WHEN you are bossing a job the main idea is not to see how much bossing you can do, but rather to see how much work you can get done.



A GOOD way to spend some of your spare time is in the study of catalogues, as well as trade papers, so that you may keep informed on all the new things. It helps you keep up with the procession.

Ventilation in House Building

DID IT ever strike you that the problem of ventilation is one that should occupy a prominent place in the minds of designers and builders of houses? Not merely in the building of big industrial institutions, office buildings and other pretentious places where lots of people congregate, but in the building of every home, no matter whether it is a cottage or a mansion. The average home is sadly neglected on this point. Take your own home for example, and investigate the conditions for yourself. Get up near the ceiling in every room and see how the air feels, and then do a little thinking on the subject and see if you can't realize where ventilation would be an advantage.

We have all been studying sanitation more or less, especially in connection with plumbing, but while some attention has been given the subject of ventilation, the rank and file doesn't seem to have come yet to a realization of the factor of importance it is in connection with home building. Most of us know that certain rooms are stuffier than others, and that up near the ceiling in almost any room the air is bad, but we fail to attach enough importance to it or to give enough of that kind of thought that leads to action, to the subject of properly ventilating every room in the home. Among the big industrial institutions the importance of ventilation has been recognized to the extent of leading to the installation of mechanical means for ventilation, which in some factories completely changes the air in the building every fifteen minutes. Employers realize that it is to their advantage as well as to their credit to properly ventilate their buildings, even when it costs considerable to install a mechanical system for the purpose.

An interesting bit of history connected with this subject of ventilation and its counterpart of heating in the winter, that is worth mentioning here, is furnished by the B. F. Sturtevant Company, who say that the history of such work in this country commences with Joseph Nason, who upon his return from England in 1842 began the introduction in this country of what was then known as the Perkins system of hot water heating. Following this in 1846 came

the introduction of mechanical air propulsion, the first installation being in the Boston custom house. In 1855, when alterations were under way at the United States Capitol at Washington, Mr. Nason was called to the capitol and planned a system of ventilating and heating there, and this was said to be the first really scientific job of the kind done in the country. At that time as now, fans were used for producing air circulation, and the air was conveyed to different parts of the building through galvanized pipe. There may be occasions now and then, especially where one has electric power convenient, where it is advisable to get proper ventilation in the home through mechanical means; that is, through a forced circulation of air by mechanical means. However, the main thought in mind right now in this connection is, that what might be termed natural ventilation should be provided for in every room of the home by some means. Just what means is best is a matter open for discussion and probably depends materially on circumstances. Some get a measure of ventilation through the use of double flues and vents in the rooms through which they pass; others may provide ventilation by a special system of piping, and there is evidently room here from the exercise of ingenuity and inventive genius. There is among the trade plenty of genius to solve the problem, and the desire here is simply to awake the builders to the importance of this matter and set them to thinking. That done, the details of the solution will come in good time.

J. CROW TAYLOR.



The Carpenter's Son

AS the son of the carpenter and builder nears the end of his public school course and reaches what might be termed the threshold of manhood, it is but natural and right that his parents should concern themselves about his future, and especially his course or place in the world of affairs. It is but natural and right also for them to want to see him guided toward the ways that lead higher, higher in the approval of mankind, and to easier ways of getting the material things of the world. Yet in the following out of these very laudable ideas people sometimes fall unconsciously into grievous errors.

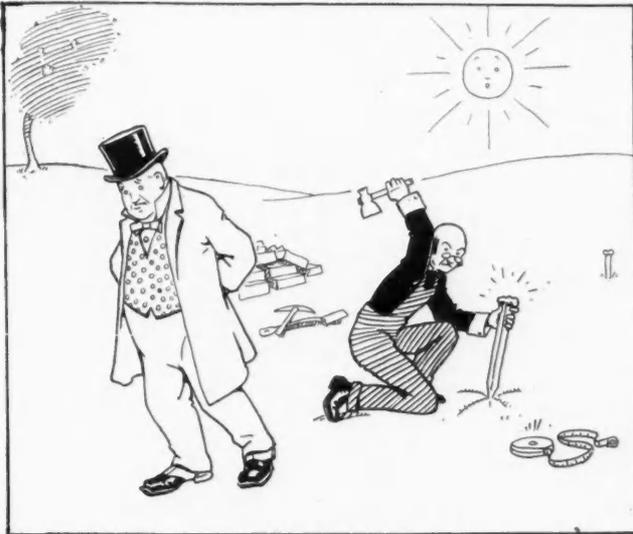
One mistake that is too commonly made is in the idea of training the son for professional life, or for some calling where he need not do rough work, like his father has had to do before him, but can go well dressed and look gentlemanly all the time whether at work or at rest. So many people have followed out this idea that the world today is more or less burdened with unsuccessful and discontented professional men, and with grinding clerks and bookkeepers whose lives are spoiled in a manner by their having been educated, so to speak, out of their class. They are no longer contented with the old home and the simpler pleasures of their childhood days, and they lack something of being the great business success they dreamed of be-

ing. So they are really spoiled from one thing without being qualified for another.

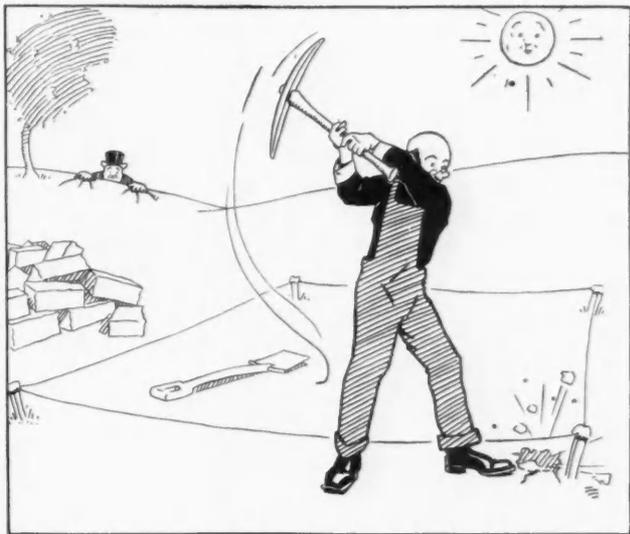
Why is this? Why do people who have worked hard strive to shield their children from that very same work—which is the best foundation in the world for the man-building? Many of those who have attained wealth and are at the heads of great industries are looking at the matter just the other way around. They realize that the best thing for their boys to start with is a thorough manual training at some skilled trade, and this sentiment is doing much today to further the idea of trade schools. There is no question, either but what the thing most boys need with the latter days of their school study is training in manual labor, and generally the best thing for the carpenter's son is an apprenticeship at his father's trade. There are exceptions, of course, as there are in everything, and some sons of carpenters may be destined for lawyers, some for doctors, some for one thing and some for another, as their peculiar traits or talents may indicate as they grow up. But did you ever stop to think that greatness comes frequently from generation after generation following each other in the same calling? It's the sons of sons of soldiers that usually make the great generals, and sons of sons of doctors that attain that high place in their profession that marks them as distinguished men, and the building trade can furnish its examples in the same manner.

Not so long ago there was a young man who attained international prominence by records made in large structural undertakings. In the course of describing some of his notable deeds the papers went into his history and found that not only his father, but his grand, and apparently his great-grandfather before him, all followed contracting and building. It was simply born and bred in the flesh and blood generation after generation, and thus was greatness attained. It's all simple and logical when you look at it right, and easy to see, also, how as a rule the carpenter's son is likely to do better at his father's calling than at anything else—because it is born in him. The trouble seems to be that too many of us have too poor an opinion of our own work or calling and too good a one of some others. We see others better dressed going about their work, envy them and think that something like that is what we will have the boy take 'up. Many a time the other fellow envies us, too, if we but knew it. There is both honor and room for distinction in any honest calling, and the man that can feel the honor in it is the one most likely to find the distinction. If your boy shows distinctive talent for something else outside of your calling, do not hesitate but train him as his talent leads, but if he has not, don't get that erroneous idea in your head that he should be shoved out of his natural channel and trained so he won't have to wear working clothes. Make a carpenter out of him, and tell him the way to glory is by being a better carpenter than anyone else.

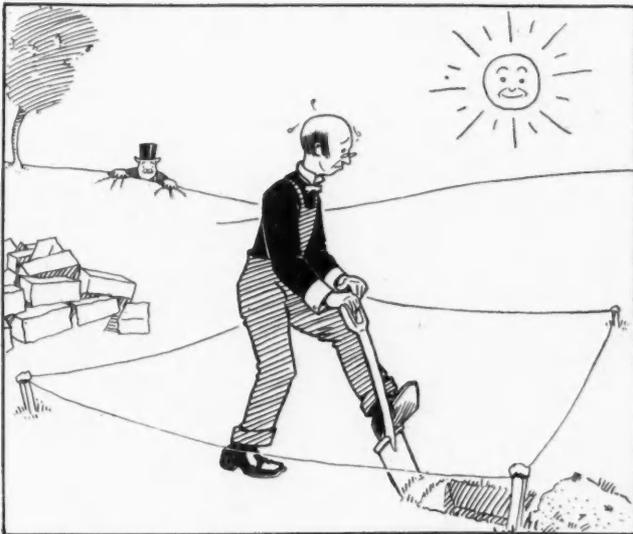
Biography of Mr. Thinks E. Knows.—No. 2



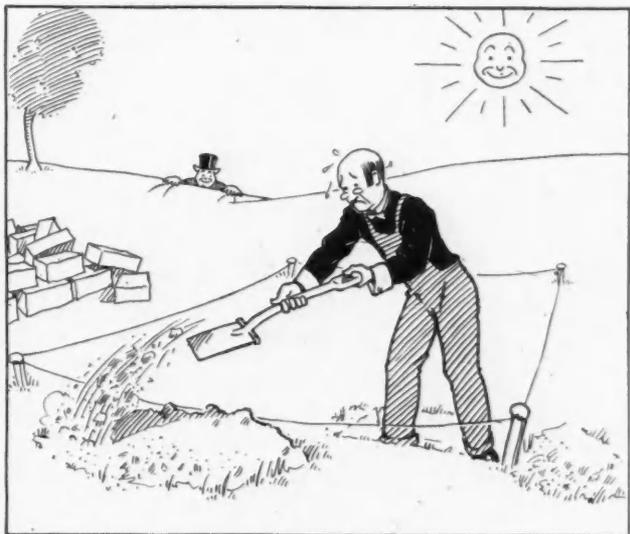
Mr. Thinks E. Knows refused the contractor's aid in laying the foundation. He starts to do the excavating.



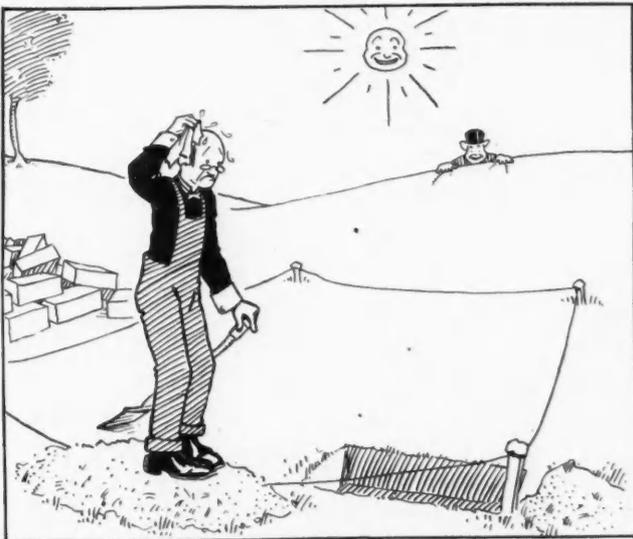
It is very easy at first and he thinks how foolish he would have been to give the contractor an order.



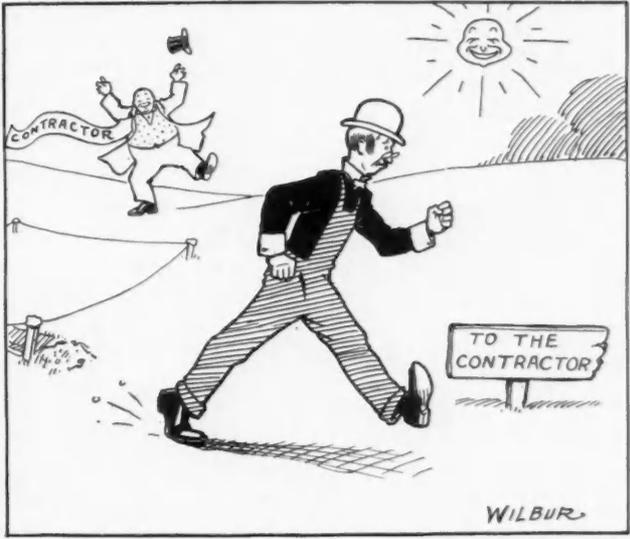
It gradually grows harder and harder and his pace resembles that of a snail, but he sticks to his task.



The perspiration begins to trickle from his brow and his back begins to ache.



He looks at his three days' work and compares it with what he will have to do.



Then common sense prevails and he decides to see the contractor.

WILBUR

The City of Doors

By J. R. White

EUROPEAN cities are more or less disappointing to the well-read tourist—he knows so well what he is going to see, and the thoughts and feelings he should have in the presence of every work of art on his list, that it is difficult to have any impressions all his own, and equally difficult to reach the exalted state of mind which he knows he ought to have if he is not to fall below the standard set by the literary guide book. Then the fact that things are not in their proper setting, detracts somewhat from the pleasure

ately collected anything to interest anybody—it *is* and that is enough.

The island is one great picture in itself; a mass of vivid coloring in the country with its clove orchards, palm groves and flamboyant trees, while the city reminds one of a pastel in shadowy black and white. Everywhere are darkly shadowed narrow streets and at the end patches of white where the sand reflects the almost painful brilliance of the merciless African sun. The swarthy native who boasts of his Arab de-



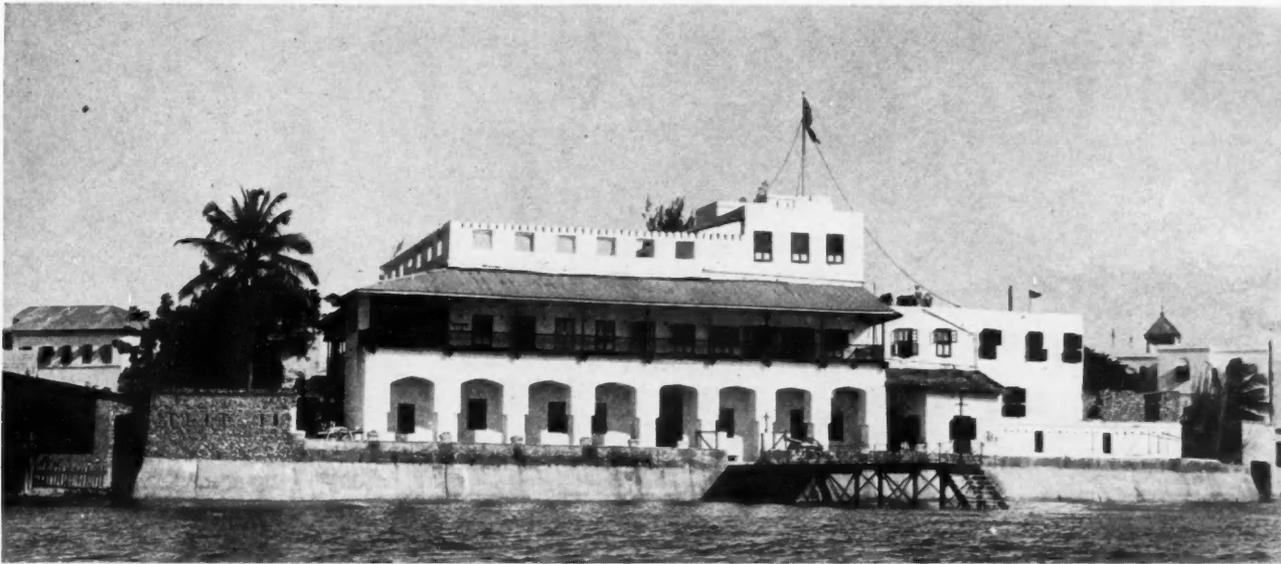
Street Scene in Zanzibar, Showing Building Construction

of seeing the ordinary sights of Europe. If the Madonnas were only looking down from the altar of some old church instead of from a gilded frame in a gilded gallery, or if the Elgin marbles were under the light of Southern skies, instead of in the gray haze of a London fog, there would not be the feeling of discord that comes with seeing things out of their proper atmosphere. We were pleased to note this was not the case in Zanzibar.

These were the only arguments we could devise to explain why the streets of Zanzibar proved so much more interesting than the corridors of the Pitti Palace or the halls of the Vatican. Zanzibar has not deliber-

scent, but who appears to be more nearly related to his neighbor on the mainland of Africa, looks as black as night in contrast with his snowy linen robe and cap. The white walls of the old Moorish buildings that line the thoroughfares of the city serve as an effective framing for the wonderfully carved teak and ebony doors that are the chief beauty of Zanzibar.

When we realized what a lovely and interesting thing a door could be, we marveled that the buildings of other countries had not profited more by the wisdom of the Arabs, and put "first things first," for surely no part of a house is so prominent or so thoroughly studied as its front door. Your guests may



English Consulate, and in the background American Consulate

not think it well bred to gaze at the pictures in your drawing room, nor to study the design in your Persian rug, when their attention should be entirely absorbed in your delightful conversation, but during the few minutes they stand in front of your door and wait for a response to the bell, there is nothing in the world to do but gaze at your ugly door. The Oriental is more thoughtful. You provide entertainment for your guests from the moment they enter your home; he sees that his guests enter in a proper frame of mind.

The approach to the house is usually a shaded arcade—fastened in the massive door is a knocker of iron or bronze, so handsome that it is a pleasure to grasp the well worn ring, held in the jaws of a lion's head, which has been chiseled with infinite care. As the echoes of the resounding metal die away, one hears

the approach of soft foot falls through the corridors, but there is time to study the splendid carving in shining ebony, which should be called a picture rather than a door, so rich is it in Oriental fantasy. Sometimes the design takes the form of artistically interwoven Arabic letters, that give to the guest who can read the sacred book some sentence from the Koran for his soul's good. Inside dusty shoes are loosed and replaced by soft sandals, and so with mind and "understanding" rested the guest comes into the presence of his host at peace with the world. No wonder that the Oriental enters a room forgetful of himself, with the bearing of a prince and the deference of a courtier.

We discussed the possibilities of these wonderful doors as we threaded our way through the narrow streets of Zanzibar, stopping to study the heavy teak



English Theatre in the Old Quarter

metal-studded panels, the strips of ebony carving, or the ornate chains that fasten the door at the bottom, and decided that a beautiful door might perhaps be turned to practical ends. As the irate creditor stood and read interlaced with the door's carving a sentence on the thrice blessed quality of mercy, his heart might soften a little and his claim on his neighbor's goods relax. The lover could still his trembling heart and enter the room less flushed and awkward if he could for a moment forget himself in a new interest. And my lady might let slip from her mind the thing she

phere. We could not give the splendid door an appropriate setting—the thick walls, deep seat, arched windows, and Moorish towers.

In Zanzibar the door is the finishing touch of all that is strange and mysterious. Everywhere are overhanging, closely latticed balconies where the women of the household are allowed to seek a breath of air during the days of a summer and winter almost equally hot and sultry. Here they may sit year in and year out waiting for time to pass, watching the street life below through the tiny openings in the lattice work.

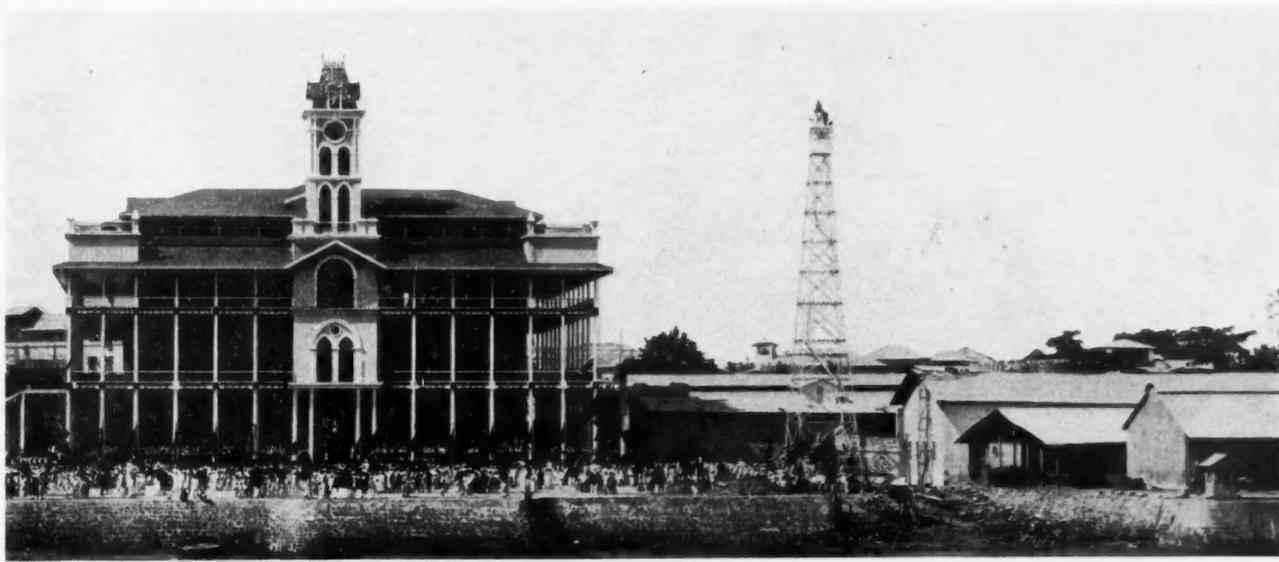


View of the Administration Building

meant to say, but which it would be kindlier to leave unsaid, or she might even cease to be conscious of a new gown, if her attention could be diverted and her fancy pleased by a friendly and attractive door. So we resolved that when we reached our own door sill and took its measurements we would send back to the City of Doors for an old Arabian panel and its knocker.

After several days in Zanzibar we compromised, and decided that although our door should be something new and artistic, it was perhaps better to put a modern American door in a modern American house. Otherwise we should be guilty of what we criticized in others—the taking of things from their proper atmos-

Sometimes the ponderous door swings open and a servant in a long white robe, or embroidered coat, precedes the closely veiled woman into the streets. There is every type of life from Arabia, India and Africa here, and every conceivable religion, and the women are veiled or unveiled according to their faith. The women of the Swahili—the native race, insofar as an island settled not more than four hundred years ago by Arabs and Africans can be said to have formed a race—have exercised considerable ingenuity to make themselves grotesque, and so they are, from their gold laden ears and noses to the beruffled ankles which give them the appearance of a Buff Cochin chicken. The Mohammedan wife disguises herself with a white or black veil



Palace and Electric Tower

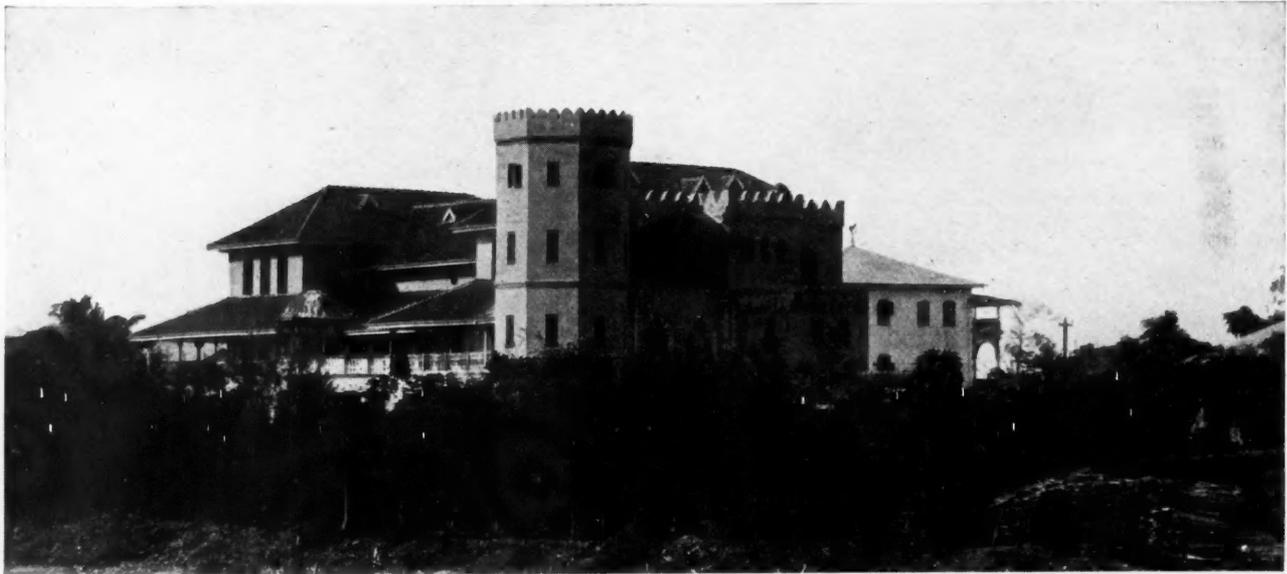
with narrow slits for the eyes, or wears bound upon her face a queer embroidered square with an oblong opening above the nose. The women here, shut in behind walls and veils, seemed to us so utterly hopeless and unhappy, but we tried to believe that the misery was of our own imagining, and the great doors clanged shut perhaps behind a woman as happy over her day's shopping as though she had spent the afternoon on Broadway. We picture her pleasure in the little latticed balcony above us, spreading out her purchases and preparing for her afternoon coffee party.

Those who can "resist everything but temptation"

should not visit the shops of Zanzibar. Nowhere else is there such a tempting array of things which one excuses oneself for buying on the ground that they are to be found nowhere else in the world—hand carved sandal wood and silver, hand woven mats and divan covers, Oriental slippers and fans, but above all ivory in every shape and form from a plain cigarette holder to the most elaborate jewel boxes. That it is possible to carve articles of considerable size from a single piece of ivory, is evident from the two tusks photographed near the stalwart servants to show their comparative size; they are frequently ten feet in length



Palace of the Sultan



Rogers Castle

and several times greater in circumference than the neck of an ordinary man. Such a pair of tusks is a small fortune, and every one would turn hunter at once and become wealthy if the government did not interfere. The hunter must pay two hundred dollars for his license and then he may shoot two elephants if he can; a third entails the penalty of fine and imprisonment.

The exports of Zanzibar are unique; like the rest of Africa it imports the necessities of life, and supplies the world with luxuries. South Africa would be poor indeed were it not for its diamonds, gold and ostrich feathers, and East Africa derives its wealth from copra, ivory and cloves, which can hardly be called necessities. Cloves are the source of income for the entire island—there is no other spot in the world except a district in the Molucca Islands where the clove tree flourishes. The great warehouses are piled high with hundreds of sacks, and the crushed brown fragments that strew the floor give forth the fragrance of a garden of pinks. Near by is the warehouse for the copra, a name given to the green, partially dried cocoanut, which is sent to Marseilles, where its oil serves for the manufacture of everything from soap to "pure olive oil."

A day's drive across the island to the town of Chuka on the opposite side is along a well worn road through clove orchards and cocoanut groves, and farther toward the East mango trees canopy the driveway. The scene is always all color and life—the women in gay colored drapery come swinging along with baskets of fruit on their heads, children are playing before the brown huts in the opening, the thick foliage of the tree almost hides the clove gatherer and his ladder, and the shining piles of cocoanuts mark the places where the native boys are at work in midair.

We bethought us one day that before we left the island we should like to see the owner of all this

wealth and loveliness. We remembered that Sultans are scarce and inaccessible; and if we wished to number one among our acquaintances, it would be well to present our letter to our consul, and gain access to the



Ebony and Ivory

royal presence before his last vestige of power disappeared. The palace we had seen, and an uglier one as far as the exterior is concerned, could not well be devised—the only redeeming features are the fine inner court surrounded by three galleries, and the splendidly carved double doors. When night hides the ugly decorations of the palace, and the encircling electric lights are lit, from the ships in the harbor it would seem that Aladdin's enchantment has set this brilliant palace by the sea. Under the glare of the morning sun it is what it is—an ugly, pretentious piece of modern English architecture.

The present Sultan was educated in England at Harrow and he is altogether dominated by British influence. In 1890 Great Britain declared a protectorate over the Island of Zanzibar, as she has a way of doing when she fancies an island. A certain Khalid attempted a usurpation in 1896, and the city was bombarded by the British fleet. The result was what one might naturally expect—the little kingdom surren-

dered, Khalid fled to German East Africa, and the youthful Ali, the present Sultan, was put on the throne, taken off again and sent to England to be educated, and then reseated in the midst of English ministers, who, in theory, assist him to govern. England relieves him of all financial worry by paying him some seventy thousand dollars a year for the rent of certain of his lands. In his harbor his whole fleet has been safely anchored by the British at the bottom of the sea. The mast of his largest vessel projects some thirty feet above the surface of the water like a threatening rod, as a warning that what has happened to a Sultan in the way of punishment may happen again.

If the Sultan finds the view from his front windows a trifle disconcerting he can solace himself within. Here in his magnificent Moorish court he may eat, drink and be merry attended by his hundred servants, and rest from the cares of state which he transacts by proxy—in the presence of his three wives a thrice happy man.

Timber Forestation in California

WORK BEING DONE IN THAT STATE TO REPLENISH OUR FAST DISAPPEARING FORESTS—KINDS OF TREES MOST DESIRABLE

By H. A. Crafts

AS all builders, and others who use lumber, are at present interested in the subject of the timber supply of the country a glance at some of the possibilities of forestation and reforestation is not uninteresting.

The best lumber authorities admit that our greatest timber supply is now on the Pacific Coast, and this includes the pineries of Oregon and Washington, and the red wood and sugar pine bodies of California.

This supply is estimated at 700,658,080,000 feet. At the present rate of lumber consumption in the United States this supply would last about twenty years. The chances are that the rate of consumption will increase; so it would be a very reasonable guess to say that the timber supply of the whole country will be exhausted in twenty years.

If a general system of timber preservation, forestation and reforestation could be put on foot all over the United States today and kept up without relaxation it is quite probable that a fair supply of lumber could be provided. But it is not reasonable to suppose that any such movement will be inaugurated, judging by the blind policy of wastefulness that has hitherto marked our industrial history. So there will occur after a few years an acute pinch in the lumber supply, and then it is possible the people will wake up to the gravity of the case.

As it is, the cost of lumber to the consumer in the United States has just doubled in the past eight years, a fact based, it is said, upon the increased scarcity of timber and its growing remoteness from the markets.

When it comes to a question of raising our own timber, and it will come to that sooner or later, those

trees which are of the quickest growth and at the same time whose timber will be adapted to mechanical purposes will be the ones chosen for a main dependence.

Pine, spruce, fir, hemlock, redwood, etc., we all know are of slow growth, but cottonwood, poplar, linden, acacia and Eucalyptus are of a more rapid growth and it is very probable that some of these, if not all, will be utilized in the beginning of the coming and inevitable crusade for the betterment of our lumber supply.

Of all the quick-growing trees mentioned the most interesting is the Eucalyptus, and this tree has been made great use of in California. It was introduced from Australia, its native habitat, and where it forms the great bulk of timber and lumber entering into the arts and mechanics.

It was first introduced into California by a Mr. Walker, of San Francisco, in 1856, who planted some fourteen different varieties of the Eucalyptus.

Next, Stephen Nolan, a nurseryman of Oakland, Cal., took an interest in the tree, and decided to introduce the tree into the Golden State upon a larger scale. He hunted up a sea captain who was about to sail for Australia, and this navigator he supplied with money and commissioned him to obtain a considerable supply of Eucalyptus seeds during his visit to Australia.

The captain returned from his voyage and brought with him the desired seed. This was in 1861. Mr. Nolan planted his seed and began a regular propagation of the Eucalyptus in California. He continued to import seed from Australia, and to raise nursery

stock from it, and for these saplings there grew a lively demand.

People planted them in groves, forests, along town and city streets and country highways and the tree obtained a wide distribution, especially throughout the central and southern parts of the state, so that today they impress their individuality upon nearly every landscape.

Ellwood Cooper, who for many years has filled the office of horticultural commissioner of the state, was one of the first to plant on a large scale the *Eucalyptus*. Mr. Cooper settled on a large ranch near Santa Barbara and upon this ranch planted 200 acres of the trees.

He chose those parts for forestry that were considered waste land, such as steep, rocky hillsides, canyons, gulches, etc. The trees did well, even in those unpromising spots, and Mr. Cooper has *Eucalyptus* trees that are as large in growth as oaks that have been growing between 200 and 300 years.

The late Governor John Bidwell was another extensive

planter of *Eucalyptus* trees on the well-known Bidwell ranch of 26,000 acres near Chico, Cal. To show what a large yield of timber may be produced from a small piece of land a case on this ranch may be cited.

On a plot 30 feet long and three feet wide, or covering 90 square feet, stand 22 large trees and 30 small ones. The 22 largest are from 75 to 100 feet high and from 18 to 48 inches in circumference. These trees are of the *Eucalyptus viminalis* variety and were planted less than twenty years ago.

In Australia there are not less than 150 different

varieties of the *Encalyptus*, and the lumber manufactured from it enters into the construction of all kinds of buildings, ships, bridges, railroads, telegraph and telephone lines, fences, paving blocks, vehicles, furniture, agricultural implements, boxes, barrels, etc.

It is rapidly entering into general uses in California. Of course it goes without saying that it makes excellent fuel for the stove, burning very freely and having lasting qualities; both the wood and the foliage

contains a gum which adds greatly to its inflammable quality, even the green leaves burning quite readily when ignited.

Other uses are found for the wood in the construction of fences, corrals, log bungaloes, railroad ties, piles for wharfage, masts, spars, etc. I presume that it is sawn up into lumber in some cases, but none of that description has yet come under my observation.

Its utility as a fuel producing wood is without question. Mr. Cooper estimates that he can cut from his 200-acre *Eucalyptus* forest not less than 1,000 cords of wood annually without in the



Eucalyptus Tree on Shore of Lake Merritt, Oakland, Cal.

least impairing the general growth.

The *Eucalyptus* is a perennial and may be classed as one of the hard woods, and in the texture of some of its varieties resembles the American oak and hickory.

There are varieties, however, that would work well under saw and plane, and when it comes to the time when its use will be adopted in carpentry, cabinet-making, it is very probable that the quality of the lumber may be improved by a system of cross-breeding. It seems quite probable that if once placed in the skillful hand of Luther Burbank, the celebrated

hybridizer, the Eucalyptus could be brought to a condition of the highest usefulness in mechanics and manufactures.

Besides the very large number of private tree planters in California the state is doing excellent work in the way of forestation in connection with the experiment station of the University of California.

Some twenty years ago forestry sub-stations were established at Chico in the northern part of the state, and at Santa Monica in Southern California. Much

acid or acid salt from the second salt is mixed with the gypsum mass by stirring; the action of the acid forces out the carbonic or hydrochloric acid from this second salt, and these gases in escaping produce pores in the plates. With careful work, the pores in the mass may be distributed so evenly and in such great number that the plates made from it are very light, conduct sound badly, and can be easily nailed. The same result, according to the Allgemeine Chemikerzeitung, may be obtained in a much simpler manner by adding



Eucalyptus Trees in Grounds of University of California

good work has been done through the medium of these substations, but the efforts of the foresters have been woefully hampered by a lack of funds, as the California legislature has been very blind to the necessity of forest tree planting in the state.

The Eucalyptus in its different varieties is the leading tree in the experimental work, and the sub-stations not only planted quite extensive forests of the tree on the sub-station grounds, but have distributed large quantities of seed and saplings, free, to tree planters throughout the state.

✦ **Sound Proof Plates**

These bricks or plates are made from a mixture of gypsum, with sawdust, coke-dust, or ashes. The following, according to the Boutechnische Zeitschrift, is another effective but more expensive method. An

small quantities of carbonates to the gypsum mass. These carbonates and the gypsum suffer mutual decomposition, resulting in the liberation of carbonic acid. The gas escapes slowly and steadily, while the gypsum sets and hardens, acquiring an entirely porous texture without losing any of its durability. Thus at the expense of very little material the plates, while retaining their strength, become lighter. The bicarbonates of the alkalis—sodium carbonate or ammonium bicarbonate—are the best salts to use for the purpose. The effect may be increased by adding sawdust, coke-dust or ashes. For example, 20 parts by weight of sawdust may be mixed with 40 parts by weight of gypsum, and 40 parts by weight of water, in which one part by weight of sodium bicarbonate or ammonium carbonate has been dissolved, added to the mixture.



Casement Bay Window

CONSTRUCTION OF A BAY WINDOW IN A STONE WALL CONSIDERED—SASHES OF THE INWARD OPENING CASEMENT TYPE

IN this installment we will consider a bay window in a stone wall, with sashes of the inward opening casement type. The bay window is entirely within the thickness of the wall, as shown in the plan.

The wall is constructed of random coursed, roughly squared local stone with cut quarry stone sill and lintel. The sill is cut with a wash and with stools at either end, is tailed into the masonry at each end, and extends to within two inches of the inner face of the stone wall. The masonry jambs of the opening are straight and the frame is secured in place by means of lugs left on the ends of both head and sill and built into the stonework as the walls are carried up. This requires very careful calking of all crevices about the frame so as to make a windproof job. The sashes are shown glazed with leaded glass.

The figured dotted lines in the elevation of the window indicate the cuts at which the various detailed sections are taken, the figures on the former designating the detail with the corresponding number.

Fig. 187 is a vertical section taken through the head of the window and shows the top rail of the transom sash beveled on the edge so as to allow for the slight throw upward when the sash, which is hinged at the bottom, is opened. The inside soffit of the window is paneled. The frame is rebated for the sash and the outside casing is molded as shown.

Fig. 188 is a vertical section taken through the transom bar of the window and shows the transom sash and bar with a rebated joint and the sash with an undercut. The transom bar is also rebated for the casement sash and has an undercut on the projecting portion. A molded member of finishing woodwork covers the transom bar on the room side.

Fig. 189 is a vertical section taken through the sill of the window and shows a method of construction similar to that illustrated in last month's installment of this series. The stool is tongued into the sill and the sill and sash are rebated. The sash has two undercuts and a let-in drip mold to make it weatherproof. The sill has a channel to catch any water which may beat in under the sash, and this channel discharges the water through the reamed holes, indicated by the dotted lines, onto the sill outside of the sash.

Fig. 190 is a horizontal section taken through the mullion of the bay window and shows it of light construction and rebated for both sashes. The rough mullion is covered on the room side by a molded member and on the outside has beaded edges and a cover mold which mitres with a portion of the outside casing.

The hinged stile of the sash is rebated and tongued and the lock stile of the sash is rebated and grooved.

Fig. 191 is a horizontal section taken through the jamb of the window. The trim is molded and hollow-backed and has a back band and wall mold. The jamb lining is tongued into the molded inside casing. The wall, on the inside surface, is furred, lathed and plastered, and grounds (G) are set as shown.

✦ Peculiarities of Tropical Woods

Mahogany logs, as brought from Honduras, Colombia and Nicaragua, are generally large; that is, most of what come to New England are of fairly large size, says a correspondent of the "Wood Worker." The length runs from 10 to 22 ft., and the diameter is about 24 ins. on an average. A mahogany sawyer told the writer of a "butt" which was 22 ft. long and about 10 ft. in diameter, which had to be split before it could be sawed. They bored 1-in. holes the entire length, about 1 in. apart, then used iron wedges. When the log was split the sawyer stretched himself across the large end and could not span the diameter by 3 ft. or more. Mahogany is generally of a fibrous, stringy nature, is hard to split with an ax and is most always sound. It is rather hard on saws, but no special way of fitting saws is used except that less hook is used than in fitting for soft woods, and more frequent changes are necessary. Spanish cedar is a soft, easily worked wood, and the best variety comes from Colombia. One "butt" which was sawed in a Boston mill was 12 ft. long and 5 ft. in diameter at the small end. The best of it goes into cigar box lumber, and much is used for lead pencils, etc. Thin gauge saws are used (circular segment) to cut this valuable wood.

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

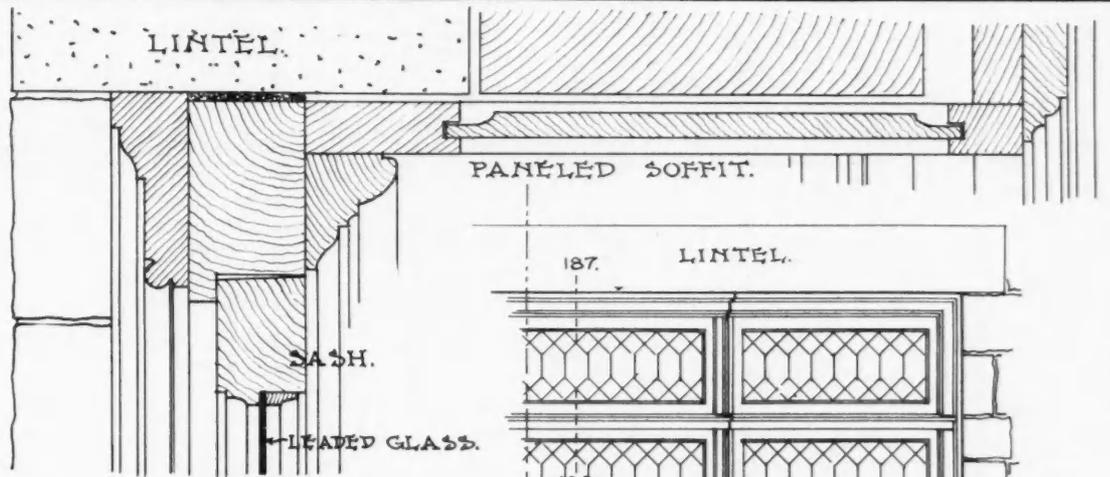


FIG. 187.

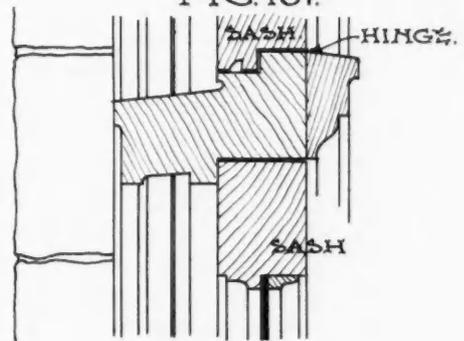


FIG. 188.

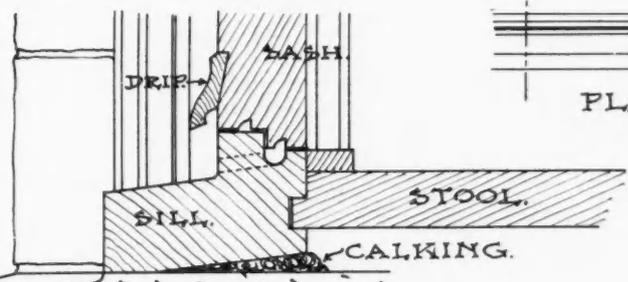
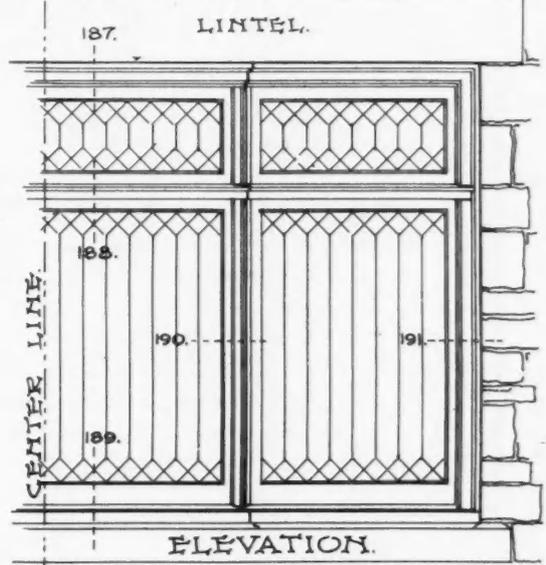
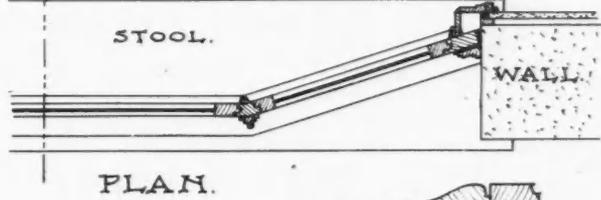


FIG. 189.



ELEVATION.



PLAN.

