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Formerly AMERICAN CARPENTER AND BUILDER
 Member of the Audit Bureau of Circulations
 Circulation Audited and Verified June, 1918

American Builder

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

Published on the first day of each month by

AMERICAN CARPENTER AND BUILDER COMPANY

Publication Offices:

Radford Building, 1827 Prairie Ave., Chicago

EASTERN OFFICE: 261 BROADWAY, NEW YORK CITY

SUBSCRIPTION RATES

One year, \$2.00; six months, \$1.00; single copies, 20 cents. Special rates for two or more subscriptions when received together, to be sent to different addresses—Two subscriptions, \$1.75 each; three subscriptions, \$1.50 each; five subscriptions, \$1.25 each; ten or more subscriptions, \$1.00 each. Extra postage to Canada, 50 cents; to foreign countries, \$1.00.

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VOL. XXVI

December, 1918

No. 3

U. S. Lifts Bars on All Building

No More Permits Needed to Resume Work Held Up by the War

A NEWS dispatch from the Washington correspondent of the Chicago Tribune gave the welcome news on Nov. 21 that building restrictions had been officially removed by action of the War Industries Board. The U. S. Official Bulletin of the next day verified this dispatch.

All remaining restrictions on nonwar construction throughout the United States are removed. Building operations of any character, which were suspended by the war, now may be resumed without further permits.

Chairman Baruch of the war industries board announced that D. R. McLennan, chief of the nonwar construction section of the board, had telegraphed the order to chairmen of State Councils of Defense.

"The action taken permits all building operations of whatever character, held up in the interest of the war program, to proceed," the official announcement says. "No further permits will be required from the war industries board or the state councils, through whom control over the situation in each state was maintained.

"Immediately following the signing of the armistice on Nov. 11, the nonwar construction section took steps to loosen the restraints on the industry, and in a formal order issued that day removed a great many of the barriers. Since then, and with a view to assisting the industry back to a complete peace basis as quickly as possible, a careful canvass has been made of the conditions in each state with respect to building materials, transportation, and the supply of fuel and labor.

"In this investigation the nonwar construction section sought the views of the industry itself and of the State Councils of Defense. The replies received, coming from practically all the states, showed an unanimous opinion in favor of such action."

Building Boom Predicted

COMMENTING on post-war conditions in the real estate market, S. W. Straus, of New York, says:

Evidences multiply that, concurrent with the end of the war, there will begin an extended period of unprecedented activity in all branches of the building and construction industry. Housing conditions in nearly every principal American city today are far below normal. Building permits in the twenty leading cities of the country in August totaled only \$22,000,000, including all government contracts. In New York City and the district surrounding it for 100 miles, exclusive of Philadelphia, construction work of all kinds during the past seven months has fallen off 37 per cent. It will take a long period of years of most active building to bring urban housing conditions again to a normal state.

While there will be a tremendous increase of all lines of construction work, including an expenditure of several billions of dollars in railroads and highways improvements and the deepening of rivers and harbors, the speeding up of building operations on a large scale will take precedence over all phases of stimulated business.

This will be due to the fact that the home is the first and most vital essential of every day existence, and the man-power which is rapidly becoming available will first be needed in the building of homes, farm buildings, apartment houses, hotels, office buildings and other similar structures.

These activities are likely to be reflected in a greatly stimulated real estate market in all our principal American cities, and we shall find capital seeking these channels with increased enthusiasm. There will be a consistent increase in values where conditions are permitted to develop under the natural sway of supply and demand.

Under these circumstances it is not likely that, contrary to the expectations of many, we shall soon see an easing off in home and business rentals. Rents, like all other commodities, will remain high for some time.

Start Something—Be the Bell Wether

IN these days there should be a special prize and a Distinguished Service medal hung up in every community for the builder who hustles out and gets the first job of putting up a dwelling house, store building, church, school or farm building.

For he will *start* something.

We realize now how tightly down the war lid was clamped on all private building. There is a 40 per cent shortage in the general run of buildings, and now that all government restrictions have been entirely removed, there is a general sentiment in the air of a great revival of private building.

Just how long it will take this expected building boom to develop depends a good deal on the attitude of the local building material dealers and the energy which both they and the builders show in getting out after the business.

The public naturally hangs back a little to see if prices will ease off, and to make sure that the labor supply has become sufficient to assure the handling of a job within reasonable limits of time and labor cost.

As far as the price of building materials is concerned, we cannot see any signs of a decline. The law of supply and demand, operating over the entire world, will certainly keep up the war-time scale of prices for several years to come, or until the vast armies are demobilized and get back again to productive work.

Building improvements are urgently needed, and the present scale of prices of building materials will not hold them back for long. Dealers should carry stocks fully sufficient to meet promptly the demands that will be made on them. If the dealers will be aggressive and enterprising in letting the consuming public know that now is the time to build, and that stocks are on hand for immediate delivery, they won't have to worry about prices. For about two years now consumers have been met with stories of car shortages and embargoes, and of uncertain war-time qualities. They have been discouraged whenever they proposed to undertake anything. All of this is now changed, and it is up to the dealers to let their prospective customers know that the war is over and that the time for rebuilding has come.

Don't be discouraging when the farmer comes into your office and mentions that he is thinking of putting up a new barn or rebuilding his farmhouse. Be a little optimistic and encourage him in the idea. Forget about the high price of lumber. Rather fix your mind on the high price of wheat, corn, hogs and steers. Everything that the farmer has to sell commands such a high price that your price on building materials seems modest indeed.

Dealers can now get supplies from any of the manufacturers, jobbers or wholesalers. The war work is over, and factories are getting back again to their regular production. Undoubtedly there are buyers who have been more or less disgruntled on account of the poor service they have been able to get from the manufacturers these past few months. It is probable that quite a number feel that the manufacturers are at fault and that they have taken war business to the utter disregard of their old customers because of the possibility of making more profit.

We know, however, that in the great majority of cases such a charge would be entirely unjust. Many manufacturers have given their entire facilities to war work, because it has been necessary and practically required by the government. Most manufacturers dislike very much to be unable to serve and thus hold in line their old customers, and it has been a sacrifice on their part to place their entire output with the government. These conditions are now at an end, and it should help immensely toward the restocking by local dealers which will permit building improvements to go forward energetically and without delay.

The Finishing Touch

By Ida R. Fargo

THEY sat across the car from me. I could hear the conversation quite plainly. Mrs. Gale was speaking—she lived on my street, half a dozen blocks away, as did also her companion, Minnie Borden. In fact, they lived in the two prettiest bungalows in all our stretch of street—rented bungalows at that, tho you would never believe it; bungalows built by a queer old gentleman who had a hobby for architecture, and claimed it paid to cater to the fastidious. Anyway, they were ideal little six-room bungalows, painted brown with a canary trim, and adorned with those carefully “tailored” touches which only an artist-craftsman can give—from the flaring base of the sturdy porch posts to the quaint hand-carved gargoyles peering down at one from the gable ends of the roof.

The two bungalows were not alike, tho they followed the same type, and had it been given me to choose between the two, I should have shut my eyes and drawn lots. But Mrs. Gale was saying:

“There is something inferior about my bungalow. I’m sure it isn’t built as well as yours. It doesn’t look as finished. I’m awfully disappointed over it—I’m almost ready to give it up.”

Walking down the street, I critically observed both bungalows, knowing, as I did, that in matter of expense one equaled the other. Yet, Mrs. Gale was right. The house she lived in *did* look inferior. And yet, when I considered the building alone, it did not. The same careful hand had finished both, but the abode of Mrs. Borden showed the homey touch of a woman’s hand. She had taken a beautiful bungalow and given it the finishing touch—a beautiful setting, flowers and a velvet strip of lawn. It was like a picture set in an appropriate frame.

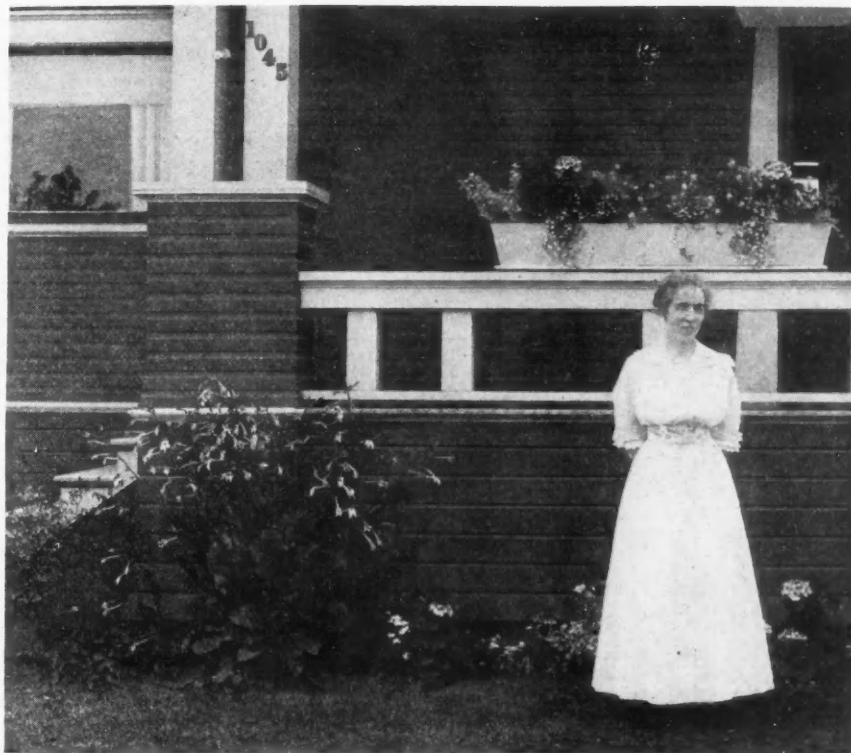
No wonder Mrs. Gale was disappointed; she had the picture, but she had forgotten to supply the frame. All too many women live as in a cage, inside the house, and forget what the outside is like till they return from some shopping trip and behold the place where they live as it is. And lo, like Mrs. Gale, they are disappointed.

It was still early in June, that day I strolled down past the two brown bungalows—the one framed and the one not. Yet at Minnie Borden’s bungalow geraniums and

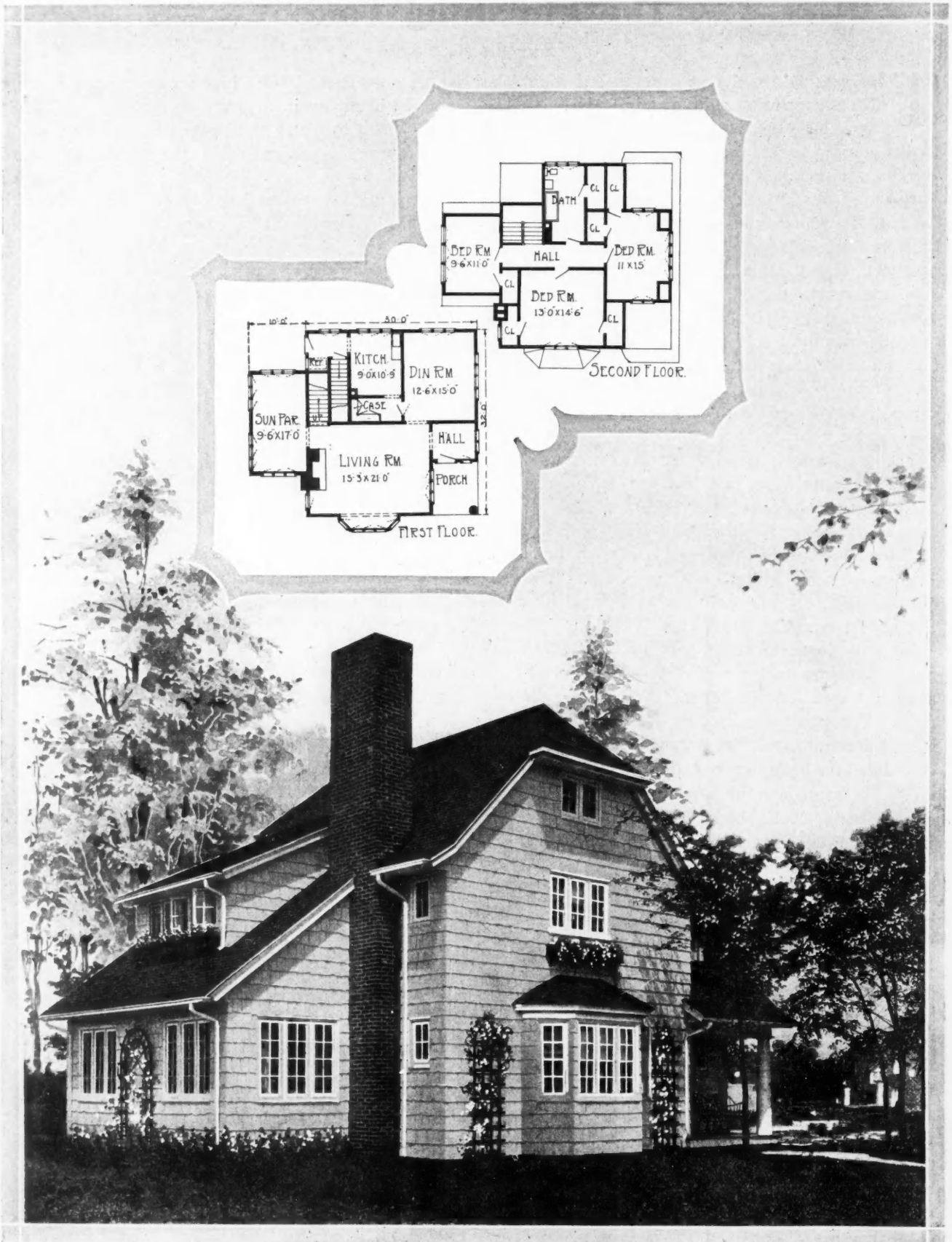
sweet alyssum and some blue-flowered ivy vine were already blooming in a pretty porch box (well made and painted to match the house trim—an item worth remembering), getting ready to tumble downward in long, loose sprays to meet the upreachings of pink petunias from the bed below. In August, with the help of some dusty miller, they accomplished their desire. But even in June they bloomed, along with the pink roses in the borders—for no flowers or shrubs or plants of any kind were allowed to mar the open stretch of green that ran out like a velvet carpet to meet the street, and seemed to set the little bungalow back in a very oasis of cool, restful shade. One felt sure that the sea breeze must be just a bit more gratefully cool there than anywhere else down the long, hot stretch of street.

I knew, finishing my stroll down the street, why Mrs. Gale was disappointed in her bungalow. She had failed to give it the finishing touch—flowers. And I knew why Minnie Borden’s bungalow belonged to that type of a home which makes a “city beautiful.” For, no matter how good the architect, no matter how careful the workmen, yet there is still something left for the occupant to do.

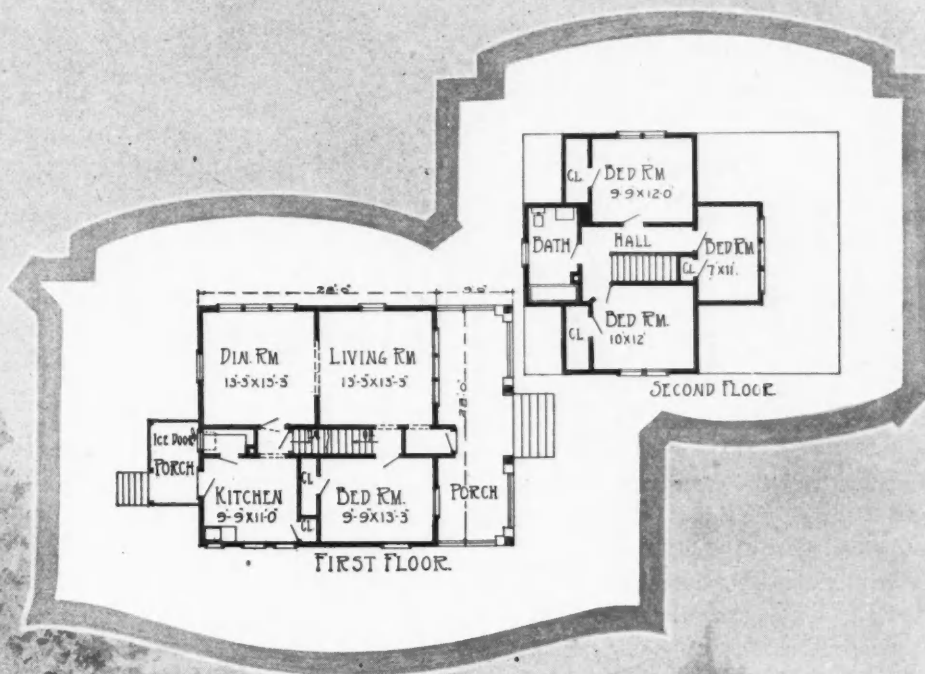
The finishing touch must be applied to bring out the full homelike charm of any dwelling; and that finishing touch is applied with flowers, shrubs and vines.



The “Finishing Touch” Around Any Home Is the Planting of Flowering Plants. The Porch Box and Window Box Full of Brightly Colored Bloom, and the Massing of Small Shrubs Along the Foundation Wall, with Perhaps a Vine Working Its Way Up a Trellis, All Help to Turn a House into a Real Home. One of the Great Advantages and Joys of Home Ownership Which the Renter Does Not Experience Is That of Being Able to Plant Trees and Shrubs, and to Develop Year After Year the Exterior Beauties of a Dwelling Place.



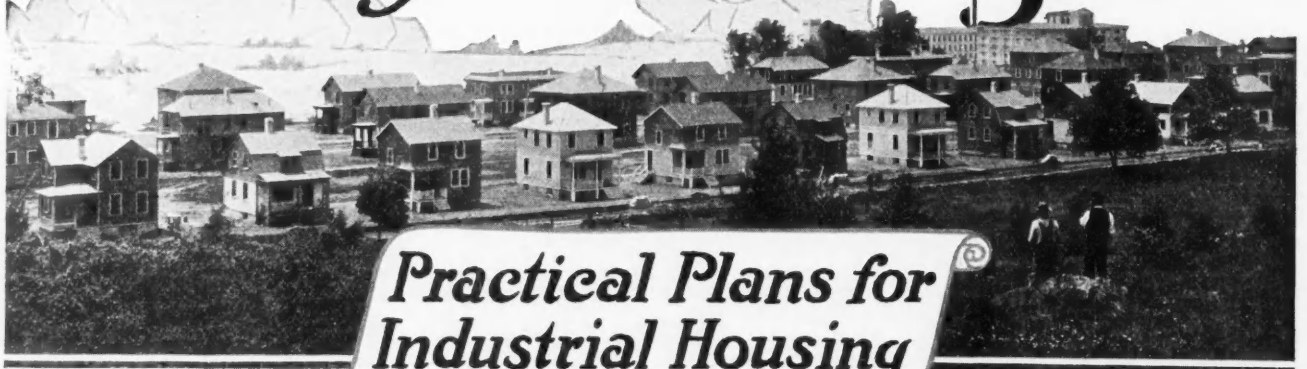
A DELIGHTFUL DUTCH COLONIAL DWELLING. An extra charm has been given this little home by using special irregular wood shingles laid in wavy lines with a wide exposure. It is suggestive of the hand-wrought architecture of the early Dutch of New Amsterdam. This distinctive house contains four fine rooms on the first floor and three bedrooms and bath above.



A PRACTICAL BUNGALOW OF SEVEN ROOMS. This design has the true western sweep with wide cornice, brackets and exposed rafters. Size, 28 by 28 feet. This plan shows four well arranged rooms on the main floor and three bedrooms and a large bathroom upstairs. The story-and-a-half style is well liked both for good looks and economy.

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Homes for Workingmen



Practical Plans for Industrial Housing

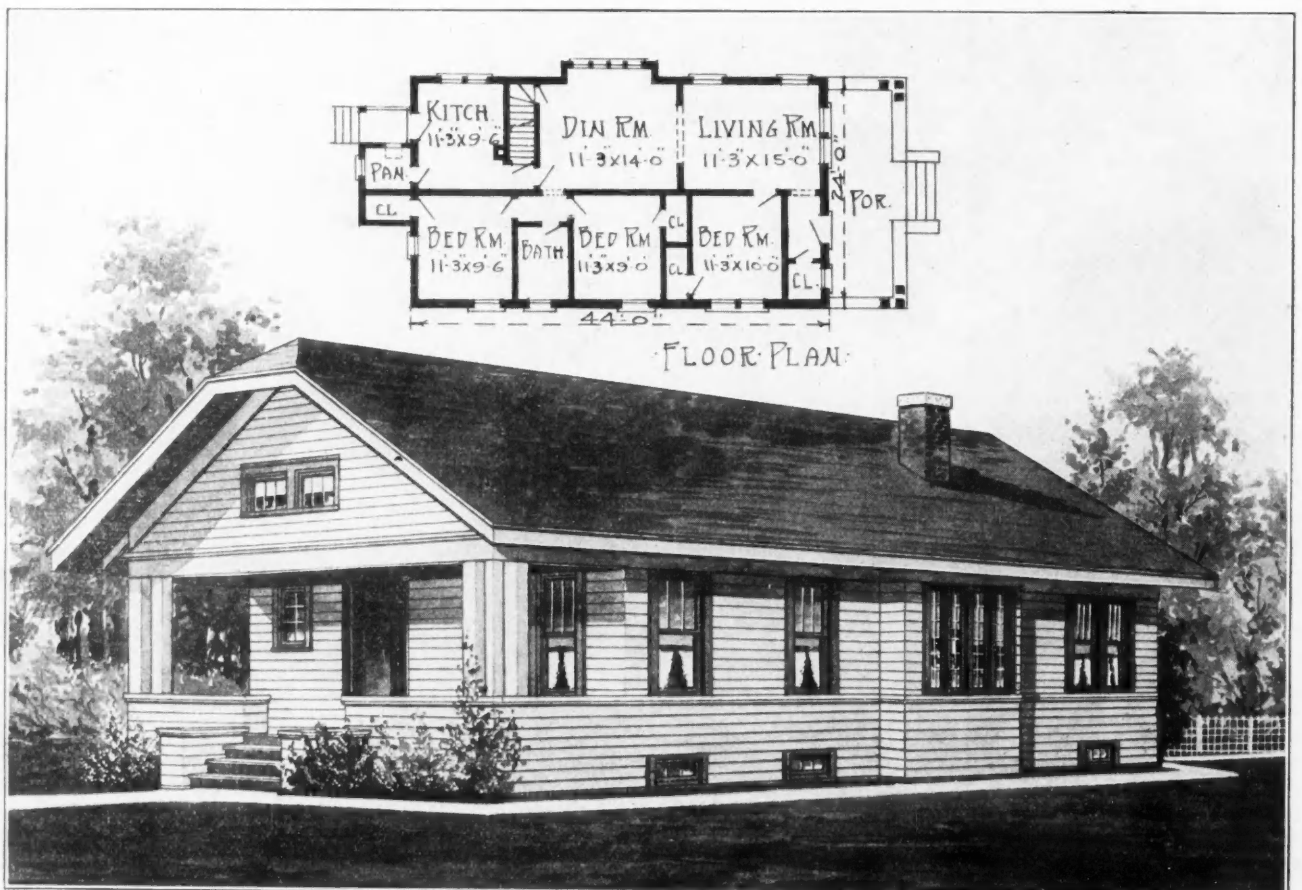
Industrial Housing Will Keep Up

NOW that the war is over the Government's housing enterprises at the shipbuilding and munitions centers will no doubt come to a quick finish.

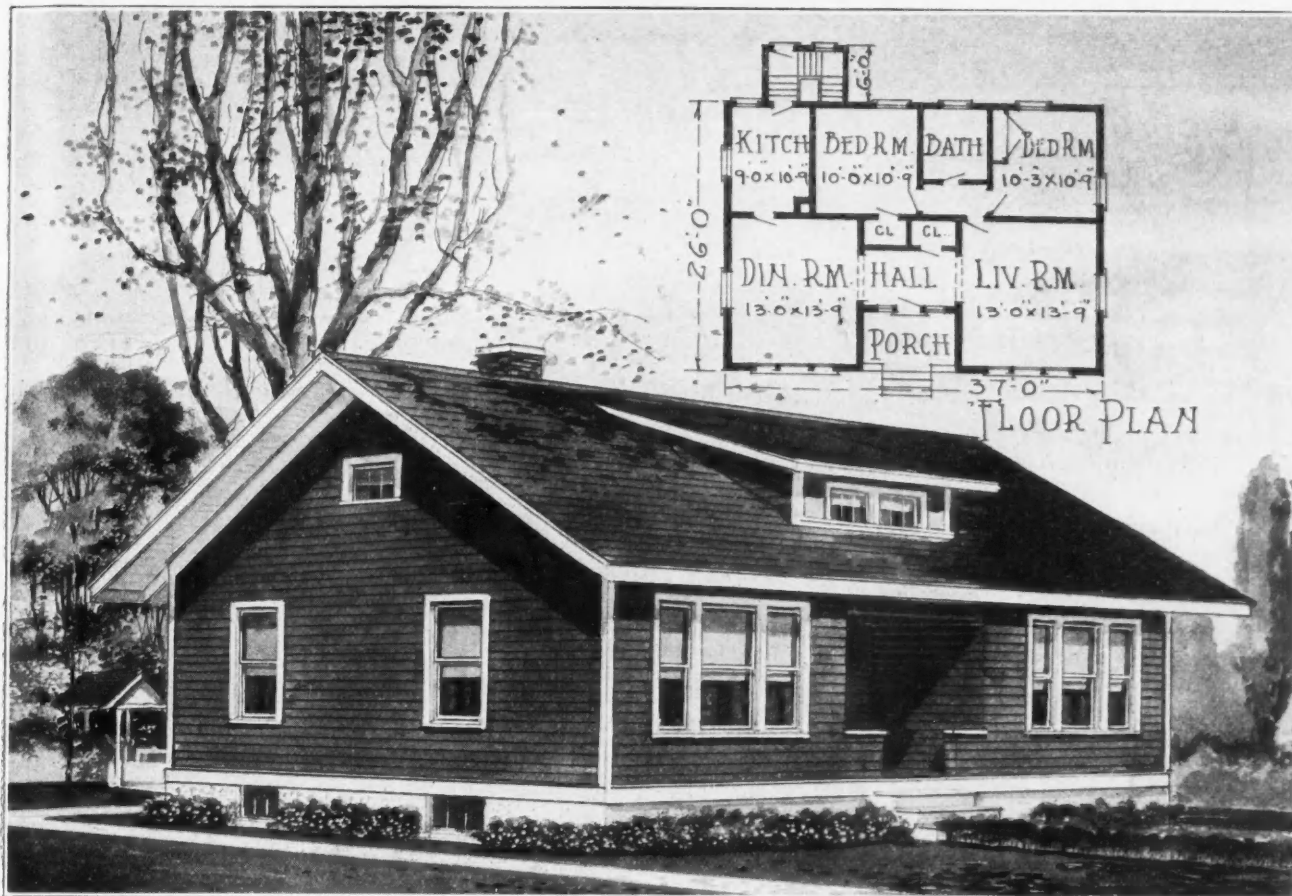
But this will not be the end of industrial housing—not by any means. The big corporations, with their interest in peace time production just as great as in war work, will continue their programs for better housing for their employes. New enterprises of this kind will be launched, for the war has demonstrated the expensiveness of "labor turnover" and has shown

proper housing or home conditions for the workmen and their families to be the only real solution for this problem.

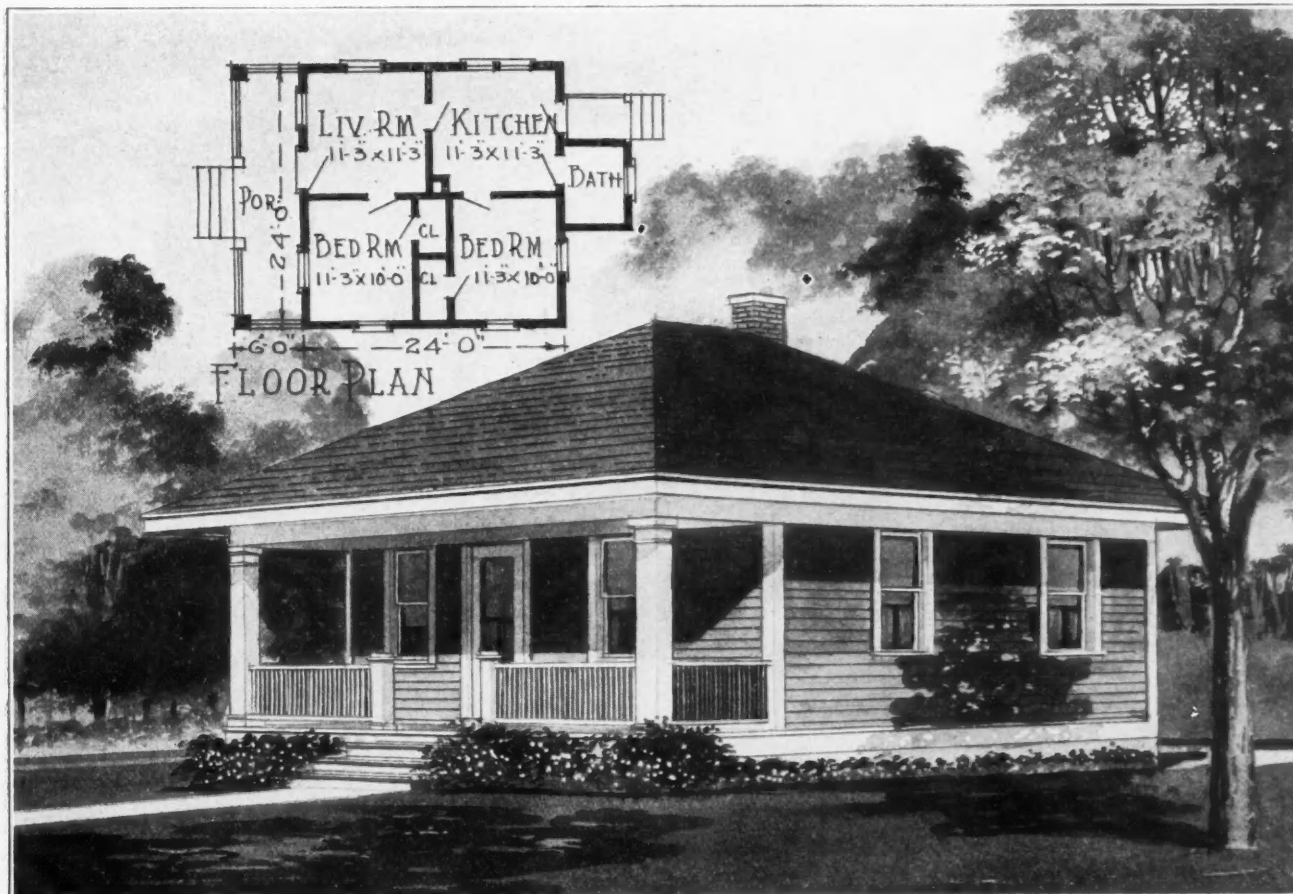
Within the past week the AMERICAN BUILDER has been authorized to select a builder and recommend designs and materials for a group of twenty-five houses for a small Minnesota manufacturing town not at all interested in war work. It's an example of necessary home building by the wholesale before worker efficiency could be secured. Other similar home-building enterprises will be started, we predict.



SIX-ROOM BUNGALOW COTTAGE. This design combines maximum economy of construction and maintenance with attractive looks and a convenient arrangement.



FIVE-ROOM BUNGALOW. Here is a balanced arrangement with living room and dining room each side of the central reception hall and recessed porch. At the back are kitchen, two bedrooms and bath. Size on the ground is 26 by 37 feet.



HIPPED ROOF COTTAGE. The rooms enclose an exact square, 24 feet on the side; but by letting the main roof include the front porch the hipped roof terminates in a 6-foot ridge which looks much better than coming to a point. Four rooms are provided.

AMERICAN BUILDER BUILDING PLANS



Blue Prints of Narrow Lot Residence

BLUE PRINTS IMMEDIATELY FOLLOWING GIVE FULL WORKING PLANS OF VERY ATTRACTIVE, POPULAR SIZE DWELLING ILLUSTRATED BELOW

HERE is a home of solid comfort that will go on any city lot. It is designed to take most of its light from front and rear and one side, so there is little danger that adjoining property, even tho built up close, will ever seriously interfere with the lighting of the rooms in this house.

It is a compact design, 24 feet in width by 38 feet in length. In addition, the sun parlor projects 10 feet at the front.

Notice the modern arrangement of simple, unpretentious entrance in connection with the private enclosed porch or sun parlor. How much better this is than the former style of big open front porch, which served only to darken the front rooms, and was useful only in warm weather. The modern sun parlor is Chicago's contribution to American domestic architecture, and as an improvement it ranks second to none.

A glance at the floor plans will show the many modern conveniences embodied in this house. Note

particularly the sleeping porch on the second floor, with its disappearing bed, which folds back into the dressing closet. Three other good bedrooms are provided, one of them being extra large. There is a great supply of well placed clothes closets.

On the first floor the arrangement of kitchen, pantry, dining room and breakfast porch is exceptionally well handled.

An interesting feature of the blue prints is that they show two alternate methods of construction and two exterior designs for this house. In addition to the all-wood design on which the plans and the rendered perspective are based, there are also a hipped roof brick construction design, and one using hollow structural tile stucco finished. The floor plans work equally well with all three of these exteriors; so these blue prints contain within themselves quite a variety of of changes for the subdivision builder.



Narrow Lot Residence of Seven Rooms, Showing All Frame Construction. Alternate Exteriors in Brick and in Hollow Tile Stuccoed Appear on the Opposite Blue Print Page, and Working Plans for This House Are Presented.

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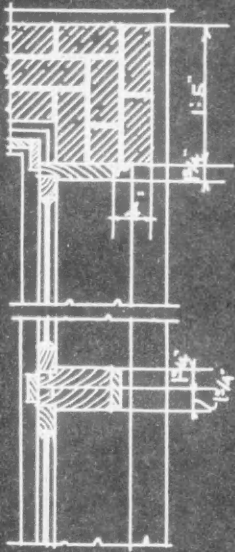
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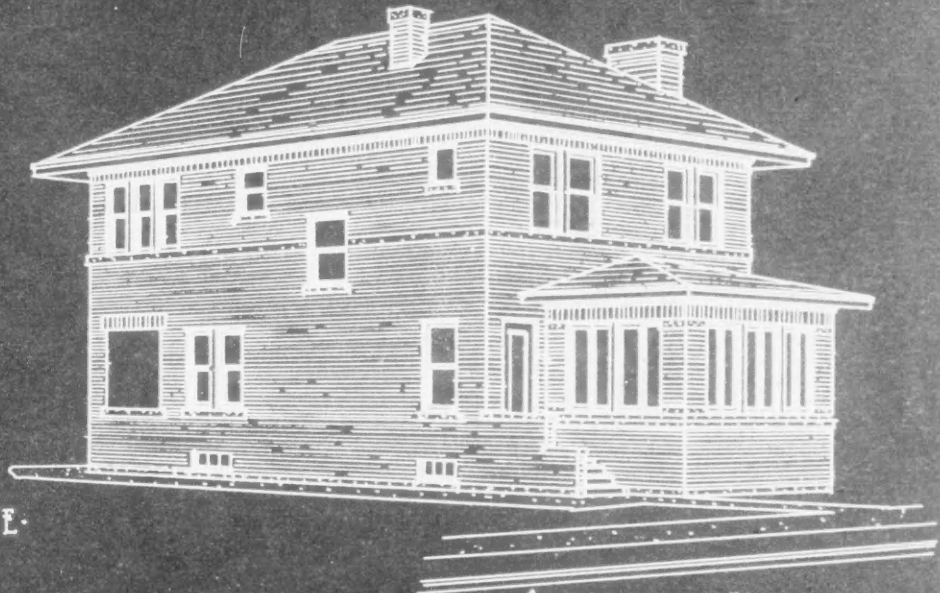
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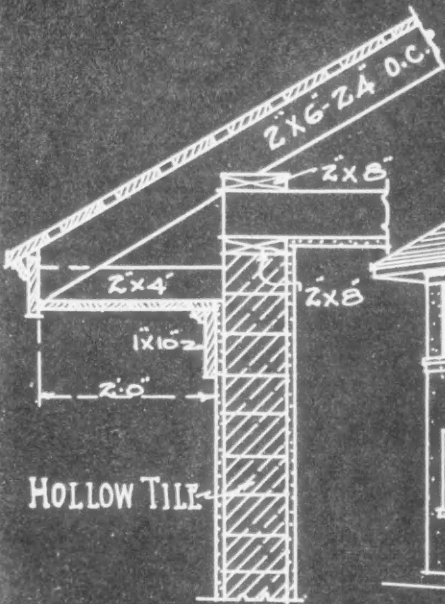
AMERICAN BUILDER BUILDING PLANS.



SUN-PARLOR FRAME.
SCALE 1/2"=1'-0"



ALTERNATE EXTERIOR.
BRICK CONSTRUCTION.



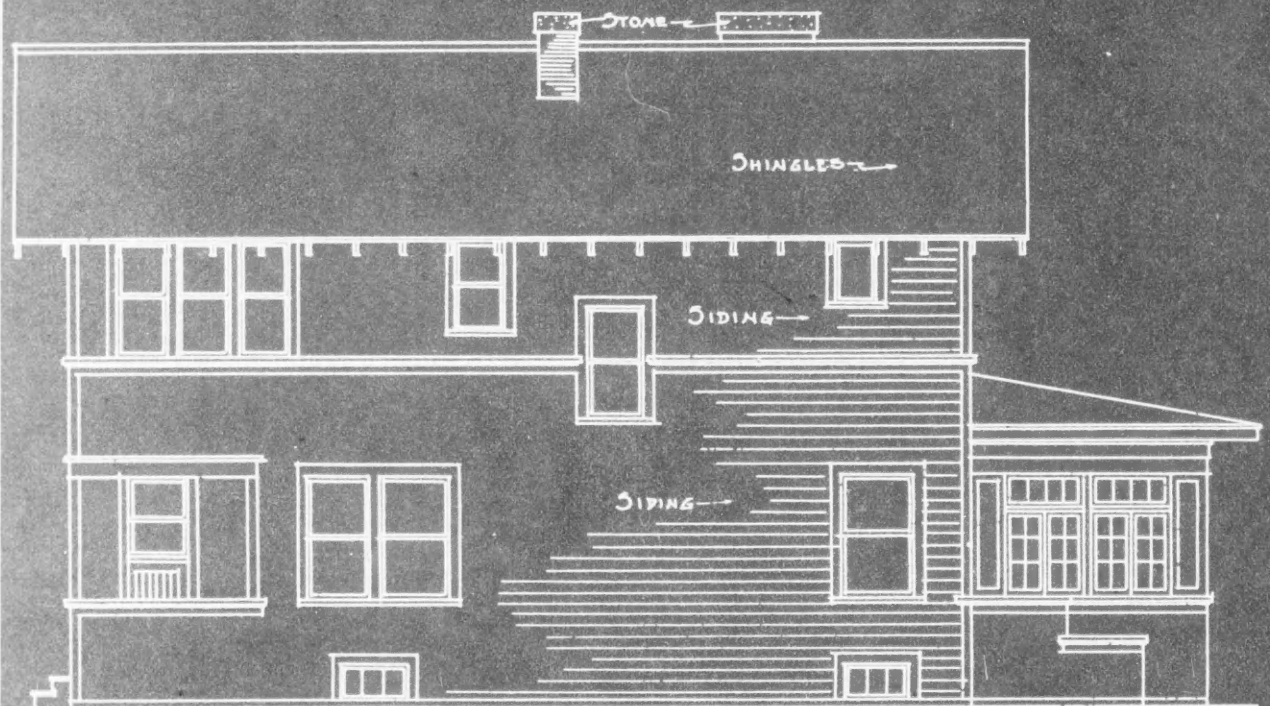
CORNICE DETAIL.
SCALE 1/2"=1'-0"



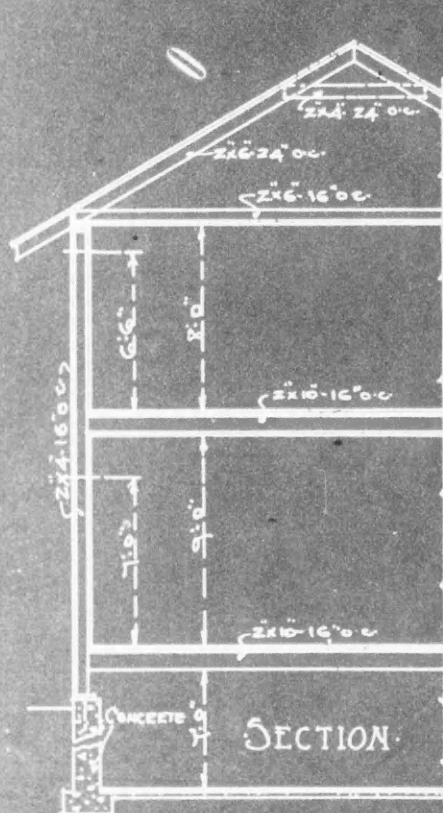
ALTERNATE EXTERIOR.
HOLLOW TILE CONSTRUCTION.

NARROW LOT RESIDENCE SHEET No. 1

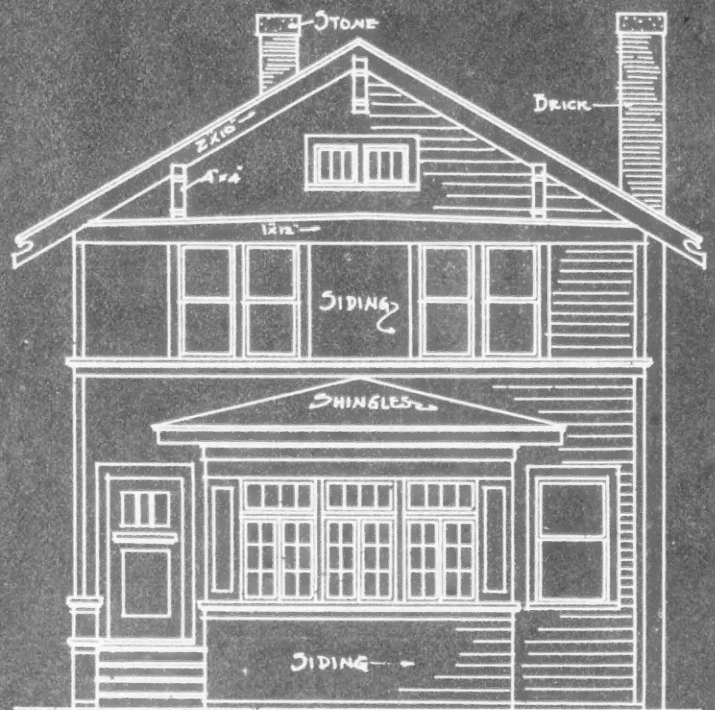
AMERICAN BUILDER BUILDING PLANS.



·SIDE·ELEVATION·



SECTION



·FRONT·ELEVATION·

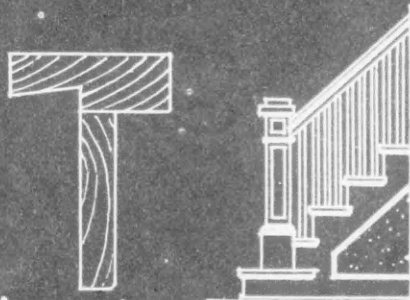
·SCALE 1/8"=1'0"

NARROW LOT RESIDENCE SHEET NO. 2

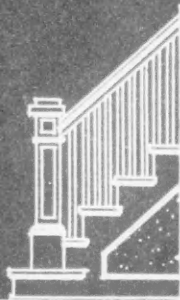
AMERICAN BUILDER BUILDING PLANS.



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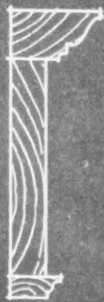
STOOL & APRON.



STAIR DETAIL.
SCALE 1/4"=1'-0"



MED. CASE.
1/4"=1'-0"



CAP.



BASE

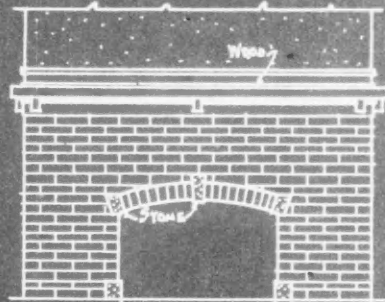


TYPICAL DOOR.

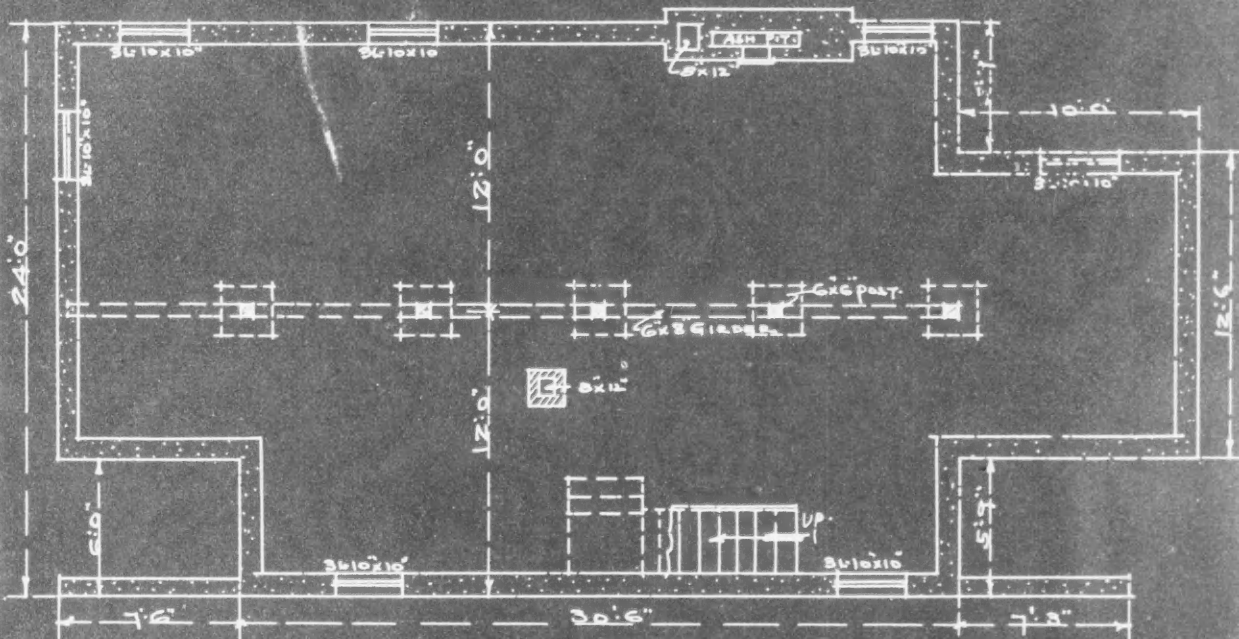


GLAZED DOOR.

SCALE 1/4"=1'-0"

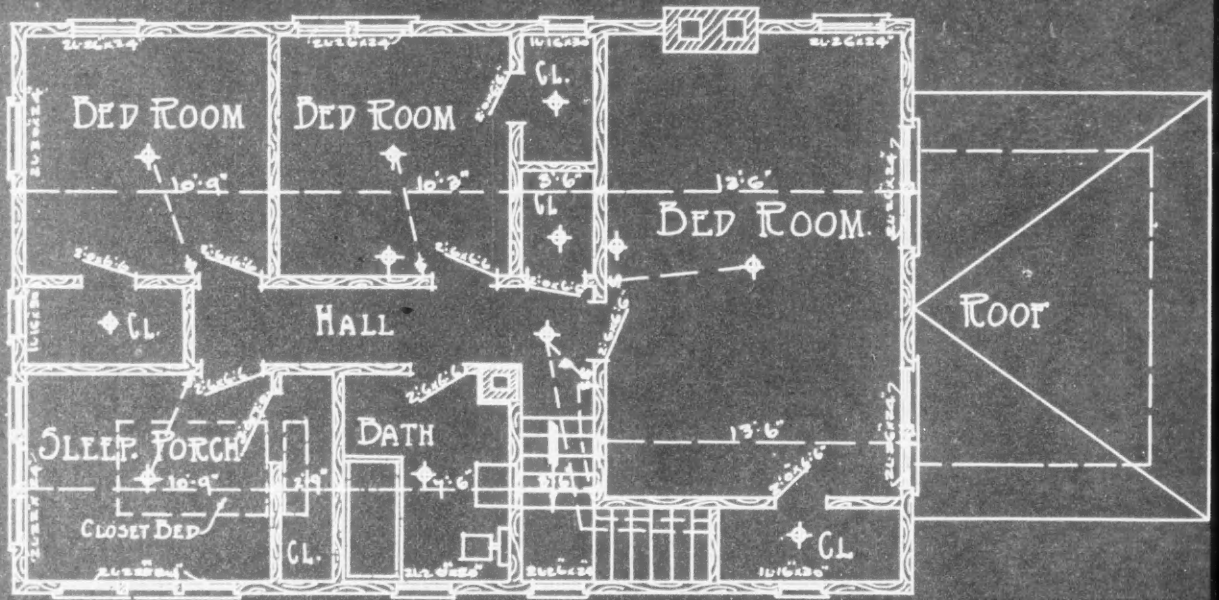


FIRE-PLACE
SCALE 1/4"=1'-0"

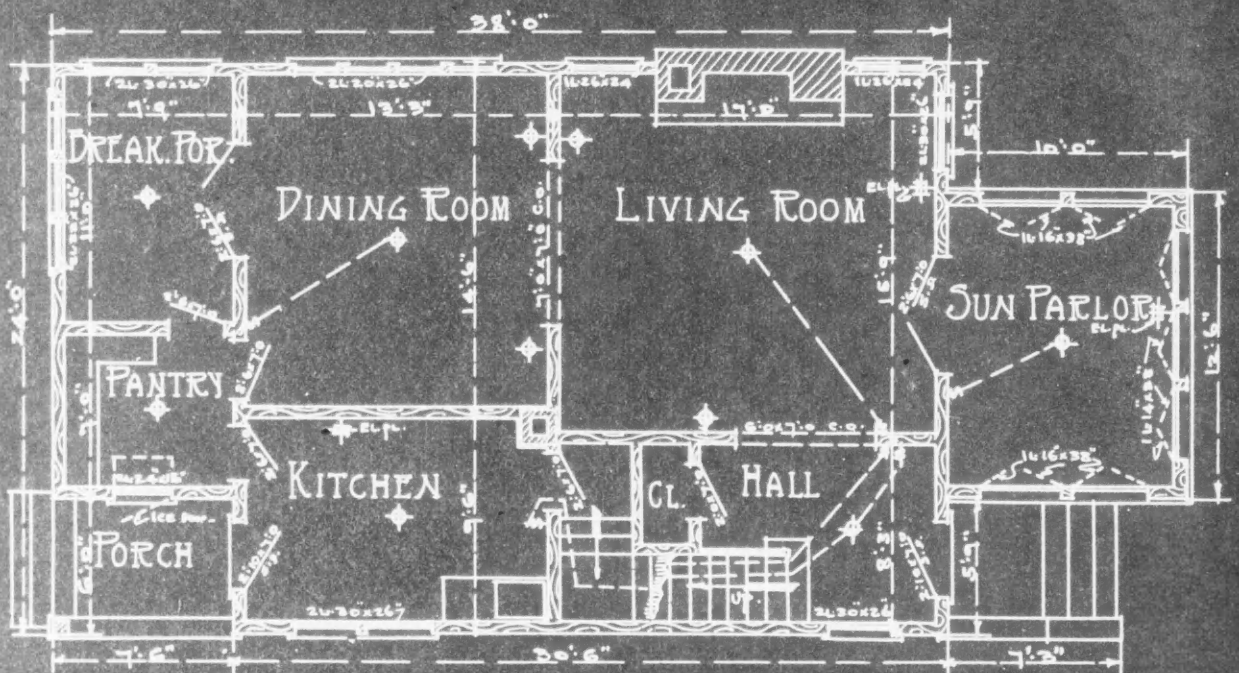


BASEMENT PLAN. SCALE 1/8"=1'-0"

AMERICAN BUILDER BUILDING PLANS.



SECOND FLOOR.



FIRST FLOOR.

SCALE 1/8" = 1'-0"

NARROW LOT RESIDENCE SHEET NO. 4

5.



4

3



To keep the coming in during the winter months

Keeping the Shop Running in the Winter

By R. Newbecker

THE slack winter months are fast approaching, and many a builder or carpenter finds on surveying his stock of odds and ends that he could realize some money from the same if he knew what to make out of it during the coming idle months. Many carpenters will, as usual, follow the beaten paths of finding odd jobs to do, while others no doubt will patriotically offer their services on the completion of war work.

The man, however, who has odd jobs coming in off and on does not feel entirely justified in closing up his shop. At the same time he may realize that the profit derived from the same does not entirely prove a paying proposition to him.

If he could only find something into which he could turn his stock of odds and ends during the winter months, something which is out of the beaten path, the operating of his shop on a regular schedule would be much easier and more profitable for him.

There is almost an unlimited possibility of making little things out of the ordinary run which can be produced from leftovers such as a builder generally has which will go a long way toward keeping the shop busy in the winter time, and one of these is an article easy of construction and at a profit which is a fruit display tray, as shown in illustration.

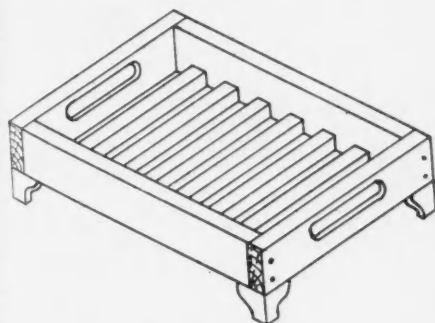
Take a walk around the grocery or fruit stores of your neighborhood and you will note that grocers display fancy apples, oranges and other fruit, as well as eggs and other articles, in their

show windows in all kinds of ugly containers ranging from dirty crates to soap boxes, bushel baskets and so forth.

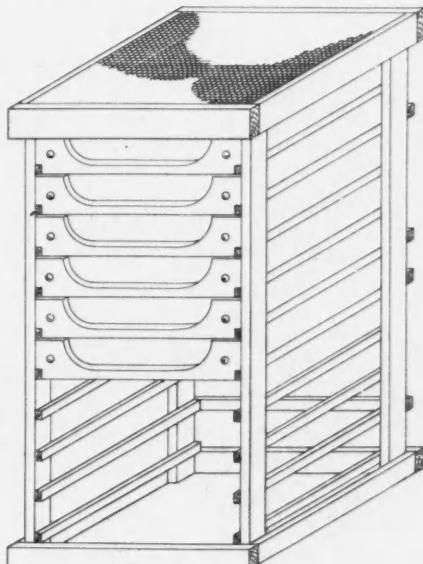
And why does he do this? Simply because no one apparently has pointed out to him the attractive display these same products would make if displayed in nice trays in his show windows—in trays as shown in illustration No. 1. Any thickness of material will do for this, from any odds or ends or packing cases. Why not make up a sample, take it to your grocer, then let him furnish you with enough boxes to make the required number desired? You simply charge for your time. These should be finished up nicely and painted a nice green or other color to harmonize with the store color, or antique brown. The size of a tray of this kind usually ranges from 12 to 14 inches in width and 18 to 20 in length; the sides can be 2 or 3 inches in height and slats for bottom can be of any width of convenient material at hand.

There may be some grocers, while not having convenient space for separate display trays as the foregoing, may easily be persuaded in obtaining a fruit display stacking tray rack, as shown in illustration No. 2. This rack should be about 4 feet 5 inches or 5 feet high, the uprights to be about 2 by 2 inches, the length and width to be of any desired size, and as many trays as desired, according to height of the same, which ranges from 4 to 6 inches, can be accommodated. These display trays have a cleat

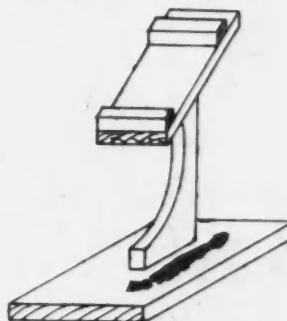
(Continued to page 124.)



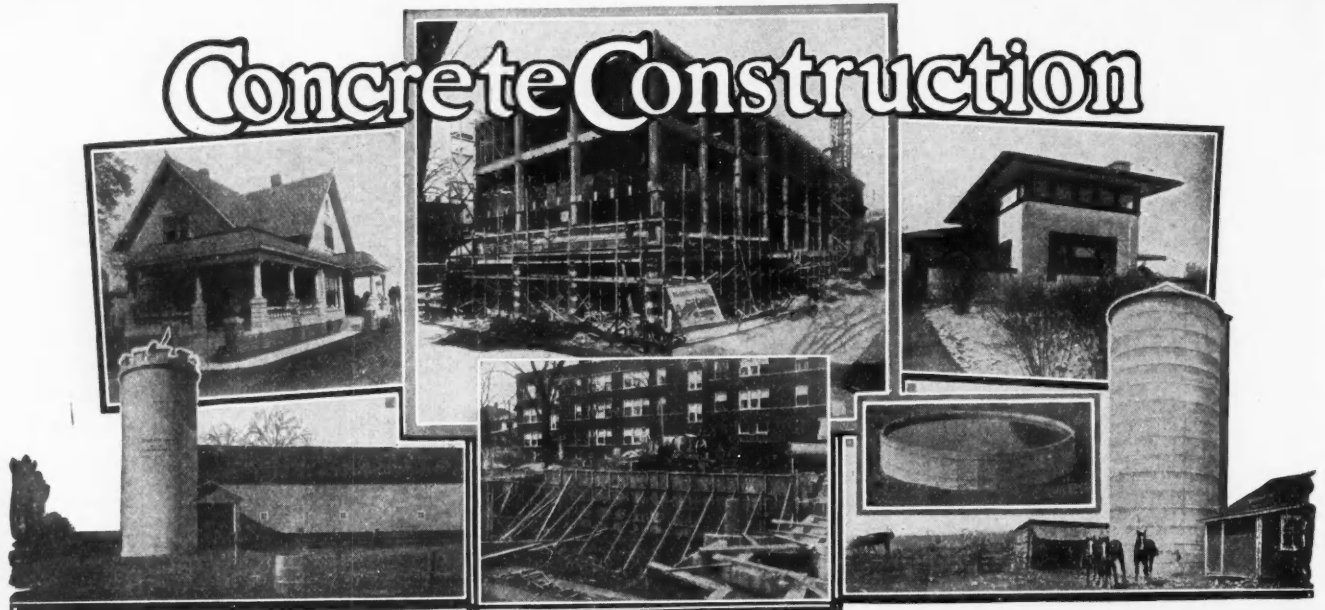
Fruit Display Tray.



Stacking Tray Fruit Display.



Display Stand for Shoes and Haberdashery.



Winter No Obstacle to Rapid Factory Construction

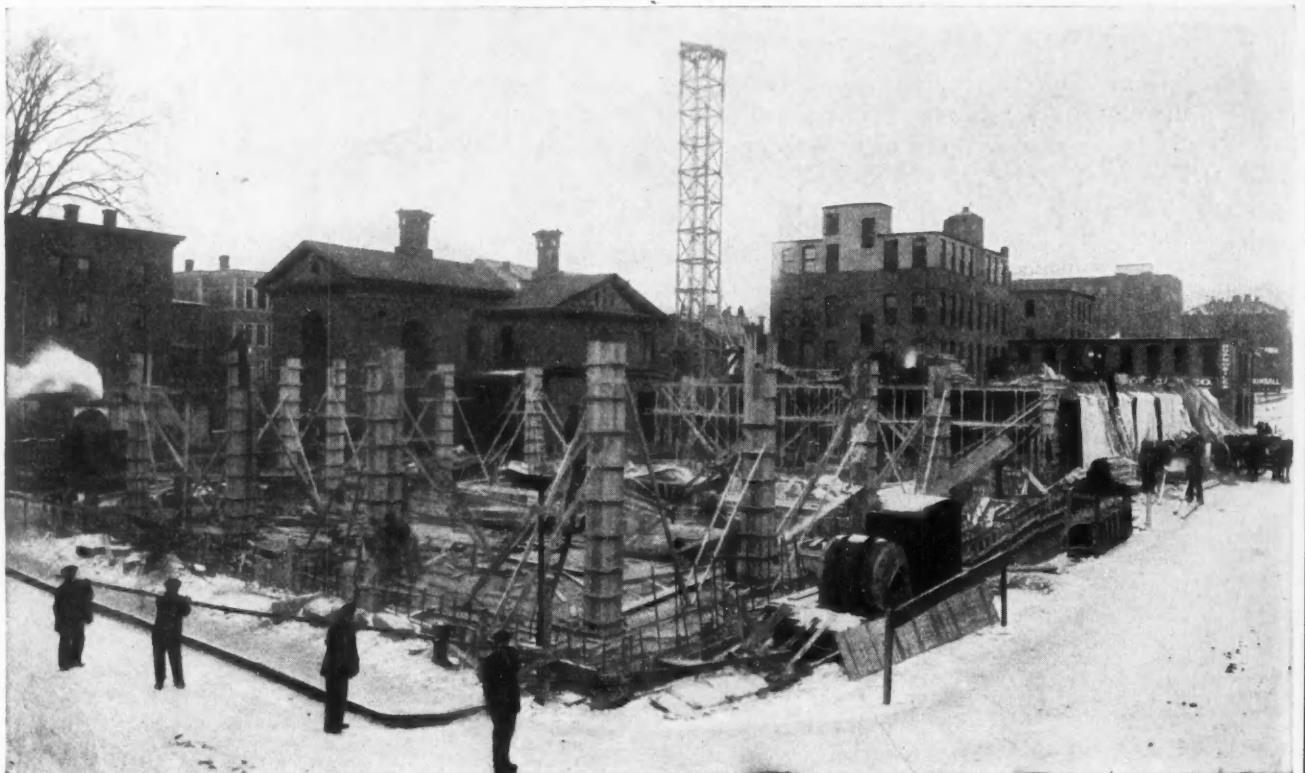
A SPEEDY COLD-WEATHER CONCRETE JOB ON OVERLAND SERVICE STATION AT SPRINGFIELD, MASS.—
METHODS USED TO WARM MATERIALS AND TO PROTECT POURED CONCRETE

By Peter F. O'Shea

THE Fred T. Ley Company of Springfield, Mass., general contractors who do work in all parts of the East and South, put up a building in their home city winter before last during cold spells and blizzards, which made a record for concrete construction in severe weather. Zero temperatures are no longer regarded as an insuperable obstacle to good concrete work. The Ley Company, by taking proper precautions, carried out the large job without any

serious hitch, made the work perfectly sound, and, moreover, finished the job in what would have been fast time even in summer.

The building, 70 by 225 feet, four stories, and a basement under part of the floor area, with face brick limestone trimmed, and steel sash, is a service station for the Willys-Overland Automobile Company. Due to sudden developments in the automobile industry, the company decided that they ought to have a service



View of Willys-Overland Service Station on January 6th After First Floor Had Been Poured.

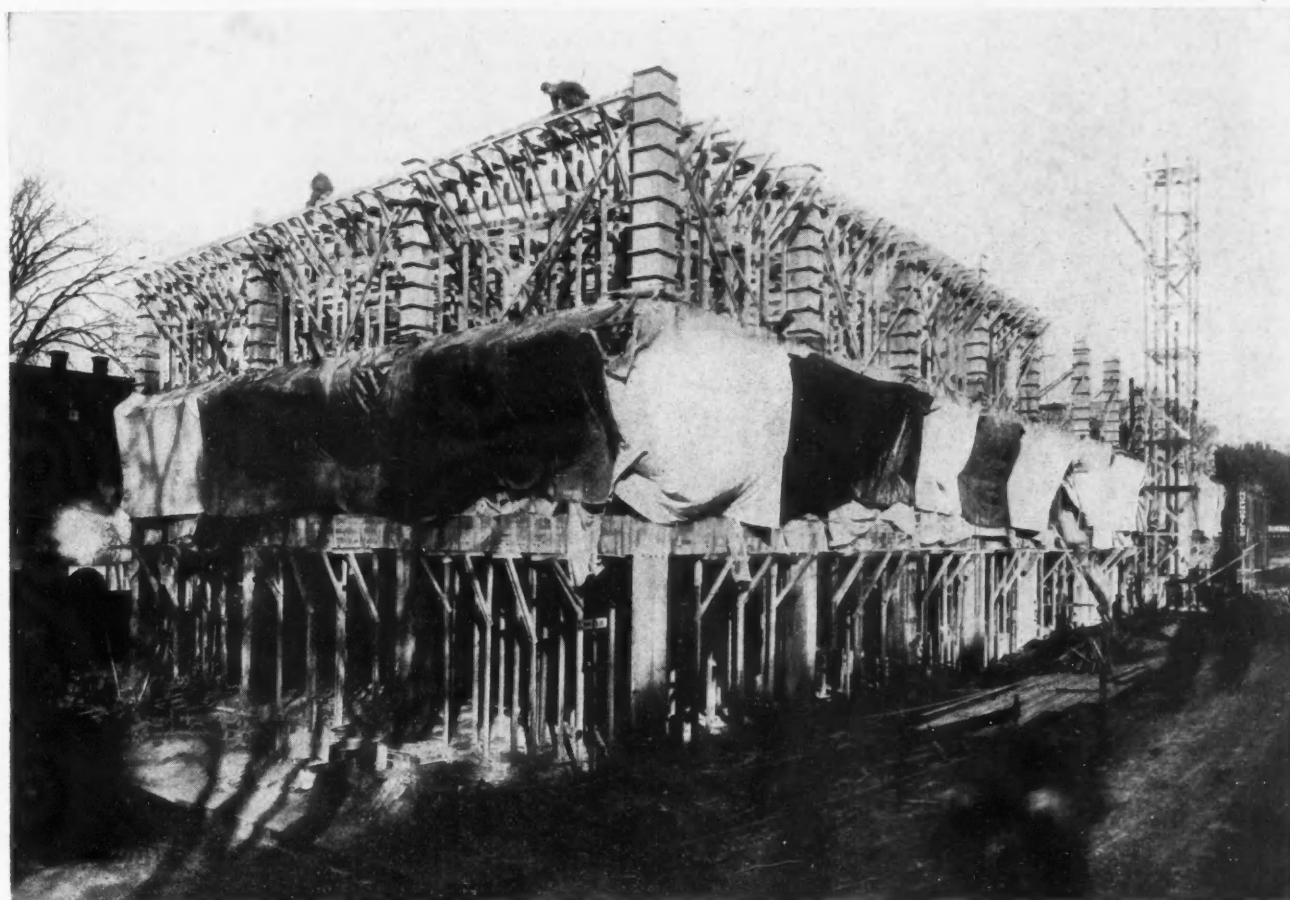
station built immediately and make it ready for occupancy and service with the beginning of spring. That was in December last, and the building was to be turned over complete on March 1. As a matter of fact, the first automobiles were stored on the upper floors March 6.

