This No. 6 Saw Rig did all the millwork in the building of these five duplex houses.

Cut Your Pay Roll

and increase the efficiency of your working crew.

There's a C. H. & E. way that will shortcut your work on any job and put money in your pocket.

Put yourself on the right side of every bid you make. You have the choice of eight different rigs to pick from, and you want to get your order in early, if you want prompt delivery.

C. H. & E. rigs are manufactured complete, including the engine, in the new factory building of the C. H. & E. Manufacturing Co., Inc., Milwaukee, Wis.

Each and every outfit guaranteed to give satisfaction or return at our expense.

Write for Catalog

C. H. & E. Manufacturing Co., Inc.
322 Mineral Street Milwaukee, Wis.

Eight Complete Sizes of C. H. & E. Portable Saw Rigs

No. 3 Portable Saw Rig
Complete attachments, steel and wood frame. 3 H.P. gasoline engine, ripping capacity 2" lumber.

No. 6 Portable Saw Rig
Complete attachments, steel frame 4 or 5 H.P. gasoline engine, ripping capacity 3" lumber.

No. 7 Baby Portable Saw Rig
Rip and cross-cut only, steel frame. 2 H.P. electric motor, ripping capacity 4" lumber.

No. 9 Portable Swing Cut-off Saw
Steel frame, 6 H.P. gasoline engine, cross-cutting capacity 12"x12" timbers.

No. 5 Rapid Cut-off Saw
Iron frame, cross-cutting capacity 18" wide.

Each outfit can be fitted with electric motor instead of gasoline engine, as per order.
A New Year's Thought

THERE is no good reason why good resolutions should be confined to January 1st. And as a matter of fact, most of us are making good resolves—vowing to do better—very nearly every day of the year.

For the most part we don't make good, at least not as good as we hoped; but still, first and last, there is some progress; and that is the way character and reputation are built up.

No, we don't decry the New Year's resolution; rather we yield to and often remember.

Here is our best suggestion for a resolution or slogan for our readers and for all other carpenters and builders who would advance.

"KEEP POSTED."

Be wise; keep posted. Make sure that your information is up-to-date.

Don't be so covered up and engrossed in the details of your everyday work that you are blind to the Main Chance in present-day building. Try your best to get a broad outlook onto the present-day building industry. It is the biggest work, and holds the biggest opportunities offered in any line.

Study and work to be bigger than your job, and you will find your job will grow bigger.

We have the pleasure of writing this New Year's message to you the day before Christmas; and we could ask no better masstif for Our Folks than the disposition to look at their work in a big way and appreciate its opportunities.

Directory and Buyers' Guide

There are numerous items of building supplies and equipment that are only occasionally wanted by builders, and these items are seldom seen advertised. Yet they are important when wanted. The result is that builders are frequently up against it to know just where to go for such infrequent goods.

Our Directory appearing in this issue has been compiled and is here presented to meet exactly this need. It lists the best concerns, gives trade names, and calls attention to important materials and builders supplies that are seldom advertised.

Keep this Directory Number of the American Carpenter and Builder for future reference. You will find these lists very handy to use and the information contained reliable.

Next Month Farm Building Number

We have a treat in store for our readers in our February Number. It will be our Second Annual Farm Building Number; bigger and more complete and more elaborate than last year. There is one illustration alone in this issue of the magazine worth the price of admission! The city man and the architect, as well as the small city and rural builder, will find this Farm Building Number extra valuable and interesting. Do not miss it. Tell your friends about it. It's going to be good.

And once again, remember that New Year's thought— "Keep Posted." With very best wishes.

Editor, American Carpenter and Builder.
CHICAGO
MARK
SPRING HINGES
REPUTATION
Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?

Chicago “Relax” Spring Hinges
are in great demand. They are substantial in construction and readily applied. The EXCLUSIVE FEATURE of spring action release, allowing the door to be placed at any desired position and automatically re-engaging when the door is closed, is of recognized merit and utility.

Send for Catalogue C32. It fully illustrates and describes the most complete line of Spring Hinges manufactured.

Chicago Spring Hinge Company.

CHICAGO NEW YORK

A Bungalow for Permanent Occupancy. Charles E. Anderson, designer, White Plains, N. Y. “The roof is covered with shingles dipped 10" in Cabot’s Creosote Shingle Stains; the body is stained a rich brown with Cabot’s Creosote Stains.”

You Can Pick Out the houses that have been stained with Cabot’s Creosote Shingle Stains
The colors are so soft and rich and lasting that all other stains look cheap and tawdry in comparison. They go farther, last longer, preserve the wood better and are vastly more artistic—and every gallon is guaranteed. Imitation stains smell of kerosene or benzine and are dangerously inflammable. Cabot’s Stains are the genuine Creosote, wood-preserving stains, and they make the wood less inflammable.

CABOT’S QUILT
A scientific heat insulator and sound-deadener that makes houses warmer in winter and cooler in summer and deadens sound in floors and partitions. Not a mere felt or paper, but non-conducting mat that is about thirty times warmer than common papers.

You can get Cabot’s Stains and Quilt all over the country. Send for samples and names of nearest agents.

SAMUEL CABOT, Inc., Mfg. Chemists
BOStON, MASS. 24 W. Kinzie St., Chicago

What is the Value of Your REPUTATION?
Your success depends upon the permanence of your work. You can bank your reputation on the lasting qualities of work done over.

Kno-Burn
U. S. Registered Trade Mark
Expanded Metal Lath
Better let us give you details about the mesh of “Kno-Burn” and why it is the “certain” lath for plaster, stucco or over-coating work. Ask for booklet 33.

North Western Expanded Metal Co.
903 Old Colony Building
Chicago, III.

Worth Much to You

Morrill Saw Set

All master carpenters are using this Saw Set. In one operation it takes out the wrong set and puts in the right one. Write for FREE booklet “Saw Points”. It tells how to properly joint, set and file hand saws.

CHAS. MORMILL
94 Lafayette Street
NEW YORK

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Plan to Visit Chicago, Feb. 12-19

THERE'S one event each year that no contractor living in the North Central States can afford to miss—the Chicago Cement Show.

For eight years regularly this exposition has had the distinction of being the big show of the year in the construction field.

This year, the Ninth Chicago Cement Show is to set a new record; in size it will be the biggest, since it will fill the Armory as well as the Coliseum, and for instructive interest to contractors, builders, and architects more elaborate plans are being laid than ever before.

Joint Exhibit of Cement Companies

Twenty-six cement companies shipping cement within 1000 miles of Chicago, have entered into an agreement to participate in a $10,000 exhibit of concrete products which will occupy the entire south half of the Armory. The materials for this exhibit will be drawn from the resources of practically the whole cement industry, including the Association of American Portland Cement Manufacturers. All duplication of effort by cement companies will be eliminated by a Joint Exhibit plan which will enable the cement manufacturers to install such a display of concrete products as has never before been attempted. Unquestionably, this joint exhibit should set forth the possibilities of concrete in such a manner as will enable the visitor to acquire a broad and intimate knowledge of the uses of cement.

The Second National Conference on Concrete Road Building will be held at the Auditorium Hotel, Feb. 15-18, in connection with the Show, and has led an unusually large number of manufacturers of road building equipment to install large exhibits. It is the intention to have on display at the Show, such specimens of concrete road work as will be discussed at the Conference.

Efforts are being made to induce the manufacturers of machinery to make exhibits of the products of their machines. The Show has grown to be a machinery rather than a products show, and to enable the architect and builder to study the possibilities of concrete,
particular attention will be paid to products. The surface treatment of concrete will be featured, and demonstrations of bush hammering, acid treating, brushing with water, and other methods of treating surfaces, will be taught, in a sort of School for Builders, which will be a part of the Joint Exhibit.

**Cut Nails Hold Roofs in Hurricane**

In the recent hurricane in New Orleans many roofs were destroyed and ripped to pieces by the winds. One of the puzzling features of the destruction, that was observed in various places, was the fact that not nearly all the roofs were torn up. Often houses in the same yard were in striking contrast to each other. One would not be damaged and the other would have many of its shingles torn away.

Investigation showed the reason for this, and proved once more that the strength of the roof is in the nails. The roofs constructed with cut nails are reported to be in good condition, while the wire nails lacked the holding power to keep the shingles in place. The fault did not lie with the shingles, but with the nails that were holding them in place.

There is some talk of revising the New Orleans building code so that shingles treated with fireproof paints can be used on new houses in the residence district. To obtain the best results under these conditions we would strongly recommend that cut nails be specified for fastening the shingles in place. They never wear out anyway and they can't blow off if cut nails are driven thru them.

The failures of shingle roofs are often blamed on the shingles when the fault is with the nails that were supposed to hold them on. If New Orleans wishes to make permanent roofs out of wooden shingles, the best plan to follow will be to specify cut nails for this purpose. They last and hold as long as the shingles.

**New Building Era in Prospect**

As the time approaches for the National Convention of the Builders' Associations of the nation, to be held at Baltimore, Md., February 22, 23 and 24, 1916, the building fraternity is impressed with the strong probability that these deliberations will be looked back to as marking a memorial turning point in the method of conducting building operations.

We find the leading architects advocating contract reform with full arbitration for all questions, the builders strenuously working to attain the same end, and many leading real estate journals that support and protect the owners' interests insisting upon their universal use, for building improvement.

This is a striking situation that a reform which the builders conceived and inaugurated less than three years ago, in order to better building conditions, should now be so fully approved and earnestly supported by the leading architects, and owners and all interests concerned. It emphasizes the point that their policies possessed merit, and that this reform must have been conducted upon intelligent diplomatic and firm lines.

It is so unusual for all interested parties, especially when their interests are at times in opposition, to have been so harmonious in eradicating these obsolete methods, and acting as a unit. This is an indication that they are all satisfied, and that the builders' ideas and policies were well founded, and best for all concerned.

The Baltimore Convention will assemble under these conditions with its members having a feeling of pride in their past accomplishments and a confidence in the future that will be an extremely important factor in guiding their deliberations, and insuring the successful execution of their conclusions.

The realization of the many needs for improvement, and the cure of unbusiness-like methods current in the builders' vocation are apparent, and has created a deep impression, resulting in everyone fully appreciating their manifest duty for action to be taken upon these questions for their rapid and permanent cure.

Never before has a convention assembled where the necessity for advancement and improvement, and obligations to the owner and the public, were so apparent, and so fully realized, or have had such a wide study and preparation for their solution. Out of such thoughts are bound to grow important policies. Practically every building organization of note, whether members of the National Association or not, will be represented at the Baltimore Convention, and these representatives will come fully prepared to consider intelligently these important matters, and formulate plans to place the building business on the same commercial plane as other important branches of commerce and industry. To attain this end, the architects and builders are fully co-operating in a sincere and friendly manner.

**Institute Urges Monumental Federal Buildings**

Washington, D. C., Dec. 15.—"It is entirely possible for the Government to build Government buildings that will be monumental in character, artistic in design and meet every requirement of utility."

This was the declaration of Charles A. Coolidge, of Boston, chairman of the committee on Government architecture, in his report to the American Institute of Architects here. He outlined a program for a campaign to be waged by the Institute to convince the Government that Federal buildings in Washington and elsewhere should take their places alongside of those in Old World capitals and cities.

The committee's report disapproved of the use of brick in public buildings, holding that it was not appropriate either in point of beauty or durability. The report declared that it was unnecessary to depart from architectural beauty in constructing Federal buildings, and the general utility of the structure would not be impaired by making it artistic in construction.

The report recommended the standardizing of postoffice buildings in smaller cities, and urged the general employment of marble, granite or stone in construction.
Winter Building Campaign Progresses

Numerous Advantages to All Concerned—Architects, Builders, Supply People, and Owners—Winter Building Efforts Win Increasing Favor

A S advocated in this department the past four years, there has this winter developed a general movement to promote "More Winter Building." Material men, architects, builders and the other architectural and building papers have taken it up.

If more winter building can be developed it will give manufacturers an opportunity of continuing normal operations through the usual dull months. It will be of direct benefit to general contractors and their employees. It will be particularly acceptable to designing architects and engineers. Moreover, there is the opportunity for distinct advantage to the building owner, for the reason that many manufacturers will be in a position to offer inducements in the way of lower prices on building material.

The contractors may see fit to accept winter work at a lower contract price in order to hold together their organizations. The architect might also make a lower charge for the directing and handling of work carried on during the winter.

It is a known fact that masonry work and reinforced concrete work can be carried on successfully during the cold weather. The writer knows that structural steel has been carried through to a successful conclusion during the winter months at an erection cost as low as would have applied to the same work done during the summer.

Habit to Blame!

Modern Building Conditions Favor Winter Activity Rather Than Hibernation—Which Is Branded As Relic Of Past

By Architect H. Jerome Darling, Detroit, Mich.

The present vogue of winter building appears to be simply a matter of evolution. The human race clings to a habit and will do things in a certain way simply because it was done in that way by their forefathers. There was a time when winter building was almost unheard of, but each year is gradually producing more winter work.

Decision Rests With Owner

The question of winter building is one that must of necessity be decided by the owner himself, and he is generally not sufficiently well informed to take the chance. All the facts must be put up to him in a form which he can readily understand before he will release his capital in a venture which to him would seem to promise more successful execution in warmer weather.

All kinds of mason work are now carried on successfully at all times during the winter. Some of the very largest and most important buildings in Detroit were erected during the winter. Buildings of reinforced concrete construction, depending almost entirely upon concrete for support, are erected in the dead of winter. The Trussed Concrete building, opposite the postoffice building, is one of the many of this class which were erected during the coldest months of the year. Mortar will not set as rapidly in winter as in summer, but I am of the opinion—judging from demolished buildings which were erected in winter, and from the assurance of prominent mason contractors—that mortar used in winter will become more durable than mortar used in summer. One reason for this may be that brickwork laid in summer will absorb the moisture from the mortar before the mortar has had time to set.

Reduction of Cost Possible

It is an accepted opinion of the public in general that contracts for winter work can be let at a lower price than at any other time of the year; all things being normal. I am not alone in the belief that about 10 per cent of the cost of building can be saved if contracts are let during the winter.

If the owner's money is drawing low interest, it might be well for him to consider, with other savings, the greater earning capacity this same money would show invested in his proposition for the period that it would otherwise practically be lying idle.

During warm weather rush seasons the contractor is forced to employ incompetent mechanics whom he weeds out in the winter when work becomes slack. The man who erects his building in the winter has the advantage of securing this higher class of workmanship. Furthermore, as the contractor and architect are not
rushed with the same amount of work as in the summer, each can devote more of his individual time to the construction of the building.

**Better Woodwork is Possible**

All woodwork which enters into construction of a building is far superior when installed during cold weather, the atmosphere being much dryer than in summer. Much of the moisture in the form of rain which is absorbed by the rough woodwork during warm weather, becomes snow in winter and is easily cleaned off before any material damage can be done. The moisture absorbed by the rough woodwork in summer will not dry out until sometime after the building is completed and decorated. When this moisture dries out floors and partitions often settle, causing cracks.

One of the greatest objections to summer building is the absorption of moisture from the air by the interior wood finish. This interior finish is one of the most important features of a building, and greater care and skill must be employed in its installation than with any other part of a building. It is always subject to more close inspection as long as a building stands, and it is important that every precaution should be employed to preserve the highest class of workmanship in the building as a whole. The moisture absorbed by the finish woodwork in summer will dry out later and cause joints to open, doors to shrink, panels to crack, and the work to assure the character of a building that literally has been thrown together. On the other hand, heat is maintained in the building erected in the winter and, as a result, moisture is kept out and the finish remains in a first-class condition.

The facts I have mentioned are some of the important influences working to produce a larger amount of winter building. I believe that when the public becomes aware of the advantages of winter construction, building operations will continue actively thru all seasons of the year.

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**PRIZE LETTER: Repairing and Remodeling a Specialty**

**HURRY-UP METHODS THAT PLEASE CUSTOMERS AND INSURE PROFIT — MONEY IN WAGON REPAIRING**

Butte, Mont.

Winter Work Editor, "A. C. & B."

Will elucidate how I keep the coin coming my way during the winter months. First, as my letter-head states, repairing and remodeling is my specialty. I have a very extensive business in that line. I look after the work for the largest real estate firm in town, several smaller ones, and a line of private customers in size work, from fitting a key to remodeling the whole building.

If the job can be completed on the day order is received, it is never put off until the next. I put the man or men into an automobile and rush to the job, complete it and rush away, therefore satisfying my client, and at the same time keeping the expense down to the minimum—which counts here where the scale is $6.50 to $9.00 per day.

Second, while living in Minneapolis, Minn., I had a nice line of customers amongst the team owners. In October I would go over all their sleighs, ice racks, etc., and in November they would haul in their wagons, drays, vans, etc., and during the winter months I would repair same, have them painted and as good as new for the spring work. Any carpenter living in a city where they have snow enough for sleighing can easily do a good business repairing wagons if he starts out and looks for the business. It took me several years to build up a business that kept me busy all winter, but I succeeded in doing so along that line.

I subscribed for the AMERICAN CARPENTER AND BUILDER the first year of its publication and have taken it ever since. I have practically all the books published by Wm. A. Radford, and was one of the first purchasers of Radford’s “Cyclopedia of Construction,” and sold several sets by inducing my workmen to buy.

I keep posted on new material, tools, etc., by reading the advertisements in the AMERICAN CARPENTER AND BUILDER.—**Thos. N. Bailey, Contractor and Builder.**

---

**THOMAS N. BAILEY**

**CONTRACTOR AND BUILDER**

Repairing and Remodeling a Specialty

Residence: 1320 Second Ave., South

OFFICE: NO. 1 EAST GRANITE STREET

Butte, Montana,

The Business Stationery of Contractor Bailey Features Repair Work.
PRIZE LETTER: Makes Show Window Back Grounds of Wall Board; also Remodels Store Fronts

Buffalo, N. Y.

Winter Work Editor “A. C. & B.”:

Last fall, I sent you some winter work ideas, which have worked out successfully with me.

This fall, I have a suggestion which is the best idea I have had yet, to drive the so-called “quiet month” out of a contractor’s calendar. I refer to backgrounds. It is a well-known fact that many of the smaller department stores have not proper backgrounds for their windows, and when approached on the subject of “portable window backings,” are ready to order.

My system is to make up artistic backgrounds of wall-board, which can be taken out easily. Most orders are from three to six different kinds of backings for different displays, and these backs are especially desirable for small windows. I have worked up about thirty different designs, and the customer orders from blue-print designs in the same manner as he would from a catalog. The selling price of the backs ranges from $1.50 to $5.00 per square yard, according to the amount of work and kind of decorating.

A good metal store front is also an excellent proposition, as architects soon get used to specifying your front, and even tho you lose the general contract, you are sure of getting the metal sub-contract from the successful general contractor. Practically all store front remodeling in this city is done in the late fall and early spring, and is really “winter work.”

GEO. M. PETERSON,
Contractor and Builder.

PRIZE LETTER: Got His Start Making Screens

Hamlin, N. Y.

Winter Work Editor “A. C. & B.”:

I have had hard luck with my eyes. I can’t stand the lamp light, so you see my evenings are not spent on books or magazines. I was working for one man for three years—a contractor. Finally we ran short of work, and it was time for me to look and see what I could find to do. I had taken a course in the I. C. S., and was getting along nicely, and liked to study carpentry and building. All of a sudden my eyes went blank—that put a damper on my study, you may bet. Was that way for three days, two days stone blind. The study ceased immediately, although I have not stopped learning.

Well, I had a call to go and fix a door, only a couple of hours’ work; but when that was done I talked window screens to the party, and made about $20.00 worth of screens for him. Then his neighbor came around and asked me to make him a couple, and they were made. Finally I struck out and got orders for screens, and hired another man, using the attic in my house as a shop. It wasn’t long before I got a call to build a porch for party No. 1, and laid over 30 sq. yds. of cement wall, besides remodeling storage.

When spring came it proved to have been a good winter for me, better than if I had been working for Mr. Contractor. Since then I have been going it on my own hook. Sometimes it cuts deep, but I suppose...
we all have hard luck. It builds us up, and makes men of us. I have worked for myself almost two years, and have had very good luck. I built one cottage this spring on the lake shore, also a garage; then farther up I built a bungalow, 36 by 44 ft., 9 ft. post, and have done quite a lot of other work, such as building cellar walls and plastering houses. Sometimes I had two gangs of men.

Am now working on a lumber shed size 44 by 60 ft., 12 ft. post, and have two more houses on the lake shore to remodel, also a barn to fix over, chicken coop to build, and something is always coming up. I have four men most of the time. I want to get a woodworking machine for making screens, because there is money in the work, and I will then have it for next season.

S. W. Conner.

Prize Letter: Keeps Books and Figures Costs for Contractors

Winter Work Editor "A. C. & B.": ———, Wis.

I came to this country in March, 1910, from Denmark, my native country. The first summer I moved around from one place to another and lost considerable time. When winter came I was laid off, and was out of work for four months. Then I attended night school, and took up a course in bookkeeping, which I finished the following winter. The year after I took a course in drawing and English.

In the spring of 1913, a contractor asked me if I would help him with his bookkeeping, which bothered him considerably as he had never studied that art; although he had been very successful and is doing work for thousands of dollars or more every year.

During January I am sitting in a warm room getting out the balance sheet.

Since then I have done his bookkeeping in my spare time, and have learned many things about the contracting business that I never could have learned otherwise. In January and February, when many carpenters are out of work and having a hard time in getting the credit and debit side to balance, I am sitting in a warm room getting out the balance sheet for the year before, and figuring out the cost of the different jobs, while the dollars keep rolling in.

I have also found that I cannot use my spare time to better advantage than by studying books and magazines about the building business. I learned, for instance, the use of the steel square from the American Carpenter and Builder, the first building paper I ever saw.

Now as to the result; while many of my fellow workmen have never had time to attend night school or money enough to buy books or magazines, and tools, I have as fine a set of tools as any one of them. I have also learned bookkeeping, some drawing, algebra, and English, and I have saved my money. Today I have in cash, first mortgage bonds, and bank deposit $3,401.27.

Take my advice, and stay away from the saloons, and keep an exact account of your income and expenses.

Louis Jensen.

[Address withheld by request.—Editor.]

$3000 House Planing Competition for Cleveland Building Show

An architectural competition of the most practical kind will be held in connection with the First American Complete Building Show, in Cleveland, O., Feb. 16 to 26, under the direction of the Cleveland Chapter A. I. A., in co-operation with the Chamber of Commerce, Cleveland Art Asn., Builders' Exchange, Society Advocating Fire Elimination and other civic bodies.

The competition is for a workingman's home to cost not more than $3,000 complete, exclusive of land and embellishments. There are seven prizes, the first being $200. The contest is open to all materials.

Rules of the competition call for six rooms, with basement under entire house. It is the aim of the committee to obtain designs that are in every way practical; and awards will be made upon this basis.

All drawings must be in by February 1.

Instructions regarding the contest may be had by applying to The Complete Building Show Company, 356 Leader-News Bldg., Cleveland, O.

R. P. Stoddard, Gen. Sec'y.

Editor's Note: Architects and draftsmen among our readers will be interested in knowing about this $400 prize contest. The fact of its being backed by civic bodies removes it from commercialism, and should open the way to general participation in it.
Artistic Home with Decorative Front

There are several distinctive features that set this home off by itself and give it character and distinction. The porch and the front gable combine to give an artistic effect; also the arrangement of the rooms is out of the ordinary.

The appearance of the porch shows that there has been some thought put on this important part of the house. The paneled stucco gable, with the three small windows in the center; the rough faced brick in the porch pillars and foundations; the brackets, and the projecting beams form a combination that is certainly attractive and unusual. The low roof and heavy pillars of the porch give it a built-in cozy appearance that will be much appreciated in the summer.

There are two entrances into the house from the front porch. One opens into the dining room and the other into the living room. The dining room occupies the right front part of the house, while the living room is directly back of the porch. Both these rooms have beamed ceilings, the design is varied in the two rooms. One of the most attractive features of the living room is the fireplace, which is placed diagonally across the corner. In the back part of this room is a door that opens into a back hall connecting up the rooms in the back part of the house.

The beams in the dining room divide the ceiling up so that there is one large rectangular panel in the center surrounded by smaller panels. This is a simple and artistic way of placing the beams. In the back part of the dining room is a built-in china case.

Good looking little Bungalow home of five rooms. Size, 45 feet 6 inches by 37 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only $6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6753.
Brick Fireplace and Tile Hearth Cozy Corner Well Worked Out in the Bungalow of the "Model Intensive Farm" at the San Diego (Pan.-Calif.) Exposition.

Note Effective Mural Decoration for Over-Mantel Treatment.
Comfortable Eight-room House. Size, 32 by 42 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only $10.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6750.

Eight-Room Bungalow with Garage to Match

Here is an exceptionally commodious story-and-a-half bungalow, containing six rooms and bath on the first floor and two rooms and bath upstairs. An extra amount of closet space is included.

An attractively designed door such as the one shown in this design always makes a good impression on anyone entering the house. It puts everyone in a mood to appreciate the interior.

This door has three glass panels across it and they vary in length from left to right. The one on the left being the shortest of the three. There are also broad brass plates at the top and bottom of the door and a heavy brass knob and plate to match. The whole combination makes a door that lends distinction to the house.

The front part of the house is occupied by two rooms that may be used together whenever occasion demands. These two rooms are the living room and a den or library. The two rooms are connected by a double sliding door. The den can thus be cut off from the rest of the house if the man of the house desires to do some of his office work at home. When the door is open it leaves a large unobstructed space across the front of the house which will be very useful in entertaining. The dining room will add to this space also.

This lower floor plan also calls for two bedrooms, a bathroom, and a kitchen. On the second floor there are two more bedrooms and bath.

The whole combination makes a door that lends distinction to the house.

Floor Plans of House, Size 32 by 42 ft.
Little Japanese Bungalow

The greatest point of attractiveness of bungalows lies in their simplicity. Many bungalows are made in a rather ornate and decorative fashion, but the best are of the type shown here and make their appeal thru their simplicity and hominess. The broad, flat roof, with its wide overhang, the projecting rafters, and the shingled sides all seem to combine to make something that more nearly fulfills the average person's idea of the latest word in a small home than any other combination. This is one of the reasons for the popularity of the bungalow type of construction.

In a warm climate a bungalow such as this would be set close to the ground because it would not be necessary to provide a basement to house a heating plant. Many changes have been forced on the bungalow in its travels from warm southern climates to all kinds and varieties of climates. It is the price that it must pay for its popularity. The original type of bungalow would hardly be practical for the parts of this country, where zero weather is often a winter occurrence. This type is followed many times in building summer cottages where the only heat that is needed can be furnished by a fireplace. The rough finished walls are also often used for summer cottages; but where the bungalow is to be used the year round, the interior of the walls is finished in the same way as in other types of houses.

In this plan the bungalow is not placed directly on the ground, but is just raised enough so that a good basement can be provided with head room for the kind of heating plant that is desired. The best plan is to place the furnace under the dining room, where it will be near the center of the house. The basement also acts as an insulator against the cold of the ground in the fall and spring when a fire is not lighted. An outside entrance to the basement is always a desirable feature of a house when there is a furnace to take care of.

The front porch is built up on a foundation of cobble stones and presents an attractive appearance. Instead of having the steps leading directly to the front, the steps are on the side and the door is in front. Little touches such as this are what make the bungalow so different from other houses.

The living room, dining room and kitchen occupy one side of the house, and the two bedrooms and bathroom are on the other side. The living room and dining room are connected by double swinging doors which are placed next to the fireplace. The living room is well lighted, but there is plenty of wall space that can be decorated with some well chosen furniture.

In one end of the dining room is a large curved bay and directly across from this is a buffet. Back of the dining room is a well arranged kitchen and a pantry.
Roomy, Homelike Bungalow of Five Rooms

There is on great hobby in room arrangement that many people have. In planning a home, nearly everyone will insist on one large room with a fireplace in it. The beauty of this idea is that it is so practical. There is nothing more necessary to the home than a room where everyone can meet, and where there is plenty of room to entertain visitors.

In this age of the world we know that surroundings have a marked effect on people and show their influence on both their mental and physical characteristics. A man does twice as much work and is twice as happy in a modern daylight factory as in the old, dark and dismal ones.

A room such as the living room in this design plays the same part in the home life. It is the meeting place of the family where the associations have their important effect on the developing character of the children. It is also the place where friends and relatives are entertained and where the social part of the community life is kept up. It is rather necessary, therefore, that this room be of good size and as comfortable and attractive as possible.

The living room in this design is 27 by 13 feet, which gives ample room. In the back wall is a big brick fireplace. Plenty of wall space is provided for some well chosen furniture that will harmonize with the decorative scheme that is chosen. With a bright, cheerful fire burning in the fireplace this room will more than live up to its name as a living room.

The exterior of this design is finished in typical bungalow style. The roofs have a very flat pitch with eaves that extend out on all sides. The gable extending toward the front of the house has the right side slightly longer than the left so as to cover the small front porch. The walls are covered with shingles. The steps to the front porch are rather wide and present a pleasant, inviting appearance.

The entrance to the house is into the living room which is connected to the dining room by a wide opening. The dining room might serve also as a sun parlor because of the many windows that are placed in the walls. Along the front there are four windows, with five along the side and one opening out onto the front porch. The dining room is of good size, and being connected to the living room makes an unusually large space across the front of the house. In the back part is a buffet which is built against the wall.

Directly back of the dining room is a pantry that is a most necessary adjunct of the kitchen. Under the window in the pantry is a table, and across from this a small cupboard. The sink in the kitchen is placed near the pantry so that dishes will not have to be carried far. Small details such as this are what make a kitchen a pleasure to work in.

The house is set up high enough so that a good basement can be provided. There are both outside and inside entrances to the basement. The outside entrance will make it unnecessary for everyone to tramp back and forth thru the kitchen in getting to the basement.

Generous Bungalow with attractive room arrangement. Size, 43 feet 6 inches by 38 feet 6 inches. We can furnish complete set of blueprinted working plans and typewritten specifications for only $6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6734.
Six-room Bungalow with large porch. Size, over main walls, 35 by 41 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only $6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6749.

Six-Room Bungalow with Large Porch

The exterior decoration of a house should always be given special attention; one who has secured an individual and unique exterior will tell you that the time spent in this sort of planning is time extra well spent.

On many types of houses the design of the porch will be the key to an attractive and distinctive appearance of an exterior. In a house such as is shown here, the porch can be made the most striking exterior feature.

The effects that are obtained with porches may be due to several different things. Sometimes it is the size of the porch which impresses people with the idea that it is a sort of a summer cottage in connection with the house itself. A small porch is often so artistically planned and arranged that it adds a distinctive touch to the exterior.

The porch shown in this design is fairly large and it also attracts attention because of the unusual and attractive way in which it is laid out. It extends along two sides of the building, but is much wider along the front than along the side. The part of the porch on the side seems to be a cozy little alcove set off by itself. Instead of the usual porch railing, a heavy wall is built up, decorated with belt courses in an artistic way. The wall can be made of rough faced cement brick if desired. The wall is built into pillars at intervals which support square white columns which in turn support the roof.

The front and side gables are decorated in an attractive way and form a pleasing combination with the porch wall.

