

Dec. 21, 1965

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3,224,155

HOLLOW PANEL WITH INTEGRAL KEY CONNECTING FEATURE

Filed Aug. 12, 1963

3 Sheets-Sheet 1

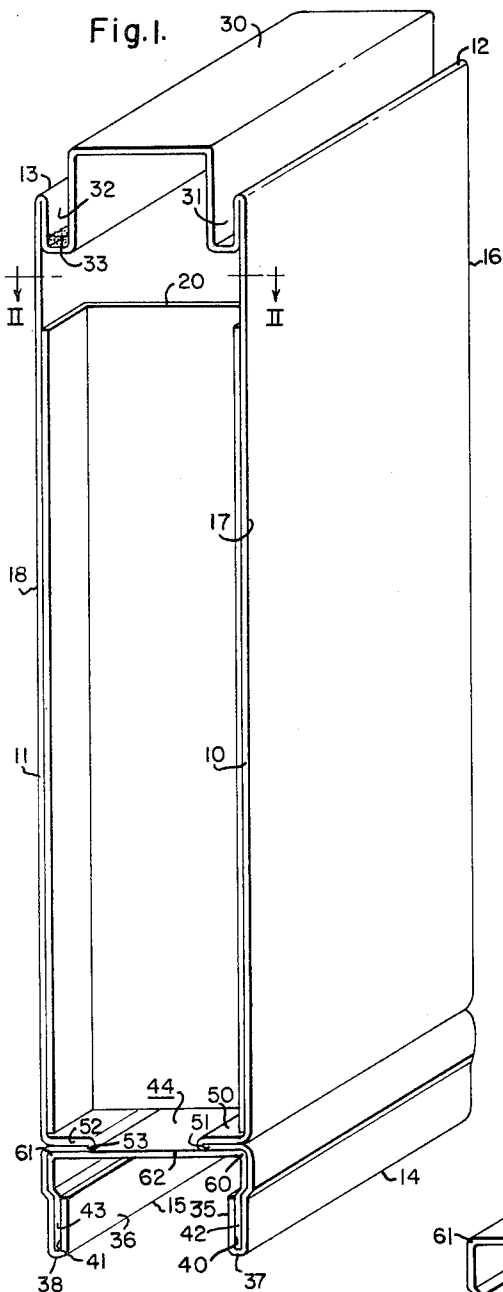


Fig. 3.

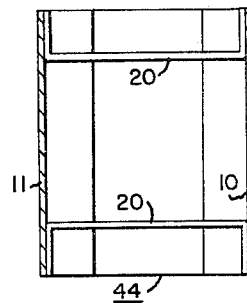
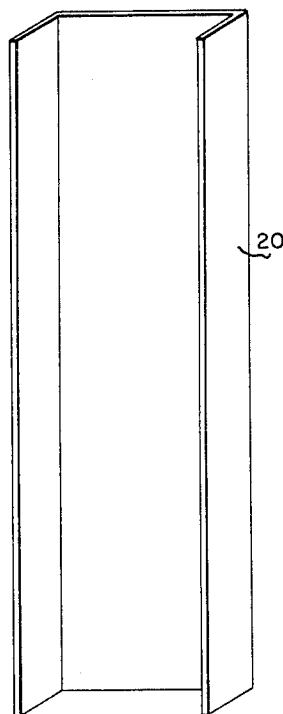


Fig. 2.

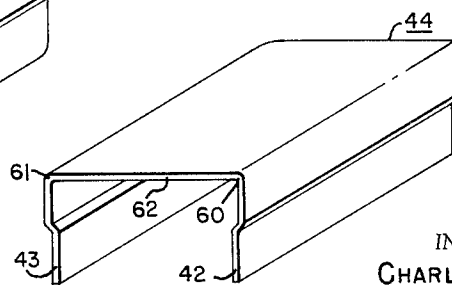


Fig. 4.

