

Sept. 23, 1941.

O. SCHROEDER

2,256,791

BUILDING UNIT AND INTERLOCK THEREFOR

Filed Dec. 20, 1939

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Fig. 1.

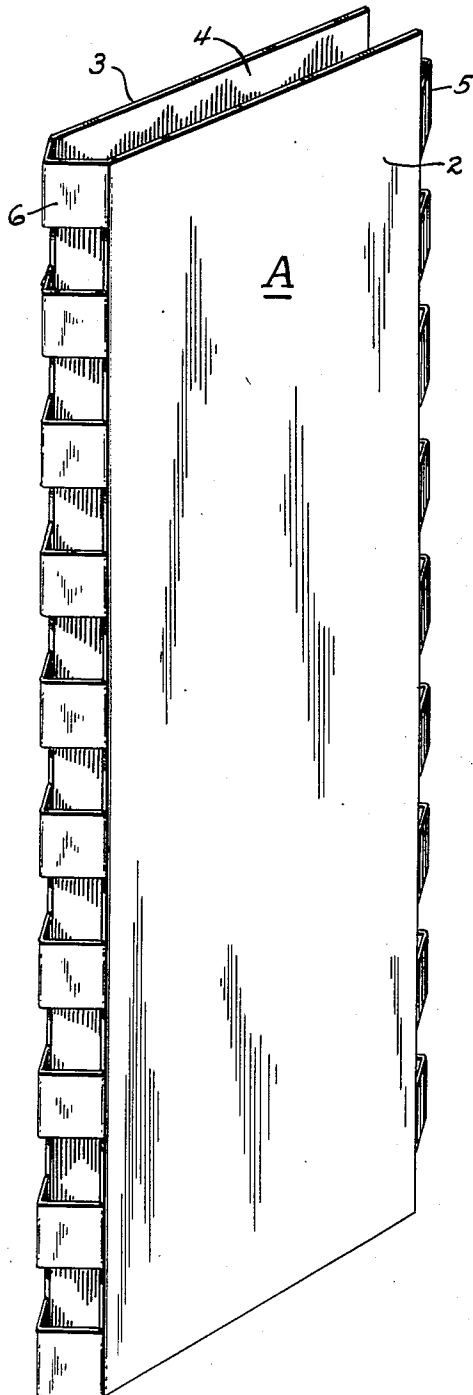
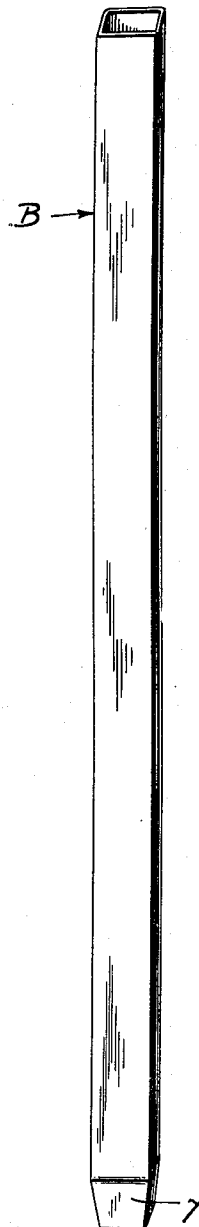


Fig. 2.



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Fig. 5.

Fig. 3.

Fig. 4.

