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AMERICAN CARPENTER AND BUILDER

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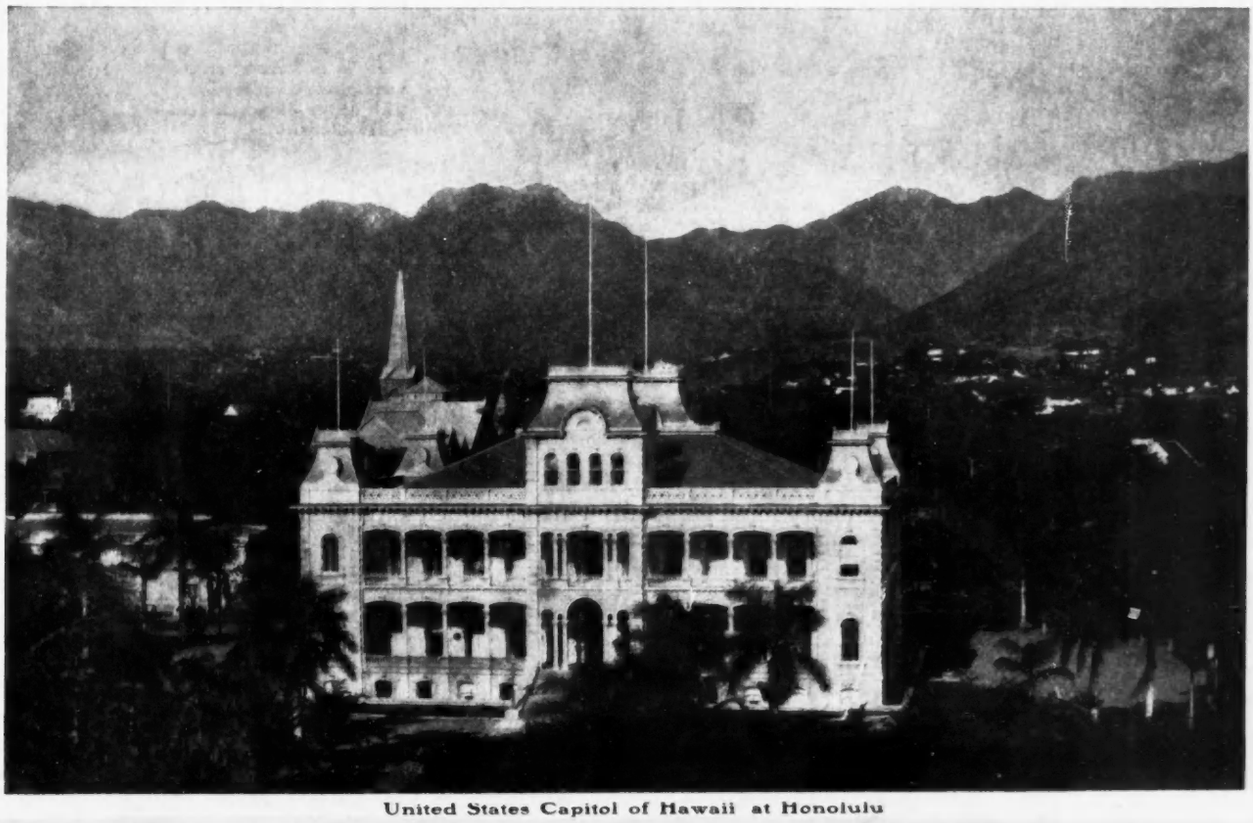
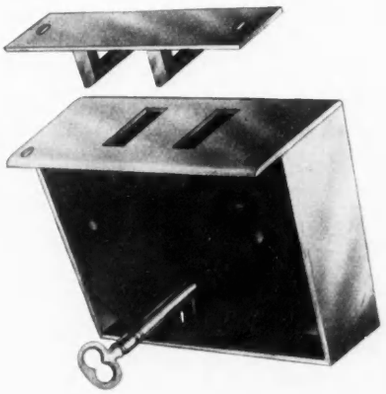


United States Capitol of Hawaii at Honolulu



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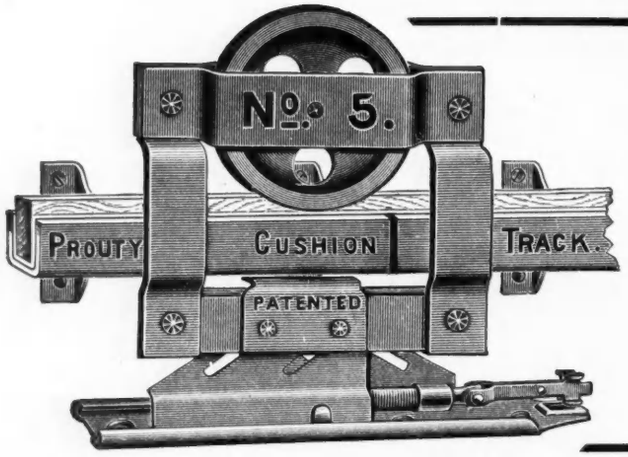

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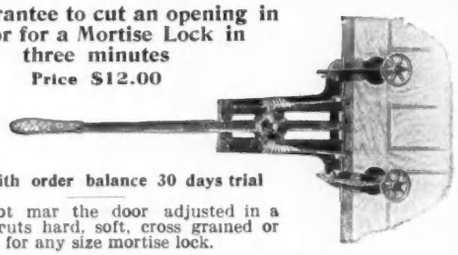

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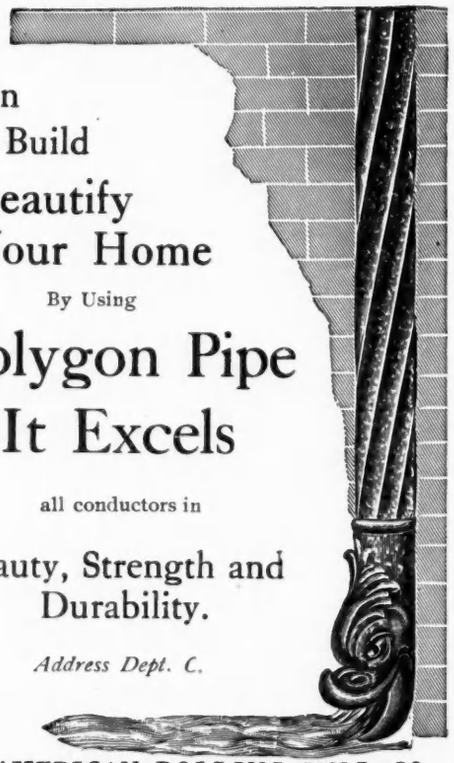

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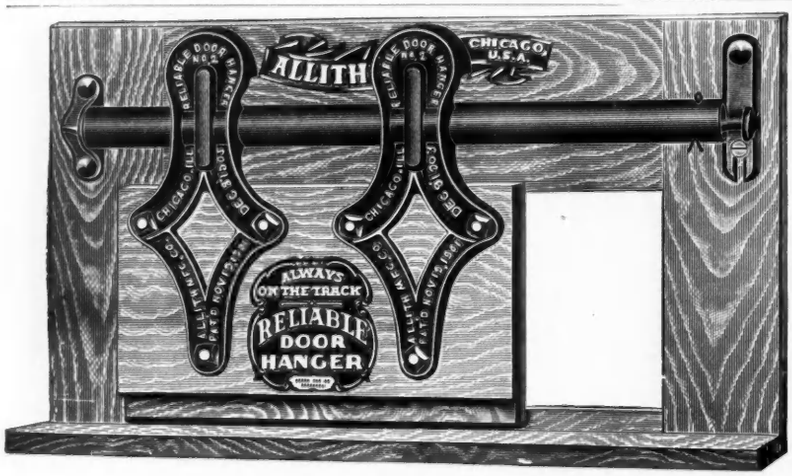

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The Largest, Best and Most Practical Trade Journal in the World for the Carpenter and Builder

American Carpenter and Builder

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

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

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EVERY man is the architect of his own fortune, but there are some bum draftsmen in the business.

✣

JUST because the tortoise beat the hare in the fable is not sufficient reason for assuming that every man that plays a little now and then will get left in the race, no matter how swift he may be, for a little play is a good thing in its place. A little relaxation now and then is but whetting the energies for renewed efforts. Of course, too much whetting is never good.

✣

WHEN a man answers your instructions with, "Yes, I know," and then does the work in an entirely different way from the one you told him, is it possible that the recording angel will make any charge for a few cuss words, if you turn them loose?

✣

Honesty in Building Matters

IN these days of rapid building it is a very easy matter for carpenters and builders to rush their work and unintentionally neglect the seemingly unimportant things, but which eventually might spoil the entire job. They seem to forget that the little things about the house often bind the entire structure together into a perfect whole, while to neglect these would result in the ruination of the building. When building it is a wise plan to remember that this is not the last house you expect to build or the last season you expect to work, but that the quality of the work you do at the present will largely govern the amount of work you will have in the future. While building your houses build a reputation at the same time, for upon the quality of your work will depend the quality of your reputation.

✣

The San Francisco Disaster

THE awful catastrophe which destroyed the city of San Francisco with its great buildings and boundless wealth has caused deep sorrow to the whole world. Shaken by an earthquake which could not be foreseen or guarded against the splendid types of the builder's craft were torn and rent apart and what did remain intact was devastated by fire which broke out in various sections of the city.

Out of the blackened ruins which are all that now remain of the beautiful city of the west a new San Francisco will arise as did Chicago, Baltimore and

Galveston. The energy and pride of the west will assert itself and prove to the world that no matter how great the calamity they will be able to rise above it. The problem for the future is what materials to use so as to guard against a similar occurrence. Will steel and iron be used exclusively in the business sections or will the structures all be limited to a certain height? The problem is a new one and will require considerable thought and study.

Uniform Design of Reinforced Concrete

REINFORCED concrete, although the most popular form of fireproof construction at the present day, is a veritable chaos as to its design.

Quoting from a recent publication: "Many systems are patented and it is a common matter for designs to be furnished free, contingent on the designer's patent being used."

This seems to be an unnecessary state of affairs. Reinforced concrete should be standardized. Structural steel construction has been standardized until all mills roll the same sections. Standards devised by the various steel companies are practically uniform. There are no patents to speak of, and all designers uniformly adopt the standard sections rolled, and specify the uniform connections.

There is no reason why reinforced concrete should not be brought to the same state of uniformity as structural steel.

It is true that there are at present a great variety of so-called "systems" which have more or less merit, but it is also true that perfect construction can be and is every day being devised, which is not using patented forms or methods.

Standard methods should be adopted in such a form that the architect, engineer or contractor is made entirely independent of the so-called patented "systems" and at the same time the standards should be arranged so that where it is shown profitable, a patented section could be substituted for the reinforcement shown upon the plans of the designer.

Until some systematic action is taken to standardize reinforced concrete, designers will be handicapped by the necessity of specifying some particular "system" or leaving the plans open to a free-for-all scrap as to who can do the work for the least money.

Individuality

THERE is such a thing as eccentric individuality, but it is not that which we intend to recommend here. Eccentric individuality is not, commercially speaking, a paying quality. Individuality, which distinguishes in contradistinction to being general or common, is the valuable kind.

Some years ago I called on a builder who constructs between fifty and seventy-five houses a year, with the object in view of interesting him in a little better line of plumbing fixtures than he had been and was using at the time, and I was confronted with the following arguments:

"What's the matter with the fixtures I am using? They are durable, guaranteed, first quality, have proven eminently satisfactory and are considerably less in cost than those to which you want me to change."

"But," said I, "they lack individuality; you are furnishing the same class of fixtures which every large operator is. You destroy a vital factor in a talking point, if nothing more."

"Oh, as to that," he remarked, "people are not paying for individuality. I could not get a cent more per house if I did change; people will not pay for it, I tell you, and I know it."

I finally persuaded him to take ten houses as an example, expend $100 (more than he had been paying) for fixtures which were better and had an individuality about them, add to it the cost of the house, plus his percentage of profit, and try it.

It would be worth $1,000 as an ad., if nothing more. He could advertise it and use it as an argument in support of his statement, that his houses were better than the common so-called real-estate houses and the goods would be there to prove it.

I afterwards had the pleasure of listening to his arguments with a prospective buyer, as to why the buyer should buy his house in preference to Mr. Blank's; it was "Individuality, Individuality, Individuality." And he had it! He sold the house and the ten.

I afterwards contracted with him for one hundred houses, and today he admits that individuality pays, and, incidentally, keeps me busy getting up new ideas for him all the time. He is also carrying the idea throughout the entire houses which he builds, and the result is that while he has at all times some ten to twenty houses under construction, he seldom has a finished house on hand for sale.

If meritorious individuality is a success in this case, why will it not be so in yours? Aim to make your efforts, in fact your entire work, distinguished from the other fellow's. Do not be satisfied with what is good enough for him is good enough for you. It isn't! It's bad enough for him, and worse for you (because he has tried it, failed at it, and cannot be told anything different).

If Edison had been satisfied with an oil lamp and had never tried to improve on it, because other people said it was good enough — and other people knew all about it — we would not have had the incandescent light, at least not as soon as we did.

Individuality always sells at a premium. It is a recognized commodity the civilized world over. Governments encourage it and protect it by letter patent. It attracts, it commands attention by being different, and the world pays tribute to it. The world owes its progression to individuality not to generalization.

Characters in Houses—Hints for Architect and Owner

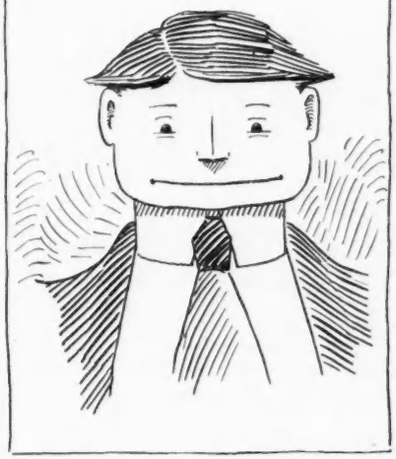


Fig. 1

A man's house should show what kind of a man he is. If the designer will study carefully the lines of his client's facial architecture he will be able to reproduce them in the house.

See Figs. 1 and 2.

Fig. 2.

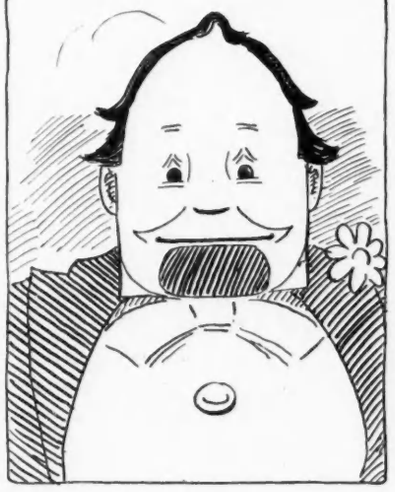


Fig. 3

Hair and whiskers can be skillfully worked into the elevation, as shown in Figs. 3 and 4.

This would be of great benefit to out of town visitors, in helping them to find your home.

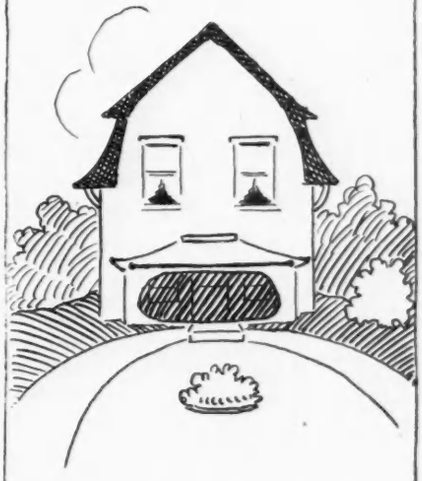


Fig. 4

Fig 5.

RALPH WILDER

Many an architect undoubtedly desires to do justice to the man who is much alarmed over the cost of lumber and extras. Some such treatment as shown in Figs. 5 and 6 is often called for.

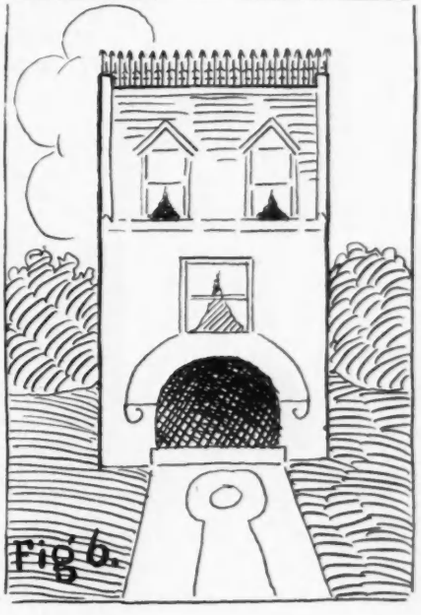


Fig 6.

A Study in Salesmanship

SALESMANSHIP AS A FACTOR IN CARPENTER WORK HAS BEEN LONG NEGLECTED AND IN NEED OF ATTENTION—HOW TO CREATE A PROPER INTEREST TO STIMULATE NEW BUSINESS

"I AM getting old," said Pete Tully, as he was calling the Clearwater Club together one evening; "getting old and tough, so that a new idea in order to penetrate my mind and make a deep impression must either have a pretty sharp point or quite a lot of force behind it, but one managed to find its way in there somehow, and it's made impression enough that I want to talk about it. The idea was suggested by Uncle Rural's statement that what most of us carpenters and builders need to study is the art of salesmanship and create or enlarge the demand for our work instead of fighting among each other for what work comes our way without any effort on our own part so far as creating a desire for the work is concerned.

"The impression this idea has made on my mind is this: We carpenters in our efforts to get each fellow his share of what work is going on and capture the building projects that are offered, remind me of a lot of small boys in a scramble for the best share of a limited supply of berries growing wild along the roadside and in the waste places, and the moral to it is that just as these boys could by less effort cultivate and grow plenty of berries for all, so might we builders by a proper attention to cultivating a desire for building on the part of the public create plenty of work for all with less trouble and worry and better feeling all the way around.

"This metaphor of mine may not be as clear nor fit as well as some of Uncle Rural's, but there is one thing that is clear in my mind now and that is that a man does not ordinarily build a new house, barn or any other building, large or small, to take care of immediate necessity as the cause, so much as he does from mere choice or to gratify his present inclination."

"Whoa! Hold up a minute, Pete!" said Mosby. "Do you mean to tell us that it is not necessary for a man to build a house for himself and his family, or a barn to shelter his stock? Surely you are not going to class them as luxuries? If you do you'll miss it a long way on some of them."

"No, I did not mean to class them as luxuries, though most any kind of a shack would be regarded as a luxury by an Indian with nothing but a home made tent for shelter; but you are on the wrong track or haven't gotten headed in the right direction. Without entering into any discussion of what constitutes a necessity as compared to a luxury, the point I want to make is this: That the average man and his family is ordinarily already housed in some kind of a habitation. When in the course of events and the development of enlarged ideas and desires suggest the thought of a new and more pretentious home or a larger or better barn, or any other building about the place, it is this desire and nothing in the form of absolute necessity that leads to the planning and erection of buildings, and at times there may be some counter influences that will shelve this desire for the time being. A man may plan to build a house, not this year, but next year. Maybe next year something else comes up, lumber is too high, or he is too busy to give it attention, so he puts it off another year. Puts it off from time to time, in fact, sufficiently to demonstrate that it is not so much a matter of immediate necessity but choice and inclination that is responsible for building operations. Sometimes, of course, a man's home is destroyed by fire, but it is not an exception of this kind we are talking about, so much as the general progress of things under ordinary conditions."

"Well," Mosby replied, "just what do you gather out of that? What is there about all of it that inspires you to think salesmanship is an important factor in connection with building operations, and has not only been long neglected but is in serious need of attention?"

"What I make out of it is, it is up to us to propagate the desire for new houses and new work of various kinds that means increased business for us. The way I make salesmanship out of it is that anything which creates a desire for goods that leads to their purchase belongs properly to the calling known as salesmanship. Do you suppose, for example, if we did not have local stores to display goods that the community would buy as much as it does? If the community had to originate its own desires, then go away to some distant market place to obtain what they desire they would not only go without lots of things they have now, but their desire for things would gradually become limited until they would narrow down to almost bare necessities and the people themselves would be the first to kick against such a condition of things. That sort of a condition, however, is just what we have allowed to exist right along in the building world. We leave the people alone to develop their own desires and then when they make these desires known we come into the game and offer what we have for sale. When we look at it this way it should not be difficult to see how we might enlarge the demand for our own work by shaping our surplus efforts along the line of creating a desire for new things in the building line just as any merchant creates a desire for his goods; not only create a desire but keep it alive and interested to such an extent that there won't be so much putting off until to-morrow what might be done to-day in the way of building. The only thing that is troubling my mind is just how

to go about it. I have an idea what we ought to do all right, but don't know how to do it, and I came here hoping that maybe some of you could give us some light on the subject."

"I have been studying the same thing," said J. B., "but I don't know whether I can throw any light on it or not. Sometimes I think what we need is a sort of advertising manager. I don't know just what part of salesmanship most of the world regards advertising, but as a desire promoter, as an agent for making people want things, there is nothing to equal advertising when it is well done. I believe it would be a good plan for all of us to carry cards regularly in our local paper, and then every new house or new piece of work worthy of notice that is done to encourage and assist the local paper in making a notice of it, giving enough details to make it interesting and of more moment than just an ordinary news item saying that John Jones has built a new barn."

"Well," said Mosby, "I believe in publicity myself; I think we are all too modest and too much inclined to hide our lights under a bushel. Still, I doubt whether or not the ordinary business card which many a carpenter does carry in his local paper really creates much interest or brings sufficient returns to justify the investment. I rather like your idea, J. B., in regard to the need of an advertising manager. I think what we need is lessons in advertising so that we may do it in a live, wideawake manner and arouse interest instead of just serving to fill in a quiet nook in the local paper at which nobody takes the trouble to look. I think we ought to have some real live reading matter, something that will excite and hold interest, and at times I feel like trying the experiment of drawing a lot of model house plans, together with a description and figures as to cost, but if some of you can suggest a better plan of attracting attention and cultivating a desire to build on the part of the public, I want to hear about it and I am ready to give up my ideas for better ones any time."

"I guess," said J. B., "we are all in the same boat in this matter; we feel that something ought to be done to attract and hold attention, something different, something new and something inspiring. But just what to do is a hard nut to crack, and so I guess we'll have to pass it up to Uncle Rural and see what he has to say about it."

"Well, boys," Uncle Rural replied. "You've got me in a corner this time where it takes more than one man to dig the way out. Still I think I can add one little portion of alum to clarify your ideas on advertising, and that portion was suggested by Tully speaking of the berries that grow wild and the berries that might be had by proper cultivation. Cultivation is a good theme to study right now, for it is spring time and we can get object lessons all around us, and one of those object lessons is that it is not ourselves, our own personality, that should be in the lime light of attention, but it is the other fellow, the fellow that is going to build, or ought to be inspired to build, who is the important subject to consider. Go watch the farmer when he plants corn. It is not the farmer nor his clothes that form the main object of attention, but the little grains of corn he is going to plant, and the preparation and cultivation of the ground before and after planting that must have practically undivided attention if the farmer hopes to reap anything like a full harvest. The farmer may in time have cause to take a certain pride in his work, but in order to have work to be proud of he must in the work of planting and cultivating practically obscure himself and think and plan almost entirely for the benefit of the growing crop."

"Well," said Tully, "isn't that just what we have been talking about?"

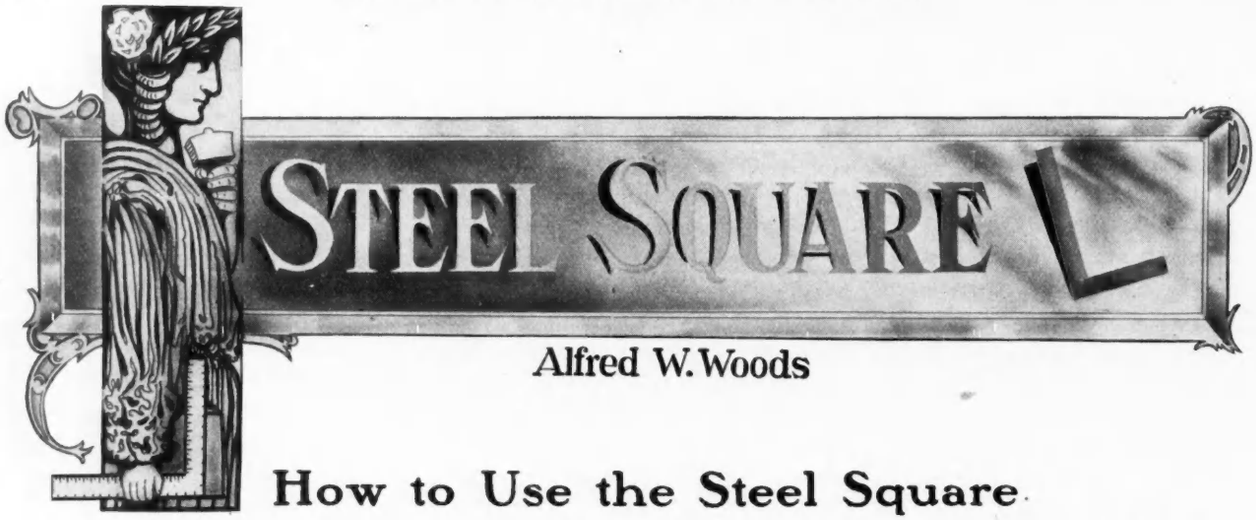
"Yes, in a way, but in not just the right way. You have been talking about attracting attention and holding attention, but to what? To yourself or to your work? Now don't misunderstand me on this point. I am not going to take issue against the idea of blowing your own horn. But when you blow that horn it should be to call people's attention, not to yourself, so much as to something that will attract and interest them. When Aunt Cynthia comes out and blows the horn for dinner it is not Aunt Cynthia we are coming in the house to see, and think of first when we hear that horn, but it is the dinner we are going to get and the good it is going to do us that makes us enjoy hearing it. Now instead of attracting attention to ourselves in this horn blowing you speak of through the local papers, what we want to do, the main object of Pete's idea as originally outlined, is to arouse the building desire of the public, and the best way to do that is not by attracting attention to what we can do individually, but by cultivating the spirit of improvement among the people, and while the articles we might have in the papers would logically at times include house plans, they should be rather more directed toward inspiring people to build by showing them how they can get pleasure and benefit out of it. In other words, it's not ourselves we want to push primarily—that is, not our own personalities—but the building movement generally, and if we can devise a way to do that we will get our reward in due time, just as Aunt Cynthia when she blows the horn for dinner, while she is really calling attention to dinner, gets due credit in time without asking for it for being the originator of a good dinner."

"Well," said Mosby as the meeting adjourned, "Uncle Rural's alum clears the water a little, but it is still a little muddy, and I can't exactly see through it."

"O, well," said J. B., "let us try the filtration process on it a while and may be after we let it sift through our minds for a few weeks we can see more clearly how to go about promoting the building spirit in the public mind."

✤

We learn from mistakes—or ought to.



Alfred W. Woods

How to Use the Steel Square

PROPORTIONAL SCALES TAKEN ON THE STEEL SQUARE FOR CUTS AND BEVELS—WHAT DETERMINES THEM AND HOW THEY MAY BE FOUND IN CONNECTION WITH THE FULL SCALE

IN OUR last article we dwelt more especially on the subject of steep or unusual pitches and how to obtain the cuts and bevels by a proportional scale in connection with the common steel square. In this article we will go further into the subject of scales, giving more in detail how a change of figures may be readily determined and yet be in proportion

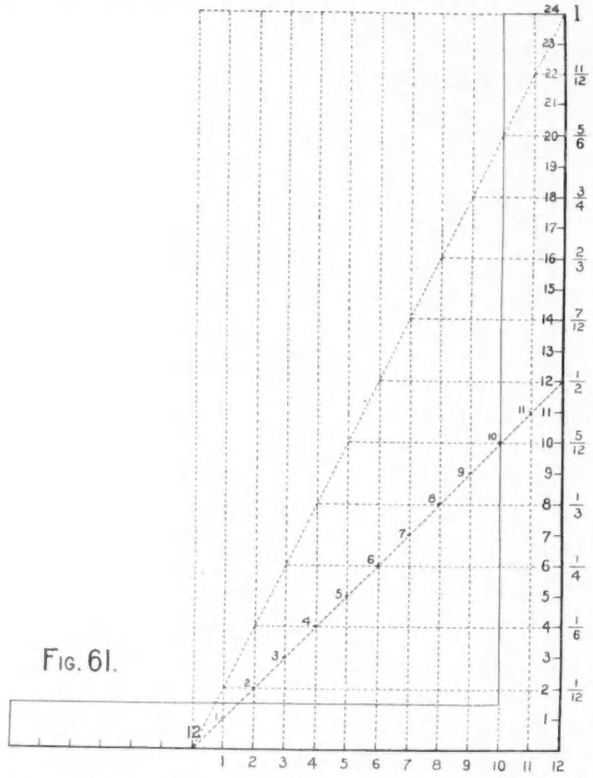


FIG. 61.

to the full scale for a one-foot run, which is at 12 on the tongue and represents one or the full pitch. We find builders differ as to what constitutes a full pitch, and this is not to be wondered at, because writers on the subject differ. There are a number of books on the market, one of which has reached considerable sale, a copy of which is now before us, illustrating the pitch lines on the square similar to that shown in Fig. 59 of the last number of this magazine, but designating each line as a whole, as 1, 2, 3, etc., pitch up to 24th pitch. Yet the universal theory of 12 and 12 taken on the square gives the seat and plumb cuts for the ½ pitch is the accepted practice and must prevail. What is true in this case must naturally follow when other figures are taken on the blade. Comparing it with the above method, twelve whole things would only be one-half of a thing. Six whole things are one-fourth of a thing, etc. In saying this we do not mean to be understood that we are trying to introduce some new fangled theory about pitches; far from it. We

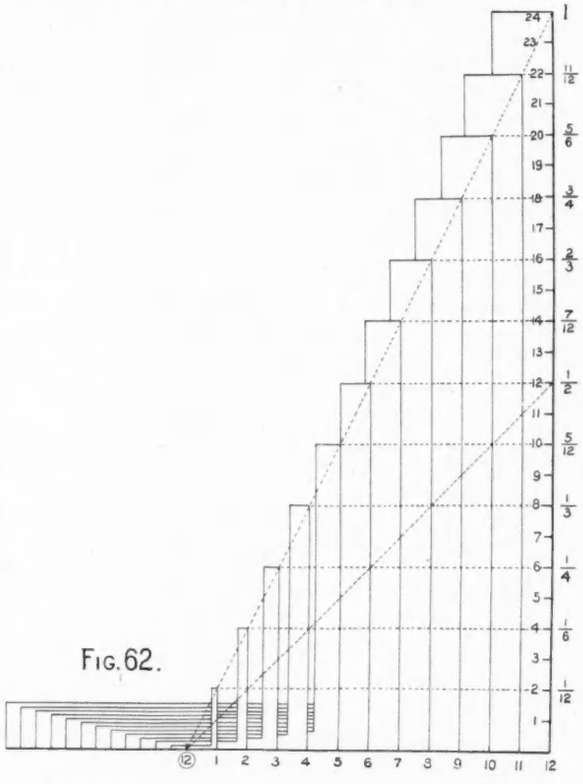


FIG. 62.

take it as is usual in the accepted practice and analyze it. In other words, if there is such a thing as ¼, 1-3, ½, ¾ pitch, etc., then there must be a full pitch.

This is arrived at by reckoning the rise given the common rafter in proportion to the span or width of the gable. It is therefore a full or a whole pitch when the rise equals the span. Taking it on the square;—the run being 12 inches, the span must necessarily be 24 inches and since the blade is 24 inches long, then the figures on that member are to the pitch as to its own (blade) length, and that is all there is to it. Then a line drawn from 12 on the tongue to each of the inch divisions on the blade will represent as many fractional pitches. These lines diverge from one another taken on the vertical line at the rate of 1-12 of

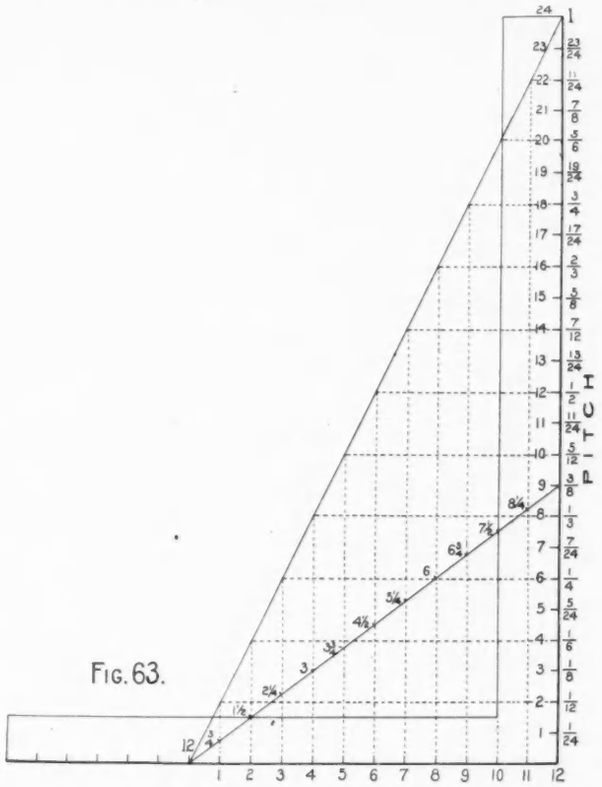


FIG. 63.

an inch to each inch in run. So at the twelfth-inch back from the starting point, the lines are 12-12 or one inch apart and intersects the blade at the inch divisions and represents the full scale for a one-foot run for all of the pitch lines. Now let us look at the figures on the blade of the square, as shown in Fig. 61, and see what relation they bear to those on the tongue. These figures as before explained represent the rise given the common rafter to a one-foot run. The fractional numbers to the right of the blade represent the proportion of the pitch. Now follow the horizontal dotted lines from these figures over to the full or one pitch, thence down to the desired pitch and the figures at this point and those in the run taken on the square will be to the same proportion as those for the full scale, but at different points on the square. For illustration see the ½ pitch.

