

Nov. 21, 1944.

P. H. WALLER

2,363,164

STRUCTURAL JOINING OF WALLS FOR CASES, PARTITIONS AND THE LIKE

Filed Oct. 18, 1940

3 Sheets-Sheet 1

Fig. 1

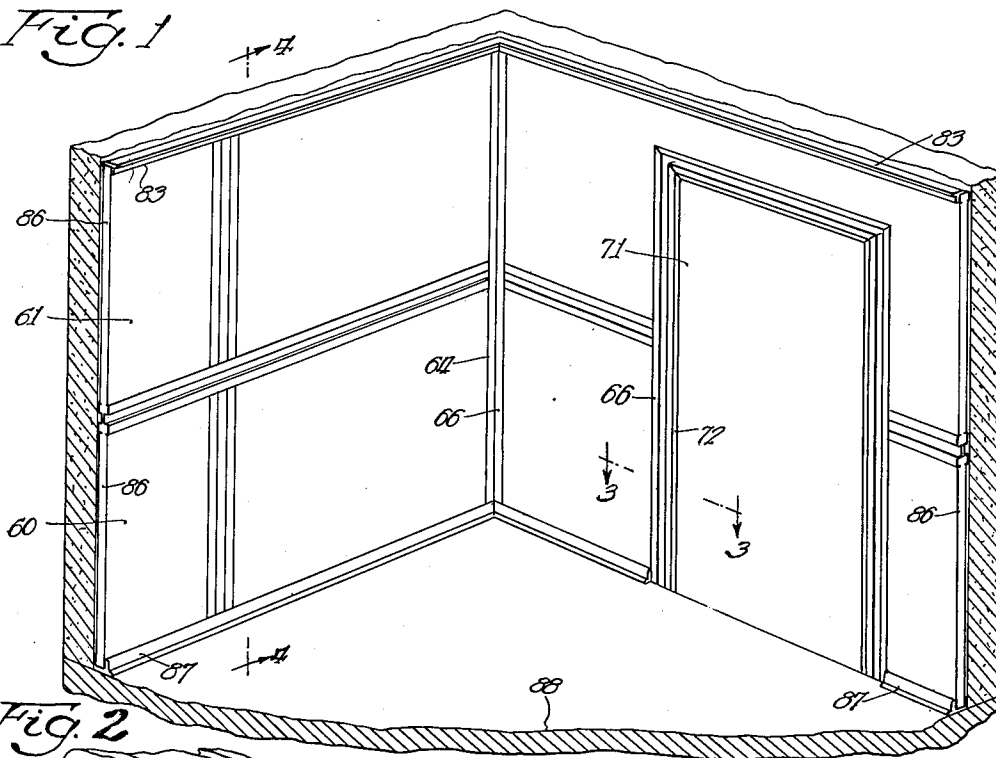


Fig. 2

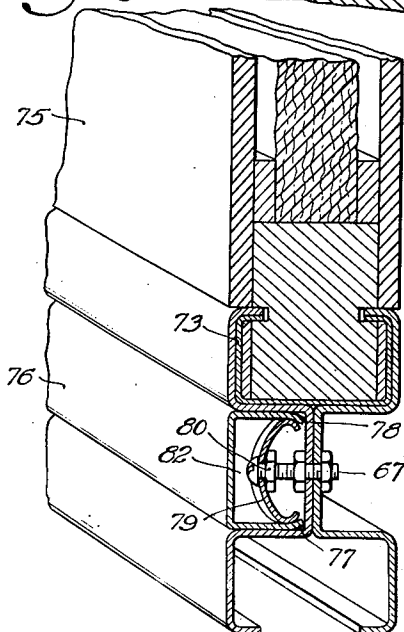
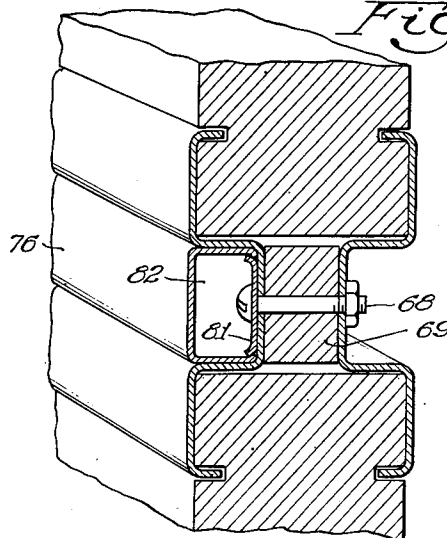