The living room is entered directly from the front porch. It is connected to the dining room by a cased opening. The fireplace is set in the interior wall between this room and the dining room. The little seat by the fireplace makes the corner into a cozy little nook. In the wall near this seat is a double sliding door that leads to a library or den. These doors will, of course, be open most of the time, but if the den is to be used for a bedroom the sliding doors will be useful.

One of the great objections to flats is that they are never designed so as to allow any privacy. All halls are eliminated as much as possible and the rooms open into each other in such a way that no part of the house can be cut off from the rest. With a plan such as is shown here, a few doors can be closed and the bedrooms and bathrooms are shut away from the rest of the house, and yet they can be readily reached thru the small hall in the back part of the plan. This hall opens into the two bedrooms, the bathroom and the dining room and thus makes each part of the house readily accessible from every other part.

The closets in this design will be a great joy to the house wife. One is provided in each of the bedrooms and there is also one in the dining room and one in the hall.
Family House of Nine Rooms

A cozy little nook is a most desirable feature to have in a house if it is at all possible to include it in the plans. It makes a quiet and attractive corner in which to read or just to sit and think. These little nooks are sometimes built merely as a small seat set back alongside the fireplace. Sometimes they are alcoves and other times they are really a part of the living room and are large enough to hold the fireplace and some bookcases.

The one shown in this plan is of the last type. It is separated from the living room by a colonnade which contains a small bookcase on each side. Another bookcase could be placed along the wall opposite the seat. The seat extends from the fireplace along one wall under the windows. On the opposite side of the fireplace is a small bookcase. This nook will either serve as a cozy, secluded corner or it can be considered as a part of the large living room.

The living room is very attractive and is well lighted so as to be bright and cheerful.

The basement is a very important part of this design. In a house as large as this one, a good basement is necessary for several reasons. In the first place, it is desirable to have an efficient and satisfactory heating plant; and this cannot be accomplished unless there is plenty of head room. The basement under this house should also be large enough so that it can be used for various other purposes. A laundry should be built and careful attention to its design with regard to convenience will be time well spent. In some corner, as far from the heating plant as possible, a store room should be provided for fruits and vegetables. A small workshop could also be provided in some part of the basement that is not being otherwise used.

The basement is reached by stairs that open into the back hall on the first floor. All the rooms on the first floor, with the exception of the dining room, can be reached thru this hall. A back hall such as this has a marked effect in preserving the privacy of each of the rooms, as it is not necessary to go thru other rooms to reach any one room.

One bedroom is provided on this floor and also a bathroom. The den or sewing room can also be pressed into service as a bedroom if the occasion demands. This will hardly be necessary, as there are four more bedrooms on the second floor. Another bathroom is also located on the second floor.

On the opposite side of the house from the bedroom, on the first floor, is the dining room and the kitchen. The dining room is connected to the living room by double swinging doors. A large convenient buffet is built against one wall of the dining room opposite the windows. There are three fairly wide windows along the wall and also a smaller one that opens to the front porch. There is also another small window opposite this.

Guaranteed Building Plans

First and Second Floor Plans of House, Size 38 ft. 6 in. by 41 ft.
The Man Who Keeps in a Rut in the Prime of Life
Doesn't Need a Grave-Digger at the End

THE MAN FROM THE LUMBER YARD

Far be it from us that anyone would ever have cause to censure the "A. C. & B." for not having held up the lamp of progress. We stand on the watch tower searching all quarters for good things for our readers.

--EDITOR.

I HAVE a cousin who runs a hotel in a small town in Missouri. There is a livery stable in connection. Some time since I made him a brief visit. I noticed that he did not always stop to wash his hands, and never changed his clothes, when he came in to help wait on the table after doing the stable work.

His business is not paying him. He is in an awful rut. He has several characteristics, such as inertia and stubbornness, in common with the long-eared animal he grooms every day. No one stops with him who can avoid it. I know many hotels located no better than his that are making good money. Their management keeps up-to-date.

I find him everywhere—in the pulpit, and among publishers—among the men that use tools, and in the factories that make tools—in city, town, and village, the man that is in a rut.

I see the man of natural ability working as if his hands were tied, because he will not adopt a labor-saving machine. He is like a man in a sack competing with another who is untrammeled.

I was in a hardware store in Michigan about a month ago and overheard a man ask for a saw, stating that he had always used that saw and that his father before him had used it also.

It may be that the saw he bought was the best to be had; but I didn't like his reason. There are very few things in the manufactured line that my father used that are good enough for me.

In his day the pen was the sole means of correspondence. Now, the dictaphone, and typewriter are indispensable. He sent a messenger; I telephone. I have got to keep up-to-date on my work, or competition will bury me. The rut-habit grows on one, that is why I am especially anxious to reach the young men who read these letters.

The man who keeps in a rut in the prime of life doesn't need a grave digger at the end.

The only reason some manufacturers, whose product is classed under the "has-beens" continue on earth is that so many users are in a "rut."

Educating the Head

The man who would be 100 per cent efficient must begin by educating the head. There is no better head education for a tool user than is to be found in an enterprising builder's magazine.

I wish you could meet the Editor of the "A. C. & B." There may be more like him. I doubt it. He said to me, "Regardless of cost I want the best in ideas.
and suggestions—the best that is helpful in every department for my readers."

For centuries the human mind has been working out our plans for houses, creeds of living and philosophies of life.

Life is too short for you to work out these problems for yourself. No matter how good a head you have you must plant good seed. You use care in selecting the seed you plant in your garden.

You should censor carefully the ideas you plant in your gray-matter. Keep your mind open for impressions.

**Eyes that See**

I was recently in the office of a young man who is breaking into the contracting game. There was hanging on the wall an elevation of a residence of a peculiar style. He saw I was interested in it and asked me to inspect the building which he was just completing.

The building stood at the intersection of three streets. It was arranged so that the entrance to the kitchen was as attractive as the front entrance; not having that back porch effect. On the side opening onto the yard, there was a sun-parlor below with sleeping-porch above.

I congratulated him on having been able to make such a clever design, as to cover all of the objectionable points and to utilize all the good features of the locality.

He disclaimed credit for having originated the plan, saying that he always used the other fellow's brains when he could.

It seems that he had been visiting in St. Louis, and was walking through a residence section. He saw an intersection of streets exactly as there was in his home town. He was impressed with the way in which the city architect had utilized that particular space, and made a memorandum book record of the details. When he returned home he made up an elevation of the plans, placed it before the owner of the corner, and secured the contract for the building.

I see so many young fellows with a "nobody-at-home-expression." The young contractor mentioned above will make good because his mind is always on the alert. Having eyes, he saw.

**Educating the Hand**

I read somewhere that Paderewski would not present a new piece to his audience until he had played it over a thousand times. Possibly that thoroughness was the reason he commanded a larger wage than our United States President.

There was nothing more remarkable in his educated fingers, than in the educated hand of the brick-layers, who were sent over to England some three years ago to complete a large factory building in record time, to earn a bonus for the contractor.

They quadrupled the speed of any English masons. As I recall it, the Englishman used eighteen motions to lay a brick; the American laid it with four and a half. The Americans were helped also by their trowels.

The favorite English trowel is narrower at the heel and shorter than the favorite American trowel for speeders. The latter is so balanced as not to give any wrist strain. It butters just right, whereas the English is stiff at the point. Our boys went prepared in head, hand and tool.

Being 100 per cent men they out-distanced all competitors.
Possibilities of the Steel Square

To Find the Lengths of Rafters With the Square Where There Is a Fractional Part of a Foot in the Run

By A. W. Woods

We have a letter from a reader in Minnesota, in which he says he understands steel square work in roof framing fairly well, except where there is a fraction in the run and especially where there are hips and valleys to be reckoned with. We have covered this phase of the question time and again in various ways, but will try it again, using a different illustration, and then finish up with some odds and ends which we hope will prove interesting.

In Fig. 1 are shown two squares. The lower one is used to show the angles that the runs of the hip rafters form with that of the common rafter, which is 12 inches along the line of the tongue. In connection with this is also shown what determines these angles in connection with circular measurement, as noted in degrees. In this are shown only the runs for the octagon and square cornered building in comparison to the run of the common rafter for one foot; and these lengths when transferred to the upper square are shown to be 13 and 17 respectively. (Neither of these are absolutely correct but near enough for practical purposes.) That is the reason these figures are used for the seat cut for any pitch the building may have. In this, we have taken the 1/4 pitch for illustration purposes and the lines from 12-13 and 17 on the tongue to 6 on the blade represent the length of the rafters for a one foot run of the building.

Now coming to the fractional part of a foot run, suppose it to be 8 inches; then a plumb line from eight cutting the runs as shown, and their lengths transferred to the tongue of the upper square will be found to be 8 8/12 and 11 4/12 respectively and continuing on up, cutting the pitch lines and all above these points will represent the corresponding lengths for an 8-inch run.

Now, for an example, say, the run of the building is 9 feet 8 inches. We place the square 10 times at the figures mentioned for one foot run and at the last placing, lay off the seat cut line, then slide the square back along this line till 8 rests at the point where 12 was before, paying no attention to the figures on the table, and the latter will rest at the proper place for the plumb cut. Proceed in like manner for the hips, using the figures that give the respective seat and plumb cuts, then slide the square back to 8 8/12 and 11 4/12 for the respective hips, and the lengths of the rafters will be properly cared for.

Something about Pitches

Now, we are going to branch off and show some things not generally known about pitches. In Fig. 2 are shown the

Fig. 1. Diagram to Explain Fractional Runs.

Fig. 2. Some Cuts for One-fourth and Whole Pitch, Except Reversed on Square.
pitches for the common and hip rafters for the \( \frac{1}{4} \) and one, or whole, pitch. If we were to ask what is the difference, we fancy we hear the echo coming back,—why a good deal of difference! Yet the figures representing them give identically the same cuts for the common rafter but reversed on the square.

Passing on to Fig. 3, we find the length of the rafter for the \( \frac{1}{4} \) pitch to be 13.4164, and that for the whole pitch to be 26.8328, which is just double that of the \( \frac{1}{4} \) pitch. If you do not believe it, transfer its length to that of the whole pitch and a plumb line from this point will intersect 6 on the tongue; or by throwing out a horizontal line, it will intersect 12 on the blade, thus showing the rise of the former to equal half the run of the latter, and vice versa for the run.

If we draw a diagonal line through the parallelogram thus formed we will have four right angle triangles filling the space covered by the whole pitch, thus proving that the area covered by the former is one-fourth of that covered by the latter. There is a reason for this, which is fully explained in Fig. 4. We leave it to you to study out.

There are seemingly some queer things in the subject of pitch. A half is a half any way you take it, but a \( \frac{1}{2} \) is also \( \frac{3}{4} \); a \( \frac{3}{8} \) is also \( \frac{5}{8} \); a \( \frac{1}{24} \) is also equal to six whole ones; and yet it is all clear enough when you look at it in the right way.

- **Fig. 3.** Rafter Length for One-fourth Pitch Just One-half That for Whole Pitch.

- **Fig. 4.** Area of Gable Triangle Formed by One-fourth Pitch Rafter is Just One-fourth That Formed by Whole Pitch Rafter.

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**Pick-ups on the Job**

By H. J. Blackledge

When I began the carpenter business at about six- or seventeen years of age I had one of the best pocket knives I ever owned. And naturally I wanted to use it. One day the foreman came around. He watched me a few seconds. Meantime I was fairly blushing with pride at the way I was showing him how to use my knife. Suddenly, "Shut it up, Kid! Haven't you got a coping saw?" "Yes." "Get it out then and use it. If I catch you coping moulding or anything else with jack knife again you'll go home." And yet only a few weeks ago I saw a man of fifty using a jack knife to cope base with! And you can get a coping saw for twenty-five cents with blades at about ten cents a dozen! Leave your jack knife at home, "young 'un."

My partner and I have found a short cut in cutting rafters that I think is worth while. We took some poplar, three-eighths by six and three-eighths by ten, about eighteen inches long and made T-shaped templates, using the six-inch for the stem and the ten-inch for the top of the T. Then we cut the ends of the template with the commonest rafter cuts. On the top piece at one end we cut the plumb and level cuts of common rafter, quarter pitch. At the other end we cut the plumb and level cuts of common rafter, quarter pitch. At the top piece we glued a neat typewritten table of the lengths of common and hip rafters from one to twenty-foot or run—at the pitch of that particular template. Of course they are awkward to carry around and take care of, but the saving in time on even one roof is a decided item.

Another table that we have found of great saving is that of jack rafters. This consists of the lengths of the first jacks, at four different pitches, for twenty-four to thirty-six inches apart. For instance: jacks to be 30 inches apart—first one will be 2 ft., 9.5 inches long. The next one will be twice that length and each succeeding one 2 feet 9.5 inches longer. This is at quarter pitch. At third pitch, the first one would be just three feet long; next one six, etc. (Will be glad to send in the whole table if anyone cares for it.)

Another exceedingly useful table is one we use in figuring contracts. It was a forerunner of the "A. C. & B." Estimating Blanks, but not as elaborate. We began in a small town where there was no need of all the articles they have enumerated. But we did need a list of the material used in small cottages
SHOWING THE GOODS

EFFICIENCY IN THE SALES OFFICE OF BUILDER OR ARCHITECT

By Kenneth C. Cardwell

A GREAT many architects, and a still greater proportion of builders who are pretty good architects themselves, are considerably more efficient in the technical, working side of their business than they are in the equally important, but much-neglected, merchandising side, as it may be called. In other words, while they can develop ideas and work them up into plans and specifications, and, later, into actual, substantial structures, in a way that will please the most exacting, they find some little difficulty in selling their ability to prospective builders.

Of course, in the case of the conscientious, ethical architect, the limitations of his professional code prevent any very active selling campaign; and this, perhaps, is quite as it should be. But in the case of the builder there is no such limitation. And even in the case of the architect, there are certain things which may and should be done, to make more plain the way of the customer to the desired end, which is a contract for the designing and construction of his building. Yet, in the average office, much remains to be desired in the matter of showing the prospect what he wants, or ought to want.

Take a Selling Tip from the Up-to-Date Merchant

Merchants, for instance— the ordinary run of merchants, who sell not merely brains and ability, but actual goods, from bread to brocades—learned long ago that one of the most effective means possible of getting business is to show customers their goods in an attractive manner. Everybody knows that the desire to buy is very frequently born of the sight of something desirable, seen in a merchant's window, and that one's choice of a purchase formerly thought of is even more frequently guided by the same sort of suggestion.

That is why expert window-trimmers, or advertisers, as they now insist they should be called, get large and luscious salaries; and it is a realization of this fact which led a big dry-goods man to declare, not long since, that be considered his show-windows to be of equal value, for advertising purposes, with his newspaper advertising, which costs him an astonishing sum each year. In fact, there is hardly any room for argument on the proposition that attractive display of the goods to be sold is one of the most powerful agencies in accomplishing the sale.

Of course, the builder can't very well use a window-trimmer in his business, as a means of showing people what he can do in the way of putting up an attractive house; although, at the same time, it can readily be demonstrated that something in this direction is far from impossible. But it is still highly desirable to be able to show the prospective builder, who may or may not give you the business, that he will probably do worse if he goes farther; and it is sufficiently obvious that the one best way of showing him this highly valuable point is to present to his admiring view an attractive example of good building, and to be able to say, proudly, "This is my work."

Not Always Convenient to Run Out on Inspection Jaunt

If the prospective builder aforesaid has plenty of time, and if the builder himself has plenty of time, this kind of demonstration is not especially difficult, although it sometimes involves some trouble, and always the possibility of loss of the prospect's interest. The builder—or architect, inasmuch as all this applies equally well to the architect—if he has a car, can lead
his hoped for customer to it, and whirl him out to the house he wants to show as a specimen of his work; or he can trust to the plebeian but inexpensive street railway, and take him to the desired spot in more leisurely, but much less satisfactory, fashion.

This does very well where all circumstances are favoring; but how about the case where the man who wants the house is "shopping around," as he frequently and not unwise does? What if he is making the rounds of the architects and builders, with the idea of getting a general notion of what they have done and can do, and does not care, at the moment, to devote the time required for long trips hither and yon? Perhaps he intends to come back, if he feels that it is worth while, and inspect in detail some house which might meet his idea of what he wants; but what if, in the meantime, some enterprising chap nails him to a contract?

This can happen; nay, it does happen, every day. The builder who may have constructed, on in some distant suburb, the very house which the prospect would like, does not get a chance to show it, because some other fellow has had the good business sense to prepare his showing right in his office. And the other fellow who does this is, to that extent, the better entitled to the business, because he has used the best means at his disposal of proving his ability. He has taken pains to show his goods attractively and convincingly.

A Sad Case—and a Typical

The loss of a rather desirable client by a perfectly able architect on a certain occasion illustrates the point exactly. In this instance the man who wanted to build, a substantial retired business man with plenty of money, had a sort of general idea of what he and his wife wanted in the way of a big, comfortable house, but naturally couldn't express it in the shape of drawings, or even in understandable architectural terms. But he would know it when he saw it, or something like it.

That is why he visited this architect's office. He had heard of the architect as being a good one, who had constructed some handsome residences, and knowing of no other—the average man, it should be remembered, has little occasion to come in contact with architects and builders until he requires their services—he naturally went to the one he had heard a good report of. Now, it was unfortunate that on this occasion the architect was not in the office, altho it is entirely possible that even if he had been his lack of tangible evidence of his work would have hampered him fatally in closing with the visitor.

At any rate, finding the architect out, the would-be builder managed to convey the idea that he would like to see and get an idea of some of the better houses which the architect had built. Pictures, he thought, would be more satisfactory than anything else, altho floor plans and elevation drawings would also be interesting. And, being a business man, he simply took it for granted that something of this sort would be available.

However, little evidence of this sort was available, as the office man, the stenographer and the pair of draftsmen, after various hurried consultations, finally informed each other and the visitor. Yes, there were
bound permanently so that they cannot be lost. Each picture is mounted on flexible cloth—any good photographer understands this much-used method of preserving pictures—and can be handled, in the book, without the slightest chance of injury. Moreover, a separate index of the houses, classified by the name of the owner, gives a fairly good reference to the places, in case the memory of the builder or of the person showing the book fails.

Working Drawings Preserved in Good Shape

The same plan is followed in reference to most of the drawings. The tracings, whether of floor plans, elevations or details, are kept in a big cabinet, bound together and lying flat, so that they can be handled without much difficulty. And while these are not referred to nearly so often as the books of photographs, because the photographs are shown first, they are of even greater value when wanted.

For instance, the customer, roaming at his heart’s content through one of the bound volumes of pictures, comes across a series of four or five, showing various exterior and interior views of a semi-bungalow which embodies the very features he wants. He promptly and enthusiastically says so; whereupon he is shortly referred to the original tracings, giving him every detail of that house. And if he does not “sell himself” on the proposition, with very little delay, it is because he never really intended to buy or build a house.

“Our of course we take customers out to see houses we’ve built, wherever it’s desirable or necessary,” said the builder. “But this record of pictures and plans we have makes that trouble unnecessary, in a great many cases. We can show the goods—and sell ’em, too—right here in the office; and you’ve no idea how it helps to develop a deal. I know that not many builders, and very few architects, take this trouble. That’s their business; but it’s my business to build houses, and to sell them; and as far as the selling goes, I believe I’d rather lose the power of speech than to give up my little scheme for showing, in convincing detail, how my work looks.”

Pick-ups on the Job

(Continued from Page 53)

and bungalows, so we sat down and began with the mudsills and went right thru to the ridge boards. Just as a sample, here is one paragraph of that table:

“Studding—Studs, headers, cripples, double or triple corners, backing, bridging, wainscote and plate-rail bridging, corner braces, braces over openings; plates outside and partition, single and double.” You see, the subject of studding is pretty thoroly covered. And so we treated each part of the building. After that we did not “forget” various pieces, as we had been doing before. Another list was made up for hardware of every ordinary kind used.
Proposed School to be Constructed at Shannon, Illinois

ARCHITECT'S DRAWINGS PROVIDE FOR TWELVE ROOMS, INCLUDING ASSEMBLY HALL, LABORATORY, AND MANUAL DEPARTMENTS

Rendered Perspective of Proposed School for Shannon, Ill. A Design by the Well Known School House Architect, Mr. G. W. Ashby, of Chicago.
Talk No. 42. Other Types of Heavy Timber Floors—
Construction Series No. 6

THE BOSS TELLS ABOUT TWO OTHER TYPES OF HEAVY TIMBER FLOORS USED IN THE MILL
CONSTRUCTION TYPE OF BUILDING

"You will remember," said the Boss, "that we discussed a type of timber floor in Talk No. 40. That type of floor is used to a considerable extent in buildings where the column spacing is not large and where the floor loads are of medium amount. In this talk, we will consider two other types of timber floors, which may be used for greater column spacing, or where the allowable floor load in pounds per square foot is larger. It will be remembered that the floor in Talk No. 40 was laid direct upon the main girders, and that no smaller beams were used in any part of the floor. The floor boards were laid with the large dimension horizontal and keyed together by $\frac{3}{4}$-inch by $\frac{5}{8}$-inch hardwood splines.

"The first type of floor is similar to that shown in Fig. 73. This floor is supported by the main girders as in the previous case, but is intended for use with long spans or heavy floor loads. The floor may be made up by laying on edge planks 2 inches or 3 inches thick and from 6 inches to 8 inches wide. Each plank is securely spiked to its neighbor when it is laid and helps to build up a solid timber floor slab. The edges of the planks are surfaced and given a slight bevel on each side. This bevel provides a finish to the under side of the floor where this surface is to form the ceiling of the room below. Care should be taken to see that the planks are spiked in such a way as to prevent cracks between the planks. This will prevent dirt from passing from one floor to the other, and also provides a better fire-resisting surface.

"The floor slab, when in place, should be covered with two or more layers of waterproof paper, and then a $\frac{3}{8}$-inch to $\frac{1}{4}$-inch hardwood top floor should be securely nailed down to serve as a wearing floor. This top floor should extend across the direction of the lower floor, and preferably in the direction of the greatest travel. Tongue-and-groove flooring may be used if desired, but square-edge boards will be easier to replace when worn.

"The ends of the planks at the walls may be supported by a girder placed near the walls, or may rest upon a ledge of brickwork built out from the face of the wall at the proper height.

"Later, we will figure the details of a floor of this type as in our previous problems.

"Another type of heavy floor is that shown in Fig. 74. This type is used in stores and office buildings where but few columns are desired, and where the floor loads are not large. It is also used in factories and storehouses to some extent. It will be noticed that the floor boards are fastened to beams of medium size which in turn are carried by the main girders. The hangers or stirrups shown are of steel or malleable iron and designed to carry the load which comes on them with a proper factor of safety. The tops of the beams and girders are all in the same place so as to prevent spaces between the bottom of the flooring and the carrying members. One of the most important points in the mill construction type of building is to
have no concealed spaces of any kind which could prove troublesome in case of fire.

"The least thickness of floor boards allowed in a floor of this kind is 234 inches when dressed. The smaller beams must be at least 6 inches thick and have at least 72 square inches of cross-section. This gives a 6-inch by 12-inch beam as the smallest size. This latter rating also applies to the main girders, but owing to the ordinary length of span between centers of columns, the girders will be of large size.

"The floor boards are laid horizontally in this floor, and are preferably of the splined or tongue-and-groove type. A limiting width of 9 inches is often specified for these boards. All material is surfaced on both top and bottom surfaces with no unfinished surface exposed in any part of the wood structure. A smooth wood surface offers better resistance to fire than when rough.

"The ends of all girders are supported by iron or steel wall plates or post caps as in the cases shown in Talks Nos. 40 and 41. A top floor is used over the lower, or carrying floor, and two layers of waterproof paper inserted between the two floors, as in previous cases. Fig. 75 shows a larger detail of the hangers used to hold the beams in place.

"The main carrying girders should be single stick if possible. This feature of the design may be carried out with timber sizes up to 14 x 16 inches. Timbers 7 or 8 inches wide and 16 inches deep are often used in pairs side by side. The two timbers are planed and bolted together closely so as to prevent an air space between the two pieces. The bolts are placed about four times the depth of the piece apart. Some designers prefer to leave a 3/4-inch air space between the two pieces, but this practice has been found to be objectionable in some instances, especially in case of fire. The space between the timbers forms a pocket which violates one of the fundamental principles of standard mill construction.

Heavy Timber Construction

"The size of the smaller beams will depend upon the load to be carried and the number of beams used in each span of the main girders. These beams should be spaced as far apart as the load will permit so as to keep down the amount of material on the ceiling, and to allow better lighting in the rooms of the structure. It is often specified that the smallest spacing of such beams shall be 8 feet on centers, but in some types of mill construction, they are spaced as closely as 4 feet on centers. This latter spacing is used when a heavy under-floor is not desired.

"The wall plates, post caps, base plates, wood posts, and other details in all of these forms of construction are of the same general type as described in previous talks.

"Now," said the Boss, "we will figure the sizes of members needed in the first general type of floor described above, when applied to the problem that we worked out in Talk No. 40. In that problem, we used a live load of 150 pounds per square foot of floor in addition to the weight of the floor structure.

"We will change the general design by omitting every second post along the length of the building shown in Fig. 65, Talk No. 40, thus making the size of the bays, or panels of floor, 16 feet by 16 feet. The main girders will extend across the width of the building, as in our previous problem.

"For the case where plank laid on edge, as in Fig. 73, is to be used, we will assume that stock is 3 inches thick. To find the depth of the stock, or the thickness of the main floor, we will use Formula (A) of Talk No. 38.

\[
\frac{X \times b \times d \times d}{6} = \frac{W}{1}
\]

The detail of this formula has been explained in previous talks. If yellow pine is used, and of a quality such that 1,000 pounds per square inch is a suitable value for the working unit stress, the value of X will be 1,000.

"A strip of floor 1 foot wide and 16 feet long, loaded with 150 pounds per square foot, will have a total load of 2,400 pounds. The length of the strip to use in the formula will be 192 inches. Filling in the formula given above, we will have

\[
\frac{1,000 \times 12 \times d \times d}{6} = \frac{2,400 \times 16 \times 12}{8}
\]

\[
d \times d = 28.8
\]

\[
d = 6 \text{ inches (approx.)}
\]

"This is the thickness of the floor before we have considered the weight of the material itself. Adding the weight of a 6-inch main floor with a 1-inch top
Heavy Timber Construction

floor to the 2,400 pounds used above, we would have

\[7'' \times 12'' \times 16' = 112 \text{ board feet of floor strip, each}
\]

board foot weighing 3 pounds, or 336 pounds to be added to this 2,400. Putting 2,736 in the place of 2,400 in the calculations above and solving, we find that the new value of \(d \times d\) is 32.8. This new value does not change the 6-inch size which we found.

“Our floor would be made of 3-inch by 6-inch plank laid on edge and supported by the main girders which extend across the building. The planks are laid so as to break joints at frequent intervals, and are securely spiked as described above.

“The size of the main girders will now be calculated. We will assume that a quantity of yellow pine will be used in the girders that will allow a value of 1,300 pounds per square inch for the value of \(X\) in the formula. The load supported by one girder will be that carried by a panel of floor 16 feet square, or floor slab itself will be 16 \times 16 \times 7 \text{ board feet multiplied by 3 pounds per board foot, or 5,376 pounds. Adding this to the weight on the floor, or 38,400, the total weight \(W\) to be used in the formula is 43,776 pounds.

“If we decide that we do not desire to use a depth of main girder greater than 16 inches on account of the interference with head room in the building, thus making higher ceilings and higher walls necessary, we will fill in the formula using \(d\) as 16 inches, and solve for \(b\).

\[
\frac{1,300 \times b \times 16 \times 16}{6} = \frac{43,776 \times 16 \times 12}{8}
\]

\(b = 19\) inches (approx.)

This means that two 10-inch by 16-inch timbers planed and bolted together will be needed to carry the load. While it is not generally advisable to use beams or girders with the width greater than the depth, in this instance it is necessary unless the distance between centers of columns across the building is lessened.

“Next time,” said the Boss, “we will figure the members of the other general type of floor referred to above, and see what size of columns will be needed with these changes in the design of our building.”

Washington’s New High School

The new $1,250,000 Central High School structure, now approaching completion in the national capital, is said to be the most modern and commodious for educational purposes in the United States. It covers two full blocks, and will accommodate 3,000 pupils. The building contains 5,500,000 cubic feet of space. It is built in the Georgian style of architecture, and is rectangular in shape. It stands fifty feet back from the sidewalk, and on either side are broad terraces, 156 feet wide. A portion of the site is devoted to an immense athletic field and stadium, constructed throughout of concrete and seating 6,000 spectators.

The building is faced with dark rough face brick and Bedford stone trim. The interior arrangement is planned on an elaborate and extensive scale. There are auditoriums, class rooms, laboratories, music rooms, drawing rooms, gymnasium for girls and gymnasium for boys, work shops for manual training, large dining and lunch rooms, libraries, rest rooms, hospital, lecture rooms, machine shops, amphitheater holding 2,000, and a large drill hall for the cadet companies.

The cost of the building, including site and equipment, will exceed $1,250,000. The plans were drawn by William B. Ittner, of St. Louis. The building was erected by William Dall, of Cleveland. Snowden Ashford, municipal architect of the District of Columbia, has supervised the construction.—ALFRED T. MARKS.
A Block of Store Buildings

FOURTH OF A SERIES OF DESIGNS OF PUBLIC AND BUSINESS BUILDINGS OF VARIOUS KINDS, WITH PERSPECTIVE VIEW, CONSTRUCTION DETAILS, AND FLOOR PLAN

For Details See Pages 62 and 63

Suggested Plan Layout for Block of Modern Stores; Note Variety of Display Window and Entrance Arrangements.

Block of Five One-Story Stores to Occupy a Corner Lot, Size 114 by 50 Feet; Maximum Daylight Store Front Construction with Prism Glass Transoms. White Enamel Terra Cotta Trim. When Writing About This Design, Please Refer to No. 6700. Price of Blueprints and Specifications on Application.
Details of Store Front Construction for Design No. 6700 as Illustrated on Page 61.
Note: A space of about 2 feet is necessary between case top and ceiling for the storage of miscellaneous packing boxes, placards, etc.

Typical Grocery Store Shelving & Cases
Store fixtures are commonly built-up of yellow pine (varnished or painted), oak (varnished) or birch (stained mahogany). These drawings suggest a typical store fixture arrangement for grocery & retail dry goods stores.

Typical Dry Goods Store Shelving, Counter & Cases

Raising and Moving a Frame Building

LABOR-SAVING TRICKS CULLED FROM THE EXPERIENCE OF THIS EXPERT MOVING CONTRACTOR AND EQUIPMENT MAN—CHAPTER I.

The moving of buildings from one location to another is a task that the contractor is often asked to tackle. There are good methods and poor methods of moving—ways that will cost you time and money and other ways that will make big profits for you.

The better way is the one I will tell you about. There are tricks in house moving—the same as in other trades. Fig. 1 illustrates how to save time in raising and getting the building on the trucks, by running the trucks and tracking out on an incline. In this particular case I saved raising this building two feet. That meant money to me. It was an easy pull—for with a single line and 10-foot sweep you have 50 h. p., adding a single-wheel pulley will give us 100 h. p., two pulleys 150 h. p., etc. You, therefore, see that the pulling out onto the foundation on the incline tracks was easily done by adding two pulleys. Only takes a few minutes to connect up the additional pulleys and by pulling out on an incline you will save yourself a day's work in raising—save two days in hauling extra blocking—which you would have to haul both ways—to and from the job—saving the work of five or six men.