In Fig. 62 is shown a similar drawing, but in this the squares are reduced in size ranging from 1-12 up to the full size square. The fractional figures that denote the pitch, also denote the size of the squares in proportion to the full size square and these, if divided into as many parts as the full size square would give just the same results as far as the cuts and bevels are concerned as will be seen by taking the ½ pitch, the line passes at the half-way point on the blade of all of the squares and consequently would give like results. However, squares are not made other than with the standard measurements. This illustration is given simply to illustrate proportional scales and that the size of the square would make no difference in the results so long as the divisions are to the ratio of the standard scale of measurements.

But we are not through talking about Fig. 61. In this illustration the vertical dotted lines from each inch in run represents the blade and the figures where the ½ pitch line crosses these lines and that denoting the run will give the seat and plumb cuts for the common rafter, as 1 and 1, 2 and 2, 3 and 3, etc. Now let us apply this to some other pitch. For an example we will take ⅜ pitch, as shown in Fig. 63. Remember the full pitch regulates the scale in proportion to the full scale for any rise under 24 inches. The full scale for the ⅜ pitch is 12 and 9. Why? Because 9 is ⅜ of 24.

To find the ¼ scale for the above pitch, take 6 on the blade and follow the horizontal line to the left till it intersects the one pitch, thence vertically down to the ⅜ pitch, and it will be found that this inersection is at 2¼ inches above 3 on the run, and it will be seen that these figures are ¼ that of 9 and 12.

For the 5-12 scale, proceed in like manner, starting from 10 on the blade. The intersection on the pitch line will be 3¾ inches above 5 on the run. Thus every inch of the blade's length represents a distinct scale, and these are subject to many more scales. If the blade of the square be divided in twelfth inches each division will represent a scale, making in all 12 multiplied by 24 equals 288 different scales; but these divisions run into intricate fractions for the rise, and only one-half of the runs will end in twelfths of an inch. The other half will end in twenty-fourths, but all of these scales will be in the same ratio as that given for the full scale, and consequently give the same result as far as the angles are concerned. However, it is better to use the full scale when same can be done, as it is handier and insures more accuracy in the work.

✤

Best He Ever Read

Your paper is the best I have ever read.—J. H. Lippincott, Garwin, Iowa.

✤

Magazine Deserves Success

Your magazine certainly deserves success.—F. A. Koehler, Peru, Ill.

✤

Some draftsmen would accomplish a good deal more if they didn't spend so much time in sharpening their pencils.

J.A.F.Cardiff.

Building a Home

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

CONTINUING the consideration of window construction, we illustrate in Plate XXVII, a double hung sash window in an eighteen-inch brick wall.

Fig. 119 is a section through the window head. The opening is spanned on the outside with an arch of stone and on the inside a timber lintel is provided, and a row-lock relieving arch turned on top of same. Relieving arches are usually constructed with one row-lock to each eighteen inches or fraction thereof in the width of the brick opening. The timber lintel is constructed with two or three centers of two-inch stuff, cut to the required curvature. On top of these centers are nailed narrow wood strips called lags.

Fig. 120 is a section through the window jamb. The calking shown in this and other sections is to keep out penetrating winds. This calking is commonly done by filling around all openings, as shown, with scratch mortar, but in the highest grade work is done by hand-calking all the spaces around frame with oakum.

It will be noticed that furring and lathing of inside of walls is omitted, and the plaster applied directly to brickwork. When this is done, the wall should be thoroughly coated with a waterproof paint so as to make it absolutely impervious to moisture and dampness, which would discolor the finished plaster work. There are several of these paints now on the market, and, when properly applied, make a wall absolutely damp resisting. Before the paint is applied, the mortar joints should be raked out enough to give a clinch for the plaster, as shown in Fig. 121.

This section is taken through the window sill, and its principal feature is the joint of the wood and stone sills. This joint is made water-tight by means of a galvanized iron bar or tongue which is let into a slot on the underside of the wood sill and lead-calked into a corresponding reglet in the stone sill. The stone sill is cut with wash and lugs on top, and with a water drip on the lower edge.

The sash are shown one and three-quarters inches thick and glazed with plate glass, bedded in putty and held in place with wood beads.

Metal lath is nailed to the timber lintel to afford a clinch for plaster. This lath will also be required over any recesses or pipe chases in masonry walls.

Plate XXVIII illustrates another method of constructing a double hung window frame in a masonry wall. The opening is spanned on the outside by a moulded stone lintel and the inner eight inches of the wall is carried on an iron lintel (Fig. 122). An iron lintel is usually provided when it is not convenient to turn a row-lock relieving arch over a timber lintel, as in the case of floor beams bearing over opening, so close to window head as to make it impossible to turn an arch underneath them. They are also used over wide openings in preference to arches.

Fig. 123 is a section through the jamb of window. Stone quoins of various widths and heighths are provided for masonry jambs.

Fig. 124 is a sill section and shows a moulded drip on bottom rail of sash.

Figs. 125-127 are exterior elevations.

Durability of Concrete and Stone

In a paper entitled "Structural Steel Dams," read by Mr. F. H. Bainbridge before the recent Chicago meeting of the Western Society of Engineers, the writer attacks what he describes as a popular but erroneous impression concerning the durability of stone, and incidentally pays the following tribute to concrete:

"It is usually assumed by the uninformed," says Mr. Bainbridge, "that stone structures subject to the action of air, water and frost will last indefinitely. As a matter of fact only a small percentage of the stone which is accessible is at all fit for use in structures, and even in the best quarries, the inferior stone which must be wasted or used for riprap, often amounts to 50 per cent or more of the stone quarried. In a dam, especially in cold climates, stone is subjected to the most trving conditions and untried local stone should be used only with the greatest caution. So far as our present experience goes, Portland cement concrete dams appears to be a safer material, but it must be remembered that concrete setting in air contracts in volume and in large masses cracks are almost certain to appear. For this reason concrete for large dams must first be cast in blocks and set in mortar joints after being dried out."

Don't be afraid of a strict boss. You'll never learn anything from an easy one.

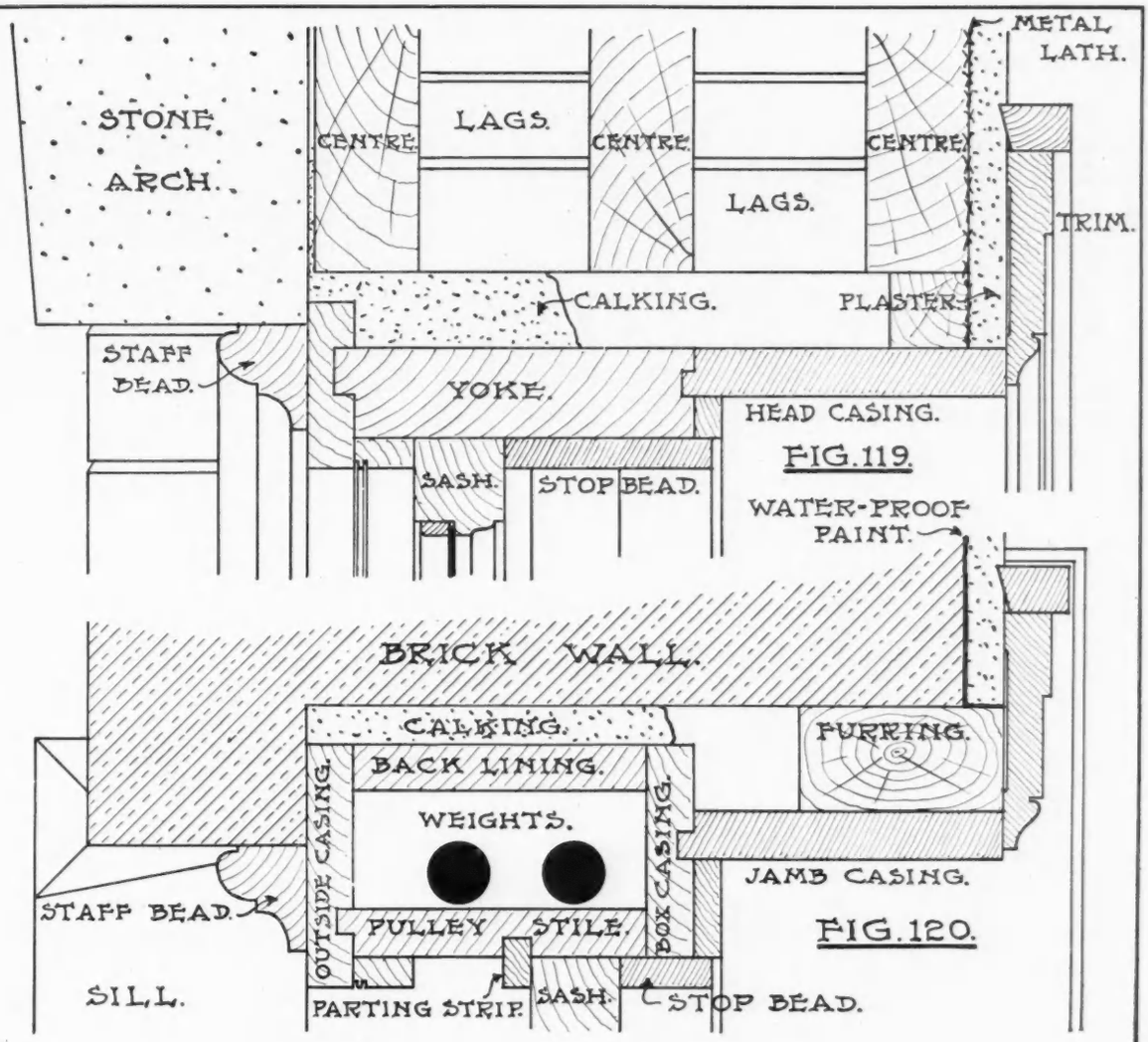


PLATE XXVII.

WINDOWS.

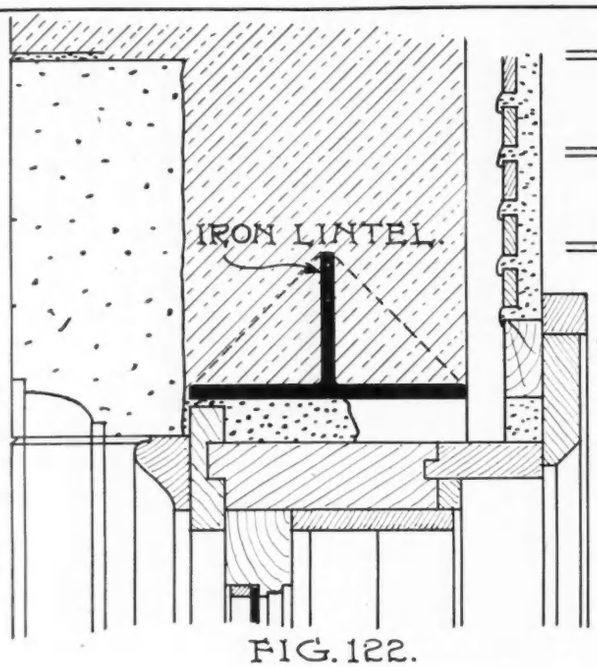


FIG. 122.

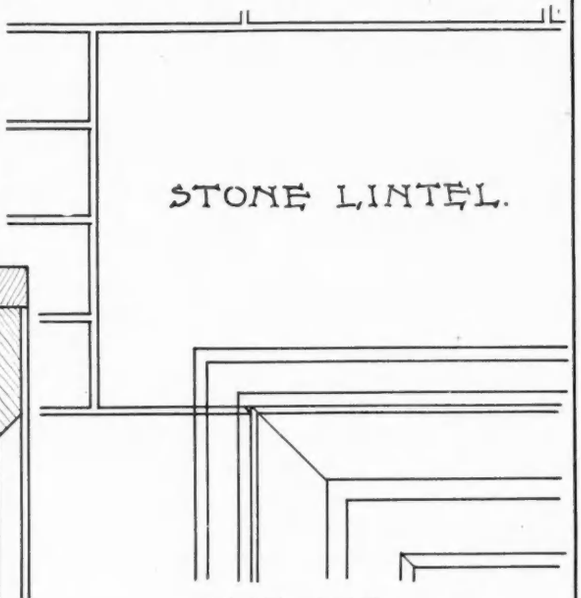


FIG. 125.

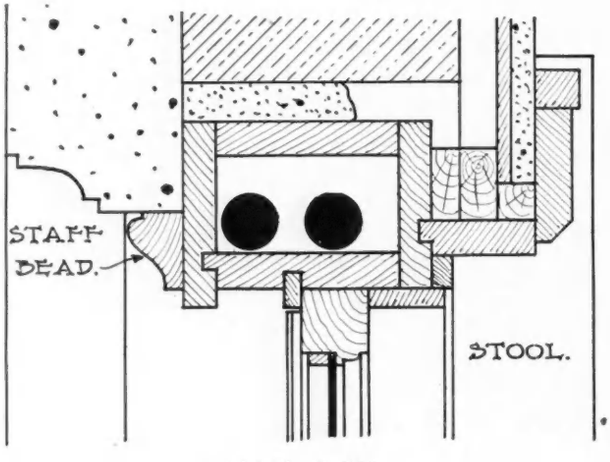


FIG. 123.

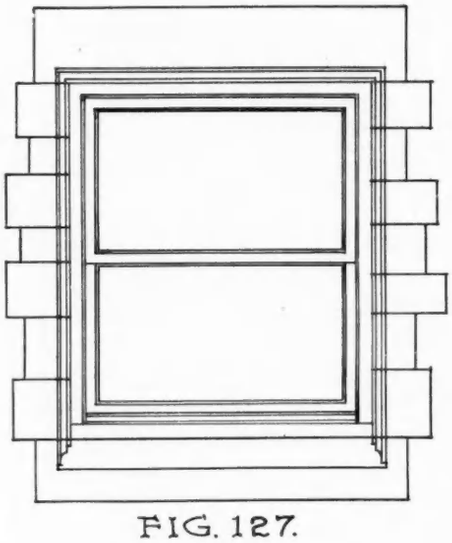


FIG. 127.

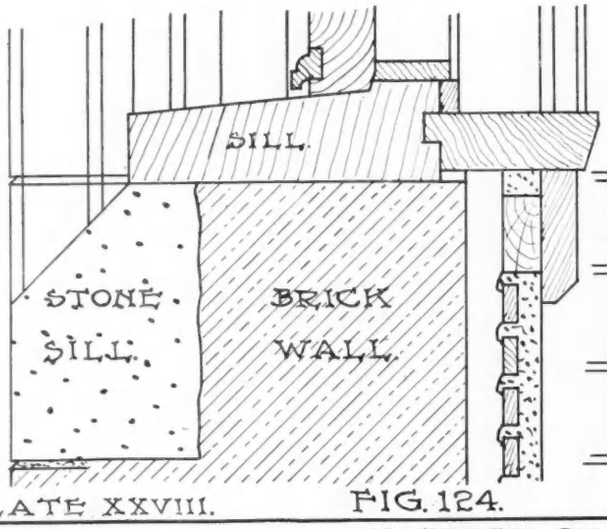


FIG. 124.

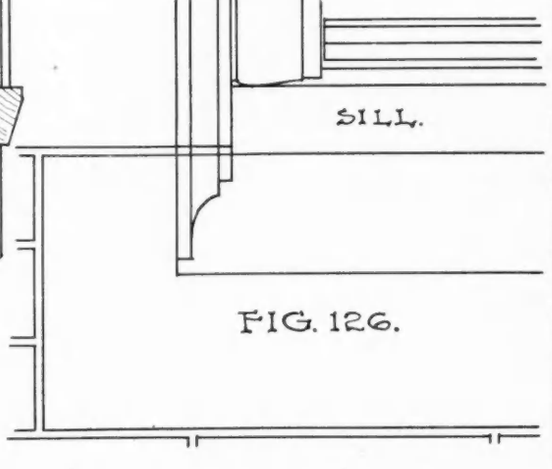


FIG. 126.

PLATE XXVIII.

WINDOWS.

FOUNDATIONS AND BRICK LAYING

Owen B. Maginnis

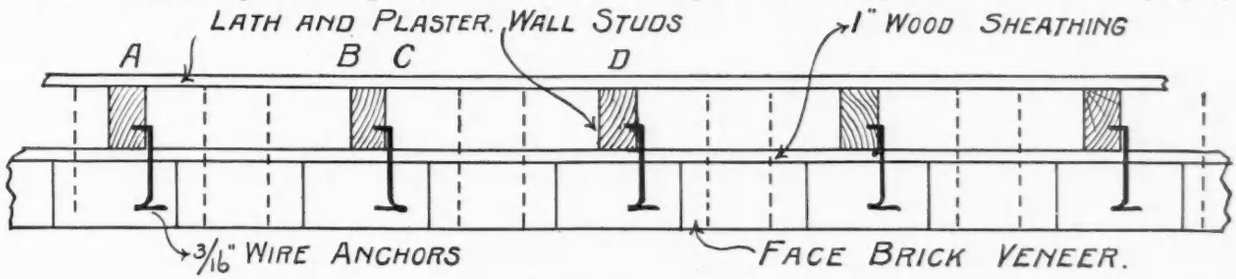
Brick Veneered Buildings

SHOWING HOW TO VENEER THE TIMBER WORK—HOW TO FASTEN THE BRICK TO THE BUILDING—METHOD TO USE IN VENEERING A CONCRETE HOUSE

THE following question was referred to us, and as it is one of general interest to our readers, we thought it best to give a complete and detailed answer to the question.

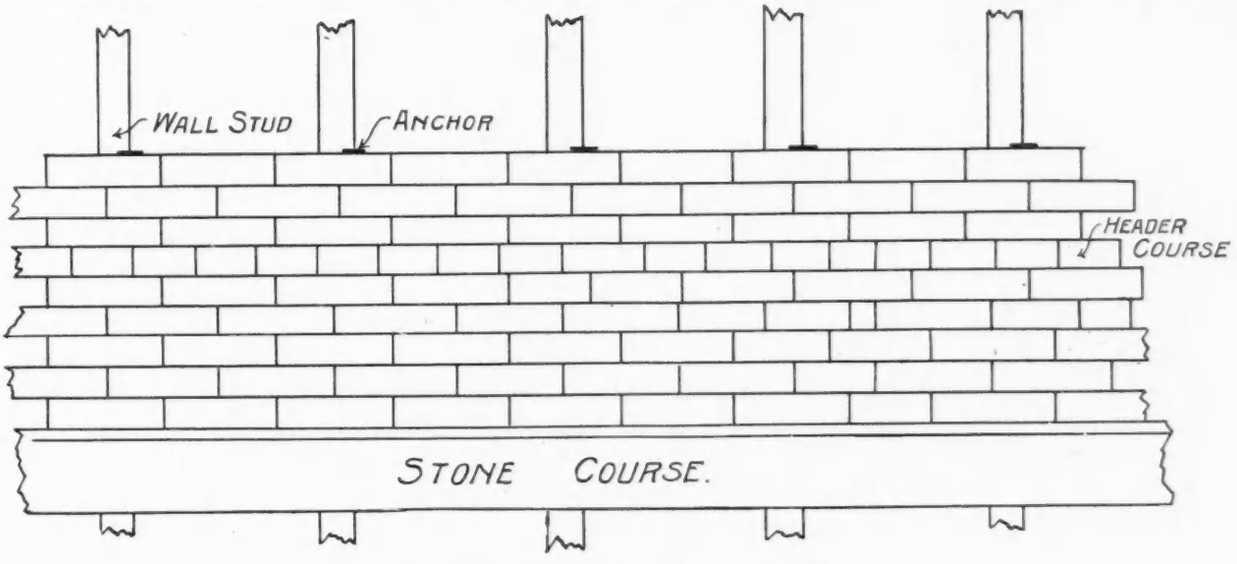
To the Editor: Eitzen, Minn.

I would like to ask a question in regard to a brick veneered building. What is the best way to fasten the brick to the building? W. C. BISPING.



PLAN

Answer: The problem propounded by our subscriber is one which can be solved in various ways according to the forms of the construction involved. In the first place, our correspondent does not state whether his house is to be constructed of a wooden frame which is to be veneered with brick, or to be of concrete veneered with brick or to be of stone veneered with brick. We will assume, however, that the house is to be of frame construction with 2 by 4 or 3 by 6 studdings and posts composing the frame, and sheathed diagonal with inch boards and finished with a brick facing or veneer of 4 inches. In order to properly veneer the wooden or timber work it is necessary that the frame should be kept at least 6 inches from the outside face of the foundation wall. A water table course of stone should be carried around above the cellar absolutely level in order to support the upper structure of brick. Therefore, the foundation wall must not be less than 20 inches thick.



ELEVATION OF VENEERED WALL.

The water table having been set and the frame

erected to the exact measurements, the first five courses of brick may be laid all the way around as shown in the sketch. After this is done wire wall anchors of the shape indicated upon the plan (which, by the way, can be purchased at any hardware store) are driven into the sides of the studdings 16 inches apart and laid flat on the top of the bed recourse so as to tie the brick work firmly to the wooden frame. At the corners the anchors should be plentifully used. Should it not be desirable to use the anchors and it is found necessary to make a stronger wall a course of brick headers, English Bond, may be introduced on the 6th course, allowing the headers to pass through the thickness of the studdings and filling up the space between them as at A B and C D with the rough brick. This method gives practically an 8-inch wall, and makes a warmer house, as old brick-bats can be used to great advantage. Should a Flemish Bond of "headers" and "stretchers" be employed then the bricks should be placed as indicated by the dotted lines shown in the plan. The thickness of the anchors desired must not be in excess of the brick mortar joints.

Should the building be of concrete, veneered with brick, it will be necessary to lay up the brick work first before backing up of the concrete. All measurements must be carefully watched so that the sills, lintels, bond courses, etc., may be at their proper heights and levels. The same rules apply to backing up with rough rubble stone work, but it is better to build the stone work first and by driving hook anchors into the variegating joints obtain a fastening in the brick veneer.

Finally, a good 8-inch wall of English Bond up to 30 feet in height is more economical, dryer, warmer, and infinitely preferable to a veneered wall.

Past and Present Building Methods

MORTICE AND TENNON FRAMING AS COMPARED WITH PRESENT DAY METHODS—SOME DEFECTS IN THE LATTER AND HOW THEY MAY BE REMEDIED

By A. W. Woods

SOME thirty-five or forty years ago when lumber was more plentiful, it was the common practice to build frame houses, great and small, with solid timbers. The sills, plates and corner posts were often hewn from the round timber with broad ax and adz, often taking months in preparing these for the "new house." In fact, it was quite the custom to commence the year before to get out the timbers, preparatory for the day of "house raising." After the timbers were hewn to the desired size, then came the work of laying out the mortice and tennons for joining the different parts together. No nails or spikes being used for this work. The corner posts were usually made out of timbers six or eight inches square with the inner corner hewn out to receive the lath and plaster. Think of doing that kind of work nowadays. This carries us back to the time of the building of our old home, now more than forty years ago, though only a

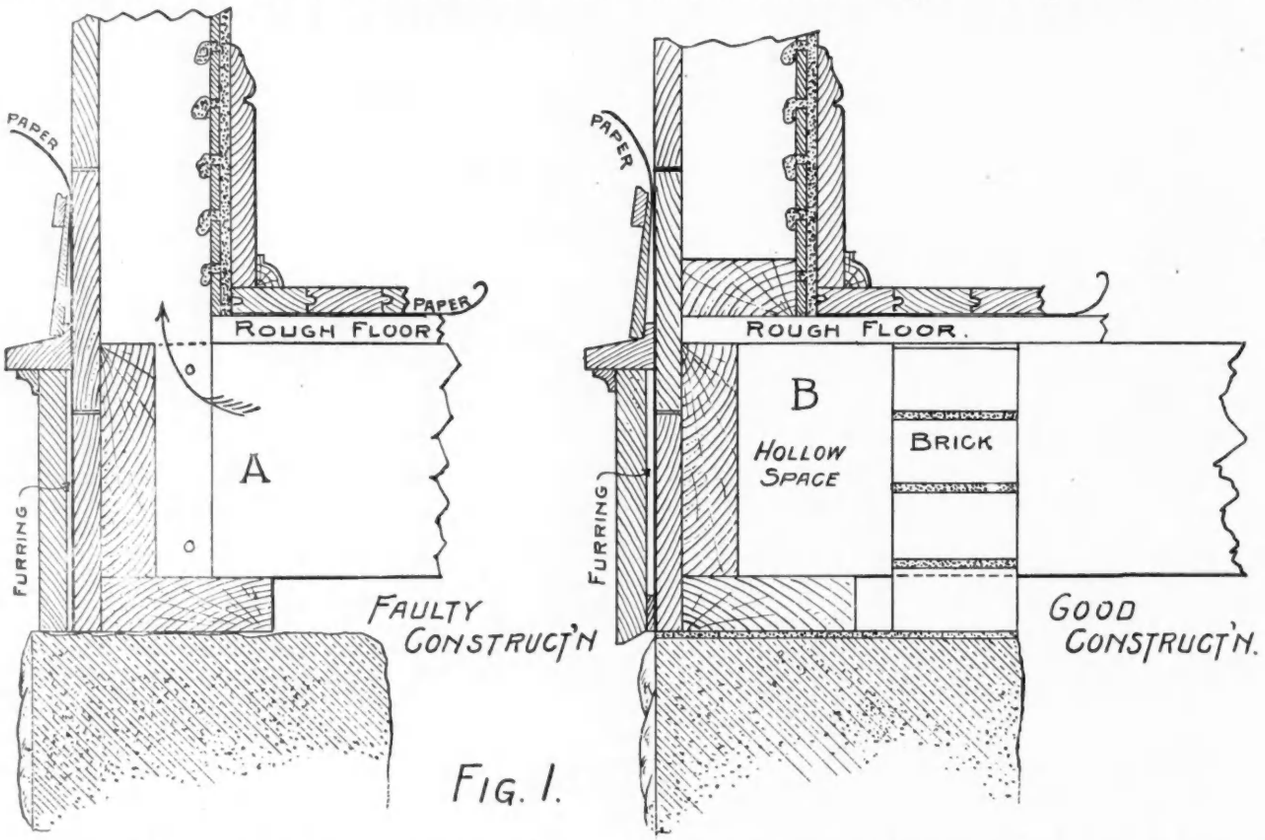


FIG. 1.

lad we remember the time the trees were being felled in the forest and after a long wait for the timbers to be squared, they were hauled to the building site and after a time for them to season, the carpenters came, and as though but yesterday, we see them under the old apple trees astride the timbers with auger, chisel and mallet working away from morn till night. It was just so with all of the work connected with the building. The mill work was gotten out by hand, even to the sash and doors. How well they built their works remain as a silent witness, suffice it to say the latter day workmen could gain some good pointers in construction from these old timers. Neither short hours, long hours, strikes or lockouts worried them. Those were days of toil, days of contentment and peace. How different it is now. When the new house is decided upon, within sixty or ninety days it is ready to move into. The work is divided up into different classes and done by different workmen. The solid timbers are no longer used for the frame work. In its stead the sills and other timbers are built up with joists and studding commonly known as balloon framing, and everything is rushed from start to finish and in the hurry many things that should be done are overlooked to the detriment of the house. Some of these things may require but little or no extra expense, if attended to at the proper time, but if neglected prove of a serious detriment to the building. It is this phase of the question that we desire most to call attention.

In Fig. 1 are shown two ways of constructing the sill, however, there are several ways, but these will serve our purpose. The one shown at A is marked "faulty" and that at B is marked "good construction." At A the masonry projects a little beyond the base board and the sill is laid without being bedded in mortar. The water follows the woodwork and runs or beats under the sill. The inequalities of the stone holding the water and in a few years the sill is rotted out, say nothing of the cold that the open crevices will let in. The studding are halved to allow nailing space to the sides of the joist, but in doing this a space between the studding is left open, allowing free circulation as shown by the course of the arrow. In the construction at B the sheathing is flush with the mason work, and the base sets clear and a little below the top edge of the stone. The back edge of the base is beveled so as to form a drip. The sills are bedded in mortar and the spaces between the joist and studding are cut off. Bricks are used to fill in between the joist

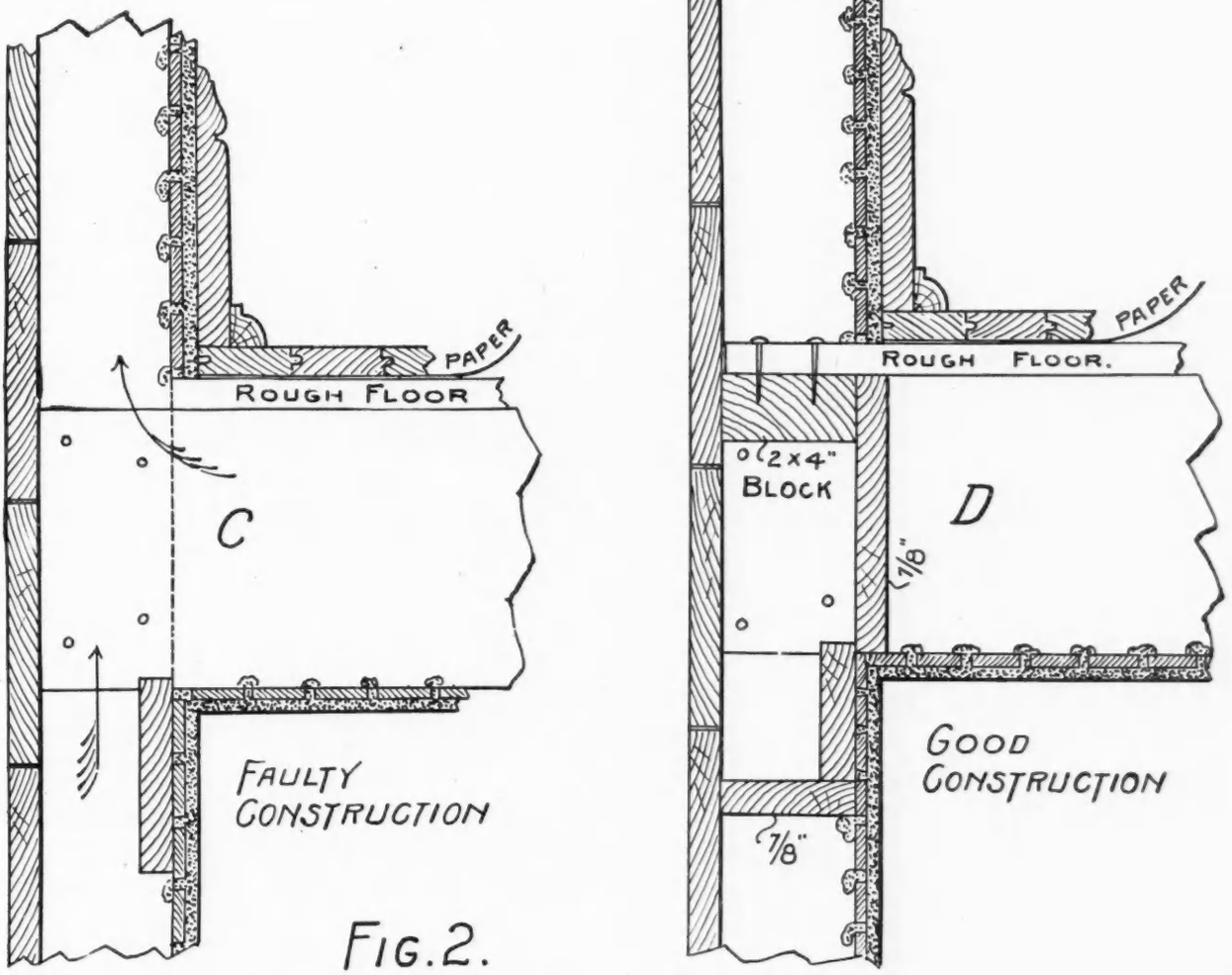


FIG. 2.

but in this allowance should be made for shrinkage of the timbers by leaving the masonry work a little below the top edge of the joist. The building paper extends from sill to plate and under window and door frames.

In Fig. 2 is shown two forms of construction at the bearing of the second floor joist. The construction shown at C is the usual way most two-story houses are built. No attempt being made to cut off the space between either studding or joist. At D is shown what should be done. Two by four-inch pieces are set in between the studding on a level with the top of the joist. The rough flooring should be laid diagonally with the joist and extend over on to these pieces and nailed. This forms a good tie and makes a closed job and by cutting in 7/8-inch boards between the joist, letting the lower edge lap over the bearing board will cut off the space between the joist. If back plastering is desired a third piece should be cut in between the studding just beneath the bearing board for the back plaster to stop against same.

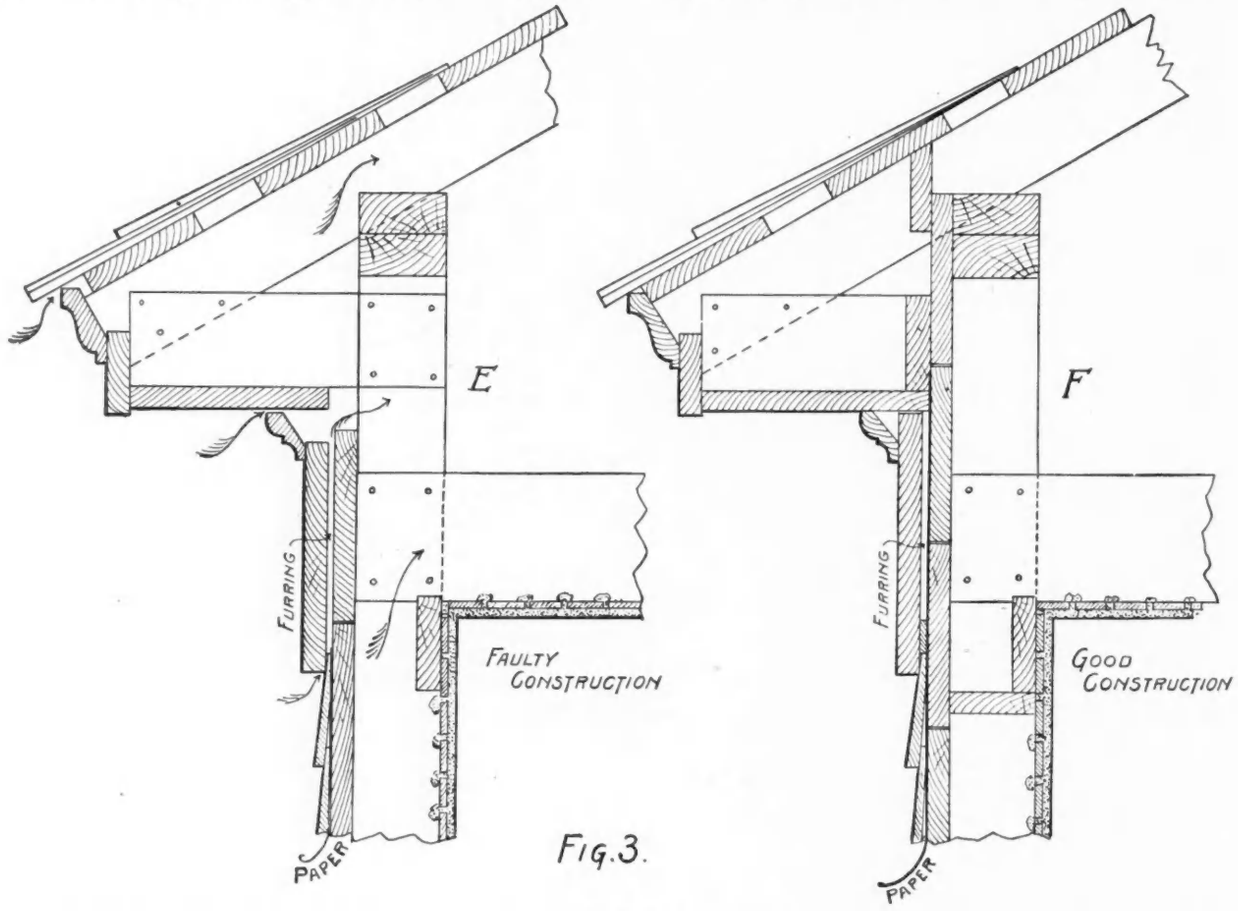


Fig. 3.

