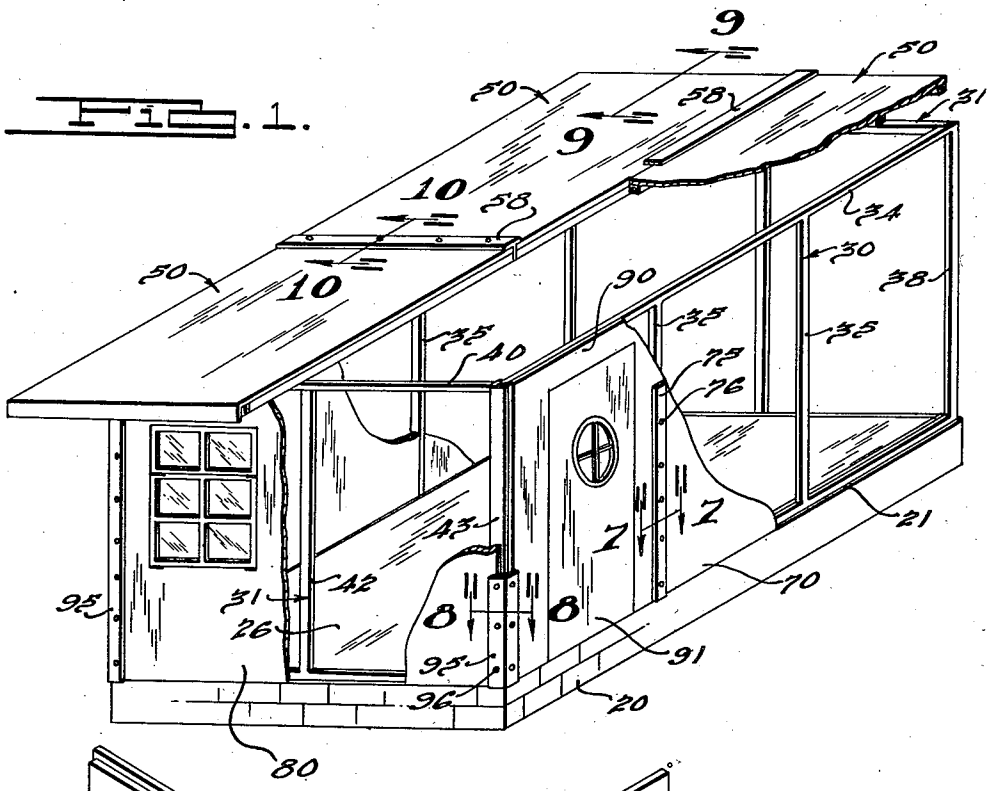
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BUILDING CONSTRUCTION

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Fig. 1.



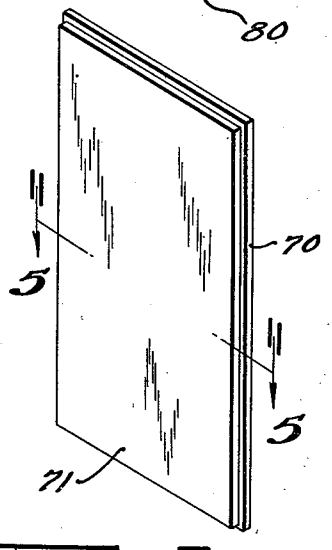


Fig. 2.

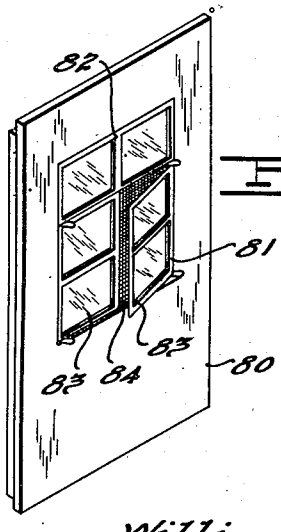


Fig. 3.