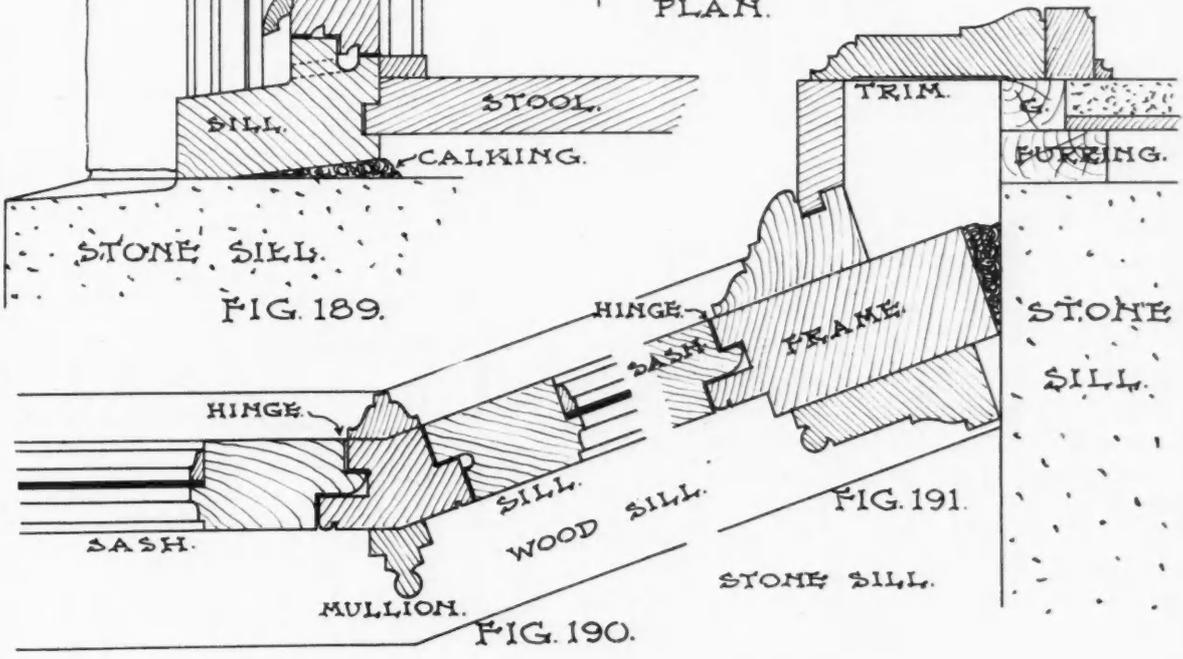


FIG. 191.

FIG. 190.



STEEL SQUARE.

ALFRED W. WOODS

How to Use the Steel Square

PRACTICAL ILLUSTRATIONS OF HOW TO APPLY THE STEEL SQUARE IN OBTAINING CUTS AND BEVELS IN A CLASS OF WORK SOMEWHAT OUT OF THE USUAL RUN OF HOUSE FRAMING

QUITE often the carpenter is called upon to frame timbers that are somewhat out of the ordinary run of work, such as framing bents with cross pieces and the cutting in of braces, where the timbers are not at right angles to each other, etc.,

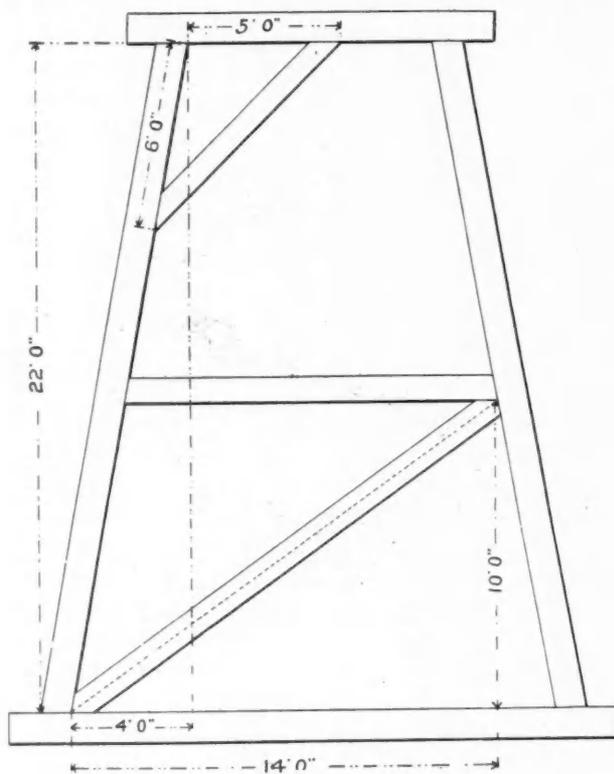


Fig. 146.

thus forming problems that tax the ingenuity of many, to readily handle the steel square in finding the lengths and cuts. Rather than trust to their knowledge in the use of the square, many workmen will lay it aside and resort to a scale diagram from which to obtain the angles by the use of the bevel square to obtain the necessary cuts.

With this we will show how the angles may be arrived at, either direct or indirect, with the use of the steel square. In Fig. 146 is shown a bent with an incline of four feet in a twenty-two foot rise. This figure contains several problems which we wish to call attention to, as follows:

At the top is shown a brace with a five-foot run on the top member and a six-foot run on the post.

Referring to Fig 147, is shown, per the one inch scale, the position of the different parts on the square. The line crossing at 22 and 4 represents the incline of the post. Now set off 5 more inches on the tongue for the level run of the brace, which will be at the 9th inch on that member. Then measure down from the tongue 6 inches on the line A-B for the run on the post and draw line C-D, intersecting the above named points and continued intersecting the blade at $8\frac{3}{4}$. The length of the brace will be as per scale, as shown.

To this diagram, the bevel square may be applied to obtain the cuts or by applying the square direct to the timber at the figures intersected by the line C-D; the tongue will give the upper cut, and the blade would give the lower cut, if the post stood at right angles

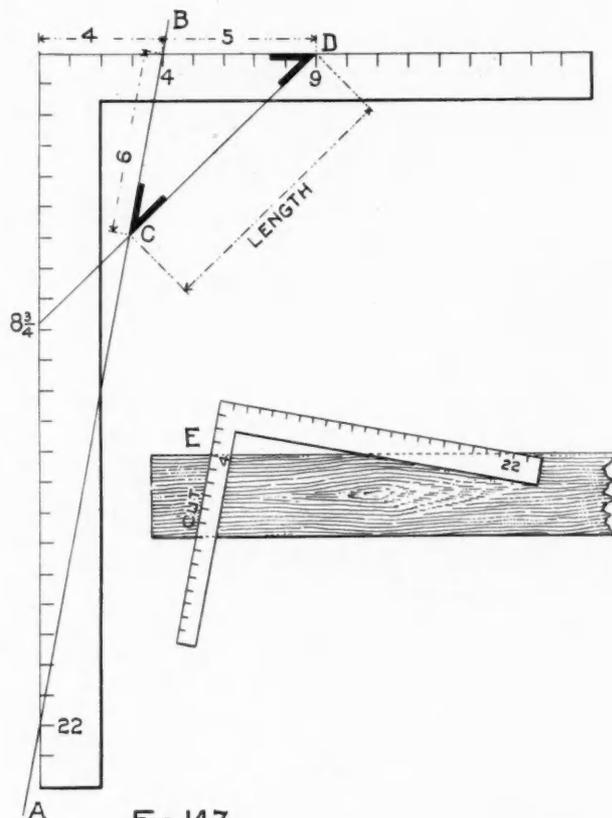


Fig. 147.

with the plate; however, mark along the blade just the same as if it was to be cut and to this apply the square at the proportion of 4 to 22, which will give

the proper cut. In other words, it is exactly that proportion as shown between the line of the blade and the line A-B that is to be taken from the bevel above

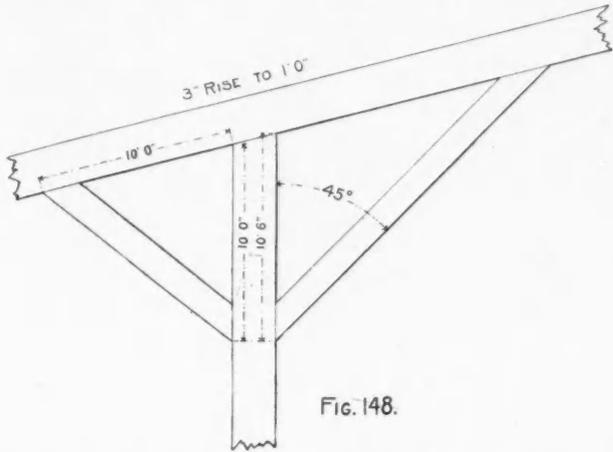


FIG. 148.

mentioned. In the lower part of Fig. 146 is shown a cross brace which should be treated as follows.

Its length should be found along the center, as indicated by the dotted line and the cuts may be found in the same manner, as for the brace described above, but they should be reckoned from the center line. The side cut of the cross piece, shown at the center of the bent, is the same as that for the seat and top cut of the post. The run and rise (4 and 22) gives the cut, as shown at E in Fig. 147.

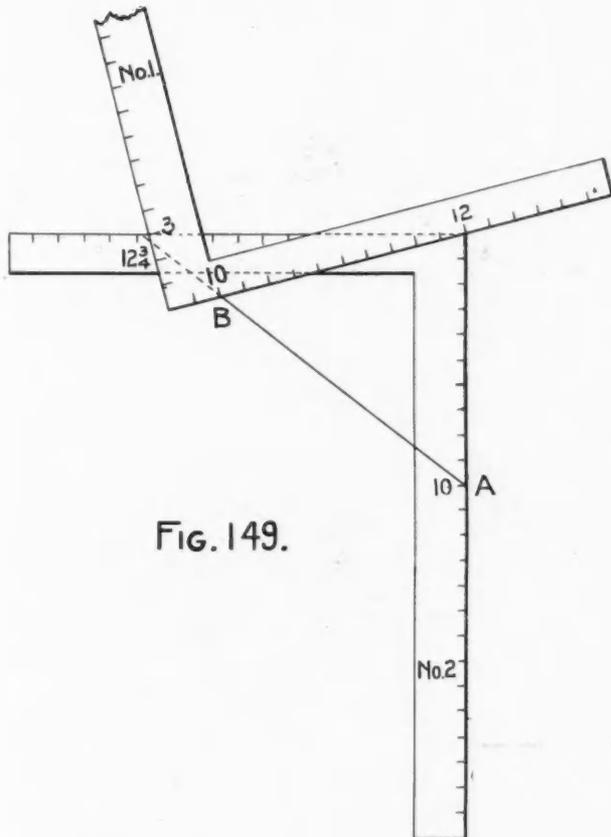


FIG. 149.

Passing on to another brace problem, as shown by the left side in Fig. 148, the brace has an equal run on both plate and post. We will illustrate this by

the use of two squares, though of course only one is necessary in executing the work. The pitch of the top piece or plate being three inches to a one-foot run, we apply these figures of square No. 1 to square No. 2 as shown in Fig. 149, and draw a line from 10 on the tongue of No. 1 to like figures on the blade of No. 2. The angle thus formed represents per scale, the runs and length of the brace. A-B representing the length and the continuation of this line to the tongue of No. 2 are the figures to use for the cuts. The proportion of 3 to 12 to be taken from the upper cut. Referring to brace shown on the right side of Fig. 148 is another problem, which at first sight might seem difficult, but on closer inspection, it will be seen that it occupies

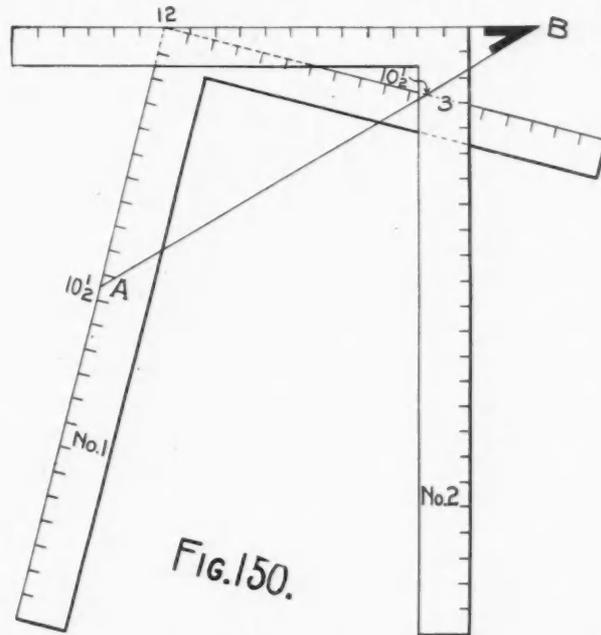


FIG. 150.

the same position as shown by the brace in Fig. 146 except in this the upper end rests against an incline instead of the lower end, as in the former figure, but in this the brace rests at an angle of 45 degrees from the perpendicular post. The question is, Where will it intersect the plate and what will be the length of the brace? This is illustrated by the two squares as shown in Fig. 150. A line from 10½ to 10½ on the square No. 1 represents the pitch of the brace. Continue the line indefinitely and place square No. 2 with the figures 12 and 3 (the pitch of the plate) intersecting No. 1, as shown; a continued line from the heel of same intersecting the continued line from 10½ to 10½ on square No. 1 will represent the angle of the top cut, which may be obtained with the bevel or square, as desired. The line A-B, as in the previous illustration, represents the length of the brace. The carpenter will observe that this requires very accurate measurements as to lengths. The least deviation will be multiplied twelve fold.

While we have shown the position of the bevel in connection with some of these cuts, we do not advocate their use. Better lay them aside and depend on how to use the square.

Dormer Windows

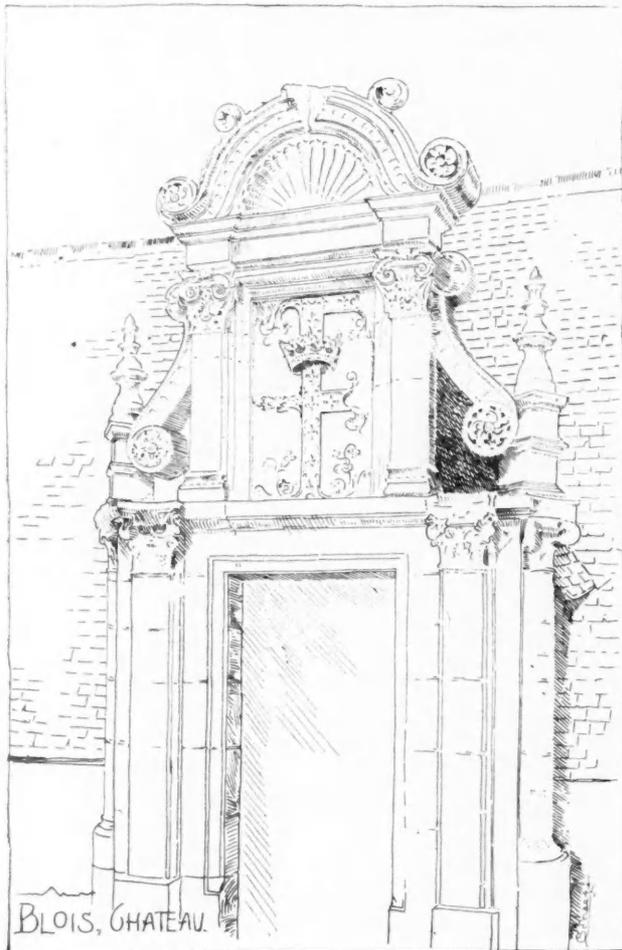
NUMBER OF PRIVATE RESIDENCE OWNERS DECREASING—METHOD OF BEAUTIFYING THE HOME—TYPICAL VIEWS OF WINDOWS SHOWN

By C. Bryant Schaefer

THE residence which is built for private occupancy presents an ideal subject for the owner's development. Accommodations have to be provided for all possible resources, which are more numerous with the extent of the proprietor's versatility. The combination of many accessories occasions

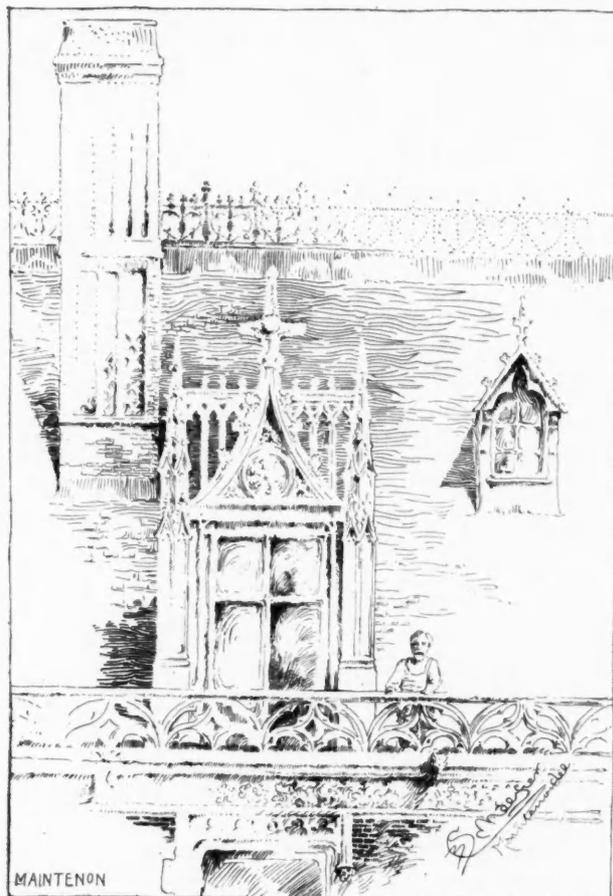
this respect, instead of giving their leisure opportunities expression in their own homes. Their music and art is made to sell, it reeks of the shop instead of having that subtle influence which coaxes one into permanent pleasures, which nourishes a natural growth in the individual year by year and which the individual expresses in turn as natural talent. Very often apartment people recognize the limitations imposed upon them and become home seekers in order to secure greater latitude for self-improvement and enjoyment.

In putting up a residence it is but sensible for the proprietor to look for assistance from whence he will find sympathy for his tastes. It is this similarity of appreciation which unites people in extended enterprises. They are qualified to understand each other. It is the foundation of natural co-operation, and a guarantee of smooth progress. But where tastes are at variance, and a spirit of personal interest is lack-



a variety of design that should increase the attractiveness of the building and its surroundings. Some of the requirements may even be of an exceptional nature. The house is the product of the estate, an instrument of the affairs, which it is the proprietor's talent to cultivate.

The building which is put up for sale or rental, on the contrary, has no individual tastes or personal business to characterize it. Only such features are taken into consideration which are a common necessity. The materials and workmanship are determined by the markets. Whether they are plain frame tenements or luxurious stone apartments the plainness and the luxury are both of a stereotyped, mechanical order. The lives of the occupants are equally monotonous. They cultivate few tastes of their own and for diversion seek what the market is also made to provide in



ing there are sure to be misunderstandings and mistakes, notwithstanding the most painstaking attention.

A great ado is made about the peculiarities of owners, their freaks and hobbies that mar building designs. Some building proprietors may afford to erect models of professional taste, but they seldom make



life a success in such models. They may have a score of inmates, but nearly all are hired to remain in a pursuit of their mechanical duties. On the other hand some rambling house with inconvenient halls and a lot of home-made conveniences may be constantly stormed by helpful and appreciative people. The building fits their natural habits and every day requirements. The scholastic plan twists their customs all out of shape.

Every family is strengthened by adhering to its precedents as well as every nation. Classes and groups

of people maintain themselves in certain established channels of conduct. They can all improve their circumstances, but they cannot be transferred to an unfamiliar condition however more desirable without their losing their established identity. That is why model reforms fail to satisfy.

The owner of a proposed residence knows what is necessary and what will be appreciated, yet in timidly insisting on some feature contrary to his advisor's views he is often confronted by such formulas as, "Well, you know it wouldn't sell very well in that case," or "It would be hard to find anyone who would care for that sort of thing."

To be sure the expert architect is equal to such demands, for extensive experience makes it possible



ANCIENT AMERICAN MODERNIZATION.

to evolve an exceptional work of art from even incongruous elements. More likely it is the common laborer who seeks occasion to remark, "I don't see what you want it that way for!"

Sometimes, indeed, an owner does come along who desires to realize some impossible specialties. There was once a man who wanted long rollers underneath the partitions of his new residence between which he could stretch the carpet or roll it up completely and take it out.

Few people reckon the difficulty of securing workmen who can depart from their habitual mode of working with success. Yet such make the most valuable men in their trades and have the ability that keeps them abreast of the times.

In reference to home building attention must be called to the great decrease that is taking place with





NEW JERSEY.

this class of work. A few years ago the country was full of home builders. Today, unfortunately, statistics show such a startling decrease that it is only a few years before the country will be in the hands of the income landlord entirely. Against the care and responsibility of building one's own home he places glittering newness and novel conveniences. The landlord is accommodating now while the people have the alternative of establishing their own places, but by and by, when they have given themselves up to the landlord trust past extrication, what then?

There will be neither architects nor householders then, carpenters will become factory hands and everything in the tenants' quarters will come from the mill ready to be thrown together by a species of day laborers.

The only way to secure permanent prosperity is for the builders to encourage the private owners, even if it involves a little more time and extra labor. His pay will last longer, he is a better neighbor and also a better man for one's confidence and associations.

Tell the private builder he is a public benefit and that he will find a value in supplying people with good employment, that his good taste is a desirable influence that will redound to his advantage and that in his house building he is establishing an estate that alone can make him independent and secure the wholesome happiness of his family.

The people who persevere in establishing their own

homes until their responsibilities become a pleasure are sure to add new features to their places from time to time. Of these none is more conspicuous than the dormer window. It may become a pleasing feature



above the tree tops, it may increase the height of the low bungalow, may light additional rooms or distinguish the front from the sides.

The attic is usually the least important part of the house. It presents space for a variety of uses according to the disposition of the occupant. Instead of being a junk room in which odds and ends may be cast to season until the next generation sends its collector of curios to prow around, the tendency might be accepted and the place devoted to a well ordered family collection.

Some people, however, actually build themselves into their houses by habit. They forget their relation to their exterior environment and overlook the business which waits outside their own door. So it may be a great help to put a dormer in the roof, from which they may view the landscape, and make the lives of the house bound more varied. If the opportunity is available some one is sure to appreciate its provision. For this purpose an octagon window is most convenient.

There are many houses the especial features of which are neglected after occupancy. The balconies, in fact any point the utilization of which is not a necessity, become unfrequented places after the first novelty has worn away.

Should not people strive to add pleasant incidents to their lives as well as build themselves residences? Certainly! But that is no easy accomplishment.

This is also one of the reasons why private ownership is on the decrease. It is found to be burdensome, having a great variety of architectural adjuncts to look after. And so the featureless, cheap simplicity or simple elegance of the ready-made structure satisfies, for a short time. Then, perforce the inmates must take themselves to the variety halls and freak gardens in search of the enjoyments which a little first effort might establish at home in a more rational and happier way. Those who persevere until they make their homes a success will some day be object lessons that will induce a revival of private ownership and its advantages. Mercenary supply of the pleasures they cultivate is impractical and there will be no subsequent short cuts as instalment plans for the enjoyment of similar talented estates.

Dormer windows can be made to give a waking up look to many plain houses. Broad types may be adopted or narrow up and down designs, according to circumstances. The aim should be to counteract the aesthetic tendency, to place high upon the low, ornate upon the bare, or to introduce a change of slight materials by way of variety, but in all retaining some similarity of style.

Europe has many beautiful roof windows. The one shown from Blois is a fine example of the classic type. Many styles and varieties are represented in that historic structure. One may see how King Francis I delighted in having his monogram and device blazoning on every wall.

The Gothic example is from Maintenan, one of the much admired chateaux of France. These types are much copied in America; one sees their free reproduction all over the country, usually in stone.

The latticed dormer in the old English inn from Much Wenlock is quite different. Its influence would be enjoyable. One can readily imagine the cozy nook that awaits the weary traveler behind its diamond panes. It bespeaks the genial manor hospitality that "mine host" makes available to the traveling public. One would find themselves a welcome guest in a home-like place.

The dormer from Paris, with its stepped gable, might have been direct from Holland. All countries weary of what they have, it seems, no matter how good, and venerable people wrongly deprecate many things to the young and new generations which were virtues while they were novelties of former times. It is strange that the unmerited cloud which is cast over many past achievements is not more often penetrated. Native American art, among the neglected of this sort, has always been thrust aside as too savage for toleration. As it is really neither savage nor intolerable, it has not been comprehended.

There are some very popular fashions derived from Indian work. Whether intentional modernizations or not is difficult to prove. Some are not even recognized as having aboriginal origin, but are winning high favor by their attractiveness. The most noticeable adaptation to modern taste is the fylfot, two intersecting Zs. Many endeavors have been made to trace the source of its introduction. Without doubt the public first became interested in native aboriginal devices during the Chicago World's Exposition. Indian bead necklaces are also made in good taste. If the patterns kept tally with events in the lives of the wearers they would be once more performing their ancient service to the memory.

The dormer shown designed from ancient American motives is probably the first one in which the Indian characters have been drawn. There are about ten separate motives derived from ancient pottery decorations and the hieroglyphics of inlaid facades. These devices were originally natural history terms. The cresting on the roof, for instance, is said by the Indians to represent the sky.

There is nothing freakish about this design. The dormer looks strictly modern and would prove a good subject for an excellent piece of carpentry work.

In the dormer window from Wurzburg is a type of rococo work. This is an admirable style for cement surfaces. After practicing on the principal forms in this kind of embellishment a workman with some taste should be able to decorate cement surfaces off-hand, taking structural features as a guide. This is the appropriate finish for the stucco like material.

The dormer in the New Jersey cottage illustrates how simple this feature may be when surrounded by a wealth of natural foliage.

PRACTICAL CARPENTRY

Planning the House and Stairway

SHOWING HOW TO BETTER THE ARRANGEMENT OF THE ROOMS BY CHANGING THE STAIRS—LAYING OFF THE STAIRS WITH SUFFICIENT HEAD ROOM AND HOW TO FIGURE SAME

By I. P. Hicks

HERE we come again with a house exactly the same size as the one we had for last month, but with an entirely different stair plan. One reason for taking a plan of the same size is to show that there is a great advantage in laying out the stairs to suit the house, and economize space that is needed in some of the rooms, and yet not skimp the stair room. This can often be done if you know how to figure it.

Now let us see what we have gained in the way of chamber room in the second floor plan over the one used last month. In the plan of last month we have three chambers and a bath-room with floor space as follows:

	Square feet.
Large front chamber.....	168
Small front chamber	81
Rear chamber	156
Bath room	72

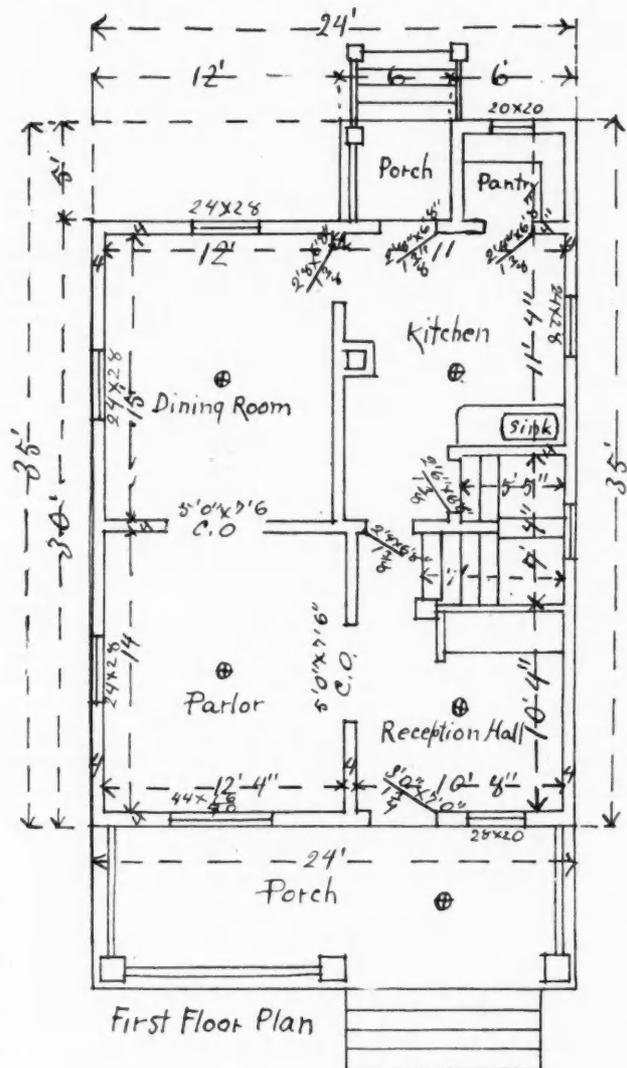
The new arrangement has four chambers and a bath-room with floor space as follows:

	Square feet.
Largest front chamber	132
Small front chamber	110
Large rear chamber	96
Small rear chamber	85
Bath room	40

We see by the new plan that we have gained one room. It is true the rooms in the present plan do not average up as large as in the former plan, yet we think the latter plan the better.

With most people the additional sleeping room would be very much desired and the four rooms and bath would be preferred to the three rooms and bath. Besides in the present plan we get two good front rooms, while in the former plan there was but one really good front room for the stair jogged into one, taking out a large space in one corner that was needed in the room to make a good room of it. The new plan presents four good serviceable rooms, with two windows in each room, giving light and air from two sides, which is necessary for keeping a room at a comfortable temperature in real hot weather. Then again, the shape of the rooms and location of windows leave a good place for a bed in each room. The bath room is of course a little smaller than the one in the

former plan, but will be found large enough to answer the purpose, and where four rooms and a bath are wanted on the second floor of a house plan 24 by 30

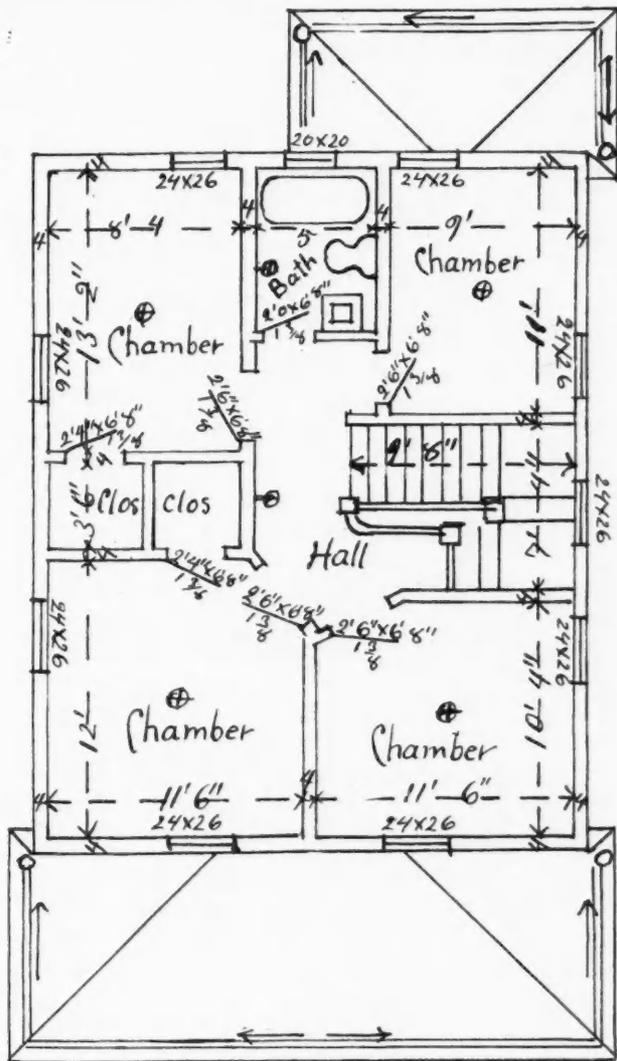


feet floor space we will challenge anyone to lay it out to better advantage.

Now let us see if we have made any improvement on the first floor plan. We find that we now have a better shaped front hall on the first floor. By starting the stairs as in the present floor plan we have a

nice square, large, front hall, one that will answer very nicely for a reception hall, having a good space for the much desired hall seat.

It is true the stair cuts into the kitchen a little more in this plan than in the former, but not enough to sacrifice very much good room. In the former plan the door to cellar and the kitchen sink take up quite as much valuable room as the stair does in this plan.



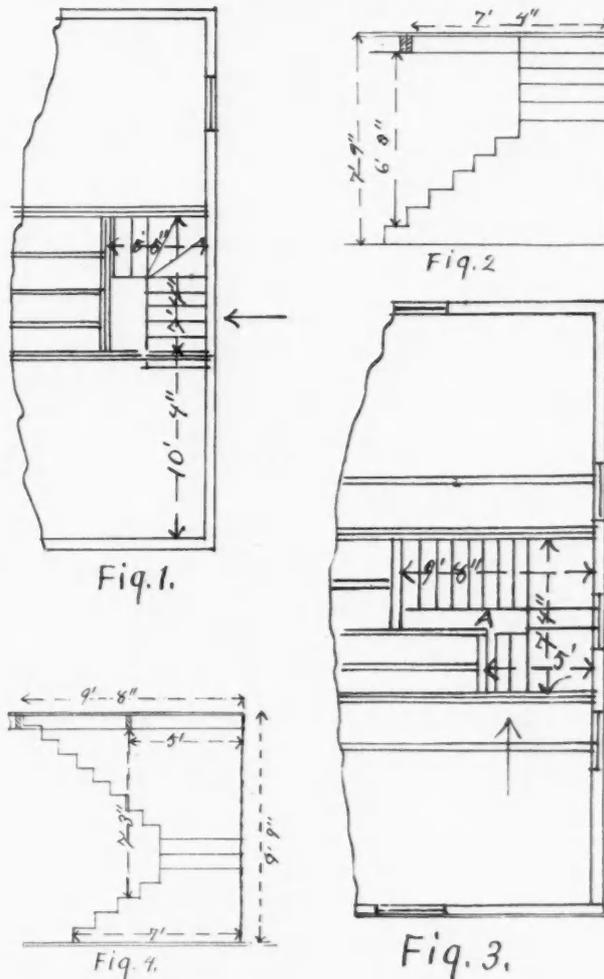
Second Floor Plan

In this case the door to cellar is located where the room would not be available for any use on account of the door opening into the front hall, and then the change in the location of kitchen sink leaves the rear of the kitchen in nice shape.

We will now refer to the plans and supplemental sketches and show how the stairs are figured for head room, etc. Referring to the first floor plan we find the stairs to the cellar start 5 feet 5 inches back from the right-hand side wall. The main stairs are what we call a return stair, that is, they make a half turn with a double landing and one step between landings. This makes the total width of stair 7 feet 4 inches, as marked on the floor plan, and it is 10 feet 4 inches to the first side of the stair, as marked on floor plan. The

sketch, Fig. 1, shows these same measurements and the entire layout of the cellar stairs and the joists around the stairs. Three winding steps are required in the cellar stairs to get them in accordance with this arrangement. These steps will be good broad ones and not in any particular way an objection, as cellar stairs. The opening, as cut in the first floor for these stairs, is 5 feet 5 inches by 7 feet 4 inches in the clear, as shown by the sketch. The joists and headers around the stairs are doubled, which will make a strong job around the well-hole and will not need any posts under in the cellar.

Fig. 1 shows that the plan of the cellar stair brings the last step directly under the double joist which is 7 feet 4 inches from the opposite side of stair, as shown in Figs. 1 and 2 and Fig. 2 is an elevation of the stair looking at the floor plan from the direction indicated by the arrow. The elevation is drawn for a cellar with 7-foot ceiling with 2' by 8' joist above with



single floor, making total height of stairs 7 feet 9 inches, and by referring to the sketch it will be seen that we have 6 feet 5 inches from top of first step to under side of joist for head room which will answer fairly well for cellar stairs.

We will now refer to the main stairs by looking at first floor plan. We find that they start 7 feet from the right side wall and by the second floor plan we

find that they land on the second floor 9 feet 8 inches from the same wall.

Fig. 3 shows the layout of the well-hole according to these measurements. Fig. 4 is an elevation of this stair from the above measurements and looking toward the stair from the direction indicated by the arrow in Fig. 3. Referring now to Fig. 4, we find the steps start 7 feet from the side wall, that the first header over the landing is 5 feet from the side wall, that the landing at second floor is 9 feet 8 inches from the side wall and that the head room over the third step to the header above is 7 feet 3 inches, which is plenty; and even from the next step above there would be about 6 feet 8 inches, but good head room for stairways is a very important matter and everybody should be positively sure that there is plenty of room. A bad stairway in a house is a great annoyance and one that continues as long as the house stands. There is no remedy so good and effective as making it right in the first place, and that consists of laying it out right and following the plan. Anyone not skilled in this kind of work had better look at the plan about six times before they jump at some conclusion and try to put them in some other way to save a little here and there, for they may make a big mistake.

Another point we wish to call attention to in Fig.

3 is that the jog in the well-hole, shown at A, should have a $\frac{1}{2}$ -inch iron rod put through the joists of the second floor and be bolted to the ceiling joists above. This form of well-hole makes an overhanging corner that should be secured in some manner. If the stairs are between the two walls from the second landing then the partition would be all the support necessary, or if there was a post from second landing to the ceiling it would be all that would be required. But the stair looks better open from the second landing to second floor with newels, rail, balusters and steps with return ends, similar to the way it is laid out in the floor plans.

The changes made in the plan will afford the readers of the AMERICAN CARPENTER AND BUILDER an interesting study, and some time we will furnish elevations of these two plans to show what a great difference in appearance can be made with exactly the same floor plan. These plans have been made more particularly to show features of laying out stairways. But with a nice bay window added to the dining room and a nice elevation, we can show you a house plan that would be hard to improve upon, keeping the same dimensions. This plan is 24 by 30 for main part; of course, 26 by 30 or 26 by 32 will make a plan that you can get larger and better rooms out of.

Getting the Length of Rafters

TROUBLE LIABLE TO BE ENCOUNTERED AND HOW TO AVOID IT—CLEAR DEMONSTRATION OF GETTING LENGTH OF RAFTERS

By Dwight L. Stoddard

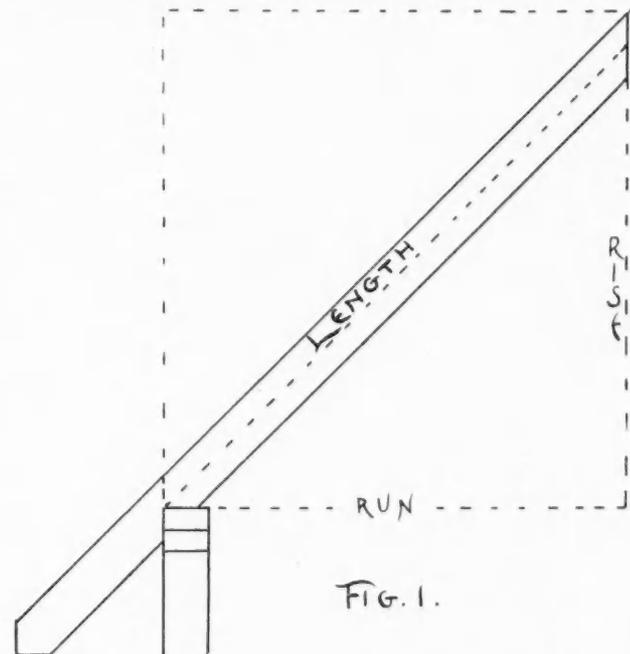
THERE is perhaps nothing about house construction that causes so much bother and trouble, and liable to cause mistakes which take much time and often some lumber, as getting the length of rafters. It is not because roof framing is such a hard job, not by any means, but it seems many give the subject entirely too little thought and attention, and consequently not being thoroughly familiar with the subject, naturally leave themselves liable to mistakes. I consider Mr. Hicks' article in the June issue of more than ordinary value, for it not only tells "how to cut rafters," but it also tells how they should not be cut, or in other words, shows how to avoid common mistakes.

It is a good thing to be a good mechanic and to know how to do the work, but it is even better to be able to know where the mistakes are liable to occur and be able to avoid them.

Many good mechanics who really ought to know better find themselves making serious mistakes that are exceedingly difficult to get out of. The hardest thing in the world is to overcome our mistakes, the rest of life is easy.

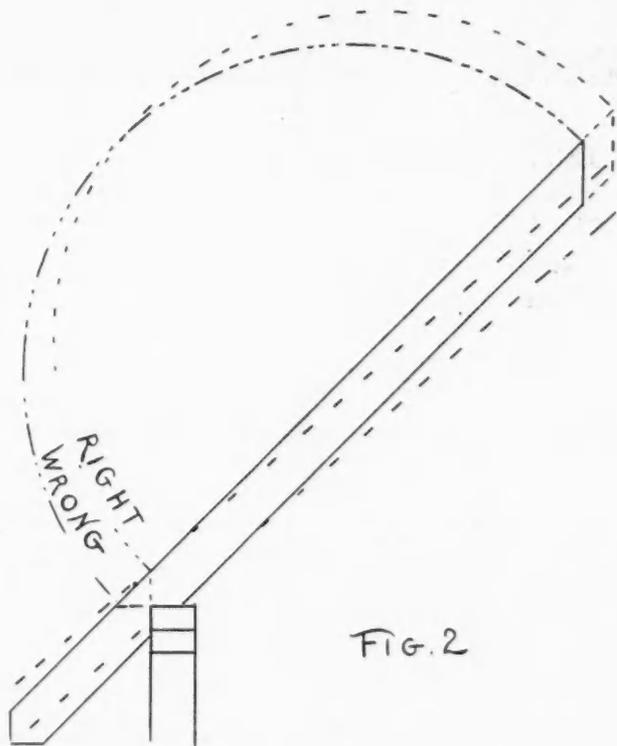
Fig. 1 shows a rafter in position and shows that all there is to it is to measure across the run and rise and it gives the length of rafter. A good way is to make a center line and measure the length on the line,

as it is fully as handy and really a little quicker. You do not have to stop to make the line to measure on the top of the rafter which will give the length just the

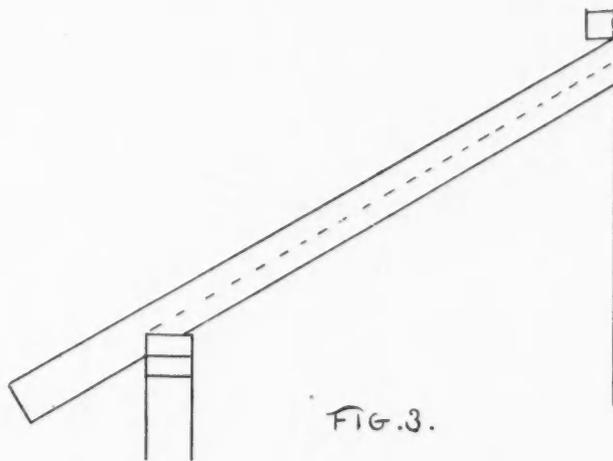


same as if you only measure up at the heel properly so to get your starting point right. One of the main things in carpentry is to start right.

Fig. 2 shows a mistake I have noticed more often than any other and therefore I believe is even more common than the one mentioned by Mr. Hicks. This mistake you will notice is made by measuring over to the top edge of your rafter with your run cut instead of squaring up with the rise cut, and therefore com-



mencing the cut a few inches too low or really clear outside of the real building. The rafter is therefore just that much too short, and to come together at all would have to come down as the dotted lines illustrate. This I think plainly calls attention to the fact that the rise is even more important than the run, for if we have the run right we seldom make a mistake with it,

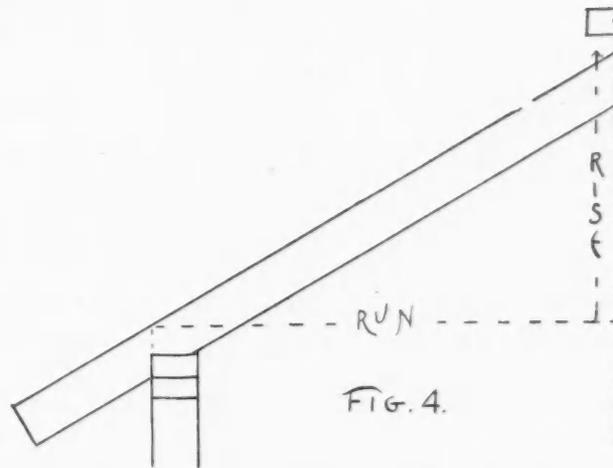


but we can easily have the exact rise and then make several mistakes.

Fig. 3 illustrates a rafter we have all undoubtedly come in contact with and possibly many of us have seen a mistake made on a similar one. It is simply cutting a rafter so the roof will come up under the

window sill. How many try to make it like this and take the measurement clear up to the sill and even forget to allow for the measuring up of the heel, therefore they not only get it clear up to the sill but clear onto the sill. This is not a serious mistake as the rafter is too long and there is plenty of lumber to re-cut.

Fig. 4 illustrates what we should first consider in getting the rise for this kind of a rafter. We must not only take into consideration the measuring up of the heel, but the allowance for the roof proper that is to go on the rafter as it is generally the top of the roof



and not the top of the rafter that is to go under the window sill.

Do not fail to get your run and rise right. Remember of the two, the rise is the one you must be the most particular with. Be sure you understand your rise in every particular and you will find the mistake will seldom occur in getting the length of your rafter.



How "Antique" Oak Is Made

"You will have to go a long way," said an art collector, the other day, "before you find a body of men more clever than those cabinet makers who produce goods to satisfy the desire of the public for furniture made of old and fancy woods. They can transform whitewood into all kinds of exotic woods by means of chemicals, and a chemist would be surprised if he were to have the run of one of those factories for a day.

"The manufacture of antique oak is one of the easiest of their processes. The boards, mouldings, panels, or whatever pieces are required, are made of oak which has just had time to dry sufficiently to prevent excessive warping.

"They are then placed in a dark room, on the floor of which and quite close to the furniture to be 'aged' are placed several bowls, plates and so forth of liquid ammonia. The room is then hermetically closed up, and the wood is left for a month or so, according to the age which is required. The coloration will extend to a depth of nearly a quarter of an inch, if the room is kept closed for a few months.