In Fig. 3 is shown faulty and good construction of cornice and bearing of the ceiling joist. At E is the usual way of construction for cottages where the ceiling is lower than the plate. The space between the studding is left open and is otherwise built on a refrigerator plan. Great open cracks are left between the frieze and plancier with the idea of covering with the bed mold. After the natural shrinkage of the different members, small crevices are opened up to huge proportion and the frosts and cold winds find their way in to compete with the burning coals for supremacy. As the heat rises and warms the attic, the cold air seeks the lower level, and if by faulty construction as before mentioned in the lower parts of the house, it has a perfect current of cold air sweeping through these spaces and the result is a cold house. At F is shown how these defects could have easily been remedied at a very little extra expense. But it does not stop here, for there are many other parts in and about the house that are constructed on the same principle. Gable studdings are often times continuous from sill to the rafter instead of the plate across the end, thereby leaving an open space the whole way down. The pockets for the sliding doors are often not closed from the surrounding openings. In case of fire getting started every opening is a ready flue to fan on the flames. On the other hand with these flues cut off, fire is not nearly so apt to get started and if it does, it will take much longer time to consume the building and the chances are much better for saving the house. The builders are not so much to blame for this kind of work, but rather the architect who should show these things in the plans and specifications and see that it is done. Otherwise, in these days of close competition the contractor must figure close, and unless these things are clearly shown and described, he cannot reasonably be expected to do it without all are required to do the same.

Constructing an Ordinary Stair

PLANS AND DEVELOPMENT OF THE RAIL ON A STAIR WHICH MAKES LESS THAN A RIGHT ANGLE TURN—SHOWING WHERE STAIR STOPS AT THE TURN AND WHERE IT CONTINUES BEYOND

By Morris Williams

FIG. I shows the plan, elevations, pitch line of tangents, developed central line of wreath and also the outline of the plane whereon the wreath is assumed to rest in its ascent from the lower end of the curve to the upper end, as shown from a to c. The form of the plane is shown to be composed of the lines a″b″-b″c″-c″o″ and o″a.″ It is generally called section, and marked as such in the diagram.

To develop the section as shown in Fig. I we commence by revolving point a in the plan to m;

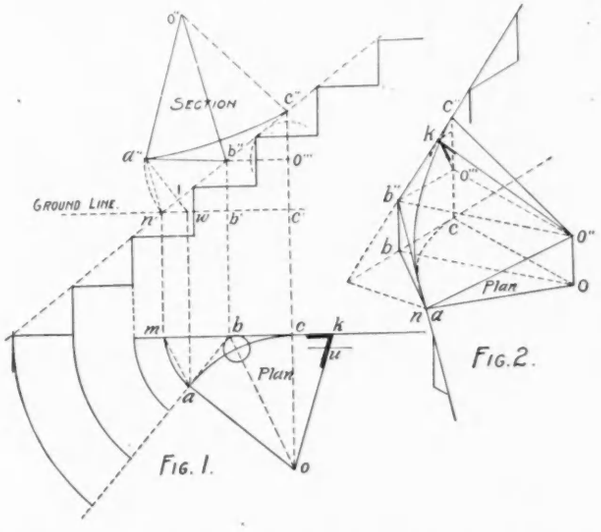


FIG. 1. FIG. 2.

from m, a perpendicular line is drawn to n. Again from a a perpendicular line is drawn to w; and from w, the line wa″, which is drawn square to the pitch line.

Now place one leg of the compass in b″, extend the other to n and revolve n to a″ as shown by the arc. Connect a″ and b″, thus the lower tangent a″b″ is transferred into the section and the angle it makes with the upper tangent b″c″ is the one required on the face mold to square the joints of the wreath.

To complete the form of a section draw a line from n to a″, and from b″ a line parallel to it. In this case the line from b″ will be the minor axis. Make it equal in length to ob in the plan and connect oa″ and o″c″, thus completing the form of the section. Now make b″x equal bx on the plan and draw the central line of the rail through a″xc″ as shown.

From b″ draw a line across to o″ ′.

We will now with the aid of the perspective shown in Fig. 2 endeavor to explain these lines and points.

Let oabc in Fig. 2 represent the plan of the lines as shown at oabc in Fig. I and axc the plan of the central line of the rail. It is shown in Fig. 2 that point a is the only one that is not raised above the ground line.

Point b is shown to be raised from b to b″, point c to c″ and point o from o to o″.

By connecting ab″ it will determine the inclination of the lower tangent over the plan tangent ab, and by connecting b″c″ the inclination of the upper tangent is determined and shown in this figure to stand over and above its plan bc.

By connecting c″ to o″ and o″ to a the form of the section will be complete as shown outlined from a to b″, from b″ to c″, from c″ to o″ and from o″ to a.

The height from b to b″ in Fig. 2 is equal to the height shown from b′ to b″ in Fig. I; the height from c to c″ in Fig. 2 equals height from c′ to c″ in Fig. I and the height from o to o″ in Fig. 2 equals the height from c′ to o″ ′ in Fig. I.

It will be observed that points b″ and o″ in both figures stand above the ground line or plan at an equal height. If we connect these points the line will be the minor axis and it will stand over and above a diagonal line in the plan drawn from o to b.

It is on these two lines that we fix point x as shown to determine a point contained in the developed central line of the wreath.

We will now explain the bevel that will be needed to twist the wreath. It is shown in Fig. I at ock, the line oc is shown to be the radius of the plan curves, the length of ck is found by placing the compasses in o″ ′, extending it to touch the upper tangent b″c″ as shown by the arc.

By connecting ko the bevel is found at k, and owing to the tangents being equally inclined it is the only bevel required, and because both tangents do incline it is applied to both ends of the wreath.

The nature of it is clearly exhibited in Fig. 2 where it is shown to indicate the angle of inclination across the plane of section from point o″ in the direction of the upper tangent b″c″.

It inclines in the direction of the tangent ab″ at the same angle as we have already stated, owing to the tangents being equally inclined.

In Fig. 3 is shown a very simple method; to draw the face mold for this wreath make mib″c″ equal the same figures shown in pitch line in Fig. I.

From I. draw the line Ia, place the compasses in b″ extend to m and turn over to cut the line from I in a; connect ab″.

Make bx equal b″x in Fig. I and draw the circle, the diameter to equal the width of the straight rail. On each side of a and c″ place the distance kn taken

from the bevel in Fig. 1 and draw the same circles. Now bend the lath to touch the circumference of the circle and semicircles for both inside and outside curves.

Make the joint at a square to the tangent ab″ and at c″ to the tangent b″c″.

The bevel is shown applied at each end, at c″ in the direction of the outside, and at a towards the inside.

In Fig. 4 is shown the bevel applied to the plank, and the wreath squared, the distance from a to b indicating the thickness of plank required.

Let oabc in Fig. 5 represent the plan. Revolve point a as shown to a′, point 2 to 2′, and point 3 to 3′. On a′b and c erect perpendicular lines.

At 2′ place the pitch-board as shown and upon 3′ erect the riser 3. Draw the pitch to cut the perpendicular line drawn from b to b′ and from b′ a level line to c′. Now place the compasses in b′ extend to a″ and turn over to a″′, connect this point with b′, then a″′ b′ c′ will represent the angle between the tangents of the face mold.

We will leave this figure now and as shown in Fig. 6 proceed to draw the face mold.

Make kbc in Fig. 6 equal kb′c′ in Fig. 5, from k draw the line ka and make it equal in length to ka″′

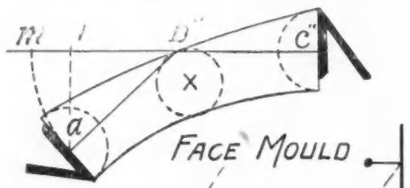


FIG. 3.

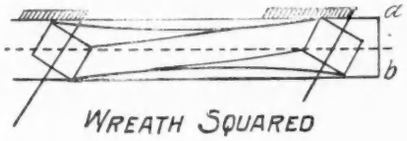


FIG. 4.

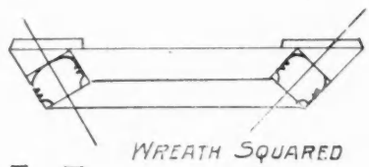


FIG. 7.

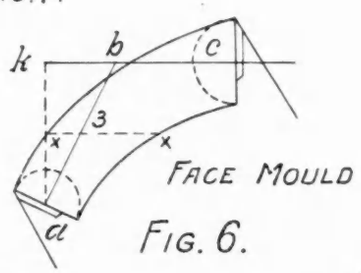


FIG. 6.

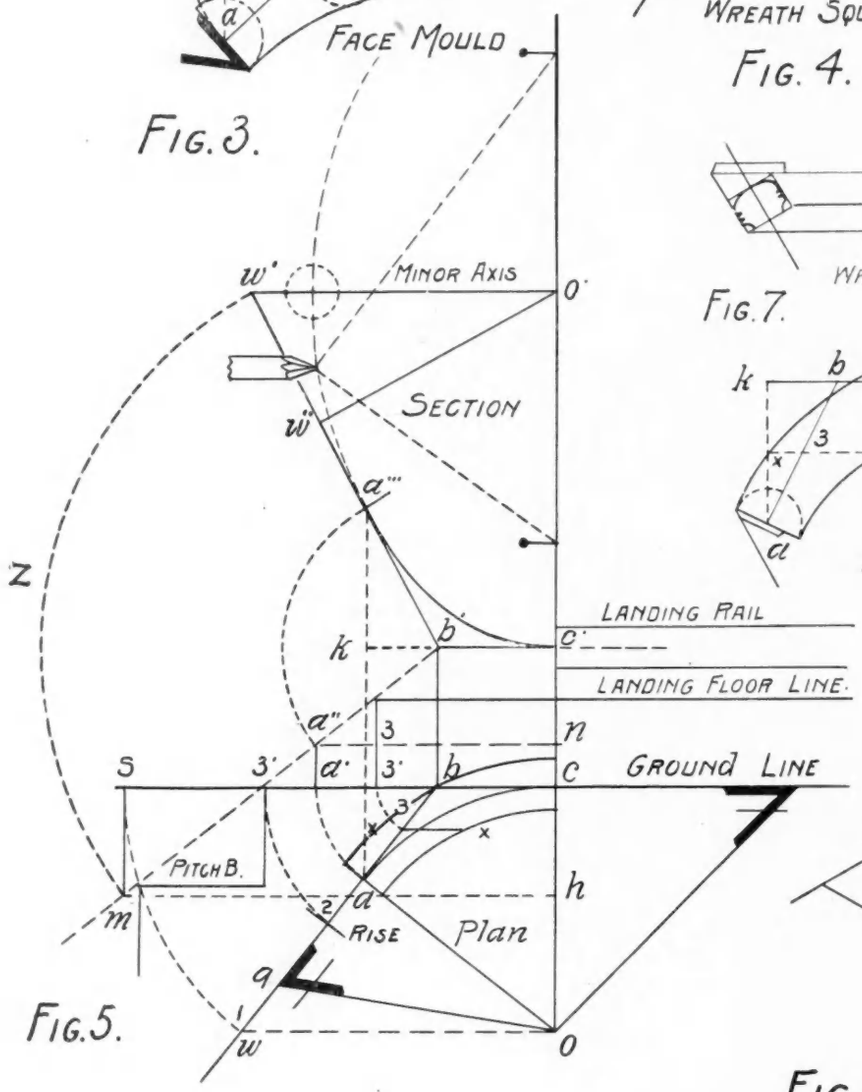


FIG. 5.

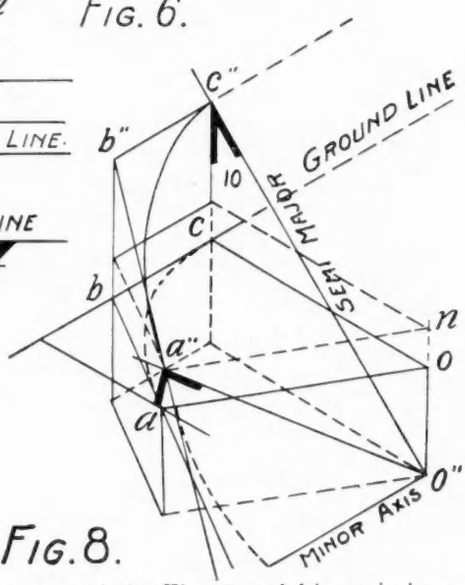


FIG. 8.

In Fig. 5, connect ab in Fig. 6 and bisect it in 3; bisect also its plan line ab as shown at 3 in Fig. 5.

Through this point draw the line xx across the plan curve of the rail and through point 3 in Fig. 6; also draw the line xx as shown. The points xx will determine the width of the mold on this line. The width at each end is determined by the bevels.

Bevel 10 shown in Fig. 5 is to be applied to the end c of the mold, and the space along its long edge between the two lines as shown is to be placed on each side of c.

Bevel 9 shown in Fig. 5 is to be applied to the end

a and as before the space there shown between the two lines on the long edge is to be placed on each side of a in Fig. 6.

By connecting the points thus found, both the inside and outside curves of the mold may be described.

The joint at a is made square to the tangent ab and at c to the tangent cb.

The bevels are shown applied square to the joints, both directed toward the outside of the mold.

In Fig. 7 the same bevels are shown applied to the plank and the wreath squared for moldings.

We will now revert to Fig. 5 and explain it more minutely with the view of demonstrating the nature of the bevels.

To find the form of the section we commence by drawing the line ow in the plane. This line is drawn parallel to the level tangent bc and is therefore a level line, and because it is drawn from o the center of the plane curve it will be the plan line of the minor axis. In this instance it also happens to be the horizontal trace of the plane the wreath is assumed to rest upon in its ascent from one springing to the other. Now revolve w to s, and from s drop a line to intersect the pitch line of the tangent in m.

Revolve point m as shown by the arc mzw′ to w′ and draw the line w′o′ as shown. This last line will be the minor axis.

Draw the circle shown upon it at a distance from o′ equal to the radius oc of the plan central line of the rail. The semi-ellipse shown may be drawn and it will be found that a portion of it as from a″′ to c′ constitute the developed central line of the wreath. This proves that we have the correct form for the section.

We will now find bevel 10 to apply to the end c′ of the wreath. Place in the compasses the length c′o′ which is the semi-major axis, put one leg in o on the plan and extend the other to cut the ground line in 10.

A view of this bevel applied square to the joint c′ is given in Fig. 8.

To find the bevel to be applied to the end a of the wreath, place in the compasses the distance o′w″ which is a square line to the tangent a″ ′b′ as shown in the section drawn from point o′.

Now place one leg of the compasses in o on the plane, extend the other to 9 as shown. This bevel also is shown applied in Fig. 8, to the end a″ of the wreath and square to the tangent a″b″ as shown.

I presume I need not state in conclusion that in practice very few of these lines will be needed, but when writing the why and wherefore according to my idea they are all absolutely necessary. A studious attention to the instruction this article contains will not only enable the reader to master these diagonals but almost all others that may be encountered in practice.

A Much-Needed Reform

UNSANITARY CLOTHES CLOSETS IN BEDROOMS BEING DONE AWAY WITH—WHAT TO USE IN ITS PLACE WHICH IS AS CONVENIENT AND MUCH HEALTHIER

By T. B. Kidner

AMONG the many advantages which we may expect to accrue from the coming extension of the use of concrete as a building material, there is one in particular which appeals to me.

From an examination of a number of plans of concrete dwelling houses I am glad to note that there seems to be a disposition to curtail the number of those very insanitary adjuncts of the modern wooden house, the bedroom hanging closets.

The demands of the ladies in this direction upon architects and builders have led to the provision of these closets until they appear to be the chief feature of the innumerable plans shown in the magazines and in the much-advertised books of designs issued by so many firms of architects.

Leading architects and health authorities have long ago condemned the bedroom hanging closet as unhygienic for many reasons. In the first place it is nearly always in such a position that the greatest germicide and disinfectant known, viz., sunlight, cannot reach it, any sort of dark place being chosen for its location. Neither is any provision made for its ventilation, notwithstanding that garments of all descriptions are continually hanging in it.

Clothing laden with the dust from street, office or factory; soiled body linen, and sometimes damp coats and shoes, are committed to its depths. In addition to the foregoing savory collection there is often a shelf or two, above the level of the eye, on which reposes a miscellaneous raffle of odds and ends. These stand amidst a substantial coating of dust which is seldom removed oftener than once or twice a year at the periodical spring and autumn house cleaning even in many otherwise sanitary and well-ordered households. In fact, the bedroom closet forms what old housekeepers used to call a 'glory hole," in which all sorts of unconsidered trifles are stored and forgotten.

Even before the general acceptance of the germ theory, many leading architects had protested against the use of these closets, and in Europe especially, the practice for many years has been to do away with them as a feature of first-class dwelling houses.

Besides their unhealthfulness, there is another serious objection to their use, namely, the waste of space occasioned in their planning. The total area of the house plan is usually limited, either by the size of the site, or considerations of cost, and yet sometimes as much as twenty per cent of the floor containing the

bedrooms is occupied with closets cut out of the several rooms.

There is no doubt that the cause of this is to be found in the demands of the fair sex. Perhaps it is due to the form and multiplicity of their garments, many of which will not allow of compact stowing away in drawers and trunks, as do those of their male relatives. But it may be that when the study of household science has become universal in our schools, the ladies themselves will protest against the violation of scientific health principles involved in the construction of these dark and stuffy receptacles for whose vogue they have been chiefly responsible.

What alternative schemes are there which will satisfy hygienic requirements and at the same time give the housewife the accommodation she has every right to expect?

Two methods offer themselves and may be broadly classed as the European and American methods respectively; or to give the words of Russell Sturgis, the well-known writer on architectural subjects "the question of closets or no closets is a question between the furniture maker and the house carpenter."

That is to say, the general practice in Europe is to have a hanging wardrobe as a part of the movable bedroom furniture; while in the best American practice, fixed wardrobes are provided on landings and in corridors as a part of the finishing of the house itself.

Either method offers various ways of carrying out its principles. The furniture maker's movable wardrobe has many varieties, the simplest, perhaps, being a structure composed of wooden sides, top and bottom, with a curtain for the front. The whole is readily cleaned or dusted, all parts being easily "come-at-able," and well in sight. Or it may be a most elaborate carved and paneled creation of some valuable wood, with drawers and sliding shelves, lined throughout with aromatic cedar, sandalwood or camphor-wood, and with a full-length mirror on the front. Between these extremes there are numerous styles, suitable for all sorts of households and purses, but all having the same general characteristics.

The scope of the American method is even greater than that of what I have, largely for the sake of contrast, termed the European method. The upper halls and landings of all classes of houses offer a fine field for the ingenuity of the architect and house carpenter, whose work in this connection often adds to the appearance as well as the convenience of hall-ways and upper corridors. A very acceptable method is to make the hanging closet a part of a small wash-room, which has, if possible, a window or skylight, or a couple of doors to allow of good ventilation. Where this is not convenient, a range of fixed wardrobes with separate sections for the several members of the household may be arranged in some suitable place. One point should, however, be generally insisted on, and that is to limit the height to six and a half or seven feet. The space above that should be enclosed or an accumulation of dust on the top will result. Of course, the space might be utilized as store cupboards, but this plan is open to the objection that a step-ladder is necessary in reaching them; also, that they are liable to become mere receptacles for odd stuff which will be 'out of sight and out of mind."

Many other methods of carrying out the idea of having the hanging closets outside the sleeping rooms will readily suggest themselves to practical men.

May I venture to hope that this important feature of house planning will receive some attention from builders of even our smallest houses. Fresh air is a panacea for many ills to-day, and considering that we spend one-third of our lives in our bedrooms the question of their ventilation and purity cannot receive too much consideration from those who plan and build our homes.

Hamlet (?) on Painting

To paint, or not to paint, that is the question—
Whether 'tis worthier in the mind, to offer
Thy home, a victim to the ravages of time,
Or, to take precaution against the elements,
And, by painting, save it? To beautify, to protect,
To paint—and by painting to say we act
With judgment, and halt the work of decay
That buildings are heir to—'tis a consummation
Devoutly to be wished. To save, to paint—
To paint, perchance to get bad paint; ay, there's the rub;
For without good paint, what troubles may come
When mysterious dope, gaudily labeled, is used,
Must give us pause. That's the outrageous stuff
That makes calamity befall each careless
New-fledged dabbler in colors, who belief lends
To impure concoctions, untried experiments.
Without white lead or linseed oil's protection;
And wastes precious time and money, as happens
The worshipper of things cheap and infernally bad,
When he himself might make his house to appear
Like a castle with a coat of good paint.
Who would grunt and sweat applying dope,
And risk the numerous evils sure to follow
The peeling off—the cracking and blistering,
The deadened color and the lifeless paint,
When strong, pure and lasting lead an oil paint
Stands at his beck and call, good, unequaled,
Mayhap 'tis lust for greed or trivial prejudice
For some hoary paint, or imagination playing false
That puzzles the will, and makes him rather stick,
In lazy fashion, to the shoddy paints he's had for years
Than to wake up and seek the good in things.
Thus judgment doth make wise men of us all;
And thus our resolution doth proclaim,
With strong cast of thought, that painting,
An enterprise of great pith and moment,
With this regard, is best accomplished
By choosing the best paints and a good painter.

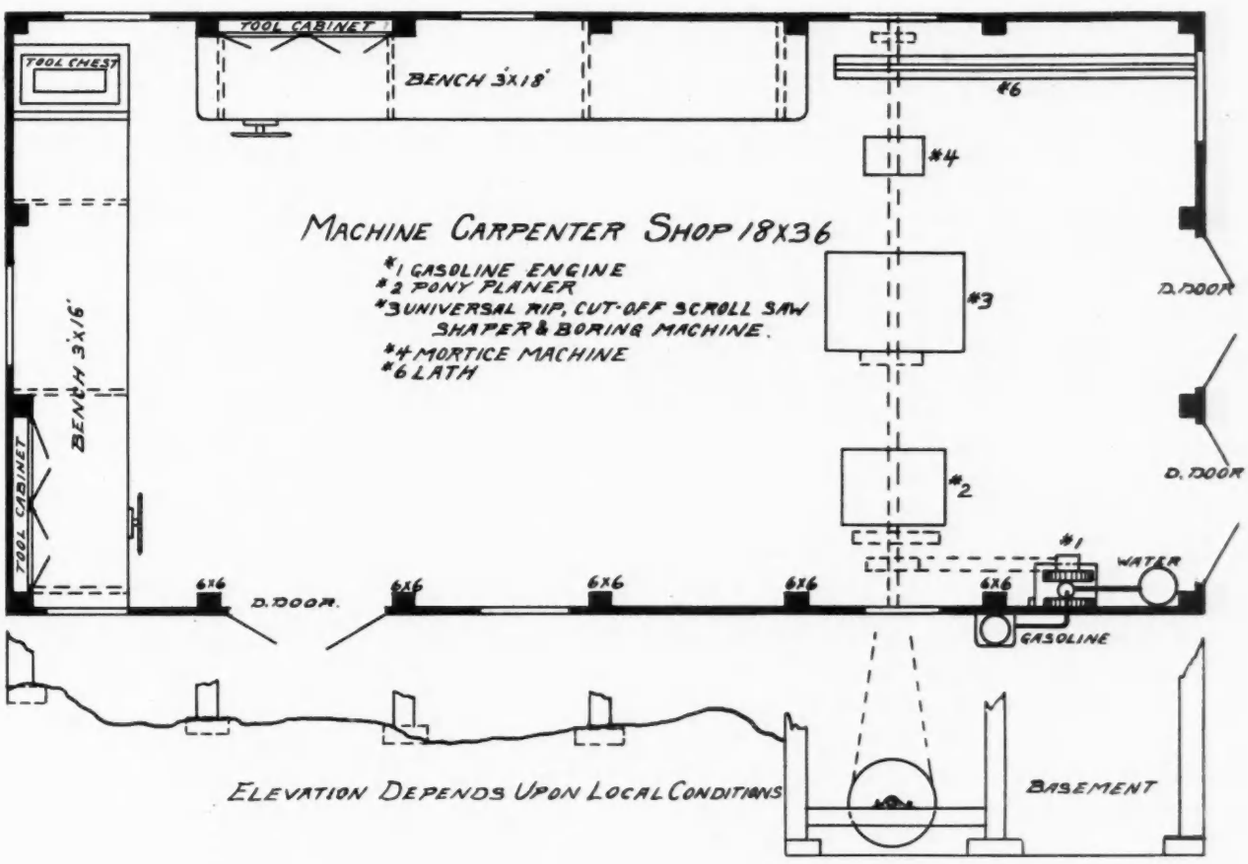
—*The Painters' Magazine.*

Instructions alone won't make a workman out of a man. You must have the right material in a man first, and then instructions will help.

Planning a Machine Shop

GIVING A GENERAL IDEA OF HOW TO LAY OUT THE FLOOR PLAN—VIEWS ON WHETHER TO HAVE THE FLOOR ON THE GROUND OR RAISED SEVERAL FEET—ADVANTAGES OF EACH

PLANNING a machine carpenter shop equipped with wood working machine is an undertaking that covers as wide a range of possibilities as the building of a house. In house planning there is everything from the tiny cottage to the mansion, and in planning a carpenter shop with machinery additions there is all sorts of variation in size and equipment, from the small plant with two or three light machines to the full fledged planing mill in which carpenter work becomes merely an incident. Also, what a man may want and what he may need, or what the community justifies, may be two different things, so that with it all the idea of designing an ideal plant for a machine carpenter shop would, if one should undertake to carry it out, involve some of the characteristics of hunting for a needle in a hay stack. This, however, need not deter us from making some plans in the hope of developing ideas, just like people make plans for houses, some of which meet the approval of somebody, and others get ideas from them to embody in different designs. In other words, it does good, and helps along a little, and for this reason a ground plan is printed herewith representing a type of machine carpenter shop in which the machine equipment is very light and is rather incidental to the carpenter work instead of overshadowing it, as is frequently the case in large establishments.



The floor space is 18 by 32 feet, and the machinery

equipment calls for a 3-h. p. gasoline engine, a 24-inch pony planer, a Union combination machine and a light mortising machine, with a line shaft under the floor and directly under the machines, so that the machines may be run with slack belts and tighter for convenience in starting and stopping, so that one machine need not be driven empty for the sake of operating the other.

There are two work benches arranged with a view both to convenience and light, and there is room reserved in the neighborhood of the benches for trestle work.

The plan, as a whole, is for a one-story shop, and the floor should be up off the ground from 4 to 6 feet. On this point there is room for lots of difference of opinion and for discussion as to the relative merits of high and low floors. If the line shaft is to be put underneath, of course the floor must be put up a little or a pit dug for the shaft, which is never advisable; and if the floor is raised a little, the question is why not raise it enough so as to furnish storage room underneath for lumber. Another argument in favor of the floor being up off the ground, and probably the most important one, is the convenience in loading out window and door frames. There is no need to enter into any elaborate argument on this point, for you all know what it means to load frames off the ground, and how much easier it is to load them from an elevated floor or platform. Still, there are some who would probably contend that the shop should either be on the ground or be up a full story. In other words, a two-story building. The setting of the machines would suggest that it would be better to have it on the ground, because the distance between the planer and the end door is so short than in handling 16-foot stock there will be nearly half of it extending out the door. If the machine was set on the ground, so to speak, so that there would be practically no difference between the level outside and inside, this would be no serious handicap, especially if the lumber should be stored in the shed out at this end of the shop, while if the floor is raised up off the ground one might be handicapped a little about handling long stock. However, the main idea in presenting the plan is to draw out discussions and start all to thinking along different lines. It is easy enough to go into any man's shop and pick some flaws in its arrangement, say I would do this, and I would set this machine there, and so on, but when we start in to plan a factory, with no local influences to draw on and give definite form to the plans, it is not nearly as easy as it looks, because there is no setting you can get but what some other setting would suggest itself as being better for doing certain kinds of work. What we want to get is a number of plans showing different settings and study their faults and possibilities, so that every man can draw from them according to his needs and be backed up in his work by the assurance that he has looked at the matter from all sides and is competent to select.

This plan, as stated, is one that involves the minimum of machinery, and is to a large institution what the cottage is to a large house, and it is probably from the use of the minimum number of machines that the carpenter really gets the most benefits. This may sound a little queer and sound like an argument against the use of machinery, but it is nothing of the kind. Nor does this shop represent anything like the possible limit that the carpenter may install in the way of machinery to advantage, but it does mean that when a man gets the machinery habit he is at times inclined to go too far with it at first, and either wind up by having it a burden on his hands or else develop his shop into a jobbing planing mill, which may make him more money than he has been making, but won't make it as a carpenter. See the point?

Before starting in to plan a shop for himself, a man should first outline as near as possible the class of work he expects to do, that is, the class of work that is to be his bread and meat, so to speak, and then design his shop and purchase his machinery equipment primarily with a view to doing this work to the best advantage, and incidentally for taking care of other odds and ends that come along intermittently, but are not regular rations. There are, for example, some localities and certain lines of work that would make it advisable in the plan mentioned above to use a top smoother or jointer instead of a pony planer. There are instances where a rip saw table might serve the purpose better than a combination machine, and places where a mortiser would not be required much, but where some other machine would be very useful, and so it goes, different work calling for different machines, no shop having as many machines as it might use at some one time, and many of them may have more machines than they can use enough to justify the expenditure for machines and the power to run them. In fact, the selecting of machinery is really more difficult to undertake than that of making a floor plan for a shop, and when a man once starts out to investigate various lines of machinery offered, he generally winds up by feeling that there are about twenty or twenty-five different machines he could make use of when his original plans only call for two or three machines and a light power equipment for driving them. Then, it's a hard pull to keep to the original plan and make up your mind what to discard and what to use, because there are more machines that you won't be able to use than there are that you can use, but it pays to hold yourself in check, especially at the beginning, because after awhile you will understand better what you will need and what you can get along better without.

"A bird in the hand is worth two in the bush," but the saying doesn't apply to splinters.

Catch-Basins and Grease-Traps

WHY IT IS NECESSARY AND VERY ADVANTAGEOUS TO USE THEM—GIVING A DETAILED DESCRIPTION OF THEIR WORKINGS—PROPER METHOD OF CONSTRUCTING THEM

KITCHEN, or other greasy wastes, should always be intercepted by a catch-basin or grease-trap, and the grease separated from the waste water before entering into the house-drain. Unless this precaution is taken, the grease in the waste water,

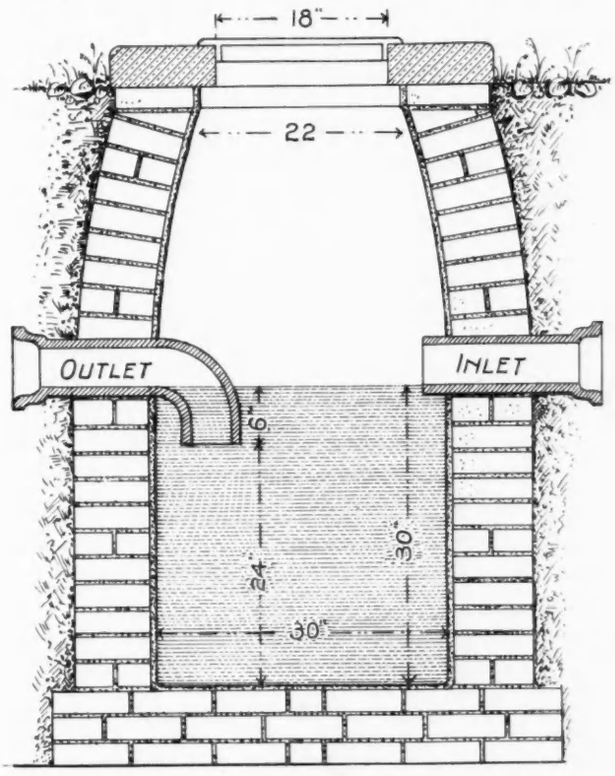


FIG. 1.

when it reaches the cold water sewer-pipes in the ground, congeals and sticks to the sides of the pipes. Lint, coffee-grounds and other like matter held in suspension, are caught and held until the accumulation closes the sewer-pipe.

There is a diversity of opinion among sanitary engineers as to the effectualness of the catch-basin. Some claim that a properly constructed grease-trap is all that is necessary and that by connecting the down spouts of the house into the head of the house sewer, sufficient water is supplied whenever it rains to thoroughly flood, cleanse and scour the sewer pipes and prevent any accumulation that would cause trouble, and that the catch-basin is a mass of putrid matter both dangerous and objectionable. With a properly constructed sewer system of iron pipe, there is no question that the system can be made proof against stoppage from kitchen waste waters without the aid of the catch-basin. It depends, of course, upon the conditions, and no set rule can be laid down governing all cases.