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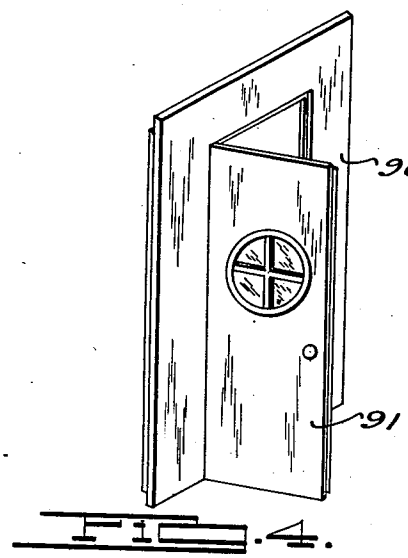


FIG. 4.

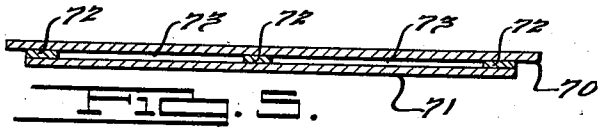
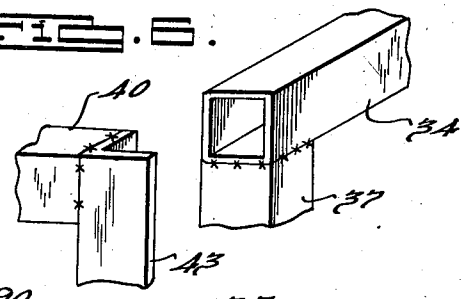


FIG. 5.

FIG. 6.



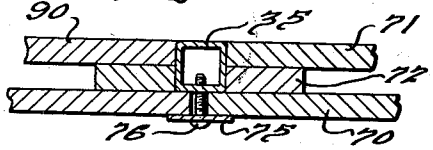


FIG. 7.

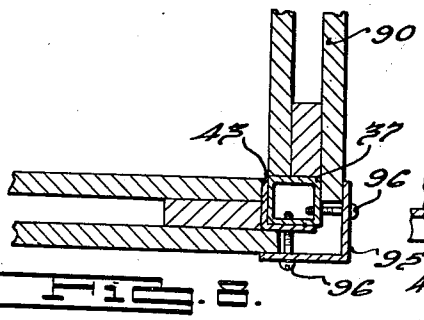


FIG. 8.

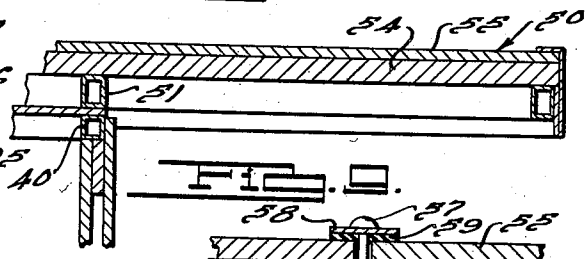


FIG. 9.

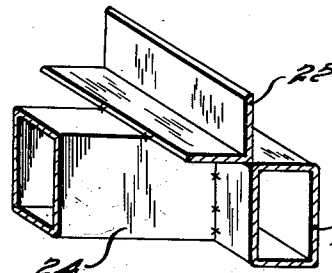
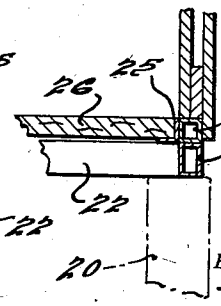


FIG. 11.



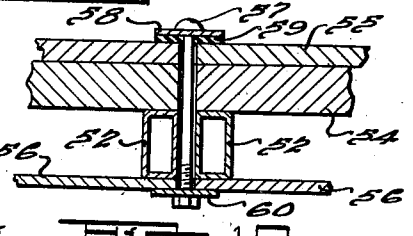


FIG. 10.

