July 9, 1957 J. D. BEAMER 2,798,262

DOOR ASSEMBLIES

Filed April 19, 1956

FIG. 1

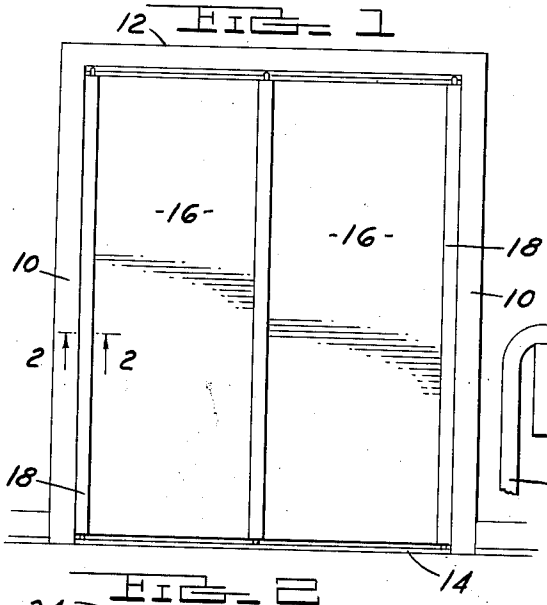


FIG. 5

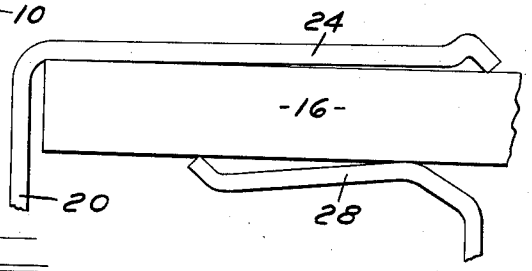


FIG. 2

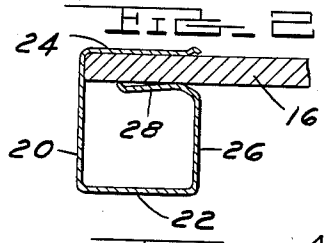


FIG. 3

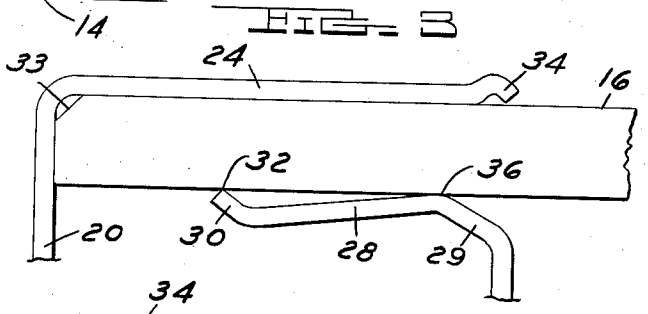
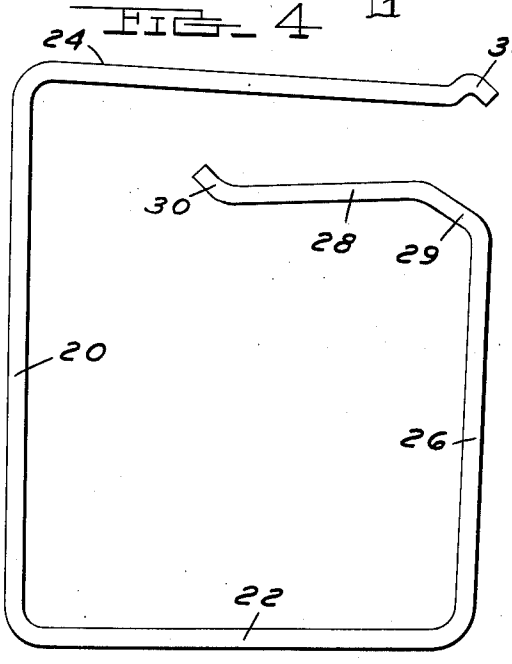


FIG. 4



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DOOR ASSEMBLIES

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Application April 19, 1956, Serial No. 579,264

7 Claims. (Cl. 20—35)

This invention relates to improvements in door and/or closure assemblies and particularly to a door assembly which is formed of a rigid planar door panel provided along certain of its margins with tubular reinforcements.

The construction is generally of the same class as that shown in the co-pending application of James W. Greig, Serial No. 398,719, filed December 17, 1953, assigned to the assignee of this application.

An object is the provision of a door or panel assembly of the character specified wherein the marginal tubular reinforcement is so mounted upon the marginal portion of a planar panel as to present a substantially flush surface with one surface of the panel. It is also so mounted as to securely retain its position upon the panel without accidental detachment therefrom and without the employment of screws, nails or other fastening means and without grooving of a planar surface of the panel to receive an inturned margin of the tube as shown in the co-pending application supra.

