Nov. 1, 1966 P. F. HALSEY ETAL 3,282,006

PANELING STRUCTURES

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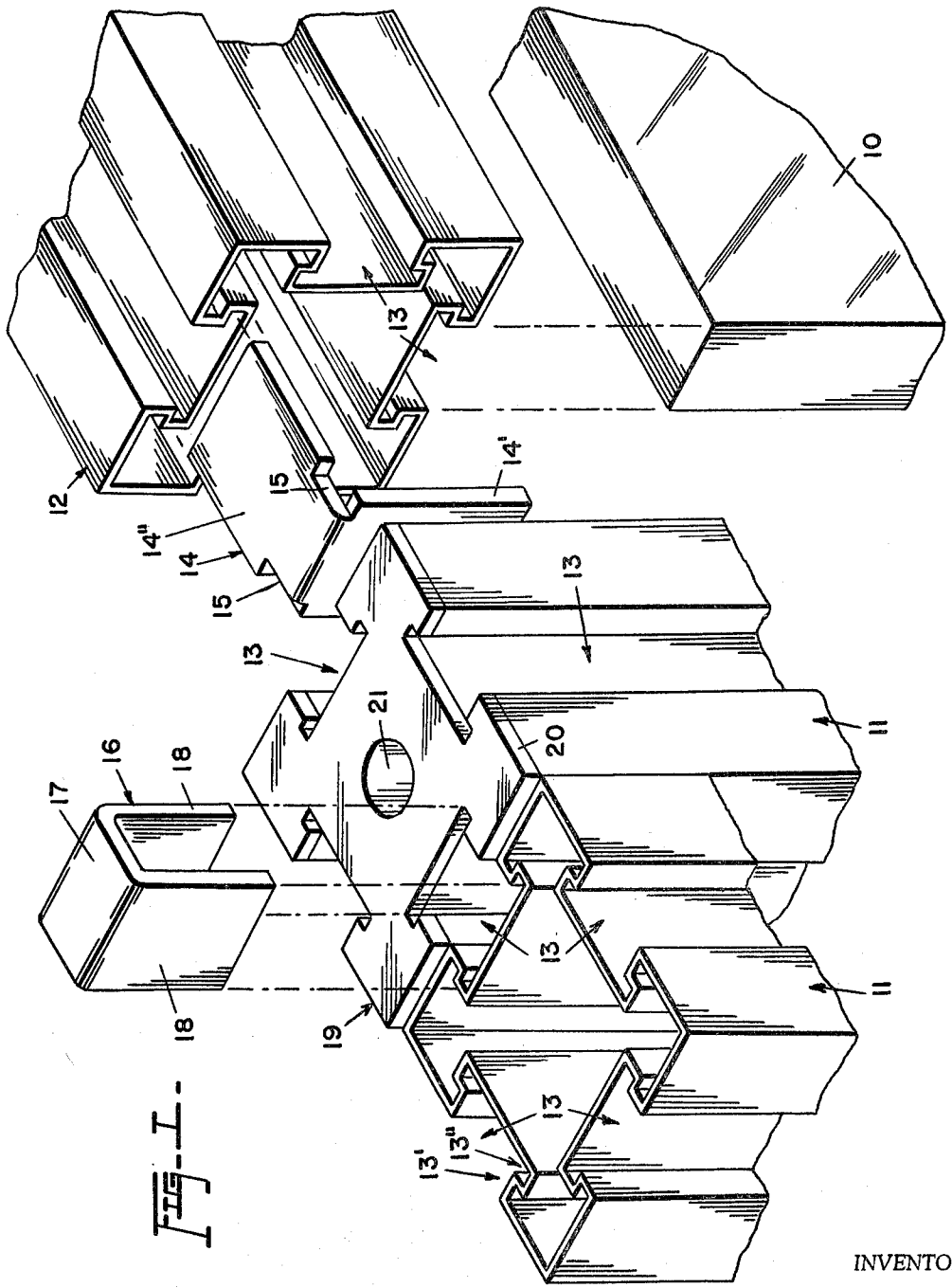