Fig. 5



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3 Sheets-Sheet 2

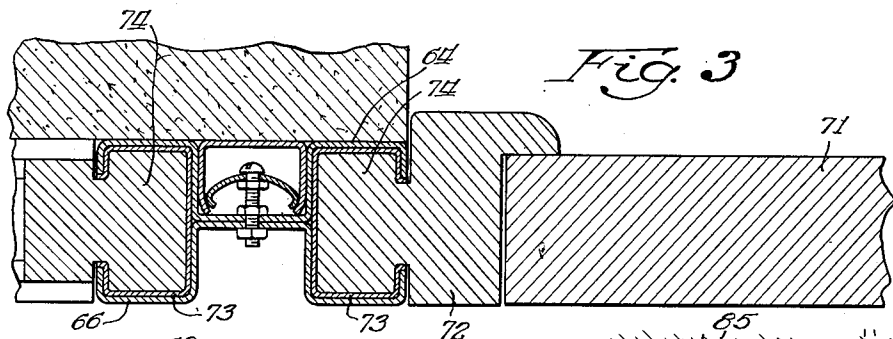


Fig. 3

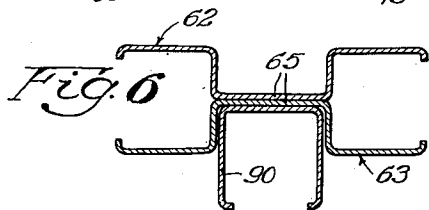


Fig. 6

Fig. 7

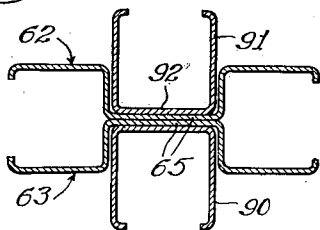


Fig. 8

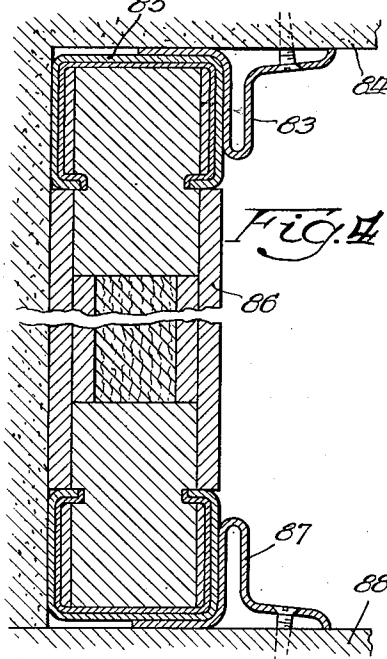
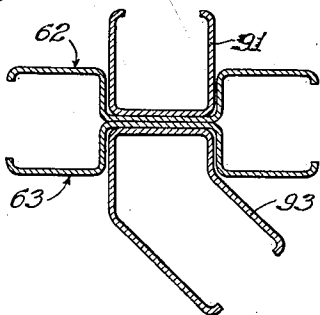
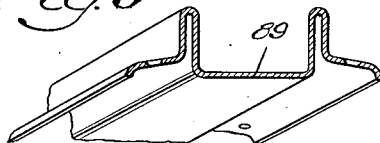