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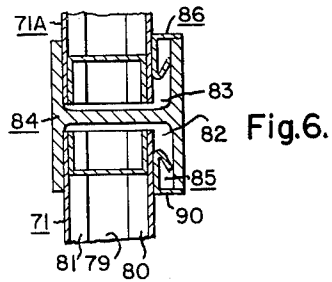
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HOLLOW PANEL WITH INTEGRAL KEY CONNECTING FEATURE

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3 Sheets-Sheet 3

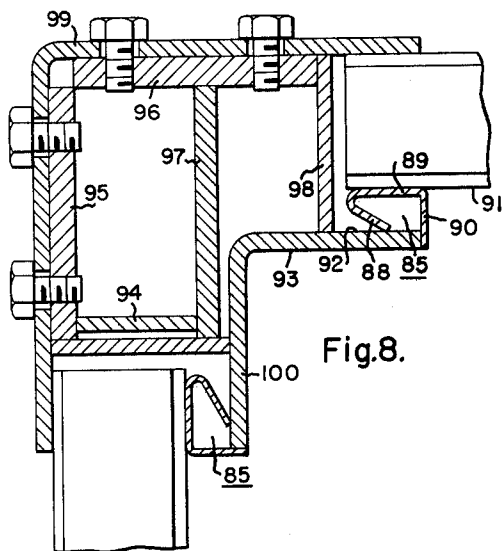


Fig. 8.

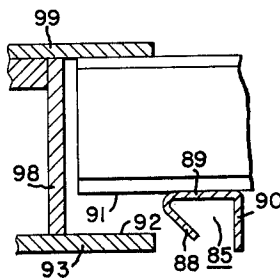


Fig. 9.

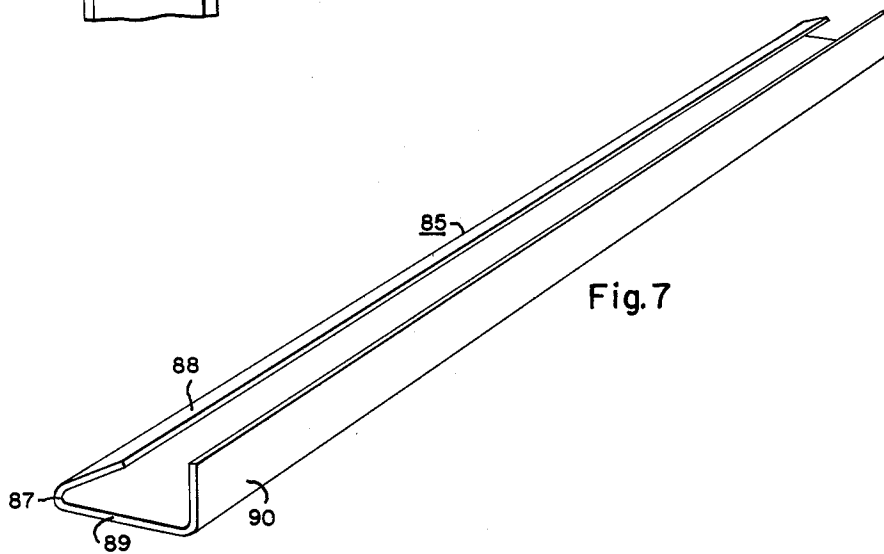


Fig. 7

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HOLLOW PANEL WITH INTEGRAL KEY CONNECTING FEATURE

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2 Claims. (Cl. 52—593)

The present invention relates to panel building constructions.

In the copending patent application Serial No. 111,621, filed May 22, 1961, now abandoned, by Charles G. Rook, there is described a novel interlocking panel board building construction having a spring wedge lock to firmly retain the panel boards in assembled position in the channel beams or uprights of a building framework.

Interlocking panels for quick assembly or demountable building constructions are well known. Such panels are usually formed of parallel spaced sidewall members having upper, lower and side edge surfaces with connecting structures therebetween and one edge will be formed as a tongue element and an opposite edge will be formed as a groove element so that a plurality of such panel boards may be assembled in interlocking relation.

It has been found that a weakness may occur in an assembled panel building construction along the interlocking joints and it is the principal object of the present invention to provide an improved form of interlocking panel board construction having a unique formation to increase the strength of the panel in the vicinity of the interlocking joint and thereby obtain a stronger wall construction when a plurality of such interlocking panels of the invention are assembled in interlocking relation.