FIG. 1

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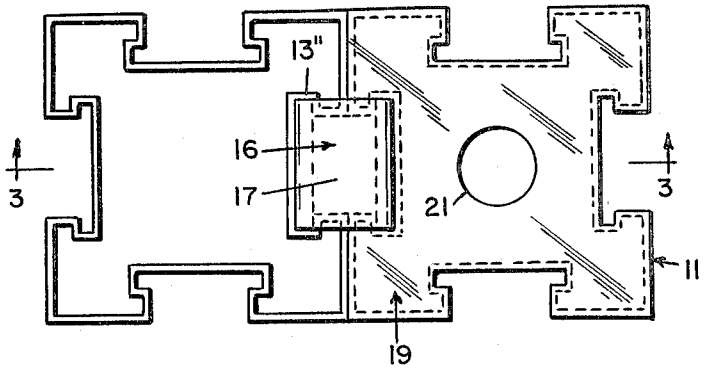

FIG. 2.

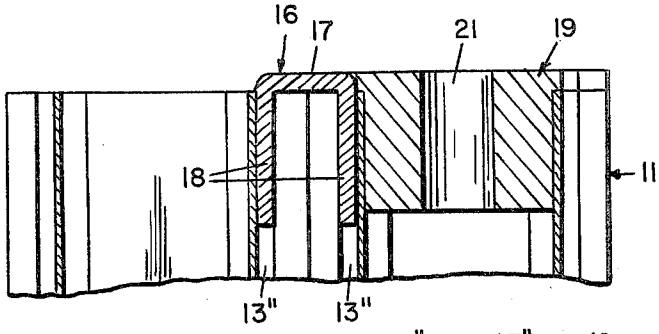

FIG. 3.

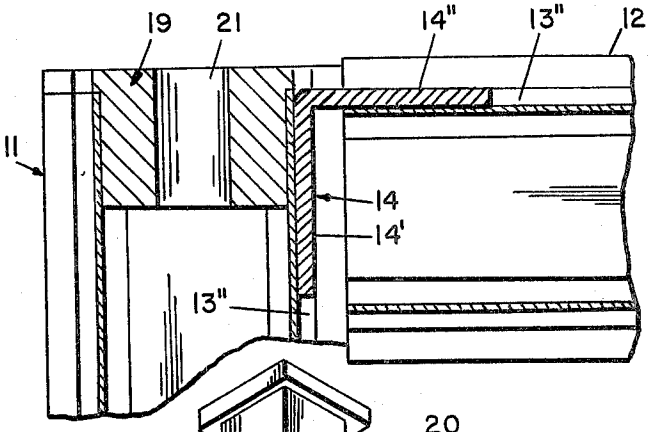

FIG. 4.

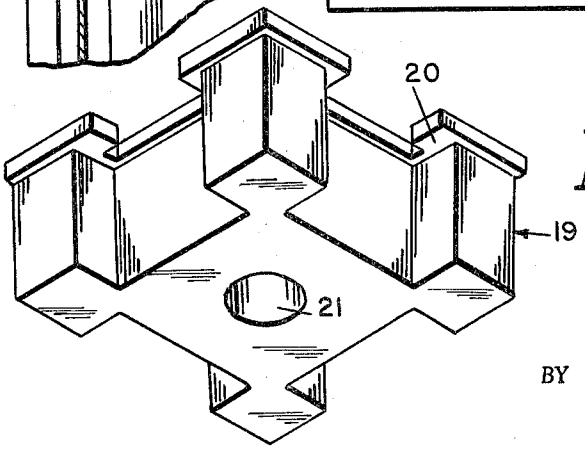

FIG. 5.

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FIG. 6.