The photographs show the progress of the work.

The Ley Company did the excavating during the first half of December, and met with only one of the customary obstacles, a water hole which was soon overcome. As soon as the forms were started it be-

But the next week was one of good weather, and the organization took full advantage of it. The temperatures for the successive days from January 1 to 7 were 27, 24, 32, 15, 33, 21, 15 degrees Fahrenheit; that is, a range of from one degree above freezing to 17 degrees below freezing. The mixing of concrete went on without difficulty, because of the treatment which had been given the raw material.

Since the beginning of the job, when sand and stone was first brought to the site, it had been dumped upon big coils of pipe laid on the ground. Each coil had



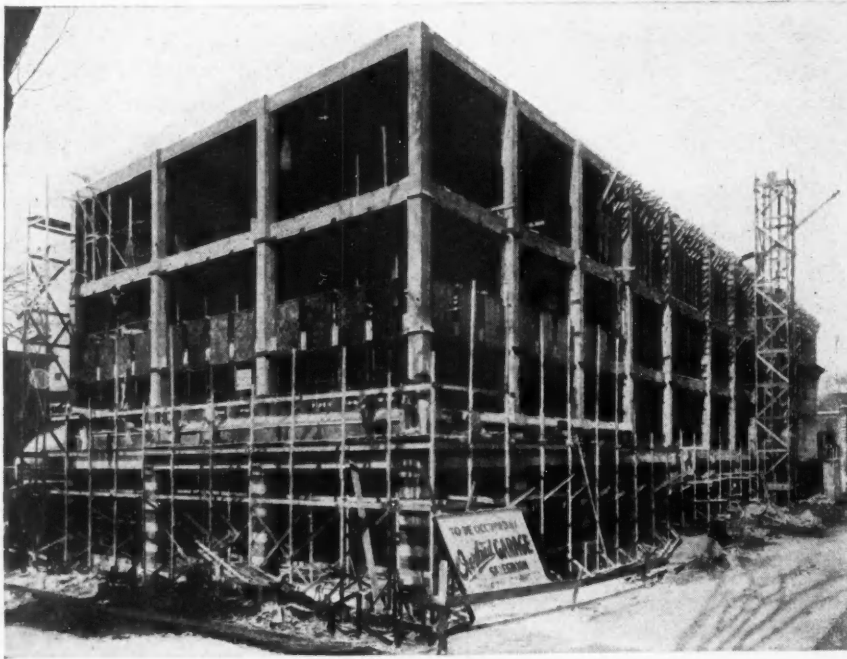
Forms Ready for Pouring of Fourth Floor on January 18th.

gan to snow and turn cold. But the foundations were poured, and kept warm while setting by a layer of stable-straw strewn along the top and covered with canvas sheets. This precaution was enough, as the weather had not yet become severe according to the standards of New England. The foundations set well.

The builders were hopeful of getting a good start on the weather, when a set back occurred, due to a change from the original plans of the basement so as to make the basement larger than at first laid out. Therefore, the contractors had to cut out part of the foundations just put in, and build new ones. In this way they lost two weeks of fairly warm weather. They were now two weeks behind their schedule, but it really amounted to more than that when the coming temperature and the times allotted for subsequent operations were taken into consideration.

eight series of inch and a quarter pipes formed into a square about 18 feet in outside measurement and with the members of the coil 24 inches apart. The pipes were bored with small holes every few inches, the holes facing toward the ground. Steam was fed to the coils by a heater according to the judgment of the supervising foreman and the weather. The steam circulating upward thru the sandpile kept out the frost and left the material warm enough for use in the mixer at any time and in shape to handle efficiently.

The material thus stored was dumped into the mixer in the usual way, but when the churning started, a jet of live steam was turned on, which had been piped into the mixing cylinder. Altho this was somewhat expensive, it allowed the mixing to go on just as under ordinary temperatures. Little trouble was experienced, especially after the men had become used to the condi-

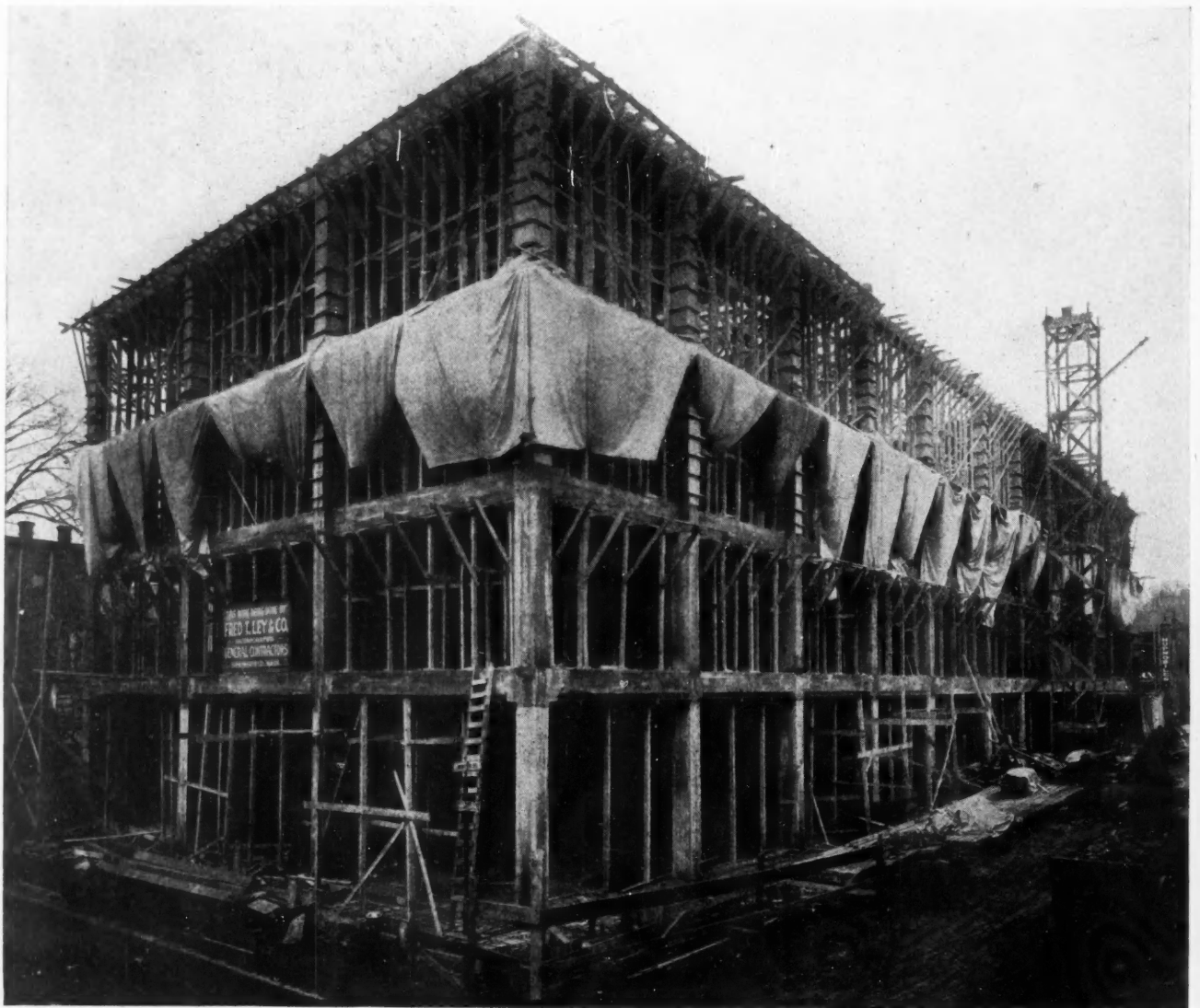


Building Ready for Facing on February 16th.

tions, as is shown by the fact that the pouring of the roof took only three days.

January 6 the first floor was poured, the temperature being 21 degrees. No precautions were thought necessary, other than covering the tops of the columns with straw and canvas. Then the temperature began to drop, but the work went on steadily, and the second floor was poured in almost zero weather.

As fast as the pouring was done, the work was piped and covered for heating. Along the tops of the horses used for cement runs during the day lines of pipe were laid, brought alongside the work, and steam sent thru holes pierced every few inches. For this work scrap



Ready to Pour the Roof of the Willys-Overland Service Station on January 24th.

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Cold Weather Concreting



Exterior Completed on February 26th.

pipe was used, especially for the short ends about the columns; it was not generally thought necessary to use fittings on the dead ends of these scrap pieces, and the ends were closed only by hammering the pipe together.

Big sheets of canvas were then fastened into place about the work, so as to confine the vapor closely to the concrete, and give an even temperature all about it. These cloths were permitted to adorn the structure like exotic bloomers as long as practicable, until they were needed on the next floor—from three days to a week. The heat was furnished by a steam heater set up in the basement excavation.

Meanwhile the inside of the building, as soon as there was any skeleton of wall to make an inside, was kept as warm as possible by a battery of open salamanders, or coke burners with gable tops from the ends of which the heated gases and air escaped. This helped to keep the foundations protected from extreme cold after they had started to set, as well as increasing the temperature of the whole structure and making it easier to maintain a good temperature within the canvas.

It must not be thought that this building was a fortunate exception to the rule of accidents and delays which is the bane of the contractor's life. There was no wait, however, on account of the pouring itself, even during zero weather. The work set

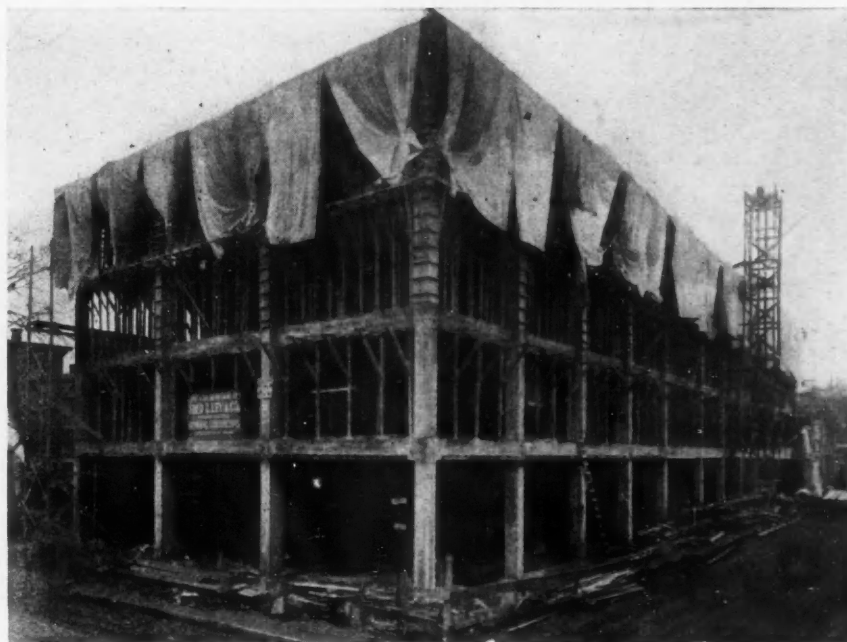
well, and the pouring gang was rounding into fine shape. It was increased in strength, with the other departments, and enough men added so that the hours of working were extended sometimes to 11 o'clock at night in the effort to catch up.

The building had been promised by the contract for March 1. When the needed shipment of steel arrived on January 12, the third floor was ready to pour, and everybody got busy. During the pouring the temperature went down almost to zero—it was 3 degrees on January 15. New England weather has a trick of going up and down in sharp jumps. On the day after the three-degree temperature, for instance, the thermometer shot up to 31, only a degree below melting temperature. Next day it fell again. These changes were,

of course, measured only from the same hour every day—12 noon; and between times there were just as abrupt changes within a few hours, especially at sunset and early in the morning. These repeated sharp thrusts of severe cold are not only inconvenient, but positively dangerous for any cement structure in the making.

However, by paying careful attention to the heating arrangements, and reinforcing them at critical points with the sudden drops of the thermometer, everything went along well. It was expensive, but the building had to go up in order to save money and business opportunity for the owners, so it paid in the end.

(Continued to page 136.)



The View of February 1st Shows Last Cloths on Roof.

Farm Buildings To Aid Food Production



Open Front Sawtooth Roof Poultry House

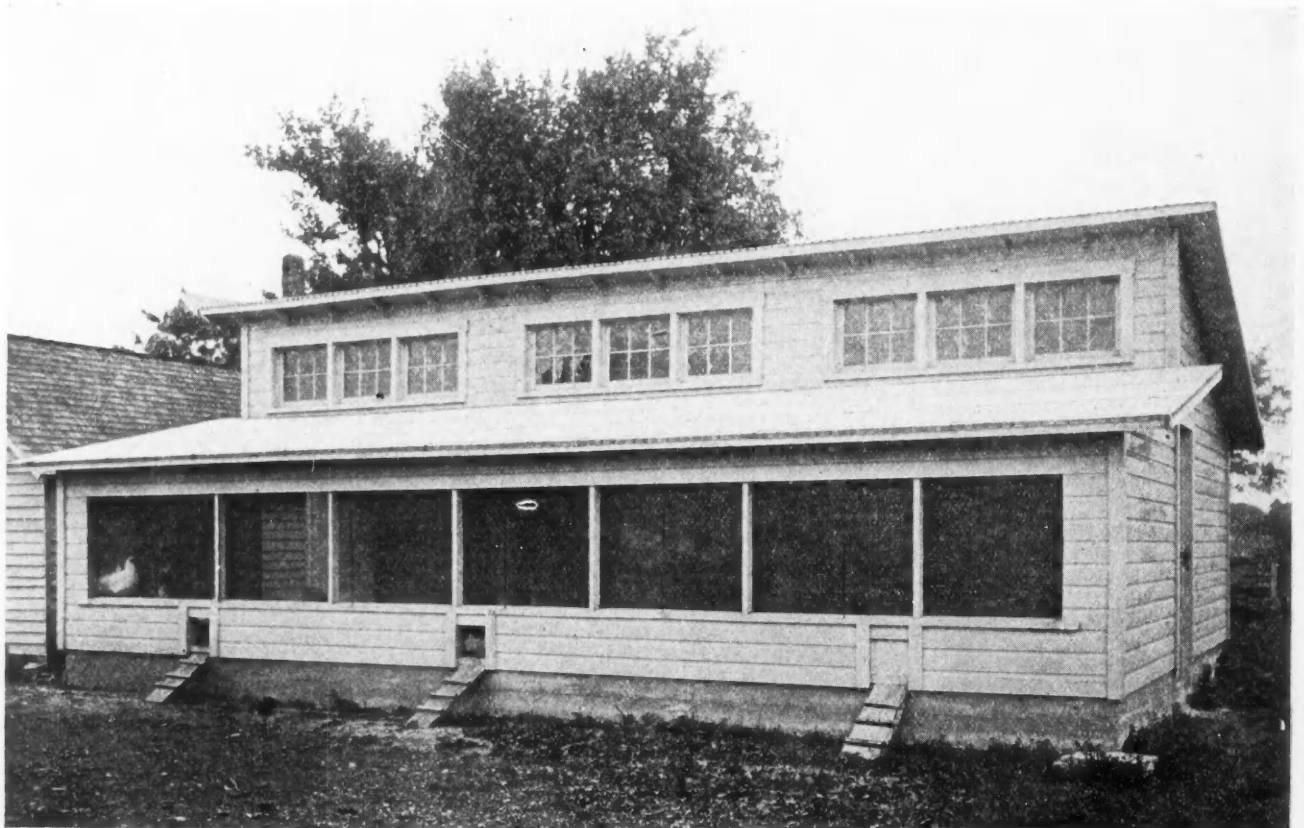
THIS poultry arrangement is in effect a house with roofed and enclosed runyard or scratching room. The hen house proper, containing roosts, nests, feed room, and incubator room, is the high part of the structure and is lighted by the nine windows in the monitor. The low part at the front is the scratching room. The front is 50 per cent open, being covered only with wire netting. It is suggested that the row of studs separating this open space from the roosting room can easily be fitted with canvas curtains on rollers to pull down in stormy weather. Another good method that would work out well and is in line with good poultry experience would be to tack up muslin over the wire netting to give more protection for

the winter season, and at the same time permit a circulation of fresh air.

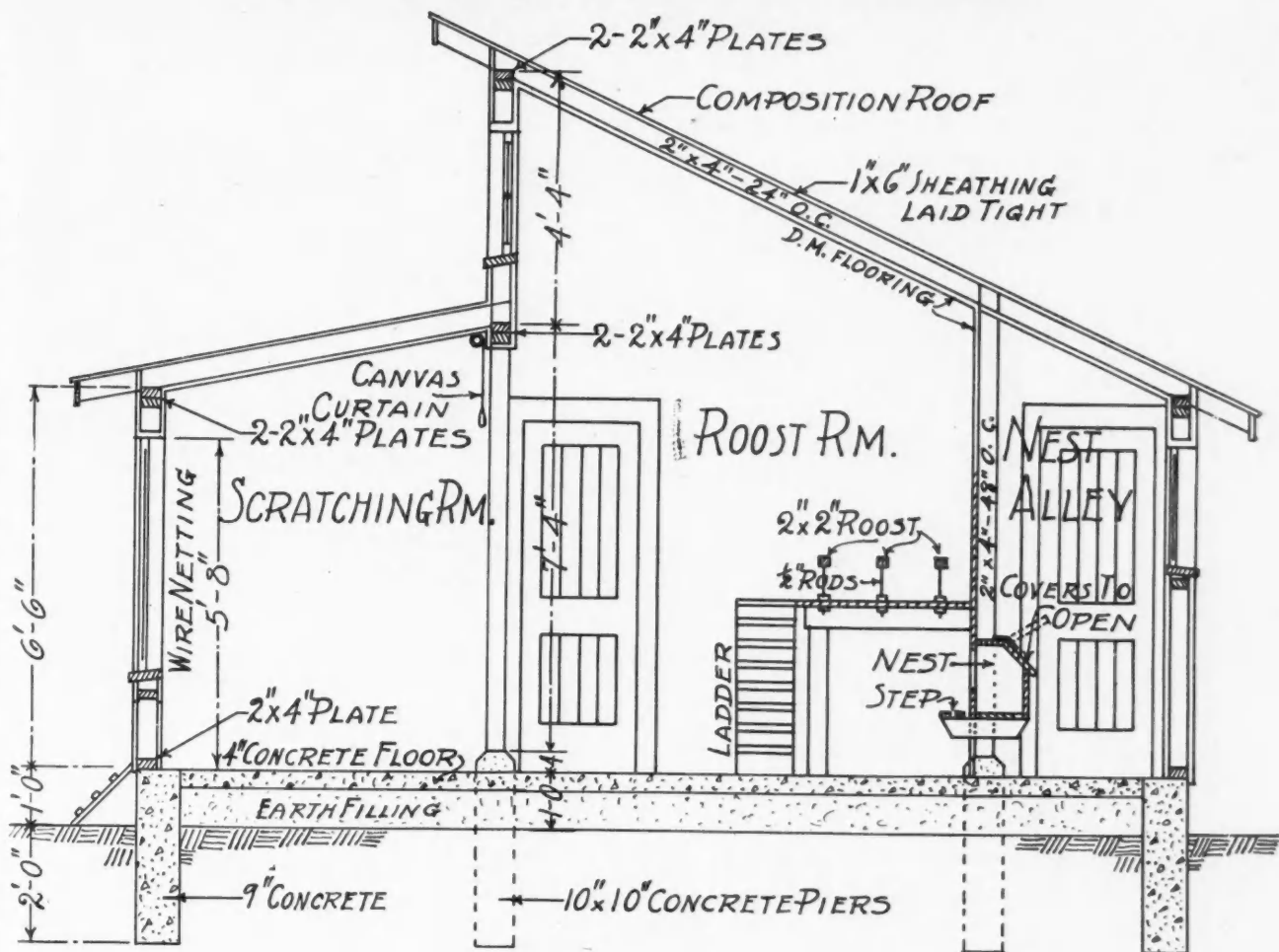
The arrangement of the nest alley in this house is one that will commend itself to the poultry keeper. There is also convenient and safe storage for quite a supply of feed.

A substantial concrete foundation is specified, and is to be recommended, because it helps to make a rat-proof, weasel-proof building. Clean gravel or well drained earth can be employed for the floor.

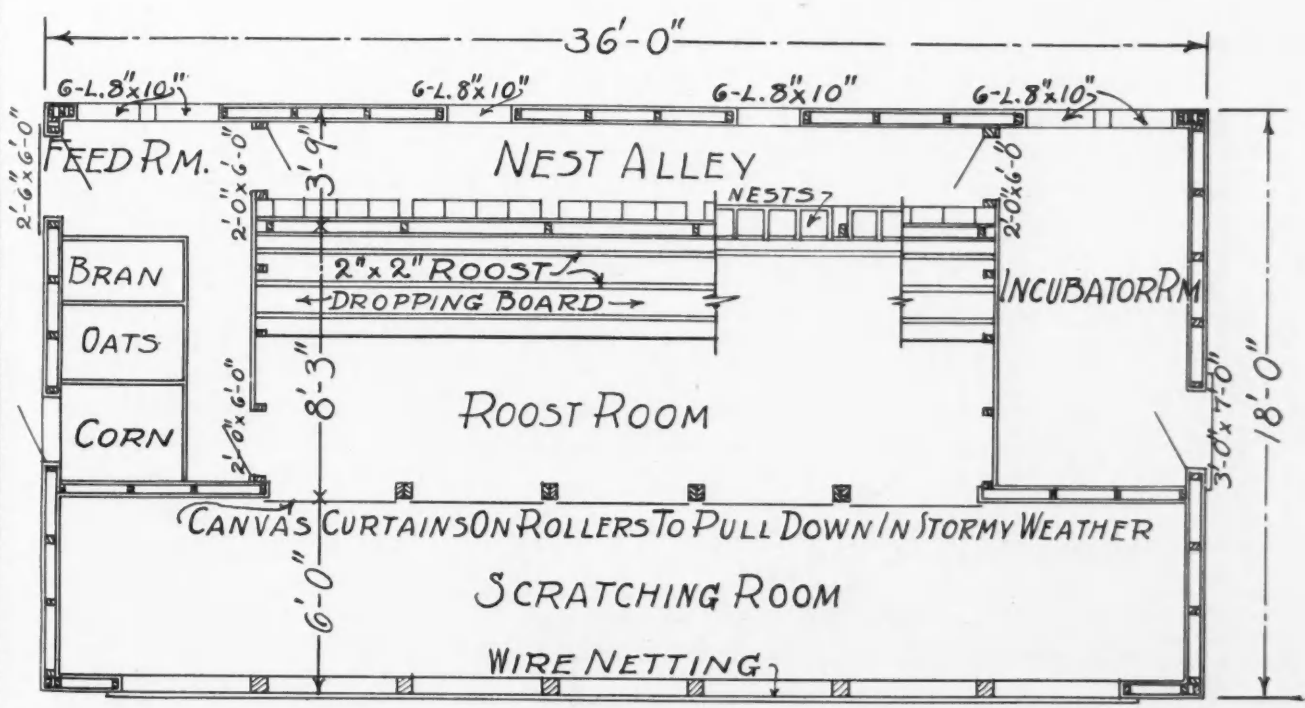
The exterior of this poultry house is neatly finished in drop siding, which makes a snug warm job. Such a building would grace any back yard and with eggs at their present price many such winter egg factories ought to be put up.



Open Front Poultry House Built at Swayzer, Ind. Dimensioned Floor Plan and Cross-Section Showing Construction are Presented on the Opposite Page.

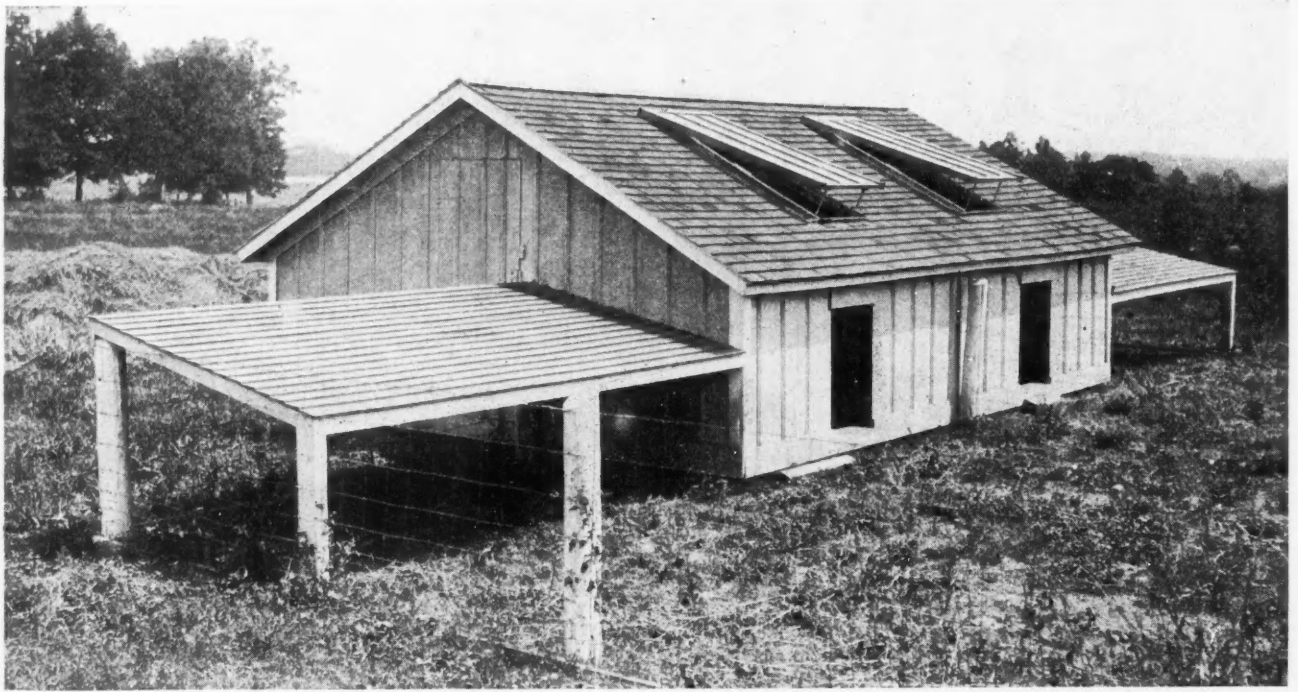


CROSS SECTION OF POULTRY HOUSE



FLOOR PLAN OF POULTRY HOUSE

Working Drawings of Open Front Poultry House Pictured Opposite.

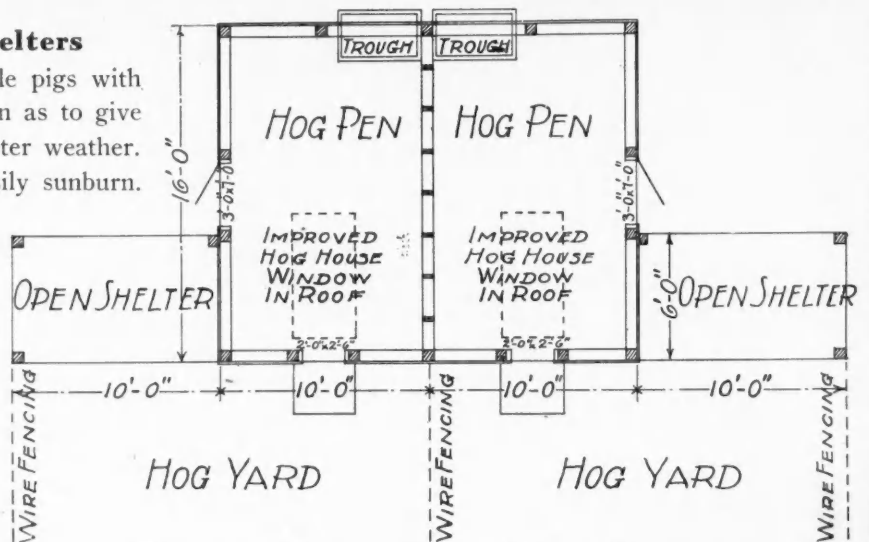


Double Pig Pen With Shelters

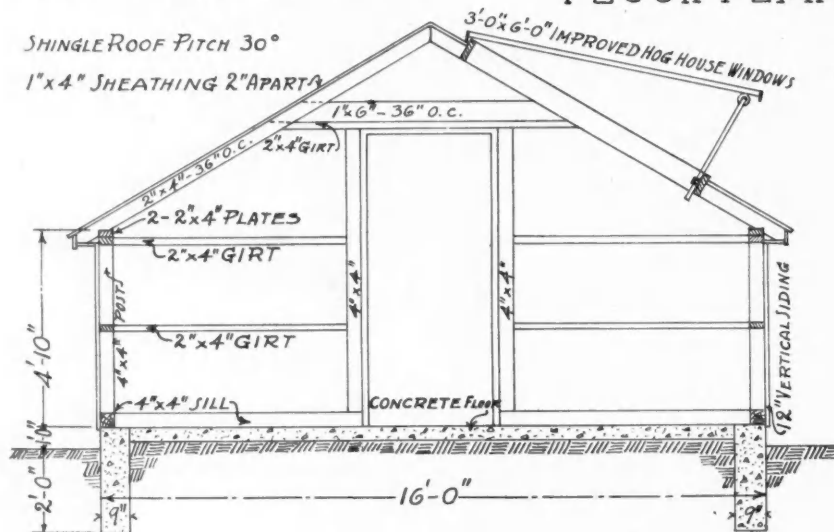
IT is quite as necessary to provide pigs with shelter from the hot summer sun as to give them warm, dry quarters in the winter weather. Swine have very little hair and easily sunburn.

This double hog house illustrated has an open shelter 6 by 10 feet, extending out from the pen on each side. The corner posts are driven into the ground and cut off at the right length to support the shelter roof. No great amount of head room needed under these awnings.

An interesting feature of the building is the roof windows, which furnish all the light there is. Each



FLOOR PLAN OF HOG HOUSE



CROSS SECTION OF HOG HOUSE

of the pens is 10 by 16 feet in size, a generous size.

The drawings show the simple method of construction used for a building of this kind. Concrete floor and foundations are specified for the sake of cleanliness and permanence. The sills, door posts, and corner posts are 4 by 4's. The other pieces, including the rafters, are 2 by 4's.

This hog house is a compromise between the large community type and the small portable. It isn't portable, being fixed solidly, yet it's a pasture shelter pen and is modest in size.

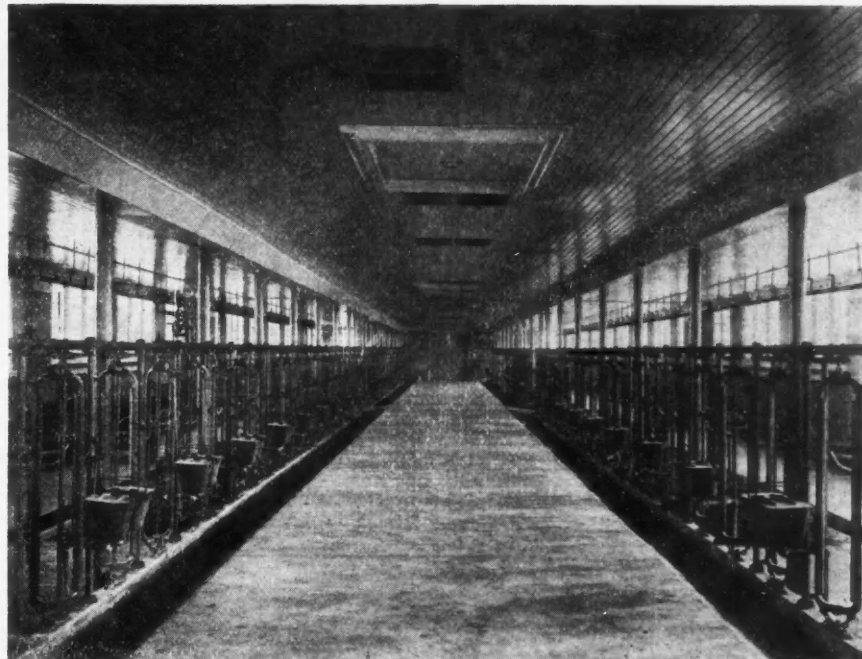


New Dairy Barn on Friends' Hospital Dairy Farm at Trevoze, Pa. Designed by James Manufacturing Company, and Built by William D. Bubeck, Carpenter and Builder, of Somerton, Pa.

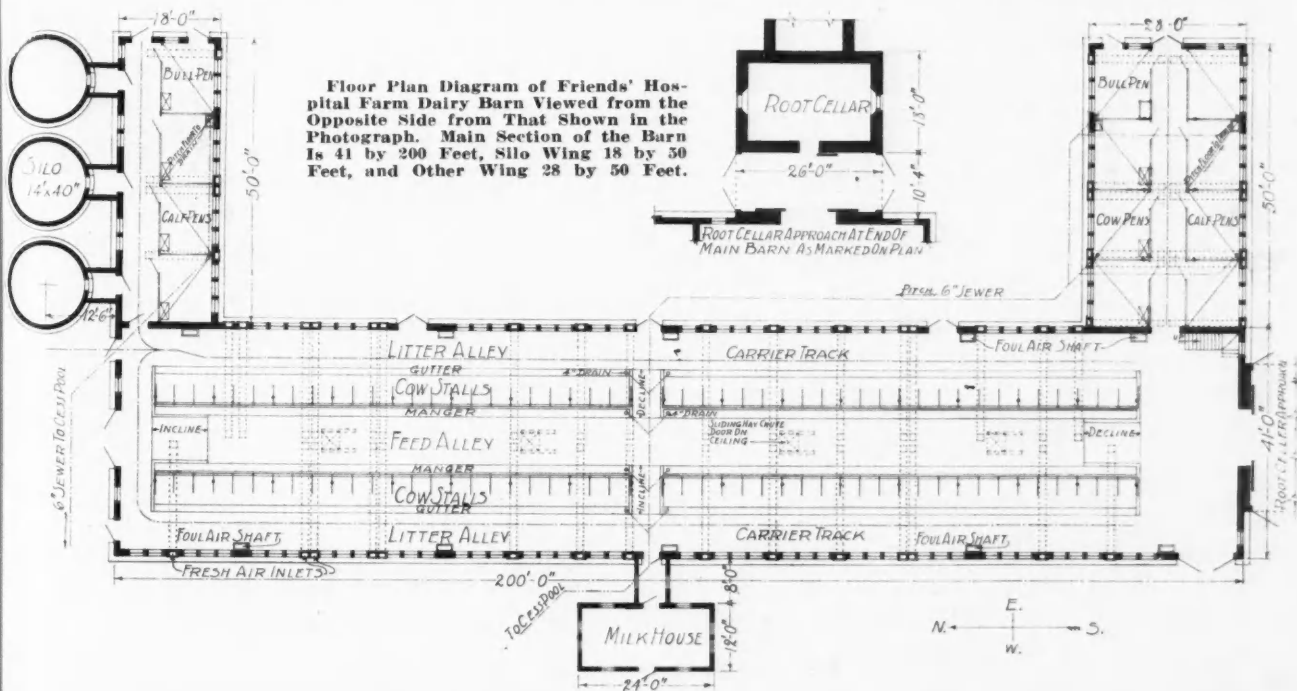
Large Dairy Barn for Institution

AN AMERICAN BUILDER subscriber, William D. Bubeck, carpenter and builder, Somerton, Pa., sends us these photographs of a barn he has recently completed, and of which he has the right to be proud. We don't remember of seeing a bigger barn than this, and certainly never one any better planned.

A notable feature of the outside of this barn is its slate roof, and, of course, snow guards are used. The side walls and framing generally is timber; foundation walls brick down to concrete footings and floor. The interior is unusually broad and spacious. Sanitary steel stanchions, individual drinking fountains, and overhead carriers are provided.



Interior View of Cow Stable Down the Extra Wide Feed Alley, Which Is 200 Feet Long.



ALTER
WIRE FENCING

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Fixing up the Farm

Plumbing in the Country Residence

PART III—CHEMICAL CLOSET SEWAGE DISPOSAL

By Harold L. Alt, Engineer

WHERE the cost of a septic tank and sewage disposal field is absolutely prohibitive, the problem is not unsolvable by any means, as there is still left the chemical closet.

At first thought the idea of a chemical closet does not strike one as being particularly desirable, yet careful investigation seems to set at naught the various objections which suggest themselves. In the first place, what is the general idea of a chemical closet?

In answer to this it may be said that the chemical closet consists of a retainer in which is placed a chemical that is a most powerful germicide. The use of chloride of lime and carbolic acid is well known for disinfecting purposes, and the chemical closet is only carrying this a step farther.

Objectionable odor is entirely prevented by a ventilation pipe, carried preferably thru the roof, but in some cases connected to a chimney flue to avoid ex-



pense. A typical example of an installation of one type of the chemical closet is shown in Fig. 1.

Here the three closets are simply set on the floor, and the 3-inch ventilation pipes are carried thru the roof. The fixture itself is portable, and is finished in three coats of gray enamel, baked on, and is prettily striped in gold, the vent pipe having the same finish. The top of the fixture is made of sheet steel which fits air-tight against the aluminum seat.

Inside of the closet is a galvanized iron container with a handle to allow easy removal. This container is filled with about two gallons of water and a pint of chemical, which is sufficient to last an average family about a month without further attention.

Another type of chemical closet which is a little more elaborate and looks considerably like the regular bona-fide water closet is shown in Fig. 2. In this case a vitreous china hopper closet with a 12-inch diameter outlet in the bottom is installed on top of a galvanized iron tube, which is 13 inches in diameter, this extending down and connecting to the tank, T, in the basement below. Each closet is ventilated by a 4-inch white enameled pipe, which is carried thru the roof as shown; inside the tank, which is of $\frac{1}{8}$ -inch steel with welded joints and covered with anti-rust paint, is an agitator, which is operated once a day to assist mixing the chemical with the contents.

In this type of chemical closet the excreta, paper, etc., are reduced to a liquid form by the action of a very powerful secret chemical which is claimed to be eighteen times as strong as carbolic acid. This not only liquefies but sterilizes at the same time so that the liquid can be drained off to an under drain or dry well twice a year by opening the drain valve, DV, from twenty minutes to half an hour.

The chemical itself comes in powdered form, and in charging the tank it is dissolved in three or four pails of water. No further attention beyond a daily turning of the agitator is then required until the time

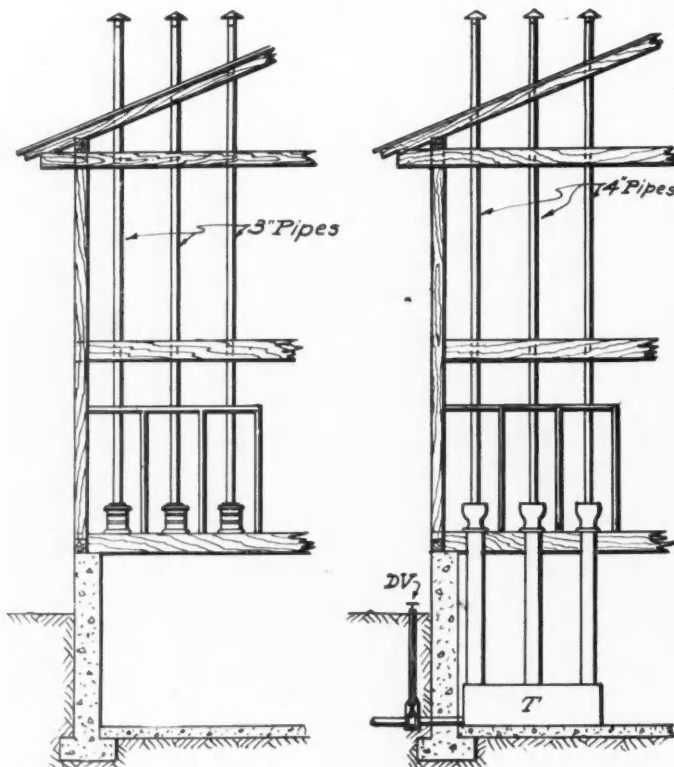


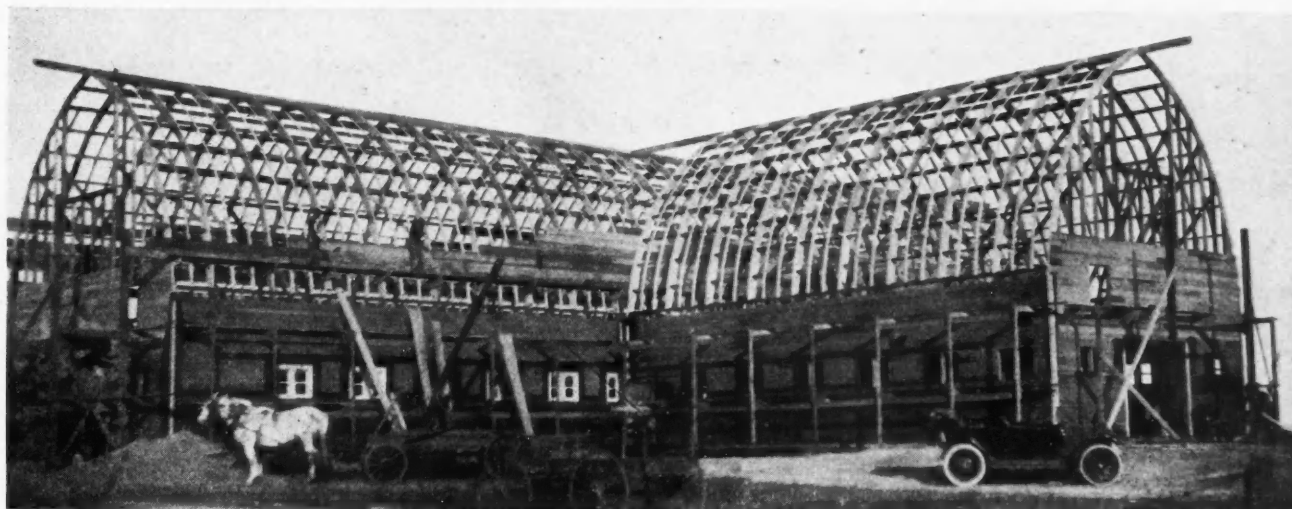
Fig. 1.

Fig. 2.

(Continued to page 136.)

“Up Against It,” or a Barn Builder’s Tragedy

HE DISCOVERS WHEN IT'S TOO LATE THAT THE VENTILATING SYSTEM MUST BE PLANNED WHEN THE STABLE IS PLANNED, OR HE WILL COME OUT WRONG AT THE FINISH



He Used a Gothic Frame and Worked It Out Beautifully to Make a Hay Mow Absolutely Free and Unobstructed by Posts or Braces—and Then Arranged the Stable with the Animals Facing OUT—Which Throws the Foul Air Flues Into the Middle of the Mow.

HERE is a situation that is both puzzling and amusing. A Dakota builder sends us a set of photographs of the big T-shaped, Gothic roof barn they built last year. The photographs show six beautiful big sheet metal ventilators of the approved type sitting on the ridge pole; yet here is what he says in his letter:

“We would be pleased to have suggestions as to the best way to ventilate this barn.”

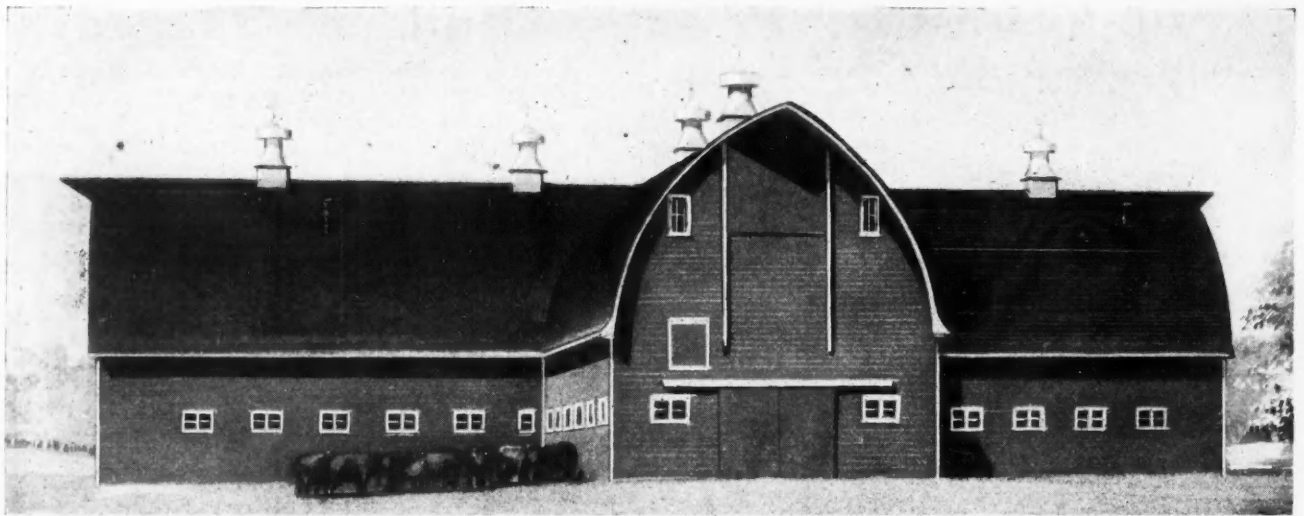
We can remember of writing an editorial some time ago urging that it is not enough to put a fine looking ventilator on the top of a barn and then fail to connect it up with proper flues thru the hay mow to the stable below. This present job seems to bear out our contention.

Here is the builder’s letter:

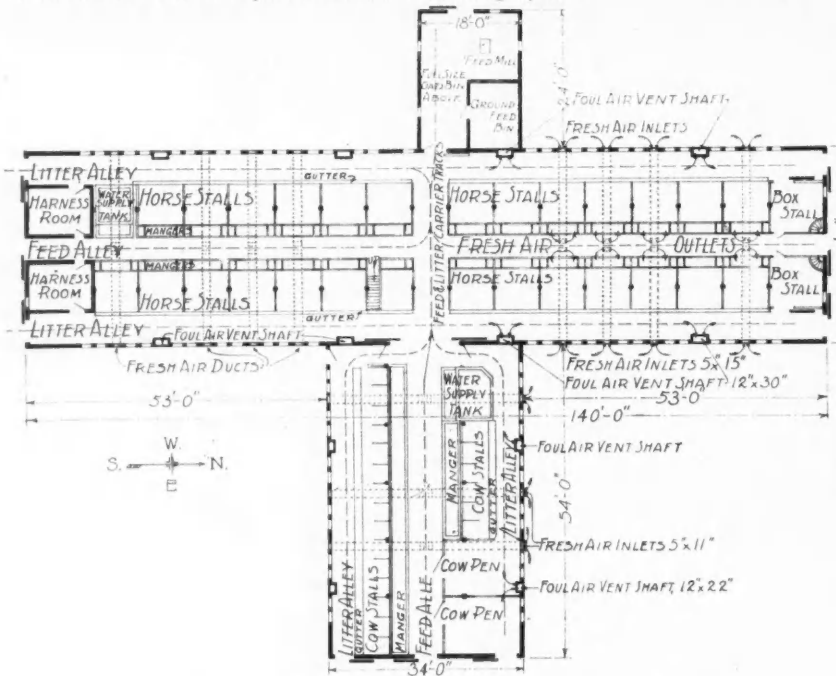
“Note that you have given special attention to Gothic roof barns in the past two issues of the AMERICAN



He Had a Power Saw Rig on the Job Ingeniously Hooked Up to His Ford Car for Power. Timbers Were Cut at a Great Saving.



The Completed Barn Is a Masterpiece for Looks and Style, 140 Feet Long with 54-Foot Wing. The Ventilators Look Good on the Roof, But They Will Never Pull the Foul Air Out of the Stable Until They Are Properly Connected Up with Ventilating Flues. It Takes More Than a Cupola to Make a Ventilating System.



FLOOR PLAN OF HORSE & COW BARN REARRANGED

BUILDER, so am enclosing you several postcards of the barn we built for Mr. M. last year. The size of this barn is 34 by 140 feet for the main section, containing stalls for fifty horses, facing out. The wing extending from the center of the main barn is 34 by 54 feet; has stalls for fifteen cows along one side, cows facing out; along the other side are two pens and a calf tie. Posts are 14 feet high. Has six "—" cupolas.

"We would be pleased to have suggestions as to the best way to ventilate this barn.

"Mr. M. has had figures on it, but they want to run the vent pipes

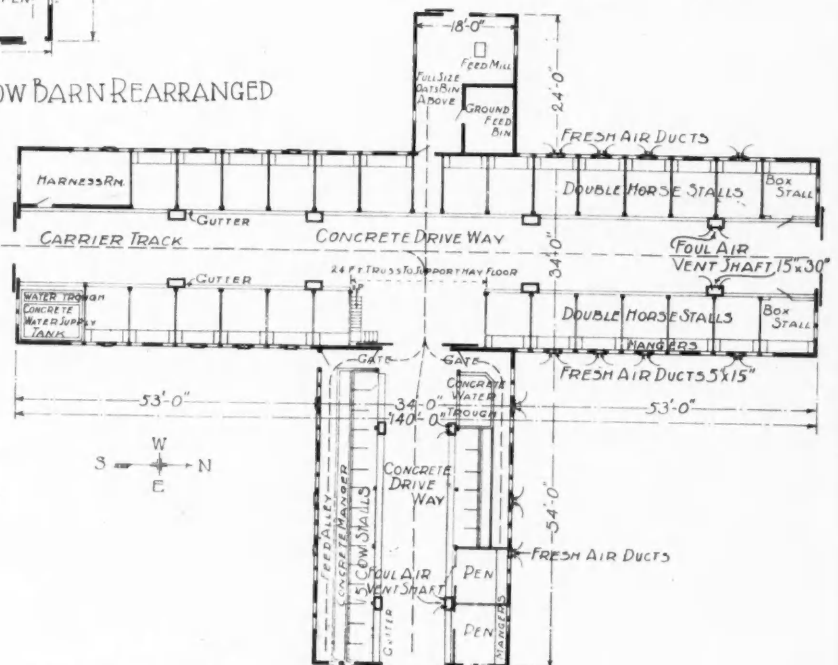
straight up thru the middle of the floor—that is, about 12 feet apart.

"Now, there is not a brace or support of any kind in the hay floor, except those that run from the plate to about 4 feet in on the floor, and we should not like to see ventilation flues put in that way after building the barn purposely to keep from having any braces, etc., in the way.

"Can it be ventilated by following the roof bents down to the plate?

"Would be pleased to hear from anyone who can suggest some good system."

It seems to the Editor that they would either have to rearrange this stable so that the animals face in in-



FLOOR PLAN OF HORSE & COW BARN AS BUILT ANIMALS FACING OUT

stead of out; or else be satisfied to have the foul air flues run up thru the middle of the hay mow. It is a big expensive barn, costing in the neighborhood of \$15,000. It deserves a good ventilating system and should have one even at the expense of an obstructed hay mow.

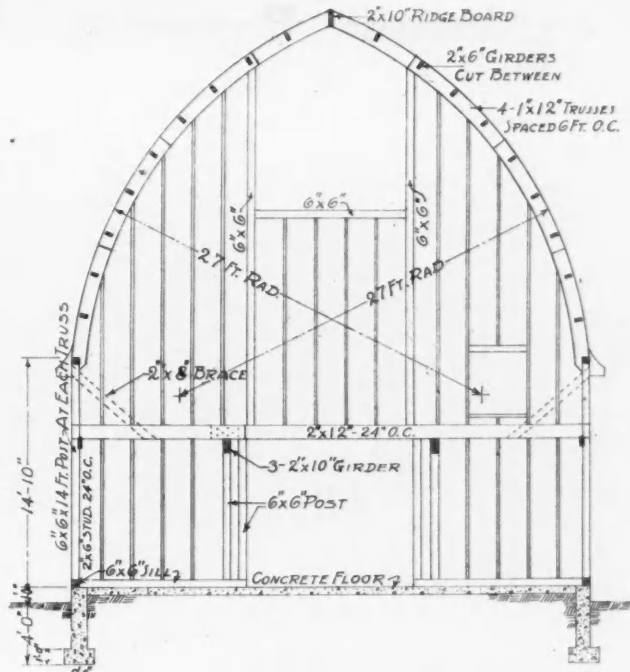
This barn is certainly a strong argument for our contention that a farm building should be designed consistently from start to finish, taking into account where the ventilating flues are to be placed at the same time the stable is arranged.

There is too much of leaving the ventilation to take care of itself and come in the best way it can after everything else is planned and very likely the barn all built.

The accompanying drawings show very clearly the essentials of the construction of a satisfactory barn ventilating system, both for this barn as built with the animals all facing out, and as rearranged to face in. Note the difference in arrangement of stables and also of vent flues. Fresh air is always admitted at the ceiling in front of the animals, and the foul air is exhausted from the floor back of the animals.

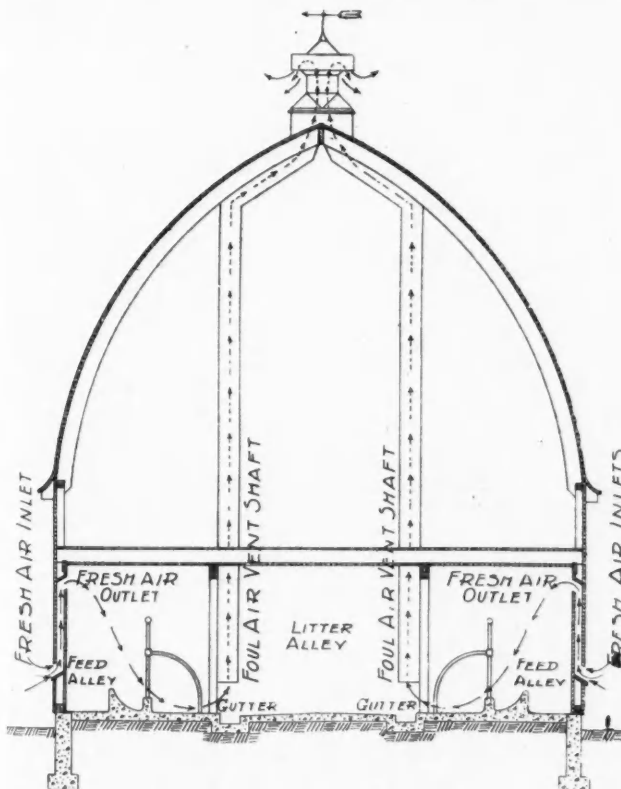
It is best to have flues as nearly straight as possible with an ample cross-section area. In case of a slight angle in a flue, the cross-section area should be increased. Better air circulation will be secured by making one or more larger flues instead of many small ones, and it is usually best to have as few as possible that will carry off all impure air from the stable.

The out-take flue should extend to within 1 foot of



CROSS SECTION SHOWING ENDFRAMING

the stable floor so that air may come up the flue from the floor. This is very important, as the coldest air at the floor should be removed during the winter instead of the warm air at the ceiling. There should be an opening in the ceiling for warm air to escape when the stable becomes overheated. Both these openings should be provided with regulating doors so that they may be partly or completely closed.



IN BARN AS BUILT, FOUL AIR FLUES MUST PASS UP THRU CENTER OF MOW

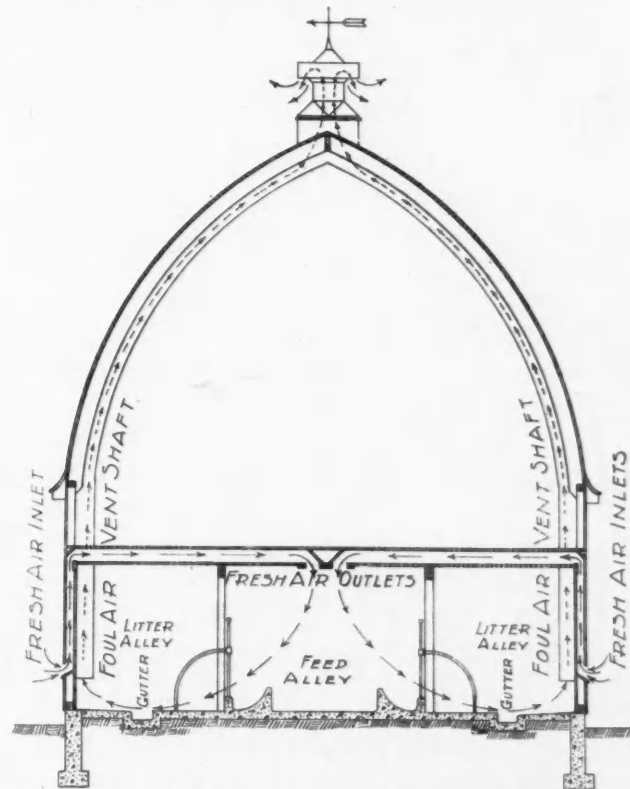


DIAGRAM OF REARRANGED VENTILATING SYSTEM, ANIMALS FACING IN

Ventilation Prevents Spontaneous Combustion

By Chas. L. Atwood

Of the Milwaukee Corrugating Co.



The Dairy Farm of Ben Thelan, Caledonia, Wis., whose barn is equipped with a complete ventilating system, which takes off excessive moisture and combustible gases.

ONE of the most important benefits to be derived by a dairy farmer from proper ventilation is safety from fire by spontaneous combustion. The direct cause of spontaneous combustion is the self-ignition of certain gases. The cause of the formation of these gases in barns is generally attributed to the curing of the hay, which is mowed away when green. This is no doubt the cause of many cases of so-called spontaneous combustion, and when the subject is analyzed we find that the moisture inherent in the hay—or cornstalks, perhaps—ferments, and the gases arising from this chemical action, if confined, become overheated and ignite spontaneously.

When hay has been thoroly cured before storage the average farmer no doubt imagines he is perfectly safe from fire from this source, but is he? Can hay be so thoroly cured that a certain degree of moisture will not cause this fermentation which results in spontaneous combustion? I think it stands to reason that, so long as there is substance and nutrition in fodder, so long will there be the elements which lend themselves to fermentation and combustion whenever the necessary moisture is added. In green hay or other fodder the moisture is already there to start the processes of fermentation. In thoroly cured hay, a sufficiently moist condition must be brought about in some way to convert the dry fodder into a fermenting mass that can cause a conflagration.

This very condition is the most natural thing I know

and beyond the Air-ne and has abandoned to
 o The all intention of attempting a serious
 prints the state of the world by The Press (The New York World.)
 NORRIS FARM CAMP
 SWEEP BY FIRE
 Big Bend, Wis.—D W Norris, 1906
 Grandav. Milwaukee, suffered a loss
 of \$25,000 as the result of a fire on
 the Norris Farm camp, caused by
 spontaneous combustion in a hay barn
 The main building, a fifteen-room
 stone house, and a tenant house were
 destroyed. The milk and implement
 houses were damaged.—Aug 8, 1918
 ND SHIP SUNK OFF CAPE
 WAS: 18 MISSING
 19 New York The American steam: Th
 A Clipping from the Milwaukee Journal.

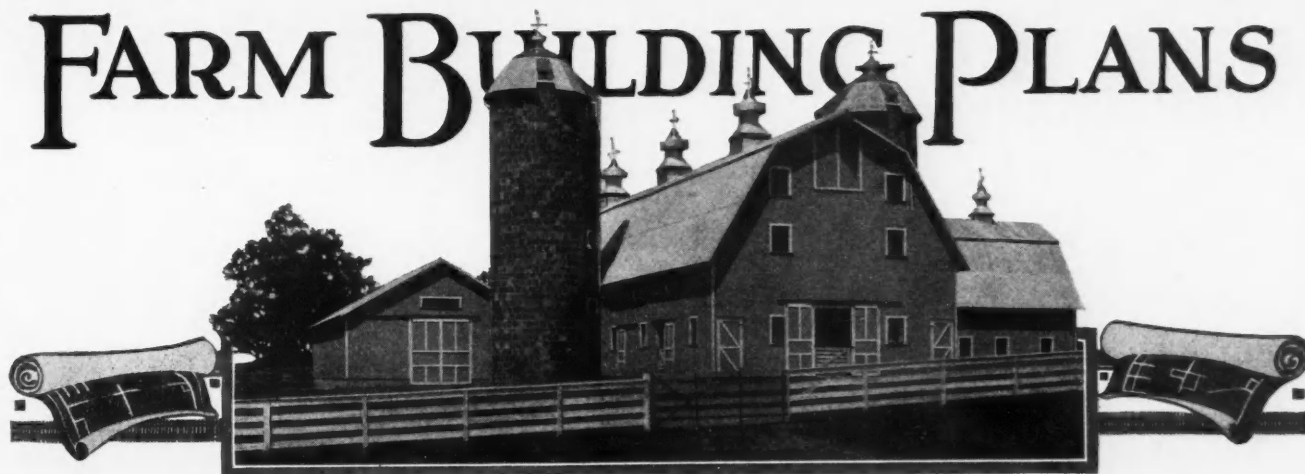
of in a good dairy barn, if it is not properly ventilated. It is pretty generally known that a cow gives off about ten pounds of body vapors daily. Multiply the units of a herd by ten and you have the amount of moisture expelled daily, to be carried off or absorbed in various ways. These vapors furnish the necessary moisture to start the processes of fermentation. The better the barn the greater the danger unless adequate means are provided to carry

off this excess moisture. This is one of the many reasons why modern barns should be thoroly ventilated. Ventilation is effective in the prevention of spontaneous combustion in two different ways. In the first place, ventilators which have a scientifically siphonic action draw the combustible gases out of the hay loft if they are being generated there. In the second place, the foul air flues, scientifically placed and properly constructed, will take off the excessive moisture and eliminate the conditions which promote fermentation and generate these inflammable gases.

It seems very conservative and reasonable, then, to say that no barn is thoroly and scientifically ventilated unless it takes care of the excessive moisture which is thrown off daily by cattle in the ordinary functions of healthful life. On the other hand, it would be unreasonable to state that a good ventilator on a roof of a barn would do no good at all. If properly constructed so as to have a siphonic action, without down draft, a ventilator on the roof would at least carry off some of these inflammable gases, if

(Continued to page 130.)

FARM BUILDING PLANS



Blue Prints of Stock Barn and Feed Racks

FULL PAGE PLATE PHOTOGRAPHS (PAGES 50 AND 55) ILLUSTRATE STOCK BARN WITH COVERED YARD AND ALSO GROUP OF SELF-FEEDERS FOR LIVE STOCK, AND THE BLUE PRINT SUPPLEMENT SHOWS THE CONSTRUCTION IN DETAIL OF THESE

THE cattle feeding barn illustrated on the next page, and detailed on Blue Print Sheets 1, 2 and 3, is a very practical design which farmers will like. The main barn is 30 feet wide by 96 feet long. Has a drive-way along one side for convenience in feeding, and the rest of the space is divided into a series of pens, each opening out into the covered stock yard. The space above the stable is very large, giving great hay storage capacity.

With a building of this kind any farmer can raise good live stock and take care of them easily. The feed is close at hand, and the animals are well protected, so that they make steady gains right thru the rough weather.

Recommend this barn to stock feeders.