Fig. 4

Fig. 9



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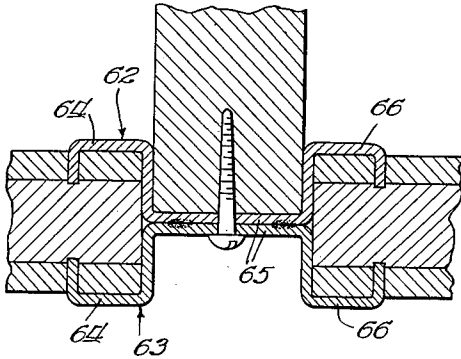
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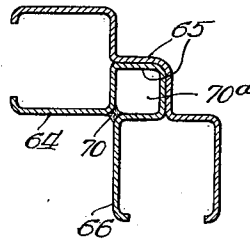
Filed Oct. 18, 1940

3 Sheets-Sheet 3

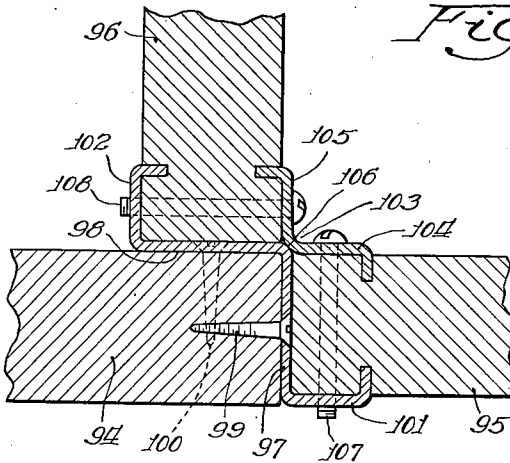
*Fig. 10*



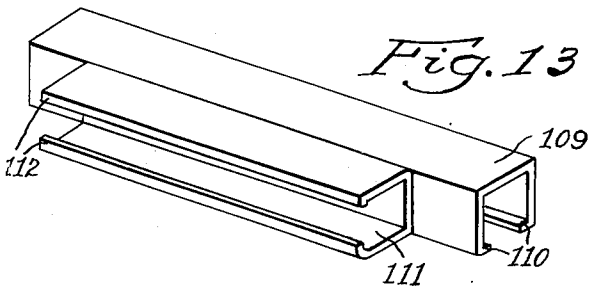
*Fig. 11*



*Fig. 12*



*Fig. 13*



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## UNITED STATES PATENT OFFICE

2,363,164

STRUCTURAL JOINING OF WALLS FOR  
CASES, PARTITIONS, AND THE LIKEPercy H. Waller, Chicago, Ill., assignor of one-  
half to Charles C. Kirk

Application October 18, 1940, Serial No. 361,692

5 Claims. (Cl. 20—92)

The present invention relates to the structural joining of walls and panels. It is particularly concerned with means of connecting together separate individual sheet material such as ply wood and the various composition boards now available on the market. The essential features of the invention are such that it is possible to connect a plurality of panels in a common plane or at various angles to each other for the purpose of making partitions, portable buildings, pouring forms for concrete, shipping cases and similar purposes.

The invention further contemplates a construction of the character described wherein the joining of the panels is accomplished by means capable of also receiving and concealing electrical leads and the like within the joint between the panels where the concealed leads will be completely isolated by metal from any combustible material.

In the drawings—

Fig. 1 is a perspective view illustrating the application of the invention to a building problem;

Fig. 2 is an enlarged fragmentary perspective view illustrating how a built-up panel is mounted in a connecting member or channel;

Fig. 3 is an enlarged sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1 with part of the panel broken away;

Fig. 5 is a fragmentary sectional view similar to Fig. 2, but showing the invention as applied to a slightly different problem of construction;

Fig. 6 is a somewhat diagrammatic sectional view illustrating the manner in which the connecting channels may be applied to a corner from which three walls extend;

Fig. 7 is a view similar to Fig. 6, showing the connection channels for a corner where four walls meet;