Note how the outside cross sills in the front are keyed down by placing a 2-inch board between the cross sill and the house sill. This is important because it saves the house sill from springing when the building is let down, the weight of the house falling on the cross sill and springing it.

Be sure to run a good tracking for the trucks, from the foundation to the street because the intervening ground is always soft.

Fig. 2 shows the building half way off of foundation. Everything is going fine; this also illustrates the track runway being laid from curb to street. Dangerous—have four by six lash. Not necessary to keep entire length of track level because the three-point method of loading takes care of this.

You will see in Fig. 3, that the house is entirely off
of its foundation. Note how the front truck has been turned all the time and the rear trucks are starting to turn. This building was 28 ft. by 64 ft. The pulling line is at the corner, saving the time of resetting the capstan.

The right hand view of the building is shown in Fig. 5. Please note how the rear end of the running sills have been sprung, also how the house is being carried in a straight line. You will note how I used a 2-inch block between the running sill and the cross sill. I have tapered this block down to a shingle from the end of the running sill to the truck because I did not wish the rear of house back of rear trucks to spring; therefore, the springing of the main 12x12-inch running timbers avoided any chance of rack.

Always observe this point in loading building and you will be able to move a building any distance over rough ground with practically no damage to the house. Load the building on three points at the start and spring your sills properly. Three point loading takes the humps out of rough roads.

You will see in the illustration how I have stationed the rear trucks in about one-third the length of the house. This allows all the trucks to carry the same load. The center cross sill I have sprung one and a half inches between the rear and front trucks, this was done to prevent the house from sagging in the center.

I always take the chimney tops off, to level off the roof. This is to prevent the danger of some one getting hurt because of wires and tree limbs.

Turning a corner as in Fig. 4 with a long, heavy house used to be a mighty hard task with loose rollers, but today with trucks and modern tools it is as easy as pulling on a straight way.

Perhaps you have noticed how the right hand corner of this building seems to sag a little. This means the house is leveling itself up. It can't possibly tip over with the three point loading method, because the center axis is not straight through the center of the building, but follows the line of the running timber. To tip this building over you would have to put it on a slanting roadway of about 40 degrees. Even then the house wouldn't tip over, but would slide off its foundation of timbers.

The view in Fig. 6 gives you a very good side view of a house properly loaded, the method of taking a hitch at the rear of the running sill and the ease with which the corner is being turned. Within reach the truck tongues are chained to the running timbers, but
in turning they are loosened up and each truck is cut separately. Be sure to cut in the right direction in going around the corner, seeing that each truck makes its circle at a given point. You will note that the inside truck cuts a smaller circle.

When going up a steep ridge slide over a tracking, "safety first" is a good slogan or motto, and I play safe on all my work. You will note in Fig. 6 that a 4 by 6 block is trailed back of each truck. These act as stubs or brakes to prevent the building from going backwards. By using this safeguard no matter what the wall. While building your cribbing to run your house over the cellar, the best way is to take a tapeline and measure from the corner of your building to the center of your truck, then draw a chalk line across your cellar the same number of feet. Follow the same method at the rear end also. Then measure the side of your wall. By following this style you will never have any blocking to change, and everything will hit right on the spot and you will always get your truck bearings in the center of your cribbing. The building will not settle either way. If it should settle breaks; the building will not give an inch.

Going down grade, chain the rear wheels of the back trucks to the running sills. This will hold the building while going down a steep grade and is much safer than a snub, for you have the same tension in sliding all the way down.

When your building has reached its new location and you have to put it over a cellar, put your foundation in up to the grade line so as to let the building down to its proper height without interfering with at all, it will settle straight down, which doesn't make much difference. Don't let the building settle on one side, this is dangerous. This method of standing the building on its foundation will take you only about thirty minutes.

**NOTE.** Mr. LaPlant will be glad to answer questions and give personal advice direct by mail to any of our readers. Questions and answers of general interest will also be published in this Department. Address him care of Editor.
Concrete Cribbing for Retaining Wall and Similar Construction

DETAILS OF A TYPE OF CONSTRUCTION THAT POSSESSES MANY POSSIBILITIES

By H. Colin Campbell, C. E.

ALTHO various types of concrete units have been used for a number of years in crib and retaining wall construction, not much publicity has been given to this method of construction. Such units resemble rectangular timbers, like railroad ties or bridge ties, in shape and size and are reinforced in a manner similar to that used for reinforcing concrete fence posts. One type of crib unit is shown in Fig. 1. This consists of an 8 by 8-inch concrete beam reinforced against tension in the lower face, while light rods are placed in the top to protect against unusual strains in lifting and placing. This, of course, makes it necessary to so mark the unit when casting that the correct side to lie down may easily be recognized. These units have so far been made up to 8 feet in length.

Where intended for use only as open cribbing, the spaces between units as they are corded up are not filled; but for some retaining wall work, it is of course necessary to close up these spaces. Then one set of units is cast with mortise depressions in their upper and lower faces so the fillers, which are also reinforced and cast with tenons to fit into these mortises, may be held in position against sliding out from earth pressure.

Concrete cribs have been in use for some time for breakwater construction on the Great Lakes. The War Department had made successful use of them and therefore in a way they may be said to have passed the experimental stage. In breakwater crib construction, of course, the cribs do not act as retaining walls but as receptacles for stone. In all use of these units the longer ones, forming the crib proper, are held in place by steel dowel pins which drop through in one unit and into other holes extending part way into the unit below.

One of the first uses of this type of construction was made when replacing wood cribbing holding an earth fill that carried the Pennsylvania Railroad tracks near and past the historic Block House at the corner of Liberty avenue and Water street, Pittsburgh. This concrete crib construction replaced the old and rotting wood construction shown in Fig. 2. At this point, the tracks were about 15 feet above the surrounding level and the new crib or wall now built of concrete units is 8 feet wide at the bottom and 6 feet at the top. The method of erecting or assembling the units is suggested in Fig. 1.
Similar use of these units has been made by the Bessencor & Lake Erie Railroad in building a retaining wall to hold a fill underneath the concrete platform surrounding its storehouse and office building at Greenville, Pa. In this construction, a wall from 8 to 9 feet was erected from header units extending back 6 feet at the bottom and 4 feet at the top. The State Highway Department of Pennsylvania has also made use of concrete units in retaining wall construction at Connemaugh, Pa., where the highway follows heavy fills. Before the concrete cribs were used, this section of the road was subjected to bad erosion from overflow wash during periods of high water.

Another illustration (Fig. 3), shows a similar type of retaining wall construction accomplished with concrete crib units, that has been employed by the Chicago and Western Indiana Railroad and the Belt Line Railway Co., of Chicago, just south of the over- head bridge at 79th street, South Chicago.

Concrete units for crib construction, for retaining wall construction, or embankment facing, have many possibilities. Here is a unit which if properly designed and constructed represents permanence. The same principles of selection, proportioning, mixing and placing of materials, should be applied to constructing these units as would be used in fence post manufacture; that is, the concrete should be a rather wet mixture somewhat wetter than described by the word “quaky.”

One feature of the adaptability of this construction is that if the holes admitting dowel provide for a loose fit, the construction can be easily dismantled and moved elsewhere if occasion demands, without any waste of material; in other words, a retaining-wall can be temporary or permanent as desired.

If permanence is intended, then thin grout should be poured around the dowel pins in the holes to protect them against corrosion.

One can see the adaptability of unit construction of this class in providing temporary yet durable foundations for buildings that are not intended to be permanently located. The ingenious worker will also see opportunities for so designing forms that the heads of units will interlock if necessary when laying up, thus doing away with part or all of the dowel pins.

One field of usefulness for this construction would be in making temporary storage bins for sand and coarse aggregates or for coal, and for temporary retaining walls or abutments where foundation conditions in general were not of the best. They would also serve admirably for waterfront cribbing against water erosion. In the latter case, the cribs will furnish forms enclosing still water in which concrete may be deposited to finally form a monolithic wall.

Details of Unique Fireplace Nook
Work of Ralph W. Ermeling, Architect

The detail and sketch plate on the page opposite shows an unusual fireplace treatment for the end of a living room. The fireplace with its broad brick chimney is exactly in the middle, with an arched door opening on each side. One of these is for the stairway, the stairs going up back of the chimney with a landing two steps up. The other archway opens into a short hall to the dining room, kitchen and cellar-way—a very convenient arrangement.

The style of finish is in keeping—simple and rugged; suitable for any substantial residence of Elizabethan design.

The sketch, partial floor plan, and the several details fully explain this fireplace with its flanking seats. The principal dimensions are lettered in, making these suggestions or helps definite for those who wish to use them.

Not Any Today

"Please, ma'am," said a servant, "there's a poor man at the door with wooden legs."

"Why, Bridget," answered the mistress in a reproving tone, "what can we do with wooden legs? Tell him we do not want any."
Details of Elizabethan Fireplace Nook in Living Room, with Built-in Seats on Each Side and Stairs going up Back of Chimney.
Horse and Cow Barn of Medium Size

A medium sized barn to stable both horses and cows on the ground floor is shown in Design A296.

The barn is 30 feet in width and 54 feet in length. It is a wooden structure built on a concrete foundation. The framework is put together on the plank frame construction plan.

The cow stable is built along modern lines to secure cleanliness and to provide for approved stable appliances to assist in doing the work. There are ten windows to light the cow stable and five windows in the horse stable. Ventilator flues reach from behind the cows to the metal hood on the roof. There are alleys for both horses and cows running in different directions for convenience in doing the chores.

Above the stable the barn is made into one large hay mow. This mow is big enough to hold a great deal of hay and straw for winter feeding and bedding. The truss plan of building the roof leaves the loft comparatively smooth inside, so that the large mow may be easily filled clear to the peak.

A good steel hay fork track with a smooth running car makes the mowing away of hay easy. A horse fork takes the hay in through the large hay mow door in the horse stable end of the barn and carries it back as far as necessary.

In a barn having a width of 30 feet the horse fork will do practically all of the mowing away, because it may be dumped anywhere along the line of the track, and if it piles up on the center, the hay soon begins to roll off at the sides and will fill in against the outside boarding. Of course, if help is plentiful...
Farm Building Plans

at haying time, it is better to have a couple of men in the mow to keep it even. It used to be considered cheaper to mow the hay well in the summer than to pull it out of the twisted hay fork loads in winter. But a great many farmers take the hay out of the mow with the horse fork in the winter time so that the particular way in which the hay is put in makes less difference than formerly.

The detail drawings show the manner in which the 2-inch planks are put together to make the door openings; also the hay track hangers from the collar beams are shown and the projection where the track extends outside under the hood. This hood supports the horse fork track outside of the building. The hood is self-supporting, because of the angle and pitch of the bracket rafters. The 4 by 4 rests on top of the last four collar beams and projects as shown in the detail drawing. This 4 by 4 is supported at the end by the hood and the track is supported from the 4 by 4 by screw hooks and eye bolts, made the proper length.

Hardware for hangers comes with the track. It is only necessary to specify the length of projection outside of the building and the manner of hanging the track to the projecting timber.

Hardware for hangers comes with the track. It is only necessary to specify the length of projection outside of the building and the manner of hanging the track to the projecting timber.

The new steel tracks and improved cars when hung in this manner work to perfection. The handling of hay by modern tools is a different proposition from the old way of doing such work.

Improved Stable Floors

There are various ways to build stable floors and all will give satisfaction if made in the right way. In a recent installation three kinds of floors were used in a combination barn. In the cow stable the driveways, feed alleys, and mangers were made of concrete. The cow stalls required a floor that was warmer than concrete. A wood block floor laid in a special wax filler was decided upon. A special floor was also wanted for the horse stalls. The builder recommended a cork brick which was installed and has been most satisfactory.
Community Cold Storage Plant

In some sections of the country farmers are building co-operative cold storage plants for the proper storage before shipment of perishable farm products.

The accompanying illustrations, Design A345, show the perspective and floor plan of a moderate sized, well built cold storage building. It is intended to encourage the proper boxing and shipping of farm produce in a way that will secure the respect of purchasers. Produce properly handled, uniformly packed in the proper carriers and shipped in refrigerator cars pleases customers and assures future sales.

The plan of this cold storage plant provides a packing room where the work of handling is done to the best possible advantage.

Next to the packing room is a pre-cooling room, 12 by 14 feet in size. This is for the purpose of taking the heat out of newly arrived fruit and truck from the farms before being loaded into refrigerator cars or placed in the cold storage room proper. In either case this pre-cooling room answers an anteroom to prepare the candidate for further icing.

The cold storage room is 21 by 14 feet in size, with a high ceiling to hold produce in considerable quantity.

The other room in the main part of the building holds the ice.

The walls and ceiling are made the same as the floor, with the exception of the concrete floor underlayer.

Waterproofed insulating board is used all around the cold storage room and the ice room, as shown in the cross sections.

It will be noticed that the packing room and pre-cooling room are built in the annex to the main building and have lower ceilings. The space between these ceilings and roof is utilized for the storage of packing materials.

Such buildings are useful in communities where small fruits and vegetables are grown to be shipped some distance to large market sections. The man in charge of the cold storage plant attends to the packing and loading, so that the packages are uniform and true to weights, measures and grades. The farmers simply grow the stuff and haul it to the packing house in picking trays. The man in charge keeps track of each farmer's account and renders a statement the first of each month. If the business is small, the same man acts as secretary, so that only one paid officer is necessary. During the busy shipping seasons he may hire what help he needs.

Such community co-operative companies sometimes grow until large refrigerating plants are necessary to handle the business. A great deal depends on the character of the men engaged in the enterprise.

The sheet of details shows how other parts of the building should be constructed and insulated. There are different insulating materials on the market, many of which possess special qualifications for certain parts of a cold storage building. The construction of the walls, ceiling and floors is the main consideration when building a cold storage plant. It is better to put a little extra money into insulation at the time of building, because it saves expense every year the plant is operated. The extra cost pays big interest on the investment as a saving in refrigerating expense. Added to this is the great advantage of preserving perishable commodities in such a way as to prevent direct loss.

Arranging Barns for Milking Machines

Most of the best dairy men in this country do not think that the milking machine is economical for dairies of less than forty cows. For dairies of thirty cows, however, the milking machine should receive consideration and in many cases it will be economical.

There are types of milking machines now on the market that provide a separate air pump for each machine on the unit plan. This system offers the opportunity to start machine milking in a small way. If it proves satisfactory it can be extended.

The most difficult cows to milk can be handled by the machine and the easy cows can be milked by hand. It will generally be found that the machine is much quicker and cheaper than the hand method. The machines are now made simple enough so that very little difficulty is encountered in making the necessary connections. Anyone can handle this work...
Farm Building Plans

Details of Construction of Community Cold Storage Plant and Ice House, Design No. A345, Illustrated on Opposite Page, Showing Special Insulation
A Homecraft Library Table

HOW TO MAKE AND FINISH THIS MOST POPULAR PIECE OF AMATEUR HAND-MADE FURNITURE

By George E. Chandler

Dept. of Mechanical Drawing, Rochester (Minn.) High School

No other large article of furniture is more easily made than a library table of the craftsman type. The growing tendency of the times toward simplicity is especially noticeable in the table presented this month. Simplicity and good proportion have been carefully studied—yet avoiding the severe lines and crude appearance so often found in craftsman designs. The result is particularly pleasing and will harmonize well with almost any type of furniture and room.

Construction

While oak is the most popular wood, almost any kind of material may be used effectively.

The following pieces will be needed:

**Stock Bill (Finished Sizes).**

Top—1 piece 1 x 30 x 48.
Legs—4 pieces 3½ x 3½ x 26½.
Rails, side, 2 pieces ¾ x 4½ x 40½.
end, 2 pieces ¾ x 4½ x 22½.
End, 2 pieces 1 x 3 x 22½.
Stretcher—1 piece ¾ x 10 x 43.
Drawer—
Sides—2 pieces ½ x 3½ x 24.
Bottom—1 piece ¾ x 17½ x 24.
End—1 piece ¾ x 2½ x 17½.
Guides—2 pieces ¼ x 4½ x 26.
2 pieces ¾ x ¼ x 26.

All tenons on the rails have been figured ¾ of an inch long. On the stretcher ¾ of an inch has been allowed for the tenon.

The legs may be either solid, built up, or veneered. The veneered legs have the advantage of reducing the
How to Make a Library Table

weight to a considerable extent; and, if properly done, will never check or crack. The veneering may be easily done as follows. A center or “core” is glued up of soft wood—usually white pine. This core should be 3 inches square when finished. Material 5/16 of an inch thick is now glued on two sides and then on the other two sides. The additional 1/16 of an inch on each side allows for dressing and finishing to dimension. A veneered leg is usually as easy to make as a “built up” one, and is certainly much more satisfactory in the long run.

In constructing the drawer the rails should be assembled and glued in the usual manner. The location of the drawer should next be laid out on the side rail and a strip ¾ x ¾ screwed on the inside at the bottom of the rail. This holds the frame rigid so that the drawer front may be sawed out, and also provides a stop for the drawer when finished.

A modified type of end rail is shown in one of the sketches. While slightly more difficult to make, it gives a unique and pleasing effect. All necessary dimensions are shown.

Please note that 2 inches has been allowed for the fitting of casters on the legs. If they are not desired, add 1 ¾ inches to the length given in the stock bill and fit with “domes of silence.”

How to Finish the Table

If oak or chestnut is used for the material a stain either in the fumed oak or dark golden oak may be used. A very pleasing effect is obtained by finishing the wood “open grained” and applying only the stain, a thin coat of shellac and two or three coats of wax. If a filler is desired, it is most easily mixed with the stain and applied in one treatment. Allow the filler to dry until it appears “flat”; then rub off the surplus filler with excelsior or burlap, working across grain as much as possible. A thin coat of shellac should now be applied. Allow this to dry over night and sand lightly with number O paper.

Wax or varnish may follow this for the finished surface.

For the drawer pulls, either wood or a simple design in brushed brass is attractive.

Portable Knockdown Classrooms

Small portable buildings, each a classroom in itself, form a novel and decidedly practical feature of the Los Angeles schools. In case of overcrowding in any building, it is possible to accommodate one or more classes in these structures, which can be set up in a very short time either in the playground or on some lot near the school. This does away with a problem found in every growing city.

In Los Angeles the portable classrooms have been used when the regular building in a district was destroyed by fire. With very brief interruption, the entire school has been accommodated in a group of small structures, which were used until the new building was completed; after which they were taken apart, as the sections are bolted together, loaded on wagons and removed for use elsewhere. One little building makes a truckload. They are not only light and inexpensive, but are quite pleasant quarters, as they can be opened to the sun and air, until they resemble outdoor classrooms.

APAT on the back won’t take the place of push.
Main Divisions of Directory

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The Publishers of the AMERICAN CARPENTER AND BUILDER present this Directory with the hope that it will prove really useful to builders. While it is as complete as our limited space has permitted, no doubt some first-rate concerns and some important products have been overlooked; nevertheless, it does cover the principal offerings of the most substantial and enterprising of the manufacturing concerns catering to the building field. We can vouch for the responsibility of every one of the concerns whose goods are listed in this Directory, and we recommend them to our readers. Carpenters, builders, architects and contractors in writing to any of these concerns can feel that they will receive most prompt and courteous attention, and that their business will be appreciated.

How to Use This Directory

As nearly as possible, all goods are listed in alphabetical order under each of the Main Divisions of the Directory. Also, all goods of the same general sort are grouped together as nearly as possible. For instance, the several makes of hand saws are listed together in the general group of CARPENTERS' TOOLS under the Main Division of CARPENTERS' AND BUILDERS' SUPPLIES. Notice, however, that in some instances this plan could not be followed, as where many individual items of some one manufacturer's line are listed all together in one place.

Study this Directory, and as you become familiar with it, it will grow more useful and easier to consult.

Valuable Information—Keep it Handy for Reference

This directory contains valuable information boiled down into a few words; the trade name given, and the name and address of the manufacturer or general sales agent.

This Directory makes it easy to compare the range of offerings in any particular line you are interested in. Do not hesitate to write for catalogs and circular matter pertaining to any goods new to you, or in which you are especially interested.

Our Information Department at Your Service

If you fail to find in this Directory any item or line of goods in which you are interested as a builder, write the AMERICAN CARPENTER AND BUILDER, and we will immediately send you the information and put you in touch with the best concerns who are in a position to furnish what you need. Our files of up-to-date booklets, catalogs and other trade literature are second to none. They are at the disposal of our readers. We are glad to serve you in every way we can.

Editors and Publishers

American Carpenter and Builder
Radford Building, Chicago, Ill.
INCLUDING ASBESTOS, BATTEN STRIPS, CEMENT, FIREPLACES AND FIREPLACE FURNISHINGS, FLOORING, INSULATING MATERIALS, INTERIOR TRIM, LUMBER, MANTELS, METAL COLUMNS, MILLWORK, PAINTS, VARNISHES, STAINS AND COATTINGS, PARTITIONS, PLASTER, PLASTER BOARD, PUTTY, ROOFINGS, STORE EQUIPMENT, STOREFRONTS, STUCCO, STRUCTURAL SLATE, TERRA COTTA, WALL BOARD, WATERPROOFING, WEATHER STRIPS.


BATTEN STRIPS. Batten Strips, Metallic Batten Co., Owens- ville, Ind.—Cement and plastic wood; durable and permanent. For ceiling; makes barns wind, rain and snowproof; last a lifetime. Interference mild sliding doors.

PORTLAND CEMENT. Portland Cement, "Alpaha," Alpha Portland Cement Co., 30 Broad St., New York.—Purity, uniformity and reliability; the brand used on the Panama Canal.

CALCING COMPOUND. Calking Compound, Pecora Paint Co., 3d & Sedgley Ave., Philadelphia, Pa.—For calking openings between window frames and stone cornices, under strong pieces of porches enclosed in glass, and for glazing train sheds, etc. See Sweet's catalog.

FLOORING. Grates, Dampers, Ashtraps, Ash Pit Doors, Grates for Fireplaces, Fire Sets, Fire Screen, Furring and Plain Channels for Suspended Ceilings, etc. Chas. F. Lorenzen & Co., 128 Reaper Block, Chicago, Ill.—Lorenzen sure draft fireplace control.


Fireproof Floors, Base and Wainscoting, "Asbestone," "San-A-Bestos," Franklyn R. Muller Co., Waukegan, Ill.—Fireproof and permanent. Asbestine is applied either to new or old wood, concrete or steel underfloors. Laid in colors, one-half inch thick, laid in colors. Asbestone is applied either to new or old wood, concrete or steel underfloors.

FIREPROOF PAINT. Fireproof Paint, Pyrolin Products Co., Fort Dodge, Iowa.—Purified, improved and corrugated steel rods.

LUMBER AND MILLWORK. Lumber and Millwork, Chicago Millwork Supply Co., 1422 W. 37th St., Chicago.—Everything in building material.

MILLWORK. Millwork, Curtis Companies, Clinton, Iowa.—Everything in millwork.

PAINTS, VARNISHES, STAINS AND COATTINGS. Paint, Varnish, Stains and Coatings, "Edgewood Tight-Tone," Edgewood Mfg. Co., Cincinnati, Ohio.—For exterior and interior use; durable and smooth, giving a beautifully finished surface; applied with brush, roller or spray gun.

FIREPROOF PAINT. Fireproof Paint, Pyrolin Products Co., Fort Dodge, Iowa.—Purified, improved and corrugated steel rods.

MILLWORK. Millwork, Curtis Companies, Clinton, Iowa.—Everything in millwork.

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PAINTS, VARNISHES, STAINS AND COATTINGS. Paint, Varnish, Stains and Coatings, "Edgewood Tight-Tone," Edgewood Mfg. Co., Cincinnati, Ohio.—For exterior and interior use; durable and smooth, giving a beautifully finished surface; applied with brush, roller or spray gun.
Roofing. "Rockland," Asphalt Ready Roofing Co., 9 Church St., New York.—Red, green and gray; 10 and 12 inches wide; 12 inches unsurfaced lap: for siding it should be used; 3-inch diameter; 9 1/2 inches.

Asphalt Shingles, "Neposet," Bird & Son, Chestnut Hill, Mass.—Broadcasted asphalt, felt foundation; heavy buty (3-ply); fire-resist- ing; twin sheets before application.

Asphalt Shingles, "Neponset Paroid Roofing," Bird & Son, East Walpole, Mass.—Made of asphalt; special flexible large nails in each roll.

Asphalt Shingles, "Strip Shingles," Franklin, Little Falls, Minn.—Can be laid quickly. Five shingles having the appearance of one piece.


Creosote Shingle Stains, Samuel Cabot, Inc., Boston, Mass.—Made of specially refined creosote, pure linseed oil and the strongest and finest pigments ground in oil. Artistic, lasting colors, thorough wood preservation and uninflammable.

Dry Wood, "Johnwood's Dye," S. J. Cornsweet, Chicago.—Fifteen standard shades for the artistic coloring of all woods; inexpensive soft woods may be finished so they are as beautiful as hard wood.

White Lead, "Dutch Boy White Lead," National Lead Co., 111 Broadway, New York.—Pure, perfectly corrected, finely ground carbonate of lead in pure linseed oil; suitable for all kinds of structures.

Wood Dye, "Johnson's Wood Dye," S. C. Johnson & Son, Racine, Wis.—A natural wood stain; for the cement, composition, etc.; also for finishing wooden floors.

Putty, The Bleck-Fontius Co., Dayton, Ohio.—Putty, wood, metal, and other materials. Never wears out; good color fastness; reduces insurance.

Paviors, "Litharge Putty for use on metal sash."

Glazing Composition. Elmer the Glazier, 383 N. Broad St., 4th St. & 3rd Ave., Brooklyn, N. Y.—Mix with water; it hardens without definite form, wherever a tight joint is required.

Roofing. Asphalt Shingle Mfg. Co., R. P. B., the following manufacturers have organized a public- ity bureau to assist in the sale of asphalt shingles:


Asphalt Roofing, "Flexible Asphalt," National Lead Co., 111 Broadway, New York.—Pure, bright, thoroughly filtered, well-settled linseed oil that is free from an excess of heavy roots; raw, boiled, or refined; suitable for all kinds of structures.

Asphalt Roofing, "Olive Oil," Dutch Boy National Lead Co., 111 Broadway, New York.—For metal construction; pure, finely ground red lead paste that does not harden in the keg; economical and efficient, as a protective paint for metal it forms a dense, hard, adherent film impervious to moisture and electrolytic corrosion.

White Lead, Carter White Lead Co., West Pullman, Chicago, Ill.—Distinguishing character of quick drying and opacity, for oil paint and glazing.

White Lead, "Dutch Boy White Lead," National Lead Co., 111 Broadway, New York.—Pure, perfectly corrected, finely ground carbonate of lead in pure linseed oil; suitable for all kinds of structures.

Roofing Slate, "M. slate Blackboards," Semi- corporal Roofing and Siding, Mr. Burton, Canton, Ohio.—Corrugated roofing slate and slate blackboards. Furnished painted or unpainted slate. Red, green, black, unfading green, red, black, green, brown, gray, etc. Mica shingles in several patterns; a variety of colors and styles. Made from best quality slate.

Unfading Roofing Slate, Slatington-Bangor Slate Co., Slatington, Pa.—Unfading roofing slate and slate blackboards.

Steel Roofing, Benjamin Franklin, 418 E. 147 St., Cincinnati, Ohio.—Made from best quality Terne plate, furnished painted or unpainted. "Tert- nite" galvanized, also available. Applied without soldering and by an ordinary method of laying, which is especially adapted to the efficient and economical covering of all different kinds of roofs, from the plainest barn or shed roof to the finest residence or the most elaborate structure. It insures an absolutely watertight seal and makes an iron roof.
Carpenters’ and Builders’ Supplies


Abrasives and Sharpeners

Carborundum, Amalo Aloxite Sharpening Stones, "Carborundum." The Carborundum Co., Buffalo, N. Y.—Carborundum is a product of electric furnace, next to the diamond in hardness; unequaled for sharpening all edged tools.

Bolts

Anchor, Expander, and Toggle Bolts, "Anchor." Anchor Mfg. Co., 149 W. Berkeley St., Sausalito, Calif.—A self-drilling bolt, having four times the head area of others. Do not need to be screwed in; simply insert head; expand and secure.—sold in sets.

Bolts, Taps and Drills

Imm, Chicago.—A self-tapping bolt, with self-cutting screw threads.

Bolts, Metal Studs

Carpenter and Builder Tools

Anchor Expander, Toggle and Bolts, "Anchor." Anchor Mfg. Co., 149 W. Berkeley St., Sausalito, Calif.—A self-drilling bolt, having four times the head area of others. Do not need to be screwed in; simply insert head; expand and secure.—sold in sets.

Bolts, Taps and Drills

Imm, Chicago.—A self-tapping bolt, with self-cutting screw threads.

\textbf{Lock Molder, "Miller."} A. W. Miller Mfg. Co., Riverside, Calif.—Best steel and exceptionally well made in every detail; opening in door for locks; clean and tight; time two minutes to mold a set.

\textbf{Mitre Box, Automatic, "Kawale Auto- matic."} Kawale Tool Co., Mani tocan, Mass.—Made of cold rolled steel and high carbon steel; the true center of cut of any corner or the true radius cut of any diagonal, given automatically. Saves time and much trouble and produces work perfectly, with accurate figuring of degrees and diameters.

\textbf{Mitre Box, "Kawale," Goodell Mfg. Co., Greenfield, Mass.—} Made of steel and the parts cannot be removed. The box features include: steel frameless or bed, cold rolled steel corrugated back, steel lever to prevent support, automatic detents for holding up saw, steel bottom plates with angular serratures, long saw guides.


\textbf{Mitre Boxes, "Victor," The} Stanley Rule & Level Co., New Britain, Conn.—Strong, accurate and medium priced. Patented adjustable saw guides to take any thickness back or panel. 100% satisfaction.

\textbf{Screws, "Butterfield,"} Goodell Mfg. Co., Greenfield, Mass.—Close sets of screws; have clamping jaw which prevents screws slipping on teeth. 20 anvil adjustments to produce any set desired; positive action; manufactured in three styles.

\textbf{Self-setting Planes, "Nair," Gage Tool Co., Vineland, N. J.—} Sets itself; dropping bit and cap into place sets it right; saves over 90 per cent of the time usually wasted in setting planes.


\textbf{Steel Squares, "Stanley," The Stanley Rule & Level Co., New Britain, Conn.—} These Squares are made from one piece of hard steel and are given in a variety of styles; the names of different styles and variety of finishes—nickeled, royal copper, blued, nickel plated, galvanized and polished.

\textbf{Bar Clamps, Steel, "Hargrave," Cincinnati Tool Co., Norwood, Ohio.—} Made of special alloy steel; clamping power is greater than ordinary clamps. Made with a number of different graduations and in all standard lengths.