RACKS AND SELF-FEEDERS FOR WINTER WORK. The photographs on page 55, with blue print sheet opposite, show the most serviceable and salable line of feed racks ever devised for the farmer trade. We are glad to offer these at this time of year, and we recommend them to carpenters and builders who want to busy themselves during the winter season, to lumber dealers who have an accumulation of short stuff and odds and ends around the yard

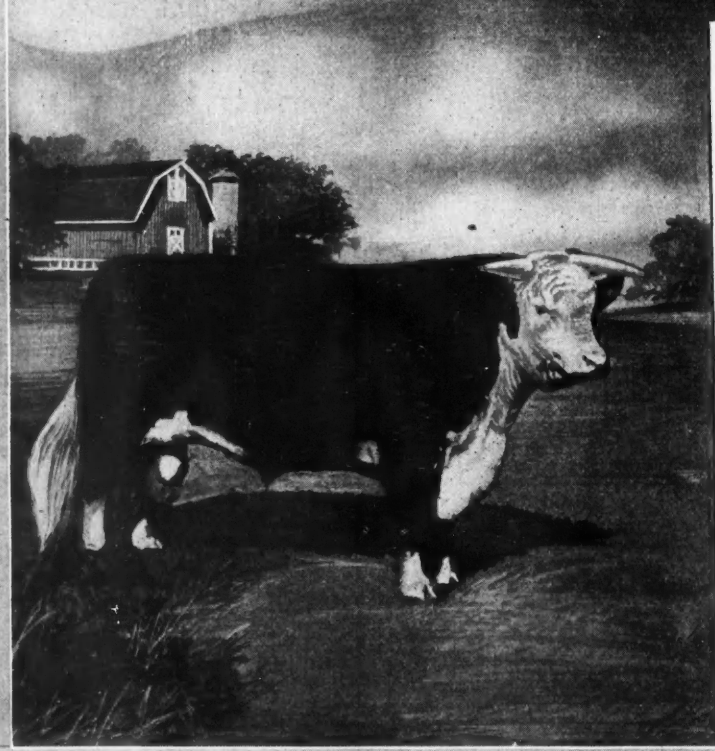
**Full Page Plate Photographs
of Blue Print Buildings**

Stock Barn with Yard Shed . . . Page 50
Labor-Saving Feed Racks . . . Page 55

which they would like to work up into salable shape, and also to farmers and stock raisers who want a workmanlike, well-designed and well-built feed rack for use this winter. Here are six different racks for cattle, sheep and hogs. They are worth all the way from \$5.00 up to \$30.00 for the sizes illustrated.



Here is a Typical "American Builder" Farm Building Field Job—a Modern Barn, a Garage and a Wide, Generous Farmhouse, with all the Modern Conveniences. The Contractor and His Men Are Just Ready to Turn Over the Key to the Owner.

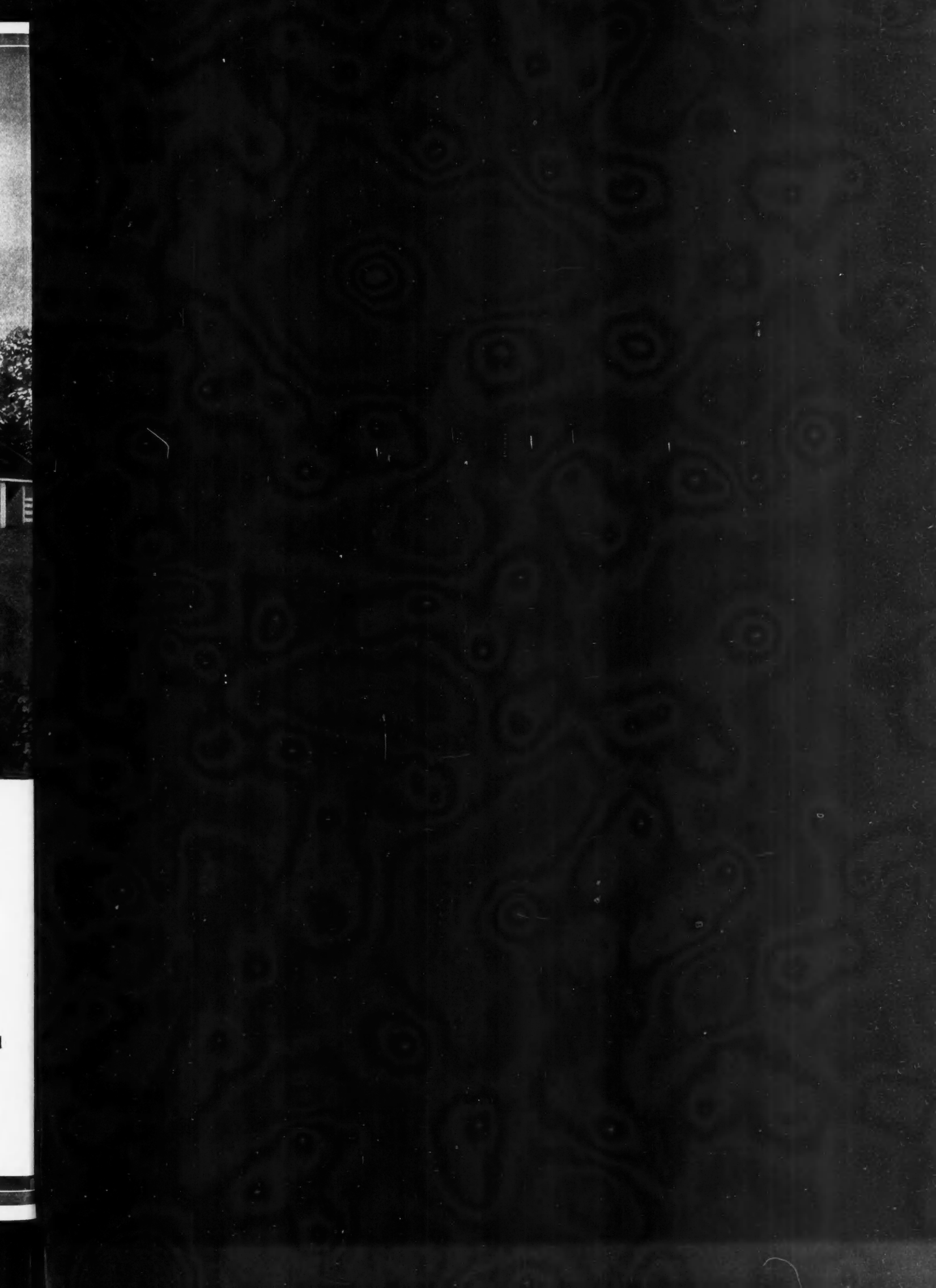


Stock Barn With Covered Yard

For Working Drawings See Blue Print
Sheets Nos. 1, 2 and 3

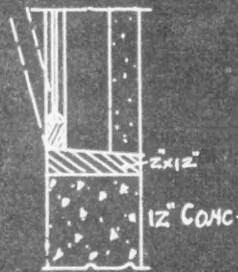
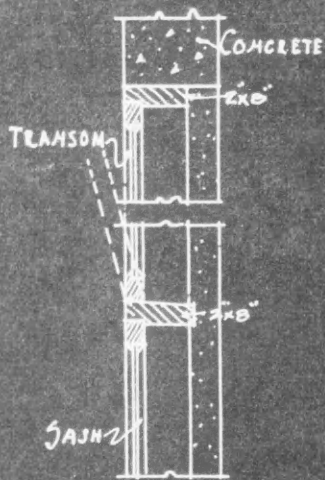
Illustrating "Repeater 7th" World
Famous Hereford Bull

"It costs no more to raise Good
Stock than Scrub Stock"

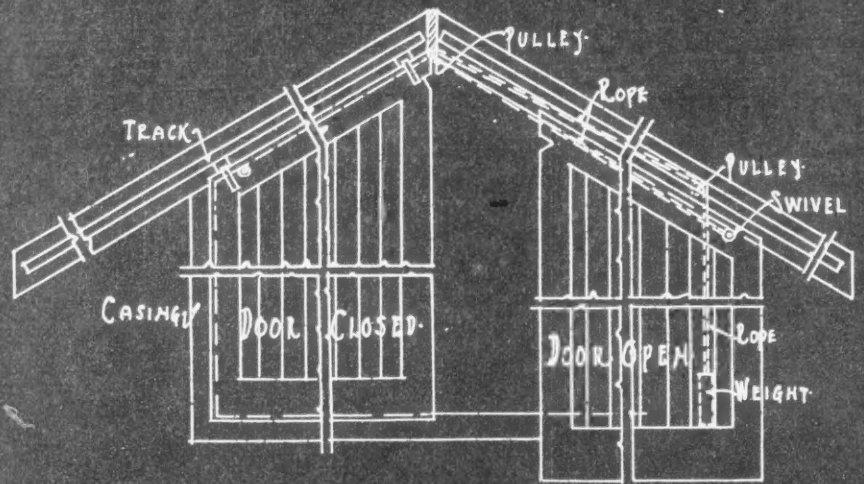




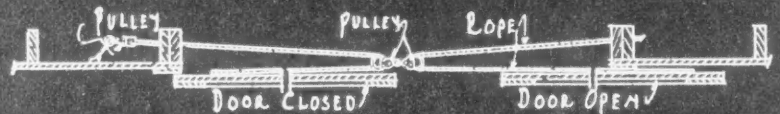
AMERICAN BUILDER BUILDING PLANS.



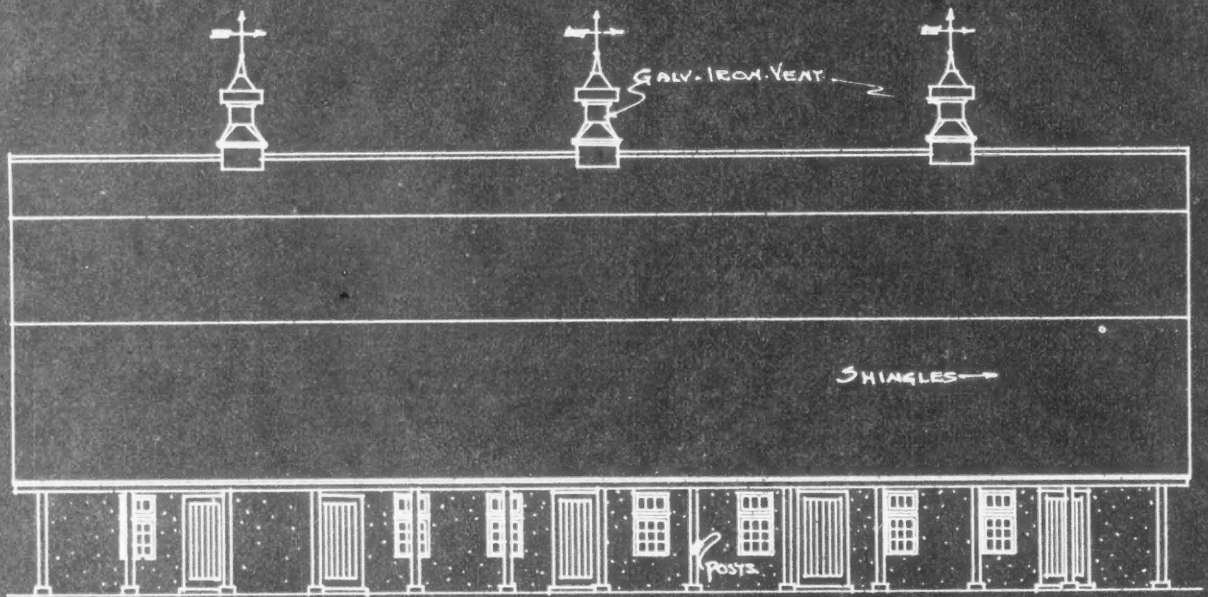
WIND FRAME
SCALE 1/2"=1'-0"



ELEVATION OF HAY MOW DOORS



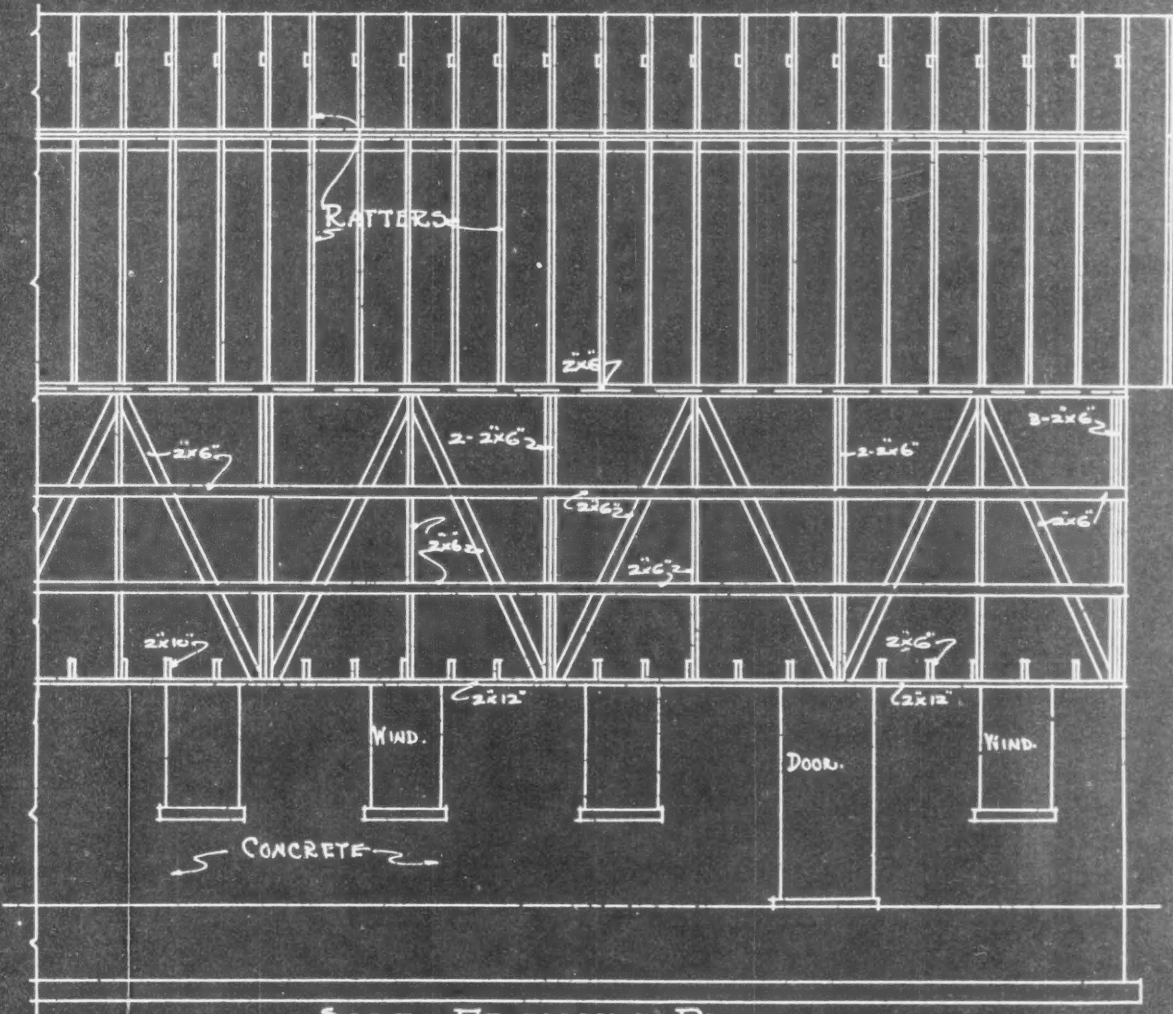
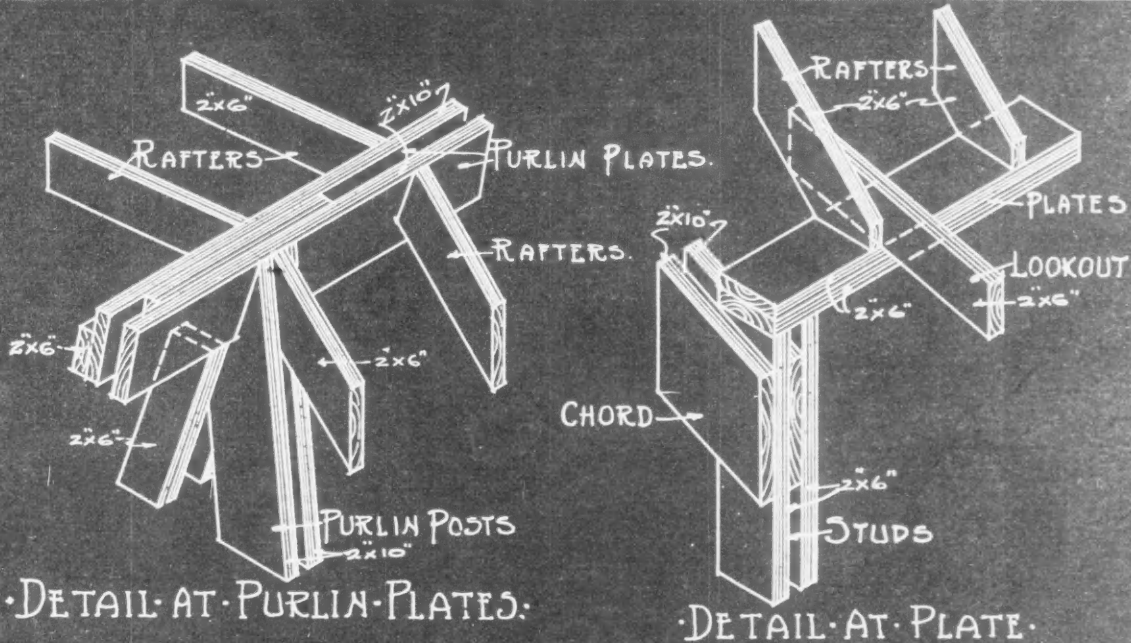
PLAN OF DOORS
SCALE 1/4"=1'-0"



SIDE ELEVATION
SCALE 1/16"=1'-0"

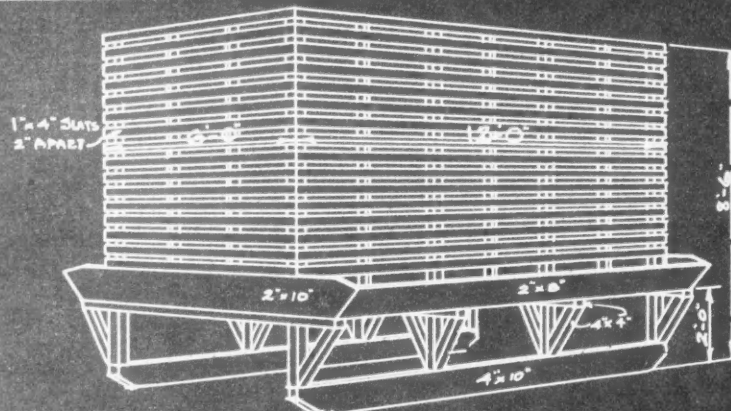
STOCK BARN WITH COVERED YARD. SHEET NO. 2

AMERICAN BUILDER BUILDING PLANS

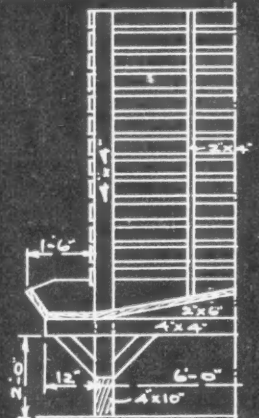


SCALE 1/8"=1'-0"

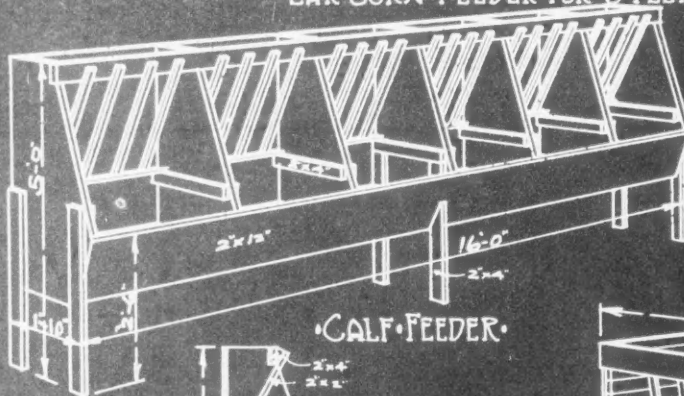
AMERICAN BUILDER BUILDING PLANS



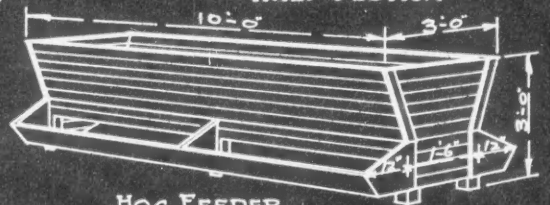
EAR CORN FEEDER FOR STEERS



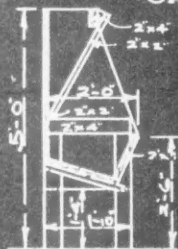
HALF SECTION



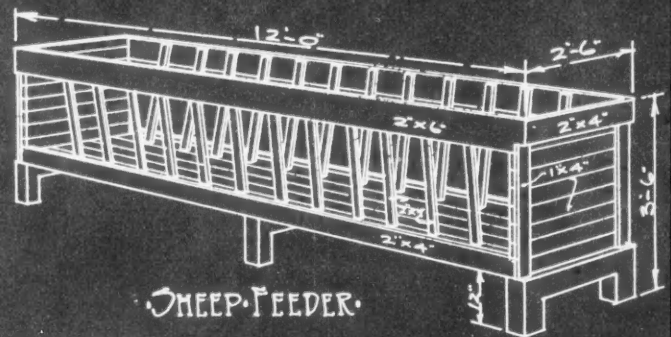
CALF FEEDER



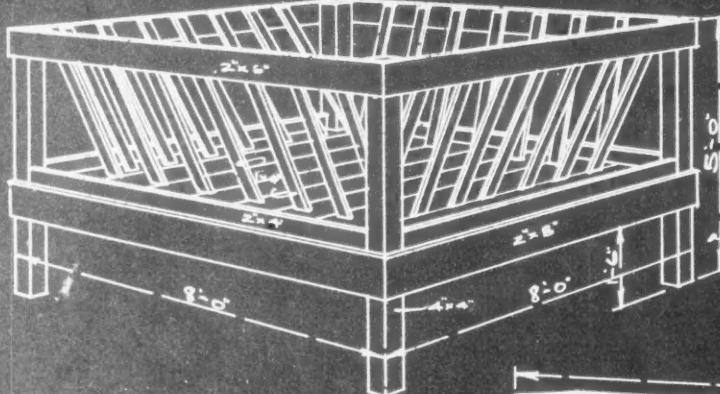
HOG FEEDER



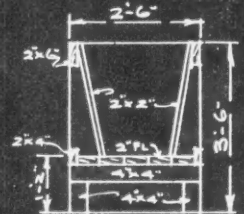
CALF FEEDER GROSS SECTION



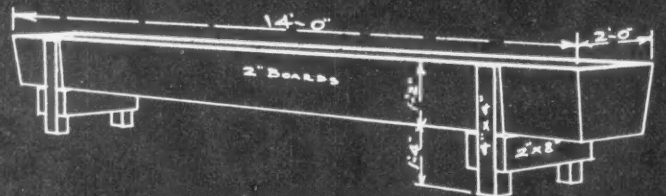
SHEEP FEEDER



SQUARE CATTLE FEEDER



SHEEP FEEDER SECTION



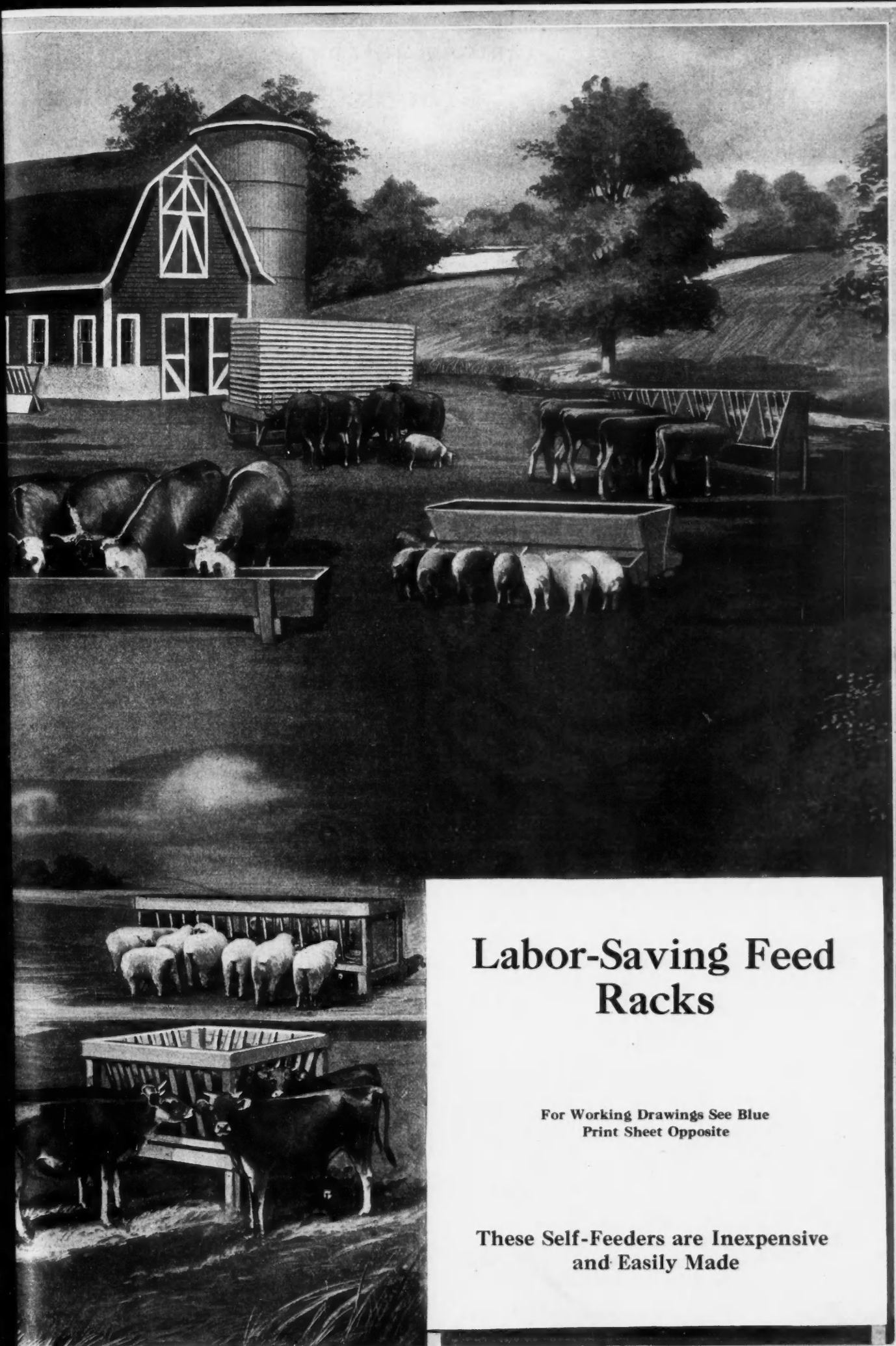
CATTLE FEED TROUGH

SELF FEEDERS FOR LIVE STOCK.

5.







Labor-Saving Feed Racks

For Working Drawings See Blue
Print Sheet Opposite

These Self-Feeders are Inexpensive
and Easily Made

Remodeling Country Schools for Better Lighting

THE "WISCONSIN" IDEA OF WINDOW PLACING AND HOW IT WORKS

By Chesla C. Sherlock

FOR some years past a great deal of attention has been devoted to the question of adequately lighting city schools so that the maximum efficiency in this respect could be obtained. Our city schools are far ahead of country schools in this respect, due, no doubt, to city parents becoming alarmed at the large percentage of school children who were suffering from defective eyesight.

The result has been to so arrange windows in the school room as to shut off all blinding cross-glares of daylight, to prevent the child having to look toward strong light as he studies or recites and, in

and that it was first put into use in the state from which its name is taken.

In the Wisconsin school light is admitted from only two sides of the room. The north and west sides of the room are built solid, being given over to black-board and picture space. The school room generally has its opening on the south side. There may also be windows on this side, while practically the entire east side of the building is given over to windows, to admit light and air to the interior.

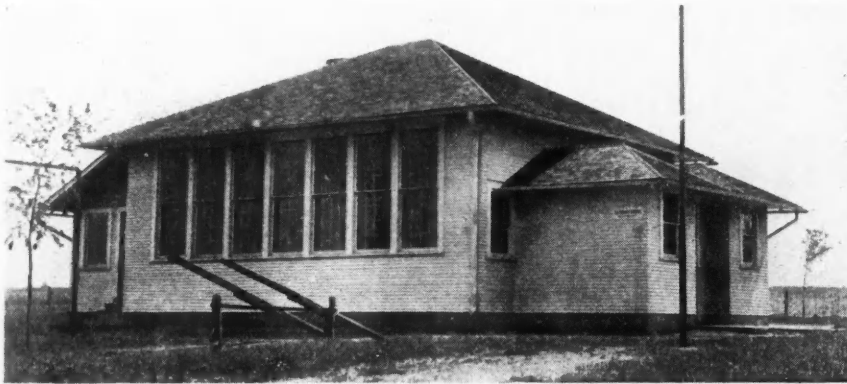
The advantages of such a school house can be apparent at once to everybody. Admitting light from one side of the room only absolutely eliminates all chance of cross-glares in the room. The fact that the children face the north wall of the room removes all possibility of their having to study against the outside light, and what light comes from the south side of the room comes over their shoulders.

It is not always possible, of course, to construct school houses with the entrance to the south, but the same general idea can be carried out. There is an advantage

in having the open side of the room to the east, as there is practically little trouble from the sun shining in the room during the day, while if the opening is to the west, the sun causes considerable trouble during the last two hours of the afternoon session.

Wherever the Wisconsin school house has been used it has met with widespread favor because it embodies the essential ideas found worked out in the city schools which have been so successful. The Wis-

(Continued to page 132.)



Inexpensive Rural School Building of the Modern Type.

short, to treat the matter as if it was entitled to the consideration which it really deserves.

Parents do not hesitate to demand the necessary equipment in city schools once they have had the matter presented to them in the proper light. No father or mother wants a child to wear glasses or to go thru life handicapped because of strained eyes during his school days.

The effect of this change in city school plans is finding its way into rural communities. There is no argument which can be advanced in favor of eliminating eye strain for city children which does not apply equally well for country children.

And while new school houses are being built over the country to take the place of the "little red school house," this question of proper lighting facilities should not be slighted.

To fill this need there has been developed a type of school building known as the "Wisconsin idea" school house. This type of school house derives its name from the fact that its lighting facilities depend almost entirely upon daylight,



An Old School House Remodeled to Conform to the New Lighting Requirements.

ing

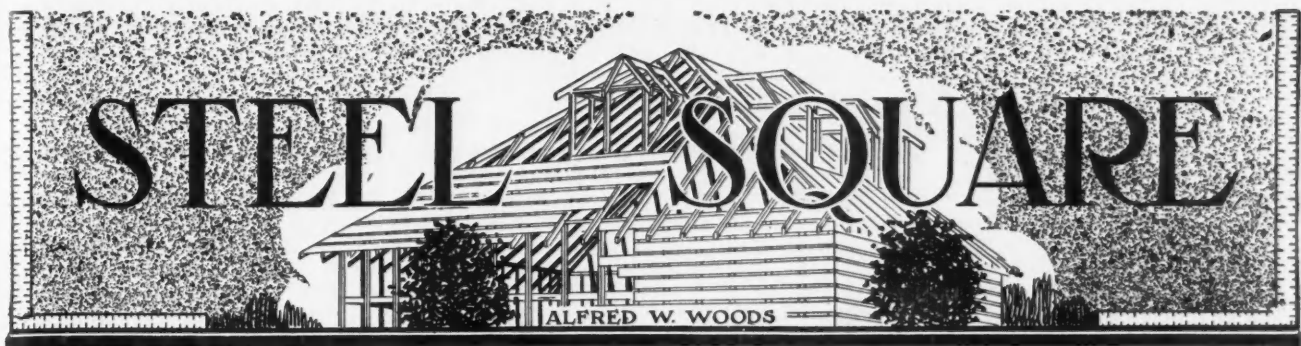
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Problems of Roof Framing Solved

SECOND OF A SERIES OF ARTICLES ON THE PRACTICAL USE OF THE STEEL SQUARE FOR ROOF FRAMING—
THE RELATION OF THE HIP RAFTER TO COMMON RAFTERS

By A. W. Woods

WE will now continue using the same example in connection with the corresponding hip, and in doing so we will again show the layout of the common rafter as in the previous article, but this time with the layout as it would appear with the corresponding hip.

The first thing to know is the size of the building and the pitch of the desired roof. Knowing this, the dimension of the plan is at once fixed and forms the base from which to work. The experienced framer does this work mentally and applies his square to the timbers intelligently without having to resort to a diagram to first find the figures to use to obtain the desired results. But not so with the novice; he has to be shown and for that reason we are going to try to make this work plain.

The critic, we trust, will therefore pardon us for elaborating on simple things, because it isn't meant for him; he doesn't need it; it's for the other fellow who has not been in the harness so long. So, going back to the illustration, we first call attention to the plan. It is the shaded part in the form of a right

angled triangle, because the subject is a square cornered building. A B represents the run of the common rafter, A C the tangent, or the distance that the common rafter rests from the corner of the plate. B C represents the run of the hip and rests at an angle of 45 degrees from the run of the common rafter, because the pitch on either side of the hip is of the same slope. B D represents the rise given the roof. Now, as the run of the common rafter in this example is 6 feet 8 inches and the rise 7 inches to the foot, the square is placed seven times at 12 and 7. At the last placing of the square, and after marking along the tongue, the square is moved back along this line till the 8-inch mark rests at the edge of the rafter and the blade will give the proper plumb cut. This is plain enough and we trust everybody understands the work up to this point.

If there is to be a tail to the rafter to form the cornice, then square down on a plumbline directly under the starting point, to the depth desired for the tail as at A. This line should be at right angles to the tongue as shown in the illustration. Then slide the square down the edge of the rafter without change of figures till the tongue touches the desired depth on the plumbline, and mark along the tongue. This line will represent the seat cut of the common rafter, as shown at A. Proceed in the same manner for the hip as shown at C, placing the square on the edge of the rafter as many times as for the common rafter, but at 17 and 7 instead of 12 and 7. The reason of this is clearly illustrated by the dotted lines from one rafter to the other. The run of the hip has a gain of 5/12 over the run of the common rafter. This added to one foot, as shown on the tongue of the square for the common rafter, brings it to 17 for the hip rafter. In other words, 17 is the diagonal for one foot square and is therefore a fixed number for the hip, the same as 12 is for the common rafter, and remains 17 for any pitch given the roof. The square is placed the same number of times on the hip as for the common rafter, but at the last placing it is slipped back till 11 1/4 inches rests at the edge of the rafter, because that is practically equal to the diagonal of

(Continued to page 128.)

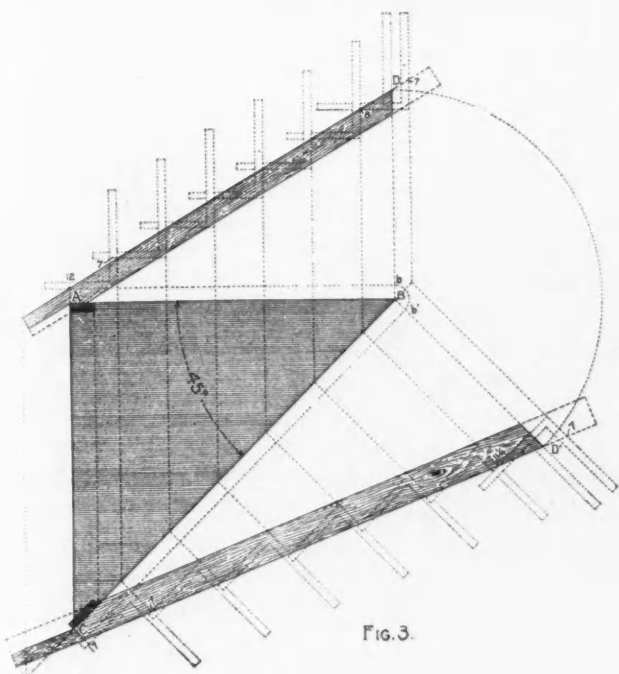
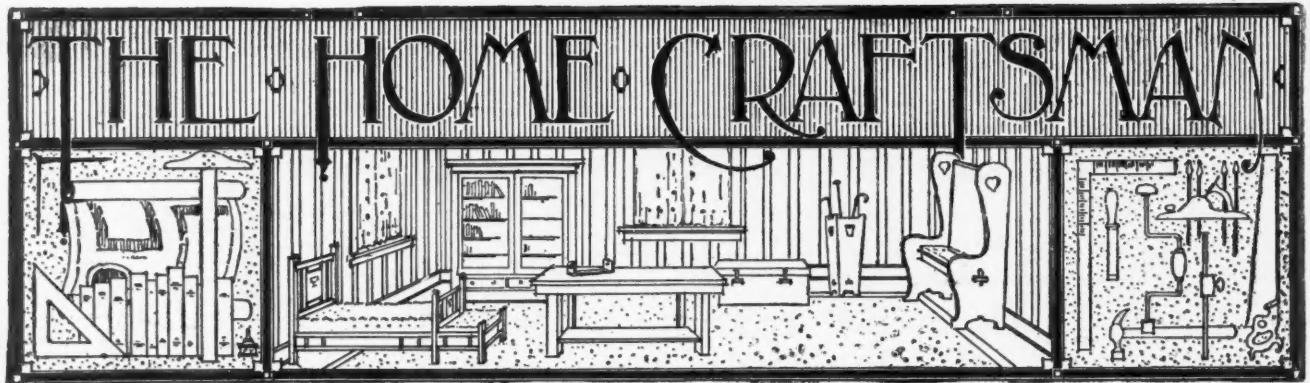


FIG. 3.



Working Instructions for a "Different" Cedar Chest

By Frank O. Koch

I DESIGNED this cedar chest with two points in mind, namely, utmost convenience and a true regard for the graceful, simple and rich proportions of colonial design.

This chest is not just a "storage box," like the average cedar chest, but in reality a convenient chest of drawers designed in the form of a cedar chest. Access to drawers is obtained by opening door on front, the top being stationary. A cedar chest of this kind, in my mind, leaves nothing to be desired.



The Working Drawings on the Opposite Page Show How to Make This Chest of Drawers.

This chest, if well made, is a fitting heirloom to be handed down thru the generations. It makes an ideal present for Christmas, birthday, bridal or many other occasions.

For the construction of this chest use "Tennessee red cedar." You will obtain best results and save yourself a lot of hard work by ordering the material at the planing mill, dressed four sides, and sanded where specified in following material bill. An outline of top, giving general dimensions of same and pattern of feet and brackets, should be furnished the mill and included with the bill of material. If the maker desires to cut out the material by hand, allowance must be made for planing and squaring pieces to sizes given below.

Material Bill

- 1 top $\frac{3}{4}$ inch thick, size as per drawn, sanded one side.
 - 1 piece $\frac{3}{4}$ by $1\frac{1}{4}$ by 52 inches.
 - 1 piece $\frac{3}{4}$ by $1\frac{1}{4}$ by 60 inches.
 - 2 pieces $\frac{3}{4}$ by $1\frac{1}{4}$ by 26 inches.
 - 1 bottom $\frac{3}{4}$ by 19 by $46\frac{1}{2}$ inches.
 - 1 back piece $\frac{3}{4}$ by $20\frac{3}{4}$ by 48 inches, sanded 1 side.
- } Border Strips

- 2 ends $\frac{3}{4}$ by $20\frac{3}{4}$ by 21 inches, sanded 1 side.
- 1 door $\frac{3}{4}$ by $19\frac{1}{2}$ by 41 inches, sanded 2 sides.

Pilasters

- 2 front pieces $\frac{3}{4}$ by 4 by $20\frac{3}{4}$ inches.
- 2 side pieces $\frac{3}{4}$ by 2 by $20\frac{3}{4}$ inches.
- 2 back pieces $\frac{3}{4}$ by $3\frac{1}{2}$ by 20 inches.
- 2 brackets (as per pattern) made up of $\frac{3}{4}$ -inch stuff, as shown on (Section F). Sanded 3 sides.
- 2 feet (as per pattern) made up of $\frac{3}{4}$ -inch stuffs, as shown on (Section F). Sanded 3 sides.
- 2 lifts $\frac{3}{4}$ by 2 by 6 inches.

Drawers

- 1 front piece $\frac{3}{4}$ by 7 by 40 inches, sanded 1 side.
- 1 front piece $\frac{3}{4}$ by 6 by 40 inches, sanded 1 side.
- 1 front piece $\frac{3}{4}$ by 5 by 40 inches, sanded 1 side.
- 2 side pieces $\frac{1}{2}$ by 7 by $18\frac{3}{4}$ inches.
- 2 side pieces $\frac{1}{2}$ by 6 by $18\frac{3}{4}$ inches.
- 2 side pieces $\frac{1}{2}$ by 5 by $18\frac{3}{4}$ inches.
- 1 end piece $\frac{3}{8}$ by $6\frac{3}{8}$ by 40 inches.
- 1 end piece $\frac{3}{8}$ by $5\frac{3}{8}$ by 40 inches.
- 1 end piece $\frac{3}{8}$ by $4\frac{3}{8}$ by 40 inches.
- 3 bottoms $\frac{1}{4}$ by $18\frac{1}{2}$ by 40 inches.
- 6 runners $\frac{3}{4}$ by 2 by 20 inches.

Begin the work by laying out and cutting mortises $\frac{1}{4}$ inch deep on back piece, as dimensioned on Section CC, to receive ends of drawer runners; also rabbet back to receive end piece, as shown on Section E.

Secure bottom to ends and back piece by gluing and nailing same in such position as indicated on Section BB and Section CC.

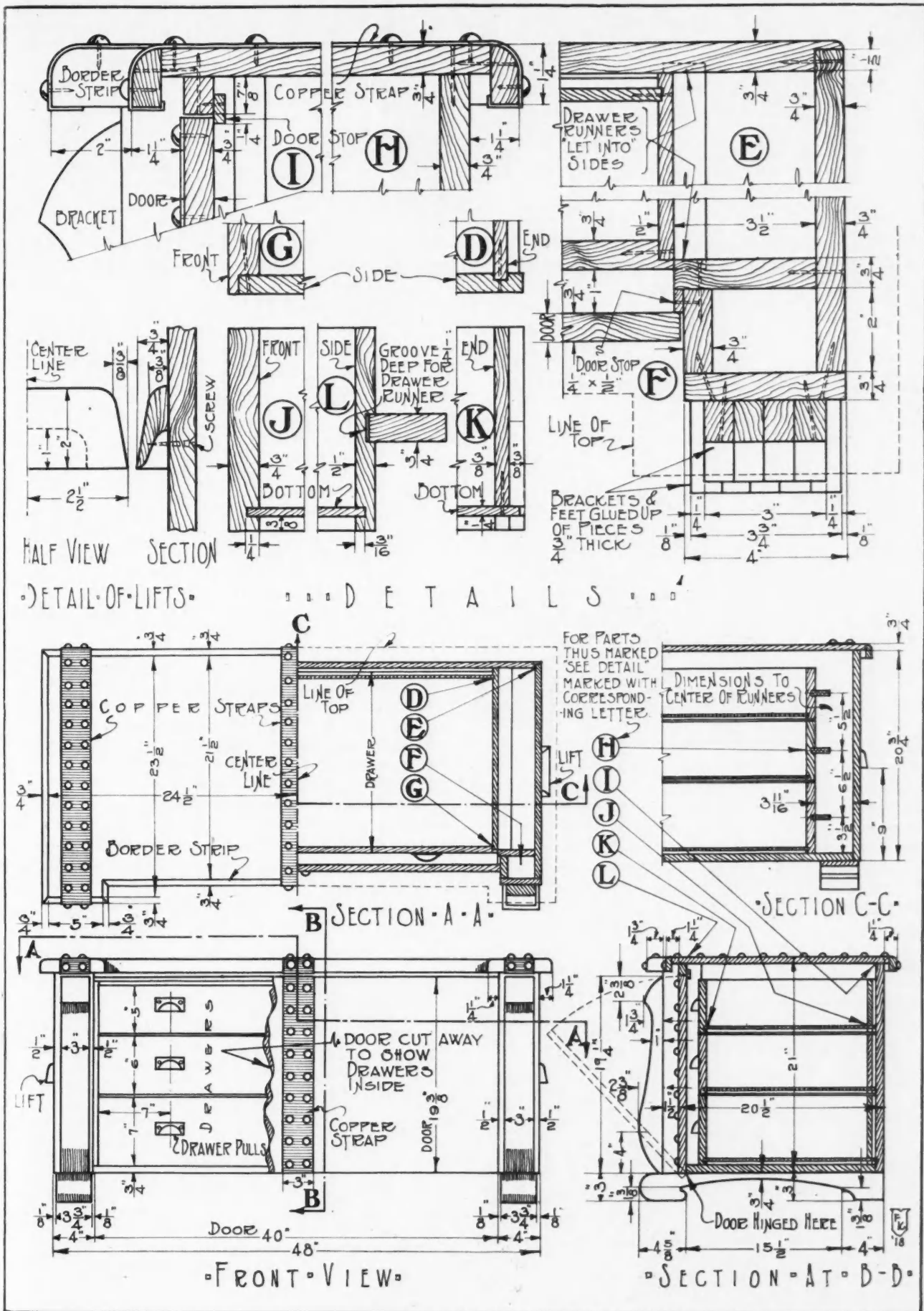
Cut mortises $\frac{1}{4}$ inch deep in back pieces of pilasters to receive front ends of drawer runners. (See Section F.) Glue and nail pieces for pilasters together and secure same to ends and bottom after drawer runners have been fitted and placed in position. (See Section F.)

Apply brackets and feet as shown on front view, and (Section BB) gluing and nailing same in position. After glue has "set up" insert 6 screws thru bottom into each foot piece to obtain good, substantial job.

Shape up pieces for lifts and apply to ends with screws, as shown on "Detail of Lifts."

Cut $\frac{3}{8}$ -inch mortises $\frac{1}{2}$ inch deep on inside face of pilasters to receive ends of door strip, which should

(Continued to page 134.)



Working Details of the "Different" Cedar Chest as Designed by the Author.

CORRESPONDENCE

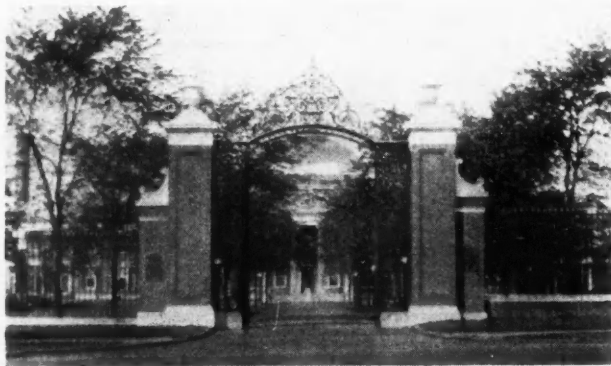


Questions Answered and Ideas Exchanged.

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

Crippled Children Build House Model

Widener Memorial Industrial Training School
To the Editor: for Crippled Children, Philadelphia, Pa.
We have been taking your magazine for several years, keeping them all on file. A short time ago the boys of my class, seeing a picture and floor plans of a bungalow in the



One of the Entrances to Philadelphia School for Crippled Children.

June, 1914, *AMERICAN BUILDER* (Page 48), worked out the plans in mechanical drawing, and then built the house and finished it thruout, including doors, sash and trim, and fitted same with electricity. The house measures 10 feet long, 7 feet wide and 42 inches high.

Enclosed you will find snapshots taken by us of one of the school entrances from Broad Street, and the other of the house model which was built by the boys.

CLAUDE WILLEY, Instructor.

Asks New Equipment for Trades School

To the Editor: Tuskegee Institute, Ala.
Tuskegee Institute has suffered a very serious loss in the destruction by fire of the Trades Building. With the prevailing prices of building material, it will cost not less than \$250,000 to replace the building and equip it. The insurance did not represent half of that amount.

We are therefore appealing to the generous friends, who have stood so loyally behind Dr. Washington, the founder, as well as the present principal, to help us in our present emergency, so that we may go forward with this very important phase of our work.

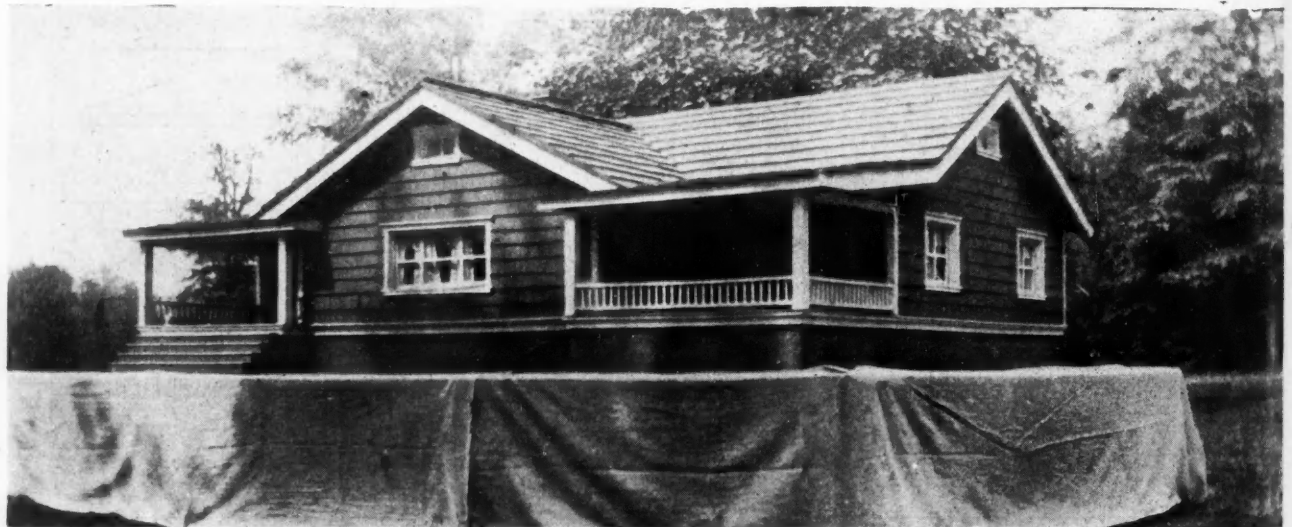
During the past five months we have trained nearly a thousand soldiers in trades, and many of them are already at the front, serving as technicians. Hundreds of other soldiers are being sent to us for this trade work, which is being carried on at present in temporary quarters. We are most anxious to continue our work with the government.

We are therefore appealing for donations of tools, machinery and equipment for the following trades: tinsmithing, carpentry, wood turning, printing, tailoring, blacksmithing, wheelwrighting, harnessmaking, carriage trimming, plumbing, steamfitting, electric lighting, architectural and mechanical drawing, painting and shoemaking.

Contributions in any amount will be appreciated and duly acknowledged.

The confidence and warm support which Tuskegee Institute enjoys are sources of continual inspiration to us to render that high degree of service for which the institution was founded.

ROBERT R. MOTON,
Principal.



Ten-Foot Model of American Builder Bungalow Design No. 6567 Worked Out in Mechanical Drawings from the Picture Published in the June, 1914, Magazine and Built by a Class of Boys in the School for Crippled Children.

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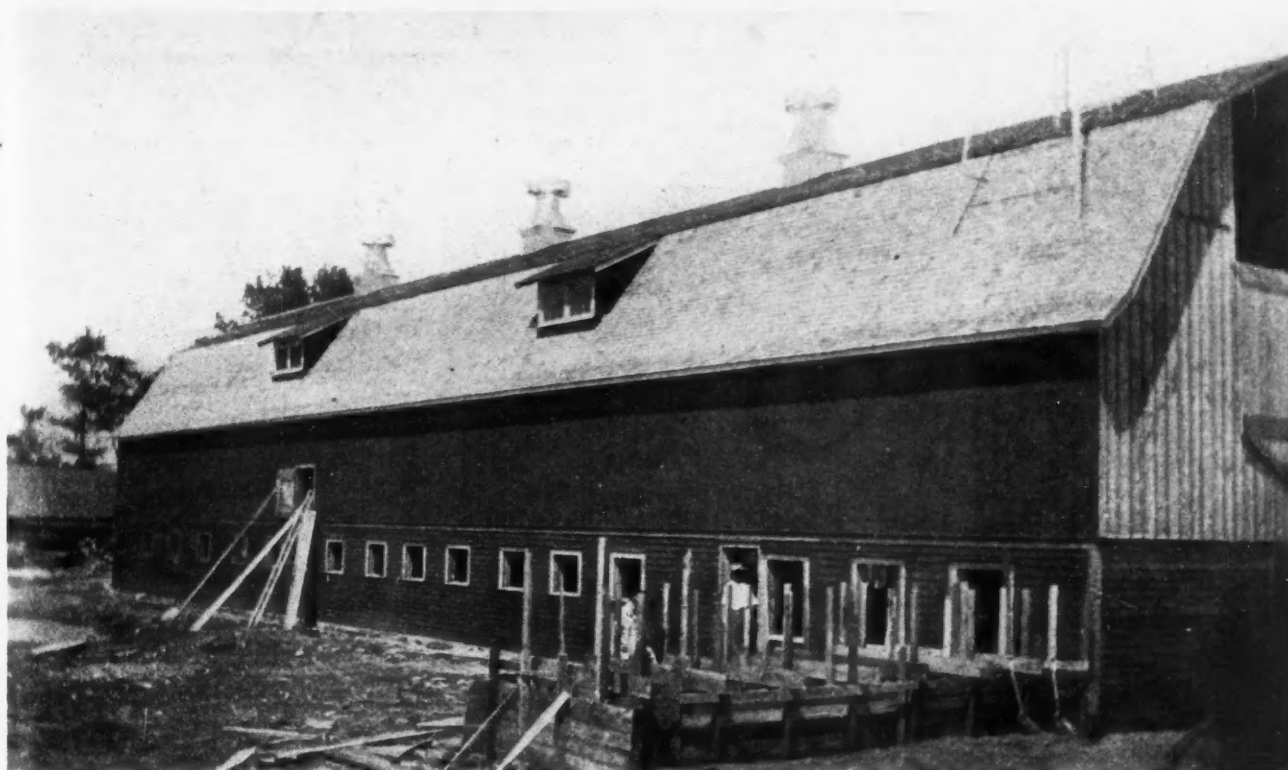
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Large Barn Built by Herman Erler for H. F. Jorsting, Near Rosemount, Minn. Size 30 by 130 Feet, 16-Foot Posts. It Is Arranged for Thirty Cows and Sixteen Horses, Also Contains Three Calf Pens, Bull Pen, Milk Room and Feed Room.

Power Rig Makes Up For Labor Shortage

To the Editor: Rosemount, Minn.
Find enclosed snapshots of a few of my jobs here, also of saw rig I built myself two years ago and find it a great help, especially now when labor is scarce. I see the rest of the boys send in photos, so thought I would do likewise.

Wishing you and the rest of our builders success, I am,
HERMAN ERLER, Contractor and Builder.

Wants Furniture Designs

To the Editor: Fairfax, Mo.
I couldn't very well get along without the "Builder," as I have only been carpentering for a few years. Would like to see some furniture plans this winter. O. J. WHITE.

Answer: You will be interested in the cedar chest drawings presented this month. Other good designs will be presented if we can get them. EDITOR.



Power Saw Rig Built by Contractor Herman Erler, Rosemount, Minn., and a Great Labor-Saver on His Barn Building Work.

House Building in New Zealand

To the Editor: Upper Hutt, New Zealand.
I am enclosing a photograph of a dwelling house we are just completing. It is build of concrete, hollow wall construction, and lined thruout (after furring) with "Amiweed."

I have been using concrete for the last five years as a ma-



How They Build in New Zealand—A Concrete Hollow Wall Dwelling Built by an American Builder Reader at Upper Hutt, New Zealand.

terial for comfortable, everlasting homes and cannot keep pace with the demand for houses built in this system, especially now that labor is almost unobtainable in our Dominion.

Wishing you every success, which I am sure you merit, I am,

RALPH SCHOLES,
Builder, Contractor, Decorator.



What the Lines Mean

To the Editor: LaFargeville, N. Y.

I wonder how many of us can look over the blue prints in the November issue and tell what all the lines and figures mean?

Look at the basement plan and notice first that it is marked one-eighth inch to one foot. Now, if you have a scale or even a common rule, you will see that this scale applies to the plan as given, and not to the original drawing from which it was reproduced, as is sometimes the case.

For the line marked 5'-0", meaning five feet and no inches, is five-eighths inches long, and the longer one, marked 34'-0", is thirty-four-eighths, or four and one-half inches.

These dot and dash lines are called dimension lines and may be drawn directly between two points, as the two marked 14'-0" across the right hand side; or there may be short lines called extension lines to indicate from which point the measurements are taken as those at the bottom and those at the top of the plan to show location and size of the chimney foundation.

In some plans there would be figures to show the distance the windows were from the corners and the distance between the windows either to the sides or centers, but this can be gotten by scaling or measuring with the rule. Too many figures and lines are apt to be confusing.

Notice that the wall and piers are all of concrete, indicated by the small specks in the plan and the larger ones in the section at the bottom of the sheet.

The dash lines in the squares in the middle of the basement are marked as concrete footings, and there is also one under the chimney.

The two rows of dashes across the cellar are marked 6 by 8 inch girder, and those lines from the front of the house

out to the piers are for girders under the porch joists.

Notice that the chimney itself is marked by cross hatched lines, which indicate brick, and that these appear on the other plans also.

On the section drawing in the lower left corner of the sheet the grade line is given and the height of the joist just above the cellar floor, but if you scale or measure this, you will see that it does not measure this, but look at the wall and notice that there is a part of it left out or broken out, which is a method often used to save space on a drawing.

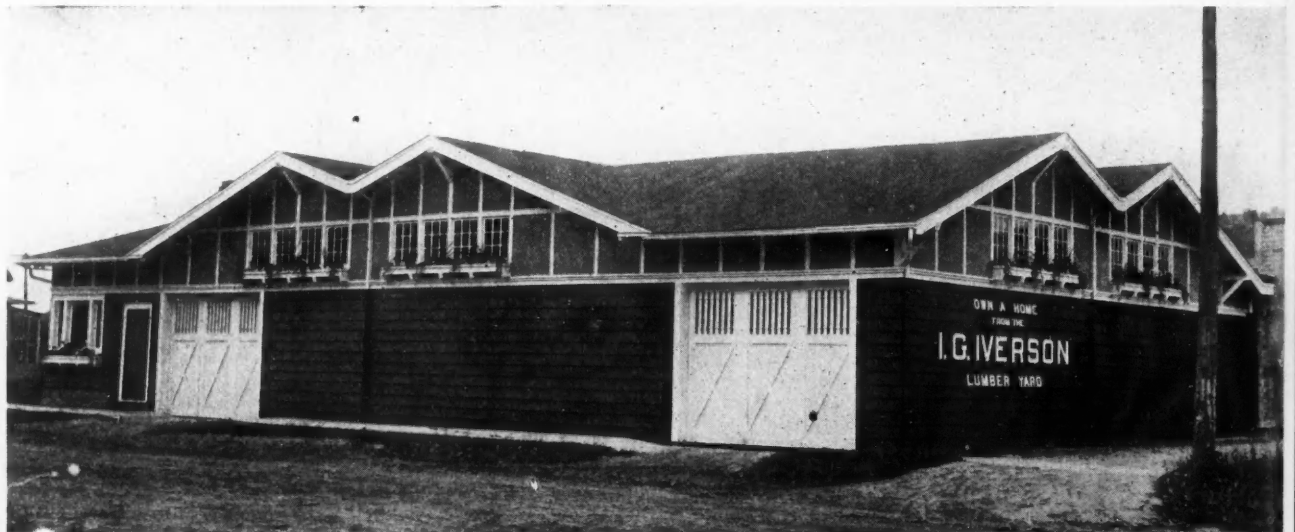
The height of the first and second story are shown, and also the height of the window openings above the floor.

On the front elevation you see that the first door is marked GLZD, which means glazed.

The size of the window glass is sometimes marked on the elevation, but here we get it on the plans; also the size of the doors.

This way of marking windows is all right here, but sometimes there are two sizes of glass in the same window, and

(Continued to page 64.)



The Lumber Yard of I. G. Iverson at Houston, Minn., Sets a Good Example for Building Improvements. It Is a Practical Lumber and Building Materials Warehouse and Looks Business-like. At the Same Time It Is Designed Artistically. The Advertising Slogan, "Own a Home from the I. G. Iverson Lumber Yard," Will Certainly Bear Fruit.

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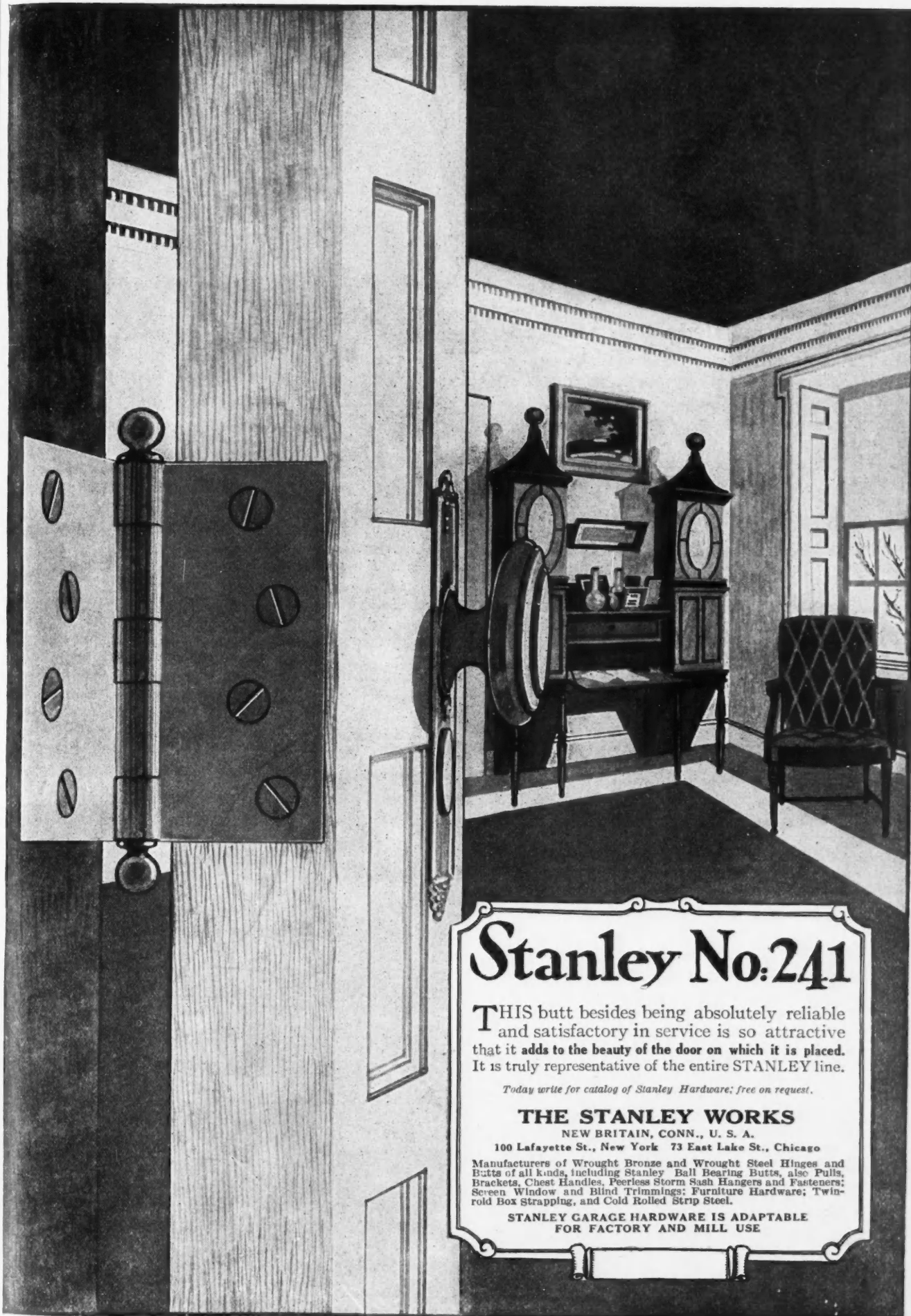
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Stanley No:241

THIS butt besides being absolutely reliable and satisfactory in service is so attractive that it adds to the beauty of the door on which it is placed. It is truly representative of the entire STANLEY line.

Today write for catalog of Stanley Hardware; free on request.

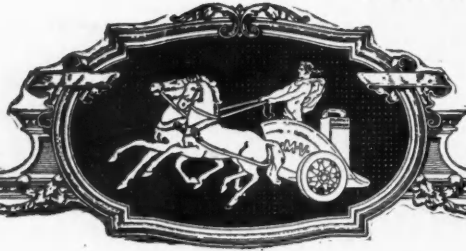
THE STANLEY WORKS

NEW BRITAIN, CONN., U. S. A.

100 Lafayette St., New York 73 East Lake St., Chicago

Manufacturers of Wrought Bronze and Wrought Steel Hinges and Butts of all kinds, including Stanley Ball Bearing Butts, also Pulls, Brackets, Chest Handles, Peerless Storm Sash Hangers and Fasteners; Screen Window and Blind Trimmings; Furniture Hardware; Twin-rod Box Strapping, and Cold Rolled Strip Steel.

STANLEY GARAGE HARDWARE IS ADAPTABLE FOR FACTORY AND MILL USE



Varnishing Costs More Than Varnish

Labor is rapidly becoming the contractor's chief problem. Now, more than ever, it pays him to use the varnish that cuts down labor costs—

Murphy Varnish

"the varnish that lasts longest"

It is free-flowing and easily applied. It requires fewer strokes. It enables finishers to increase their output.

