

Jan. 13, 1959

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PANEL CONSTRUCTION
Filed May 23, 1955

2,867,857

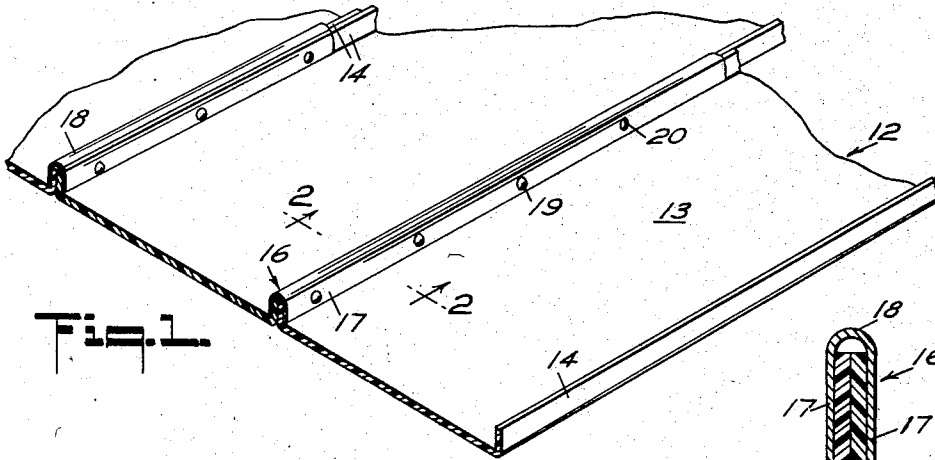


Fig. 1.

Fig. 2.

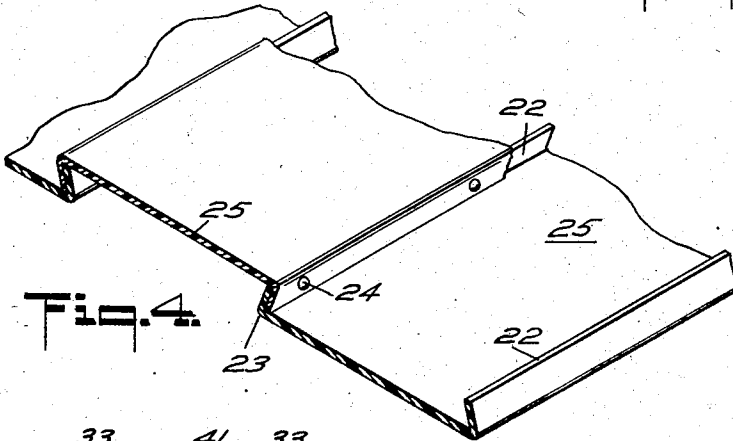
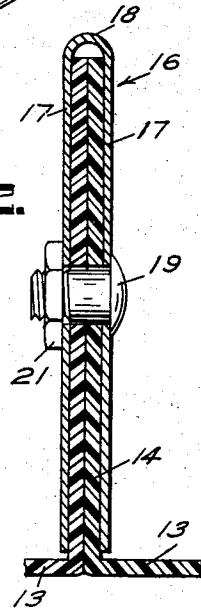


Fig. 4.

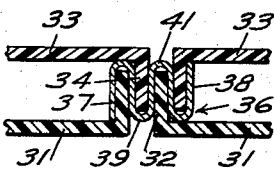


Fig. 5.

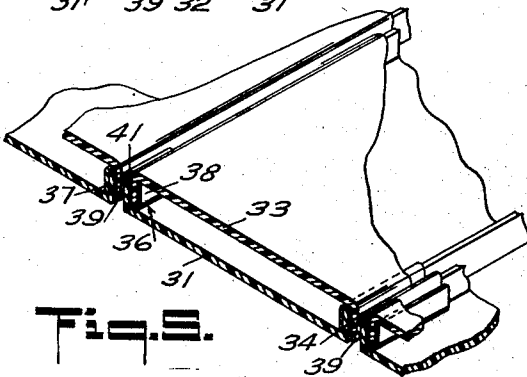


Fig. 6.

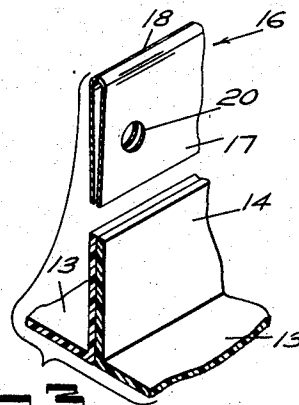


Fig. 3.