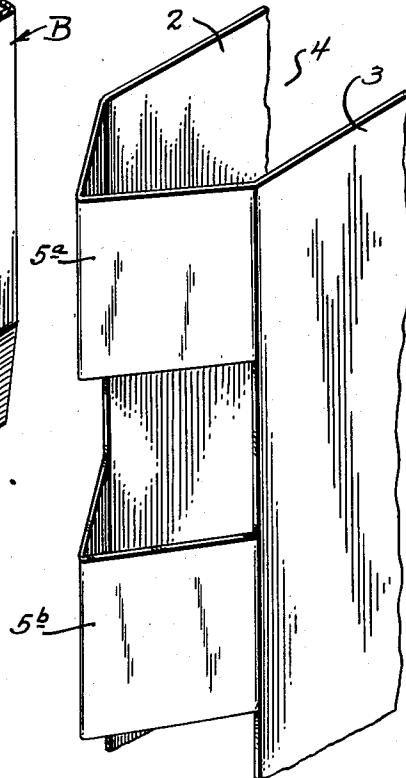
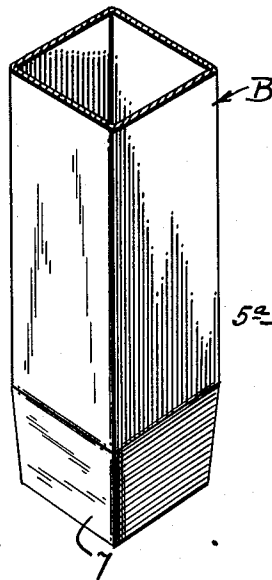
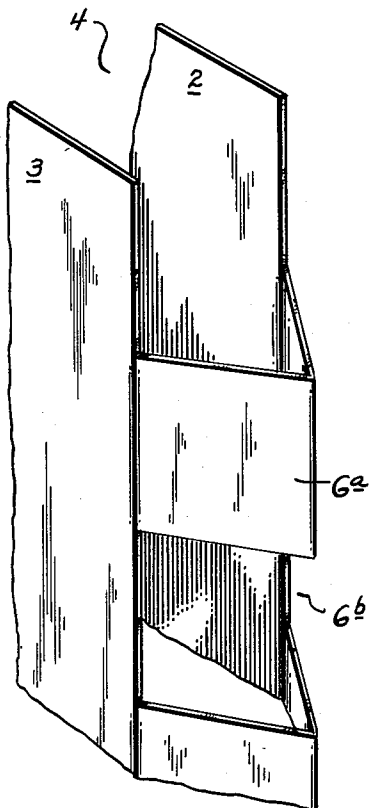


Fig. 6.

Fig. 8.

Fig. 7.

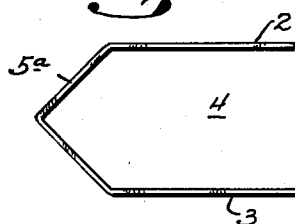
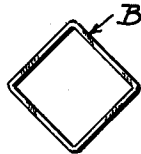
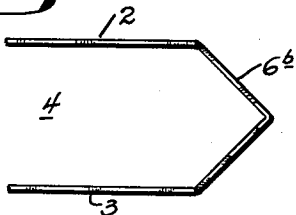
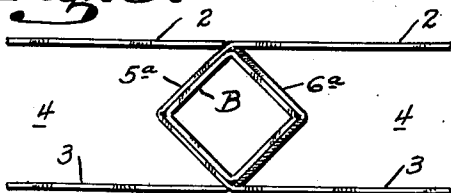


Fig. 9.



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Fig. 10.

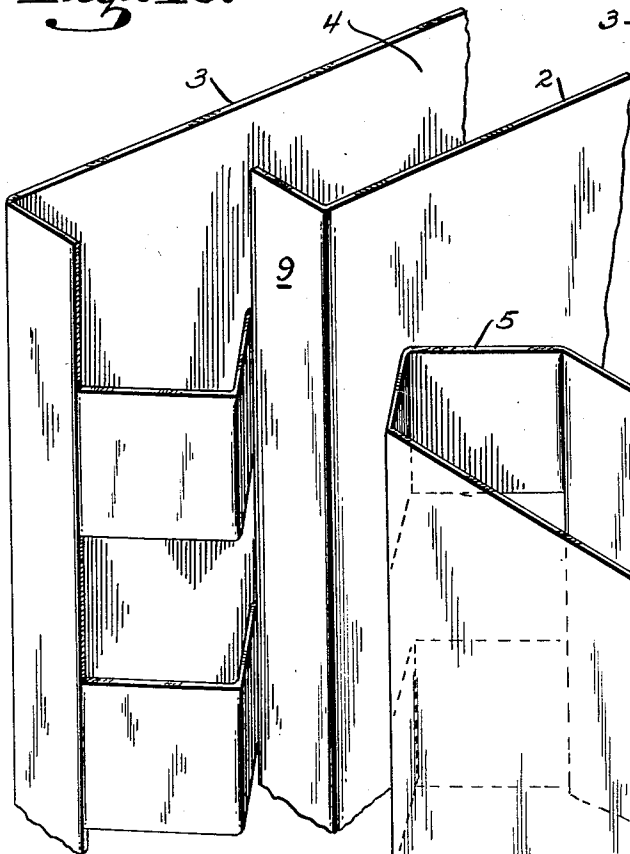


Fig. 14.