Another object is the provision of an assembly of the character set forth in the immediately preceding paragraph wherein a plain marginal tubular reinforcement, generally rectangular in cross section, is so engaged with the marginal portion of an ungrooved planar panel as to resist tilting thereon and wherein such is accomplished at a minimum cost without supplemental attaching means and with a simple, inexpensive structure.

Another object is the provision of an assembly of the character described wherein the marginal tube may be readily applied to the panel without defacing or marring the same. More specifically such tube will retain its position upon the panel against withdrawal therefrom so securely that such withdrawal can only be accomplished with considerable difficulty and with probable resulting defacement of the panel.

Other objects, advantages and meritorious features of the invention will more fully appear from the following claims, specification, and accompanying drawings, wherein:

Fig. 1 is a front elevation of a sliding door assembly comprising two sliding doors mounted within a wall opening and embodying the invention;

Fig. 2 is a fragmentary horizontal sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged fragmentary plan of a corner of a door provided with the tubular reinforcement embodying the invention;

Fig. 4 is a view similar to that of Fig. 3 but showing diagrammatically the relationship of the tube with the rigid planar panel which forms the broad expanse of the door; and,

Fig. 5 is a view similar to Fig. 3 showing a slightly modified structure.

The instant invention is illustrated in connection with a sliding door of the type wherein there is provided a rigid planar panel reinforced along its vertical margins with finish tubes. Such constructions are in general use

and one such is illustrated in Greig Patent No. 2,659,939 dated November 24, 1953.

In the drawing of the instant application a door opening is indicated in Fig. 1 by the jamb portions **10**, a header portion **12** and a floor line **14**. Two sliding doors are illustrated as mounted within such opening. Such doors might be supported upon bottom rollers adapted to ride over a track with the top edges of the doors guided within channel guideways or the doors might be supported from overhead by rail engaging roller carrying hangers, all of which is conventional construction and has nothing to do with the instant invention.

The instant invention relates to the combination of the door panel with the marginal reinforcement tube and the construction of the tube and the manner in which the same is mounted upon the panel. In the instant application a suitable panel is indicated as **16**. Such may be formed of Masonite or any other suitable sheet material. It is relatively rigid and strong. Different manufacturers produce a hard composition board suitable for use or natural board or plywood may be used. Over a vertical margin of the panel a metal tube is mounted. Such tube mounting is particularly shown in Figs. 2 through 5. It is indicated generally in Fig. 1 by the numeral **18**. The tube shown is generally rectangular in cross section. It comprises a bottom portion **20**, side wall portions **22** and **24**, a top wall portion **26** and a flange portion **28**. The side wall portions project approximately perpendicularly with respect to the bottom portion **20**. The side wall portion **22** is continued to form the top wall **26**. This top wall terminates spaced from the opposite side wall **24** providing a gap therebetween. It has a marginal portion which is inturned forming a flange **28**. The inturned marginal flange **28** is disposed generally parallel to the side wall **24**.

While it is herein stated that the side walls **22** and **24** are generally parallel and perpendicular with respect to the bottom wall **20**, and such is generally true, it will be noted that such side walls do converge slightly toward each other. They are tensioned toward each other and are resilient so that they may be spread apart at the gap, as shown in Figs. 2, 3 and 5. The edge of the flange portion **28** is bent outwardly toward the side wall portion **24**, as at **30**. When the tube is received over the marginal portion of the panel, such outwardly bent edge portion **30** tends to engage the face of the panel being urged thereinto, as shown at **32** in Fig. 3. Any attempt to withdraw the panel from the tube will cause the edge **32** of the flange **28** to dig into the face of the panel and resist such withdrawal. Furthermore, the flange portion **28** of the tube and the top wall portion **26** thereof will tend to swing as a unit about the connection of the top wall portion **26** with the side wall **22**, upon any attempt to withdraw the panel from the tube, and such swinging tendency also causes the edge **32** to be urged more strongly against the face of the panel.

In the modification shown in Figs. 2 and 3 one corner of the margin of the panel which is received within the tube is beveled as at **33**. This beveled corner **33** facilitates ease of insertion of the panel margin through the gap into the tube. Such beveled corner **33** also facilitates seating of the edge of the panel against the bottom **20** of the tube shown in Fig. 2.

Insertion of the margin of the panel through the gap into the tube is also facilitated by the fact that the tube is so formed as to exhibit a side entrance into the gap. The flange **28** is connected with the top wall **26** by an angular or beveled wall portion **29**. This increases the width of the entrance to the gap and facilitates insertion of the margin of the panel thereinto.

In the modification shown in Fig. 5 the edge of the panel is not beveled. The panel is there shown as provided with

a straight or flat edge. Such edge will not seat throughout its width against the bottom of the tube because of the beveled corner or radius bend portion of the tube between the bottom wall **20** and the side wall **24**. However, such flat edge of the panel does seat against the beveled corner or radius bend portion of the tube as shown in Fig. 5.

