March 5, 1957 L. E. MEDAL ET AL 2,783,507

PANEL CONSTRUCTION

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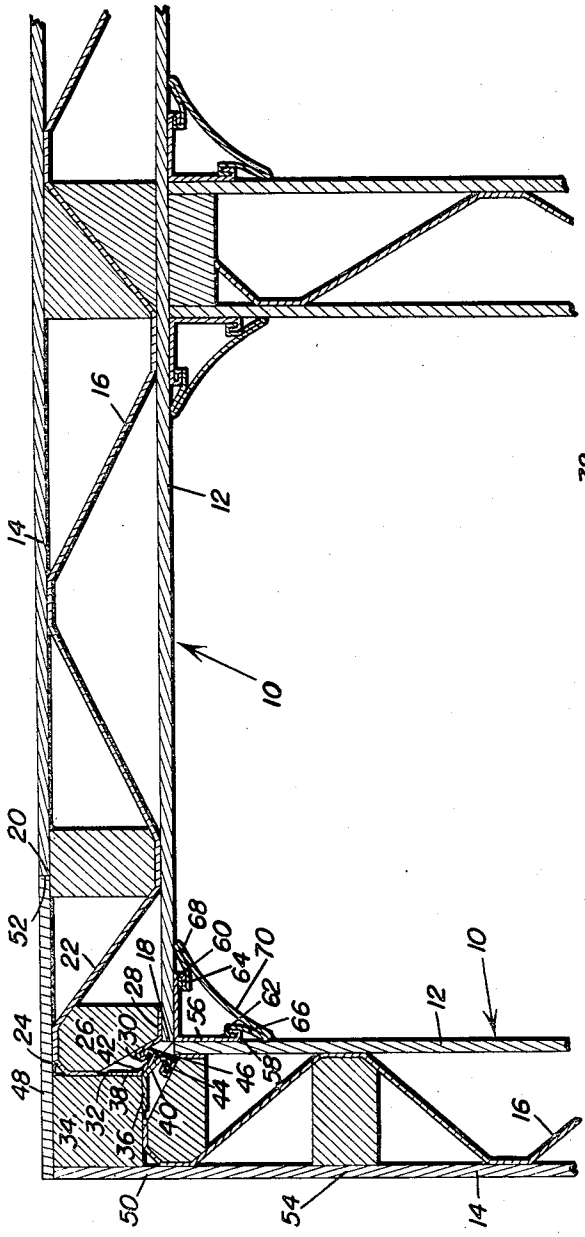