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1

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PANEL CONSTRUCTION

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Application May 23, 1955, Serial No. 510,073

3 Claims. (Cl. 20—15)

This invention relates to construction of panels made of fiberglass or similar plastic compositions, and is more particularly directed towards a panel of this type adapted for connection to a similar adjacent panel so as to provide a complete wall or roof structure.

Recently, fiberglass and similar panels have been utilized as construction materials, particularly for such structures as patio coverings, wind breaks and the like. In general, these panels have been made in a generally flat or corrugated rectangular shape, and by butting or lapping adjacent side edges of a pair of panels, a substantially continuous construction is provided. However, irrespective of whether a lap or butt joint is utilized, in order to provide the necessary structural rigidity to a wall or roof structure, it has been necessary to provide joist or studs along the adjacent panel edges as backing or reinforcing members, thus materially adding to the cost of installation, and in many instances interfering with the appearance of the finished structure.

Accordingly, it is an object of the present invention to provide a construction panel formed of fiberglass or similar material having means associated therewith which materially increases the structural rigidity and strength of the panel, particularly when two or more panels are secured together to form an integral wall or roof structure.

Another object of my invention is to provide a panel structure of the character described in which the respective panels are each provided with reinforcing members extending along opposed edges thereof, such members further providing means for attaching edges of adjacent panels together.

A further object of the invention is to provide a wall or roof structure employing a plurality of panels of the character described which substantially eliminates the need for intermediate studs or joists.

A still further object of this invention is to provide a panel of fiberglass or like material having an extremely shallow channel-like configuration, in which the flanges of adjacent panels may be secured together to provide a generally planar structure, or in which a pair of such panels may be used in combination to provide a hollow wall construction with each pair then being attachable to an adjacent pair of similarly disposed panels.

Yet another object of the invention is to provide a panel of the character described of a modified shallow channel form whose flanges when in assembled relationship with an adjacent panel produces a locking action to resist displacement of the panels against movement in two normally related directions.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may

2

be adopted within the scope of the invention as set forth in the claims.

Referring to said drawing:

Figure 1 is a perspective view of a plurality of panels formed in accordance with the teachings of this invention in assembled relationship to provide a continuous structure.

Figure 2 is a cross-sectional view, on an enlarged scale, taken substantially along the line 2—2 of Figure 1. Figure 3 is a partial perspective view of a pair of panels in abutting relationship just prior to the installation of the retaining clip or member.

Figure 4 is a view similar to Figure 1 but illustrating a modified form of panel construction.

Figure 5 is a perspective view similar to Figure 1 but illustrating a still further modified form of panel construction.

Figure 6 is an enlarged cross-sectional view of one of the joints illustrated in Figure 5.

As disclosed in Figures 1 through 3 of the drawing, it will be seen that the panel of the present invention, generally designated by the numeral 12, is formed of fiberglass or similar plastic material and is of a shallow channel-like form provided with a web 13 and a pair of short flanges 14 extending substantially normal to the web along the longitudinally extending edges thereof. By way of example, the length of the panel may be of any suitable dimension such as 6 or 8 feet, the width approximately 16 inches, which corresponds to conventional joists or stud positions, and the flanges approximately 2 inches deep. The thickness of the material will usually be in the neighborhood of $\frac{1}{16}$ of an inch and it will be appreciated that without the provision of the flanges 14, a long panel of the type described would not have sufficient structural rigidity in and of itself to be used as a component part of a wall or roof structure, without relying on conventionally spaced wood joists or studs intermittently positioned adjacent the longitudinally extending edges of a flat panel.

In constructing a wall or roof with the panels, a plurality of panels may be positioned with the flanges of adjacent panels disposed in abutting relationship as clearly illustrated in Figures 2 and 3 of the drawing, thereby placing the web portions 13 in substantially coplanar and continuous relationship.

In order to secure the panels together in the manner above mentioned, I prefer to use a U-shaped metal clip 16 formed of aluminum or the like and comprising a pair of generally parallel legs 17 joined together at one end thereof by an arcuate portion 18. The clip is preferably coextensive with the panel length, but if desired a plurality of shorter clips could be used. As illustrated, a plurality of apertures, spaced longitudinally of the clip length, are drilled through the legs 17. With the clip in place, the person installing the panels may use the apertures 20 as a guide for a drill to drill an axially aligned hole through the panel webs 14. Then, by means of a bolt and nut 19 and 21, the clip and adjacent abutting panel webs may be secured together. Obviously, in place of the bolt and nut shown other fastening devices such as rivets or self threading screws could be utilized without departing from the spirit of the invention. As best illustrated in Figure 3, it will be noticed that the legs of the clip preferably slope towards each other adjacent the distal ends of the legs thereby requiring the clip legs to be slightly forced to an open position to receive the abutting webs. By virtue of this arrangement, even before the fastening elements are inserted through the clip and webs, the resiliency of the clip legs will snugly engage the outermost walls of the webs and maintain the webs in tight abutting relationship.