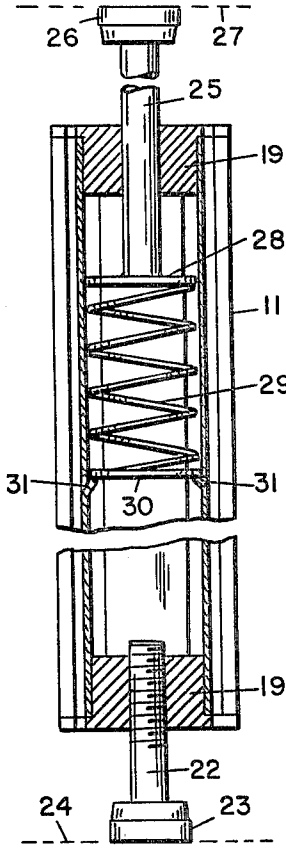
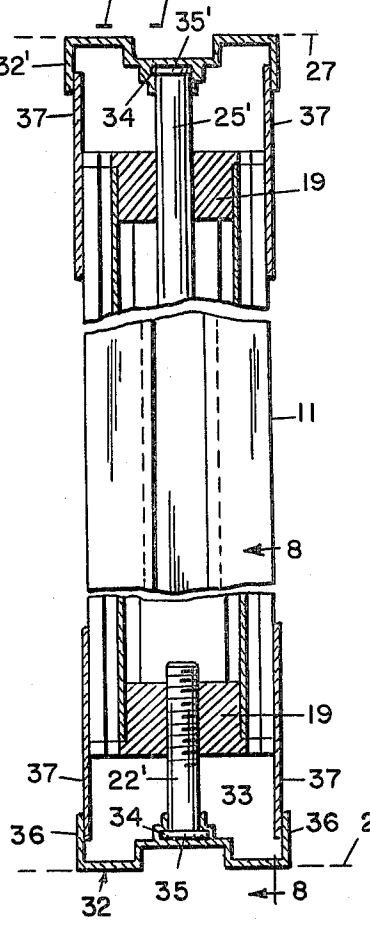


FIG. 7.



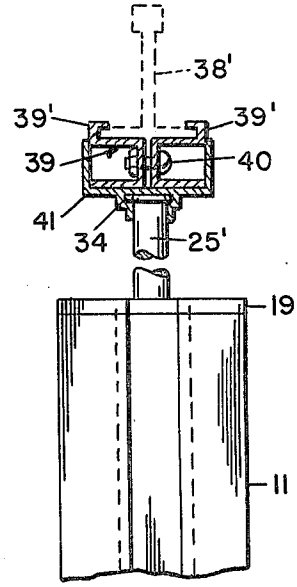


FIG. 11.

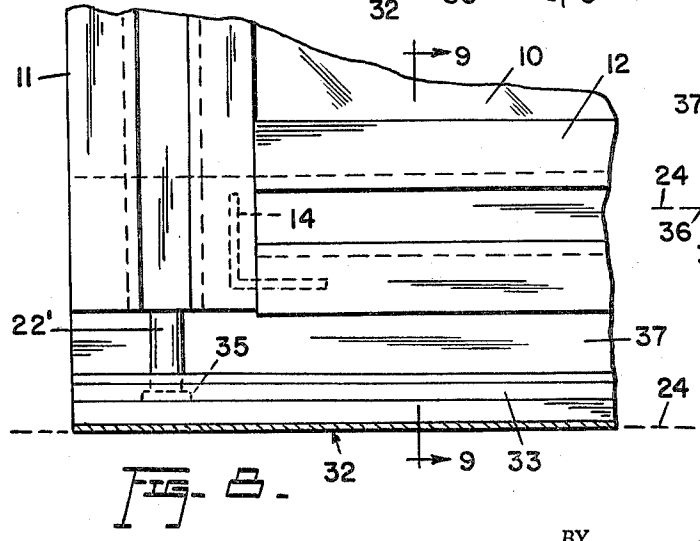


FIG. 8.