RESIDENCES



Practical House Designs

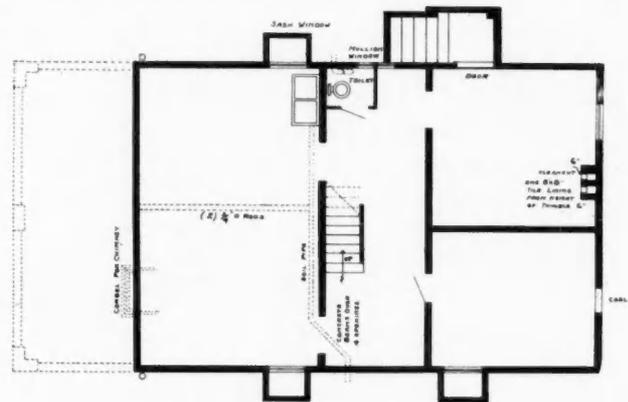
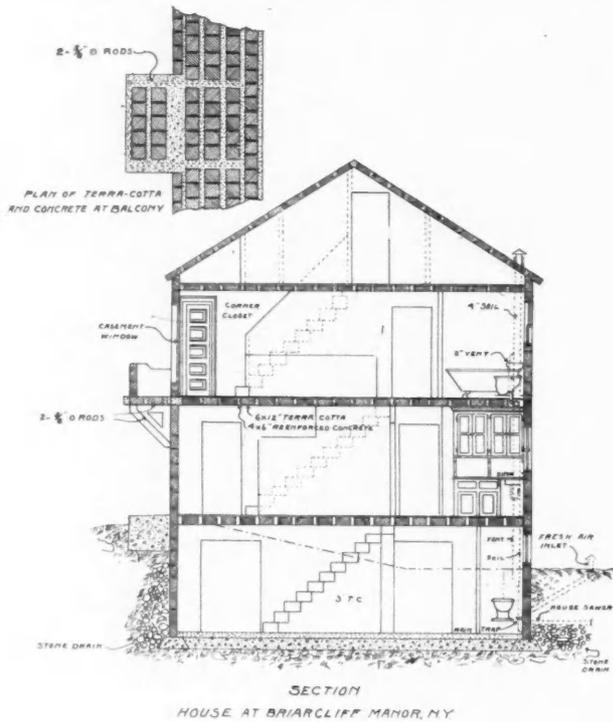
COMPLETE PLANS AND ELEVATIONS SHOWN—DESIRABLE FEATURES POINTED OUT—ARRANGEMENT ALONG MOST MODERN LINES

DEMAND for fireproof houses and the increasing price of building lumber have both led to the more general use of hollow tile as a building material. Its use for floors, roofs and partitions of steel frame buildings is today very general, but for the foundations and outside walls it is not so well known, owing to the fact that small buildings, to which this use is particularly adapted, have been usually built of wood.

That the cost of a fireproof house built entirely of

work by day labor instead of contract, and pay the builder ten per cent, as his commission.

The actual cost (including builders' 10 per cent) of



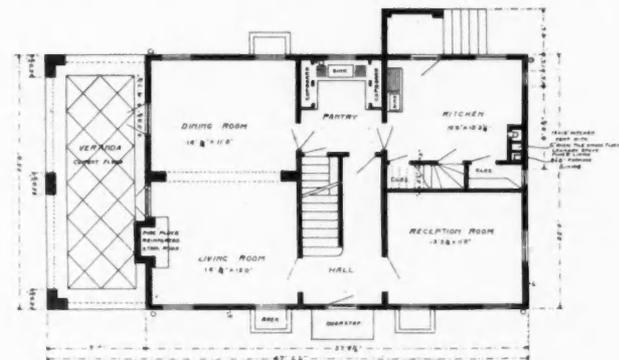
CELLAR PLAN
HOUSE AT BRIARCLIFF MANOR

these buildings, also bids on their construction using wood or concrete, are as follows:

	House	Post Office
Wood	\$6,000	\$7,000
Concrete walls and wooden floors	6,600	8,900
Hollow tile	6,500	6,500

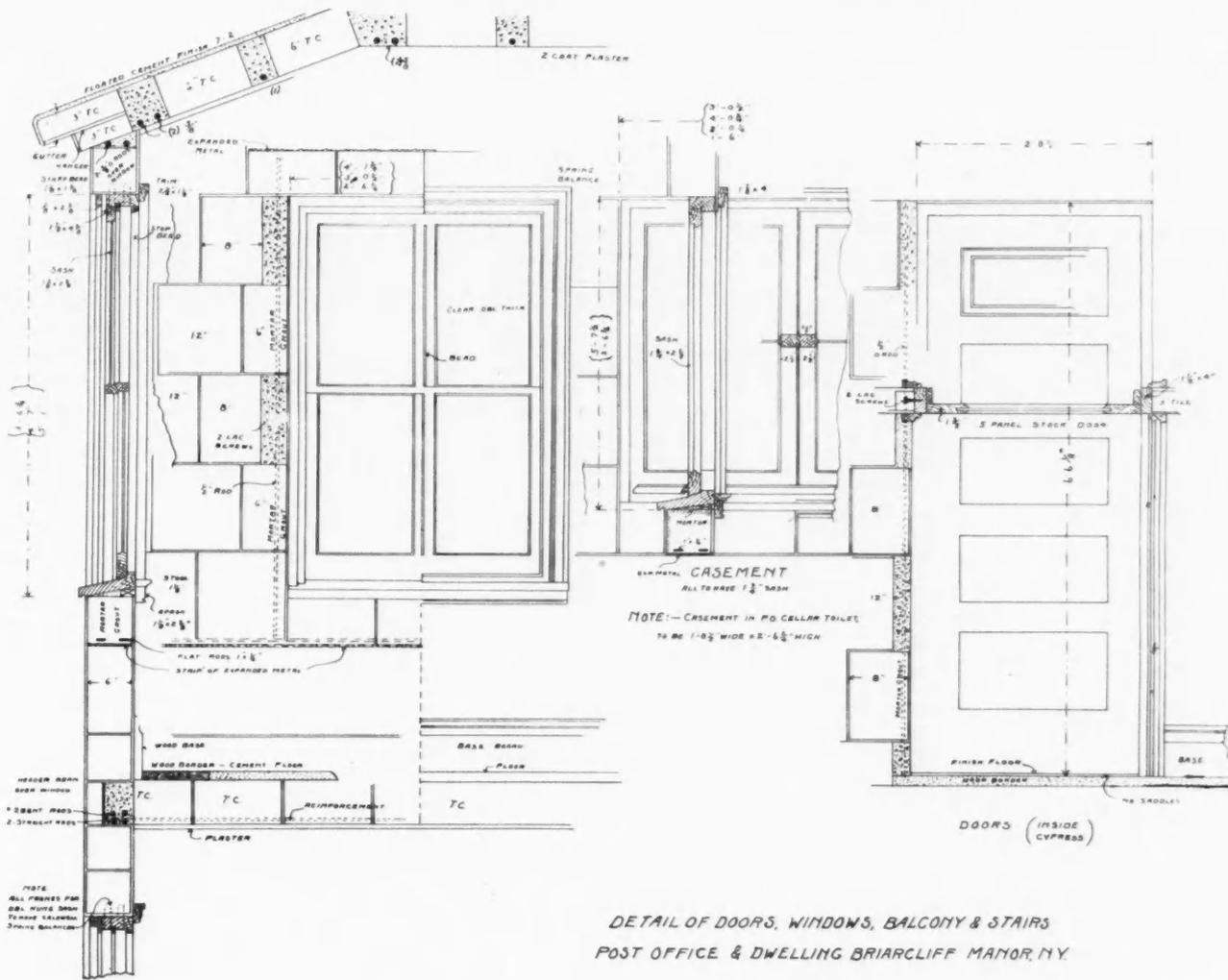
The illustrations show clearly the construction and arrangement of the house. Its exterior is finished in stucco with pebbled surface, a treatment which harmonizes exceedingly well with its simple and massive outlines.

The outside walls are 8 inch by 12 inch blocks 6 inches thick, and the partitions are of the same size



FIRST FLOOR PLAN
HOUSE AT BRIARCLIFF MANOR, N.Y.

hollow tile is reasonable, has been demonstrated by several buildings recently put up in Briarcliff Manor, a suburb of New York. Designs were prepared for an eleven-room house, also a small postoffice with an apartment on the second floor, both of the familiar wooden frame type. Bids for their construction of wood were considered high, and alternate bids using concrete walls and wooden floors, were asked for. As these second bids were even higher than the first, it was decided to use hollow tile throughout, to do the



DETAIL OF DOORS, WINDOWS, BALCONY & STAIRS
POST OFFICE & DWELLING BRIARCLIFF MANOR, N.Y.

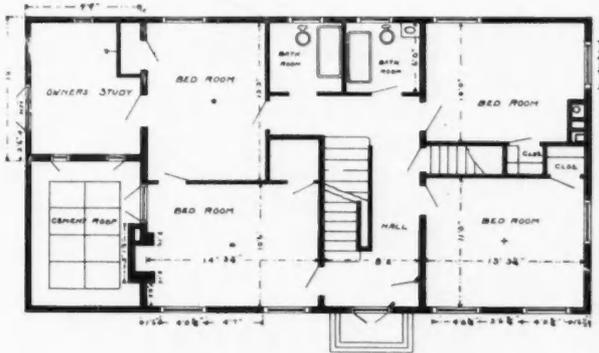
blocks, 3 inches thick. Floors and roof are of the combination type, 4 inches by 6 inches re-inforced concrete beams with 12 hollow tile blocks between, all covered with a layer of cement in which nailing strips for securing the wood top floor are imbedded.

Great ingenuity is used in this floor construction, for where a re-inforced beam bears upon the side walls, a hollow tile block is omitted from the wall, and the concrete of the beam is tamped in, to fill the space completely. This gives an excellent tie between the

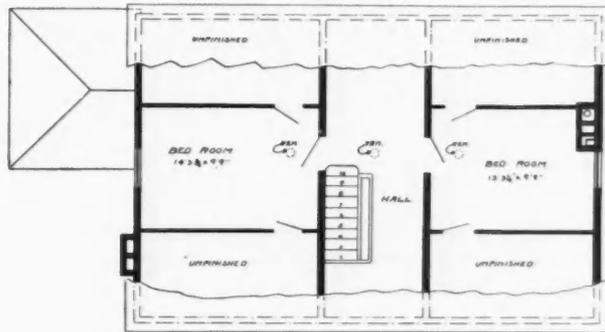
beams and walls and also increases the bearing area of the beams upon the walls materially.

A large section of floor was tested with a dead load of 150 pounds per square foot. The results were extremely gratifying, for the deflection was almost nothing and both floor and supporting walls were thereby loaded to about two and one-half times what they would be called upon to bear in service.

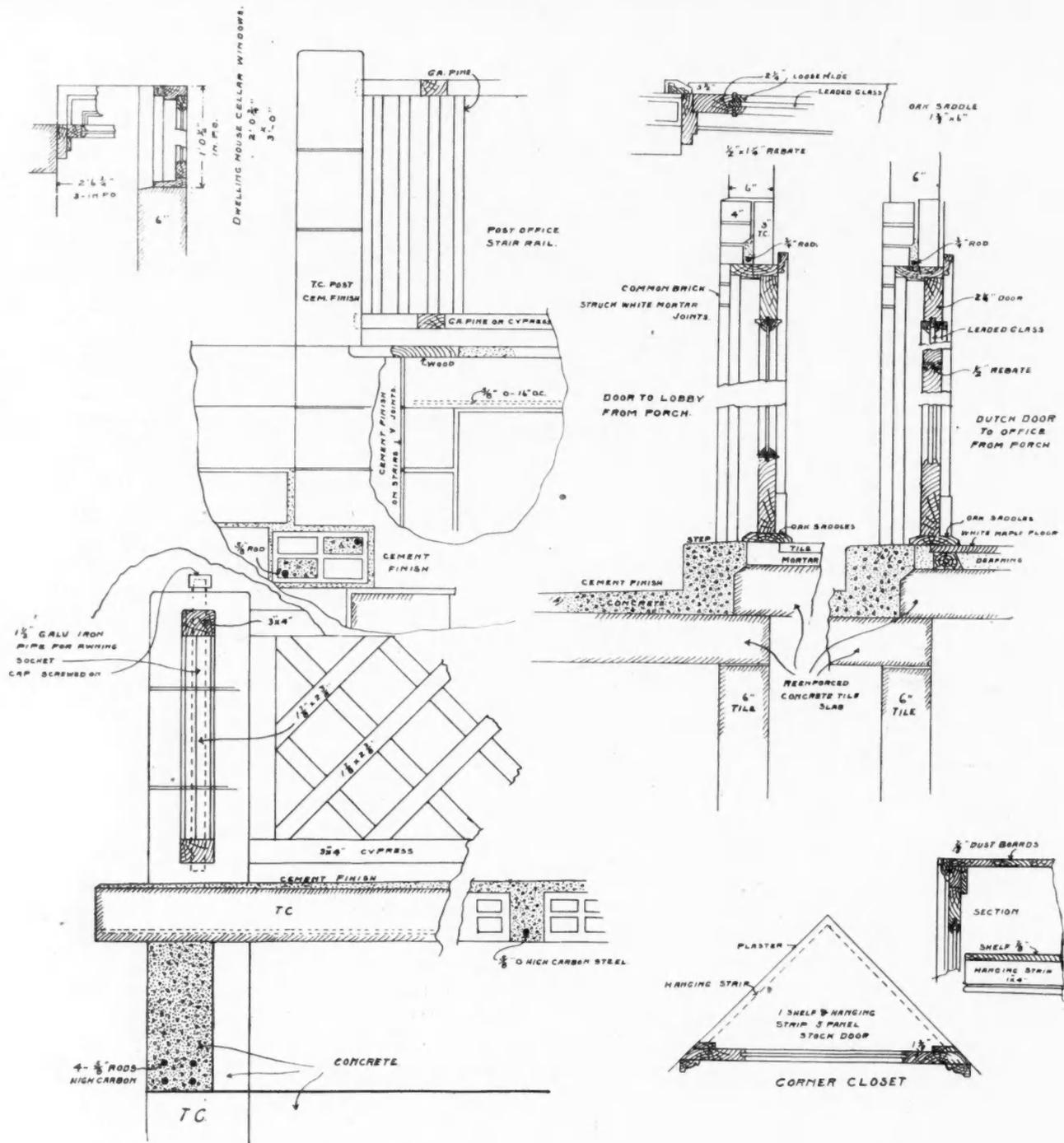
The stairs are built up of hollow tile blocks. Each tread is composed of several blocks, held together by



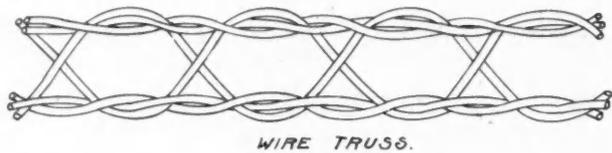
SECOND FLOOR PLAN
HOUSE AT BRIARCLIFF MANOR, N.Y.



ATTIC PLAN
HOUSE AT BRIARCLIFF MANOR, N.Y.

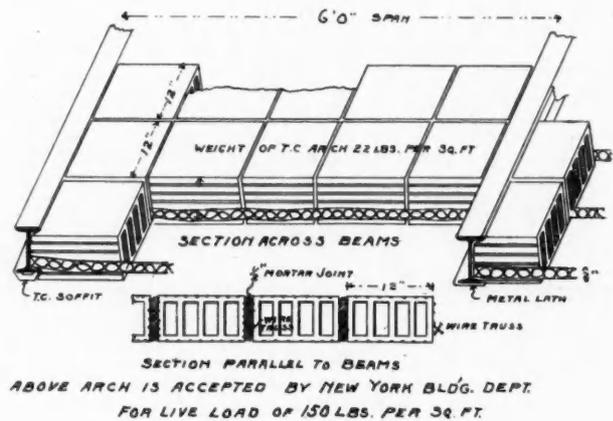


steel rods imbedded in concrete within the cavities of the blocks. Treads of this form are readily made by simply piling the blocks on end one above another, placing the rods through them and pouring the cavities full of concrete. Lintels over the doors and win-



dows may be quickly and cheaply made in the same way.

Windows and door frames are secured in place by screwing 2-inch log screws into them and allowing the

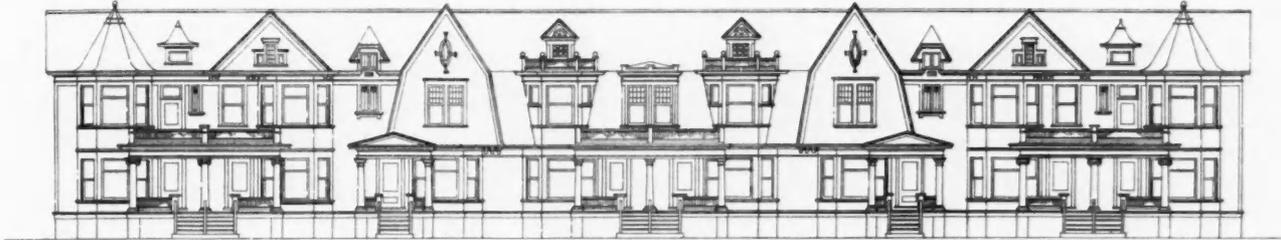


screws to project into the blocks of the partitions or walls. As the blocks are laid up, concrete or cement can be filled in to completely surround the log screw and thereby anchor it to the wall.

Conduits for electric wires are imbedded in the

beams. In order to provide ample wall support for the steel beams the blocks in the walls or partitions below their points of support could be entirely filled with concrete, forming a column to the foundations.

The illustration shows clearly the type of floor rec-



FRONT ELEVATION OF TERRACE HOUSE

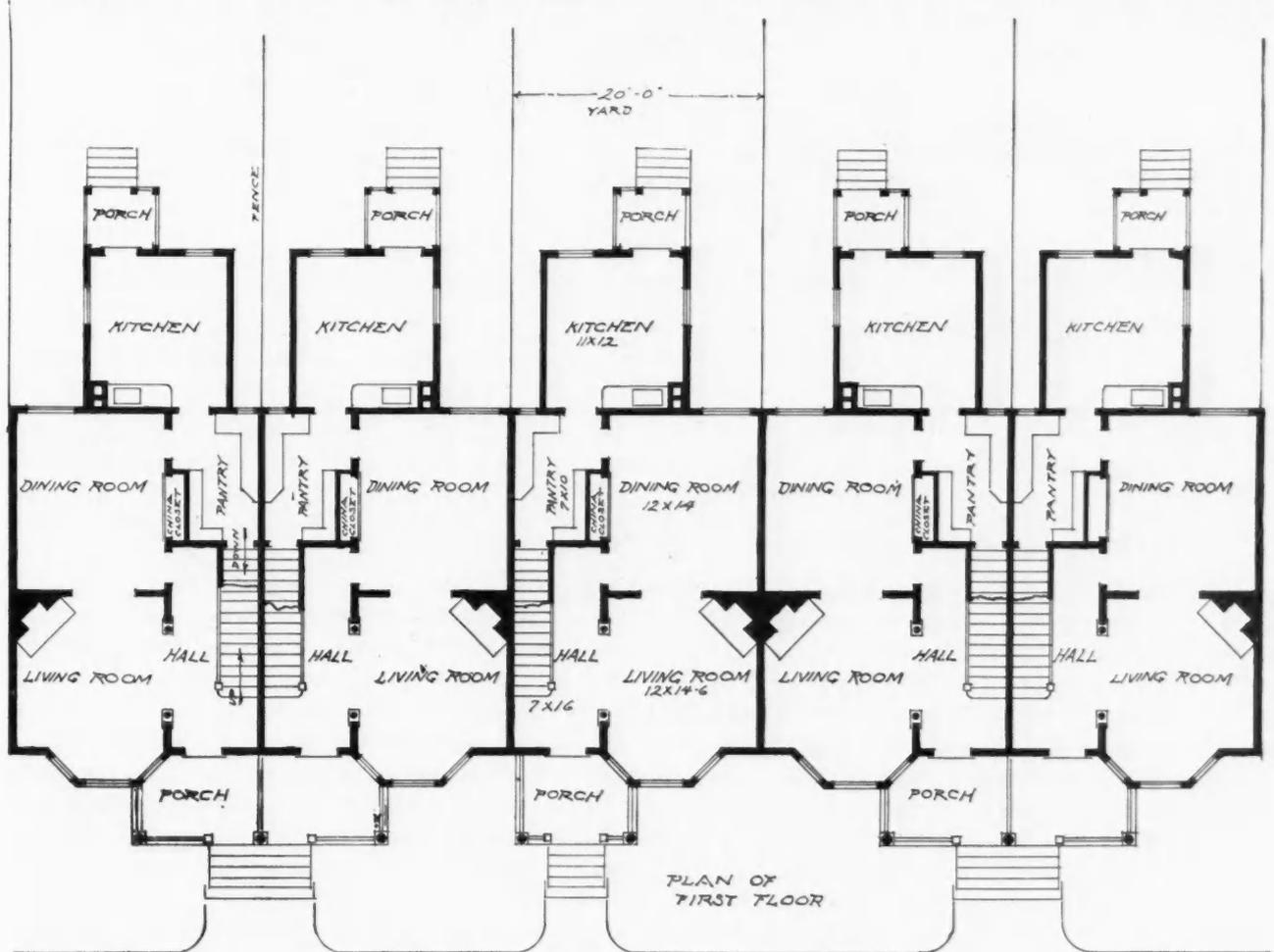
cement floor covering, and carried in the vertical walls through the cavities in the tiles.

Necessary soil and vent pipes for the plumbing are brought up exposed through the butlers' pantry, and some of the piping for the bathrooms is exposed upon the ceiling of the butler's pantry. This might have readily been employed, by substituting a single steel beam for several of the concrete beams and springing a flat hollow tile arch between the beams. The 14-foot span could have been easily carried by 8-inch beams spaced about 8 centers and anchored in the walls in a manner similar to that used for the concrete

ommended; it is known as the New York Arch, and can be quickly and inexpensively installed. No steel framework would be necessary, and in addition to the beams, the only steel required would be an occasional tie rod to hold the beams together, and strips of woven wire between rows of blocks before grouting.

Terrace House

In residence districts of large cities where property is very expensive and it becomes necessary to crowd the houses together in order to get a rental return that will justify investment in tenement houses, it has been customary to build isolated cottages with a narrow



PLAN OF FIRST FLOOR

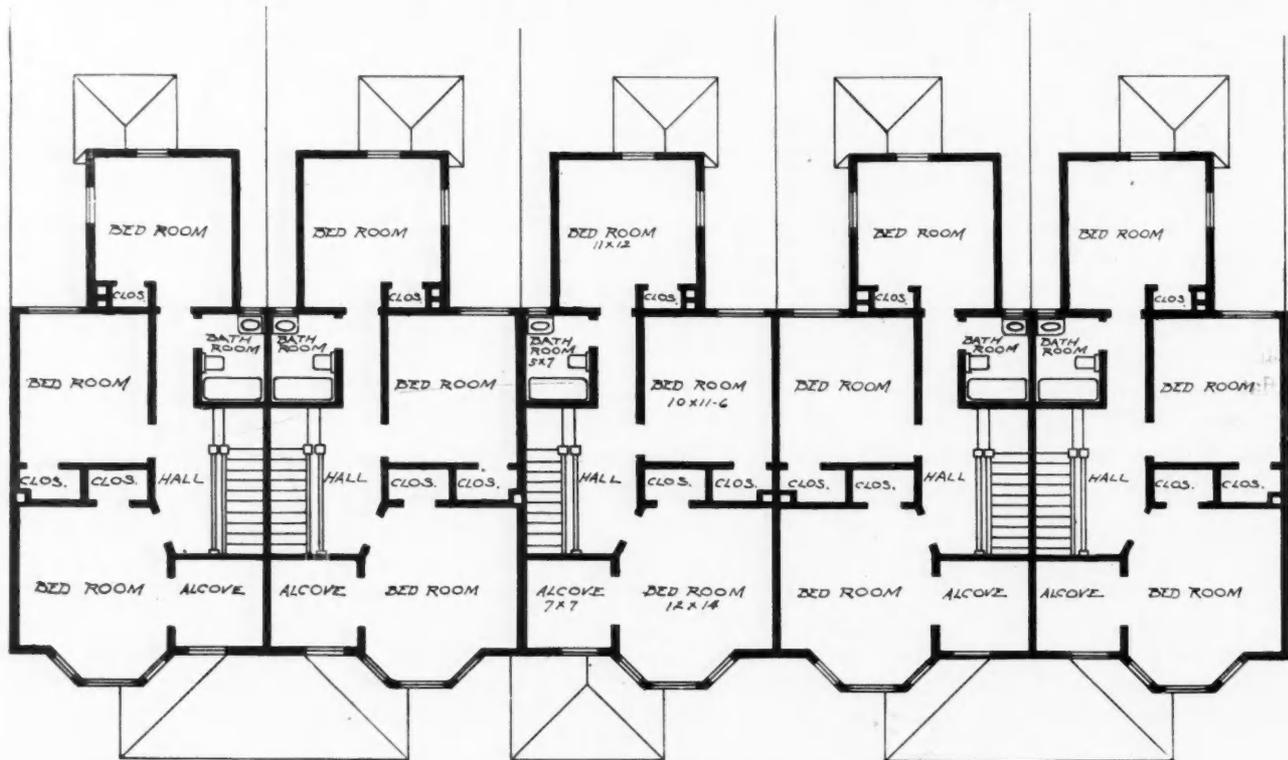
walk or light shaft between. In most cases this is very unsightly and of very little practical use because the eaves of the houses come so close together that but very little light is admitted to the windows facing such light shafts and these windows are generally opposite so that one family can see directly into their next neighbor's window. The result is that both families will pull down the blinds and cut out what little light and air would enter. From the landlord's point of view this passage between the tenements brings in no revenue and is of no protection against fire on ac-

foot front. Each apartment has its own basement containing laundry, coal room, storage room and furnace room if individual heat is provided or the entire building can be heated by our central apparatus of low pressure steam or hot water.



The Way the Lumber Goes

That our lumber supply, one of the largest sources of our national wealth, is in danger of practical ex-



PLAN OF SECOND FLOOR

count of the distance between the buildings. For these reasons as well as those of exterior appearance the "terrace" house has been widely introduced in many cities with the best results.

As the illustrations will show, this is a continuous building with a fireproof partition between each apartment; and the various rooms so arranged as to get direct outside light into each room, either from the front or rear. Although the width of each apartment as well as the number of rooms contained varies greatly, there is a great demand for six to seven-room apartments and the design here shown contains six rooms, and all the accessories necessary to make a modern residence such as halls, pantry, closets, bath room, china closets, mantels, porches, alcove, etc.

The exterior can be greatly varied in design even if the arrangement of rooms and windows are alike in each apartment, thus breaking the monotony of a repeated design as you often see in large cities.

This design shows each apartment 20 feet wide, which admits a cluster of five to be built on a hundred-

tinguishment before many years, seems clear from a recent report of the Department of Agriculture. According to this showing, the lumber cut in this country up to the beginning of the fiscal year was about 27,738,000,000 feet. The vast proportions of this slaughter of the forests may be appreciated by imagining the lumber to be all of inch thickness, making a board walk 2,000 feet wide from New York to San Francisco. Maine, Michigan and New York are no longer great lumber states, ranking, respectively, sixteenth, fifth and twenty-first. The Pacific slope and the Gulf States lead, Washington being the chief lumber State and Louisiana the second. Wisconsin and Minnesota are third and fourth. Arkansas, Mississippi, North Carolina, Texas, Alabama, Georgia and Virginia make, with Louisiana, eight southern States, all of which lead Maine in the amount of lumber produced. There is little more white pine in the country. It is practically all gone, and one of the difficulties of building now is that there is no substitute of quite such versatile usefulness.—*Leslie's Weekly*.

A Suburban Home

MODERN HOME FULLY DESCRIBED, SHOWING VIEWS OF BOTH INTERIOR AND EXTERIOR—DESIRABLE FEATURES PRESENTED

THE old saying, "Many people, many minds" is no more fitly illustrated than in architecture. One family will like one style of exterior; another family cannot understand why anybody should desire that style of house. One arrangement of interior will just suit one family; another family has only criticisms for it. To plan houses that will meet the various desires of different families, and often the varying desires of members of the same family is no small task.

Some architects are versatile enough to be able to put aside their likes and dislikes and plan houses of whatever style is wanted. The interests of the

itect. The friend questioned the accuracy of the photographer's statement. Enquiry at the house proved that the photographer was correct.

The house illustrated this month is a popular type, one which appeals to many people. It was built for Mr. W. A. Rogers, Oak Park, Ill., H. G. Fiddelke, architect. Both exterior and interior are fitly described by the two words—substantial, conservative. The walls are constructed of pressed brick veneer with stone trimmings. The design is plain but pleasing. There is no needless ornamentation and what there is is effective.

The wide projecting eaves of house and porch pro-



client should be paramount, and if he wants an English half-timber, or a colonial house that is what he should get.

In this day of specialists architects often prefer to send away a client rather than to work up a design other than what they are interested in. An architect often is known by the houses he builds. A photographer who had been working in Chicago was sent to California to get some house "views". As he was walking down a street of one of the cities he remarked to a friend who was with him, "Over there is an M— house." M— was a Chicago arch-

itect the walls from sun and rain. The ceiling of the porch is heavily beamed, carrying out the idea of massiveness which is characteristic of the whole. The porch is broad and long and affords ample room in summer time. The walls of the porch, being carried up as they are, afford the necessary privacy while admitting of unobstructed view by those thereon.

The entrance hall is in the middle of the house and is wide and long, giving access to all of the rooms on the first floor and to the main stair. The woodwork in this, as in all other rooms, is of select quartered oak, and is finished with an eggshell gloss

in dark English color. The floors are of quartered oak and are finished with floor varnish and polished. The beauty of the single panel doors with the skillful matching of the quarterings must be seen to be appreciated. The ceilings of both hall and dining room are beamed. In the rear of the hall is a comfortable seat which supplies the necessary hall seating. The main stair is of simple but dignified design. The square post possesses just enough carving to properly "set it off".

living-room are obvious and, in a house of this size, the addition of a library makes a very complete arrangement. The disadvantage of doing without a parlor is mainly the inability to keep the living-room—especially where there are children—in just the order one would like it where formal calls are received. The addition of the library affords a place of study for children as well as a reading room for the elders. Being placed near the entrance it provides a retreat for the man of the house when business friends



The ceiling of the hall is plain; the side walls are covered with an "all over" pattern of paper in dull reds and blues. The accompanying photograph illustrates what a difficult thing it is to properly represent colors. The richness of the subdued colors in wall and floor coverings is not properly represented by the contrasty effects of the photograph. The electric fixture of square tubing with its umbrella shaped shades of thin opalescent glass is worthy of notice.

The vestibule is well lighted by leaded side lights. The side lights contain just a touch of color. The floor is of marble mosaic.

The arrangement of the rooms on the first floor, while conservative, acknowledges the demand of the times by having a large living-room and a conveniently placed library. The advantages in a large

call and it is not necessary or convenient to interrupt the family conversation.

The center of interest in the living-room is the large fire-place. It is built of Roman brick and is surmounted by an oaken shelf. The heavy brass andirons, the wide open hearth and the warm color of the woodwork and brick are suggestive of comfort in the long winter evenings.

The prevailing tone in this room is brown. The ceiling is covered with canvas on which is an oil fresco, plain save for a simple border of oak leaves in soft green. The oak leaf also plays a prominent part in the decoration of the paper on the side walls, dividing it into appropriate panels and accenting the border. The ceiling is not beamed but a heavy corner mould is carried around the walls under which is

the picture mould. The floor coverings are in keeping with the color scheme, as is the mission furniture.

Connected with the living-room by a double opening is the dining-room. This opening can be closed by means of sliding doors when desired. The prejudice against sliding doors is fast disappearing since the advent of good hangers. There was a time when cased openings were considered sufficient. Even now many people prefer to have the house as one room. There are advantages in the sliding doors in that the openings may be closed in house cleaning to shut off a room as soon as it has been cleaned. Also, when

be found in the regulation furniture factory. Again should the furniture be carefully made and finished ready to put in place there is trouble in the finish for the color seldom matches that of the room, while if the piece is finished in the building it never takes a finish such as can be given it under more favorable surroundings. There is always more or less of sentiment connected with one's furniture, too.

The decorations of the dining-room show a greater variety of color than the other rooms, but all are subdued and of the same excellent taste. A plate-rail divides the side walls into suitable spaces. Below



preparing dinner it is often desirable to shut off the dining room from the living room until the meal is prepared.

This dining room is lighted by three south windows in a bay and a large window in the west, making it a pleasant room indeed.

The china closet, etc., are not built in as is so common now-a-days. There are good reasons for not doing so. In the first place, it is impossible to provide as favorable surroundings for the cabinet-maker in the house as in the shop. Indeed, the cabinet work is usually done at the mill where all is haste and bustle, where the atmosphere, in more ways than one, is not calculated to produce painstaking work such as will

this rail is a covering of rich green Japanese grass cloth. Above it is stenciled a border composed of conventionalized trees and fruit with foliage. The soft yellow of the fruit and green of the foliage are suggestive enough to put one in an appropriate frame of mind. Between the cross-panels of the ceiling is burlap upon which is simple line stenciling. The lighting is such as to permit of a direct light upon the table, shaded from the eyes of those about by an art shade; or, if desired, a diffused light may be thrown over the entire room from small frosted globes at the intersections of the beams.

The landing of the main stairs is lighted by a large triple window of beautifully colored art glass. The

second floor is divided into bed rooms of good size with large closets and is well ventilated. The finish is oak and is as well cared for as is the lower floor. Spacious linen closets are provided in the hall and are easily reached from any room. The two front chambers are connected with private bath between. This bath-room is well lighted from two front case-

ment windows and is nicely finished in white enamel.

The larger of these two rooms contains a mantel. A unique feature is in having one door in the bedroom fitted with a beveled mirror, single panel. Otherwise, the doors of this floor are of original design in four panels, the lower panels being the longer.

The third floor contains the servant's room and bath.

Troubles of Contractors

By Herbert Shearer

FELLOWS who don't know just naturally suppose that carpenters and builders are raking in easy money these days of high prices, but the other fellows who are on the inside of the deals, the men who have to pay a little more every time they go out to buy something, know better. They don't get enough more for their work to keep out of reach of advancing prices of materials and shorter hours for labor. It has been for months a case of high prices chasing profits into the hole and the profits have to scramble to get out in time to prevent being covered up. As one contractor expressed it, "I get more money for every job I bid on, but the extra money slips away and I don't know where it goes to." Even a load of sand in Chicago costs \$4.00 a yard and they always claim to have a yard and a quarter on; you know better, but you can't dispute with them or they will haul the next load somewhere else. Sand men are an independent lot just now. Sand only grows in patches and some of these chaps have fences around the patches. Four dollars and sometimes \$5.00 for a two-horse load of sand that costs nothing and is just simply mined with a shovel looks like coining money, but these fellows have their troubles.

One of them hauls sand from the lake shore to the northwestern section of the city. He drives a pair of mules and one mule is balky. The balky mule will haul his share of a yard, but he knows in a minute when his greedy owner loads on more. On one occasion, late in the afternoon the mule objected and his owner tried to persuade him to move along. Now it is not much use to argue with a mule. When they balk they are very set in their way, but on this occasion the sand man wanted the money for the load and he had a good black-snake whip and an easy vocabulary, consisting principally of extremely expressive English adjectives with a foreign accent. The debate did not last very long because a humane officer interfered. The owner of the rig being a foreigner and not a Christian, delivered himself of a sentiment that is best expressed in the quotation:

"Things have come to a pretty pass

When a man can't wallop his own jack-ass."

and it did seem a little tough when a man could whip the contractor into paying him any price for sand that he chose to ask, then have a mule block the game, but it is hard to fathom the ideas and actions of mules and humane officers.





PLUMBING

W^m R. MARSHALL

Roughing-In Measurements

WHAT SHOULD BE KNOWN BEFORE THE ROUGHING-IN WORK IS DONE — AVOIDS NEEDLESS EXPENSE AND SECURES A BETTER FINISHED JOB

IN planning a bath-room a selection of fixtures is the first step necessary, after this has been carefully done the manufacturer should be asked to furnish sketches showing roughing-in measurements of all fixtures. This not only enables the architect

change the fixture or have some parts of the fixture rebuilt to meet the measurements; all of which is an unnecessary expense and annoyance. The following sketches will show just what measurements it is necessary to have in order to properly lay out the work for each fixture.

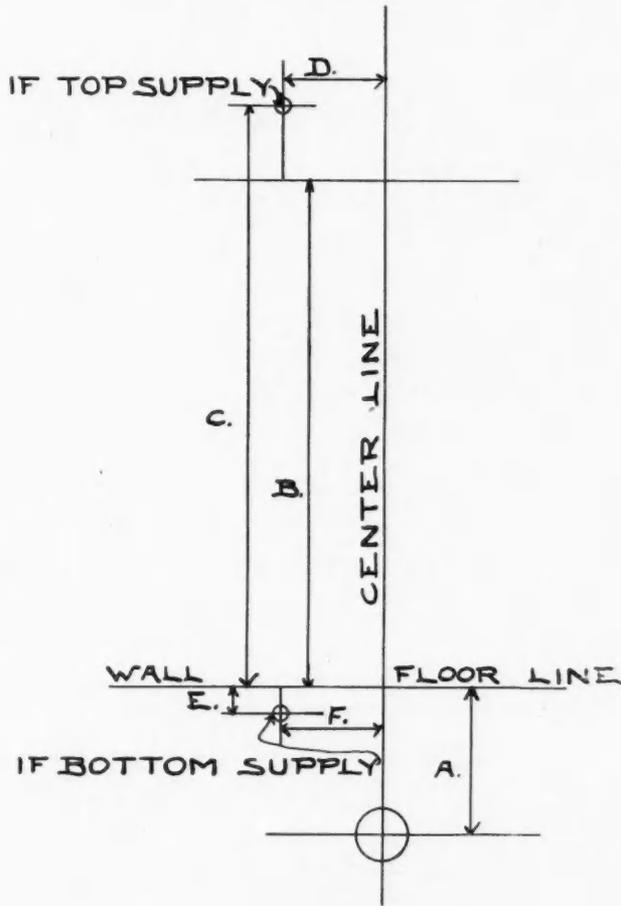


FIG. 500

to lay out the room to the best of advantage, but permits the carpenter to make provision for furring strips, braces, etc. It eliminates the danger and expense of alterations after the roughing-in pipes have been covered in walls and floors. Many times roughing-in work is put in on guess work and covered, and when the job is ready for the setting of the fixtures it is found the rough work will have to be changed, or forced to fit; which is very likely to strain the joints and weaken the job. Sometimes it is cheaper to

Water Closet

There are two types of closets generally in use for residence work, i. e., the high-tank closet and the low tank closet. In the high-tank closet the following measurements are necessary: the height of closet tank, so carpenter can provide strips under plaster wall to which the tank can be fastened. The opening

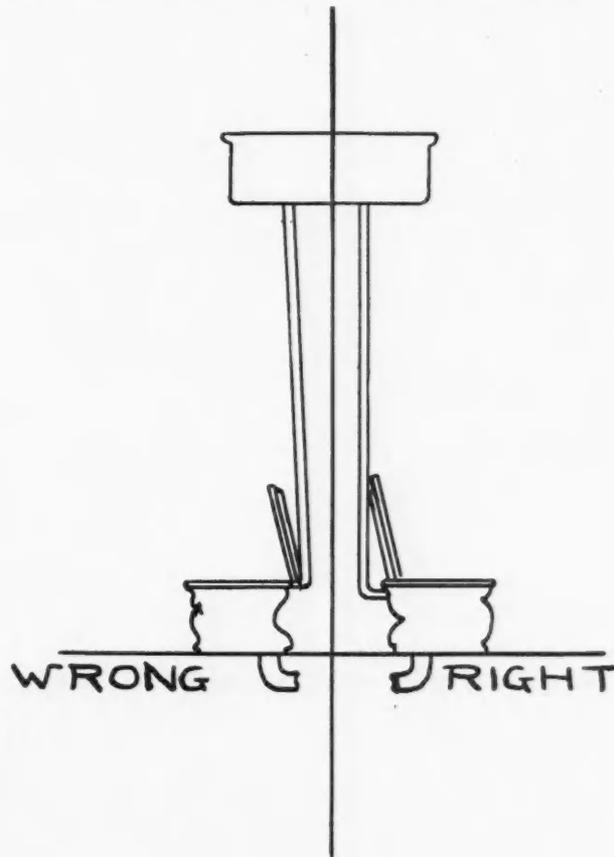


FIG. 501

in floor for closet outlet. Fig. 500 illustrates how such measurements are furnished by the manufacturers. The measure for supply pipes —

A is the distance from wall on floor of outlet of closet, and must be exact so flush pipe from tank will properly fit closet bowl, be plumb and allow closet seat

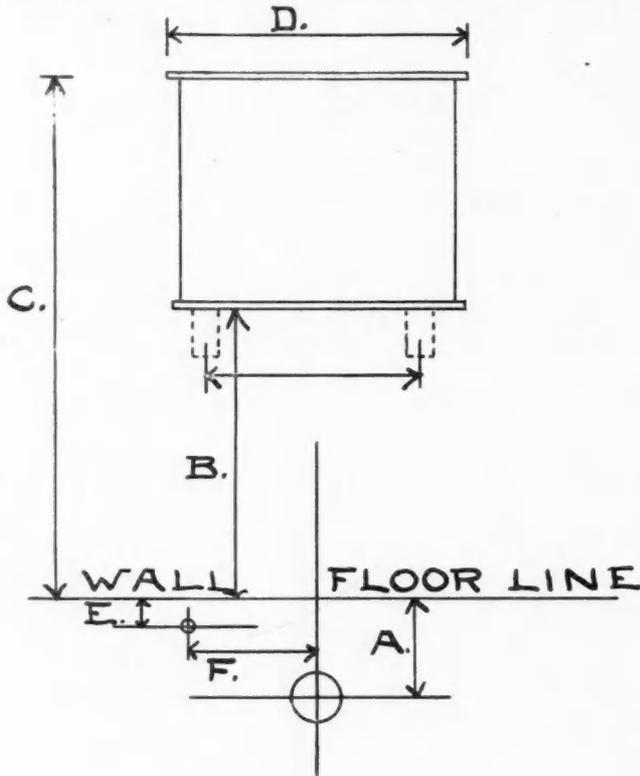


FIG. 502

or cover to remain up when so placed. A closet which is roughed-in too close has to be forced—throwing the flush pipe out of plumb and making it impossible to make seat or cover stay up on account of lack of space. Fig. 501 explains the fault.

B is the distance from floor to the bottom of tank; shows carpenter just where to nail strip for tank brackets.

C is the distance from floor to the opening in wall for the water supply to tank, when a top supply tank

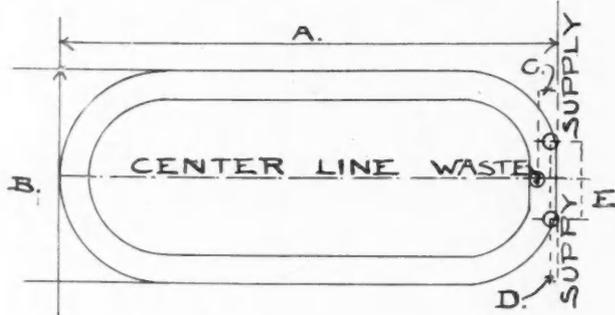


FIG. 504

is used, and the supply pipe is concealed in the wall.

Note—This measurement should allow for a stop valve to be placed between wall and tank supply valve to permit of supply being shut off in the event of the tank having to be removed for repairs, otherwise the entire supply has to be cut off until tank is replaced.

D is the distance from the center of tank for tank supply opening and can be either on the right or left hand side.

E and F is the distance from center and wall for the supply pipe to tank when a bottom supply tank and a nickle-plated supply pipe is used.

Note—When nickle-plated brass supply pipes are specified nothing but iron pipe size brass pipe nickel-

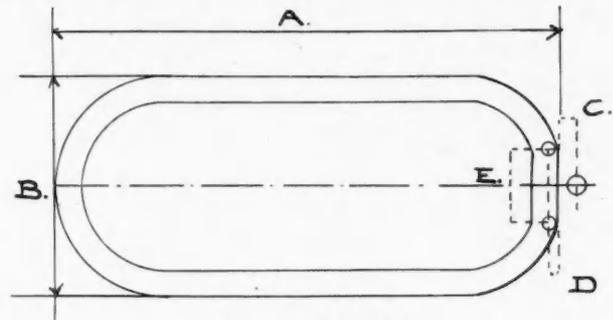


FIG. 505

plated provided with a shut-off valve should be used.

Low Tank Closet Combination

The roughing-in measurements are about the same as the high-tank closet combination except that it is always desirable to have the tank dimensions as low down combinations are sometimes used under high windows and in places where the wall space below the chair rail has to be considered in the placing of the other fixtures. Fig. 502 shows all details necessary.