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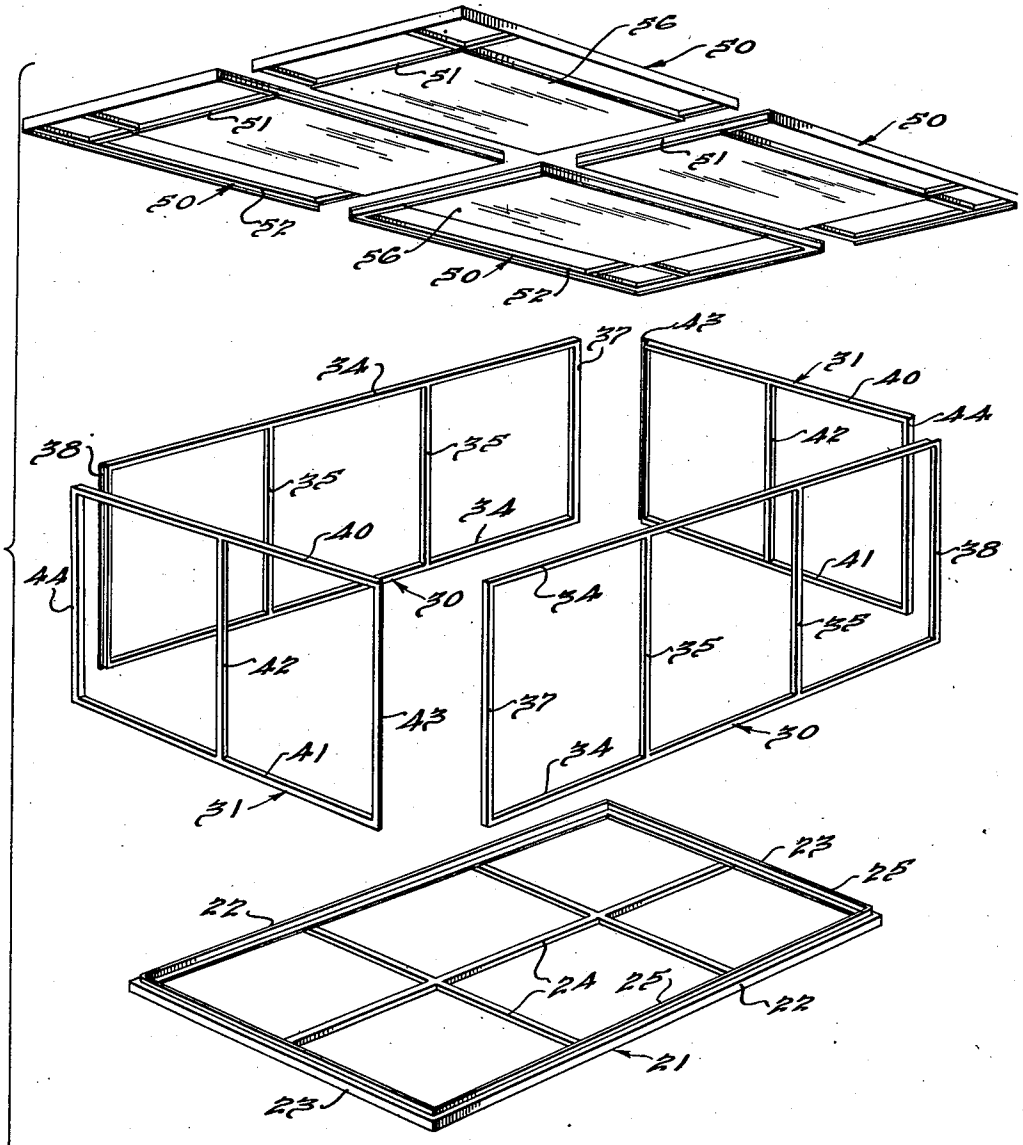


Fig. 12.

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UNITED STATES PATENT OFFICE

2,255,194

BUILDING CONSTRUCTION

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Application August 1, 1939, Serial No. 287,804

3 Claims. (Cl. 189—1)

This invention relates generally to housing constructions. More particularly, it relates to a novel form of housing construction which is not only easily and conveniently erected but which is of permanent construction and which readily lends itself to modern method of mass production.

It is a primary object of the present invention to provide a housing structure which utilizes a standard basic frame construction and which at the same time is susceptible of almost infinite modifications in design with the use of a relatively few more or less standard parts whereby the component parts may easily, conveniently, and cheaply be produced by modern mass production methods without the necessity of having the resultant housing structures be of identical or even of similar appearance, construction, and design.

The present invention contemplates the provision of a general more or less standard frame construction which in outline is generally the shape of the housing structure to be produced and which though in itself is not rigid, is so designed and constructed that when it has been assembled with the necessary paneling and wall structures will produce a housing construction which in finally assembled form is extremely rigid, strong, and weatherproof, and which is susceptible of easy and convenient enlargement to practically any desired size.

Still further the present invention contemplates the provision of certain novel and unique sub-assemblies which are not only simply and cheaply manufactured by modern mass production methods but which may be simply attached to or incorporated in the housing construction shown herein.