Fig. 1

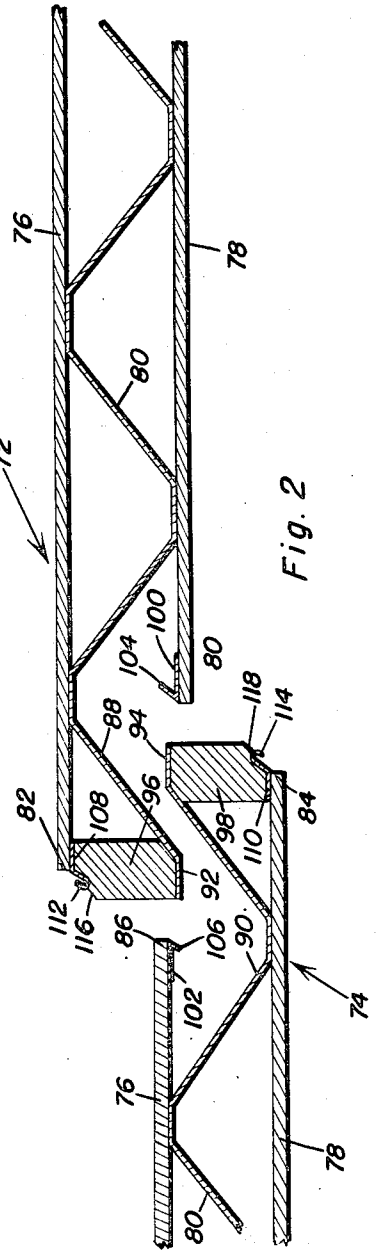


Fig. 2

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Fig. 3

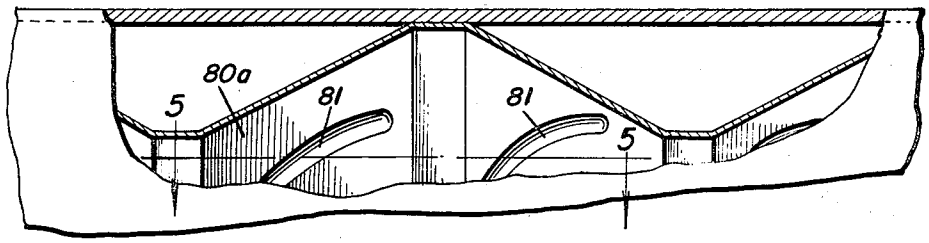


Fig. 4

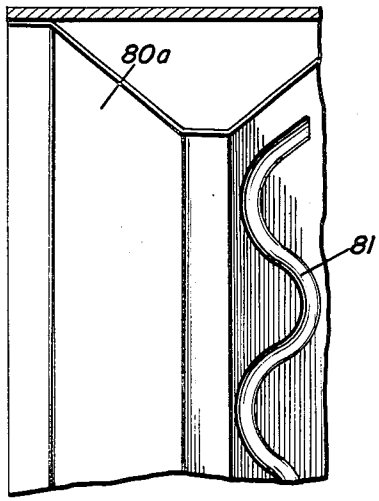
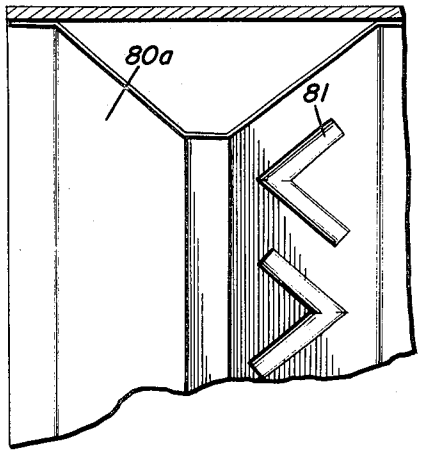