In an ordinary residence, the common brick basin answers very well for the interception of all foreign matter. In large houses, hotels, restaurants and manufacturing establishments, where there is a voluminous

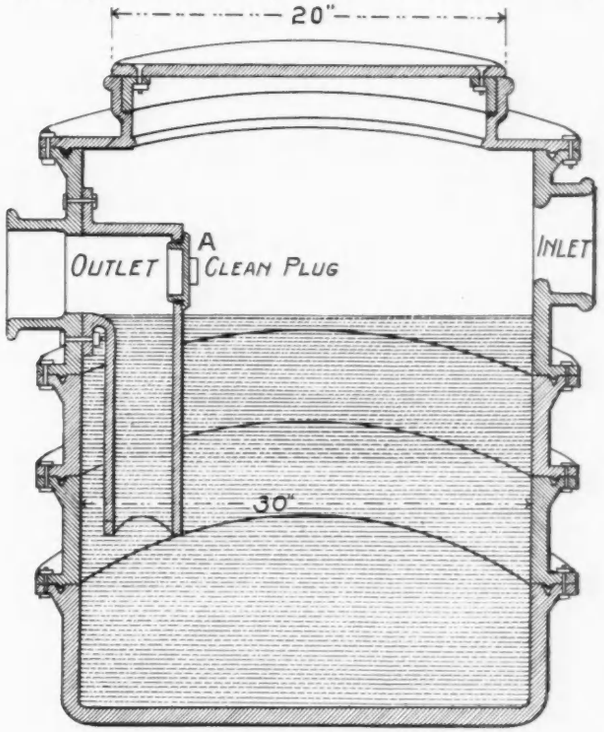


FIG. 2.

waste of greasy matter, it is good practice to install a grease-trap, in addition to the catch-basin. No catch-basin should be allowed within any building, unless constructed of cast iron, having a hermetically sealed lid or cover. Where the building covers the entire lot,

some cities allow the use of a grease-trap, provided with water jacket, through which cold water will circulate whenever water is drawn at the fixtures, in lieu of a catch-basin.

The sewer pipe, through which kitchen wastes are

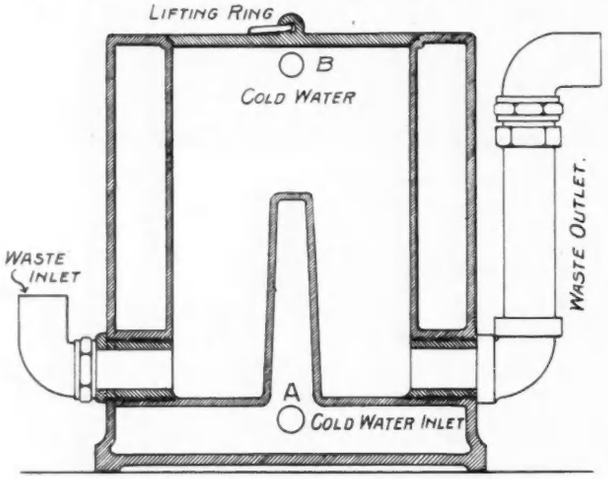


FIG. 3.

conducted to the catch-basin, should be at least four inches in internal diameter. Catch-basins, if of brick, the brick used should be hand burned sewer brick and in size; the catch-basin should be at least thirty inches internal diameter at the base and may taper to not less than twenty-two inches internal diameter at the top, and should be finished at grade level with a limestone cover, not less than four inches thick with an opening for an iron lid or cover, eighteen inches in diameter. If the catch-basin is located near the house, the iron cover should be bolted to the stone and hermetically sealed.

The walls should be eight inches thick and laid in

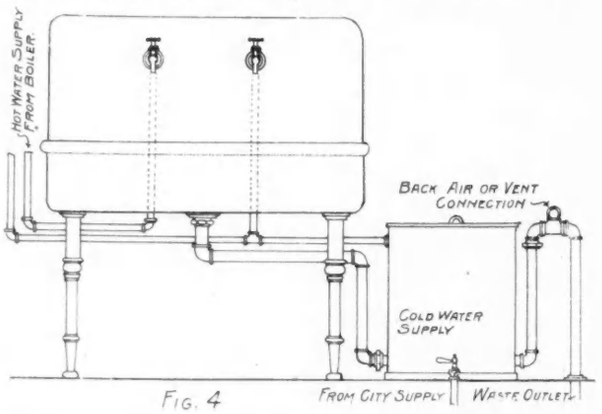


FIG. 4

Portland cement mortar and plastered outside and inside with a half-inch coat of Portland cement mortar, in proportion of one part of Portland cement and two parts of clean, sharp sand.

The bottom should be at least eight inches thick, laid in cement mortar and be laid at least two feet below the invert of the outlet to the sewer, A and B.

The outlet should be trapped to a depth of six inches below the invert of the outlet to the sewer, to prevent the escape of grease, by a hood or trap, as shown in Fig. 1, C and D.

The inlet to the catch-basin should be about two and one-half feet above the finished bottom of the catch-basin, C and B. If the catch-basin be built of cement concrete, the internal size given above should be followed. The walls should be at least six inches thick and plastered inside and out, with at least a half-inch coat of cement mortar, one part of Portland cement and two parts of sharp sand, the concrete for walls and bottom made of one part of live Portland cement, three parts of clean sharp sand and five parts of crushed stone, about one-fourth inch, and not over one and one-half inches in diameter in size, and finished at the top in the same manner as the brick catch-basin.

Cast Iron Catch-Basins

See Fig. 2. Catch-basins of this description are elastic and can be made deeper by adding additional sections; the joints are packed, set in cement and bolted, making an absolutely tight basin, the cover is bolted down to rim of manhole opening. The plug "a" can be unscrewed, giving access to outlet hood for cleaning purposes, if it should become clogged up and

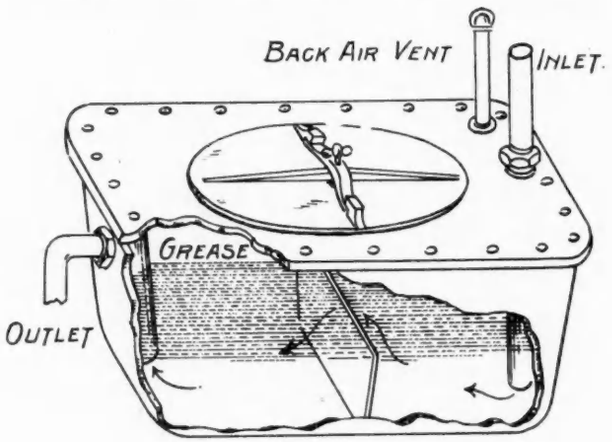


FIG. 5.

permits a straight opening to sewer, which enables straight rodding out of sewer pipes, in case of obstruction in sewer pipe between catch-basin and main sewer. This catch-basin is designed for installation inside of the building.

Grease-Traps.—One of the most improved grease-traps on the market is shown in sectional cut, Fig. 3 (known as the "Tucker" patent). This grease-trap has hollow walls, through which cold water continually circulates, the hollow partition in the center obstructs or breaks the flow of greasy water from the waste inlet and deflects it upwardly. The grease is congealed by coming in contact with the cold walls of the trap and the hollow partition in the center and remains on the top, forming into a solid cake, which can be readily removed while the water flows freely to the waste outlet on the other side of the trap. It is impossible to heat this trap and thereby destroy its effectiveness, as whenever hot water is drawn from the boiler, the same amount of cold water enters the cooling chambers of the trap. The city water supply is

connected into opening "A," passing around the trap walls and out at "B," and hence to sink and kitchen range boiler. Fig. 4 shows very clearly just what the operation is. Fig. 5 is another style of a grease-trap with submerged inlet and outlet and with baffle plate in center. The cover can be easily removed, and when in place can be forced down tightly against a rubber jacket, making it gas tight.

Steam Heat and Manufactured Woodwork

EFFECT OF VARIOUS ATMOSPHERIC CONDITIONS ON MANUFACTURED WOODWORK—BEST METHOD OF REMEDYING THE SAME—EFFECT OF DAMP WALLS ON FURNITURE

By Owen B. Maginnis

IT HAS been a matter of greatest concern to expert and operative woodworkers to so construct their details that they will be enabled to withstand all atmospheric and artificial influences. Among the latter might be classed the influences of heat whether exerted by the medium of fireplaces, stoves, hot air registers, hot water or steam heating.

Let us, then, consider how heat affects wood, and endeavor to show its good and bad effects. Presuming that the work has been manufactured of the best treated and kiln-dried stuff, same having been thoroughly prepared and put together in the best constructive manner which is something our modern woodwork and furniture cannot always claim. Taking for granted that the work has been fairly well done and that it is filled or perhaps varnished, let us note its future.

First as to its storage. When complete the furniture should be placed in a store room heated to a moderate temperature, say a normal one about 70 or 75 degrees Fahrenheit. This room if steam heated should be well ventilated by windows or roof ventilators for the purpose of preventing that damp condensation which develops in a room or chamber where no ventilation exists. This condensation is caused by the water in the atmosphere becoming so moist as to enter into the porous fibers of the wood, and causing them to expand to such an extent that they may bulge and warp.

In a room heated with a stove this cannot possibly occur because the condensed air is continually passing from the room up the chimney to the outer air, and a fresh supply whether admitted by windows or ventilators is dried and warmed as it passes in.

When the goods are delivered they are placed either on cold trucks in cold railroad cars, or on the open decks of steamers where even in summer the climatic change of day and night will effect the sensitive nature of finished wood, and cause changes in its shapes and forms. These changes are most noticeable in the thinnest and most delicate parts of the furniture as may be witnessed in veneers, thin root panels and carvings by their warping, bulging or drawing away from the joints even when glued and screwed together. Thin turned work will even split should the composition of the wood be be in any way crossed grained, and thus causes a general dilapidation.

When the stuff has arrived at its destination or final place of deposit what is the result? As the porosity of the fibers must have exuded all heat by exposure to the cold air, they must have naturally contracted and changed the shape of the wood so that when the stuff is conveyed for a second time into a steam or hot water heated flat or building of any description it must necessarily yield and succumb to the atmospheric conditions predominant therein. The pores of the wood will open and imbibe the heat which is active and present and again cause expansion.

Further disaster to finished woodwork is caused by placing it against freshly plastered damp walls or partitions. A damp wall is frequently so full of water that when the room is heated without any furniture being placed therein, the wall will sweat to such an extent that the water will trickle in small rivulets down the surfaces of the sides. To assist in drying the walls and remedying this it is customary among builders to open the windows on bright, dry days and admit dry, clear air (free, of course, from frost, as this would freeze up and solidify the water in the mortar) and thus dry it more quickly.

The injurious effect upon woodwork by damp walls is caused by the water and dampness passing directly through the woodwork or furniture in drying out and these must suffer while the process is proceeding with the result that they will warp and change in form. Should there be a mirror in such a room it will naturally attest to the dampness by becoming full of spots and blotches and it is an excellent plan when practicable to keep the fixtures away from any wall so as to leave a space of two or more inches to allow for a continuous circulation of dry air between the wall and the back of the wood, thus helping to preserve the latter.

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Fond Memories

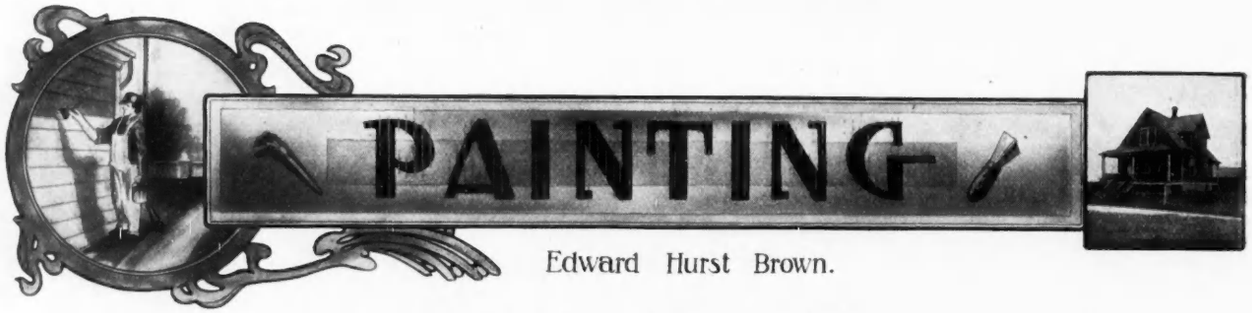
A hard-headed old Pittsburg manufacturer who made his fortune, as he expresses it, "with his coat off," was induced by his daughters to accompany them to a Wagner concert, the first he had ever attended. The next day he happened to meet an acquaintance who had seen him the night before, who asked:

"I suppose you enjoyed the concert last night, Mr. Brown?"

"Yes; it took me back to the days of my youth," the old man said, with a reminiscent sigh.

"Ah, summer days in the country, girl in a lawn dress, birds singing, and all that?"

"No, the days when I worked in a boiler shop in Scranton."—Success Magazine.



Edward Hurst Brown.

Painting the New House

HOW TO PREPARE THE SURFACE OF THE WOOD BEFORE VARNISHING—CONDITIONS UNDER WHICH BEST RESULTS CAN BE OBTAINED—REASONS WHY MOST WORK IS UNSATISFACTORY

IN SEVERAL of the preceding articles we have been considering the various materials used in hardwood finishing, we will now briefly take up the process of doing the work. And this is one of the most important factors that enter into a satisfactory job of finishing. If the persuasive varnish drummer is to be believed, when he enters the office of the architect or builder to call attention to his wares, all that is needed to insure perfection is to see that his particular brand of varnish is specified and used. In proof of his assertion he produces samples of wood which he declares were finished with the goods in question and there is no reason to doubt his veracity. The label on the back of the sample shows that it was finished, we will say, with one coat of paste filler, one coat of liquid filler or surfacer and one coat of varnish, all made by the firm represented by the commercial tourist. The surface shines like a mirror and there is a depth and richness of luster that appeals at once to the architect, who on his next job will probably specify the finish to be in accordance with the label on the back of the sample that the varnish drummer has left him. When the work is actually done, the contrast is startling. The smoothness and the depth and transparency of finish are lacking. Tiny bubbles or motes stand out here and there in the varnished surface, and the coating appears thin and unfinished. The architect refuses to believe that the painter has followed the specifications and feels that he has swindled the owner. As a matter of fact the architect was tricked into specifying an inadequate finish. Almost every varnish manufacturer puts out samples that are unfair, both to the architect and the painter. The varnish salesmen failed to tell the architect that the sample was made of selected wood, carefully scraped, and sandpapered, with every particle of dust removed; laid flat on a table in a dust free and perfectly dry room, kept at a uniform temperature of 70 degrees while being varnished. The varnish was flowed on in a heavy coat that would lay on a flat surface nearly twice as thick as on the vertical trim in a room. Sometimes the sample is carefully dipped in the varnish. All specks or motes are strained from the varnish and there are no raised fibers of wood or bits of sawdust or any of the dust always in the air of the house that is nearing completion. Moreover, in the varnish factory there is no hurry in the all-important matter of preparing samples. The filler is allowed ample time to dry hard, and the liquid filler or surfacer is allowed to become bone dry, so as to give a smooth surface to work on that is hard and non-absorbent as glass. Nor was it mentioned that the surfacer was rubbed perfectly smooth with curled hair or fine steel wool before the varnish is applied. All these the manufacturer regards as mere details, too trivial to mention on the label, yet they are the all-important factors in producing the finely finished samples. Of course, it is natural to presume that a manufacturer would endeavor to show his goods to their best advantage, but there ought to be some way by which he could be able to show what his varnish would do under ordinary working conditions. Moreover, the varnishers who produce these sample panels are perfectly familiar with the goods they are using and understand all their peculiarities and just how to handle them under varying conditions. It has been well said that the skilled finisher will produce a better job with a cheap varnish that he is perfectly familiar with than an average mechanic can do with the best and most expensive varnish on the market, especially if he is unfamiliar with it. Varnish is one of the most sensitive products known. The more expensive the varnish, the greater its sensitiveness to atmospheric changes, and the greater number of "deviltries"—to use a trade term—it seems to possess. This is one reason why it is unwise for the architect to specify special brands of varnish. No matter how good a varnish may be the mechanic is always able to produce the best job of hardwood finishing with the goods he is most familiar with, and even a good mechanic will often fail to do satisfactory work with a varnish he is unaccustomed to.

Conditions Responsible for Poor Work

In very many cases where complaints are made of the poor work done by the finishers or the poor results obtained from the use of a certain varnish, the cause will be found to lie in the unfavorable conditions under which the work has been done. In too many cases there are delays of one kind or another all through the building operations, until finally, when

the work is ready for the painter, the builder is way behind his contract time. Unmindful of the fact that good work can be produced only by making haste slowly, the painter is urged by both builder and owner to rush the work as fast as possible and get the building ready for occupancy. He is expected to begin the interior finishing in rooms where the carpenters are at work, the plumbers are still busy and perhaps the plasterers are at work patching up. The air is full of dust which settles on the half dry varnish and specks it. The building is seldom heated and the temperature is allowed to fall at night, chilling the varnish and causing all manner of "deviltries." Moreover, the painter is expected to hustle the work along and the impatient builder, architect and owner clamor so much for speed, that the second coat of varnish follows as soon as the first is "set" and before it has a chance to become thoroughly dry. And again, the carpenters seldom leave the woodwork in good condition for the painter. He finds it far from smooth, and requiring both scraping and sandpapering, marred by pencil marks, dented by misdirected blows from the hammer, greasy from the fingers of plumbers and others, and in no condition to do a good job of finishing. Yet he is expected to cure all the defects and injuries caused by other mechanics and to make a perfect and satisfactory job of hardwood finishing. Small wonder indeed that he cannot do it.

To do a first-class job of hardwood finishing, all the other work should be completed before the room is turned over to the finishers; and it should then be thoroughly swept out and the floors sponged off, or wiped off with a damp cloth and allowed to become perfectly dry. The sash should be fitted, and in place, and the doors hung, and both doors and windows should be closed to prevent draughts. An even temperature of about 70 degrees should be maintained night and day, or at any rate, this should be the minimum. Wherever possible, doors should be taken from their hinges and laid flat on a pair of trestles while varnishing, in order to flow on a more even coat. The door openings, in this case, can be closed with light frames covered with building paper or cloth, to prevent dust and cold air coming into the room. Unless these precautions are taken and unless ample time is given, a first-class job of hardwood finishing is impossible. And even with the utmost care and under the most favorable conditions it is almost impossible to produce a finish that will equal the manufacturers' samples or that of fine mantels or furniture except at an expense which is practically prohibitive. Furniture is always finished in a closed and dust free room of a temperature of from 70 to 80 degrees, and it is almost always possible to lay the pieces in such a position that the varnish is flowed on a horizontal surface, enabling a much heavier coat to be applied. It must be remembered that there is this important difference between painting and varnish. Whereas paint should be applied in thin coats, thoroughly brushed out with a rather stiff bristle brush, in order to work it into the pores of the wood, varnish should be flowed on in a heavy coat, and when applied should be allowed to level itself out. The luster and beauty of the varnish depend largely upon the depth or thickness of the film, and it naturally follows that a heavier coating can be applied to a level surface than upon a vertical one. Very few varnishes will stand "crossing," but they should be applied in parallel strokes with the grain of the wood, using a wide, chisel-edged camel's hair or elastic bristle varnish brush. There is no economy in using any but the very best brushes that can be bought.

Preparation of the Surface

The first thing necessary is a careful preparation of the surface to be varnished. All pencil marks must be cleaned off. Greasy stains should be removed—ammonia is excellent for this, but it requires subsequent washing off, and as it can be used only on such woods as do not contain tannic acid, as it darkens oak, mahogany, etc., gasoline or naphtha is probably more generally satisfactory. Hammer dents in the surface can be sometimes obliterated by soaking well with water and holding a heated flatiron in front of the dented spot. The luster of the varnish, it must not be forgotten, will accent and intensify every unevenness of surface. All plane marks must be carefully obliterated by means of steel scrapers, and finally the wood must be made perfectly smooth by means of sandpaper or steel wool. Extra care must be taken in doing this to avoid rounding off the edges of moldings and other sharp corners. Finally, every particle of fine sand and wood dust must be carefully dusted off, and the surface must be left smooth and clean. And in a job of hardwood finishing clean means clean, and not an approximation to cleanliness.

If the wood is an open-grained wood it will next need to be filled with a paste filler. The method for doing this has already been described. (See the AMERICAN CARPENTER AND BUILDER for February, 1906, page 856.) If the wood is to be stained, the filler should be colored of the appropriate tone, and any of the methods of staining already described are to be used. The staining is usually done before the wood is filled.

After the paste filler has been applied and become dry, many hardwood finishers recommend that a thin coat of shellac be given to the whole surface in order to produce a smooth and non-porous surface, such as glass would have. Shellac being expensive, a liquid filler is often substituted, and in this case, care should be taken to select one of good quality, made with a pigment base and a good varnish and thinned with turpentine. Cheap liquid fillers are dear in the end. The older work was invariably given a priming coat of shellac, and as grain alcohol shellac was used good results were the rule. There is so much adulterated shellac on the market to-day, cut with wood

alcohol, that many finishers now prefer to start at once with the varnish coats, instead of using a shellac or liquid filler surfacer. In any case where there is danger of moisture penetrating through the wood from behind, shellac should be avoided. Under no circumstances should oil be used as a primer.

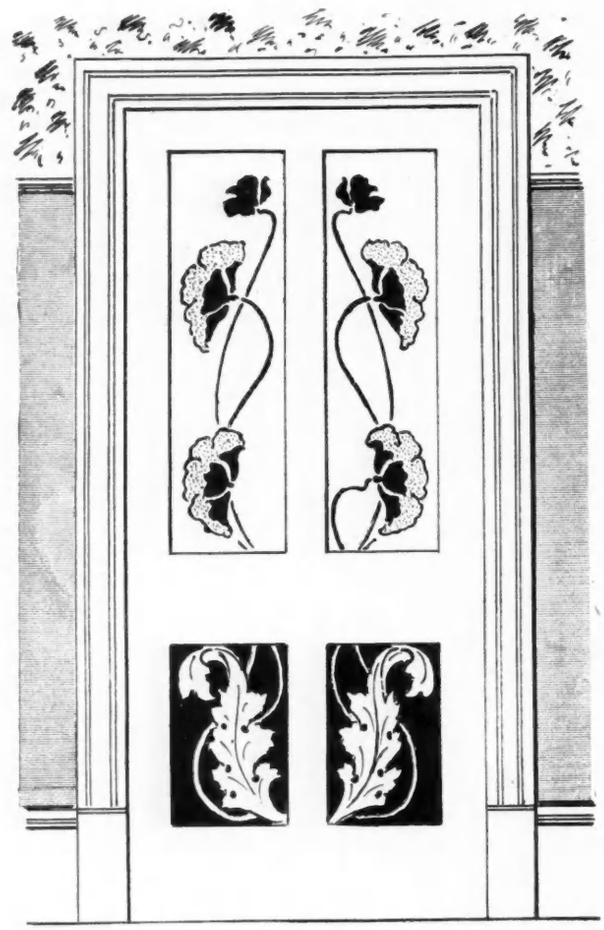
After the work has been filled, any nail holes, cracks or other defects should be puttied up. This is a matter requiring the most careful judgment on the part of the finisher. All wood darkens in time, and if the putty is tinted to match the new woodwork, in the course of five or six months, every nailhead and every crack will show out as light spots or marks against a darker ground. This is not due to the putty losing its color but to the natural darkening of the wood. It is far better to make the putty three or four shades darker at the start and have it invisible after a few months than to produce a perfect match in the beginning and obtain permanently disfigured woodwork later on. Papier mache and wood pulp have both been tried in an effort to overcome this difficulty, but without success.

Novel Idea in Interior Decoration

SUGGESTIONS FOR DECORATING DOORS TO HARMONIZE WITH THE REST OF THE INTERIOR—COLORS AND DESIGNS TO USE TO PRODUCE BEST RESULTS

By Sidney Phillips

THERE is one part of the wall space of almost every room that is neglected by the decorator, and often cuts into an agreeable decorative scheme with a rectangular piece of bald panel work entirely out of harmony with the general effect. That is the door. Open or shut, it obtrudes itself on the vision as a space filled with painted or varnished wood-

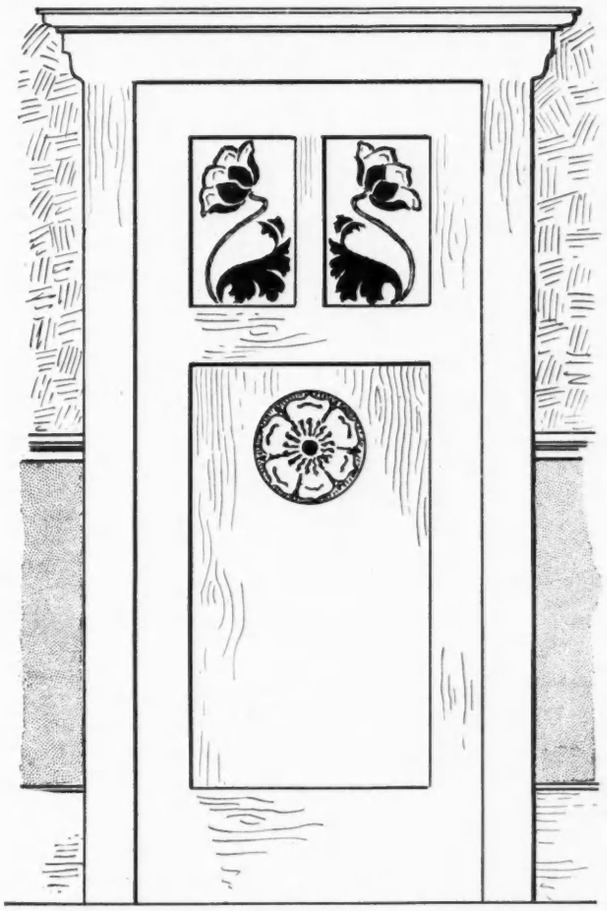


work, deriving some little interest from the arrangement of the panelling—though in the case of the usual four panel door, this interest must be very slight. and relieved only by the slight shadows cast by shallow moldings, or perhaps by the grain of the wood, if it is finished in the natural. And if, as it frequently happens, there are several doors in the room, a large portion of the wall space is entirely uninteresting from the decorative standpoint. Some of the early Gothic doors were made attractive by the great wrought iron hinges, elaborately designed and exhibiting the cunning work of the smith, that served to bind the door together, as well as to hang it. Again, many front and vestibule doors are made with glazed upper panels, affording opportunity for bright colors and effective design. The value of these glazed doors as an attractive adjunct to a house, has long been recognized by speculative builders. But there is no reason whatever why decorations upon doors should be confined to leaded glass.

The panels of the door afford an opportunity for decoration, either with stenciled, painted or burned in designs, or combinations of one or more of these methods. And it may be well to add that whatever decorative scheme is employed for a door, should be confined, as a rule, to the panels, since the stiles and rails are the elements of strength which bind the panels together and support them, and hence should be free from decoration. If any ornament is to be used upon the framework it should be a simple geometrical treatment that would not take away from the structural character of the door. Besides the methods of decoration above suggested, there are, of course, others that are available, such as inlay, applied metal work or relief ornaments, or tapestry, or even wall paper can be used. In the latter case, the hard prints, many of which are very beautiful, and the imitation leathers, some of which are close imitations of old Spanish tooled leather, would be very appropriate for a door panel decoration. The imitation leathers, such as are used for furniture coverings might also be used.

When fabrics or wall papers are used for decorating a door, the moldings should first be removed, and the fabric stretched in position and tacked closely round

the edges with small tacks, and the moldings should then be replaced, covering the rough edges. If there should be no moldings, it is well to cover the edge of the fabric with a small gold or metal effect molding or a furniture gimp. In using wall papers, this is not necessary, although it is even in this case better, if the

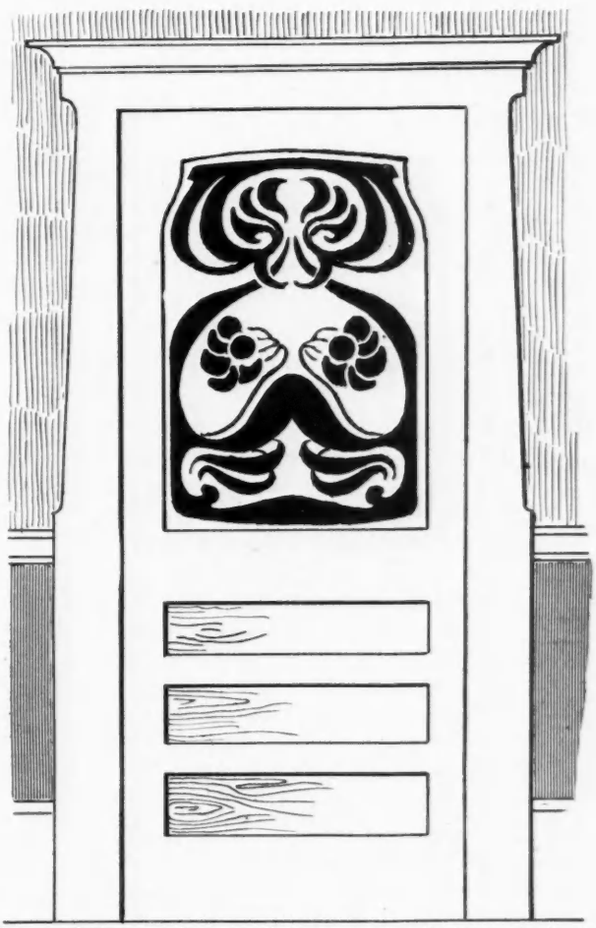


molding is removed, especially when lincrusta or heavily embossed papers are used. In order to protect ordinary wall paper from being soiled by handling, it may be varnished after it has been pasted on the door panel. This is done by first sizing the paper with a glue size, prepared by boiling the best glue (gelatine in flakes) in sufficient water to make a size that can be applied smoothly and evenly, and after this has stood for at least twenty-four hours, applying a thin coat of white damar varnish. A second thin coat of varnish can be given if desired, but, as a rule, one coat will be sufficient.

Painted or stenciled decorations look well either on painted woodwork or on wood that is finished in the natural or is stained. In the latter case the decoration should be done after the work is filled and given a thin coat of shellac, which should be lightly rubbed with fine steel wool to bring it to a smooth even surface. In coloring the design, the effect of the varnish should be considered. An ordinary varnish gives a brown or yellow cast to the colors beneath it, changing blues to a greenish cast and considerably dulling the reds, greens and yellows. Where bright colors are desired to carry out the decorative scheme, care should be taken to use only such varnishes as are specially prepared for use with white enamel work. These are made from selected gum and are nearly colorless.

For pyrography or burnt wood effects, which are particularly adapted to panel decoration selected poplar or white wood is the best lumber to use, although straight grained oak (not quarter sawed) that is fine and uniform in grain, or cherry, may be used if desired. Maple is also well adapted for burning. In this case the burning should be done before the wood is filled. The outlines of the pattern should be transferred to the wood by means of carbon transfer paper, such as is used in making second sheets on a type writer. Then the burning is done with the glowing platinum point of the ordinary pyrography outfit. The simplest and most effective pyrograpic outfit, however, and at the same time the cheapest, consists of a fine rubber tube that can be attached to a gas tip, terminating in a burning point, secured in a cork handle.

The burning is done by means of a tiny gas



flame that can be regulated to any height desired. Broad decorative effects are obtained by burning the outlines only, and staining the figures by means of specially prepared wood dyes, or the transparent aniline varnish stains may be employed. When the latter are used, it is well to give the whole work a thin coat of shellac before staining. Where stenciled designs

are used under varnish, the use of ordinary oil colors must be avoided. The proper materials to use are the so-called coach colors, or colors prepared for the use of carriage painters by being ground in "japan," which in this connection means a special kind of varnish made for the purpose of grinding colors. These colors are thinned with pure turpentine only to the consistency required for stenciling. The best effects are obtained by the use of transparent colors, such as raw and burnt sienna, raw and burnt umber, carmine, Prussian blue and the like. These will not obscure the grain of the wood completely, but will have more the effect of stains.

For the purpose of illustration, three designs for decorated doors are given. In each case the Art Nouveau style has been used, since it is capable of so much variation and freedom of treatment. Of course, the Empire torch, the Colonial swag or garland, or the heavy laurel leaf festoon, as well as almost any decorative style can be employed. Many suitable designs can be found in the catalogues of the manufacturers of cut stencils.

The first door illustrated is an ordinary four-panel door, the design being a conventionalized poppy. On the bottom panels are large leaves and the twisted stems that run on up to the upper panels, as though passing back of the lock rail, each supporting a large flower. The leaves are of dull green, against a black or dark brown or blue ground. The flowers are bright red or dull yellow against the natural color of the wood, the stems being green. This design may be either painted, stenciled or burned. In the latter case, the background of the lower panels may be darkened by burning.

But it is when the door is designed with a special view to decoration that the most novel effects and the best results can be obtained. The second illustration shows a three-panel door, also decorated with conventionalized poppies, shown in profile in the upper panels, while in the lower panel a large flower is used as a circular disc or cartouche filling. The background of this flower is burned in short strokes, the flower itself being either a bright red or yellow against this dark brown ground.

The third design is an odd one, the decoration being suited for painting rather than for burning. The color should be pale blue or green or at any rate, should be light in tone. The flowers should be red or yellow. This design would look well in pink or pale green on a white or ivory enamel finish door.

The illustrations are intended merely to suggest some ideas of the possibility of painted decorations for doors. Many others should suggest themselves to the wide-awake decorator.

Proper Way of Estimating

WHY SUCH GREAT DIFFERENCES OCCUR IN BIDS—HOW TO GET THE FIGURES MORE ACCURATE WHERE MOST CONTRACTORS FALL DOWN

By R. D. Connell

THE subject of estimating will no doubt be of interest to some and should be of interest to all our readers.

The great difference which appears in bids would suggest that there are various methods or perhaps better a lack of method in estimating. I have known mill estimators to vary 100 per cent on a small bill of material, and the bids on a $10,000 building to have a difference of three and four thousand dollars between the high and the low bids.

While there are no fixed rules to go by in estimating a job where material and labor vary in different localities, yet there are methods that will be of great value to those who have no system at all. It is the practice of many contractors to get estimates from other sub-contractors on the various parts of the work, add them together and the sum would be the amount of their bid. This way is not reliable, as you have no way of knowing that your estimate is correct, a mistake in any one of the sub-contractors who gave you figures would mean your bid was high or low. If his mistake was against him it would also be against the general contractor and in many cases would have to stand it if he secured the job. A contractor should be able to estimate every part of the building himself. The estimator who arrives the closest to the right amount will make an accurate list of all the material and labor that is required to complete the building. Accuracy in taking off quantities is a very necessary factor in good estimating, and yet it is possible for a person to have a correct list of all the labor and material and yet be off in his estimate. In taking off quantities care must be taken to reduce them to small units, for example, you have on your list a side-board; this should be taken as a unit and the material and labor listed and figured out just as you would the whole job.