\textbf{Screws, "Buckey."} Buckey Saw Vise Co., 275 W. 55th St., Cleveland, Ohio.—Iron plates, weak for fine work. Chisel, folding saw vise, square-beam bench vise, adjustable plane gauge, cabinet scraper.

\textbf{Screws, "Ray."} Ray Screw Co., Milwaukee, Wisconsin.—Threaded from start to finish, with the exception of the last inch or so, to prevent splitting and to provide a more uniform pattern of threads.

\textbf{Screws, "Perfect,"} Wilkerson Mfg. Co., Milwaukee, Wisconsin.—Threaded from start to finish, with the exception of the last inch or so, to prevent splitting and to provide a more uniform pattern of threads.

\textbf{Screws, "Mart."} Mart Screw Co., Philadelphia, Pa.—Threaded from start to finish, with the exception of the last inch or so, to prevent splitting and to provide a more uniform pattern of threads.


\textbf{Screws, "Buckey."} Buckey Saw Vise Co., 275 W. 55th St., Cleveland, Ohio.—Iron plates, weak for fine work. Chisel, folding saw vise, square-beam bench vise, adjustable plane gauge, cabinet scraper.

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CEMENT BRICK AND BLOCK MACHINES.

Concrete Block and Brick Machines, "Lansing Miracle," 'Lansing Northwestern," Lansing Co., Lansing, Mich.—A complete line of machines for building brick, block, and tile, including long and short handled finishing tools. Wheelbarrows of every description and for every use connected with cement work.

Concrete Block Machines, "Helm," Helm Brick Machine Co., Cadillac, Mich.—Built of iron and steel, all parts carefully machined. These presses turn out cement brick and blocks by the face-up principle under enormous pressure. The line consists of brick and block presses in various sizes. The machines are built for hand and power operation. Each press has a single axis, brick or block daily or 1,500 blocks daily.

Concrete Block and Brick Machines, "Lancing Miracle," "Lancing Northwestern," Lancing Co., Lansing, Mich.—A complete line of cement block and brick machines, sewer pipe machines, and sanitary sewer pipe machines. All parts are carefully machined, long and short handled finishing tools. These machines are suitable for all uses and for every use connected with cement work.

CEMENT DRAIN TILE MACHINES.

Concrete Drain Tile Machines, W. E. Dunn Mfg. Co., Holland, Mich.—Capacity 2,600 concrete drain tile per day; can be operated by one or two men; makes all sizes from 3 to 12 inches in diameter, all 12 inches long; machine is automatic and requires a 5 H.P. engine for its operation.

CONCRETE BLOCK MACHINES.

Concrete Block Machines, W. E. Dunn Mfg. Co., Holland, Mich.—Capacity 150 block per hour; makes blocks in widths of 8, 10, 12 and 16 inches long, in different designs. Can be operated by one man. Concrete Block Machines, W. E. Dunn Mfg. Co., Jackson, Mich.—Castings completely machined, each cast to make any size and shape block; face down, coarse aggregates, can be produced by machine.

Concrete Block Machine, "Ringer," Miles Mfg. Co., Jackson, Mich.—Machined of iron. Adjustable for any size and shape block; up to 8 inches long, solid, 8 to 12 inches high, 12 inches thick.

Concrete Block Machines, Northwestern Steel & Iron Works, Eau Claire, Wis.—A full line of cement block machines, castings completely machined, each cast to make any size and shape block, face down, coarse aggregates, can be produced by machine. Concrete Block Machine, "Ringer," Miles Mfg. Co., Jackson, Mich.—Machined of iron. Adjustable for any size and shape block; up to 8 inches long, solid, 8 to 12 inches high, 12 inches thick.

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Cement Stucco Machines.

Automatic Stucco Machine Co., 51 East 25th St., New York City.—Engages the stems and spouts; applies stucco by way of springs to wall surface very rapidly and produces uniform and artistic finish. Cement Stucco Machines, Automatic Stucco Machine Co., 51 East 25th St., New York City.—Engages the stems and spouts; applies stucco by way of springs to wall surface very rapidly and produces uniform and artistic finish. Cement Stucco Machines, Automatic Stucco Machine Co., 51 East 25th St., New York City.—Engages the stems and spouts; applies stucco by way of springs to wall surface very rapidly and produces uniform and artistic finish.

CONTRACTORS' MACHINERY AND EQUIPMENT

Including Cement Forms and Molds, Cement Machinery, Cement Mixers, Cement Sprouting Systems, Concrete Block and Brick Machines, Engines, Floor Surfacing Machinery, Hoists and Derricks, Miscellaneous Equipment, Mortar and Plaster Mixers, Pumps and Woodworking Machinery.


Concrete Mixers, "Rex Low Charging Mixer," Chain Belt Co., Milwaukee, Wis.—Built in two sizes, Rex 6 and Rex 10. All steel frame, semi-cast steel drum, fabricated by the most up-to-date methods. Power direct from H.P. engine. Furnished "in 3 sizes and 14 styles. A size and style for every purpose.

Concrete Mixers, "Winner," Cement Tile Machinery Co., 445 Rath St., Waterloo, Iowa.—Made in 5 sizes ranging from 3 cu. ft. to 10 cu. ft. capacity; semi-cast steel mixer, steel frame, cast semi-steel drum, steel Clamp Belt Drive, large diameter road wheels, Novo gasoline engine, steel housing. Large capacity, 500 to 600 bushels per hour.

Concrete Mixers, "Eureka," "Eureka Mfg. Co., 193 Handy St., Lansing, Mich.—Hold 5 to 6 cubic feet of unmixed materials per batch; 3/4 horsepower gasoline engine; equipped with either batch hopper or side loader.

Concrete Mixers, "Big-an-Litle—A Mix a Minute," The Jaeger Machine Co., 318 W. Rich St., Columbus, Ohio.—Made of steel, 6 sizes ranging from 1 to 6 cubic feet capacity; semi-cast steel mixer, steel frame, cast semi-steel drum, steel Clamp Belt Drive, large diameter road wheels, Novo gasoline engine, steel housing.

Concrete Mixers, "Winner," Cement Tile Machinery Co., 445 Rath St., Waterloo, Iowa.—Made in 5 sizes ranging from 3 cu. ft. to 10 cu. ft. capacity; semi-cast steel mixer, steel frame, cast semi-steel drum, steel Clamp Belt Drive, large diameter road wheels, Novo gasoline engine, steel housing. Large capacity, 500 to 600 bushels per hour.

Concrete Mixers, "Eureka," "Eureka Mfg. Co., 193 Handy St., Lansing, Mich.—Hold 5 to 6 cubic feet of unmixed materials per batch; 3/4 horsepower gasoline engine; equipped with either batch hopper or side loader.

Concrete Mixers, "Simplex," "Simplex Mixers." The Mfg. Co. of Michigan, Jackson, Mich.—Made of steel, 6 sizes mixed, used for all types of concrete. Simplex tamper and Mfg. Concrete Block ma-

CONCRETE TAMPERs.

Concrete Tampers, W. E. Dunn Mfg. Co., Holland, Mich.—Capacity 2,600 concrete drain tile per day; can be operated by one or two men; makes all sizes from 3 to 12 inches in diameter, all 12 inches long; machine is automatic and requires a 5 H.P. engine for its operation.

Concrete Tampers, W. E. Dunn Mfg. Co., Michigan, Jackson, Mich.—Made of iron. Adjustable for any size and shape block; up to 8 inches long, solid, 8 to 12 inches high, 12 inches thick.

Concrete Tampers, W. E. Dunn Mfg. Co., Holland, Mich.—Capacity 150 block per hour; makes blocks in widths of 8, 10, 12 and 16 inches long, in different designs. Can be operated by one man. Concrete Tampers, W. E. Dunn Mfg. Co., Michigan, Jackson, Mich.—Made of iron. Adjustable for any size and shape block; up to 8 inches long, solid, 8 to 12 inches high, 12 inches thick.

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Concrete Tampers, W. E. Dunn Mfg. Co., Michigan, Jackson, Mich.—Made of iron. Adjustable for any size and shape block; up to 8 inches long, solid, 8 to 12 inches high, 12 inches thick.
Concrete Batch Mixers, "Low-Down," Concrete Co., 1128 32nd St., Milwaukee, Wis.—Strong, substantial steel truck; light, rugged power take-off; 7,000 pounds. Will turn out 25 to 30 cubic yards per hour.


Concrete Mixers, "Coltlin," Knickerbocker Mfg. Co., 4118 15th Ave., Milwaukee, Wis.—Strong, substantial steel truck; 7,000 pounds. Will turn out 25 to 30 cubic yards per hour.

Concrete Mixers, "S. S. S.," T. L. Smith Co., 1138 32nd St., Milwaukee, Wis.—Low-charging, batch type; built in 10 sizes; capacities from 3 to 40 cubic feet per batch; furnished with any kind of power or without power.


Concrete Mixers, "Smith Mixture," T. L. Smith Co., 1138 32nd St., Milwaukee, Wis.—Batch type; built in 10 sizes; capacities from 3 to 40 cubic feet per batch; driven by 3 horsepower gasoline engine. Will turn out 25 to 30 cubic yards per hour.

Concrete Mixers, "Standard," The Standard Scale & Supply Co., 1345-1347 Wabash Ave., Chicago.—Low charging, batch type; built in 10 sizes; capacities from 3 to 40 cubic feet per batch; furnished with any kind of power or without power.

Concrete Mixers, "Smith-Chicago Mixers," T. L. Smith Co., 1138 32nd St., Milwaukee, Wis.—Strong, substantial steel truck; 7,000 pounds. Will turn out 25 to 30 cubic yards per hour.


Concrete Mixers, "Smith Mixture," T. L. Smith Co., 1138 32nd St., Milwaukee, Wis.—Batch type; built in 10 sizes; capacities from 3 to 40 cubic feet per batch; driven by 3 horsepower gasoline engine. Will turn out 25 to 30 cubic yards per hour.

Concrete Mixers, "Standard," The Standard Scale & Supply Co., 1345-1347 Wabash Ave., Chicago.—Low charging, batch type; built in 10 sizes; capacities from 3 to 40 cubic feet per batch; furnished with any kind of power or without power.


Concrete Mixers, "Smith Mixerette," T. L. Smith Co., 1138 32nd St., Milwaukee, Wis.—All steel mixer. No main roller track. Design of machine permits very rapid discharge. Batch can be discharged in from 12 to 18 seconds.


Concrete Mixers, "Smith Mixture," T. L. Smith Co., 1138 32nd St., Milwaukee, Wis.—Batch type; built in 10 sizes; capacities from 3 to 40 cubic feet per batch; driven by 3 horsepower gasoline engine. Will turn out 25 to 30 cubic yards per hour.

Concrete Mixers, "Standard," The Standard Scale & Supply Co., 1345-1347 Wabash Ave., Chicago.—Low charging, batch type; built in 10 sizes; capacities from 3 to 40 cubic feet per batch; furnished with any kind of power or without power.
Steel Scoops and Mortar Boxes. Adjustable Steel Cement Scoop and Mortar Box in sizes up to 24 cu. ft., made of sheet metal. More economical to handle than a horse box. All gears covered. Furnished with 4, 6 or 8 H.P. gasoline engine or electric motor, or with belt or gear drive.

Conveyors. "Dow," Dow Wire & Iron Works, Louisville, Ky.—Small portable conveyors for lumber loading and handling. Can carry 1,000 lbs. in 10 cu. ft. All belt power conveyors for handling goods of all kinds.

Cranes, Tubular, "Simplex," J. G. Speidel, Reading, Pa.—With 5,000 lbs. capacity, are of a spur-gear type having the highest ratio of power to hoist. These conveyors have an automobile brake that is very powerful and reliable, and two speeds.

Concrete Elevators, "Smith Elevators," T. L. Smith Co., 1138 32nd St., Milwaukee, Wis.—Made in 4-types: Class A, all steel; Class B, steel and wheelbarrow elevator. All elevators built in 3 sizes, buckets holding 10, 17 and 31 cu. ft. of sloppy concrete.

Hoists, Reversible, American No. 4, American Sawmill Machinery Co., Hackettstown, N. J.—Iron construction, drum, sheave and head box hoisted against an incline. Forward and reverse motion obtained by movement of single reverse. Furnished with powerful brake and safety ratchet and pawl. Capacity 1,000 lbs., 100 feet per minute.

Concrete Elevators, "C. H. & E. Double Cage Material Elevator," C. H. & E. Mfg. Co., Milwaukee, Wis.—The 2 cages are the same, installed in connection with a C. H. & E. Hoist the time occupied in putting up a building is decreased to about one-third.


Diaphragm Pumps, "Ideal," The Original Gas Engine Co., Lansing, Mich.—For use of builders in construction of small buildings. Made in two sizes, 38-inch and 4-inch suction. Mounted either on skid or truck.

Gasoline Pumping Outfits, "Novo," Novo Engine Co., Lansing, Mich.—Made in every type and size from 1 to 15 H.P., centrifugal, diaphragm, rotary, plunger type, deep well, triplex, and duplex.


Trench Pumps, "Ideal," The Original Gas Engine Co., Lansing, Mich.—For use of builders in construction of small buildings. Made in two sizes, 38-inch and 4-inch suction. Mounted either on skid or truck.


Trench Pumps, "Power-Driven Diaphragm Pump," T. L. Smith Co., Milwaukee, Wis.—Engine and pump connected by chain, which is enclosed in a guard. Made in two sizes, 3-inch and 4-inch suction. Mounted either on skid or truck.

Trench Pumps, "Oshkosh," Oshkosh Mfg. Co., Oshkosh, Wis.—For use of builders in construction of small buildings. Made in two sizes, 3-inch and 4-inch suction. Mounted either on skid or truck.

W O O D W O R K I N G M A C H I N E R Y.


Band Saws, "Rivera," The Silver Mfg. Co., Salesville, N. J.—All sizes convenient to operate; all operating parts within easy reach of operator. Machine is planned perfectly smooth; can be tilted any desired degrees; furnished with heavy-duty belt for foot, belt or combination; 26-inch, 38-inch, 40-inch, 42-inch, 46-inch, belt power only. All-iron table planed perfectly smooth. Patentable table-tilting device a standard feature. Made in 26-inch, 28-inch, 28-inch, 30-inch, 30-inch and 32-inch sizes.

BARN EQUIPMENT AND STABLE FIXTURES.

Barn Equipment, Harry Mfg. Co., Salem, Oreg.—Portable lines in stable, shop, and field work, to include every kind of dry gauge equipment for carrying, loading, and working with hay, wood, and other materials.

Barn Equipment, Hunt, Perrin & Co., Philadelphia, Pa.—Complete lines of hay, wood, and other equipment for barn and stable work, including portable lines for general purposes.

Barn Equipment, James Mfg. Co., Fort Atkinson, Wis.—Complete lines of hay, wood, and other equipment for barn and stable work, including portable lines for general purposes.

Barn Cupola, "Aerdome," Northfield Iron Co., Northfield, Minn.—Made of sheet metal; has double diaphragms, deflecting cone, fluted shield, and riser; self-supporting corner base. Three grades of these are carried.

Barn Ventilators, James Mfg. Co., Fort Atkinson, Wis.—Create sanitary conditions in the barn; pull foul air out and force fresh air in.


Door Hangers, "Richards-Wilcox," Richards Wilcox Mfg. Co., Aurora, Ill.—Made of steel. Ball and roller bearing trolley, round track and flat track types. A hanger for any door that slides, garages, barn, house, fire door and heavy warehouse door.

Door Hangers, Tubular, "Giant," F. E. White Mfg. Co., Galatia, Ill.—Complete lines of hay, wood, and other equipment for barn and stable work, including portable lines for general purposes.

SHAPERS, PLANERS, MACHERS AND BORERS.

Combination Woodworker, "Elliot Woodworker," Elliot Woodworker Co., 2405 Woodward Ave., Detroit, Mich.—Solid metal; makes every cut on the average building, including the housing out of stair strings; fitted with electric motor.


Door Hangers, "Richards-Wilcox," Richards Wilcox Mfg. Co., Aurora, Ill.—Made of steel. Ball and roller bearing trolley, round track and flat track types. A hanger for any door that slides, garages, barn, house, fire door and heavy warehouse door.

Door Hangers, Tubular, "Giant," F. E. White Mfg. Co., Galatia, Ill.—Complete lines of hay, wood, and other equipment for barn and stable work, including portable lines for general purposes.


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Door Hangers, "Richards-Wilcox," Richards Wilcox Mfg. Co., Aurora, Ill.—Made of steel. Ball and roller bearing trolley, round track and flat track types. A hanger for any door that slides, garages, barn, house, fire door and heavy warehouse door.

Door Hangers, Tubular, "Giant," F. E. White Mfg. Co., Galatia, Ill.—Complete lines of hay, wood, and other equipment for barn and stable work, including portable lines for general purposes.
BUILDERS' HARDWARE

Including Base Knobs, Basement Window Hinges, Bolts, Butts, Casement Operators, Door Checks, Door Holders, Door Sets, Door Stays, Door Springs, Design Hardware, Hinges, Latches, Locks, Push and Kick Plates, Shelf Pins.

BASE KNOBS.

Base Knobs, Metal, "Champion," The Champion Hardware Co., Geneva, Ohio.—Made of brass and bronze. Used in windows swinging out. Does not interfere with use of screens or curtains. Locks windows firmly at any point desired. Handle only part visible and this is fastened to the curtain below the stool.

DOOR CHECKS.

Door Checks and Controllers, "Sargent" and "Eclipse," Sargent & Co., New Haven, Conn.—Made in various shapes and types. Can be adjusted to fit doors of either hand without changing the requirements. A very good feature.

Door Checks and Spring, "Lamburg," P. & F. Corbin, New Britain, Conn.—Both operated by a single hand and durable. Easy to adjust. Fits doors of either hand without changing the requirements. A very good feature.

Door Checks and Springs, "Larimer," The Larimer Co., Eola, Ill.—Used in many sizes. Sent anywhere on approval.

DOOR HANGERS.

Door Hangings, "Corbin," P. & F. Corbin, New Britain, Conn.—High grade door butts; full line of brads and brass nails; bronze and iron handles for all bottoms. Made of high quality steel, iron, and brass. For the best in safety and security, choose Corbin.

Door Hangers, "Champion," The Champion Hardware Co., Geneva, Ohio.—Made of high grade steel, well finished. Furnished in two sizes; meet the requirements of light and heavy doors. By simply stepping or pushing the trouser the door is brought in contact with the floor and securely held the door.

DOOR LOCKS.

Door Knobs, "Champion," The Champion Hardware Co., Geneva, Ohio.—Made of high grade steel, well finished. Furnished in two sizes; meet the requirements of light and heavy doors. By simply stepping or pushing the trouser the door is brought in contact with the floor and securely held the door.

DOOR SPRINGS.

Door Springs, "Slammer," Bommer Brothers, Classon and Willoughby Aves., Brooklyn, N. Y.—Made of high quality steel. Can be adjusted to suit all requirements. A very good feature.

DOOR AND WINDOW TRIMMINGS.

Door and Window Trimmings, "Sargent," Sargent & Co., New Haven, Conn.—All kinds; butts, sash and window locks, camber fasteners and adjusters, tensen spencers, and trimmers in all sizes.

DESIGN HARDWARE.

Design Hardware, "Corbin Art Hardware," P. & F. Corbin, New Britain, Conn.—Cut bronze and brass. Wrought steel bronze and iron. Designs in all schools of art in our fifty finishes.

HINGES.

Butt Hinge, Double-action Spring, "Bommer," Bommer Brothers, Classon and Willoughby Aves., Brooklyn, N. Y.—A faultless, technically correct butt hinge, having weight-supporting bearing properly located. Have an exclusive lubricating system.

Butt Hinge, Single-action Spring, "Bommer," Bommer Brothers, Classon and Willoughby Aves., Brooklyn, N. Y.—Have single-action flush face butt hinge, nator appearance to the mortise. Have an exclusive lubricating system.

Butt Hinges, National Manufacturing Co., Sterling, Ill.—Complete line of wrought steel hinges.

Floor Hinges, "Champion," Champion Hardware Co., Geneva, Ohio.—Double-action butt hinge, strong and durable. Inserted in the floor, not in the door.

Floor Surface Spring Hinges, "Bommer," Bommer Brothers, Classon and Willoughby Aves., Brooklyn, N. Y.—Have a wrought iron stud. Have adjustable box flanges to allow for variations in thickness of door and frame. Made of solid bronze with toe piece. Made for pipes standard. Also lavatory and kitchen stainless steel. Have adjustable box clamps to allow for variations in thickness of door and frame. Made of solid bronze. Also used in doors.

Rollover Plate Hinges, "Bommer," Bommer Brothers, Classon and Willoughby Aves., Brooklyn, N. Y.—Have adjustable box clamps to allow for variations in thickness of door and frame. Made of solid bronze. Also used in doors.

SASH Lifts and Locks.


Screen Door Hinges, "Ideal," Stover Mfg. Co., Freeport, Ill.—Detachable; when mounted on these hinges doors can be put up without tools.


Spring Hinges, for garage, factory and fire-engine house doors, "Bommer," Bommer Brothers, Classon and Willoughby Aves., Brooklyn, N. Y.—For these hinged doors, Bommer has made a change in the lock.
Home Comforts and Conveniences


CABINETS—BATH

Turkish and Vapour Bath Cabinets, "Rob-

in's," 632 N. 3rd St., Philadelphia, Pa.—Provides

hot and cold running water without any plumbing.

CABINETS—MEDICINE

White Steel Medicine Cabinets, "Hess

Warming & Ventilating Co.," 1220 Tacoma Bldg.,

Chicago, III.

CLOCKS

Clocks, American Clock Co., 1459—
1469 Ruffner St., Philadelphia, Pa.—Clocks for

father's clocks, tower clocks, bar-room clocks, also furnish blueprints from which carpenters and cabinet makers can build their own clock cases.

ELECTRICAL HOUSE GOODS

Announcers and Alarms, Patrick & Wil-

kinson Co., New York, N. Y.—Complete systems

for hotels, schools and residences.

ELEVATORS AND DUMBWAITERS

Dumbwaiters, "Eccentric," 1 R. M. Rodgers & Co.,

64 Emerson Place, New York, N. Y.—Also furnish
custom designs for all purposes.

Elevators, "Jumper," "Colombia," J. G. Speidel,

Reading, Pa.—The "Jumper" elevators are designed

for use between cellar and kitchen of residences.

Dumbwaiters, "Sidewalk," Sedgwick

Machine Works, 152 Liberty St., New York, N. Y.

High-pull finish, both interior and exterior.

Dumbwaiters and Dumbwaiters, "Storm,

Storz Mfg. Co., Herman and Veer, Chicago—

Storz built to fit the place.

Elevators, "Altizer," Elevator Co., 609 N.

LaSalle St., Chicago.—Hand or power for any

快手 Power or Electric Service. Furnished in any

size or capacity desired. Machines are equipped

with ball and roller bearings; making them very

easy to run. 21" made of iron and steel; they uti-

lize practical service. An up-to-date equipment

at reasonable cost.

Freight Elevators, J. G. Speidel, Reading, Pa.—

Hand Power or Electric Service. Furnished in any

size or capacity desired. Machines are equipped

with ball and roller bearings; making them very

easy to run. 21" made of iron and steel; they uti-

lize practical service. An up-to-date equipment

at reasonable cost.

Passenger Elevators, J. G. Speidel, Reading, Pa.—

Hand or hand belt power elevators, dumbwaiters,

bath, hand or belt power elevators, dumbwaiters, bath,

belt power elevators, dumbwaiters, bath, hand or

belt power elevators, dumbwaiters, bath, hand or

belt power elevators, dumbwaiters, bath, hand or

belt power elevators, dumbwaiters, bath.

Sidewalk Lifts, J. G. Speidel, Reading, Pa.—

Machines are built in a strong and com-

fortable manner and have an automatic brake

that is very powerful and reliable. A neat in

appearance.

Underground and Built-in Garbage Re-

ceivers, "Majestic," The Majestic Co., Hun-

tington, Ind.—Cast semi-steel and American

ingot iron. Keeps can underground in fly tight

receptacle, sanitary and convenient. Made in five

sizes.

ELEVATORS AND DUMBWAITERS.

Plumbing Supplies, Hardin-Lavin Co., 4532 Cottage Grove Ave., Chicago.—Bath-

room outfits, sinks, pipes, fittings, valves, etc.

Steel Lockers, "H & H," Hart & Hutchin-

son Co., Reading, Pa.—Makes in sizes for gar-

dians and laundries.

STEEL CLOSETS.


Gives the most for your money.

Rectangular Closets, Vacuum Cleaners, Water Supply Systems, and Sanitary Refrigerators, Herrick Refrigerator Co., Waterloo, Iowa.—Eliminates ice man from entering house; requires ice only during warm period; refrigerators for stores, hotels, florists, etc.

Washstands, "Ro-San," Rowe Sanitary

Closet Co., 21st and North Ave., Chicago.—Has

hot and cold running water without any plumbing.

Sanitary Refrigerators, Herrick Refrigera-

tor Co., 4532 Cottage Grove Ave., Chicago.—

Builds and delivers refrigerators, freezers, uprights, reach-ins, etc., for stores, hotels, florists.

Sanitary Closets, "Waverly, " Waverly

Chemical Co., Iowa City, Iowa.—Commode style,

sized to suit. Can be installed in any one or more

locations. Used by contractors. Use before plumbing has been put in, and saves time and money in laying stall.

Chemical Closets, "Waverly, " Waverly

Chemical Co., Iowa City, Iowa.—Commode style,

sized to suit. Can be installed in any one or more

locations. Used by contractors. Use before plumbing has been put in, and saves time and money in laying stall.

Acetylene Lighting Apparatus, "Davis,

Davis Acetylene Co., Elkhart, Ind.—Steel and
galvanized pipe and fittings, using carbide

acetylene gas. Portable, easy to handle; 25 per

cent in cost of service. Fifteenth year; highest

awards received at St. Louis World's Fair and

Panama Exposition.

Acetylene Gas Generators, "Sunlight

Omega," Sunlight Gas Machine Co., 52 Van-

derbilt Ave., New York.—Made of galvanized

steel; double safety indirect carbide to water feed;

reserve supply hopper; no weights, floats, motors

Sewing Machine, "Peerless," Peerless

Shearing Machine Co., New Britain, Conn.—

Immediate delivery on stock sizes.

Automatic Electric Lighting & Power Co.,

126 Liberty St., New York.—For country homes,

churches, small towns, etc. Four or five lamps

may be fixed at any time.

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Automatic Electric Lighting & Power Co.,

126 Liberty St., New York.—For country homes,

churches, small towns, etc. Four or five lamps

may be fixed at any time.
Sheet Metal Goods

Including Coal Chutes, Eaves Troughs and Conductors, Skylights, Metal Ceilings, Metal Doors, Sash and Windows.

ARCHITECTURAL SHEET METAL.

Architectural Sheet Metal Work, The W. H. Mullins Co., 214 Franklin St., Salem, Ohio.—Special designs from architects’ drawings; will submit photographs of models for approval and will reproduce every line and detail of models in finished work in sheet zinc and sheet copper.

Coal Chutes.

Coal Chutes, "Canton," Canton Foundry & Machine Co., Canton, Ohio.—Cost-iron. Neat, easily applied; will outlast any number of tin connections; an ornament that is both practical and economical.

Coal Chutes, "Kewanee All-Steel," Kewanee, Ill.—Made of steel throughout. Automatic in action, guarantees against breaks.

Foundation Coal Chutes, Residence and Store, "Majestic," The Majestic Co., Huntington, Ind.—Made of cast semi-steel and steel. Door protects building, locks automatically and serves as window. Made in seven styles: two size each style, covering all requirement of building.

Fold Chute, Sheet Metal Foundry Co., Sterling, Ill.—Casting frames and doors, sheet metal with a heavy screen; two styles, three sizes; books automatically and in two covered open and closed.

CONDUCTOR PILE.

Conductor Connectors and Boots, "Universal," Canton Foundry & Machine Co., Canton, O.—Cast-iron. Neatly applied; will outlast any number of tin connections; an ornament that is both practical and economical.

CORNICES.


GALVANIZED SHEETS.

Galvanized Sheets, Apollo-Keystone Copper Steel Co., Chicago.—Useful for various zinc work, roofing, siding, etc.

GALVANIZED SHEETS.

MARQUISES.


SKYLIGHTS.

Skylights, Galvanized Iron, The Edwards Mfg. Co., 401 Eggiset AVE., Cincinnati, Ohio.—Frames of galvanized iron or copper; carried by gussets in a framework through "hopper" on the roof, giving ventilation with or without windows; shutratings by light or chain support from below.

Table Milling Jobs, "Willis Products," Willis Mfg. Co., Galena, Ill.—In all types. A man, a hammer and a stove pipe can erect.

METAL CEILINGS.

Metal Ceilings, Berger Mfg. Co., Canton, Ohio.—Gives some artistic effect as molded plaster, but cost much less and are more durable. Cannot crack, chip or fall. Fire retardant. Improved bead and button construction makes a perfectly tight joint without taping or calking. Perfectly constructed, easily and quickly erected. Many different types, made to order.

Metal Ceilings, Canton Metal Ceiling Co., Harrison Ave., Canton, Ohio.—Manufacturers of metal ceilings, shingles, roofing, siding, building corners, wall ties, etc.

Metal Ceilings and Walls, The Edwards Mfg. Co., 401 Eggiset Ave., Cincinnati, Ohio.—Embossed. Made from sheets of mild steel, usually 25 to 28 gauge, and will weigh crated about 70 pounds to the 100 square feet. They are given a priming coat of paint both sides before shipping.

Metal Ceilings, "Moen," Moschel-Edwards Corrugating Co., Covington, Ky.—Stock designs of special construction to meet all architectural requirements.


Steel Ceilings, "Canton," Canton Art Metal Co., W. Lisbon Ave., Canton, Ohio.—The original ceilings with the famous Dise Cut millahood; embossed sheet, and expressed Head Joints, fire retardant, will not crack, peel or fail off by dew, rain or snow, and sanitary.

Steel Ceiling, "Moore's Lock Joint," S. Neighler Metal Co., Mfg. Co., Pittsburgh, Pa.—Seams or Joints are locked on all four sides after plates are in position.

WIRE, COPPER, IRON AND STEEL SPECIALTIES.


BENCH LEGS.

Bench Legs, "Garwood," Garwood Bronze & Iron Mfg. Co., Toledos, Ohio.—For shop and garage work benches; made of cast iron; makes a fine bench, not requiring bracing to wall or posts.

COFFER.

Copper in Sheets, Rolls and Plats, C. G. Hossey & Co., Pittsburgh, Pa.—Copper nails, rivets, screws, etc. Made for shop and garage work benches; made of cast iron; makes a fine bench, not requiring bracing to wall or posts.

METAL LATH.

Metal Lath, "Bootsvich-Ty-Ee-Stang," a division of The American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.—Forms of sheet metal work. Made with base of stainless steel alloys for highest quality, highest tensile strength, highest durability and highest resistance to rust. This metal lath is manufactured for use with all types of metal lath and plastering work and is used by all types of building architects, builders and plasterers.

