

Aug. 5, 1952

J. W. BACKMAN

2,605,869

DOOR

Filed April 7, 1948

2 SHEETS—SHEET 1

Fig. 1.

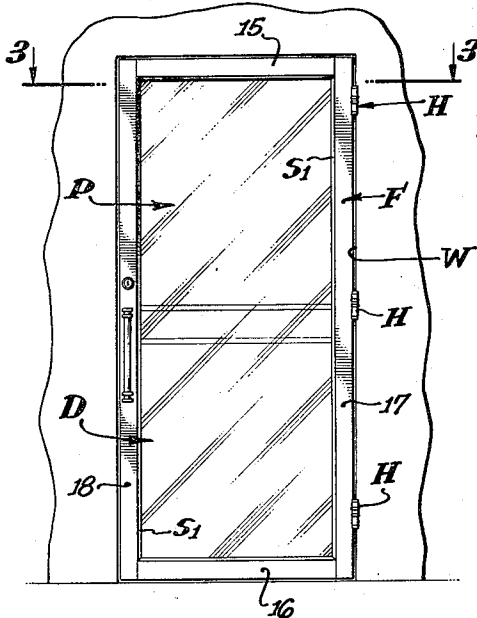


Fig. 2.

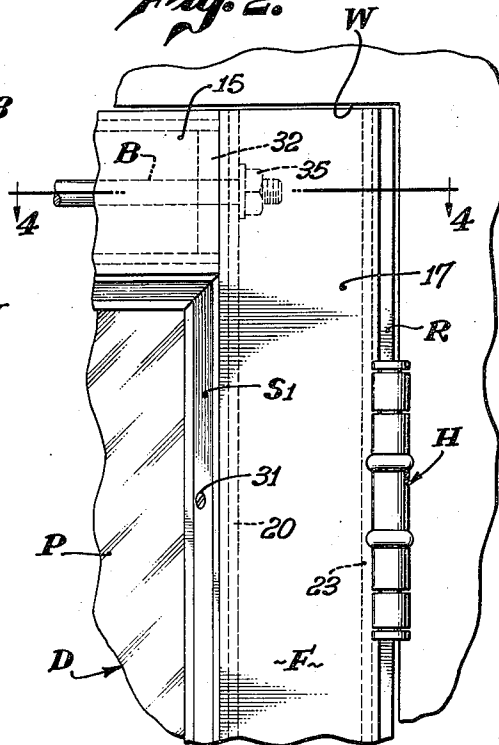


Fig. 3.

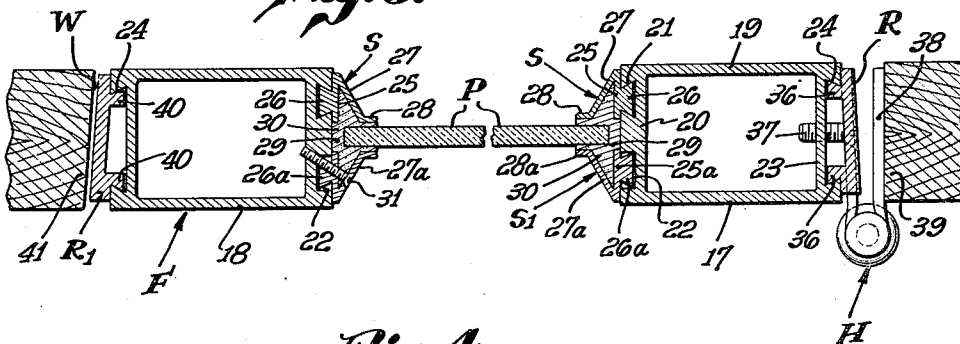
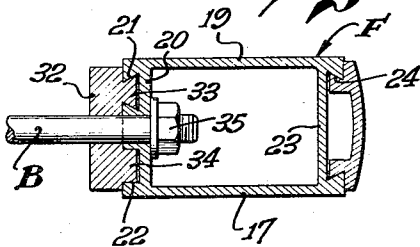


Fig. 4.