The factor of guess enters into all estimating, but the smaller the unit or part is the closer you will come to the right amount. It is a very tedious task to estimate a building, and many get tired when they are half done and begin to lump off the work, and just here is where they fall down and get their bid either too high or too low, or may by chance get it right.

Short Talks With Our Subscribers.

WE ARE glad our April number pleased you. Mr. William A. Radford, editor of the AMERICAN CARPENTER AND BUILDER and president of the company, has been so overwhelmed with letters of congratulation on the the appearance and success of the magazine that he has found it impossible to reply to all personally, much as he would have liked to do so. He wishes us to thank the members of our large family of readers, through our monthly "Talk," for their many kind words of appreciation of his efforts to give them the very best trade paper published, and to state that it is a great satisfaction to him to know that he has so far succeeded as to bring out this multitude of letters of hearty approval.

We made a special effort to have our April issue better in every respect than any preceding number, and according to these many letters received by Mr. Radford we must have succeeded. Now that we have set this mark for general excellence, we do not propose to fall behind it in any subsequent issue. We think this number is an improvement over April in many respects. What do you think? Next month we are planning to make it even better, and so on through the year, until the April, 1907, number will be as far ahead of April, 1906, as 1906 was ahead of 1905.

Family Circle Remains Unbroken

It is a great satisfaction to us, and it must also be to you, to know that our great family of over 28,000 readers still remains unbroken. In fact, it has materially increased, until at this writing we have 28,689. This is certainly a "great family" in more ways than one. It is not only a great family in numbers, but it is a family every member of which is a loyal member. Not only do they remain in the circle themselves, but they are continually sending in the names of new members.

A gentleman of wide experience, who reads all the leading trade publications regularly, said, "I like your magazine for one thing in particular—it differs from all other similar magazines in that it is practical from start to finish; it tells its readers just how to do things and tells them in a way that is easily understood." It is this more than anything else which binds its readers together in one unbroken circle. It is this which makes the correspondence department so helpful—the disposition to help each other. It is this also which is undoubtedly the cause of so many members securing new subscribers for us. They know that they have been helped themselves; they know that they will continue to be helped each month, and they are anxious to have others share the benefits. From ten to twenty new members are added every day, coming directly through present subscribers.

"The World's Greatest Building Paper"

You may have noticed that last month we added a new line to our title page—"The World's Greatest Building Paper." Do you think we are claiming too much? Do you know of any building paper which approaches the AMERICAN CARPENTER AND BUILDER in the amount and quality of its reading matter, in the number and quality of its illustrations, in the number of trade subjects covered, or in the practical manner in which these subjects are covered?

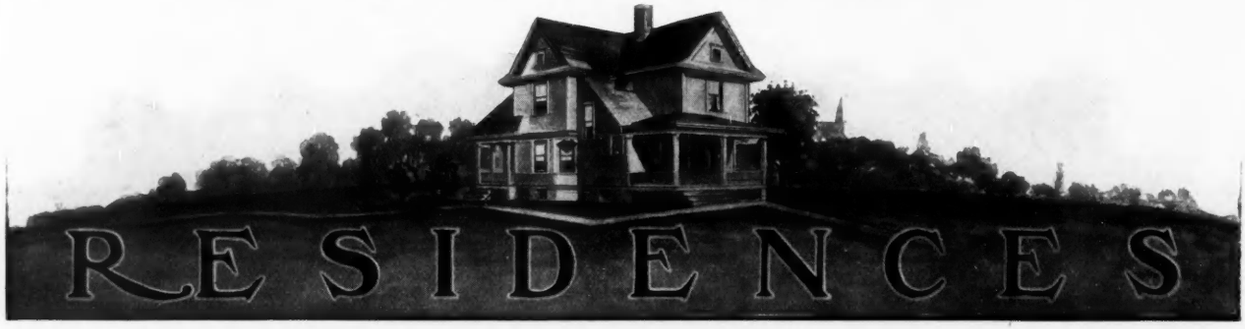
We have been watching the trade papers pretty carefully and have yet to find one which approaches our magazine on these points. In fact, we consider we are so far in advance as to be in a class by ourselves. We are made bold in this respect by the many kind words of praise from our readers themselves. We are determined to always merit this good opinion of our subscribers, and if in your opinion we at any time fall below the mark we trust you will not fail to let us hear from you.

Value of the Advertising Pages

Have you noticed what a valuable lot of information there is in the advertising pages? These pages have been increasing in number right along, and as their volume increases their value to our readers increases. Many of our subscribers are really giving as much attention to the advertising pages as they do to the reading matter. They say that they get more information from them regarding everything pertaining to the trade which is new and up-to-date than from any other source. Every conceivable article which the carpenter and builder uses is described in these pages, and if there is anything new he is sure to learn of it first right here.

Then, too, the increased number of these pages makes it possible for us to increase the number and value of the pages of reading matter. We are able to spend more money for practical articles, and for the finest illustrations. We are making plans for increasing the value of the magazine from every standpoint and we have a number of very gratifying surprises in store for our readers.

Watch for the next issues.



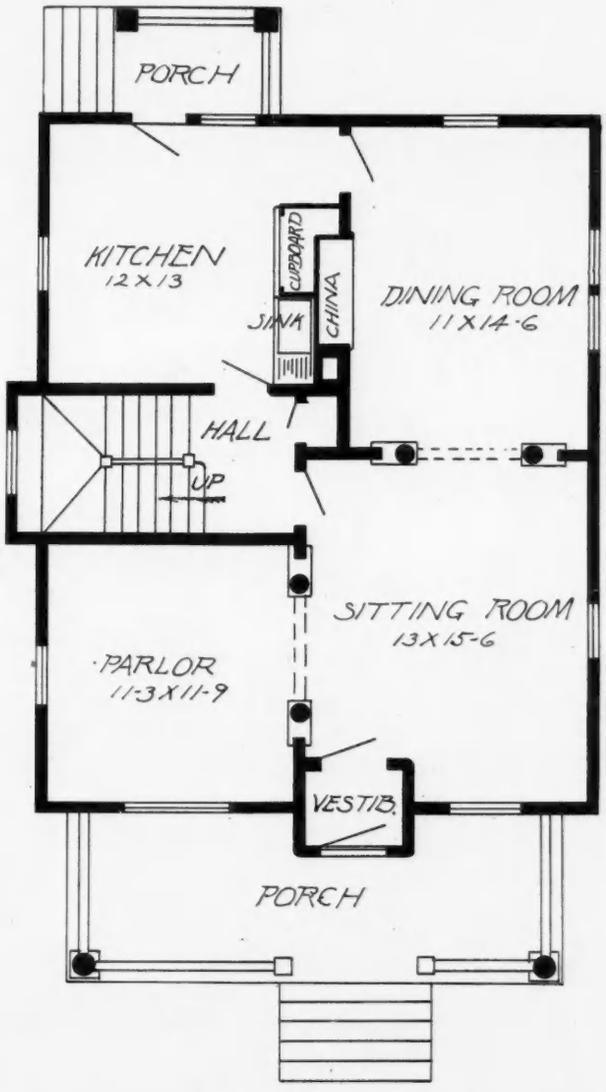
Desirable Modern Houses

PERSPECTIVE AND FLOOR PLANS SHOWING THE INTERIOR ARRANGEMENT—DESIRABLE FEATURES OF EACH—SUGGESTIVE TO THE CARPENTER AND BUILDER

A VERY solid and rather imposing effect is produced in the design shown on this page. There is a porch running across the entire front of the house and is so arranged that a number of people can easily occupy the porch without obstructing the entrance to the house. The vestibule at the entrance is a good feature as it prevents drafts from entering into the house on cold and windy days. The parlor and sitting rooms are divided with drop curtains and can be drawn aside when they have company, making one large room. The rooms are all square, which does away with any unnecessary corners and makes use of all the available space. There is a doorway dividing the sitting room from the hall stairway. This is a good feature, as the housekeeper often wants to get up stairs from the kitchen in case she is taken unawares by visitors.

The second floor is divided into four bedrooms and a bath room. The bedrooms are all of good size and each has two windows. This is a good feature, as a bedroom or any other room in a house cannot have too much sunlight, as sunlight is one of the healthiest things to have in the house. The windows are so arranged that they can be left partly open at night and still prevent a draft striking the person sleeping in the room. It is almost essential to good health to have at least one window open in the bedroom at night, otherwise the air in the room becomes so bad that in-

stead of awakening up refreshed, it will cause listlessness and fatigue. As to the cost of this house, it is almost impossible to give an estimate, as the prices vary in different parts of the country, because the taste of individuals in regard to inside finishing has a great deal to do with the expenses. Some want all inside

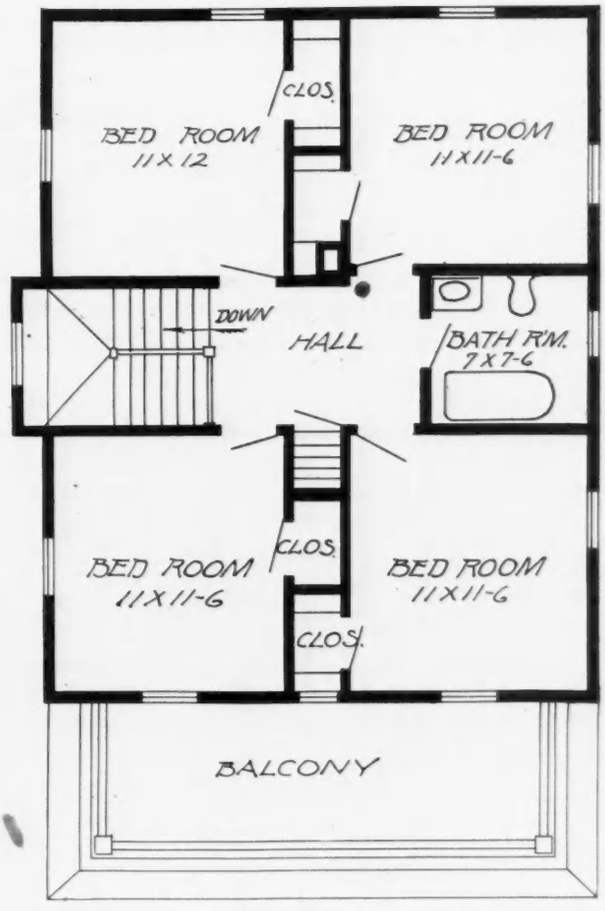


woodwork as perfect as a piece of furniture. They want it filled and rubbed down as carefully as a mahogany chair, while others are satisfied with the cheaper woods coated with varnish or paint. A difference of several hundred dollars may be made in a house of this size by the kind of inside finish and the amount of work on it. The material for a hardwood floor, for instance, may not cost a great deal more than some kind of soft wood, but there is a great deal more work in laying a hardwood floor. Every one has heard about the man who was ruined by a pair of lace curtains because hanging them led to the discarding of every old thing in the house. Everything else must match the expensive lace curtains; so it is with hardwood floors. The subject here reminds me of Josh Billings' description of Webster's unabridged dictionary; he called it Webster's history of the English language or how one word leads to another. It is just so in house building. One expense leads to another. The only way to avoid extras is to study the plans very carefully, make up your mind as to just exactly what you want and stick to it.

A Roomy House

The house shown on page 198 was designed by A. P. Coon and is very roomy. The form of this house is square because that shape affords the greatest amount of room and most favorable location of the rooms for the money. There is a cellar under the entire house, which can be entered from the kitchen, and can be used very advantageously for many purposes. A splendid feature of the first floor is the large living room, which is 14 by 19 feet. This is connected with the reception hall by sliding doors. The pantry is located between the kitchen and the dining room, and is provided with doors that swing in both directions and enables the housewife to do the maximum amount of work with the fewest possible steps, and also prevents the fumes of cooking matter saturating the entire house.

On the second floor there are four large bedrooms

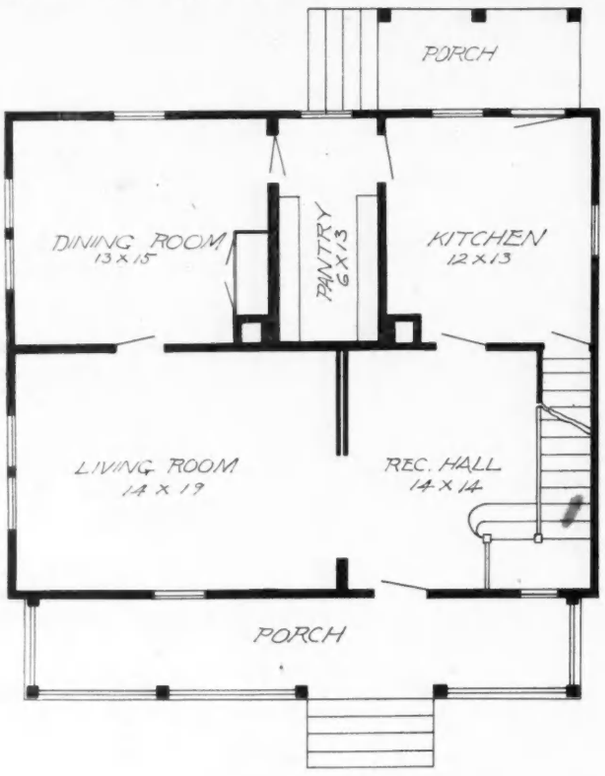


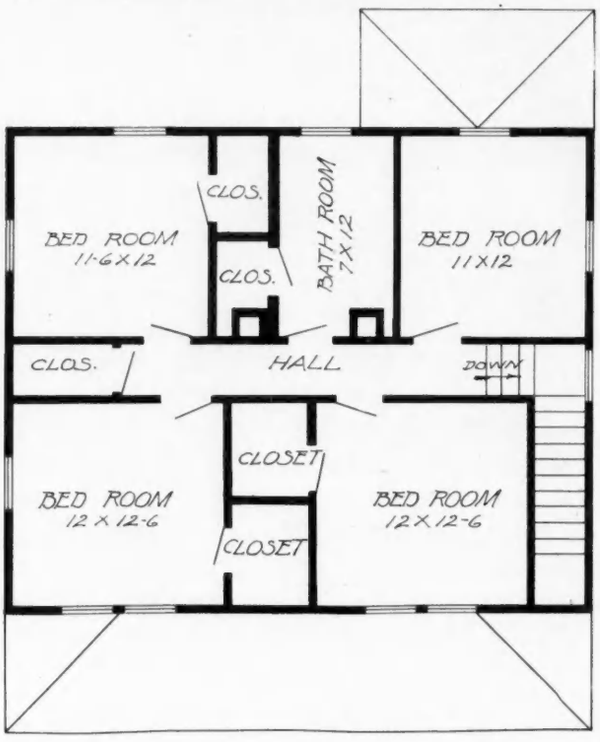
and a bath room. As the chimney comes up through the bath room it enables one to place the plumbing so that freezing is impossible.

A Gambrel Roof House

The house shown on page 199 was built at Hinsdale,

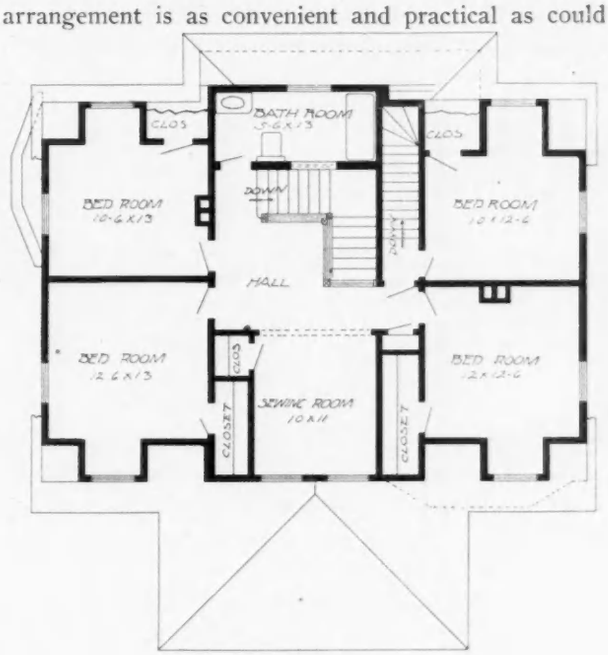
Ill., and suggests comfort in every line. The house is surrounded by a broad lawn, which is a splendid thing to have around a house, as it adds to the general appearance and gives evidence of the taste and refinement of the occupants. After the grounds surrounding the house have been leveled, comes the task of making cement walks. It is almost impossible to put down a walk before the ground is leveled and have it right afterward, unless the owner is willing to set the





walk a little high and haul in earth enough to make the proper grade. The cement walk should be just about an inch higher than the grass, and there should be a little space, say an inch and one-half, between the grass and the walk, so that a lawn mower would make a neat trim.

In this house there is a back porch which is fitted up with screens protecting it from insects and making a comfortable work-room from early spring until late in fall. Such a porch is a great convenience and it looks well. When you come to a convenient arrangement that is at the same time pleasing to the eye, you have a combination that is sure to last. The interior arrangement is as convenient and practical as could



be desired. Upon entering the first floor you come to a large hall, which can be used as a reception hall. On one side of the hall is the living room, while on the other is the dining room. There is also an entrance from the hallway into the library, which is located at one corner of the house and equipped with book shelves, window seats and an open fireplace. This is an ideal lounging place for the men and women also, and is a favorite corner in the house.

The dining room is also equipped with a window seat and fireplace, which makes it a pleasant inviting room. This is a very important feature about a dining room, as everyone enjoys their meals better in a bright, cheery room than in a dark, gloomy one. The pantry is located between the dining room and the kitchen, which is very convenient, as it saves very many unnecessary steps.

The second floor is divided into four bedrooms, a sewing room and a bath room. The sewing room is located so that a full view of the street is obtained, which makes it desirable, as it gives the occupants a view of anyone entering the house. There is a cellar under the entire house, which can be entered from the kitchen and also from the outside

How to Make Concrete Blocks More Popular

GOOD REASONS FOR HESITANCY IN USING THEM DURING THE PAST—HOW TO BEST OVERCOME THIS AND BY WHOM IT IS TO BE DONE

By George Jay Seymour

I HAVE heard it said again and again, that architects are a hard class of people to deal with.

This may be true, but let us not forget the almost innumerable brands of building materials that are on the market, and the architects are constantly requested to specify some new brand.

The architect cannot specify everything that comes along, that is evident, and yet every manufacturer, salesman, and local agent, whose goods are not immediately taken up, denounces the architects as a hard class to deal with.

But the architect's living, the keeping of present, and the getting of future business, depends on the excellence of his work, and to be continually specifying new and untried materials, will certainly depreciate his work.

Suppose that he specifies some new brand of material, on the strength of a few simple tests and the recommendations of the salesman, and a serious accident occurs, accompanied by loss of life perhaps, either while the building is in the course of construction, or afterwards. Such a thing is sufficient to spoil his business and blast his hopes of success. Such a thing has been known to ruin very prosperous and able architects.

Of course the material won't be blamed; no, the architect should have known better than to have specified it.

And now let us see what all this has to do with concrete blocks.

The architects are certainly not antagonistic to cement; though I speak unauthoritatively, I believe there is more cement specified than any other building material.

Concrete floors are very popular, not only because of their strength, but also on account of their fireproofing qualities, yet why does the architect hang back when it comes to concrete blocks?

It has been said that the concrete block house can be built better without employing an architect, and that the constant increase in houses of this description, will decrease the architect's business. To any reasonable man this is absurd, for while a barn or some small structure may be built of concrete blocks without an architect being employed, no house that will have any beauty, or that will have any prominence, can be built without the help of an architect whether it be built of concrete blocks, or brick or stone.

We quote from an architect of prominence: "More blocks have been sold than their merit warrants. At present this condition is not so apparent. There is more discrimination, there is more hesitancy, and there is more prejudice against the block than there was during its early history. The distinguished architects are to a man against it. However, with the architects this matter is not so serious as with the general public. As soon as the properly made block is conspicuously upon the market and as soon as the manufacturer has mastered the structural and artistic difficulties in the way of its production and use, then it will be found that the architect is ready to face about and proclaim to his client and the world that a new architectural medium is at hand, and thereby influence the public in the matter.

"A very few carefully designed buildings, carefully executed, will very soon remove all of the prejudice on the part of the people, the architect, and the builders, which now exists against their use."

We believe the above quoted gentleman is right when he says, "more blocks have been sold than their merit warrants."

Not more than the merit of the "ideal" block warrants, but the block as it is really made.

Personally, we believe that a concrete block house is superior, in a great many ways, to the brick or stone house, provided the designs are equally meritorious and provided the concrete blocks are well made and fit well.

That is just the point.

Anyone can make a first-class block if he wants to, but the average concrete block manufacturer does not turn out a first-class block by any means.

The fault is not with the block, but the man who makes the block.

To quote from the same architect again, "there is no more convenient form in which to handle concrete as a building material in upper walls than in blocks."

This is true, and it is because builders realize the inherent merits of concrete blocks that they have been led to accept any old kind of a block.

The idea struck the popular fancy and the block manufacturers in order to meet the demand, forgot quality and thought only of quantity.

Anybody and everybody rushed into the business whether they knew anything about it or not, and such sorry specimens were turned out, that if the concrete blocks did not have such inherent and apparent merits it would have been thrown into disfavor long ago.

We know concrete block manufacturers who have all the business they can handle, are turning away new orders, and in order to fill the ones already accepted, are turning out almost anything that resembles a block. If a brick manufacturer turns out a poor lot of brick, it is refused and he must deliver brick that is up to the standard. Why should not the concrete block manufacturer do the same? This gross negligence has hurt the industry and will continue to hurt it, as long as the negligence is permitted.

We do not write this article in a carping spirit, but in a spirit of friendly criticism. We have every confidence in every form of cement. We have every confidence in its future, but we do not like to see a meritorious thing needlessly injured.

It is for those most vitally concerned, those who are making their living out of the industry, to raise such a hue and cry, as to bring about a reform and compel only good blocks to be manufactured.

We think nearly all the readers of this article can recall instances of poorly made blocks; blocks that crumble off at the edges, or that crumble away altogether with a little handling.

And this is why the architect does not favor concrete blocks.

The architect does not fear a well-formed, clean, sharp-edged block; where the external texture is good and the interior composition all that could be desired, of pleasing color, and varied and artistic design.

But where is he sure of getting this? In specifying brick he knows he can rely on it, and when he can place the same confidence in the concrete block he will specify it and not till then.

Then architects who have given the block a chance say that in a great many cases when the block is carefully made that their plans are not followed out because that would necessitate making some blocks of a different size from the others and this the manufacturers object to. This is another serious fault that must be corrected.

We believe faulty blocks are to a great extent due to the mix. We are not sufficiently up on this subject to give any suggestions, but it does not seem reasonable, that one set rule should apply successfully to all conditions.

Once more we want to impress our readers that we are enthusiastic about the cement block industry and its future, but we want to see the errors which are bound to spell ruin corrected.

And another thing that block manufacturers must remember is this.

The brick manufacturers had a hard struggle with their product.

They have control of the field now and they do not propose to lose that control. The ultimate success of the concrete block industry means a death blow to the brick industry.

It will be a battle royal.

The brick manufacturers will fight to the last trench, and will be on the lookout for flaws, and those that they find will be as so many victories for them and setbacks for the block manufacturers.

It is to the interests of the block manufacturers to see that as few flaws occur as possible. They must either unite and resolve not to manufacture anything but good blocks, or the majority must manufacture such an excellent product that the rest will be compelled to do the same or drop out.

New Recipe for Mince Pie

The following story suggests a new recipe for mince pie. It promises a product that will stand by a man even though it fails to aid digestion:

"Once, when I was a reporter," said David Belasco at a holiday dinner, "I spent two days with a gang of tramps in order to get material for an article on tramp life.

"These tramps were a merry lot. They had as many stories to tell as the end man of a minstrel show. The excellent mince pie that we have just been eating reminds me of a mince pie episode told by one of the wanderers.

"He said that a friend of his, one cold day in January, knocked at the kitchen door of a farmhouse.

"'Well?' said the farmer's wife. 'You here again?'

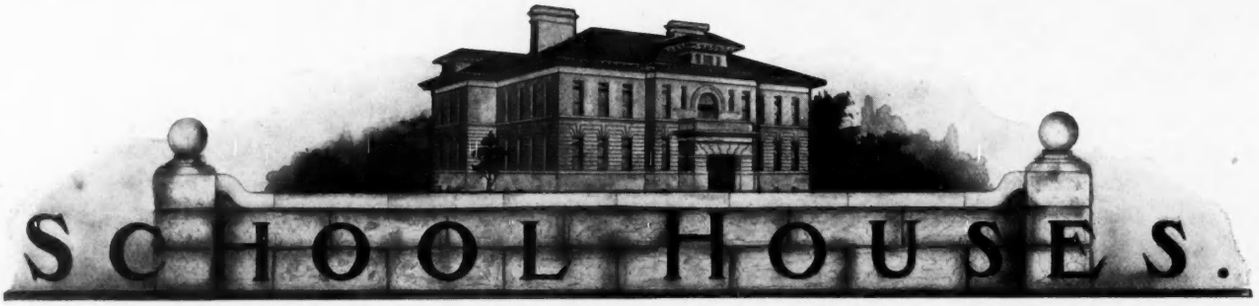
"'Yes, ma'am,' said the tramp respectfully. 'I want to know, ma'am, if you'll be kind enough to give me the recipe for that mince pie what I had here yesterday.'

"'Well, the idea!' cried the farmer's wife. 'Landsakes, man, what do you want that recipe for?'

"'To settle a bet,' replied the tramp. 'My pardner says you use three cups of Portland cement to one of molasses, but I claim it's only two and a half.'"

Cannot Do Without It

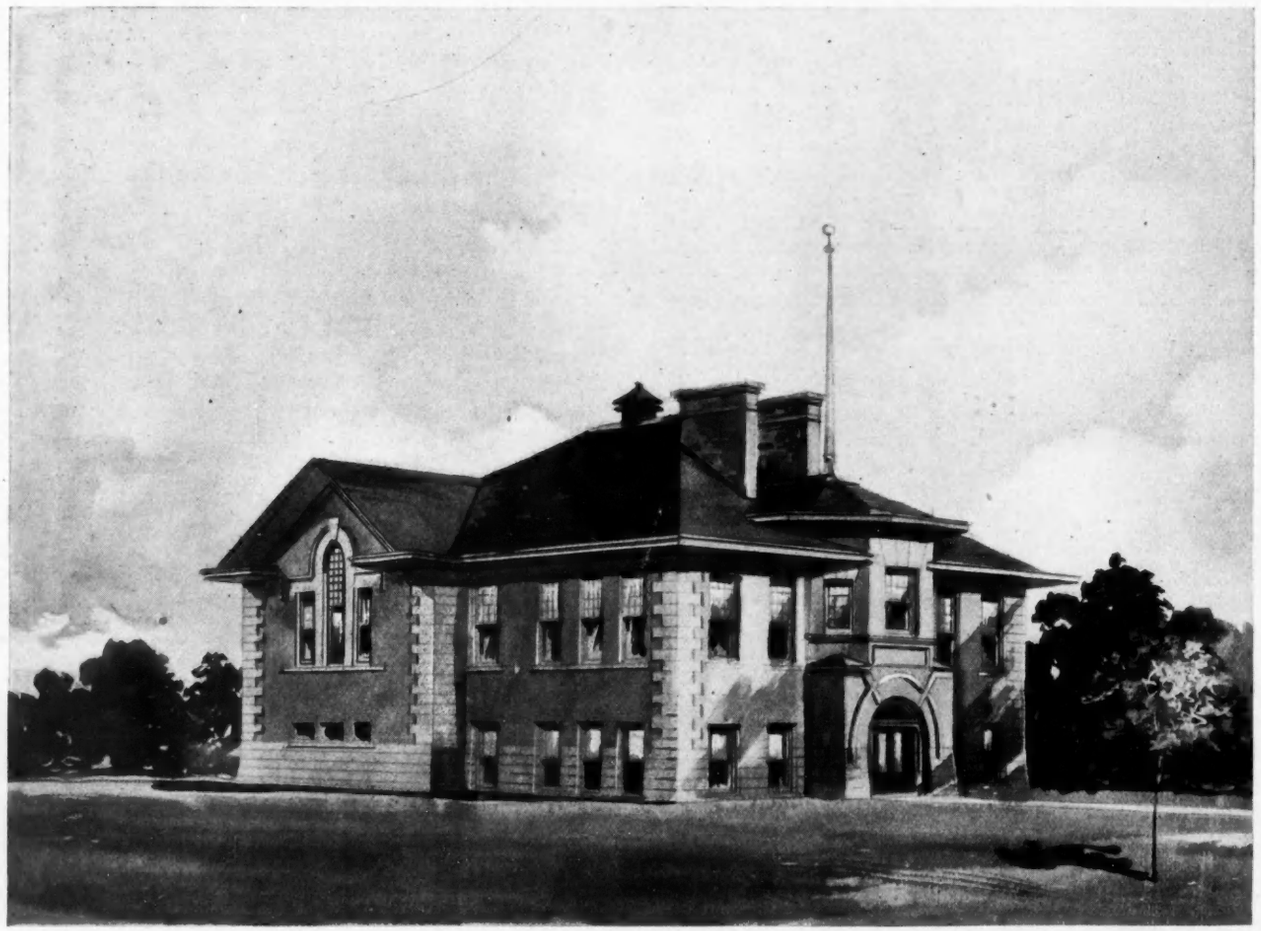
I cannot do without such a valuable paper.—A. A. Kimball, Tibbetts, Mo.



Two Small High Schools

DESIGNS SUCH AS ARE FOUND IN MANY SMALL TOWNS—REASONS FOR THE INTERIOR ARRANGEMENT AND THE ADVANTAGES OF THE SAME

THE designs of the high schools shown this month were made by G. W. Ashby, architect, and are splendid types of what are found in many of our smaller cities. The building shown on this page is constructed of brick and the trimming is of stone and presents a neat, substantial appearance.



The basement is divided into a gymnasium, laboratory, boiler and fuel rooms and locker rooms. The gymnasium is a feature that is being introduced in many of our schools and is a very splendid one. Very often too little attention is paid to the physical development of the children, and this is just as important as the mental, as there is no question but that a good healthy body is essential to a sound mind. A half-hour or so of systematic exercise in a gymnasium will produce results which are often surprising. There are plenty of windows in this room, as it is very essential that there is a good supply of fresh air while the exercises are being taken.

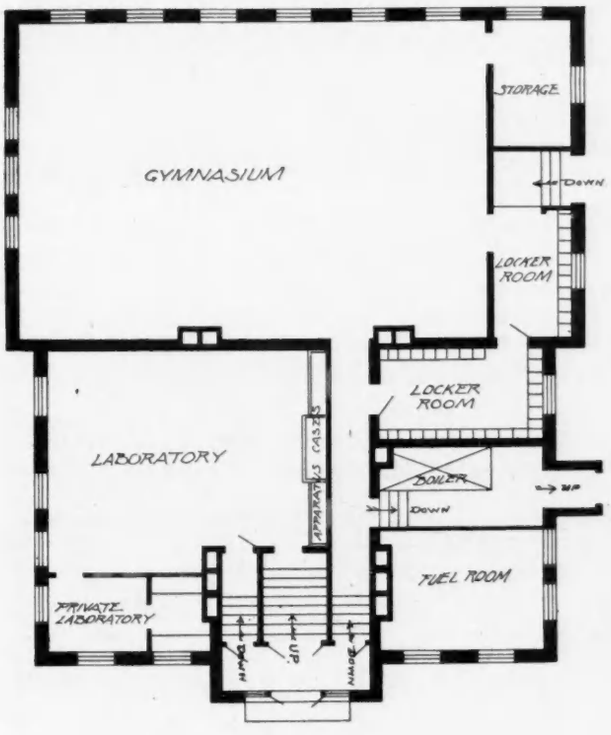
Locker rooms are conveniently arranged where the students can keep their slippers and sweaters after their work in the gymnasium. The laboratory is large enough to accommodate a good-sized class and is equipped on one side with a case for various apparatus to be used for their school work. All apparatus should be carefully stored away after it has been used, as they are all delicate instruments and are very easily affected by dust.

Instead of having regular seats in a room of this kind it is better to have one or two long tables, around which the students can sit, as their work in the laboratory will make it necessary for them to take notes and

FRONT ELEVATION

make practical experiments for which these tables are absolutely essential. In the private laboratory some of the finer experiments can be made and all the weighing of very small quantities which would be affected by a draft or other outside influence can be done in this room.

The main floor is divided into an assembly room, two class rooms, principal's room and locker rooms.

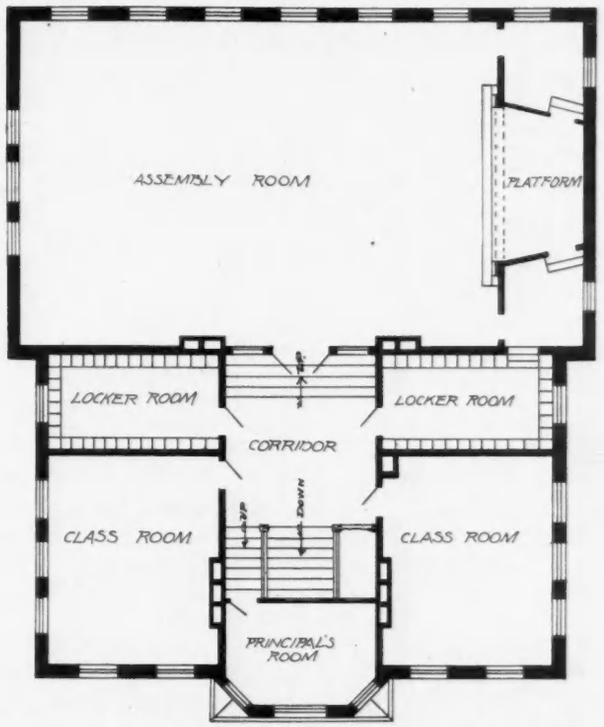


BASEMENT PLAN

The assembly room extends across the entire width of the building and has a raised platform.