Metal Lath, "Kerridge," Edwards Mfg. Co., Canton, Ohio.—Made of stainless steel and used in any manner, but is made from a solid sheet throughout. Has great tensile strength, a value which is not to be confused with strength of an article that is not a solid sheet. This metal lath is made from 16 to 24 inches on centers instead of 12 inches on centers as the ordinary lath.


Metal Lath, "Kawneer," Kawneer Mfg. Co., Niles, Ohio.—Made of stainless steel. All forms and design of metal lath made to the specifications of architects.

METAL DOORS, SASH AND WINDOWS.

Solid Steel Doors, "Kewanee," Kewanee Mfg. Co., Kewanee, Ill.—Solid steel doors have heavily reinforced diamond steel tops. Both solid and illuminated types: one-piece semi-steel frames. Doors are made and delivered to comply with all city regulations.

Solid Steel Doors, "Fenestra," Detroit Steel Products Co., Detroit, Mich.—Solid steel doors, including bench legs, are made of solid steel and are made to order.

Sidewalk Doors, "Canton," Canton Foundry & Machine Co., Canton, O.—Solid-steel. Doors are made of solid steel and are made to order.


METAL MOLDINGS.

Metal Molding, "Kavanau," Kavanau Mfg. Co., Canton, O.—All-metal. All forms and designs of metal lath made to the specifications of architects.

METAL DOORS, SASH AND WINDOWS.

Solid Steel Windows, "Fenestra," Detroit Steel Products Co., Detroit, Mich.—All-metal. All forms and designs of metal lath made to the specifications of architects.

METAL DOORS, SASH AND WINDOWS.


Water Supply Systems.

Fairbanks-Morse Water System, Fairbanks, Morse & Co., Chicago.—States that its system is manufactured for use with all types of metal lath and plastering work and is used by all types of building architects, builders and plasterers.


**WIRE, COPPER, IRON AND STEEL SPECIALTIES (Continued)**

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**INSTRUCTION.**

**By Mail, Engineers' Equipment Co., Inc., Chicago.**—Instruction in drafting, ship- building and engineering.

**MOTOR TRUCKS.**

**Delivery Car.**—"Overland," Willys-Overland Co., Toledo, Ohio.—48 horse power; electrically lighted and started; high-tension magneto ignition; oil indicator; large tires and other advantages.

**Motor Trucks.**—Kissel Motor Car Co., Hartford, Wis.—Made in seven sizes, from 1,000 pounds to delivery in six tons capacity.

**Auto Trailers for Contractors.**—J. S. Miller Mfg. Co., Toledo, Ohio.—35 horse power; electrically lighted and started; revolving oil indicator; rubber tires; all weather, all season.
CORRESPONDENCE

Questions Answered and Ideas Exchanged.

Our Readers Are Requested and Urged to Make Free Use of These Columns for the Discussion of All Questions of Interest to Carpenters and Builders

Which is the Correct Way?

To the Editor: Clearmount, N. H.
I wish to ask a little question in regard to putting on clapboard siding. Which is the proper way to lay the same, whether as shown in Fig. 1 with even breaks, or as shown in Fig. 2 with uneven brakes? Please decide, as the other prove of interest to you. One is a barn 40 by 50 feet with No. 30 “Monitor” cupolas on it, which I am agent for. They give perfect satisfaction. The other barn is 42 by 72 feet, with full gambrel roof, with small cupola of my own make.

M. LEPLEY

Handrailing Scroll with Face Mould

To the Editor: Sedalia, Mo.
I wish you would, through the columns of the “A. C. & B.” give some information in regard to a stairway. Suppose we have a stairway with circle end tread and want a rail and cap to form the newel top, with balusters for newel. Rail to be on the spiral order. I want to know the best way to lay off the rail to suit the size of step.

“Missouri”

A Missouri Barn

To the Editor: Bertrand, Mo.
I am a charter member to the AMERICAN CARPENTER AND BUILDER and think it the best paper out; have every copy but one.
I see some of my brother carpenters have been sending in some of their work, and so I am sending you herewith photograph of one of two barns I built last fall, which may
QUICKER SERVICE—
BIGGER PROFITS—
BETTER GOODS—

Make Me Prove It!

I WANT to show you how you can increase your profits. All I want you to do, Mr. Contractor, Mr. Carpenter, Mr. Builder, is to send me the coupon—or a post card—for our Catalog. I will send it to you—anywhere—and write you at the same time. The fact that WE SERVE 10,000 Contractors, Carpenters and Builders Regularly demonstrates that our service and material is right and that we are making money for them. We are. And we can make it for you, too. Make me deliver the proof. I can.

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We Ship to You Anywhere

No matter where you live, we guarantee safe and prompt delivery. We have customers everywhere. Our plant is the largest in the world. We sell everywhere on earth. Our own architectural staff will work up your plans from your own rough sketches. The cost is but a fraction of what you would have to pay locally. For every nickel in freight, we will save you dollars on the bill. I want to tell you more about this when I write you.

5000 Building Bargain

Get Catalog Use Coupon FREE

Here are a few pages from our 156-page color-illustrated catalog of 5,000 Extraordinary Bargains in Building Material. Lumber at a saving of $100 to $300 a car. Millwork in special designs for immediate shipment. No waits. Roofing, Builders' Hardware, Paints, Wall Board, Everything! Crammed from cover to cover with money-savers. A veritable Builders' Encyclopedia. The book that creates low prices. Free on request. I want to send it to you. Will you use the coupon? Or a post card? I have started 10,000 others to greater profits by sending it to them. Let me start you. Today! Now!

WM. RIORDON,
Mgr. Contractors' Dept.

Gordon-Van Tine Company
97 Federal Street,
DAVENPORT, IOWA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
JOHNS-MANVILLE Service to the Builder is a personal service. The actual, personal co-operation of J-M representatives is always available, no matter in what corner of this continent you are located. Forty-eight J-M Branches of the Johns-Manville Company in as many leading cities of the United States and Canada bring J-M Service directly to your office. It is the function of J-M Service

J-M Transite Asbestos Shingles are not expensive—They are cheaper than slate or tile

When you suggest J-M Transite Asbestos Shingles, you offer your client a reliable, fire-retardant roof at a low cost—a roof that possesses artistic qualities with a degree of fire-proofness no less than slate.

And at the same time, one much lighter in weight. J-M Transite Asbestos Shingles may be laid on rafters designed for light wooden shingles.

Moreover, they never deteriorate, because the action of the elements only toughens and improves them.

They are supplied in a variety of colors. They can be stained any desired tint, and come in all shapes and sizes, rough and smooth edges and in two thicknesses.

Easy to apply and offer a good profit to the builder and permanent satisfaction to your client.

J-M Transite Asbestos Shingles are examined, approved and labeled by the Underwriters Laboratories, Inc., under the direction of the National Board of Fire Underwriters. Laid American Method, they are given class "B" rating. Laid French Method, they are given class "C" rating.

Write for literature.
Men stationed at these Branches to aid you in the working out of the many building problems where J-M Products can help you to build better and more profitably and satisfactorily. J-M Responsibility stands back of all J-M Products and guarantees those products to yield full satisfaction—the sort of satisfaction that reflects credit on you and enhances your reputation as a Builder.


In buildings where localizing the noise nuisance is paramount, J-M Keystone Hair Insulator proves its worth and indispensability. This perfect insulation is easy to apply and is a practical benefit and improvement to the apartment house, hotel, school, or in fact anywhere that reverberation is to be eliminated. J-M Keystone Hair Insulator is made of chemically cleansed cattle hair loosely quilted between heavy paper. It is odorless and vermin-proof. This material is equally efficient as a sheathing material, and is superior to building paper, for that purpose. Its cost is small and its value is great. The J-M Catalog No. 102 fully explains its application and properties.

J-M Cold Water Paint resists fire, costs less and yields you a Bigger Profit.

Keeping shop and factory walls and ceilings painted improves light reflecting efficiency—cuts lighting costs and better working conditions which promotes quality and quantity of employee's output. And painting is actually cheaper than cleaning the walls when J-M COLD WATER PAINT is used. There's a good profit for you in selling this paint, and another profit in applying it—by brush or spray. J-M Cold Water Paint resists fire, too—contains no oil—and spreads farther than oil paints. Endorsed by the Underwriters as a fire retardent. Mixed with water. Will not flake or rub off. Does not discolor. Backed by J-M Responsibility. Write for data.

H. W. JOHNS-MANVILLE CO.
side of the cap, draw your first quarter (as shown by dotted lines), then at 2, 3, 4, 5, and 6, which completes the outside. Then set your compass from 5 to the under side of the cap, draw your line 5 to the line 5, 6, extend then from 6 and that completes the scroll. The line 5, 6 gives joint.

Pitch board. Set it about ¾ inch below the proper pitch to get the curve better.

Any reader wishing templates and paper details for same, I shall be pleased to send by post.  

John MacLachlan.

Combined Barn and Machine Shed

To the Editor:

I am sending you a photo of a combined barn and machine shed, 60 by 80 feet, 14-foot posts, erected in Western Nebraska.

The barn is to be used this season to store baled hay, and when completed will hold 350 tons.

This photo shows the job just at the time we were commencing to sheath the main roof.

Louis DeBrunner,
Contractor and Builder.

CONCRETE FOR PERMANENCE

Build in Stucco

Well-built Stucco is beautiful, requires no painting and very little upkeep. Being well built, it does not crack—it gives lasting satisfaction.

How to Build Stucco

We have prepared complete specifications covering kind of construction, foundations, selection, mixing, application and setting of materials, and finishes. We will send them free upon request; also photographic reproductions of beautiful Atlas-White stucco homes.

The Atlas Portland Cement Co., 30 Broad St., New York

Chicago Philadelphia Boston St. Louis Minneapolis Des Moines
But the word has lost its terror for the builder who paints with

Pyrolin

Fire-resisting Pure Linseed Oil Paints and Shingle Stains

Expert analytical chemists have found it to be absolutely fire resistant, and in addition the best Pure Linseed Oil Paint and Shingle Stain on the market. Made in any color, and can be used on any wood.

Pyrolin is of immense importance to the contractor. It not only means the protection of his buildings against fire, but it also means the reinstating of wood as the primary building material.

Only Building Left Saved by PYROLIN

Mr. E. L. Cavanaugh, Clare, Iowa, writes the following letter:

"In 1906 we had our implement building at this place painted with the PYROLIN Fire Proof Paint, which gave satisfactory results so far as appearance, covering capacity and durability are concerned.

"We had no test of its fire-resisting qualities until December 11th, 1911, when almost the entire business portion of the town of Clare was destroyed by a severe conflagration. Our implement building was just eight feet from the nearest building in the direct path of the flames, which beat against the side of our building. The fire was so hot that it did not seem possible it could be saved. The woodwork charred and blackened but the flames did not carry, and the building was saved and the fire was stopped. We are using the building every day."

And his experience is only a repetition of daily tests to which Pyrolin is subjected.

Send for our Booklet. It will explain to you the tests of the U. S. Government; the advantages of Pyrolin as a paint, and the money and peace of mind it will save you as a fire-resistant paint.

Write today for your copy.

Pyrolin Products Co.
Fort Dodge, Iowa

Exclusive Western Agents for McCloskey's Finest Varnishes in the world

Pyrolin Products Company,
Fort Dodge, Ia.

Gentlemen:
Kindly send me your Pyrolin catalogs.

Name

Address

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
White Paint

People really do want white paint. Certain styles of architecture cannot well be painted anything but white, and there is always one detail or another about a house, whether frame, brick or cement, that calls for white paint; and then it cannot be too white.

You can't make white paint with white lead that is not itself white. The whiter the lead the whiter the paint.

When you write “Carter” into your white lead order you are sure of getting the whitest white lead on the market—the Carter process excludes everything that might discolor the lead or impair its paint value. Carter is the whitest white lead because it is perfectly corroded.

A complete system of warehouses insures your getting Carter White Lead promptly and conveniently no matter where you are located.

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Chicago, Ill.

Square Questions

To the Editor:

Kankakee, Ill.

I have one of your books on the square and have tried to apply it in reading square. On one side of the square is a rafter table and for some reason or other my mathematical interpretation of the length of a common rafter does not work out with the rafter table. I am appealing to you for light on the subject.

My understanding is that the inch marks on the blade are for the rise, regardless of the run, although the pitches ¼, ½, and ¾ are generally recognized.

Take for instance a small model building, 18 in. rise and 36 in. width of building, or one-half pitch. According to the square 21.63’ per foot run or 21.63’ x 1½ = 32.44”, length of common rafter on this building.

Now suppose we take 18” on the tongue for rise and 18” on blade for run, and then measure diagonally across, and we find the hypothenuse of length of common rafter is about 25½”. Then again, if we use our mathematics, we have (18)² + (18)² = 648, \(\sqrt{648} = 25.45”\).

The diagonal and mathematical methods are the same, but do not conform to the square. I take it that I do not know how to read the square. Will you kindly straighten out this tangle?

You mention using 17 on the hip and valley rafters; is this always true, regardless of the pitch or how it is determined?

Will certainly appreciate an early reply, and thank you.

KANKAKEE.

Answer—Your mathematics are right and so is your square, as far as it goes, but evidently you are reading it wrong. What you have, is one of the patented square that claim everything and does not enlighten very much.

Now, every inch on the blade stands for so many inches rise to the foot run. So the illustration you are giving is really 3/4 instead of ½ pitch. If you will look for the length at the 12-inch rise, you will find 16.97 which represents the length of the common rafter for a one foot run. Therefore, for an 18-inch run, it would be 1½ x 16.97 = 25.45 inches, or practically 2 ft. 1¾ inches—Answer.

Just remember in reckoning pitches on the square (to the foot run) what the figures on the blade are to its own length. Thus 6, is ½; 12 is ½; 18 is ¾; 24 is a whole pitch and 30 is 1¼ pitch, and so on doubling up as we reach far up into the dizzy height, and still some more, yet it (the pitch), would always be off one foot from the perpendicular.

In reality pitches are reckoned in fractions (twenty-fourths) up to one and from that on up indefinitely, it is whole numbers and fractions.

Now, mind you, we have only considered whole inches to the foot run. Just think what a mixture of complex fractions
Are You Equipped to Use Concrete?

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The accompanying illustration shows the relative proportions in connection with the square.

A. W. Woods.

Why We Don’t Publish Estimates

To the Editor:

Richmond, Va.

I am not in the building business, but subscribed for your magazine for special reasons. My hope was that in publishing sketches, plans, etc., you would show the estimated cost of construction. You have rarely done this. Why not show the proper cost or actual cost where the building was erected, or the estimated cost in Chicago?

J. T. Lawrence.

Answer—There was a time when we made quite a feature of estimates of cost in connection with building designs illustrated in our pages, but we found so many differences of opinion regarding the value of such estimates, that we finally concluded that it was a waste of effort and apt to be misleading. Therefore, have in recent years limited statements of cost to actual known facts. The only estimate of cost that amounts to anything is the estimate or preliminary bid of the man who will furnish the material or do the work in each specific instance.

EDITOR.

How to Make A Baby’s Bed

To the Editor:

East San Diego, Cal.

For sanitary reasons, babies should sleep by themselves. The bed should not be too low, because it is hard on one’s back to bend over when baby needs attention. The bed should also be deep enough so that when the baby begins to walk it cannot climb over the sides of the bed.
Not on our say so—not because you know of a few instances where it was used—not on a chance, but because master planners and builders throughout the United States have used it and recommended it for over fifty years—because thousands of the finest buildings of all classes are erected each year with CLINTON WIRE LATH specified and used—because in actual practice it has been shown in buildings recently demolished that CLINTON WIRE LATH, placed in them over a half a century ago, was, when brought to light, as good as when laid—because CLINTON WIRE LATH is made of the best materials, by expert workmen, by a concern that WILL NOT cheapen its products.

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CHICAGO TECHNICAL COLLEGE
1017 Lake View Building, Chicago, Illinois

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

This design is simple and may be easily handled in the home workshop. White pine is perhaps the material best suited for the bed, although any wood that will cover easily with paint might be used.

The following pieces will be needed:

Stock Bill Giving Finished Sizes.

Head posts—2 pieces, 1½ by 1½ by 37½ inches.

Foot posts—2 pieces, 1½ by 1½ by 36 inches.

Rails—2 pieces ¾ by 3 by 19½ inches.

2 pieces, ¾ by 4½ by 19½ inches.

2 pieces ¾ by 3½ by 19½ inches.

2 pieces, ¾ by 3 by 37½ inches.

2 pieces, ¾ by 4½ by 37½ inches.

1 piece, ¾ by 4 by 38 inches.

Vertical slats—14 pieces, ¾ by 3 by 11¼ inches.

6 pieces, ¾ by 5½ by 11¼ inches.

Slats—7 pieces, ¾ by 2 by 37 inches.

Cleats—2 pieces, 1 by 1½ by 18¾ inches.

In making out the stock bill, all tenons have been allowed ¼ of an inch long. The mortises for the vertical slats have been made ½ inch deep.

The bed shown in the illustration was held together by round-headed screws, screwed thru the posts into the side rails. This was done so as to take apart like an ordinary bed.

Bed as it Appears When Completed and Finished in White.

Twenty number 12 by 2 inches round-headed screws were used for this purpose.

Bore holes in each post for casters.

When white pine is used, two coats of interior white paint with a final coat of enamel will give a most satisfactory finish.

P. H. Heron.

+ Pretty Good for an Amateur

To the Editor:

Owosso, Mich.

As I am neither a carpenter nor a builder by profession, I thought perhaps I might stir up something by enclosing a picture and floor plans of my residence which I completed about a year ago. I take the honor of drafting, planning and doing most of this work myself. Accordingly it might be of interest to some to know how I manage to do it.

My occupation is Auditor for the Union Telephone Company which occupies eight hours per day of my time. Well, it would make too long an article should I go into detail and tell how two weeks after having purchased my lot I had my plans ready (working nights), and had broken...
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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
ground for the full basement, 8 feet in the clear. Then by getting out of bed at 4:00 A.M., built my forms for concrete foundations up to grade line, and then started day laborers to work filling the forms; then with masons and three carpenters until house was inclosed. I spent my two weeks' vacation bossing the job, and for diversion I put in all my heating and plumbing while I was waiting. Then for a little exercise did lathing; laid all my floors solid, will notice I say "we," because it would not be hardly fair to take all the credit myself, as my wife figured very conspicuously, she having done nearly all the staining and varnishing which is hand rubbed, five coat work. I did the decorating, using water colors. Did we go some! I guess we did, but enjoyed every bit of it. How could I do it? Why I have been a subscriber for the AMERICAN CARPENTER AND BUILDER for years, and if one takes this journal and studies it carefully with other books treating on the different

---

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On these two pages are the names of the most responsible and progressive Manufacturers in Building Materials. Use these pages—they will appear every month—as your Buyers' Guide. When in Chicago make this Exhibit your headquarters. A few hours on this one floor will save you days of time. Our location is central—Jackson Boulevard and Fifth Avenue and is right in the heart of things in Chicago. We are in business to save you time and money. Remember, "It's Free to See" and you will be cordially welcomed.

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North Carolina Pine Association
Norfolk, Virginia

Keeping Tools in Condition

To the Editor: Napa, Cal.

I have intended for some time to send you my appreciation of the American Carpenter and Builder, and tell the craft thru your columns of a method for trueing up the face of worn oil-stones.

Rub the stone with a circular motion on a flat piece of marble, using water as a lubricant. If the stone is badly worn, sprinkle a little fine sand on the marble to start with. A piece of an old marble table top, or a piece torn from an old marble mantle on some repair or remodeling job is fine for the purpose.

For keeping hatchets, chisels, planers, etc., sharp without becoming blunt by the bevels getting too obtuse there is nothing like a grinder run with pedals like the one made by the Luther Grinder people. This is, of course, for the man who has not access to a power grinder.

And speaking of keeping tools sharp and up to date, the Man from the Lumber Yard hits the nail squarely in his December article.

Yours for continued success,
C. S. Enov.

*+

New Use for the 4d

To the Editor: Larwill, Ind.

This barn is 40 by 70 feet with basement same size, and 9 feet high; has 114 stanchions and six stalls for horses. The upper part is 16-foot siding and is 35 feet to upper point of rafters. The barn has self-supporting roof.

I have a combination saw rig that is equal to four men, run by a 4-h. p., gas engine. We have nine men in the crew, and this photograph shows them raising the rafters with my Ford machine.

I see by the last issue of the paper that they are having some western wind blowing shingles. Well, I can explain how it is done, as I have seen some of the country. Will start at Toronto, Canada, and go across the United States to Mexico. I have worked in nine States, and have seen three shingles laid with one nail. As a rule, in California it is customary to lay two shingles to one nail. I can show some buildings covered this way at San Diego, Los Angeles, Alhambra, Cal., also at Columbus, Kan., and at Chicago, Ill.

C. M. Noble.
SERVICE is the basic working principle of the Southern Pine Association, an organization of the leading manufacturers of Southern Yellow Pine.

That SERVICE embraces practically every interest related to the Southern Yellow Pine industry and practically every person having to do with Southern Yellow Pine. For those who take advantage of it, it is a guarantee of faithful performance from the saw-mill to the consumer. For the Architect and Engineer, it is a safeguard against substitution—the insurance on “getting what you specify.”

That you may be certain of this, the Southern Pine Association stands ready to provide, on request and for a nominal charge, competent inspectors to pass upon every stick of timber, from whatever source, that goes into the structure you are erecting, thereby eliminating the possibility of faulty material finding its way into your building or other structure.

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If you care for details of this service, and desire to have your name listed for the Southern Pine Association’s new manual of stress tables and grading rules, fill out and mail the attached coupon.

SOUTHERN PINE ASSOCIATION

676 Interstate Bank Bldg.
New Orleans, La.
How to Obtain the Cuts

To the Editor: Quincy, Mass.

Will you please explain how to get the cuts for the hip rafters on a bay window such as is shown by the enclosed sketch? The cuts I would like to know how to get are where the rafters meet at the ridge and at the plate marked X.

C. B. THOMPSON.

Answer—We reproduce on page 110 the bay roof drawing as shown, with the substitution of the parts (shown by the dotted lines) to take on the square to obtain the cuts in question. There is nothing hard to master about cuts of this kind, if one just stops to give the matter a little thought.

The principle involved is just the same as that used for the side cut of the jack or hip for the ordinary square cornered building and therefore applies to any angle or pitch the roof may have, and that is by the tangent system.

Now, to find the side cut of hip No. 1, take the tangent (A-C) and the length of the hip (whatever it may be) and the side on which the latter is taken will give the angle to fit against the ridge piece at B.

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Arkansas Soft Pine Bureau, Little Rock, Ark.
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*Representing*
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that is obtained by taking the tangent $B-G$ and the length of the hip; and the side of the square on which the latter is taken will give the required angle.

To find the side cut of the jack, take the tangent $H-D$ and the length of the common rafter and the side of the square on which the latter is taken will give the required angle.

The reader will notice that we have worked from center lines, as that is where the lengths are reckoned. This requires a reduction in the actual length of the hip on account of the ridge piece taking up a part of the length; and right here the inexperienced will have a problem on hand that will tax his ingenuity to the fullest extent because of the different angles that enter into the problem. But, as a matter of fact, in general practice problems of this kind are passed over, either unconsciously or as being a trivial matter; and if the joints do not fit up close enough for looks, the cut and try method is resorted to and the whole thing is forgotten about as soon as the job is done. But after all, this, like all other intricate problems, has an easier way than appears to have on its face; and so we will look to the easy way for the solution.

Say the ridge piece is 1 inch thick, one-half of which must be taken from the rafters. But instead of trying to make the required reduction at the top, notice the length of the center lines that are covered by the ridge piece. These respective lines represent the length of the run for the required reduction. This being the case, go to the seat cut and set off a like amount, thence square up to the work line and the point of intersection of which will give the point for the proper seat cut and the reduction in the length of the rafter will be solved without further calculation. This, of course, requires the rafter to first be laid off the full length just as though there was no ridge piece.

A. W. Woods.
BIRCH TRIM

A combination of beauty and economy that gives lasting satisfaction—"What wonderful woodwork!" exclaims the visitor. Architect and builder receive the credit.

Doors made of rotary cut Birch veneers, in a proper setting of Birch trim, increase the value of a structure without proportionately increasing the price. Many beautiful effects are within reach of the builder who uses Birch for trim, stairway and all interior woodwork.

Homes trimmed with Birch have the added value of appearing partly furnished. Birch trim is suitable for residence, hotel, club, apartment, churches, schools, halls, office buildings. Birch that does not masquerade as something else.

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
How We Cured the Leaking of the Water Tower

To the Editor:

Boston, Mass.

When we turned the water into the new water tower, it leaked like a riddle. The water seeped thru the wall at the rate of a hundred gallons a day. We brushed the inside over with clear cement and still the water seeped thru.

The tower is a home-made job, by amateurs. We got our instructions for building it from booklets published by manufacturers of Portland cement, and bulletins issued by the Department of Agriculture. None of them said anything about making cement construction waterproof.

My boy takes the AMERICAN CARPENTER AND BUILDER, and I read it with as deep an interest as I do any of the new things that concern my profession, but I have seen nothing in it about the new thing I am going to speak about. My profession is that of a clergyman, with a human interest in everything that men live by. I find in the "A. C. & B." some good material for sermons; but I did not find any remedies suggested for my leaky water tower. I found it elsewhere, and, being a preacher, it comes natural for me to wish to tell about it for the benefit of other suffering mortals who may be in the same predicament.

One day I saw in the Boston Evening Transcript, that Mr. Page, Director of Public Roads, had been making extensive experiments in waterproofing concrete with oils, and straightway I wrote to that Government official. By return mail I received from him a two-page letter containing full instructions and specifications for the oil.

With that in hand I called at the office of the Standard Oil Company, in Boston, and left an order for a small quantity of residuum oil.

And this is what we did with it:

We followed instructions given by Director Page. The tower is circular, 4 feet in diameter inside, and 12 feet deep, with the wall 6 inches thick, reinforced with wire mesh of No. 4 wire, made for that purpose.

First, we washed the inside surface with dilute hydrochloric acid, and then washed off the acid with clear water. One pint of acid diluted with one pint of water and applied with a scrubbing brush did the business. This process dissolves the lime and leaves the grains of sand bare for new concrete to stick to.

Secondly, we mixed a mortar of one part Portland cement and two of clean, sharp sand, as ready for use. Then we thoroly mixed in two and a half quarts of oil to a bag of cement, mixing until no bubbles of oil appeared on the surface. The mortar readily absorbed the oil.

Finally, we plastered it on, half an inch thick, troweling thoroly to make a dense mortar surface, and kept it moist until it was thoroly hardened. We let it stand about two weeks, as I had to be away from home. Time was of no consequence, because the service pipe to the house taps the supply pipe from the well before it enters the tower, with proper shut-off valves, so that our supply system is independent of the tower. We had already set a barrel on top of the barn, connected with the barn pipe, to serve as a reservoir and give pressure, while the tower was out of commission.

When I got home I set the electric pump going and filled the tower to the brim, covered it up, shut the valve, and let it stand eight days for a test. From that time to this I have not discovered the leaking of a single drop.

My wife and some of the neighbors had a fear that the oil would taint the water, but, when we drew out the first tumbler full it tasted as sweet as the fresh water from the well.

That was some time ago. Now, you can learn all about
AMERICAN CARPENTER AND BUILDER

Crown Your Buildings with

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Ornamental Roofing and Shingles

A Most Pleasing Variety of Effects Obtainable in Colors and Designs

SAFETY AND BEAUTY

Heretofore, safety has been secured by the wealthy by using slate and tile roofs. The man of moderate means had to take chances and has repeatedly seen all he possessed destroyed by a flying spark or a fire brand.

Temporary color effects have only been possible by the use of stains and paints, but these did not withstand sun and rain for any length of time.

It has remained for the Patent Vulcanite Roofing Co. to give the public a roofing material that perfectly combines the qualities of safety, comfort and beauty at so low an initial cost, that no one now needs to put over his home such a flimsy, highly combustible and temporary covering as a wood shingle roof.

Vulcanite Roofings are an unfailing weather-proof and fire-resisting material. Twenty years' service is a reasonable expectancy. Vulcanite comes in rolls and shingles in several patterns that can be worked into a large variety of truly artistic effects.

We shall be very glad to send you our large illustrated catalogue which will show you some of our popular roofings and how they add to the appearance of a building. We'll also tell you just what we do for Builders to help them lay more "Vulcanite." Sit down and write us now. Address main office, Chicago.

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You can turn a forceful stream of water on Kellastone Stucco and it cannot permeate the rock-like Kellastone mass because its firm, compact texture renders it non-porous. It defies the attack of the elements. There's a vast difference in stuccos—just as there is in lumber, brick, paint, etc. Kellastone is pre-eminently a stucco. It is prepared to withstand the ravages of time, fire and water.

You Can Apply KELLASTONE IMPERISHABLE STUCCO In Zero Weather because, not being mixed with water, it will not freeze. Cement stucco is mixed with water. Turn a hose on it and note the rapid absorption of this water. Rain acts exactly the same. Cement stucco are cheaper in first cost and may look nice for a time, but a Portland cement stucco is certain to absorb water, expand and contract, which will ruin it. Cheap stuccos are poor economy. Our free literature gives you the reasons. Send for it. It also describes Kellastone Composition Flooring for private homes, apartments, public buildings and industrial plants and Kellastone Plasters for interior finish. A postal brings complete details.

The National Kellastone Co. 504 Association Bldg. Chicago, Ill.

Director Page's experiments, and the various tests and uses to which "Oil Mixed Portland Cement" has been put, by sending ten cents to the Superintendent of Documents, Washington, D. C. for "U. S. Dept. of Agriculture Bulletin No. 230."

The oil cost me 15 cents a gallon. It could then be bought by the barrel for nine cents, f.o.b. New York. We used about one and a half bags of cement and three and a half quarts of oil on the job. JOSPEH A. PARSE, Pastor Emeritus.

Mending A Kitchen Door

To the Editor: Indianapolis, Ind.

During certain months of the year, Indiana, like many of her sister States, suffers from an invasion directed by "General Humidity" and, to use the expression given by one old carpenter, wooden articles swell, curl and warp so badly that

"floor boards turn over and cradles spill out the kids." Perhaps that expression needs a bit of salt, but wood down here does swell and twist mightily when dog days come; and there will be hardly a door in the house which will swing and close properly.

The kitchen door of my house suffered very badly, being exposed on the inside to heat and steam from the cooking range and on the outside, every rain beat directly against the door with full force of a southwest wind.

The Suffragettes of the household having expressed decided convictions regarding the condition of said door and the matter of its being mended forthwith, an examination revealed that when made, the panels had evidently filled tightly in their respective grooves, and when swelled by moisture, the panels had expanded, forcing the rails outward away from the stiles, as shown by Fig. 1. The widening of the panels, A A, and the mid-piece, D, could not be followed by the stile, B, as that member was end wood and did not swell much when affected by moisture.
CONCERNING

Winter Profits

This A. C. & B. prize-winning letter has money-making ideas in it for you

Reprinted from November 1915 issue of American Carpenter & Builder,
from first prize letter of William H. Humphreys:

"Winter Work Editor, A. C. & B.—

"It certainly is a good thing to keep the dollars coming in during the winter months."