Bath Tubs

There are a great many styles of bath tubs and innumerable methods of trimming them, the two most popular styles being one fitted with outside connected

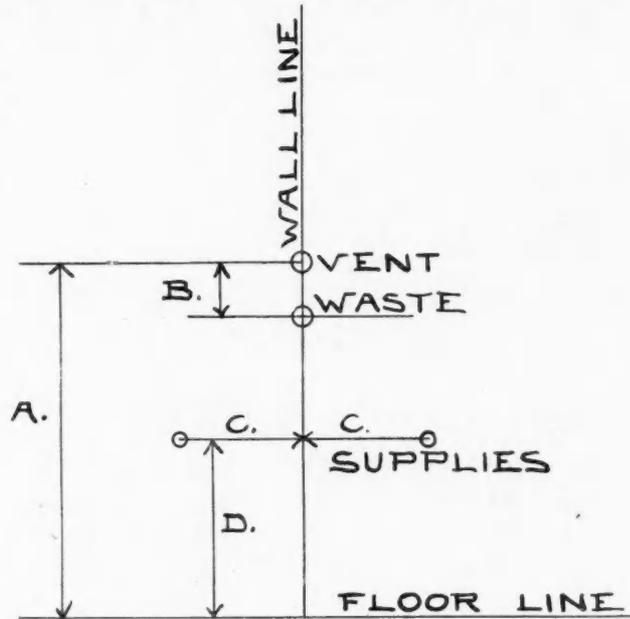
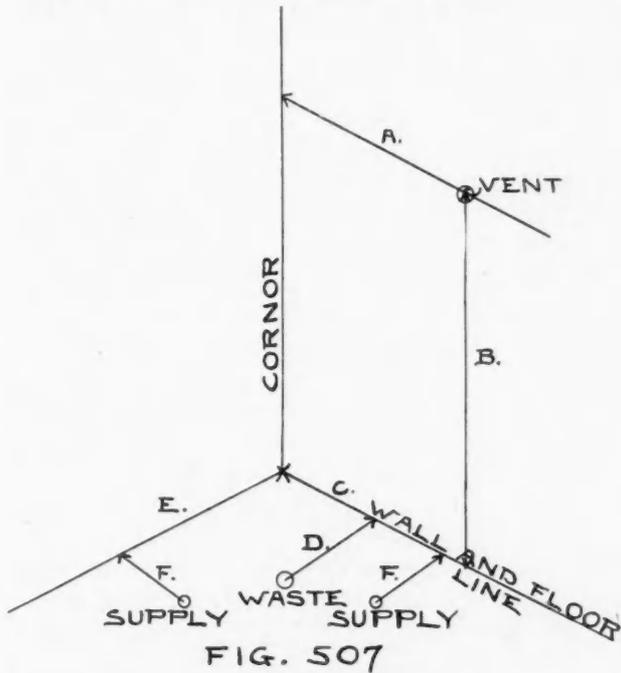


FIG. 506

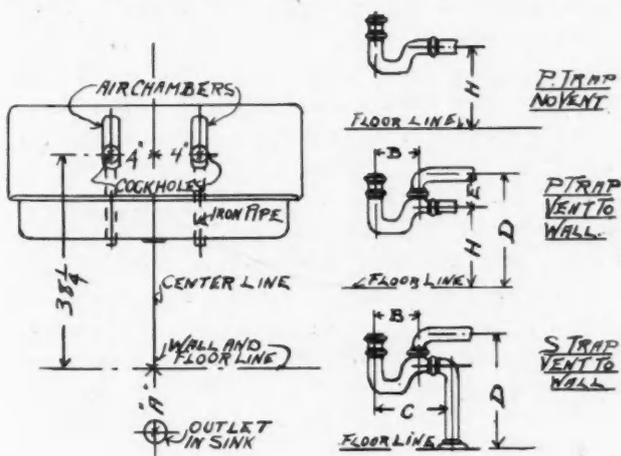
waste and overflow with rubber stopper inside of tub connected to a chain; the other style is known as a standing waste and overflow, known in trade parlance

as an Ideal Bath-Waste, which is fitted to the outside of the tub and has the waste stopper outside of tub. Measurements for bath tubs are necessarily all floor measurements, except the measurements of the tub itself, which is length over rim and width over rim;



when these measurements are known it is a simple matter to compute the center of openings from wall lines. The setting of the tub as regards distance from side and end wall is governed by space available or inclination. Fig. 504 shows supply pipes and waste outlet on floor.

- A, is the measurement of length over all.
- B, is the measurement of width over all.
- C, is the measurement of distance between outside



- D, is the measurement of distance between outside edge of rim and center of supply pipe.
 - E, is the measurement between centers of supplies.
- Fig. 505 is the same as 504 except the waste outlet

is outside of rim to allow standing waste to project above the rim of the bath tub.

Lavatory

Lavatories, irrespective of design or material, are known as flat back or corner lavatories. Fig. 506 shows the measurements of a flat-back lavatory with C trap to wall vented, and supply pipes from wall.

A, is the distance from floor to trap vent.
B, is the distance between vent opening and waste opening.

C, is the distance of center to center of supply pipes.
D, is the distance of supply pipe from floor.

Fig. 507 shows measurements necessary for a corner lavatory with S trap to floor and vent to wall and supply pipes from floor.

A, is the distance from corner of vent opening.
B, is the distance from floor of vent opening.
C, is the distance from corner on floor line of waste outlet.

D, is the distance from wall line of waste outlet.
E, is the distance from corner on floor line of supply pipe opening.

F, is the distance from wall line of supply pipe openings.

Kitchen Sinks

Fig. 508 shows the method of taking measurements for kitchen sinks. The measurement shown from floor to faucet opening, i. e., 38 1/4 inches, is based on a sink to set 30 inches to top of roll on sink, the centers for supplies being 4 inches from center line to each faucet.

A, is the distance from wall to center of outlet opening in sink. If an S trap to floor with vent to wall is to be used, the center of the waste opening in the floor will be the A distance less C distance, as C is the distance from inlet to outlet of trap. The B measurement is necessary if trap is set sideways instead of straight back, as it gives the distance off center of vent opening in wall. D is the distance from floor of vent opening in wall. Where a P trap with vent is used measurements B, H, E, and D are necessary to properly rough in the work in the wall and when a P trap without vent is used the distance H from floor to waste outlet is all that is necessary.

Noise Insulation

A good way to shut out sound from the streets is to have double windows. Gen. M. C. Meigs, writing on this subject, says:

"I have found it impossible to make myself heard by a person on the other side of a large window, double glazed, interval between panes seven-eighths of an inch. Glass is very elastic, and should, I suppose, therefore, be a good sound conductor. But the voice cannot be heard through two sheets of ordinary French window glass separated by seven-eighths of an inch of air. In this, I think, may be found a hint for shutting out sound."

The Strength of Beams

A THIRD ARTICLE DEALING WITH THIS IMPORTANT SUBJECT IN THE SIMPLE AND EASILY UNDERSTOOD WAY WHICH HAS CHARACTERIZED THE PREVIOUS ONES

By T. B. Kidner

TO the craftsman who is desirous of adding a little theory to his practical knowledge, there is nothing, perhaps, so repellent as the apparently difficult arithmetical formulas with which he is confronted in the pages of many of his trade books. The writer's success in making some of these formulas clear to a couple of his craftsmen friends, led to a continuation of the lessons, and as the accounts of the earlier lessons, given in the June and August numbers of this journal, seem to have been received with appreciation by many of his fellow-readers, the writer begs

be easily applied to a series of such beams, and their combined strength readily ascertained.

The first step, then, was to look about for a suitable example of such a structure, the strength of which could be calculated for purposes of the lesson. A very short excursion round the neighborhood led to the discovery of a veranda or balcony which suited the purpose admirably and our two craftsmen pupils soon measured the structure and jotted down the necessary particulars, which were as follows:

The veranda projected from the second story of a dwelling-house, some 3 feet, the house itself being 24 feet in width, with the veranda right across the face. It was carried on 11 beams, each 4 feet by 6 feet, projecting through the face of the wall, giving 10 bays of flooring. There was a sloping roof to the veranda, but as this was carried on some beams projecting from the floor above, its weight had not to be taken into account. A light balustrade about 2 feet 6 inches high completed the structure.

The first proceeding was to calculate the strength of one beam, or cantilever, of the size used in the veranda. The veranda had several coats of paint, but we assumed that the supports were of spruce. Going back to our first lesson (see rule on p. 672, August) we proceeded to find the strength of such a piece supposing it to be a simple beam, loaded in the middle and supported at each end, calculation being as shown in Fig. 5, the steps being as follows:

(A) Put down the figure for spruce (see table on p. 368, June) = $3\frac{1}{2}$ cwts. (B) Put down the breadth 4 inches, then the depth 6 inches and, as that was to be "squared," 6 again. (C) Put underneath, the length, 3 feet. This sum gave us 168 cwt. as the breaking weight when the piece was supported at both ends.

But we had already seen (p. 670, August) that a cantilever loaded at the end is only one-fourth as strong as the same piece is when supported at both ends and loaded in middle. In the case of the veranda, however, the load would not be at the end, but would be distributed along the length of the cantilever, thus bringing in another rule; which is 'A cantilever loaded evenly throughout will carry twice as much as a similar one loaded at the end only.' A similar rule applies when the beam is supported at each end (see Figs. 1 and 2). Accordingly we divided our answer by 2, giving us $(168 \div 2)$ 84 cwts. as the breaking weight for a spruce cantilever, 4 inches by 6 inches, projecting 3 feet from its support, the wall of the house.

As the veranda would have to carry a live load,

(Continued on page 829)

Fig. 5
THE CALCULATIONS

A

$$\frac{\text{cwts} \quad 3\frac{1}{2} \times 4" \times 6" \times 6 \quad \text{cwts}}{3} = 168$$

B
168 cwts. is Breaking Weight of
piece when as in Fig. 1.

C

$$\begin{array}{r} 2 \overline{)168} \\ \underline{84} \end{array}$$
84 cwts. is B.W. when as in Fig. 4

D

$$\begin{array}{r} 8 \overline{)84} \\ \underline{10\frac{1}{2}} \end{array}$$
10½ c. Safe load (½ B. Weight)

E
Verandah has 11 bearer or 10 bays
of floor; 10½ cwts. x 10 = 105 cwts

F
Verandah is 24' 0" x 3' 0" = 72 sq.ft.
Load cannot exceed 1½ cwts. per foot.

G

$$72 \times 1\frac{1}{2} = 108 \text{ cwts.}, \text{ the greatest}$$
load possible for whole verandah.

to offer an account of the next step taken in helping his two friends past some more little difficulties.

It is a well-known maxim in all teaching that we "must proceed from the known to the unknown" and it seemed to the writer that the consideration of the strength of a wooden cantilever beam, which was taken up in the August number, led very naturally to the question of the method of calculating the strength of verandas and similar structures, which are supported by a number of projecting beams or cantilevers. The method given in the August number, by which the strength of the projecting beam used for hoisting goods to an upper story is ascertained, can

THE STRENGTH OF BEAMS

Fig. 1

4

Proportional strength

Fig. 2

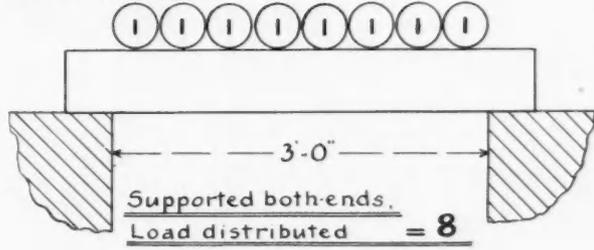
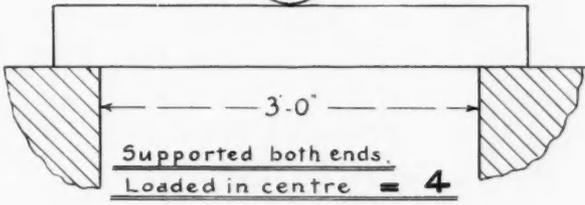


Fig. 3

1

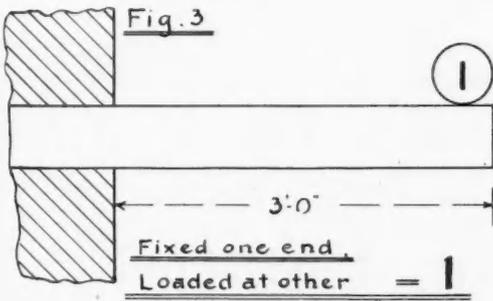
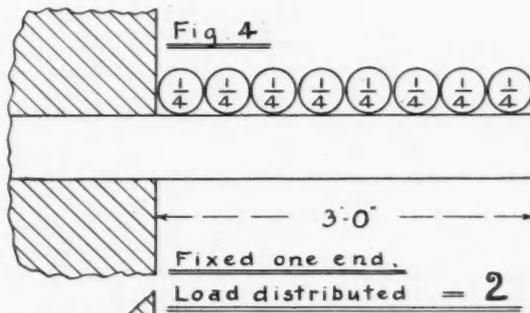
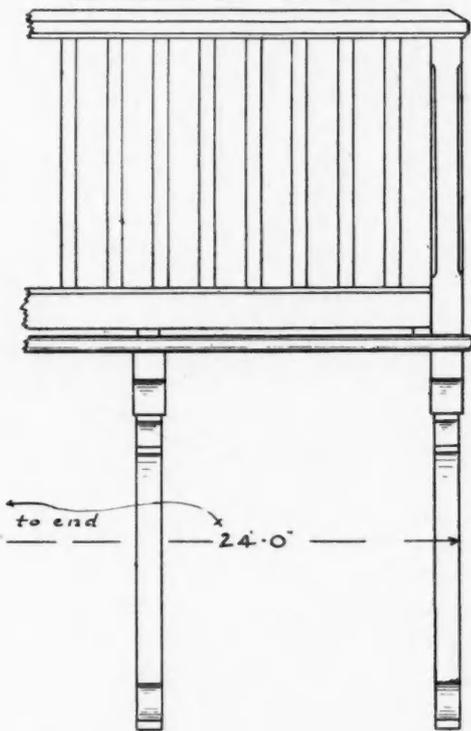


Fig. 4

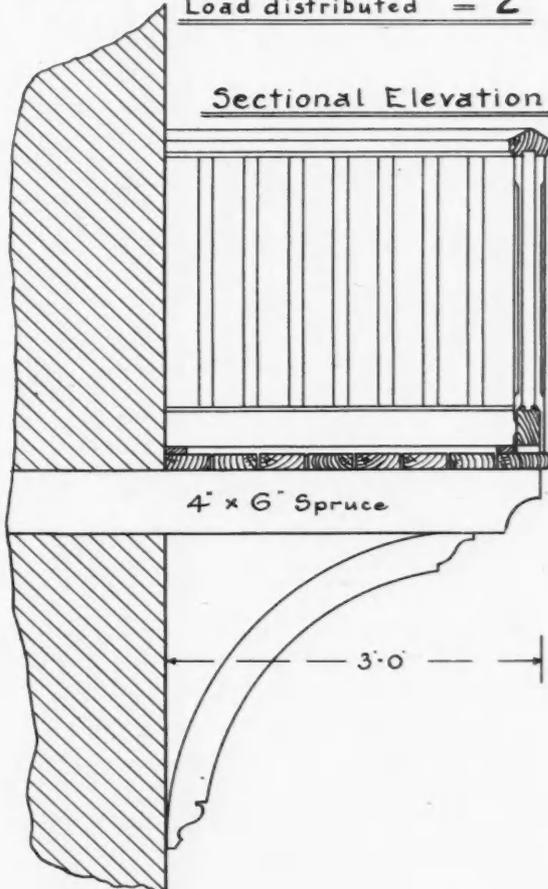
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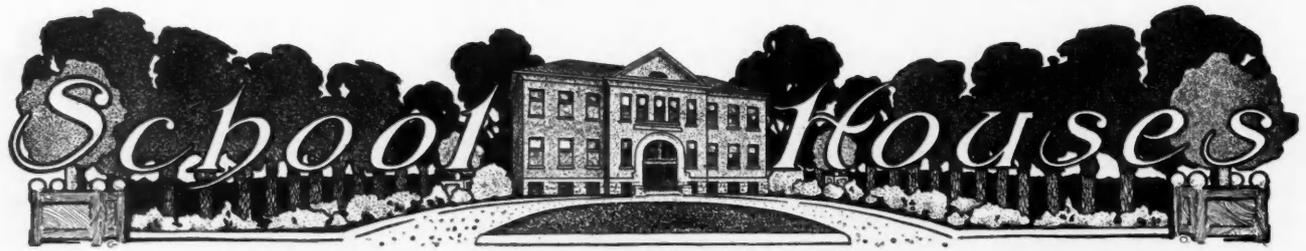
Part Front Elevation



Sectional Elevation



VERANDAH



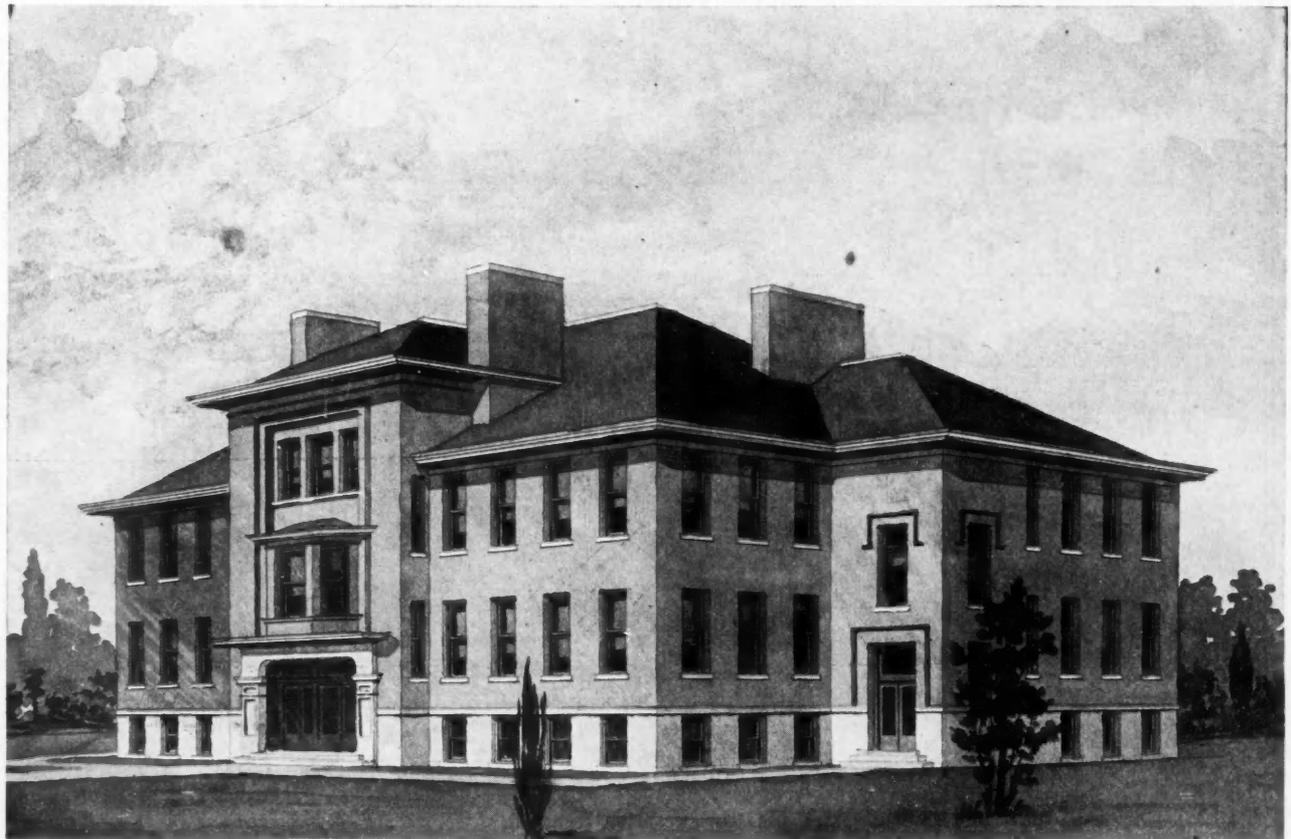
Modern School Building

PERSPECTIVE AND FLOOR PLANS OF A MODERN SCHOOL HOUSE—CONTAINS ALL CONVENIENCES AND UP-TO-DATE EQUIPMENT

WE are this month illustrating a large eleven-room school house, designed by G. W. Ashby, architect. The building is 75 feet deep and 126 feet long. The foundation is of stone, while the balance of the building is of paving brick. It is covered with a slate roof. We wish to call special atten-

are well lighted, well ventilated, and contain ample black board wall surface for all practical purposes. The second floor also has the convenience of two toilet rooms and drinking fountains.

The basement has a high ceiling, so that the rooms can be used for school purposes, such as laboratory,



tion to the front entrance which is of a very neat design and permits a large vestibule to be placed between the front entrance and the main stairs.

The first floor is divided into six class rooms which will accommodate 40 pupils each, ranging from the first to the sixth grades.

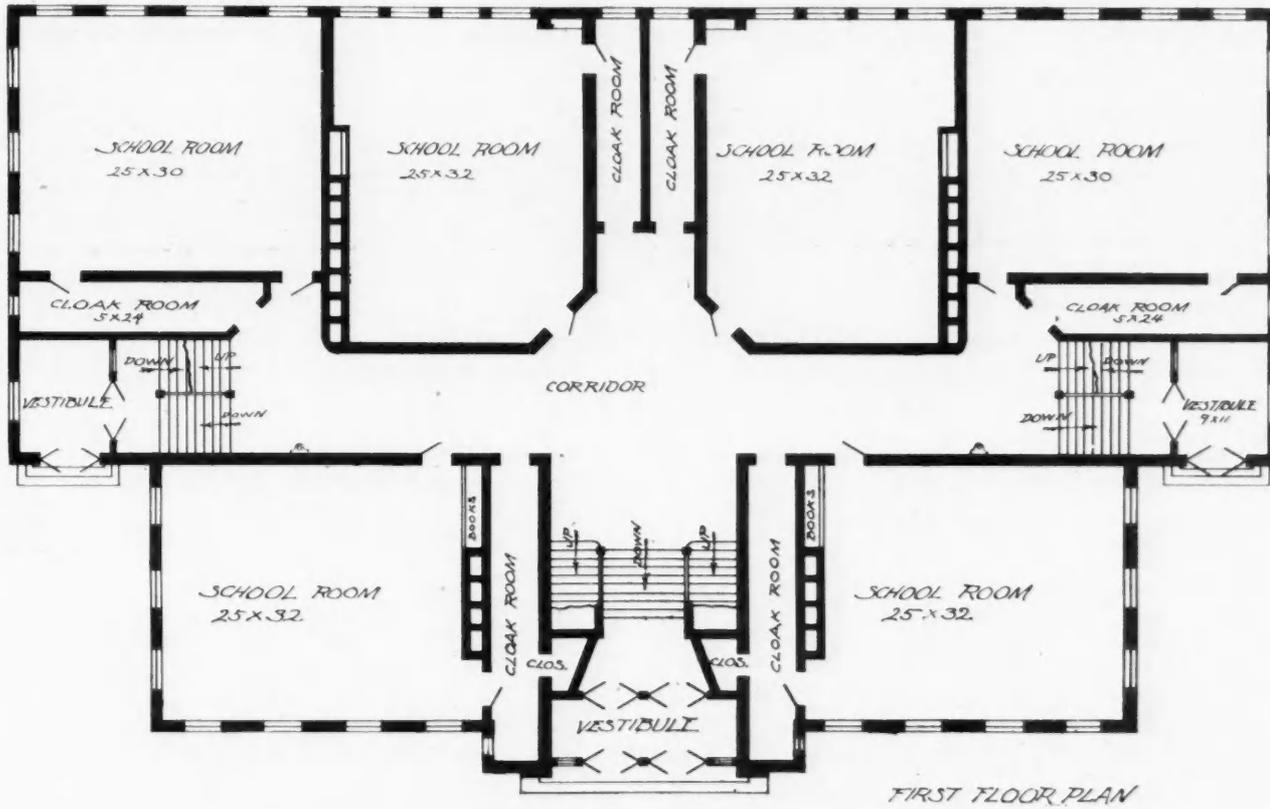
The second floor has a main study or assembly room and four class rooms. The office for the principal is over the main entrance on a level with the stair landing between the first and second stories. The building has three entrances and stairways, thus giving convenient access and exits to all rooms of both stories. The corridors are of ample width and all school rooms

manual training work, and domestic science. The basement also contains toilet rooms, coal room and boiler rooms.



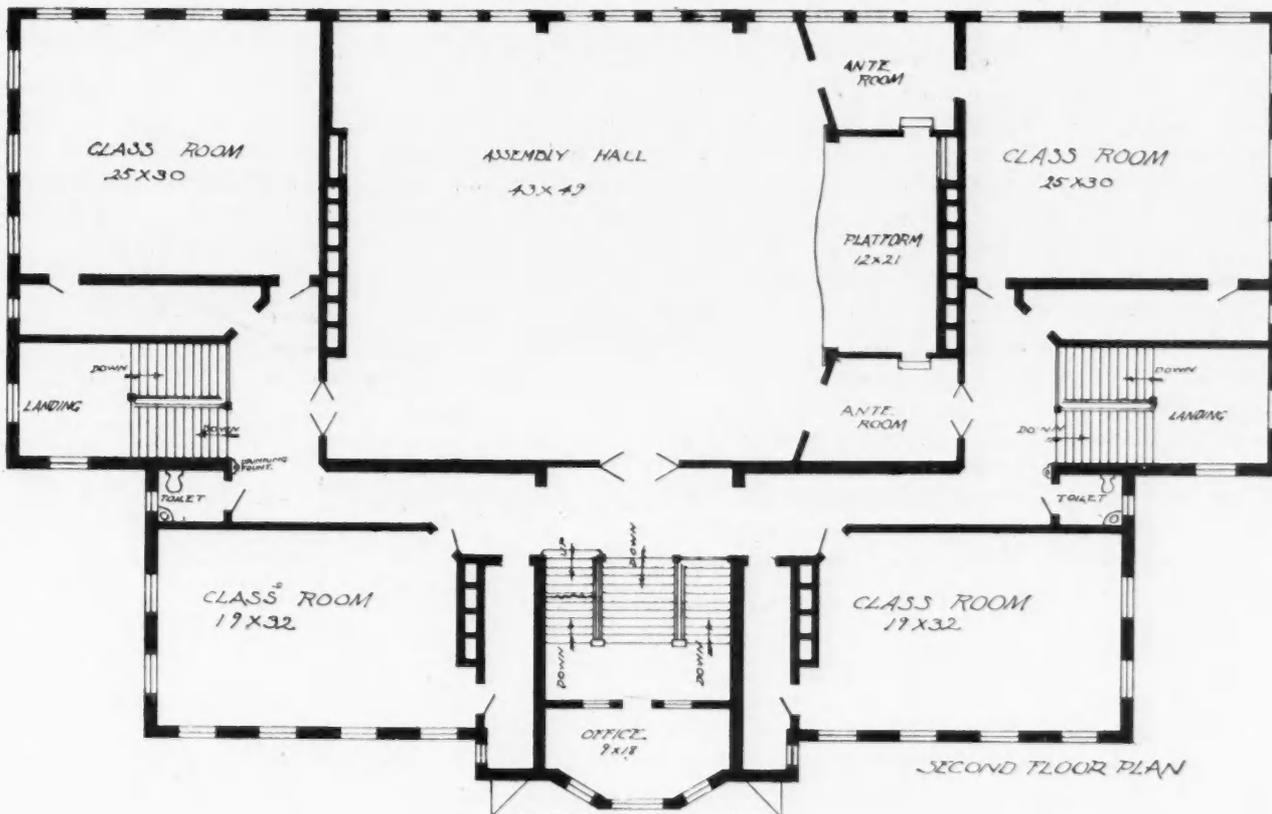
German Building Precautions

Consul C. B. Hurst reports that extraordinary care is displayed by the authorities of Plauen, Germany, to avoid defective construction in new buildings. He says: Work on masonry, when the temperature is too low, is forbidden under severe penalties. The law prohibits the building of walls and sewers with cement, or the use of concrete, when the thermometer at 8 o'clock a. m. registers less than 25 degrees F., or with lime



mortar when the temperature at this time is 21 degrees F. This regulation refers to building above the surface or in inclosed rooms. If freezing weather has lasted a long time, concrete construction may only be resumed after the consent of the building police. If freezing sets in so as to delay hardening of the con-

crete, the wooden frames used in the work must be kept in place as long as the cold weather lasts. On days when building in the open air or open rooms is not permitted, due notices will be posted at the various police stations. A penalty exists for the violation of the building laws.





Running the Sticker

QUALIFICATIONS NECESSARY TO BE A GOOD STICKER [HAND—PROBLEM OF CHANGING THE KNIVES AND HOW TO SOLVE IT

WE all know that the sticker hand is a rather important personage in the planing mill, but sometimes we may wonder just what it takes to constitute a good sticker hand. What are the qualifications necessary, and what are the distinctive features which make sticker work differ from any ordinary planer work? Did you ever stop and study these things and figure out the difference?

One day in a round of shop talk the subject of sticker work and sticker practice came up, and it was found by comparison that there is a very wide difference in methods and practices at different planing mills though they may be doing practically the same line of work. In one planing mill it may be found that the sticker is changed to meet every job in regular order as it comes along. It may be a matter of sticking sash for only one window, or of running stock for only one window frame, or any other little job that seems insignificant and not worth making the change for, but the sticker is changed and the job taken care of in the same manner as if it was a run of several hours instead of only a few minutes. This keeps the jobs all running in their regular order, but it makes lots of changes for the sticker, and no doubt many which are unnecessary.

There is another extreme. In some planing mills sticker changing is a thing that is avoided just as much as possible. Jobs of the same kind of stuff are bunched so as to get as much of a run together as possible, and little special jobs, which are sometimes wanted in a hurry, frequently have to wait quite a long time before the sticker man can be persuaded to change to run them. And, even then he does it ungraciously, and sometimes doesn't take much pains with the work.

This suggests briefly two extremes of practice, each of which may be at fault, because of their being carried to extremes rather than because of any error in the original idea. Along with these two extremes in practice we find equivalent extremes in the men who run stickers. Some seem to take a delight in setting up a sticker for a new job, and it seems to be a pleasing diversion to have a special rush job come along requiring perhaps the sticker man to change off and run it, and then change back again to what he was

running before he was interrupted. This man naturally gets so he can change his knives in quick time, and though he may do more changing than is necessary, he takes up less time in any given change than others.

There are other men, and many of us have met them, who seem to regard it as an insult to be asked to change over a sticker at any time, and when a small job is wanted in a hurry, it is certain to arouse their anger. To these men the changing of the knives becomes by habit a burden and from the practice of putting it off as long as they can and in every way they can they naturally lose interest in it and instead of developing speed in the work become both slow and rough. Therefore, the changes they make are few, comparatively, and what there usually are prove expensive in time, and the difficulty in getting them to make changes frequently interferes with the order of work in a mill. Work here and there on certain jobs may be held up waiting for some special lot of sticking, and some job wanted in a hurry frequently finds itself blocked because the sticker man has accumulated quite a run on some other stock and won't change until he has finished it.

Between these two extremes it is easy to see that there is a happy medium which might, and probably should, be followed in every shop, of not making any more changes than are necessary for the good of the work, and of not hesitating to make a change when the work requires it. However, it's from a study of these extremes that we get some ideas that are worthy of consideration. The man who objects to changing his sticker, while he becomes a disagreeable fellow in a way, he does drive home the idea that there are many chances to favor the sticker by attention to bunching orders so that if there are several small ones taking the same class of stock they can all be run at once, thus saving a change, and frequently two changes, one off and one back, and to that extent reducing the cost of the sticker work. This point should all be kept in mind, too. It means systematic work, and things of this kind count and help keep down expenses.

On the other hand, the fellow who changes his sticker for every job as it comes along regardless of whether or not there are other jobs of the same kind

that may reach him in the course of the day, frequently helps follow out a system in a different manner. The development of system in this case is along the line of each job being taken care of in the order of its billing out to the mill, and each job gets individual and undivided attention, thus eliminating much of the danger of confusion and of getting two jobs mixed. The strong point in a sticker man of this class, however, is not so much in humoring the shop system, that calls for every job being taken in rotation, as it is in a development of skill and speed in setting up his machines. From practice willingly undertaken instead of being shunned and being done unwillingly he gets so he can change his machine in record breaking time.

It would be interesting to know just what the record is of sticker changing. In the talk referred to above it was brought out that one man who was considered something of a rapid change artist, and was called on sometimes to change his sticker may be from twenty to thirty times in a day, has stopped his machine, set it up for crown mould, and got it going again inside of five minutes. That's rapid work, and some disputed it, or rather questioned its possibility, but it was vouched for by a man who had kept time on this sticker man without the sticker man having the stimulus of knowing that time was being kept. It goes without saying that a man who has to set up his sticker may be twenty or thirty times a day will naturally develop skill and speed, and it's a pretty good process of training for a sticker man to go through for the sake of acquiring speed in making changes, even though the better practice may be to so shape the run of his mill work that it will not be necessary to change so frequently.

As contributing to speed and convenience in changing the sticker there are some other elements that enter besides the deftness of the operator acquired through training. One of these is to be properly equipped for making changes promptly with the least possible trouble. Proper equipment applies to other things, too, than the machine, the knives, and the tools necessary in making changes. One point, of course, is to have machines that are getatable; another is to have the proper equipment of tools and to have them all at hand; and still another is to have plenty of cutter knives and keep them in good shape. But, even with all these things, it may take a man longer than it should to change his sticker and set up for something else.

What is needed to complete the equipment and what is frequently neglected, though it contributes as much as anything else toward making sticker changes easy and quick, is to have convenient and at hand patterns for all the shapes of stock for which there are cutters. Take mouldings for example, and the best practice so far found is to keep by the sticker a short length of pattern of each kind made for use in setting up the knives. This pattern is not just a piece cut off of the

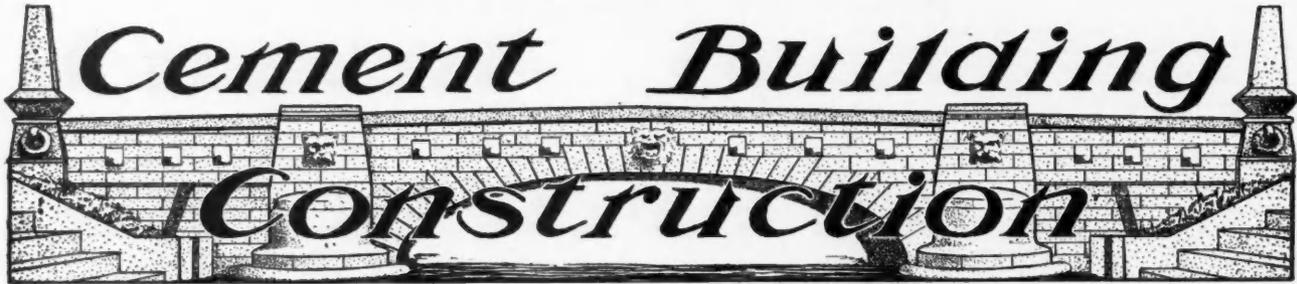
end of the moulding, but the right way to make it is to stop a piece of stock before it is clear through the sticker, stop the machine and take it out. Then by cutting off each end properly you will have a section say two feet long of the blank from which the stock is made as well as a section of the moulding. This not only shows you the blank size, but it will fit on the bed in the feed rollers and thus hold itself in place for setting up. This insures uniformity in the moulding as well as assists in time saving in changing the sticker. If some pattern of this kind is not kept the moulding of the same pattern run this week may not member neatly with moulding made last week, and sometimes it is frequently put in racks together and may get mixed up, when it makes a bad job. If they are all set to one pattern, however, you know that the same moulding is always the same and parts of stock from one job will match the stock from another job, just as if both had been run at the same time. For the convenience of ordering out at the office as well as for identification, these patterns where they are for moulding shown in the standard moulding book, should be numbered to correspond with the numbers given in the moulding book, and then they can be ordered and identified by number. Samples can be hung on a hook or arranged any way that seems most convenient and they should include every kind of moulding made.

Where there are special patterns not shown in the moulding book they should be kept just the same, and may be identified by naming or any way felt most convenient. With these patterns at hand the changing of the sticker from one pattern to another is not only simplified and made easier, but it is more reliable. There is a satisfactory degree of certainty that stock will be of the exact shape and size wanted. This point of itself makes the pattern worth while, and then when a man gets in the habit of setting up to these patterns he does not have to set up and try, run a blank in a little way, take it out and examine it and possibly readjust his cutters, thus not only taking up lots of time but spoiling a certain amount of stock on each job. He can put in his pattern, carefully set his knives, clear his machine and go to work. It's well enough, of course, as a safeguard to measure the stock as it goes through and compare it to the pattern, but generally where a man follows this idea up earnestly he soon gets it down fine enough that it is very seldom that he has to do any great amount of adjusting and setting up of the knives.

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Dead Black Stain for Wood

Apply a coat of hot logwood solution, allow it to dry, then apply a second coat; when this is dry, apply a solution of acetate of iron, made by dissolving iron filings in hot vinegar or acetic acid, which will turn the logwood stain dead black. Let this dry, then rub with raw linseed oil to a dead polish.



Practical Building Code

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

By Fred W. Hagloch

SECTION 1. All buildings requiring excavating shall be so protected by the owner making or causing them to be made that adjoining soil, etc., shall not cave in by reason of its own weight, and shall be properly guarded and protected so as to prevent same from becoming dangerous to life and limb.

SECTION 2. All permanent excavations must be protected by guard rails or fences not less than four and one-half feet in height.

SECTION 3. If the owner or possessor of any land digs, or causes to be dug, any excavation to a greater depth than nine (9) feet below the curb of the street or streets on which said land abuts, or, if there be no curb, below the established grade of the street or streets (or if there be no established grade the surface line shall be recognized as same), and by such excavation causes any damage to any improvements on adjoining property, such owner or possessor shall be liable to the party injured to the full amount of such damage.

SECTION 4. All excavations of less depth than nine feet below the aforesaid lines can be made by the owner or possessor without liability for damage done to improvements on adjoining land, provided the owner of such adjoining property has been notified by written or printed notice of the excavating no less than thirty days prior to any damage done to said adjoining property.

SECTION 5. All excavations above the curb or grade lines shall require the same notice to adjoining owners mentioned in Section 4.

SECTION 6. All excavations made for sewers, conduits, tunnels or any other purpose made below the nine feet depth of grade line must be at least one foot from any building wall or footing, and the party causing such excavation is liable for all damage to adjoining property.

SECTION 7. Excavations for vibratory machinery, engines, dynamos, etc., shall not be made within one foot of any building wall, footing or foundation.

ARTICLE VI. FOUNDATIONS. All buildings erected within the city shall have foundation walls or piers, unless building be open or closed shed or shelter of temporary nature.

SECTION 1. All foundations must be at least three feet below the grade or natural surface line, and for building with basements or cellars of greater depth than three feet below surface line of the natural soil the foundation must be at least six inches below the cellar or basement floor.

SECTION 2. Where filled or made soil is more than three feet deep the foundation must penetrate the natural soil at least six inches, unless the filled or made soil is no less than twenty years old, which is recognized as natural soil.

SECTION 3. All walls for buildings three stories and basement or less in height shall have a footing not less than six inches wide and six inches deep on each side of wall, and where footing can be placed on one side of wall only, then such footing must be not less than one foot deep, and one foot wider than the wall.

SECTION 4. All buildings of greater height than three stories and basement must comply with the following requirements:

The total weight of material, together with the total live load of all floors and roof, must be determined and properly proportioned to each pier or wall and a foundation of sufficient width and strength to carry same according to the following allowance for the various natural beds or soils:

Natural rock two feet or more thick, 160 tons per square foot.

Natural rock less than two feet thick, 80 tons per square foot.

Natural rock, shelly and mixed loose, 35 tons per square foot.

Hard clay beds, always dry, 4 tons per square foot.

Clay in thick beds but moist at times, 2 tons per square foot.

Gravel, or gravel and coarse sand, 6 tons per square foot.

Sand, very compact, 3 tons per square foot.

Sand or soft clay, or both mixed, 1 ton per square foot.

Quicksand, alluvial soils, etc., 100 pounds per square foot.

SECTION 5. Provided also that all buildings, irrespective of the conditions in other sections in this Arti-

cle VI, must comply with the following requirements:

All buildings of less than thirty feet in height must have a foundation not less than three feet below the grade or surface line, and one foot must be added to the depth of the foundation for every ten feet added to the height of the building up to sixty feet in height, when one and one-half foot must be added to the depth of the foundation for every ten feet added to the height of the building.

SECTION 6. Soils loaded heavier than allowed in Section 4 may be strengthened by the use of wood, concrete or metal piles of the following dimensions and distance apart:

Tapering piles, not less than six inches diameter at small end and not less than twelve inches diameter at large or top end and not less than twelve feet long, or not less than eight inches diameter at small end and not less than twenty inches in diameter at large or top end and not less than sixteen feet long, and no piling shall be spaced closer than thirty inch centers or farther than forty inch centers.

All wood piling must be sound cedar or hard wood and covered with not less than four feet of concrete, stone or other foundation material.

All concrete piling must be made of no weaker materials than one part Portland cement, three parts sharp sand and five parts gravel or crushed stone.

All metal piling must contain not less than twenty per cent of their volume solid metal, unless hollow space be filled with concrete, when metal may consist of a shell around the outside made of twenty gauge steel.

Straight or uniform piling must not be less than twelve inches diameter and not less than sixteen feet long and in other respects comply with the rules governing tapering piling.

All piling shall be loaded only according to the severity of the force required to drive them or the forms (cores) with which they have been made.

The unit standard of driving hammers shall be a 1,500 pound hammer dropped free five feet, and each such drop shall be considered as one penetration in the following:

A pile requiring six penetrations per last inch shall be loaded not to exceed sixteen tons.

A pile requiring eight penetrations per last inch shall be loaded not to exceed twenty tons.

A pile requiring ten penetrations per last inch shall be loaded not to exceed twenty-eight tons.

A pile requiring twelve penetrations per last inch shall be loaded not to exceed thirty-five tons.

A pile requiring fourteen penetrations per last inch shall be loaded not to exceed forty tons.

The capping or pier placed on piling must rest on the soil around the piling as well as upon the piling.

No piling shall project into such pier or capping more than one foot or more than one-fifth the depth of such pier or capping.

The capping of piling shall be the footing for the

walls or column and sizes and materials for same is given under footing.

Piling under walls less than sixty feet in height shall consist of not less than two rows and more than sixty feet in height not less than three rows, spaced as provided above.

Piling under piers shall not be farther from the outside of pier than sixteen inches to center of outside row of piling and the interior piling spaced as provided above.

Where the driving of the piling has failed to compact the soil around the top of the piling same shall be rammed full with concrete, but this concrete shall not be considered as a part of footing or piers.

The top of all wood piling shall be cut off to a uniform height when capped with wood, and all wood must be below the lowest ground water level.

SECTION 7. Footings. All footings may be made of the same materials that the walls, piers, etc., which they support are to be built of, but in no instance can a footing course project farther beyond the course above it than the depth of such course.

Concrete footings may slope or batter on the sides 45 degrees, except the lower eight inches whose sides must be vertical.

All footing materials must be either sound, well tamped concrete, firmly laid flagstone not less than six inches thick, or brick laid in cement mortar. The stone or brick footings may be stepped up work.

All footings must be not more in width than twice their height, unless built of steel beams bedded in concrete or made of reinforced concrete; in these instances the footings may be three times as wide as high.

No footing shall be less than eight inches high and of such width to cover sufficient surface to carry the load as given in Section 4, Article VI, or in compliance with the following table:

Footings for eight inch walls shall be sixteen inches wide and eight inches deep.

Footings for twelve inch walls shall be at least twenty inches wide and ten inches deep.

Footings for sixteen and seventeen inch walls shall be at least thirty inches wide and not less than twenty inches in height.

Footings for twenty-two inch walls shall not be less than forty inches wide and not less than two feet in height.

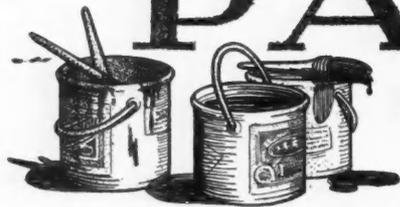
Footings for thirty inch walls shall not be less than four feet in width and not less than two and one-half feet in height.

Footings made of steel beams and concrete, commonly known as grillage or footings, made of properly reinforced concrete are not governed in the above table.

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I think the AMERICAN CARPENTER AND BUILDER is fine and it will do any man good unless he is a "know it all." ARTHUR M. THOMPSON, Carthage, Ill.

PAINTING



Edward Hurst Brown



Practical Hints for the Painter

NEW IDEAS BROUGHT OUT AT THE CONVENTIONS RECENTLY HELD — ANSWERS TO QUESTIONS ALSO GIVEN

AT some of the conventions of master painters, held during the past summer, many practical points of interest and value were brought out that can be used to advantage by every painter, whether he is a member or not. These associations are mainly of an educational character and have done much to advance the trade both in a technical and in a business way, and the good that they do is by no means confined to their own membership, but helps to better the condition of every painter in the country. It seems strange, therefore, why so many employing painters take no interest in association work, but go on in the same old way, refusing to co-operate with their brethren in the craft—looking upon the other fellow who is carrying on the painting business in the same town as a robber, or at least as one who is unworthy to associate with, and holding themselves aloof as one who knows it all and who cannot be helped by contact with others in the same line of business. It is only after a man has met with fellow painters from other parts of his town or at the state conventions that he begins to realize what a decent lot of fellows his competitors are, and before long he finds himself on such friendly terms with them that instead of each man endeavoring to cut one another's throat by reducing prices below a living profit basis, they find that without any unlawful combinations, but by the mutual understanding that all would use businesslike methods in their estimating, that they can get better prices and all will make more money. The principle of live and let live is essential to success in business just as in other walks of life.