Well Equipped School

The high school shown on page 204 is of a larger type and will be able to accommodate more students. There is a basement under the entire building, which is divided into a furnace room, fuel rooms and toilet rooms. The first floor is divided into an assembly room, two class rooms and the principal's room. The principal's room is right off from the platform and



can be used as a dressing room or a waiting room during entertainments, as in many small towns the assembly room in the high school is the only available room to give entertainments. The platform is raised, so that the teachers can easily overlook the entire room, and right here we would suggest that it is a good plan for the different teachers in the school to give talks several times a week to the students on the different important topics of the day. This can be done during the first fifteen minutes in the morning and is of great educational value to the students.

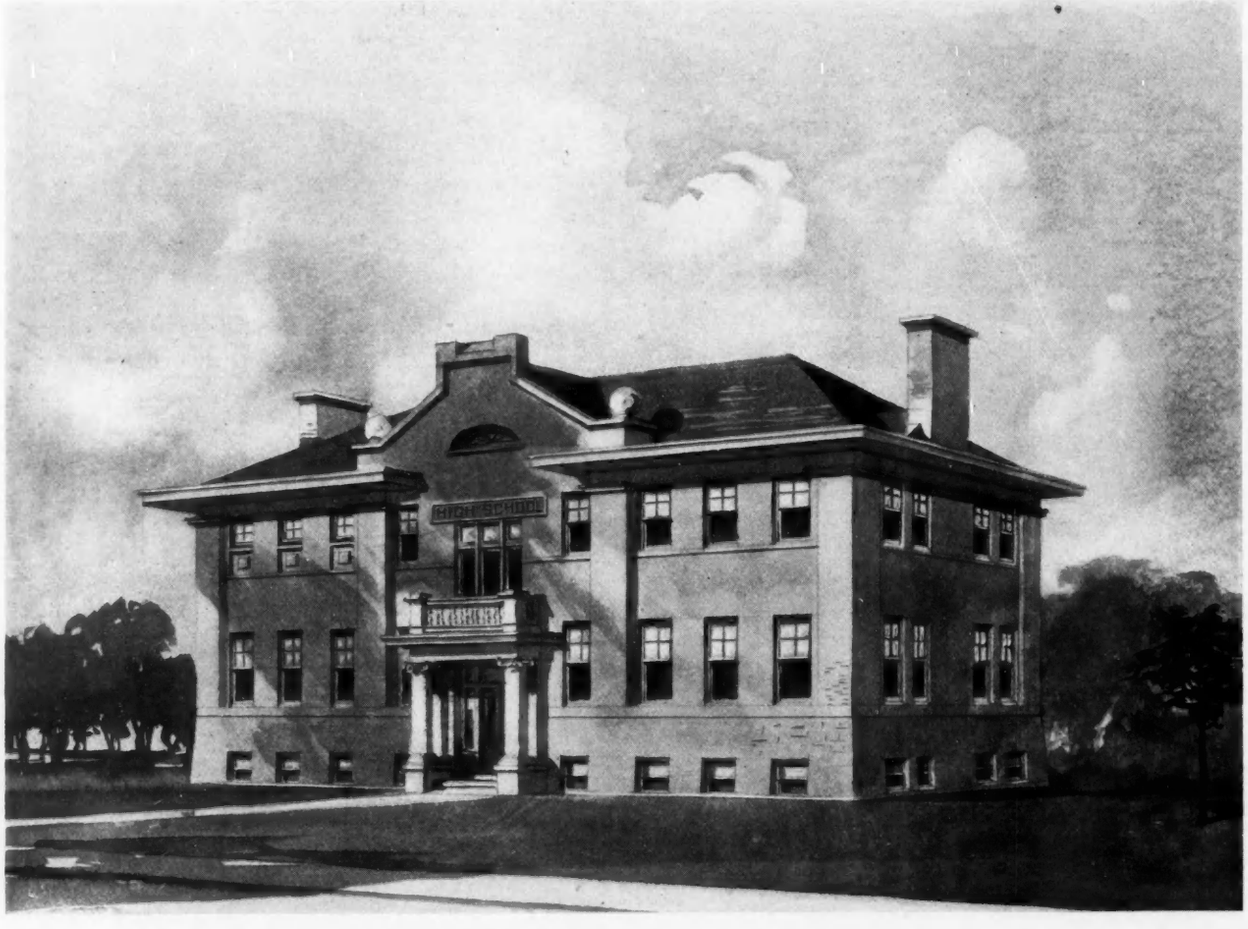
The two class rooms will be sufficient in a high school of this kind, as one class can be working in the laboratory, two can be using the class rooms and

LEFT SIDE ELEVATION

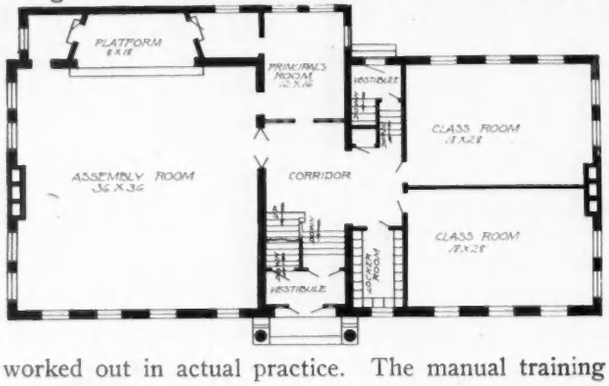
the other can be at work studying in the assembly room. By the time the children have reached the high school they no longer study a little of a great

many studies, but devote more time to a few studies; four studies being the usual number that any one student takes.

The gymnasium is 36 by 36 and can be used for several purposes should it be found that a gymnasium



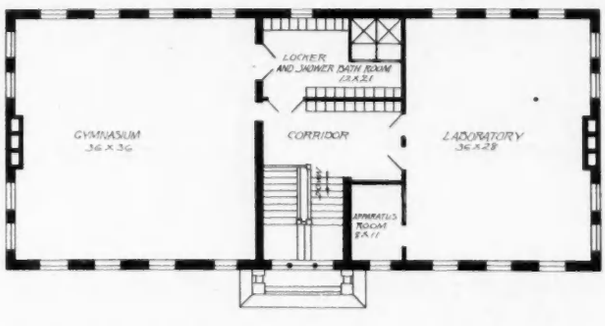
was not desirable. A manual training department can be put in instead, and many of the problems which are given to them in some other class can be here



worked out in actual practice. The manual training department is getting to be introduced in more schools every year, and in talking the matter over with a number of teachers they remark that since manual training has been introduced there has been less truancy in the schools. This is explained by the fact that no matter how bad a boy may be, if he has something to do with his hands, such as sawing and nailing, he will be perfectly contented and prove that his mind runs toward the practical side of things.

German Care of Landscapes

Most German states have laws to prevent the disfigurement of landscapes by advertisements. The district authorities, like our county boards, are authorized to determine what landscapes, buildings or monuments of a historical or artistic value should be protected, says the New York World. Violations of the statute are made punishable by fine, with or without imprisonment. The statute provides against the display of pictures, advertisements or other things calculated to mar or disfigure any especially attractive landscape or detract from the artistic or æsthetic effect of any building or other structure of special importance or be highly prejudicial to any street or part of a town.



The alteration of buildings of historical or artistic value may be prohibited by the local authorities, as may the construction of other buildings calculated to interfere with such historical monuments.

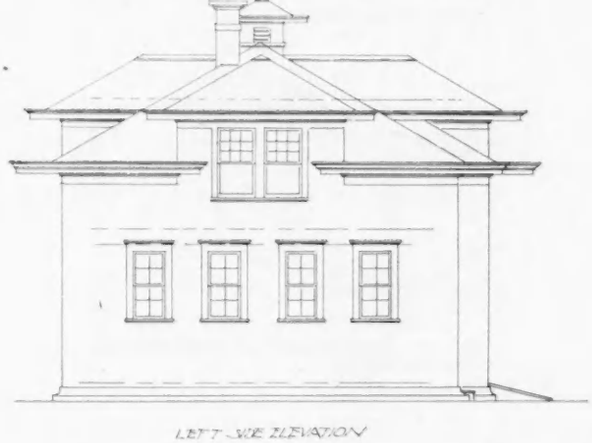
Henry H. Niemann

A Medium Sized Barn

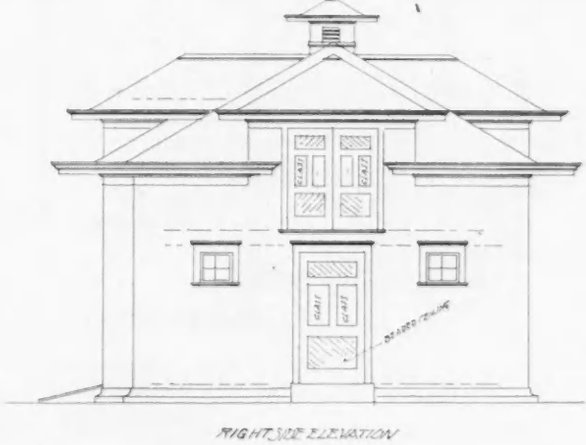
CAN BE USED FOR VARIOUS PURPOSES, SUCH AS LAUNDRY, SERVANTS' ROOMS, ETC.—ELEVATIONS AND FLOOR PLANS SHOWN INDICATING THE ENTIRE INTERIOR ARRANGEMENT

WE ARE this month illustrating a residence barn having two box stalls, a carriage room large enough for three vehicles, laundry, servants' rooms, storage room, feed room, etc. This barn has been designed in connection with a large residence to be built in New Orleans, La. The exterior is of cement, rough cast finish which is very durable and appropriate for southern climates. This location not permitting basements under the house, the laundry has been built in connection with the stable and servants' quarters, which is a good plan and would be equally as well for other locations in place of having the laundry in the basement of the house, which always results in more or less steam and fumes escaping to the upper rooms every wash day. This laundry is equipped with a hot water heater which not only furnishes hot water

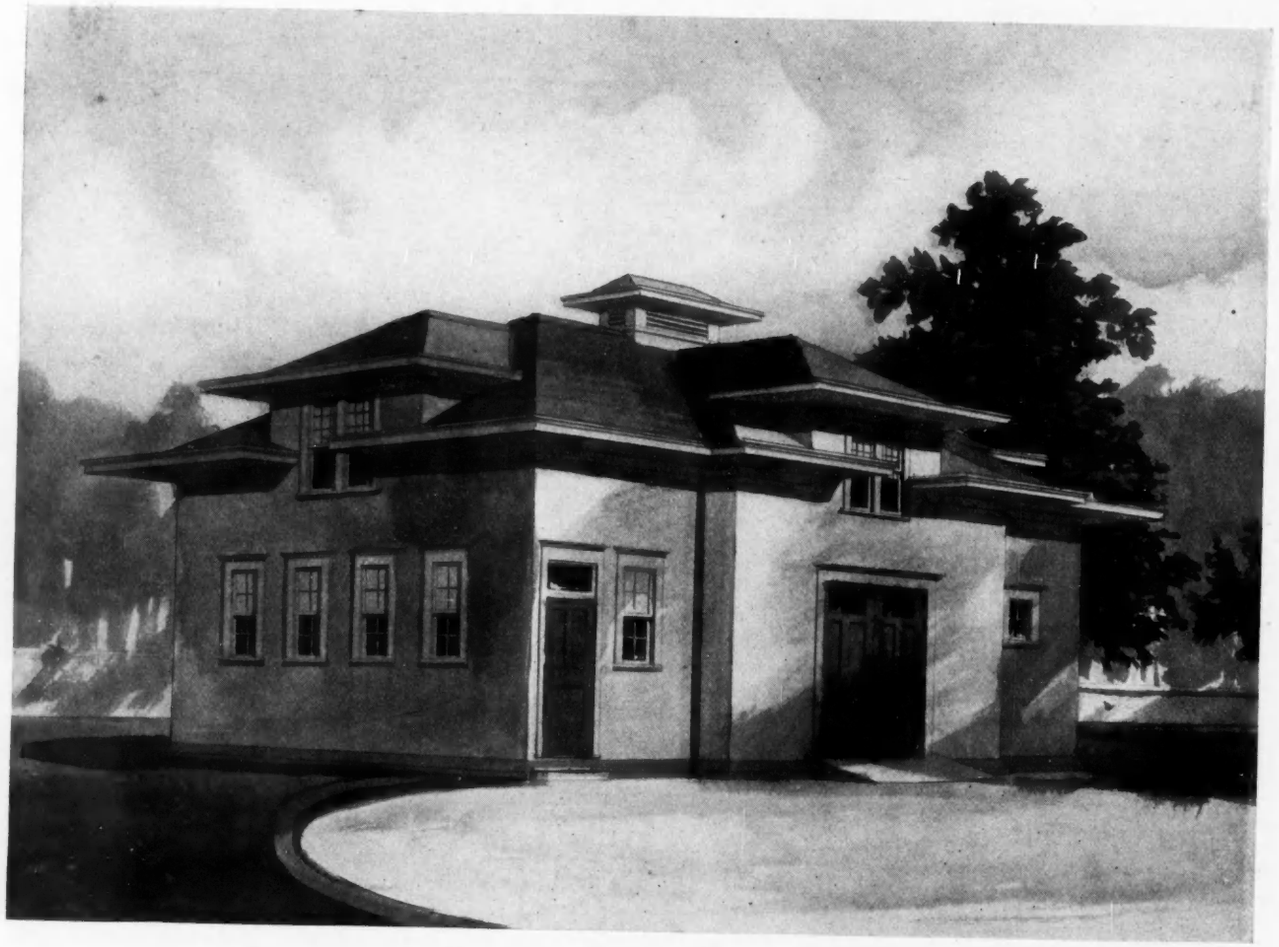
FRONT ELEVATION

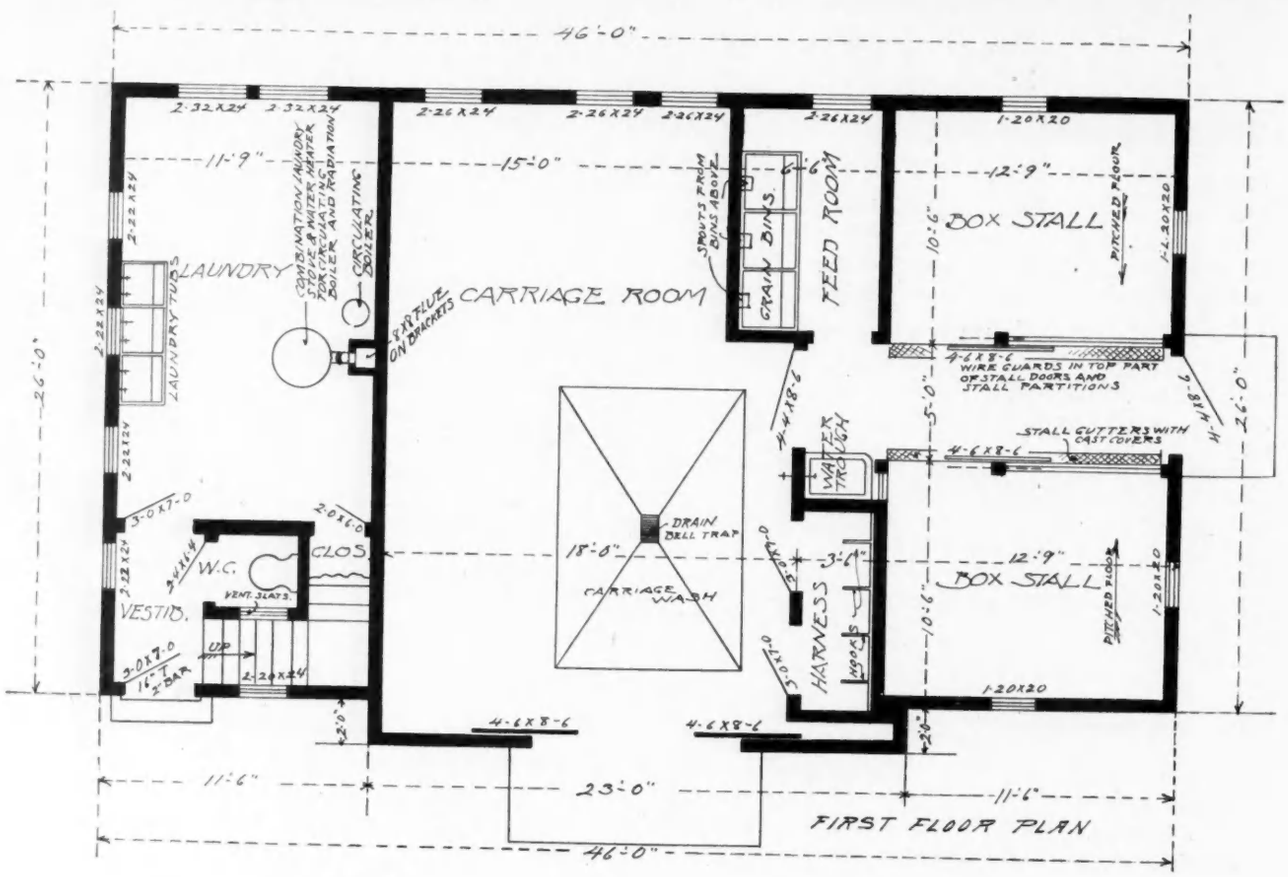


LEFT SIDE ELEVATION

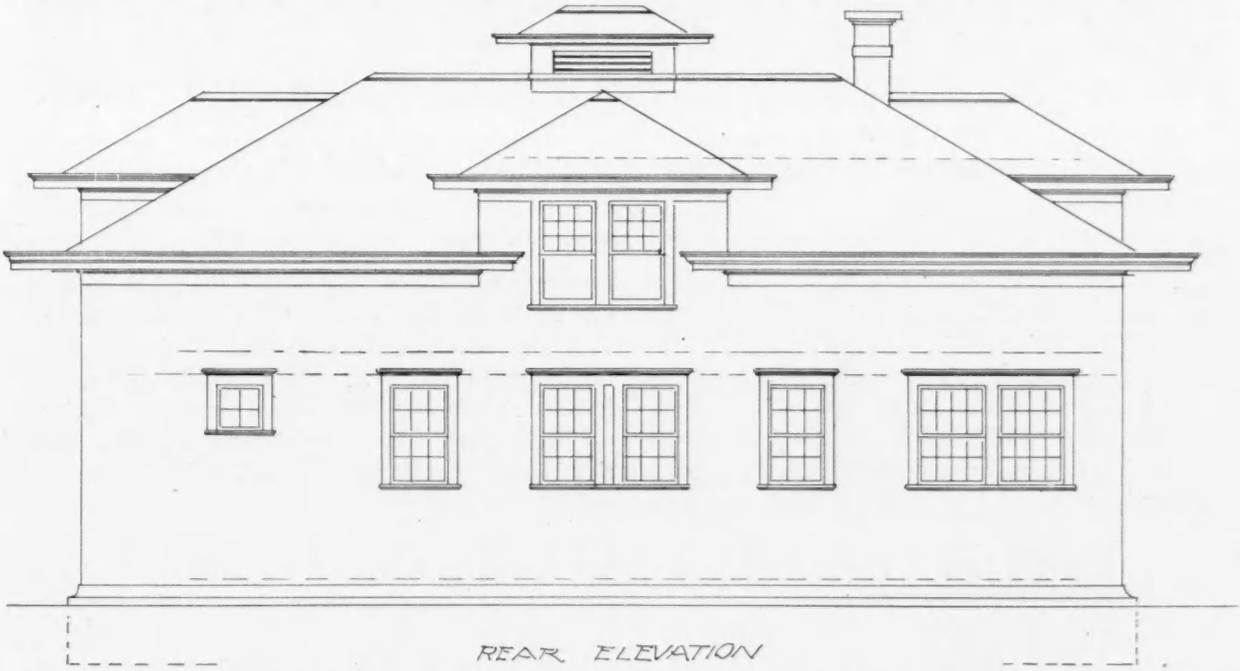


RIGHT SIDE ELEVATION



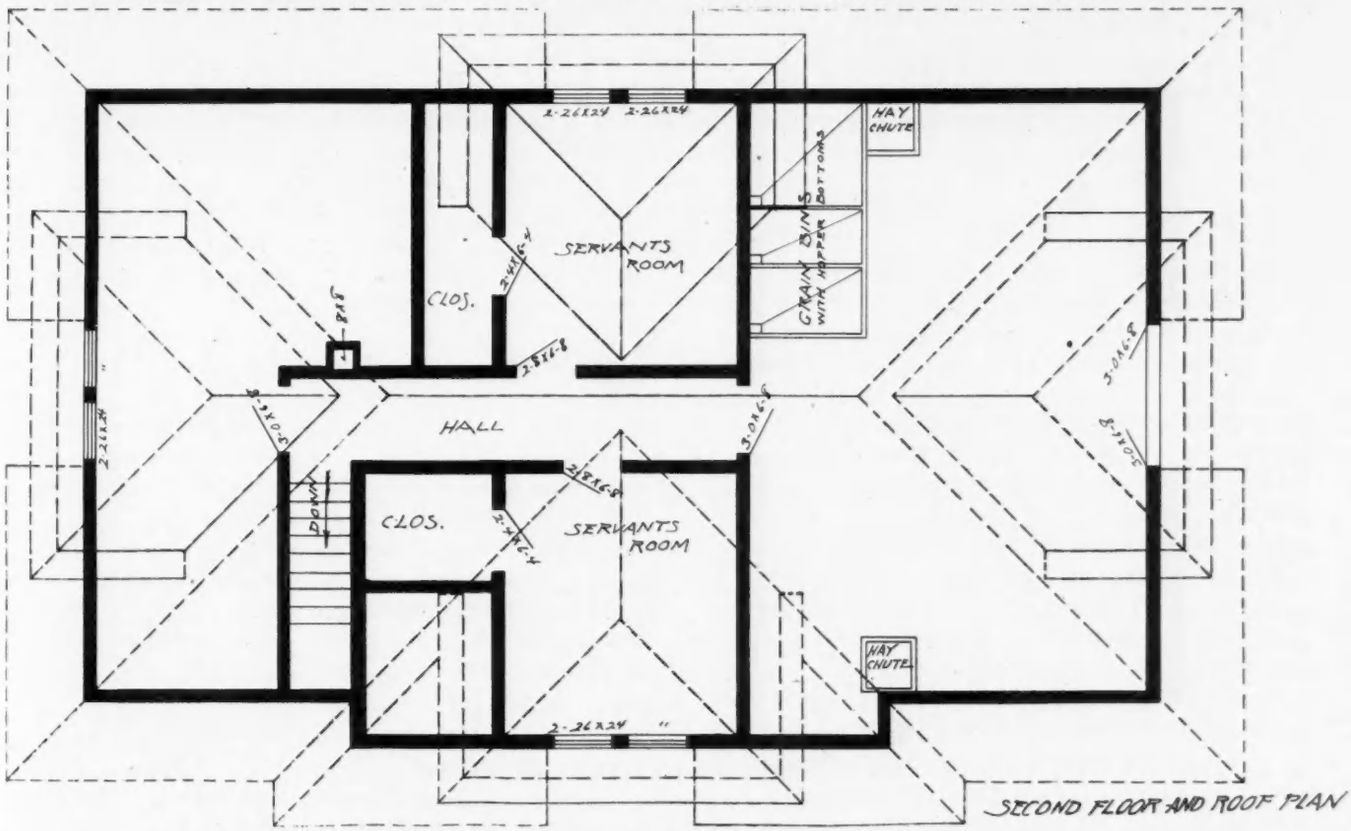

46'-0"
26'-0"
11'-9"
15'-0"
12'-9"
10'-6"
LAUNDRY
LAUNDRY TUBS
COMBINATION LAUNDRY STOVE & WATER HEATER WITH RETURN FLUE BOILER AND RADIATION
CIRCULATING BOILER
3 TILE ON BRACKETS
CARRIAGE ROOM
SPOUTS FROM BINS ABOVE
GRAIN BINS
FEED ROOM
BOX STALL
PITCHED FLOOR
4-6X8-6
WIRE GUARDS IN TOP PART OF STALL DOORS AND STALL PARTITIONS
STALL GUTTERS WITH CAST COVERS
WATER TROUGH
DRAIN BELL TRAP
18'-0"
CARRIAGE WASH
HARNESS ROOM
3'-0"
5'-0"
W.C.
CLOS.
VESTIB.
VENT. SLATS.
UP
16 T 2" BAR
11'-6"
23'-0"
FIRST FLOOR PLAN

for laundry and stable use, but is also used for radiation, furnishing heat to the stable, laundry, servants' rooms, etc. The carriage room has a carriage wash



REAR ELEVATION

and also a large harness case with hooks for harness, bridles, saddles, etc. The box stalls are 10 by 12 feet, have hay chutes from the upper floor and supplied with



SECOND FLOOR AND ROOF PLAN

the necessary feed boxes, salt boxes, etc. The stall floors are laid with a slight pitch down to a cast iron gutter which has a cast perforated cover.

The horse stable contains a small feed room, having small feed bins which are supplied from large feed bins on second floor by spouts having gate slides.

The second story has two pleasant servants' rooms which are 10 by 11 feet and have large closets neatly finished with yellow pine trim. Over the laundry is a large storage room with a dustproof door to the hall. Over the horse stable is the feed room for the storage of grain, hay, etc., and is provided with a large, double hay door which provides light and ventilation as well as loading facilities.

Something the Boys Can Make

GIVING THE COMPLETE DETAILS AND DRAWINGS OF HOW TO CONSTRUCT A MORRIS CHAIR—MATERIAL TO USE AND PROPER FINISH FOR SAME

A MORRIS chair, nowadays, is almost a household necessity. It needs to be used but a little while to make itself appreciated.

The chair shown in Fig. 1 is of substantial construction and has been found an excellent place for work as well as rest. The broad arms form a convenient place upon which to place writing materials. A drawing or sewing board of the usual size will reach from arm to arm thus placing the work directly in front of the worker. In a second of time the hinged back may be lowered and the chair becomes an ideal place in which to recline.

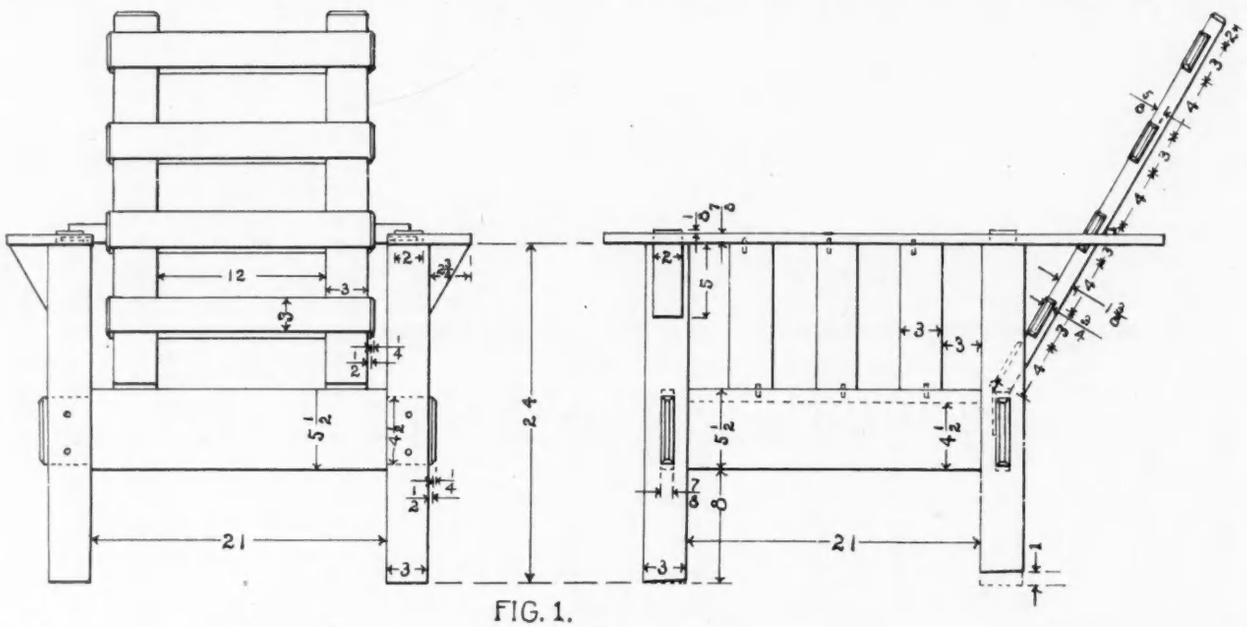


FIG. 1.

It is taken for granted that a boy with skill enough to make this chair has had considerable experience in handling tools. The chair shown in the photograph was made by a boy of fourteen who had learned the use of the various tools needed.

Square up four legs so that they shall measure three inches, by three inches, by twenty-five inches. Be careful to get the working-face out of wind and straight. Use the winding-sticks and the straight-edge freely.

Next, lay off the mortises for the rails and the tenons which come on the tops of the legs. Place the legs side by side and even the top ends by means of the square placed against the ends and along the side of one of them. Measure from the top ends one inch and square a sharp line across the four legs. Again, measure from this line a distance of eleven inches and square a line across as before for the tops of the mortises. From this line, measure four and one-half inches. A line squared across at this point will locate the bottom, or the lower ends, of the mortises. There should remain eight and one-half inches to the lower end of the legs. With the try-square held against the working-face and joint-edge, carry these lines around the pieces.

Before marking the sides of the mortises and tenons, set the pieces upright and in the positions they are to occupy relative to one another, taking pains to place the best surfaces where they will show most, and indicate the approximate locations of the mortises.

The front and back rails extend entirely through the legs. The side rails do not enter at all. The mortises, therefore, are on the side surfaces only of the legs.

Set the gauge first at one and one-sixteenth inches and gauge all mortises. Then set one and fifteen-sixteenths inches and gauge again, keeping the gauge block against the same surfaces as before.

For the tenons at the tops of the legs, set the gauge first to one-half an inch and gauge on each of the four surfaces, also the ends. Set to two and one-half inches and repeat. Do not make the mistake of gauging a

surface from one side, or edge, then from the other. The gauge must be reset and the gauging on any one surface done from the same edge.

The manner of cutting the mortises has been described in the January number in this department.

To cut the tenons, place the leg upright in the vise and, with the tenon saw, rip along the gauge lines. Keep the saw cut, or kerf, entirely upon the waste wood but against the line. Next, place the piece on its side and cross-cut around the four sides to form the shoulders. Nothing less than the best will do, and

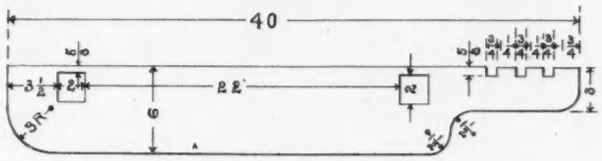


FIG. 2.

the shoulders must be squared to the sides of the legs with accuracy.

Bevel the ends of the tenons about one-sixteenth of an inch.

The slope on the bottoms of the legs is not to be put on until the chair has been put together.

Square up two pieces, one for the front rail and one for the back rail, to seven-eighths, by five and one-half, by twenty-eight and one-half inches.

Place them side by side, with the edges up, even the ends and square lines across the edges three and three-quarters inches from each end. Carry each of these lines across the faces and onto the other edge. Gauge the tenons by setting the gauge first to one-half an inch then to five inches. Rip carefully to the gauge lines and cross-cut to meet these lines. These tenons, it will be observed, have shoulders on the edges only.

With the pencil gauge, gauge and bevel the ends of the tenons to one-quarter of an inch.

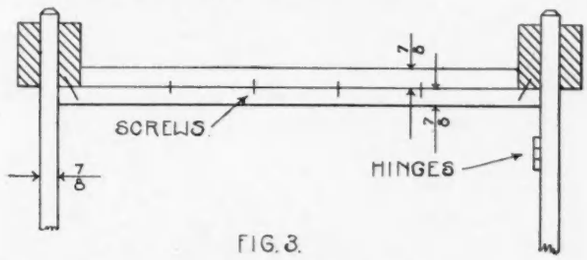


FIG. 3.

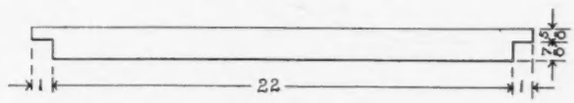


FIG. 4.

For the side rails, Fig. 3, square up two pieces seven-eighths, by five and one-half, by twenty-one inches. Also, square up two pieces to be fastened to the ones just described seven-eighths, by four and one-half, by twenty-three and one-eighth inches.

The vertical side bars are six in number to be squared up to three-quarters, by three, by ten and one-half inches.

The two pieces for the arms, Fig. 2, are seven-eighths, by six, by forty inches. The forepart has the outer corner cut off, a three-inch radius being used. The back part is ripped to a gauge line three inches from the inside edge to a distance of seven and one-half inches from the end. The three corners are cut, an inch and a half radius being used.

The gains into which the stick which supports the back enters are laid off by measuring from the end one and three-quarters inches, from this mark three-quarters of an inch, then one and one-quarter, three-quarters, one and one-quarter, and finally three-quarters of an inch. Set the gauge to five-eighths of an inch and gauge, from the inside edge, the spaces between the lines three-quarters of an inch apart. Saw and chisel, keeping the saw kerf on the wood which is to be removed.

The mortises in the arms are to receive the tenons cut on the tops of the legs. Square lines across from the inside edge at points measured from the fore part

three and one-half inches, from this point two inches, then twenty-two and finally, two inches. The gauging is done from the inside edge, the gauge being set to five-eighths of an inch, then to two and five-eighths inches. Lay off both upper and under side of the arm.

These mortises can best be cut by boring a series of holes pretty close to the lines then chiseling from each side half way through.

For the back, square two pieces to one and three-eighths, by three, by thirty inches. Bevel the top ends one-quarter of an inch. Place the two pieces on edge and even the ends. Very carefully mark off with knife point and try-square lines at the following points, beginning at the lower ends: Four inches, three inches, four inches, three inches, four inches, three inches, four inches, three inches. There should remain two inches. Carry these lines across the face and onto the other edge. Set the gauge to five-eighths of an inch and, gauging from the face, mark between the lines which are three inches apart. Gauge both edges of each piece. These gains are to be sawed and chiseled so as to receive the cross bars of which there are four.

The cross-bars are three-quarters, by three, by nine-

teen and one-half inches, beveled on the ends one-quarter of an inch.

The stick which supports the back, Fig. 4, should be three-quarters, by one and one-half, by twenty-four inches. The gauge is set to seven-eighths of an inch and the ends gauged to line squared around at a distance of one inch from each end, the block being held against what is to become the under side of the stick. Saw as indicated in Fig. 4.

The brackets which support the arms, Fig. 1, are made by squaring up a piece two inches, by two and three-quarters inches, by five inches and ripping this diagonally. The roughness made by the saw is planed off.