"However, the next best thing is to plan so that during the summer months dollars will roll in fast enough to make up for the winter. Then you can spend your winter, or part of it at least, figuring the best development of plans, the exact amount of lumber, trim and hardware, and all the requirements for home building. Your houses will nearly sell out before your eyes if you do not have all this detail work to do when you could be doing the actual building.

"How could you spend a more interesting evening than deciding the best arrangement of this kitchen, or how that space can be used to the best advantage? It is the houses that have been carefully planned that rent and sell the quickest. I always try to have at least one new device that I have not used before in each house. I always have a dozen or more plans on hand, made ready in winter months, so that when a prospective customer comes to me I can show plans and figures of any kind that may be desired.

"Home building is my real work, and when I have any time in the winter months, why the home building goes on just the same—only it is on paper.

"W. H. HUMPHREYS, Contractor and Builder."

— and let H-L-F help you

Mr. Humphreys has a big idea in his winter planning. Do YOUR planning in winter and then in summer you can devote your time to over-seeing and pushing the work through so that you can handle more jobs.

In working up house plans, you can get wonderful help from H-L-F Co. Send 10 cents for the H-L-F Prize Plan Book. It contains over a hundred houses—and is a regular storehouse of ideas for men like you. In connection with each house is shown exterior view, floor plan, complete description and guaranteed costs.

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
As the strain of expanding panels pulled the stile mortises from their glue-hold in the rails, daylight appeared between rails and stiles, as shown by Fig. 1, and the outer edge of the door sagged, pulling apart the mid-piece joints also, until the door presented the appearance of extreme dilapidation, shown by Fig. 2. The outer edge of the door had sagged as shown by dotted line A, and openings were visible in all the joints, B, C, etc.

I did not wish to take this door to pieces and joint the panels narrower, so it was decided to dry the doors as well as possible and to try drawing the rails into place by three 3/4-inch bolts. One morning the door was removed from its hinges, placed in a small clothes closet which was emptied of its regular contents for that purpose and a coal-oil heating stove started up and placed in the closet. As soon as the kitchen door had become well warmed thru, a small disc electric fan was placed in the closet and started up, stirring the air thoroughly and bringing it in contact with each and every portion of the kitchen door.

The closet door was left open a fraction of an inch after the oil stove was set to work, and after a little experimenting we might, not a bit more could be gained.

The air was thoroughly drawn across, as shown, but before making these marks, the door was squared by being driven up to the dotted line, A. B and C joints.

The nut-holes—six of them—having been made and accurately located, a guide strip was tacked across the door, fair with one of the lines, D, and held as shown, by three shingle nails, E E E. A 7/16-inch long bit was then set to work in line with the guide strip, as shown by F, and a hole bored thru the rail and well into the mid-piece, after which the boring was repeated at the other end of the guide stick, and again at the top and the bottom of the door upon the other lines, D D.

It was not considered practically possible to bore these holes from opposite edges of the door and have them meet fair with each other, therefore no time was lost in trying to do so. As soon as the bit had worked its way a few inches into end-wood, past the edges of the rail, boring was stopped, the guide stick moved back 3/4 inch and with a 3/4-inch bit in a small plow, a groove was worked down into each stile, as shown at G. Plowing was continued until level with the lower side of each hole bored thru from the rails, then the ends of the grooves were squared down a bit with a chisel, until the two bored holes were connected fair enough to permit the rods to be put in place.

Screwing down the nuts upon these rods quickly drew the rails nearly into place, and a little judicious hammering upon the edge of the door made the openings between rails and stiles vanish entirely. Evidently the panels were compressed slightly. Perhaps they buckled a trifle, but be that as it may, the door was drawn together fair and square, both at B and C joints.

The door was 13/16 inches thick and an expansion bit was set for 13/16 inches and holes bored in the edge of the door, fair with the lines, D, and in the middle of the door edge. Figure 3 shows the manner in which one of these holes was located in the edge of the door; H indicating the hole, L a cut washer, and J representing the nut of a 3/4-inch rod, threaded and fitted with nut and washer at either end.

The door was placed on the bench and three lines, D, D, D, drawn across, as shown by Fig. 2. These marks were made a bit diagonal, as shown, but before making these marks, the door was squared by being driven up to the dotted line, A.

The nut-holes—six of them—having been made and accurately located, a guide strip was tacked across the door, fair with one of the lines, D, and held as shown, by three shingle nails, E E E. A 7/16-inch long bit was then set to work in line with the guide strip, as shown by F, and a hole bored thru the rail and well into the mid-piece, after which the boring was repeated at the other end of the guide stick, and again at the top and the bottom of the door upon the other lines, D D.

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Buy your lumber and millwork direct. Every contractor, carpenter and builder should have our big free catalog of building material—the book of 8000 price bargains. A copy is ready and waiting for you and will be sent free, postage prepaid, at your request. The tremendous saving afforded by our method of supplying building material direct to the actual builder has proven a boon to thousands. Let us show you how to make more money by saving more money.

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Partitioning and remodeling residences; lining the walls of offices, garages, workshops and warehouses.

These are merely a few suggestions showing what a wide field for UTILITY BOARD business there is right in your own locality. Make up your mind now to write us today for liberal samples, prices and full particulars about UTILITY BOARD, the dull-season money-maker.

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Standard Flex-a-tile Shingles No Tar Asphalt Paint
Flex-a-tile "Giant" Shingles Rubbertex Roll Roofing
Other Guaranteed Heppes Products

The three grooves, one of which is shown at G, were then filled with wooden pieces, fitted carefully, and glued and bradded in place, after which some plugs of side-wood were turned to size, glued and driven into the H openings in the edges of the door, and then bradded for further security.

The openings, G, were made on the side of the door which came into the kitchen. This was done to prevent weathering the pieces driven into the G holes, it being decided that the inside of the door had less exposure to steam and moisture than the outside of the door.

Several months have passed since the door was mended, and thus far I have still to see the slightest signs of the joints opening or the door sagging again.

JAMES F. HOBART.

Unique Piece of Bronze Work
To the Editor: New York, N. Y.

In response to your letter requesting data in regard to the huge bronze tripod executed and erected by us atop the "Ferry Memorial" at Put-in-Bay, Ohio, would say that the tripod is 22 feet 10 inches in height, 17 feet 4 inches in diameter and weighs about twelve tons complete. Its material is of statuary bronze, in part cast and part wrought sec-

Massive Piece of Bronze Works Erected on Ferry Memorial at Put-in-Bay, Ohio.

The glass dome consists of twenty-four pieces, constructed in an unbroken surface, closed joints, etc., a form of construction never before attempted in glass.

THE GORHAM CO. ARCHITECTURAL BRONZE, Fred Jantzen.

NOTE: If one is a stickler for terms, he may properly call this an "octapod" rather than a tripod, as it has eight sides.—Editor.
Don't Lose Money Through Misunderstanding
Don't judge wall board until you get the facts on

UPSON-BOARD

Hundreds of carpenters are materially increasing their incomes,—not a dull month in the year. THEY have found there is a DEPENDABLE wall board.

You wouldn't deliberately pass up money. You wouldn't worry through an adult season if you knew a way to bring in steady cash from one job to the next.

This is to let you KNOW. We'd have got in touch with you before only we've had our bands full in the past trying to keep up with orders. But now, with the most completely equipped wall board plant in the country, and with the largest capacity for making high-grade board, we can do our duty by every carpenter in "putting him wise."

You know there are many wall boards on the market. But you may NOT know that there is a bigger difference between these wall boards than there is between the different kinds of wood,—as, for example, hemlock and oak; or even between the different gradings of the same wood. The difference between DEPENDABLE Upson Board and others, is the difference between wall board satisfaction and possible dissatisfaction.

Upson Processed Board stands in a class by itself. We challenge any manufacturer in the country to show his actual stock board to be as good or as durable as satisfactory as Upson Board. Upson Board looks, feels and works like lumber. It is the highest grade fibre board, and is well called the standardized board.

If you are prejudiced against the use of all wall board, you are wrong yourself and your customers an injustice. Good wall board is the nearest substitute for true wood for walls and ceilings. And if you, yourself, have put on unsatisfactory wall board or have heard of other installations going wrong, you have no more cause to condemn Upson Processed Board than you have to condemn all lumber because one particular job was not right.

What you've complained about probably was a board made of punky "jack pine," tamarack, or old junk such as "chip" fibres. "Jack pine" boards are soft and dozy like rotted wood and will crumble and break when you try to cut or saw them—you can't handle or fit them worth a cent. "Chip" boards, made of inferior fibres, are very apt to warp and twist; some are put together with tar or sticky materials which gum your saw and make you cut every time you try to cut them.

When you get these irresponsible boards on the wall and did your best to make a good job, perhaps they curled and buckled. And likely your customer kicked because they soaked up gallons of paint like a sponge, and even then smeared and blistered and spotted. No wonder, then, perhaps you're down on wall board!

But it is different with Upson Processed Board. It is "made good to make good."

There isn't one complaint to the million feet—a record we believe unequalled by plaster, steel or any other of the ordinary building materials.

And keep this in mind! There isn't a dollar's difference in the cost of the cheapest board on the market and DEPENDABLE Upson Board, for the average room. While you, as a carpenter, aren't so much interested in the cost of finishing, yet from the standpoint of your customer you ought to know that in addition to giving a better and more permanent job, Upson Processed Board saves this slight difference in initial cost many times over in the lower cost of painting.

Now then, Upson Processed Board gives you the nearest perfect lining for walls and ceilings—gives you the work which plasterers now get — gives you a chance for all-the-year-round work. And there is money in it, too, for a shop making cabinets, screens, household articles, window trims and other products or articles where thin lumber or steel is not used.

You can tell more about Upson Processed Board in a minute, simply by examining a sample, than we could tell you in an hour. But while you look it over and test it out, we want you to check up on such big points as these:

WORKS LIKE LUMBER: You can apply 25% more of Upson Board than of any other wall board in the same time. Handling, saws, cuts, planes and moulds much like lumber. It really is artificial lumber—made of long, tough, wiry, PURE WOOD FIBRES, pressed into hard, stiff, woodlike panels. Stands a pressure of more than 400 pounds to the square inch!

GIVES YOU FINEST JOB AND REPUTATION: UPSON PROCESSED BOARD IS SCIENTIFICALLY PROCESSED. Kiln cured, like interior trim. Waterproofed so that ordinary leaks will not hurt it. Surface filled to give the most perfect painting surface of any board, usually saving $5 to $15 per thousand square feet in the painting cost. Do not let dealers or manufacturers of wall board impose upon your knowledge. Do not let them foist inferior board upon you, by saying it is "like" Upson Processed Board. There is no board like Upson Processed Board on the market.

You'll discover a hundred and one advantages and make many money-making jobs, when you write for your sample of Upson Processed Board and for our plan of working with you to build up your trade.

Don't wait. Start today. Send NOW for information.

THE UPSON COMPANY
26 Upson Point
Lockport, N. Y.

Fibre Board Authorities

THE UPSON COMPANY
Lockport, New York

LOOK FOR THE BLUE CENTER—TRADE-MARKED

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Thru this special department this month the Editors aim to keep builders, contractors, carpenters and architects in touch with what their friends, the manufacturers, are doing for them in new or improved tools and machinery, methods and materials—pertaining to building. These items are offered here as interesting information for our readers; they are not advertising. Take full advantage of these Reading Months to write for catalogs and booklets, and become thoroughly familiar with these Improvements and New Goods.

**Improved Model Floor Surfacer**

The Automatic Ballbearing Electric Floor Surfacing Machine, manufactured by Wayvell Chappell & Co., 4847 E. Ravenswood Ave., Chicago, Ill., will rapidly refinish old floors, removing varnish, paint, etc., take off the wood quickly of new floors, and sandpaper a finish that will stand inspection against a sunlight reflection after varnishing. Each machine is put to this test on maple flooring before shipping.

The machine is solidly constructed and of ample weight for both rapid and high grade work. It is provided with a readily exchangeable motor mounted above the roller and with a large and powerful dust collector fan mounted close behind the roller, making a very compact, strong and weldable machine.

A most valuable feature are the heavy steel ballbearings on both the roller and the shaft on which is mounted the dust collector fan.

To secure a smooth-running, the flexible roller, free from vibration and chain jumping, an exclusive feature of the latest improved models is provided in the countershaft chain drive. As will be seen from the illustration the roller is supported on arms which are pivotally mounted to move about this shaft as a center, and in this way is allowed a yielding movement, the chain pull smooth and at an even tension.

---

**Rock Board**

The Wall Board from Rockford

It will help you get more work and give better service

Suggest it to builders of bungalows, garages, club rooms, etc.—to men who want partitions put up in quick time, and with little cost—to housekeepers for utilizing attic and cellar space. A score of opportunities to use this board are open to the alert contractor. Put up in a moment, it will last as long as the house itself. Can be painted the same as wood, or artistically stenciled. Rock Board is heavier, harder and stronger than any other Wall Boards, giving it better insulating and fire retarding properties, and in the cost Rock Board shows a decided advantage over other boards. Write for our Catalogs and Prices today.

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Neponset put me on the map—I am making good money. The very first job gave me the best advertising a man could get—other jobs keep coming right along.

Big Architects specify Neponset Shingles and property owners are highly pleased with them.

If a fire comes along, leaping from roof to roof, it will skip my roofs—blazing sparks and embers die harmless on Neponset.

It does everything a wood shingle will do, and can be laid twice as fast, because every Neponset shingle is not only double-width, but uniform; no trimming.

I advise you to be the Neponset man in your town.

Send the Coupon Today.
The machine surfaces to within about three inches of the wall without the edge roller and with it right up to the baseboard. Current is carried to the motor thro flexible trailing wire.

Machines are made in five sizes, suitable for any requirements—small rooms in residences to the largest of areas.

As machine is ready for work when uncrated, any operator, by following the instructions provided, can become familiar with it in an hour or so and get looked-for results.

**Twelve Business Maxims**

1. Have a definite aim.
2. Go straight for it.
3. Master all details.
4. Always know more than you are expected to know.
5. Remember that difficulties are only to overcome.
6. Treat failures as stepping-stones to further effort.
7. Never put your hand out further than you can draw it back.
8. At times be bold; always prudent.
9. The minority often beats the majority in the end.
10. Make good use of other men's brains.
12. Preserve "A sound mind in a sound body."

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**New President and General Manager of the Association of American Portland Cement Manufacturers**

Mr. B. F. Affleck, president of the Universal Portland Cement Company, was elected president of the Association of American Portland Cement Manufacturers on Dec. 17. Mr. J. P. Beck of Chicago was elected to the position of general manager.

**E. W. Edwards President of Rapid Transit Commission**

Mr. E. W. Edwards, President of the Edwards Mfg. Co., Cincinnati, Ohio, has recently been chosen as president of the Rapid Transit Commission of that city. This commission has been organized with the idea of developing plans for rapid transit and interurban routes in and around the city.

It is expected that the board will direct the expenditure of from eight to ten million dollars in the next two years. The fact that Mr. Edwards has been chosen to head the commission shows the high regard in which he is held by the other members.

Mr. Edwards was one of the original members of the commission, was re-appointed and then later elected president.

**Another Government Job**

Waterproofed with CERESIT


Once again Uncle Sam has set the seal of Government approval on CERESIT as a dependable waterproofing. Each time it has been chosen for a difficult proposition—down on the Panama Canal, out in Long Island Sound for a lighthouse, and now for the Storage Warehouse shown above for waterproofing the cistern and boiler room against a seven-foot head of tidewater.

The contractor is at present using the boiler room and the cistern as storage reservoirs for his fresh water supply used in tempering the concrete for the superstructure, so that CERESIT is serving the double purpose of keeping the tidewater out and keeping the fresh water in.

Ceresit Waterproofing Compound is just as successful on the small jobs—for waterproofing basements, silos, cisterns, stucco walls, or anything in concrete and cement. Our engineers offer their services to you free of charge; they will gladly answer any question you ask them.

Write for interesting information.

Ceresit Waterproofing Co., 910 Westminster Bldg., Chicago
Ten Years' Service Without Ten Cents Expense

In the ten years which have passed since the Ambler Asbestos “Century” Shingles were applied on this garage not a cent has been expended for roof repair. Not a shingle has cracked, twisted, curled or otherwise failed to give permanent service. No painting, no repairing, no replacing, no worry. This service was given in the teeth of destructive winter storms such as are witnessed on the New England Coast. Ambler Asbestos “Century” Shingles withstand the stress as no other roofs will do.

Ambler Asbestos “Century” Shingles

What a fine feather this is for the cap of the contractor who applied the roof. It hasn't shown even a suggestion of its ten years' exposure to the rugged storms of the New England Coast. It is just as tight—just as firm—as fireproof—as storm proof and as good looking as it was ten years ago.

Reputations are made quickly with Ambler Asbestos “Century” Shingle roofs.

You'll have no stronger recommendation in your town—and you'll need none.

Whether you are specifying for or laying roofs on garages, houses, hospitals, schools, churches, or in fact on any building where permanent service is your aim, you will best serve the owners by using Ambler Asbestos “Century” Shingles. Write us at once for terms and trade prices. Samples furnished.

KEASBEY & MATTISON CO., Factors

Branch Offices in Principal Cities of the United States
Porter Barn Equipment in England

The accompanying photograph is interesting as showing how American building ideas, or rather barn equipment ideas, are gaining ground in England. At the 1914 “Smithfield Show,” held in London, England, a prominent feature of the Geo. W. King, Ltd., Exhibit was the J. E. Porter Company’s improved litter and feed carriers. This concern acts as the European agents for the Porter Barn Equipment. The old country has long been famous for its dairy and beef cattle, and evidently they are getting around now to the idea of building their barns and doing their stable work in the modern efficient way.

The Door Stays Open with This Garage Door Stay

It isn’t very hard to fasten a door open, but stays that will do this and be convenient at the same time are hard to find. You can push the door open and put a rock against it if you want to, and if the rock is heavy enough, the door will stay open, but it is an inconvenient system when you want to shut the door.

The accompanying illustration shows a dependable and convenient stay that will hold the garage door open under any conditions until you want to shut it. In the illustration the door is being closed from the inside with one hand.

Throwing the door open operates the stay automatically and the door is held rigidly in position until a slight pull on the chain releases it. No mortising is necessary and the device can be very easily applied to any swinging door. It made of one-inch angle iron and has plenty of leverage on the door when it is in position.

The name of this device is the Stanley No. 1775 Garage Door Stay, and it is made by the Stanley Works, New Britain, Conn. Further information can be secured from this concern.

$1250 Now Buys This Worm-Drive Kissel—The Truck Sensation of the Year

Up to one-ton capacity, with the most approved type Worm-Drive Axle construction—built strictly in accord with Kissel standards of high grade materials and workmanship—a wonderful truck at the price. Increased production makes it possible.

A STUDY of the specifications tells the story—get the details of this startling value.

We make six other sizes. You may, therefore, be sure of unprejudiced advice in consulting Kissel regarding your haulage needs.

KISSEL KAR TRUCKS

Capacities from 1000 to 12000 lbs. Chassis Prices $950 to $4350. Bodies to suit. Send for big portfolio with five hundred fine illustrations of Kissel Kar Trucks in service—then ask us to figure on your haulage problem. You incur no obligation. Write today.

KISSEL MOTOR CAR COMPANY, 546 Kissel Avenue, HARTFORD, WIS.

New York, Boston, Philadelphia, Chicago, St. Louis, Milwaukee, Washington, Kansas City, St. Paul, Minneapolis, San Francisco, Los Angeles, Oakland, Rochester, Buffalo, Denver, Omaha, Cleveland, Detroit, Toledo, Columbus, Baltimore, Pittsburgh, Dallas, Salt Lake City, Indianapolis, Chicago, New Haven, Troy, Providence, Marshalltown, Des Moines, Minneapolis, Toronto, Calgary, Victoria, and 300 other principal points in the United States and Canada.
Shingles Flew —

flew by
the thousands
during the recent
hurricane in New Orleans.
But not those held with

Cut Nails

No better test could have been devised to prove the holding power of CUT NAILS. And now the New Orleans authorities are figuring on a new building law that will demand CUT NAILS only to be used for shingle roofs.

This is only one of the many cases where CUT NAILS have proven their worth in time of need. We have examples that have been in service over 200 years.

They will cost you less than other nails, both now and in the future. Your reputation depends on the life of your buildings. Prepare them for all emergencies.

Write to nearest manufacturer listed below for free samples, and name of nearest local dealer.

**CUT NAIL MANUFACTURERS**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO. B. LESSIG CO.</td>
<td>Pottstown, Pa.</td>
</tr>
<tr>
<td>WILLIAMSPORT IRON &amp; NAIL CO.</td>
<td>Williamsport, Pa.</td>
</tr>
<tr>
<td>LA BELLE IRON WORKS</td>
<td>Steubenville, O.</td>
</tr>
<tr>
<td>VAN ALEN &amp; CO., E. G. Van Alen</td>
<td>Northumberland, Pa.</td>
</tr>
<tr>
<td>TREMONT NAIL COMPANY</td>
<td>West Wareham, Mass.</td>
</tr>
</tbody>
</table>
Asphalt Shingles Are Reputation Builders

PROGRESSIVE CONTRACTORS HELP THEMSELVES BY USING THIS MORE PLEASING ROOFING MATERIAL.

The home builder who is really interested in having an attractive home is usually a good buyer for an asphalt shingle roof. Asphalt shingles are so distinctive in coloring, and so moderate in price that the owner quickly sees the advantage of using them without adding to the cost of the home he is building.

Asphalt shingles are preferred for artistic bungalow type homes like this.

As time goes on and the roofing gives perfect service without the frequent repairs that are necessary on many roofs, the owner becomes still more grateful for the contractor's advice about using them. The beauty of the coloring of the roof, and its general trimness, aid in making the house such that the contractor is proud to show. Asphalt shingles become a decided factor in adding to the reputation of the contractor who uses them.

This is a double satisfaction to the builder, because they actually show a larger profit than the common roofings. Asphalt shingles are larger in size than the usual type of roofing, and are all cut to a uniform measure. The workmen can lay them much faster and no matching is necessary. There are fewer of them needed to cover a given space of roof, which means fewer motions and much time saved. The net result of these savings is an added profit for the builder that certainly counts on a closely figured job.

A great deal of valuable information on this money saving roof is being given by the Asphalt Shingle Publicity Bureau, 843 Marquette Bldg., Chicago. Their well illustrated booklet, "The Roof Distinctive" tells about the added profits in using them and will be sent free on request.

W. H. Kestin Now Sales Manager

Mr. Walter H. Kestin has been appointed sales manager for the concrete machinery department of the Northwestern Steel & Iron Works, Eau Claire, Wisconsin.

This addition has been made necessary by the marked increase in the demand for Northwestern mixers and the return of activity in the building lines.

Mr. Thorman W. Rosholt, vice-president of the company, who has heretofore devoted a portion of his time to this work, will in the future devote more of his time to work among the trade.

Mr. E. R. Hamilton, secretary and general manager, states that they have had a substantial increase in the business during the past twelve months and that present indications seem to insure still greater gains for the coming year.

Asphalt Shingles Are Preferred for Artistic Bungalow Type Homes Like This.

Proud of His Job--

and so is every builder who puts up

Willis Skylights

They look well, last well and satisfy the customer. He wants the best for his money, and so do you. You both get it in the Willis.

Made of the highest grade materials by the best workmen—at the lowest cost. Guaranteed not to sag or buckle. Requires no solder or putty. Perfectly watertight, and gives the most light for the size.

Easy to put up, and put up to stay. If you haven't our catalog, get it today.

Willis Manufacturing Company
GALESBURG, I.LL.
A Contractor's Answer

"YES, that is a fine barn, and I can
tell you why you like it so well.

"Do you realize that I have built several
barns just like this one except the King
Aerators on the roof? The King Aera-
tors give this barn a finish that has at-
tracted your attention.

"I find that King Aerators give all
buildings that fine appearance and I will
recommend their use on all farm build-
ings in the future. They are rain, snow
and bird proof; are much lighter on the
roof, easily put on and the strongest
winds do not blow them off.

"You have heard of the King Ventilating System.
The King Aerator is the first part of
the complete King System. Some day
you will want a complete King Sys-
tem. No other ventilator works
as well with the King System
as the King Aerator.

"Therefore, buy the King
Aerator and get started right.

"I have just received from the manu-
facturers King's Book on Ventilation and
the illustrated catalog, and I would advise
you to send ten cents for the King Book,
and they send the catalog free. Their
address is

King Ventilating Company
1120 Cedar Street Owatonna, Minn.
New Nest of Saws

E. C. Atkins & Co., The Silver Steel Saw People, have just placed on the market a new combination nest of saws, which will be highly appreciated.

The nest is designed so that the carpenter may carry in practically the same space and weight as an ordinary compass saw, a 16-inch compass saw, 10-inch keyhole and 14-inch nail or metal cutting blade.

All these blades fit into a handle, making them interchangeable by merely turning a thumb lever.

Every carpenter carries both a compass and keyhole blade and the addition of a blade which will cut a kerf sufficiently wide to permit regular hand saw to follow it, will be highly appreciated.

This set is known as Atkins No. 4 and can be secured through any first-class hardware dealer who will get them for you if he does not as yet carry them in stock.

New Specialties’ Plant Incorporated by Edwards Interests

The Cincinnati Can Company, incorporated at Columbus, Nov. 23, by interests identified with the Edwards Manufacturing Company, will add another new, large and active industry to Cincinnati. The new concern is a consolidation of several small companies whose plants were in other cities. The principal company taken over was the Eureka Specialty Company, which has a plant at Ludlow, Ky., and another plant at Greenfield, Ohio.

The company will manufacture a line of sheet metal specialties, including oil cans, ice cream freezers and other miscellaneous specialties. It is capitalized at $100,000 and the plans of the company contemplate enlarging and extending the business to a considerable extent.

New Nest of Saws Being Offered by E. C. Atkins & Co.

The company will occupy the factory buildings at Carthage pike and the Big Four Railroad, formerly used by the Cellular Metal Company. The property belongs to the Edwards interests. New additions will be made to the plant. A force of 200 men will soon be employed.

The incorporators of the industry are E. W. Edwards, president of the Edwards Manufacturing Company, president of the new concern; H. W. Edwards, vice-president; O. S. Larkby, secretary; G. D. Myers, treasurer; J. C. Miller, superintendent of the plant; H. A. Greening, sales manager; G. R. Edwards, Morgan Wamsley and Daniel McLaren.

The new company advises us that they have a first class proposition for good live specialty salesmen on a commission basis, and will be pleased to furnish particulars on request. Address The Cincinnati Can Co., Cincinnati, Ohio.

Here is the Weatherproof Cannon Ball Barn Door Hanger—

Here’s the hanger that will coin money for live dealers and help them corral the Barn Door Hanger business of their community.

The tandem and flexible hanger is modified from the old reliable Cannon Ball Hanger only that the stirrup is shaped to conform to the Track.

The track is our latest design, is V-shaped and adapted to the Cannon Ball Hanger wheel. The bead of the wheel runs in a groove and the wheel has an even bearing on each side. This track is made of heavy steel provided with heavy steel splices, making it just as strong at the splices as at any other point.

The cover is the same identical cover used on Covered Cannon Ball Track construction and is the only perfect track cover obtainable, since it not only completely encloses the Hanger and Track but also extends down below the top of the door and makes a tight closure.

We also call attention to the fact that Weatherproof Cannon Ball Hangers are equipped with a Track Cleaning device which automatically removes obstructions of any kind from the groove of the Track, making it self-cleaning.

HUNT, HELM, FERRIS & CO., 304 Hunt St., Harvard, Ill.
You Can Make $3,000 This Year

Repairing and Retreading Automobile Tires
1916 will be YOUR biggest money-making year if you accept this opportunity. Success, wealth, power, independence, await the man who enters the tire repair business, at the beginning of its most prosperous period. I started six years ago and built a business of $300,000 a year. What I did in this business then, you can do now. Your chances to win are ten to one better than mine. There will be more automobiles made during the next three years than in all time before. There is nothing that offers such a certainty of success.

One Million Autos to be Made in 1916

Means Over 15,000,000 Tires

That's the amount the manufacturers are planning to produce. Every one is getting ready for the big demand that is sure to come. There is nothing that offers such a certainty of success. Think of the millions of new tires besides the tires already in use, that will need repairing and retreading. To the man who starts now in this tire repair business there is a wonderful future before him. There isn't any question about it. No business under the sun offers such sure possibilities of big success.

Punctures and Blow-Outs Are Common

Autoists are continually clamoring for tire repair work. Not a day passes but thousands of tires blow up—thousands of punctures are made and this will be always a condition with automobile tires. Repairing is a necessity. The work has to be done. Simply open a shop—the work comes along with hardly any effort. It's a business especially adaptable to carpenters and builders either as a business builder by itself or as a side line.

Haywood's 1916 Tire Repair Plants

Turn Out Jobs Quick at Biggest Cash Profits

The first in your town with the Haywood Equipment. Mends tires best and quickest. Does the work that the biggest plants in the country do. Price and directions in full. Haywood's equipment makes you a real manufac- turer—a success.

No Experience Required

Experience is absolutely unnecessary. Just a little mechanical turn and follow directions is all that is required. One machine will give you the start. Investment small. $50 and up. That's the way I did it. Business grows fast from that time on. You save money, another machine, then another, and be able to pay them out of your profits. The first thing you know you are a real manufacturer—a success.

Get All the Facts from the Big FREE Catalog

Learn all the secrets of this proposition. Get details about jobs and how to repair them. See the outfits in use. Get the stories of others who accepted this opportunity even when chances for success were not half what they are today. You will be surprised and delighted how easy it is to enter this business and your name and address only. Use the coupon on the other page. A letter or post card—but do that once.

M. E. HAYWOOD, President

Haywood Tire & Equipment Co.
696 Capitol Avenue
Indianapolis, Indiana

NOVEMBER 14, 1915

Tires to Mend the Whole Year Round

Autos are used both winter and summer. No season to tide over without any work. You are busy continually day in and day out, building a business that gets bigger and better—making you rich, prosperous and contented.

Any city, any town, any village, the man offers such sure possibilities of big success.

Free Haywood NOW!
Suppose you made $10

every time a person died in your county!

Wouldn't worry much about your income, would you?

European wars, bad crops, hard times never affect the death rate. People stop building, they may stop buying, but they never stop dying.

Now suppose you could go into partnership, with all your local undertakers—they to sell, you to manufacture—an airtight, waterproof, steel reinforced cement vault that does away absolutely with the present barbarous and unsanitary method of burial.

Would you, for example, allow anyone that belongs to you moulder unprotected in the muddy bottom of a six-foot cistern? Neither will anybody else—the moment they learn about the Norwalk Vault!

For eight years the Norwalk Vault Company has been in business. Very slowly at first, but more and more rapidly every month now the cement vault idea is growing. Undertakers everywhere are waking up to it. In the last six months we have helped establish factories in New York, Boston, Bridgeport, Providence, Albany, Syracuse, Trenton, Nashville, New Orleans, and a dozen other smaller cities in the East. Now we are moving westward again.

Our experience has led us to be willing to make this proposition to any man in or about the cement trade:

No matter what net profit you are earning now, we believe we can show you how to add 18% a year—11% more profit a month.