The beautiful finish it imparts preserves woods—makes them last and last—impervious to wear and weather.

Reduce your biggest item of expense—labor—by using these easily-applied, long-lasting finishes:

Murphy Transparent Interior
Murphy Transparent Spar
Murphy Transparent Floor
Murphy Nogloss Interior
Murphy Semi-Gloss Interior
Murphy Univernish
Murphy White Enamel
Murphy Enamel Undercoating

Murphy Varnish Company

Franklin Murphy, jr., President

Newark

Chicago

Dougall Varnish Company, Ltd., Montreal, Canada Associate

ANA

Correspondence Department

(Continued from page 62.)

then it may be simpler to mark them on the elevation.

The chimney cap is marked "stone," but in some cases it could well be made of concrete.

Turning to the first floor plan, the chimney or fire-place is here indicated as brick.

Notice the two columns at the corner of the front porch. This shows wood on end and the elevation shows the same also on the new porch and on the posts in the cellar.

The lines for the walls and partitions also show wood. Notice that the figures for length and width, thirty-four and twenty-eight, are the same as the foundation; that is, the rough frame comes to the face of the wall and the sheathing and water table project. Notice the projection and width of the bay or triple window in the dining room; also the size of the glass as marked.

On the second floor plan the lines of the porch roof are shown and the plates are shown by dash lines.

Lines showing the size of rooms start at the outside of the outer walls and run to the centers of the partition. On the upper plan the dimensions given lengthwise add up to thirty-four feet and those crossways to twenty-eight feet.

The circles with an X in the center of each are for electric lights. Those in the dining room, living room and porch can be turned on or off from the switch button on the walls as shown by the dash lines. Notice these lines running up and down the stairs, which indicate three-way switches so that one can turn on or off both lights from either upper or lower hall and the cellar light from the first floor.

The chimney from the living room has another flue added for the second floor and this floor seems to be well planned for convenience.

In the two bedrooms the doors might conflict some but not badly, as these rooms are quite good size. It may be all right to have the light in the center, but in a small bedroom it should not be so placed, as it will come directly over the bed.

I don't like the way the doors conflict in the lower hall, but there does not seem to be any help for it unless the kitchen door is changed to swing the other way. You will see that the one from the kitchen to the dining room swings both ways.

The roof of the front porch is marked "shingles," but it looks quite flat for these, and if one could not get metal it might be well to get a good grade of prepared roofing.

JOHN UPTON.



Kansas Farm Bungalow

To the Editor:

Timken, Kans.

I have been a reader of your American Builder for some time, and I like your paper fine and could not do without it

(Continued to page 66.)



Bungalow Type of Farmhouse Built by J. J. Chlumsky, Near Timken, Kansas.



Free Lesson

Learn to Read Blueprints

Mail coupon today for this FREE LESSON. It will positively convince you that Plan Reading from Blueprints is not at all difficult—that by our new, easy method you can master it in a short time. You don't pay a cent for this lesson—now or at any other time—your request for it places you under no obligation at all.

You are looking ahead to something better than working with the tools of your trade. Some day you hope to become foreman or superintendent in charge of building work—perhaps go into business for yourself. In any such case a knowledge of plan reading is absolutely necessary—and we want to show you how to get it.

Thousands of bright, energetic, capable men are being held back because they lack this knowledge. They are expert workmen but they seldom, if ever, get a chance to study the blueprints or have them explained. They must follow the lead of the man who does understand plan reading and directs their work.

We give you practical instruction in blueprint reading that you can apply to your everyday work. We place in your hands blueprints used in actual building work in Chicago and other cities, and send full instruction on every point. Every detail is carefully explained by practical contractors and builders—men in charge of construction work right here in Chicago. You get the benefit of their long years of practical experience. They give you the kind of knowledge that brings advancement and a fatter pay envelope.

Learn by Mail Builders' Course Easy Payments

Just a few hours of your spare time at home each week devoted to study will enable you to master this Course in a surprisingly short time. Our lessons come to you by mail in convenient form for spare-time study—during evenings at home or at any other convenient time.

Note the wide range of subjects covered in this thorough, comprehensive and practical Builders' Course.

Throughout the entire course your instruction is under the personal guidance of our experts. Every subject is handled in a plain, straight-forward manner in language that you can easily understand. You are taught the things you need to know—and taught in such a way that you will remember them.

And you can get all this training on easy monthly payments, so small that you will scarcely feel the cost.

Complete Course Includes:

Plan Reading How to read a building plan. Floor plans and elevations. Use and meaning of different lines on the plan. Sections and section lines. Cross sections. How different materials are shown on the plan. How to read dimensions. Detail drawings. How to lay out work from the plans. Tracings and blue prints—how they are made. Practice in reading complete plans from basement to roof, etc., etc., etc.

Estimating Practical rules. Problems worked out from the plans. Brickwork and carpentry. Excavations. Labor and material for footings in brick, concrete and rubble stone. Methods of practical builders. Reinforced concrete—full plans and specifications for re-inforced concrete buildings. Estimates of labor and material required. Labor and material for brick work: figuring common and pressed brick walls of different thicknesses, etc. Chimneys, fire places and cisterns. Fire proofing, tile, tile flooring, arches, partitions, furring, terra cotta, etc. Lumber and timber; figuring board feet. Estimating posts, girders, sills,

joints, studs, bridging, rafters, etc. Estimating all kinds of roofs, floors, siding, cornices, etc. Labor for rough and finished carpentry.

Construction Brickwork: Footings and foundation walls of brick, concrete and stone. Brick laying, joints in brick work, pointing, tuck pointing, etc. Brick and stone arches. Use of different kinds of stone.

Carpentry: Kinds and uses of wood's, cornices, interior details, framing, roof construction, bridging, miter joints, butt joints, etc. How plans are made. Complete instructions illustrated by working blueprints of all kinds of buildings, private, public and business.

Arithmetic A complete but condensed course in arithmetic expressly arranged for contractors and builders. Teaches all a man in this business needs to know.

SEND COUPON NOW—TODAY

A Better Job—More Money

Begin at once to prepare yourself for more responsible work and better pay. Mail the coupon and by return mail get the Free Lesson in Plan Reading together with full information regarding our Builder's Course which will prepare you to make more money. Remember, this places you under no obligation whatever. But get the Free Lesson, judge from it and the full descriptive literature we will send you, how easy it really is to master this course—and then decide about enrolling with us.

Chicago Technical College
1236 Chicago "Tech" Bldg.
Chicago, Ill.

CHICAGO TECHNICAL COLLEGE,
1236 Chicago "Tech" Bldg., Chicago
Without obligation on my part, send me the Free Lesson in plan reading, also information on your Builders' Course in Plan Reading, Building Construction, Estimating, etc.

Name.....

Address.....

City or Town..... State.....

Present Occupation.....

(Continued from page 64.)

now. I sure like the pictures of different homes you have in it.

I am sending you a picture of my home that I build and planned myself on our farm out here in western Kansas. I have not seen any from Kansas yet, so I thought some of the readers would be interested to know what kind of homes we build out here. The size of my home is 58 by 34 feet.

J. J. CHLUMSKY,
San Creek Farm.

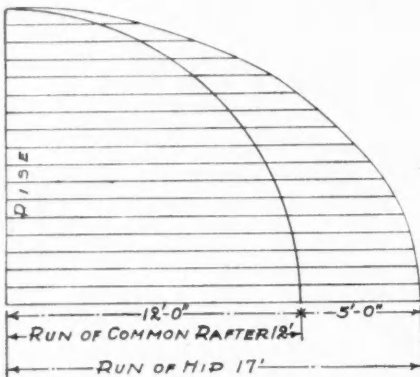


Hip Rafters for Gothic Roofs

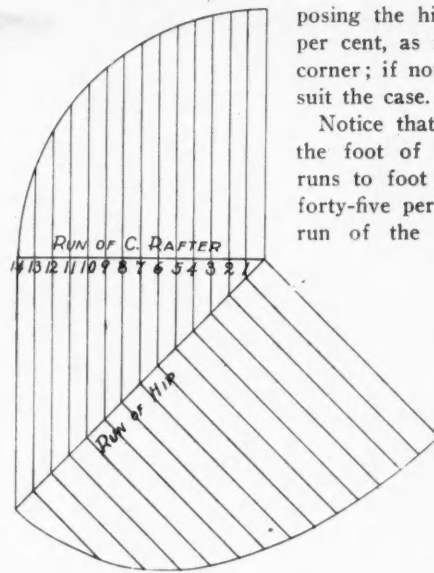
To the American Builder: LaFargeville, N. Y.

In reply to a reader who asked about the hip rafter for a Gothic roof, I would submit these ways:

The first one is done by drafting and might not be as practical to use for laying out the actual curve from a full size common rafter as the other one, which is done by measuring.



In the first way a draft is made of the curve of the common rafter, and any number of perpendicular lines are drawn from this down to meet a line drawn at forty-five degrees. This is sup-



posing the hip runs at forty-five per cent, as it does on a square corner; if not, make the angle to suit the case.

Notice that the last line from the foot of the common rafter runs to foot of the hip and the forty-five per cent line gives the run of the hip. The rise, of course, is the same on both rafters. Lines are then drawn from these meeting points at right angles to the forty-five foot line and the length of each upright line is transferred to the corresponding line here. Then a free hand curve is

drawn thru the points so marked.

By the other method a number of lines are drawn across. For the full size rafter, the cracks in a board floor might be used. Each of these lines is then extended five inches for each twelve inches in its length and the points marked for drawing a free hand curve.

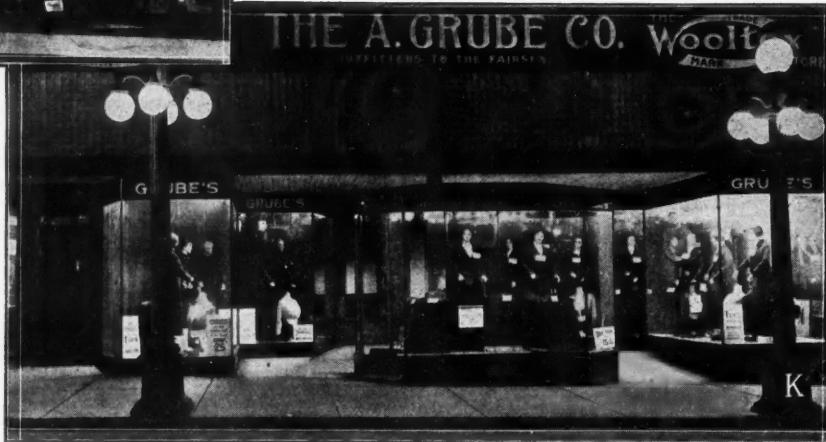
Notice that it could have a little cut off from the bottom or from the side, and it would still be all right. The first one could have some cut off from the upper end of the rafters and be all right. This is what is done on a Gothic roof when radius used is more than half the span.

JOHN UPTON.



This Kawneer Store Front Brought 25% Increase in Sales

War Conditions Call for Remodelling
The Kawneer Way is the Profitable Way



By installing a modern Kawneer All-Metal Store Front this merchant was able to boost his sales without increasing his advertising.

60,000 other merchants vouch for the value of the Kawneer way of modernizing store buildings.

Kawneer STORE FRONTS

Write today for Catalog and Portfolio of Designs.

Let us show you how you can make money as the store front expert in your locality.

Kawneer Mfg. Company, Niles, Mich.



The Scare Circle— the greatest roofing salesman in the world!

FIRE breaks out in a community. An efficient fire department, hard work or luck confines it to a limited area.

But fear has swept through the neighborhood. The black hole is a constant reminder of what might have been—how fire spreads from building to building.

New buildings rise from the gutted hole topped with Asbestos Roofing. And for a radius of a mile or two—within the scare circle—homes and factories put on asbestos roofs.

So, the lesson of a fire—the scare circle—sells more Johns-Manville Asbestos Roofing than any other agency or factor.

To the roofer in the community it is a strong object lesson of how people, once awakened to a threatened danger, take steps to guard against it.

In almost every city and town there are essential factories and buildings where loss by fire would result in serious handicap to civic programs. Some of these plants are having additions built;

perhaps close by workmen's houses are being erected.

Probably a dozen or more roofers will be after each of these jobs. It is some roofer's opportunity to make himself stand out "head and shoulders" above the others by talking roofing that not only keeps water out but also resists fire and gives maximum long-time service.

This roofer can prove that a roofing made from coal tar or asphalt compound is far inferior to one made of mineral asbestos with just enough Trinidad Lake and other natural asphalts to act as a binder. He can demonstrate that while "rubber type" roofings may look like and smell like Johns-Manville Asbestos Roofing, they do not and will not give the same protection and service.

It is a real business-getting opportunity and wise building for the future, because the satisfaction given and reputation made by each Johns-Manville Asbestos Roof reacts to the credit and prestige of the roofer who sold it.

Let us send you full information about Johns-Manville Roofing and the Company behind it—now!



H. W. JOHNS-MANVILLE CO.
New York City
10 Factories—Branches in 63 Large Cities

JOHNS-MANVILLE ASBESTOS ROOFING



MIDLAND TERRA COTTA

FOR
MODERN BANK FRONTS

“MIDLAND” architectural terra cotta affords exceptional opportunities for unusual and striking treatments, combining with the qualities of permanence and cleanliness, an unlimited range in color and adaptability of form.

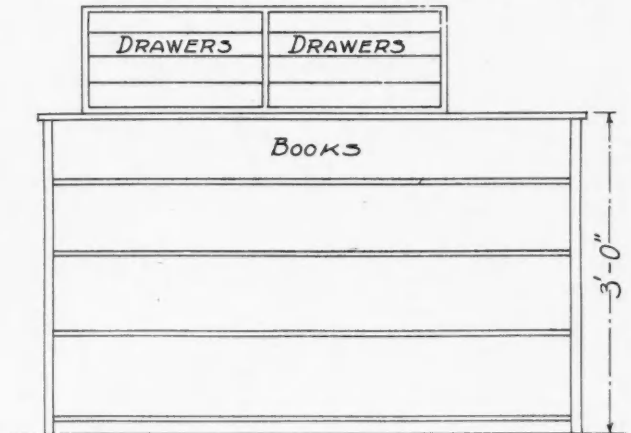
QUALITY and SERVICE
our motto

MIDLAND TERRA COTTA COMPANY
Lumber Exchange Bldg. Chicago



Some Office Furniture Ideas

To the Editor: LaFargeville, N. Y.
In reply to C. R. Gibbons, who says in the September issue that he would like to see some drawings of office furniture, I would say that this might mean anything from a table



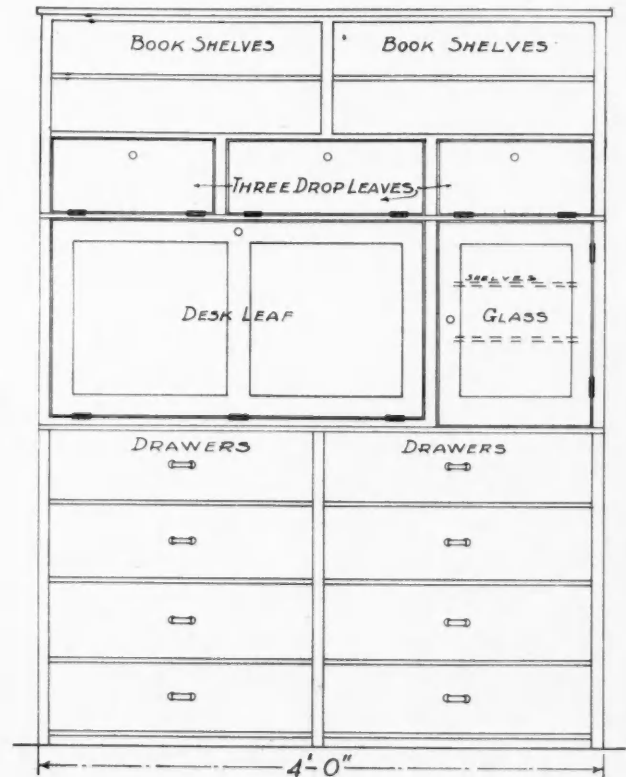
Open Book Shelves Are Handiest in the Office.

to a filing cabinet, and what would suit one man might not suit another in the same line of business.

But as our homes are, since the war, becoming almost an office, and when one is secretary of two or three societies and treasurer of as many more, there is need of some furniture or device for keeping the necessary records.

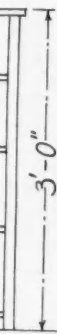
Perhaps I may be of some help to him and to others. Some will find a regular filing cabinet with drawers ten inches deep, twelve inches wide and some eighteen to twenty inches long to be the right thing, while others will need a card index system and still others will want a number of drawers, some three to six inches deep and large enough to take in a letter or drawing, say, 10x12 or larger, in some cases. I have

(Continued to page 70.)



Combination Desk, Bookcase and Filing Cabinet Recommended by the Author.

N. Y.
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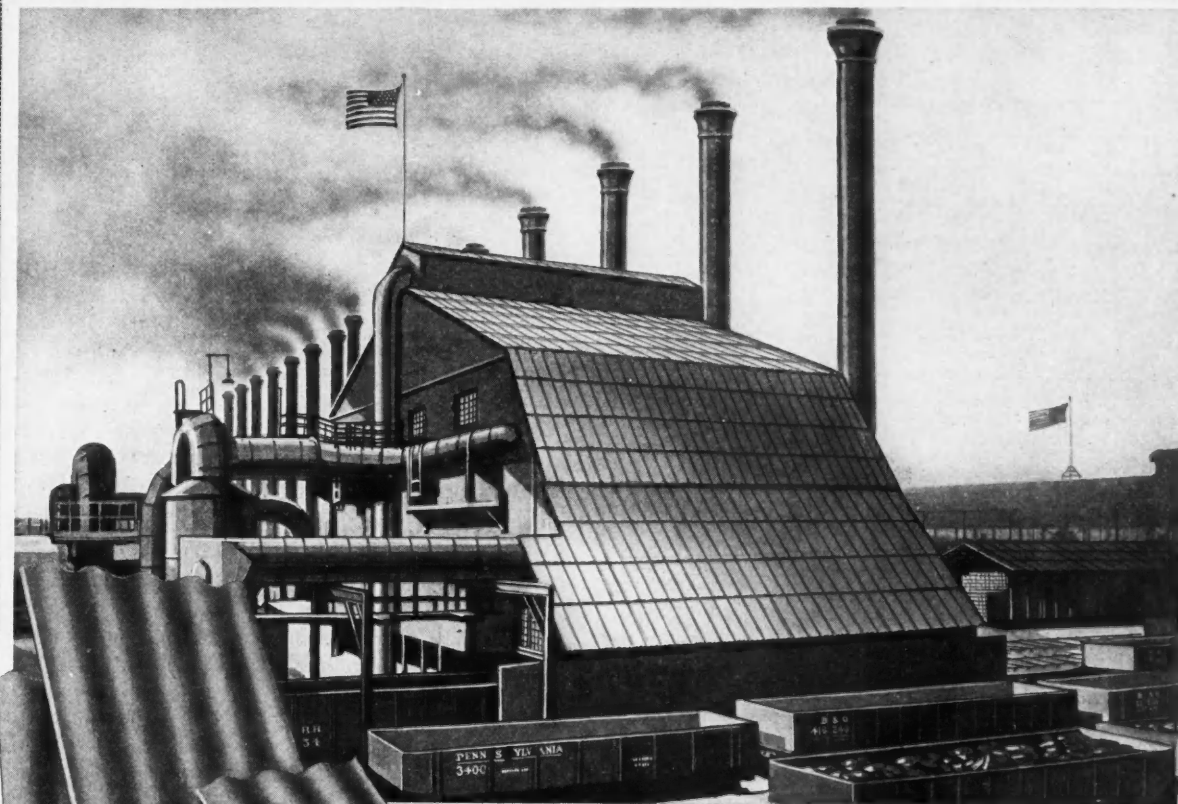
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In the Front Line Trenches of Industry

Generating plant of Jones and Laughlin Steel Co., Hazelwood, Pa. Roofed with Ambler Asbestos Corrugated Sheathing.

Here, as well as in the trenches "over there", there is danger—danger from fire. In all the large industrial centers where men are working day and night there is the constant menace of fire due to increased activity.

Thousands of buildings and manufacturing establishments are protected from this menace by

Ambler Asbestos Corrugated Roofing and Siding

But there are many new structures that will be exposed to the danger of fire unless they are so protected. Contractors and builders who protect the buildings they have in their charge by specifying Ambler Asbestos Corrugated Roofing and Siding are doing a patriotic service. Loss by fire now not only means the loss of the building burned but also thousands and often millions of dollars worth of munitions and other supplies that would be saved if the building were properly protected.

Ambler Asbestos Corrugated Roofing cannot burn because it is made of non-burnable materials—Asbestos and Portland cement. It never needs repairs. Never requires paint and is not affected by weather conditions.

The Ideal Skylight

We have manufactured exclusively for us a Corrugated Wire Glass to be used for skylights in conjunction with Ambler Asbestos Corrugated Roofing. It makes a non-leakable, fireproof skylight. Easily put into place and is much more economical than other types of skylights.

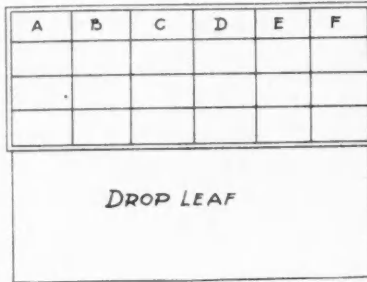
Write today for more information.

KEASBEY & MATTISON COMPANY
Dept. B-1 Ambler, Pa., U. S. A.

Manufacturers of Ambler Asbestos Shingles, Asbestos Corrugated Roofing and Siding, 85% Magnesite Pipe and Boiler Covering, and Asbestos Building Lumber.

(Continued from page 68)

one set of such draws which go on top of a book case, and am making another to set on the floor. This is to be larger, some forty-eight inches long, twenty inches deep



File for Envelopes of Clippings. sides with glass in the doors. There is to be a book case above this.

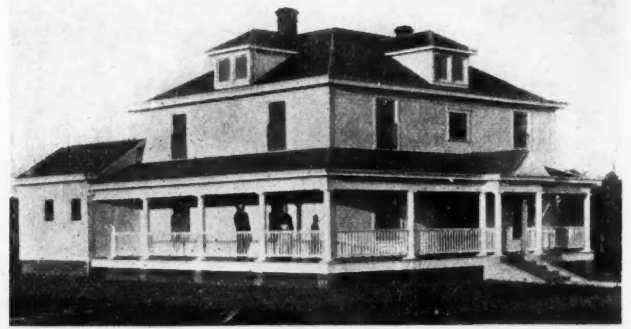
and thirty-two inches high, with eight draws about 16 by 22 inches inside and six inches deep. The original idea was to use this for the base of a desk and make the desk part some 14 inches deep with a drop leaf to let down for a drawing board and writing table, and a cupboard at the JOHN UPTON.



Purple Wood from Panama

Large growths of bright purple nazarene wood are lying idle in Panama, only awaiting development, according to Dr. Henry Pittier, who recently led a botanical expedition to the Darien section of the isthmus. Before the war this beautiful wood commanded \$125 to \$200 per thousand feet. It is estimated that there are 40,000,000 feet of the timber.

The timber has most unusual qualities. The trees reach a large size, sometimes a diameter of three feet, and have very little sap wood. The interior is a rich purple color and the wood is hard, heavy, strong and extremely resistant to water and weather; it contains an essential oil and it takes an excellent polish. When the wood ages, and is at the same time exposed to the sunlight, it turns much darker in color.



Helped in Plan Drawing

To the Editor: Lynn, Ind. I am sending you a few pictures of dwellings and the M. E. Church at Spartanburg, Ind. By the help of your paper and Radford books I have made the blueprints for these buildings, and built them with my crew. OLIVER M. HAWKINS.



Shipworker Keeps Tab on Building Field

To the Editor: Benicia, Cal. On account of my age, fifty-eight years old, Uncle Sam wouldn't have me as a fighting man, so I enlisted as a shipwright at Benicia for the duration of the war.

As you well know, the only way to keep abreast of the building business is to study the best up-to-date methods of performing that work, as well as keeping posted on all the modern improvements in material, etc., that are necessary to complete the finished structure. And the only way to get this information at first hand is to read and study the American Builder, as it is all the name implies and covers the ground completely. This is my reason for having the

(Continued to page 78.)

Install WEATHER STRIPPING That Satisfies

Here is the Strip that "outstrips them all," on account of its original Cushion feature practically allowing for variation in any sash. You cannot afford to put in any other, because the

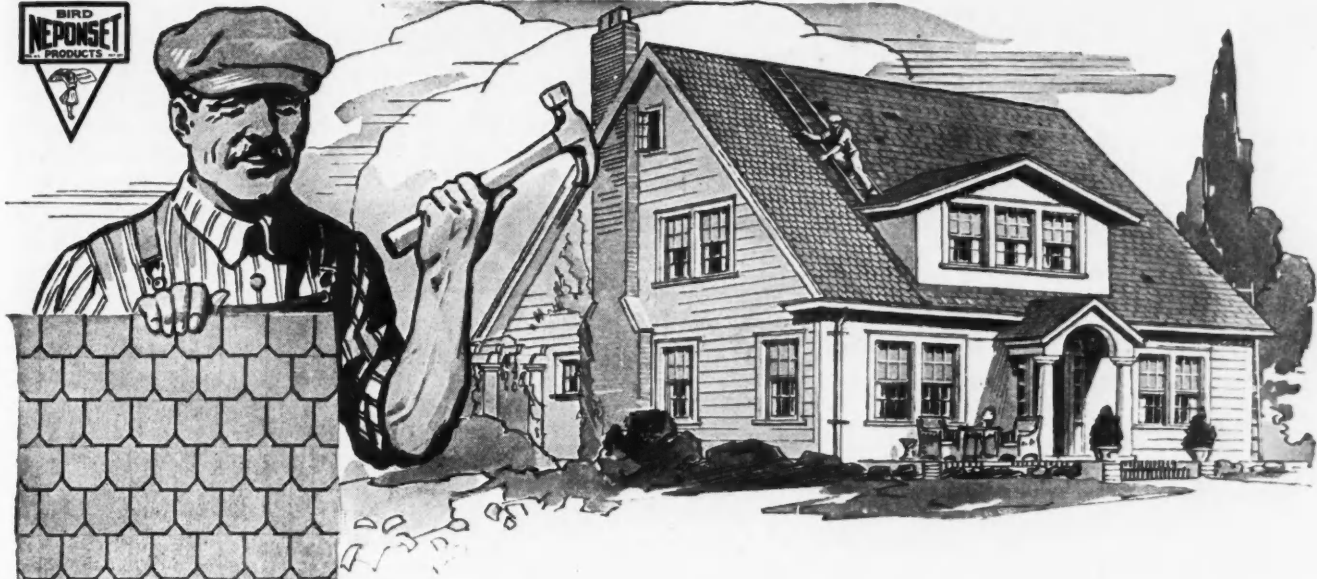
FLI-Bac METAL CUSHION Weather Strip

positively controls severest draughts and provides for swelling of sash under any atmosphere; thereby permits no binding or friction.

Perfected in several styles to meet the most odd and difficult conditions, the FLI-BAC is made entirely of metal, non-corrosive, hard especially rolled zinc and brass cut across grain to secure stability and durability, rendering it indestructible. Casement, French windows and doors, both high and low, outswinging windows, pivot and bowed sashes, doors of every description, sliding sashes and doors inclusive, when exposed to elements are made air, dust and water tight by the FLI-BAC METAL CUSHION WEATHER STRIP. Never before have you been able to install satisfactory weather stripping in this class of work. So be sure and write us now, today, for valuable territorial rights we have open and wish to close with responsible parties instantly. Use coupon quick.

FLI-Bac Screen Corporation

ROCHESTER, N.Y.



"I Thank Art Craft for a Big Year"

CARPENTERS and builders all over the country are praising Art Craft in just these words.

"Art Craft fits perfectly into the country's war-time needs. Laying Art Craft right over *old shingles* is the new successful thrift roofing method. Its low first cost pleases the owner's purse and lands the order. Its attractive tile design in permanent red or green slate color pleases the owner's eye. It gives extra years of satisfaction and fire-safe protection because it has an extra heavy felt base. Quality worked into every square inch of Art Craft builds prestige and wins profit."

To the carpenters and builders of America we extend thanks for their splendid co-operation during past years and the year just closing.

BIRD & SON, Inc., Dept. C, East Walpole, Mass.
(Established 1795)

Chicago

New York

Washington, D. C.

Canadian Office and Plant, Hamilton, Ont.



Art Craft Roof

BIRD & SON, Inc. (Write to nearest address given above.) I want to learn how Art Craft will bring me more business. Send complete information. Name.....Address.....

(Continued from page 70.)

American Builder mailed to this point, as I am always anxious to find out what new ideas it has in store for us.

Your blueprints are an excellent addition to the many good things you have given us in the past few years, and like others of your family, I am in favor of perforating the margin so they may be easily removed and filed away.

Wishing you every success, I am, D. KENNEDY.



Likes Industrial Housing Articles

To the Editor: Concord, N. H.
In the last year I have found the AMERICAN BUILDER very interesting and helpful. I enjoy it all the way from the "ads" to John Upton.

Have just returned from a long motor trip which included a inspection of the industrial housing proposition of the Cheney Brothers at South Manchester, Conn., which was well described in the September number. Let us have more of these articles.
HAROLD M. RENDER.



Question for Scraper Sharpeners

To the Editor: Passaic, N. J.
Will you please state thru your AMERICAN BUILDER how to sharpen a scraper to remove old varnishing from floor, and the way to turn the edge over.

JOHN DEVRIES.



Hold Your Liberty Bonds

Don't surrender your Liberty Bond conditionally or unconditionally. Hold fast to that which is good. Keep your Liberty Bonds.

Fire Hazards of the Fuel Shortage

Many new fire hazards are being introduced by the fuel shortage. The most serious of these arises from the large amount of soft coal which is being stored in the basements of dwellings, apartment houses and mercantile buildings and on the premises of factories. Spontaneous combustion in this is likely to start fires, and great care should be shown in the selection of coal and in its storage and use.

A great many householders are forced to use soft coal in hard coal stoves and furnaces, requiring careful treatment. The large amount of soot deposited by soft coal is apt to clog the smoke pipes and chimneys, and cause forcing of the furnaces, while the fumes and gases from soft coal will have a deteriorating effect upon the mortar in chimneys and thus lead to defective flue fires.

A number of householders are investigating the possibility of using fuel oil and kerosene burners in their furnaces, because of the difficulty in securing hard coal and their unwillingness to use soft coal because of the dirt of soot. This also will introduce serious fire hazards, because of the storage of oil on the premises, and the danger of feed pipes bursting and starting fires. No such appliance should be considered without ascertaining whether it complies with the underwriters' requirements.

Fire hazards which endanger the homes should be watched with special care, as the mothers and children run the greatest risk. All heating appliances should be installed and operated with constant attention to the unusual risks due to the changes in fuel, as well as to their ordinary dangers. President Wilson says, "Preventable fires are a public direktion," but a preventable fire in a man's home, endangering the lives of his family, should be regarded as a crime under wartime conditions.



UNIVERSAL INSULITE

A clean, odorless, indestructible, vermin-proof Insulating Board, furnished in sheets four feet wide up to ten foot lengths, $\frac{1}{2}$ and $\frac{1}{4}$ " thick. Made from selected wood fibre, felted into strong even sheets. Fibres waterproofed. You can use it inside and outside.

Paint, plaster or paper over it. Use it as a base for Magnesite Stucco.

The United States Government used ten million square feet during the last year in construction, both for inside and outside use.

One million square feet has been used, inside and outside, in the erection of small houses for the forest fire sufferers in the overburned districts in Northern Minnesota

The Only Insulating Board That Will Stand Outside Exposure

The United States Bureau of Standard Tests shows that the insulating value of Universal Insulite is higher than any other form of rigid insulation. Samples and full information on request.

Manufacturers

INTERNATIONAL INSULATION COMPANY

Mills:
International Falls, Minnesota

General Sales Offices:
2362 University Ave., St. Paul, Minn.

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Industrial America

THE world's great war has taught Industrial America the necessity and value of providing her workmen with permanent, comfortable homes.

In building for permanency and wartime thrift, the United States Government made the most rigid investigations of this nation's building materials and when the housing project of Hilton Village, Va., was planned, final judgment was in favor of

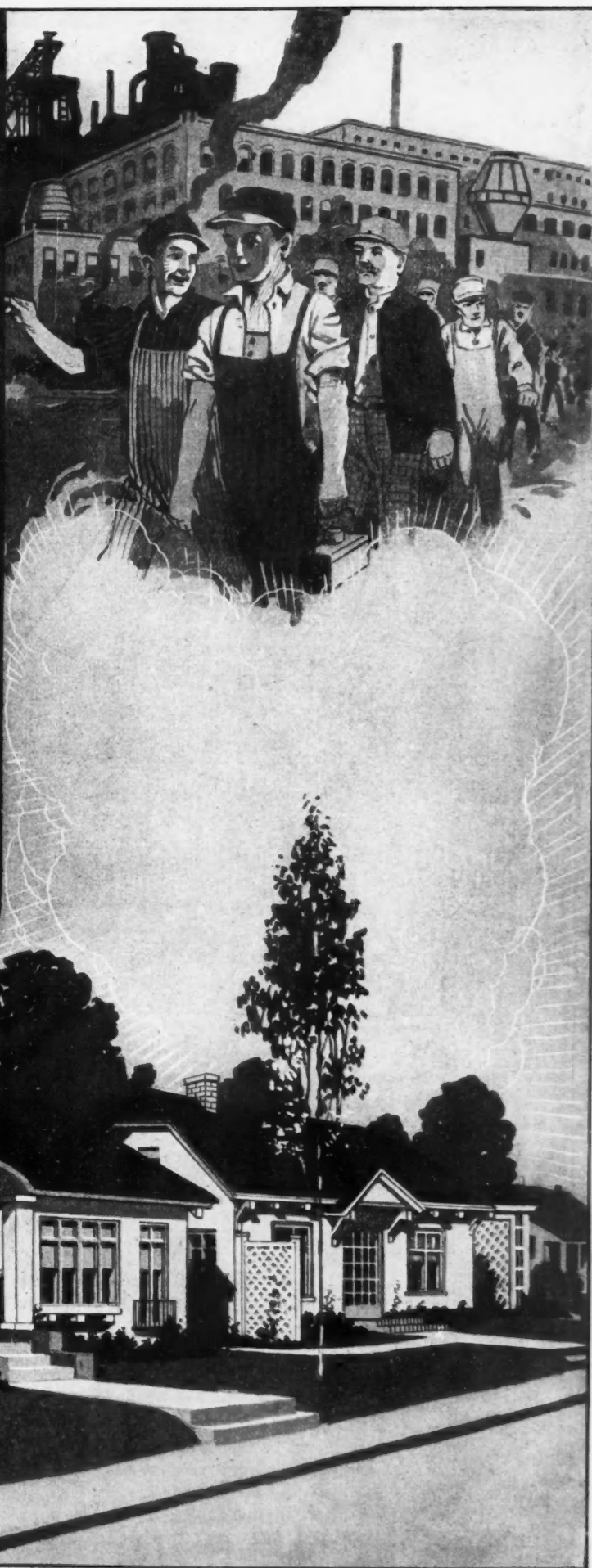
KELLASTONE

IMPERISHABLE STUCCO

Kellastone is unquestionably the most economical, attractive and permanent building material of today, minimizing fuel bills, upkeep and general expense, affording unlimited artistic possibilities.

Kellastone can be successfully applied in zero weather. It is immune to frost and frigid temperatures, and doesn't expand or contract like ordinary stucco. Send for our new booklet—an analytical story about *Kellastone* which conclusively proves its qualifications as a superior stucco for Industrial America.

National Kellastone Company
1315 Mallers Building
CHICAGO





NEWS OF THE FIELD

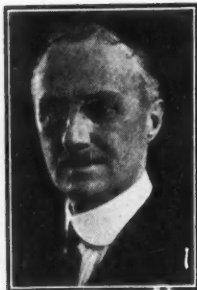
New Plan for Industrial Co-operation

The recent deaths of Charles C. Barrett, president, and George A. Meyer, treasurer, of the Devoe and Reynolds Co., Inc., brought forcibly before those who were devoting themselves exclusively to the interest of the company the fact that the common stock of the company was largely held by persons not actively engaged in the business.

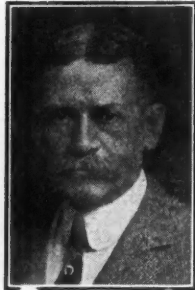
This being a most undesirable position from the viewpoint of efficiency in organization and prosperity for the stockholders, Mr. William H. Phillips of New York and John J.

Alsasser of Chicago determined to remedy this condition. They organized a company known as the D. & R. Syndicate Corporation, incorporated under the laws of the state of New York, and succeeded in purchasing from the inactive stockholders a considerable portion of the common stock held by these interests in the company. The officers of the D. & R. Syndicate Corporation are: William H. Phillips of New York, president; S. R. Harrington of Chicago, vice-president; John J. Alsasser of Chicago, Treasurer; S. Stanwood Menken of New York, secretary. And the control of the affairs of the company remain in the hands of those who have made it their life work and are still interested in the development and the progress of the institution. These gentlemen also appreciated that business of today is transacted successfully along broad lines and realized they, individually, could not be successful without the earnest co-operation of the heads of the departments and the employes who had also devoted their lives to the interest of the company, and therefore resolved to inaugurate a co-operative plan among their valued employes which would enable them to participate in any dividend made by the company and thereby secure their

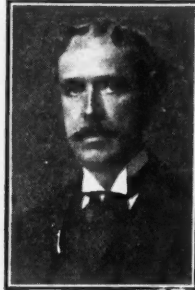
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W. H. Phillips,
President.



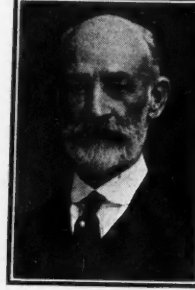
E. H. Reynolds,
Chairman of Board.



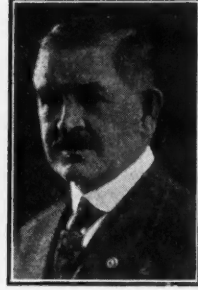
Dr. I. W. Drummond,
1st Vice-President.



S. R. Harrington,
2nd Vice-President.



J. M. B. Drummond,
Secretary.



J. J. Alsasser,
Treasurer.

Fire Resistive Construction

is assured in light-concrete work, such as walls, partitions, ceilings, light roofs, floors, column and beam protection, Porch Floors, etc., by using

BOSTWICK "TRUSS-V-RIB"

"The Ideal Reinforcement"

"VERY HEAVY—THE BEST" BUT NOT THE CHEAPEST

Our complete line includes, in addition, Bostwick "Truss-Loop" Metal Lath, Expanded Metal, Metal Corner Bead, Metal Ground Bead, Metal Wall Plug and Wall Ties, Etc.

SAMPLES AND PARTICULARS WILL BE SENT PROMPTLY ON REQUEST

BOSTWICK STEEL LATH CO., No. 17 Hall Ave., NILES, O.

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The Goodness of Beaver Board Built These Big Plants

What builds a big plant after all? What makes a business successful?

“A really worth-while product which when first introduced sells itself repeatedly.”

Isn't this a good answer to the question, and doesn't it cover Beaver Board, the knotless, crackless, manufactured lumber?

We believe so, and we believe that the illustrations shown at the top and bottom of this page prove the value of Beaver Board as a staple building material.

Of course these big plants are significant, but when you consider that there are over 9,000 dealers throughout the world selling this product regularly, you will realize that thousands of carpenter contractors are profiting by its use.

It isn't possible for us to show all the plants of the Beaver Board Companies on this page. In the first place, there are thousands of acres of timber lands with two big mills in the Canadian North where the big spruce trees are felled, cut and shipped by Beaver Workmen. Then there is a large plant located at Ottawa, Canada, and a Varnish Plant for the manufacture of “Sealtite” Sizing at Buffalo. The main plants at Buffalo and Thorold, Ont., are shown here.

THE BEAVER BOARD COMPANIES
42 Beaver Road Buffalo, N. Y.

Branches in Boston, New York, Baltimore, Cleveland, Detroit, Chicago, Minneapolis, Kansas City and San Francisco.
Manufacturers also of *Beaver Greenboard* and *Beaver Blackboard*.
Distributors in Principal Cities. Dealers everywhere.

BEAVER BOARD

FOR BETTER WALLS & CEILINGS





Permanent Houses for Industrial Workers

In planning homes for factory employes, permanence, speedy erection and low initial cost are obtained by the use of Hy-Rib Metal Lath products, which assure fire resistance, sanitation and low upkeep cost. These products are standardized and carried in stock in all parts of the country; labor and material to apply them are readily obtainable, so that erection proceeds with utmost speed.

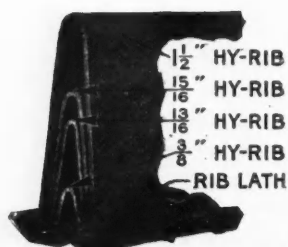


FOR EXTERIOR Stucco on Hy-Rib Metal Lath

Hy-Rib makes a thin monolithic reinforced concrete wall which is fire-resisting and permanent. Metal Lath is then applied to the inner face of the studs and plaster. Houses so built are easy to heat, require no painting and are generally preferred for their attractive appearance. They cost less than any other permanent construction.

If interested in any industrial housing operation, give us an outline of what is proposed so that we can send our detailed suggestions.

TRUSCON STEEL COMPANY
(FORMERLY TRUSSED CONCRETE STEEL CO.)
YOUNGSTOWN, OHIO.
WAREHOUSES AND REPRESENTATIVES IN PRINCIPAL CITIES



News of the Field

(Continued from page 80.)

best efforts for the advancement of the business and the welfare of the stockholders.

The D. & R. Syndicate Corporation have offered to the employes of the Devoe & Reynolds Co. an opportunity to purchase such stock as they can successfully assume at the same price which the syndicate paid the inactive stockholders, and the employes need not pay cash for this stock unless they desire to do so. The stock is to be sold to them with six years' time in which to pay for it, with the understanding that all dividends on the stock be applied to the payment of interest and principal, and as soon as an employe had accumulated sufficient to take up any of the stock set aside for him it will be transferred to him individually.

The D. & R. Syndicate Corporation will also act as a savings institution for the employes for the payment of this stock. If an employe finds he can save a certain portion of his salary each year he can deposit this with the D. & R. Syndicate Corporation, and it will apply to the payment of the stock he has agreed to purchase. If at the end of the six years the employe has been unable to pay for his stock and other arrangements cannot be made, it will be retained by the D. & R. Syndicate Corporation.

Not only will those employes who have been tried and found true be given this opportunity, but the D. & R. Syndicate Corporation will stand ready to extend a similar proposition to any employe in the future whose conduct and interest in the business will, in the opinion of the D. & R. Syndicate Corporation, merit this consideration.

At a meeting of the board of directors of the Devoe & Reynolds Co., Inc., held at the general offices, 101 Fulton St. New York City, on Oct. 21, 1918, the following officers were elected: President, W. H. Phillips; chairman of the board, E. H. Reynolds; first vice-president, I. W. Drummond; second vice-president, S. R. Harrington; treasurer, J. J. Alsasser; assistant treasurers, G. W. Betts and G. D. Potten; secretary, J. M. B. Drummond; assistant secretary, N. H. Cutting; board of directors, E. H. Reynolds, W. H. Phillips, I. W. Drummond, J. Seaver Page, S. R. Harrington, J. J. Alsasser, G. W. Betts, J. M. B. Drummond, N. H. Cutting, S. Stanwood Menken and G. H. Phillips.



Standardization of Dixon's Lumber Crayons

For the convenience of their patrons, the Joseph Dixon Crucible Co., Jersey City, N. J., announce the following standardization of styles and colors in the Dixon line of lumber crayons:

		Black (Graphite)
Dixon's No.	361	Medium soft, japanned finish.
"	365	Soft, paper covered.
"	365½	Very soft, japanned finish.
		Colored
Dixon's No.	494	Carbon black.
"	496	Yellow.
"	497	Terra cotta.
"	520	Red.
"	521	Blue.
"	521½	Soft blue.
"	522	Green.
"	523	White.

While Dixon's lumber crayons were originally designed for marking lumber, it is interesting to observe the broad scope of their use at this date, because of their distinctive qualities. They mark freely, the colors are vivid and remain so for a maximum period, and the crayons are exceptionally strong and long wearing. Today Dixon's lumber crayons are fully as necessary to the essential industries for marking on metal the yellow color being especially popular for this purpose as for marking on lumber.

These cottages are housing essential employees of the Indiana Steel Co., Gary, Indiana. The exterior stucco walls and the interior plaster walls are over Herringbone Rigid Metal Lath.



Workmen Will Stay In These Homes

The need for adequate industrial housing has long existed. Now it will be seen even more clearly than heretofore that one of the best ways to weld valuable workers permanently to an industrial plant is to house them comfortably, attractively and economically. Then metal lath and stucco homes will be more popular than ever.

Such structures can be put up rapidly and built to last at the same time. They are a permanently valuable investment to the owner; a source of lasting satisfaction to the tenants.

They are cool in summer, warm in winter. The perfect "key" of plaster and lath stubbornly resists fire, mice, rats, vermin, weather and decay. Falling plaster is unheard of.

Specify and use Herringbone Rigid Metal Lath because it is standard, *full-weight* lath, and because of its exceptional strength and rigidity due to the heavy longitudinal strands, set at an angle of 45 degrees to the plane of the lath.

Our well-organized system of branch offices in all principal centers assures prompt shipment of Herringbone Lath for essential uses in connection with war industries. Having set the highest standards of swift, economical and permanent building materials for many years, we are now fully equipped to give valuable service in the vital problem of housing industrial workmen right.

Engineers or architects interested in this most important building opportunity should get in touch with us.

The GF Industrial Housing Book we will present free to any interested architect, engineer, contractor or builder on request. To others upon remittance of \$1.00.

The name of a GF dealer nearest you can be obtained by phoning Buyers' Aid, Inc., in cities of 70,000 or over. Ask them to send you the GF catalog, or we will send it to you direct from the factory.

THE GENERAL FIREPROOFING CO., Youngstown, Ohio

Manufacturers of All Types of Metal Lath, Concrete Reinforcements, Waterproofings and Technical Paints

Members of Associated Metal Lath Manufacturers

Branches: New York Philadelphia Chicago San Francisco Kansas City
Atlanta Cincinnati Buffalo Utica



Trade Mark Reg. U. S. Pat. Off.

Herringbone Rigid Metal Lath



EDITOR'S NOTE: The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

Paint Your Buildings With Tree or Paint Spraying Outfit

Rural builders will be interested to learn that they can do a first-class job of painting houses, barns and silos by using a tree spraying apparatus to apply the special paint which is adapted to this purpose.

This plan is particularly desirable now because of the shortage of experienced painters, as no experience is required to spray the paint on the building. Little more paint is used than when brushed on and the work can be done in about one-fourth the time required to paint a building by hand.

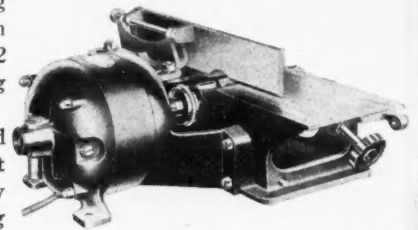
Ordinary linseed oil and lead paint cannot be applied in this manner. This special paint, however, is a liquid wax paint, and sinks into the wood as soon as it touches the sur-

face, and it can be applied rapidly and evenly with either a spraying machine or paint brush. It makes a smooth, even surface without brushing and spreads on the wood. One coat is enough for most buildings. Can be applied in cold weather.

This liquid wax paint is made in four fine colors—red, maroon, dark brown and natural brown. It is sold thru lumber and paint dealers everywhere.

A Portable Motor Operated Bench Planer for Light Woodwork Operation

An improved type of portable motor-operated bench planer or jointer for woodwork has been developed, in which the planer and motor are a single unit with direct drive thru a flexible coupling. This delivers approximately 100 per cent of power to the cutterhead, thus rating the sturdy little machine as having more power per inch of knife than the 2 to 5 horsepower big jointers.



Bench Planer with 1/4 H. P. 4,000 R. P. M. Electric Motor.

The saving effected is very great. It eliminates practically all of hand planing and saves many time-consuming trips to the big stationary jointer, for the bench planer is portable and can be taken to the work anywhere in the shop or on work outside.

An interesting mechanical feature of this machine is that three knives are operated in an alternating-current equip-

(Continued to page 86.)

BUILDER'S SPECIAL

500-Foot and 1000-Foot Lightning Rod Outfits Shipped Direct

THERE'S an extra profit waiting for you on many jobs, which you can easily get by installing proper lightning protection. The property owner has confidence in you—make this extra money yourself. With only a small investment in our Builder's Special Outfit, you will realize this big profit in selling and erecting

Thompson's
THE WORLD'S BEST

Guaranteed Lightning Protection

The Builder's Special Outfit is designed to meet your needs. A 1000-Foot Outfit will equip from 6 to 8 average buildings, a 500-Foot Outfit from 3 to 4 buildings.

An Extra Profit You Can Get

Many Thompson agents are making \$3,000.00 extra per year. Every un-rodded rural building is a prospect for a sale ranging from forty to several hundred dollars. Your profit on a complete 1000-Foot Outfit is \$165.00; on a 500-Foot Outfit, \$82.50.

FREE If you are a Builder, Carpenter Contractor, or Lumber Dealer, with your initial order we will give you free a set of the necessary Special Lightning Rod Tools. This offer is limited.

Write today for Illustrated Dealer's Catalog, Instruction Book (shown at left), and full details of our Introductory offer and Exclusive Agency Proposition.

THE GEORGE E. THOMPSON LIGHTNING ROD COMPANY
Originators and Distributors
Dept. B, Owatonna Minnesota, U. S. A.



One System Supplies Electric Light and Running Water



The Guarantee Behind Your Guarantee

THE Kewanee trademark on the system that you recommend or install is a guarantee that will back up your judgment.

The Kewanee Combination System will furnish light and water at the cost of a lighting plant alone. And dependability will furnish a lifetime of satisfaction.

Built right from the start and adapted to the work they are to do, Kewanee Systems save the waste of repairs.

KEWANEE
COMBINATION SYSTEMS
KEWANEE PRIVATE UTILITIES CO.
(Formerly Kewanee Water Supply Co.)
424 Franklin St. Kewanee, Ill.

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R. P. M.
portable
or on
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equip-



Lightning Can't Strike

If
SHINN
Gets There
FIRST



W. C. Shinn

Dealers Find This Business Good All the Time

Why Lightning Strikes

Lightning is the result of attraction between electrical energy in the cloud and electrical energy in the earth, finally overcoming the resistance of the dry air between.

If there is a house just below the cloud, the attraction of the electricity in the cloud, drawing upward on the electricity in the earth, tends to literally "charge" the house with electricity. Therefore, if the electric force should at that moment break through the air, the building, being directly in line and heavily charged with electricity, would probably be destroyed.

Shinn-Flat Conductors permit the electricity of the earth to gradually pass into the atmosphere above the building as it is attracted by the electricity of the cloud. There is no "punching up" of electricity in the building.

The Lightning Stroke always occurs where the electricity has been impeded or obstructed—when it breaks through, that is the stroke. If you equip your building with Shinn-Flat Conductors, and therefore prevent the electricity from becoming impeded or obstructed, you need never fear Lightning.

WHEN building materials are high-priced, the Lightning Rod business is good. Property is then worth so much more that owners cannot afford not to be protected.

This is the condition in which America finds herself today—

Limited New Construction.

Greatly Increased Values of Old Property.

Protection Absolutely Necessary.

Shinn-Flat

Prevents Lightning Losses

You can build a big business in your community selling this wonderful protection against Lightning.

36% More Conducting Surface

Shinn-Flat Lightning Conductors are distinctive and more efficient. They are woven flat, and have 36% more conducting surface than the same amount of material woven in a round cable.

Shinn-Flat is recognized all over North America as the most scientific system of Lightning Protection ever devised.

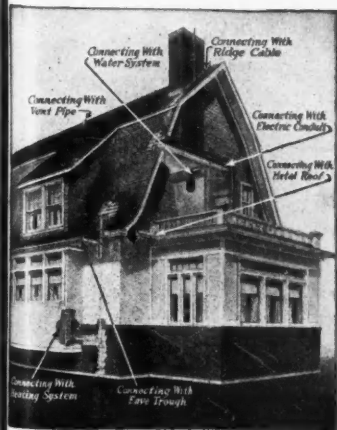
It is the system that has been recommended by such authorities as Sir Oliver Lodge of England, the U. S. Weather Bureau, Dr. Steinmetz of the General Electric Company, etc.

Start Right Now

This business is an all-year-round one. The dealer who keeps working at it every month in the year is the one who rolls up the annual business of 10,000 to 20,000 feet, carrying a very satisfactory margin. Contractors and builders are logical men to handle it, as they get out among property owners, and understand the value of property and the importance of its protection.

Write for full information and booklet on Lightning Cause and Control.

W. C. Shinn Manufacturing Co.
1659 Monadnock Bldg. Chicago, Illinois



Shinn-Flat Concealed System Nothing Shows But the Points

Shinn-Flat may be applied underneath the siding or stucco, when the structure is being built, with points only showing, and these rendered inconspicuous by the use of Shinn Short Points. We developed the system of Concealed Protection because many builders of fine homes and architects prefer Lightning Conductors to be invisible.

W. C. SHINN MFG. CO.
1659 Monadnock Bldg., Chicago
I am interested in the exclusive agency for the Shinn-Flat System in this community. Send full information.
Name.....
Town.....
State.....

What's New

(Continued from page 84.)

ment, while two knives are used on a direct-current equipment. This is due to the fact that 4,000 revolutions per minute are required to do planing satisfactorily, while only 3,600 revolutions per minute can be had in an alternating-current motor.

Fractional horsepower motors are used which are standard equipment and can be furnished for operation on any commercial circuit.



New Lock is Thief Proof

In the course of fifty years of lock building, a manufacturer naturally has developed new examples of the art that enables a man to keep what he has accumulated out of reach of the man who unlawfully tries to obtain it.

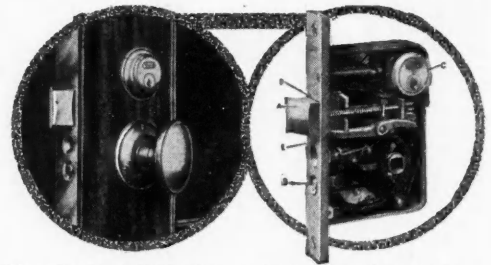
A particularly notable example of this development is the lock illustrated, designed to resist at every point the efforts of burglars and sneak thieves, thus making it particularly valuable for entrance doors of all kinds.

The "three point" protection afforded, while seemingly complicated because of its various functions, is really extremely simple. Solid bronze parts and the sturdiest construction make this lock exceptionally capable of resisting attack.

It has every bit of the smoothness and ease of closing that a bolt of one-half-inch throw would have, yet for the purpose of security, a dead bolt with three-quarter-inch throw. This is obtained as follows:

When the door is open the latch bolt is regular—extending one-half inch from the face of the lock. When the door is closed a dead locking slide that does not enter the strip trips a heavy bar of bronze of extraordinary sturdiness,

throwing it into position directly back of the latch bolt, preventing any possibility of forcing the bolt. At the same time the bolt



New Lock of Well-Known Make Affording "Three Point" Protection.

automatically shoots out to a three-quarter-inch throw, thus providing a dead bolt 1-inch by 13-16 inch of solid bronze.

Forcing the stop in and releasing the outside knob is impossible with this lock, because when the door is closed and the outside knob rendered inoperative the night lock is automatically deadlocked so that a tool inserted between the stop bead and jamb cannot, by any torsional twist, force the stop in and release the outside knob.

Finally, the famous cylinder, most durable and secure made, provides a 100 per cent protection against picking, as not a single instance of unlawful picking has been known to occur since the first Yale cylinder was developed, over fifty years ago.



New Use for Wood-Board

Contractors and carpenters will be interested in a new use for wood-board as applied to the exterior of buildings. In finishing the outside of a home or other structure, it has been customary first to box it with sheathing or ship-lap and then finish it with the siding. It is now suggested to

(Continued to page 88.)



Easy Sold—Big Profits

Your opportunity is here now. A Booster of Profits! Big Profits are yours in return for a portion of your spare time.

Needed by All

Every home is a possible prospect for Canton Sidewalk Doors and Coal Chutes. Give them a permanent coal window. The sale of, and installation of, every Canton Sidewalk Door and Coal Chute brings another sale with other repair jobs. They are burglar proof, made of the best materials, and stay rods and chains hold them in place either when open or closed.

Write for our catalog B-8.

Canton Foundry & Machine Co.
Canton, Ohio

More Heat—Less Fuel—Why?

Eyston

ONE-PIPE FURNACE

This furnace will burn with equal economy, hard or soft coal, coke or wood and burn LESS of it. It is the SAFE furnace to install, as its only hot-air connection is surrounded with a cold air duct.

25 to 40% Less Fuel

This saving means much to your clients and it makes the EYSTON furnace easy to sell. It is YOUR JOB to install it. We back up every installation with our absolute guarantee. Its cost is within reach of every householder. Let us hear from you and we will send you our proposition.



The Tubular Heating and Ventilating Company
232 Quarry Street
PHILADELPHIA, PA.

The Fuel Administration

without knowledge or intent, has boosted the
HESS WELDED STEEL FURNACE

by switching house owners from the use of hard coal and imposing upon them the necessary use of soft coal and other fuels, to which many fuel consumers are not accustomed. Few furnaces have stood the test of this change as well as the **Hess**.

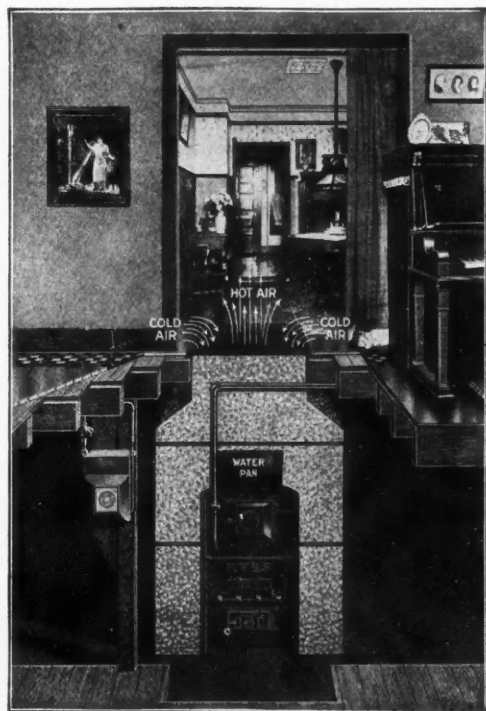
The welded seams throughout, making the construction absolutely gas and air tight; the absence of inner flues and smoke passages; the construction of the fire box (heavy fire brick slabs) and the very large grate surface, all combine for perfect combustion and complete transformation into heat of all of the various kinds of fuel which must be used in furnaces.

Our customers are burning hard or soft coal, coke, wood, ignite, without reference to size or quality, and are getting all the heat these fuels are capable of producing.

Our booklet will interest you and we will be glad to send you a copy.



The Hess Welded Steel Pipe Furnace



The Hess Welded Steel Pipeless Furnace

Attention—Contractors:

We have addressed a circular letter to a number of contractors who have repeatedly bought **Hess Welded Steel Furnaces** for their own use and for buildings they are erecting. We are asking them what particular advantages have induced them to place their repeated orders with us.

Their replies will be made up in a small booklet which we will gladly send, with our furnace catalogue, to anyone interested, and the experience of these contractors will be a better guide to intending purchasers of furnaces than anything we can say for ourselves.

Send us your name on a postal card and let us mail one of these booklets to you. We are catering particularly to contractors with our **Welded Steel Furnaces**.

Special Rates to Contractors

Hess Warming & Ventilating Company

1220 Tacoma Building

Chicago, Illinois



Built by Truck Specialists

REPUBLIC builds nothing but trucks, in factories scientifically planned and fully equipped for the most efficient manufacture of trucks. Republic engineers specialize on trucks and truck problems. They have studied the requirements of every industry and have developed a standard line of trucks to meet them.

The entire resources of the largest manufacturers of motor trucks in the world are concentrated on the production of trucks that will meet every modern hauling need.

It is this concentration and specialization that has enabled Republic Trucks to give a service value, so remarkable that it has created the greatest demand in the history of the motor truck industry.

Starting with a production of but 54 trucks in 1913, Republic, within five years was producing and selling more than twice as many trucks as the next largest manufacturer.

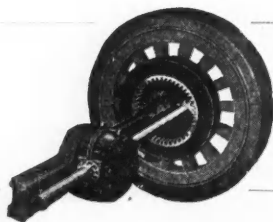
More than 1300 Republic Service Stations, distributed all over the United States, make dependable service available to every owner of a Republic.

Seven Models— $\frac{3}{4}$ ton to 5 ton.

See the Republic dealer and write us for booklet.

REPUBLIC MOTOR TRUCK CO., INC.
Alma, Michigan

The Tor ensen Internal Gear Drive, used in all Republic Trucks, delivers 92% of the motor power to the wheels. We know of no other type of drive that delivers as much



REPUBLIC

Internal Gear Drive

MOTOR TRUCKS

Built by the Largest Manufacturers of Motor Trucks in the World

What's New

(Continued from page 86.)

use wallboard in place of this sheathing. Those who have tried it report good results.

There is a considerable financial saving, since good wallboard costs only about \$35 per thousand square feet, and this point will enable the contractor to gain new business by reason of his ability to quote lower contract prices. Because it comes in standard sizes and is easily put up, much labor and time are saved.

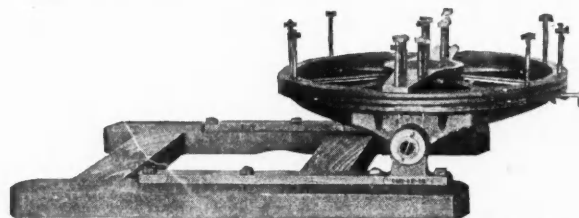
For small and medium-sized homes, garages, poultry and dairy houses, and the many industrial housing projects sure to develop with the coming period of renewed building activity, wallboard will doubtless be freely used for boxing the exteriors of buildings prior to finishing with sidings.



Contractors and Lumber Dealers Approve New Haulage Method

The Tractor-Semi-Trailer method is the latest development of motor hauling. It is 100 per cent efficient—better than the motor truck alone, because the capacity of truck is trebled without additional strain on the driving mechanism, and because several trailers may be used with one motor vehicle—one trailer being loaded, another unloaded and another being drawn.

It is better than the two-wheeled cart in which the load is balanced over the axle, because it gives speed with safety and does not "whip" from side to side; also because it uses



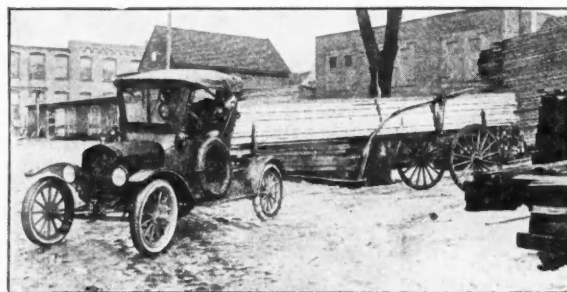
Rocking Fifth Wheel—Connection of 18-Inch Size, Complete for Fords or Light Roadsters to Make One Ton Tractor-Semi-Trailers, Showing Extra Bolster Plate and Upper Circle Ready for Attaching to Extra Wagons.

part of the trailer load for traction. If there is not enough weight on the driving wheels they will slip on muddy roads, icy hills, or wet asphalt. With the tractor-semi-trailer enough weight is concentrated on the driving wheels to make traction certain and draw the entire load without slipping.

Why is a fifth wheel? Webster defines a fifth wheel as "a horizontal wheel or segment of two parts rotating on each other above the fore-axle of a carriage, forming a support to prevent careening."

The fifth wheel was necessary to make the wagon thoroly practical. It is in universal service as a combination stabilizer and turning bearing, for its broad circle prevents the wagon

(Continued to page 90.)



Runabout with Trailer Loaded with Lumber Backing Into a Narrow Driveway.

The War is Over---

Construction Days are at Hand---

Make No Mistakes Through Haste---

“Look Before You Build”

At the Permanent Building Material Exhibit you will find 150 remarkably interesting displays showing you all the latest and most important developments in the building line. Whether you plan a skyscraper or a three-room bungalow, you cannot afford to proceed until you have visited the

Building Material Exhibit

Entire Second Floor

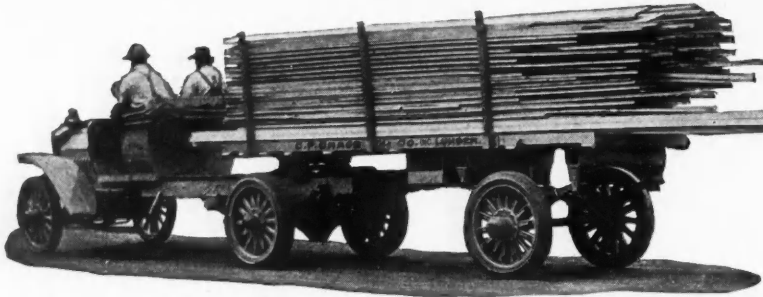
Insurance Exchange Building

175 W. Jackson Boulevard

CHICAGO

If you can't come in person write. We will cheerfully furnish free information and estimates.