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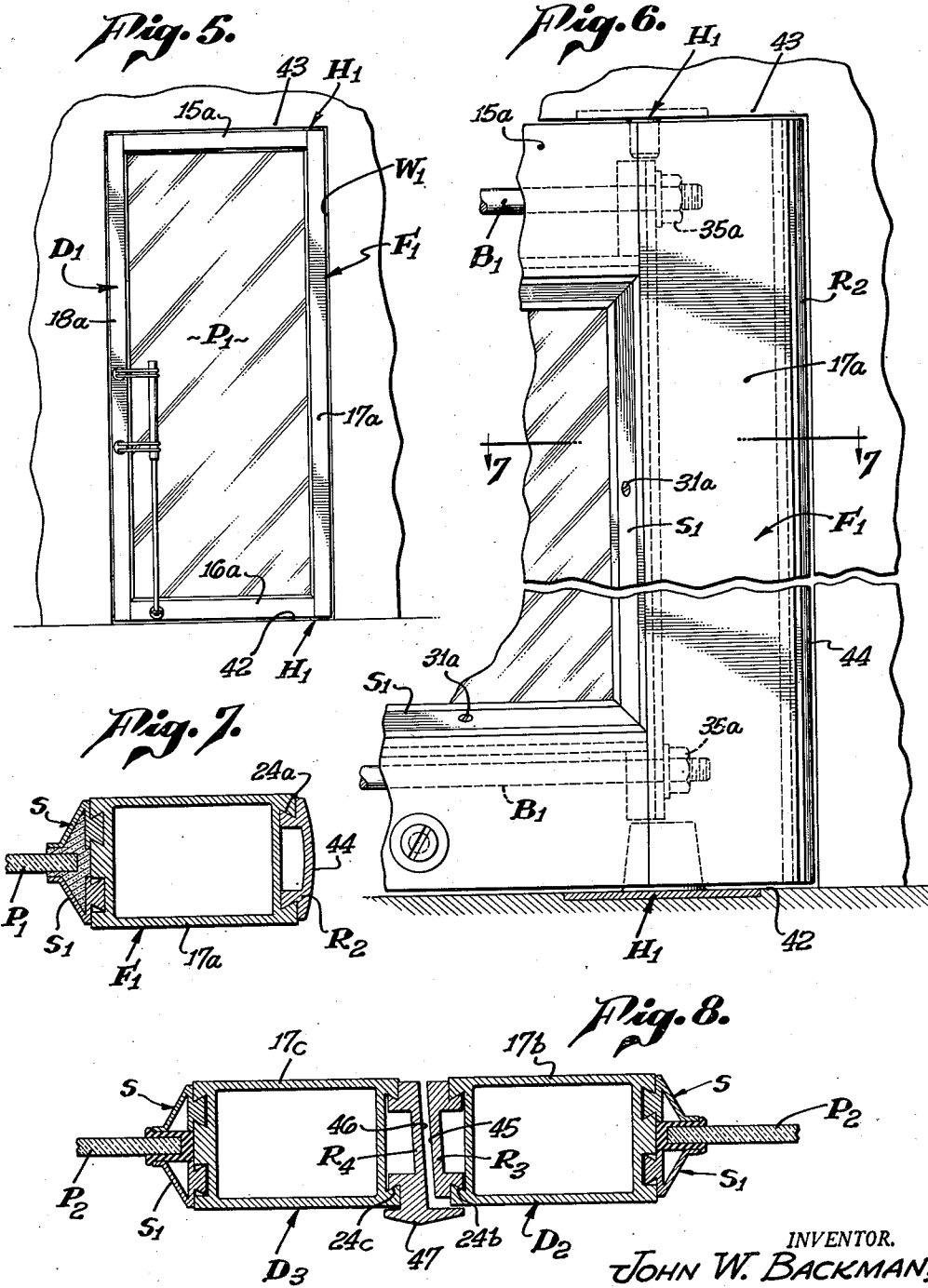
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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE

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DOOR

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1

My invention relates to hinged doors for stores, office building entrances and the like, and more particularly to doors made up of glass panels in extruded metallic frames.

It is a purpose of my invention to provide to strengthen and structurally simplify the frames for hinged doors with glass panels, so as to not only reduce the cost of manufacture thereof, but to minimize the mode of assembly of the parts of a door frame in relation to each other and to the glass panel which it contains, and while effectively securing the panel therein, also allows ready removal thereof should it become broken to substitute a new panel.

It is also a purpose of my invention to provide a door frame including a sectional rail, which affords means for mounting on one of its vertical edges hinges by which the door is hung in a doorway, and a second rail on its other vertical edge which is detachable to allow rails of different forms to be used depending upon whether the door is hung to swing in one or two directions, and whether it is hung from one vertical edge, or hingedly mounted on the floor to swing in both directions for use in conjunction with a similarly mounted door to provide a two door controlled entrance for stores and the like.

I will describe only two forms of doors, and various forms of jamb rails, each embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawings:

Fig. 1 is a view showing in elevation one form of door embodying my invention.

Fig. 2 is an enlarged fragmentary elevational view of the upper right hand corner of the door shown in Fig. 1.

Fig. 3 is an enlarged sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 1 showing another form of door embodying my invention.

Fig. 6 is an enlarged fragmentary elevational view of the door shown in Fig. 5.

Fig. 7 is a transverse sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary horizontal sectional view showing my invention embodied in a pair of doors mounted to swing to open position in one and the same direction.

Having specific reference to Figs. 1 to 4, my invention in this embodiment comprises a door D composed of a glass panel P in an extruded metal frame of rectangular form and designated generally at F. The door D is of that type which is hung from one vertical edge in a doorway W by hinges H and to swing to open position in one direction only.

The door frame F is composed of top and bot-

2

tom or end sections 15 and 16, and side or vertical sections 17 and 18, and all sections are of identical construction. Hence, a description of the structure of one section will suffice for all.