That is to say, a man struggling along now with only 6% on his capital should clear 24% with this new proposition, while a firm with energy and ability enough to clear 20% in any ordinary business should make 38% with ease.

How conservative are these figures you may see for yourself when you realize that after paying all manufacturing and overhead expenses, you can clear at least 100% on every vault delivered, and even then leave the undertaker an equally generous margin of profit for doing the selling for you.

On the other hand, this is no get-rich-quick game. To go into it, a man must have a little capital and be willing to work hard to build up the business. For the right kind of a man there is a real opportunity; no technical experience is necessary; no expensive factory; no big payroll; no fancy running expenses of any kind.

About one-third the territory in the United States is now taken, the rest we expect to assign during the coming year. Even as it is, letters come in every day asking for territory already filled. Moreover, prices are going up again January 1st, 1916.

So, if the proposition looks good to you on the surface, don't lose any time before making us prove it out for you. We'll be glad to show you figures, lists, maps, original letters, or to take you to the nearest factory and let you see the vaults themselves. Ask anything you want to know—our office and sales force are at your service—no obligations whatever.

The Norwalk Vault Company

40 Seminary Avenue  Norwalk, Ohio

Making Corrugated Roofing Waterproof

With the advent of galvanized roofing as one of the most serviceable roofings at moderate cost, the problem arose of making it watertight without sacrificing simplicity of construction, the feature of the original painted steel roofing that had brought about its popularity and general use.

In galvanized corrugated roofing security against leakage was obtained in lapping two or more corrugations on the side. This was expensive, as the metal involved in the lap gave no covering surface. No such security was obtainable in 2 and 3 V. crimp roofing and pressed standing seam roofing, until the Moeschl-Edwards Corrugating Co. of Covington, Ky., placed on the market roofings with a novel side-lap that has been covered by patent, and which they are marketing under the name of "Patent Corrugated Roofing," "Patent V Crimp" and "Patent 3 V Crimp Roofing." The illustration

The Patented No-Leak Joint of Moeschl-Edwards Roofing

is an exact reproduction of the size and construction of this patent lap, or crimp. It is used in connection with the three different styles enumerated above, and has proven watertight under the most severe storm conditions. Water that may be blown by the high winds, or may be drawn by capillary attraction over the under crimp, cannot fall into the building, as it is carried down to the eaves in the small gutter formed on the outside of the under crimp. The vertical rib in the under crimp supports the outside crimp while the nail is being driven thro into the sheathing boards in 2 and 3 V Crimp roofing. This vertical rib takes the place of the old style V stick. This is economy, as that expense is avoided. In corrugated sheets this patent lap is more effective than two ordinary corrugations between which water will lie if it is driven over the outside corrugation. In Patent Corrugated this water would drain down to the eaves. The Moeschl-Edwards Corrugating Co., Covington, Ky., will be pleased to furnish all inquirers with prices and samples, gratis.

Carpenters Wanted

Make money all winter—get the exclusive agency for Akron Lighting Systems, portable and street lamps and lanterns. Write Today

The American Carpenter and Builder

When writing advertisers please mention The American Carpenter and Builder.
$1000.00 COLD CASH FOR YOU

Make A Clean Fortune From Unclean Millions

Sensational New Invention! Fill Your Pockets with Gold this Winter

Carpenters, your time has come! Your opportunity is here — today! We can and positively will connect you with prosperity — an absolutely easy way to make money — more money than you ever dreamed of making without capital — over $1000.00 COLD CASH FOR YOU just out — just introduced — going like wildfire. Thousands of rapid sales in country. Remarkable demonstrations going on everywhere. Agents happy, enthusiastic, receiving — banking enormous profits daily. $50.00 clear in two days — one carpenter's record.

Every home in the land needs and wants Grab's Automatic Shoe Scraper on their doorstep. Millions are waiting to buy. The half million shipped in the last week is only a demand for millions. Business is booming — orders coming in from 11:00 to 11:00 — everybody buying — the great harvest is on — get your share of this easy money.

HAILED AS A GREAT BLESSING TO HUMANITY

This wonderful opportunity is open to you now. You are fit and ready today. Barriers removed — success immediate and generous will be yours. We want you now. You want us — you want the opportunity we offer to get the money you need. Our extremity is your one big chance to make big money.

A SCIENTIFIC AND MECHANICAL WONDER

Grab's Automatic Shoe Scraper is positively the most popular house hold article on the market today. Really and truly the only article on the market today. Really and truly the best thing that ever happened. Solves mighty problems, makes remarkable sales. Agents happy, enthusiastic, receiving enormous profits daily. $80.00 clear in two days — one carpenter's record.

A positive pleasure for any one to use—a source of never ending comfort to the housewife, to all who value cleanliness. Messy less dirt—less work — less drudgery — less shoes to buy — longer life to rugs, carpets, floors. A winner from the very start. High grade, unquestionable merit, something with class, practical and durable value, unique, original, pleasing to the eye. Simply tell the truth—that's all.

Just what this invention does. Replaces unsightly, unsanitary, rude door mat. Mud, dirt, dust, snow, dirt of all kinds removed in a jiffy. Works like magic — sells like "sixty." Ramsey, of Montana, writes: "Only forty-five families in town—have sold all."

Selling Price $1.00

That's All!

GRAB'S SCIENTIFIC SHOE SCRAPER


SATISFACTION GUARANTEED

or Money Cheerfully Refunded

MAIL THIS COUPON TODAY.

SECURITY MFG. CO., Dept. 227, Toledo, Ohio.

Gentlemen:

Please send me, without expense or obligation on my part, full particulars of your Big Money Making Offer.

Name ____________________________

Street No. ______________________

Town ___________________________

State ___________________________
Greatest Typewriter Bargain
EVER OFFERED

Only $2.00 a month until the bargain price of $29.60 is paid and the machine is yours. This startling offer has astounded the typewriter world. Absolutely the greatest typewriter bargain ever offered. For a short time only I offer a limited number of these standard Visible Writing MODEL No. 3 typewriters at this exceptional price. Perfect machines, not damaged or shop worn. Complete outfit, cover, tools, instructions, etc. Machine of standard size, but light weight and portable, keyboard of standard arrangement, writing the full 84 characters, two color ribbon, tabulator, back space, writes on ruled lines; in fact, every late style feature and modern operating convenience, at less than a third of the regular price, and each letter visible as printed and all previous writing completely visible at all times.

FREE Trial! NO RISK
My brand new Model, No. 3 offer for but $29.60—and only $2.00 per month. I want you to buy this typewriter before you see it. I want you to be absolutely convinced that this is the greatest typewriter bargain ever offered. If you have the slightest use for a typewriter you should accept this amazing offer. You cannot equal this wonderful value anywhere. When the typewriter arrives deposit with the express agent $5.60 and take the machine for a five days' trial. If you are convinced that it is the best typewriter you ever saw, keep it and send me $2.00 a month until my bargain price is paid. If you don't want it, return to the express agent, receive your $5.60 and he returns the machine to me. I will pay the return express charges. This machine is guaranteed just as if you paid $100.00 for it.

Only 100 Typewriters at This Price
There is no time to lose. Fill in the coupon and mail it today—sure. The typewriter will be shipped promptly. There is no red tape, no collectors, no chattel mortgage. It is simply understood that I retain title to the machine until the full $29.60 is paid. You cannot lose. It is the greatest typewriter opportunity you will ever have.

Bishopric Stucco Board Tests Convince Chicago Architects
On November 23rd a representative group of Chicago architects and builders assembled in the East Room of the La Salle Hotel to witness strength tests conducted by Robert W. Hunt & Company, engineers, showing the comparative strength of Bishopric Stucco Board when used as sheathing and lathing, as compared with ordinary 7¢-inch sheathing boards and wood lath construction.

Chas. Bostrom, Commissioner of Buildings of Chicago, was present to witness these tests. The engineers connected with Robert W. Hunt & Company, who had the tests in charge, had prepared panels that duplicated as nearly as possible actual construction as it would be in the ordinary stud frame building under regular working conditions. The stresses applied were equivalent to those set up by wind pressure on a building; so the test was really one of comparative stiffness of the Stucco Board construction as compared with ordinary sheathing boards and wood lath.

The results were too conclusive to leave any doubt in the mind of any one present as to the superior strength and stiffness of the Bishopric Stucco Board construction. Where the sheathing and lath panels failed at loads of from 800 to 1400 pounds, the Bishopric Stucco Board panel successfully withstood a load of 400 pounds and failed at 4400 pounds.

The editor of the AMERICAN CARPENTER AND BUILDER was present with a staff photographer and took the two photos reproduced herewith. One of them clearly shows the testing frame with dynamometer and hoisting tackle for applying loads. The load was applied in increments of 200 pounds. The movement of the upper sill of the panel was measured after each increment of load; the lower sill of the panel being held rigidly in place on the testing frame, and the load being exerted against the upper sill to force it out of place and distort the panel as in wind pressure on a building.
Carpenters and Shop Men

Here is a fast seller at the retail prices shown at the left. Our liberal dealer's discounts from these prices make you a good profit. Complete line of sizes and styles as here listed. With this agency, you can do the engine business of your trade territory. Write us now while your territory may still be open.

NEW BARN PLAN BOOKLET AND COMPLETE CATALOG FURNISHED UPON RECEIPT OF YOUR LETTER CONTAINING THE NAMES OF PARTIES WHO EXPECT TO BUILD OR REMODEL BARNS. WRITE TODAY AND LEARN MORE ABOUT MODERN BARNS AND EQUIPMENT.

J. E. PORTER COMPANY, 620 FREMONT ST., OTTAWA, ILLINOIS
will note that this photograph was taken immediately after the failure of the Bishopric Stucco Board panel; over 4000 pounds having been withstood. Evidently the secret of strength is that the Stucco Board acts as a unit to withstand the pull, and does not allow slippage of one part over another, as is the case with the ordinary 6-inch sheathing boards. You will see that the laths are pulled apart and the composition backing warped and rippled over its entire surface.

Compare this with the other photograph, taken immediately after the failure of the sheathing and lath panel which represents ordinary construction. Before this test was started, several chalk lines were drawn across the several boards so that the amount of slippage could be easily seen as the loads were applied. This panel failed at a little short of 1000 pounds.

This test at the Hotel La Salle was one of a series that the Mastic Wall Board and Roofing Company are conducting in the various cities to acquaint the local architects and builders with the remarkable strength of Bishopric Stucco Board. Mr. Allison Bishopric, President of the company, acted as host on this occasion and served luncheon to the assembled company.

Any one of our readers interested in securing a detailed report of this test should address the Mastic Wall Board & Roofing Company, 706 Este Ave., Cincinnati, Ohio.

*"The Standard" Mixes Mortar and Plaster, Too*

It has long been thought necessary when a contractor desired to mix mortar to purchase a special mortar mixer usually of the trough type with revolving blades. Many contractors using "The Standard" low-charging mixer on their concrete work have found that they could use the same machine for mixing mortars and plasters and the claim better results can be obtained than with the special mortar mixers.

On account of "The Standard" design and the discharge arrangement, its use for mortars and plasters is made possible, the discharge not clogging or preventing the free mixing of the materials. One of the first large jobs on which it was used was the Woolworth Building in New York City, all the plaster for this 50-story building having been mixed in "The Standard" machine.

The illustrations herewith show "The Standard" machine in use for mixing mortar for J. C. Nelson & Son, contractors, Minneapolis, Minn., on building 25 by 100, the same mixer was used for the concrete foundation and also for lime and cement, this being done by one man, who mixed all the mortar.

Mr. Nelson states that in the future he will use the mixer.
When the Architect Specifies
BAYONNE

He is giving his client positively the very best material for Porch Roofs and Decks, Sleeping Porches, Conservatories, etc.

BAYONNE is standard for quality because it has for years met all the requirements in a superior way. Does not leak, buckle or contract. Weather exposure does not affect its appearance or wearing qualities—and it is both noiseless and unaffected by tread of feet and drip of rain.

Very simple and easy to lay, making a clean job. No "setting" in wet paint and only one coat of paint is necessary for ordinary purposes after laying.

WRITE FOR SAMPLE BOOK "N" giving prices and laying instructions

John Boyle & Company, Inc.
112-114 Duane St. 70-72 Reade St.
Branch House: 202-204 Market St., St. Louis

VERY Asphalt Shingle roof you lay adds to your reputation in the minds of your customers. And it makes you more profit. This roofing looks better, lasts longer, needs fewer repairs and pleases the owner in a way that makes him thank you for suggesting their use.

Asphalt Shingles
"Destined to Roof the Nation's Homes"

Do not forget that they save labor—fewer to lay, large and uniform size—which means a larger profit per job. Yet with all this they cost the house owner about the same as a commonplace roof.

This Free Book Will Help You
Send for booklet "The Roof Distinction." Tells about them and suggests beautiful roofing effects.

Asphalt Shingle Publicity Bureau
855 Marquette Bldg., Chicago

Here's YOUR Chance to Learn
DRAFTING

This Complete $15 Drawing Outfit and Full Instructions in Mechanical Drawing FREE

There's a good job waiting for you. The country is facing greater prosperity than it has ever before experienced. Far-seeing men are getting ready for boom times. Get this training now and share in the coming prosperity.

MEN WANTED
FOR BIG JOBS
AT BIG PAY

This is a rare chance for a few wide-awake young men

Charles W. Morey
President of the College
and Head of a large Commercial and Technical College.

On account of the rapidly increasing demand for trained draftsmen Pres. Morey has issued orders that instruction be furnished to a limited number of young men who are inclined along architectural and building lines. Read about this great offer below—then mark and mail the coupon.

STUDY AT HOME

Devote your spare hours for a short time only and get in the class drawing the big pay envelope. Hundreds of men are in daily attendance at this old established college. In your own home you can do the same work they are doing, and the same experts that teach them will guide you toward the big job. They will prepare your instruction matter. Your work is examined and approved by them. No books to sell. Live, up-to-date blue prints of work in actual construction. These men know exactly the practical training you need because they are in constant charge of big work.

A WONDERFUL CHANCE
for Carpenters, Bricklayers, Plasterers, Foremen, Superintendents, Contractors and all other men in Building Lines.

$45 COURSE FREE

This college has set aside a limited number of Free Scholarships and will give the regular $45 Course in Mechanical Drawing Free with any one of the Home-Study Courses named in the coupon below—this is in addition to the complete $15 Drawing Outfit which is also furnished to students free. Take advantage of this unusually liberal offer today, as it will be withdrawn when the allotted number of Free Scholarships has been awarded. It costs you nothing to get full information. No obligation on you.

ACT NOW—FILL OUT COUPON TODAY

Mark "x" opposite work in which you are interested. Without obligation on you we will send full information.

- Architectural Drafting
- Builders' Course
- Estimating
- Plan Reading
- House Planning
- General Contracting

- Building Superintendent
- Structural Steel Drafting
- Sheet Metal Drafting
- Reinforced Concrete
- Machine Drafting
- Surveying

Name
Address
Town State

College or Home-Study Course

Chicago Technical College
1017 Lake View Building, Chicago, Illinois
HUMAN MINDS and perfected machinery could not make more perfect shingles than Flex-A-Tile Asphalt Shingles. There is no guesswork in their manufacture. Pure wool felt is saturated with twice its weight of high-melt, oil-free asphalt; over this we lay a coating of tough, rubber-like gilsonite; and into this is compressed under tons of pressure the beautiful crushed slate or granite surfacing.

That's why Flex-A-Tiles hold up under all conditions of weather and give such lasting service. That's why you can depend on Flex-A-Tile roofs to be a credit to the owner and a credit to the builder alike. Flex-A-Tile Asphalt Shingles save building cost because they require no painting or no repairing. Build your roofs of Flex-A-Tiles and you will build an enviable reputation and handsome profits for yourself.

Look out for imitations. Be sure you get genuine Flex-A-Tiles, made only by the Heppes Company.

Send Now for Sample Flex-A-Tile Asphalt Shingles

THE HEPPES COMPANY
1010 S. Kilbourne Ave. Chicago
Utility Wall Board No-Tar Asphalt Paint
Flex-A-Tile "Giant" Shingles Rubbertex Roll Roofing
Other Guaranteed Heppes Products

for mixing brick mortar at all times as it is the cleanest and best method he has ever used.

The mortar boxes are shown in front of the machine where the lime is slacked and preliminary mix with the cement is given. At the discharge side of the machine can be seen the mixed mortar which has been discharged.

These Shingles Are Scientifically Perfect

Charging Side of Mixer Used in Handling Mortar for Brick Work

The contractors will appreciate the advantage of this machine mixed mortar which is free from "butterflies" and better tempered and blended than hand-mixed.

The advantage of having a machine that can be used not only for concrete and cement mortar but for lime mortars and plasters is especially important to the building contractor, as he is enabled to keep the machine in use nearly all of the time during building operations.

It will also be appreciated that a machine which will mix mortars and plasters will always give a thorough mix of concrete which is much easier handled than the other materials.

"The Standard" Low-Charging Concrete Mixer is manufactured by The Standard Scale & Supply Co., having houses in Pittsburgh, Chicago, Philadelphia, New York, Cleveland, and agencies in all sections of the country. Catalog 44-1 will give complete details of their machines.

The Crescent Bench Jointer

A new tool, which has just been placed on the market, is the 4-inch bench jointer illustrated here.

The view shows the machine motor driven; machine is furnished complete with cord and attachment plug.

While small, this machine has a wide range of work and will, in most cases, do from 40 to 50 per cent of the work usually done on the large size jointers in many shops.

It is furnished with round safety head, tilting fence for bevel work, automatic guard, and has rear table arranged for rabbettting.

For straightening and squaring up the edges of boards, plank or studding, this machine will do in one operation the same work that requires a number of operations with jack-plane, fore-plane and square, and will do it much faster and better.
"Yes, Sir, You Are Now Shingling For All Time!"

"REX STRIP Shingles not only look better than wood shingles—they possess the life-time durability of the modern asphalt shingle."

Certainly this Builder knows whereof he speaks—and he likes to speak of the Rex Strip Shingles.

Because in every job they figure he can give the House Owner a fine-looking, weather-protecting, fire-resisting roof covering with a saving to himself of 50% in laying cost.

The patented strip arrangement of Rex Strip Shingles is the reason. One man now lays five shingles in the time he ordinarily would lay one. He drives six nails instead of ten—a 40% saving in time and nails. No chalking—no spacing required. Obtainable in a grayish green or dark red.

We will gladly explain the economical efficiency of Rex Strip Shingles—on request. We suggest you write for samples and full particulars today.

Flintkote Mfg. Co., Inc.

Boston . . . 90 Pearl Street
New York . . 67 Beaver Street
Chicago . . 659 Peoples Gas Bldg.

The Walter's and Cooper's Zinc Coated Metal Shingle

is coated or plated after stamping, so that every last possible spot where deterioration could start has a rich, heavy, zinc coating. The result is: Walter's and Cooper's Interlocking Metal Shingles are practically indestructible under all climatic and weather conditions. Roofs covered thirty years ago are as good now as when first put on and have never caused a cent's worth of expense in renewals or repairs in all that time. Roofing contractors make a very handsome profit handling these shingles. Ask for particulars.

National Sheet Metal Roofing Co.

333-345 Grand St., Jersey City, N. J.

Globe Fencing

Easy to erect, and easy to sell. Makes attractive appearing yards, and offers attractive profits to the builder who recommends it.

Write for our catalog, and discounts to builders.

GLOBE FENCE COMPANY, Un-Inc.

20 22nd St.
NORTH CHICAGO, ILL.

"most artistic . . . yet inexpensive"

If you would make your "dream-home" come true, study the unique artistic effects you can secure by using "CREO-DIPT" STAINED SHINGLES

17 Grades 16, 18, 24-inch 30 Colors

The best cedar shingles stained by special preservative process giving 30 different, soft-toned colors. They are rot-, decay-, worm- and weather-proof. Cheaper than brush-coated or shingles stained on the job, and they last twice as long as natural wood. All perfect shingles, ready to lay with absolutely no waste. Send for sample of colors on wood and book picturing 89 beautiful homes all over the U. S.

STANDARD STAINED SHINGLE CO., 1028 Oliver St., Na. Tonawanda, N. Y.

You are able to explain to your clients the advantages and the delightful combinations possible with "CREO-DIPT" Stained Shingles.
The motor furnished is 1 1/4 horsepower, and requires very little current to operate, but is quite sufficient to do all the work the machine is intended for.

The machine will be furnished either motor driven or for belt drive, with or without countershaft as required, and the manufacturers, the Crescent Machine Company, 224 Main Street, Leetonia, Ohio, will be glad to quote prices and full particulars.

A Chemically Treated Wall Board that Does Not Shrink

A wall board in order to be successful now must be proof against dampness because if it can take up water the continuous shrinking and swelling will spoil the looks of the wall that is made of this material. Wall board that is sized before it reaches the consumer also has become very popular because of the time that is saved in the decorating.

Plastergon wall board is chemically treated so that it is sized and waterproofed at the same time. This treatment makes the board very stiff and hard and gives an unusually good surface for painting, which is not waxy or spongy.

A sample of Plastergon board can be obtained from the makers, the Plastergon Wall Board Co., 101 Fillmore Ave., Tonawanda, N. Y., which will show the construction of this board. A coating of paint is applied at one end and shows the ideal surface of the board for painting. If the surface of the board was spongy and soft the paint would sink in so that two or more coats would be needed to obtain a uniform color, or if the surface was waxy the paint would not adhere. The single coat as applied to this wall board presents a remarkably uniform and flat surface.

Details of prices and the free sample can be obtained from the above mentioned company.

MYERS HYDRO-PNEUMATIC PUMPS FOR THE HOME WATER SUPPLY

The country folks have long been envious of the water convenience of their city neighbors. And now Myers Hydro-Pneumatic Pumps, have made possible for them the water facilities they have so long coveted.

Myers Hydro-Pneumatic Pumps

made in many styles and sizes, for operation by gasoline engine motor or other power, have extended the city water mains to every threshold. These are the pumps that pump air and water at the same time through a single discharge pipe into the pressure tank. The air, becoming compressed, forces the water to any point desired. The equipment can be placed in the basement or any convenient point out of the frost zone. It is easy to install, with a nominal upkeep afterwards and the water service is excellent. Considering the satisfaction of having a handy water supply and the ease and low cost with which it can be obtained, no one can afford to carry water by the bucket-full from some outside source. Write for a copy of our new Hydro-Pneumatic Pump Catalog illustrated in this advertisement. It will give you complete information about Myers Home Water Supply Systems.

Address Dept. C
F. E. MYERS & BRO., Ashland, Ohio
ASHLAND PUMP and HAY TOOL WORKS

Plenty of Work This Winter—If You Own a BERLIN Portable Woodworking Mill

A man with this valuable piece of equipment can do any number of things during the slack season. He can make all sorts of interior improvements—such as built-in sideboards, medicine cabinets, stair work and door and window frames, both interior and exterior, cornices, mantels, and doors, exterior and interior trim, etc. Many builders have paid for this machine and made a handsome profit, too, during the winter season.

A Machine for all Purposes

The BERLIN heavy duty Portable Saw Rig consists of a Rip Saw, Cross Cut Saw, Dado Saw, Grooving Machine, Jointer, Jig Saw, Boring Machine, Planer and Emery Wheel. It comes equipped with either a gasoline engine or electric motor mounted on the own base. It is easily moved from job to job and is strong and rigid. Guaranteed for two years.

Write for Details and Full Information Today

SCHAEFER MFG. CO., Berlin, Wis.
Novo Wins Gold Medal at Panama-Pacific Exposition

Novo wins highest honors in the hoisting and pumping field every day. Novo has a habit of winning. More gratifying than winning the Gold Medal is the assurance we receive every day from contractors and manufacturers that Novo is their best aid in beating a low bid—in equipping their concrete mixers, pumps and air compressors with the steadiest kind of power.

The reason for the wonderful success of Novo power is that Novo Engine is so simple, self contained, automatic and uniformly dependable under roughest conditions of work and weather that it delivers a steady flow of power without expert handling. A Guarantee Bond against freezing damage is furnished with each engine.

Novo ENGINE CO., 444 Willow Street, Lansing, Michigan
CLARENCE E. BEMENT, Secretary and Manager

Remember there is a Novo Hoist and Novo Pump for every kind of job up to 15 H. P.

Write us on your letterhead for free book—“Reliable Power”

$2,430 Clear Profit in 90 Days
—that’s what one man made in a town of 375 inhabitants with THE HELM PRESS

What Other Manufacturers Report:

-Landed a $90,000 Government contract with HELM Cement Brick.
-Just landed a contract for 400,000 Helm Pressed Cement Brick.
-Made a million brick this season on a HELM Press.
-Working on a contract for half a million pressed cement brick.
-My daily profits on blocks'average $25.00.
-Turned out 17,000 pressed cement blocks for one contract in less than a month.
-Six weeks behind on HELM pressed cement and block orders.

Be a Manufacturer of Pressed Cement and Brick Blocks

The greatest opportunity in America today and open to you right in your community. Pressed bricks and blocks are a staple; a billion bricks used annually in the U. S.—and blocks are just as necessary. Millions in actual profit are made annually out of these products. Builders in small towns and big cities buy them in place of wood, stone and clay because it reduces building costs. How much of this big profit do you pocket?

It Will Earn You $20 to $50 Daily

With a HELM Press you can start a big money making business with small capital and even without experience. The HELM PRESS makes pressed cement bricks and blocks under 80,000 pounds pressure—1,000 blocks or 10,000 bricks daily—without tamping, burning or hard work, ready for the market in a few days. There's a big demand right in your own community for brick and blocks made by pressure; equip yourself to supply it.

Send for this FREE Concrete Book. Fill out and mail the coupon before you turn the page. It brings a free book telling all about the HELM PRESS, the HELM Brick and block system and the DRY WALL system. It tells how each product is made and sold and outlines the method by which you can begin a profitable business. Write today—and don't forget the coupon.

The Helm Brick Machine Co.
271 Mitchell St.
Cadillac, Mich.

The Helm Dry Wall Building System
Appeals to architects, builders and contractors. Overcomes any objection to concrete because it insures absolutely DRY WALL construction. Makes rigid and fireproof walls, and is economical for the building contractor because it requires no furring or lathing. It is bound to get you business because it's so good.

The Helm Brick Machine Co.
271 Mitchell St.
Cadillac, Mich.

Please send FREE the book on concrete and HELM Presses, to

Name:
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When writing advertisers please mention THE AMERICAN CARPENTER AND BUILDER
EVENY architect, contractor and builder is entitled to one of these new books free for the asking. It is a valuable handbook on interior finishing, beautifully illustrated in nine colors.

It tells how to finish inexpensive soft woods as beautifully as hardwoods and gives complete specifications for finishing woodwork and floors with

Johnson's Wood Dye

These dyes are not pore-filling varnish stains but coloring matter that penetrates deeply into the wood without raising the grain.

Johnson's Prepared Wax

is the most extraordinary polish for interior woodwork and floors. It gives a hard, dry, glass-like surface that does not collect dust.

If you are not familiar with Johnson's Wood Dyes and Prepared Wax we shall be glad to send you samples for experimental work or finished wood panels showing the various shades of Johnson's Wood Dye.

The Oshkosh "Handy Man"

The real name for this general utility machine is the Oshkosh Back Filler, but every contractor that has installed one or more of these little hustlers has named them "The Handy Man." For there's hardly a job of any kind, in any sort of construction work, from pipe laying and concrete work to chimney building, that does not need a "Handy Man" on the work.

On a frame of 6-inch by 8-inch channel steel is mounted a 6 H. P. Novo gas engine. This is chain and sprocket connected to the clutch of the winding drum. Connection between this and the drum is by wood friction. The speed of the cable on the drum is 125 feet a minute. The cable runs directly down from the drum and then through a swinging sheave to the scoop or scraper. This insures the cable winding smoothly and evenly on the drum, no matter from what direction the pull comes. This is an important feature.

The operator stands on the platform at the back of the machine. He drives the “Grader” alongside the work—for it is a self-tractor and needs no horses to handle it—releases the cable, and has the laborer pull back the scraper across the pile of dirt to be moved. If the earth is heavy and sticky, it is sometimes necessary to have two men handle the scraper; but in most cases one can do it. When the scraper is set in the dirt the operator pulls in the clutch and the engine pulls the loaded scraper to the point wanted, where it is stopped, instantly, and the operation repeated.

By the swinging sheave construction can be worked from almost any angle, and there is no need to watch the cable on the drum to see that it is winding smoothly. In direct winding drums this is a serious fault, for the cable is apt to pile and unwind unevenly and hard.

But even if you are not entirely, or at all, in the moving business, you will find dozens of uses for the "Handy Man." Water and gas pipes or sewer tile can be laid into the trench and the trench filled as the work progresses. Public utilities and contractors for them find a use for this outfit. It will pull cables through conduit and brake the stretching of line and wires can be rapidly and easily handled. By means of the pawl and brake the stretching of line and trolley wires can be rapidly and easily handled. The drum draws up the cable to the proper tension and the brake holds it immovable at that point. By throwing a pulley in a sling at the top of a pole, a whole bundle of cross arms can be raised and held for bolting in place. The "Handy Man" will pull two steel rails into place while six (6) or eight (8) men are getting ready to move one.

In erecting jobs the "Handy Man" is always in demand. He lifts material to the workmen. He runs pumps and can, in emergency, run the concrete mixer. With a small

The Oshkosh “Handy Man” for General Construction Work.
Contractors Using Berger Materials are “Making Good” and Making Money

No Supports for Short Spans
Berger’s Ferro-Lithic Reinforcing Plates are used extensively for reinforcing and centering concrete slabs for flat or arched roofs and floors, sidings of buildings, sidewalks, etc. Made of a series of dovetailed members running full length of the sheet, which stiffen the plate and furnish a key for bonding the concrete and plaster.

Makes Plaster Go Farthest
Berger’s Expanded Metal Lath. A minimum quantity of plaster will go farthest and make a practical job on stucco walls, partitions, ceilings, and every other kind of work requiring plaster. The diamond shaped openings are small and expanded so that the plaster clutches perfectly. Standard sheets are 18” wide by 96” long.

Reduce Cost and Dead Load
Berger’s Pressed Steel Corbels will enable you to do this in both light and heavy long-span construction. Our standard size has a 30-inch base with flanges adapted for making concrete cores 34” on centers. Ceilings can be erected after all wires and pipes are placed. We make both Permanent and Removable Corbels.

Save Money and Material

Use Berger’s Metal Lumber Instead of Wood
The reasons are obvious. It is stronger and more durable, and officially proven to be fireproof and indestructible. It is also sound-proof, damp-proof and vermin-proof. Not affected by climatic changes and can be installed in winter just as well as in summer.

We cut and number each unit to fit your plans—you put them together on the job, thus making erection easy and saving considerable money in time and labor. Use Berger’s Metal Lumber for safety, economy, permanence and satisfaction. See Sweet’s, pages 278-285, also write for Catalog L 1-8.

The Berger Mfg. Co., Canton, Ohio
Branches: Boston New York Philadelphia Chicago St. Louis Minneapolis San Francisco
Export Dept.: Berger Building, New York City, U. S. A.

More Money in 1916
For BETTER BUILDING
There is less wood lath and of inferior quality — Don’t neglect the opportunity. Metal Lath, for both Exterior and Interior construction, is a good thing — push it along!