Yet another important object of the present invention consists in the provision of a housing construction which is made up of sections comprising more or less standard sub-assemblies which not only greatly simplify the construction and erection of the housing construction but which permit of its enlargement and expansion from time to time as may be desired.

Many other further objects, advantages, and features of the present invention will become clearly apparent from the following specification when considered in connection with the accompanying drawings forming a part hereof.

In the drawings:

Figure 1 is a perspective view with parts broken away to show the interior construction and arrangement of parts, illustrating a housing structure embodying the features of the present invention;

Fig. 2 is a perspective view of one of the standard wall panel structures used in the construction of the housing structure shown in Fig. 1;

Fig. 3 is a perspective view of a wall panel embodying a window opening and windows adapted to constitute a standard component part of the housing structure shown in Fig. 1 of the drawings;

Fig. 4 is a perspective view of a wall panel embodying a door opening and door associated therewith also designed and intended to be a component part of the housing structure illustrated in Fig. 1 of the drawings;

Fig. 5 is a transverse sectional view taken substantially along the line 5—5 of Fig. 2 showing a typical interior construction and arrangement of parts of one of the panels of the present invention;

Fig. 6 is an enlarged, fragmentary, exploded view of portions of the frame structure illustrating in detail the manner in which these members may be mated together in order to form a more or less unitary and integral base frame structure;

Fig. 7 is an enlarged, fragmentary, sectional view taken along the line 7—7 of Fig. 1, illustrating in detail the manner in which adjacent panels are joined to each other and to the basic frame structure;

Fig. 8 is an enlarged fragmentary, sectional view taken along the line 8—8 of Fig. 1, illustrating in detail the manner in which adjacent panels of the housing structure are joined together at the corners of the building and illustrating how they are joined to the basic frame structure as well;

Fig. 9 is an enlarged fragmentary, sectional view taken along the line 9—9 of Fig. 1, illustrating in detail the manner in which the roof and floor panels are interconnected with the wall structure generally, and the manner in which the housing structure as a whole is mounted on its supporting base;

Fig. 10 is an enlarged, fragmentary, sectional view taken substantially along the line 10—10 of Fig. 1, illustrating in detail the interior construction and arrangement of parts making up the individual roof panels and in addition disclosing the manner in which the joints between adjacent roof panels may be formed in order to secure them in predetermined position to the base frame and to each other in order to provide a tight weatherproof joint therebetween;

Fig. 11 is an enlarged fragmentary view with parts in section showing in detail the construction and arrangement of parts constituting the frame of one of the floor panels at the marginal edge thereof to illustrate in detail the manner in which this framework is formed for the purpose of providing easy and convenient means of attaching the side wall frames of the housing structure thereto; and

Fig. 12 is an exploded perspective view of all of the frame elements, which, when assembled in the manner hereinafter described, serve together to constitute the general frame assembly of the housing structure as a whole and to which the various panels and sub-assemblies hereinafter described in detail may be attached tc form the completed building structure.

With more particular reference to the drawings, it will be readily understood that the specific embodiment of the invention illustrated therein and described below is merely illustrative of one form which the invention may take. Obviously, many other and further modifications and forms of the invention will be apparent to those skilled in the art, and it is, therefore, to be understood that the spirit and scope of the present invention are to be limited solely by the scope of the sub-joined claims.

It will be readily appreciated on considering the specific form of the invention herein disclosed that the housing construction illustrated in the drawings and described below is merely illustrative of one form which the invention may take. By way of illustration, Fig. 1 illustrates a unit construction embodying the features of the present invention. The construction shown in Fig. 1 comprises a foundation structure, generally designated as **20**, which may be of permanent form comprising bricks or cement blocks laid in mortar or may be of a more temporary nature, merely comprising bricks or other suitable supporting members removably laid in the ground at the point where it is desired to erect the house.

