Feb. 20, 1962 J. L. CONROY 3,021,576

FRAME STRUCTURE

Filed Nov. 18, 1955 2 Sheets-Sheet 1

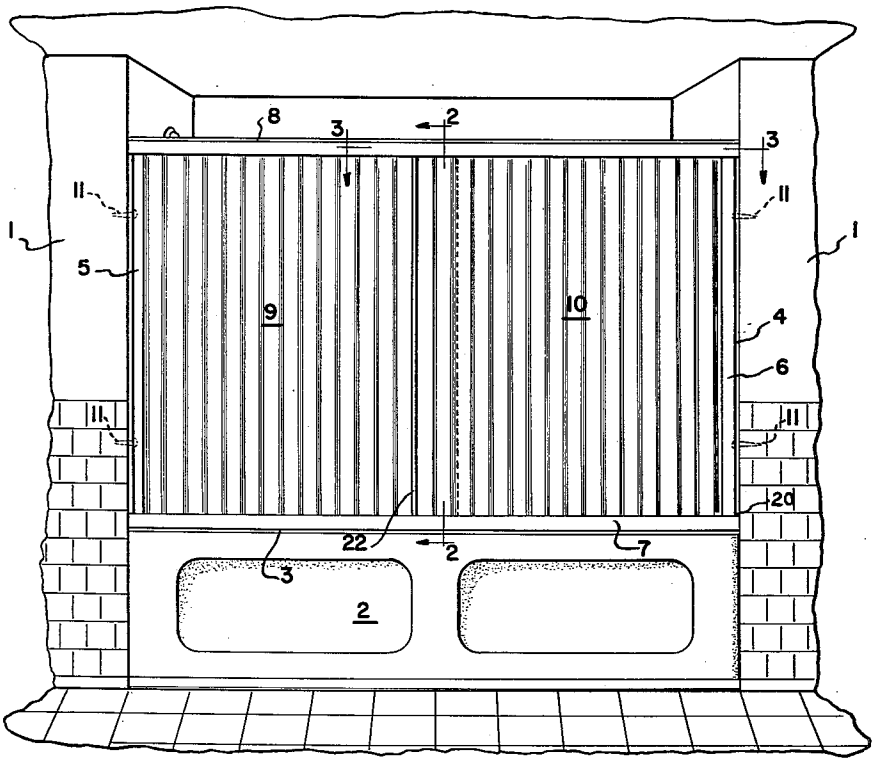


FIG. 1.

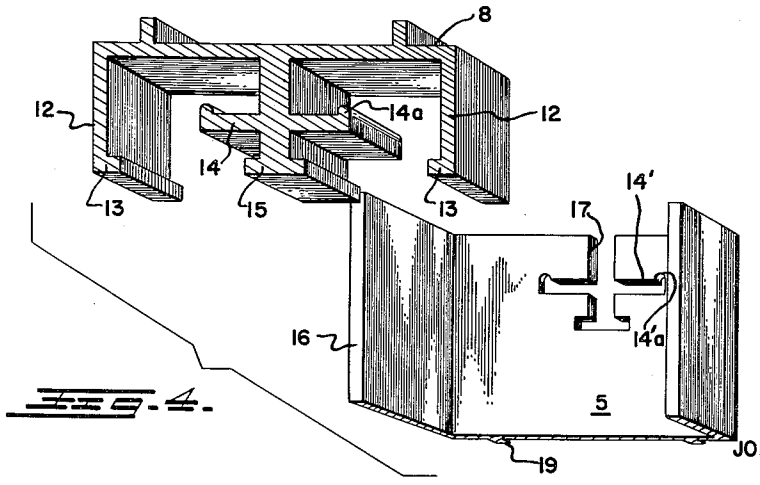


FIG. 4.

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Fig. 3.