Send for Our Free Magazine



Heavy Type Rear End Construction in Place; It Requires But Little Time to Substitute This Assembly for the Worn-Out Wheels, Axles and Springs on a Horse-Drawn Truck.

What's New

(Continued from page 88.)

from tipping to either side while the front axle easily turns to right or left.

Since the ordinary wagon is a four-wheeled vehicle, it conforms readily to all road unevenness. If we use a tractor, however, and a two-wheeled trailer resting upon the rear of the tractor we have a new condition to meet in this six-wheeled tractor-semi-trailer unit. If the connection between tractor and trailer-wagon were rigid one pair of wheels would be lifted off the ground by every road depression. No combination could stand this strain long.

The *rocking* fifth wheel solves the problem. It has a crosswise hinge, allowing a rocking motion. This permits the combination to follow the road unevenness with speed and safety.

The *rocking* fifth wheel is indorsed by building contractors and lumber dealers all over the country as being the most satisfactory device for coupling tractor, pleasure car or truck with the semi-trailer. It is fully covered by basic and detail improvement patents.

Inside Corner Bead Prevents Cracks

The function of the inside corner bead is two-fold: to better the mechanical side of plastering, and to do away with the unsightly radial cracks that commonly develop where wall meets wall or ceiling.

This bead, in position, provides the grounds to which the mechanic must work and prevents slurring of the work, forming of the angles with a brush, skinning the mortar coat, etc. In the completed work the nose of the bead forms the angle of the wall. The nose is purposely

made small so that in the plastered wall any difference in texture between it and the plastering is not noticeable.

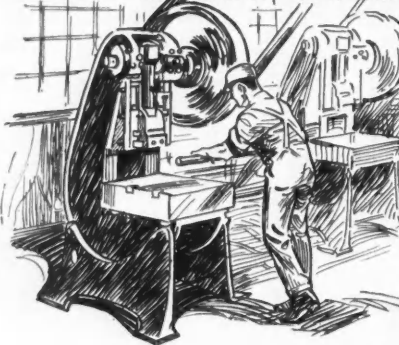
As is plain from the formation of the bead, its prominent quality is the provision for expansion under stress. Especially where wood is joined to brick or tile there is always a tendency for the partition to pull away from the wall, whether from shrinking of timber or other cause; tho this tendency is frequent even where the partitions are of tile.

Where the inside bead is used, any strain is met by a yielding of the bead at the back, which opens gradually under the stress and allows the plastered walls to part without the unsightly radiating cracks that are so common and so difficult to repair. Where the bead is used the plastering does not meet in the angles, and the division, even if prominent, shows only an opening in line with the bead, which openings are easily pointed and do not damage the work.



Improved Type of Inside Corner Bead.

From War



To Peace



Brasco

STORE FRONTS

Having aided our Government in the Great War by devoting a major portion of our plant and equipment to the execution of war orders, we are now ready to contribute full support to its program for an early and complete return to Peace.

With a large and complete line of storefront materials, and ample fa-

cilities for their prompt fabrication, your orders for Brasco Store Fronts will be executed with care and dispatch. The new Era with its great demands on all lines is upon us. Consistent with the spirit of the times, adopt Brasco Store Fronts and be prepared for the unprecedented business fast approaching.

BRASCO MANUFACTURING COMPANY
5029 S. WABASH AVE., CHICAGO, ILL.

MV MV MV MV MV MV MV MV MV MV MV



With Victorious Peace Now Accomplished

We again offer you the Mitchell Vance Co., Inc., Lighting Fixtures Service of sixty years' exceptional record transferred to Uncle Sam for National War Industry Demands.

This Lighting Fixture Service to you begins with an entire new line of beautiful and inexpensive Colonial Designs of Vance Bronze, which will meet every requirement of the private home or public building.

**WE SERVED THE GOVERNMENT IN RECORD TIME.
WE WILL AGAIN SERVE YOU IN LIKE MANNER.**

Let us have your specifications to figure on. Quantity prices quoted on application.

MITCHELL VANCE CO., INC.

Sole Producers of VANCO BRONZE, the New Metal

503-511 WEST 24th STREET

NEW YORK CITY

MV MV MV MV MV MV MV MV MV MV MV

Where the Factory Can Help the Contractor

By T. F. Ryan

General Contractor, Laurel, Nebr.

IN contracting, the most difficult problem is that of labor. So many conditions affect the labor costs on a building that it can never be much more than approximately estimated.

The material difficulty is largely one of quantity as the price and quality are factors beyond the control of the contractor; the labor is subject to every variation of the material to which is also added the unreliability of the individuals who are to furnish it.

The small contractor employing less than ten men is perhaps personally acquainted with them and can estimate very accurately the amount of work that they can do; but he is not sure that they will remain with him to finish up the job he may be estimating, he may have to fill some of their places with strangers, if he has plenty of work to do he cannot wait to pick out his men, he must take those that he happens to find.

Every contractor has had to keep men at times, who were not satisfactory and who were not earning their wages, while his best men were only doing an amount equal to their pay, nor could they be reasonably expected to do more. On such a job it is easy to see how a contractor might lose money if he figured the work at all close.

It sometimes happens that a working force may be materially changed in a short time; and this frequently occurs when there are a lot of good jobs in sight—some of your best men seeing them may want to start out for themselves. It is always this class that is the hardest to keep. Your incompetents will stay with you.

I have known working forces to change in a few weeks so that the contractor with a lot of possible business in sight would not have one good capable mechanic among his whole number of men. It is bad enough to lose business in this way, but it is still worse if you have several contracts already secured and no competent men to do the work. Here you are in a fair way to lose out financially as well as in reputation as a contractor.

If you should find yourself in such a predicament, for it is nothing less, the best thing to do is to let the future prospects go, since if you do not take care of what you have on hand you may be sure that it will affect your future. Take personal charge of your inexperienced men and turn all your outside finish over to your nearest millwork supply house, and in the

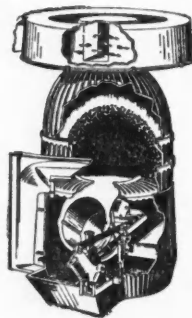
(Continued to page 94.)

This Heater Means Business

WHEN you specify or install a Williamson Newfeed **Underfeed** furnace or boiler you can guarantee to cut the customer's coal bill $\frac{1}{2}$ to $\frac{2}{3}$ and we back you.

Every **Underfeed** you install is a permanent advertisement for you and your business.

35,000 **Underfeed** users everywhere recommend this heater because of the savings in fuel bills and reduction to the minimum of smoke, soot, dust and clinkers which its use insures.



Proposition for Contractors

With the resumption of building there will be a big demand for **Underfeeds** in every community.

We have an interesting proposition for contractors, and it will pay you to write for full particulars.

In addition to the **Underfeeds** we make a complete line of **Topfeed** furnaces and boilers, also an excellent line of **Pipeless** furnaces which has a large sale.

GET READY FOR THE BUILDING SEASON BEFOREHAND!
Write Today

The Williamson Heater Co.
127 West 5th Street Cincinnati, Ohio

50% Less Fuel Producing 100% More Heat

Guaranteed by Bond

The Only Furnace that Insures Clean Air

Big Money for You

Meets Abnormal
Costs of Material
and Labor

Simple to Install
Easy to Operate

We Want Good,
Active Men to
Represent Us.

Write today for our special
agency proposition

MAIL TODAY

Standard Heater Co.
438 W. Ontario St., Chicago
Send me your Special Agency
Proposition to Contractors.

Name.....

Address.....



STANDARD HEATER CO.
438 West Ontario Street
CHICAGO, ILL.

The War is Over

Restrictions on Building Have Been Removed

ARE YOU PREPARED?

The Modern Way Furnace Company has been going right along, getting ready for the big event, and is now in position to give you up-to-the-



minute improvements in Hot Air Heating Systems.

The Modern Way burns hard or soft coal, coke or wood. Heats, ventilates, and gives added comfort to the home.

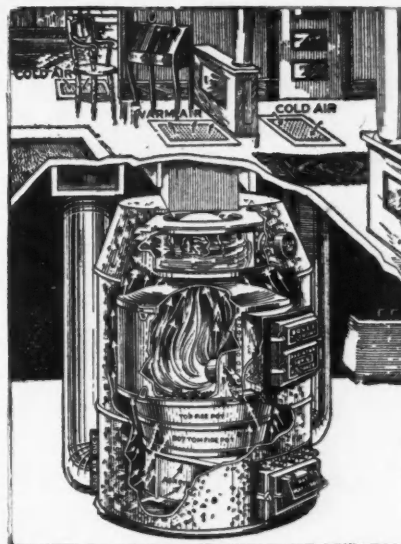
CONTRACTORS, ATTENTION!

BIG PROFITS FOR YOU

Get our proposition at once, for your vicinity, before someone beats you to it.

We Protect Our Dealers

**The Modern Way
Furnace Co.
FORT WAYNE, INDIANA**



BOVEE'S PIPELESS FURNACES

Central Heating and Regular Pipe Furnaces

Bovee's Pipeless Furnaces four sizes. One Register. Cool basement. Easy to install. Very economical of fuel and very durable.

Bovee's Central Heating System Furnaces

Six sizes. One large warm air register. Other registers can be added if found necessary. Separate cold air ducts. Aids in circulation of heat and removes cold air from warm air registers. Ordinary rugs can be used.

Regular Pipe Furnaces furnished where registers are desired in each room. Send pencil sketch of building for estimate.

Horizontal Furnaces for 4-ft. wood or coal with double doors 16x16-in. or 17x21-in. furnished with Central Heating or Regular Piping

Buy from Manufacturers and Save All Commission, one-third the cost of your Heating Plant.

FREE CATALOGUE

BOVEE FURNACE WORKS, 50 W. 8th St., Waterloo, Iowa

Majestic Coal Chute

is easily installed in place of unsightly basement windows, or built into new foundations. It is absolutely burglar proof. The glass door can only be unlocked from the inside and gives ample light to the basement.

Inexpensive and durable—will outlast the building. It increases the value of property and is a modern building necessity.

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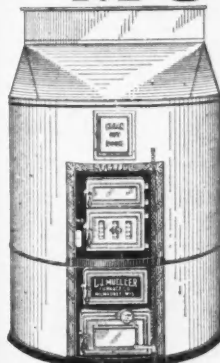
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MUELLER

Pipeless Furnace



Guaranteed to heat every room in house to a comfortable temperature through one register. Easily installed, even in partial cellar. Saves one-third and more in fuel—burns any kind. Thousands in use. Write for free illustrated booklet and full information.

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Saves Coal



Use Arnold Automatic Damper

This simple device, placed in your Stove Pipe or Furnace Pipe immediately gives your house 25% to 33 1/2% more heat from the same quantity of fuel—no matter what type of stove or furnace you use. A Proved Success! You can easily attach it yourself—simple directions on box.

NO WASTED FUEL

Automatic in operation—requires no attention after fire is started. Keeps your house at even temperature. No overheating with waste of fuel. No underheating with dangers to health.

Saves Its Cost on First Ton of Fuel

Thousands already in use. Every owner a booster. Price \$2.50 by parcel post prepaid. Order today, stating whether for Stove or Furnace and size of pipe. Agents wanted.

ROBINSON MFG. COMPANY

92 Factories Bldg.

Toledo, Ohio

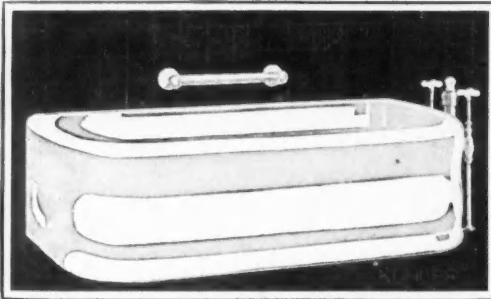
HERO

PIPELESS FURNACE

the great coal saver, it is a money maker for the contractor and jobber. Stove heated houses are all prospects for sales because of the big fuel economy.

Easily installed by any good mechanic in a day. Here is a chance to build a good business with liberal profits. Big commission and exclusive territory. Write for bulletin.

HERO FURNACE CO. 59 W. Lake St. Chicago



KOHLER

Also MEANS A BATHTUB

Kohler achievement finds its highest expression in the Viceroy Bathtub, the inviting built-in tub that graces the bathrooms of the great hotels and better homes—the pride of the builder to whom beauty and durability are highly essential.

Could you but witness the making of this bathtub in a great community factory, you would readily become imbued with the spirit by which Kohler signifies not only a bathtub and a host of kindred products, but also an idea, an ideal, a town, an institution, a spirit of achievement.

The Kohler method and the Kohler line—the outcome of forty-five years' unceasing endeavor—hold a particular significance for you as a representative builder. They are aptly described in an interesting, illustrated book which it will be our pleasure to send you for the mere asking. Write for it today.

KOHLER OF KOHLER

Kohler Co., Kohler, Wis.
Shipping Point, Sheboygan, Wis.

AND TWELVE AMERICAN BRANCHES



MANUFACTURERS OF ENAMELED PLUMBING WARE

Where the Factory Can Help the Contractor

(Continued from page 94.)

meantime look out for better help.

On rough work a contractor can keep several carpenters busy, even if they are not very experienced workmen, provided that he is with them all the time to direct them and keep them from making mistakes; but if he should have a couple of inexperienced men trying to get out cornice and frames and be dividing his time between the two sets of men, the chances are that neither job will be done right.

The factory will take all this outside finish and get it out cheaper and better than the average carpenter, let alone inexperienced workmen. After the order is given, you need not worry about it; the mill will take care of it—if the work is not done right you need not pay for it.

The writer is speaking from the practical experience of having had frames shipped from the factory, set up; of having them come knocked down and afterwards put together on the job, and of having made the frames entirely by hand, and also of having all the work done with power machinery right on the job; and believes that no ordinary contractor with or without power machinery can compete with the factory in the making and setting up of frames.

Three years ago the writer worked with two good carpenters who were employed in the various items of building houses; sometimes they set up window frames sent in knocked down. Their wages were \$4.00 per day. Afterwards they went to Sioux City and began to work in a sash and door factory. When the factory had an order for set-up frames, they worked at setting the frames up, for which they received \$2.75 per day. Here was the same item of labor that cost the contractor \$4.00, furnished to the mill men for \$2.75.

This factory set up window frames, 24 by 28, two-light and under, for 25 cents each; the same work done by the same men, cost 50 to 60 cents per frame. Here, in other words, the factory set them up for about one-half of what it cost to have the same work done outside the factory.

In actual work on a job, it took me five days to put 35 frames together. These frames were in the knock-down, bundled, and were as nearly finished as is the average knock-down frame. The casings were jointed, jambs sized, when I put them together—a first-class job in every respect; but my work cost 65 cents per frame, without counting the cost of nails and supervision, which items would vary, but on this job, cost about 15 cents per frame, making the frames cost 80 cents each for setting up.

By paying 10 cents extra at the factory, the casings could all be jointed and beveled for the siding, as some carpenters want a slight bevel for siding. The jambs could be re-sized; in fact, just as good a job as was

(Continued to page 96.)

It is the Direct Top Vent

that makes the PURITY JR. an odorless toilet. Unlike a toilet depending upon an elbow side opening, the PURITY JR. seat may be raised a hundred times without impure air entering the room.

An Outdoor Toilet

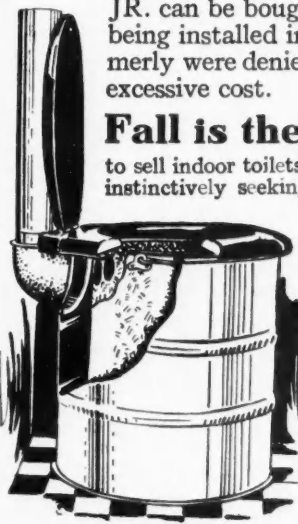
causes more distress in winter than the thoughtful father and husband is willing to permit his family to endure. Because the PURITY JR. can be bought for little money, it is being installed in many homes that formerly were denied such convenience thru excessive cost.

Fall is the Best Time

to sell indoor toilets. Right now each home is instinctively seeking to secure the thing that will add most to its comfort during the coming winter. The builder who has given them their other conveniences is the man to whom they turn for a better toilet.

Prepare to Meet this Demand by establishing yourself now as one of our agents. PURITY toilets create business.

Night Commander Lighting Company
Jackson, Michigan



Set It Up In 30 Minutes

NEEDS NO WATER, NO SEWER

CARPENTERS and contractors can make big money during the winter months by selling and installing *Magic* sanitary chemical inside toilets. They need no water or sewer connections. They are operated by chemicals only, keeping the toilet sterilized at all times. The Magic can be placed in a bedroom, closet or bathroom. Enjoy all the comforts of city homes. Keep out of the cold, rain, snow and wind. Avoid exposure to the weather.



Write to the address below for their liberal money-making proposition to carpenters and builders. You run no risk. We guarantee absolute satisfaction and refund your money after thirty days' trial if you are not pleased and contented.

Chemical Closet Supply Co.
Jackson, Michigan

This is the Best Time

CARPENTERS and builders are making big profits selling chemical toilets to home owners where sewage systems are not available. As a side line or full time, the opportunities are unlimited; the profit possibilities depend entirely upon your own efforts. This is the best time to sell indoor toilets, as the inconvenience of the outdoor privy is emphasized by the cold weather.

The Wolverine Chemical Toilet sells cheaper than the old-fashioned outdoor privy. It is an important essential to health, comfort and convenience and can be placed anywhere in the home. Over 10,000 in use in factories, business houses, schools, homes and elsewhere.

Sanitary WOLVERINE Chemical Toilet No Plumbing Odorless No Waterworks

Endorsed by physicians, health authorities, schools, and home owners. Every town and country building needs one. Easy to install; no experience needed. Germs killed by chemical.

30-DAY FREE TRIAL -- GUARANTEE

In handling such a line you certainly want the best. The Wolverine line of chemical toilets has a wider range than any other and is manufactured by pioneers in this field; our knowledge of this business is backed by five years of successful experience. Our cooperation and suggestions should prove invaluable to you.

We Want Agents Preferably carpenters and builders to act for us in their locality. This is a home necessity right in your line -- you can make a profit on the sale, and another on the installation. The profits are big and the work light. Our cooperation makes the sale easy.

Write at once for details of this real business opportunity. The big selling season is here and you can get your share of this business if you act **Now**

Dail Steel Products Company 4812 Main Street LANSING, MICH.

Comfort Indoor Closet

Odorless Sanitary Germ-Proof
No Sewer — No Waterworks — No Plumbing Needed

This modern home necessity is fast taking the place of the unsightly, unhealthy, inconvenient outhouse in the back yard. Thousands now in use and all giving complete satisfaction. Can be put wherever convenient in the house. No odor whatever. Gives city convenience in the country or town.

Abolish Outdoor Closet

Anybody can afford one. Saves those cold night trips out-of-doors. Impossible to get same amount of comfort for the money another way. Sold on 30 days' trial and under sworn guarantee to refund all money if not entirely satisfactory. Send for description and prices today. Be fair to your family.

Agents Make Big Money Easily

Comfort Indoor Closets sell themselves as fast as people understand about them. Contractors and carpenters are making big money by merely suggesting this closet.

Write for details of this exclusive agency offer. Send postal now before somebody else gets your territory.

Comfort Chemical Closet Co.
312 Factory Bldg. TOLEDO, OHIO



Where the Factory Can Help the Contractor

(Continued from page 94.)

done on the above frames, and all delivered on the ground for 45 cents per frame, set up ready to be placed. Thirty cents was allowed for the setting up, as some of the frames were larger than 24 by 28, 10 cents for extra work and 5 cents per frame for freight. A frame in the knock-down takes third class freight, and set up, first class, making a difference of about 5 cents for each 150 miles hauled.

On the setting up of this bill of frames the factory could make a saving of \$12.25. Quite an item, besides the help it gives when one is crowded with work or short of competent workmen.

Wherever material has to be ripped, sized and jointed, as for corner boards, outside base and belt courses, the mill can do it cheaper than you can, and if you have to do all this work by hand, can deliver it right on the job cheaper than you can and will do the work better than the average carpenter can by hand. Where a power jointer joints a casing or corner board, it will more generally be true and square or beveled, as the case may be, its entire length, than when such work is done by hand.

The item of freight does not make as much difference as one would think. You will have to pay freight in carload lots to your station in any event, this being figured in the cost of your material. The difference between this and the local fourth class freight will average about 5 cents for each 100 pounds hauled 150 miles. On 1000 feet of outside finishing lumber it would be somewhere near \$1.05 more on a haul of 150 miles than the carload rates would be for that distance.

Where you have good capable and conscientious workmen, I do not advocate the turning of this work over to the mills, tho I think the mill can deliver it right on the job considerably cheaper than you can do it by hand; but where you have careless, lazy, incompetent fellows who only work because they want some money to spend, caring nothing for your interests and, in truth very little more for their own.

Furnishing the inside finish is another place where the factory may save you considerable money. If all your interior finish is made out in one bill and ordered directly from the mill, it will come to you clean and in good shape. It will save you the cost of cleaning up dirty finish—a big expense, on some jobs amounting

(Continued to page 98.)

Running Water and Electric Light

You Can Have Either or Both in your village or country home, no matter how far you may be from a central pumping plant. The Milwaukee Air Power Water System delivers fresh water from well, lake or spring direct to any part of house or yard. Saves all carrying—all inconvenience. Just turn a faucet and you get fresh, running water just as in a city home. No water storage tank to freeze or foul the water.

The Milwaukee Electric Light System is another wonderful convenience. It is sold with the water system or separate as desired. They can both be run with one engine—giving water, light and power.

Write for illustrated, descriptive matter.
MILWAUKEE AIR POWER PUMP CO.
872 Third Street Milwaukee, Wis.



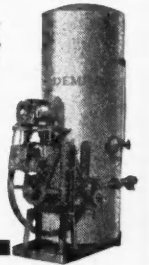
You're in a position to make more money

Simply suggest the advantages and convenience of running water to your home or barn customer and take the order yourself for your plumber to fill. No. 2085

Deming Hydro-Pneumatic SYSTEMS

are self-operating and automatic; require little attention; initial cost is moderate and operating expense trivial.

Don't miss the next opportunity.
Send for catalog and information now.
THE DEMING CO., 99 Depot St., Salem, O.



ED. H. WITTE

I WILL SELL YOU AN ENGINE

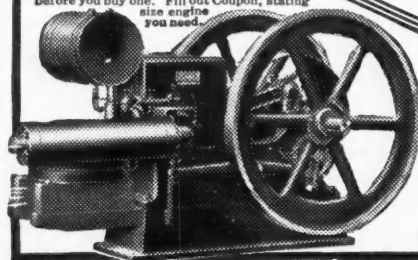
On Practically Your Own Terms

ALL CASH, PART CASH, or NO CASH DOWN

Any worthy, creditable person, anywhere in the U. S. can buy on these terms. Anyone can order without risk. I guarantee safe delivery to your station. All WITTE Engines sold on 5-year guarantee, 2 to 30 h-p. My factory is the largest exclusive engine factory in the world, selling direct to the user, any style—Stationary, Portable or Saw Rig. I Ship Your Engine Quick. You choose engine and plan of payment. WITTE Engines are best-looking, best balanced, easy to operate. Money Back If Not Satisfied on My New 90 Day Engine Offer—FREE.

"How to Judge Engines"

FREE My new book explains what you should know about engines before you buy one. Fill out Coupon, stating size engine you need.



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Specify Wolff Plumbing

For installations of any size or character. It is the best today as it has been for over 60 years.

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General Office and Showroom
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Wolff Lavatory in Reid, Murdock & Co. Building, Chicago
George C. Nimmons, Architect C. J. Stein Plumbing Contractor

THE AUTOMATIC COAL CHUTE

Will Answer Every Requirement

Opens Automatically
Closes Automatically
Locks Automatically
Fool Proof
Order one from your
dealer or direct from



Agents Wanted

THE WESTERN IRON & FOUNDRY CO.
Wichita, Kansas

Make Your Own Brick

and

\$20 to \$50

Extra Daily Profit

10000 Brick
or
1000 Blocks
Daily



The Helm Press

Be independent of the clay brickmaker and dealer. Put yourself in a position to make more money on your contracts, to take bigger jobs—more profitable jobs without worry of delays or lost time eating into your profits. With a Helm Press you can make 10,000 Brick or 1,000 Blocks a day—\$20 to \$50 daily profit. Operates under 80,000 pound pressure. No tamping—no burning—every brick or block perfectly true. A big demand in your own community for this superior kind of building material. Equip yourself to supply it.

Helm "Dry Wall" Building System

Appeals to builders, contractors and architects. It overcomes the opposition to concrete because it offers absolutely Dry Wall construction. It saves money for builders, as no furring and lathing are required, and it makes rigid walls and fireproof walls. This is the system which is bound to get you business and give you the advantage over all other products.

Send for Our Valuable Book FREE

Let this FREE book tell you all about this great opportunity which is open to you today. It will tell you all the details of this system, about the Helm Press and the Dry Wall building system. It will show you how easy it is to start a profitable business. It tells how each product is made, how it is cured and sold. Write today. Use a post card or coupon.

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CADILLAC, MICH.

Helm Brick Machine Co.
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Gentlemen—Please send FREE your book on Concrete and Helm Presses.

Name

Address

Andrews Hot-Water Saves Heating 1/3 Fuel

Write For
Big Free Book

**More Profits
For Contractors**

Most economical and satisfactory for home owners. We furnish all estimates and erection plans. Complete systems of best quality or our famous steel boilers sold alone. Write for our Big Heating Book and Proposition.

Andrews Heating Company
1576 Heating Bldg. Minneapolis, Minn.



Where the Factory Can Help the Contractor

(Continued from page 96.)

to as much as 20 per cent of the cost of the material. Base mould, heavily moulded base, picture mould, O. G. stops, and quarter-round are difficult to clean if very dirty. It is about as cheap to throw very dirty small mouldings away and buy new clean ones as it is to pay for the work of having them perfectly cleaned.

If the finish has to be sandpapered, have all the flat surfaces machine sanded before it is shipped from the factory. It can be done there for 20 per cent of what it will cost you to do it by hand on the job. The flat surfaces of the following bill of material for the writer was sanded at the mill for \$3.50:

- 19 doors.
- 12 door jambs.
- Stools and aprons for 23 windows.
- 800 lineal feet 8-inch base.
- 800 lineal feet 4 1/4-inch casing.
- 500 lineal feet band mould.
- 300 lineal feet window and door stop.
- 20 feet 3-member plate rail.

The material came on the job perfectly clean and bright, save a small amount of dirt caused by handling. This was cleaned and the moulded edges and quarter-round and picture mould sandpapered by hand. The cost of this, including the \$3.50 paid for flat sanding

was a little less than \$10.00.

I have worked on similar jobs where as high as \$60.00 was paid for cleaning a like amount of finish, and then the softer parts of some of the moulded work showed dinginess—parts where a plane or scraper could not be used.

Few retail lumber yards have dust and light-proof moulding racks. The dirt settles and in time works into the finish. The light discolors the exposed parts, causing the wood to lose its freshness. To remove these defects takes time and money. Quite often neither can be conveniently spared. It is well then for the contractor to know that the mill can furnish this material perfectly clean, and when specified, the greater part of it sanded, ready to put on, saving the item of recleaning finish which was once in condition, but because of improper handling has to go thru another expensive process.



Timely Advice to Young Builders Just Starting Out

By Jack Plane

I BELIEVE an article written for the benefit of the young carpenters who contemplate going into the contracting business this spring would be in order at this time.

Having been one of the young fellows myself and having learned as I went along, I speak from actual experience.

(Continued to page 120.)

THE IDEAL CONCRETE MACHINERY CO.

1308 Monmouth Ave. CINCINNATI, O.



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EVERY-THING in Concrete Machinery

FOR THE CONTRACTOR

WRITE FOR CATALOG



Catalog No. 30



Catalog No. 28

Specify



CLAY

Steel Barn Equipment

and make a good profit and better satisfied customers.

There are just two units to the CLAY Stall—the partition and top rail. It is erected quickly and easily. The CLAY 2-WAY Stanchion eliminates rigid posts and cow stops.

CLAY Equipment is more comfortable for the cow and convenient for the farmer.

Send for large, free catalog. Address Dept. 3

IOWA GATE COMPANY, Cedar Falls, Iowa

Security Lightning Rod Systems

Insure Guaranteed

LIGHTNING PROTECTION

Inspected and approved by

National Board of Fire Underwriters

Pure Copper Lightning Rods and

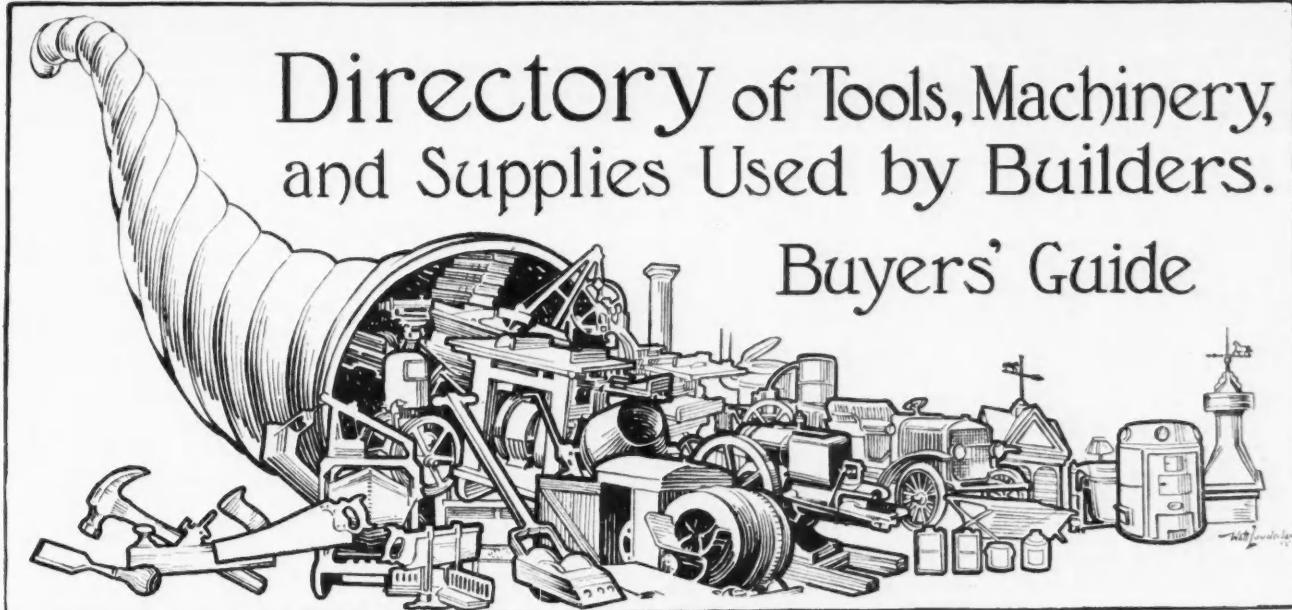
Gold Leaf Weather Vanes
"The Kind That Last"



The Security Lightning Rod Co.
Burlington, Wisconsin

Directory of Tools, Machinery, and Supplies Used by Builders.

Buyers' Guide



THE Publishers of the **AMERICAN 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. Builders, dealers in building materials, architects, contractors and carpenters 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.

Valuable Information—Keep it Handy for Reference

This directory contains valuable information boiled down into a few words, and will save time and effort for busy builders and dealers. The various tools, machines, or building materials are arranged alphabetically; the trade name given whenever possible, 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, write the **AMERICAN 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. We are glad to serve you in every way we can.

**Editors and Publishers, American Builder
Radford Building, Chicago, Ill.**

Adzes—Carpenters'

E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Mack & Co., Rochester, N. Y. ("D. R. Barton").
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent").
L. A. Sayre & Co., Newark, N. J. ("Sayre").
L. & I. J. White Co., Buffalo, N. Y.

Air Brakes

Baasche Air Brush Co., Chicago, Ill.

Air Compressors

American Floor Surfacing Machine Co., Toledo, O.
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.").
Milwaukee Air Power Pump Co., Milwaukee, Wis.
T. L. Smith Co., Milwaukee, Wis.
Standard Scale & Supply Co., Pittsburgh, Pa.
Waterloo Cement Machinery Corp., Waterloo, Ia.
("Wonder" portable).

Air Painting Equipment

Surty Guard Co., Chicago, Ill.

Anchor—Building

Bragstad Concrete Machinery Co., Canton, S. D.
(Reinforcing).
Geo. B. Carpenter & Co., Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.

Anchor—Joist

Geo. B. Carpenter & Co., Chicago, Ill.
Equipment Corporation of America, Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Western Iron & Foundry Co., Wichita, Kan.

Anchor—Wall

Bragstad Concrete Machinery Co., Canton, S. D.

Geo. B. Carpenter & Co., Chicago, Ill.
Equipment Corporation of America, Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Western Iron & Foundry Co., Wichita, Kan.

Angle Irons

Archer Iron Works, Chicago, Ill.
Badger Corrugating Co., La Crosse, Wis.
McKinney Mfg. Co., Pittsburgh, Pa.
Rehm Hardware Co., Chicago, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill. ("R. W.").
Sargent & Co., New Haven, Conn. ("Sargent").
Stover Mfg. & Engine Co., Freeport, Ill.
Western Iron & Foundry Co., Wichita, Kan.

Anvils—Bench

E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star" anvil and vise).

Arches—Corrugated

Badger Corrugating Co., La Crosse, Wis.
Berger Mfg. Co., Canton, O.
Bostwick Steel Lath Co., Niles, O.
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
National Sheet Metal Roofing Co., Jersey City, N. J.
Stark Rolling Mills Co., Canton, O.
Willis Mfg. Co., Galesburg, Ill.

Arches—Driveway

Iowa Gate Co., Cedar Falls, Ia. ("Clay" country-home driveway arches).

Augers—Boring Machine

Geo. B. Carpenter & Co., Chicago, Ill.
J. A. Fay & Egan Co., Cincinnati, O.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent").
Smith & Hemenway Co., New York, N. Y. ("Red Devil").
James Swan Co., Seymour, Conn. ("Swan").

Augers—Hollow

Buckeye Mfg. & Foundry Co., Cleveland, O.
Geo. B. Carpenter & Co., Chicago, Ill.
J. A. Fay & Egan Co., Cincinnati, O.
Goodell-Pratt Co., Greenfield, Mass.
Sargent & Co., New Haven, Conn. ("Sargent").
James Swan Co., Seymour, Conn. ("Swan").

Augers—Posthole

E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Vaughan & Bushnell Mfg. Co., Chicago, Ill.

Automobiles—Passenger

Kissel Motor Car Co., Hartford, Wis. ("Kissel").

Auto Trailers

Martin Rocking Fifth Wheel Co., Springfield, Mass. ("Martin" semi-trailer).
Rogers Bros. Co., Albion, Pa.
Surty Guard Co., Chicago, Ill.

Awls—Brad and Scratch

Geo. B. Carpenter & Co., Chicago, Ill.
Goodell-Pratt Co., Greenfield, Mass.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent").

Stanley Rule & Level Co., New Britain, Conn. James Swan Co., Seymour, Conn. ("Swan").

Awnings—Corrugated Bar. Milwaukee Corrugating Co., Milwaukee, Wis.

Awnings—Corrugated Steel. Badger Corrugating Co., La Crosse, Wis. Berger Mfg. Co., Canton, O. Edwards Corrugating Co., Milwaukee, Wis. Milwaukee Corrugating Co., Milwaukee, Wis. ("Milcor"). Willis Mfg. Co., Galesburg, Ill.

Awnings—Cotton, Duck, etc. Wm. L. Barrell Co., New York, N. Y. John Boyle & Co., New York, N. Y. Geo. B. Carpenter & Co., Chicago, Ill.

Axes—Broad E. C. Atkins & Co., Indianapolis, Ind. Geo. B. Carpenter & Co., Chicago, Ill. Mack & Co., Rochester, N. Y. Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent"). L. & I. J. White Co., Buffalo, N. Y.

Axes—Hand E. C. Atkins & Co., Indianapolis, Ind. Geo. B. Carpenter & Co., Chicago, Ill. Germantown Tool Works, Philadelphia, Pa. Mack & Co., Rochester, N. Y. ("D. R. Barton"). Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent"). L. A. Sayre & Co., Newark, N. J. ("Sayre"). L. & I. J. White Co., Buffalo, N. Y.

Bathroom Outfits Andrews Heating Co., Minneapolis, Minn. Hardin-Lavin Co., Chicago, Ill. B. B. Karol, Chicago, Ill. Kohler Co., Kohler, Wis. (Enameled plumbing ware). Robinsion Cabinet Mfg. Co., Toledo, O. L. Wolff Mfg. Co., Chicago, Ill.

Baths—Foot Hardin-Lavin Co., Chicago, Ill. B. B. Karol, Chicago, Ill. Kohler Co., Kohler, Wis. (Enameled ware).

Baths—Shower Hardin-Lavin Co., Chicago, Ill. B. B. Karol, Chicago, Ill. Kohler Co., Kohler, Wis. (Enameled ware).

Baths—Sitz Hardin-Lavin Co., Chicago, Ill. B. B. Karol, Chicago, Ill. Kohler Co., Kohler, Wis. (Enameled ware). Robinsion Cabinet Mfg. Co., Toledo, O. ("Robinson's").

Bathtubs Andrews Heating Co., Minneapolis, Minn. Hardin-Lavin Co., Chicago, Ill. B. B. Karol, Chicago, Ill. Kohler Co., Kohler, Wis. ("Viceroy," "Colonna"). Robinsion Cabinet Mfg. Co., Toledo, O. (Rubber folding). L. Wolff Mfg. Co., Chicago, Ill.

Battens—Metal Badger Corrugating Co., La Crosse, Wis. ("Badger"). Bostwick Steel Lath Co., Niles, O. Edwards Mfg. Co., Cincinnati, O. F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees"). Milwaukee Corrugating Co., Milwaukee, Wis. ("Milcor"). Shrauger & Johnson, Atlantic, Iowa. Willis Mfg. Co., Galesburg, Ill.

Beaders Geo. B. Carpenter & Co., Chicago, Ill. Stanley Rule & Level Co., New Britain, Conn.

Beads—Corner (Metal) Badger Corrugating Co., La Crosse, Wis. Berger Mfg. Co., Canton, O. Bostwick Steel Lath Co., Niles, O. Geo. B. Carpenter & Co., Chicago, Ill. Edwards Mfg. Co., Cincinnati, O. Equipment Corp. of America, Chicago, Ill. General Fireproofing Co., Youngstown, O. ("GF"). Kawneer Mfg. Co., Niles, Mich. F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees"). Milwaukee Corrugating Co., Milwaukee, Wis. ("Superior," "Neverbreak," "Milcor"). Rehm Hardware Co., Chicago, Ill. Shrauger & Johnson, Atlantic, Iowa. Sykes Metal Lath & Roofing Co., Niles, O. Truscen Steel Co., Detroit, Mich. Willis Mfg. Co., Galesburg, Ill.

Bells—Door and House Geo. B. Carpenter & Co., Chicago, Ill. P. & F. Corbin, New Britain, Conn. Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent").

Benches—Manual Training J. A. Fay & Egan Co., Cincinnati, O. Peerless Blue Print Co., New York, N. Y. Richards-Wilcox Mfg. Co., Aurora, Ill. ("Richards-Wilcox").

Benches—Saw American Saw Mill Machinery Co., New York, N. Y. ("American"). Geo. B. Carpenter & Co., Chicago, Ill. C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E."). J. A. Fay & Egan Co., Cincinnati, O. Sidney Machine Tool Co., Sidney, O.

Bench Stops Geo. B. Carpenter & Co., Chicago, Ill. Goodell-Pratt Co., Greenfield, Mass. Chas. Morrill, Inc., New York ("Apex"). Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent"). Vaughan & Bushnell Mfg. Co., Chicago, Ill.

Bevels Henry Disston & Sons, Philadelphia, Pa. Rehm Hardware Co., Chicago, Ill. Stanley Rule & Level Co., New Britain, Conn. L. S. Starrett Co., Athol, Mass.

Bits—Auger Geo. B. Carpenter & Co., Chicago, Ill. Progressive Mfg. Co., Torrington, Conn. ("Forster"). Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent"). Sidney Machine Tool Co., Sidney, O. Smith & Hemenway Co., New York, N. Y. ("Red Devil"). James Swan Co., Seymour, Conn. ("Swan").

Bits—Sash Pulley Mortising Grand Rapids Hardware Co., Grand Rapids, Mich. Sidney Machine Tool Co., Sidney, O.

Bits—Screwdriver Geo. B. Carpenter & Co., Chicago, Ill. Goodell-Pratt Co., Greenfield, Mass. North Bros. Mfg. Co., Philadelphia, Pa. Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent"). Smith & Hemenway Co., New York, N. Y. Stanley Rule & Level Co., New Britain, Conn. James Swan Co., Seymour, Conn. ("Swan"). Syracuse Twist Drill Co., Syracuse, N. Y. ("Syracuse"). Vaughan & Bushnell Mfg. Co., Chicago, Ill.

Blackboards Auld & Conger Co., Cleveland, O. Beaver Board Companies, Buffalo, N. Y. ("Beaver" blackboards, "Beaver" greenboards). Natural Slate Blackboard Co., Pen Argyl, Pa. (Slate blackboards and slate bulletin boards). F. C. Sheldon Slate Co., Granville, N. Y. ("Sheldon"). Vendor Slate Co., Bangor, Pa.

Back Fillers American Cement Machine Co., Keokuk, Iowa ("Boss" and "Handy"). Equipment Corporation of America, Chicago, Ill. Oshkosh Mfg. Co., Oshkosh, Wis. Standard Scale & Supply Co., Pittsburgh, Pa. Waterloo Cement Machinery Corp., Waterloo, Ia.

Bandsaw Machinery American Saw Mill Machinery Co., New York, N. Y. ("American"). E. C. Atkins & Co., Indianapolis, Ind. Chicago Machinery Exchange, Chicago, Ill. Crescent Machine Co., Leetonia, O. J. A. Fay & Egan Co., Cincinnati, O. Parks Ball Bearing Machine Co., Cincinnati, O. Silver Mfg. Co., Salem, O. Sidney Machine Tool Co., Sidney, O.

Bar Benders. American Cement Machine Co., Keokuk, Iowa ("Boss"). Geo. B. Carpenter & Co., Chicago, Ill. Equipment Corp. of America, Chicago, Ill. Standard Scale & Supply Co., Pittsburgh, Pa. T. L. Smith Co., Milwaukee, Wis.

Barn Equipment Philip Bernard Co., Sioux City, Ia. Geo. B. Carpenter & Co., Chicago, Ill. Griffin Mfg. Co., Erie, Pa. Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star"). Iowa Gate Co., Cedar Falls, Iowa ("Clay"). James Mfg. Co., Fort Atkinson, Wis. ("James-Mor-Milk").

Lane Bros. Co., Poughkeepsie, N. Y. Louden Machinery Co., Fairfield, Iowa. Mast, Foss & Co., Springfield, O. McKinney Mfg. Co., Pittsburgh, Pa. F. E. Myers & Bros., Ashland, O. National Mfg. Co., Sterling, Ill. J. E. Porter Co., Ottawa, Ill. Rehm Hardware Co., Chicago, Ill. Shrauger & Johnson, Atlantic, Ia. Stanley Works, New Britain, Conn. ("Watrous-Acme" barn-door latch). Sterling Foundry Co., Sterling, Ill.

Bars—Carpenters' Pry Geo. B. Carpenter & Co., Chicago, Ill. Rehm Hardware Co., Chicago, Ill. Vaughan & Bushnell Mfg. Co., Chicago, Ill.

Base—Sanitary (Fireproof) Bostwick Steel Lath Co., Niles, O. Franklyn R. Muller & Co., Waukegan, Ill. ("Asbestone"). Structural Slate Co., Pen Argyl, Pa. ("Pyramid").

Baseboards—Marble Hornet Mantel Co., St. Louis, Mo.

Baseboards—Slate Auld & Conger Co., Cleveland, O. Hornet Mantel Co., St. Louis, Mo. F. C. Sheldon Slate Co., Granville, N. Y. ("Sheldon's"). Slatington Slate Co., Slatington, Pa. (Clear black). Structural Slate Co., Pen Argyl, Pa. ("Pyramid").

Blocks—Chain Geo. B. Carpenter & Co., Chicago, Ill. J. G. Spiedel, Reading, Pa. ("Simplex"). Yale & Towne Mfg. Co., New York, N. Y.

Blocks—Corn Crib Bragstad Concrete Machinery Co., Canton, S. D. Mason City Brick & Tile Co., Mason City, Ia.

Blocks—Cresting Berger Mfg. Co., Canton, O. Milwaukee Corrugating Co., Milwaukee, Wis. (Galvanized). Willis Mfg. Co., Galesburg, Ill.

Blocks—Fireproofing Mason City Brick & Tile Co., Mason City, Ia.

Blocks—Hollow Building (Clay) Boone Brick, Tile & Paving Co., Boone, Ia. Mason City Brick & Tile Co., Mason City, Ia.

Blocks—Hollow Building (Concrete) American Cement Machine Co., Keokuk, Ia. Bragstad Concrete Machinery Co., Canton, S. D. W. E. Dunn Mfg. Co., Holland, Mich.

Blocks—Silo American Cement Machine Co., Keokuk, Ia. (Concrete). Bragstad Concrete Machinery Co., Canton, S. D. (Concrete). Mason City Brick & Tile Co., Mason City, Ia.

Blocks and Tackle Geo. B. Carpenter & Co., Chicago, Ill. Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star"). Lane Bros. Co., Poughkeepsie, N. Y. ("Lane Automatic Lock, T. B."). Oshkosh Mfg. Co., Oshkosh, Wis. Rehm Hardware Co., Chicago, Ill. Sagen Derrick Co., Chicago, Ill.

Blue Print Paper Eugene Dietzgen Co., Chicago, Ill. Kolesch & Co., New York, N. Y. Peerless Blue Print Co., New York, N. Y. Technical Supply Co., Scranton, Pa.

Boiler and Pipe Covering Andrews Heating Co., Minneapolis, Minn. Philip Carey Co., Lockland, Cincinnati, O. Geo. B. Carpenter & Co., Chicago, Ill. Keasbey & Mattison Co., Ambler, Pa. Hardin-Lavin Co., Chicago, Ill. H. B. Karol, Chicago, Ill. H. W. Johns-Manville Co., New York, N. Y. Williamson Heater Co., Cincinnati, O.

Boilers—Heating Plant Andrews Heating Co., Minneapolis, Minn. Geo. B. Carpenter & Co., Chicago, Ill. Hardin-Lavin Co., Chicago, Ill. L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller"). Williamson Heater Co., Cincinnati, O.

Bolts—Anchor Ankyra Mfg. Co., Wayne Junction, Philadelphia, Pa. ("Ankyra").

Bolts—Door and Window Allith-Prouty Co., Danville, Ill. (Parallel door, cremore, surface, top or bottom bolts). Geo. B. Carpenter & Co., Chicago, Ill. Chicago Spring Butt Co., Chicago, Ill. P. & F. Corbin, New Britain, Conn. Griffin Mfg. Co., Erie, Pa. H. B. Ives Co., New Haven, Conn. McKinney Mfg. Co., Pittsburgh, Pa. Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent"). Shelby Spring Hinge Co., Shelby, O. Stanley Works, New Britain, Conn. Yale & Towne Mfg. Co., New York, N. Y.

Borers—Vertical Geo. B. Carpenter & Co., Chicago, Ill. Crescent Machine Co., Leetonia, O. J. A. Fay & Egan Co., Cincinnati, O. Grand Rapids Hardware Co., Grand Rapids, Mich. Sidney Machine Tool Co., Sidney, O.

Boring Machines American Saw Mill Machinery Co., New York, N. Y. ("American"). Geo. B. Carpenter & Co., Chicago, Ill. Crescent Machine Co., Leetonia, O. J. A. Fay & Egan Co., Cincinnati, O. Grand Rapids Hardware Co., Grand Rapids, Mich. Warren W. Morse, Minneapolis, Minn. Oshkosh Mfg. Co., Oshkosh, Wis. Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent"). Sidney Machine Tool Co., Sidney, O. Silver Mfg. Co., Salem, O. (Hub-boring). Smith & Hemenway Co., New York, N. Y. James Swan Co., Seymour, Conn. ("Swan").

Braces—Bit Geo. B. Carpenter & Co., Chicago, Ill. Goodell-Pratt Co., Greenfield, Mass. Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent"). Stanley Rule & Level Co., New Britain, Conn. Vaughan & Bushnell Mfg. Co., Chicago, Ill.

Braces—Corner Geo. B. Carpenter & Co., Chicago, Ill. Goodell-Pratt Co., Greenfield, Mass. Griffin Mfg. Co., Erie, Pa. Rehm Hardware Co., Chicago, Ill. Sargent & Co., New Haven, Conn. ("Sargent"). Stanley Rule & Level Co., New Britain, Conn. The Stanley Works, New Britain, Conn.

Brackets Allith-Prouty Co., Danville, Ill. Geo. B. Carpenter & Co., Chicago, Ill. The Curtis Companies, Clinton, Ia. (Wood exterior roofs, ornamental). Griffin Mfg. Co., Erie, Pa. (Lavatory and sink, shelf and folding). Rehm Hardware Co., Chicago, Ill. Richards-Wilcox Mfg. Co., Aurora, Ill. (Builders "R.-W."). Sargent & Co., New Haven, Conn. ("Sargent"). The Stanley Works, New Britain, Conn.

Brick—Enameled Boone Brick, Tile & Paving Co., Boone, Ia.

Brick—Face Boone Brick, Tile & Paving Co., Boone, Ia. Mason City Brick & Tile Co., Mason City, Ia.

Brick—Fire Boone Brick, Tile & Paving Co., Boone, Ia.

Buckets—Dredging and Excavating Equipment Corp. of America, Chicago, Ill.

Buckets—Hoisting and Dumping Archer Iron Works, Chicago, Ill. Geo. B. Carpenter & Co., Chicago, Ill. Equipment Corp. of America, Chicago, Ill. T. L. Smith Co., Milwaukee, Wis.

Building Paper Badger Corrugating Co., La Crosse, Wis. Bird & Son, East Walpole, Mass. ("Neponset Black," "Coted," "American"). Geo. B. Carpenter & Co., Chicago, Ill. Flintkote Co., Boston, Mass. ("Rex" black, waterproof).

H. W. J. Milwaukee Rehm H.

Bommer single Geo. B. Chicago Griffin M.

anned McKinne National Rehm H.

Sargent & Shelby S. Stanley Yale &

Hart & Hess W. B. B. K.

Robinson Geo. B. La-Plant

Geo. B. Goodell Rehm H. Sargent L. S. St.

divided John Bo. Geo. B. The Flit. "Rex"

Hartman Morgan

The Cur. Morgan

Badger Edwards Milwaukee Willis M.

Portable American ("Boss" Archer Equipme T. L. Shi

American ("Boss" Archer Equipme T. L. Shi

Geo. B. Rehm H. Sargent Shelby & Yale &

Geo. B. H. B. I. Rehm H. Sargent Shelby & Yale &

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Geo. B. H. B. I. Rehm H. Sargent Shelby & Yale &

H. W. Johns-Manville Co., New York, N. Y.
Milwaukee Corrugating Co., Milwaukee, Wis.
Rehm Hardware Co., Chicago, Ill.

Butts-Door
Bommer Bros., Brooklyn, N. Y. ("Bommer" single and double-acting spring).
Geo. B. Carpenter & Co., Chicago, Ill.
Chicago Spring Butt Co., Chicago, Ill.
Griffin Mfg. Co., Erie, Pa. (Bright, steel, japanned and electro-plated).
McKinney Mfg. Co., Pittsburgh, Pa.
National Mfg. Co., Sterling, Ill. (Ornamental).
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent").
Shelby Spring Hinge Co., Shelby, O.
Stanley Works, New Britain, Conn.
Yale & Towne Mfg. Co., New York, N. Y.

Cabinets-Bathroom (Metal)
Hart & Cooley Co., New Britain, Conn.
Hess Warming & Ventilating Co., Chicago, Ill.
B. B. Karol, Chicago, Ill.

Cabinets-Bath (Vapor)
Robinson Cabinet Mfg. Co., Toledo, O.

Cable
Geo. B. Carpenter & Co., Chicago, Ill.
La-Plant-Choate Mfg. Co., Cedar Rapids, Ia.

Callipers
Geo. B. Carpenter & Co., Chicago, Ill.
Goodell-Pratt Co., Greenfield, Mass.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent").
L. S. Starrett & Co., Athol, Mass. (Callipers and dividers).

Canvas
John Boyle & Co., New York, N. Y.
Geo. B. Carpenter & Co., Chicago, Ill.
The Flintkote Co., Boston, Mass. ("Paradox," "Rex" canvas roofing).

Capitals-Carved Wood
Hartmann-Sanders Co., Chicago, Ill.
Morgan Sash & Door Co., Chicago, Ill.

Capitals-Composition
The Curtis Companies, Clinton, Ia.
Hartmann-Sanders Co., Chicago, Ill.
Morgan Sash & Door Co., Chicago, Ill.

Capitals-Sheet Metal
Badger Corrugating Co., La Crosse, Wis.
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
Willis Mfg. Co., Galesburg, Ill.

Car Loaders and Unloaders
Portable Machinery Co., Passaic, N. J.

Cars-Industrial
American Cement Machine Co., Keokuk, Ia. ("Boss").
Archer Iron Works, Chicago, Ill.
Equipment Corp. of America, Chicago, Ill.
T. L. Smith Co., Milwaukee, Wis.

Carts-Concrete
American Cement Machine Co., Keokuk, Ia. ("Boss").
Archer Iron Works, Chicago, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
Equipment Corp. of America, Chicago, Ill.
Lansing Co., Lansing, Mich.
Standard Scale & Supply Co., Pittsburgh, Pa.
Sterling Wheelbarrow Co., Milwaukee, Wis.

Carvers-Wood
Buck Bros., Millbury, Mass.
J. A. Fay & Egan Co., Cincinnati, O.
Hartmann-Sanders Co., Chicago, Ill.
Mack & Co., Rochester, N. Y.

Casement Adjusters
Geo. B. Carpenter & Co., Chicago, Ill.
H. B. Ives Co., New Haven, Conn.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent").
Shelby Spring Hinge Co., Shelby, O.
Yale & Towne Mfg. Co., New York, N. Y.

Casement Window Fasteners
Allith-Prouty Co., Danville, Ill.
Caldwell Mfg. Co., Rochester, N. Y.
P. & F. Corbin, New Britain, Conn.
Griffin Mfg. Co., Erie, Pa.
H. B. Ives Co., New Haven, Conn.
McKinney Mfg. Co., Pittsburgh, Pa.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent").
Shelby Spring Hinge Co., Shelby, O.
Stanley Works, New Britain, Conn.
Yale & Towne Mfg. Co., New York, N. Y.

Casement Window Hardware
Geo. B. Carpenter & Co., Chicago, Ill.
Griffin Mfg. Co., Erie, Pa.
H. B. Ives Co., New Haven, Conn.
Rehm Hardware Co., Chicago, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill. ("Air-Way").
Sargent & Co., New Haven, Conn. ("Sargent").
Shelby Spring Hinge Co., Shelby, O.
The Stanley Works, New Britain, Conn.
Whitney Window Corp., Minneapolis, Minn.
Yale & Towne Mfg. Co., New York, N. Y.

Casings-Window (Sheet Metal)
Milwaukee Corrugating Co., Milwaukee, Wis.

Castings to Order
Cincinnati Mfg. Co., Cincinnati, O.
H. B. Ives Co., New Haven, Conn.
Sterling Foundry Co., Sterling, Ill.
Western Iron & Foundry Co., Wichita, Kan.

Catches-Door and Window
Geo. B. Carpenter & Co., Chicago, Ill.
P. & F. Corbin, New Britain, Conn.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star" gravity barndoor catch).
H. B. Ives Co., New Haven, Conn.
National Mfg. Co., Sterling, Ill.
McKinney Mfg. Co., Pittsburgh, Pa.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent").
Shelby Spring Hinge Co., Shelby, O.

Stanley Works, New Britain, Conn.
Sterling Foundry Co., Sterling, Ill. ("Best")
Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")
Yale & Towne Mfg. Co., New York, N. Y.

Ceilings-Metal
American Sheet & Tin Plate Co., Pittsburgh, Pa. (Beaded sheet steel).
Anderson Mfg. Co., Des Moines, Ia.
Badger Corrugating Co., La Crosse, Wis. ("Badger")
Berger Mfg. Co., Canton O. ("Classik")
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis. ("Invisible Joint")
Truscon Steel Co., Detroit, Mich.
Willis Mfg. Co., Galesburg, Ill.

Cellar Window Sets
Caldwell Mfg. Co., Rochester, N. Y.
Geo. B. Carpenter & Co., Chicago, Ill.
Griffin Mfg. Co., Erie, Pa.
H. B. Ives Co., New Haven, Conn.
National Mfg. Co., Sterling, Ill. ("70" and "71")
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Shelby Spring Hinge Co., Shelby, O.
Stanley Works, New Britain, Conn.
Yale & Towne Mfg. Co., New York, N. Y.

Cement Brick Machines
W. E. Dunn Mfg. Co., Holland, Mich.
Helm Brick Machine Co., Cadillac, Mich. ("Helm")
Ideal Concrete Machinery Co., Cincinnati, O.
Northwestern Steel & Iron Co., Eau Claire, Wis. ("Northwestern")
Standard Scale & Supply Co., Pittsburgh, Pa.

Cement Post Machines
American Cement Machine Co., Keokuk, Ia. ("Bulldog")
Bragstad Concrete Machinery Co., Canton, S. D.
W. E. Dunn Mfg. Co., Holland, Mich.
Helm Brick Machine Co., Cadillac, Mich. ("Helm")
Ideal Concrete Machinery Co., Cincinnati, O.
Northwestern Steel & Iron Co., Eau Claire, Wis. ("Northwestern")
Sheldon Mfg. Co., Nehawka, Neb. ("Sheldon" and "Howard")

Cement Sewer Pipe Machines
W. E. Dunn Mfg. Co., Holland, Mich.
Ideal Concrete Machinery Co., Cincinnati, O.
Northwestern Steel & Iron Co., Eau Claire, Wis.

Cement Shingle Machines
American Cement Machine Co., Keokuk, Ia. ("Boss")

Cement-Portland
Alpha Portland Cement Co., Easton, Pa.
Atlas Portland Cement Co., New York, N. Y.
Sandusky Portland Cement Co., Cleveland, O.

Cement-Portland (White)
Atlas Portland Cement Co., New York, N. Y.
Sandusky Portland Cement Co., Cleveland, O.

Chemical and Sanitary Closets
Chemical Closet Supply Co., Jackson, Mich. ("Mag-1-c")
Comfort Chemical Closet Co., Toledo, O. ("Comfort")
"Success"
Dall Steel Products Co., Lansing, Mich.
Hardin-Lavin Co., Chicago, Ill.
Night Commander Light Co., Jackson, Mich. ("Purity")
Robinson Cabinet Mfg. Co., Toledo, O.
Rowe Sanitary Mfg. Co., Detroit, Mich. ("Ro-San")

Chimney Caps
Badger Corrugating Co., La Crosse, Wis.
Edwards Mfg. Co., Cincinnati, O.
Globe Ventilator Co., Troy, N. Y. ("Globe")
Holland Furnace Co., Holland, Mich.
Midland Terra Cotta Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis. ("Evendraft")
National Mfg. Co., Sterling, Ill. ("Best")
Sterling Foundry Co., Sterling, Ill. ("Best")
Willis Mfg. Co., Galesburg, Ill.

Chimney Tops
Badger Corrugating Co., La Crosse, Wis.
Holland Furnace Co., Holland, Mich.
National Mfg. Co., Sterling, Ill.
Rehm Hardware Co., Chicago, Ill.
Sterling Foundry Co., Sterling, Ill.
Geo. E. Thompson Lightning Rod Co., Owatonna, Minn. (Thompson's "World's Best" special lightning rod chimney points)

Chisels-Carpenters
E. C. Atkins & Co., Indianapolis, Ind.
Buck Bros., Millbury, Mass.
Geo. B. Carpenter & Co., Chicago, Ill.
Mack & Co., Rochester, N. Y. ("D. R. Barton")
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Stanley Rule & Level Co., New Britain, Conn.
James Swan Co., Seymour, Conn. ("Swan")
Vaughan & Rushnell Mfg. Co., Chicago, Ill.
L. & I. J. White Co., Buffalo, N. Y.

Chisels-Floor
Buck Bros., Millbury, Mass.
Geo. B. Carpenter & Co., Chicago, Ill.
L. A. Sayre, Newark, N. J. ("Sayre")

Chisels-Hollow Mortising
American Saw Mill Machinery Co., New York, N. Y. ("American")
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Chicago Machinery Exchange, Chicago, Ill.
J. A. Fay & Egan Co., Cincinnati, O.
Warren W. Morse, Minneapolis, Minn.
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.

Chutes-Concrete
Archer Iron Works, Chicago, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
Equipment Corp. of America, Chicago, Ill.
T. L. Smith Co., Milwaukee, Wis.

Cistern Covers
Sterling Foundry Co., Sterling, Ill.
Western Iron & Foundry Co., Wichita, Kan.

Clamps-Carpenters
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Chicago Machinery Exchange, Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
L. S. Starrett Co., Athol, Mass.
Stover Mfg. & Engine Co., Freeport, Ill.
James L. Taylor Mfg. Co., Poughkeepsie, N. Y.

Clamps-Column
Geo. B. Carpenter & Co., Chicago, Ill.
Chicago Machinery Exchange, Chicago, Ill.
James L. Taylor Mfg. Co., Poughkeepsie, N. Y.
Truscon Steel Co., Detroit, Mich.

Clamps-Concrete Construction
Geo. B. Carpenter & Co., Chicago, Ill.
Equipment Corp. of America, Chicago, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star" curb clamps)
James L. Taylor Mfg. Co., Poughkeepsie, N. Y.
Western Iron & Foundry Co., Wichita, Kan.

Clamps-Door
Geo. B. Carpenter & Co., Chicago, Ill.
Chicago Machinery Exchange, Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
James L. Taylor Mfg. Co., Poughkeepsie, N. Y.

Clamps-Form
Geo. B. Carpenter & Co., Chicago, Ill.
Sterling Wheelbarrow Co., Sterling, Ill.
James L. Taylor Mfg. Co., Poughkeepsie, N. Y.

Clamps-Saw
E. C. Atkins & Co., Indianapolis, Ind.
Buckeye Mfg. & Foundry Co., Cleveland, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Son, Philadelphia, Pa.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
Sargent & Co., New Haven, Conn. ("Sargent")
Stover Mfg. & Engine Co., Freeport, Ill.

Clips-Siding (Metal)
F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees")

Clothes Dryers
Jos. Barnett & Co., Cedar Rapids, Ia. ("Barnett System")
Niles Adjustable Hanger Co., Fargo, N. D. ("Niles")
Williamson Heater Co., Cincinnati, O. (Metal laundry clothes dryer)

Clutches-Friction
O. K. Clutch & Machinery Co., Columbia, Pa. ("O. K." friction and positive)

Coal Chutes
Badger Corrugating Co., La Crosse, Wis.
Bragstad Concrete Machinery Co., Canton, S. D.
Canton Foundry & Machine Co., Canton, O.
Holland Furnace Co., Holland, Mich.
Majestic Co., Huntington, Ind.
National Mfg. Co., Sterling, Ill.
Standard Scale & Supply Co., Pittsburgh, Pa.
Sterling Foundry Co., Sterling, Ill. ("Best")
Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")
Western Iron & Foundry Co., Wichita, Kan.
Willis Mfg. Co., Galesburg, Ill.

Coal Handling Machinery
Portable Machinery Co., Passaic, N. J.

Coatings-Cement (Colors)
Samuel Cabot, Inc., Boston, Mass.
Devoe & Reynolds Co., New York, N. Y.
General Fireproofing Co., Youngstown, O. ("GF No. 101" brick and cement coating)
Ideal Concrete Machinery Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
Eugene E. Nice, Philadelphia, Pa.
Reilly Co., Indianapolis, Ind. ("Weatherwax")

Coatings-Roof
Phillip Carey Co., Cincinnati, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Heppes-Nelson Roofing Co., Chicago, Ill. ("No-Tar")
Johns-Manville Co., New York, N. Y. ("J.-M.")
Eugene E. Nice, Philadelphia, Pa.
Reilly Co., Indianapolis, Ind. ("Weatherwax" and "Mocorrod")

Column Bases
Bostwick Steel Lath Co., Niles, O.
Canton Foundry & Machine Co., Canton, O.
Hartmann-Sanders Co., Chicago, Ill.
Majestic Co., Huntington, Ind.
Western Iron & Foundry Co., Wichita, Kan.

Columns-Metal
Bostwick Steel Lath Co., Niles, O.
Canton Foundry & Machine Co., Canton, O.
Edwards Mfg. Co., Cincinnati, O.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star" steel)
James Mfg. Co., Fort Atkinson, Wis.
Milwaukee Corrugating Co., Milwaukee, Wis.
Truscon Steel Co., Detroit, Mich.
Western Iron & Foundry Co., Wichita, Kan.