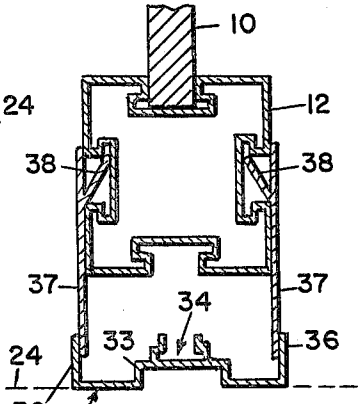


FIG. 9.

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PANELING STRUCTURES

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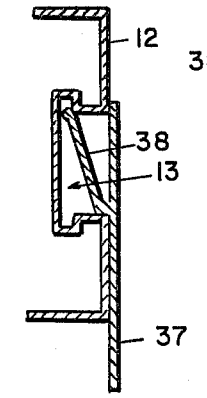


FIG. 10.

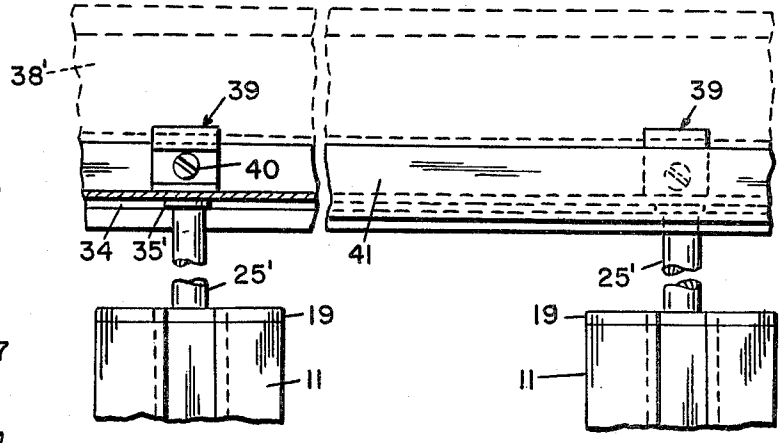
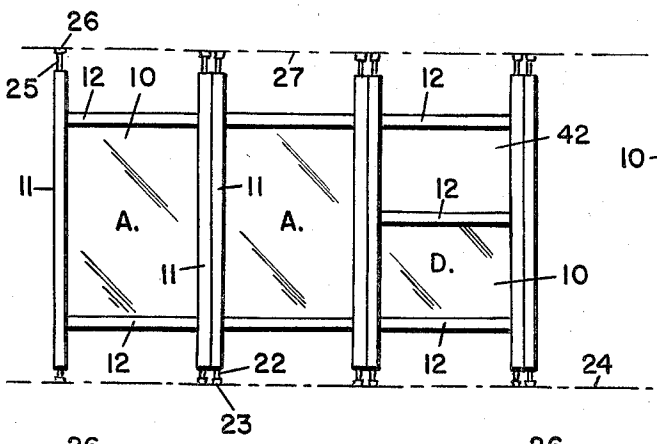


FIG. 12.



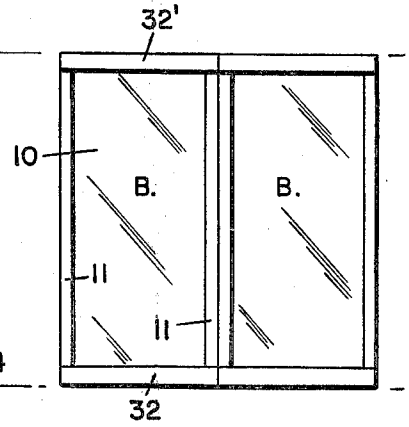


FIG. 13.

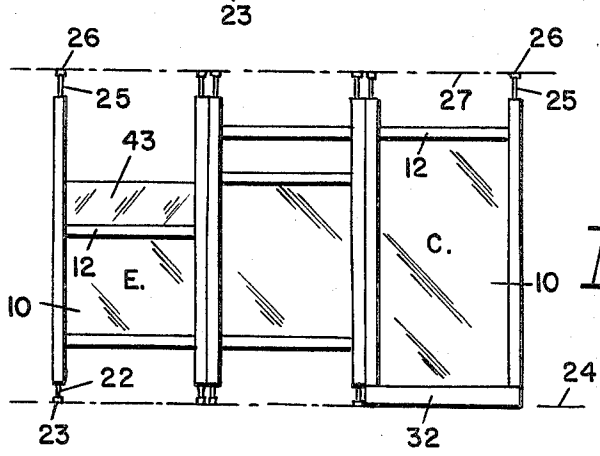


FIG. 14.