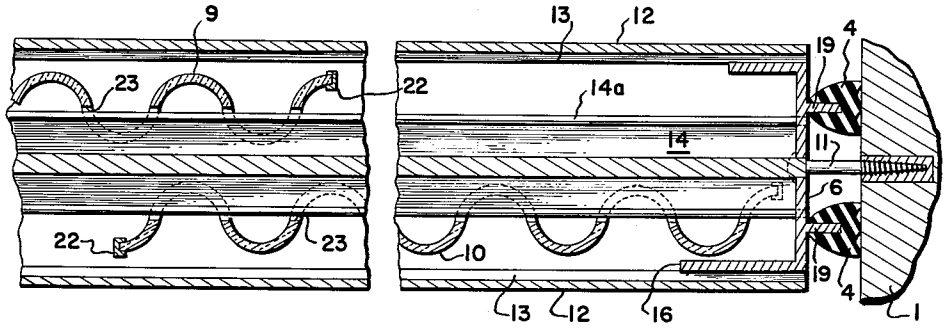


Fig. 2.

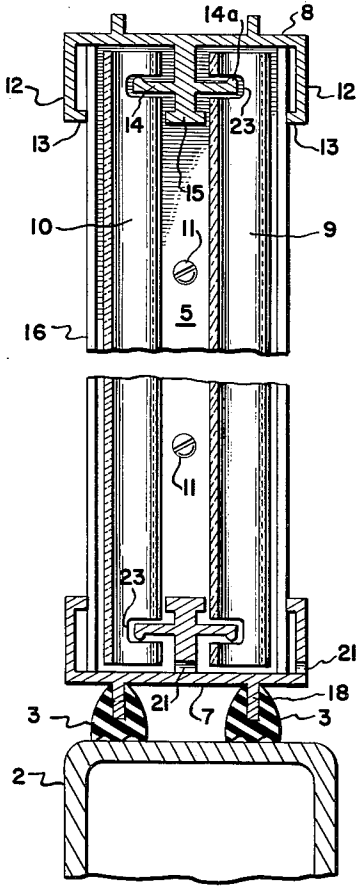


Fig. 5a.

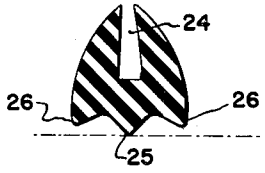
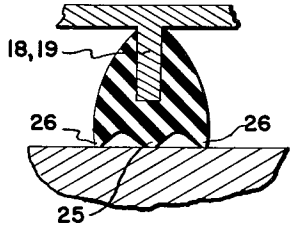


Fig. 5b.



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United States Patent Office

3,021,576
Patented Feb. 20, 1962

3,021,576

FRAME STRUCTURE

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Filed Nov. 18, 1955, Ser. No. 547,791
3 Claims. (Cl. 20—11)

This invention relates to improvements in closures having sliding panels, and adapted to enclose, for example, a combined bathtub and shower, and relates more particularly to a frame structure.

Prior art devices of this general type are well known. The provision of expensive rollers and hangers has been necessary for proper operation of these prior art closures, since they usually include relatively heavy glass fixedly mounted in frames to provide the sliding panels.

In order to provide for adapting a closure unit to openings of various sizes, it has been necessary in the past to provide separate fasteners, such as angle brackets and screws, fastened into the tub rim itself, for securing the tracks in place. These angle brackets and screws presented a sealing problem, and the sealing means have not always been satisfactory.

An object of this invention is to provide a sliding panel closure unit having fixed horizontal tracks and vertical jamb members which interconnect at the corners in such a manner that the track members may be cut to length for installation, and wherein the only required fastening means are between the jamb members and the vertical walls of the opening in which the closure unit is placed.

Incidental to this invention is the provision of improved sealing means in the form of resilient sealing strips which are slightly distorted when mounted on projecting runners on the fixed track and jamb members, wherein the distortion, because of the particular construction of the strips, provides a tight fit with the runners on the tracks and jambs and with the walls and tub rim, or other surfaces against which the closure is installed.