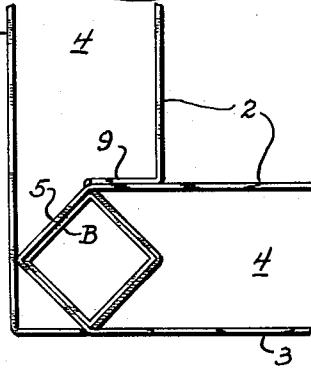


Fig. 11.

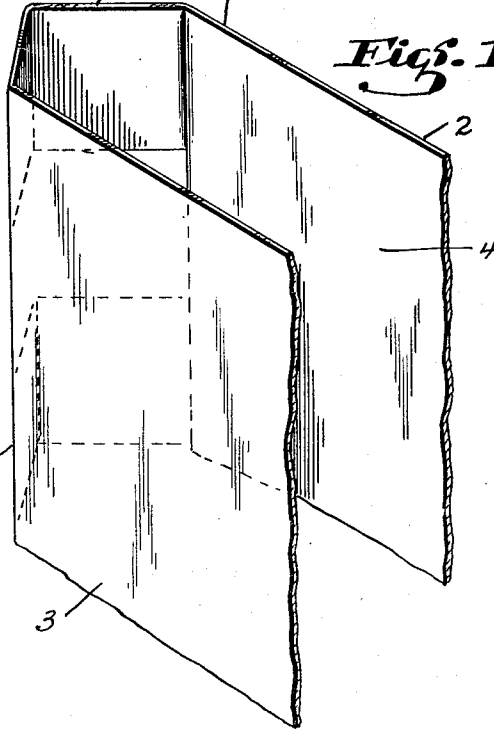


Fig. 12.

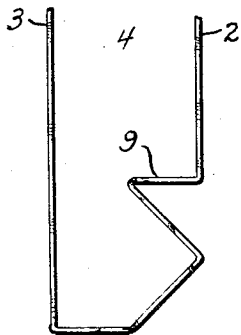
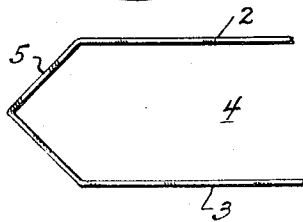


Fig. 13



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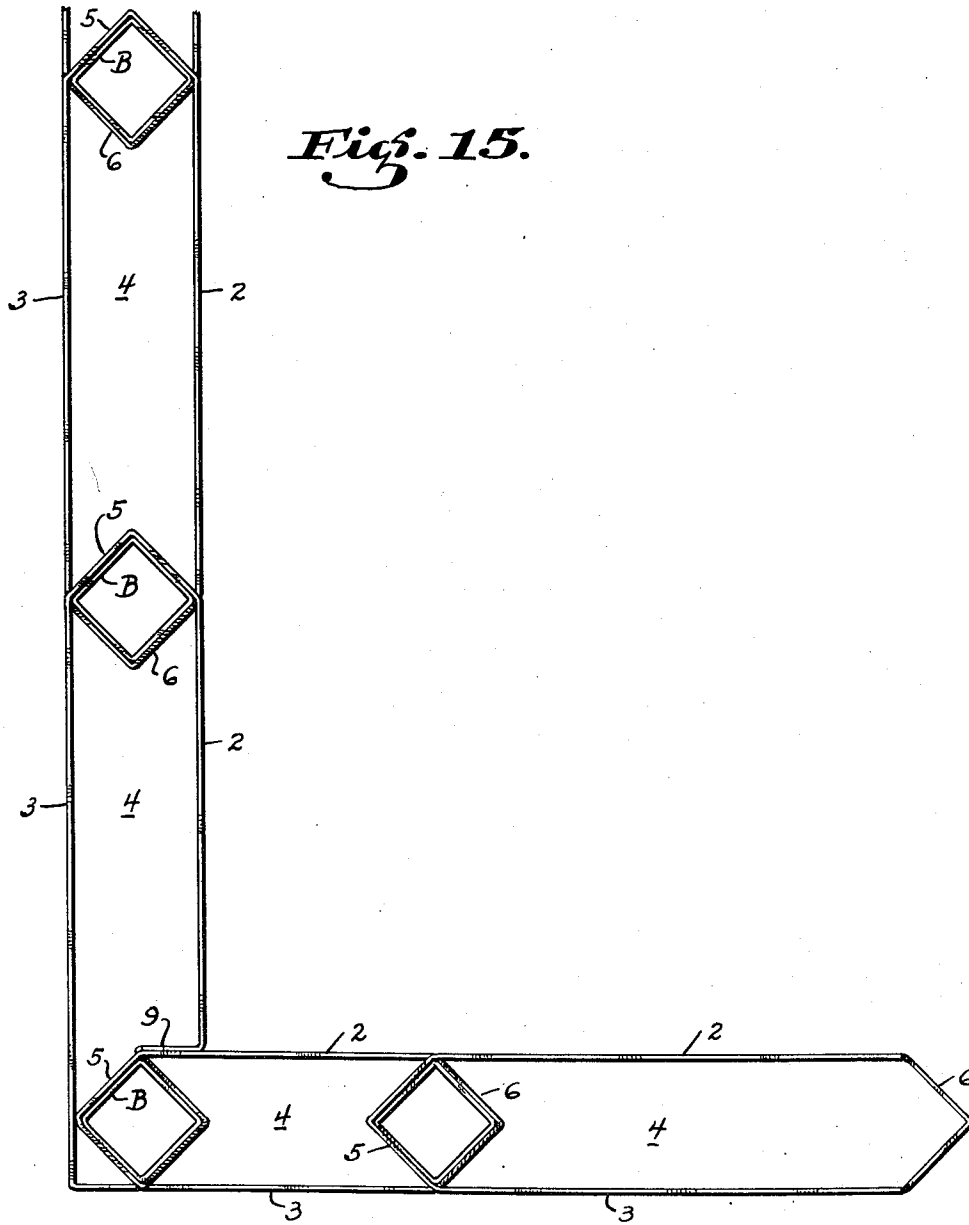
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2,256,791