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United States Patent Office

3,282,006

Patented Nov. 1, 1966

3,282,006

PANELING STRUCTURES

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Filed July 9, 1963, Ser. No. 293,724
2 Claims. (Cl. 52—475)

This invention relates to new and useful improvements in paneling structures such as may be used for partitions, room dividers, enclosures, or the like, and the principal object of the invention is to provide related structural components which may be quickly and easily assembled into a panel unit of a desired size and type, such a panel unit being usable either singly or in multiples and being readily removable so that when several panel units are connected together, any one of them may be conveniently removed and replaced by another.

The panel unit in accordance with the invention embodies a panel member and frame members which surround and support the edges of the panel member, an important feature of the invention residing in forming the frame members from a hollow extrusion with channelled sides to receive the panel member as well as clip-like elements for connecting the frame members together.

Some of the frame members of the panel unit are vertically disposed, and another important feature of the invention resides in the provision of means at the upper and lower ends of the vertical frame members for engaging the ceiling and the floor, whereby to support the panel unit in a desired position without the use of nails, screws, or the like.

Other advantages of the invention reside in its simplicity of construction, in its sturdiness, and in its adaptability to convenient and economical manufacture.

With the foregoing more important object and features in view and such other objects and features as may become apparent as this specification proceeds, the invention will be understood from the following description taken in conjunction with the accompanying drawings, wherein like characters of reference are used to designate like parts and wherein:

FIGURE 1 is a group fragmentary isometric view of some of the components of the invention;

FIGURE 2 is a top plan view of two vertical frame members connected together by a clip;

FIGURE 3 is a fragmentary vertical sectional view, taken substantially in the plane of the line 3—3 in FIG. 2;

FIGURE 4 is a fragmentary vertical sectional view showing the connection of a horizontal frame member to a vertical frame member;

FIGURE 5 is an isometric view of the end cap used in the invention;

FIGURE 6 is a vertical sectional view on a reduced scale of a vertical frame member with floor and ceiling engaging means;

FIGURE 7 is a view, partly in vertical section and partly in elevation of a vertical frame member with a modified embodiment of the floor and ceiling engaging means;

FIGURE 8 is a fragmentary vertical sectional view, taken substantially in the plane of the line 8—8 in FIGURE 7;

FIGURE 9 is a fragmentary cross-sectional detail, taken substantially in the plane of the line 9—9 in FIGURE 8;

FIGURE 10 is a fragmentary vertical sectional detail of a side portion of FIGURE 9 on an enlarged scale;

FIGURE 11 is a fragmentary view, partly in elevation and partly in section of a vertical frame member with another modified form of the ceiling engaging means;

FIGURE 12 is a fragmentary view, partly in elevation and partly in section, taken from the side of FIGURE 11 and showing two of the vertical frame members with the ceiling engaging means; and

FIGURES 13 and 14 are diagrammatic elevations on a reduced scale, showing various different panel units such as may be constructed with the invention.

Referring now to the accompanying drawings in detail, FIGURE 1 illustrates the construction of a panel unit which comprises a rectangular panel member **10** which is adapted to have its marginal edge portions supported by two vertical frame members and two horizontal frame members, one of the vertical members being shown at **11** and one of the horizontal members being shown at **12**. The frame members **11**, **12** are of identical construction, preferably in the form of a hollow extrusion which is cut to desired lengths for framing a panel member **10** of a given size. As will be noted, the frame member extrusion is square in cross-section and is provided in each of its four sides with a longitudinal channel **13** having an open outer side **13'** and a relatively wider inner portion **13''**. The marginal edge portions of the panel member **10** are received in the channels **13**, the width of the outer side **13'** of the channels corresponding to the thickness of the panel member so that the panel member is properly held in the channels of the frame members. The panel member **10** may be formed from any suitable material such as wood, composition board, glass, or the like.