In each modification the side wall portion **24** is crimped to provide a marginal bead **34**. This bead stiffens and reinforces the side wall **24** and provides a smooth finished edge therealong. In the modification of Figs. 2 and 3 the bead **34** is so formed that it does not directly engage the adjacent face of the panel but is spaced slightly therefrom. In the modification shown in Fig. 5 the edge of the bead **34** is adapted to directly engage the adjacent face of the panel and increases the stability of the assembly.

When the panel **16** is inserted within the tube, it is inserted through the split of the tube perpendicularly with respect to the bottom wall **20** of the tube and is forced down until the edge of the panel engages such bottom wall as shown in Figs. 2 and 3 or engage the corner of the corner bend as shown in Fig. 5. Normally the space between the inturned flange **28** and the opposite side wall **24** of the tube would be slightly less than the thickness of the panel received between the side wall **24** and the flange **28** so that when the panel is received therebetween, it is grippingly engaged by the tube to be held securely therein.

The outwardly turned edge **30** of the flange **28** of the tube engages the adjacent face of the panel along a line spaced from but parallel to the bottom wall **20**. The engagement is such that it tends to hold the panel to its seat against the bottom wall and resists withdrawal of the panel from the tube. The tube is further engaged by the marginal flange **28** along a line **36** which is parallel to the line of engagement **32**. This particular shape of the flange and its line engagements with the adjacent face of the panel urges the panel to lie flat against the inner face of the side wall **24** of the tube. It is important to note that the line of engagement formed by the outwardly turned margin **30** of the flange **28** with the adjacent face of the panel is a line which is closer to the bottom wall of the tube than it is to the top wall thereof. Due to this fact, any tendency to tilt the tube about its longitudinal axis about the edge of the panel is strongly resisted.

What I claim is:

1. A door assembly comprising, in combination: a rigid planar door panel; a split tube substantially rectangular in cross section having a bottom wall, two opposite side walls, and a top wall forming an angular extension of one side wall and terminating spaced by the split from the opposite side wall, said top wall having its marginal portion inturned into the tube forming a flange extending toward the bottom wall but terminating spaced therefrom and disposed generally parallel to said opposite side wall of the tube, said flange and said opposite side wall being tensioned toward each other, said tube received over a marginal portion of the panel with the edge of the panel disposed adjacent to the bottom wall of the tube and lying flat against said opposite side wall of the tube and held thereagainst by the pressure of the inturned marginal flange of the top wall of the tube.

2. A door assembly as defined in claim 1 characterized in that the marginal flange portion of the top wall of the tube which is inturned into the tube has its edge bent toward the opposite side wall of the tube and engaged with the adjacent face of the panel resiliently holding the edge of the panel toward the bottom wall of the tube.

3. A door assembly as defined in claim 1 characterized in that the marginal flange portion of the top wall of the tube which is inturned into the tube is inturned thereinto a distance greater than one-half of the distance between the top wall and the bottom wall of the tube and the edge portion of said flange portion bears against the panel along a line closer to the bottom wall of the tube than to the top wall thereof.

4. A door assembly as defined in claim 1 characterized in that the marginal flange portion of the top wall of the tube which is inturned into the tube is inturned thereinto a distance greater than one-half of the distance between the top wall and the bottom wall of the tube and the edge of said flange portion bears against the panel along a line closer to the bottom wall of the tube than to the top wall thereof, and further characterized in that said opposite side wall of the tube which lies flat against the panel has its edge portion crimped to form a marginal bead and the edge of such bead bears against the adjacent face of the panel, and such side wall and the marginal flange portion of the top wall are tensioned toward each other gripping the panel therebetween.

5. A door assembly as defined in claim 1 characterized in that the marginal flange portion of the top wall of the tube which is inturned has its edge portion bent toward the opposite side wall of the tube and engaged with the adjacent face of the panel holding the edge of the panel toward the bottom wall of the tube, said adjacent face of the panel being engaged along a line by the edge of the flange which line is closer to the bottom wall of the tube than to the top wall thereof, said adjacent face of the panel being also engaged along a parallel line spaced from the first line by a portion of the flange adjacent to the top wall of the tube, that portion of the flange intermediate said lines of engagement being spaced from the face of the panel.

6. A door assembly as defined in claim 1 characterized in that the edge of the panel received within the tube seats throughout the width of such edge portion against the bottom wall of the tube.

7. A door assembly as defined in claim 1 characterized in that the top wall of the tube is joined to the flange portion of the top wall by a beveled corner wall portion which provides an enlarged entrance into the space between the flange portion of the top wall and the opposite side wall of the tube.

No references cited.