This and other objects of the invention, which will become apparent from the following detailed description, are attained in part by providing a frame for the tub enclosure unit comprising a pair of vertical jambs and a pair of horizontal tracks. The vertical jambs are provided at each extremity thereof with slots adapted to receive therein projecting portions of the tracks. The frame may thereby be adjusted to any width merely by adjusting the length of the horizontal tracks. Each of the upper and lower horizontal tracks is identical in configuration and cross-section, each being provided with lateral flanges and a centrally-disposed dependent web. Each of the lateral flanges of each track and each centrally-disposed dependent web is provided with guide means which provide support and define paths for the two corrugated panels which are suspended between the two tracks. The size of the two corrugated panels is preferably such as to provide a slight overlap between the two when they are extended as far as possible, one being in contact with each vertical jamb. Preferably, the corrugated panels are formed of synthetic plastic material reinforced with a filler such as a Fiberglas filler. Each corrugated panel is desirably provided with a series of slots in each corrugation along one face of the panel, these slots being adapted to ride along an intermediate lateral projection on the centrally-disposed dependent web of the horizontal track. By proper adjustment of horizontal spacing between the two panels, one corrugated panel may be placed between one side of the centrally-disposed web and an adjacent lateral flange, while the second corrugated panel is on the opposite side of the web between the web and the opposite lateral flange.

In order to obtain a good seal, the jambs and tracks

are each provided with at least two parallel projecting ribs on their exterior surfaces. A continuous strip of extruded, resilient gasket material is provided, having a longitudinal groove within which a rib may be seated, and on the opposite face of the gasket strip, there may be provided a corrugated surface which will provide a frictional and resilient engagement between the framing of the tub enclosure unit and the adjacent supporting wall or tub surface.

The invention may be best understood by a detailed consideration of the drawings, in which:

FIG. 1 is a front view of the closure device of the invention as installed to enclose a combined bathtub and shower;

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

FIG. 3 is a section through the assembly on the line 3—3 of FIG. 2;

FIG. 4 is an exploded view of the top track and a vertical jamb, showing the mode of interconnection thereof;

FIG. 5*a* is a sectional view of the sealing strip;

FIG. 5*b* is a sectional view of the sealing strip showing its relationship to a projecting rib and a subjacent surface.

Referring now to FIG. 1, in a conventional house structure for which this tub enclosure unit is specifically designed, a tub 2 will be situated within a recess within a wall 1. The recess may be more completely enclosed by a tub enclosure unit in which the framing member consists of a pair of corresponding horizontal tracks 7 and 8 and a pair of vertical jambs 5 and 6. A tight sealing relationship is desirably maintained between the vertical jambs 5 and 6 and the walls 1, and between the bottom track 7 and the subjacent surface of the tub 2, by the insertion therebetween of continuous, resilient gasket strips 3 and 4, as shown in greater detail in FIGS. 2, 5*a*, and 5*b*. The horizontal tracks 7 and 8 desirably coincide in length with the length of the recess which is enclosed, and both tracks are secured in place by engagement with the vertical jambs 5 and 6, as hereinafter described in greater detail, and as illustrated in FIG. 4. Any suitable conventional means may be employed for securing the vertical jambs 5 and 6 to the walls 1, such as, for example, conventional screw fasteners 11.

To complete the closure, a pair of corrugated panels 9 and 10 are suspended in laterally movable relationship between the upper track 8 and the lower track 7. Preferably, these corrugated panels overlap slightly, even when extended to their fullest extent so that the direct passage of air or water is minimized. While the corrugated panels may be made of many materials, they are preferably of translucent, reinforced synthetic plastic. Such panels are quite common today, and in the preferred embodiment of this invention, the panels are of a polyester reinforced with a mat of chopped glass fibers, and molded at an elevated temperature under moderate pressure. Panels of this type are available in a wide variety of pleasing colors, in varying degrees of opacity.