In assembling the panel unit, one end of the horizontal frame member **12** is placed against one side of the vertical frame member **11** and a right-angled clip **14** is used for connecting the two frame members together as will be apparent from FIGURES 1 and 4. The clip **14** includes one arm portion **14'** which is slidably inserted into the inner portion **13''** of the channel **13** in the vertical frame member **11**, and a second arm portion **14''** which is similarly inserted into the channel portion **13''** of the horizontal frame member **12**. The arm portions **14'** and **14''** of the clip are as wide as the inner portions **13''** of the channels and the clip portion **14''** adjacent the portion **14'** is recessed at opposite sides thereof as at **15** so that it is reduced in width at that point to permit the clip to project laterally outwardly through the relatively narrow portion **13'** of the channel in the vertical member **11**. An assembled panel unit is shown, for example, at A in FIGURE 13, wherein the panel member **10** is framed by a pair of vertical frame members **11** and by upper and lower horizontal frame members **12**. Such a panel unit may be used either singly or in multiples connected together either co-planary or at right angles to each other. For example, FIGURE 13 shows two of the panel units A, A with two of their vertical frame members **11** in juxtaposed, contacting relation, which is also illustrated in FIGURE 1. A U-shaped clip **16** is utilized to connect the members **11** together at the upper ends thereof and a similar clip is used at the lower end of the members. The clip **16** includes a bight portion **17** and a pair of side portions **18**, the side portions **18** being slidably received in the inner portions **13''** of the channels in the members **11** while the bight portion **17** straddles the ends of the members, as is illustrated in FIGURES 2 and 3.

The ends of the vertical frame members **11** are provided with caps **19**, one of which is best shown in FIGURE 5. The cap **19** is shaped so as to fit snugly into the end portion of the frame members and is provided with an outwardly projecting marginal flange **20** which seats against the end of the frame member when the cap is inserted therein. The cap is formed with a central, vertical bore **21** which is plain in the instance of a cap used at the upper end of the vertical member, and is screw-threaded in the cap used at the lower end. The screw-threaded bore in the cap **19** at the lower end of the

frame member **11** adjustably receives a screw-threaded stud **22** which projects downwardly from the cap and is equipped at its lower end with a suitable pad **23** to rest on the floor **24**, as is clearly shown in FIGURE 6. By adjusting the stud **22** in the lower cap **19**, the panel unit may be leveled as required.

Also as shown in FIGURE 6, the plain bore in the cap **19** at the upper end of the frame member **11** slidably receives a stem or pin **25** which projects outwardly from the cap and is equipped at its upper end with a suitable pad **26** to engage the ceiling **27**. The inner end of the pin **25** is provided with a disc **28** which is contacted by one end of a compression spring **29**, the latter being positioned inside the frame member **11** and having its lower end seated on a plate **30** which is supported inside the frame member by inwardly struck detents **31**. It will be apparent from the foregoing that the spring **29** biases the pin **25** upwardly so as to press the pad **26** firmly against the ceiling **27** and thus hold the entire frame member **11** and the associated panel unit in place.