Columns-Wood
The Curtis Companies, Clinton, Ia.
Hartmann-Sanders Co., Chicago, Ill. (Built-up)
Morgan Sash & Door Co., Chicago, Ill. ("Morgan" built-up)

Concrete Block Machines
American Cement Machine Co., Keokuk, Ia. ("Automatic" and "Handy")
Bragstad Concrete Machinery Co., Canton, S. D. ("Bragstad" unit plant)
W. E. Dunn Mfg. Co., Holland, Mich.
Helm Brick Machine Co., Cadillac, Mich. ("Helm")
Ideal Concrete Machinery Co., Cincinnati, O.
Lansing Co., Lansing, Mich.
Northwestern Iron & Steel Co., Eau Claire, Wis. ("Northwestern")
Standard Scale & Supply Co., Pittsburgh, Pa.

Waterloo Cement Machinery Corp., Waterloo, Ia. ("Wonder")
 Western Iron & Foundry Co., Wichita, Kan.
Concrete Inserts
 Equipment Corp. of America, Chicago, Ill.
 Truscon Steel Co., Detroit, Mich.
Conveying Machinery
 Geo. B. Carpenter & Co., Chicago, Ill.
 Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star" trolley conveyors)
 Ideal Concrete Machinery Co., Cincinnati, O.
 Portable Machinery Co., Passaic, N. J.
 T. L. Smith Co., Milwaukee, Wis.
Conveyors—Belt
 Portable Machinery Co., Passaic, N. J.
Conveyors—Portable
 Portable Machinery Co., Passaic, N. J.
Coping
 Sterling Foundry Co., Sterling, Ill.
Copper—Roll
 Geo. B. Carpenter & Co., Chicago, Ill.
 C. G. Hussey & Co., Pittsburgh, Pa. (Sheets, plates and rolls)
 Milwaukee Corrugating Co., Milwaukee, Wis.
Corners—Metal Building
 Anderson Mfg. Co., Des Moines, Ia.
 Badger Corrugating Co., La Crosse, Wis. ("Badger")
 Berger Mfg. Co., Canton, O. ("Kornelite")
 Bostwick Steel Lath Co., Niles, O.
 Edwards Mfg. Co., Cincinnati, O.
 General Fireproofing Co., Youngstown, O.
 F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees")
 Milwaukee Corrugating Co., Milwaukee, Wis. ("Milcor")
 Rehm Hardware Co., Chicago, Ill.
 Shrauger & Johnson Co., Atlantic, Ia.
Cornices—Sheet Metal
 Anderson Mfg. Co., Des Moines, Ia.
 Badger Corrugating Co., La Crosse, Wis.
 Berger Mfg. Co., Canton, O.
 Edwards Mfg. Co., Cincinnati, O.
 Milwaukee Corrugating Co., Milwaukee, Wis.
 National Sheet Metal Roofing Co., Jersey City, N. J.
 Shrauger & Johnson, Atlantic, Ia.
 Willis Mfg. Co., Galesburg, Ill.
Cotton Duck
 John Boyle & Co., New York, N. Y.
 Geo. B. Carpenter & Co., Chicago, Ill.
Countersinks
 Geo. B. Carpenter & Co., Chicago, Ill.
 Goodell-Pratt Co., Greenfield, Mass.
 North Bros. Mfg. Co., Philadelphia, Pa.
 Rehm Hardware Co., Chicago, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Stanley Rule & Level Co., New Britain, Conn.
 L. S. Starrett Co., Athol, Mass.
 James Swan Co., Seymour, Conn. ("Swan")
 Syracuse Twist Drill Co., Syracuse, N. Y. ("Clark's")
 Vaughan & Bushnell Mfg. Co., Chicago, Ill.
Couplings—Cutoff
 O. K. Clutch & Machinery Co., Columbia, Pa. ("O. K.")
Cranes—Handpower
 Canton Foundry & Machine Co., Canton, O.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Louden Machinery Co., Fairfield, Ia.
 Richards-Wilcox Mfg. Co., Aurora, Ill. ("Overway")
 J. G. Spiedel, Reading, Pa.
 Yale & Towne Mfg. Co., New York, N. Y.
Crayons—Lumber
 Eugene Dietzgen Co., Chicago, Ill.
 Joseph Dixon Crucible Co., Jersey City, N. J.
Crestings and Finials
 Badger Corrugating Co., La Crosse, Wis.
 Berger Mfg. Co., Canton, O.
 Edwards Mfg. Co., Cincinnati, O.
 Milwaukee Corrugating Co., Milwaukee, Wis.
 Shrauger & Johnson, Atlantic, Ia.
 Willis Mfg. Co., Galesburg, Ill.
Crushers and Pulverizers
 Bragstad Concrete Machinery Co., Canton, S. D.
 Equipment Corp. of America, Chicago, Ill.
 Standard Scale & Supply Co., Pittsburgh, Pa.
 T. L. Smith Co., Milwaukee, Wis.
Dampers—Fireplace
 Hornet Mantel Co., St. Louis, Mo.
 Rehm Hardware Co., Chicago, Ill.
 Stover Mfg. & Engine Co., Freeport, Ill.
Dampproofing
 Pittu-Mortar Waterproofing Co., New York, N. Y. ("B.-M. No. 208")
 Philip Carey Co., Lockland, Cincinnati, O.
 Ceresit Waterproofing Co., Chicago, Ill. ("C. W. Co." dampproofing coating, "C. W. Co." plaster bond)
 General Fireproofing Co., Youngstown, O.
 H. W. Johns-Manville Co., New York, N. Y.
 Reilly Co., Indianapolis, Ind. ("Weatherwax" and "Reilly's Cement Floor Wax")
Derricks—Circle-swing
 Geo. B. Carpenter & Co., Chicago, Ill.
 Chicago Derrick Co., Chicago, Ill.
Derricks—Handpower
 Geo. B. Carpenter & Co., Chicago, Ill.
 Sasgen Derrick Co., Chicago, Ill.
Derricks—Lumberyard
 Geo. B. Carpenter & Co., Chicago, Ill.
 Sasgen Derrick Co., Chicago, Ill.
Derricks—Stifleg
 Geo. B. Carpenter & Co., Chicago, Ill.
 Sasgen Derrick Co., Chicago, Ill.
Derricks—Tripod
 Geo. B. Carpenter & Co., Chicago, Ill.
 Sasgen Derrick Co., Chicago, Ill.
Derricks—Truck
 Geo. B. Carpenter & Co., Chicago, Ill.
 Sasgen Derrick Co., Chicago, Ill.

Door Checks
 Geo. B. Carpenter & Co., Chicago, Ill.
 P. & F. Corbin, New Britain, Conn.
 Louden Machinery Co., Fairfield, Ia.
 Rehm Hardware Co., Chicago, Ill.
 Richards-Wilcox Mfg. Co., Aurora, Ill. ("R.-W.")
 Sargent & Co., New Haven, Conn. ("Sargent")
 Shelby Spring Hinge Co., Shelby, O.
 Yale & Towne Mfg. Co., New York, N. Y.
Door Hangers—Barn and Garage
 Allith-Prouty Co., Danville, Ill.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Griffin Mfg. Co., Erie, Pa.
 Hunt, Helm, Ferris & Co., Harvard, Ill. ("Canon Ball" and "Star")
 Lane Bros. Co., Poughkeepsie, N. Y. ("Lane")
 Louden Machinery Co., Fairfield, Ia.
 McKinney Mfg. Co., Pittsburgh, Pa.
 F. E. Myers & Bro., Ashland, O.
 National Mfg. Co., Sterling, Ill. ("Big 4," "Storm Proof," "National")
 J. E. Porter Co., Ottawa, Ill. ("Hummer" and "Tornado")
 Rehm Hardware Co., Chicago, Ill.
 Richards-Wilcox Mfg. Co., Aurora, Ill. ("R.-W." and "Slidelite")
 Safety Door Hanger Co., Ashland, O. ("Top-ping's" folding garage door hanger set)
 Sargent & Co., New Haven, Conn. ("Sargent")
 Stanley Works, New Haven, Conn.
 Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")
Door Hangers—House
 Allith-Prouty Co., Danville, Ill.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Hunt, Helm, Ferris & Co., Harvard, Ill. ("Canon Ball")
 Lane Bros. Co., Poughkeepsie, N. Y. ("Lane" auditorium sliding door hangers)
 National Mfg. Co., Sterling, Ill. (S2 "Silent")
 Rehm Hardware Co., Chicago, Ill.
 Richards-Wilcox Mfg. Co., Aurora, Ill. ("R.-W.")
 Safety Door Hanger Co., Ashland, O. ("World's Best," "Red Rib," "Safety," "Storm King," "Tandem Safety," "U. S. Standard")
 Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner" parlor door hangers and track)
Door Hardware
 Allith-Prouty Co., Danville, Ill.
 Bommer Bros., Brooklyn, N. Y. ("Bommer")
 Geo. B. Carpenter & Co., Chicago, Ill.
 P. & F. Corbin, New Britain, Conn.
 Griffin Mfg. Co., Erie, Pa.
 H. B. Ives Co., New Haven, Conn.
 McKinney Mfg. Co., Pittsburgh, Pa.
 National Mfg. Co., Sterling, Ill.
 Rehm Hardware Co., Chicago, Ill.
 Richards-Wilcox Mfg. Co., Aurora, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Shelby Spring Hinge Co., Shelby, O.
 Stanley Works, New Britain, Conn.
 Yale & Towne Mfg. Co., New York, N. Y.
Door Holders
 Bommer Bros., Brooklyn, N. Y. ("Bommer")
 Caldwell Mfg. Co., Rochester, N. Y.
 Geo. B. Carpenter & Co., Chicago, Ill.
 P. & F. Corbin, New Britain, Conn.
 Griffin Mfg. Co., Erie, Pa.
 H. B. Ives Co., New Haven, Conn.
 McKinney Mfg. Co., Pittsburgh, Pa.
 National Mfg. Co., Sterling, Ill. (S10 garage door holders)
 Rehm Hardware Co., Chicago, Ill.
 Sargent & Co., New Haven, Conn.
 Shelby Spring Hinge Co., Shelby, O.
 Stanley Works, New Britain, Conn. ("456" garage "177")
 Sterling Foundry Co., Sterling, Ill.
 Yale & Towne Mfg. Co., New York, N. Y.
Door Knockers
 Geo. B. Carpenter & Co., Chicago, Ill.
 P. & F. Corbin, New Britain, Conn.
 Rehm Hardware Co., Chicago, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Yale & Towne Mfg. Co., New York, N. Y.
Door Mortisers
 Geo. B. Carpenter & Co., Chicago, Ill.
 J. A. Fay & Egan Co., Cincinnati, O.
 A. W. Miller Mfg. Co., Riverside, Cal.
 Warren W. Morse, Minneapolis, Minn.
Door Openers—Electric
 P. & F. Corbin, New Britain, Conn.
 Richards-Wilcox Mfg. Co., Aurora, Ill.
Door Pulls
 Chicago Spring Butt Co., Chicago, Ill.
 P. & F. Corbin, New Britain, Conn.
 Griffin Mfg. Co., Erie, Pa.
 H. B. Ives Co., New Haven, Conn.
 McKinney Mfg. Co., Pittsburgh, Pa.
 Rehm Hardware Co., Chicago, Ill.
 Richards-Wilcox Mfg. Co., Aurora, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Shelby Spring Hinge Co., Shelby, O.
 Stover Mfg. & Engine Co., Freeport, Ill.
 Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")
Door Stops
 Bommer Bros., Brooklyn, N. Y. ("Bommer")
 Chicago Spring Butt Co., Chicago, Ill.
 P. & F. Corbin, New Britain, Conn.
 Griffin Mfg. Co., Erie, Pa.
 Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star" door bumpers)
 H. B. Ives Co., New Haven, Conn.
 Rehm Hardware Co., Chicago, Ill.
 Richards-Wilcox Mfg. Co., Aurora, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Shelby Spring Hinge Co., Shelby, O.
 Stover Mfg. & Engine Co., Freeport, Ill.
 Wagner Mfg. Co., Cedar Falls, Ia.
Doors—Bronze and Iron
 Cincinnati Mfg. Co., Cincinnati, O.
 Kawneer Mfg. Co., Niles, Mich.
Doors—Cellar (Metal)
 Canton Foundry & Machine Co., Canton, O.
 Cincinnati Mfg. Co., Cincinnati, O.
 Western Iron & Foundry Co., Wichita, Kan.

Doors—Copper-covered
 Brasco Mfg. Co., Chicago, Ill.
 Cincinnati Mfg. Co., Cincinnati, O.
Doors—Fireproof (Metal-covered)
 A. C. Chesley Co., New York, N. Y.
 Cincinnati Mfg. Co., Cincinnati, O.
 Edwards Mfg. Co., Cincinnati, O.
 Kawneer Mfg. Co., Niles, Mich.
 Lane Bros. Co., Poughkeepsie, N. Y. (Doors and shutters)
 Milwaukee Corrugating Co., Milwaukee, Wis.
 Richards-Wilcox Mfg. Co., Aurora, Ill.
 Willis Mfg. Co., Galesburg, Ill.
Doors—Fireproof (Hollow Metal)
 Cincinnati Mfg. Co., Cincinnati, O.
 Edwards Mfg. Co., Cincinnati, O.
 Milwaukee Corrugating Co., Milwaukee, Wis.
 Kawneer Mfg. Co., Niles, Mich.
 Truscon Steel Co., Detroit, Mich.
Doors—Grain Elevator
 Philip Bernard Co., Sioux City, Ia.
 Edwards Mfg. Co., Cincinnati, O.
Doors—Hardwood and Veneered
 Cadillac Lumber Co., Cadillac, Mich.
 The Curtis Companies, Clinton, Ia. (Doors, windows, window and door frames, storm doors and windows, screen doors and windows. Everything in millwork)
 Morgan Sash & Door Co., Chicago, Ill. (Also pine and soft-wood doors, and hardwood and glass doors, blinds, baseboards and wooden bevels)
 Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis.
Doors—Iron and Steel
 Cincinnati Mfg. Co., Cincinnati, O.
 Edwards Mfg. Co., Cincinnati, O.
 Milwaukee Corrugating Co., Milwaukee, Wis. ("Milcor")
 Truscon Steel Co., Detroit, Mich.
 Western Iron & Foundry Co., Wichita, Kan.
Doors—Sidewalk
 Berger Mfg. Co., Canton, O.
 Canton Foundry & Machine Co., Canton, O.
 Cincinnati Mfg. Co., Cincinnati, O.
 Willis Mfg. Co., Galesburg, Ill.
Doors—Silo
 Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis.
 E. C. Tecktonius Mfg. Co., Racine, Wis.
Doors—Storm
 Standard Screen Co., Chicago, Ill. ("Standard")
Doors and Shutters—Steel Rolling
 Edwards Mfg. Co., Cincinnati, O.
Drafting Tables
 A. S. Aloe Co., St. Louis, Mo. ("Aloe's Ideal")
 Eugene Dietzgen Co., Chicago, Ill.
 Kolesch & Co., New York, N. Y.
 Peerless Blue Print Co., New York, N. Y.
 Technical Supply Co., Scranton, Pa.
Draftsmen's Scales
 Geo. B. Carpenter & Co., Chicago, Ill.
 Eugene Dietzgen Co., Chicago, Ill.
 Goodell-Pratt Co., Greenfield, Mass.
 Peerless Blue Print Co., New York, N. Y.
Drawing Boards
 Devoe & Reynolds Co., New York, N. Y.
 Eugene Dietzgen Co., Chicago, Ill.
 Peerless Blue Print Co., New York, N. Y.
Drawing Instruments
 Eugene Dietzgen Co., Chicago, Ill.
 Peerless Blue Print Co., New York, N. Y.
Draw Knives
 Geo. B. Carpenter & Co., Chicago, Ill.
 Mack & Co., Rochester, N. Y. ("D. R. Barton")
 Rehm Hardware Co., Chicago, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 James Swan Co., Seymour, Conn. ("Swan")
 L. & I. J. White Co., Buffalo, N. Y.
Drills—Brest and Hand
 Geo. B. Carpenter & Co., Chicago, Ill.
 Goodell-Pratt Co., Greenfield, Mass.
 North Bros. Mfg. Co., Philadelphia, Pa.
 Rehm Hardware Co., Chicago, Ill.
 Silver Mfg. Co., Salem, O. ("Silver's")
 Stanley Rule & Level Co., New Britain, Conn.
Drills—Chain
 Buckeye Mfg. & Foundry Co., Cleveland, O.
Drills—Twist
 Geo. B. Carpenter & Co., Chicago, Ill.
 Rehm Hardware Co., Chicago, Ill.
 Sidney Machine Tool Co., Sidney, O.
 James Swan Co., Seymour, Conn. ("Swan")
 Syracuse Twist Drill Co., Syracuse, N. Y. ("Syracuse")
 Whisler Mfg. Co., Gibson, Ia. (Chucks)
Dumbwaiters
 Geo. B. Carpenter & Co., Chicago, Ill.
 Highwood Dumbwaiter Co., Leonia, N. J.
 Kimball Bros. Co., Council Bluffs, Ia.
 Sedwick Machine Works, Inc., New York, N. Y.
 Sidney Elevator Mfg. Co., Sidney, O.
 J. G. Spiedel, Reading, Pa. ("Columbia," "Jumper")
 Rehm Hardware Co., Chicago, Ill.
 Storm Mfg. Co., Newark, N. J.
 York Automatic Dumbwaiter Works, York, Pa. (Disappearing floor type)
Dumpcarts
 Geo. B. Carpenter & Co., Chicago, Ill.
 Standard Scale & Supply Co., Pittsburgh, Pa.
Edgers—Double
 Abram Cement Tool Co., Detroit, Mich. ("Abrams" cement edgers)
 American Saw Mill Machinery Co., New York, N. Y. ("American")
 E. C. Atkins & Co., Indianapolis, Ind. (Cement)
 Geo. B. Carpenter & Co., Chicago, Ill.
 J. A. Fay & Egan Co., Cincinnati, O.
Edgers—Gang Saw
 American Saw Mill Machinery Co., New York, N. Y. ("American")

E. C. Tecktonius Mfg. Co., Racine, Wis.
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 Geo. B. Carpenter & Co., Chicago, Ill.
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 Geo. B.
 Eugene
 Geier &
 Kolesch
 Peerless
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 David
 Geo. B.
 T. L. S
 Ankryn
 Pa.
 Geo. B.
 Rehm
 Richard
 Yale &
 Geo. B.
 General
 Louden
 Beckm
 Bird &
 Geo. B.
 H. W.
 Milwau
 R.

E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa.
J. A. Fay & Egan Co., Cincinnati, O.

Elevators—Building Material

American Cement Machine Co., Keokuk, Ia.
("Boss" and "All Oak")
Archer Iron Works, Chicago, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")
Equipment Corp. of America, Chicago, Ill.
Novo Engine Co., Lansing, Mich.
O. K. Clutch & Machinery Co., Columbia, Pa.
("O. K.")
Oshkosh Mfg. Co., Oshkosh, Wis.
Sasgen Derrick Co., Chicago, Ill.
T. L. Smith Co., Milwaukee, Wis.
Standard Scale & Supply Co., Pittsburgh, Pa.
Waterloo Cement Machinery Corp., Waterloo, Ia.
("Wonder")

Elevators—Freight

Highwood Dumbwaiter Co., Leonia, N. J.
Kimball Bros. Co., Council Bluffs, Ia.
Sedgwick Machine Works, Inc., New York, N. Y.
Sidney Elevator Mfg. Co., Sidney, O.
J. G. Spiedel, Reading, Pa.
Storm Mfg. Co., Newark, N. J.
Western Iron & Foundry Co., Wichita, Kan.
York Automatic Dumbwaiter Co., York, Pa.
(Handpower, 300-pounds capacity)

Elevators—Sidewalk

Highwood Dumbwaiter Co., Leonia, N. J.
Kimball Bros. Co., Council Bluffs, Ia.
Sedgwick Machine Works, New York, N. Y.
Sidney Elevator Mfg. Co., Sidney, O.
J. G. Spiedel, Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Enamels—Architectural

Ceresit Waterproofing Co., Chicago, Ill. ("Rad-olite," a white enamel for interior decorative purposes)
General Fireproofing Co., Youngstown, O.
Murphy Varnish Co., Newark, N. J.
Eugene E. Nice, Philadelphia, Pa.
Patton Paint Co., Milwaukee, Wis.

Engines—Gas and Gasoline

American Cement Machine Co., Keokuk, Ia.
American Saw Mill Machinery Co., New York, N. Y.
Geo. B. Carpenter & Co., Chicago, Ill.
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")
Kewanee Private Utilities Co., Kewanee, Ill.
("Kewanee")
Northwestern Steel & Iron Co., Eau Claire, Wis.
("Northwestern")
Novo Engine Co., Lansing, Mich. ("Novo")
O. K. Clutch & Machinery Co., Columbia, Pa.
("O. K.")
Oshkosh Mfg. Co., Oshkosh, Wis.
Sheldon Mfg. Co., Nehawka, Neb. ("Stover" and "Novo" in connection with Sheldon's concrete mixers)
T. L. Smith Co., Milwaukee, Wis.
Standard Scale & Supply Co., Pittsburgh, Pa.
Stover Mfg. & Engine Co., Freeport, Ill.
Waterloo Cement Machinery Corp., Waterloo, Ia.
("Wonder")
Witte Engine Works, Kansas City, Mo. ("Witte")

Engines—Kerosene

American Cement Machine Co., Keokuk, Ia.
American Saw Mill Machinery Co., New York, N. Y.
("American")
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")
W. E. Dunn Mfg. Co., Holland, Mich.
Novo Engine Co., Lansing, Mich. ("Novo")
O. K. Clutch & Machinery Co., Columbia, Pa.
("O. K.")
Oshkosh Mfg. Co., Oshkosh, Wis.
Standard Scale & Supply Co., Pittsburgh, Pa.
Stover Mfg. & Engine Co., Freeport, Ill.
Waterloo Cement Machinery Corp., Waterloo, Ia.
("Wonder")
Witte Engine Works, Kansas City, Mo. ("Witte")

Engines—Steam

American Saw Mill Machinery Co., New York, N. Y.
("American")
Standard Scale & Supply Co., Pittsburgh, Pa.

Engineering and Surveying Instruments

A. S. Aloe Co., St. Louis, Mo. ("Aloe")
L. Beckmann Co., Toledo, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Eugene Dietzgen Co., Chicago, Ill.
Geiser & Blumh, Troy, N. Y. ("G. & B.")
Kolesch & Co., New York, N. Y.
Peerless Blue Print Co., New York, N. Y.
L. S. Starrett Co., Athol, Mass.
Technical Supply Co., Scranton, Pa.
David White Co., Milwaukee, Wis.

Excavator and Loader

Geo. B. Carpenter & Co., Chicago, Ill.
T. L. Smith Co., Milwaukee, Wis.

Expansion Bolts

Ankyra Mfg. Co., Wayne Junction, Philadelphia, Pa. ("Ankyra")
Geo. B. Carpenter & Co., Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill.
Yale & Towne Mfg. Co., New York, N. Y.

Fans—Ventilating

Geo. B. Carpenter & Co., Chicago, Ill.
General Electric Co., Schenectady, N. Y.

Feed Carriers

Louden Machinery Co., Fairfield, Ia.

Felts—Deadening

Beckman-Dawson Roofing Co., Chicago, Ill.
Bird & Son, East Walpole, Mass. ("B. & S.")
Geo. B. Carpenter & Co., Chicago, Ill.
H. W. Johns-Manville Co., New York, N. Y.
Milwaukee Corrugating Co., Milwaukee, Wis.
Rehm Hardware Co., Chicago, Ill.

Fences—Iron and Steel

Edwards Mfg. Co., Cincinnati, O.
Gilbert & Bennett Mfg. Co., Chicago, Ill.
Iowa Gate Co., Cedar Falls, Ia. ("Clay")
Wright Wire Co., Worcester, Mass.

Fences—Woven Wire

Gilbert & Bennett Mfg. Co., Chicago, Ill.
Wright Wire Co., Worcester, Mass.

Files and Rasps

Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa.
Rehm Hardware Co., Chicago, Ill.
Simonds Mfg. Co., Fitchburg, Mass.

Fire Door Hardware

Richards-Wilcox Mfg. Co., Aurora, Ill.

Fire Escapes

Western Iron & Foundry Co., Wichita, Kan.
Wright Wire Co., Worcester, Mass.

Fire Extinguishers

Canton Foundry & Machine Co., Canton, O.
Geo. B. Carpenter & Co., Chicago, Ill.
H. W. Johns-Manville Co., New York, N. Y.

Fireplace Furnishings

Hornet Mantel Co., St. Louis, Mo.
Majestic Co., Huntington, Ind. (Fireplace ash-dumps)
Stover Mfg. & Engine Co., Freeport, Ill.

Floor Finish

Geo. B. Carpenter & Co., Chicago, Ill.
Conrad Wood Preserving Co., Minneapolis, Minn.
Devoe & Reynolds Co., Inc., New York, N. Y.
General Fireproofing Co., Youngstown, O.
S. C. Johnson & Son, Racine, Wis. ("Johnson's Floor Finish No. 1" and "Johnson's Prepared Wax")
Franklyn R. Muller Co., Waukegan, Ill.
Murphy Varnish Co., Newark, N. J.
Eugene E. Nice, Philadelphia, Pa.
Patton Paint Co., Milwaukee, Wis.
Reilly Co., Indianapolis, Ind. ("Reilly's Sanitary Floor Dressing")

Floor Hardeners

General Fireproofing Co., Youngstown, O. ("GF 145 Crystalrox, liquid; GF 140, powder")
Patton Paint Co., Milwaukee, Wis.

Floor Scraper Blades

E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Inc., Philadelphia, Pa.
Fox Supply Co., Brooklyn, Wis. ("Fox")
Goodell-Pratt Co., Greenfield, Mass.
Rehm Hardware Co., Chicago, Ill.
L. S. Starrett Co., Athol, Mass.

Floor Scrapers—See Surfacing Machines

Flooring—Composition

American Magnesia Products Co., Chicago, Ill.
("Velvetile")
Geo. B. Carpenter & Co., Chicago, Ill.
Flintkote Co., Boston, Mass. ("Rex Adamant")
H. W. Johns-Manville Co., New York, N. Y.
Franklyn R. Muller Co., Waukegan, Ill. ("Asbestone")
National Kellastone Co., Chicago, Ill.

Flooring—Fireproof

Franklyn R. Muller & Co., Waukegan, Ill. ("Asbestone")

Flooring—Hardwood

Mason City Brick & Tile Co., Mason City, Ia.
Cadillac Lumber Co., Cadillac, Mich.
The Curtis Companies, Clinton, Ia.
Morgan Sash & Door Co., Chicago, Ill.
Northern Hemlock & Hardwood Mfrs. Asso., Oshkosh, Wis. (Hard maple, beech and birch)
Oak Flooring Bureau, Cincinnati, O.

Flooring—Parquetry

The Curtis Companies, Clinton, Ia.
S. C. Johnson & Son, Racine, Wis.
Southern Pine Association, New Orleans, La.

Flooring—Sanitary

H. W. Johns-Manville Co., New York, N. Y.
Franklyn R. Muller Co., Waukegan, Ill.
Reilly Co., Indianapolis, Ind. ("Linwax" wood block floors)

Flooring—Wood Block

Reilly Co., Indianapolis, Ind.
Southern Pine Association, New Orleans, La.

Flue Lining

Midland Terra Cotta Co., Chicago, Ill.

Foot Scrapers

Griffin Mfg. Co., Erie, Pa.
Richards-Wilcox Mfg. Co., Aurora, Ill.
Sterling Foundry Co., Sterling, Ill. ("Best")

Forms—Curb and Sidewalk

American Cement Machine Co., Keokuk, Ia.
("Boss")
Berger Mfg. Co., Canton, O.
Bostwick Steel Lath Co., Niles, O.
Equipment Corp. of America, Chicago, Ill.

Forms—Wall

M. L. Schleuter, Chicago, Ill. ("2-E" system)

Fountains—Drinking (Sanitary)

Anderson Mfg. Co., Des Moines, Ia.
Phillip Bernard Co., Sioux City, Ia.
Geo. B. Carpenter & Co., Chicago, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star" sanitary water bowls for barn equipment)
B. B. Karol, Chicago, Ill.

Kohler Co., Kohler, Wis. (Enameled ware)

Louden Machinery Co., Fairfield, Ia.
J. E. Porter Co., Ottawa, Ill. (For dairy)

Stranger & Johnson, Atlantic, Ia.

L. Wolff Mfg. Co., Chicago, Ill.

Garage Hardware

Allith-Prouty Co., Danville, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
Griffin Mfg. Co., Erie, Pa.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Canon Ball")
Louden Machinery Co., Fairfield, Ia.
McKinney Mfg. Co., Pittsburgh, Pa.
National Mfg. Co., Sterling, Ill. (800, 801, 804, 805, 806)

Rehm Hardware Co., Chicago, Ill.
Safety Door Hanger Co., Ashland, O. ("Topping's" folding garage door hanger sets)
Sargent & Co., New Haven, Conn. ("Sargent")
Shelby Spring Hinge Co., Shelby, O.
The Stanley Works, New Britain, Conn. ("Stanley")
Wagner Mfg. Co., Cedar Falls, Ia.

Garbage Burners

Andrews Heating Co., Minneapolis, Minn.
Hardin-Lavin Co., Chicago, Ill.
L. J. Mueller Furnace Co., Milwaukee, Wis.
Rehm Hardware Co., Chicago, Ill.

Garbage Receivers

Majestic Co., Huntington, Ind. (Built-in)
Rehm Hardware Co., Chicago, Ill.

Garden Furniture

Hartmann-Sanders Co., Chicago, Ill.

Gas Machines—Gasoline

Andrews Heating Co., Minneapolis, Minn.

Gates—Drive

Iowa Gate Co., Cedar Falls, Ia. ("Clay" self-opening and closing automatic drive gates)
Wright Wire Co., Worcester, Mass.

Gates—Farm

Iowa Gate Co., Cedar Falls, Ia. ("Clay" adjustable steel farm gates)

Gates—Walk

Iowa Gate Co., Cedar Falls, Ia. ("Clay" plain and ornamental walk gates)

Gauges—Auger Bit

Geo. B. Carpenter & Co., Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Stanley Rule & Level Co., New Britain, Conn.
Standard Scale & Supply Co., Pittsburgh, Pa.
James Swan Co., Seymour, Conn. ("Swan")
Syracuse Twist Drill Co., Syracuse, N. Y. ("Syracuse")

Gauges—Butt

Buckeye Mfg. & Foundry Co., Cleveland, O. (Steel)
Geo. B. Carpenter & Co., Chicago, Ill.
Goodell-Pratt Co., Greenfield, Mass.
Rehm Hardware Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh, Pa.

Gauges—Hatchet

Geo. B. Carpenter & Co., Chicago, Ill.
F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees")
L. A. Sayre & Co., Newark, N. J. ("Sayre")

Gauges—Mortise

Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa.
Rehm Hardware Co., Chicago, Ill.
Stanley Rule & Level Co., New Britain, Conn.

Gauges—Saw

E. C. Atkins & Co., Indianapolis, Ind.
Buckeye Mfg. & Foundry Co., Cleveland, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.

Gauges—Shingling

F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees")
L. A. Sayre Co., Newark, N. J. ("Sayre")

Glass—Art

The Curtis Companies, Clinton, Ia.
Morgan Sash & Door Co., Chicago, Ill.

Glass—Leaded

The Curtis Companies, Clinton, Ia.
Morgan Sash & Door Co., Chicago, Ill.

Glass—Plate

The Curtis Companies, Clinton, Ia.

Glass—Wire

The Curtis Companies, Clinton, Ia.
Milwaukee Corrugating Co., Milwaukee, Wis.
Morgan Sash & Door Co., Chicago, Ill.
Willis Mfg. Co., Galesburg, Ill.

Glue Pots—Electric

Geo. B. Carpenter & Co., Chicago, Ill.
General Electric Co., Schenectady, N. Y.

Gauges—Wood

Buck Bros., Millbury, Mass.
Geo. B. Carpenter & Co., Chicago, Ill.
Mack & Co., Rochester, N. Y.
Rehm Hardware Co., Chicago, Ill.
James Swan Co., Seymour, Conn. ("Swan")
L. & I. J. White Co., Buffalo, N. Y.

Grain Elevators—Built-in

Meadows Mfg. Co., Pontiac, Ill. ("Meadows" stationary inside cup elevators)

Grilles—Steel and Wire

Hart & Cooley Co., New Britain, Conn.

Grinders—Disk

Geo. B. Carpenter & Co., Chicago, Ill.
Crescent Machine Co., Leetonia, O.
M. L. Schleuter, Chicago, Ill. (For floors)

Grinders—Tool

E. C. Atkins & Co., Indianapolis, Ind.
Canton Foundry & Machine Co., Canton, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Goodell-Pratt Co., Greenfield, Mass.
Rehm Hardware Co., Chicago, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill. ("R.-W.")

Exhaust Equipment

Paasche Air Brush Co., Chicago, Ill.

Grindstones

Geo. B. Carpenter & Co., Chicago, Ill.
J. A. Fay & Egan Co., Cincinnati, O.
Rehm Hardware Co., Chicago, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill. ("R.-W.")
Whisler Mfg. Co., Gibson, Ia. (Power grindstone shafts)

Grounds

Ankyra Mfg. Co., Wayne Junc., Philadelphia, Pa. ("Ankyra")
Geo. E. Thompson Lightning Rod Co., Owatonna, Minn. (Thompson's "High Tension" hydroelectric lightning rod ground points)

Guards—Jamb and Corner
Canton Foundry & Machine Co., Canton, O.

Guards—Safety
E. C. Atkins & Co., Indianapolis, Ind.
Crescent Machine Co., Leetonia, O.
J. A. Fay & Egan Co., Cincinnati, O. (Saw)
Fox Supply Co., Brooklyn, Wis. (Emery wheel)
General Fireproofing Co., Youngstown, O. ("GF" expanded metal)
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
Sidney Machine Tool Co., Sidney, O.
Surtly Guard Co., Chicago, Ill. (Machinery, belt, banrsaw, circular saw, planer, shaper).
Wright Wire Co., Worcester, Mass.

Guards—Window
Allith-Prouty Co., Danville, Ill.
Cincinnati Mfg. Co., Cincinnati, O.
General Fireproofing Co., Youngstown, O. ("GF" expanded metal)
Gilbert & Bennett Mfg. Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Western Iron & Foundry Co., Wichita, Kan.
Willis Mfg. Co., Galesburg, Ill.
Wright Wire Co., Worcester, Mass.
Yale & Towne Mfg. Co., New York, N. Y.

Hammers
Geo. B. Carpenter & Co., Chicago, Ill.
Germantown Tool Works, Philadelphia, Pa.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Stanley Rule & Level Co., New Britain, Conn.
Vaughan & Bushnell Mfg. Co., Chicago, Ill.

Hangers—Eaves Trough
Berger Mfg. Co., Canton, O.
Milwaukee Corrugating Co., Milwaukee, Wis.

Hangers—Joist
Geo. B. Carpenter & Co., Chicago, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill.
Lane Bros. Co., Poughkeepsie, N. Y.
Rehm Hardware Co., Chicago, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
Truscon Steel Co., Detroit, Mich.

Hangers—Pipe
F. D. Kees Mfg. Co., Beatrice, Neb.

Hangers—Sliding Partition
Allith-Prouty Co., Danville, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill.

Hangers—Storm Sash
Allith-Prouty Co., Danville, Ill.
F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees")
National Mfg. Co., Sterling, Ill. (80)
Rehm Hardware Co., Chicago, Ill.
Shelby Spring Hinge Co., Shelby, O.
The Stanley Works, New Britain, Conn.
Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")

Hardeners—Cement
Ceresit Waterproofing Co., Chicago, Ill. ("Indurite" liquid floor hardener; "C. W. Co. Metallic" floor hardener)
General Fireproofing Co., Youngstown, O. ("GF 140")
H. W. Johns-Manville Co., New York, N. Y.
Patton Paint Co., Milwaukee, Wis.
Relly Co., Indianapolis, Ind. ("Weatherwax")

Hatchets—Lathing
Geo. B. Carpenter & Co., Chicago, Ill.
Germantown Tool Works, Philadelphia, Pa.
Mack & Co., Rochester, N. Y. ("D. R. Barton")
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
L. A. Sayre & Co., Newark, N. J. ("Sayre")

Hay Carriers
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Harvester," "Peelless")
Louden Machinery Co., Fairfield, Ia.
F. E. Myers & Bro., Ashland, O.
J. E. Porter Co., Ottawa, Ill. ("Columbian")

Hay Track
Geo. B. Carpenter & Co., Chicago, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star" steel)
Louden Machinery Co., Fairfield, Ia.
Rehm Hardware Co., Chicago, Ill.

Heads—Cutter
E. C. Atkins & Co., Indianapolis, Ind.
Chicago Machinery Exchange, Chicago, Ill.
Huther Bros. Saw Mfg. Co., Indianapolis, Ind.
Oshkosh Mfg. Co., Oshkosh, Wis.
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.

Heads—Dado
American Saw Mill Machinery Co., New York, N. Y. ("American")
E. C. Atkins & Co., Indianapolis, Ind.
C. H. & E. Mfg. Co., Milwaukee, Wis.
Chicago Machinery Exchange, Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa.
J. A. Fay & Egan Co., Cincinnati, O.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
Oshkosh Mfg. Co., Oshkosh, Wis.
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
Silver Mfg. Co., Salem, O.
Whisler Mfg. Co., Gibson, Ia. ("Woodworker's Friend")

Heads—Jointer
American Saw Mill Machinery Co., New York, N. Y. ("American")
E. C. Atkins & Co., Indianapolis, Ind.
Chicago Machinery Exchange, Chicago, Ill.
Crescent Machine Co., Leetonia, O.
J. A. Fay & Egan Co., Cincinnati, O.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
Oshkosh Mfg. Co., Oshkosh, Wis.
Park Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
Silver Mfg. Co., Salem, O.
Whisler Mfg. Co., Gibson, Ia. ("Woodworker's Friend")

Heads—Shaper
American Saw Mill Machinery Co., New York, N. Y. ("American")
E. C. Atkins & Co., Indianapolis, Ind.
Chicago Machinery Exchange, Chicago, Ill.
Crescent Machine Co., Leetonia, O.

J. A. Fay & Egan Co., Cincinnati, O.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
Sidney Machine Tool Co., Sidney, O.
Whisler Mfg. Co., Gibson, Ia.

Heat Regulators
Andrews Heating Co., Minneapolis, Minn.
Geo. B. Carpenter & Co., Chicago, Ill.
Hart & Cooley Co., New Britain, Conn.
F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees")
Williamson Heater Co., Cincinnati, O.

Heaters—Garage
Edwards Mfg. Co., Cincinnati, O.
Hardin-Lavin Co., Chicago, Ill.
Williamson Heater Co., Cincinnati, O.

Heaters—Room
Hero Furnace Co., Chicago, Ill. (For schools)

Heating Plants—Hot Water
Andrews Heating Co., Minneapolis, Minn.
Geo. B. Carpenter & Co., Chicago, Ill.
Hardin-Lavin Co., Chicago, Ill.
B. B. Karol, Chicago, Ill.
L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller")
Williamson Heater Co., Cincinnati, O.

Heating Plants—Pipeless Furnace
Andrews Heating Co., Minneapolis, Minn.
The Beckwith Co., Dowagiac, Mich. ("Round Oak")
Bovee Furnace Works, Waterloo, Ia. ("Bovee's Upright," "Bovee's Cast Iron," "Bovee's Horizontal")
Hardin-Lavin Co., Chicago, Ill.
Hero Furnace Co., Chicago, Ill.
Hess Warming & Ventilating Co., Chicago, Ill. ("Hess Welded Steel")
Holland Furnace Co., Holland, Mich.
B. B. Karol, Chicago, Ill.
Majestic Co., Huntington, Ind.
Modern Way Furnace Co., Fort Wayne, Ind. ("The Modern Way")
L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller")
Standard Heater Co., Chicago, Ill.
Tubular Heating & Ventilating Co., Philadelphia, Pa.
Williamson Heater Co., Cincinnati, O.

Heating Plants—Steam (Blower)
Andrews Heating Co., Minneapolis, Minn.
B. B. Karol, Chicago, Ill.
Williamson Heater Co., Cincinnati, O.

Heating Plants—Steam (Direct Radiation)
Andrews Heating Co., Minneapolis, Minn.
Hardin-Lavin Co., Chicago, Ill.
B. B. Karol, Chicago, Ill.
L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller")
Williamson Heater Co., Cincinnati, O.

Heating Plants—Vapor System
Andrews Heating Co., Minneapolis, Minn.
Hardin-Lavin Co., Chicago, Ill.
L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller")
Williamson Heater Co., Cincinnati, O.

Heating Plants—Warm Air Furnace
Andrews Heating Co., Minneapolis, Minn.
The Beckwith Co., Dowagiac, Mich. ("Round Oak")
Bovee Furnace Works, Waterloo, Ia. ("Bovee's Upright," "Bovee's Cast Iron," "Bovee's Horizontal")
Hardin-Lavin Co., Chicago, Ill.
Hero Furnace Co., Chicago, Ill.
Hess Warming & Ventilating Co., Chicago, Ill. ("Hess Welded Steel")
Holland Furnace Co., Holland, Mich.
B. B. Karol, Chicago, Ill.
Majestic Co., Huntington, Ind.
Modern Way Furnace Co., Fort Wayne, Ind. ("The Modern Way")
L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller")
Standard Heater Co., Chicago, Ill.
Tubular Heating & Ventilating Co., Philadelphia, Pa. ("Forbes-Blaze")

Hinges—Blind and Shutter
P. & F. Corbin, New Britain, Conn.
McKinney Mfg. Co., Pittsburgh, Pa.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Stanley Works, New Britain, Conn.
Stover Mfg. & Engine Co., Freeport, Ill.

Hinges—Butt
Shelby Spring Hinge Co., Shelby, O.

Hinges—Floor
Allith-Prouty Co., Danville, Ill.
Bommer Bros., Brooklyn, N. Y. ("Bommer")
Geo. B. Carpenter & Co., Chicago, Ill.
Chicago Spring Butt Co., Chicago, Ill.
P. & F. Corbin, New Britain, Conn.
National Mfg. Co., Sterling, Ill. (240)
Rehm Hardware Co., Chicago, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Shelby Spring Hinge Co., Shelby, O. ("Shelby Chief")
Stover Mfg. & Engine Co., Freeport, Ill.
Yale & Towne Mfg. Co., New York, N. Y.

Hinges—Screen Door
Shelby Spring Hinge Co., Shelby, O.

Hinges—Spring
Bommer Bros., Brooklyn, N. Y. ("Bommer")
Chicago Spring Butt Co., Chicago, Ill.
Shelby Spring Hinge Co., Shelby, O.

Hinges—Strap and T
Griffin Mfg. Co., Erie, Pa.
McKinney Mfg. Co., Pittsburgh, Pa.

Hinges—Surface
Bommer Bros., Brooklyn, N. Y. ("Bommer")
Geo. B. Carpenter & Co., Chicago, Ill.
Chicago Spring Butt Co., Chicago, Ill.
P. & F. Corbin, New Britain, Conn.
Griffin Mfg. Co., Erie, Pa. (Strap, T and Ornamental)

McKinney Mfg. Co., Pittsburgh, Pa.
National Mfg. Co., Sterling, Ill.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Shelby Spring Hinge Co., Shelby, O.
Stanley Works, New Britain, Conn.

Hoists—Electric
American Cement Machine Co., Keokuk, Ia.
Geo. B. Carpenter & Co., Chicago, Ill.
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")
O. K. Clutch & Machinery Co., Columbia, Pa. ("O. K.")
Waterloo Cement Machinery Corp., Waterloo, Ia. ("Wonder")
Yale & Towne Mfg. Co., New York, N. Y.

Hoists—Gasoline
American Cement Machine Co., Keokuk, Ia.
Geo. B. Carpenter & Co., Chicago, Ill.
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")
Jaeger Machine Co., Columbus, O.
Knickerbocker Co., Jackson, Mich.
Novo Engine Co., Lansing, Mich. ("Novo")
O. K. Clutch & Machinery Co., Columbia, Pa. ("O. K.")
T. L. Smith Co., Milwaukee, Wis.
Waterloo Cement Machinery Corp., Waterloo, Ia.

Hoists—Hand
Allith-Prouty Co., Danville, Ill. ("High-Speed" standard screw)
American Cement Machine Co., Keokuk, Ia.
Geo. B. Carpenter & Co., Chicago, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Giant Star")
Richards-Wilcox Mfg. Co., Aurora, Ill. ("Yale")
Sasgen Derrick Co., Chicago, Ill.
Shrauger & Johnson, Atlantic, Ia.
Yale & Towne Mfg. Co., New York, N. Y.

Hoists—Rope
American Cement Machine Co., Keokuk, Ia.
Geo. B. Carpenter & Co., Chicago, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Giant Star")
Lane Bros. Co., Poughkeepsie, N. Y. ("Lane")
O. K. Clutch & Machinery Co., Columbia, Pa. ("O. K.")
Wagner Mfg. Co., Cedar Falls, Ia.

Hoists—Steam
American Cement Machine Co., Keokuk, Ia.
Geo. B. Carpenter & Co., Chicago, Ill.
Equipment Corp. of America, Chicago, Ill.

Hoop Fasteners
E. C. Tecktonius Mfg. Co., Racine, Wis. (Hoop band and plate fasteners for silos)

House Moving Trucks
La Plant-Choate Mfg. Co., Cedar Rapids, Ia. ("Steel Giant")

Humidifiers
Williamson Heater Co., Cincinnati, O.

Ice Chests
Herrick Refrigerator Co., Waterloo, Ia. ("Herrick")

Instruction by Correspondence
American Technical Society, Chicago, Ill.
Chicago Technical College, Chicago, Ill. (Correspondence courses for builders, plan-reading home study courses, estimating of buildings home study courses, architectural drafting home study courses)
International Correspondence Schools, Scranton, Pa.

Insulation—Cold Storage
Beckman-Dawson Roofing Co., Chicago, Ill.
Bird & Son, East Walpole, Mass. ("Neponset Black Insulating," "Refrigerator Insulation")
Samuel Cabot, Boston, Mass. ("Cabot's Quilt")
Geo. B. Carpenter & Co., Chicago, Ill.
Flintkote Co., Boston, Mass. ("Rex" black waterproof paper)
International Insulate Co., St. Paul, Minn.
H. W. Johns-Manville Co., New York, N. Y.

Interior Trim—Hardwood
The Curtis Companies, Clinton, Ia.
Morgan Sash & Door Co., Chicago, Ill.
Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis.

Interior Trim—Metal
Brasco Mfg. Co., Chicago, Ill.
Detroit Show Case Co., Detroit, Mich. (Kalamend)
Kawneer Mfg. Co., Niles, Mich.
Milwaukee Corrugating Co., Milwaukee, Wis.

Iron—Architectural
Cincinnati Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
Western Iron & Foundry Co., Wichita, Kan.

Iron Work—Builders
Canton Foundry & Machine Co., Canton, O.
Cincinnati Mfg. Co., Cincinnati, O.

Jacks—House Moving
Geo. B. Carpenter & Co., Chicago, Ill.
Elite Mfg. Co., Ashland, O.
LaPlant-Choate Mfg. Co., Cedar Rapids, Ia.

Jointers
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Crescent Machine Co., Leetonia, O.
J. A. Fay & Egan Co., Cincinnati, O.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
Silver Mfg. Co., Salem, O. ("Silver" new jointers)
J. D. Wallace & Co., Chicago, Ill.

Jointers—Masons and Cement Workers
Abram Cement Tool Co., Detroit, Mich.
Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa.

Jointers—Sawtooth
Henry Disston & Sons, Philadelphia, Pa.

Truscon
Geo. B. Devoe
M. E. Williams
"Cale"
Eugene
E. C. ...
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Joists and Studs—Pressed Steel
 Truscon Steel Co., Detroit, Mich.

Kalsomine
 Geo. B. Carpenter & Co., Chicago, Ill.
 Devoe & Reynolds Co., New York, N. Y.
 M. Ewing Fox Co., New York, N. Y. ("Muralite," "Calcitrine")
 Eugene E. Nice, Philadelphia, Pa.

Kiln Lugs
 E. C. Tecktonius Mfg. Co., Racine, Wis.

Knives—Moulding
 E. C. Atkins & Co., Indianapolis, Ind.
 Henry Disston & Sons, Philadelphia, Pa.
 Sidney Machine Tool Co., Sidney, O.
 L. & I. J. White Co., Buffalo, N. Y.

Knives—Planer
 Henry Disston & Sons, Philadelphia, Pa.
 L. & I. J. White Co., Buffalo, N. Y.

Ladders
 Allith-Prouty Co., Danville, Ill. (Rolling ladders and equipment)
 Bragstad Concrete Machinery Co., Canton, S. D. (For silos)
 Cadillac Lumber Co., Cadillac, Mich.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Lane Bros. Co., Poughkeepsie, N. Y. (Rolling store)
 F. B. Myers & Bro., Ashland, O.
 Rehm Hardware Co., Chicago, Ill.
 Richards-Wilcox Mfg. Co., Aurora, Ill. (Rolling store)
 W. C. Shinn Mfg. Co., Chicago, Ill. (Chair-folding)
 Geo. E. Thompson Lightning Rod Co., Owatonna, Minn. (Special lightning rod ladders)

Latches
 Allith-Prouty Co., Danville, Ill. (Also barn door, gate, parallel door, refrigerator door, warehouse door)
 Chicago Spring Butt Co., Chicago, Ill.
 P. & F. Corbin, New Britain, Conn.
 Hunt, Helm, Ferris & Co., Harvard, Ill. ("Canon Ball" door latches)
 F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees" barn door)
 Lane Bros. Co., Poughkeepsie, N. Y. ("Lane")
 McKinney Mfg. Co., Pittsburgh, Pa.
 National Mfg. Co., Sterling, Ill. (Swinging and sliding)
 Richards-Wilcox Mfg. Co., Aurora, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Shelby Spring Hinge Co., Shelby, O.
 Stanley Works, New Britain, Conn.
 Stover Mfg. & Engine Co., Freeport, Ill.
 Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")

Lath—Expanded Metal
 Anderson Mfg. Co., Des Moines, Ia.
 Berger Mfg. Co., Canton, O. ("B. B." and "Standard")
 Bostwick Steel Lath Co., Niles, O.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Edwards Mfg. Co., Cincinnati, O.
 Equipment Corp. of America, Chicago, Ill.
 General Fireproofing Co., Youngstown, O. ("Herringbone")
 Milwaukee Corrugating Co., Milwaukee, Wis. ("Net-Mesh")
 Sykes Metal Lath & Roofing Co., Niles, O.
 Truscon Steel Co., Detroit, Mich.
 Willis Mfg. Co., Galesburg, Ill.
 Wright Wire Co., Worcester, Mass.

Lath—Metal
 Anderson Mfg. Co., Des Moines, Ia.
 Badger Corrugating Co., La Crosse, Wis.
 Berger Mfg. Co., Canton, O. ("B. B.," "Standard")
 Bostwick Steel Lath Co., Niles, O.
 Cadillac Lumber Co., Cadillac, Mich.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Edwards Mfg. Co., Cincinnati, O.
 Equipment Corp. of America, Chicago, Ill.
 General Fireproofing Co., Youngstown, O. ("Gen-fre")
 Milwaukee Corrugating Co., Milwaukee, Wis. ("Netmesh")
 Sykes Metal Lath & Roofing Co., Niles, O.
 Truscon Steel Co., Detroit, Mich.
 Western Iron & Foundry Co., Wichita, Kan.
 Willis Mfg. Co., Galesburg, Ill.

Lath—Wire
 Bostwick Steel Lath Co., Niles, O.
 Geo. B. Carpenter & Co., Chicago, Ill.
 General Fireproofing Co., Youngstown, O.
 Gilbert & Bennett Mfg. Co., Chicago, Ill.
 Wright Wire Co., Worcester, Mass.

Lathes—Woodworking
 American Saw Mill Machinery Co., New York, N. Y. ("American")
 Geo. B. Carpenter & Co., Chicago, Ill.
 J. A. Fay & Egan Co., Cincinnati, O.
 Sidney Machine Tool Co., Sidney, O.

Laundry Trays
 Kohler Co., Kohler, Wis. (Enameled ware)

Laundry Tubs
 Andrews Heating Co., Minneapolis, Minn.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Hardin-Lavin Co., Chicago, Ill.
 B. B. Karol, Chicago, Ill.
 Kohler Co., Kohler, Wis.
 Slatington Slate Co., Slatington, Pa. (Clear black slate)
 L. Wolff Mfg. Co., Chicago, Ill.

Lavatories and Fittings
 Andrews Heating Co., Minneapolis, Minn.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Hardin-Lavin Co., Chicago, Ill.
 B. B. Karol, Chicago, Ill.
 Kohler Co., Kohler, Wis. (Built-in)
 L. Wolff Mfg. Co., Chicago, Ill.

Letters—Metal
 Abram Cement Tool Co., Detroit, Mich. ("Abram")

Geo. B. Carpenter & Co., Chicago, Ill.
 Edwards Mfg. Co., Cincinnati, O.
 Milwaukee Corrugating Co., Milwaukee, Wis.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Willis Mfg. Co., Galesburg, Ill.
 Yale & Towne Mfg. Co., New York, N. Y.

Levels—Builders
 A. S. Aloe Co., St. Louis, Mo.
 L. Beckmann Co., Toledo, O.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Eugene Dietzgen Co., Chicago, Ill.
 Geier & Bluhm, Troy, N. Y.
 Goodell-Pratt Co., Greenfield, Mass.
 Kolesch & Co., New York, N. Y.
 Peerless Blue Print Co., New York, N. Y.
 Rehm Hardware Co., Chicago, Ill.
 J. Sand & Sons, Detroit, Mich.
 Stanley Rule & Level Co., New Britain, Conn.
 L. S. Starrett Co., Athol, Mass.
 David White Co., Milwaukee, Wis.

Levels—Carpenters
 A. S. Aloe Co., St. Louis, Mo. ("Aloe's Convertible")
 Geo. B. Carpenter & Co., Chicago, Ill.
 Eugene Dietzgen Co., Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 Goodell-Pratt Co., Greenfield, Mass.
 Kolesch & Co., New York, N. Y.
 Peerless Blue Print Co., New York, N. Y.
 Rehm Hardware Co., Chicago, Ill.
 J. Sand & Sons, Detroit, Mich. (Also masons, bricklayers, plasterers, millwrights levels; spirit level glasses and sights; glasses for straight-edge levels)
 Sargent & Co., New Haven, Conn. ("Sargent")
 Stanley Rule & Level Co., New Britain, Conn.
 L. S. Starrett Co., Athol, Mass.
 David White Co., Inc., Milwaukee, Wis.

Library Shelving—Metal
 Berger Mfg. Co., Canton, O.
 Edwards Mfg. Co., Cincinnati, O.
 General Fireproofing Co., Youngstown, O.

Lighting Fixtures
 Hardin-Lavin Co., Chicago, Ill.
 B. B. Karol, Chicago, Ill.
 Mitchell-Vance Co., New York, N. Y. ("Vanco-Bronze")

Lighting Systems—Acetylene
 Geo. B. Carpenter & Co., Chicago, Ill.
 Night Commander Light Co., Jackson, Mich. ("Michigan Pit")

Lighting Systems—Electric
 Kewanee Private Utilities Co., Kewanee, Ill. ("Kewanee")
 Milwaukee Air Power Pump Co., Milwaukee, Wis.

Lighting Systems—Gasoline
 Geo. B. Carpenter & Co., Chicago, Ill.

Lighting Protection
 Anderson Mfg. Co., Des Moines, Ia.
 Jos. Barnett & Co., Cedar Rapids, Ia. ("Barnett System")
 Security Lightning Rod Co., Burlington, Wis.
 W. C. Shinn Mfg. Co., Chicago, Ill. ("Shinn-Flat")
 Shrauger & Johnson Co., Atlantic, Ia.
 Geo. E. Thompson Lightning Rod Co., Owatonna, Minn. ("World's Best")

Litter Carriers
 Hunt, Helm, Ferris & Co., Harvard, Ill.
 Loudon Machinery Co., Fairfield, Ia.
 Mast, Foss & Co., Springfield, O.

Loaders—Wagon
 Geo. B. Carpenter & Co., Chicago, Ill.
 Portable Machinery Co., Passaic, N. J.
 T. L. Smith Co., Milwaukee, Wis.
 Standard Scale & Supply Co., Pittsburgh, Pa.

Lock Mortising Machines
 A. W. Miller Mfg. Co., Riverside, Cal. (Hand lock mortiser)
 Warren W. Morse, Minneapolis, Minn.

Lockers—Metal
 Berger Mfg. Co., Canton, O.
 Edwards Mfg. Co., Cincinnati, O.
 General Fireproofing Co., Youngstown, O.
 Hess Warming & Ventilating Co., Chicago, Ill. ("Hess" steel clothing lockers)

Locks and Knobs—Door
 Geo. B. Carpenter & Co., Chicago, Ill.
 P. & F. Corbin, New Britain, Conn.
 Rehm Hardware Co., Chicago, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Shelby Spring Hinge Co., Shelby, O.
 Yale & Towne Mfg. Co., New York, N. Y.

Lumber Manufacturers
 Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis. ("Old Faithful" hemlock, "Beautiful Birch," maple, ash, elm, basswood, beech, tamarack, white and Norway pine)
 Sheldon Mfg. Co., Nehawka, Neb. (Hardwood)
 Southern Pine Association, New Orleans, La. (Long-leaf yellow pine)
 Southern Cypress Mfrs. Assn., New Orleans, La. (Southern cypress)
 White Pine Bureau, St. Paul, Minn. (Northern white pine)

Lumber—Asbestos
 H. W. Johns-Manville Co., New York, N. Y.
 Keasbey & Mattison Co., Ambler, Pa.

Lumber—Metal
 Berger Mfg. Co., Canton, O.
 Bostwick Steel Lath Co., Niles, O.

Mantels—Brick
 Midland Terra Cotta Co., Chicago, Ill.

Mantels—Tile
 Hornet Mantel Co., St. Louis, Mo.

Mantels—Wood
 The Curtis Companies, Clinton, Ia. (Sideboards, colonnades, bookcases and everything in wood-work)
 Hornet Mantel Co., St. Louis, Mo.

Morgan Sash & Door Co., Chicago, Ill. ("Morgan")

Marquees
 Edwards Mfg. Co., Cincinnati, O.
 Milwaukee Corrugating Co., Milwaukee, Wis. ("Milcor")
 Willis Mfg. Co., Galesburg, Ill.

Millwork—Wholesale
 Cadillac Lumber Co., Cadillac, Mich.
 The Curtis Companies, Clinton, Ia.
 Federal Window Co., Milwaukee, Wis. ("Putty-less" windows)
 Morgan Sash & Door Co., Chicago, Ill. ("Morgan")
 Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis.

Miter Boxes
 E. C. Atkins & Co., Indianapolis, Ind.
 Goodell-Pratt Co., Greenfield, Mass.
 Rehm Hardware Co., Chicago, Ill.
 Smith & Hemenway Co., New York, N. Y.
 Stanley Rule & Level Co., New Britain, Conn.

Mitering Machines
 American Saw Mill Machinery Co., New York, N. Y. ("American")
 J. A. Fay & Egan Co., Cincinnati, O.
 Goodell-Pratt Co., Greenfield, Mass.

Mixers—Cement (Batch)
 American Cement Machine Co., Keokuk, Ia.
 Archer Iron Works, Chicago, Ill. ("Archer")
 F. C. Austin Co., Chicago, Ill. ("Austin")
 Blystone Mfg. Co., Cambridge Springs, Pa. ("Blystone")
 Bragstad Concrete Machinery Co., Inc., Canton, S. D.
 W. E. Dunn Mfg. Co., Holland, Mich.
 Frank Mfg. Co., Des Moines, Ia. ("Frank")
 Helm Brick Machine Co., Cadillac, Mich. ("Helm")
 Ideal Concrete Machinery Co., Cincinnati, O.
 Jaeger Machine Co., Columbus, O. ("Big-an-Little")
 Knickerbocker Co., Jackson, Mich.
 Koehring Machine Co., Milwaukee, Wis.
 Lansing Co., Lansing, Mich.
 Little Whirlwind Mixer Co., La Crosse, Wis. ("Little Whirlwind")
 Northwestern Steel & Iron Co., Eau Claire, Wis.
 O. K. Clutch & Machinery Co., Columbia, Pa.
 Oshkosh Mfg. Co., Oshkosh, Wis.
 Sheldon Mfg. Co., Nehawka, Neb. ("Sheldon")
 Sidney Elevator Mfg. Co., Sidney, O.
 T. L. Smith Co., Milwaukee, Wis.
 Standard Scale & Supply Co., Pittsburgh, Pa.
 Waterloo Cement Machinery Corp., Waterloo, Ia. ("Wonder")

Mixers—Cement (Continuous)
 Bragstad Concrete Machinery Co., Inc., Canton, S. D.
 Elite Mfg. Co., Ashland, O.
 Helm Brick Machine Co., Cadillac, Mich. ("Little Giant")
 Knickerbocker Co., Jackson, Mich.
 Lansing Co., Lansing, Mich.
 Oshkosh Mfg. Co., Oshkosh, Wis.
 Standard Scale & Supply Co., Pittsburgh, Pa.

Mixers—Mortar and Plaster
 American Cement Machine Co., Keokuk, Ia.
 Archer Iron Works, Chicago, Ill.
 Blystone Mfg. Co., Cambridge Springs, Pa. ("Blystone")
 C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")
 Frank Mfg. Co., Des Moines, Ia. ("Frank")
 Helm Brick Machine Co., Cadillac, Mich.
 Ideal Concrete Machinery Co., Cincinnati, O.
 Jaeger Machine Co., Columbus, O.
 Knickerbocker Co., Jackson, Mich.
 Lansing Co., Lansing, Mich.
 Standard Scale & Supply Co., Pittsburgh, Pa.
 Waterloo Cement Machinery Corp., Waterloo, Ia. ("Wonder")

Molds—Brick
 Helm Brick Machine Co., Cadillac, Mich. ("Helm" ornamental brick molds)

Molds—Cement Drain Tile
 American Cement Machine Co., Keokuk, Ia.
 W. E. Dunn Mfg. Co., Holland, Mich.
 Ideal Concrete Machinery Co., Cincinnati, O.

Molds—Cement Fence Post
 American Cement Machine Co., Keokuk, Ia. ("Bulldog")
 Bragstad Concrete Machinery Corp., Canton, S. D.
 W. E. Dunn Mfg. Co., Holland, Mich.
 Helm Brick Machine Co., Cadillac, Mich. ("Helm")
 Ideal Concrete Machinery Co., Cincinnati, O.
 Northwestern Steel & Iron Co., Eau Claire, Wis. ("Northwestern")

Molds—Cement Silo
 American Cement Machine Co., Keokuk, Ia.
 Bragstad Concrete Machinery Co., Canton, S. D. (Blocks, reinforced and frost-proof)
 Helm Brick Machine Co., Cadillac, Mich. ("Helm")
 M. L. Schleuter, Chicago, Ill. ("2-E" system)

Molds—Ornamental Concrete
 Ideal Concrete Machinery Co., Cincinnati, O. (Bench, column, mantel and ornamental molds)

Mortar Colors
 General Fireproofing Co., Youngstown, O.

Motors—Electric
 General Electric Co., Schenectady, N. Y.
 Sidney Machine Tool Co., Sidney, O.
 Standard Scale & Supply Co., Pittsburgh, Pa.