Fig. 8 is a view similar to Fig. 6, illustrating the construction of the channels for a corner where four walls meet, but one of the walls extends at an angle less than a right angle to another of the walls;

Fig. 9 is an enlarged fragmentary perspective view of the metal strip used to join a partition constructed in accordance with my invention to a top or bottom wall;

Fig. 10 is a view similar to Fig. 6, illustrating the connecting channel in its simplest form for partitions and the like;

Fig. 11 is a view similar to Fig. 10, but showing

the structure therein adapted for the connection of two walls or panels meeting at right angles; and

Fig. 12 is a view similar to Fig. 10 showing another corner adaptation of the structure.

Fig. 13 is a perspective view illustrating a specific form of the invention adapted for connecting two walls meeting at right angles.

Referring now to Fig. 1, and the succeeding Figs. 2, 3 and 4, the invention is shown here as applied to connecting wall panels such as 60, 61, etc., to provide structural walls in a building. In this form of the invention, it is preferable to employ the basic shape of connecting channel illustrated primarily in Fig. 10. This connecting channel comprises two duplicate members 62 and 63, each comprising a panel receiving part 64, a joining part 65, and another panel receiving part 66. The connecting parts 65 are joined in several ways to each other to produce two oppositely facing channels. As illustrated in Fig. 10, the parts 65 are spot-welded together. It is possible in this fashion to provide the parts 62 and 63 in long rolled strips spot-welded together at frequent intervals so that the strips may be cut off into the desired lengths and be ready for immediate use. The pieces 62 and 63 may, however, be secured together directly by bolts as indicated at 67 in Fig. 2, or by bolts 68 and a filler 69 as indicated in Fig. 5. It is possible also to bend the parts 65 as illustrated in Fig. 11 and spot-weld them together so as to direct the channel parts 64 and 66 at any desired angle with respect to each other. The parts 64 and 66 may be connected together when turned at right angles to each other, for example, by welding at the point 70, as illustrated in Fig. 11. In such a construction the tubular passage 70a may serve as a conduit for electrical conductors. The basic construction, however, of this connecting channel unit remains the same throughout the several modified figures referred to. This form of construction is usable interchangeably with the form first described as comprising the elements 17 to 19 where the dimensions are such that the interchangeability can be feasibly carried out.

In the building structure shown in Fig. 1, the panels 60, 61, etc., may be cut out to provide for a door construction 71, illustrated best in Figs. 1 and 3. For this purpose, a special wooden piece 72 is grooved to receive the channel portions 64 and 66. The piece 72 may be used either as a door jamb to which the door is hinged, or as a stop against which the door closes.

Where the panels are to be removed frequently, as in the case where the panels such as 60 and 61 are used for portable buildings that are to be torn down and moved often, or for concrete forms that are to be removed frequently, I find it desirable to utilize a metal liner 73 which is illustrated in Figs. 2, 3 and 4. This metal liner is slid over the portion of the panel, indicated by the numeral 74, which lies outside the channel receiving grooves. Where the panel is to be flush precisely with the channel on the outside, it is necessary to, of course, reduce the thickness of the portion 74 by an amount equal to the combined thickness of the liner 73 and the connecting channel itself. This is the condition illustrated in Fig. 2 where the plywood surface 75 is flush with the outer surface of the channel part 64.

Flush surfaces are desired in forms that are used for concrete, and in order to fill the space between the portions 64 and 66 left by the inwardly bent connecting portion 65, I provide removable channels 76 which are adapted to be snapped in place when the proper means is provided on the connecting units. The channels 76 have their edges 77 and 78 slightly turned in to snap over certain spring clips 79 that are mounted in connection with the bolts 67. These spring clips may be mounted at suitable intervals along the connecting channels by using long bolts 67 and an extra nut 80 to hold the clip in place.