BUILDING UNIT AND INTERLOCK THERE-
FOR

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poration of California

Application December 20, 1939, Serial No. 310,201

8 Claims. (Cl. 189—34)

This invention relates to a building unit which consists of a double walled panel constructed of sheet iron or similar material which is adapted to form the walls, floors, ceilings, roof, etc., of a building, and to means for interlocking the panels in abutting relation.

The object of the present invention is to provide a building unit in the form of a double walled panel which is adapted to be constructed from sheet iron or like material, and particularly to provide panels of the character described which are adapted to abut edge to edge and to be interlocked at the abutting edges; to provide an interlocking construction which positively prevents opening of the seam or joint formed between the abutting edges of the panels when subjected to load or other stresses; to provide an interlocking member which not only functions to interlock adjacent abutting panels but which also serves as a main load supporting member and to reinforce and brace the panels against all stresses to which they may be subjected; and further, to provide panel units of the character described which can be cheaply fabricated and quickly assembled in a building structure without the necessity of bolting or welding.

The invention is shown by way of illustration in the accompanying drawings, in which—

Fig. 1 is a perspective view of one of the building units or panels forming the subject matter of this application;

Fig. 2 is a perspective view of an interlocking tube;

Fig. 3 is an enlarged perspective view of a portion of one panel;

Fig. 4 is a similar view of a portion of a similar panel which is to be placed in abutting relation to the panel shown in Fig. 3;

Fig. 5 is a perspective view of a portion of the interlocking tube which is to be inserted between the knuckles of the two panels when placed in abutting relation;

Fig. 6 is a diagrammatic plan view of Fig. 3;

Fig. 7 is a diagrammatic plan view of Fig. 4;

Fig. 8 is a diagrammatic plan view of Fig. 5;

Fig. 9 is a diagrammatic plan view showing Figs. 6, 7 and 8 assembled;

Fig. 10 is a perspective view of a portion of a corner panel;

Fig. 11 is a perspective view of a portion of a panel to be interlocked with relation thereto;

Fig. 12 is a diagrammatic plan view of Fig. 10;

Fig. 13 is a diagrammatic plan view of Fig. 11;

Fig. 14 is a diagrammatic plan view showing Figs. 12 and 13 assembled and the interlocking tube in place; and

Fig. 15 is a plan sectional view of two wall sections and a corner connecting them.

Referring to the drawings in detail and particularly to Figs. 1 to 9 inclusive, A indicates a building unit in the form of a panel which, under normal circumstances, will be approximately 16 inches wide, 3 to 4 inches thick, and of any length desired. If the panel is to be used in the wall construction of a building, it will be from 8 to 10 feet long, depending on the ceiling height desired; on the other hand, if it is used in floor, ceiling, or roof structure, it may be 15, 20, or more feet in length, depending upon the width and length of the building, the roof dimensions, etc.