The manner in which these panels are secured between the upper and lower tracks is best illustrated in FIGS. 2 and 3. Since the upper and lower horizontal track members 8 and 7 are of substantially the same structure, a description of one will suffice. The track member is desirably of strong, corrosion-resistant material, and may be of extruded aluminum, for example. Each track performs a dual function as a framing member and as guide means for the panels. Preferably, each track has a cross-section in the form of an m, in which the middle leg is crossed. The outer legs of the m are formed by downwardly depending flanges 12, FIGS. 2 and 4, which flanges are perpendicular to the top of the m. The extremities are inturned to provide projecting toes 13. The middle or central vertical leg

of the m is provided with lateral projections 14, extending outwardly on each side thereof to provide a direct support for each of the corrugated panels. Preferably, the outer extremity of each of the lateral projections 14 is provided with an upstanding rib 14*a* which functions as a knife-edge and tends to minimize the area of frictional contact between the corrugated panels and the supporting portions of the track. The middle vertical leg of the m is also provided with an extension in the form of a centrally-disposed web 15, which may also be provided with lateral projections at the extremity thereof. The centrally-disposed web 15 functions as an additional guide means for the corrugated panels and tends to stabilize the path of their travel. The projecting toes 13 on the downwardly depending flanges 12 serve a like function.

By providing the corrugated panels with a continuous series of slots on one surface thereof, adjacent the upper and lower extremities thereof, a supporting path within the panel may be provided which will provide a continuous pathway for the lateral projections 14 of each track. The corrugated panels, as illustrated in FIGS. 2 and 3, may thus be suspended between the upper track 8 and the lower track 7 by an extremely simple form of suspension which eliminates the rollers, hangers, and heavy supporting framing members so frequently found in structures of the prior art. While the corrugated panels 9 and 10 may be formed of a variety of materials, when the lightweight, reinforced synthetic plastic corrugated panels are employed, as in the preferred form of the invention, very little frictional resistance to lateral movement of the panels is encountered. A series of slots 23 in each corrugated panel affords an upper and lower supporting area in each panel, and frictional resistance is minimized by the provision of the knife-edge 14*a* on the lateral projection 14 of each track.

As will readily be appreciated from a consideration of FIG. 2 of the drawings, the structural relationship between the slots 23 of each panel and the supporting tracks is such as to minimize the possible passage of water or air inwardly or outwardly, transversely of the corrugated panel. However, some water will accumulate within the lower horizontal track 7, and to promote the return of any entrapped water to the tub, weep holes 21 are desirably provided in the track. During installation, the weep holes 21 are directed inwardly toward the tub.

The vertical jambs 5 and 6 are provided at each extremity thereof with slots 17, into which the middle leg of the m of the track may be snugly, slidably fitted. Each jamb is desirably provided with lateral flanges 16 which desirably engage the inturned toes 13 of the track flanges 12. Thus the channel members of the jambs are preferably generally of the shape of an n and the legs of the n interfit with or engage legs of the m of the track member to assist in retaining the frame in assembly. Preferably, the front flange 16 of each jamb is of greater width than the rear flange, in order to enhance the decorative appearance of the entire unit.

Since each track is symmetrical in form, it is obvious that each corrugated panel may travel freely across the entire width of the recess between the walls 1. Where the corrugated panels are of material which may be subject to chipping at the extreme ends thereof, from the hard blows which will occur when a panel is slammed against one of the vertical jambs, it is desirable to protect the exposed ends. This may be done, for example, by clamping a thin, decorative, aluminum strip 22, around each extreme end of each corrugated panel.

Tight sealing engagement between the framing of the tub enclosure unit and the adjacent wall and tub surfaces is provided by the insertion of resilient gasket material between the jambs or tracks, as the case may be, and the adjacent surface. The preferred form of extruded, resilient gasket material is illustrated in FIG. 5*a*. In the preferred form of gasket material, the gasket is extruded in the form of a continuous resilient strip having a longitudinal slot 24 centrally located in the upper surface thereof, and a series of notches or sharp corrugations 25 and 26 on the opposite or undersurface thereof. Each track or jamb is desirably provided with a pair of parallel ribs 18 projecting from the surface thereof. The continuous longitudinal slot 24 in the upper surface of the extruded gasket is seated around a projecting rib, and when the weight of the unit is allowed to compress the gasket, the sharp corrugations on the undersurface of the gasket 3 are somewhat flattened. This flattening provides a resiliency in the mounting of the unit which is highly desirable in preventing shocks of a physical nature, and in minimizing the same. At the same time, the compression of the gasket provides a tight sealing action which prevents the flow of fluid between a track or jamb and the subjacent surface.