Alternatively, where it is possible to slide the channels 79 into place, I may use a flat strip 81 secured under the head of the screw bolt 68, as illustrated in Fig. 5. The space 82 within the channels 76 is available and is used by me to receive conduits for electrical wires and the like, or the wires themselves, if suitably covered, may be laid directly in the channels 76 and the channels then placed in permanent position, since the construction of the channels 76 with the connecting channel units is such as to completely enclose the electrical conductor in a metal case that is the equivalent of the usual metal conduit used for this purpose.

In the form of the invention shown in Fig. 5, the filler 69 is a means by which channel strips 62 and 63 may be adapted to connect panels of various widths. Thus one need not have a special welded channel unit for every thickness of panel used.

Referring now to Figs. 4 and 9, these figures illustrate top and bottom moldings by which the panels are attached to ceilings and floors. A top molding 83 is shown as extending between a ceiling 84 and a finishing channel 85 which is received on the upper edge of the panel 86. The molding 83 may be welded or otherwise secured to the channel 85 to complete a molding member that can be slid onto a panel which is grooved to receive standard channel units such as that illustrated in Fig. 10. A similar bottom molding 87, which is a duplicate of the molding 83, can be used to attach the panel to a floor 88. Where the panel 86 is being used as a partition visible from both sides, a sheet metal strip 89, constructed as shown in Fig. 9, is attached to a channel 85 and serves to finish the joint between the ceiling or floor on both sides of the partition. If the partition joins the vertical walls of the room, which walls are already in existence, this same structure may be used to finish the

joint between the vertical walls and the partition.

In Figs. 6, 7, 8 and 10 I have illustrated how the basic unit may be built up very simply to accommodate joints between panels where more than two panels come together. Fig. 10 shows how the basic unit may be fastened to an existing board or panel by screws and two panels then slid into place to extend at right angles to the existing panel and in opposite directions.

In Fig. 6 a simple channel 90 is spot-welded to the connecting portions 65 of the members 62 and 63 and faces directly at right angles to the channels formed by these two members. Strips constructed in this fashion may be made in any lengths desired and used for connecting three panels meeting at right angles so that all three panels may be slidably mounted.

Fig. 7 illustrates the construction carried to the extent of providing for four panels meeting at right angles. This is accomplished by the addition of another channel member 91 exactly like the member 90. It will be noted that through the open channels, spot-welding at the point 92 can readily be done, also any suitable fastening means, such as rivets, bolts or the like, may be applied without difficulty.

Fig. 8 merely illustrates the construction shown in Fig. 7, carried to the point of providing a special channel 93 which is bent to extend at an angle of forty-five degrees to thus provide for odd corners in construction.

Fig. 12 illustrates an adaptation of the fundamental unit to a condition where a projecting corner 94 must be used as the starting point for a plurality of grooved panels 95 and 96 running in different directions. A mounting strip is formed to provide two attaching portions 97 and 98 extending at right angles to each other so that they may be secured to the corner by fastening elements such as screws 99 and 100. A panel receiving channel part 101 is extended from the portion 97. A similar panel receiving channel part 102 is extended from the portion 98. A strip 103 having two complementary channel parts 104 and 105 completes the channels for receiving the panels 95 and 96. The strip 103 may be welded to the other strip at their meeting line 106. The panels 95 and 96 may be held against movement by screw bolts 107 and 108. Where it is not possible to slide the panels 95 and 96 into place the strip 103 may be separate from the corner attaching strip. Then the grooved panels may be put in place against the parts 101 and 102. After that the strip 103 is placed and the screw bolts 107 and 108 are used to secure the strip 103 in position.

Figure 13 illustrates another simple method of providing for two panels meeting at right angles to each other. The construction shown in this figure comprises a channel shape part 109 having inturned lips 110 opposite the back to provide a restricted entrance into the channel. Another channel 111 which is a duplicate of the channel 109 is welded or otherwise suitably secured to the channel 109 so that the base of one channel part and the side of the other channel part are joined. The channel 111 has inturned lips 112 like the channel 109. It will be obvious that this construction provides a very strong construction for right angle joints between two panels.