The panels or units employed are identical in construction with the exception of the corner panels, hereinafter to be described, but their width, thickness, and length may vary depending upon their application or use.

The panels are constructed of sheet iron or similar metal, and consist of inner and outer panel members 2 and 3 spaced apart 3 or 4 inches more or less to form an interior or intermediate space 4. The panels are connected along their opposite longitudinal edges by outwardly projecting V-shaped members 5 and 6, hereinafter to be referred to as knuckles. The knuckles on the opposite edges are staggered vertically with relation to each other so that when two panels are abutted or assembled edge to edge, the knuckle 5a of one panel will pass over the knuckle 6a of the adjacent panel (see Figs. 3 and 4) and the knuckle 5b will enter the space 6b, and so on, in the same manner as the knuckles of a door hinge enter between each other when the two leaf sections of a hinge are assembled. When the panels are assembled in the manner described, they are permanently interlocked or secured against separation by inserting a tube such as shown at B in Figs. 2 and 5.

Inasmuch as the knuckles shown in these drawings are V-shaped, the cross-sectional shape of the tube will be square or diamond-shaped. It will have the same length as the panels to be interlocked, and is quickly and readily inserted, as the entry end of the tube is chamfered or tapered, as indicated at 7. If the tube is used to interlock the panels in a wall structure, it will serve the same function as a wall stud in the wood frame

of a building, in addition to the function of serving as an interlocking member. In a roof structure the tube will function as a rafter, and in ceilings and floors as a joist or beam.

The sheet iron forming the panels proper may be of light gauge, for instance, #18 gauge or lighter for walls, roof and ceiling structure, and may be heavier in a floor structure. The interlocking tubes, on the other hand, should be constructed of a materially heavier gauge iron, for instance, #12 gauge. This is particularly essential in a wall structure, as they must support the major portion of the load resting on the walls, such as ceilings, roof, etc., and must also serve to stiffen and reinforce the walls and building as a whole against lateral and longitudinal stresses that may be imposed; and the same may be said of the tubes which function as the floor joists, and possibly the rafter tubes, particularly if they span a considerable space.

Wherever a corner is encountered in the erection of a wall, the type of panel shown in Fig. 10 is employed. It is similar to the panels shown in Figs. 1, 3 and 4, but differs therefrom only to the extent that the knuckles, in place of facing outwardly from the edge of the panel, face inwardly or toward the inner sector 2, as clearly shown. The knuckles are so arranged, as shown in Figures 10 and 11, that a median line passing through the vertex of the knuckles, which may be considered the transverse axis of the knuckles shown in Figure 10, is at right angles to the outer wall of the panel. The panel which interlocks therewith, and shown in Fig. 11, is identical to the panel shown in Fig. 1, and the tube which interlocks the corner panels is identical to the tube shown in Fig. 2, but it may be of heavier gauge if it is desired to strengthen the corners.

It should, however, be noted that an offset is made as indicated at 9. This is important, as it forms a face or support along one side of the panel shown in Fig. 11 when it is placed in interlocking position, thus further reinforcing and strengthening the corner structure.

Whether walls, roofs, ceilings, or floors, etc. are formed from the panels shown, a dead air space is provided which functions as an insulator against heat and cold. Also, the space may be utilized for piping, wiring, conduits, etc., and if desired may be filled with insulating material of any suitable character. Sound deadening material in the form of a coating or otherwise may be applied to the inner surfaces, and they may be treated in any suitable manner to prevent rust and corrosion.

It should be noted that the interlocking tubes B have a cross sectional dimension substantially equal to the thickness of the panels, or, more correctly stated, equal to the distance between the inner faces of the inner and outer walls 2 and 3 of the panels. This, together with the fact that the knuckles or V-shaped members 5 and 6 span the same space and connect the outer longitudinal edges of panels, is of great importance, as it forms a joint or seam between abutting panels which is tightly drawn together and which can not open or spread apart due to expansion or contraction or other stresses or loads applied; further, as the space is fully utilized, tubes or posts may be employed which are constructed of sheet iron or the like and which will have a large enough diameter to carry the loads and stresses applied.