Motor Trucks
 Dearborn Truck Co., Chicago, Ill. ("Dearborn" worm-drive trucks, 1½ to 2½ tons; "Dearborn" complete chain-drive trucks, 1 and 2 tons; "Dearborn" 1 and 2-ton truck units for converting pleasure cars into motor trucks)
 Kissel Motor Car Co., Hartford, Wis. ("Kissel")
 Republic Truck Co., Alma, Mich. (¾-ton "Dis-

- patch." 2000-pound "Special." 1-ton model 10, 1½-ton model 11, 2-ton model 12, 3½-ton model T, 5-ton model V)
- Mouldings—Metal**
Badger Corrugating Co., La Crosse, Wis.
Detroit Show Case Co., Detroit, Mich.
General Fireproofing Co., Youngstown, O.
Kawneer Mfg. Co., Niles, O. (Copper, bronze, steel for architectural work)
Milwaukee Corrugating Co., Milwaukee, Wis.
Shrauger & Johnson Co., Atlantic, Ia.
Willis Mfg. Co., Galesburg, Ill.
- Mouldings—Wallboard**
W. R. Friedel Co., Memphis, Tenn.
- Nailers—Roof**
Pearson Mfg. Co., Robbinsdale, Minn.
- Nail Feeders**
Budnick Mfg. Co., Grand Rapids, Mich. (Automatic)
- Nailing Machines**
Budnick Mfg. Co., Grand Rapids, Mich.
Pearson Mfg. Co., Robbinsdale, Minn.
- Nails—Galvanized**
Badger Corrugating Co., La Crosse, Wis.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
Rehm Hardware Co., Chicago, Ill.
- Nails—Roofing and Slatting**
Auld & Conger Co., Cleveland, O.
Beckman-Dawson Roofing Co., Chicago, Ill.
Bird & Son, East Walpole, Mass.
Bostwick Steel Lath Co., Niles, O.
Cadillac Lumber Co., Cadillac, Mich.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
W. H. Maze Co., Peru, Ill. (Soldi zinc, "Zinc City," "Zinclad")
Milwaukee Corrugating Co., Milwaukee, Wis.
Rehm Hardware Co., Chicago, Ill.
Slatington Slate Co., Slatington, Pa.
- Nails—Shingle**
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
W. H. Maze Co., Peru, Ill. (Wood, asphalt, asbestos, zinc-coated "Zinclad")
Rehm Hardware Co., Chicago, Ill.
- Nail Sets**
Geo. B. Carpenter & Co., Chicago, Ill.
Goodell-Pratt Co., Greenfield, Mass.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
L. A. Sayre Co., Newark, N. J.
Smith & Hemenway Co., New York, N. Y.
Stanley Rule & Level Co., New Britain, Conn.
L. S. Starrett Co., Athol, Mass.
James Swan Co., Seymour, Conn. ("Swan")
Syracuse Twist Drill Co., Syracuse, N. Y. ("Syracuse")
Vaughan & Bushnell Mfg. Co., Chicago, Ill.
- Ornaments—Bronze**
Cincinnati Mfg. Co., Cincinnati, O.
- Ornaments—Sheet Metal**
Badger Corrugating Co., La Crosse, Wis.
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
Willis Mfg. Co., Galesburg, Ill.
- Ornaments—Wood**
The Curtis Companies, Clinton, Ia.
Morgan Sash & Door Co., Chicago, Ill.
- Package Receivers**
Majestic Co., Huntington, Ind.
- Paint and Varnish Removers**
Geo. B. Carpenter & Co., Chicago, Ill.
Devoe & Reynolds Co., New York, N. Y.
S. C. Johnson & Son, Racine, Wis. ("Johnson's Electric Solvo")
Murphy Varnish Co., Newark, N. J.
Eugene E. Nice, Philadelphia, Pa.
Patton Paint Co., Milwaukee, Wis.
Rehm Hardware Co., Chicago, Ill.
- Paints**
Bird & Son, East Walpole, Mass. ("Neponset Roofing")
Devoe & Reynolds Co., New York, N. Y.
Joseph Dixon Crucible Co., Jersey City, N. J. (Graphite)
Ceresit Waterproofing Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
The Flintkote Co., Boston, Mass. ("Rex" red roof paint, "Rex" black roof paint, "Rex" asphalt roof paint, "Rex" dampproof paints, "Rex" insulating paint, "Rex" preservative paint, "Rex" Flintkote plastic)
M. Ewing Fox Co., New York, N. Y. ("Permanite," "Whitenite," "Walwhite")
General Fireproofing Co., Youngstown, O.
Eugene E. Nice, Philadelphia, Pa.
Rehm Hardware Co., Chicago, Ill.
Reilly Co., Indianapolis, Ind. ("Weatherwax")
- Paint Spraying Machines**
Geo. B. Carpenter & Co., Chicago, Ill.
DeVilbiss Mfg. Co., Toledo, O. ("Aeron System" portable painting equipment)
Devoe & Reynolds Co., New York, N. Y.
M. Ewing Fox Co., New York, N. Y.
H. W. Johns-Manville Co., New York, N. Y.
Paasche Air Brush Co., Chicago, Ill.
Surtly Guard Co., Chicago, Ill.
Waterloo Cement Machinery Corp., Waterloo, Ia. ("Wonder")
- Paper—Roofing and Sheathing**
Badger Corrugating Co., La Crosse, Wis.
Beckman-Dawson Roofing Co., Chicago, Ill.
Bird & Son, Inc., East Walpole, Mass.
Cadillac Lumber Co., Cadillac, Mich.
Phillip Carey Co., Lockland, Cincinnati, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
Flintkote Co., Boston, Mass. ("Rex" products, "Rex Flintkote" roofing, "Minado" roofing)
- H. W. Johns-Manville Co., New York, N. Y.
Rehm Hardware Co., Chicago, Ill.
- Partitions—Hollow Tile**
Mason City Brick & Tile Co., Mason City, Ia.
- Partitions—Metal**
A. C. Chesley Co., New York, N. Y. (Interior)
Edwards Mfg. Co., Cincinnati, O.
General Fireproofing Co., Youngstown, O. ("Truss-it" and "Self-Sentering" steel and cement plaster)
- Pencils—Carpenters**
Joseph Dixon Crucible Co., Jersey City, N. J.
Peerless Blue Print Co., New York, N. Y.
- Pencils—Drafting**
Joseph Dixon Crucible Co., Jersey City, N. J.
Devoe & Reynolds Co., New York, N. Y.
Eugene Dietzgen Co., Chicago, Ill.
Peerless Blue Print Co., New York, N. Y.
- Pergolas**
The Curtis Companies, Clinton, Ia. (Component parts)
Hartmann-Sanders Co., Chicago, Ill.
Morgan Sash & Door Co., Chicago, Ill.
- Pipe—Furnace**
Williamson Heater Co., Cincinnati, O. (Warm-air furnace pipe and steam and hot-water pipe and fittings)
- Plane Irons**
Buck Bros., Millbury, Mass.
L. & I. J. White Co., Buffalo, N. Y.
- Planers—Power**
American Saw Mill Machinery Co., New York, N. Y. ("American")
Geo. B. Carpenter & Co., Chicago, Ill.
Chicago Machinery Exchange, Chicago, Ill.
Crescent Machine Co., Leontonia, O.
Parks Ball Bearing Machine Co., Cincinnati, O.
Standard Scale & Supply Co., Pittsburgh, Pa.
J. D. Wallace & Co., Chicago, Ill.
- Planes—Carpenters**
Buckeye Mfg. & Foundry Co., Cleveland, O. ("Buckeye")
Geo. B. Carpenter & Co., Chicago, Ill.
Mack & Co., Rochester, N. Y. ("D. R. Barton")
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Stanley Rule & Level Co., New Britain, Conn.
- Plaster Board**
Badger Corrugating Co., La Crosse, Wis.
Bishopric Mfg. Co., Cincinnati, O.
Cadillac Lumber Co., Cadillac, Mich.
Phillip Carey Co., Lockland, Cincinnati, O. ("Cell-Board")
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
International Insulate Co., St. Paul, Minn.
- Plaster—Interior**
American Magnesia Products Co., Chicago, Ill.
National Kellastone Co., Chicago, Ill. (Magnetite)
- Plates—Door**
Allith-Prouty Co., Danville, Ill.
Bommer Bros., Brooklyn, N. Y. ("Bommer")
P. & F. Corbin, New Britain, Conn.
Detroit Show Case Co., Detroit, Mich. (Brass kick plates)
Griffin Mfg. Co., Erie, Pa. (Push)
National Mfg. Co., Sterling, Ill. (Push)
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Yale & Towne Mfg. Co., New York, N. Y.
- Plumbing Fixtures**
Hardin-Lavin Co., Chicago, Ill.
B. B. Karol, Chicago, Ill.
Kohler Co., Kohler, Wis. (Enameled ware)
L. Wolf Mfg. Co., Chicago, Ill.
- Preservatives—Wood**
Phillip Carey Co., Lockland, Cincinnati, O. ("Universal Coating")
Ceresit Waterproofing Co., Chicago, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
General Fireproofing Co., Youngstown, O. ("GF 550")
Reilly Co., Indianapolis, Ind. ("Reilly's Wood Preservative")
Patton Paint Co., Milwaukee, Wis.
- Prism Lighting**
Berger Mfg. Co., Canton, O. ("Raydiant" sidewalk lights)
- Pumps—Contractors**
American Cement Machine Co., Keokuk, Ia. ("Boss")
Geo. B. Carpenter & Co., Chicago, Ill.
C. H. & E. Mfg. Co., Milwaukee, Wis. (Triplex, piston, centrifugal)
The Deming Co., Salem, O.
Equipment Corp. of America, Chicago, Ill.
Goulds Mfg. Co., Seneca Falls, N. Y.
B. B. Karol, Chicago, Ill.
Knickerbocker Co., Jackson, Mich.
F. E. Myers & Bro., Ashland, O.
Novo Engine Co., Lansing, Mich. ("Novo")
O. K. Clutch & Machinery Co., Columbia, Pa. ("O. K.")
Oshkosh Mfg. Co., Oshkosh, Wis.
T. L. Smith Co., Milwaukee, Wis.
Standard Scale & Supply Co., Pittsburgh, Pa.
Waterloo Cement Machinery Corp., Waterloo, Ia. ("Wonder")
- Pumps—House**
Geo. B. Carpenter & Co., Chicago, Ill.
The Deming Co., Salem, O.
Goulds Mfg. Co., Seneca Falls, N. Y.
B. B. Karol, Chicago, Ill.
Kewanee Private Utilities Co., Kewanee, Ill. ("Kewanee")
Milwaukee Air Power Pump Co., Milwaukee, Wis.
F. E. Myers & Bro., Ashland, O.
Rehm Hardware Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh, Pa.
- Radiators—Hot Air**
Geo. B. Carpenter & Co., Chicago, Ill.
Majestic Co., Huntington, Ind.
L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller")
Williamson Heater Co., Cincinnati, O.
- Radiators—Hot Water and Steam**
Andrews Heating Co., Minneapolis, Minn.
Geo. B. Carpenter & Co., Chicago, Ill.
Hardin-Lavin Co., Chicago, Ill.
B. B. Karol, Chicago, Ill.
L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller")
Williamson Heater Co., Cincinnati, O.
- Radiator Shields**
Milwaukee Corrugating Co., Milwaukee, Wis.
L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller")
Williamson Heater Co., Cincinnati, O.
- Railings—Brass**
Brasco Mfg. Co., Chicago, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
Cincinnati Mfg. Co., Cincinnati, O.
Wright Wire Co., Worcester, Mass.
- Railings—Iron**
Geo. B. Carpenter & Co., Chicago, Ill.
Cincinnati Mfg. Co., Cincinnati, O.
Wright Wire Co., Worcester, Mass.
- Rails—Altar**
Cincinnati Mfg. Co., Cincinnati, O.
- Rails—Barn Door**
Griffin Mfg. Co., Erie, Pa.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star," "Twentieth Century," "Flexo," "Weather-proof," "Cannon Ball")
Lane Bros. Co., Poughkeepsie, N. Y. ("Lane")
National Mfg. Co., Sterling, Ill. ("Braced," "Storm Proof")
Rehm Hardware Co., Chicago, Ill.
Safety Door Hanger Co., Ashland, O. ("World's Best," "Red Rib," "Safety")
Sargent & Co., New Haven, Conn. ("Sargent")
Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")
- Raisers—Panel**
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
- Reamers**
Geo. B. Carpenter & Co., Chicago, Ill.
Goodell-Pratt Co., Greenfield, Mass.
B. B. Karol, Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
James Swan Co., Seymour, Conn. ("Swan")
Vaughan & Bushnell Mfg. Co., Chicago, Ill.
- Refrigerators—Outside Icing**
Herrick Refrigerator Co., Waterloo, Ia. ("Herrick")
McCray Refrigerator Co., Kendallville, Ind.
Willis Mfg. Co., Galesburg, Ill. (Iceless)
- Registers—Hot Air Furnaces**
Bovee Furnace Works, Waterloo, Ia.
Geo. B. Carpenter & Co., Chicago, Ill.
Hart & Cooley Co., New Britain, Conn.
Hess Warming & Ventilating Co., Chicago, Ill.
Majestic Co., Huntington, Ind.
L. J. Mueller Furnace Co., Milwaukee, Wis. ("Mueller")
Rehm Hardware Co., Chicago, Ill.
Williamson Heater Co., Cincinnati, O.
Willis Mfg. Co., Galesburg, Ill.
- Reinforcing**
Berger Mfg. Co., Canton, O. ("Ribplex")
Bostwick Steel Lath Co., Niles, O.
Bragstad Concrete Machinery Co., Canton, S. D. (For cement blocks)
General Fireproofing Co., Youngstown, O.
Truscon Steel Co., Detroit, Mich.
Western Iron & Foundry Co., Wichita, Kan.
- Resaw Machines**
Chicago Machinery Exchange, Chicago, Ill.
J. A. Fay & Egan Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
- Ridging—Ventilated**
Globe Ventilator Co., Troy, N. Y. ("Globe")
Willis Mfg. Co., Galesburg, Ill.
- Rollers—Barn Door**
Allith-Prouty Co., Danville, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
Griffin Mfg. Co., Danville, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Cannon Ball")
Lane Bros. Co., Poughkeepsie, N. Y. ("Lane")
National Mfg. Co., Sterling, Ill. ("Big 4," "Storm Proof," "National")
Rehm Hardware Co., Chicago, Ill.
J. E. Porter Co., Ottawa, Ill.
Safety Door Hanger Co., Ashland, O. ("World's Best," "Red Rib," "Safety," "Storm King," "Tandem Safety," "D. S. Standard")
Sargent & Co., New Haven, Conn. ("Sargent")
Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")
- Rollers—House Door**
Allith-Prouty Co., Danville, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Cannon Ball")
Lane Bros. Co., Poughkeepsie, N. Y. ("Lane")
National Mfg. Co., Sterling, Ill.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")
- Roofing Cement**
Auld & Conger Co., Cleveland, O.
Beckman-Dawson Roofing Co., Chicago, Ill.
Phillip Carey Co., Lockland, Cincinnati, O.
Conrad Wood Preserving Co., Minneapolis, Minn.
Heppes-Nelson Roofing Co., Chicago, Ill. ("No-Tar," liquid and plastic)
H. W. Johns-Manville Co., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis. ("Federal Elastic")
Eugene E. Nice, Philadelphia, Pa.

Roof Putty
Philip Carey Co., Lockland, Cincinnati, O. ("Noah's Pitch")
Geo. B. Carpenter & Co., Chicago, Ill.
Devoc & Reynolds Co., New York, N. Y.
H. W. Johns-Manville Co., New York, N. Y.
Eugene E. Nice, Philadelphia, Pa.
Rehm Hardware Co., Chicago, Ill.

Roofing—Asbestos
Philip Carey Co., Lockland, Cincinnati, O.
Edwards Mfg. Co., Cincinnati, O.
H. W. Johns-Manville Co., New York, N. Y.

Roofing—Asbestos Shingles
Edwards Mfg. Co., Lockland, Cincinnati, O.
H. W. Johns-Manville Co., New York, N. Y.
Keasbey & Mattison Co., Ambler, Pa.

Roofing—Asphalt (Ready)
Beckman-Dawson Co., Chicago, Ill.
Bird & Son, East Walpole, Mass. ("Neponset Paroid," "American Ready," "Neponset Granitized," "Universal," "Artercraft")

Philip Carey Co., Lockland, Cincinnati, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
The Flintkote Co., Boston, Mass.
Heppes-Nelson Roofing Co., Chicago, Ill. ("Flex-a-Tile")

H. W. Johns-Manville Co., New York, N. Y.
Rehm Hardware Co., Chicago, Ill.
Patent Vulcanite Roofing Co., Chicago, Ill.

Roofing—Asphalt Shingles
Beckman-Dawson Co., Chicago, Ill.
Bird & Son, East Walpole, Mass. ("Neponset Twin," "American Twin," "Proslate")

Philip Carey Co., Lockland, Cincinnati, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
The Flintkote Co., Boston, Mass. ("Rex" strip shingles, "Rex" wide-space shingles, "Rex" individual shingles, "Rex" diamond-strip shingles, "Rex" reversible-strip shingles)

Heppes-Nelson Roofing Co., Chicago, Ill. ("Flex-a-Tile")
Patent Vulcanite Roofing Co., Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.

Roofing—Built-up
Bird & Son, East Walpole, Mass. ("Neponset")
Philip Carey Co., Lockland, Cincinnati, O.
The Flintkote Co., Boston, Mass. ("Rex" construction roofing)

H. W. Johns-Manville Co., New York, N. Y.

Roofing—Canvas
Wm. L. Barrell Co., New York, N. Y. ("Conser-tex")
Beckman-Dawson Co., Chicago, Ill.
John Boyle & Co., New York, N. Y. ("Bayonne")
The Flintkote Co., Boston, Mass. ("Paradox-Rex")

Roofing—Mastic
Beckman-Dawson Co., Chicago, Ill.
General Fireproofing Co., Youngstown, O.
H. W. Johns-Manville Co., New York, N. Y.

Roofing—Metal (Corrugated)
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Anderson Mfg. Co., Des Moines, Ia.
Badger Corrugating Co., La Crosse, Wis.
Berger Mfg. Co., Canton, O.
Bostwick Steel Lath Co., Niles, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
National Sheet Metal Roofing Co., Jersey City, N. J.
Willis Mfg. Co., Galesburg, Ill.

Roofing—Metal (Sheets)
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Anderson Mfg. Co., Des Moines, Ia.
Badger Corrugating Co., La Crosse, Wis.
Berger Mfg. Co., Canton, O.
Bostwick Steel Lath Co., Niles, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
National Sheet Metal Roofing Co., Jersey City, N. J.
Rehm Hardware Co., Chicago, Ill.
Stark Rolling Mills Co., Canton, O.
Willis Mfg. Co., Galesburg, Ill.

Roofing—Metal Shingles
Badger Corrugating Co., La Crosse, Wis.
Berger Mfg. Co., Canton, O. ("Bercro," "Swanee," "Chieftain")
Bostwick Steel Lath Co., Niles, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Courtright Metal Roofing Co., Philadelphia, Pa.
Edwards Mfg. Co., Cincinnati, O.
F. D. Kees Mfg. Co., Beatrice, Neb. (Hip)
Milwaukee Corrugating Co., Milwaukee, Wis.
National Sheet Metal Roofing Co., Jersey City, N. J.
Willis Mfg. Co., Galesburg, Ill.

Roofing—Rubber
Beckman-Dawson Co., Chicago, Ill.
Philip Carey Co., Lockland, Cincinnati, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
Heppes-Nelson Roofing Co., Chicago, Ill. ("Rubbertex," "Success," "Flexo," "Ebonite," "Whale")
Rehm Hardware Co., Chicago, Ill.

Roofing—Slate
Auld & Conger Co., Cleveland, O.
F. C. Sheldon Slate Co., Granville, N. Y.
Structural Slate Co., Pen Argyl, Pa.
Vendor Slate Co., Bangor, Pa.

Roofing Tile—Metal
Berger Mfg. Co., Canton, O. ("Lyketile")
Edwards Mfg. Co., Cincinnati, O.
General Fireproofing Co., Youngstown, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
National Sheet Metal Roofing Co., Jersey City, N. J.
Willis Mfg. Co., Galesburg, Ill.

Roofing Tile—Reinforced Cement
Truscon Steel Co., Detroit, Mich.

Roofing Tin
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
Willis Mfg. Co., Galesburg, Ill.

Roofing—Wood Shingles
Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis.
West Coast Lumbermen's Assn., Seattle, Wash. ("Rite-Grade Inspected" red cedar shingles)

Roofing and Siding—Iron and Steel
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Anderson Mfg. Co., Des Moines, Ia.
Badger Corrugating Co., La Crosse, Wis.
Berger Mfg. Co., Canton, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
National Sheet Metal Roofing Co., Jersey City, N. J.
Rehm Hardware Co., Chicago, Ill.
Willis Mfg. Co., Galesburg, Ill.

Roofing and Siding—Slate
Auld & Conger Co., Cleveland, O.
Slatting Slate Co., Slatting, Pa.
Structural Slate Co., Pen Argyl, Pa.
Vendor Slate Co., Bangor, Pa.

Routers
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Stanley Rule & Level Co., New Britain, Conn.

Rules—Boxwood
Geo. B. Carpenter & Co., Chicago, Ill.
Dahl Mfg. Co., New York, N. Y.
Lufkin Rule Co., Saginaw, Mich.
Peerless Blue Print Co., New York, N. Y.
Rehm Hardware Co., Chicago, Ill.

Rules—Galiper
Geo. B. Carpenter & Co., Chicago, Ill.
Dahl Mfg. Co., New York, N. Y.
Goodell-Pratt Co., Greenfield, Mass.
Lufkin Rule Co., Saginaw, Mich.
Peerless Blue Print Co., New York, N. Y.
Rehm Hardware Co., Chicago, Ill.
Stanley Rule & Level Co., New Britain, Conn.
L. S. Starrett Co., Athol, Mass.

Rules—Extension
Geo. B. Carpenter & Co., Chicago, Ill.
Dahl Mfg. Co., New York, N. Y. ("Interlox Master Slide Rule")
Eugene Dietzgen Co., Chicago, Ill.
Lufkin Rule Co., Saginaw, Mich.
Peerless Blue Print Co., New York, N. Y.
Rehm Hardware Co., Chicago, Ill.
Stanley Rule & Level Co., New Britain, Conn.
Technical Supply Co., Scranton, Pa.

Rules—Lumbermen's
Geo. B. Carpenter & Co., Chicago, Ill.
Dahl Mfg. Co., New York, N. Y. ("Interlox" folding rule)
Lufkin Rule Co., Saginaw, Mich.
Peerless Blue Print Co., New York, N. Y.
Rehm Hardware Co., Chicago, Ill.
L. S. Starrett Co., Athol, Mass.
Technical Supply Co., Scranton, Pa.

Sanders
American Sawmill Machinery Co., New York, N. Y. ("American")
Chicago Machinery Exchange, Chicago, Ill.
J. A. Fay & Egan Co., Cincinnati, O.
M. L. Schleuter, Chicago, Ill. (For floors)

Sash Holders
Geo. B. Carpenter & Co., Chicago, Ill.
Hardware Sales Co., New York, N. Y. ("Automatic")
H. B. Ives Co., New Haven, Conn.
F. D. Kees Mfg. Co., Beatrice, Neb. ("Kees")
Rehm Hardware Co., Chicago, Ill.
Shelby Spring Hinge Co., Shelby, O.
Stanley Works, New Britain, Conn.
Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")

Sash Lifts
Allith-Prouty Co., Danville, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
P. & F. Corbin, New Britain, Conn.
Griffin Mfg. Co., Erie, Pa.
H. B. Ives Co., New Haven Conn. ("Ives" patent window stop adjuster)
McKinney Mfg. Co., Pittsburgh, Pa.
National Mfg. Co., Sterling, Ill.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Shelby Spring Hinge Co., Shelby, O.
Stanley Works, New Britain, Conn.
Stover Mfg. & Engine Co., Freeport, Ill.
Yale & Towne Mfg. Co., New York, N. Y.

Sash Locks
Allith-Prouty Co., Danville, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
P. & F. Corbin, New Britain, Conn.
H. B. Ives Co., New Haven, Conn. ("Ives" patent window ventilating lock)
McKinney Mfg. Co., Pittsburgh, Pa.
National Mfg. Co., Sterling, Ill. (600 sash lock)
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Shelby Spring Hinge Co., Shelby, O.
Stanley Works, New Britain, Conn.
Yale & Towne Mfg. Co., New York, N. Y.

Sash Pulleys
Geo. B. Carpenter & Co., Chicago, Ill.
P. & F. Corbin, New Britain, Conn.
The Curtis Companies, Clinton, Ia.
Grand Rapids Hardware Co., Grand Rapids, Mich.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Stover Mfg. & Engine Co., Freeport, Ill.

Saw Arbors
American Saw Mill Machinery Co., New York, N. Y. ("American")
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa.
J. A. Fay & Egan Co., Cincinnati, O.
Goodell-Pratt Co., Greenfield, Mass.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
Silver Mfg. Co., Salem, O.
Simonds Mfg. Co., Fitchburg, Mass.

Sawmill Machinery
American Saw Mill Machinery Co., New York, N. Y. ("American")
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
J. A. Fay & Egan Co., Cincinnati, O.
Parks Ball Bearing Machinery Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
Standard Scale & Supply Co., Pittsburgh, Pa.

Saw Rigs
American Saw Mill Machinery Co., New York, N. Y. ("American")
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")
Chicago Machinery Exchange, Chicago, Ill.
Equipment Corp. of America, Chicago, Ill.
J. A. Fay & Egan Co., Cincinnati, O.
The Knickerbocker Co., Jackson, Mich. ("Knickerbocker")
Northwestern Steel & Iron Co., Eau Claire, Wis. ("Northwestern")
Novo Engine Co., Lansing, Mich. ("Novo")
Oshkosh Mfg. Co., Oshkosh, Wis. ("Eveready")
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O. ("Famous")
Standard Scale & Supply Co., Pittsburgh, Pa.
Witte Engine Works, Kansas City, Mo. ("Witte")

Saw Sets
American Saw Mill Machinery Co., New York, N. Y.
E. C. Atkins & Co., Indianapolis, Ind.
Geo. H. Bishop & Co., Lawrenceburgh, Ind.
Buckeye Mfg. & Foundry Co., Cleveland, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa.
J. A. Fay & Egan Co., Cincinnati, O.
Goodell-Pratt Co., Greenfield, Mass.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
Chas. Morrill, New York, N. Y. ("Apex" hand)
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
L. A. Sayre Co., Newark, N. J. ("Sayre")
Sidney Machine Tool Co., Sidney, O.
Simonds Mfg. Co., Fitchburg, Mass.
Smith & Hemenway Co., New York, N. Y.
Stanley Rule & Level Co., New Britain, Conn.

Saw Swages
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa.
J. A. Fay & Egan Co., Cincinnati, O.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
Sidney Machine Tool Co., Sidney, O.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Tables
American Cement Machine Co., Keokuk, Ia.
American Saw Mill Machinery Co., New York, N. Y. ("American")
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")
Chicago Machinery Exchange, Chicago, Ill.

Sash—Hollow Metal
Brasco Mfg. Co., Chicago, Ill.
A. C. Chesley Co., New York, N. Y.
Detroit Show Case Co., Detroit, Mich. ("Desco")
Edwards Mfg. Co., Cincinnati, O.
Willis Mfg. Co., Galesburg, Ill.

Sash—Iron and Steel
Shrauger & Johnson, Atlantic, Ia.
Truscon Steel Co., Detroit, Mich.

Sash—Storm
The Curtis Companies, Clinton, Ia.
Morgan Sash & Door Co., Chicago, Ill. ("Morgan," "Cold Weather," "Protection")
Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis.
Standard Screen Co., Chicago, Ill. ("Standard")

Sash Balances
Caldwell Mfg. Co., Rochester, N. Y.
The Curtis Companies, Clinton, Ia.
Rehm Hardware Co., Chicago, Ill.
The Stanley Works, New Britain, Conn.

Sash Cord
Geo. B. Carpenter & Co., Chicago, Ill.
The Curtis Companies, Clinton, Ia.
Rehm Hardware Co., Chicago, Ill.
Samson Cordage Works, Boston, Mass. ("Spot," "Massachusetts," "Phoenix")
Silver Lake Co., Newtonville, Mass.
Wright Wire Co., Worcester, Mass. (Wire)

Crescent Machine Co., Leetonia, O.
 J. A. Fay & Egan Co., Cincinnati, O.
 Novo Engine Co., Lansing, Mich. ("Novo")
 Parks Ball Bearing Machine Co., Cincinnati, O.
 Sidney Machine Tool Co., Sidney, O.
 Silver Mfg. Co., Salem, O. ("Silver's")
 Standard Scale & Supply Co., Pittsburgh, Pa.
 J. D. Wallace & Co., Chicago, Ill.

Saws—Band

American Saw Mill Machinery Co., New York, N. Y. ("American")
 E. C. Atkins & Co., Indianapolis, Ind.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Chicago Machinery Exchange, Chicago, Ill.
 Crescent Machine Co., Leetonia, O.
 Henry Disston & Sons, Philadelphia, Pa.
 J. A. Fay & Egan Co., Cincinnati, O.
 Huther Bros. Saw Mfg. Co., Rochester, N. Y.
 Novo Engine Co., Lansing, Mich. ("Novo")
 Oshkosh Mfg. Co., Oshkosh, Wis.
 Parks Ball Bearing Machine Co., Cincinnati, O.
 Sidney Machine Tool Co., Sidney, O.
 Silver Mfg. Co., Salem, O.
 Simonds Mfg. Co., Fitchburg, Mass.

Saws—Circular

American Saw Mill Machinery Co., New York, N. Y. ("American")
 E. C. Atkins & Co., Indianapolis, Ind.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Chicago Machinery Exchange, Chicago, Ill.
 Crescent Machine Co., Leetonia, O.
 Henry Disston & Sons, Philadelphia, Pa.
 J. A. Fay & Egan Co., Cincinnati, O.
 Huther Bros. Saw Mfg. Co., Rochester, N. Y.
 Parks Ball Bearing Machine Co., Cincinnati, O.
 Rehm Hardware Co., Chicago, Ill.
 Sidney Machine Tool Co., Sidney, O.
 Silver Mfg. Co., Salem, O.
 Simonds Mfg. Co., Fitchburg, Mass.
 Standard Scale & Supply Co., Pittsburgh, Pa.
 J. D. Wallace & Co., Chicago, Ill.

Saws—Drag

American Saw Mill Machinery Co., New York, N. Y. ("American")
 E. C. Atkins & Co., Indianapolis, Ind.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 Huther Bros. Saw Mfg. Co., Rochester, N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.

Saws—Grooving

American Saw Mill Machinery Co., New York, N. Y.
 E. C. Atkins & Co., Indianapolis, Ind.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Chicago Machinery Exchange, Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 J. A. Fay & Egan Co., Cincinnati, O.
 Huther Bros. Saw Mfg. Co., Rochester, N. Y.
 Parks Ball Bearing Machine Co., Cincinnati, O.
 Sidney Machine Tool Co., Sidney, O.
 Simonds Mfg. Co., Fitchburg, Mass.

Saws—Hand

E. C. Atkins & Co., Indianapolis, Ind.
 Geo. H. Bishop & Co., Lawrenceburgh, Ind. (Also backsaws and miter saws)
 Geo. B. Carpenter & Co., Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 Rehm Hardware Co., Chicago, Ill.
 Simonds Mfg. Co., Fitchburg, Mass.

Saws—Jig

American Saw Mill Machinery Co., New York, N. Y.
 E. C. Atkins & Co., Indianapolis, Ind.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Chicago Machinery Exchange, Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 J. A. Fay & Egan Co., Cincinnati, O.
 Huther Bros. Saw Mfg. Co., Rochester, N. Y.
 Parks Ball Bearing Machine Co., Cincinnati, O.
 Sidney Machine Tool Co., Sidney, O.
 Simonds Mfg. Co., Fitchburg, Mass.
 Standard Scale & Supply Co., Pittsburgh, Pa.

Saws—Swing

American Saw Mill Machinery Co., New York, N. Y. ("American")
 E. C. Atkins & Co., Indianapolis, Ind.
 C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")
 Chicago Machinery Exchange, Chicago, Ill.
 Crescent Machine Co., Leetonia, O.
 Henry Disston & Sons, Philadelphia, Pa.
 J. A. Fay & Egan Co., Cincinnati, O.
 Huther Bros. Saw Mfg. Co., Rochester, N. Y.
 The Knickerbocker Co., Jackson, Mich. ("Knickerbocker" combination swing, cut-off and rip saw)
 Novo Engine Co., Lansing, Mich. ("Novo")
 Oshkosh Mfg. Co., Oshkosh, Wis.
 Parks Ball Bearing Machine Co., Cincinnati, O.
 Sidney Machine Tool Co., Sidney, O.
 Silver Mfg. Co., Salem, O. ("Silver's")
 Simonds Mfg. Co., Fitchburg, Mass. ("Simonds")
 Standard Scale & Supply Co., Pittsburgh, Pa.

Scaffold Brackets

Geo. B. Carpenter & Co., Chicago, Ill.
 Elite Mfg. Co., Ashland, O.
 Rehm Hardware Co., Chicago, Ill.
 Richards-Wilcox Mfg. Co., Aurora, Ill.
 Standard Scale & Supply Co., Pittsburgh, Pa.
 James L. Taylor Mfg. Co., Poughkeepsie, N. Y.
 Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")

Scaffolds—Steel

Geo. B. Carpenter & Co., Chicago, Ill.
 Elite Mfg. Co., Ashland, O.
 Richards-Wilcox Mfg. Co., Aurora, Ill. ("R. W.")
 Standard Scale & Supply Co., Pittsburgh, Pa.

Screens—Bank and Counter

Cincinnati Mfg. Co., Cincinnati, O.
 Wright Wire Co., Worcester, Mass.

Screen Door Sets

National Mfg. Co., Sterling, Ill.
 The Stanley Works, New Britain, Conn.

Screens—Sand and Gravel

Geo. B. Carpenter & Co., Chicago, Ill.
 Cincinnati Mfg. Co., Cincinnati, O.
 Lansing Co., Lansing, Mich.
 Wright Wire Co., Worcester, Mass.

Screens—Door and Window

Cadillac Lumber Co., Cadillac, Mich. ("No-Sag")
 Geo. B. Carpenter & Co., Chicago, Ill.
 Cincinnati Mfg. Co., Cincinnati, O.
 The Curtis Companies, Clinton, Ia.
 Eli-Bac Screen Corporation, Rochester, N. Y. ("Eli-Bac" window screens)
 Morgan Sash & Door Co., Chicago, Ill.
 Standard Screen Co., Chicago, Ill. ("Standard")

Screwdrivers

Geo. B. Carpenter & Co., Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 Goodell-Pratt Co., Greenfield, Mass.
 North Bros. Mfg. Co., Philadelphia, Pa.
 Rehm Hardware Co., Chicago, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Smith & Hemenway Co., New York, N. Y.
 Stanley Rule & Level Co., New Britain, Conn.
 L. S. Starrett Co., Athol, Mass.
 James Swan Co., Seymour, Conn. ("Swan")

Scribers

Geo. B. Carpenter & Co., Chicago, Ill.
 Goodell-Pratt Co., Greenfield, Mass.
 Rehm Hardware Co., Chicago, Ill.

Sewage Disposal Plants

Andrews Heating Co., Minneapolis, Minn.
 Dall Steel Products Co., Lansing, Mich.
 Kewanee Private Utilities Co., Kewanee, Ill. ("Kewanee")

Shafting and Hangers

American Saw Mill Machinery Co., New York, N. Y.
 Geo. B. Carpenter & Co., Chicago, Ill.
 O. K. Clutch & Machinery Co., Columbia, Pa. ("O. K.")
 Sidney Machine Tool Co., Sidney, O.
 Western Iron & Foundry Co., Wichita, Kan.

Shaping Machines

American Woodworking Machine Co., Rochester, N. Y.
 Crescent Machine Co., Leetonia, O.
 J. A. Fay & Egan Co., Cincinnati, O.
 Sidney Machine Tool Co., Sidney, O.

Sheathing—Asbestos

Geo. B. Carpenter & Co., Chicago, Ill.
 H. W. Johns-Manville Co., New York, N. Y.
 B. B. Karol, Chicago, Ill.
 Keesbey & Mattison Co., Ambler, Pa.
 Rehm Hardware Co., Chicago, Ill.

Sheathing Board

Bishopric Mfg. Co., Cincinnati, O. ("Bishopric")

Sheets—Iron and Steel

American Sheet & Tin Plate Co., Pittsburgh, Pa. (Galvanized sheets, black sheets of every description, etc.)
 Anderson Mfg. Co., Des Moines, Ia.
 Badger Corrugating Co., La Crosse, Wis.
 Berger Mfg. Co., Canton, O.
 Bostwick Steel Lath Co., Niles, O.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Edwards Mfg. Co., Cincinnati, O.
 H. B. Ives Co., New Haven, Conn.
 Milwaukee Corrugating Co., Milwaukee, Wis. ("Milcor")
 Rehm Hardware Co., Chicago, Ill.
 Stark Rolling Mills Co., Canton, O.
 Willis Mfg. Co., Galesburg, Ill.

Shingle Nailers

Pearson Mfg. Co., Robbinsdale, Minn.

Shingling Brackets

Geo. B. Carpenter & Co., Chicago, Ill.
 Elite Mfg. Co., Ashland, O.
 Rehm Hardware Co., Chicago, Ill.
 Stanley Rule & Level Co., New Britain, Conn.
 Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")

Show Cases

Detroit Show Case Co., Detroit, Mich. ("Silent Salesman")

Shower Receptors

Kohler Co., Kohler, Wis.

Shutters—Fireproof

Berger Mfg. Co., Canton, O. (Doors and windows)
 A. C. Chesley Co., Inc., New York, N. Y.
 Edwards Mfg. Co., Cincinnati, O.
 Milwaukee Corrugating Co., Milwaukee, Wis.
 Richards-Wilcox Mfg. Co., Aurora, Ill.
 Willis Mfg. Co., Galesburg, Ill.

Silos

Chicago Warehouse & Silo Fixture Co., Chicago, Ill. ("Security")
 Mason City Brick & Tile Co., Mason City, Ia.
 Northern Hemlock & Hardwood Mfrs. Assn. ("Old Faithful" hemlock creosoted. "Korn-Keep Silo")
 E. C. Tecktonius Mfg. Co., Racine, Wis.

Silo Fixtures

Bragstad Concrete Machinery Co., Canton, S. D. (Silo door hinges)
 Chicago Warehouse & Silo Fixture Co., Chicago, Ill. ("Security")
 E. C. Tecktonius Mfg. Co., Racine, Wis.

Silo Lugs

E. C. Tecktonius Mfg. Co., Racine, Wis. (Self-adjusting)

Silo Machines

American Cement Machine Co., Keokuk, Ia.
 Bragstad Concrete Machinery Co., Canton, S. D.
 Helm Brick Machine Co., Cadillac, Mich. ("Helm")
 Northwestern Steel & Iron Co., Eau Claire, Wis. ("Northwestern")
 M. L. Schleuter, Chicago, Ill. ("2-E System")
 T. L. Smith Co., Milwaukee, Wis.

Silo Roofs

Badger Corrugating Co., La Crosse, Wis.

Sinks—Factory Wash

Auld & Conger Co., Cleveland, O.
 Geo. B. Carpenter & Co., Chicago, Ill.
 B. B. Karol, Chicago, Ill.
 Kohler Co., Kohler, Wis. (Enameled ware)
 L. Wolf Mfg. Co., Chicago, Ill.

Sinks—Kitchen

Andrews Heating Co., Minneapolis, Minn.
 Auld & Conger Co., Cleveland, O.
 B. B. Karol, Chicago, Ill.
 Kohler Co., Kohler, Wis. (Also slop sinks, kitchenette sinks)
 Rehm Hardware Co., Chicago, Ill.
 Structural Slate Co., Pen Argyl, Pa. ("Pyramid")
 L. Wolf Mfg. Co., Chicago, Ill.

Skylights

Anderson Mfg. Co., Des Moines, Ia.
 Badger Corrugating Co., La Crosse, Wis. ("Badger")
 Berger Mfg. Co., Canton, O.
 Edwards Mfg. Co., Cincinnati, O.
 Milwaukee Corrugating Co., Milwaukee, Wis. ("Torpedo")
 National Sheet Metal Roofing Co., Jersey City, N. J.
 Schrauger & Johnson Co., Atlantic, Ia.
 Willis Mfg. Co., Galesburg, Ill. ("Willis")

Slate—Structural

Auld & Conger Co., Cleveland, O.
 Slatington Slate Co., Slatington, Pa. (Clear black)
 Structural Slate Co., Pen Argyle, Pa.
 Vendor Slate Co., Bangor, Pa.

Slicks—Carpenters

Sargent & Co., New Haven, Conn. ("Sargent")
 James Swan Co., Seymour, Conn. ("Swan")
 L. & I. J. White Co., Buffalo, N. Y.

Sound Deadeners

Bird & Son, East Walpole, Mass. ("Neponset Flurlan sound-deadening felt")
 Samuel Cabot, Inc., Boston, Mass. ("Cabot's Quilt")

Spoke Shaves

Buckeye Mfg. & Foundry Co., Cleveland, O.
 Geo. B. Carpenter & Co., Chicago, Ill.
 Rehm Hardware Co., Chicago, Ill.
 Stanley Rule & Level Co., New Britain, Conn.
 James Swan Co., Seymour, Conn. ("Swan")
 L. & I. J. White Co., Buffalo, N. Y.

Springs—Door

Allith-Prouty Co., Danville, Ill. (Screen door)
 Bommer Bros., Brooklyn, N. Y. ("Bommer")
 Geo. B. Carpenter & Co., Chicago, Ill.
 Chicago Spring Butt Co., Chicago, Ill.
 Rehm Hardware Co., Chicago, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")

Squares—Bevel

Geo. B. Carpenter & Co., Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 Goodell-Pratt Co., Greenfield, Mass.
 Peerless Blue Print Co., New York, N. Y.
 Rehm Hardware Co., Chicago, Ill.
 Stanley Rule & Level Co., New Britain, Conn.
 L. S. Starrett Co., Athol, Mass.

Squares—Combination

Geo. B. Carpenter & Co., Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 Eugene Dietzgen Co., Chicago, Ill.
 Goodell-Pratt Co., Greenfield, Mass.
 Nicholls Mfg. Co., Ottumwa, Ia.
 Rehm Hardware Co., Chicago, Ill.
 L. S. Starrett Co., Athol, Mass.

Squares—Steel

Geo. B. Carpenter & Co., Chicago, Ill.
 Eugene Dietzgen Co., Chicago, Ill.
 Goodell-Pratt Co., Greenfield, Mass.
 Nicholls Mfg. Co., Ottumwa, Ia.
 Peerless Blue Print Co., New York, N. Y.
 Rehm Hardware Co., Chicago, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Stanley Rule & Level Co., New Britain, Conn.
 L. S. Starrett Co., Athol, Mass.
 Technical Supply Co., Scranton, Pa.

Squares—"T"

A. S. Aloe Co., St. Louis, Mo. ("Aloe's")
 Geo. B. Carpenter & Co., Chicago, Ill.
 Eugene Dietzgen Co., Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 Peerless Blue Print Co., New York, N. Y.
 Rehm Hardware Co., Chicago, Ill.
 Stanley Rule & Level Co., New Britain, Conn.
 L. S. Starrett Co., Athol, Mass.
 Technical Supply Co., Scranton, Pa.

Squares—Try and Miter

Geo. B. Carpenter & Co., Chicago, Ill.
 Eugene Dietzgen Co., Chicago, Ill.
 Henry Disston & Sons, Philadelphia, Pa.
 Goodell-Pratt Co., Greenfield, Mass.
 Peerless Blue Print Co., New York, N. Y.
 Rehm Hardware Co., Chicago, Ill.
 Sargent & Co., New Haven, Conn. ("Sargent")
 Stanley Rule & Level Co., New Britain, Conn.
 L. S. Starrett Co., Athol, Mass.

Stable Fixtures

Gilbert & Bennett Mfg. Co., Chicago, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Star")
Louden Machinery Co., Fairfield, Ia.
J. E. Porter Co., Ottawa, Ill.
Wright Wire Co., Worcester, Mass.

Stains—Brick

Conrad Wood Preserving Co., Minneapolis, Minn.

Stains—Cement

Samuel Cabot, Inc., Boston, Mass. ("Cabot's" waterproof)
Geo. B. Carpenter & Co., Chicago, Ill.
Conrad Wood Preserving Co., Minneapolis, Minn.
General Fireproofing Co., Youngstown, O.
Eugene E. Nice, Philadelphia, Pa.
The Reilly Co., Indianapolis, Ind. ("Weatherwax")

Stains—Shingle

Samuel Cabot, Inc., Boston, Mass. ("Cabot's" creosote stains)
Geo. B. Carpenter & Co., Chicago, Ill.
Conrad Wood Preserving Co., Minneapolis, Minn.
Devoe & Reynolds Co., Inc., New York, N. Y.
Patton Paint Co., Milwaukee, Wis.
Reilly Co., Indianapolis, Ind. ("Weatherwax")

Stains—Wood

Samuel Cabot, Inc., Boston, Mass. ("Cabot's" creosote stains)
Geo. B. Carpenter & Co., Chicago, Ill.
Conrad Wood Preserving Co., Minneapolis, Minn.
Devoe & Reynolds Co., New York, N. Y. ("Devoe's oil wood stain")
S. C. Johnson & Son, Racine, Wis. ("Johnson's Wood Dye")
Eugene E. Nice, Philadelphia, Pa.
Patton Paint Co., Milwaukee, Wis.

Stanchions

Brasco Mfg. Co., Chicago, Ill.
Hunt, Helm, Ferris & Co., Harvard, Ill.
"Giant," "Boss," "434-W" steel tubular;
"Star" non-adjustable wood, "Star" adjustable wood
James Mfg. Co., Fort Atkinson, Wis.
Louden Machinery Co., Fairfield, Ia.
Mast, Foss & Co., Springfield, O.
J. E. Porter Co., Ottawa, Ill.

Stair Treads

Auld & Conger Co., Cleveland, O.
Geo. B. Carpenter & Co., Chicago, Ill.
The Curtis Companies, Clinton, Ia.
Franklyn R. Muller Co., Waukegan, Ill. (Composition)
Structural Slate Co., Pen Argy, Pa. ("Pyramid")

Stairways

Auld & Conger Co., Cleveland, O. (Slate)
The Curtis Companies, Clinton, Ia.

Store Fronts

Brasco Mfg. Co., Chicago, Ill.
The Curtis Companies, Clinton, Ia.
Detroit Show Case Co., Detroit, Mich. ("Desco" solid metal; "Petz" wood molding, covered with copper or brass)
Kawneer Mfg. Co., Niles, Mich. ("Kawneer" all-metal store front construction)
Milwaukee Corrugating Co., Milwaukee, Wis.
Morgan Sash & Door Co., Chicago, Ill. ("Morgan")
Willis Mfg. Co., Galesburg, Ill. (Sheet metal)

Straight Edges

Geo. B. Carpenter & Co., Chicago, Ill.
Devoe & Reynolds Co., Inc., New York, N. Y.
Eugene Dietzgen Co., Chicago, Ill.
Goodell-Pratt Co., Greenfield, Mass.
Peerless Blue Print Co., New York, N. Y.
L. S. Starrett Co., Athol, Mass.
Technical Supply Co., Scranton, Pa.

Stucco

American Magnesia Products Co., Chicago, Ill. ("Kragstone")
Bostwick Steel Lath Co., Niles, O.
Johns-Manville Co., New York, N. Y. ("J.-M." asbestos)
Franklyn R. Muller Co., Waukegan, Ill.
National Kellastone Co., Chicago, Ill. (Magnesite)

Stucco Board

Bishopric Mfg. Co., Cincinnati, O.
International Insultite Co., St. Paul, Minn.

Studding Sockets

Geo. B. Carpenter & Co., Chicago, Ill.
Sterling Foundry Co., Sterling, Ill. ("Best")
Wagner Mfg. Co., Cedar Falls, Ia. ("Wagner")

Studs—Fireproof

Triscon Steel Co., Detroit, Mich.

Surfacers

American Saw Mill Machinery Co., New York, N. Y. ("American")
Chicago Machinery Exchange, Chicago, Ill.
Crescent Machine Co., Leontonla, O.
J. A. Fay & Egan Co., Cincinnati, O.
M. L. Schleuter, Chicago, Ill.
Sidney Machine Tool Co., Sidney, O.

Surfacing Machines—Desk and Table

Wayvell Chappell Co., Chicago, Ill. (Electric)

Surfacing Machines—Floor (Electric)

American Floor Surfacing Machine Co., Toledo, O. ("Big American," "American Universal," "Heavy Duty," "American Champion")
Wayvell Chappell Co., Chicago, Ill.
Fox Supply Co., Brooklyn, Wis. ("Fox")
Sargent & Co., New Haven, Conn. ("Sargent")
M. L. Schleuter, Chicago, Ill. ("Schleuter")

Surfacing Machines—Floor (Handpower)

Fox Supply Co., Brooklyn, Wis. ("Fox")
Sidney Machine Tool Co., Sidney, O.
Triple A Machine Co., Chicago, Ill.

Sun Dials

Hartmann-Sanders Co., Chicago, Ill.

Tampers—Concrete

Abram Cement Tool Co., Detroit, Mich. ("Abram")
American Cement Machine Co., Keokuk, Ia.
Geo. B. Carpenter & Co., Chicago, Ill.
Ideal Concrete Machine Co., Cincinnati, O. (Power tampers for block machines)
Oshkosh Mfg. Co., Oshkosh, Wis.
Rehm Hardware Co., Chicago, Ill.

Tank Lugs

E. C. Tecktonius Mfg. Co., Racine, Wis. (Flat and round bands)

Tanks—Closet

Geo. B. Carpenter & Co., Chicago, Ill.
B. B. Karol, Chicago, Ill.
Kohler Co., Kohler, Wis.

Tanks—Pneumatic Water

Andrews Heating Co., Minneapolis, Minn.
Geo. B. Carpenter & Co., Chicago, Ill.
B. B. Karol, Chicago, Ill.
Kewanee Private Utilities Co., Kewanee, Ill. ("Kewanee Indian")

Tanks—Slate

Structural Slate Co., Pen Argy, Pa. ("Pyramid")

Tanks—Steel and Iron

Anderson Mfg. Co., Des Moines, Ia.
Andrews Heating Co., Minneapolis, Minn.
Badger Corrugating Co., La Crosse, Wis. ("Badger")
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
B. B. Karol, Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
Western Iron & Foundry Co., Wichita, Kan.
Williamson Heater Co., Cincinnati, O.

Tapes—Measuring (Steel)

Geo. B. Carpenter & Co., Chicago, Ill.
Eugene Dietzgen Co., Chicago, Ill.
Lufkin Rule Co., Saginaw, Mich.
Peerless Blue Print Co., New York, N. Y.
Rehm Hardware Co., Chicago, Ill.
L. S. Starrett Co., Athol, Mass.

Tenoners

J. A. Fay & Egan Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.

Terra Cotta—Architectural

Midland Terra Cotta Co., Chicago, Ill.

Thresholds—Metal

Detroit Show Case Co., Detroit, Mich.
Kawneer Mfg. Co., Niles, Mich. (Plain and stormproof)

Tile—Drain

Mason City Brick & Tile Co., Mason City, Ia.

Tile—Floor and Wall

Hornet Mantel Co., St. Louis, Mo. (Also baseboard tile)
Mason City Brick & Tile Co., Mason City, Ia.

Tile—Hollow Building

Bostwick Steel Lath Co., Niles, O. (Metal)
General Fireproofing Co., Youngstown, O. (Metal)
Mason City Brick & Tile Co., Mason City, Ia. (Clay)
Truscon Steel Co., Detroit, Mich. (Clay and metal)

Tile—Partition

Mason City Brick & Tile Co., Mason City, Ia.

Tile Machines—Drain (Cement)

W. E. Dunn Mfg. Co., Holland, Mich.

Tints—Wall

Devoe & Reynolds Co., Inc., New York, N. Y. ("Devoe" velvet finish)
M. Ewing Fox Co., New York, N. Y.
General Fireproofing Co., Youngstown, O.

Toggle Bolts

Geo. B. Carpenter & Co., Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill.

Tool Cases and Chests

Geo. B. Carpenter & Co., Chicago, Ill.
Wedell & Boers, Detroit, Mich.

Tools—Carpenters (See Specific Article)**Tools—Carving**

Geo. B. Carpenter & Co., Chicago, Ill.
Mack & Co., Rochester, N. Y.

Tools—Cement Workers

Abram Cement Tool Co., Detroit, Mich. ("Abram" cement finishing trowels, groovers, rollers, grout cutters)
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Rehm Hardware Co., Chicago, Ill.
Sheldon Mfg. Co., Nehawka, Neb.

Towers—Concrete Placing

Archer Iron Works, Chicago, Ill.

Towers—Steel

Archer Iron Works, Chicago, Ill.

Tracing Cloth and Paper

Peerless Blue Print Co., New York, N. Y.

Transits and Levels

A. S. Aloe Co., St. Louis, Mo. ("Aloe")
L. Beckmann Co., Toledo, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Eugene Dietzgen Co., Chicago, Ill.
Geler & Bluhm, Troy, N. Y.
Kolesch & Co., New York, N. Y.
Peerless Blue Print Co., New York, N. Y.
L. S. Starrett Co., Athol, Mass.
David White Co., Inc., Milwaukee, Wis.

Transom Lifts

H. B. Ives Co., New Haven, Conn.
Rehm Hardware Co., Chicago, Ill.
Sargent & Co., New Haven, Conn. ("Sargent")
Yale & Towne Mfg. Co., New York, N. Y.

Trolleys and Tramways

Allith-Prouty Co., Danville, Ill. (Trolley trucks for steel frame doors or gates)
Geo. B. Carpenter & Co., Chicago, Ill.
Lane Bros. Co., Poughkeepsie, N. Y. ("Lane" overhead trolley track and carriers)
Louden Machinery Co., Fairfield, Ia.
Richards-Wilcox Mfg. Co., Aurora, Ill. ("Over-Way" trolley systems)

Trowels

Abram Cement Tool Co., Detroit, Mich. ("Abram")
E. C. Atkins & Co., Indianapolis, Ind.
Geo. B. Carpenter & Co., Chicago, Ill.
Nicholls Mfg. Co., Ottumwa, Ia.
Rehm Hardware Co., Chicago, Ill.
Sheldon Mfg. Co., Nehawka, Neb. ("Atkins")
L. A. Sayre Co., Newark, N. J. ("Sayre")

Trucks—Concrete

Helm Brick Machine Co., Cadillac, Mich. ("Helm")

Tubing—Brass and Copper

Geo. B. Carpenter & Co., Chicago, Ill.

Turntables—Auto

Canton Foundry & Machine Co., Canton, O.

Urinals

B. R. Karol, Chicago, Ill.
Kohler Co., Kohler, Wis. (Enameled ware)
Structural Slate Co., Pen Argy, Pa. ("Pyramid" slate)
L. Wolff Mfg. Co., Chicago, Ill.

Varnishes—Architectural

Geo. B. Carpenter & Co., Chicago, Ill.
Devoe & Reynolds Co., Inc., New York, N. Y.
Murphy Varnish Co., Newark, N. J.
Eugene E. Nice, Philadelphia, Pa.

Ventilating Systems

Badger Corrugating Co., La Crosse, Wis. ("Badger")
Louden Machinery Co., Fairfield, Ia.
Shrauger & Johnson, Atlantic, Ia.

Ventilators—Exhaust Blower

Geo. B. Carpenter & Co., Chicago, Ill.
Louden Machinery Co., Fairfield, Ia.
Milwaukee Corrugating Co., Milwaukee, Wis. (For creameries)
Shrauger & Johnson, Atlantic, Ia.

Ventilators—Roof

Anderson Mfg. Co., Des Moines, Ia.
Badger Corrugating Co., La Crosse, Wis. ("Badger")
Brasco Mfg. Co., Chicago, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
Edwards Mfg. Co., Cincinnati, O.
Globe Ventilator Co., Troy, N. Y. ("Globe")
Hunt, Helm, Ferris & Co., Harvard, Ill. ("Queen")
James Mfg. Co., Fort Atkinson, Wis.
Louden Machinery Co., Fairfield, Ia.
Milwaukee Corrugating Co., Milwaukee, Wis.
Royal Ventilator Co., Philadelphia, Pa.
Shrauger & Johnson, Atlantic, Ia.
Willis Mfg. Co., Galesburg, Ill. ("Willis")

Ventilators—Sidewalk

Hero Furnace Co., Chicago, Ill.

Ventilators—Window

Badger Corrugating Co., La Crosse, Wis.
Brasco Mfg. Co., Chicago, Ill.
H. B. Ives Co., New Haven, Conn.
James Mfg. Co., Fort Atkinson, Wis.
Kawneer Mfg. Co., Niles, Mich.
Rehm Hardware Co., Chicago, Ill.

Vises

E. C. Atkins & Co., Indianapolis, Ind. (Saw)
Geo. B. Carpenter & Co., Chicago, Ill.
Henry Disston & Sons, Philadelphia, Pa. (Saw)
Goodell-Pratt Co., Greenfield, Mass.
Huther Bros. Saw Mfg. Co., Rochester, N. Y.
B. B. Karol, Chicago, Ill.
North Bros. Mfg. Co., Philadelphia, Pa.
Rehm Hardware Co., Chicago, Ill.
Richards-Wilcox Mfg. Co., Aurora, Ill. ("E.-W." rapid-acting for woodworking)
Sargent & Co., New Haven, Conn. ("Sargent")
Smith & Hemenway Co., New York, N. Y. (Hand and saw vises)

Wallboard

Beaver Board Companies, Buffalo, N. Y. ("Beaver Board")
Bird & Son, Inc., East Walpole, Mass. ("Neponset," "American Ready")
Bishopric Mfg. Co., Cincinnati, O. ("Bishopric")
Black Rock Wallboard Co., Black Rock, N. Y. ("Black Center")
Philip Carey Co., Lockland, Cincinnati, O. ("Carey")

Geo. B. Carpenter & Co., Chicago, Ill.
Compo-Board Co., Minneapolis, Minn. ("Compo-Board")
Cornell Wood Products Co., Chicago, Ill. ("Cornell")
The Curtis Companies, Clinton, Ia.
Edwards Mfg. Co., Cincinnati, O.
International Insulation Co., St. Paul, Minn. (Felted fibre board, waterproofed, for inside and outside construction)
Kearsbey & Mattison Co., Ambler, Pa. (Asbestos)
MacAndrews & Forbes Co., New York, N. Y. ("Fiberlic")
Plastergon Wallboard Co., Buffalo, N. Y. ("Plastergon")
The Upson Co., Lockport, N. Y. ("Upson")

Wall Plugs

Bostwick Steel Lath Co., Niles, O.

Wall Ties

Badger Corrugating Co., La Crosse, Wis. ("Badger")

Bostwick Steel Lath Co., Niles, O.
Geo. B. Carpenter & Co., Chicago, Ill.
Equipment Corp. of America, Chicago, Ill.
General Fireproofing Co., Youngstown, O.
Helm Brick Machine Co., Cadillac, Mich.
Milwaukee Corrugating Co., Milwaukee, Wis.
Sykes Metal Lath & Roofing Co., Niles, O.
Willis Mfg. Co., Galesburg, Ill.

Washstands

Auld & Conger Co., Cleveland, O.
B. B. Karol, Chicago, Ill.
Kohler Co., Kohler, Wis. (Enameled ware)
Rowe Sanitary Mfg. Co., Detroit, Mich. ("Rossan")

Water Closets

Andrews Heating Co., Minneapolis, Minn.
B. B. Karol, Chicago, Ill.
Kohler Co., Kohler, Wis. (Enameled ware)
L. Wolf Mfg. Co., Chicago, Ill.

Waterproofing for Cement

Bitu-Mortar Waterproofing Co., Inc., New York, N. Y. ("B. M. 78")
Samuel Cabot, Inc., Boston, Mass. ("Cabot's")
Phillip Carey Co., Lockland, Cincinnati, O. ("Per-coproof")
Ceresit Waterproofing Co., Chicago, Ill.
General Fireproofing Co., Youngstown, O.
H. W. Johns-Manville Co., New York, N. Y.
Reilly Co., Indianapolis, Ind. ("Weatherwax")

Water Supply Systems

Andrews Heating Co., Minneapolis, Minn.
Geo. B. Carpenter & Co., Chicago, Ill.
The Deming Co., Salem, O.
B. B. Karol, Chicago, Ill.
Kewanee Private Utilities Co., Kewanee, Ill. ("Kewanee")
Louden Machinery Co., Fairfield, Ia.
Milwaukee Air Power Pump Co., Milwaukee, Wis.

Wax—Floor

Geo. B. Carpenter & Co., Chicago, Ill.
Devoe & Raynolds Co., Inc., New York, N. Y.
Rehm Hardware Co., Chicago, Ill.

Weatherstrips

Allmetal Weatherstrip Co., Chicago, Ill. ("All-metal")
Geo. Angell Co., Detroit, Mich.
Brasco Mfg. Co., Chicago, Ill.
E. I. Church & Co., West Hanover, Mass. ("Ax-tell" all metal)
Diamond Metal Weatherstrip Co., Columbus, O.
Fli-Bac Screen Corporation, Rochester, N. Y. ("Fli-Bac" cushion metal)
Henry Airtight Weatherstrip Co., Crawfordsville, Ind.
Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis.
Rehm Hardware Co., Chicago, Ill.
Shrogren Weatherstrip Co., Chicago, Ill.

Weather Vanes

Badger Corrugating Co., La Crosse, Wis.
Edwards Mfg. Co., Cincinnati, O.
Milwaukee Corrugating Co., Milwaukee, Wis.
Security Lightning Rod Co., Burlington, Wis.
Shrauger & Johnson, Atlantic, Ia.
Willis Mfg. Co., Galesburg, Ill.

Wheelbarrows

Sheldon Mfg. Co., Nehawka, Neb. ("Sidney" line)
Sterling Wheelbarrow Co., Milwaukee, Wis. ("Sterling")

Winches—Boom

Sasgen Derrick Co., Chicago, Ill.

Windmills

Stover Mfg. & Engine Co., Freeport, Ill.

Windows—Casement

The Curtis Companies, Clinton, Ia.
Morgan Sash & Door Co., Chicago, Ill.
Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis.

Windows—Hoghouse

Anderson Mfg. Co., Des Moines, Ia.
Badger Corrugating Co., La Crosse, Wis.
Phillip Bernard Co., Sioux City, Ia.
The Curtis Companies, Clinton, Ia.
Northern Hemlock & Hardwood Mfrs. Assn., Oshkosh, Wis.
Shrauger & Johnson, Atlantic, Ia.
Willis Mfg. Co., Galesburg, Ill.

Windows—Puttlyless

Federal Window Co., Milwaukee, Wis.

Windows—Wire Glass

Kearsbey & Mattison Co., Ambler, Pa.
Willis Mfg. Co., Galesburg, Ill.

Wire Cloth—Brass, Bronze and Copper

Geo. B. Carpenter & Co., Chicago, Ill.
Cincinnati Mfg. Co., Cincinnati, O.
Gilbert & Bennett Mfg. Co., Chicago, Ill.

Rehm Hardware Co., Chicago, Ill.
Standard Screen Co., Chicago, Ill.

Woodworker—Variety

American Cement Machine Co., Keokuk, Ia.
Crescent Machine Co., Leetonia, O.
J. A. Fay & Egan Co., Cincinnati, O.
Novo Engine Co., Lansing, Mich. ("Novo")
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
Woodworking Machinery—Foot and Handpower
W. F. & Jno. Barnes Co., Rockford, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
Crescent Machine Co., Leetonia, O.
J. A. Fay & Egan Co., Cincinnati, O.
Oshkosh Mfg. Co., Oshkosh, Wis.
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
Silver Mfg. Co., Salem, O. ("Silver's")
James L. Taylor Mfg. Co., Poughkeepsie, N. Y.

Woodworking Machinery—Power-driven

American Saw Mill Machinery Co., New York, N. Y.
Geo. B. Carpenter & Co., Chicago, Ill.
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")

Chicago Machinery Exchange, Chicago, Ill.
Crescent Machinery Co., Leetonia, O.
J. A. Fay & Egan Co., Cincinnati, O.
Novo Engine Co., Lansing, Mich. ("Novo")
Oshkosh Mfg. Co., Oshkosh, Wis.
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Elevator Mfg. Co., Sidney, O.
Sidney Machine Tool Co., Sidney, O.
Silver Mfg. Co., Salem, O. ("Silver's")
J. D. Wallace & Co., Chicago, Ill.

Woodworking Machinery—Second-hand

Sidney Machine Tool Co., Sidney, O.

Woodworking Machines—Universal

American Saw Mill Machinery Co., New York, N. Y.

Geo. B. Carpenter & Co., Chicago, Ill.
C. H. & E. Mfg. Co., Milwaukee, Wis. ("C. H. & E.")

Chicago Machinery Exchange, Chicago, Ill.
Crescent Machine Co., Leetonia, O.
J. A. Fay & Egan Co., Cincinnati, O.
Parks Ball Bearing Machine Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
Sidney Elevator Mfg. Co., Sidney, O.
Silver Mfg. Co., Salem, O. ("Silver's")

Wrenches

Allith-Prouty Co., Danville, Ill.
Geo. B. Carpenter & Co., Chicago, Ill.
Goodell-Pratt Co., Greenfield, Mass.
Rehm Hardware Co., Chicago, Ill.
Richards-Wileox Mfg. Co., Aurora, Ill.
Smith & Hemenway Co., New York, N. Y.
C. S. Starrett Co., Athol, Mass.
E. C. Tecktonius Mfg. Co., Racine, Wis. (Silv wrenches)
Vaughan & Bushnell Mfg. Co., Chicago, Ill.

Learn to Be a Draftsman and Draw Your Own Plans

By means of these two books the contractor, builder or carpenter can advance by easy steps from the first principles of drafting room practice to the complete work of an architect's office, including drawing to scale, tracing, detailing, lettering, rendering, designing, etc. He can combine the work of the architect and builder. He will learn not only how to plan the structure, but how to lay out the work, specify the materials and finish, make the contracts, and take complete charge. A complete set of plans with every dimension, all sizes of windows, doors, etc., is shown in these books. This serves as a guide as it shows the process from the preliminary sketch to the finished plan.