From the foregoing description, it will be appreciated that at each joint or connection along the longitudinal edges of the panels there will be provided a reinforcing web or member which is formed from the webs and clip assembly. This will materially increase the rigidity and strength of the panel construction notwithstanding the elimination of conventional joists or studs at the point of panel connections.

In Figure 4 I have illustrated a modified form of panel construction in which the webs 25 of adjacent panels are positioned in offset parallel relationship and in which means are provided for resisting separation of adjacent panels in a direction normal to the web surface as well as to direct separation of the panels in the general plane thereof. As illustrated, the web 25 is substantially identical to the web 13 previously discussed but in place of the normally disposed flanges 14 along the longitudinally extending edges of the panel, the flanges 22 taper inwardly from the edges of the web. In this manner, by inverting every other panel, the tapered or inclined flanges will form an interlocked connection as illustrated at 23 and effectively resist separation in all directions except by sliding one panel out from the other along the length thereof. To secure adjacent panels together, it is possible to merely drill holes through the adjacent flanges and secure them together by bolts 24 or the like.

A still further modified form of construction is illustrated in Figures 5 and 6 of the drawing wherein a pair of panels are utilized to provide a hollow wall construction which is naturally of greater strength and possesses insulation properties not capable in the types of construction previously discussed. In this embodiment, a lower panel 31 having its flanges 32 directed upwardly is used in combination with an upper panel 33 having its vertical flanges directed downwardly. By using a pair of such panels, when an adjacent pair is brought into contiguous relationship, along the longitudinally extending edges of the outermost flanges of each set, they may be secured together by a clip 36 best illustrated in Figure 6 of the drawing. As will be seen, the clip is provided adjacent one end thereof with a downwardly directed U-shaped portion 37 and at the other end thereof with an upwardly directed similar U-shaped portion 38. The intermediate portions of the clip are divided into additional U-shaped portions 39 and 41 respectively, the arrangement of the clip being such that each U-shaped portion substantially completely surrounds one of the adjacent panel flanges and separates each flange from the parallel adjacent flange as well as securing all of the flanges together against relative displacement. In erecting a wall or roof of the hollow type construction, it is possible to provide one set of panels 31 and 33 and place the clip portions 37 and 39 on the respective flanges 32 and 34. A second panel 31 may then be brought into position and engaged with the clip portion 41 and finally the other upper panel 33 may have its flange engaged in the clip portion 38 thereby securing all four panels and the flanges thereof in operative relation. As many panels as may be desired may be added along the longitudinal edges of each pair as will be obvious from an examination of Figure 5 of the drawing.

From the foregoing description it will be appreciated

that while the panels and wall or roof structures formed therewith are extremely simple in construction and likewise simple to erect, they provide structures of considerable strength and rigidity by incorporating their own stiffening or reinforcing means at the lines of connection of adjacent panel sections. It will likewise be appreciated that the installation may be made by persons possessing no special qualifications and without requiring any elaborate construction equipment.

What is claimed is:

1. A structure comprising a plurality of panels, each of said panels having a generally flat web portion and substantially normally disposed flanges extending from the edges thereof, one pair of panels being positioned with the webs thereof in parallel spaced overlapping relation and the flanges directed towards each other, another pair of similarly positioned panels disposed adjacent said first mentioned pair in substantially coplanar relationship, and clip means securing the flanges in each pair and of adjacent pairs together, said means having a plurality of U-shaped bends extending in contra directions with each bend embracing a single flange of one of said panels.

2. Construction apparatus comprising a plurality of panel sections, each of said sections having a web portion and a generally normally disposed flange extending along the longitudinally extending edge of said section, said panels being positioned with a pair thereof in parallel spaced overlying relationship with the flanges thereof directed towards each other and positioned in parallel relationship, two of such pairs of sections being brought into adjacent relationship, with a space existing between each flange of each section and the adjacent flanges of each pair of sections, and a clip member having a plurality of U-shaped depressions formed therein extending longitudinally of said panels along the line of connection thereof with each of said U-shaped portions engaging a flange on one of said panels and with each flange snugly embraced on both sides thereof by said clip portions.

3. Apparatus as set forth in claim 2 in which said clip member is provided with legs of resilient material and normally tapering towards each other so as to define a constricted space therebetween, said space being less than the double thickness of said abutting flanges.

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