The foregoing description is believed to be sufficient to enable those skilled in the art to understand the invention disclosed herein and to con-

struct and use articles and structures embodying the same.

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

1. Means for joining panels having edge portions in juxtaposition to each other, said means comprising channel parts each having inturned lips opposite the back thereof the lips extending toward each other from the side walls of the channel so that they may extend into grooves provided adjacent the edges of the panels, one of said channel parts serving to cover the edge portion of one panel and the other channel part serving to cover the edge portion of the other panel, said channel parts comprising two strips of metal, the base of one channel part and a side flange of the other channel part being joined whereby the channel parts open at right angles to each other.

2. Means for joining panels having edge portions in juxtaposition to each other, said means comprising channel parts each having inturned lips opposite the back thereof the lips extending toward each other from the side walls of the channel so that they may extend into grooves provided adjacent the edges of the panels, one of said channel parts serving to cover the edge portion of one panel and the other channel part serving to cover the edge portion of the other panel, and means connecting said channel parts throughout their lengths, said channel parts and connecting means comprising two metal strips, each strip forming a portion of each channel part complementary to the portion formed by the other strip, said strips also including parallel portions between the channel parts, said parallel portions being fastened to each other, and a third panel attaching channel part having inturned lips opposite the back thereof, said third panel attaching part having its back secured to said parallel portions.

3. Means for joining panels having edge portions in juxtaposition to each other, said means comprising channel parts each having inturned lips opposite the back thereof the lips extending toward each other from the side walls of the channel so that they may extend into grooves provided adjacent the edges of the panels, one of said channel parts serving to cover the edge portion of one panel and the other channel part serving to cover the edge portion of the other panel, and means connecting said channel parts throughout their lengths, said channel parts and connecting means comprising two metal strips, each strip forming a portion of each channel part complementary to the portion formed by the other strip, said strips also including parallel portions between the channel parts, said parallel portions being fastened to each other, and two

other panel attaching channel parts having inturned lips opposite the backs thereof, the backs of said last named channel parts being secured on opposite sides of said parallel portions.

4. Means for joining panels having edge portions in juxtaposition to each other, said means comprising channel parts each having inturned lips opposite the back thereof the lips extending toward each other from the side walls of the channel so that they may extend into grooves provided adjacent the edges of the panels, one of said channel parts serving to cover the edge portion of one panel and the other channel part serving to cover the edge portion of the other panel, and means connecting said channel parts throughout their lengths, said channel parts and connecting means comprising two metal strips, each strip forming a portion of each channel part complementary to the portion formed by the other strip, said strips also including parallel portions between the channel parts, said parallel portions being fastened to each other, a channel shaped finishing strip secured between the channel parts on one side of said parallel portions, the base of said finishing strip being opposite the said parallel portions to bridge the space between adjacent flanges of the channel parts, fastening means securing the said parallel portions to each other, the said finishing strip having inturned side edges, and the fastening means having a clip thereon releasably engaging said side edges to hold the finishing strip in place, the base of the finishing strip and the adjacent side faces of the channel parts being aligned and substantially flat whereby to provide a smooth surface joining the connected panels.

5. Means for joining panels having edge portions in juxtaposition to each other, said means comprising channel parts each having inturned lips along its free edges, one of said channel parts serving to cover the edge portion of one panel and the other channel part serving to cover the edge portion of the other panel, said means comprising two thin metal strips, the side edges of each strip being bent to form an inturned lip facing toward the corresponding edge of the other strip, at least one strip having a U-shaped offset midway between its side edges, the depth of the offset being substantially greater than the inturned lip portions of the strips, the offset extending in the same direction as the lip portion, the thickness of said joining means at the offset being much less than the thickness of the panels being joined, and the strips being secured to each other by means of the offset portion, thereby to space the opposed lip portions apart, the side faces of the channel parts being flat whereby to provide continuations of the surfaces of panels secured by said channel parts.

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