Fig. 6



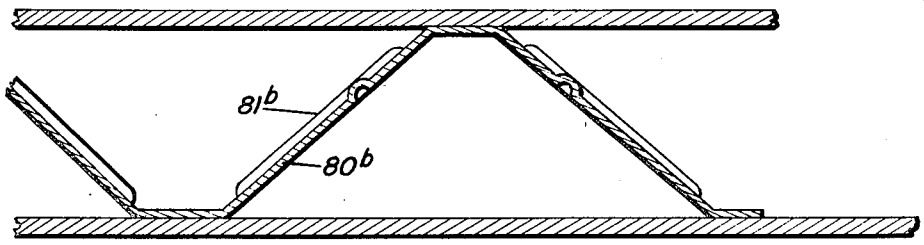


Fig. 5

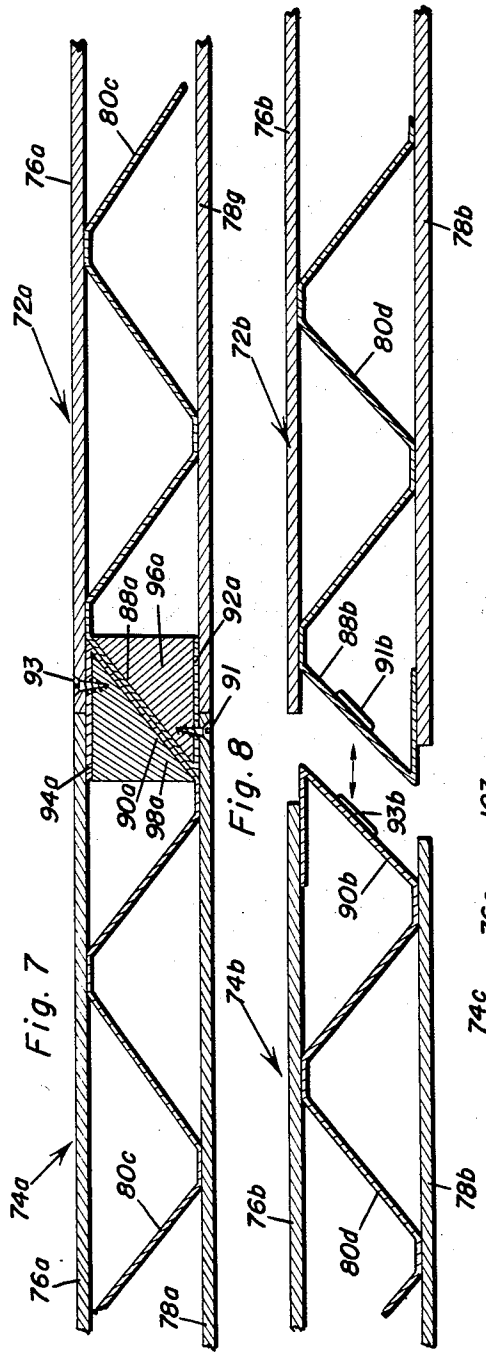
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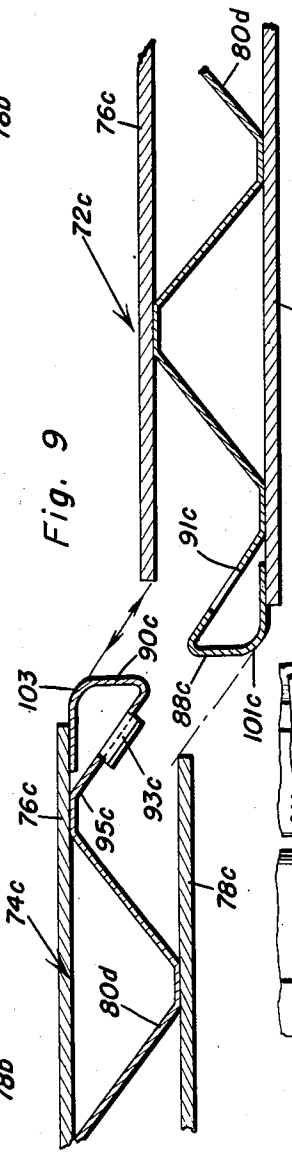
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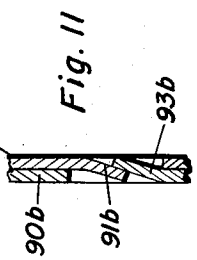
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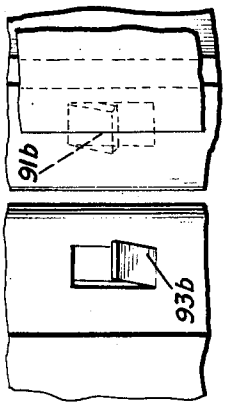
PANEL CONSTRUCTION

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PANEL CONSTRUCTION

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Application October 5, 1953, Serial No. 384,170

2 Claims. (Cl. 20—4)

This invention relates to new and useful improvements in panel constructions, and the primary object of the present invention is to provide a wall-forming member with novel and improved interlocking means at the vertical edge portions thereof whereby two such wall-forming members may be readily assembled in a convenient manner to produce a wall construction.

Another important object of the present invention is to provide a panel construction composed of inner and outer plies and a corrugated filler disposed between and spacing the plies and having an angularly bent vertical end portion for interlocking with a similar end portion of a filler for an adjacent panel section.

Yet another object of the present invention is to provide a panel construction including inner and outer plies of relatively rigid material with a corrugated filler suitably fixed between the plies to provide a strengthened panel construction with ventilating cores.

A further object of the present invention is to provide a panel construction of the aforementioned character wherein the corrugations of the filler are formed with pressed ribs for the purpose of reinforcing and strengthening the filler and the entire panel construction of which the filler is a part.