As is clearly illustrated in the exploded view, Fig. 12 of the drawings, the framework of the housing comprises a base frame, generally designated as **21**, which may easily and conveniently be formed of tubular steel members welded together to form a generally flat, rectilinear framework comprising side frame members **22** and frame members **23**, and cross bracing tubular members **24**, which may extend both longitudinally and transversely of the frame structure. This base frame **21** is fabricated in such manner that it may constitute in outline the base frame construction of the housing structure as a whole. Suitable angle members **25**, as seen in Fig. 11, extend completely around the base frame and are permanently secured to the base frame in the manner shown in Fig. 11 by welding or other suitable means. These angle members, with the base frame members **22** and **23**, provide a rabbet or recess adapted to receive the side frame members hereinafter described in detail and also serve to provide an inwardly presented rabbet or recess adapted to constitute means for supporting the marginal edge of the flooring structure interiorly of the base frame in the manner clearly illustrated in Fig. 9 of the drawings.

For the purpose of convenience in manufacture, as will hereinafter become more clear, for various types of houses these base frame structures may easily and conveniently be formed in standard sizes of any suitable dimension of length and width and in the present form of construction shown it has been found preferable to form them in units varying in length and width of five foot intervals, that is, in the particular construction shown in Fig. 14, the floor section is illustrated as being ten feet wide by fifteen feet long. The importance of this feature of the invention will become readily apparent hereinafter.

As is illustrated in Fig. 9, the flooring **26** interiorly of the housing structure is supported in the angle members **25** and may conveniently be formed of composition, wood, or other suitable sheet material. The side frame members of the housing structure illustrated in Fig. 14 are fabricated in units, preferably of a standard height, such for example as 7½ feet, and formed of unit lengths of 5 feet or multiples thereof. In the particular construction shown in Fig. 14 of the drawings, inasmuch as the side frame elements are adapted for use in connection with a base frame 10 x 15 feet, it will be readily appreciated that the side frame elements constitute two 15 foot frames **30** and two 10 foot frames **31**. The side frames are preferably of generally rectilinear form comprising square tubular top and bottom members **4**, strengthened by intermediate square tubular brace posts **35** spaced at 5 foot intervals. One of the end members of the side frame **37** is of square tubular form, while the opposite end frame member **38** is of angle section, in order to mate with the adjacent tubular vertical member of the frame with which it is subsequently to be associated in the manner hereinafter described. Similarly, the end frame members **31** comprise upper and lower square tubular members **40** and **41**, respectively, with an intermediate vertically extending brace post **42** and vertical end members **43** and **44**. It will be noted that the end member **43** is of angle section adapted to mate with the square tubular member **37** when the frames are assembled together and the tubular member **44** is adapted to mate with the angle section member **38** in the opposite side frame **30**. The particular manner in which the angle frame members **43** mate with the tubular members **37** at the corner of the housing structure is clearly illustrated in the sectional view, Fig. 8.

All of the tubular and angular members making up the frames **30** and **31** are permanently secured together, preferably by welding, in the manner illustrated, thus providing a rigid unitary structure. The roof as a whole may be constructed of four identical sections, each designated as **50**, comprising frame members **51** and marginal members **52** assembled in the manner illustrated. The number of roof sections utilized in the housing structure is, of course, dependent upon the size of the total roof area necessary. Adjacent roof sections **50** may be secured together in the manner illustrated in Fig. 10. All of the roof sections comprise a section of sheet material **54** carried on the upper surfaces of the frame members **51** and **52** and waterproof covering **55** carried on the upper surface of the sheet material **54**. As suitable finish ceiling member **56** may be secured to the lower side of the frame members **51** and **52** in the manner illustrated in Fig. 10. When the roof sections as a whole are assembled in abutting relation, they may be anchored together by means of bolts **57** which serve to anchor a sealing strip **58**, underneath which is anchored a resilient weatherstrip **59**. The bolts may be provided with a decorative internal finish strip **60** engaging the lower surface of the ceiling finishing members **56**. It will be seen that when the entire frame

structure is assembled together, all of the lateral walls of the building structure will be composed of a plurality of identical openings having dimensions of approximately 5 x 7½ feet.