In assembling the closure unit, the advantages of the details of structure of the frame, sealing means, and panels become apparent. The track members are individually cut to a length slightly less than the distance between the walls 1 at the respective points where they are to be located. The horizontal sealing strip 3 and the vertical sealing strips 4, of the same approximate length, respectively, as the length of the tub rim and of the jambs 5 and 6, are put in place on the projecting ribs 18 and 19 of the bottom track member 7 and the vertical jambs 5 and 6. The corrugated panels 9 and 10 are then slid endwise into the bottom track member 7, and the top track member 8 is slid onto the tops of the panels. The jambs 5 and 6 are fed into the track members a short distance, for example, one inch, beyond the location desired. The lateral projections 14 on the tracks and the sealing strips or gaskets 3 are preferably so dimensioned as not to interfere with each other at this stage of the assembly. A clear mastic material is advantageously applied to the ends of the track members so as to provide a watertight seal at the joint 20 between the jambs and track members when secured in place. The assembly is then lifted into place, the jamb members slid into contact with the walls, and fastening means such as screws 11 are employed to secure the jambs to the walls.

The advantages over prior art devices are apparent, and include the provision of a simple means for holding the track members in place while eliminating angle brackets and similar fasteners for joining the jambs and track members, while nevertheless permitting the latter to be cut to length. The corrugated panels are strong, even though relatively thin, so that reinforcing frames for the panels themselves may be eliminated. The corrugations provide the added advantage that water splashed horizontally will be prevented from traveling along the panels any substantial distance toward the ends thereof.

While described in conjunction with bathtub enclosures for purposes of illustration, it is obvious that the frame of the invention and the various details thereof have utility for other purposes.

I claim:

1. A frame, adapted to be cut to fit rectangular openings of various sizes along one dimension thereof, comprising a first pair of parallel frame members of substantially uniform cross-section adapted to extend along one dimension, said cross-section being generally of the shape of an m having the legs extending toward the opening bounded by the members, at least one lateral projection on one of said legs, a second pair of parallel frame members of substantially uniform cross-section, said last mentioned cross-section being generally of the shape of an n, each of said second pair of members having a slot at each end of the same cross-sectional shape as said leg having said lateral projection, and each of said last-mentioned legs and its lateral projection engaging said slots, the legs of the n shape of said second pair of frame members engaging legs of the m shape of said first pair of frame members, each of said second pair of

frame members being freely slidable along said first pair of frame members, whereby the first pair of frame members are adapted to be cut to any length, and relative movement of said pairs of frame members is substantially restricted to sliding movement parallel to the length of said lateral projection.

2. A frame unit adapted for placement between two opposed substantially vertical parallel supports, comprising a pair of vertical jambs of substantially uniform cross-section, each having a slot therein at the upper end thereof, said cross-section being generally of the shape of an **n**, a horizontal frame member of substantially uniform cross-section generally in the shape of an **m** and having projecting means corresponding to and adapted to slidably fit within said slots, the surfaces of said slots in the jamb being perpendicular to said jambs and parallel to said frame member so that the elements when juxtaposed form at least three sides of a rectangular opening, said elements being so juxtaposed, the legs of said vertical jambs of the shape of an **n** engaging legs of the horizontal frame member of the shape of an **m**, the shape of said slots in the jambs, the engagement of said legs, and the shape of the projection on the horizontal frame member being such that the jambs are freely slidably longitudinally of said horizontal frame

member, whereby said slots in the vertical jambs restrict relative movement between said vertical jambs and said frame member to movement parallel to the horizontal frame member, and whereby said vertical jambs are adapted to be attached to said parallel supports, thus holding said frame unit in place.

3. The device of claim 2 in which said pair of jambs are slotted in each end, and a pair of substantially identical horizontal frame members are utilized, to form a rectangular, four-sided frame.

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