To give an idea of some of the things that one may gather from attendance at the Master Painters' Conventions, we will briefly mention a few points picked up this summer.

Painting on Concrete

Nearly all painters appreciate the difficulty that is experienced in painting on concrete, and as this is likely to become a question of much importance, the discussion at the New Jersey Convention was most opportune. One painter recommended what he termed the salt process of mixing paint. One hundred pounds of white lead ground in oil are first broken up in one

gallon of linseed oil to a stiff-paste. Ten pounds of ordinary salt are dissolved in three gallons of boiling water and stirred slowly into the lead and oil, stirring for about twenty minutes. The salt and water will break up the lead as well as linseed oil. The mixture will be of the consistency of soft soap. This should then be thinned with pure raw linseed oil to the consistency required for painting. The first coat will dry flat and the second coat will stand out with a good gloss. He stated that he had tried this formula on cement and on brick and plastered walls and had never known it to fail. The action of the salt seems to be to vitrify the surface of the cement.

Another member said that he had obtained good results by priming the cement walls of a schoolhouse with graphite paint, following this with four coats of white lead and linseed oil paint.

If the cement wall is allowed to stand for a sufficient length of time, say for a year or so, it was the opinion that there would be no difficulty in the painting.

A member spoke of a cement floor which had been stained a green color, but the caustic action of the cement had caused the color to bleach out. He was called in to remedy this and gave the floor a coat of linseed oil and turpentine, flowing it on freely and using as much as the cement would absorb. This treatment brought back the color and produced a satisfactory job.

Preparing Plastered Walls for Painting

At the Ohio Convention, this was one of the subjects discussed. All cracks and holes should be filled with plaster of Paris. A hard finished wall should be sized with common soap, alum and glue size. Old paint, thinned with turpentine or benzine, also will give good results. Varnish reduced with turpentine will stop suction, but is apt to dry with a gloss, which may be prevented by adding a little plaster of Paris or whiting.

A sand-finished wall may be treated with the same glue and alum size. If the sand-finish is coarse, use a stout color made of whiting, with a little raw umber to color it, and glue with a little alum to harden it. Plenty of glue should be used. Old sand-finished

walls should first be washed off with water applied with a sponge.

New hard-finished walls should first be given a coat of paint — if they are to be finished in oil colors — and then given a coat of glue size before the next coat of paint is applied. Varnish, hard oils and liquid fillers are frequently used as first coaters. They stop suction fairly well and save one or more coats of paint, but were not recommended for good jobs because they have not enough oil to penetrate the plaster and are apt to crack or peel off. (This objection is overcome by some painters who thin them with turpentine or benzine.)

Paint Legislation

The Ohio Association of Master House Painters and Decorators, at its convention held at Cedar Point, adopted the following resolution:

Whereas, There is at the present day a strong public sentiment in favor of legislation against business frauds of all kinds, more especially the fraudulent adulterations of products in ordinary use, and mislabeling of all kinds,

And Whereas, The Pure Food and Drug Law, which has recently been put into force, points a way by which an effective form of legislation may be enacted to secure the honest labeling of all paint materials; and

Whereas, We the Master House Painters and Decorators' Association of Ohio, as practical men, recognize the necessity for such a law for the protection of the painter, the property owner and the honest manufacturer; therefore be it

Resolved, That we put ourselves on record as favoring the passage of a National law for the honest labeling of all paint materials, by which the responsibility for mislabeling shall be placed upon the manufacturer, and not upon the dealer; and

Resolved, That our secretary be instructed to forward a copy of these resolutions to each senator and congressman from Ohio, urging him to take such steps as may be necessary to secure the passage of such a law, and

Resolved, That each member of this association be urged to do all in his power to aid in the passage of such legislation.

Wax Finish

At the Canadian Convention, held in London, Ont., the question of the relative merits of wax finish and varnish, especially for outside use, was brought up. A Toronto member stated that three years ago he had finished some front doors with wax, and that since then, the butler has rubbed them two or three times a year with a little wax. They are today in much better condition than any doors finished with varnish at the same time. In order to renew a varnished door, the old varnish must first be taken off with varnish remover or alkali, while the finish on a waxed door may be renewed by the use of a polishing brush and a very

little wax. Or the old finish may be removed very easily by washing it with turpentine. The doors in question were first filled with paste filler, then oiled with two-thirds linseed oil and one-third turpentine, and allowed to stand for a week. They were then given a coat of wax and rubbed and repolished with a little more wax. The great secret of success is not to use too much wax.

In finishing a floor, the same member recommended filling the floor, if made of an open-grained wood, but if close-grained no filler was necessary. Then he oiled it and finished with wax, polishing it with a weighted brush. The advantage of the wax finish on a floor is that it can be renewed on those portions of the room which become worn without taking off the old finish from the entire room as would be necessary in the case of varnish.

Finishing a Walnut Cabinet

A reader of the AMERICAN CARPENTER AND BUILDER wants to know how to finish a kitchen cabinet which he is making of the best grade of walnut, seasoned for a year.

It depends very much on the kind and color of the walnut whether any stain is needed or not. Many people prefer the natural color of the wood, which must be first filled with a paste filler tinted to match. For a somewhat darker and richer color, a good silex paste filler may be used, tinted with Vandyke brown, burnt umber and Turkey umber and drop black. The wood may then be finished with not less than three coats of good varnish. Each coat should be allowed to dry thoroughly, not less than three to four days, before the next is applied and should be sandpapered smooth with fine sandpaper or steel wool before the next coat is applied. Steel wool should not be used on the filler, however, as the silex will cut away the iron, making a black mark. The last coat of varnish may be left glossy or it may be rubbed with oil and pumice stone to a dead finish.

Finish Remaining Tacky

A subscriber has had a disagreeable experience in finishing some counters in a store. He first oiled them, using raw linseed oil, japan driers and turpentine. Then, next day, he filled them with corn starch, raw oil, driers and turpentine and rubbed it in well and then rubbed it off clean. Next day he gave them a coat of hard oil finish. They stood for about a week before they were used. When put into use they became very tacky, so that a person's warm hand made quite an impression. He varnished one of the counters again with copal varnish, but it was still just as bad.

The trouble was that too much oil was given, making a soft foundation that will not dry under the subsequent coats. One coat of linseed oil with at least one-third pure turpentine, is as much as should be given under varnish, and it should be allowed at least forty-eight hours before varnishing. Then again, corn starch is a very poor material to use for a filler.

A good silex paste filler should always be used even on cheap work. Again, it might readily have happened that the oil was adulterated to a greater or less extent with rosin or mineral oil of some kind, since there is a great deal of adulterated oil on the market. This would cause the tackiness complained of. The only remedy is to remove the finish with one of the paint and varnish removers or with ammonia, and then to begin all over again, filling the wood with a good paste filler, then giving two or three coats of hard drying varnish. A coat of shellac might be used to advantage as the first coat over the filler.

We can furnish you a book called "739 Paint Questions Answered," on receipt of \$3.00, which contains the answers given to a good many knotty problems that have bothered practical painters, and which is a veritable mine of paint information.

Wood Preservative

A reader wants to know the best preservative for some moving plank and maple rollers.

You can either paint these with two or three coats of Princess Mineral Brown paint, thinned with pure linseed oil and the necessary driers, or can use creosote. This can be applied either by soaking them in the liquid, using a shallow trough or pan, and turning the plank first on one side and then on the other, or it can be applied by repeated brushings. One of the

largest creosote manufacturers in the country is Samuel Cabot, Boston, Mass.

Painting Galvanized Iron

Although it is necessary to paint galvanized iron in order to preserve it, there is no more difficult problem that the painter is called upon to meet than to paint it in such a manner that the paint will not scale off. If the work is allowed to stand exposed to the weather for two or three months, Prince's mineral brown is one of the best materials that can be used to prime it with. But as new galvanized iron cannot always be allowed to stand for three months before being painted it can be treated with the following wash, which will put the surface in condition to hold the paint. In one-half gallon of water, dissolve one ounce each of chloride of copper, nitrate of copper and sal ammoniac. When the solution is perfect, add one ounce crude or commercial hydrochloric acid. This wash must be made in a glass or earthenware jar, and is applied with a wide flat brush. In a few hours the metal turns black and finally dries to a light gray. After twelve hours the non-adhesive chemicals are brushed from the surface with a dry brush. On this a first coat of Prince's mineral brown or of red lead may be given. If the latter is used, the dry red lead should be bought and mixed as it is needed. Pure red lead will not keep in the mixed or paste form.

Screens as Decorations

SHOWING THE IMPORTANT PART THEY PLAY MIDWAY BETWEEN FURNITURE AND DECORATION—
APPROPRIATE COLOR AND DECORATIVE SCHEME SUGGESTED

By Sidney Phillips

ALTHOUGH they are not a permanent feature of the decorations of a room, nevertheless screens play an important part in the decorative scheme and add not a little to the effectiveness of an apartment. Not only are they useful for cutting off draughts or hiding something which it is desired to conceal from general view, but they may be made to serve the purpose of altering the apparent shape of a room, as for example making a long and narrow apartment appear shorter. In Japan, screens form the partitions between the rooms, and they can often be used this way with us, as for example when it is desired to temporarily divide off the end of a long dining room or hall, for a special serving pantry, in the case of a large dinner or a buffet luncheon. In fact the practical uses of screens are almost innumerable.

Naturally the screen interests the carpenter as well as the decorator, for whatever it may be covered with there is necessarily a wooden frame work to start with. Indeed, some beautiful screens are made entirely of wood, either carved or paneled, or perhaps painted or finished with burned designs in poker work effects (pyrography). Others may be inlaid with colored woods, mother of pearl or other substances, such as metal work, and in fact there is no end to the

elaboration and expense that can be put upon the screen.

The simplest type of screen is perhaps the folding screen of two, three or more leaves, hinged together. Special screen hinges are made by which the leaves fold in either direction, and yet may always be folded flat for storing away the screens. Other screens are made with ordinary inside blind hinges, the leaves on either side of the central panel being reversed, as shown in the illustrations. These screens can be folded only in one way, and cannot be used to partially enclose a column or a chair, or for any purpose requiring the outer leaves to fold toward one another. Where the leaves are covered with fabric of some kind or with leather, the material may be carried across from one leaf to the next in such a way that no metal hinge is needed. Or a band or strap may be carried from the back of one leaf to the face of the next, while just below it is a second strap running in the reverse direction. This makes an excellent form of screen hinge, provided the material used is strong enough to stand the wear and tear. These straps, of course, are afterward concealed by the material used to cover the screen.

Fig. 1 is a type of the ordinary folding, covered

screen. Of course, the top edges may be either straight or curved, and if the latter they may be either simple segments of circles as shown by the illustration or they may have any shape the designer may desire. Sometimes one end of the screen is much higher than the other and the top forms an irregular broken line. Such screens are very common in the French decorative styles of the period of Louis XV and Louis XVI. A

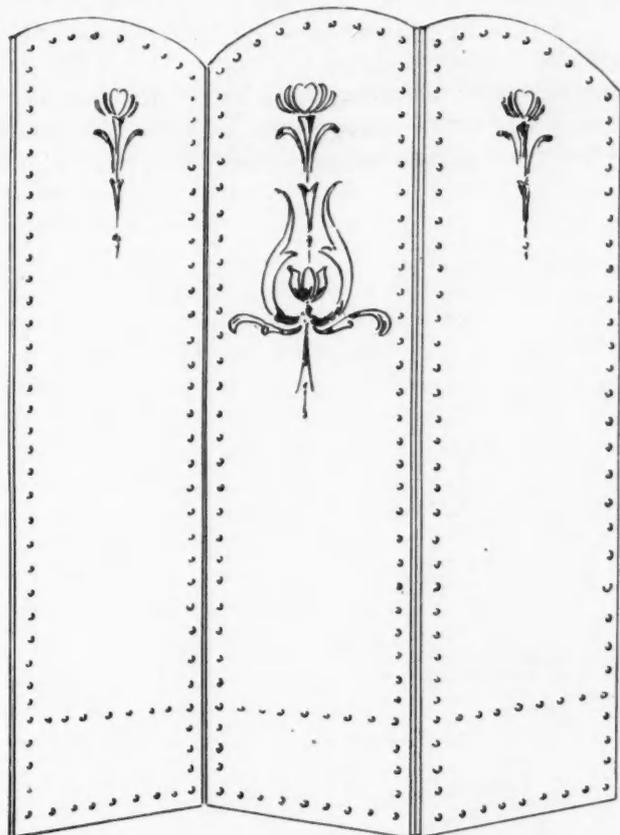


Fig. 1

screen of the character shown in the sketch is made with a simple skeleton framework, stiffened by cross-pieces, and generally of five-eighths or at the most seven-eighths-inch lumber. The lower ends of the vertical stiles may be prolonged and finished to form feet, if it is desired to have the screen stand clear of the floor, or they may be left flush with the bottom rail and covered as shown by the illustration. Of course, it is essential to a well-made screen that the frame work shall be rigidly put together, although when the covering is tightly stretched over the frame, this necessarily assists in holding the wood work firm.

The framework can be covered with any material from paper to the richest tapestries or embroideries or to magnificent stamped and gilded leather, and upon the choice of the covering necessarily depends the decorative effect as well as the cost of the screen. The cheapest Japanese screens are covered with paper, printed or stenciled with the characteristic decorations of the country; while very handsome Japanese screens are made with embroidered silk coverings, showing representations of flowers, birds, dragons and the like, often worked in gold and brilliant colors, so as to give

the effect of high relief. These Japanese screens, while many of them are very beautiful, are apt to be frail in construction. They are not made to stand the rough handling given to American furniture and should be used ordinarily only where they will be very little disturbed. Perhaps the simplest and cheapest material that the decorator can use for covering a screen is wall paper. The frame work should first be covered with well shrunk, unbleached muslin, wetted and stretched tightly over the frame, the material being closely tacked with small upholsterers' tacks. Upon this ground a coat of glue size should be given before the wall paper is pasted on. Many beautiful effects can be obtained by the proper choice, even of inexpensive papers, for screen coverings. For example, a denim or chambray effect may be used, with a narrow border around the edge of each leaf. Or a plain ingrain paper may be chosen with a landscape border or frieze running across the top of the three panels. The lower portion of the screen may then be covered with lin-crusta, lin-o-wall, anaglypta or some similar relief material, either in elaborate ornamental relief or in a paneled effect. Quite considerable can be added to the beauty of the screen by painting these relief materials in colors or by the use of gilding. If a fabric, such

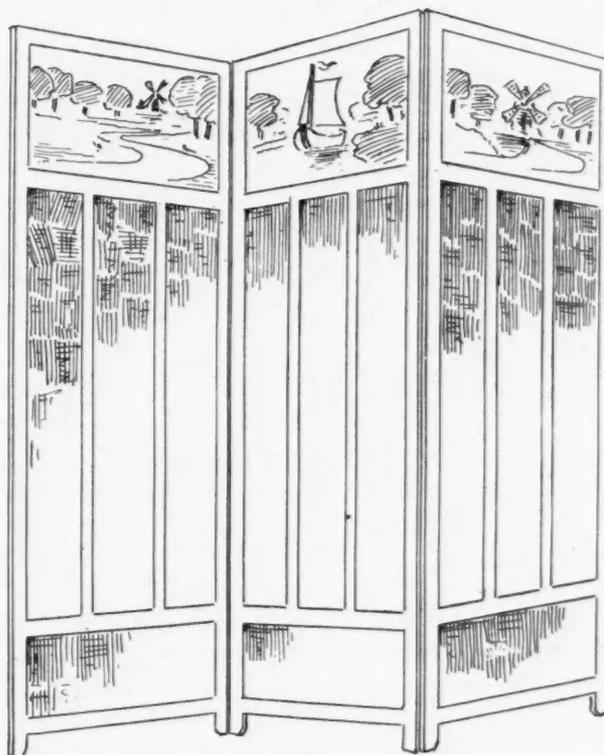


Fig. 2

as burlap, denim or buckram, should be used for the covering it is generally necessary to cover the exposed edges of the frame work with a narrow gimp braid or binder, fastened down with brass or copper-headed upholsterer's tacks. On a fabric ground of this character very beautiful effects can be obtained by stenciled ornament, and there is practically no limit to the variety of designs applicable to screen decoration. Bands or border designs may be used in panel effects

or heraldic or other single figures may be centered in the upper part of each leaf of the screen in the manner shown in Fig. 1. Many appropriate stencil designs may be obtained ready cut, from the designers making a specialty of furnishing stencils to the trade. Some of the new double stencils, especially those in pictorial patterns, requiring two separate stencil plates for their execution, are particularly appropriate for this class of work. The sketch may be taken to represent either a burlap screen with stenciled decorations or a leather covered screen with the decorations executed in pyrography and then stained. As a border a series of copper or dull black iron headed nails may be used, with the heads of a diameter of from one-half to three-fourths of an inch. The panel at the bottom is formed by studding the cross piece, which would naturally occur in the framework at that point, with a row of these nails.

A screen covered with denim or buckram may serve as a background for an artistically arranged collection of souvenir postal cards, which should be pasted on with a heavy paste to which a little Venice turpentine has been added. Posters also make effective coverings for screens. For a nursery the animals intended for wall decorations and printed in oil colors in sheets may be cut out and arranged in some pleasing manner. Indeed, many ingenious variations in the treatment of these simple frame screens will suggest themselves to the decorator who is on the watch for novel ideas. And not a little profit can be gained by making up a lot of screens in advance of the holiday season, putting them on sale about the middle of November, showing only a few at a time, and bringing out fresh ones as the first ones are sold. If you have no store of your own you can usually arrange with the local furniture dealer to sell them for you on commission. The prices asked should not exceed those in the city stores. Indeed, they may often be sold for a trifle less—but only a very little under price—because the profit on these goods is usually considerable and you can utilize odd rolls or samples of wall papers and fabrics in making them. Of course, it is not necessary to have both sides of the screen alike or even of the same color. Frequently contrasting colors are used, such as red on one side and green on the reverse. Both sides will not be seen at the same time, hence there is no occasion at all for making them alike.

A second type of screen is shown in Fig. 2, which is an example of a framed screen, in which the wood work is framed up in panels, the framing showing and the panels either being of wood or covered with paper, fabric or other materials. The sketch shows a very simple form, in which the frame work is of forest green or mission oak, and the thin whitewood, pine or three-ply veneer panels are covered with burlaps pasted on. The upper panels are decorated with sections of a Dutch landscape frieze that comes in six five-foot lengths and is printed in oil colors. The pattern must be cut so as to get the greatest pictorial effect.

Of course, one is not confined to this particular pattern, but any one of a great number of pictorial friezes, of English or American make, could be used. A great deal of variation may be made in a screen of this character by changing the arrangement of the paneling and by the use of moldings, but care must always be taken to avoid the use of projecting moldings that will prevent the leaves of the screen from folding flat against one another. Of course, the panels may be decorated with painting, stencil work, carving, burnt leather or in any other way desired. For a den the bright-colored English sporting prints would be very appropriate for the upper panels. Rare old pictures or prints or photographs could also be used and protected either by glass or by thin sheets of transparent celluloid, such as are used for the screens in front of automobiles.

The writer has recently seen a number of beautiful screens very effectively used in a hotel dining room. Some of them had the lower panels of carved and gilded openwork, while the upper panels were tapestry. Others had rare old prints in the upper panels, the lower section being silk tapestry and the framework gilded. Still others were made with small square mirrors, set in muntins, like a window sash, the woodwork being gilded and enriched with egg moldings. These latter screens were very effective.

A different type of screen altogether is the fire screen, swinging on pivots between two upright posts that are supported by cross feet. These screens, of course, have but a single panel or leaf that can be tipped at any angle desired and may be ornamented as elaborately as one cares to afford.

A charming screen for a porch can be made of latticework with a zinc-lined box at the base, either mounted on raised feet or on casters. This box, which should be about six inches deep and eight inches wide, extending in length the full width of the screen, should be filled with earth and planted with climbing nasturtiums, cobœa scanders, ampelopsis or some other rapidly growing vine.

The subject of screens is such a wide one that it has barely been possible to touch upon it very briefly in this article, but it is hoped that some suggestions have been given that may prove profitable to our readers.



To Clean Grained Floors

Grained and varnished wood imitations of hardwood are best cleaned by rubbing well with cloths wrung out in borax soapsuds, never letting the water touch them, says Building Management. Afterward they should be rubbed with a flannel barely moistened with kerosene. If there is too much kerosene it will dissolve and blur the colors. Clean hardwood with a flannel wet in turpentine, and rub afterward lightly with boiled linseed oil. Take off spots with fine sand mixed in oil. Apply it with a leather and rub with clean leather afterward to bring back the polish.

Manual Training



Ira S. Griffith

Something the Boys Can Make

COMPLETE DESCRIPTION OF HOW TO MAKE A FOOT STOOL—KIND OF WOOD TO USE AND MANNER OF FINISHING SAME

A FOOT STOOL may be classed among the household necessities. It has a way of making itself useful to both old and young. Even the children will be found using it in an inverted position for a doll cradle rather than the fine cradle bought for that especial purpose.

The design which is described this month originated with the Handicraft Club, Peoria, Illinois, and possesses many excellent points. It is of good size, has a base of such size as not to admit of being easily toppled over, is substantially constructed and above all is well proportioned in its parts. The top being of solid wood will not show wear as would an upholstered one.

It should be made of oak. Red or white oak will do, and it may be quarter or plain sawed. It will be well to purchase the necessary stock in one piece, which should be mill planed to a thickness of seven-eighths of an inch. It must be well seasoned, free from warp, knots and checks and clear the full length

of the piece. As some of the pieces are to be finished to a width of ten inches it must be at least a quarter of an inch wider. The length will be four feet, two inches.

Begin by squaring, in the usual way where the stock is mill-planed, one piece to a width of ten inches and a length of sixteen inches. This is for the top. Put a one-quarter inch round on the top edges after having planed off the surface so that it is smooth and free from ridges and hollows made by the planer.

The two stretchers or side pieces may next be got out. Square them to a width of three and one-half inches each. As the ends are to be cut on a slope, it will not be necessary to square them nor to cut to length. To lay out these slopes, square a line across the face of one of them close to an end, keeping the beam of the try-square against the joint-edge; measure from this line, along the edge opposite the joint edge seven-sixteenths of an inch; set the bevel, or bevel square as it is commonly called, so that the beam shall rest against the joint-edge and move the blade until it shall pass through the point just located on

one edge and, on the other edge, through the point at which the try-square line meets the edge. Mark the two ends on the two surfaces of each, using the try-square to carry the line across the edge. From the long point of the slope, measure fifteen inches and lay off the slopes on the second ends. These ends may be sawed and planed to the lines now. To lay out the curve on the lower edge of the stretchers, three points are given. Measure from each end one and one-half inches along the shorter edge and mark. Locate the middle of the longer edge and measure across the surface two and one-half inches and mark the third point. The curved line may be sketched

free hand through these points but a better way would be to lay it out by means of a "sweep." The length is found as follows: Connect the three points with straight lines, Fig. 2. Locate the middle of these two lines and, holding the square with its tongue along the line and the blade passing through the middle

point, draw a line along the blade. The distance from the point at which the two blades cross to any one of the points gives the radius of the circle of which the curve is a part. Cut out the curve with the turning saw and smooth with the spoke-shaver and scraper.

The top view, Fig. 1, shows that the legs fit into gains on either side of each stretcher. These gains may next be laid off. Along the shorter, or lower edge measure from each end five-sixteenths, then seven-eighths of an inch. If the thickness of the legs was made less than seven-eighths of an inch in smoothing the surface, the last distance must be shortened accordingly. Square knife lines through these points. The pieces should be placed together and the lines marked on each side, at each end of both. Gauge for depth of cut, one-eighth inch first, then six-eighths from the same side. It is taken for granted that a boy able to make this stool knows how to saw and chisel these gains accurately.

Square the legs to a length of eight and one-half inches and a width of ten inches. The grain of the



wood is to extend up and down so that the length, which is always measured along the grain, is less than the width. The curves on the bottom may be laid out and cut now, or they may be marked off with the pattern at the same time as the other curves. To make this pattern, draw an oblong on rather stiff paper eight and one-half by ten inches. Draw a center line, along the grain. At the bottom, measure two inches from this center line. Also, measure from the bottom along the center line two and three-quarters inches. With a three and three-eighths inch radius draw a curve that shall pass through these two points.

The like parts should be nailed together lightly and cut out together. The nailing must be done in the wood which becomes waste.

Clean and smooth all of the pieces and put together the legs and side pieces. Bore the holes for the dowels which pin the parts together with a one-half inch bit. The first hole should be one and three-sixteenths inches from the top, the next, one and three-sixteenths below this. Drive a one-half inch dowel into each hole and cut it off one-quarter of an inch from the leg. With knife and sandpaper, round the ends of the dowels.

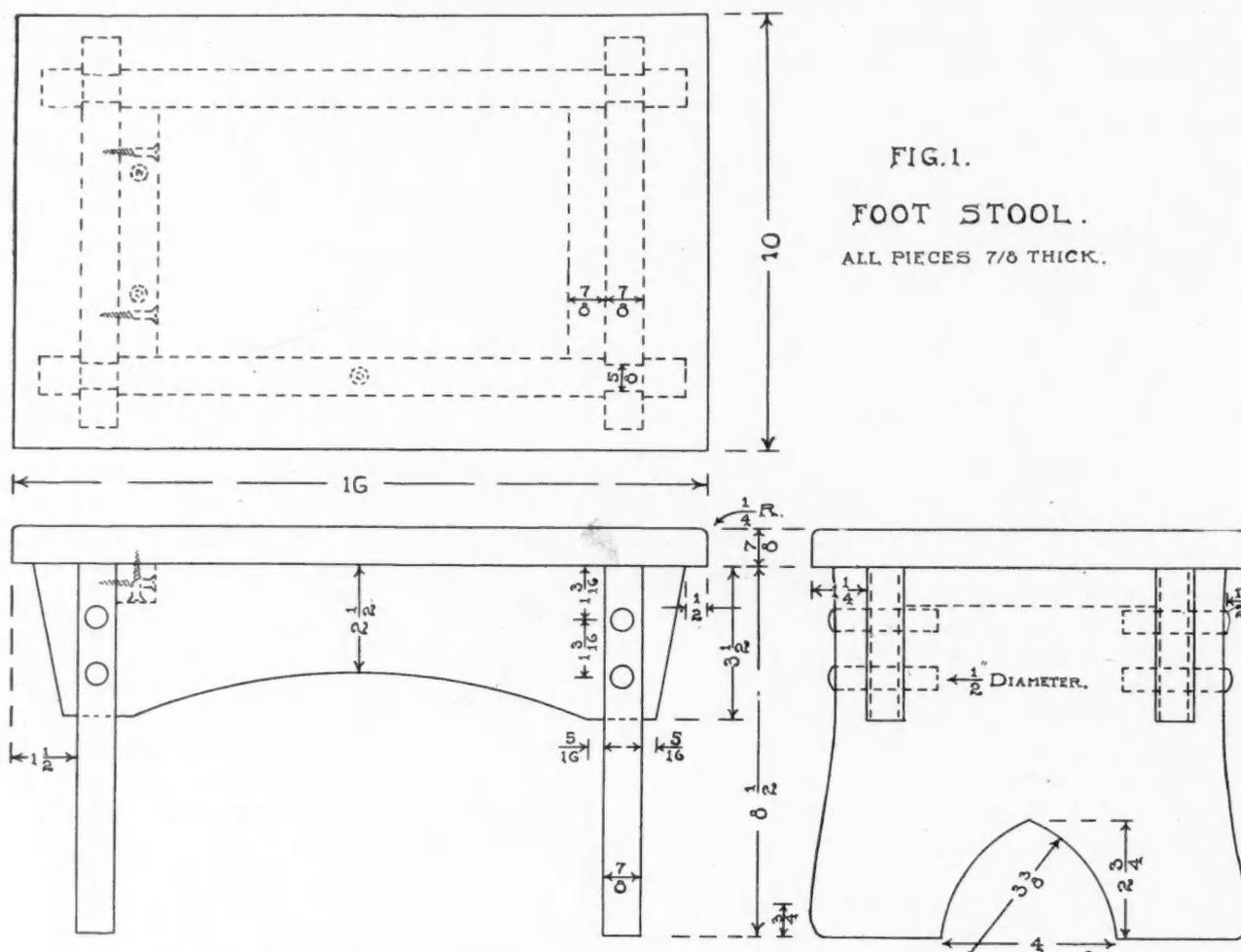


FIG. 1.

FOOT STOOL.

ALL PIECES 7/8 THICK.

The curve for the side should be sketched free hand, as nearly as possible like that in Fig. 1. When one-half has been drawn, the paper may be folded on the center line and the second half traced from the first.

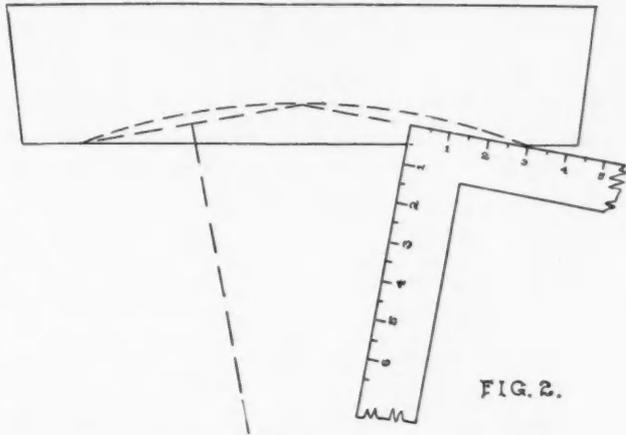
The grooves on the legs should be laid out and cut before the sides are cut. Set the gauge to one and seven-eighths inches and gauge from each edge, on each surface of each leg a line three and one-half inches long. Reset to two and one-half inches and gauge as before. Square knife lines across these pairs of lines at three and one-half inches from the top. Rip to the lines and chisel across the grain.

The pattern may now be applied and the curves cut and smoothed. If a band saw or jig-saw is to be had

For fastening the top to the frame, two pieces of seven-eighths square stock will be needed. Cut them to a length that will just fit between the side pieces. Drill and countersink two holes in each direction. Screw the pieces to the legs first then turn the stool upside down, place the top and fasten. Fig. 1. If desired two additional screws may be placed through the rails into the top. It will be necessary to bore part way with a bit large enough to take in the head of the screw, then to drill the rest of the distance with a smaller bit.

The stool shown in the photograph was finished in the ever popular brown Flemish. The wood was first stained with Brenig's Flemish water stain, diluted by adding an equal volume of water. When this had

dried the surfaces were lightly sandpapered with 00 paper to remove the fibers which the water stain had caused to rise. Care must be taken not to "cut through" on the corners. Thoroughly brush the pores full of paste filler and when it has flattened, or when it has lost its gloss, which will be in a minute or two,



rub the filler off across the grain with excelsior and finish the rubbing with waste. A sharp pointed stick should be used to clean the corners. Allow the filler to stand over night then apply a very thin coat of shellac. The shellac must be thin or it will "scratch" when shoes are placed upon it.

✦
The Strength of Beams

(Continued from page 814)

we divided this again by 8, the factor of safety, and obtained $(84 \div 8) 10\frac{1}{2}$ cwts. as the safe load for one cantilever.

The next step was to find what safe load the whole veranda would bear. As there were eleven cantilevers, the first thought of the pupils was to multiply the safe load of one of them by 11. A little consideration, however, showed them that it was the number of bays of floor which had to be counted; each bearer having to support half the load of the bays on each side of it. As 11 bearings gave us 10 bays our sum was $10\frac{1}{2}$ cwts. by 10, giving us 105 cwts. for the whole veranda.

The next consideration was one about which the craftsmen pupils had no definite knowledge, namely, as to the weight of a number of people standing on a floor. As this is a very useful thing to remember, it should be noted that numerous experiments have shown that the weight of a crowd of people does not exceed one cwt. per foot super of floor space. "But, suppose," said one of the pupils, "that the veranda was filled with people excitedly watching a street procession. ("Or a dog fight," interposed his mate.) "Would not that make some considerable difference?" As this was a very proper matter to take into account, it was decided to count upon a live load of $1\frac{1}{2}$ cwts. per super foot. The veranda being 24 feet by 3 feet gave us $(24 \times 3) 72$ feet super, which at $1\frac{1}{2}$ cwts. per foot gave us $(72 \times 1\frac{1}{2}) 108$ cwts. as the greatest

possible load which would be likely to be placed on it.

As this came marvellously near to the previously calculated strength of the structure, it appeared that the designer of it had been fairly correct and that it was perfectly safe as long as its members were not weakened by age, rot or other defects.

(Note.—The curved rib or bracket shown under the cantilever in the drawing is almost wholly ornamental and was not considered at all in the calculations.)

(To be continued.)

✦
Fisherman's Quick Confession

This is said to have happened at Flat Rock. Be it known that Flat Rock, in Shelby county, is a fisherman's paradise. It was in the cool of the morning on a hot day that a native was fishing at Flat Rock. So close attention was he giving to his cork that he did not notice that any other person was present until a smooth voice asked:

"Fishing pretty good?"

"Yep."

"Catching many?"

"Oh, quite a few. Not as many as I caught yesterday, though."

"And how many did you catch yesterday?"

"I pulled out forty-three bass and crappies."

"Don't you know," continued the smooth voice, "that the law prohibits you from taking out more than fifteen fish in one day?"

"I don't care anything about that. When I go to fish I go after fish. The law hasn't anything to say to me."

"It hasn't, eh. Well, don't you know that you are talking to a fish and game warden?"

"S-o-o-o?" drawled the native. "Don't you know you are talking to the blamedest liar in Indiana?"—Exchange.

✦
Day Dreaming

Day-dreaming is a good stimulant to the ambition, but, like many a stimulant, it must be taken in moderation to give the best results. Dream golden dreams, and build aircastles if you will, for great accomplishments must be dreamed of in this way before they become realities. But don't forget that the dream is a mere outline plan, and it takes work to build the real castle. The exact proportion of time that should be given to dreaming and the time for work have never been set forth, but the lion's share is evidently on the side of work.

✦
"Let me live in my house by the side of the road,

Where the race of men go by—

They are good, they are bad, they are weak, they are strong,
Wise, foolish—so am I.

Then why should I sit in the scorner's seat,

Or hurl the cynic's ban?

Let me live in my house by the side of the road

And be a friend to man."

—Exchange.

Correspondence

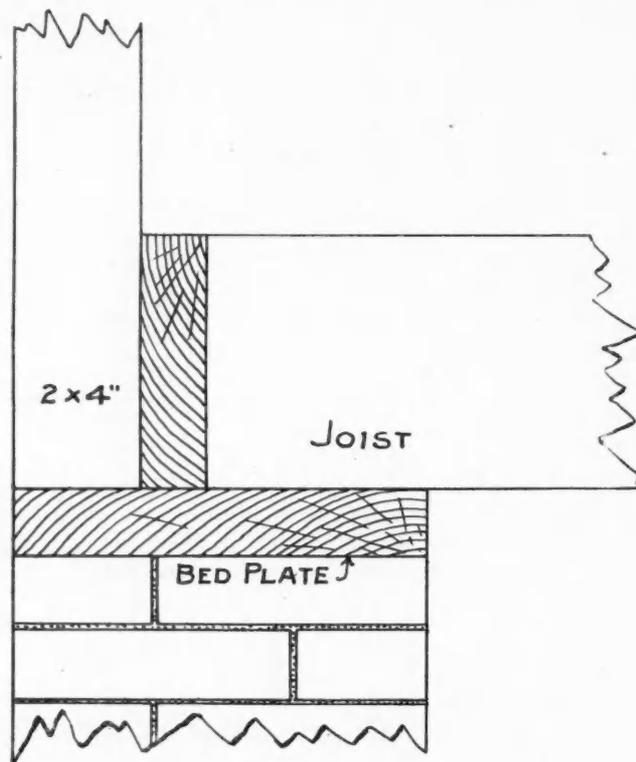


Sill Construction

Matarete, Colo.

To the Editor:

I read in the July number with much interest J. H. Godfrey's article in making buildings rat proof. Now, I want to give my way of sill construction. We use a box sill here



altogether. No solid sills. First, we use a wall plate, say of 2 by 8 inches and an upright of the same width of joist, thus allowing the studding to rest on the bed plate and spiked to the upright. This makes a strong sill and at the same time keeping out mice and rats. The sketch shows the construction.

GEO. A. SLY.

Helpful Suggestions

To the Editor:

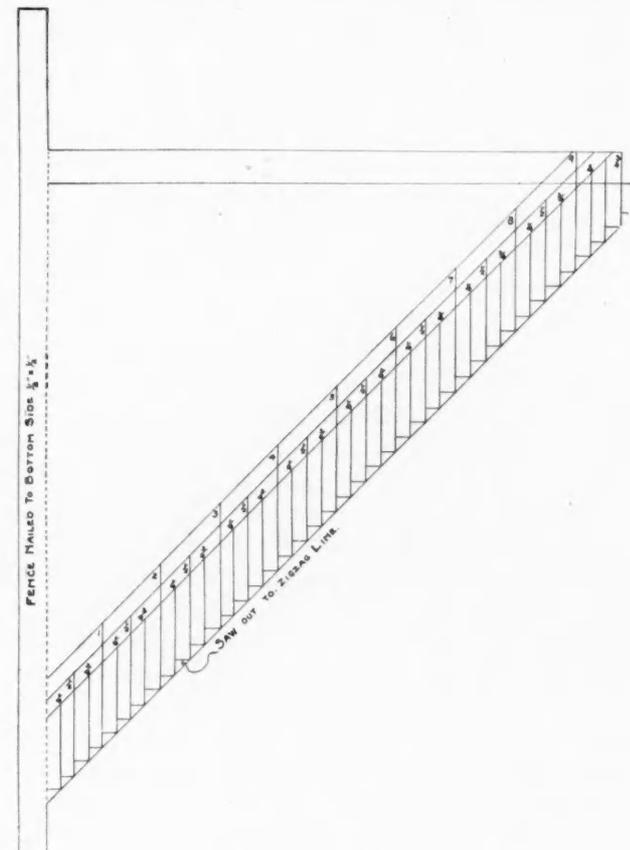
Equality, Ill.

I wish to say a few words in answer to Mr. F. R. Marrs' article on page 1324 in the February number. Mr. Marrs says that "the tool known as a block plane is one for which he has no use for whatever, in putting on siding." I do not use the block plane either on square joints where I gauge the siding to fit at the place it is intended to go, but the place I suggested the use of the block plane was a different matter.

It is of course true that "blocking" makes a poor joint in square joints on red cedar, but on a bevel joint like a gable it is all right. I wish to add that the man who cannot take

a good hard sharp pencil and make a joint close enough for any purpose whatever is "a poor hand to put at such work" and had better get him an old mule and a double-shovel and practice on a row of corn until he could draw a close line. I have no use for a knife for marking purposes any more than Mr. Marrs has for a block plane. All in good humor, Mr. Marrs, but if you use a knife to mark with, just try a pencil.

Now, then, how many of the boys ever tried "halfsoleing" their tressels? When you make a new pair of tressels just take a piece of $\frac{7}{8}$ stuff about one inch wider than the top of your tressels and nail it on the top, letting it extend over the edges $\frac{1}{2}$ inch as a protection against your saw. Then when it gets worn and cut up by the saw just take it off and put on a new one and you have a new pair of tressels. Then again, if you make door and window frames you can saw out a small section from the middle of this piece and tack it in place to be removed in making frames to allow the brace on



your frame (squaring brace), to drop in so your frame will lay solid on the tressels.

I will show you by the accompanying cut how I made a very handy shop stool. The cut explains itself and is very handy for pencil gauging timbers for ripping as it is always set and always ready. Another handy tool is a squaring tri-

angle for squaring the foundation of buildings. The writer realizes that it is considerable trouble to square a foundation of a building simply with lines and a measuring pole. Take three straight pieces of blind stops; one 6 feet, one 8 feet and one 10 feet and bolt them together at the three corners and you have a tool with which you can square a foundation in $\frac{1}{4}$ the time and much more accurate than with simply a line and a 10-foot pole.

J. H. GODFREY.

✦
A Subscriber's Home

To the Editor: Pierce, Tex.

I am sending you herewith two illustrations of my home which was built eight years ago last spring and of which I drew all the plans and made all calculations. Having come to Texas from Fall River, Mass., the people in this locality



remarked that they did not see how a Yankee could come down here and build a Southern house. The design was original with me and it has attracted a great deal of attention. It is built on brick piers 4 feet above the ground and is 55 feet square on the outside of the gallery sill. The gallery goes nearly around the entire house and by opening two kitchen doors one could walk around the house. Upon entering the house there is a large hall which is paneled with curly pine and black curly cypress. The doors are cypress with black curly cypress panels. We have three large fire places in the house and in front of the fire place in the hall we have a 12-foot hall seat. The first floor is divided into



four rooms besides the kitchen and bathroom, and the second floor is divided into three good-sized bedrooms. We have hot and cold water in both kitchen and bathroom.

I am also sending you a picture of a silo which I built on my brother's plantation of 2,500 acres. It is a complete success, as during the past year it was filled with sorghum and cow peas mixed and all the stock on the farm enjoyed it very much. It is again filled with ripe sorghum and contains nearly 300 tons. It is 20 feet in diameter and the staves are 40 feet long of $\frac{1}{4}$ by 4-inch clear heart pine. The wooden hoops are made of $1\frac{1}{2}$ by 4 clear heart pine. Outside of the hoops

we have 2 by 4's and 1 by 4's nailed to them to shingle onto. The shingling was done only to preserve the building and make it last longer. I have an air space from the bottom to



top between the shingles and the hoops. My trade has been a great help to me even here in Texas, which is the greatest state in the Union in more ways than one. FRANK BORDEN.

✦
Reinforced Concrete Bank Building

To the Editor: Riceville, Ia.
I am sending you herewith a photograph of the First National Bank, which was built of reinforced concrete and



two-piece building blocks of the wet mixture, 1 to 2 to 3. This building is 37 by 60 feet and was erected last fall at a cost of \$5,600. All the molds and forms were made by myself and this building has proved to be warm and dry during the past winter and is admired by all. CHAS. L. SCOTT.

✦
Estimating Reinforced Concrete Work

To the Editor: Lincoln, Neb.
I would like to have you give me prices on the following: Some parties want to build a reinforced concrete building under the Johnston system. The walls will have piers with 8-inch curtain walls between. What I want is the approximate cost of labor for placing the forms and concrete per

cubic yard for the 8-inch walls, also for the 24 by 24 piers. Reinforcing and everything is furnished except the labor. Also the price per cubic yard and furnish everything. Base your estimate on labor and prices of material at Chicago and give them.

A. L. GOODEN.

Answer: The labor cost in concrete form building is a very uncertain figure as no two men do the same amount of work per day. I have had a squad of carpenters and helpers that would build forms for 24 by 24-inch columns at less than 10 cents per foot height and again I have seen it cost as much as 35 cents per foot. Then conditions make a wide difference and I recall an instance where forms cost as much as 70 cents per cubic foot of concrete as no form could be used over again in stories higher up. The side wall forms are worth from 6 to 20 cents per square foot for labor, but it is all guess work, for even the nature of the lumber effects the labor cost data, besides you must remember that the cost of forms is always the big item in reinforced concrete and until we have a system of changeable forms it always will be. I recall an instance where a contracting firm underestimated the cost of form \$28,000 on a building which they contracted to build for the sum of \$230,000. In fact, their estimate as to cost of forms was only \$17,000 and the total cost amounted to \$45,000.

The cost of labor per cubic yard for reinforced work of sizes given will be as follows: First story columns, \$2.35 per yard; walls, \$2.75 per yard. Second story columns, \$2.66 per yard. Walls, \$3.00, and so on up. These figures are based on machine mixing and elevator. FRED W. HAGLOCH.



Method of Shingling

To the Editor: Lakesville, Miss.

I would like to hear the subject discussed as to the best method of laying shingles. How many nails should the different shingles have and what part of the shingle should they be put on? There are different shingles: Cypress, Pine, Redwood and Cedar are the ones that are most used.

I use five in Cypress shingles which are just from the saw and are green. I put two nails in the shingles, but they seem to be inclined to split when drying out. I would like to hear the subject discussed.

O. E. BAIRD.



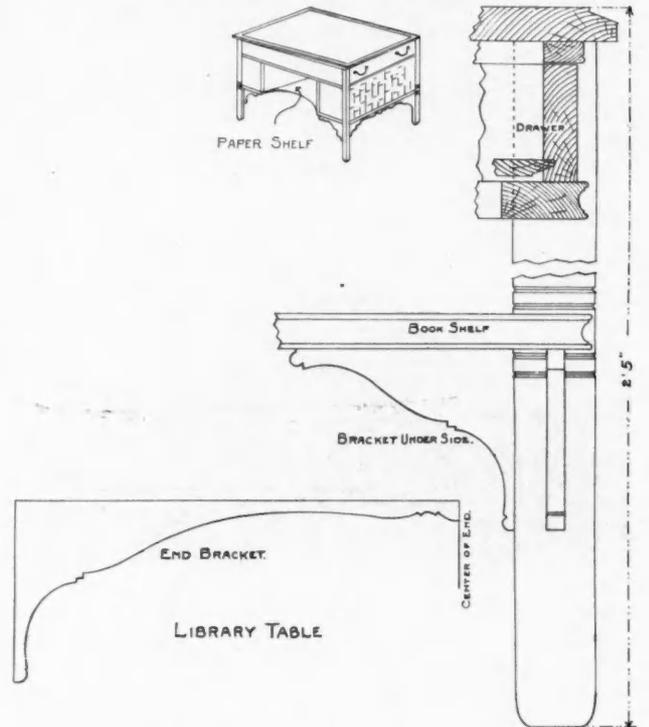
Making a Library Table

To the Editor: Jackson, Mich.