All parts should be well scraped and sandpapered preparatory to putting together. If mill planed stock is used, the mill marks must be planed off before sandpapering.

Begin by placing the front rail in place; then the back rail. Pin the tenons to the mortises by using three-eighths inch dowels as shown in Fig. 1. Use clamps to hold the legs up snug to the shoulders while boring. If desired, the dowels need not show on the front. Bore from the rear not quite through the legs.

Fasten the side rails together as shown in Fig. 3, then fasten them to the legs as shown in the same figure. The place at which to fasten them to the legs may be determined by using one of the three upright side bars as a measure, measuring down from the shoulder of the tenon which is on the top of each leg.

Mark and dowel, as shown in Fig. 1, for the uprights. A three-eighths-inch dowel may be used. Great care will be required in laying off the dowel holes for, if they are not just right, trouble will be experienced in clamping the side together.

Place the arm in place and clamp the side together after having glued and placed the uprights in position.

The arms are to be fastened to the legs by three-eighths-inch dowels, the holes being bored from the inner edge of the arm through the tenon. Fig. 1.

Place the brackets which support the arms. They may be nailed and the heads set and puttied, or they may be blind doweled and glued.

The framework of the back is put together by means of screws. Bore and countersink from the back side, two screws placed diagonally being sufficient for each joint. Place the cross pieces so there shall be twelve inches from inside to inside of the supports.

Fasten the back to the main frame of the chair, as shown in Fig. 1, by means of common iron strap-hinges.

The seat may be made by placing slats from side to side, the ends of which shall rest on the ledge made by the side rails. A better way would be to upholster the seat putting in springs.

The bottoms of the legs are to be cut on an angle. Measure up one inch on each of the rear legs and lay a straight-edge so as to connect this point with the bottom of the front leg. This gives the slope. Square across each leg and connect on the other side and saw.

Place castors under the legs and the chair is ready for the finish.

A satisfactory effect may be obtained by using one of the mission oak stains now so common on the market, following the directions of the manufacturers.

Cushions suitable can be bought ready-made either in leather or cloth and of a size to fit.

How to Prevent Fires

The Washington, D. C., Star has an article by Prof. Doremus on how to prevent fires from lace curtains catching in gas lights, in which he states his opinion that it should be made obligatory upon hotel proprietors to make curtains and other articles of household use fireproof, particularly when it can be shown that such an end can be accomplished at small cost and with little labor. We read of many fires which start from lace curtains blowing against the gas jet and igniting, when by the use of ammonia such a thing can be obviated, and the curtain may remain in contact with the gas jet for several hours without doing any more damage than to scorch the fabric. The curtain may be ruined; but it will be impossible for the fire to spread. "I have lectured many times (continues the professor) and before large audiences on the subject of fires and how to prevent them, and have frequently illustrated my lecture by the use of prepared fireproof curtains. By using one curtain which has been prepared to withstand the fire and one which has not, the advantage of using the ammonia solution is readily seen. It is inexpensive, and only a small quantity is necessary for the laundry of a family for a week. I am surprised that families have not applied the protective safeguard from fire. The same preparation can be used on the woodwork, about the windows and doors, and even the wainscoting in rooms can be washed with the solution and made practically fireproof. The preparation of the formula is very simple. Purchase in any drug store a pound of phosphate of ammonia. Dissolve it in water, making a strong solution, and then keep it in the laundry for constant use. Let the laundress, when she is preparing to starch the clothes, pour a little of the solution in a bowl holding the starch, and the linen will come out of the wash fireproof. I earnestly recommend the use of this formula by families, when it can be prepared so easily and cheaply."

His Bread and Butter

Your magazine has been my bread and butter for the past year and I cannot do without it. I hasten to renew my subscription for I do not wish to miss a single number. Your paper is far ahead of any other publication, and I have never thought as well of a magazine as I do of yours.—Chas. E. Hawk, Wilkesville, Ohio.

Effects of the California Earthquake

First Baptist Church, Oakland, built of stone, badly shaken and partially destroyed. Photo by E. H. Gold, of the Chicago Car Heating Co. taken Wednesday, April 18, the day of the earthquake

Hanging Door Controversy

To the Editor: Alliance, O.

In the March issue of your excellent magazine I see several articles which seem to indicate that not a few people doubt the truthfulness of the statements which I made in the January issue.

In reply I would like to say that the man from North Liberty, Ind., had better look up his January number and read my letter again. I did not say that a man could hang ten or twenty doors a day; but, on the contrary, I did say that there were more carpenters who would put up less than six than there were who would put up more than six doors a day.

The man from Louisville, O., lives only a short distance away and I would be glad to have him come to Alliance and inspect our work. I would also be glad to try and teach him to put on locks, and if he is not convinced, I will gladly pay for his time and expenses.

There are several other carpenters besides myself who can hang a door every hour or put on a lock in fifteen minutes. Just because some people are slow is no reason why others should be so. The men who wrote these letters must have had jambs so crooked that one would need a flexible plane to fit the doors with. The idea of a man being able to hang only three doors a day seems to me to be unreasonable. This would be about one hour to fit the door, one to put the hinges on and one to put the lock on.

I think that good work and not speed should be considered first in all lines of the trade. While a man may be able to do good work with poor tools, he cannot do it with any speed. He must not only have good tools but he must keep them in the best of shape, if he is to do good work with any reasonable amount of speed. Probably the failure to comply with this is the reason that some readers of the AMERICAN CARPENTER AND BUILDER are able to hang only three doors a day. Then again it may be that their methods of procedure are at fault. Whatever the fault, I would like to hear from some of these carpenters as to how they proceed to hang a door; and, if it is desirable, I may explain how I am able to hang a door every hour or lock one in fifteen minutes.

C. C. MUMMERT.

To the Editor: Alliance, O.

I notice in the March number of the AMERICAN CARPENTER AND BUILDER some of the members throwing mud at C. C. Mummert about hanging doors. I will say right here I saw Mr. Mummert hang and lock those doors, and I was the one who timed him, and they were fit in good shape, for I put the stops on the same doors. No dogs or cats could crawl through the cracks between the doors and jambs, and while I am not working for Mr. Mummert at the present time, I would like to see fair play. I think the main secret in fitting doors is to have the jambs nice and straight and plumb. I fit, hung, and locked four doors and my doors were all 3½ by 8 and were outside doors and a brick wall at that, in six hours. We always set our jambs for 2 by 8 doors 2 by 8⅛, and we therefore do not have so much to plane off. I also notice an account in the March number of hanging sliding doors. I think a good plant is to rabbit the head jamb about ½ an inch for the door to work in. I then, as you say, should have room for the hanger above the rabbit. This rabbit in the jambs holds your door and when you put on your stops keep them back about ⅛ from the door, and then the stops will never scratch your varnish when the door swings. R. C. COULTER.

To the Editor: Strawberry Point, Iowa.

I read the articles in the AMERICAN CARPENTER AND BUILDER on hanging and fitting doors, and while I have worked for a number of contractors and have had a number of men work for me, I have never yet found a man who could come up to Mr. Mummert—that is, in actual work. A man hanging eight doors in 5 hours reminds me of a man several years ago who told me he could lay ten thousand shingles in ten hours in a workmanlike manner. I took up this man's offer and set him to work and he did lay eight thousand shingles and used eight pounds of shingle nails; but it took the other man five days of ten hours each to put that roof in shape so it shed water, and after all, this roof in question was a bad job.

J. E. GRATKE.

To the Editor: Equality, Ill.

I read with much interest the various articles on hanging doors, and while I am considered a fast hand at hanging doors I find that to properly hang and lock six ordinary doors is a good day's work. I am not as fast as I used to be at this kind of work, not because I am getting old—oh, no—but because I know how the job should be done, and I am going to do it as it should be done "if it takes all summer." In conclusion, I will say that I know a man who says he can lock twelve doors and nail on seven squares of shingles in a day, but whenever I worked with him he could not do so much and I have often wondered why. J. H. GODFREY.

To the Editor: Searsboro, Iowa

The articles eliciting many smiles among your many readers are those relating to the door fitting and hanging business. For one with my over thirty years of that class of work, feel like taking my hat off in deference to the Alliance man, and like patting Louisville on the back. I am sorry I came away from that part of the Buckeye State before I had absorbed enough of the agility. I can sympathize with that one of the one hundred and fifty who "ever afterward was put to other work beside hanging doors." In my early experience back there (geographically between the two), after noting the trouble my employer, the boss carpenter, had in hanging a door in a new house we were then at work on, turned the rest over to me, and even if my memory is good I had fitted, hung and locked nine, and had thought nothing of it. But these reminiscences made me prick up my ears as if they had struck a familiar tune. I often wondered why I was not retained to do those snap jobs and not as a "barn" carpenter either. These discussions will certainly be a benefit to your readers, as no doubt many will verify their own capacities in

the months to come. Can we get as honest an expression of what a man can do in ten hours in the laying of large surfaces of flooring or shingle roofing. We, i. e. some one else, claim to be able to put down eight thousand shingles and to put them on right. By the way, a discussion of the proper way of laying shingles and kind of nails so the roof will serve the longest. These seem simple matters, but vital to the man paying for them at the present lumber prices. As a starter I will give my idea to pick at. First, avoid placing sheathing tight, providing roof is over one-third pitch, six-inch sound boards with spaces between of such width that each row of shingles can be nailed in middle of length. Second, one nail not over one-half an inch from edge of each and every shingle with one nail added between two edges for each three inches over six inches. Third, the best galvanized steel wire nail, not too coarse. Fourth, care in removing staging supports. There are other items that enter into the durability of a roof which suggest themselves. What think the craft?

H. T. KEENER.

To the Editor: Osnaburg, Ohio.

After having read all the literature on hanging doors in your March number I had first thought the subject was exhausted, but upon review of an article I discovered that a brother from West Virginia went wrong. He says that to place a door lock properly was to drive it in the mortise with a mallet. I infer from this that he has not been as long in the business as some of the rest of us, and has therefore failed to discover his mistake. When I place a lock I look for a contingency that may arise at some future time. I have seen broken locks time and again, and the fact is that there are but few houses that will escape some broken locks in the course of years, and then comes the work of removing and repairing these locks that have been driven in with a mallet, hammer, sledge or piledriver. I say use a ⅝-inch bit to bore with and a sharp paring chisel to clean out the mortise, and have it just large enough so that you can place the lock in by a gentle pressure of the hand. I don't mean so loose that it would wabble, but just loose enough so you can readily remove it if occasion should require. If any of my brother chips can suggest a better way, I stand open for conviction.

J. SHENGLE.

To the Editor: Southold, N. Y.

I feel that I ought to say something in support of Mr. C. C. Mummert, because I have hung a few doors in my time, and while I have never timed myself in putting on mortise locks, I think fifteen minutes is not far out of the way. We all know that some carpenters are more handy than others in certain work. Now I have never yet seen a man who could nail two thousand shingles in nine or even ten hours, but have heard a great many carpenters say they could. I think ten doors of white pine 1⅜ fitted and hung, but not locked, is a day's work, and I do not see what a man could do with his time after fitting and hanging four doors in nine hours. He might lock the four and still have 4½ hours left in which to think of the good money and how easily it came to him. A man looses time changing tools from fitting and hanging doors. He should fit all before changing tools, and in that way save considerable time. Not long ago I fitted and hung, but not locked, six 1⅜ Cypress doors 2 by 8 by 6 and 8 in five hours. I had to rip off both edges, also both ends, the saddles being down made it still harder, but I did not have to hurry any either. I can get witnesses to swear to this if necessary; but I honestly think from eight to ten doors is a good day's work.

L. L. GLOVER.

To the Editor: Flint, Mich.

I have read with interest the articles about hanging doors, but I note that none of them say just how they hang the doors as rapidly as they do. I will try and tell you how I fit and hang doors. After the door is fitted to the jambs about the thickness of a quarter play all around and ¾ of an inch from the floor, I take a stick which is the length of my door, or about 8 feet long, and I put notches in it where I want the hinges, which is one foot from the bottom, 10 inches from the top and one in the middle in case I put on three hinges. I then take my doors to the work bench, where my tools are handy. I then put my stick with the marks on it alongside the door, and it will show how much play to leave at the top, and also where to put the hinges. I then put on the hinges and locks. After these are put on I put it on the jambs, using my stick and marking where the hinges will be with my knife. If this is done right, your doors will fit and swing nicely.

BENNIE E. ALGER.

To the Editor: Wolford, N. D.

I find by looking over my records for the last five years since January 1st, 1900, that a man on the average of ten hours a day will do the following on common frame dwellings 1, 1½ and 2 stories high:

Joists, studs or common rafters	400 to	700 ft.
Dressed and matched or shiplap sheathing	400 "	600 "
Common roof sheathing on floors and roof	500 "	700 "
Shingles on straight work	2,500 "	4,000 "
Common siding ½ inch by 6 inches straight w'k	350 "	600 "
4 to 6-inch flooring	400 "	500 "
1½ to 2 inches hard flooring	150 "	300 "
Common three member base, lintal	150 "	200 "
Casing windows or doors one side	4 "	8
Common doors, old style frames, all hand work to make	2	
Common window frames, all hand work	1½ "	2
To set common window frames and fit windows	4 "	10

To fit, hang and lock common pine or yellow pine doors and do it properly, from 3 to 6 per day, and it takes an extra good man to do the latter. I have yet to find in all my experience a man who could hang eight doors in five hours, and I think the gentleman from Ohio must have been fooling in regard to putting on a mortise lock in eleven minutes. He undoubtedly must have used some mortise cutter that is being advertised in your paper. If he can do all kinds of work on the same scale of time, send him to North Dakota. I know of a dozen places where he could get $6 per day. I will start it myself, as I have always tried to hire the fastest and best men I could get.

F. R. MARRS.

To the Editor: Princeton, W. Va.

I have noticed the various opinions in your paper as to what a man can do in a day in fitting and hanging doors. I have tried the same to see what I could accomplish, and found that I could hang and lock eight white pine doors 2 feet 8 inches by 6 feet 8 inches and 1½ inches thick, and two plain glass doors 2 feet 8 inches by 6 feet 8 inches and 1⅝ inches thick, with mortised locks, making ten doors in all in 9½ hours. The work was done in a first-class manner and they fitted and worked perfectly. Still I would consider five or six of the above mentioned doors a good day's work.

E. D. BELCHER.

To the Editor: Byron, Me.

I have been reading with interest in the AMERICAN CARPENTER AND BUILDER about hanging doors and must say it is amusing to note the swiftness in different men in hanging and locking them. In order to joint in and hang a large number of doors in a day and do a good job, we should look over the door jambs a little. All door jambs should be set to a straight edge and the header should be level and the jambs plumb and great care should be taken not to have any twist in the frame, as this will cause the door to shut badly. Where the jambs are not set straight, it takes more time to joint in the door and have a good fit. When the jambs are properly set, I claim that a good workman should joint in, hang, lock and shut five doors in nine hours.

L. A. DUNN

Side Cut of Valley Jacks

To the Editor: St. Paul, Minn.

I wish you would state in the American Carpenter and Builder a rule for getting the side cut of valley jacks where the valley does not rest at an angle of 45 deg. Or, in other words, where the two gables are not of the same pitch.

A. C. Olsen.

Answer: With this question Mr. Olsen submits a roof plan which is herewith reproduced as shown in Fig. 1. We

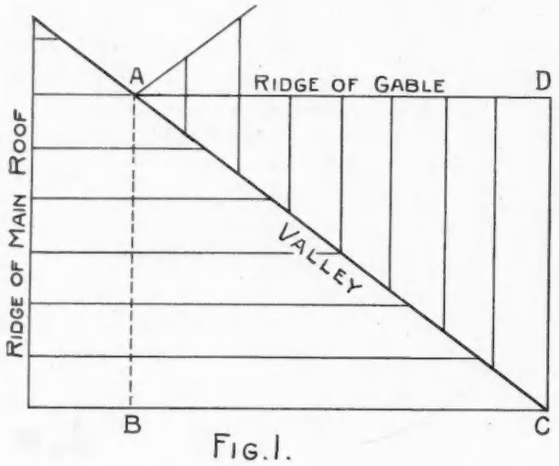


FIG. 1.

have answered how to solve like problems several times by the use of the steel square.

We will now answer how the angles may be found without the aid of the steel square at all. Of Mr. Olsen's diagram we will take only that part bounded by A-B-C and D

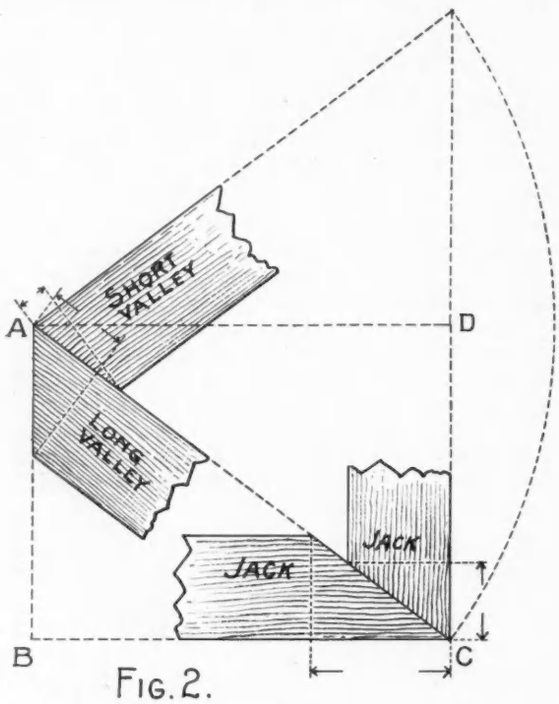


FIG. 2.

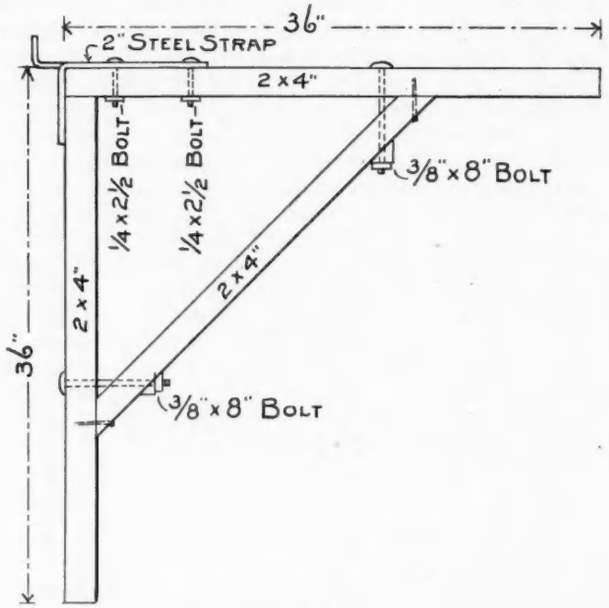
which we place there for illustrating purposes. In Fig. 2 is shown a parallelogram of like proportions to that bounded by A, B, C and D in which is given a system of lines for obtaining the side cuts for the jacks and valleys and applies to any pitch given the roof. In this diagram lay off the full thickness of the jacks and valleys and square across their backs at the intersection of the angles as shown by the dotted line and the space between the arrow heads in each case will be the amount to set back from the plumb cut for the like cut on the other side. Carry these lines clear around and cut diagonally across the back of the rafter from one plumb cut to the other. Mr. Clarence Whitehead of Preston, Idaho, will find answer to his question in the above.

A. W. Woods.

Making Scaffold Brackets

To the Editor: Stockbridge, Wis.

In your January issue there appeared a sketch of a scaffold bracket and its being different from mine, I enclose a sketch of the one I use with an explanation of the same. The arms and brace are made of two by four-inch surfaced white pine. The brace is nailed to the arms and is also fastened to same by a bolt three-eighths of an inch by eight inches. There is a piece of a wagon tire one foot long bolted with two bolts one-fourth inch by two and one-half inches to the two by four-inch with a rounded hook on the end which extends



seven-eighths of an inch beyond the corner and two inches up. There is a piece of iron one-eighth by seven-eighths of an inch and four inches long nailed on the sides of each arm where they come together. This helps to strengthen it.

G. H. Pingel.

How to Enamel Slate

To the Editor: Monson, Me.

I have just started on a job of enameling slate. Can you tell me how to mix some paint that can be rubbed down to give a black enamel with a polish? F. W. Bray.

Answer: Our correspondent has a rather difficult problem to solve, and one which will require considerable experimenting on his part before he can do work that will prove perfectly satisfactory and at the same time economical. In the manufacture of slate materials, the rubbed slate surface is first coated with one or two coats of a black paint—usually coach painters black, ground in Japan and thinned with turpentine to working consistency. This is allowed to become thoroughly dry and then rubbed smooth with pumice. After being painted with colors, the surface is varnished with a specially prepared black baking enamel,

which he can get from almost any manufacturer of carriage varnishes, upon stating his exact requirements.

A baking enamel will require to be baked from four to twelve hours in a temperature of about 220 Fahrenheit, according to the drying quality of the varnish. It may, however, not be necessary to use a baking enamel in order to save the purpose of our correspondent, but he might get the result he desires by using a good quality of rubbing varnish over the black ground without using any baking process, or he might find that a black varnish would answer his purpose.

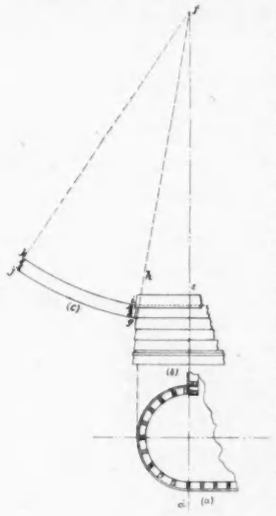
EDWARD HURST BROWN.

Siding a Circle

To the Editor: University Place, Neb.

Mr. Donoho's query on page 80 in the April issue as to how to side a circle is a question which confronts many carpenters and few satisfactory results are obtained unless the siding is specially prepared.

The following is one method: In the accompanying illustration (*a*) shows the plan and (*b*) the elevation of a circular corner and (*c*) the curved siding. To find the radius and extent of this curvature the center or axial line (*d e*) is prolonged indefinitely as at (*f*). Draw the line (*gh*), which is a continuation of the direction of the inside slanting surface of one piece of siding. Prolong the line (*gh*) until it intersects the axial line as at (*f*). With (*f*) as a center and radii equal to (*fg*) and (*fi*) describe the arcs (*g*), (*j*) and (*i k*). The figure thus obtained (*g, j, k, i*) will be the form and curvature necessary to secure the level lines and proper fit. Transfer this form to a piece of cardboard for a pattern and trace the curve on each piece of siding and work out with a draw knife and plane. Specially worked siding with a vertical back so as to hug the sheathing is now made for this purpose.



J. M. KELLER.

Drilling Through Stone, Marble or Iron

To the Editor: Plano, Ill.

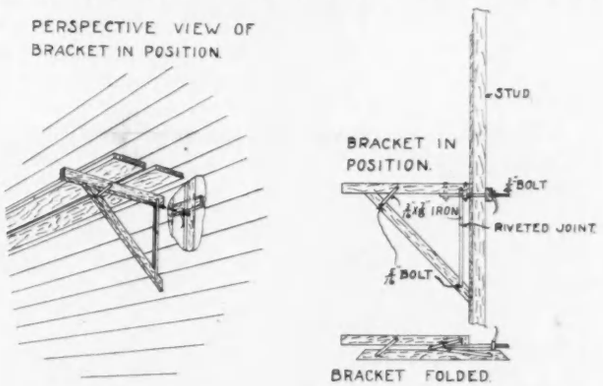
I am interested in the AMERICAN CARPENTER AND BUILDER, and wish to add one item to the good things I see there. Almost every carpenter finds it necessary occasionally to drill through stone, marble, or iron, and although he may have a drill of the right size, the job is a hard one on account of the great pressure to force the central part or web of the drill through the hard material. Several years ago I found this could be overcome or nearly so by filing through the central web of the drill so that it has two good cutting edges clear to the center of the drill. This may be done by using a three-cornered file so that the plane of the one side of the file lies on the plane passing through or containing the center line or axis of the drill. Repeat this process on the opposite side. This carries the cutting edges clear to the center, and makes what would otherwise be a very slow and hard job to a comparatively quick and easy one. Some may say you cannot file a drill, but the best way to find out is to try, using a fine, sharp file.

J. B. KILPATRICK.

Making a Scaffold Bracket

To the Editor: Eldred, Pa.

I noticed in the January number of your magazine a sketch of a scaffold bracket by Mr. Gates, and as I have something along the same line which I think is more convenient, I herewith enclose a sketch of a folding bracket. The arm is made of two by three-inch hard wood. The brace is four feet and one inch long and takes up very little space when folded. It is easy to move from one job to another which is a great convenience. I hope that will be of benefit to the craft.



C. H. KAUFMAN.

Amount of Camber for Trusses

To the Editor: Bethany, Neb.

In framing trusses what amount of camber should be given, and should it be carried into the framing of the truss throughcut? I would like to have a reason for the same.

A. H. BULL.

CONTENTS FOR MAY, 1906

PRACTICAL TRADE APPLIANCES

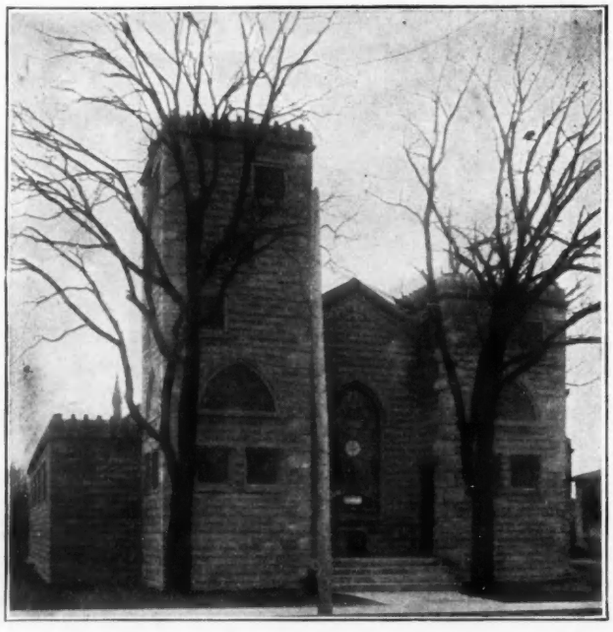
Fireproof Cement Blocks

The following letter is self explanatory:

KALAMAZOO, Mich., Feb. 28, 1906.

Miracle Pressed Stone Co.,
Minneapolis, Minn.

Gentlemen:—The picture I send you of the church was built with the Miracle Double Staggered Air Space Blocks; no furring or lathing or plaster on the inside of the blocks. We built right over an old wooden church. Enlarged and remodeled, it cost five thousand dollars. Sunday morning Feb. 11th, this church burnt, or rather the interior burnt. When the fire department got there, the interior, or old wooden frame was nearly consumed, and the interior walls were red hot, but two streams of water did not have the



least effect on the blocks. They are neither checked nor cracked, and in passing, you would not know there had been a fire except that the glass is all broken, and the roof is caved in.

It surely demonstrates that the Miracle Double Air Space Block, if properly made, is fireproof and indestructible.

Very truly yours,

(Signed) W. A. DRAKE & SON.

Refractory Concrete

Refractory concrete is a high refractory composition on which has been allowed a United States patent. It is called "refractory concrete" because it is worked the same as cement, or plaster, i. e., it can be wet and poured to form, or moistened and tamped into the desired shapes, or used as a mortar or hard plaster; and it will endure any degree of heat that fireclay products will.

Chemically the composition is a combination of carbon and incompletely reduced silica (two of the highest refractories) and portland cement; the carbon and silica is reduced in the electric furnace at a temperature in excess of 6,000 degrees C. consequently it is not possible to secure a degree of heat by the combustion of wood, coal, oil, gas, or spirits, that will fuse the material; the product of the composition will not expand or contract heating or cooling, is not affected by gases or acids, and the finished product will grind steel or cut glass.

The product of this composition is not as cheap as ordinary concrete construction, but is cheaper than fireclay products; and a thickness of one-half inch of the neat composition will endure as high a temperature as is likely to arise in case of fire.

The composition can be combined with trap, crushed quartz or granite, sand and such aggregates, in some cases up to 73 per cent of the bulk of product. This brings the cost low.

For flue linings, chimney blocks and tops, floor and partition blocks, conduits for electric wires, fireproof plaster, and as a scratch coat for stucco, it is an ideal material. The product is formed the same as cement sand products would be. Where fire protection is wanted it is possible to secure it to a certainty with this composition. The process by which the product can be cured and put into use in twelve to twenty-four hours is supplied by E. R. Stowell, New Corydon, Ind., who will be pleased to furnish full information to any of our readers.

Some New Books

A very practical treatise describing every essential detail pertaining to site, location, arrangements, construction, plastering, heating, plumbing, lighting, decorating and furnishing of the house. The information given in this book is thorough and covers the subject of house construction from the time you choose the location until it is ready for occupancy. It is published by the House Hints Publishing Company, Philadelphia, Pa.

The third edition of "The Lightning Estimator" has just been published by the Bradt Publishing Company, Jackson, Mich., and gives a more complete data and a greater amount of practical information than the two previous editions.

Antihydrine

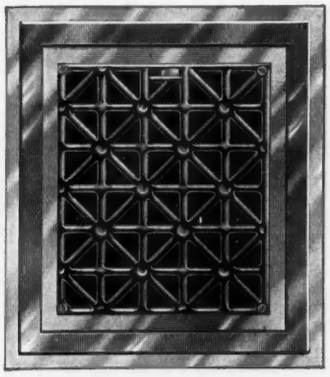
An excellent material for waterproofing hollow concrete blocks is Antihydrine and is being manufactured by the Antihydrine Company of New Haven, Conn.

The manufacturers claim that this product is the original waterproof and stainproof material of this kind on the market, and most of the others manufactured are but imitations. It can also be applied to walls and ceilings as well as building blocks and helps to make them both fire and vermin proof as well. It will also preserve all iron work built in walls and can be applied inside or outside. The manufacturers have an attractive card they are sending out giving full information and particulars, and by writing the Antihydrine Company, New Haven, Conn., and mentioning the American Carpenter and Builder they will send you one.

New Designs in Registers

The Columbian Wrought Steel Register has recently been placed on the market by the Columbian Hardware Company.

The Columbian is 50 per cent lighter than the old cast registers, but will still carry a greater load. This 50 per cent is a saving in freight expenditure.

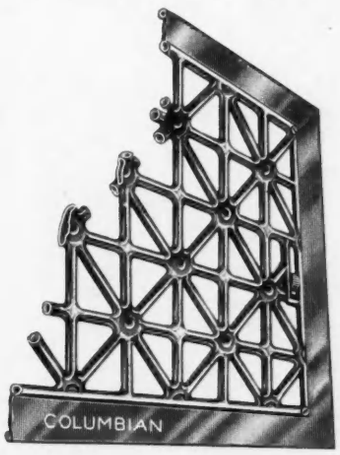


The Grecian design shown in illustration is simple and artistic, harmonizing with the different styles of interior decoration.

Columbian All Steel Registers, on account of their shallowness of box, may be used in side walls as well as in floors and ceilings. This feature helps the dealers, as they only have to carry one line, and not a special line of side wall registers.

The tubularly constructed face of the Columbian enables it to withstand a sudden blow, strain, or jar, without warping or cracking.

The Columbian face is made from two heavy plates of sheet steel; two distinct plates, namely, a top and bottom plate. These two plates are so closed over each other as to give a tubular construction. This contributes much more supporting strength than if the face were made from a sheet of steel equivalent in thickness to the two plates used. The Columbian faces are so strong that no supporting bars or braces are necessary to strengthen them.



Columbian Wrought Steel Borders are stamped out of heavy steel with corners reinforced securely. The slots for tin box loops are located as in the standard cast iron border. The Columbian border being beveled makes it strong and rigid, and it is furnished in a variety of handsome finishes.

Interesting News to Saw Filers

At last there are hopes of getting away from that old fashioned saw vise with which the circular saw filer had to shift with for years.

On another page of this journal there appears an advertisement of the vise that revolutionizes saw filing.

The newness and goodness of this vise is in its adjustability. A few positions are shown in this column, while any other thought of position can be attained.

These varieties of positions are valuable to the filer because he can have the correct position for every style of saw or cutter tooth and the same time get the proper light to them.

Another excellent feature of this vise is its freeness of protruding levers, bolt heads and overly heavy jaws, each of which contributes to the easy and unobstructed stroke of the filer.

The vise holds the saw at both collar and teeth, which lessens the tendency of buckling saws and prevents that nerve racking vibration at every stroke of the filer.

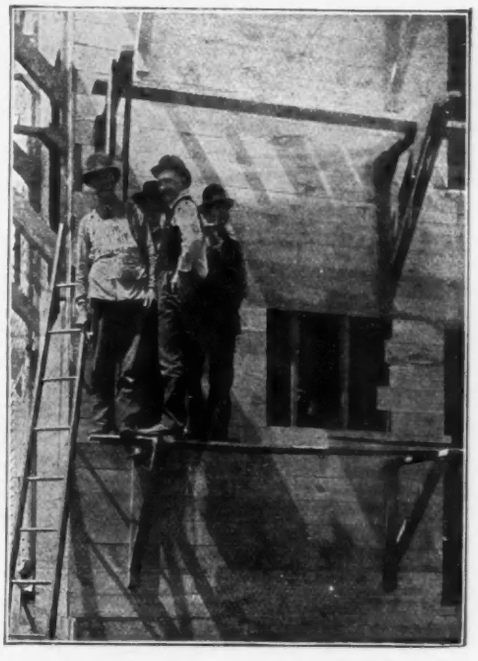
The manufacturers of this new devise are L. F. Grammes & Sons, of Allentown, Pa. We believe they are placing them with the leading supply and hardware men of whom they

can be bought by the user. If they are not handled by any one they can be bought direct from the manufacturers.

Wagner Bracket Hanger

By using brackets fitted with Wagner No. 25 Bracket Hanger Scaffolding on buildings is entirely done away with. The results are: Saving in time, saving in lumber, a stronger scaffold. Two three-fourth holes bored in the sheathing is all that is required for putting them on.

Wagner No. 25 Bracket Hanger has a double hook. It holds the bracket from turning sideways, and we guarantee every hanger to support 1,500 pounds of weight. The hooks are made of one-half inch steel. The plate is made of one-eighth by three-inch steel.



This cut shows four men standing on one bracket fitted with Wagner No. 25 Bracket Hanger. The weight of these

men is 643 pounds. Every one is guaranteed to hold up 1,500 pounds.