While these and other features of the invention have been more or less specifically described

and illustrated, it is to be understood that various changes may be resorted to within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A structure comprising a series of panels having outer and inner spaced apart walls, said walls being connected at their opposite longitudinal edges by a plurality of spaced outwardly extending knuckle members, the knuckles on adjacent panels being staggered to permit the knuckles of one panel to enter between the knuckles of the adjacent panel, and a member insertable through the knuckles of two abutting panels to interlock the panels said member substantially filling the space between the outer and inner walls of the panels and supporting the major portion of any load to which the panels may be subjected.

2. A structure comprising a series of panels having outer and inner spaced apart walls, said walls being connected at their opposite longitudinal edges by a plurality of spaced outwardly extending knuckle members, the knuckles on adjacent panels being staggered to permit the knuckles of one panel to enter between the knuckles of the adjacent panel, and a tubular member insertable through the knuckles of two abutting panels to interlock the panels, said tubular member having a diameter substantially equal to the spacing between the outer and inner panels.

3. A structure comprising a series of panels having outer and inner spaced apart walls, said walls being connected at their opposite longitudinal edges by a plurality of spaced outwardly extending V-shaped knuckle members, the knuckles on adjacent panels being staggered to permit the knuckles of one panel to enter between the knuckles of the adjacent panel, and a tubular member insertable through the knuckles of two abutting panels to interlock the panels, said tubular member having a cross sectional shape similar to that produced by the interengaging V-shaped knuckle members and substantially filling the space between the outer and inner walls of the panels.

4. A structure comprising a series of panels having outer and inner spaced-apart walls, said walls being connected at their opposite longitudinal edges by a plurality of spaced outwardly extending knuckle members, the knuckles on adjacent panels being staggered to permit the knuckles of one panel to enter between the knuckles of the adjacent panel, said knuckles contacting each other above and below to permit them to support a vertical load applied to the panels, and a tubular member insertable through the knuckles of two abutting panels to interlock the panels, said tubular member having an outside diameter substantially the same as the distance between the inner faces of the walls forming the panels, and said tubular member cooperating with the knuckles to support any load applied to the panels.

5. In a structure of the character described a corner joint comprising a pair of panels each having inner and outer spaced walls, a right-angular flange at one end of the outer wall of one of the panels and extending towards the inner wall, a right-angular flange at the adjacent end of the inner wall of said panel and extending towards the outer wall, said first and last named right-angular flanges extending to a point approximately midway between the walls,

said flanges being spaced apart a distance equal to the spacing between the walls and a plurality of spaced knuckles connecting the right-angular flanges, the other panel having outwardly extending spaced knuckles, the knuckles of the panels being staggered to permit the knuckles of one panel to enter between the knuckles of the adjacent panel and form aligned openings, and a key member inserted through the knuckles of the two abutted panels to interlock the panels, said key member substantially filling the space between the inner and outer spaced walls of said other panel and supporting the major portion of any load to which the panels may be subjected.

6. A corner joint for building construction consisting in the combination of two interlocking sheet metal panels, each panel consisting of a metallic sheet folded upon itself to provide outer and inner spaced walls and with the looped portion of each panel cut away to provide complementary staggered interlocking knuckles, the transverse axis of the knuckles on one panel extending at right angles to the outer wall of their panel and the knuckles on the other panel extending outwardly in continuation of their panel, and a key member fitting the registering openings of the two sets of knuckles when the latter are in interlocked position to hold the two panels in rigid angular position one to the other, said key member substantially filling the

space between the inner and outer spaced walls of said other panel and supporting the major portion of any load to which the panels may be subjected.

5 7. A corner joint according to claim 6 in which the first mentioned panel with the angularly disposed knuckles has a portion of the inner wall to which said knuckles are connected at right angles to the body of the inner wall to form a lateral support for the adjacent interlocked end of the other panel.

10 8. A corner structure comprising in combination a pair of panels each having outer and inner walls spaced apart uniformly, said walls being connected at their opposite longitudinal edges by a plurality of spaced knuckle members, the knuckles on adjacent panels being staggered to permit the knuckles of one panel to enter between the knuckles of the adjacent panel, 15 one of said panels having the transverse axis of its knuckles projecting at right angles to the outer wall of said panel, the knuckles on the other panel projecting outwardly as a continuation of its outer and inner walls, and a key member insertable through the intersted 20 knuckles of the two panels to lock the panels in right angular position, said key member having a cross section substantially equal to the spacing between the outer and inner walls.

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