I inclose rough sketch of a library table. I have made a few of them for some of my customers, and they all like them very well. A good proportion, for size, would be 2 feet 6 inches

wide by 4 feet long, but might be made any size, suitable for the requirements. Any good carpenter could make one, and, no doubt, one that would be more serviceable and durable than a "boughten" one.

The spaces at the ends may be made to accommodate any size books; a good size would be about eleven inches in height and eight inches in depth. The portion of the shelf, between the ends, is cut away on the edges, so as to be out



of the way when sitting at the side; but, at the same time, is sufficiently broad for the reception of papers and magazines. The drawer, being at the end, is more convenient than if placed at the side, and not only on this account, for, by making the drawer-sides long—say, three feet or more—it is less liable to be "dumped" when pulled out. A. G. BEARD.

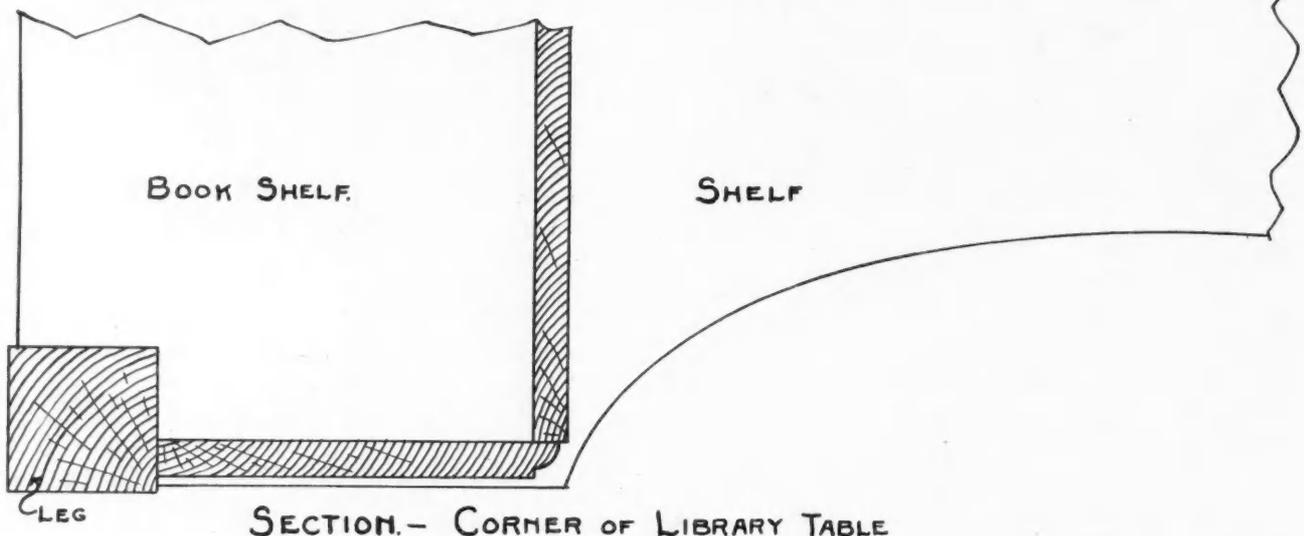


Brick Veneer Construction

Cleveland, Ohio.

To the Editor:

I am about to start a brick veneered building and would like some information as to whether it is necessary to leave

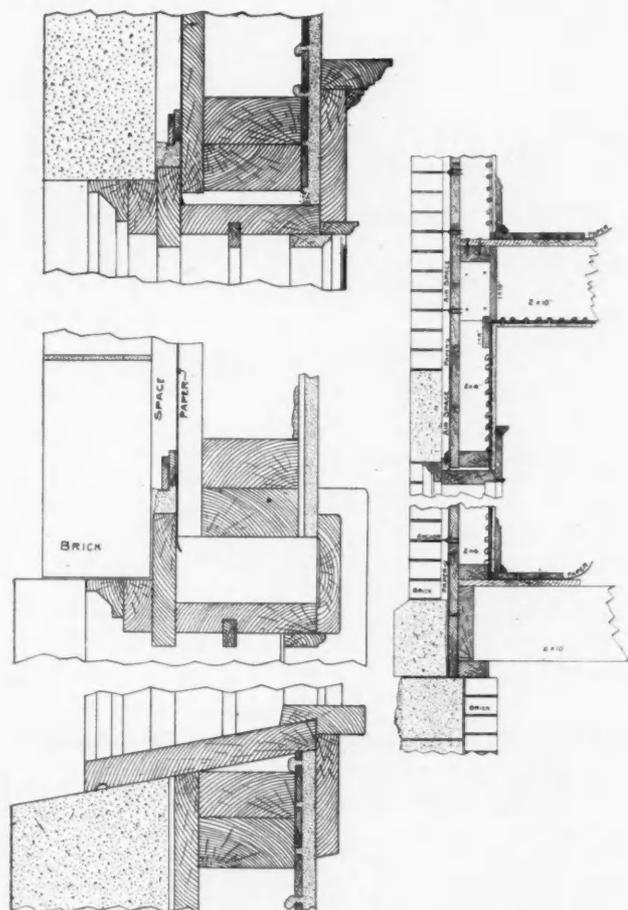


SECTION.—CORNER OF LIBRARY TABLE

an air space between the brick and the sheathing, and if so, how much is necessary?

GEO. H. WOOD.

Answer: The accompanying illustrations show in sectional detail, construction of a veneered building. It is a good idea to not crowd the brick close to the sheathing;



better set off an inch or the thickness of the blind stop and make the same wide enough to lap on to the sheathing. However, the building paper should be put on first and then after the window frames are set, it is a good idea to nail a couple of lath an inch or so back of the blind stop and fill in with mortar, pressing the same in firmly. This can be done at the time the brick are being laid with practically no loss of time. The hollow space serves a double purpose, as it affords a dead air space, and at the same time allows some leeway in correcting unevenness in the plumbing of

the frame work. It is also a good idea to cut in pieces between the joist and studding at the different floors, so as to cut off the circulation in case of fire, as well as the ever pesky mouse.

The anchoring of the brick work to the sheathing should be done by stapling wire to the sheathing opposite the studding and about every sixth course apart. The wire should be left loose enough to reach out half the width of the brick and to be well bedded into the mortar joint and to be No. 11 wire.

Otherwise, we trust these illustrations are clear and need no further explanation.

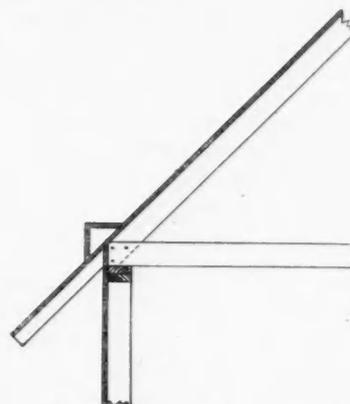
A. W. WOODS.

A Useful Device

To the Editor:

Winnipeg, Man.

I take the liberty to enclose a device which I find very useful in roof work, especially in the absence of staging. In



sawing roof boards, ready to receive the lookouts and fascia on gable, I find it a very shaky job to reach down and saw the lower boards. I call my device "the endless pig trough" bottom side up. It is made of 1 by 6 inch boards in any convenient length and nailed to the roof boards, as shown. This makes a good place to either stand or sit on while working.

M. J. LARSON.

Questions by a Member

To the Editor:

Rathdrum, Ida.

I would like to have the opinion of others of a few questions. In the case of trim for a door where plinth and head blocks are used, should the blocks be of the same width as casing, or wider?

Also, should locks on doors be placed a certain height or be governed by the panels, or make-up of the door?

GEO. W. ANSTINE.

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Practical Trade Appliances

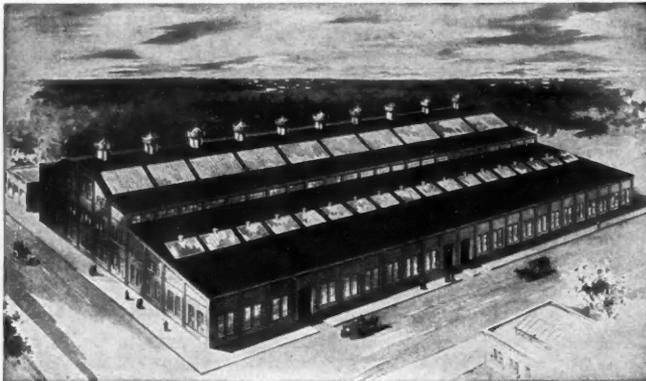
The Perfect Level

Carpenters, masons, bricklayers and others who constantly use a level are often placed under disadvantage by using the old-style tool with the bulb buried in the top, and visible only from one position. Such a tool sometimes reduces a workman's efficiency, and the object in inventing the Davis & Cook Level was to provide a practical tool to overcome just such drawbacks and help the workman by making his plumbing and leveling perfectly accurate and perfectly simple to obtain. The Davis & Cook Level represents all that a well-made and improved tool can represent. Instead of having the bulb imbedded in the top of the tool, the Davis & Cook Level has two bulbs—one for plumbing, one for leveling. Both are placed in the center of the tool. Both may be read instantly—even ten or fifteen feet away. Above or below the operator—to the right or left—at any angle, the bulbs are plainly in view, saving time, and as convenient as a tool can be. The bulb tubes carrying the bulb are set in

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These levels are made in many styles, some for carpenters principally, others for masons, and still others for railroad work. They are made of mahogany, glued mahogany, cherry, glued cherry, rosewood, aluminum, iron, etc. The manufacturers call special attention to their high class of finish, which is produced by two coats of extra coach varnish. The Davis & Cook Levels are trimmed with polished nickel and brass, designed to protect the tool, and every device is used to insure the buyer and user the longest use and complete satisfaction with the service he gets.

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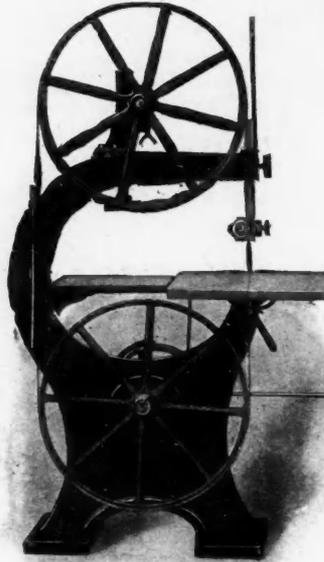
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Wood-working machinery particularly suited for the needs of readers of the AMERICAN CARPENTER AND BUILDER is manufactured by the Crescent Machine Co., of Leetonia, Ohio. Their Crescent Band Saws are the most popular on the market. They were originated about seven

years ago, and were at that time manufactured in a small way. Almost immediately they became popular, from the fact that they were from the start good, honest machines sold at moderate prices. Improvements in design and detail were made from time to time, till to-day they stand unrivaled for quality and merit; and the prices are still moderate. To buy cheap machinery is not good business, since an



inferior machine is dear at any price. To pay anyone more for a band saw than the price of a Crescent is equally unadvisable, since there is absolutely nothing to be gained from a quality standpoint. This is proven by the fact that to-day there are about double as many Crescent band saws produced and sold than of any other make. Surely the public knows a good thing when they see it. An illustration of one of their 32-inch saws is shown herewith. These are made in all sizes, from 20 to 38-inch.

This company also manufactures a full line of other wood-working machinery. Their Crescent saw table is a very practical machine, and in addition to this they have three others—the Crescent Combination, Universal and Variety saw tables. Then there are the Crescent jointers in four sizes—8, 12, 18 and 24-inch.

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Concrete Blocks in Ireland

That the concrete block is destined to play an important part in the heavy construction in all parts of the world is evidenced by a large order just received by the Century Cement Machine Co. for a number of their Hercules machines to be shipped to Ireland, where they will be used in turning out stone 12 inches high by 24 inches long to be used in the construction of a Roman Catholic Church to cost over \$60,000. This immense edifice will be built entirely of concrete blocks and will be the largest concrete block structure ever erected in Ireland.

Fine examples of Hercules concrete block construction can be seen in various parts of Ireland. On Chichester

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300	2 ft. 8 in. x 2 ft. 10 in.	1.20
500	2 ft. 5 in. x 19 ft. 5 in.	4.70

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This includes the World's Fairs of Chicago and St. Louis the Expositions of Buffalo and Omaha, built at a cost of \$90,000,000.00. We are the foremost dismantlers and purchasers of large institutions in the world. By this means alone million of dollars worth of the world's best products have passed into our possession and have been rebuilt and sold at 50 per cent below their original value.

THE WORLDS BARGAIN CENTER.

Thousands of satisfied customers everywhere have learned to recognize the virtue of our business. We stand between you and high prices. The greater part of our stock consists of brand new, first-class merchandise from SHERIFFS' and RECEIVERS' SALES. Our enormous warehouses are overflowing with Merchandise secured from such sources. Our wonderful growth and expansion is the best evidence of our ability to serve you. Merchandise of the highest quality is sold at sacrifice prices. Each day some new addition to our stock compels us to dispose of what we have on hand. The time to buy is when these bargains, shown you in this advertisement, are calling on you for action. Send us your order to-day and be convinced.

FELT ROOFING 60c per 108 Sq. Feet.

"EAGLE" BRAND PREPARED ROOFING.
Composed of two and three sheet of carefully saturated felt; between sheets water-proof insulating cement; compressed together making a solid flexible sheet with layers of composition thoroughly combined. Practically fire-proof against sparks and cinders. 32 in. wide, about 40 ft. long. 108 sq. ft. to the roll.
2 ply per square 60c
3 ply per square 90c
Roofing cement, caps and nails, additional per square 35c

"Rubberized Galvo" Roofing.

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

Lumber! Send us your lumber bill for our Estimate. Lumber!

THE CHICAGO HOUSE WRECKING CO.
Offers the most wonderful opportunity ever heard of to furnish you lumber and building supplies of every kind at Prices that will save you big money. Such an opportunity as this seldom occurs. We have lumber for your house, church, barn, meeting house, cribs, stores, factories and in fact, buildings of every kind. We can furnish absolutely everything required in construction material. Have your carpenter or builder **Make up a complete list of everything that you may require, including Lumber, Sash, Doors, Nails, Roofing Siding, Ceiling and every Single Article.** Send it to us at once, tell us where you have seen this advertisement, and we will make you a Proposition that will be a saving of from 30 to 60 per cent. This is not an idle statement. Thousands of satisfied customers have bought from us in the past. We guarantee absolute satisfaction. We require your good will.

LUMBER FROM EXPOSITIONS.
We have had vast lumber experience. After the World's Fair at Chicago we sold 80,000,000 Feet; at the Omaha Exposition, 15,000,000 Feet; at the Pan-American Exposition over 33,000,000 Feet, and at the St. Louis Exposition over 100,000,000 Feet. You will miss one of the greatest chances you ever saw if you overlook buying your lumber now. Prices on lumber are ever advancing. Do not wait for them to go down. They never will. If you have no need for a carload yourself, get your neighbors to club in with you. By buying a carload you can save all kinds of money on freight charges. We have railroad tracks running through our main warehouses and buildings and can load a car to good advantage to you. You can include other items in the same car, such as Pipe, Plumbing Material, Roofing, Wire, Fencing, Furniture, Machinery and Merchandise of all kinds.

50,000,000 FEET OF LUMBER FOR SALE!
We recently bought at Manufacturers' Sale over 50,000,000 Feet of all kinds of Lumber and Finishing Material. We are making special concession to those who will buy at once. Even if you have no use for this lumber at once, it will pay you to buy now.
We cheerfully invite inspection of our Lumber Stock and will be glad to have you come direct to our warehouse and yards at Chicago, see the lumber we are offering, and you will recognize that it is all what we say of it; make your own selection and see it loaded. It is not necessary to come to Chicago; we will sell you by mail very easily and will have no trouble to convince you of the desirability of placing an order with us. Just you send us your lumber bill, and we will easily "Show You."
On application we will send copies of letters from customers who have bought. They saved money, why can't you. Write us today!

STEEL ROOFING

PER 100 SQ. FEET, \$1.50.
Most economical and durable roof covering known. Easy to put on; requires no tools but a hatchet or a hammer. With ordinary care, will last many years. Suitable for covering buildings of any kind. Also used for ceiling and siding. Fire-proof and water-proof. Cheaper and more lasting than shingles. Will not taint rain-water. Makes your building cooler in summer and warmer in winter. Absolutely perfect, brand new, straight from the factory. \$1.50 is our price for our No. 15 grade of Flat Semi-Hardened steel roofing and siding, each sheet 24 in. wide and 24 in. long. Our price on the corrugated, like illustration, sheets 22 in. wide and 24 in. long, \$1.75 At 25 cents per square additional we will furnish sheets 6 and 8 feet long.
Steel Pressed Brick Siding per square, \$2.00
Fine Steel Beaded Ceiling per square, 2.00
Can also furnish Standing Seam or "V" crimped roofing, to all points East of Colorado except Oklahoma, Texas and Indian Territory. Quotations to other points on application. This freight prepaid proposition only refers to the steel roofing offered in this advertisement. Satisfaction guaranteed or money refunded. We will send this roofing to any one answering this advertisement C. O. D., with privilege of examination if you will send 25 per cent of the amount you order in cash; balance to be paid after material reaches your station. If not found as represented, refuse the shipment and we will refund your deposit.

OUR GUARANTEE.

We guarantee absolute satisfaction. A satisfied customer means more to us than a large sale. Every article you purchase from us is guaranteed absolutely as represented. If you find it to the contrary, we hold ourselves in readiness to make good our representations.

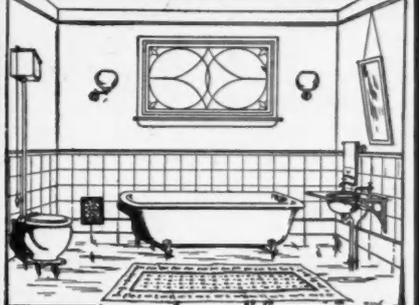
Our Responsibility.

We cheerfully invite investigation as to responsibility. Our capital stock and surplus is over \$1,000,000.00. We refer you to any commercial institution, in Chicago or anywhere else. Look us up in Dun's or Bradstreet's; ask any Express Company; write to the editor of this or any other paper; if you want any more positive proof, write to our depository, the Drovers' Deposit National Bank, Chicago.

STRUCTURAL IRON AND STEEL.

On account of our extensive wrecking operations we are always in position to supply your needs in iron material of every kind. Our stock consists of,
Wrought Iron Steel Rails
Tubular Boilers Iron Rails
Channels Angles
Iron Rods Bolts
Washers Fancy Cast
Iron Fence Iron Posts,
Deck Beams Latticed Beams
Turnbuckles
In fact, there is nothing in the iron line that we cannot furnish. Our prices are always right. We can save you money. We can give you quick delivery. Send us blue print or diagram of your needs.

THIS BATH ROOM OUTFIT \$25.00



A complete outfit consisting of, steel enameled tub, vitreous earthen closet with hardwood seat and tank, handsome enameled lavatory, all nickel trimmings. Other combinations at \$37.50, \$50.00, \$54.00, up to \$150.00. Plumbing material of every kind at prices that do not represent original cost of production. We buy at Sheriffs' and Receivers' Sales. Cast iron enameled kitchen sinks, \$1.25 and up. One piece enameled iron sinks and backs with nickel plated faucets \$11.00
Handsome white enameled seamless cast iron bath tubs \$14.00 Soil pipe and fittings.

OUR NEW 500 PAGE CATALOG No. 742 FREE.

It is a book such as every shrewd buyer must have. 500 pages with thousands of items of the very best merchandise and supplies bought by us at Sheriffs' and Receivers' Sales. Merchandise machinery and supplies, articles for everyone. You will find it useful in the home, in the field in the workshop or in the office. Write us today.
Cut out this "Ad" mark a cross on those items that most interest you and we will send you much valuable information. Also fill in the coupon to your right and our catalog will be sent you absolutely free and prepaid. If you do not want to cut out the "Ad" send us your name and address correctly, tell us where you have seen this "Ad" also tell us just what items in our "Ad" interests you most. Address,
CHICAGO HOUSE WRECKING CO. 35th and Iron Sts. CHICAGO

FREE CATALOG COUPON.

CHICAGO HOUSE WRECKING CO.
35th and Iron Streets. Chicago, Ill.
I am a reader of the Am. Carpenter and Builder. Send me your large 500-page catalog, absolutely free as advertised in this paper.
Name
Post-Office Address
R. F. D. No. Post-Office Box No.
County State

street, Belfast, stands a handsome four-story concrete block office building erected last season by one of the best known firms in Belfast. A new line of railroad now under course of construction will have concrete block stations, several Hercules machines having already been received by the contractors having the work in hand.

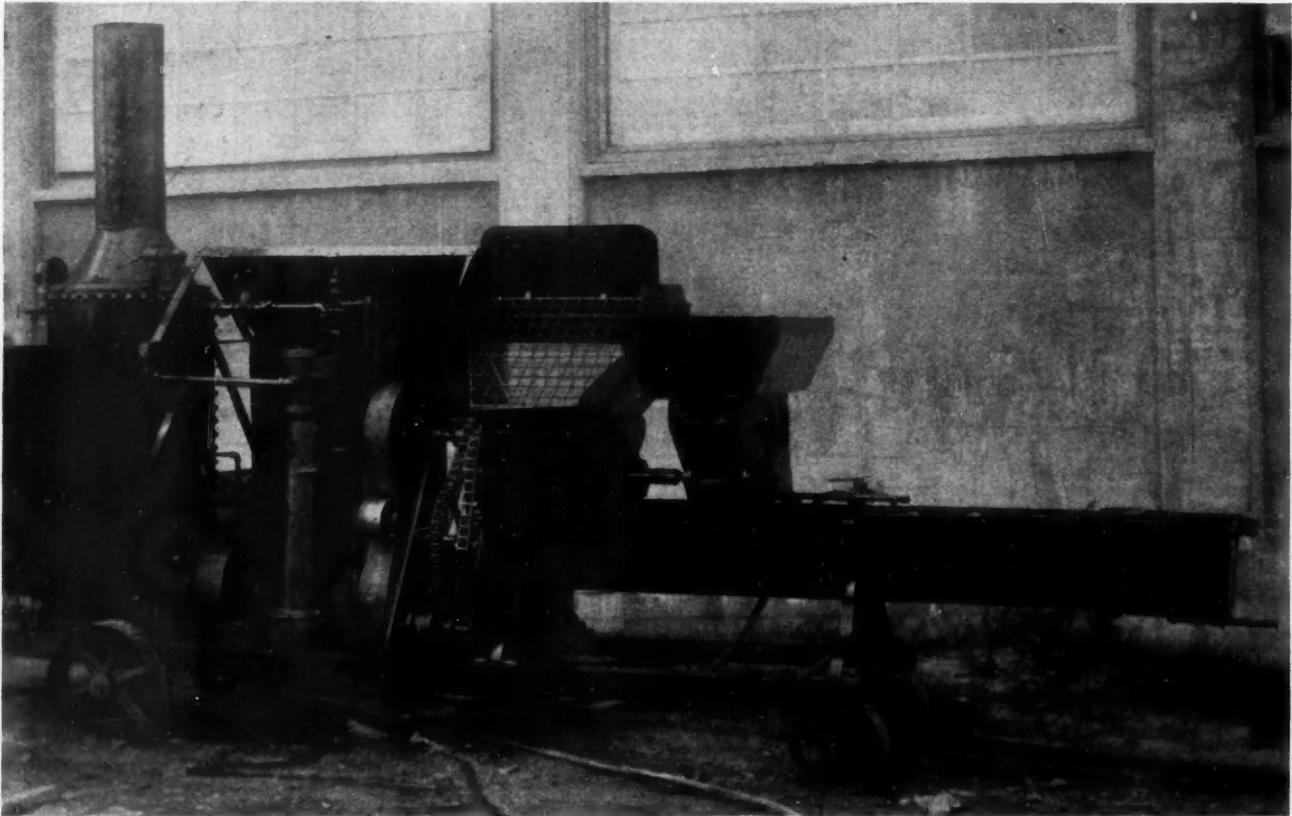
Eureka Machine Co. in New Factory

Owing to increased business the Eureka Machine Co., formerly of Jackson, Mich., have recently moved into their new factory in Lansing. Their facilities in their new place will enable them to fill their orders with much greater rapidity than heretofore.

Mixing concrete is a vital point and their claims for the

proportion used. This may occur only once in a hundred times, but if it does occur where the concrete is used at a vital point it will result in a disastrous failure. With the Eureka you either get perfect mixture or no mixture at all. Inasmuch as the bags of cement are broken on a screen there is no remote chance even of any piece of paper getting into the feeder and from thence into the concrete. The Eureka company also claim that their mixture will mix a given number of cubic yards of concrete with less cost for labor and power. It is practically abuse-proof and it is provided with a driving mechanism that has ample power to run the machine at its maximum capacity of 18 cubic yards per hour.

If you are contemplating the purchase of a mixture it



Eureka Mixer are very strong. Why? Because the materials are automatically measured by the machine instead of being measured by men. If the bins are kept full the proper amount of each material will be used, no more no less, and if for any reason the cement bin, for instance, is carelessly allowed to become empty the proportion of this material is not decreased, but it stops feeding entirely with the result that you do not get a concrete mixture, but simply wet sand, the change being absolute with so much character that there is absolutely no danger of its getting into the work and causing trouble afterwards.

With any system involving manual measuring there needs must be constant danger that at some time the attention of the foreman will be diverted and the wrong

will be well for you to look thoroughly into the merits of the Eureka, and by dropping them a card mentioning the American Carpenter and Builder they will be pleased to forward descriptive circulars.

Seven Important Points

One of the latest productions in concrete block machinery is the "Oliver," manufactured by the Oliver Mfg. Co., of Jackson, Mich., and it is highly worthy of investigation by all up-to-date block makers, as it covers a large range of work and is thoroughly milled before leaving the factory, and it is the result of the careful study of several of the oldest concrete machinery men.

Some of their claims are (1) its simplicity, yet large



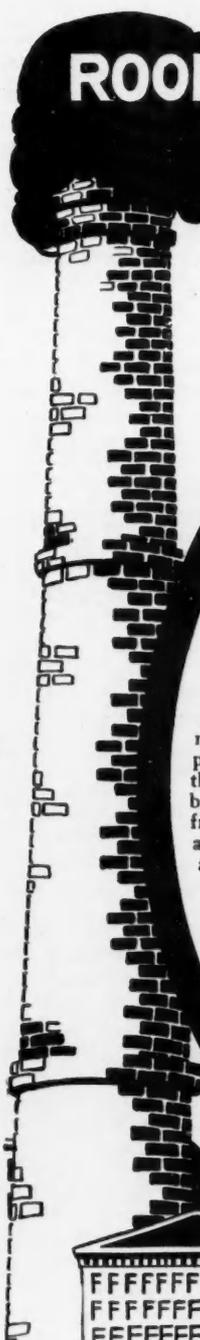
LIGNINE CARVINGS UNBREAKABLE

Perfect reproduction of hand carvings. Full depth of grain. Will not BREAK, CHIP, CHECK, CRACK nor SHRINK. Are applied the same as wood carvings by nailing and glueing, no heating nor steaming. Finish with filler or stain. Write for samples and catalog showing designs of Capitals, Heads, Shields, Scrolls, Rosettes, etc.

ORNAMENTAL PRODUCTS CO., 552 West Fort Street, Detroit, Michigan.



ROOFING DIRECT FROM FACTORY TO FARM AT FACTORY PRICES



If you wanted to buy a certain bunch of steers would you hire some one to buy them for you and pay him a commission, or would you go and buy them yourself and save the commission?

Buy them yourself, wouldn't you?

Well, then, why should you buy prepared felt roofing from a lumber or hardware dealer and pay him a profit when you can buy direct from the factory and save his profit?

Another thing to consider.

Dealers always buy roofing from wholesalers (large lumber, sash and door or hardware companies). These wholesalers have traveling salesmen whose railroad fare and hotel bills must be paid. Do you realize that, every time you buy a roll of roofing from a dealer, you are paying both the dealer and the wholesaler a profit, and helping to pay the traveling man's expenses?

MICA-NOID READY ROOFING was sold through dealers for eighteen years, but three years ago we decided to try selling direct to the farmer at the dealer's price. The results have been away beyond our expectations. We are selling each month a little over three times as much roofing as we formerly sold through the dealers and jobbers.

There is a mighty good reason for it.

Mica-Noid Manufacturing Company
114 Mica-Noid Bldg., St. Louis, Mo.

CAUTION: - No MICA-NOID ROOFING has been sold to dealers since January 1, 1903. Any dealers or jobbers offering any roofing under the name of MICA-NOID will be prosecuted.

MICA-NOID ROOFING has been on the market long enough for thousands of people to prove that it will last a lifetime. And yet bought direct from the factory, the price of MICA-NOID is not any higher than that of hundreds of imitations that have been put on the market during the past few years.

Can you afford to put your good money into roofing that has not years of results back of it? Do you want a roofing that's good for life, or one that you will be patching every few months as long as it is on? Do you want a roofing that can be applied without ever taking the old shingles off, a roofing that can be used for siding, a roofing that is affected by neither the hottest summer sun nor the cold of the coldest winter?

MICA-NOID READY ROOFING is all we manufacture or have manufactured for eighteen years. We want you to know what others have found it to be during that time.

Send for **FREE** samples and booklet of letters from farmers who have used MICA-NOID for years.



range of adjustments, (2) and a machine on which unskilled labor cannot produce an imperfect block, (3) that the user is not compelled to buy out the foundry or lumber yard to supply pallets, as all blocks are made on the same size pallet, (4) that it is possible to use a very wet mixture, as the core is placed in the machine horizontally and withdrawn vertically, (5) its speed, owing to its lever release, (6) its rapidity of adjustment, (7) its attractive price.

Great Improvements in Roofing

Perfection in most lines is almost impossible to reach, but it would appear to have been accomplished in roofing. In the past all kinds of materials have been used to cover roofs, but sooner or later their defects were apparent, but in using something that overcame one defect another would appear. Shingles, which are becoming too expensive as the price of all lines of lumber advances, are also no protection against fire and soon warp, rot, crack, split and blow off. Slate is

too heavy and expensive. Galvanized iron and steel soon rust and corrode. Tin, unless freshly painted every year, soon becomes as full of holes as a sieve. Tar and gravel will run in summer, soon clogging gutters and water spouts. Builders faced a serious problem, but Mica-Noid Ready Roofing has solved it. This roofing is made from the most carefully selected and highest grade wool felt, and is thoroughly treated with a waterproofing compound, which penetrates and saturates every fiber. This makes it absolutely waterproof—snow may lie upon its surface for weeks and months, alternately melting and freezing, and not a drop of water will soak through. Mica-Noid Ready Roofing is rightly termed a perfect roofing, and too much cannot be said of its good qualities. Since it cannot absorb moisture, it is not in the least affected by frost. Neither is it in any way affected by sudden extremes of heat or cold, which otherwise would cause expansion and contraction, causing it to warp. On the contrary, it lies flat at all times and under

ALWAYS SAFE AND RELIABLE :: ASK YOUR FRIENDS

ZERO WEATHER HAS NO TERRORS FOR
Caldwell Tanks and Towers



which are supplied with such effective safeguards against freezing that the coldest weather causes no interruption to their service.

In guarding against this, as with other outbursts of nature, our outfits are so thoroughly fortified in design and construction that nothing can break the continuity of their service.

Many of our outfits are giving satisfactory service in the Dakotas, Minnesota, Northern New York, Canada, Nova Scotia, etc., where the winters are most severe. Ask for photographic views of some of these outfits, also for illustrated catalogue.

W. E. CALDWELL CO.,

Tanks STEEL - WOOD **Towers**
GALVANIZED

WINDMILLS--GAS ENGINES--PUMPS

LOUISVILLE :: :: KENTUCKY

FLINT-COAT ROOFING

See Our Roofing on the Minnesota State Fair Buildings.

You Will Save 25 to 50 Per Cent.

2-ply Flint Coat Roofing...\$1.90	1-ply Rubber Roofing.....\$1.45
3-ply Flint Coat Roofing... 2.10	2-ply Rubber Roofing..... 1.90
4-ply Flint Coat Roofing... 2.50	3-ply Rubber Roofing..... 2.25
5-ply Rock Asphalt..... 2.90	Grit Coat Asphalt..... 2.75

Impervious Ready Rock Roofing, \$3.50.
This roofing has a heavy burlap insertion.

EVERY ROLL GUARANTEED PERFECT.

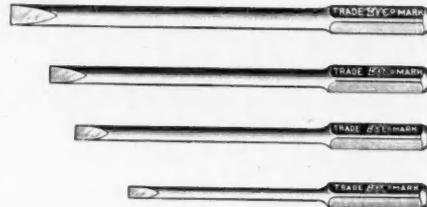
Above prices are for one roll of 108 square feet, delivered at your railway station, all ready to lay. Can be laid by any one. Nails and Cement with each roll. Our roofing costs less than shingles; lasts longer. Does not rust like iron or steel. **Water, Wind, Hail and Fire Proof.** Recommended by leading architects, largest railroad companies and corporations in Northwest. Write for Samples and Booklet.

ROCK ASPHALT ROOFING CO. Room 617 Y. M. C. A. Bldg. CHICAGO.

all conditions, presenting a smooth, even surface. It is more firmly compressed than any other similar material, and it is therefore lighter for its bulk than any other. It is proof against the action of acids, and it is not affected by the fumes and gases arising from factories. It is the most durable roofing made. It does not stick together in the rolls. It does not taint rainwater, and it is easily applied by any one who can drive a nail. It is fire-resisting to a high degree, the hard though pliable mica shell with which it is coated preventing ignition from sparks and live cinders—a frequent cause of fires. It will not rot. It is odorless. It is permanent. When put on, it is on to stay. It can be painted any color, but does not require annual painting. It is always attractive. It is always ready to be laid. It is the most economical because it lasts longest. It is the cheapest because it is the best.

Magazine Brad Awl Handle

One of the many improved mechanics' tools manufactured by the Braunsdorf-Mueller Co., Elizabeth, N. J., is illustrated below. The hard wood awl handle has a steel socket and chuck, having receptacles or pockets for four awls. The tool is strong and substantially made. It is intended principally for wood workers who have had ex-



perience in driving the ordinary awls into hard wood, which turn and pull out of the handle, thus making necessary the use of a claw hammer to withdraw the awl. The four awl blades sent with this tool are of high quality steel. They can be duplicated at less than half the price of the ordinary tang blades. It is absolutely impossible for the blade to turn or pull out.

A Circular Saw Vise That's Best

L. F. Grammes & Sons, of Allentown, Pa., have a circular saw vise that is better than the best of any kind so far invented. The thing that is so original and that makes such a big demand for it is the adjustable feature of the vise. It can be tilted to any position because it works on a swivel and on an axis. For this reason it is a vise that conforms itself to every imaginable special toothed saw or circular cutter. The material of the vise is iron and steel and its construction is such that it cannot vibrate



-the Mantel for You

The Mantel for you is the Mantel you buy from the manufacturer himself, straight from factory to fireside, and at a net price.

The ROYAL MANTEL is the one Mantel sold exclusively by catalogue on your mail order; prices in plain figures and every ROYAL an art Mantel every selection a distinct and original creation.

You can't afford not to know the ROYAL line; don't fail to send for our wonderful little "SUGGESTION BOOK"—superbly illustrated—done in gold and colors—which tells you just how to decorate and finish house interiors properly, how to attain proper contrasts, color harmony and beautiful artistic effects. This book is yours, FREE.

The ROYAL MANTEL Catalogue, largest published, sent free on receipt of 12 cents to cover postage. Read up on the ROYAL—the Mantel for you,

WHITE MANTEL & TILE CO., 507 White Bldg. KNOXVILLE, TENN.

Specify and Use

No-Tar Roofing

This Tells You How to Make Extra Dollars

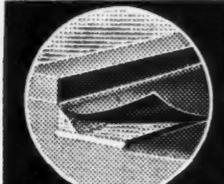
WRITE for our **Free Roof Book** and let us tell you how to make a Specialty of putting on No-Tar Roofing and build up a good side line to your business as Carpenter and Builder. We'll tell you facts and figures—low prices for the finest kind of roofing—that will interest and pay you to know.

Investigate—find out about **No-Tar Roofing**.

"No-Tar" Roofing has a surface as hard as flint—it is flint. Can't catch fire from sparks or cinders. It's as flexible as rubber—and absolutely waterproof. It's tougher than leather. Costs less and lasts longer than shingles, iron or steel. Won't run in the hot sun. The building that has a "No-Tar" Roof protection will last longest.

Accepted by all Fire Insurance Companies, who charge 25 per cent less for insuring buildings protected by "No-Tar" Roofing than for buildings with shingle roofs.

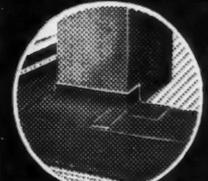
FOR STORE BUILDINGS AND FACTORIES—"No-Tar" Roofing is made in various weights, for all sorts of buildings. Nothing better or cheaper for **siding houses, out-buildings, etc.** All joints



Wall Flashing—Roof Book 13. tells how to make it



Over Old Shingles—Roof Book page 5. makes it easy



Chimney Flashing—Roof Book, page 15. tells how

water tight. "No-Tar" Roofing keeps stock and poultry snug, safe and warm in coldest weather. Quick and easy to lay.

FOR HOUSES—"No-Tar" Roofing will add immensely to the appearance of your residence. Use it on your new house, or cover the old, leaky shingle roof with "No-Tar" Roofing and avoid disaster from water or fire. "No-Tar" Roofing is a non-conductor of heat or cold. Keeps your house warm in the winter and cool in the summer. Try it on your porch or kitchen.

FREE SAMPLES TO TEST—When we send you the Free Sample of "No-Tar" Roofing we will tell you ten ways to test it and prove its superiority to any other roofing.—

FREE ROOF BOOK—Explains the whole roofing proposition. We send the book **FREE** postpaid, on request. Special nails, metal caps and cement **FREE**.

The Heppes Company

2993 Fillmore Street

Chicago = Illinois

WRITE FOR FREE ROOF BOOK AND SAMPLES

WRITE FOR FREE ROOF BOOK AND SAMPLES

Five Orders of Architecture



Especially prepared for carpenters, builders, architects, draftsmen, sheet metal workers and architectural stone workers. The newest, simplest and most complete work ever published on the Greek and Roman orders. Illustrated with over 300 sections drawn to scale.

Two volumes, comprising one 400-page text book, nearly one foot high, handsomely bound in red morocco, marbled edges, gold stamped titles, printed on the highest grade paper; and a handsome portfolio containing 58 large detail plates 11 x 15 inches. Compiled from the representative instruction papers of the American School of Correspondence.

40 PER CENT DISCOUNT SALE

SPECIAL BARGAIN PRICE \$9.80 - REGULAR PRICE WAS \$16.00

A reduction of \$2.20 from last month's special offer and \$6.20 from the regular price. Absolutely the lowest price we can possibly make, and will be in effect for a **short time only**. This special price is made in order to get as many of these sets as possible before the public early in the season, and thereby introduce the superior character of the American School's instruction.

Sent express prepaid for one week's **Free** examination if you mention American Carpenter & Builder, September, '07. Study the books carefully. If they meet your needs, send us \$2.00 within one week and \$2.00 a month until the special price has been paid. We shall send for the books at our expense if you do not care to keep them. **No risk whatever** on your part. Why delay your order?

**AMERICAN SCHOOL OF CORRESPONDENCE
CHICAGO**

while the filer is operating it. The vise is shipped to all responsible parties on 30 days' trial. If it is not as represented it may be returned. It is made in three sizes as follows:

- No. 1 for saws 4 to 9 inches diameter.
- No. 2 for saws 6 to 14½ inches diameter.
- No. 3 for saws 12 to 20 inches diameter.

Write them for full information, mentioning the AMERICAN CARPENTER AND BUILDER.

A Public Apology

Terre Haute, Ind., July 30, 1907.

It is not often that a manufacturing concern seeks the public prints to acknowledge its shortcomings and it is with profound regret that we now find such a course desirable. In fact a number of complaints recently reaching our office has convinced us that it is necessary and the proper course to pursue in fairness to our customers and with justice to ourselves. These letters convince us that there must be many others who have a similar grievance, but who have not taken the trouble to write. The general purport of these letters is that the writers ordered machinery of Pettyjohn manufacture last spring and received acknowledgment of order with shipment promised in — days. (Usually 10 to 30 days.) But as they had orders ahead for stones and could not wait they were compelled to cancel the order and place same for machinery of other makes. They now realize that this was a mistake and that it would have been better to have waited. They still wish to purchase Pettyjohn machinery provided we will take the other machinery in exchange as part payment and feel that we should be willing to do so because if we had filled their order promptly all the trouble would have been avoided, etc.

In explanation will say that last spring we simply had more business than we could take care of, more orders than we could fill, more letters than we could answer properly. The rush was sudden, heavy and unexpected and was partially due to our placing a new machine on the market during the busy season—the Invincible face-down, wet-process block machine, which met with an instantaneous recognition that exceeded our fondest expectations. During the winter we had built an immense stock of the Pettyjohn portable block machines and filled orders for that type promptly as long as our stock held out.

In general we did the best we could. "Angels could do no more." We cut out or reduced our advertisements, we ran our factory night and day, we kept the wires hot urging rush shipments of steel and other raw material, and we kept our promises regarding deliveries, except in a few cases due to causes unexpected and beyond our control. We thought it fairer to promise delivery in 30 days and ship in 27 days than to promise in one day and ship in ten. We believed it right to let our customers know what to expect so they could make their arrangements accordingly. We lost orders by it, but we believe it was right.

We filled orders in the turn received. This was the rule. In some cases we placed orders ahead for our old customers when they had a building under contract with time forfeit. They could not substitute other machinery while new customers could. We hardly know whether to apologize for this or not. We would certainly feel like apologizing to the old customer if we had not done so.

In conclusion will say that our night work and increased capacity has produced results and that for three weeks past we have been filling all orders promptly, most of them on the day received. Our stock is complete and rounded up with

Paint! Paint! Paint! Leak! Leak! Leak!

There is no reason in the world why you should buy a roof that *needs* painting. The *need* of painting is *proof* of weakness. It is not the *roof* that protects, it's the *paint*. If you forget to put the paint on, or for economical reasons omit doing so, you have a leaky roof; and a leaky roof is always an abomination.

Amatite roofing requires absolutely no painting or coating of any kind during its life. This diagram below tells you why.

You will notice that the top layer consists of a *genuine mineral surface* that will last as long as the roof, and not only makes painting unnecessary, but gives an amount of durability that is remarkable. It saves you the *cost* of paint and the *labor* of putting it on.

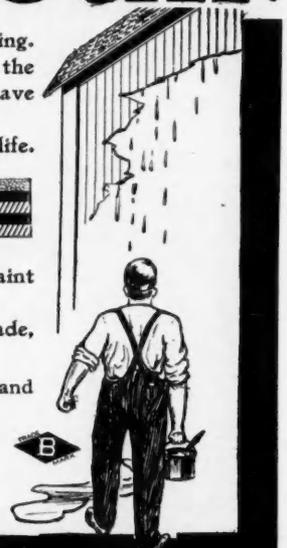
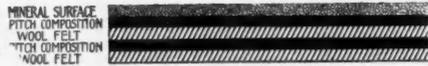
If you want the best, most economical and most satisfactory ready roofing made, remember *Amatite*.

FREE SAMPLE

Booklet about it and free Sample will be forwarded at once on receipt of you name and address. This is *proof positive* and you should send for it today.

Barrett Manufacturing Co.

New York Chicago Cleveland Allegheny Kansas City St. Louis Boston Minneapolis
Philadelphia New Orleans Cincinnati London, Eng.

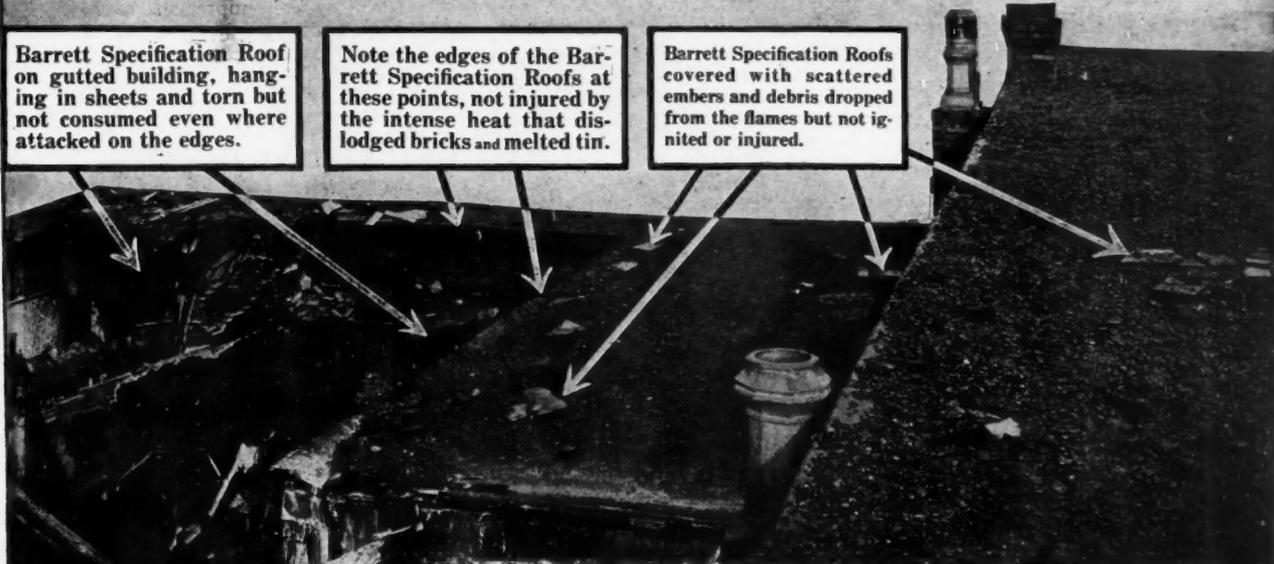


REAL FIRE PROTECTION

Barrett Specification Roof on gutted building, hanging in sheets and torn but not consumed even where attacked on the edges.