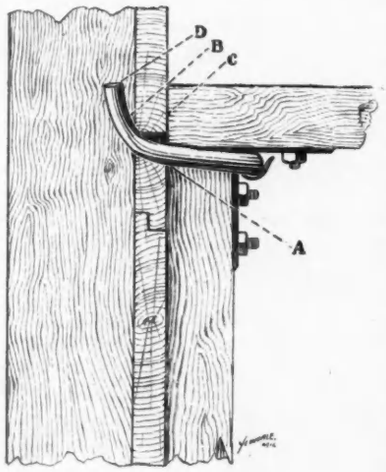


Figure 1 shows one of the hooks through the casing. A shows the lower part of the hook resting on the outside of the hole. This shows that the pull is downward at A and upward at B. You can see that it is almost impossible to put weight enough on a bracket to break it down. C shows how tightly the bracket is brought up against the casing and with the point of the hook projecting upward, as at D. It is impossible for it to get out.

Largest Book of Its Kind

We are in receipt of the largest book of its kind ever published—Catalogue K-7, published by the Miracle Pressed Stone Co., of Minneapolis, Minn.

It contains 84 pages, 9x12, and covers the four leading branches of the great concrete industry; the making of cement building blocks, cement brick, cement sewer pipe and drainage tile, and cement sidewalk tile, including also every tool and appliance known to operators in any of these branches. In fact, it covers many subjects and lists many tools and appliances which a great number of operators have never heard of. It not only tells of their machines and appliances, but it tells how they are used, and why.

It is not only a book of Miracle machinery, but a book of solid information on this great new industry. It is intended for a reliable guide for the cement user—large or small.

The book is being considered by many engineering schools throughout the country as a good practical text book for students. It savors of "Miracle," of course, but it carries the information, nevertheless.

Those of our readers who are interested in this great branch of the building industry should write the above firm. Be sure to write for "Catalogue K-7" to insure getting the correct one.

Heating Power of the X-Ra

A large grate surface, a capacious and properly shaped fire pot, and a construction that insures an extremely efficient combustion give the X-Ra a heating power unequaled by that of any other furnace. The products of combustion ascend to the center of the radiator, are carried to the front, and around both ways to the smoke exit in the rear. The draft is indirect enough to prevent unnecessary expulsion of heat through the smoke exit, and at the same time is not so indirect as to cause the fuel to be burned with sluggish combustion. In the X-Ra Furnace the fuel is burned with a bright, effective combustion. In some furnaces the draft is carried through drums or is otherwise made so indirect as to cause a weak and imperfect combustion of the

fuel. In such a furnace the smoke pipe may be comparatively cool, but there is an extravagant consumption of fuel, and no matter how much coal is burned, there is very little heat sent through the warm air pipes. In other furnaces the draft is so direct as to cause an unnecessary loss through the smoke pipe.

In the X-Ra these extremes are avoided, its draft system being carefully planned to secure the best results from the fuel consumed. All its interior surface, from the ash pit to the top of the radiator, is good, effective heating surface.

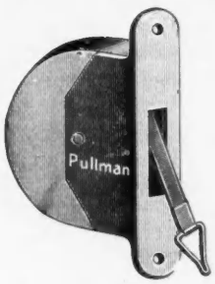
A hot blast properly used adds greatly to the heating efficiency of the furnace, and makes it possible to maintain an even temperature with little fuel and attention.

Our readers will be given fuller information in regard to this furnace if they will write to the Stanton Heater Co., Martins Ferry, Ohio.

A Well Known Sash Balance

Pullman Mfg. Company, Rochester, N. Y., are asking you to send for Catalogue A, which is free, and which contains price lists, description, etc., of the well known "Pullman" Sash Balances herewith illustrated.

They are the only Balances that have Steel Frame, Steel Face (not cast iron), Rolled Edge Tape (not slit), Aluminum Bronze Tape (not brass), Enclosed Drum and Hood (not exposed); they have Automatic Adjustment, and do not require any adjusting screw, as the latter makes the tapes buckle and break.



They are the largest makers of Sash Balances in the world, and their goods have been on the market for the past twenty years and are sold in all sections of the Globe.

They want fifty thousand Carpenters in the United States to have their catalogue within the next sixty days, and are anxious to have you send for one.

Strictly Fireproof

The "Acme" sheet metal lath, manufactured by the Canonsburg Iron and Steel Company of Pittsburg, Pa., while not new and untried as attested by its use in many public and private buildings throughout the country, is modern and up-to-date in every respect. In its construction the makers have endeavored to combine all the good qualities of all other makes and eliminate all the objectionable, and bearing in mind that the old wood lath excels in many desirable features any metal lath heretofore put on the market, they have as far as possible incorporated them in the "Acme." The "Acme" is made from a good grade of metal, coated to prevent rust. When sheet metal lathing was first introduced it was supposed (or perhaps the price had something to do with it) any cheap, open grain, porous material would answer. This was found to be a very serious mistake. Nothing but a metal of good solid body should be used. The extremely low grade is dear at any price. The regular stock size of "Acme" lath is 15 inches by 96 inches. Special lengths can be made to order. Through the center and on each edge of the sheet runs a bead which adds greatly to the rigidity and by lapping one bead over the other a perfect joint is formed—an important feature possessed by no other metallic lath.

To sum up, "Acme" sheet metal lath is fireproof, is rigid when in place, no bulging or bagging, flexible enough in the sheet to be readily formed into desirable shape, requires no extra support or backing, economical in the use of mortar, one smooth side admitting of rapid work in applying mortar, reversible, mortar applied from either side will key perfect, no cutting edges, mortar properly supported when green, can be readily put up, makes a perfect joint, crack proof, vermin proof, simplest, strongest and, taking everything into consideration, cheaper than any other fireproof lathing on the market. See their advertisement on another page of this issue.

Block Machines by Carload

The statement issued monthly by the Ideal Concrete Machinery Co., of South Bend, is not only a unique piece of business advertising, but is an evidence of the enormous strides made by this firm in the sale of their Ideal Block Machines, and allied products.

Their March Bulletin has just been received, and under the heading "Straws Which Show the Way the Wind Blows" we find 207 shipments, reaching into 29 states—one being a solid carload and two shipments going into Cuba.

Montross Metal Shingles

Of the many forms of roofing now on the market perhaps none are making greater strides in sales than the metal shingles, showing that its many features of advantage appeal to the careful investor. It is fireproof, stormproof, and can be easily and cheaply laid by anyone capable of using a hammer and nails, and with sufficient intelligence to follow the printed instructions sent with each shipment.

In this connection we would direct attention to the prod-

uct of the Montross Metal Shingle Company, of Camden, N. J.

This firm is placing on the market more individual designs than perhaps any other concern engaged in business, and are, consequently, meeting with corresponding success, as the buyer has so much to choose from he is pretty sure to strike something that meets his fancy.

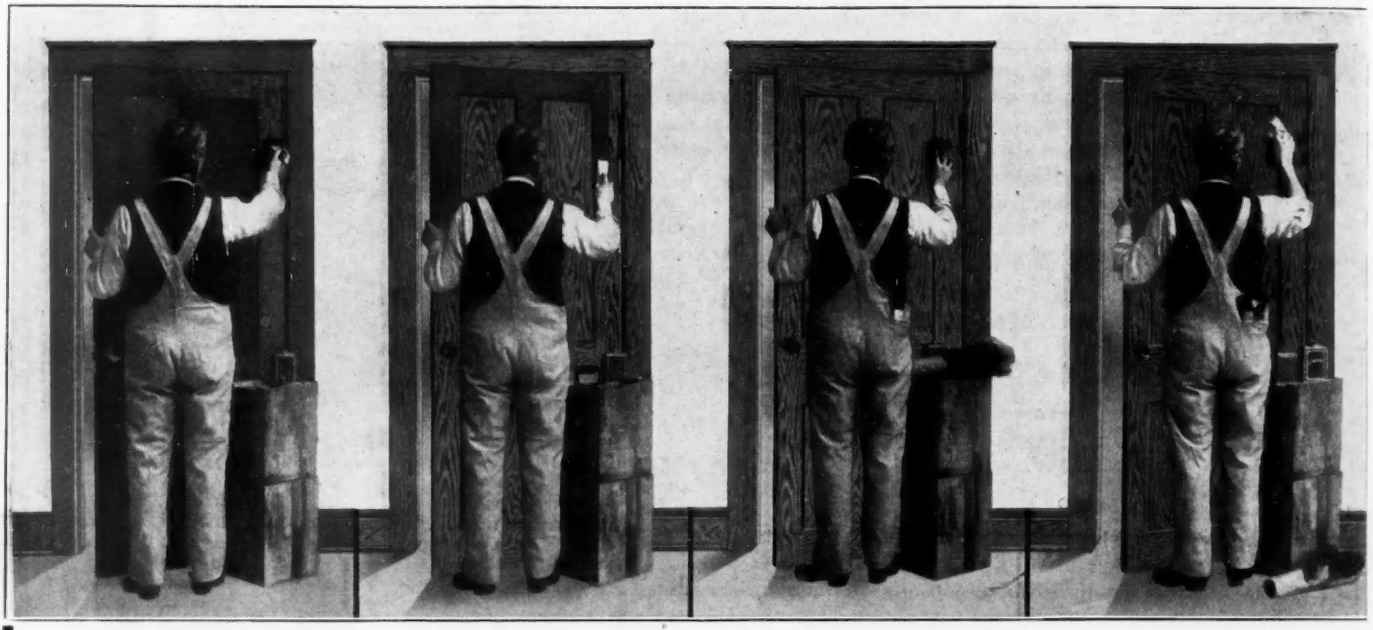
They have just issued another edition of their handsome catalogue, describing the advantages of each of their several styles. If you have not received one it will pay you to drop them a postal.

Can You Make a Mitre Box?

Years ago this was one of the stock questions asked by the employer of the journeyman applying for a job. The making of a mitre box was one of the things that tested the skill of the workman, for to select and dress out the stuff, true it up, get it together, lay out the cuts and saw them so that they could make an accurate mitre was not within the range of the ordinary workman. Many a workman has been surprised when he tested his cuts to find they would not make a perfect joint, and many a one has shown more ingenuity in patching up his mitre box than he showed workmanship in making it.

This question has now become nearly obsolete in consequence of the mitre boxes at present on the market being so arranged that not only a mitre can be accurately cut but any variation of the angle which may be required. They are also well arranged for kerfing by having gauges which may be set so that the saw will reach certain depths in every case.

So perfect is the mitre box manufactured by the Stanley Rule & Level Co. that it would be difficult for the most fastidious workman to suggest an improvement. He not only can do his work accurately but the box is so constructed that it can be taken down when not in use and in this condition occupies but very little space.



Apply Johnson's Electrric Solvo with a brush. It will immediately soften all the old finish.

Now remove the old finish with a putty knife.

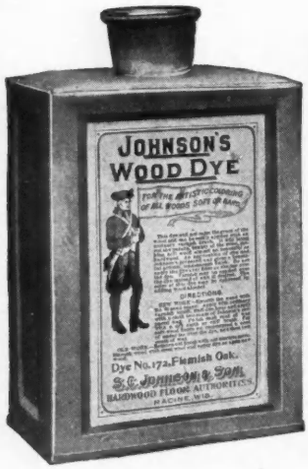
Using Steel Wool to remove the old finish from carvings and mouldings.

Wipe the wood clean with a cloth saturated with benzine or wood alcohol.

The Refinish

To properly refinish all old woodwork, furni ture

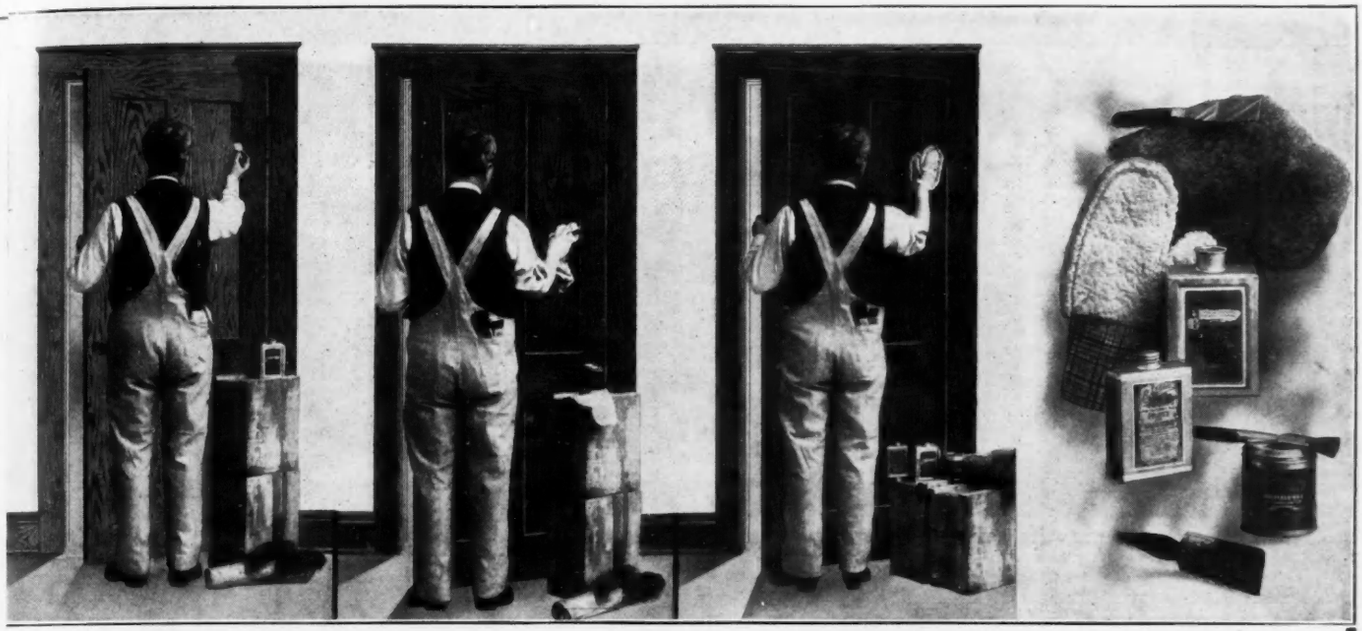
Johnson's Electric Solvo for softening old finish upon wood, glass or metal so that it may be easily removed. Apply with an ordinary varnish brush and allow it to remain until the old finish becomes softened, then remove with a putty knife and Steel Wool. Now wipe clean with a cloth dampened with benzine or alcohol. It will leave the wood bare and clean, ready for the new finish. List Prices:—Gallon cans, $2.50; half-gallons, $1.25; quarts, 75c.; pints, 40c., and half-pints, 25c.



Johnson's Wood Dye for the artistic coloring of all wood. Apply with a camel's hair or fitch brush. It will immediately penetrate the wood, properly coloring it. It does not raise the grain, but brings out the beauty and high-lights of the wood. With Johnson's Wood Dye inexpensive woods such as cypress, Southern and Western pine may be made as beautiful as hardwood. Made in the following shades:

No. 130, Weathered Oak; No. 131, Brown Weathered Oak; No. 132, Green Weathered Oak; No. 128, Light Mahogany; No. 129, Dark Mahogany; No. 172 Flemish Oak; No. 140, Manila Oak; No. 126, Light Oak; No. 123, Dark Oak; No. 110, Bog Oak; No. 121, Moss Green; No. 122, Forest Green; No. 125, Mission Oak and No. 178 Brown Flemish Oak.

If you prefer a high glossed, shiny finish, varnish may be applied over the dye instead of Johnson's Prepared Wax. List Prices:—Gallons, $3.00; quarts, 85c.; pints, 50c., and half-pints, 30c.



Now apply Johnson's Wood Dye, the desired shade, with a camel's hair or fitch brush.

When dry, spread on Johnson's Prepared Wax with a cloth.

Bring to a polish by rubbing with a dry cloth or polishing mitt.

Johnson's Electric Solvo, Wood Dye and Prepared Wax and these tools are all that is necessary to properly refinish all old wood, furniture, woodwork or floors.

shing of Wood

ture or floors we recommend the following preparations:

Johnson's Paste Wood Filler for filling the grains of all wood, soft or hard. Our Natural Paste Wood Filler No. 10 should always be used when finishing all wood, soft or hard, natural. One coat of varnish or wax over our Paste Wood Filler is a better finish than two coats of varnish or wax upon the bare wood. For shades of golden, dark or antique, antwerp or green antwerp, we recommend our Paste Wood Filler, the desired shade, instead of our Wood Dyes. List Prices:—18c. per lb. in one-pound and two-pound cans; 12c. per lb. in twenty-five pound cans.

Johnson's Prepared Wax "A Complete Finish and Polish for all Wood." It is entirely different from any wax finish on the market, as it contains a very large percentage of hard polishing wax, making it easy to bring it to a beautiful and permanent polish. Our Prepared Wax should be spread on with a cloth and polished with a clean, dry cloth, polishing mitt, or when used upon floors with a weighted brush. When applying wax over dark Paste Wood Fillers or Wood Dyes, we recommend our Prepared Wax Black, exactly the same as our regular wax, except the color.

We are very anxious that every painter become acquainted with the advantages of our leading specialties. To carry out this idea we make this free proposition to every reader of this magazine.

Free Offer If you will give us, on the coupon below, the name and address of your paint dealer, or better still, his card, we will send you by express, prepaid, a sample can of Johnson's Electric Solvo, Wood Dye, any desired shade, and Johnson's Prepared Wax Black. Please bear in mind that these samples will not cost you one cent; all we ask is the card, or name and address, of your paint dealer. We must have this information. Don't delay—send today and learn of the best method of refinishing wood.

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

"The Wood-Finishing Authorities."

ACB5

COUPON

S. C. JOHNSON & SON,
Racine, Wis.
Gentlemen: My paint dealer's name is

_____

His address is

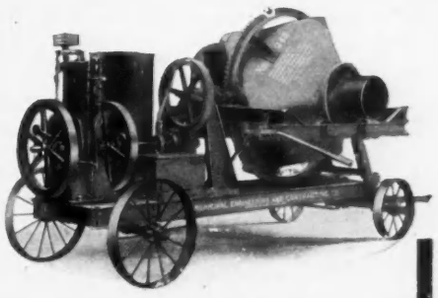
_____

Please send by express, prepaid, free samples of Johnson's Electric Solvo, Wood Dye (state shade desired) ..... and Johnson's Prepared Wax Black.
I agree to test the samples, and if I find them satisfactory I will insist upon my dealer supplying me.

Name.....Address.....

The Real Question

About Concrete Mixers



When Ordering a Mixer

for making concrete, mortar, pulp, briquettes, block fuel or any other requirement, the important question is—will it produce a perfect product ?

Failing in this, any other features of claimed excellence are unworthy of consideration.

It stands to reason that concrete machines having for mixing devices paddles, scoops, shelves or blades attached to the inside of the periphery of the mixing receptacle merely pocket as much as they will hold of some ingredient as it enters the chamber and carry it around, cutting through but not mixing with the main mass of material at the bottom of the receptacle, and this ingredient, carried by these devices, is not removed, or mixed, until the batch is discharged.

The inevitable result is an imperfectly mixed, inferior quality concrete.

In trough mixers provided with spirals, the materials are merely pushed along in layers, and any distribution of cement that may be done is accomplished by the uncertain action of water.

The Chicago Improved Cube Concrete Mixer has no inside scoops or paddles—nothing but breaker rods, with an interior absolutely smooth and free from complicated mechanism.

At 15 revolutions a minute the entire contents of the cube are thrown back and forth and broken over the breaker rods 90 times—a more thorough mixing than is secured by any other mixer..

There are no pockets, scoops or blades to separate the ingredients.

The breaker rods break up any possible lumps or masses in the material, and it is impossible for ingredients to adhere to them—no possibility of balling up or clogging—the entire batch must be evenly mixed, insuring perfect concrete.

As a mortar mixer it has no equal.

It is the only mixer which can be dumped by the same power that operates the machine. We control all patents covering this device.

There are no insides to clean, and no paddles, scoops or shelves to clog, wear out and get out of order.

It requiress less power to operate than any other mixer, consequently uses less coal and requires less labor.

The "Chicago" has fewest number of parts, requires least time to mix, and insures absolute uniformity of concrete. Sizes and mountings for every equipment. Write for Catalogue No. 40.

Municipal Engineering and Contracting Company

General Offices: Railway Exchange -:- -:- **CHICAGO, U. S. A.**

New England Agents: The Dyar Supply Co., 7 Sudbury Street, Boston **New York Office: 150 Nassau Street**

The

"Runyan"

Is the only machine that is an absolute success in making blocks face down or lateral—also brick. It can be changed from one form to the other in less than ONE Minute. It con be changed from a block machine into a brick machine in FIVE Minutes. One lever does all the work. THREE machines in one—for one price—Cheapest and best machine on the market

Write for catalog and prices to

C. M. RUNYAN & CO. Sales Agent

ELYRIA, O.

Strong, Simple, Durable

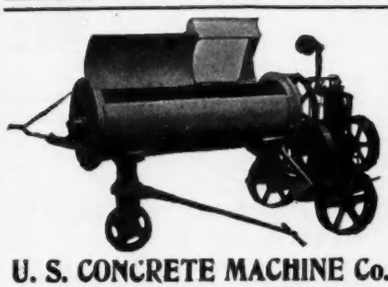
Capacity limited only by what can be fed into it. It's doing business all the time. Operated by 3 H. P. gasoline engine, the entire machine when equipped weighs but 1,700 lbs.

The GRANT

The Mixer that Mixes

DryConcrete, for it is not a revolving drum or cube

It has the dry and wet mix of our famous CONNOLLY and, of its character, is the lowest priced concrete, cement and mortar mixer equipped with power on the market.



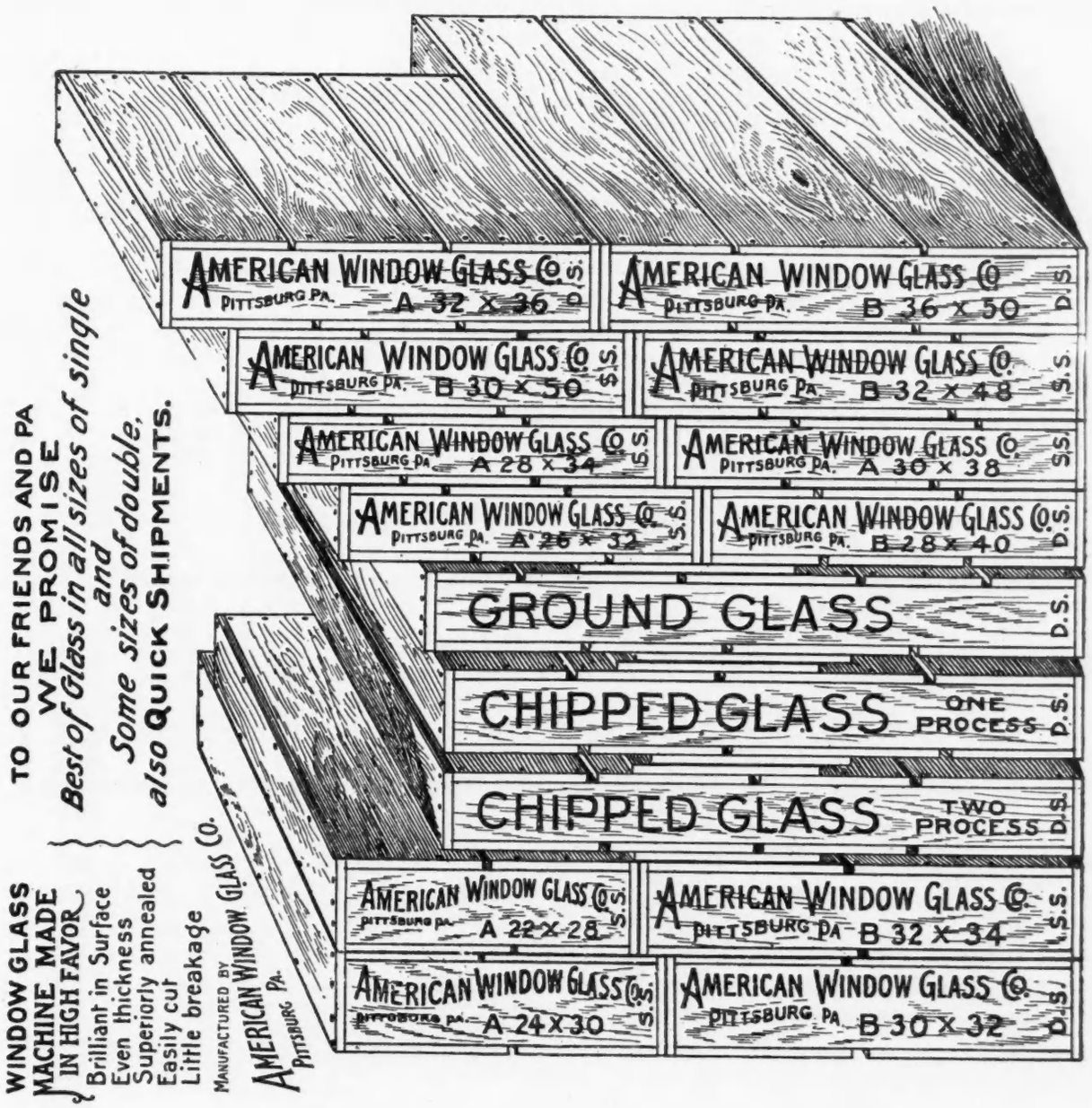
The rapid and peculiar motion of its 23 paddles attached to the center (mixing) shaft, making 62 revolutions a minute, throwing the material over itself and giving it lateral and edgewise thrusts, the entire product gets a thorough and absolutely perfect mix.

We make and try to keep in stock our Special Type of Grant with mixing cylinder 10 ft. in length and equipped with 53 paddles, a superb mixer designed for dry concrete. This we sell with or without power, stationary or on wheels, and is essentially a machine for block and all kinds of artificial stone work.

Make no mistake but send for Booklet "G" and prices.

Ready for Shipment

U. S. CONCRETE MACHINE Co., Majestic Bldg., Detroit, Mich., U.S.A.


AMERICAN WINDOW GLASS Co. PITTSBURG PA. A 32 X 36 S.S.
AMERICAN WINDOW GLASS Co PITTSBURG PA. B 36 X 50 D.S.
AMERICAN WINDOW GLASS Co. PITTSBURG PA. B 30 X 50 S.S.
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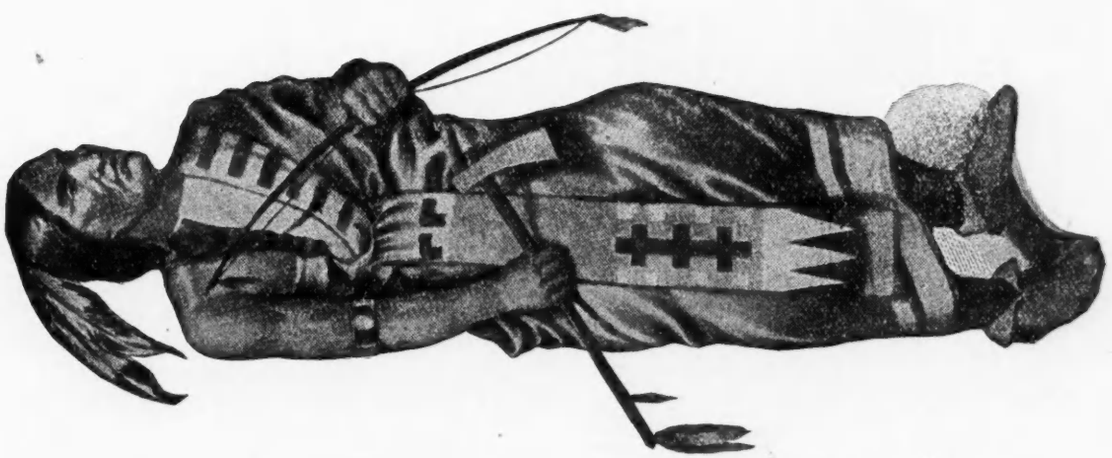
AMERICAN WINDOW GLASS Co. PITTSBURG PA. A 26 X 32 S.S.
AMERICAN WINDOW GLASS Co. PITTSBURG PA. B 28 X 40 D.S.
GROUND GLASS D.S.
CHIPPED GLASS ONE PROCESS D.S.
CHIPPED GLASS TWO PROCESS D.S.
AMERICAN WINDOW GLASS Co. PITTSBURG PA. A 22 X 28 S.S.
AMERICAN WINDOW GLASS Co. PITTSBURG PA. B 32 X 34 S.S.
AMERICAN WINDOW GLASS Co. PITTSBURG PA. A 24 X 30 S.S.
AMERICAN WINDOW GLASS Co. PITTSBURG PA. B 30 X 32 D.S.
TO OUR FRIENDS AND PA
WE PROMISE
Best of Glass in all sizes of single and
Some sizes of double,
also QUICK SHIPMENTS.
WINDOW GLASS MACHINE MADE IN HIGH FAVOR
Brilliant in Surface
Even thickness
Superiorly annealed
Easily cut
Little breakage
MANUFACTURED BY AMERICAN WINDOW GLASS CO. PITTSBURG PA.



It's Easy

Simply fill in the coupon below, tear off and slip it into an envelope addressed to us. We will send you, ***absolutely free,*** a copy of our handsome book

"A Perfect Door"

It's a revelation in doors, and should be in the library of every Owner, Builder, Contractor and Architect. Do it ***now—before you turn the page.***

Morgan Sash and Door Company, Dept. R,
Lumber District, Chicago.

Morgan Sash & Door Company, Dept. R,
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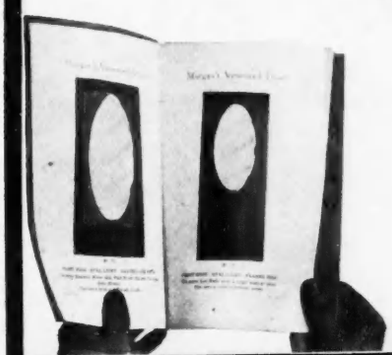

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The name of my lumber dealer is

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Contents for May, 1906, see page 215

INDEX TO ADVERTISEMENTS, MAY, 1906

It's the Shrewd, Hard-Headed Contractors that are Buying the Hercules

ORDERS are pouring in from all over the world for the HERCULES CEMENT STONE MACHINE. And with very few exceptions these orders come from men who have made a success of thei business.

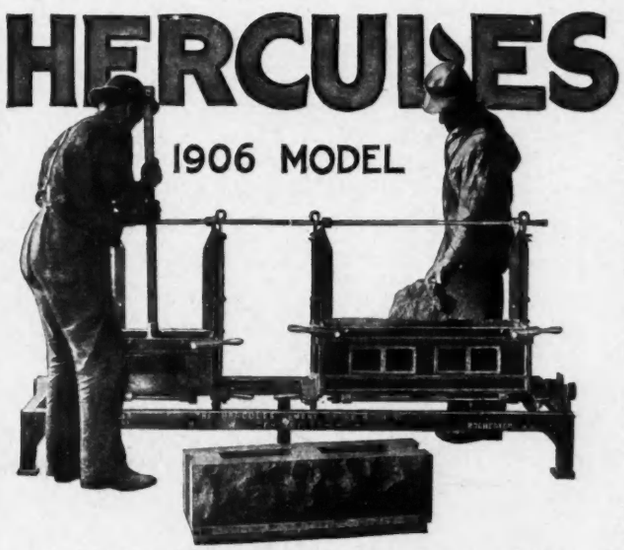
Men with brains—with foresight—with judgment are buying the Hercules because they can see no other machine that comes anywhere near being its equal.

In the words of the promotor of slang "it's got 'em all beat forty ways," and it doesn't require a superabundance of brains to figure it out.

Just use your eyesight—look at the illustration of the simply built Hercules and compare it to the awkward, cumbersome and complicated outfits labeled Cement Stone Machine that are bound to reach the scrap heap by the shortest route.

No machine but the Hercules can make this variety

Look at the variety of blocks shown in the illustration—the Hercules makes all these and hundreds more. It makes ornaments, columns, lintels, anything that the architect orders it can make, in any size desired from 2 inches to 6 feet.



The Hercules is a simple machine—it is a strong machine—it makes more blocks in a day—makes them at less expense, and makes them stronger and better than any other machine. It makes moisture proof blocks and frost proof blocks. It makes blocks so natural looking that many have been deceived, believing them to be natural stone.

The Hercules makes two stones of the same size and design or of different sizes and designs on the one machine at the same time.

You tamp on the face with a Hercules, which gives the stone a more natural appearance.

It is a machine that is in great demand all over the world today, and any man thinking of buying a Hercules this season should write us at once.

We have a handsome new catalog showing houses, churches, factories and all kinds of buildings built of stone made on the "Hercules." We will gladly send the catalog free to you upon request—**(Ask for Catalog XX)**

Century Cement Machine Company

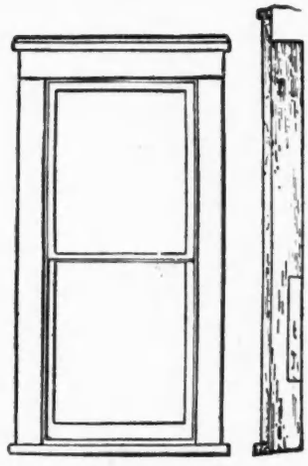
273 West Main Street :: **Rochester, New York**

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

Pease
Dowel Joint Column
No. 70

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

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



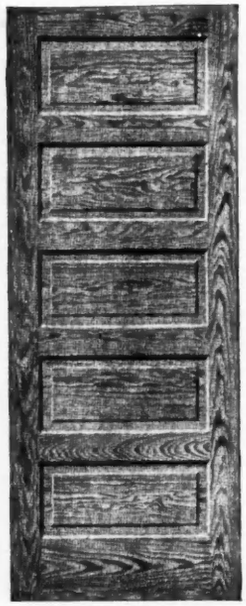
Window Frame No. 1

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

What do you think of our Stair Newel

No. 7, surmounted with our elegant, genuine Wood Carved Cap, at $3.80 up?

Stair Newel No. 7



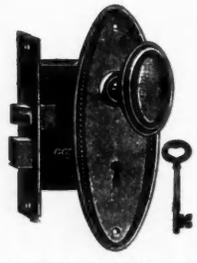
Door No. X.L., 5 Cross Panels
Soft Arkansas Yellow Pine
free from Check.

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

At $1.05 up

85c per gallon up

Write for our beautifully colored folder Practical Painting mailed free



Inside Door Set No. 13271.

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