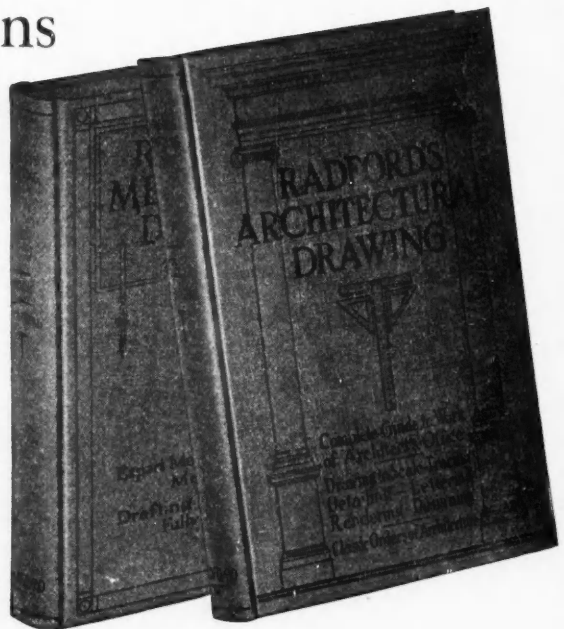
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Develop your own ideas. Be in a position where you can work a customer's hazy suggestions into a tastefully arranged, complete plan, showing all dimensions.

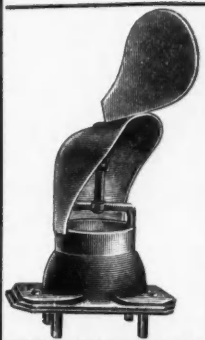


Price \$2.00 per set

American Builder 1827 Prairie Ave.
CHICAGO

Index to Advertisers Follows on the Next Five Pages

Cure Chimney Troubles with "Best" Revolving Chimney Tops



The only all cast iron ball-bearing revolving top. Protects chimney and keeps it clean. Produces better draft, easy to install, will last a lifetime. Legs have slotted holes and radical adjustment so that each size top will fit any size chimney up to the largest for which it is designed. Write for folder.

Sterling Foundry Co.
8 Ave. A. Sterling, Ill.



Stop Those Leaks!

THE easiest and quickest way of repairing leaks in radiators, pumps, water jackets, motor head gaskets, hose connections, etc., is to use Johnson's Radiator Cement. This will stop the leaks in just a few minutes without laying up the car. No mechanical experience is required—all you have to do is remove the cap and pour the cement into the radiator.

JOHNSON'S RADIATOR CEMENT

Quick—Efficient—Harmless

Johnson's Radiator Cement contains no powders, cement or anything which can coat or clog the cooling system, and is absolutely harmless in every respect. It will ordinarily seal a leak in from two to ten minutes.

Johnson's Radiator Cement blends perfectly with the water until it reaches the leaks—just as soon as it comes in contact with the air it forms a hard, tough, pressure-resisting substance which is insoluble in water making a permanent seal.

Quarts. . \$1.75 Pints. . \$1.00 Half-Pints. . \$.65

Write for our folder on "Keeping Your Car Young"—it's free.



If your dealer cannot supply you, use attached coupon.

S. C. JOHNSON & SON, Dept. ACB 12
Racine, Wis.

I enclose \$1.00 for which please send me, all charges prepaid, a pint of Johnson's Radiator Cement. Also send me, free your booklet on "Keeping Your Car Young".

Name

Address

City and State

My Dealer is

RO-SAN Indoor Closet



The original chemical closet. More comfortable, beautiful, convenient. Takes the place of all outdoor toilets, where germs breed. Be ready for the long, cold winter. Have a warm, sanitary, comfortable, odorless toilet right in the house any where you want it. Don't go out in the cold. A boon to invalids.

GUARANTEED ODORLESS

The germs are killed by a chemical in water in the container. Empty once a month as easy as ashes. Closet guaranteed. Thirty days' trial. Ask for catalog and price.

ROWE SANITARY MFG. CO.
912 Rowe Bldg., Detroit, Mich.
Ask about Ro-San Washstand-Hot and Cold Running Water Without Plumbing.

AGENTS WANTED

We have a good proposition for one **CARPENTER** in each town.

Use your spare time this winter making good profits.

Write today for terms and territory.

This ad running all over the country. Cash in on it.

Build Lightning Proof and make \$20 to \$50 Extra Profit!



When you build a house or a barn why should you leave the easiest profit on the whole job for the lightning rod agent?

There's a handsome profit in selling lightning rods, and someone is going to come right behind you and put rods on every building you erect—if you don't do it yourself.

You're the logical man to do the job

You have the builder's confidence, and in most cases you need only mention rods to get the contract. He'd rather have you rod his building than a stranger, because he knows it's a particular job.

Your profits will run from \$20 to \$50 on every set of Barnett rods you install. Let us tell you more about our money-making, profit-sharing proposition.

This booklet gives you in simple, interesting form the information you need about measuring buildings, erecting rods, and how to sell them. Your name on a postcard will bring it.

Jos. Barnett & Co. 220 4th Ave., East, Cedar Rapids, Iowa

We Have Some Excellent Territory Still Open

and a good agency proposition for the largest and most complete line of Order-Made

Window and Door SCREENS

on the market. We supply you with a complete agent's outfit, consisting of models, contract blanks, advertising matter, etc. We give exclusive agencies to ones who make good. No regular agencies established in towns less than 10,000 population. This is a splendid opportunity for carpenters, contractors, builders and material dealers. Write now—address

STANDARD SCREEN COMPANY
1848-58 Hastings Street, Chicago, Illinois



Profit-Making Barns For Both Owner and Builder

Milk is an "essential" of life. **More** milk is the imperative need and demand. More and better dairy barns are absolutely necessary—for **better dairy barns result in more and better milk.** That's why there should be a great increase in **better** dairy barn building.

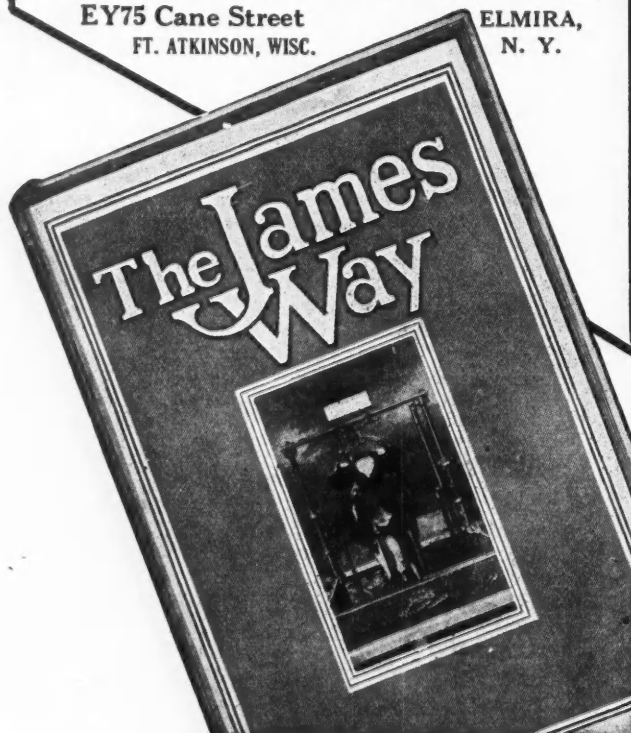
Why not get your share of the contracts for these barns?

We are in position to help you do this very thing.

Write Us For A Free Copy Of That Famous Book "The Jamesway"

When writing send us the names of farmers who are thinking of building or remodeling barns and give us the size of their herds. We will send advertising literature to those farmers which will bring their building contracts into your hands. Co-operate with us and you will make more money.

JAMES MANUFACTURING CO.,
EY75 Cane Street
FT. ATKINSON, WISC. ELMIRA,
N. Y.



Timely Advice to Young Builders Just Starting Out

(Continued from page 98)

I will presume that the budding contractor is full of ambition and has thoroly mastered every detail in carpentry as applied to residence work, barns, etc., and has a fairly good reputation and is in good standing with the local merchants of his town. The first thing to do would be to modestly announce the fact of his entering the contracting field in the local newspaper; just a plain business announcement. Also have some stationery printed, such as letter-heads and envelopes. He should not make the mistake of overloading his stationery with reference to his skill or make strong statements about guaranteeing satisfaction to his clients. Some people may take him at his word and he will find out later that he cannot do this in some cases.

No doubt he will be going up against some long established competition, and he should be very careful how he criticises this competition in the presence of prospective clients or the general public. Silence is golden, very often, even in the contracting business. He should treat his competitor with ordinary respect, but not fraternize much with him or his workmen, as it will not be the best thing to do, for sometimes, in a burst of confidence, he is likely to injure himself. If he learns that his competitor is running him down, he should not pay the least attention to what he says, just hold his temper and saw wood.

And now we come to the most important thing, getting contracts at a fair profit. I would suggest that he go first to the local lumber dealer or dealers and get price quotations on a list of items entering in building construction. If there are two dealers, I would advise going to the one who is not likely to be in a secret agreement with his competitor and not get too confidential with this dealer; rather maintain a neutral attitude for a while at least. After procuring this list he should make out an estimating table to refer to when figuring a job and make up his bid from this, instead of letting the dealer make a blanket bid on the whole, for the simple reason that he cannot be too cautious in this matter. Part of successful bidding is in keeping his bid absolutely secret, even parts of his bid. In estimating the millwork it would be better to have the mills make up this item from the plans or from a list, heeding the advice already given concerning relation between his competitor and the lumber dealer.

And now a few words about prospective clients. As soon as he learns of a prospective client and he proves to be a stranger to him, he should first learn all he can of his general disposition and reputation among the merchants of his town. If this proves to be below the average, he had better not make any effort to get this work, for he will be quite likely to regret it if

(Continued to page 122.)



Hog House on Avondale Farm near Mason City, Iowa

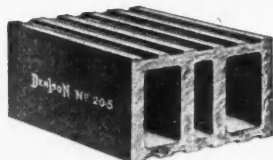
DENISON Hollow Clay Tile

DENISON TILE is being used by the United States Government for military construction work at Little Rock, Ark., Tishomingo, Okla., and Iowa City, Iowa, and has been accepted for use in buildings to be erected at other points. It has met the Government requirements and it will meet yours.

There is a great demand for permanent construction on the farm. The advantages of DENISON HOLLOW TILE are its low first cost, handsome appearance, durability, fire resistance and economical upkeep.

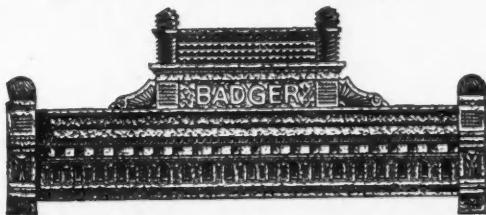
Contractors and Builders: You will make a nice profit on this type of construction and be assured of a satisfied, well pleased owner.

Write us for prices at your nearest shipping point.



**Mason City
Brick & Tile Co.**
900 West Eighth Street
Mason City, Iowa

BADGER SHEET METAL PRODUCTS GIVE SATISFACTION



We manufacture Cornices, Skylights, Ventilators, Tanks, Hog Troughs, Roofings and Sidings, etc.

Write for free catalog

BADGER CORRUGATING CO., La Crosse, Wisconsin

RESULTS THAT COUNT

Profits
Sure



TIP TOP (roof) Ventilators and
TIP TOP More Sun (hog house)
Windows directly increase food production and insure greater profits for sellers and users.

It is impossible to get these results without proper ventilation and sunlight.

Dealers and contractors should write today for our plan of co-operation.

Anderson Mfg. Co., Des Moines, Iowa



The Test

(U. S. Government Requirements)

The 24 inch "GLOBE" Ventilator with 6 inch outlet shows a velocity of more than 460 linear feet of air per minute with an outside wind velocity of 5 miles per hour, when the exterior and interior temperature shows a difference of 40 degrees F., the Government requirements for ventilators. Test made on actual installation.

Department F

GLOBE VENTILATOR CO.
TROY, N. Y.

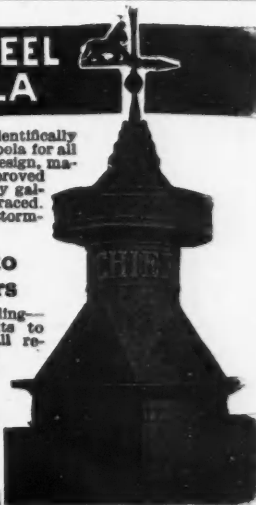
CHIEF ALL-STEEL CUPOLA

New-improved, scientifically designed ventilating cupola for all buildings. Up-to-date in design, material and construction. Used and approved on hundreds of farms. Made of heavily galvanized steel with base strongly braced. Can't rust, rot, or blow off. Absolutely storm-proof and bird's-nest proof.

Easy to Install—Sure to Please Your Customers

Chief Cupola saves time and labor installing—base bolts directly to roof and cupola bolts to the base. Only six bolts needed. Meets all requirements—insures adequate ventilation—satisfies all users. Write for full description, prices, etc.

Shrauger & Johnson Co.
430 Walnut Street, Atlantic, Iowa



There's More Profit for You in O K Cupolas

Equip the barns you build with this modern ventilating device and thus build your reputation and good will for the future. Also you make more profit on the present jobs. Owners realize the importance of good ventilation, and every O K Cupola owner boosts for you.

O K Cupolas solve the barn ventilation. They sell themselves. Are made of heavy galvanized steel; bird, storm, rot and rust proof. Neat in appearance. Are easy to erect—shipped ready to install. Farmers want them. You cash in big by supplying this necessity.

Write for full particulars and our special discount to builders and contractors where we are not represented.

Philip Bernard Co.
2402 Floyd Ave. Sioux City, Ia.



Timely Advice to Young Builders Just Starting Out

(Continued from page 120.)

he does. On the other hand, if he proves to be a good prospect he should approach him and ask him in a business-like way for an opportunity to figure with him, and if he seems interested offer to sketch up some floor plans. If he succeeds in this he should then take his estimating sheet and make up an approximate estimate of the cost and get any other information which his prospective client may want to know. If he succeeds in making a good impression on his client in this respect he should then refer him to some good architect; if the work is of some consequence, and state particularly the necessity of complete plans and specifications. Unless he is fairly able to do this work himself and the prospective client does not care to secure an architect's services, he is likely to lay up trouble for himself later. If he is able to draw up a fair set of plans and specifications and they are satisfactory he should have a distinct understanding with his client that he is to do the work, otherwise he will most likely be very much chagrined to learn that he has spent much valuable time for nothing and perhaps be laughed at for being such an easy mark.

If the client does get an architect the young contractor should get in touch with the architect either by letter, or better still, make a short visit to his office and introduce himself.

The next thing is submitting the bid. He should not be in too much of a hurry to put in his bid first. It would be only fair to ask who his competitors will be, and this information is generally given. He should go over his estimate at least three times before submitting it and write it out in a business-like way and, if possible, have a set time arranged for the bids to be in with the privilege of being present when they are opened. If he prefers to open them at his own will it would be well to reserve his bid until it is called for and insist on it being opened at once and ask for a statement as to the chances of securing the job. The contractor can generally tell by the answer he gets as to whether he is to be favored with the job, and if his client uses the words, "I'll let you know," he might as well shake hands with him and thank him for the privilege of figuring with him and take his leave and look for another prospect.

I will now give a general description of the prospective clients he will likely meet sooner or later. I would divide them in three classes. First, are those who act perfectly honorable in every way and usually let their work at a price asked and who appreciate the good intentions of the "square deal" contractor and try to make their business relations with him as pleasant as possible. I am sorry to say that this class is only met with about once in twenty times. Second,

(Continued to page 140.)



HOUSE-PAINTING done four or five times faster and the costs greatly reduced—these are the speed and economy possibilities with the

Aeron System
Finishing Corporation Products

Portable Painting Equipment

Contractors, Master Painters and others with painting to do, can now better meet present-day working conditions.

Wood, stucco or any other kind of surface can be spray-painted by one Aeron operator in at least the same time it would take four or five hand-brushers to coat it. Dripping of material and other wastes are eliminated. There are no costly brushes to replace. No time is lost in continual dipping from pail to the work. Outfit is simple to operate, and can be easily moved any place.

The Aeron System is sold on a strictly guaranteed-to-make-good basis—certainty of results is assured.

Let us mail you full particulars and copy of new catalog.

The DeVilbiss Mfg. Co.
1276 Dorr St. Toledo, Ohio

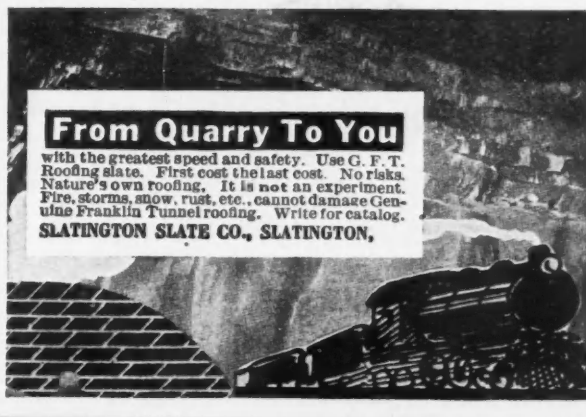
Go Carefully Into the Comparative Cost of Sheldon's Slates and Artificial Roofings

You will find that you can have an attractive roof of **SHELDON'S SLATES** at the cost of a flimsy artificial roof. And the first cost will be the only cost—there will be no renewing, repairing or repainting.

Ask for Interesting Booklet "The Roof of Eternal Youth" Fully Describing Sheldon's Slates.

Roofers: You can make money laying Sheldon's Slates. Write.

F. C. Sheldon Slate Company
Granville, N. Y.



From Quarry To You

with the greatest speed and safety. Use G. F. T. Roofing slate. First cost the last cost. No risks. Nature's own roofing. It is not an experiment. Fire, storms, snow, rust, etc., cannot damage Genuine Franklin Tunnel roofing. Write for catalog. **SLATINGTON SLATE CO., SLATINGTON,**

MANUFACTURERS OF ROOFING
"SLATES OF QUALITY"

MOTTLED GREEN AND PURPLE - WEATHERING GREEN
UNFADING GREEN - MAMMOTH VEIN POULTNEY SEA GREEN
GENUINE BANGOR FROM OUR CELEBRATED BANGOR UNION QUARRY
BLACKBOARDS - STRUCTURAL SLATE
SLATER'S TOOLS - MACHINES & SUPPLIES

We furnish "SLATES OF QUALITY" in random widths, graduated thicknesses and in one or varied colors; SEE SWEET'S CATALOGUE.

THE AULD & CONGER CO.

ESTABLISHED 1870.

We publish a handy book "THE SLATE ROOFER" **CLEVELAND, O.**

Dry Foundations!

are assured by having the walls treated with

Carey
PERCOPROOF
DAMP-PROOFING COMPOUND

Applied with a brush direct to foundation walls, concrete construction, masonry, or stucco surfaces. Percoproof forms an unbroken elastic surface, fills every crack and pore and prevents moisture from penetrating.

Unlike ordinary waterproofing materials, Percoproof contains no oil and requires no thinning. It comes ready for use and is equally satisfactory in all climates and seasons.

THE PHILIP CAREY CO.

136 Wayne Ave., Lockland, Cincinnati, O.



VENDOR SERVICE

DON'T BE SHORT ON HEAD WORK

Try out the "Vendor" service. You will find it prompt and efficient in every way. We carry immense stocks on our quarry banks at all times and make promptness a cardinal virtue. Over forty of the leading quarries in the Pennsylvania slate regions make this service possible. And you get exactly what you order, too.

We have some open territory. Write for our proposition.

Uncle Sam knows "Vendor" service. That's why the Government uses such quantities of our Roofing Slate

VENDOR SLATE CO.
INCORPORATED
BANGOR, PENNSYLVANIA
Largest Shippers of Roofing Slate in the World



BLACK CENTRE

The good builder makes a real gain by insisting that his wallboard shall have this trade-mark on the back of every panel.

Then he has a wallboard that can be relied upon, the wallboard that stands up even under unusual conditions—the only wallboard with the moisture-repellent Black Centre—the wallboard whose quality helps good workmanship in every step of the job.

If you don't know the Black Rock Dealer nearest you, write us.

BLACK ROCK WALLBOARD CO.

1505 Ontario Place

BLACK ROCK, N. Y.



Fiberlic Wall Board

Fiberlic Wood Grain Panels

The material from which it is made, the fact that the pulp is chemically cleansed and that the fibre lengths give the finished product that natural reinforcement that is lacking in ground wood boards, is in itself a guarantee of the superiority of Fiberlic from strong, permanent, economical and sanitary construction.

McAndrews & Forbes Company
200 Fifth Avenue, New York City
Factory: Camden, N. J.

Keeping the Shop Running in the Winter

(Continued from page 35.)

nailed on each side, which in turn slides on the cleat attached to uprights, as illustration plainly shows, and if finished up nicely in antique brown will show off fruit better than having the same around all over the store.

A proposition placed in the right way to the grocer will, nine times out of ten, land an order from one to a dozen of either the one kind or the other for fruit display purposes.

These foregoing few illustrations only go to show that an endless variety of novel necessities for which a demand really exists can easily be made at a good profit by the carpenter during an otherwise dull season, when often there is hard picking in keeping the small shop a-going, and thus turn an apparently dull part of the season into a profitable one for the wide-awake carpenter-contractor who caters to things of necessity which are not overdone.



Storage of Soft Coal

Fire Hazards Which Should Be Carefully Watched By Property Owners

Large quantities of soft coal are being stored by mercantile establishments and industries because of the fear of a fuel shortage during the winter. The danger of spontaneous combustion in this causes a serious fire hazard, and unusual care should be exercised by the owners of such properties. The hazard can be reduced by proper selection of the grades and sizes of soft coal, and the exercise of proper precautions in its handling and storage.

Where large quantities of soft coal are stored in the open it should be in separate piles, so that a fire starting will not spread thru the entire supply, and the affected pile can be extinguished or moved. Where the coal is stored in basements the Fuel Administration suggests the following precautions:

1. Coal the size of a walnut or larger is well adapted for storing. Mine run, slack or screenings, on account of fine coal and dust, are not suited for storage in a basement.
2. Never place coal near a hot pipe, against a hot furnace or any other hot surface.
3. Do not mix ashes with the coal, as there may be live coals in the ashes.
4. If coal must be wet down, wet only the portion that is to be used immediately.
5. It is very important that pieces of waste, oily rags, sticks, paper and other rubbish should not be mixed, or allowed to come in contact with the coal.
6. Special attention should be paid to the proper cleaning of flues and chimneys regularly.



Death of Ford C. Bowman

The Philip Carey Co. has suffered a great loss in the death of Ford C. Bowman, manager of their waterproofing department on Saturday, Oct. 26, 1918, of influenza-pneumonia. Every attention medical science could afford was given without avail.

Mr. Bowman came to this company from Purdue University nearly eight years ago, and by intelligent, devoted work established himself as a most valuable member of the institution. Mrs. Bowman and a little son survive. The interment took place at Madison, Ind., Mr. Bowman's boyhood home.



You're the man

who can make offices and factories more comfortable, warm for this winter. For you are the man who can put in

PLASTERGON
TREATED WOOD FIBRE
WALL-BOARD

The hard, stiff, water-proof Plastergon Wall-Board, by shutting out the cold far more than sieve-like plaster, also does the patriotic work of saving coal.

Different from any other wall-board. Don't forget that! Chemically saturated.

Why don't you do now what the Government did before using Plastergon Wall-Board in ninety per cent of the new Washington buildings. Find out the difference.

Write for Free sample of Plastergon Wall-Board and Builders' Book

Plastergon Wall-Board Company

201-207 Philadelphia Avenue

Buffalo, N. Y.

USE WALLBOARD BUT—Use It Right
Friedel's Flange Moulding

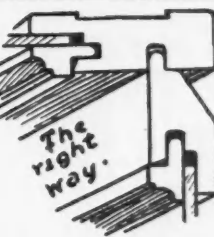
(Patented)

A 100% IMPROVEMENT

Has many advantages—It is Artistic, Economical and Mechanical. Its use is highly recommended by leading contractors and wall board manufacturers. Also Architects.

Crooked framing does not interfere. Flange provides sufficient furring over old lath or brick walls. No headers! No nailing!

Friedel Moulding is manufactured in stock lengths 10, 12, 14 and 16 ft. Clear, yellow pine. Special forms made to detail in Oak, Birch, Gum or Mahogany.



Our free book New Working Ideas upon request

W.R. Friedel Co.
Dept. 21
Memphis, Tenn.

Hidden Strength

That smooth outside fibre covers a wood core that puts



Trade Mark Registered, U. S. Patent Office, No. 94746

in a class by itself for **strength, rigidity and toughness.** Compo-Board walls won't warp, shrink, chip, crack or mar with the knocks of furniture. They keep out heat, cold and moisture.

It's a "right hand" material for any carpenter.

There are 1001 jobs that can be done with Compo-Board more satisfactorily, quicker and with less muss, fuss and worry.

Compo-Board is the only wall board with the wood core. Sold in strips 4 feet wide by 1 to 18 feet long by dealers everywhere.

Send For Sample and Interesting Booklet

The Compo-Board Co.

5777 Lyndale Ave. N.,

MINNEAPOLIS - MINNESOTA

Carpenters
Get what's coming to you!



You can do the wall finishing that plasterers once did and make money out of

Carey
WALL BOARD

EVERY job is a bigger job for you if you put on the wall finishing. Carey Wallboard is better for the owner, doesn't warp, never cracks, easy to decorate artistically. There are many attics you might finish in odd times if you'll just speak to the owners. Write

THE PHILIP CAREY COMPANY
1021 Wayne Ave., Lockland, Cincinnati, Ohio

Good Roads a National Necessity After the War

By G. A. Kissel

President, Klessel Motor Car Co.

Without a doubt, every city or town has had brought home to it the value of good roads, and improved highways. Since the United States entered the war, the railroads have been gradually devoting more and more of their equipment to government requirements, thus leaving millions of tons of goods and supplies for home consumption to be transported and delivered as best it can. Thus cities whose highway commissioners had the foresight to put thru good-roads measures and see that they were carried thru, had little or no difficulty in coping with these unexpected transportation problems. In such localities the motor truck took up the transportation problems, with no loss of time and with a delivery and haulage expense that was not any greater than the rates paid the railroads, if not lower.

But it is those cities and towns who have let the good-roads problems go by, who have paid no attention to them, that are facing acute haulage problems. These are the municipalities whose merchants have great difficulties in keeping their shelves full; of being able to supply the ordinary wants and necessities of their trade. These are the municipalities which all of a sudden were shut off from the source of supply, and as a result have to pay higher prices for goods on account of the increased cost of transporting them to the points of distribution.

The United States has been in the war for over a year, and it would seem that every municipality would have by this time realized the necessity of building good roads to meet the future transportation demands of their respective localities. It was thought at one time that the railroads, after

getting from under the first onslaught of government requirements, would be able to resume handling of local freight shipments destined for home consumption, but time has proven that such is not the case. With every increase in railroad equipment which factories have been able to build, a corresponding increase in goods to be shipped has been found to be the case in every part of the country.

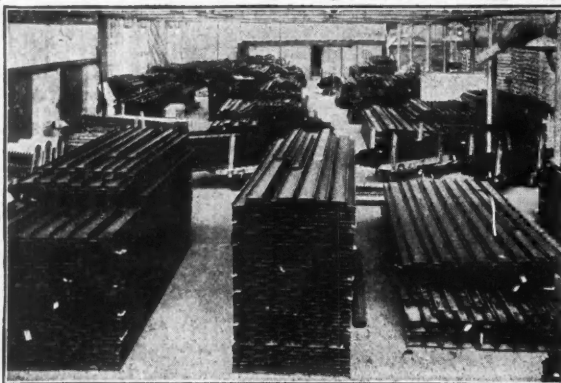
Hence the bad roads municipality has had to struggle along, its merchants and business men paying increased expenses, which in the end is generally borne by the consumer and taxpayer.

With the possibility of this uncertainty on the part of the railroads extending well into the future, it is my opinion that every state should follow the example of that of Illinois in making plans for good roads to be constructed immediately. Illinois intends to build sixty millions of dollars' worth of good roads. It is estimated that the principal and interest of this sixty-million-dollar bond issue will be paid in twenty-five years by the constantly accumulating automobile license fees in the state treasurer's hands. Already there is more than \$2,500,000 available.

Such a plan insures the kind of highways and byways that permit economical transportation of goods by motor trucks after the war, and at a time when undoubtedly the entire reconstructive efforts of the United States will be concentrated on devastated Europe.

Other good points about such a plan are that it will throw open jobs for thousands of returned soldiers, engineers,

(Continued to page 128.)



A corner of the Berger Metal Lumber Shipping and Storage room

Berger's *Metal Lumber*

These joists and studs of formed steel combine strength, permanence and fire-resistance with a weight much less than that of any other fire-resistive construction.

Ask for Bulletin L-3



The Berger Mfg. Co., Canton, O.

Branches: Boston New York Philadelphia Chicago
St. Louis Minneapolis San Francisco
Export Dept.: Berger Bldg., New York City, U.S.A.



WE ARE ENTERING A PERIOD WHICH GIVES PROMISE OF GREAT ACTIVITY IN THE BUILDING FIELD. OVER TWENTY MILLION DOLLARS OF DEFERRED BUILDING PROJECTS HAVE JUST BEEN RELEASED BY THE GOVERNMENT.

THIS IS THE TIME FOR YOU TO BECOME ACQUAINTED WITH MATERIALS WHICH HAVE A REPUTATION FOR QUALITY.

REX PRODUCTS—ASPHALT SHINGLES AND PREPARED ROOFINGS ARE QUALITY PRODUCTS.

Send for catalog number 20

THE FLINTKOTE COMPANY

PEARL STREET, BOSTON

NEW YORK CHICAGO NEW ORLEANS



BAYONNE

ROOF AND DECK CLOTH

BAYONNE

Roof and Deck Cloth

BAYONNE is specified by leading architects because it has proved to be the ideal covering for low-pitch or flat roofs, verandas, sleeping porches, sun parlors, conservatories and all floors exposed to the weather or to constant wear.


The Chas. DeJong Building Company, of Paterson, N. J., writes: "We have been using **Bayonne** for the last four years, and recommend it most highly, as it has proved satisfactory in every instance."

Bayonne outwears other materials of its kind, is laid on dry boards (an easy and inexpensive job), and is painted afterwards—any color desired. It is absolutely water-proof, cannot crack or buckle, and fits perfectly into nooks and corners. It is kept clean by sluicing with water. **A Bayonne Roof or Deck never leaks.**

Our Free Sample Book "N" shows texture and gives prices and directions for laying. Write for it today.

JOHN BOYLE & CO., Inc.
112-114 Duane Street, 70-72 Reade Street, New York City
St. Louis Branch—202-204 Market Street

CON-SER-TEX



THE IDEAL COVERING FOR ROOFS SLEEPING BALCONIES AND PORCH FLOORS

CON-SER-TEX

Contractors, builders and carpenters in all parts of the United States continually express their satisfaction with this material when used for roofings, porch decks, sleeping verandas and bungalow construction.

It is furnished in such widths and weights as are best suited for various classes of work, thus practically all waste is eliminated.

Every carpenter, builder, and owner should send for our new illustrated booklet "Roofing Facts and Figures." It proves the many advantages of Con-Ser-Tex Canvas Roofing.

WM. L. BARRELL COMPANY
8 Thomas Street New York City
Chicago Distributors: George B. Carpenter & Co., 430, 440 N. Wells St.
California Distributors: Waterhouse Wilcox Co., San Francisco and Los Angeles

KRAGSTONE STUCCO

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Good Roads a National Necessity After the War

(Continued from page 126.)

office men, mechanics, expert road men, and workmen of every caliber. These men will have returned from "over there," where they have had the best experience in this kind of work, and without a doubt these men will represent the highest developed specialists in work of this character, and as a result their work should be of the highest character and rebound to the credit of the cities employing them.

I understand that recently the Minnesota goodroads leaders have started a plan or program along this line for their cities, and undoubtedly the Central West states will soon be a network of improved highways, permitting uninterrupted and economical travel and traffic by motor car and motor trucks.

One of the great lessons at home which the great war will teach us is that of good roads. Ask any of the soldiers from "over there" when they return how they found the roads and highways of Europe, and ask especially those engineers and members of the motor corps what, in their estimation, was one of the greatest advantages the Allies had in the transportation of food and supplies, and they will state that outside of a never-ceasing flow of motor trucks and equipment, the excellent highways and roads permitted the uninterrupted use of this equipment. I believe it is up to us to take this lesson to heart and apply it while we have time.



Liberty Bonds to Rebuild Wounded Soldiers and Sailors

The United States Government is resolved to do its best to restore every wounded American soldier and sailor to health, strength and self-supporting activity.

Every Liberty Bond holder who holds his bond is keeping up a part of this great work of restoring to health, strength and usefulness the men who have suffered for their country.

Until his discharge from the hospital, all the medical and surgical treatment necessary to restore him to health is under the jurisdiction of the military or naval authorities, according to the branch of the service he is in. The vocational training, the re-education and rehabilitation necessary to restore him to self-supporting activity is under the jurisdiction of the Federal Board for Vocational Education.

If he needs an artificial limb or mechanical appliance, the Government will supply it free, will keep it in repair, and renew it when necessary. If after his discharge he again needs medical treatment on account of his disability, the Government will supply it free. While he is in the hospital and while in training afterwards the soldier or sailor will receive compensation as if in service and his family or dependents will receive their allotment.

A wounded soldier or sailor, altho his disability does not prevent him from returning to employment without training, can take a course of vocational training free of cost and the compensation provided by the war risk insurance act will be paid to him and the training will be free, but no allotment will be paid to his family.



Relation of Hip to Common Rafter

(Continued from Page 57.)

8 inches square. The 3¼ inches difference represents the 5/12 gain that the run of the hip has over that for the common rafter. The deduction for the ridge piece is obtained in the same manner as before mentioned for the common rafter; but in this, one-half of the diagonal thickness of the ridge piece should be allowed for instead of one-half of its thickness.

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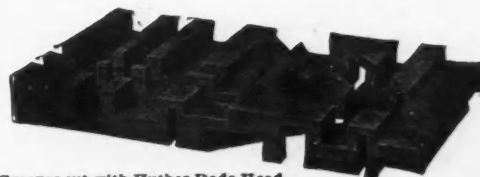


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SEND TODAY FOR CATALOG NO. 38

Housing Big Problem in Britain, France

By S. J. Duncan-Clark,

In the Chicago Evening Post

Both in Great Britain and in France the housing problem is one of the most serious questions to be faced in the reconstruction period. In the four years of war there has been practically no new buildings and very little repairs. The cities and towns of France and England give evidence of the necessary neglect of property. Labor and material have been diverted to the one supreme task. Even the single shell hole in the roof of Amiens cathedral had not been touched, altho weeks had elapsed since the Germans withdrew their guns many miles to the east.

Before the war the number of persons in England and Wales living more than two to a room was 3,139,472. This conclusion, paralleled in Scotland, was then regarded as serious and reflection upon the social standards of the nation.

It is estimated that four years of war have resulted in an actual deficit in the normal increase of dwellings amounting to nearly 500,000.

These figures represent a very definite phase of the problem confronting the ministry of reconstruction. In order to maintain the unsatisfactory standards that existed prior to the war a systematic effort must be made to wipe out the deficit in as short a time as possible.

The problem is further complicated by the fact that war-time legislation forbade any increase in rents for the duration of the war and six months thereafter. Obviously when this restriction expires there will be an immediate increase in rents, to the serious hardship of thousands of tenants, unless further legislative action is taken to restrain landlords. On the other hand, if the restraint is continued private enterprise in the construction of buildings will be discouraged.

Hence it has been recommended by experts of the ministry of reconstruction that the government should co-operate directly with county and municipal authorities in the erection of dwellings suitable for wage-earners and people of small means. Encouragement will be given local public utility societies—better known in America as improvement societies or associations—and to private enterprise, but the main reliance will be put on public work under the supervision of the central government and carried out by local authorities.



Ventilation Prevents Spontaneous Combustion

(Continued from page 148.)

it did not do away with the conditions which caused them. And unquestionably they would lessen in some degree the danger of fire from spontaneous combustion.

Fire from lightning stroke is another fairly serious menace which is practically eliminated by proper ventilation.

Lightning is known to be attracted by dead air space, where air pressure is lower than elsewhere. Circulating air means uniform air pressure. Stagnant air means lowered air pressure. That's the reason it's usually the barn and not the house that suffers from lightning stroke. Give your barn the same relatively efficient ventilation for its large number of cows that you give your house for its small number of humans and the chances of lightning striking your barn will be no greater than the chances of its striking your house.

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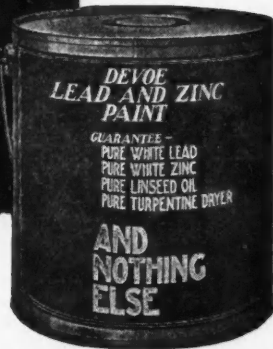
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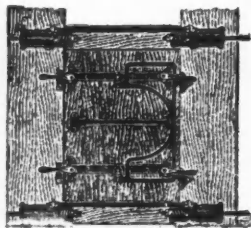


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Forehanded Income Tax Financing

Federal income and profits taxes for 1919 under the new Revenue Act will amount to \$6,000,000,000. The first third of these taxes will be due and payable March 15, 1919. These taxes must be paid in cash. If no advance preparations were made to provide means of payment, the strain on the banking and business credits of the country, might lead to embarrassing results.

To avoid this the U. S. Treasury has provided a method whereby all tax payers may supply themselves in advance with a medium of meeting the March 15 installment of the Federal Revenue payment, without resort to credit at that time.

This is done by offering 4½ per cent Tax Anticipation Certificates, a direct obligation of the United States Treasury, dated Nov 7, and maturing March 15.

The banks and all private investors having funds in hand at the present moment may employ them with absolute freedom from risk or commercial uncertainty by buying these Government Tax Anticipation Series "T." By doing so cash which might otherwise be idle, "waiting for conditions to settle down," may be put to work for the government. Current funds are needed to carry on the demobilization operations following the armistice. There is no way to obtain this money except by "borrowing against the taxes" to be collected in 1919. This is done by the issue of these Tax Anticipations.

When March 15 rolls around the holder of Series "T" need not borrow money at his bank to pay his Federal taxes. He has on hand maturing certificates which the government will accept at their face. Best of all the tax payer has been receiving Treasury checks for interest during the interim between purchase and maturity.

The Treasury reserves the right to allot all subscriptions for Series "T" or to reduce subscriptions. No fixed amount is prescribed for the issue.

To avoid high interest rates next March when taxes fall due, all corporations and individuals liable for Federal tax payments should purchase these Tax Anticipation certificates. It is a patriotic duty and it is good business.

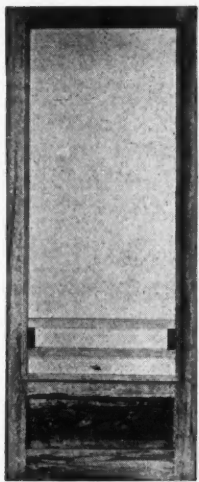


Remodeling Country Schools for Better Lighting

(Continued from page 56.)

consin school is the most efficient where it is necessary to cling to the one-room school house, and where the small school house is giving way to the consolidated school you will find the city schools being used as a model, carrying out essentially the same idea as to lighting the study rooms.

It is not necessary to demolish the old school house in order to carry out the Wisconsin idea of lighting. The writer has seen several of the old-fashioned school houses which have lately been remodeled to conform to this idea of construction which were as good and as successful as those schools which were originally constructed as Wisconsin schools. All that is necessary is to cut out windows on one side of the room and to stop up all other openings. The plan is a success because it achieves that which it was intended to achieve, namely, to properly light the one-room school house.



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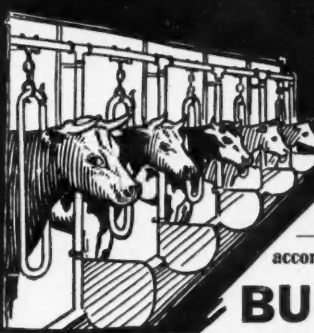
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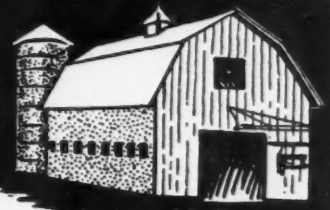
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Working Instructions for a "Different" Cedar Chest

(Continued from page 58.)

be tensioned accordingly. Locate mortises so that inside face of door strip will "line up vertically" with outside front edge of bottom board. Glue door strip in position.

Cut off ends and dress off edges of drawer fronts to fit their respective places. Rabbet ends of front pieces to receive side pieces, as shown on (Section G), and groove inside face of same to receive bottoms. (See Section J.)

Groove inside face of side pieces to receive bottoms and end pieces, as shown on (Section L) and (Section D), respectively. Groove outside faces of side pieces, as shown on (Section L), to comply in position with position of their respective runners, allowing about 1/16 inch space between side pieces.

After cutting end pieces to proper length and dressing edges of drawer bottoms to fit readily into grooves provided for them, the fronts, side pieces and ends may be glued and nailed together and bottoms secured by nailing same to end pieces, as indicated on (Section K).

Round the edges of border strips and glue and nail same to top piece, as shown on (Section I), mitering the strips at the corners, as shown on (Section AA).

Nail and glue top to ends and back piece, also securing door strip to top, as shown on (Section I) and

(Section H), allowing the required projection on all sides.

Nail the door strips in place, as shown on (Section I) and (Section F).

Fit the door in place and hinge same at bottom to swing out, as indicated in dotted lines on Section BB. Provide door with lock such as supplied by the trade for this purpose.

Clean up surfaces where necessary with No. 00 sandpaper, set all exposed nail heads and remove all glue from surfaces to finished, as well as other remaining surplus glue.

Before finishing, putty up all nail holes and other chemicals. Drawer fronts and inside of door should be finished the same as the outside of the chest.

For the finish, apply one thin coat of shellac, sand lightly with worn sandpaper of No. 00 grade and apply two coats of flat varnish, for a flat finish or two coats of gloss varnish for a polished finish, as desired. Sandpaper surfaces lightly between coats of varnish with worn sandpaper of No. 00 grade.

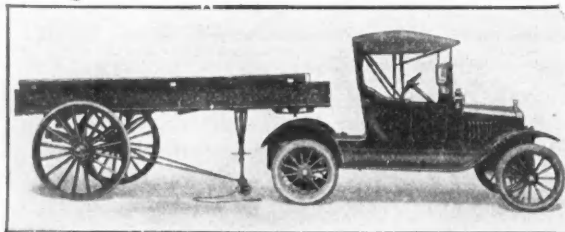
After finish is perfectly dry, apply the 3-inch copper straps, with round-headed brass tacks, returning ends of straps under bottom edges of border strips, as shown on (Sections I and H). Fine brads may be used to stay the strap ends if necessary. The strap on center of door is supplied with keyhole. Same is cut out roughly with a fine chisel and finished up with a rat-tail file.

ORDER NOW and be SURE of HAVING YOUR HAULING EQUIPMENT READY for THE SPRING RUSH

A Complete Outfit to Haul 1 Ton for \$500.00

The Martin Semi-Trailer

Can be easily and quickly attached to a Ford Roadster without boring the frame or mutilating the car in any way. No outside help required to fasten it in place. When Trailer is not needed it can be instantly detached and the car used for pleasure.



Trailer Body, 12 feet long

The complete outfit is ver little longer overall than the conventional truck of the same loading space.

Think of it !!!— Only \$500.00 !!!

This new Martin semi-trailer costs \$250.00

This slightly-used Ford Car costs \$250.00

\$500.00

A Martin Semi-Trailer and a Ford Make the Lowest Priced and Most Efficient One-Ton Truck in the Entire Commercial Car Field

With a Martin Semi-Trailer, a Ford Car Can Easily PULL a Ton Without the Least Strain on the Driving Mechanism. Can be backed, turned and handled in the narrowest quarters.

(The reason why this is possible is fully explained in a catalog which will be sent on request)

We Have Trailer Equipment to Haul Loads from One to Ten Tons

Write for Full Information

MARTIN ROCKING FIFTH WHEEL CO., Springfield, Mass.



NILES ADJUSTABLE HARNESS HANGER

The Latest and Most Meritorious Invention Ever Added to Barn Equipment

CARPENTERS - BUILDERS

Can make big profits installing the "NILES ADJUSTABLE" in the barns you have built and the ones you are going to build. Thousands already in use. Not one dissatisfied user. Indestructible. Modern. The hanger that's been wanted for years. Eliminates reaching. Keeps harness up high, out of filth and danger of breakage. Pays for itself in one year. No ropes, pulleys, ratchets, bolts or pins. Just close the locks like a pair of pliers, move it up or down, let go, it stays where you put it. Automatic and positive locking device in any position. Heavy compression spring inside tube handles weight. Oscillates in brackets. 24-inch drop. Every sale is a recommendation for others. The hanger that's building a successful future. Write at once for high class testimonials, full description and terms to agents.

NILES ADJUSTABLE HANGER CO., Fargo, N.D.



MYERS
"FAULTLESS"
ADJUSTABLE TANDEM
DOOR HANGERS
& SELF-CLEANING TRACK
F. E. MYERS & BRO. ASHLAND, O. U.S. A.
PATENTED


No. 25 Why repair the roofs and siding on buildings and then allow the doors to remain drafty and poorly hung? Loose-fitting, half-closed, off-the-track doors, permit wind, rain and snow to sweep in, causing discomfort to stock and damage to storage.

The Myers Faultless Self-Cleaning Door Hanger

overcomes door difficulties. The construction of this hanger is such that it permits doors to be raised or lowered, or moved in or out, and the flexible joint keeps them snug and tight fitting. This in connection with the covered Self-Cleaning Track produces sliding door service that is not easily interrupted by stormy weather.

Further particulars and late circular gladly supplied—
Catalog showing complete line Myers Hangers on request.

F. E. MYERS & BRO., No. 110 Orange St., Ashland, Ohio



BIG MONEY MADE BY CONTRACTORS DURING the WINTER MONTHS

Farmers can easily be sold -- You can get them to use

Red Rib Barn Door Hangers

THEY are especially adapted to the use of heavy barn doors. They are designed by experts to withstand the strain and wear brought upon barn door hangers. Consider lasting qualities, and you will find none better than the "Red Rib" Hangers. Solid, double-grooved wheel; very strong trolley; sheds water; birdproof; tandem wheel; hinge hanger; noiseless; roller bearing wheel. They are absolutely guaranteed. There is money in this proposition for you. Investigate it at your local dealers. Or, if by chance he does not carry them in stock, write for our money-making proposition to contractors and builders, and descriptive literature.

SAFETY DOOR HANGER COMPANY, Ashland, O.

DOES NOT SAG OR BIND

Unbreakable Steel Folding Saw Vises



Open **Open**

No shift saw vise. 28 in. jaw, wgt. 4 lbs. 14 in. jaw, wgt. 2 lbs.

Folded **Folded**

\$2.25 Prepaid **\$1.25 Prepaid**

The 28 in. vise takes the full length of saw. The 14 in. vise required only on shift of saw.

Buckeye Manufacturing & Foundry Co.
Successors to Buckeye Saw Vise Co.
9491 Lake Avenue, Cleveland, Ohio



No Putty

Less Trouble

THE PUTTYLESS WINDOW

Left side shows lead inserted in sash and glass in position. Right side shows lead sealed down over edge of glass and glazing completed. Note its classic neatness.

FEDERAL WINDOW COMPANY
Sole Licensees for the United States
SECURITY BUILDING, MILWAUKEE, WIS.



**SECURITY
SILO**

**Sell
YOUR
OWN
Silo --
Make
All the
Profit**

*We
supply the
fixtures,
you supply
the rest.*

A Money-Maker for Builders and Lumber Dealers

We furnish the fixtures only. You purchase your staves direct—save handling, freight—build up business under your own name—make all the profit—give the farmer a better silo for less money.

Selling silos built with SECURITY Silo Fixtures is permanent, profitable business, a staple necessity that sells readily year after year. Some SECURITY dealers have sold 20 to 50 silos yearly for last five years.

We help you with lowest silo fixture prices in the field and new selling plans that get the farmer's interest.

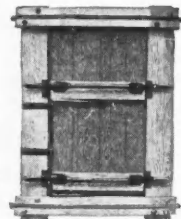
Security Silo Fixtures

supply the selling features that farmers want. Make silo easier to erect—simpler to handle. Superior sagless hinge door and collapse-proof anchorage. Safety ladder. Make a silo that produces best silage.

Dealers testify that they can beat all competition and prices and make good profits.

A million silos are still needed on American farms. Hundreds—thousands of dollars in profits can be made yearly with our plan and SECURITY fixtures.

**COMPLETE DETAILS FREE
WRITE TODAY**



Security Sagless Hinge Door
A Great Selling Feature

Chicago Warehouse & Silo Fixture Co.
329 So. LaSalle St. Chicago, Illinois

Chemical Closet Sewage Disposal

(Continued from page 44.)

of emptying and recharging, some months later. The cost of the chemical will average close to \$1 per year per person.

While chemical closets may differ in detail, the fundamental idea is the same, viz., the disinfecting of the matter deposited therein by the action of the chemical and the prevention of all odor by the circulation of air up the vent pipe. There is no doubt that a great field exists for these fixtures in suburban communities where lack of sewers or proper city water supply renders the regular water closet impractical.

Winter No Obstacle to Rapid Factory Construction

(Continued from page 39.)

On Jan. 18 the fourth floor was ready to pour. The canvas for the third floor, as may be seen in the photograph, was still in place. But now the severe cold weather was for the time being past. New England Januarys generally have a warm spell, sometimes even a thaw, toward the later end. It then takes some time to settle down to the renewed cold spell of February and the chill winds of March. The worst was past.

Everybody had worked hard to get back to the old schedule which they had fallen three weeks behind. Form builders, steel men, and cement gang aimed at reducing the handicap against them, and caught up fast even in the coldest week. The organization had now worked itself into trim so that it formed a good team, with the gangs able to co-operate for effective work and speed. Even in the two weeks which included the coldest weather, the whole organization caught up its three weeks of behind time. On Jan. 25 they were again on schedule time, ready to pour the roof.

Probably the greatest speeding up during this time was in the pouring itself, even under the adverse conditions. Toward the end of the job the cement gang was in such good shape that tho the roof had been planned to take a week in pouring, it was actually done in three days.

It was very fortunate that they had now regained

(Continued to page 138.)

PAINT WITH AIR

Better Work—Cheaper

ASK

SURTY GUARD COMPANY

62 East Lake Street, CHICAGO

AIR SPRAYS AND A COMPLETE LINE OF
EQUIPMENT, MACHINERY, GUARDS, ETC.



Simonds Saws on Every Job

On Every Industrial Housing Job YOU will find Simonds Saws doing their "bit." The World's Record Simonds \$3.00 Saw leads them all.

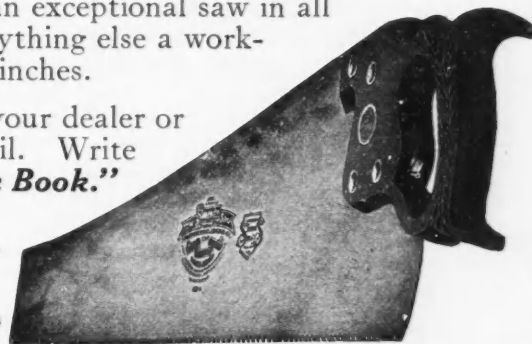
Every true mechanic can judge a good saw in a minute. Simonds has passed all tests successfully. Have YOU tried one? It is an exceptional saw in all respects, proper balance, weight, temper and everything else a workman requires. Straight or sway back. 24 or 26 inches.

\$3.00 buys this excellent hand saw. From your dealer or direct from us. Simonds Saws never fail. Write for our free book "*Carpenter's Guide Book.*"

Simonds Mfg. Co. "*The Saw Makers*"

Fitchburg, Massachusetts

17th St. and Western Ave., CHICAGO 5 Factories and 11 Branches



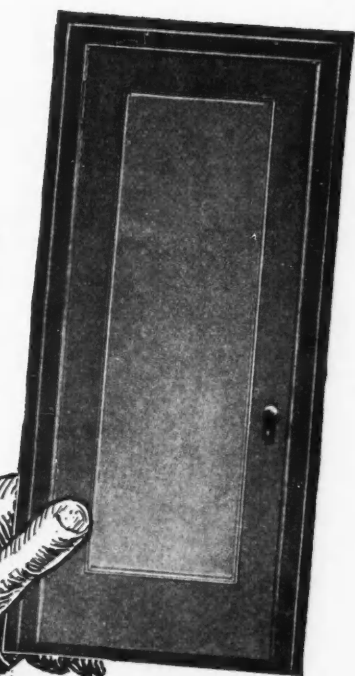
Fire-Proof Doors

Metal and Metal-Covered

Standard Sizes in Stock of All Designs

Agents Wanted

Write for Booklets and Price Lists — also our Agent's Proposition.



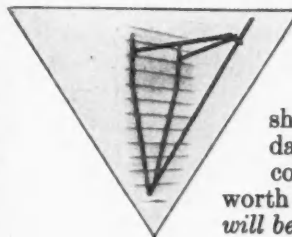
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275 Rider Ave.

New York City, N. Y.

Steel Brackets

Meet all your bracket needs with Reliable Folding Steel Scaffold Brackets. Used on either Stucco, Brick, or Frame. They save Time, Labor, and Trouble.



They save enough on the first job to pay for themselves. Every contractor should use them. A ten days' FREE TRIAL will convince you of their worth — if not your money will be refunded.

Write for Catalog

Elite Manufacturing Co.

Ashland, Ohio



Winter No Obstacle To Rapid Factory Construction

(Continued from page 136.)

schedule time, for a number of heavy snow storms and blizzards now set in, and there were more delays in receipt of material. When the latter occurred the traffic man looked thru his shipment plots, found where freight should be or might be at the moment, discovered it in some side track or yard, and then did his utmost with the telephone and telegraph. Each day's progress in each kind of work on the job was plotted parallel to the original schedule on the schedule sheet. Then parts which were slightly slack were speeded up, and preparations made so far as possible by the traffic department or the various gangs to take advantage of any opportunity for getting a little ahead of schedule so as to provide for contingencies. Each morning the foremen and heads of departments looked over the schedule and knew just where everybody was today and where they might be tomorrow if they had the proper help.

By the middle of February the scaffolding and forms had been removed from part of the building, and it was ready for the facing, tho the work had been retarded by a four-day blizzard, or heavy snow storm and cyclone combined, from Feb. 12 to 16. There was another blizzard from the 26th to the 28th, but before it came the exterior of the building was all faced and complete with the windows in except in the ground floor.

It was found that no harm had resulted to the concrete by putting it in in such cold, and there has since been no reason to regret either the time of erection or the methods used in precaution. The company is ready at any time to repeat the performance in the same way if necessity calls for it.

The original contract date for completing the building, before changes had been proposed by the owners, was March 1. On March 3 the owners put the first automobile on the second floor.

The building had been completed, from foundations to occupation, in less than three winter months.



AXTELL "All Metal" WEATHER STRIPS
 For bottom of doors and swinging windows. Applied in 20 minutes at 200% profit. Saves all wear on sill. Full size sample by mail for \$1.00 bill.
 Over a MILLION in Daily Use.
E. I. CHURCH & COMPANY
 Sole Manufacturers West Hanover, Mass



It is now so easy

for any Carpenter or Farmer to quickly construct a strong and substantial wagon bed or hay rack by using our new

Hay Rack and Wagon Bed Hardware

SEND FOR DETAILS
Today Without Fail

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And Representatives in All Principal Foreign Cities

PRODUCTS: Door Hangers and Tracks Rolling Ladders Overhead Carriers Light Hardware
Spring Hinges Fire Door Hardware Garage Door Hardware Hardware Specialties

Catalogs, blue prints and special information promptly furnished

OUR ENGINEERING SERVICE IS AT YOUR DISPOSAL WHENEVER DESIRED

Metal Weather Strip

We have in stock a complete supply of all lengths in zinc strips for sliding and casement windows, in 1", 1 3/8", 1 3/4" widths. Spring bronze in four widths.

Brass thresholds, both wide and narrow, in any length up to 12 feet.

Automatic Door Bottoms in lengths up to 54".

Copper covered felt Door Bottoms in lengths up to 60".

Nails, screws and other supplies.

Write us for samples and prices.

We can ship most sizes the same day we receive the order.

George Angell Company
400 Penobscot Building
Detroit, Mich.



First In War— First In Peace

Just as Kissel Trucks were first in meeting the wartime demands made upon industrial America, so they are first in solving the extraordinary problems of peace times.

It is in meeting carpenters' and builders' increased haulage demands, due to the lifting of the building ban, that Kissel Trucks give evidence of their real superiority.

The sound Kissel construction principles that proved fully equal to wartime service emergencies, and which were developed by eleven years' experience in motor truck designing and construction, will enable you to set a transportation pace **now**.

If you have been disappointed in being unable to buy Kissel Trucks for sometime past, see your nearest Kissel dealer today for earliest delivery.

Kissel Motor Car Company
Hartford, Wisconsin, U. S. A.



Carpenters Wanted

The Henry Airtight Weather Strip for bottom of doors and side hinged windows. A perfect protection against rain, cold, snow and dust. Approved by architects, carpenters and builders wherever known. Carpenters and others are making big money selling them.

Write today for our proposition

The H.
Henry Airtight
Weatherstrip Co.
Crawfordsville,
Indiana



The use of Airtight Weather Strips Advocated by the U. S. Fuel Administration

MAKE Hanging Storm Sash Easy, Quick Work



Done in a jiffy when your storm sash are equipped with KEES (Gossett) Hinges. Put on in no time. No tools or ladder needed. Simple, inexpensive, satisfactory. Millions in use.

KEES (Gossett) Hinges for Storm Sash

Made of either wrought steel japanned, solid brass, solid bronze or galvanized steel—screws to match. Our storm sash fastener makes opening and closing of sash easy. Holds sash open for ventilation. Windows can be raised or lowered to suit. A great combination. Write for FREE Samples for Trial NOW! Address.

F. D. Kees Mfg. Co., Box 552, Beatrice, Neb.



High or Low—Up or Down

SAND'S

Plumbs and Levels Are Easily Read

No matter how they are picked up they are always in correct position for use



The reversible plumbs and levels are of double construction. The duplicate plumb glasses, one at each end, make this double reading possible, one glass proving the other for accuracy.

It is impossible to go wrong with a SANDS

They are easy to read even in dim places. All glasses are protected, also dust and waterproof. These and many other features not found in any other levels are what good carpenters, builders and contractors seek in a level. Every **SANDS** Level embodies the experience of twenty-five years. Made of either wood or aluminum—plain or brass bound, four or six glasses, six to seventy-two inch lengths.

If you desire accurate, durable levels insist on your dealer to furnish you with a SANDS

Originators of Aluminum Levels



J. Sand & Sons

DETROIT, MICH.

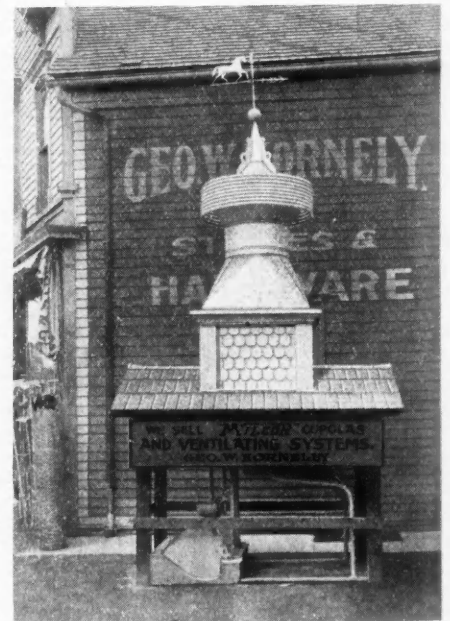
Timely Advice to Young Builders Just Starting Out

(Continued from page 122.)

are those who have some knowledge of building themselves and do not hesitate to make it known and are apt to find a little fault here and there and are more or less critical of things in general, but as a whole are not a bad class to get along with. These constitute the large majority.

The third class I almost hesitate to describe. These are the fellows who will peddle the bids from one contractor to another and seem to be bent on only one thing: to catch a poor sucker who most likely will turn out to be an over-ambitious young contractor who is extremely anxious to get the job. These fellows will not hesitate to lie about the other contractors' bids, being lower than they really are and have a tricky way of getting one fellow to stake off the job or furnish the plans under the impression that he is to get the job, without, however, committing themselves definitely and then give the job to the other fellow without so much as even a "thank you."

These fellows are the ones who will let the poor sucker get the job pretty well started and then start in to make life miserable for him by picking fault with every little thing and generally wind up the deal by forcing the contractor to collect the final payments thru a lawsuit. Sometimes the poor sucker is of such a generous nature that he submits to such treatment and does the best he can and pockets the loss and tries to forget it; but usually he gets so disgusted with the contracting business that he prefers to go back to work by the day. The fellows in this last class are not confined to any one town or locality; they are met with sooner or later by most contractors.



This Display of Steel Cow Stanchions and Metal Ventilator Outside a Dealer's Office Bring in the Business.

Tasche Air Brush Co.

MANUFACTURERS OF

PAINTING MACHINERY

"The Better Way to Paint"

Most Efficient and Economical 1230 W. Wash. Blvd. Chicago



Importance of Farm Tenant Houses Seen

TIMELY INDORSEMENT OF RURAL HOUSE BUILDING BULLETIN READY CAMPAIGN BY UNIVERSITY EXPERTS—INSTRUCTIVE FOR DISTRIBUTION.

IN many cases where calls were made in cities and towns the past year for farm labor, they were answered by married men. Their services were often rejected because the farmer was not prepared to care for a family," says a bulletin on "Tenant Houses for Farm Labor," just off the press of the Purdue University extension department.

"A large per cent of these men were born and reared on farms and would make first-class tenants. They succumbed to the lure of the city and seemingly large salaries, but found that life there is not always sunshine and roses. The lack of tenant houses forms a stumbling block in returning these men to where they may better themselves, their employers and all mankind.

"The records also show that many of the farmer-boy soldiers married just before enlisting or sailing for Europe. The farmers of this country will be called upon to provide employment for a large per cent of these men in uniform upon their return, since they will

not be in a position to start farming for themselves."

Better Houses Erected

These statements show the need for tenant houses on Indiana farms (and the same is equally true of all the rest of our agricultural states), if farmers are to solve effectively the labor problem, which they face in peace time as well as during the war. Many are seeking to meet the help problem by employing married men, and to get good help and keep it the farmers thruout the state are erecting better houses for them.

The bulletin on tenant houses contains several plans which may be used for almost any condition, besides pictures, which offer many valuable suggestions to the prospective builder. Readers of THE AMERICAN BUILDER can obtain copies of a pamphlet thru county agricultural agents or by writing to Purdue University, Lafayette, Ind., for extension bulletin No. 73.

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**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 Butt Company

CHICAGO

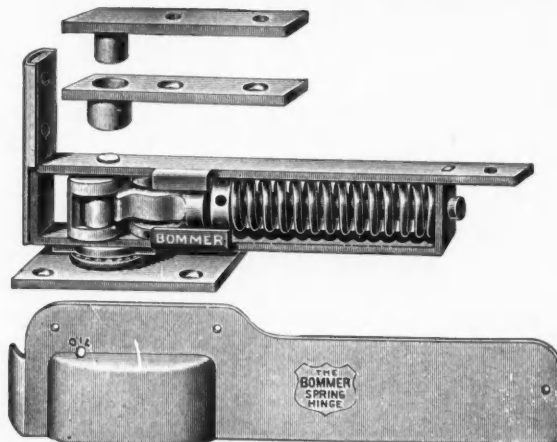


NEW YORK

BOMMER

Floor Surface Spring Hinge

Double or Single Action, Holdback, Ball Bearing. Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side

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Stained with Cabot's Creosote Stains
C. M. Hart, Architect, Bay Shore, N. Y.

Stained Shingles

The Warmest, Most Artistic and Most Economical of all House Finishes

Wood shingles are two or three times warmer than the gummed-paper substitutes, and they are cheaper, last longer and are incomparably more artistic and attractive. When stained with the soft moss-greens, bungalow-browns, tile-reds and silver-grays of

Cabot's Creosote Stains

they have a richness and beauty of tone that no other finish can equal, and the creosote thoroughly preserves the wood. Use them also on siding, boards, sheds and fences. Anyone can apply them with best results at least expense.

Cabot's "Quilt"

makes floors and partitions sound-proof by breaking up the sound-waves and absorbing them. It makes walls and roof cold- and heat-proof by a cushion of minute dead air spaces that prevents the conduction of heat. From 28 to 50 times as efficient as cheap building paper.

You can get Cabot's goods all over the country. Write for samples and name of nearest agent.

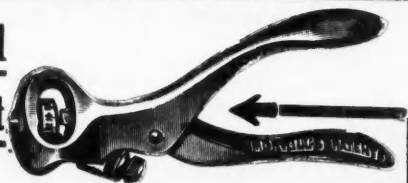
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Cabot's Brick Stains, Stucco Stains, Conservo Wood Preservatives, Damp-proofing, etc.

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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. MORRILL

94 Lafayette Street
NEW YORK

Builders' Hardware



No. 3978—Surface Hinges, Antique Copper finish. Per dozen pair... \$1.90

No. 6—Builders' Hardware Catalog sent free. On account of market conditions, we are unable to issue net price list. Send us your hardware list for quotation.

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