Note the edges of the Barrett Specification Roofs at these points, not injured by the intense heat that dislodged bricks and melted tin.

Barrett Specification Roofs covered with scattered embers and debris dropped from the flames but not ignited or injured.



BARRETT SPECIFICATION ROOFS

THE accompanying photographs illustrate forcefully the fire retarding properties of Barrett Specification Roofs. They prove beyond question that roofs of this character give **real fire protection** and do not ignite when exposed to a neighboring conflagration.

The photographs show part of the ruins of the Kenyon Hall fire in Allegheny, Pa., which destroyed \$200,000 worth of property on February 17th, 1907.

The buildings illustrated were roofed along the lines of The Barrett Specification, and, although scores of burning embers fell upon them during the fire, they stood the severe test **without damage of any kind** except where the support was burned away from below, causing the roof to fall through.

Because Barrett Specification Roofs are constructed of Felt and Coal Tar Pitch, it is sometimes assumed that they are not fire retardant. **Experience proves, on the contrary**, that they are a much more efficient fire retardant than Tin or Slate, which of themselves will not burn, and of course vastly more so than prepared roofings.

Repeated tests by fire marshals and fire underwriters have demonstrated that roofs laid according to The Barrett Specification are fire retardant in the full sense of the word. The best proof that they are so considered is the fact that a very large proportion of the manufacturing plants and railroad buildings of the country are covered with these roofs, as are also practically all of the famous fireproof sky scrapers of the land.

BARRETT SPECIFICATIONS in full will be sent on request to any one interested.

Barrett Manufacturing Co.

New York	Chicago,	Philadelphia,
St. Louis,	Cleveland,	Allegheny,
Cincinnati,	Kansas City,	Minneapolis,
New Orleans	Boston,	London, Eng.



machines of the several types, different sizes and various equipments, adjustments, accessories, etc. To the disappointed ones we will say that our prices are too low to permit us to take machinery of other makes in exchange, but we can now take care of your wants and if it is not too late to get right,—let the orders come.

THE PETTYJOHN Co.

Roofing Sold Direct to the Farmers

The farmers of the Northwest are beginning to realize that a house, barn or shed can not be properly built and comfortable unless the building is properly roofed. The Rock Asphalt Roofing Co., of Chicago and St. Paul, with their years of experience are selling direct to the farmers at dealers' prices roofing that meets all requirements of our severe winters and hot summers. Free booklet and samples will be sent to any one interested. By placing your order with these people for Flint Coat and Rock Asphalt Roofing you will get the best that money can buy, and at much lower prices than you can get an inferior article from your dealer. Do not overlook this.

Their ad. appears on page 840.

Miracles Buy Out Company

The Miracle Pressed Stone Company, of Minneapolis, has purchased the plant, equipment and stock of the Cement Working Machinery Company, of Detroit, Mich. The entire equipment and stock will be moved to Minneapolis and sold at a great reduction. There are molds for caps, sills, columns, lawn vases, etc., in great variety,

and the opportunity is afforded men with ready money to get a start in this line of business for a little outlay.

Samples of Lignine Carvings Free

We recently received from the Ornamental Products Co., of Detroit, Mich., a sample of their wonderful Lignine carvings by mail unwrapped and unprotected, asking us to subject it to the severest of tests, even under the hammer, to demonstrate to our entire satisfaction that their Lignine carvings are, as they say, practically unbreakable.



We complied with their request and found that unbreakable is rightly used when applied to Lignine.

They are anxious to place a sample of their carvings in the hands of every user of wood carvings in the country. Write for catalogue and sample, and in writing please mention AMERICAN CARPENTER AND BUILDER.



The color of old oak is pleasant for bed chamber work, and in north rooms terra cotta paper of an old pink shade is pleasing; and in south rooms olive green of a middling dark and golden shade.

Solid Comfort

Is enjoyed by the man
whose home is heated

with

Klymax
Boilers

and

KEWANEE
Radiators

Hellogg Mackay-Cameron Co.
K.-M.-C. Building,
Michigan Boul. and 12th St.
CHICAGO

MINNEAPOLIS, MINN.
100-106 2nd St. South

SEATTLE, WASHINGTON
639 New York Block

KANSAS CITY, MO.
2nd and Main Sts.

ANDREWS HOT-WATER HEATING

Dear Sir:--

I have a personal word for you.

If you have been reading the Andrews Heating Company's announcements, I am sure this will interest you; and I think it will, even if you haven't.

All business is a man-to-man affair, even when it seems to be impersonal. When you buy a heating plant - for instance - you rely upon the man who stands behind it. In our business I am the responsible man. I do not claim all the credit for our success; but, if blame there be, it falls upon me in the end. So I would like you to feel that I recognize my responsibility as should a plain business man who values his reputation.

I have been in the heating business all my adult life; I don't know anything else, and I confess I like the trade. The harder the problem the easier it is to keep up my interest. I devote some of my time to large heating contracts; but my mind turns constantly toward various improvements in the heating line - a better plant for less money or a convenience that I can make better and sell for less than others.

The ANDREWS STEEL BOILER is an example. This is fully described in my book "Home Heating," so I do not attempt to cover the merits. Then I want you to examine into the fuel economy and convenience of the ANDREWS LOCOMOTIVE TYPE OF BOILER. You will find the Andrews Regurgitating Safety Valve System of radiation and piping worth your attention. I also want you to examine into the Andrews Warm Air Furnace, the Andrews Self Regulating Heating Thermostat, and the Andrews Air Pressure System of Domestic Water Supply (wherever there is no city water).

You can readily see how these fit together to build up a big business - we like to say that "We do it right in 44 States, Canada and Alaska" and we feel we can do it right for you.

If you can give us the names of two other persons interested in heating do so when you write - we will be pleased to send you just what you want covering all our lines.

On ordinary business write the Andrews Heating Co. at any of our offices nearest you; but any special subject write me personally.

Faithiully yours,

Geo. C. Andrews.

557 Heating Bldg.
MINNEAPOLIS

ANDREWS HEATING CO.

601 LaSalle Bldg.
CHICAGO

Classified Advertisements.

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

Help Wanted.

WANTED—Carpenters to read our ad. on page 857. Gage Tool Co.
 HAVE A POSITION for a first-class superintendent for planing mill. If interested address M.. American Carpenter and Builder.

AGENTS WANTED for the O-K. Weatherstrip. Made of Aluminum Coated metal. It possesses the rigidity of steel and is guaranteed absolutely rust proof. Best door and window bottom strip on the market. Price is right. Satisfaction and money in handling it. Carpenters and contractors supplied. For full particulars, write The Introstile & Novelty Co., Marietta, Ohio.

HIGH-GRADE MEN WANTED.—Salesmen, fixture and art glass, city trade, \$2,000. Superintendent, small carriage factory, \$1,800. Superintendent, office-fixture factory, \$2,400. We have hundreds of openings for men with experience in lumber, building and special lines—office, sales or technical. Call or write HAPGOODS, 1024 Hartford Building, Chicago. (Offices in 12 cities.)

Business Opportunity

ALL of the best Pacific Coast timber grows adjacent to Astoria; cheapest water transportation allows importation of all Philippine woods, making it together with incomparable ocean and river transportation, most ideal location for wood-working plant of any kind. Address Chamber of Commerce, room 713, Astoria, Oregon.

Instruction.

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

Furnaces

FURNACES \$5 NOW, \$10 more before shipment. Bal. AFTER approval Tools 50c. Save \$50. Book free. Century Furnace Co., box E., Youngstown, O

House Plans.

IF INTENDING TO BUILD send 25c for catalog of inexpensive houses. Plans and Photos, with cost—\$900 to \$5,500. LATEST AND BEST IDEAS. Plans, \$1.00 up. The C. A. Eastman Co., Architects, Des Moines, Iowa.

Wood Working Machinery.

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

Patents.

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

WHO WANTS SLATE?

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

SLATE WE HAVE WHAT YOU WANT

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

SATISFACTION GUARANTEED IN QUALITY AND PRICE

ASK FOR DELIVERED PRICES

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

H. J. KICHLINE, Sales Agent

A Substitute for Marble

The lack of marble in Denmark has in the past led to many attempts to produce a substitute which would equal in decorative effect the natural product, and at the same time would not exceed it in cost. Some success has been achieved in the manufacture of a substitute in Sweden, but the thin slabs would not keep their shape. The veins were stiff and angular, and the soft transitions of color which made variegated marble a thing of beauty were lacking. An important advance has, however, been made in the industry by a Danish master builder, who is producing a stone which is claimed to be of such delicate transition of tints and play of color that it is almost impossible to distinguish it from real marble. The claim is made that the article can be produced in any form and that it appears to have the durability of genuine marble, while the cost is about one-tenth.

The Beauty of Cherry

Cherry wood, filled and not varnished, has a soft glow not possessed by any other woods, and has none of those distortions of grain that are so unpleasant in mahogany. The timber is chosen generally from the wild cherry, which in New England and Canada does not usually grow to a girth of more than sixty inches, but in the western states and South frequently attains a diameter of twenty-four inches. The domestic fruit cherry gives some good specimens of tall timber, but as the tree is rarely sacrificed until it is past bearing, and is decayed, the supply from this source is precarious.

ACADEMY OF ARCHITECTURE INDUSTRIAL SCHOOL
 1740 Choteau Ave., St. Louis, Mo.
 DRAFTSMEN qualified; Architectural, Art Mechanical.
 BUILDERS trained for leaders in business.
 FOREMEN educated in any trade.
 CORRESPONDENCE courses for home study.

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



HEAVY BED

PATENTED.

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

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 Large Stocks Prompt Shipments Correspondence Solicited **ROOFING SLATE**

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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.

In order to advertise the *superior methods of instruction* of the American School of Correspondence, Chicago, a limited number of sets of this great cyclopaedia will be sold at *one-third regular price*. It is compiled from representative instruction papers of the School. *We employ no agents*, believing our books offer the best method of acquainting the public with the superiority of our *regular* courses of instruction. We feel sure that every purchaser will later become a student in some *regular* course. The work *itself* is a masterpiece of complete, concise, practical, "ready-to-use" information. There is not one iota of theory in its 4,000 pages. Every demonstration is derived from the *practical* experience of the greatest experts in the building industries of the world.

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Only a few sets remain to be sold at this price. . . . Orders will be filled in order received. Sent prepaid by express. Pay \$2.00 within one week and \$2.00 a month if satisfactory; otherwise notify us to send for them. **In any case you lose nothing.**

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If you are a Carpenter, Contractor, Builder, Architect, Draftsman or Mechanic, it offers you an exceptional chance to advance in your present occupation.

AMERICAN SCHOOL OF CORRESPONDENCE
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CUT THIS COUPON AND SAVE \$40.20

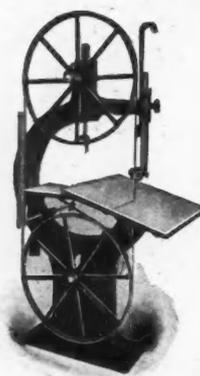
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within a week and \$2.00 a month until
\$19.80 is paid; otherwise I will notify you
to send for the books.

Name.....

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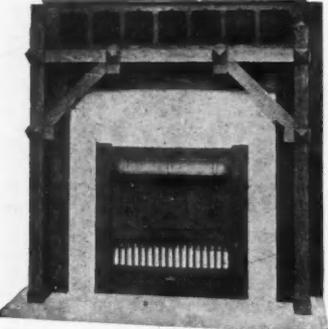


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Write for Prices and Other Particulars

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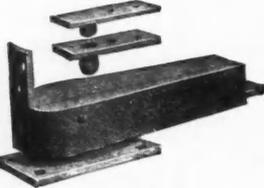
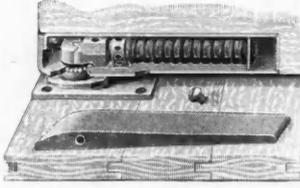
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If you need anything in my line, and wish to
SAVE
20 to 40 Per Cent
on every article, write for my free illustrated Catalog. Shipments promptly made from a very complete stock of guaranteed goods. Small orders are as carefully handled as large ones.

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

The "Chief" Floor Hinge The "Chief" with Finish Plate Removed

The "CHIEF" in Name and Quality.

You can hang three doors while you hang one with any other Double Acting Floor Hinge. Ask your dealer, or write us for souvenir book which will explain.

The Shelby Spring Hinge Co. Main Office and Factory, SHELBY, OHIO

Litter Made Into Building Paper

All of the trashy looking odds and ends of paper kicked around in the big warehouses of the big paper stock dealers do not find their way into the hands of scavengers. They are of too great a value for that. One of these days, if you are building a cottage, you will require some of this litter to use in construction, and when you get it you will recognize it as some of the stuff represented in big, clumsy looking bundles.

Down at the docks of the river any day now may be seen thousands of tons of the old paper, ready to be trundled aboard boats bound for Michigan, where it is converted in great mills into building paper. It is then returned to the dealers. By this time it is in clean brown rolls and the average person never would suspect that it once was swept into heaps, apparently fit only for the furnace. Much of the stock is sent to Michigan by boat in summer. Trains haul it in the winter months.



Church Built From One Tree

A large Baptist church that stands in the city of Santa Rosa, Cal., enjoys the distinction of having been constructed entirely from a single tree. Of course, that includes the woodwork of the structure. The tree, says The Technical World, from which the timbers, lumber and singles were cut was a giant California redwood. A considerable quantity of the lumber was left over after the church building was completed. This building has a spire 70 feet high; an audience room capable of seating 300; a parlor capable of seating 80; a pastor's study 14x20 feet; a vestibule and toilet room. The building is 35x80 feet.

JUST PUBLISHED
CONTRACTS and SPECIFICATIONS

By JAS. C. PLANT, Supervising Architect. 130 pages. Numerous Drawings. Handsomely and durably bound. Price \$1.00 postpaid.

A working manual of forms and methods for Architects, Contractors and Owners. The duties and responsibilities of each are fully explained. Forms of public and private contracts, specifications, etc., are given. Sold by booksellers generally or sent postpaid on receipt of price. Book catalogue sent FREE on request if you mention American Carpenter and Builder, Sept.-07.

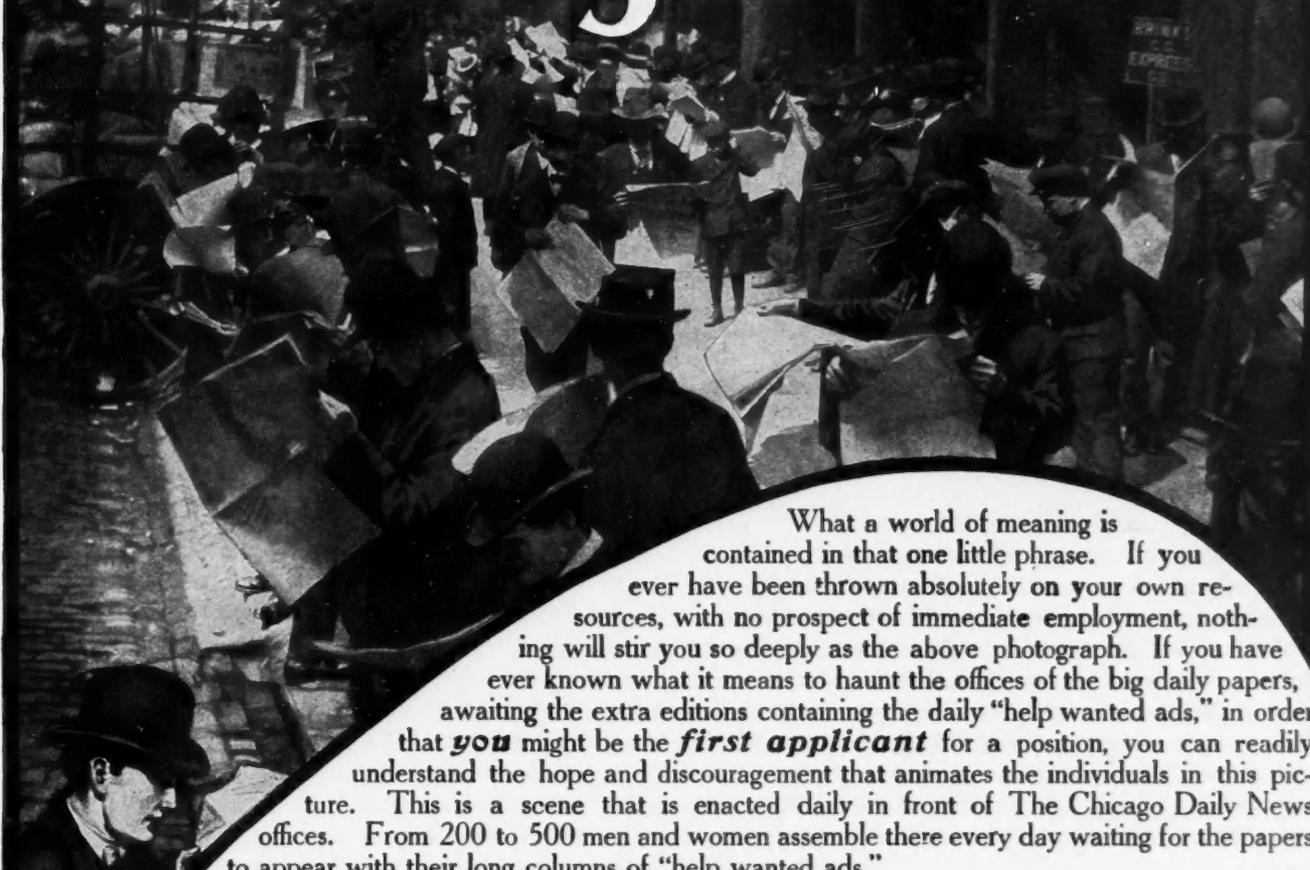
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Free Bicycle catalog showing all models at lowest prices.
DO NOT BUY a bicycle or a pair of tires until you learn our marvelous new offers. We ship on approval without a cent deposit, prepay freight, allow 10 Days Free Trial—All our new and wonderful 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.
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FOR GERMANY Well Known Important Firm in the Building Trade having high connections and bank references, also branches and agencies, and since many years successfully introduced all over Germany amongst imperial government and city (building) offices and leading architects, is open for general agencies for Germany (on commission or own account) of first-class (patented) novelties of any description concerning directly or indirectly the building trade. Address with full particulars the Managing Director, MR. BOLDT, 48 Hansaring, Cologne, Germany.

Looking for Work



What a world of meaning is contained in that one little phrase. If you ever have been thrown absolutely on your own resources, with no prospect of immediate employment, nothing will stir you so deeply as the above photograph. If you have ever known what it means to haunt the offices of the big daily papers, awaiting the extra editions containing the daily "help wanted ads," in order that **you** might be the **first applicant** for a position, you can readily understand the hope and discouragement that animates the individuals in this picture. This is a scene that is enacted daily in front of The Chicago Daily News offices. From 200 to 500 men and women assemble there every day waiting for the papers to appear with their long columns of "help wanted ads."

How easily any one in this crowd could put himself forever above such a quest for insignificant, poorly paid positions. The only reason that it is necessary to race with hundreds of others to apply for such a position is that almost any one is qualified to fill it and the first applicant will doubtless secure it.

It is only positions that require special training, special skill, special knowledge, that must and do seek the man. Hundreds of such positions are advertised day after day and still cannot be satisfactorily filled. Why not put yourself above the **mediocre** and qualify yourself for a position of responsibility and trust where your earnings are gauged by **what you know and not by the time you spend at your daily task?**

The American School of Correspondence is constantly fitting thousands of young men to start life in positions where there is an assured future for a man of ambition and brains. It is taking older men from poorly paid, uncongenial work and placing them where they can secure better pay, better future, better hours and better work for the rest of their working days.

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

**AMERICAN SCHOOL
OF CORRESPONDENCE**

CHICAGO, ILL.

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and Build
9-'07

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

- COUPON**
-Carpenter's Course
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Name.....
Address.....

How to Paint a House Cheap

And Have It Guaranteed to look Better, Wear Longer, and Cost Less Than Any Other Paint.

Never Fades, Cracks, Chalks, Peels or Blisters, and is Not Affected By Gases or Salt Air. Fifty Sample Colors Prepaid To Any Address Absolutely Free.

The cost of painting is a heavy burden. Cheap paints soon fade, peel or scale off and white lead and oil costs so much and has to be replaced so often that it is a constant expense to keep the bright, clean appearance so desirable in the cosy cottage home or the elegant mansion.



Carrara Paint Is Used on the Most Beautiful Homes of the Country.

The Waldorf-Astoria and many of the magnificent hotels in New York City are painted with the world-famous Carrara Paint, and this is also true of many of the famous clubs and public buildings of the great metropolis. Most all of the great railroad, palace car, telephone and electric companies use Carrara Paint in preference to any other, because they proved it best by trial. Field Museum, Chicago, covering over seven acres of ground, is painted with Carrara Paint.

From railroad box cars to elegantly furnished general offices of the great railways; from plain brick walls and stone fences to tin roofs and interior finish of stately hotels; from country barn or hay shed or cheap outbuilding to farm residence, suburban home or luxurious city residence, Carrara is used because it lasts longer, does not fade, doesn't crack, blister, or peel, and covers more surface than the highest priced paints. It costs less than the cheap mixed paints that injure instead of protect. There is but one Carrara. It is made by the Carrara Paint Co., Cincinnati, Ohio, and anyone having a house to paint should send for 50 sample colors, free, of this great paint that has stood the most rigid tests for 25 years, and bear in mind that it is the only paint ever manufactured that is backed by a positive guarantee in every case. Write today and save half your paint bills in the future, by filling in this coupon in your name and address on dotted lines below.

FREE OFFER

Cut out this coupon now and mail it to the Carrara Paint Co., 171 Fourth Nat'l Bank Bldg., Cincinnati, Ohio. Please send me FREE by return mail, prepaid, Fifty Sample Colors and handsome booklet showing many buildings in colors, just as they are painted with this great paint.

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Give full address—write plainly.
 We absolutely prove to every property owner that Carrara Paint will cost less, look better and wear twice as long as any other paint.

What Does the Salary Bag Hold for YOU?



To draw a small salary month after month, year after year, is your own fault. It is pure negligence and nothing else, for there is an institution that is ever ready to provide the qualifications that will enable you to rise to the highest, best paying positions in the profession of your choice—an institution that can help you, no matter how poor your circumstances may be, how old or how young you are, no matter where you live. And to prove this the I. C. S. points to hundreds of other men who have secured advancement and success through the I. C. S. plan; to a growth from a mere idea with one Course of Instruction to one of the largest educational institutions in the world with 208 Courses of Instruction, an invested capital of six million dollars, and a total enrolment far in excess of any other college in the world—a growth made possible only as a result of success in its business—and the business of this place is to raise salaries.

Without doubt this plan is the most practical, the quickest, easiest, and cheapest way in the world for YOU to secure a better position and increased earnings. It puts you under no obligation whatever to send us this coupon and allow our experts to explain our system of instruction, and adapt a Course to your personal needs.

Do you really want to earn more salary? Would you like the salary bag to yield you more each week or each month? Then make a definite attempt to bring this about by sending in this coupon. Tomorrow never comes. *Do it today.*

International Correspondence Schools Box 910, Scranton, Pa.

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

Architect	Estimating Clerk	Foreman Mach'st
Arch'l Draftsman	Bridge Engineer	Sh.-Met. Pat. Drfts.
Contr. & Builder	Civil Engineer	Mining Engineer
Building Inspector	Surveyor	Textile Expert
Struct'l Engineer	Mechanical Eng.	Bookkeeper
Struct'l Draftsman	Mechanical Drafts.	Stenographer
Plum. & Heat. Con.	Stationary Eng.	Ad Writer
Supt. of Plumbing	Electrical Engineer	Window Trimmer
For. Steam Fitter	Electrician	Illustrator
Plumbing Inspect'r	Elec.-Light. Supt.	Civ. Ser. Exams.
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Name _____
 Street and No. _____
 City _____ State _____

"TARGET & ARROW OLD STYLE" TIN

Has Protected This Residence for 48 Years



THE RESIDENCE of Mr. George L. Baker at Selma,



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

Alabama, was roofed with "Target-and-Arrow Old Style" tin in 1859. During all these years it has never sprung a leak or required repairs of any kind and is in as good condition to-day as when first put on. No other brand of roofing tin and no roofing material of any kind can show such proof of durability or can guarantee such results for the future. The thing for builders and house owners to bear in mind is that "Target-and-Arrow Old Style" tin bought at the present time will give the same service that it has given in the past. Any who are in doubt as to what kind of roofing they ought to buy, should send for our two free books, "A Guide to Good Roofs" and the "Tin Roofer's Hand-Book," a comprehensive text-book on tin roofing.

N. & G. TAYLOR COMPANY, PHILADELPHIA

Established 1810



Specify **Petz** Patent Store Front Construction

"Made in Detroit"



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

NEW BOOK, "METAL STORE FRONTS"

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

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

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



HEAT YOUR HOUSE

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

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

Double feed doors which admit large chunks of coal.

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

Deep ash pit. Heavy substantial castings.

GREEN'S NEW COLONIAL FURNACE

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

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

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

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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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"Tin Roofing—A Brief History"
 "Advantages of a Good Tin Roof"

"Standard Working Specifications"
 "Practical Hints"]

This "Handbook" will be mailed to architects throughout the United States about August 25th. If you fail to receive a copy write to the President of this Association, using your letter head, or enclosing business card, and one will be sent you promptly.

National Association of Master Sheet Metal Workers

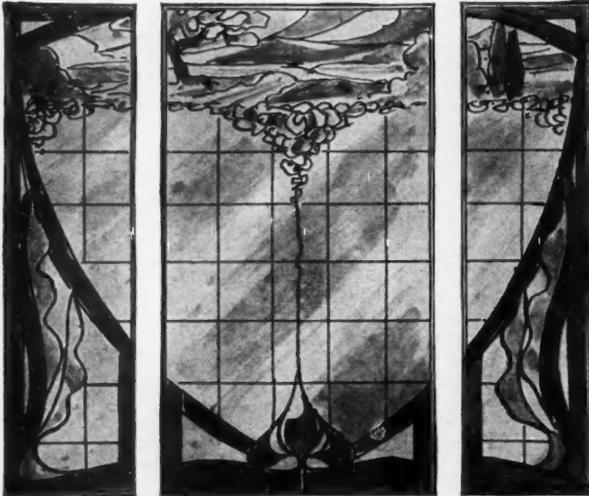
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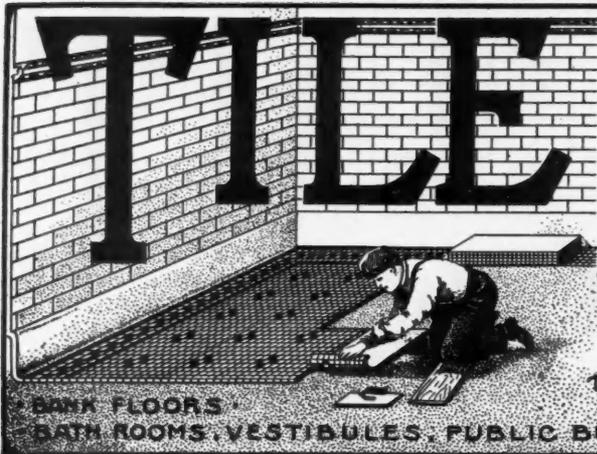
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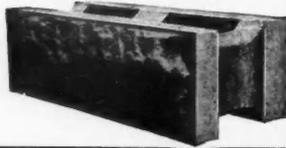
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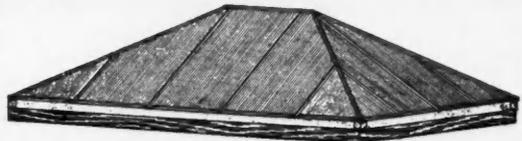
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Can be shipped anywhere safely at a low freight rate. Can be set up by any handy man, no soldering, no putty and no leaks. CATALOG FOR THE ASKING.

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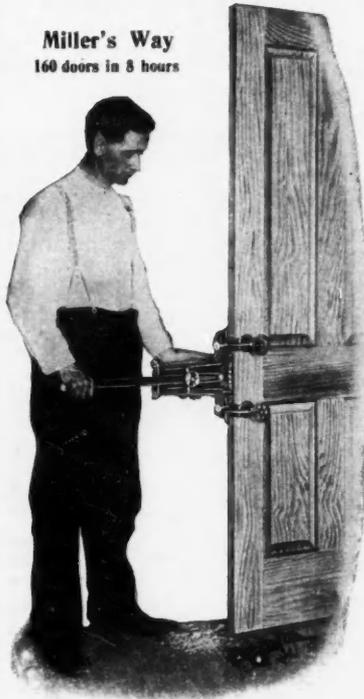
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MILLER LOCK MORTISER

Miller's Way
160 doors in 8 hours



Will cut an opening in three minutes for a mortise lock in hard, soft, cross-grained or end wood, parallel with sides of door.

The labor is performed with slight exertion. The care is practically none as the tool does not get out of order.

The adjustment is done in a moment's time for the different sizes.

The cutters are five in number and cover locks from 1/2 in. to 1 1/8 in. thick.

It cuts all the different lengths of openings for locks.

Thin doors are handled as easily as thick doors.

Brains needed are just common, ordinary brains.

It does not mar the door.

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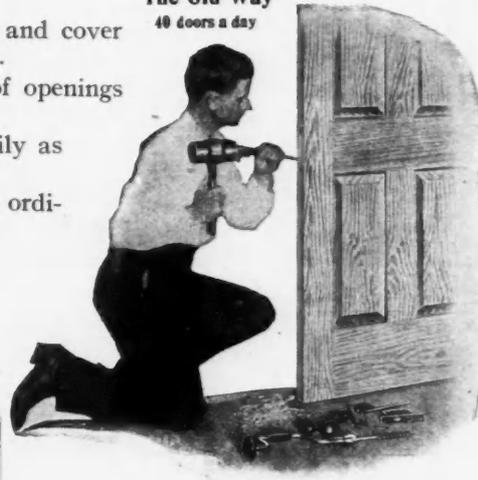
"We saved just \$65 in four weeks."

"It paid for itself in two days."

"The more I use it, the better I like it."

**Practical, Durable,
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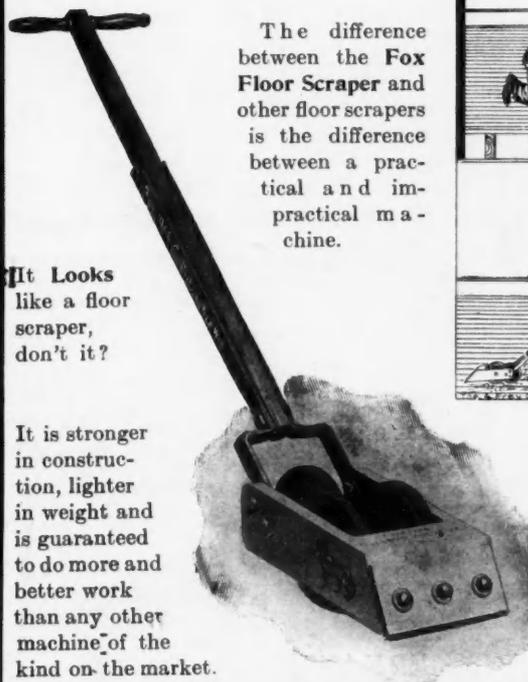
The Old Way
40 doors a day



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The Only Practical Floor Scraper



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

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

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

What Are These Men Doing?



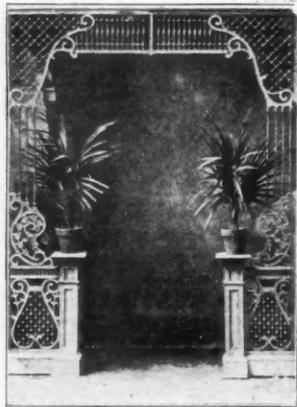
Come to think of it, isn't it foolish to **break your back** and **waste your money**.

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



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In Two to Three Months

Begin now. Bricklayers are in big demand. As we teach bricklaying exclusively we turn out the most expert mechanics.

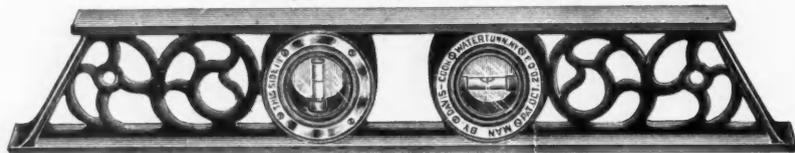
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Iron Plumb and Level



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Road Track and Sidewalk Level

20 Years the Standard
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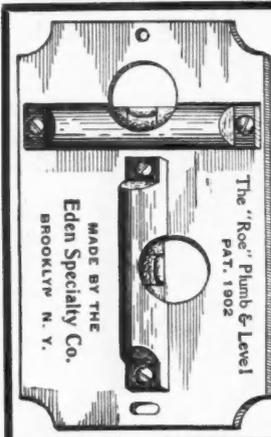
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Davis & Cook Adjustable Levels are guaranteed and backed by twenty years of success in level making. No other levels are made on as good a principle or of such high class materials.

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



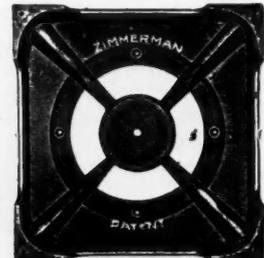
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Mounted on boards 4x18 in. 15c extra
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"The Column Never Rot's"
All Sizes for Round or Square Columns. Thousands in use. Send for Circular "Z."



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Has solved the perplexing problem that has confronted Architects, Builders and Owners for years, "AN EVENLY AND PROPERLY SURFACED FLOOR." In the past there has been but one method, the unsatisfactory, tedious and expensive one of hand labor. It is now no longer necessary to employ a small army of men to surface a floor,—THE AMERICAN FLOOR SURFACING MACHINE will do the work of from FIFTEEN to TWENTY men, depending upon the size and condition of the floor, and do it **QUICKER, CHEAPER, BETTER**, whether of a dwelling, school house, skating rink dancing hall, office building, decks of steamers, hotels, bowling alleys or store buildings.

The American Floor Surfacing machine does the work with **ABSOLUTE EVENNESS** and at a small fraction of the cost of hand labor. It is at once efficient, reliable and consequently has met with unqualified success wherever it has been operated. The machine is built on correct mechanical principles, is **SELF-PROPELLING** and the epitome of simplicity. It is **MODERN METHODS SUPPLYING MODERN DEMANDS**, and a **MONEY SAVER**, and so simple in operation that any person of ordinary intelligence can quickly learn how to successfully handle it.

Illustrated Booklet and Details upon Request
AMERICAN FLOOR SURFACING MACHINE CO.
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SELF-SETTING PLANE



SECTIONAL VIEW—showing ADJUSTABLE IRON THROAT.

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

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

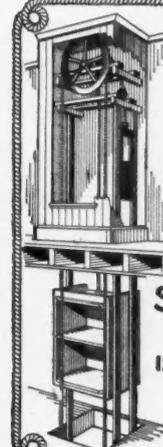
This SELF-SETTING PLANE, made in Vinland, N. J., is the ONLY SELF-SETTING PLANE—no other SELF-SETTING PLANE was ever made.

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

We send SELF-SETTING PLANES, where not sold, on 30 DAYS' TRIAL, EXPRESS PREPAID, on receipt of list price. IF RETURNED to us AT OUR EXPENSE, within 30 days of receipt, we will return you the entire amount you sent us and the trial will cost you absolutely nothing, except your trouble.
SEND \$3.00 FOR A SELF-SETTING PLANE ON TRIAL.

For other particulars and large illustration see this magazine for January, 1907, pages 1202 and 1211, and June, page 353.

GAGE TOOL CO., Vinland, N. J.

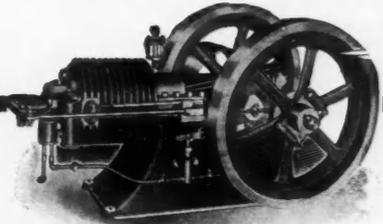


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 OF THE MOST IMPROVED AUTOMATIC CONSTRUCTION

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 TRUNK, CARRIAGE, SIDEWALK AND FREIGHT ELEVATORS

SEDGWICK MACHINE WORKS
 POUGHKEEPSIE, N. Y.
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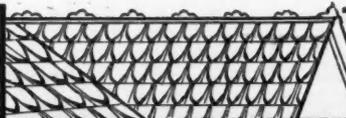
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 SEE SWEET'S INDEX



The GADE Air Cooled Gasoline Engines

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

THE BEST ROOFING FOR ANY BUILDING IS



THE CORTRIGHT METAL SHINGLE

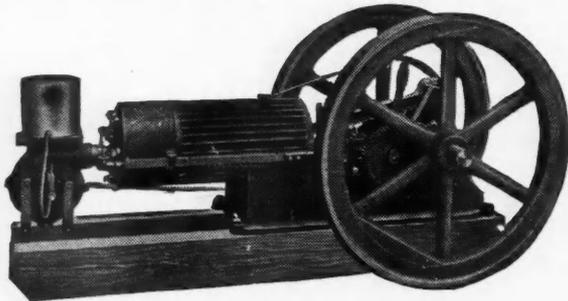
What is more, it's the coming roofing. The public is just waking up to its advantages, and the carpenter is getting the benefit, for the laying of it requires someone handy with hammer and nail. Don't wait until it is too late, get in touch with us before someone else is given your territory.

CORTRIGHT METAL ROOFING CO.
Philadelphia and Chicago

The WATERLOO

Vapor Cooled Gasoline Engine

THE ONLY HORIZONTAL VAPOR COOLED GASOLINE ENGINE IN THE WORLD



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175 Third Avenue West, - Waterloo, Iowa



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Iron
Fencing**

is the legitimate successor of wood and wire.

¶ Wooden fence, because of the scarcity, and consequent high price of lumber, is far more expensive than it was a few years ago.

¶ Wire fence may do for farm purposes, where there are gardens and where stock is kept, but it was intended for use in the country districts only—never in the city. Conservative buyers consider wire fence dear at any price for city use.

¶ Iron fence was built with these points in view—that of use in the city, in place of the unsightly and easily destroyed wood and wire, and at a lower cost.

¶ There's money in it for you if you will "boost" our fence—ask us for Catalog 120-E and particulars—we will show you how.

The Stewart Iron Works Co.

CINCINNATI, OHIO

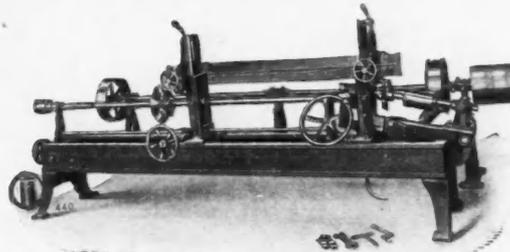
"The World's Greatest Iron Fence Works"

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

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

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

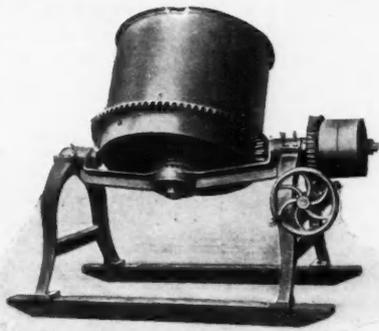
It is also equally efficient on headers or sills.



Send for Catalogue No. 145

The New Britain Machine Co.
100 Chestnut Street, New Britain, Conn.

"STANDARD" Brick Machines
Batch Mixers
Gasoline Engines



"Standard" Batch Mixer, power driven

This view of our power driven mixer shows quite clearly the ball bearings on which the mixing drum revolves, the driving gear, the heavy swing cast in one piece supporting the drum, the strong, well designed legs, the tight and loose pulleys for belt drive, and the tilting device. The only ball bearing mixer on the market, and the simplest machine of its class offered to the trade. Made in hand and power sizes. Easily charged and discharged. Furnished on skids or truck, with and without power. An excellent mixer for dry or wet mix, for contractors, for block and brick plants.

PRICES LOWER THAN EVER
Write for new (July 1907) Catalog.

SOUTH BEND MACHINE MFG. CO.
1803 S. Franklin St., SOUTH BEND, IND.

**HERCULES SPECIAL
Concrete Block Machine**
COMPLETE OUTFIT FOR ONLY \$120.00

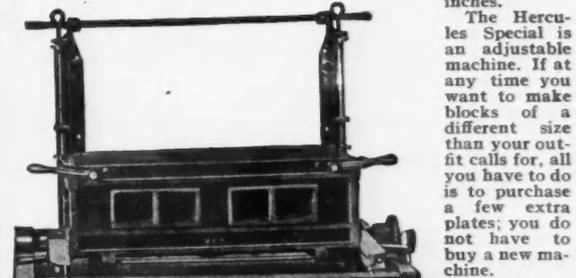
THE HERCULES SPECIAL is now offered to the trade. It is built exactly like the famous Hercules, but is smaller in size. The Hercules Special will make blocks from 3 inches to 32 inches in length, and these blocks will be equally as high grade as those made on the regular Hercules.

To those with limited capital who wish to engage in the concrete block business, or for people wishing to do their own building the Hercules Special is without doubt the best machine to buy.

You get a complete outfit that will start you in the business for only \$120.00, Net F. O. B., Rochester.

With this outfit you can make blocks 8x8x16, or if you desire parts for making stone 8x8x20 will be substituted.

We also allow you choice of any width, either 8 inches, 10 inches or 12 inches.



The Hercules Special is an adjustable machine. If at any time you want to make blocks of a different size than your outfit calls for, all you have to do is to purchase a few extra plates; you do not have to buy a new machine.

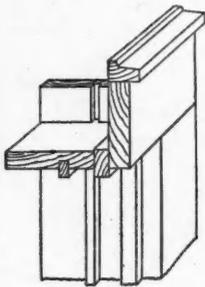
We will be glad to send you full particulars about the Hercules Special upon request.

ADDRESS

Century Cement Machine Co.
273 West Main Street, - Rochester, N. Y.

Special Prices

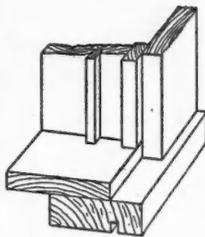
For This Month Only



Window Frame Dimensions

Pulley Stile,	$\frac{7}{8} \times 4\frac{1}{2}$	} Poplar, Yellow Pine or Cypress
Outside Stop,	$\frac{7}{8} \times 1\frac{3}{4}$	
Sill,	$\frac{7}{8} \times 5\frac{1}{4}$	
Subsill,	$1\frac{3}{4} \times 3\frac{3}{4}$	
Outside Casing, $1\frac{1}{8} \times 4\frac{1}{2}$		
Water Table	$\frac{7}{8} \times 1\frac{3}{4}$	

Prices F. O. B. Your City



Section.

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

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

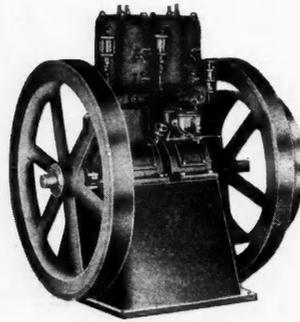
Crown Mould Caps 15 cents each additional.

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

All Frames Complete with Pulleys

The Malta Manufacturing Co.
MALTA, OHIO

POWER THAT PAYS!



WE MAKE IT!
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Gasoline Engines
FROM
3 to 50 H. P.

Few Parts. Well made and guaranteed free from defects and breakage for one year

In the working parts of a Goshen Engine there are no valves, cams, gears or springs. As the pistons pass up and down in the cylinder they open and close the torts of the engine, thus exhausting the burnt gases and admitting the new charge. We make special piston rings that we guarantee for three years. An honest, reliable engine for any purpose.

Marine Engines from 3 to 50 H. P. which are really all engine and one that will please you

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GOSHEN, INDIANA

CONTRACTORS' HOIST

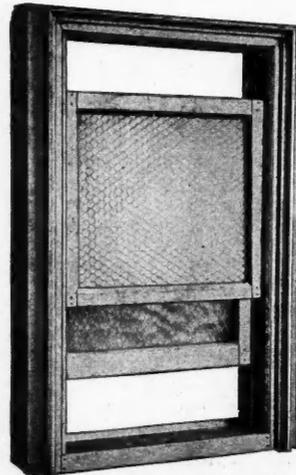


Our direct connected, self contained hoist for double platform elevator work can't be beaten.

Equipped with our Standard Gasoline Engine it certainly is the most economical method of elevating building material known.