Another object of the invention is to provide an improved form of interlocking panel board construction having a simplified arrangement for containing plastic sealing composition in the interlocking joint.

Still another object of the invention is to provide an improved form of demountable and quick assembly panel board building construction.

In accordance with the invention, each panel board is comprised of generally parallel spaced sidewall members having upper, lower and side edges surfaces. One of the connecting structures between edge surfaces, such as the upper edge surfaces, is formed to provide a tongue element and side by side groove elements while the opposite board surfaces, i.e., the lower surfaces are formed as parallel spaced tongue elements with a groove space therebetween adapted to enclose the upper tongue element of a similar panel board in the assembled relation. As previously mentioned, a respective groove is formed along the base of the upper tongue element adjacent each panel board sidewall in a position to receive a respective one of the parallel spaced lower tongue elements of the similar interlocking panel and a plastic sealing compound may be found in the trough of either one of said grooves. In order to strengthen the panel board in the area of the lower parallel spaced tongue surfaces the sidewall surfaces of each tongue are formed inwardly and upwardly to provide spaced parallel side walls within which is retained a U-shaped reinforcing channel member joining the parallel side panel walls in the groove space between the parallel tongue elements. To further strengthen the panel board of the invention in the vicinity of the lower parallel spaced tongue elements, each panel sidewall is crimped inwards and outwards to form a stiffening rib remote from the upper interconnecting tongue surface of the sidewalls and adjacent the lower parallel tongue elements in a position to abut the upper corner surfaces of the reinforcing channel member in the assembled relation.

The interlocking panel boards of the invention are assembled in interlocking relation to form a building wall, roof or floor and their side surfaces are retained in the

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channel surfaces of suitable building framing uprights or roof or floor beams or the like by means of a spring retaining wedge lock member such as that shown and described in the aforementioned patent application.

Further objects, features and the attendant advantages of the invention will be apparent with reference to the following specification and drawings in which;

FIG. 1 is a perspective elevation of a panel board of the invention;

FIG. 2 is a cross-section on the line II—II of FIG. 1;

FIG. 3 is a perspective elevation of the connecting member that is positioned along the side edges of the panel of FIG. 1;

FIG. 4 is a perspective elevation of the reinforcing channel member that is positioned along the bottom edge surfaces between the parallel spaced interlocking tongue elements;

FIG. 5 is a sectional elevation through a side wall and portions of a roof of a building comprising a plurality of the interlocking panel boards of the invention;

FIG. 6 is a cross-section on the line VI—VI of FIG. 5;

FIG. 7 is a perspective elevation of the spring retaining member or wedge lock as used in the building assembly shown by FIGS. 5 and 6;

FIG. 8 is a cross section of a corner construction for the building using panels as shown by FIG. 5; and

FIG. 9 is a fragmentary detail to show how the spring retaining wedge lock member is used.

The interlocking panel board of the invention will now be described in connection with FIGS. 1—4 of the drawings. The panel board generally comprises spaced parallel side walls 10, 11, of sheet material each having upper edge surfaces 12, 13, lower edge surfaces 14, 15, and side edge surfaces all of which are not visible such as surfaces 16, 17 and 18. The parallel spaced side walls 10, 11 are interconnected by side channel members such as the member 20 (FIG. 3) which may be secured thereto in any suitable manner such as by spot-welding when the materials forming the panel board are of aluminum or the like. Obviously the panel board may be formed of any suitable sheet material but a sheet metal is preferred and the space between the side walls 10, 11 may be filled with thermal insulating material, if desired. Also, as shown, the side walls 10, 11 and the inter connecting surfaces along the top edges 12, 13 may be all formed from a single sheet of material although the invention is not to be limited in its broadest aspects to a single sheet structure.

As most clearly shown by FIG. 1 of the drawings, the upper edge surfaces 12, 13 are formed into an interlocking tongue 30 with interlocking grooves 31, 32 along the base of the tongue 30 adjacent the side panel surfaces 10, 11, respectively. A plastic sealing composition of any suitable material may be deposited in either or both of the interlocking grooves 31, 32 such as shown at 33 for purposes to be later described. The lower edge surfaces 14, 15 of the panel sidewalls 10, 11 are formed inwardly and upwardly as shown at 35, 36 to form spaced parallel tongues 37, 38 that may be received in interlocking grooves of a similar panel such as the grooves 31, 32.