A further object of the present invention is to provide a panel construction having improved features over that disclosed in U. S. Patent No. 2,576,530, and particularly involving a novel and improved joint connection between the abutting vertical edge portions of adjacent panel sections.

A still further aim of the present invention is to provide a panel construction or wall-forming member that is extremely simple and practical in construction, strong and reliable in use, efficient, and durable in operation, inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a fragmentary horizontal sectional view of a building constructed in accordance with the present invention and showing the manner in which two relatively perpendicular panels are used as wall-forming members and the manner in which they are constructed at the corner of the building and at abutting walls;

Figure 2 is a fragmentary horizontal sectional view through two wall-forming members, representing the type shown in Figure 1, and illustrating the manner in which the two wall-forming members are interconnected;

Figure 3 is a fragmentary view of one of the wall-forming members in slightly modified form, partly in perspective and partly in section to emphasize the manner in which the strengthening ribs are formed on the fillers of the wall-forming members;

Figure 4 is a view similar to Figure 3 but illustrating the entire filler in perspective;

Figure 5 is a horizontal sectional view taken substantially on the plane of section line 5—5 of Figure 3;

Figure 6 is a view similar to Figure 4 but showing the strengthening ribs in modified form;

Figure 7 is a fragmentary horizontal sectional view showing two wall-forming members in slightly modified form and connected together;

Figure 8 is a view similar to Figure 7 but showing the wall-forming members in further modified form and spaced apart;

Figure 9 is a view similar to Figures 7 and 8 and showing the wall-forming members in additionally modified form and spaced apart;

Figure 10 is a fragmentary perspective view showing the abutting end portions of the two wall-forming members illustrated in Figure 8; and

Figure 11 is a fragmentary vertical sectional view through the abutting end portions of the fillers of the two wall-forming members shown in Figure 8 after the members have been assembled.

Referring now to the drawings in detail, and more particularly to Figure 1, wherein for the purpose of illustration, there is disclosed one embodiment of the present invention, the numeral 10 represents a wall-forming member or panel which is composed of inner and outer spaced parallel vertical plies 12 and 14 and a, preferably metallic, corrugated filler 16 between the plies 12 and 14. It is to be understood that the term "wall-forming member" is hereinafter used for convenience only in designating these structures and the panels may readily be utilized as wall, ceiling, roof or floor-forming members.

The plies 12 and 14 are provided with adjacent vertical edge portions 18 and 20, the edge portion 20 of ply 14 is inwardly horizontally offset from the edge portion 18 of ply 12. Filler 16 is provided with a V-shaped end portion 22 that extends across and which faces the edge portion 20 of ply 14. Edge portion 22 terminates in a channel-shaped vertical seat element 24 that extends across and which faces edge portion 18 of ply 12.

A stud element 26 is suitably fixed in seat element 24 and extends toward the inner face of ply 12. A vertical locking strip 28, of resilient material, is suitably fixed between stud element 26 and the inner face of ply 12 and has one edge bent to form a vertically extending channeled edge portion 30, one flange of which rests against the flat cut face 32 of stud element 26 to restrict bending of edge portion 30 in one direction.

A group of the members 10 are employed for forming a building wall, and where the end member of one wall is disposed perpendicular to the end member of an adjacent wall, these end members are joined to a corner post 34. The seat elements 24 of the perpendicular members 10 engage relatively perpendicular faces of the posts 34 to which resilient, vertical locking strips 36 and 38 are suitably secured.

The strips 36 and 38 have vertical flanges 40 and 42 that contact each other and which terminate in oppositely extending channeled edge portions 44 and 46 that interlockingly engage the edge portions 30 of the perpendicular members 10.

Corner panels 48 and 50 are secured to the other relatively perpendicular faces of post 34 and have outer vertical edges 52 and 54 which abut the edge portions 20 of the outer plies 14 of the perpendicularly arranged members 10.

Means is provided for joining the inner plies 12 of the relatively perpendicular wall-forming members 10 together. This means comprises a resilient angle strip 56 suitably secured to the adjacent outer faces of the

plies 12. The vertical edges of the strip 56 are bent to form channeled edge portions 58 and 60 which yieldingly engage the vertically disposed channeled edge portions 62 and 64 on the flanges 66 and 68 of a concavo-convexed corner finishing strip 70.