“Bostwick Truss Loop”
Reduces the Cost — Write Us, HOW?

The BOSTWICK STEEL LATH CO., Niles, O.
derrick to assist the machine, it will pull out shoring planks and concrete forms. And for unloading material wagons, there is a saving over the hand method of 75 per cent.

If you want to hire this "Handy Man," write to the Oshkosh Manufacturing Company, Oshkosh, Wisconsin, and they will tell you the terms. And they are mighty attractive.

**Square Column Band Saws and Knife Edge Strains**

Square column band saws, of which J. A. Fay & Egan Co. are the exclusive manufacturers, have established a world-wide reputation for reliability and economy.

This company states that these square column saws, which are made in 30, 33, 36 and 42-inch wheel sizes, permit the operation of the wheels at a much higher speed than other types, greatly increasing the cutting capacity of these machines. The wheels are made of iron and steelを通木 being used in their construction. The lower wheel is solid, operating like the fly-wheel of an engine, to give great momentum to the light spoked upper one, preventing overloading or choking down in a heavy cut.

The upper wheel is carried in the famous Fay-Egan patented knife edge balance tension device, which is made on the same principle as a fine laboratory scale. This tensioning device is absolutely positive in action and sensitive to the slightest degree, compensating for the contraction and expansion in the blade caused by temperature changes. Even while sensitive to so slight a degree, it is flexible enough to pass a large block of wood between the blade and wheels, while the machine is in operation, without causing any damage.

The combination of the square column, the solid lower wheel and the knife edge straining device is what has made Fay-Egan band saws so successful.

In actual operating tests, the makers say these square column band saws have demonstrated their ability to do from two to three times as much work at a blade upkeep expense of one-half the cost, as compared to the old style "gooseneck" machines.

Further information covering this line of band saws can be had on application to their main works, 545-565 W. Front Street, Cincinnati, Ohio.

"Heavens!" shrieked the heroine. "I am undone!"

"Let's go at once, James," whispered the lady from Manayunk; "I ain't goin' to watch no disrobin' act."

**KEEP YOUR MEN BUSY**

THIS WINTER AT A BIG PROFIT TO YOU

There are many masons, building and cement contractors who are making big profits in selling and laying "SANTILITE." It enlarges that branch of your business where there is little competition in your own locality, and it is especially attractive for it keeps your men profitably busy during the closed or Winter Season.

Write for samples, illustrated instructions for laying "SANTILITE," and our proposition to make your winter work profitable.

**SANITARY COMPOSITION FLOOR CO.**

131 Plum St. SYRACUSE, N. Y.
Don't Pay For Your "Ellis" without getting it

Every carpenter or contractor who does not use a reliable engine is paying for the engine without getting it. He pays for it in lost time, and in labor costs. You can buy an Ellis Engine out of two weeks' wages to one workman; and your Ellis will give you reliable service for many years.

Ellis Engines are America's favorite with carpenters, contractors and builders. Very compact in design; light in weight in proportion to power. Easy to operate; no cranking. Run either way; reversible while running. They work successfully on common cheap lamp oil at a fuel cost of

6 cts. for 10 hours

for each horsepower developed. Just the thing for woodworkers, rip-saws, planers, cement mixers, hoists; in fact, for every job where power can be used. Write for free book, "Engine Facts," giving valuable information and full details of our 30 Days' Free Trial Offer, with opinions of users from all parts of the world.


METALLIC BATTEN STRIPS

PRACTICAL—EVERLASTING—ECONOMICAL

These Batten Strips of Galvanized Metal will never warp, split, or draw away from the boards. Offer no obstruction to sliding doors. Allow for expansion and contraction of the siding. Made in 6-foot and 10-foot length with interlocking joint. Fastest cut, no waste. Nailed directly to siding with small nails.

End view showing joint closed.
End view showing joint open.

Metallic Batten Strips make stronger, new joints. They make the building wind-proof, weather-proof and rat-proof. Also valuable for lining grain bins or wagon boxes.

Write for Free Sample and see for Yourself

METALLIC BATTEN COMPANY . Owensville, Indiana

Just a Word to Your Customers—and the Wallace Portable Collapsible Lamp is practically sold—with a nice profit for you.

All you have to do is demonstrate the lamp, and nine out of ten among your customers will buy it. It's so handy—

Stands, hangs, clamps or sticks any place—at any angle and when not in use folds up into a compact ball. Made in Brass, Bronze or Nickel, and reasonable in price.

You can appreciate its advantages, and so will your builders.

Drop us a postal today for our liberal proposition.

WALLACE NOVELTY CO.
22 E. 41st Street
NEW YORK

Lots of Money and Plenty of Work

for the man who installs Pullman All-Metal Weather Strips. The easiest and most profitable side line ever offered to a contractor.

Get the agency for your town now, before someone beats you to it, because we offer exclusive territory to only one man. Write immediately for sample and terms of our agency offer.

Pullman Metal Weather Strip Co.
York, Pa.

The owner of this house saved $21.15 on his fuel bill during five months of severe winter weather a saving of over 20%. His wife wasn't bothered with dust, dirt or drafts. Every window was equipped with Pullman Strips.

When writing advertisers please mention the American Carpenter and Builder
"Instruction by correspondence is the cheapest and best way for the poor man"

Edison is Right!!!

You admit the International Correspondence Schools are a good thing. You'd take a course right now "if"—"except"—

"If" what? If you weren't so "overworked," with such "long hours," or had more strength and energy?

Wasn't it Edison who stayed up half the night to educate himself in spite of every handicap you could ever have?

All big men who have made their mark in the world had the ambition—the determination—to improve their spare time, to train themselves for big work. You, too, can possess power, money and happiness if you'll only make the effort. The reward is great—it's worth it.

Here's all we ask: Merely mail this coupon. Put it up to us without paying or promising. Let us send you the details of others' success through the I. C. S., and then decide. Mark and mail this coupon now.

INTERNATIONAL CORRESPONDENCE SCHOOLS
Box E-8126 Scranton, Pa.


eXplain, without further obligation on my part, how I can qualify for the position before which I mark X

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<td>Box E-8126 SCRANTON, PA.</td>
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New Hand Book for Builders

Engineers and contractors concerned with the building of reinforced concrete construction are as a rule interested in obtaining all of the latest information and data on this subject. We show herewith a picture of the new hand book just issued by The Berger Manufacturing Company, of Canton, Ohio. This book is well illustrated and contains such data as tables of safe loads, specifications for installing and descriptions of proper materials to use for various kinds of construction.

Any architect, engineer or contractor may secure a copy of the book by writing to the above named company.

The Uniform Mortise Sash Balance

In many buildings there is a certain width of space available for windows; and the difference of a few inches in the width of the glass attained in the several methods of window construction makes a surprising difference in the lighting. Various methods of construction have been employed to accomplish this result and one of the best ways is by the use of sash balances.

With the sash balance the greatest possible space can be utilized for glass because the box frames for the sash weights, cords, and pulleys are eliminated. An absolutely uniform tension is maintained by the spring so that the sash will be perfectly counter-balanced at all positions.

The type of balance shown here is made in three classes. These classes contain types of...
Use Stanley's
No. 1775
Wrought Steel
Garage Door
Stay and Close
the Doors with
One Hand from
Inside the
Garage

MADE of 1-inch angle iron it has
great strength and leverage.
Throwing the door open, sets the
stay and a slight pull on attached
chain releases the lock and draws
door shut. Weight 83 pounds per pr.
Write for descriptive circular "A."

Mr. Builder, here's a chance to
make good money all this winter

We offer to every carpenter who is a good business man, an
opportunity to turn the dull season into a prosperous, money-making
time—a chance to do a little work at odd times in any month in the
year and make a handsome profit. Thousands of builders are working
with us—thousands are turning their business ability to their own
advantage. Read what some of them say in the next column.

Read What These
Carpenters say:

I haven't been able to put in much time on your proposition, but I enclose seven orders. These will help sell others who are wait-
ing to see how the closets work.
ED. LAMEN,
Flora, N. D.

I set my closet up in my office and sold it the next day. Enclosed find six more orders.
S. W. CASSIDY,
Herkimer, N. Y.

Enclosed find five orders. One is for a sample for expected. The other four I sold right from your catalog.
C. F. BERTHELESEN,
Clear Lake, Iowa

Please hurry shipment of closets. I sold two today with-out doing any selling at all. They sell themselves.
C. B. LA HUIS,
Grand Rapids, Mich.

AMERICAN CARPENTER AND BUILDER

You Can Build
in the Winter

Cold weather and flying snow need not be effectual
barriers to winter building. You can quickly enclose
your building, as many others have done, by using

Ro-San Indoor Closet

This is a modern, healthful, comfortable, sanitary fixture that
you can introduce to your customers, at a profit. It eliminates the
vile, germ-breeding outdoor privy. This is a chemical closet—effi-
cient and odorless—that may be installed right in the house. The old
privy breeds disease in summer and is cold and unhealthful in winter.
The Ro-San Indoor Closet brings health, comfort and convenience
to the house, the office, school, factory. Endorsed by health boards.
Recommended by physicians.

Easy to Install

Get it up in half an hour, clothes closet—anywhere. Comes complete, ready for business. Easy to set up as
a heating stove.

Our Guarantee

We back this closet with our guarantee—If it doesn't satisfy your customer, we'll buy it back. It has to make
good. The buyer is the judge.

Our Proposition to You

We distribute these closets through local builders. We don't expect our agents
to peddle them. We establish you in a dignified paying business. We assist
you in building up that business. Write today for catalog and our agent's pro-
position—write before some other fellow gets the exclusive agency in your town.

ROWE SANITARY MFG. CO., 198-C Sixth St., DETROIT, MICH.
ances to carry sash weighing from 6 to 100 pounds. This Caldwell Sash Balance also has another advantage in that the form has been changed so that a uniform mortise can be used. These mortises can thus be cut at the mill, which simplifies the installation to a large degree.

A copy of their catalog describing the Uniform Mortise Sash Balance can be secured by writing to the Caldwell Mfg. Co., 15 Jones St., Rochester, N.Y. This catalog will give full particulars of their product.

**Diamond Slab Asphalt Shingle**

The Heppes Company are introducing a new shingle, the Diamond Slab "Flex-A-Tile" asphalt shingle. As the name indicates, this new shingle is built in the form of a diamond; and there's sound reason for this idea, for the diamond shape permits of a more economical arrangement of the shingles on the roof; in fact, the economy in this respect is so great that the makers say there is an actual saving of 33 per cent in material without changing the protection qualities of the shingle. This diamond shape is the patented feature which differentiates the diamond slab shingle from any other asphalt shingle and which guarantees the dealers who sell it that there can be no infringement by imitators.

Next to the saving in material comes the big saving in labor—an economy that amounts to 75 per cent. Instead of laying the shingles one at a time, the diamond slab "Flex-A-Tiles" are self-spacing and are laid four at a time. In this connection should also be noted the 35 per cent saving in nails, for when laying fewer shingles consequently fewer nails are required.

The Heppes Company, who are located at Fillmore Street and Kilbourn Avenue, Chicago, will gladly send liberal samples together with interesting descriptive literature, price quotations, etc., on their new Diamond Slab "Flex-A-Tile" to any dealer, contractor, builder or architect. We advise every reader of this issue to write the Heppes Company at once and secure all the facts about this remarkable new asphalt shingle.

**Merchant & Evans Company Move to New Offices**

The principal offices, warehouses and factory of the Merchant & Evans Company, are being moved from their old address, 517 Arch St., Philadelphia, Pa., to 2019-2035 Washington Ave., Philadelphia. This change is announced to take effect Jan. 1, 1916. The Merchant & Evans Company will celebrate their 50th anniversary this year. They have been engaged in making metal specialties and metal building materials for the past fifty years. They have plants in Philadelphia, Wheeling and Chicago.

**PLASTERGON WALL BOARD**

The chemically treated wall board that does not shrink

For every kind of building, PLASTERGON WALL BOARD is best because it is absolutely dependable. It is hard and stiff enough to lay smooth over studs and joists WITHOUT WAVING. Dampness has NOT EFFECT on it and the waterproofing not only lumberizes the board but also saves it, saving you from $4.00 to $6.00 per thousand. BUT DON'T TAKE OUR WORD FOR THIS. Get samples of WATERPROOF Plastergon, test them and then order some of the board. The price will surprise you. Send today.

PLASTERGON WALL BOARD COMPANY, 101 Fillmore Ave., TONAWANDA, N.Y.

**Spanish Tile**

**Address** The Moeschl-Edwards Corrugating Co. Covington, Kentucky
Fiberclic

For Walls and Ceilings

Your clients look to you for the new, the serviceable and the beautiful. On this basis alone Fiberclic merits your serious consideration. Numerous effects can be inexpensively secured by the use of Fiberclic.

Fiberclic is made from long, tough, imported root fibre. It is chemically treated to insure strength, durability and rigidity, odorless, sanitary and fire resisting.

Fiberclic is nailed right to the studding, and is far cheaper than lath or plaster. It can be used for any surfacing, and offers an endless variety of effects.

Send for a sample of Fiberclic, and give it a thorough test, also ask about the special Fiberclic paints and stains.

THE FIBERCIC COMPANY, Camden, N. J.

For Durable Painting of all kinds, specify

Dutch Boy White Lead

Anchors into wood pores. Stretches and shrinks without cracking. Wears well. Looks well.

Write for general painting specifications and chart of 39 color treatments—Ask for Folders A

LET US PUT BOOK IN YOUR HAND!

IT IS BRIMFULL OF SUGGESTIONS THAT WILL ACTUALLY HELP YOU MAKE GOOD MONEY DURING THE LEAN MONTHS WHEN OUTDOORS WORK IS IMPOSSIBLE.

This book tells just where hundreds of other carpenters have found this work, and how they have turned it to profit. Shows how you can do the same. There are scores of jobs right in your locality just ripe for the Ceiling Board man. Attics and cellars to finish, summer kitchens, garages, churches and stores to improve.

Write today for your FREE copy

THE PHILIP CAREY COMPANY

The Compo-Board Company
5777 Lyndale Ave. No., Minneapolis, Minn.

For Convincing Reasons Why You Can Save Labor, Time and Needless Expense by Using Curtis 1866 Woodwork and Built-in Permanent Furniture.

Any reputable lumber dealer can supply Curtis products. Go with the owner and look over Curtis designs. Both of you will be better satisfied. Let us prove it. Write today to Service Bureau.

THE CURTIS COMPANIES
Clinton, Iowa

Let Us Put Compo-Board In Your Hand!

You'll never find another building material or wall lining like this—none so flat and strong, with so slight a tendency to warp or shrink; none so easily handled, sawing so clean and smooth; none so durable; none with such a stubborn resistance to air, cold, heat, moisture and fire; none so adaptable to so wide a range of uses.

Compo-Board has all these features as a result of its patented wood core construction.

How important it is then that you get Compo-Board when you ask for it. You can't be fooled if you look for the wood core, for it is easily and quickly identified.

You can get just the amount you need for any job in strips four feet wide and in even lengths up to 16 feet long.

Sold by dealers everywhere. Write for interesting book and free sample piece.

The Compo-Board Company
5777 Lyndale Ave. No., Minneapolis, Minn.
A Transit or a Level in Twenty Seconds with One Instrument

In normal position this instrument is a high grade architects level; but only 20 seconds are needed to convert it into a builders transit that can be used for all parts of the construction work for which the transit is fitted.

This is accomplished by the use of a special attachment, consisting of a pair of standards, which is attached to the frame of the level. This attachment can be fitted to all makes of levels beside their own. In order to make it fit, the level must be shipped to them and they say that it generally can be returned in two days, as they have a stack of attachments on hand.

The attachment makes the level into a most complete transit as it has a vertical circle, two levels, two clamps and the necessary tangent screws for close adjustment.

This Transit-Level is made by Geier & Bluhm, 5 Front St., Troy, N. Y. They will be glad to send prices and details on request to any of our readers that are interested.

Inside the Fiberlic "White House"

In our December issue we illustrated the exterior of the Fiberlic "White House," built by A. N. Hanson, Atlantic Highland, N. J. This is one of the most attractive and modernly constructed bungalows along the Atlantic Coast.
It is small, but important. And it grows in importance when your customer sees the broken windows, battered foundations, dirtied walls and lawns, and possibly a burglar or two, due to the inefficiency of weak, clumsy chutes. But if you suggest—

Canton Coal Chutes

Your customer is assured of protection against all such annoyances, and you profit in his satisfaction, and more materially in bigger profits. Because there are big profits in handling the Canton.


MAJESTIC Coal Chute

When planning a new home arrange for this modern building necessity in the foundation plans. It keeps the careless coal man from mangling and scarring the sides of the house every time he delivers coal. Saves the lawn, wall, flowers and shrubs from being ruined by coal dust and stray lumps.

The Majestic when closed sets flush with the foundation. It has a glass door which serves as a window when chute is not in use for receiving coal and gives splendid light to the basement. The glass is protected when chute is in use by special iron plate.

The Majestic is a cellar window as well as a coal chute.

Burglar Proof—Strong—Durable

The Majestic locks from the inside securely and is absolutely burglar proof. It is extra durable, and will outfit the building. It has a heavy steel body, segmented door and inner glass保卫器 which when open the top portion comes out.

Thousands of owners use them. Contractors endorse them and specify their use in all the new modern structures.

FREE BOOK gives full information regarding Majestic Coal Chutes, Underground and Kitchen Garbage Receivers, Majestic Milk Hopper and Package Receiver, Burglar Proof Basement Windows, Store Chutes and other Majestic Specialties. THE MAJESTIC CO., 505 Erie St., Huntington, Ind.

$1200 IN COLD CASH Made, Paid, Banked in 30 days, by STONEMAN — $15000.00 To Date

This offer is open to you—this money—the cold cash—can be yours.

You got it alone by waiting too long can lose it. Investigate today—get the proof, send your name and address—but no money—this very minute.

$1000.00 PER MAN PER COUNTY

Experience unnecessary—business supplies the capital. Payments start the first day and continue daily up to $1000.00 per month, per county. This offer has been quietly picked by men from all walks of life, carpenters, ministers, clerks, farmers, doctors, lawyers, teachers and anyone—enabling them to buy with our help and $50.00 on approval to get what we have offered for—you—$1000.00 per man, per county.

Spend 1 cent to make thousands

Strange invention startles world. Gives every home that wants it a chance at good fortune. Only a few homes every county will ever own. Invest now and live in the joy of giving others that which you have had. Always use both hands. No experience necessary. 

Demand absolute proof—accept no other kind. Either we have the best thing that ever happened or we're colossal liars. Ask Schleicher, minister, whether it's true that he received $195.00 twelve hours after appointment. 

HANCOCK HOUSES

Made, Paid, Banked in 30 days on $100.00 down payment. In 30 days, $1500.00 to date. The offer is open to you—$1000.00 per man, per county. Asking to be shown doesn't obligate you one bit. Investigate today by all means.

ALLEN MANUFACTURING CO., 110 ALLEN BLDG., TOLEDO, O.
ing and fire retarding. This combination makes Fiberlic especially attractive to the home-builder. It is especially significant when used in quantities for living rooms and sleeping apartments.

The Fiberlic Company endeavors to co-operate with builders and contractors and for this purpose, maintains an Architectural Department, which is always at their disposal in the matter of furnishing specifications and designs for wall board construction. They will be pleased to send, post-paid, sample of their product on request.

**The Building of Artistic Clocks**

It has been reported to us that our readers have shown unusual interest in the winter work suggestion of the Clock Company, 1655 Ruffner St., Philadelphia, Pa. The proposition they have is different from most of those offered. They furnish plans and blueprints of clock cases of various kinds. They also furnish the works—chime clock works, cuckoo clock works, simple clock works, any kind and size you want to go inside your clock. They handle their proposition in several different ways, so that it is applicable to everyone, whether skilled or not. They will furnish the more complicated parts of the case where the workman does not have the necessary tools for this type of work. They will also furnish the complete case in knockdown form so that the amateur can readily do the work. For the skilled workman, they furnish only the plans and the works and he can use his own ingenuity in making the case and putting it together.

Complete details of the plans they are offering and the types of works that they can furnish can be secured from the company. Many of our readers would, no doubt, find this a profitable way to spend their time during the dull seasons. It's lot of fun, too! Write today for catalog.

**Typewriter Bargain**

In making your estimates for spring business you will find that by having them typewritten they will be in much neater and cleaner shape and will improve your chances of getting the business.

You, of course, cannot afford to pay $300 for a typewriter for the limited use which you would have for it, and Mr. Harry A. Smith, 231 N. 5th Ave., Chicago, has realized this and is advertising in this issue a standard visible writing typewriter for less than one-third that amount, and on small monthly payments. This machine is standard in every way with all the latest operating conveniences. It is guaranteed.

Mr. Smith has unlimited confidence in the ability of his typewriters and sends them out on free trial so that you may see for yourself that you are getting a bargain at the low price for a standard visible writing machine a carpenter and builder cannot afford to be without a typewriter.

We urge that you read carefully his ad in this issue.

**JAMES Ventilators**

The better looking your barn jobs are, the better advertisements they are for you in the localities where you build them, and the more money you make. JAMES Ventilators mean better looking barns, pleased owners. They give you a strong selling point in favor of your service. The JAMES system of barn ventilation is vitally important. It creates sanitary conditions in the barn—healthy cows, increased milk yield, bigger profits.

JAMES Ventilators have the right principle; they pull foul air out of the barn and force fresh air in. They are handsome and add much to the attractive appearance of the building.

Learn about JAMES Ventilators—and also about JAMES Blue-Print and Barn Building Service—and be sure to write for the free book, "Building the Dairy Barn." Give names and addresses of people in your vicinity who expect to build or remodel barns, when, and for how many cows, and book will be sent at once.

**Building Books Absolutely Free**

Postage Prepaid
Your Choice of Any One of Twenty Building and Plan Books
Write for Descriptive Circular Telling About Our Great FREE Offer

AMERICAN CARPENTER AND BUILDER
1827 Prairie Ave., CHICAGO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
They Ventilate From the Ground Up

Foul air must be drawn from the building and fresh air substituted. Cupolas do not ventilate. The cross currents drive the foul air back and the wind entering creates draughts. Besides dampness, snow and rain can get into the building through a cupola.

ROYAL VENTILATORS

draw the impure air upward and outward from all parts of the building because they are purposely made to do this. The process of exhausting foul air and substituting pure air goes on without interruption of any kind. No wind, rain, sleet or snow can enter the building through the Royal. It keeps up a constant circulation.

You can rely on Royal Ventilators. Made from heavy gauge galvanized iron or copper as desired and thoroughly guaranteed. They are rust-proof. Service and efficiency have placed the Royal far ahead of all other ventilators.

WRITE FOR CATALOG

ROYAL VENTILATOR CO.
417 Locust Street
PHILADELPHIA, PA.

Making Concrete Attractive

Instead of the dull blue-gray cast or blotchy effect common to cement, a concrete or stucco house will take on all the rare beauty of Grecian architecture with one or two coats of Bay State Brick and Cement Coating

This is a lasting, waterproof coating in white or color. When applied it becomes part of the construction—fills the pores of the cement and makes a white bright surface. Preserves the distinctive texture of concrete or stucco.

Sample Can Free
Just write for it, specifying color you prefer. Try it out. Also ask for color card and booklet 30.

Paint and Varnish Makers
New York Office: Architects' Building

Increase Your Profits

You can easily make more profit on every barn you build by seeing that it is equipped with O. K. CUPOLAS

They are the easiest to erect—are shipped ready to install. Absolutely Bird and Storm proof. O. K. Cupolas sell themselves. Special prices to Contractors and Builders where name not represented. Get these additional profits. Let us show you the way. Full information sent FREE. Write today.

Phillip Bernard Co.
2400 Flood Avenue
Sioux City, Iowa

Northfield Aerdomes

Make Builder's Profits


Write today
Northfield Iron Co.
412 Water St.
Northfield, Mass.

Monitors Aerdomes

Should be on every barn you build. They come all put together. No frame to build under roof. Can be erected in five minutes. Absolutely Bird and Storm proof. We sell direct to contractors where we are not represented by dealers. Write for our special proposition to contractors and our complete catalog of Ventilators, Cupolas, Skylights and Sheet metal Specialties.

B. F. Lichty & Sons Co.
Sta. A, WATERLOO, IOWA
New KisselKar Truck

In its new line of seven chassis sizes of commercial vehicles for 1916, the Kissel Motor Car Company of Hartford, Wis., springs a surprise in the announcement of a new 3½ to 1-ton worm-drive truck at moderate price.

The details of this new truck are given out for the first time and a careful examination of the specifications indicates an unusual value that is declared to have been more than realized in the exhaustive and varied road tests that have taken place. It is further stated that this model is being produced in quantity and is ready for immediate delivery at several of the company’s leading agencies.

The worm-driven rear axle is of David Brown construction, with 56-inch track and 39-inch spring centers. The worm wheel and differential are mounted as a single unit in a cast steel carrier placed in the center housing of the axle.

The engine is a powerful Kissel-built, 32-horse-power, four-cylinder motor with bore of 3½ and stroke of 5½. It is cast enbloc. The motor bearings are of the highest quality of white bearing metal, steel-backed and babbitt lined. The valves are of special gauge steel, tightly enclosed in compartments that are proof against oil and dust. The valve covers are quickly removed.

Carburetion is by a highly efficient special carburetor of Kissel design and Stromberg manufacture, mounted high to promote accessibility. The carburetor is fed by the Stewart-Warner vacuum system, which guarantees a uniform and always dependable flow of fuel, does away with all the well-known deficiencies of pressure and gravity feeds and promotes gasoline economy.

The clutch is a cone type, leather faced and with adjustable spring inserts that allow unusually easy and gradual engagement. It is readily reached for adjustment thru the floor of the truck, without disturbing any other unit. Drop-forge and heat-treated 1-beam section connecting rods; split nut and worm type steering gear; Mayor or Fedders radiator; center control levers and hand throttle; foot accelerator; high tension magneto ignition—these are notable points. The entire power plant is independently suspended at three points and is easily removed.

A standard express body is furnished for $150 additional or special bodies are built, as desired. If the buyer prefers to have the body built by a local body builder, blueprints are furnished by the factory on request.

The material used and the mechanical details of the other six models of KisselKar trucks are similar to the 3½ to 1-ton truck, except that the 1,000-pound delivery is shaft driven and the 2½ to 3, 3½ to 4 and 6-ton sizes are chain driven, that construction being considered best for heavy duty. The 1 to 1½ and 1½ to 2-ton trucks have the David Brown worm-drive construction, the same as the 3½ to 1-ton.

A Fuel Chute Protects the Building

In building new homes or remodeling old ones any building specialties that will assist in keeping the house in good condition should receive careful attention. One of these specialties that has a marked effect on keeping up the appearance of a building is a fuel chute. An ordinary window is rapidly broken up by the coal striking the frame and the panes.

The chute shown here will protect the building and will retain its substantial and pleasing appearance under the
UNFADING
ROOFING SLATE
and Slate Blackboards
Best to be had and made in
Slatington—Buy from us
Slatington-Bangor Slate Syndicate, Inc.
Slatington, Penna.

THE ROCK OF AGES CLEFT FOR YOU
HELD ON
THE ROOF FOR AGES ALWAYS NEW

ECONOMICAL—ARTISTIC—FIREPROOF

OUTLAST the building. First cost, only cost. The only roof you can afford to consider for a permanent investment. Artificial substitutes bring endless expense for upkeep. Post a postal and get posted.

F.C. SHELDON SLATE CO., Granville, N.Y.

YOU'RE MISSING A BET
MR. CARPENTER
IF YOU ARE PASSING UP THE METAL SHELTER GAME

IT'S THE BEST BET YET

The METAL SHELTER Agency gets you more business, more customers, more work for your men, more money for you, better and quicker results, and—get this—
A REAL BUSINESS OF YOUR OWN

Don't wait. Get the agency for Metal Shelter Garages, Cottages, Bungalows, Stores, etc., before the other fellow beats you to it. You can sell 'em, and it's a cinch to set 'em up—a building a day. THINK! Investigation costs you nothing. Write right now.

Metal Shelter Co., Inc.
Whitehall Bldg. New York City,

AMERICAN CARPENTER AND BUILDER 153

San-a-Bestos Stucco--
FIRE-PROOF : DAMP-PROOF : CRACK-PROOF

San-a-Bestos Stucco lends itself to the most artistic and pleasing finishes—finishes that are permanent and require no painting. It is not affected by climatic conditions, and possesses flexibility that gives with settling.

Franklyn R. Muller Co.
Waukegan, Ill.

San-a-Bestos composition flooring.

We manufacture
San-a-Bestos composition flooring.

Write for information.

The House with a SYKES Metal Lath Backbone

Metal Lath—surely! That's the true backbone of strength. But what kind of metal lath? It is well to remember that weight adds rigidity and durability; and that Sykes Expanded Cup Metal Lath, having wider strands, is much heavier than others cut from the same gauge. Judge the metal lath by weight and gauge—not by gauge alone. Also remember that

being fastened direct to sheathing boards or studding, requires no furring strips, and so save you 5 to 10 cents a square yard.

Best for Interior Work as well as for Stucco Work.

A perfect key is assured by the expanded cup style. Sykes Metal Lath can't be applied wrong. Approved by U. S. Government for Post Office work; indorsed by architects.

The Sykes Booklet—Complete Specifications for Stucco on Metal Lath—sent free on request—will show you how to save money. Let us send you this booklet and a Free Sample of Sykes Expanded Cup Metal Lath. Write us today.

Sykes Metal Lath & Roofing Company
504 Walnut Street, Warren, Ohio

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
severe treatment that coal chutes receive.

The chute is made with a cast iron frame and door with a glass front. Extending into the basement is a steel tube. The door opens vertically against the side of the house and is held in position by a hook in the frame engaging with a hook in the door frame. The door is automatically locked shut when closed by a gravity catch. This catch can be released by a chain in the basement.

The makers of this fuel chute, the Sterling Foundry Co., 8 Ave. A, Sterling, Ill., will be pleased to send our readers descriptive circulars giving prices and descriptions of the building specialties they make, including the fuel chute.

Adjustable Electric Lamp Offer

The Wallace Novelty Company are the manufacturers of the Wallace Adjustable Electric Lamp—the first lamp of this character on the market, and the most widely sold.

They have made the adjustable electric lamp tremendously popular—every magazine reader has seen the slogan “Save Your Eyes!”—and naturally this popularity has resulted in imitations, but they all lack some quality of the Wallace, and it continues to be the biggest seller in the field.

The Wallace is the lamp that hangs, stands, clamps or sticks any place, at any angle. The comfort-loving individual needs only to see a demonstration of this lamp to become a constant user of it, and the company is wise enough to bid for the co-operation of the dealer by not only giving him an unusually wide margin of profit, but also by supplying him liberally with advertising matter of every character and placing its advertising sales organizations at his disposal.

It is not to be wondered at, therefore, that the trade generally features the Wallace lamp.

If you have not seen this lamp it will be worth your while to get in immediate communication with the Wallace Novelty Company, 22 E. 24th St., New York City. They have a special agency proposition for carpenters and builders.