Write for our Bulletin No. 5, and let us name you price. We also make a full line of Gas and Gasoline Engines, from $1\frac{1}{2}$ to 25 H.P.

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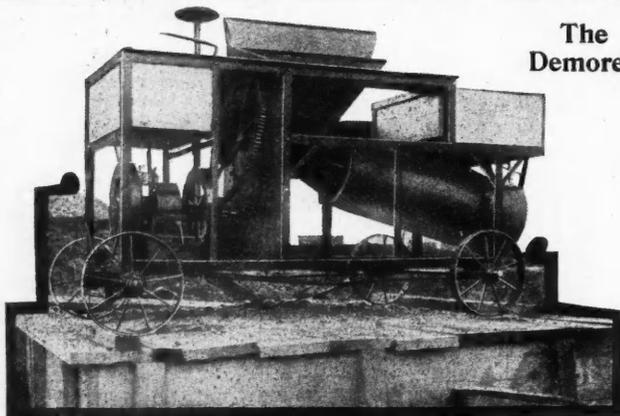


Fireproof Windows,
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Genasco Roofing

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Little Giant Mixer

automatically proportions—mixes dry, then wets. Product approved by engineers. Capacity greater than any Mixer costing twice its price. Easily portable. One customer claims \$15.00 per day saving over one of the best known Batch Mixers.

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On each carload of Lumber

You can save the middleman's profit by dealing with us direct. Every carpenter, contractor or owner gets the same price from us as the lumber dealer. Don't send us cash in advance—we send you the lumber with privilege of inspection before paying. We cut our own timber and saw it in our own mill—*direct from the mill to you* is our method. You can save money—buy from us direct. Any kind of lumber shipped, from ¼-round to heavy timbers. Quick delivery guaranteed. We handle lumber, laths, shingles, millwork, sash, doors, hardware, paints, plasterboard, lime, cement and roofing paper. Write us what you need—we quote lowest prices on all builder's supplies, laid down in your city.

Independent Lumber Co.

Room 2, Euclid Bldg., St. Louis, Missouri
Yard 3, on Belt R. R.

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BERGER'S "CLASSIK" STEEL CEILINGS

Will satisfy the owner because of their beauty, and will delight the contractor because of the price at which they are sold and the saving that can be effected in erecting them.

The most beautifully designed, most clearly stamped and most easily erected steel ceilings made.

Send measurements for sketches and prices

THE BERGER MFG. CO., Canton, Ohio
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Iron and Steel Roofings, Cornices, Skylights, Ventilators,
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IOWA HARD PLASTER CO.

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

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

Costs No More Than Inferior Brands

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THE ONLY GUARANTEED

Pure Lead Paint

SOLD DIRECT FROM

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Save 25 per cent by buying direct. We guarantee every gallon for a period of six years.

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Send for sample of our **Fiberoid Floor Covering**. One-third to one-half the cost of Linoleum. Wears twice as long. An old and rough floor is instantly transformed into a smooth, marble-surfaced one and it never wears out.

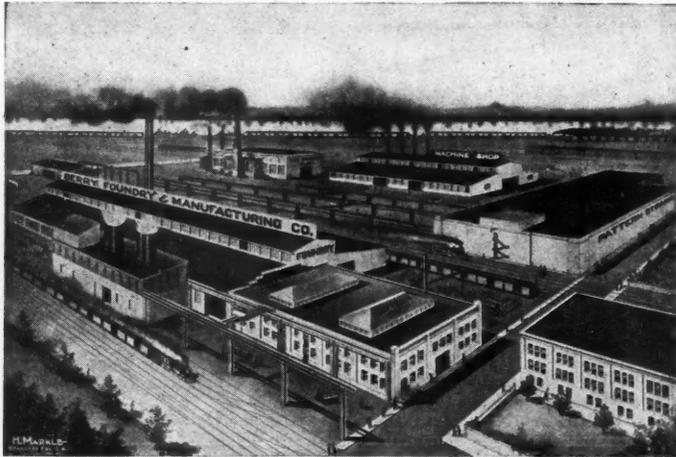
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GROFF BROS., Props.

Established in 1876

COLUMBUS, O.



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Structural and Ornamental Iron.
 Fabrication of Structural Steel
 Standard Sizes Steel Shapes in Stock.
 Builders Supplies
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Office and Works St. Joseph, Mo. Fifth and Oak Sts.

UNIVERSAL STORE FRONT CONSTRUCTION

ALL METAL BAR

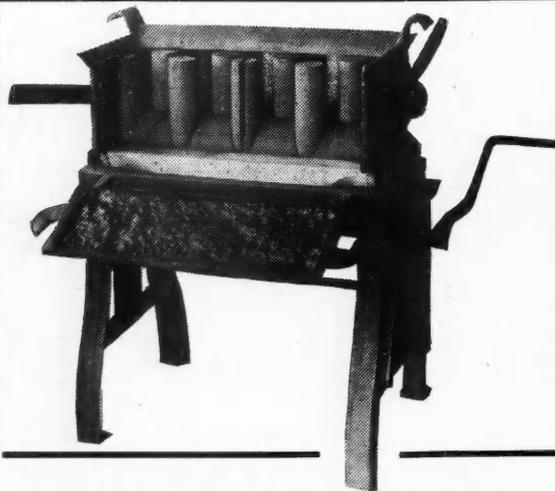


The first bar made to set glass from the outside! Others follow. All corners and angles look alike. Bar comes fitted ready to screw to building. WHEN WINDOWS ARE ENCLOSED GLASS WILL NOT FROST.

Our Universal Sash Bar Meets Every Condition of Store Front Construction

Always a sure fitter. Used for Corners, Divisions, Transoms, Mullions, Sills, Jams, Circles, Domes and any and all angles. Send us your blue prints for estimates. We deliver the goods.

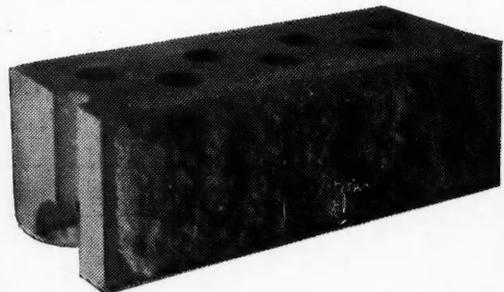
VOLTZ MANUFACTURING COMPANY, St. Joseph, Mo.
 1101 and 1103 S. Eighth Street Two Blocks East of Union Station



THIS machine makes all sizes of blocks, three kinds of face, Double staggered air space connected with horizontal air space makes block frost proof.

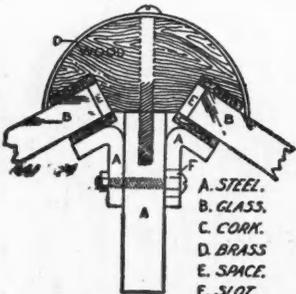
Price of complete machine, \$175.00—F. O. B. Minneapolis or Soo Falls, S. D. Half cash with order. Write for descriptive catalog.

Machine and block both patented.



State rights will be sold for exclusive manufacture and sale of this machine in any state. Write for our proposition.

Schoeneman Cement Block Machine Co.
 Sioux Falls, S. D.



All Steel Cork Bedded Corner Post

SHULTZ'S

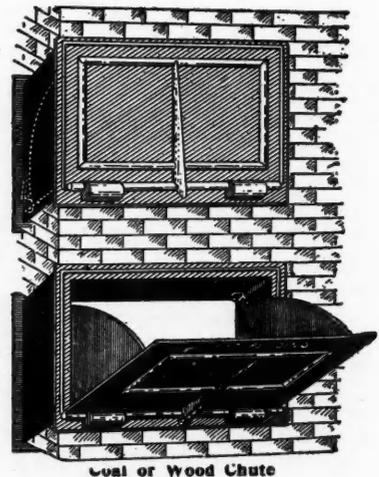
Patent All Steel, Cork Bedded Corner Posts, Mullions and Transom Bars.

Also my new Acme Steel Post and Bars, in which the Glass is Bedded Between Wood.

They are the handsomest and strongest bars made. The glass is bedded on both sides, either between Spanish cork or wood, preventing any cracking or crushing of glass. No putty. Are absolutely water and dust proof.

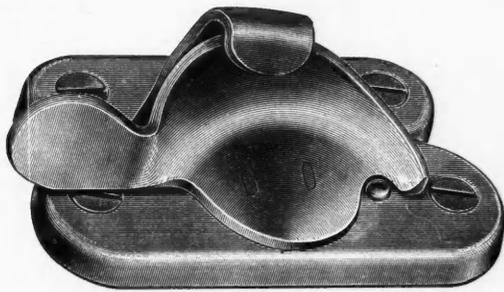
BURGLAR PROOF COAL CHUTE. Locks itself automatically when closed up. Can only be opened from inside. Face of Chute flush with wall Write

C. H. SHULTZ, Patentee and Manufacturer **St. Joseph, Mo.**
 For Cut and Prices on Corner Posts and Coal Chutes.



Coal or Wood Chute

MONITOR SASH LOCKS



(PATENTED)

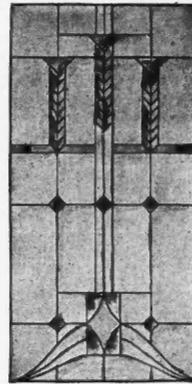
NEVER BREAK

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

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

MADE IN TWO SIZES AND ALL FINISHES BY

**The Champion Safety Lock Co.
Geneva, Ohio**



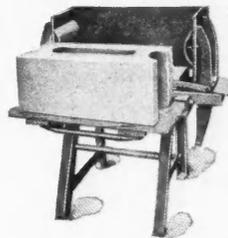
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Makers of Memorial Figures and plain Decorative Windows, also residence work in L'Art Nouveau styles and beveled plate in metal copper finish. Designs submitted on application. *Grand Prize Louisiana Exposition, Correspondence solicited. Established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

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(Near Franklin)
Telephone North 218.

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THE MACHINE WITH BRAINS, on which unskilled labor cannot produce an imperfect block, as it has a positive lock and is thoroughly milled and guaranteed. It is built very strong and all bearings are made of steel. It makes all blocks face down. It makes stones in lengths of 4, 6, 8, 10, 12, 14, 16, 18, 20, 24 inches. It makes stones in widths of wall 4, 6, 8, 10, 12 inches. It makes hollow solid or veneered blocks, angle blocks, corner blocks, circle blocks, water-table blocks, etc. It is possible to use a very wet concrete in this machine. We save you the price of this machine on pallets alone, as it only requires one size of pallet for all sizes of stone.

Prices Right. Write for Catalogue.

THE OLIVER MFG. CO., : : : Jackson, Mich.



MILBRADT'S Rolling Step Ladders

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

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Special Discount to Contractors and Builders

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Thunder and Lightning



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

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ATTENTION! CONCRETE BLOCK MAKERS!

"The Miles" Improved Concrete Block Machine

The original face down machine

Makes Friends and Keeps Them

Uncle Sam specifies it. The Best and Cheapest Machine on the market. Get full particulars from

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Illustrate in detail the construction, plans and sizes of E. & P. hand-power elevators.

They are built both in *center-lift* and *corner-lift* patterns.

They can be selected *direct* from The E. & P. Specifications.

THESE ELEVATORS ARE CARRIED IN STOCK IN CHICAGO—

Thus prompt delivery is *secured* and *assured*.

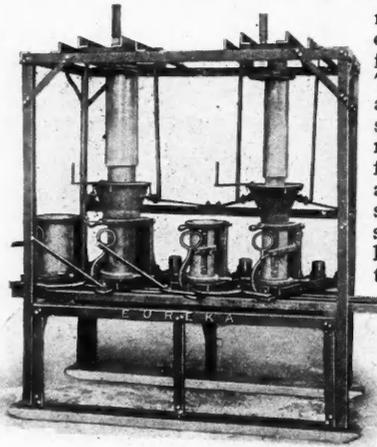
Ask for folder No. 99 and learn *how easy* it is to order therefrom, and *how reasonable* are the prices therein.



EATON & PRINCE COMPANY

CHICAGO

The Automatic Tamper Tile Machine



makes a perfect cement drain tile, very fast and very cheap. Tamps one or two tiles automatically, in ten seconds. No pallets required. When the finished tile swings out another mold and core swings into place. Absolutely automatic and labor-saving without the necessity of an expensive power plant.

Let us send you our free printed matter which gives details of this **Big Money Maker**.

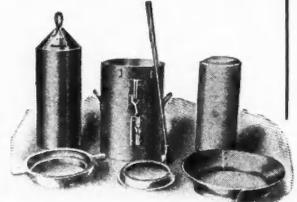
The Eureka Sewer Tile Molds cost very little to put in, make perfect cement sewer tile, all sizes 6 in. to 36 in. Yield big profits. Free booklet on request.

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STEEL SQUARE POCKET BOOK\$.50
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Venetian Blind for inside window and outdoor veranda. Any wood; any finish to match trim.

Venetian and Sliding BLINDS Screens and Screen Doors

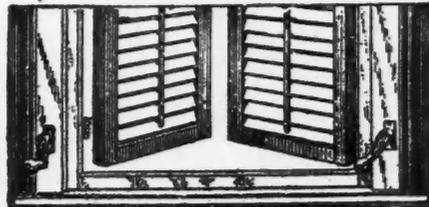
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New and improved patterns and designs.

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

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From the rude shelters of the cave man, we have evolved, through ages, the modern dwelling. We first guarded against deadly cold, then we required privacy. The modern dwelling must shelter us from heat as well as cold, and from distracting noises. Brick and stone keep out the wind and rain, and some of the heat, and some of the noise.

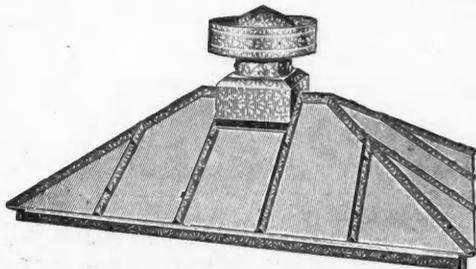
But the only material which keeps them out entirely is **LINOFELT**.

LINOFELT is a scientific non-conductor of heat, cold and sound, a blanket of flax fibres (unbleached linen threads) applied inside or outside the building.

We have in use today over half a billion square feet—we can not make it fast enough.

Every builder can learn about it from our booklet, sent on request, and he needs to learn, for he may have to put it up any day.

UNION FIBRE COMPANY,
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WINONA, MINNESOTA.



SKYLIGHTS

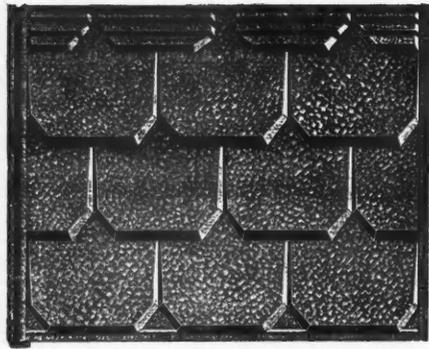
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If so, investigate the **WILLIS Ventilators and Skylights**. Our Skylights are made in seven different styles, and can be set up by any person of ordinary ability without the use of tools or solder and have a perfectly water-tight job.

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NEVER LEAK

They reduce the fire risk, and cost of insurance. Superior and cheaper than wood shingles. Any good carpenter or mechanic can lay our shingles.

Tools Required—Hammer and Shears.

THE W. J. BURTON CO.

Manufacturers of all kinds of roof trimmings.

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Write now. Price, postpaid, \$1.00 (money order).

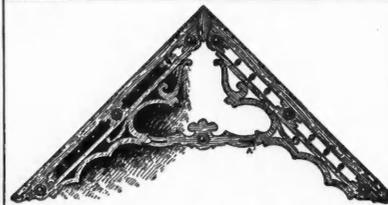
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PLATE COMPANY,**

FRICK BUILDING,

PITTSBURGH, PA.

American Carpenters and Builders

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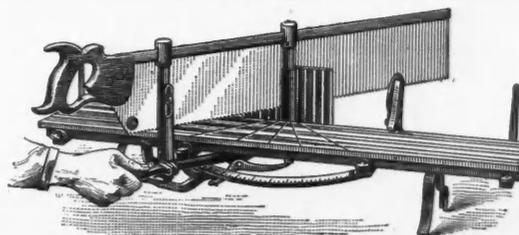
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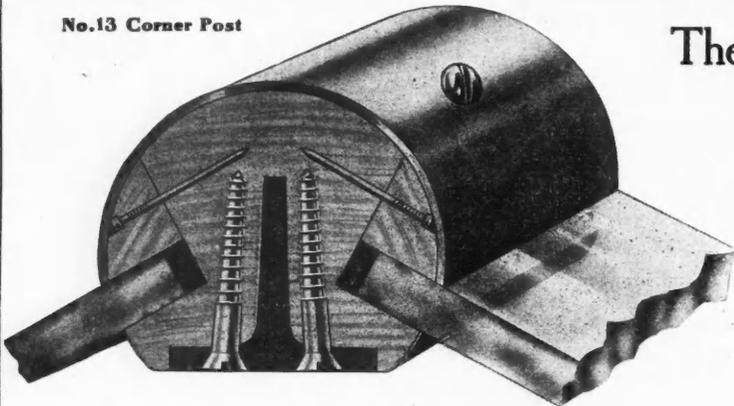


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Standard Mineral Wool makes buildings fire, sound and vermin proof. Send for circulars and samples--free

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No. 13 Corner Post



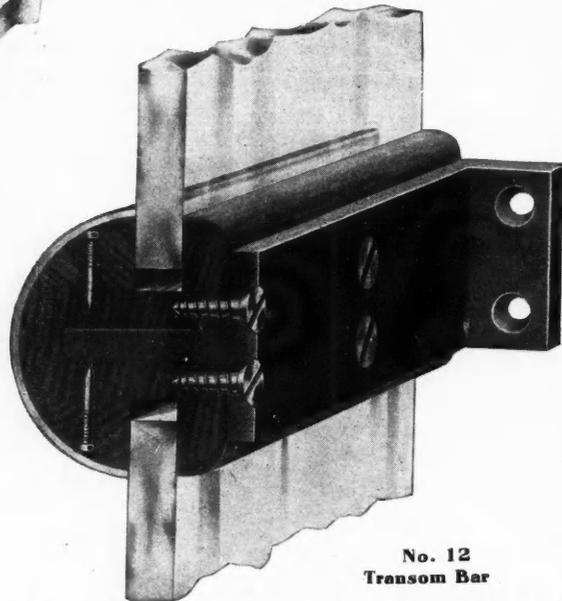
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It is recommended by Plate Glass Insurance Companies and specified by many leading Architects.

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which makes the best block in the shortest time, the greatest variety of styles as well as of sizes, a full line of veneer work as well as of regular heavy blocks, etc., then buy

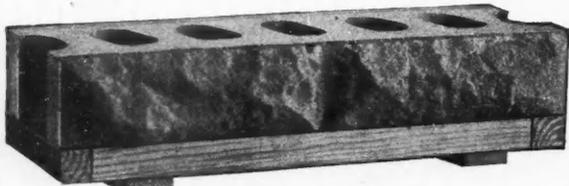
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The U. S. STANDARD MACHINE

Manufactured by
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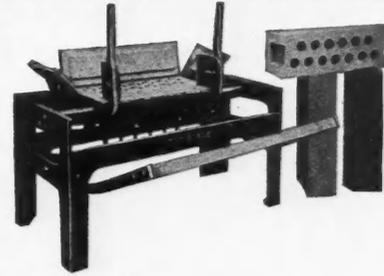
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It puts new life into old cement, and makes lumpy cement smooth and fluffy as the freshest. No mote riddling; no more waste. The mill is built on scientific principles, milled steel rolls, differential gear, large hopper and bin, with a drawer ample for 1-4 bbl. Capacity, one bbl. in 8 minutes. Price so low you cannot afford to be without it.



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THE CELEBRATED "National" Block Machine IS A WONDER

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 - DO YOU WANT the block machine that will last a life time?
 - DO YOU WANT the only block machine that, judged by its product, is the best?
- If you want all these you must have a 'NATIONAL.'

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In use in all parts of the world. Satisfaction universal. Blocks made face down and side face. Every block perfect with true sharp corners.
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Makes blocks in widths of 8, 10 and 12 inches, and in lengths up to 20 inches, and in a variety of designs. No expensive iron pallets required. A practical, rapid and economical machine. No machine at any price will give you better satisfaction.
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for porch and other ornamental work have become standard. They are in use in every one of the United States and territories, in Canada, England, Porto Rico, Cuba, Buenos Aires, and Sandwich Islands. They are giving complete satisfaction to all block makers and contractors making their own blocks.

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THE TRUTH ABOUT BLOCK MACHINES: Any block machine will, of course, make building blocks—wooden forms will do that, but the best machine will make the BEST blocks and the GREATEST PROFIT. The PETTYJOHN machines are recognized generally as the standard on the market. They are the best by test. There are more Pettyjohn machines in use than any other—there's a reason. They are the choice of the practical, hard-headed contractor who knows the best and insists on having it. We are pioneer manufacturers of concrete molding machinery and our line is the most complete on the market, embracing both side face and face down machines, ranging in price from \$35.00 to \$275.00, according to equipment. Our latest model is our Tandem Invincible, a wet process machine, face down, 40 inches long, at \$65.00, \$150.00 and \$215.00. An 8x16x8 Invincible at \$35.00—an ideal home builder's outfit. Every Pettyjohn machine is sold on trial absolutely guaranteed to give satisfaction or money refunded. Write for our interesting booklet, "Stone Making." It's free.

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Waterloo Concrete Brick & Block Mach. Co.

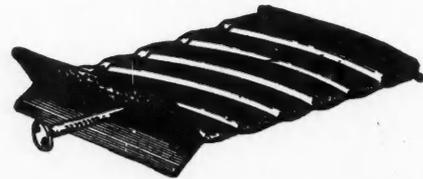


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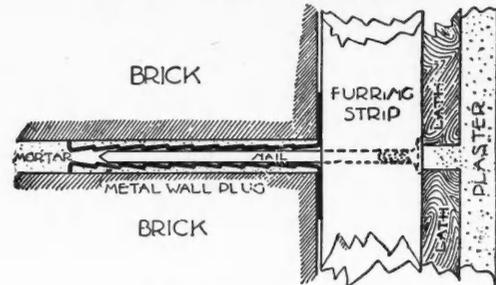
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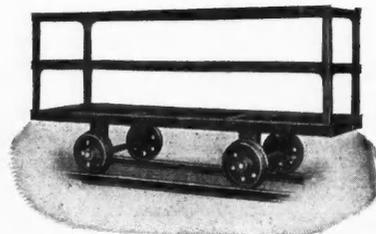
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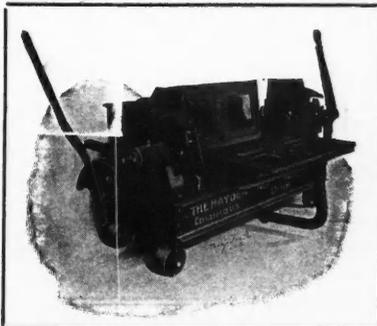
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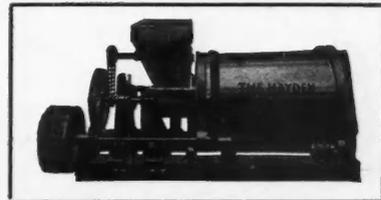
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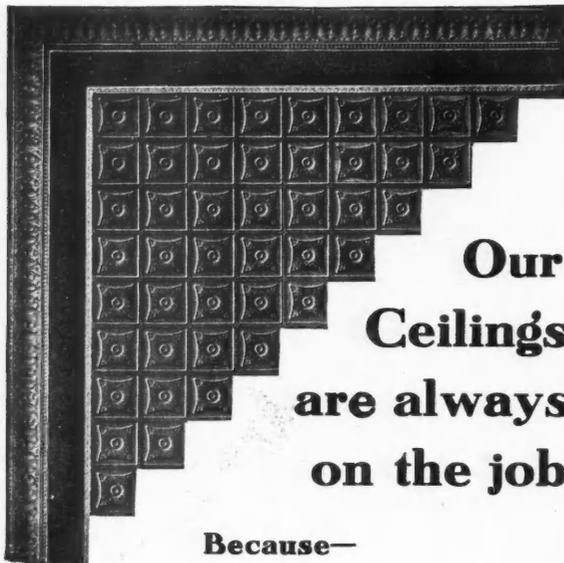
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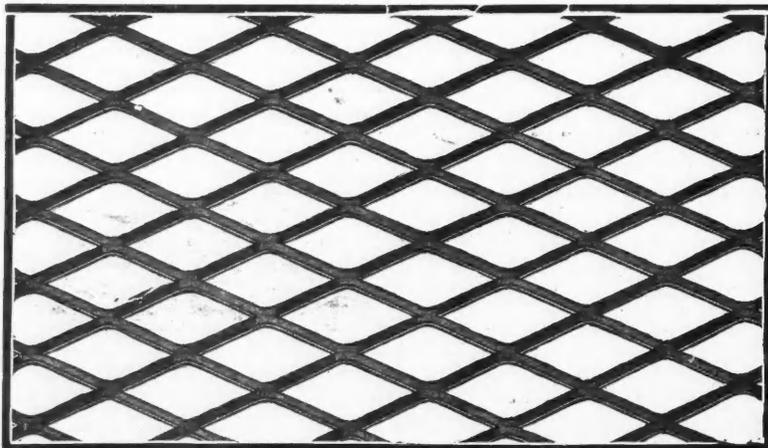


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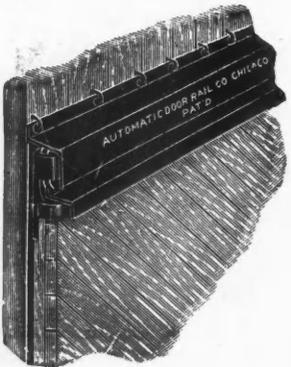
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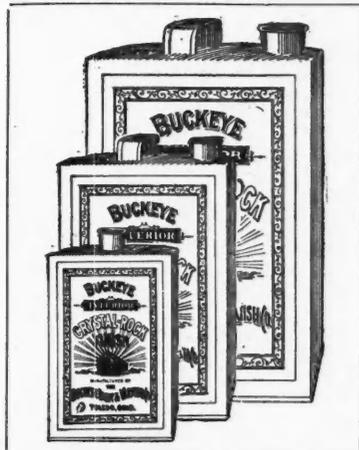
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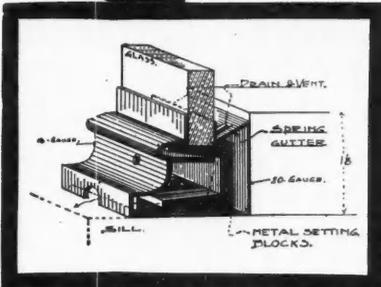
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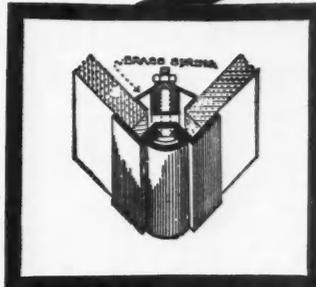
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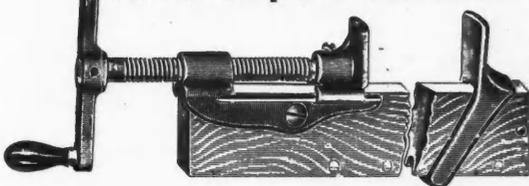
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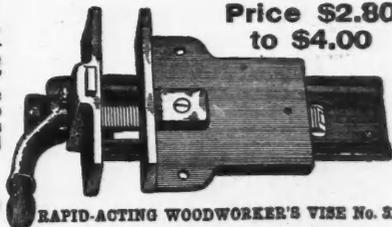
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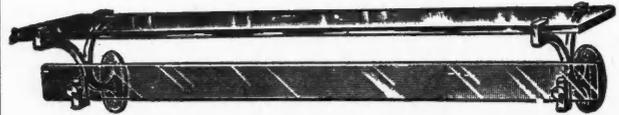
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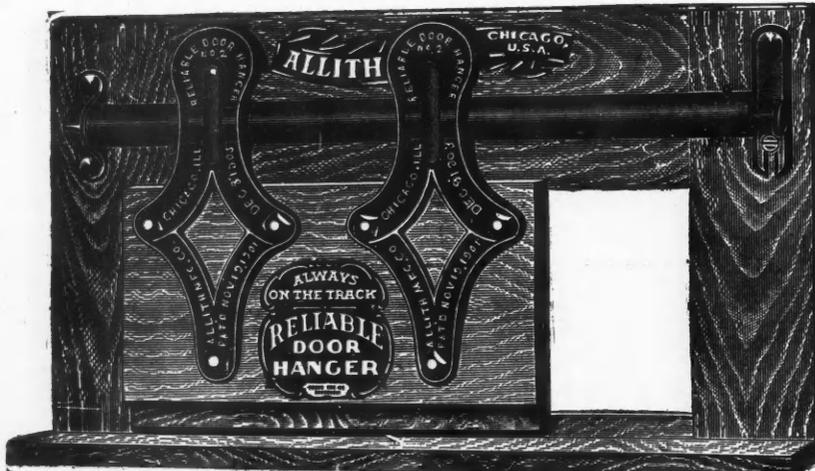
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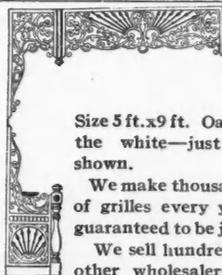


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SH1251

SH1252

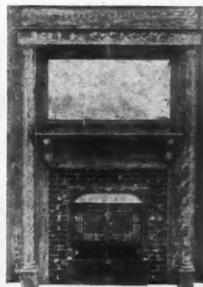


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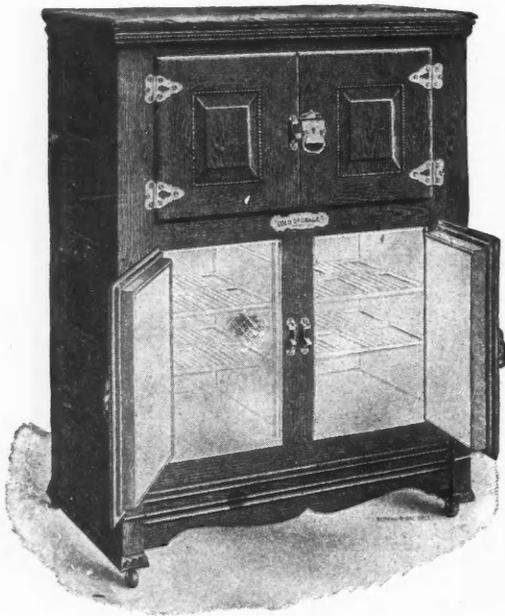
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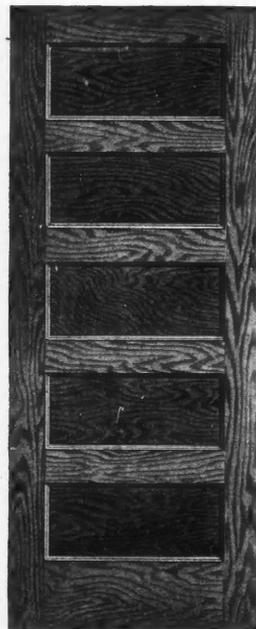
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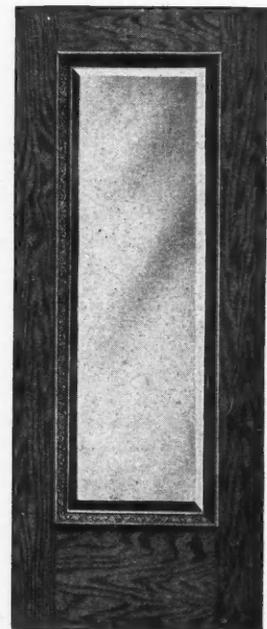
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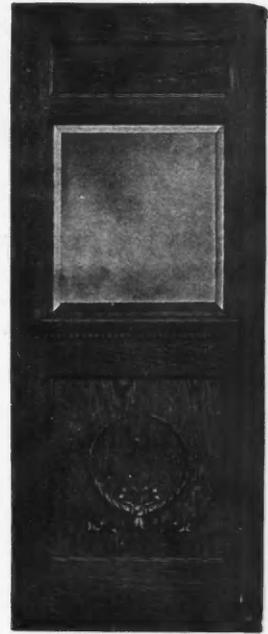
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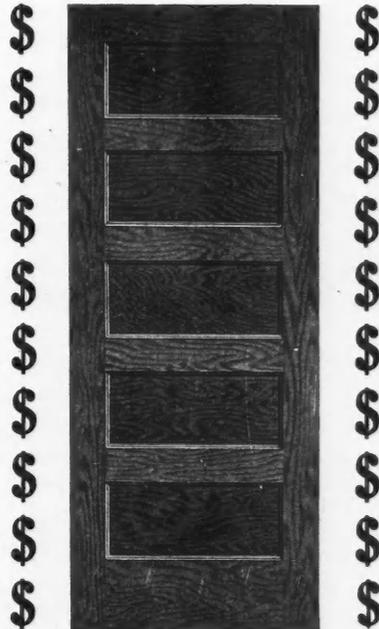
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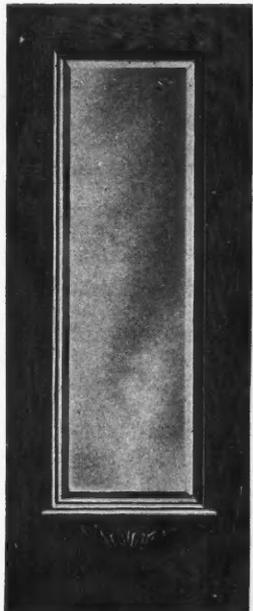
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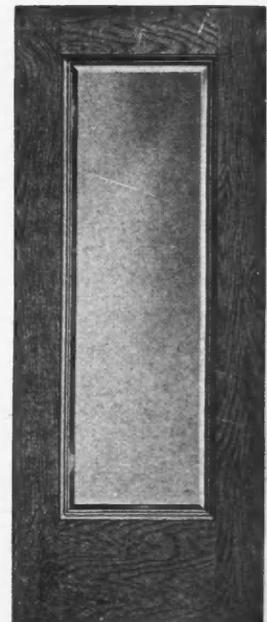
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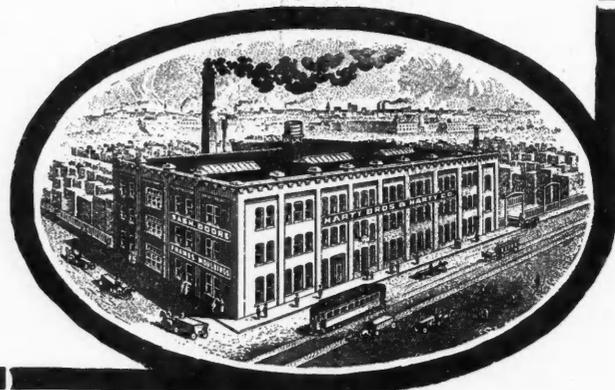
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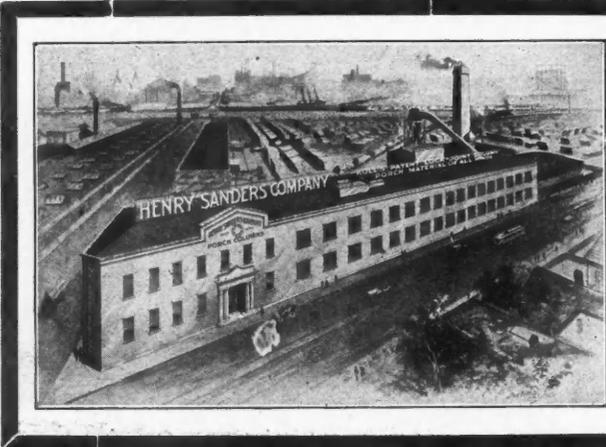
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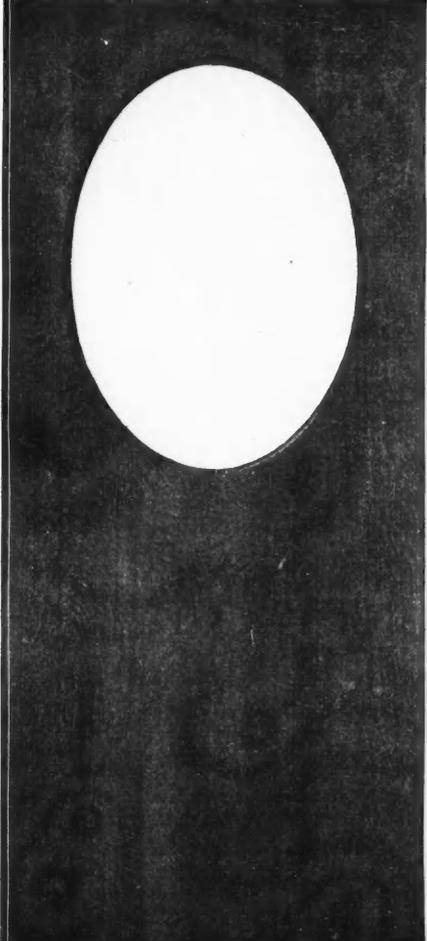


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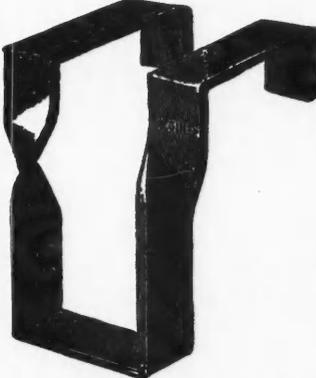
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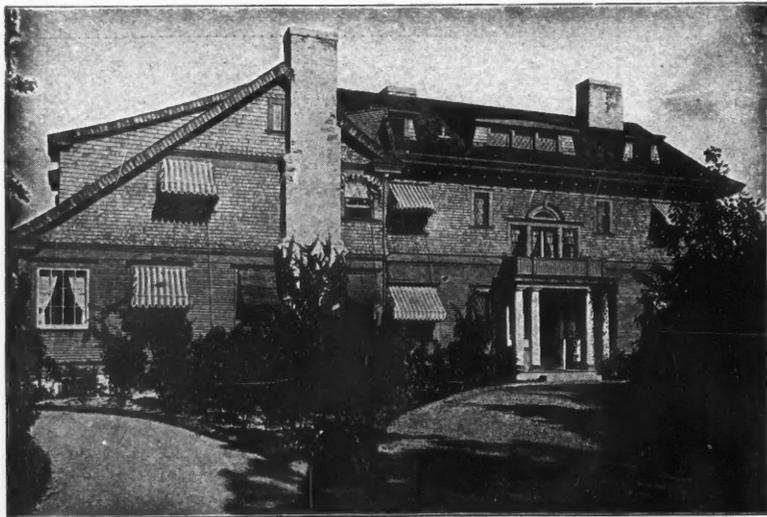
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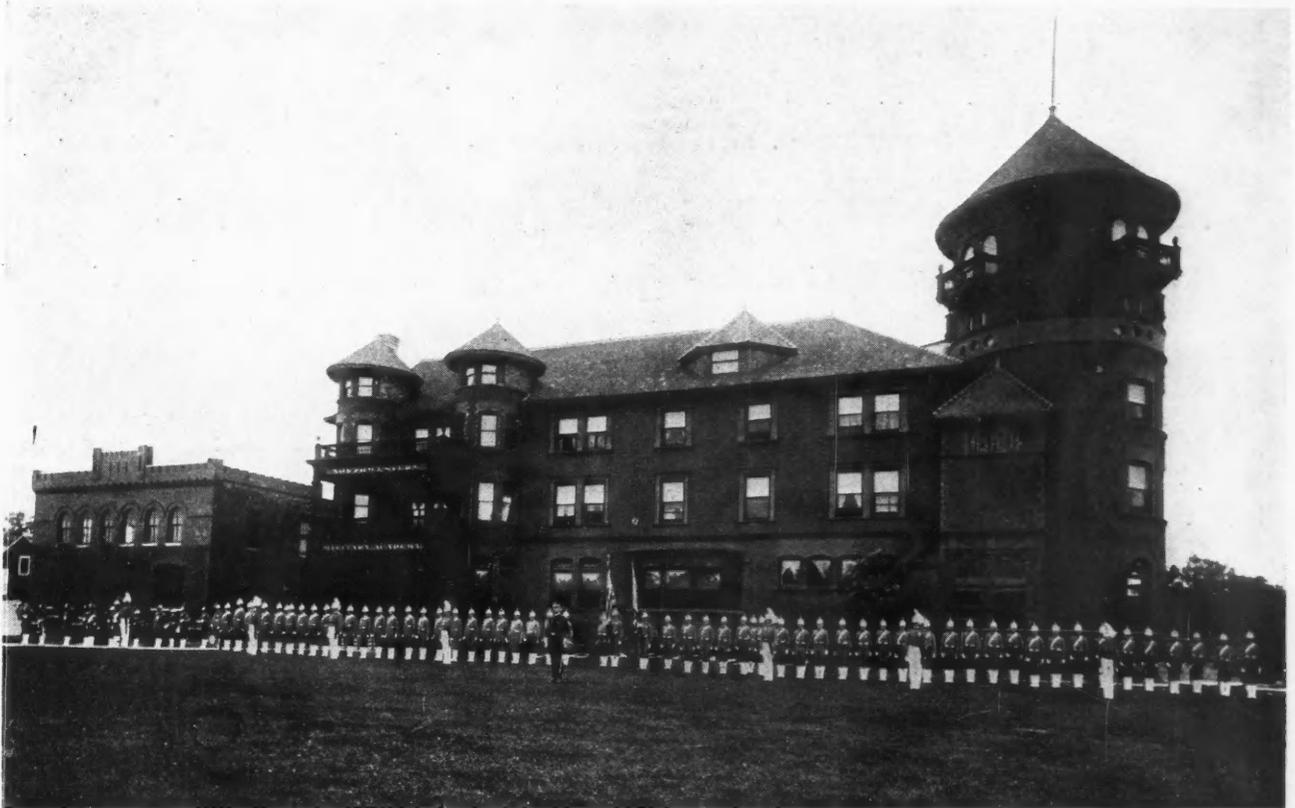
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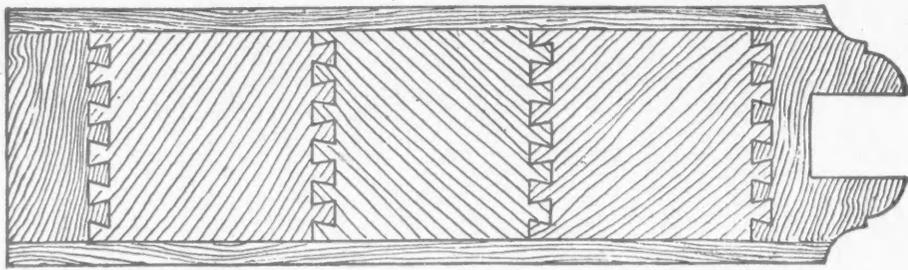
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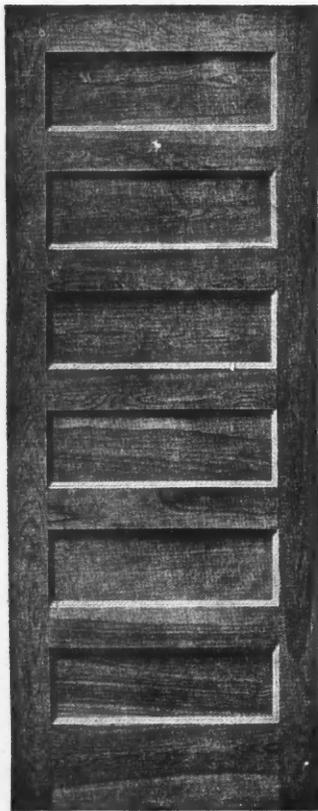


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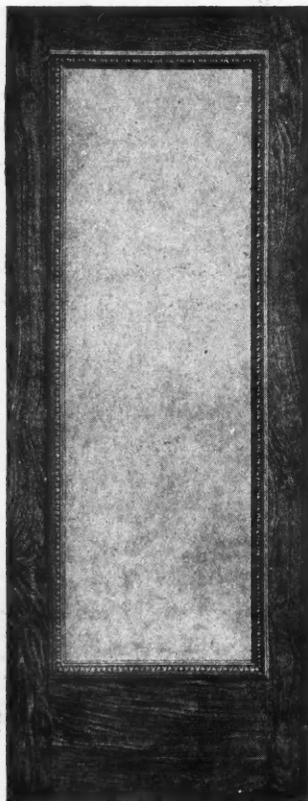
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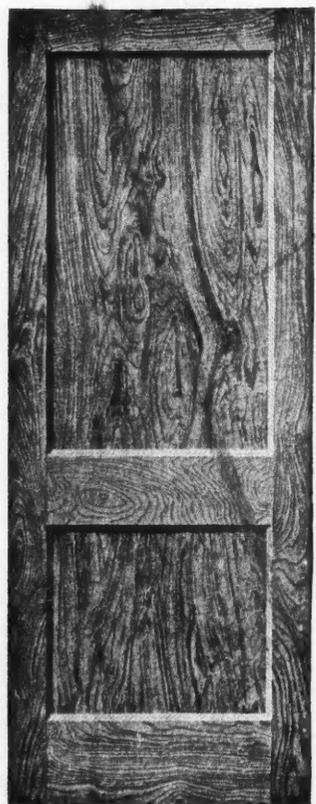


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