Attention is next directed to Figure 2 wherein there is illustrated the present invention in a slightly modified form. In this embodiment, the wall-forming members or panels are designated by the numerals 72 and 74. The members are similarly constructed and each includes an inner ply 76 and an outer ply 78 as well as a corrugated, preferably metallic, filler 80 which is suitably fixed between the inner and outer plies 76 and 78.

The inner plies 76 of the wall-forming members 72, 74 are equal in length and width to the outer plies 78 of the wall-forming members 72, 74, however, the inner plies are offset with respect to the outer plies so that one vertical edge portion 80 of each member will be inwardly offset with respect to one edge portion 82 of the other ply 76, and the other edge portion 74 of the ply 78 of one member will be outwardly offset from the other vertical edge portion 86 of the member.

The fillers 80 between the plies of members 72 and 74 are provided with V-shaped vertical edge portions 88 and 90 that face and extend across the edge portions 80 and 86 and terminate in flanges 92 and 94 which are spaced from the edge portions 82 and 84. Stud elements 96 and 98 are suitably fixed between the flanges 92 and 94 and the edge portions 82 and 84.

Vertically disposed resilient L-shaped locking strips 100 and 102 are secured to the inner faces of the plies 76 and 78 adjacent the edge portions 86 and 80 thereof and include flanges 104 and 106 that extend toward the end portions 88 and 90, respectively, of the filler.

Additional vertically disposed resilient locking strips 108 and 110 are suitably secured between the stud elements 96, 98 and plies 76, 78 and terminate in vertically disposed channeled edge portions 112 and 114 that rest against the beveled edges 116 and 118 of the stud elements 96 and 98.

As the members 72 and 74 are moved into assembled relation, the stud element 96 of member 72 will enter the portion 90 of member 74's filler and stud element 98 of member 74 will enter portion 88 of filler 80 of member 72. The channeled edge portion 112 of member 72 will snappingly engage the flange 106 of member 74 and the channeled edge portion 114 of member 74 will snappingly engage flange 104 of member 72, to retain members 72 and 74 assembled with edge portions 80 and 82 of member 72 abutting edge portions 84 and 86 of member 74.

Figures 3, 4 and 5 show the fillers 80*a* of the wall-forming members provided with vertically extending undulated strengthening ribs 81 for reinforcing and strengthening the fillers and Figure 6 shows the corrugation of the filler 80*b* provided with V-shaped reinforcing and strengthening ribs 81*b*. The ribs 81 or 81*b* are preferably formed by pressing the material of the fillers.

Figure 7 illustrates the wall-forming members 72*a* and 74*a* in further modified form. In this embodiment, the V-shaped vertical end portions 88*a* and 90*a* of the filler 80*c* of each member 72*a*, 74*a* extend between the plies 76*a* and 78*a* and include vertical flanges 92*a* and 94*a* that rest against the inner face of the plies 78*a* and 76*a*, respectively.

Substantially triangular stud elements 96*a* and 98*a* are suitably retained in the V-shaped portions 88*a* and 90*a* to strengthen and reinforce the same. The apices of the portions 88*a* and 90*a* project outwardly beyond the vertical edge portions of the plies 76*a* and 78*a* so that as the members 72*a* and 74*a* are brought together, the portion 88*a* of member 72*a* will engage portion 90*a* of member 74*a* and flange 92*a* of member 72*a* will rest against the inner face of ply 78*a* of member 74*a*, and, flange 94*a* of member 74*a* will rest against the inner face of ply 76*a* of member 72*a*.

Fasteners 91 extend through ply 78*a* of member 74*a*, flange 92*a* of member 72*a* and into stud element 96*a* of member 72*a*, and, fasteners 93 extend through ply 76*a* of member 72*a*, flange 94*a* of member 74*a* and into stud element 98*a* of member 74*a* to retain the members 72*a* and 74*a* in coplanar relation.