In order to make possible the provision of a plurality of different housing structures by use of a relatively small number of parts, the present invention contemplates the provision of wall panels adapted to be mounted in the openings of the side wall structure. In Fig. 2 is illustrated a solid wall panel which is formed of suitable wall board or other equivalent sheet material and comprises an outer wall member **70**, an inner wall member **71**, and spacer members **72** which serve to mount the inner and outer wall members **71** and **70** in spaced relation with respect to each other and provide therebetween insulating air spaces **73**. As is illustrated in Figs. 2 and 5 of the drawings, the outer wall member **70** is of slightly greater dimension than the inner wall member **71**, so that the marginal edges of the outer wall member will overlap about half the width of the tubular frame members of the housing structure when the panels are assembled together. The manner in which the wall panel members are assembled with respect to the frame is clearly illustrated in Fig. 7 of the drawings, wherein it will be seen that the inner wall member **71** and spacer member **72** have an aggregate thickness about the same as the transverse thickness of the tubular frame member **35** of the side frame structure **30**. The marginal edge of the outer wall panel **70** overlaps the outer face of the tubular member **35** and is anchored thereto by means of a decorative finish strip **75** secured by suitable screws **76** to the frame member **35**, thus providing not only a neat watertight, windproof, exterior finish, but also providing an interior wall structure of substantially flush, uninterrupted construction.

The present invention also contemplates the provision of a window panel **80**, such as is illustrated in Fig. 3, which is constructed in the same general manner and has substantially identical outer configuration with the wall panel structure illustrated in Fig. 2. The panel **80**, however, is provided with a casement window assembly **81** formed therein, which may include a pair of permanently mounted window lights **82** and adjustable window lights **83**, together with a screen **84**. Inasmuch as this panel **80** has the same exterior configuration as the wall panel, illustrated in Fig. 2, it will be apparent that this assembly may be installed in the housing structure at any desired point. Similarly, a door panel **90** is provided which is similar in construction and outer configuration to the panels illustrated in Figs. 2 and 3, but which includes a door **91** hingedly mounted in the panel, thus providing a unitary assembly adapted for insertion into the framework as a whole.

By utilization of these three standard panels, all of which easily lend themselves to modern mass production methods of fabrication, it will be seen that by erecting a standard frame structure of the general type shown in Fig. 12 and described above, a housing structure of almost any desired characteristics may be created. The number, arrangement, and placement of the various doors, windows, and blank wall spaces may easily be arranged and determined to suit the particular choice of the purchaser without the necessity of providing any special equipment. All of the parts which make up the housing structure as a whole may be completely fabricated at the point of manufacture and are all generally flat in configuration so that they may easily be conveniently packed and shipped to the desired location, and it will be readily apparent from the above description that the assembly operation is an extremely simple one.

The particular manner in which the panels are secured together at the corner of the building structure illustrated in Fig. 8, wherein a generally angle shaped finish member **95** is provided, which may be secured by means of screws **96** to the adjacent frame members, thus firmly, tightly, and securely locking the wall panels in assembled relation with respect to the frame and at the same time locking the frame members together in permanently assembled relation.

From the foregoing, it will be readily apparent that the construction provided is one which easily and readily lends itself to mass production methods and that housing structures constructed in accordance therewith may be produced which will result in an almost infinite variety of exterior designs by the use of merely two or three types of frame assemblies and three types of wall panels, all of which latter are of identical exterior configuration.

A particularly important advantage of the invention resides in the fact that the frame structure generally may be formed of extremely light weight material because after the wall panels have been all inserted and secured in place they will, together with the frame structure, constitute an extremely rigid completed body.

Many other modifications of the invention will be obvious to those skilled in the art.

What is claimed is:

1. A housing structure having a framework composed of a plurality of separate prefabricated frames, each of said frames comprising top and bottom tubular members and end members interconnecting said top and bottom tubular members, one of said end members being of tubular form of substantially square cross-section, the other end member being of angle section adapted to mate with the tubular member on the next adjacent frame member.

2. A housing structure having a framework composed of a plurality of separate prefabricated frames secured together to provide a unitary construction, each of said frames comprising top and bottom tubular steel members, vertical members interconnecting said top and bottom members serving to define a plurality of openings in said frame of identical configuration, the vertical member at one end of said frame being of square cross-sectional configuration and the vertical member at the opposite end of said frame being of angle section.

3. In a housing structure, a base frame composed of tubular steel members of generally rectangular cross-section all secured together and lying in the same plane, a member of angle section secured to the upper surface of said frame parallel to one of the marginal frame members and spaced inwardly from the marginal edge of said frame whereby to form a rabbet adapted to receive the marginal edge of flooring to cover said frame and whereby to at the same time form a rabbet to receive a side wall frame member.

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