The formation of the spaced parallel tongues 37, 38 as described provides respective grooves 40, 41 within which is received the depending leg members 42, 43 of a reinforcing U-shaped channel member 44 (FIG. 4). To further strengthen the panel board in the vicinity of the spaced tongue members 37, 38, each panel side wall 10, 11 is crimped inwardly and outwardly at 50, 51 and 52, 53 respectively to form stiffening ribs remote from the upper edge surfaces 12, 13 and adjacent the lower edge surfaces 14, 15 in a position to abut the corner edges 60, 61 and upper surface 62 of the reinforcing channel 44.

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Referring now to FIG. 5-7 of the drawing, a building construction comprising a plurality of interlocked panel boards such as shown at 70-74 will be described. Each of the parallel spaced tongues of the respective panels are received in the associated interlocking grooves of the next adjacent panel such as shown by the tongues 74', 75 in the grooves 76, 77 in a manner to surround the tongue 78 within thereinforcing channel 79 and as previously mentioned, plastic sealing compound may be deposited in either groove 76 or 77 as desired to seal the joint. The arrangement of tongues 74', 75, 78 and grooves 76, 77 together with the reinforcing channel 79 and ribs 80, 81 in accordance with the invention provides an extremely strong structure in the vicinity of the interlocking joints which prevents twisting or distortion along such joints.

As more clearly shown by FIG. 6 of the drawings, the side edge surfaces of the panel boards such as panels 71, 71A may be received in the channel sections 82, 83 of a building support beam of column 84 and may be retained in position by the respective spring retaining wedge locks 85, 86.

The details of the spring wedge lock 85 are shown by FIG. 7 of the drawings and as shown the member is formed of resilient sheet material with a pointed surface 87 extending back to form side surfaces 88, 89 and with the side surface 89 further extending at approximately 90° therefrom to form a flat back surface 90.

The wedge lock 85 is inserted as shown by FIG. 9 of the drawings by exerting a force against the back surface 90 to wedge the side surfaces 88, 89 against the panel surface 91 and the channel surface 92 of a building frame support member such as the corner channel member 93 shown by FIG. 8 of the drawings. The corner channel upright may be comprised of vertical support members 94-98 and angle members 99, 100 assembled together as shown. Obviously, various corner supporting arrangements may be used so long as channels are provided in which to position the interlocking panels of the invention with the wedge lock spring retaining member. It will be noted that the back surface 90 of the spring wedge lock, when assembled, fully covers the channel opening of the corner post or any other channel support building frame member such as shown by FIGS. 6 and 8 of the drawings.

Various modifications may be made within the spirit of this invention and the scope of the appended claims.

I claim:

1. A building construction interlocking panel board

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comprising, a pair of parallel spaced sidewall members having lower and side edge portions and an integral upper edge connecting portion therebetween formed of sheet material to a generally U-shaped cross-section, portions of each of said sidewalls remote from said upper edge connecting portion and adjacent the lower edges being crimped inwards and outwards to form inwardly extending respective stiffening ribs generally parallel to said lower edge portions, the lower outer portions of said ribs extending downwardly below said ribs substantially in the planes of the respective side walls and then being formed inwards and upwards to provide depending spaced tongue elements with parallel sidewall members and grooves therebetween, a stiffening channel member of U-shaped cross-section having a base portion and depending leg portions positioned between said sidewall members of said panel board with a respective one of its leg portions received in a respective one of said grooves and with its base portion abutting both said ribs and with respective corners of its base portion abutting respective ones of said ribs, and the upper edge connecting portion of said panel board being formed to provide a tongue portion adapted to extend upwards into the stiffening channel member of a similar panel board to be interlocked therewith and having respective interlocking grooves adjacent the base thereof adapted to receive the depending spaced tongue elements of the lower edges of the similar panel board.

2. The invention of claim 1 in which at least one of the respective interlocking grooves adjacent the base of the tongue portion is provided with a plastic sealing material therein.

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