Figures 8, 10 and 11 show wall-forming members 72*b* and 74*b* similar to members 72*a* and 74*a* of Figure 7, although the V-shaped vertical edge portions 88*b* and 90*b* of the fillers 80*d* are not secured to stud elements. The flanges of end portions 88*b* and 90*b* which extend between the plies 76*b* and 78*b* of the members are formed with outstruck tongues 91*b* and 93*b*. Tongues 91*b* have their free end portions extending downwardly and tongues 93*b* have their free end portions extending upwardly in overlapping relationship to tongues 91*b*, so that the tongues 91*b* and 93*b* will interlock, as shown in Figure 11 when the members 72*b* and 74*b* are brought together.

Figure 9 illustrates the wall-forming members 72*c* and 74*c* having corrugated metallic fillers 80*d* whose ends are bent back to form vertical substantially triangular end portions 88*c* and 90*c* that project outwardly from the vertical edges of the members 72*c* and 74*c*.

The end portion 88*c* of member 72*c* is bent back against the inner face of ply 78*c* and the end portion 90*c* of member 74*c* is bent back against the inner face of ply 76*c* of member 74*c*. Tongues 93*c* are struck from the flange 95*c* of end portion 90*c*, and will enter slots 91*c* as the members 72*c* and 74*c* are moved together to engage portion 88*c* and 90*c*; position portion 90*c* of member 74*c* behind ply 76*c* of member 72*c*; and, to position portion 88*c* of member 72*c* behind ply 78*c* of member 74*c*.

Portion 88*c* is provided with a rounded corner surface 101*c* for riding against the adjacent edge of ply 78*c* of member 74*c* and portion 90*c* is provided with rounded corner 103*c* for riding against the adjacent edge of ply 76*c* of member 72*c* as the members 72*c* and 74*c* are brought together.

It is noted that the left vertical edge portion of a wall-forming member is inversely symmetrical to the right vertical edge portion of the wall-forming member so that adjacent vertical edge portions of adjacent wall-forming members may be readily inter-connected to produce a wall construction. Furthermore, in the various embodiments of the invention, the vertical corrugations of the fillers may all be provided with the reinforcing and strengthening ribs of the undulated or triangular shape, as discussed in conjunction with Figures 3–5, inclusive. Due to the novel interlocking means between adjacent panels or wall-forming members, the vertical edge portions of the inner and outer plies of one member will abut the vertical edge portions of adjacent inner and outer plies of an adjacent wall-forming member, to produce a flush interior and exterior wall surface. The panel construction thus described are applicable as ceilings, roofs, walls or floors, and the inclusion of the corrugated fillers provides panels with cores for the passage of wiring, insulation purposes, or for the circulation of heated air as in radiant heating.

What is claimed as new is as follows:

1. A building structure comprising first and second members each being composed of inner and outer plies having adjacent vertical edge portions and a corrugated filler between said plies, said fillers having vertical end portions which contact each other when the members are arranged in coplanar relationship with the edge portions of the plies of one member in abutting relation with the edge portions of the plies of the other member, said end portions of said fillers being V-shape and having end flanges abutting one of said plies of each of said first and second members, said vertical edge portions of

said fillers having tongues struck therefrom, the tongues of one filler interlockingly engaging the tongues of the other filler to maintain the vertical end portions of the fillers in contact with each other.

2. A building structure comprising first and second members each being composed of inner and outer plies having adjacent vertical edge portions and a corrugated filler between said plies, the inner ply of the first member having a vertical edge portion inwardly offset from a vertical edge portion of the outer ply of said first member and the outer ply of said second member having a vertical edge portion inwardly offset from a vertical edge portion of the inner ply of said second member, said fillers having vertical end portions which contact each other when the members are arranged in coplanar relationship with the edge portions of the plies of one member in abutting relation with the edge portions of the plies of the other member, said end portions of

said fillers being V-shape and having end flanges abutting one of said plies of each of said first and second members, said vertical edge portions of said fillers having tongues struck therefrom, the tongues of one filler interlockingly engaging the tongues of the other filler to maintain the vertical end portions of the fillers in contact with each other.

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