If the panel unit is high enough to reach from the floor to the ceiling, as for example, the panel units B in FIGURE 13, a somewhat modified floor and ceiling engaging means are employed as shown in FIGURES 7–10 inclusive. In such event a floor rail **32** is placed below and in parallel with the bottom horizontal frame member of the panel unit, the length of the rail **32** corresponding to the width of the panel unit including the vertical frame members **11** thereof. The floor rail has a raised center portion **33** provided with a guide channel **34** to slidably and rotatably receive an enlarged head **35** provided at the lower end of the adjusting stud **22'**, it being noted that the floor rail also has a pair of upstanding side flanges **36**. The panel unit is thus supported on the floor rail and a pair of side plates **37** are provided to cover the space between the floor rail and the lower horizontal frame member of the panel unit. The side plates **37** are equipped at the inside thereof with inwardly projecting tongues or strips **38** which, as is best shown in FIGURE 10, fit into the channel **13** of the lower frame member **12** and lockably engage the same so as to hold the side plates assembled to the frame member, while the lower edge portions of the side plates fit inside the side flanges **36** of the floor rail **32**. The ceiling engaging means at the top of the panel unit comprise a ceiling rail **32'** and side plates **37** which are of the same construction as the floor rail and side plates already described. The spring pressed pin **25'** is equipped with a head **35'** to engage the channel **34** in the ceiling rail in the same manner as the head **35** of the stud **22'** in the floor rail.

Another modified embodiment of the ceiling engaging means is shown in FIGURES 11 and 12, this being intended to be used for suspended ceilings utilizing inverted T beams **38**. In this arrangement clamps **39** are applied at longitudinally spaced points to the beam **38**, each clamp consisting of a pair of complemental sections **39'** which are clamped against the beam by a screw **40**. A ceiling rail **41** underlies the clamps **39** and is pressed against the clamps by the spring loaded pin **25'**, the head **35'** of which is fitted into a channel **34** provided at the underside of the rail **41**.

It will be apparent from FIGURES 13 and 14 that panel units of various sizes and types may be constructed and assembled, as for example, the panel units A which have the horizontal members **12** thereof spaced from the floor and ceiling; the panel units B which extend from the floor to the ceiling; a panel unit C which extends from the floor but has its upper frame member **12** spaced downwardly from the ceiling; a panel unit D which has an extra horizontal member **12** spaced above the top member **12** of the panel member **10** so as to provide a window opening **42**; or a panel unit E which has a horizontal member **12** at the upper edge of the panel member **10** and a glass panel **43** above the member **12**, various other arrangements being manifestly possible.

While in the foregoing there have been described and shown the preferred embodiments of the invention, various modifications may become apparent to those skilled in the art to which the invention relates. Accordingly, it is not desired to limit the invention to this disclosure and various modifications may be resorted to, falling within the spirit and scope of the invention as claimed.

What is claimed as new is:

1. In a paneling structure, the combination of a rectangular panel member, a pair of elongated frame members for two adjacent side edges of said panel member, each of said frame members comprising a hollow extrusion of a rectangular cross-section having a width substantially greater than the thickness of said panel member, each frame member having each of its two opposite side walls extruded to form a central longitudinally extending channel of a T-shaped cross-section, said channel having a relatively narrow open outer side corresponding in width to the thickness of said panel and also having a relatively wider inner portion defined by a flat inner wall member and right-angular side edges, said frame members being disposed at right angles to each other with an end portion of one of them overlapping and abutting an end of the other at a corner of said panel member, one side edge of the panel projecting into one channel of the overlapping frame member and abutting the flat inner wall member of the channel, an adjacent side edge of the panel projecting into one channel of the overlapped frame member and abutting the flat inner wall member of the channel, and a right-angled clip for connecting said frame members together at the corner of the panel, said clip having one flat leg slidably inserted in the wide inner portion of said one channel of the overlapping frame member and a second flat leg slidably inserted in the wide inner portion of the other channel of the overlapped frame member, a portion of the second leg adjacent the first leg of the clip being recessed at opposite sides thereof to permit the second leg to project through the narrow outer side of said one channel of the overlapping frame member.

2. The structure as defined in claim **1** together with a third frame member of identical construction as the first mentioned pair of frame members, said third frame member being juxtaposed to and coterminal with said overlapping frame member, and a U-shaped clip for connecting the third member and the overlapping member together, said U-shaped clip having a pair of flat legs slidably inserted in the wide inner portion of the other channel of the overlapping frame member and in the wide inner portion of an adjacent channel of the third frame member respectively, and also having a flat bight portion spanning the narrow outer sides of the channels at the ends of the third and overlapping members.

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