Each frame section as aforesaid is of extruded metal construction, preferably aluminum, and so made as to form an elongated body 19 of hollow rectangular form in cross-section. The inner end wall 20 of the section is relatively thick, and its outer side is formed with a dove-tail groove 21 adjacent one side of the section, which is coextensive in length with the section. Adjacent the other side of the section the wall 20 is formed with a right-angled groove 22 in spaced parallelism to the groove 21 and likewise coextensive in length with the wall 20. The other end wall 23 of each frame section is formed on its outer side with a dove-tail groove 24 which is made as wide as the section will permit, and coextensive in length with the section.

A pair of retaining strips S and S1, likewise of extruded metal, are carried by the wall 20 of each frame section, and the strips of all of the sections coact to secure the panel P within the frame F. The strip S may comprise a flat portion 25 of a width to span the entrance edge of the groove 21, and this portion is formed on its outer face with a dove-tail tongue 26 coextensive in length with the strip and insertable into the groove 21 at either end of the section. The strip S includes also a second portion 27 divergent in relation to the portion 25 and terminating at its free longitudinal edge in an angular lip 28 coextensive in length therewith.

The strip S1 is of similar construction to that of the strip S. Its portion 27a is divergent to the flat portion 25a, and the lip 28a is parallel to the lip 28 of the strip S. The tongue 26a on the portion 25a, although dove-tailed and of the same dimensions as the tongue 26, is readily insertable laterally into and removable from the groove 22 because it is of right-angle form and of a width to accommodate the tongue.

This construction allows the strip S1 to be mounted on the frame section by moving it laterally against the section which is in contradistinction to the strip S which requires it to be mounted endwise on the frame section because of the dove-tail form of the groove 21. With the two strips mounted on the frame section they coact to form a fan-tail channel 29, the lips 28 and 28a being spaced to accommodate therebetween one marginal edge of the panel P, and the panel edge secured in position by filling the channel with putty, cement or any other suitable material 30 (see Fig. 3).

The strip S1, once applied as described, may be secured in place by screws 31 extended through the strip and frame section as shown in Fig. 3. Thus with all sections of the frame F

3

provided and secured in place and the channel 29 filled with putty with retaining strips S and S1, it will be clear that all four edges of the panel P are fixedly secured to the frame sections to form a complete door. Inasmuch as the strips S1 are detachable from the frame sections by first removing the screws 31 and then loosening the putty, the panel can be easily removed from the frame without disturbing the strips S, to permit substitution of another panel should it become cracked or broken.

To secure the sections of the frame F in rectangular form prior to placing the panel P therein, conventional tie-bolts B are extended longitudinally through the top and bottom sections 15 and 16, with the ends of each bolt passing through plates 32 fitted in the opposite ends of the frame sections. As shown in Fig. 4 each plate is formed on one face with a dove-tail tongue 33 and a right-angled tongue 34, these tongues corresponding to the tongues 26 and 26a of the retaining strips S and S1, and, hence, are extendable into the grooves 21 and 22. Thus the tongue 33 serves to hold the plate 32 on the frame section 17, but to secure the plate to the frame section and against possible twisting of the sections 15 and 17 relatively, the tie-bolt B is extended through the plate and the nut 35 screwed home on the bolt. With such connections at all four corners of the frame, it is manifest that the frame sections once assembled provide a non-twistable or otherwise distortable frame.

The groove 24 in the vertical frame section 17 receives endwise a pair of ribs which coact to form a dove-tail tongue 36 on one face of a rail R for securing the latter to the edge of the frame section. It is upon this frame edge that the door D is hung by the hinges H, the latter being constructed to allow the door to swing only outwardly of the doorway. The hinges are secured directly to the frame section 17 by screws 37 threaded in the wall 23, and to permit this the rail R is made in sections with one leaf of the hinges between the sections and abutting the ends thereof so that the latter aid in supporting the leaves on the door frame. The other leaf 38 of each hinge is screwed to the adjacent jamb 39 of the doorway, and thus the door is hung in the doorway.

The groove 24 in the frame section 18 receives lengthwise a pair of ribs 40 which coact to form a dove-tail tongue on the inner side of a rail R1. This rail, as well as the rail R, may be termed a jamb rail in that it faces the other jamb 41 of the doorway. The rail R1 may be made of any contour on its outer side depending upon the cross-sectional contour of the jamb 41. As the jamb is beveled transversely the side of the R1 is likewise beveled.

Referring now to Figs. 5, 6, and 7, I have here shown a door D1 which is mounted on the floor 42 and the upper joint 43 of a doorway W1 to a store or the like, by conventional hinges H1 to swing inwardly and outwardly through the doorway. While the construction of the door frame F1 thereof is substantially the same as the frame F, the frame sections 16a and 17a at their meeting ends are constructed to accommodate certain conventional parts of the hinges H1 by which the latter can be adjusted to fit the floor and jamb parts of the hinge to properly mount the door in the doorway.

Where the door D1 is mounted in the manner described the rails R2 carried by the vertical

4

frame sections 17a and 18a are transversely rounded to provide bull noses 44 (see Fig. 7), and such rails are secured against longitudinal movement by screws or in any other suitable manner.

Referring now to Fig. 8, I have here shown my invention incorporated in a pair of doors D2 and D3 mounted to swing only outwardly in a doorway. Here the confronting vertical sections 17b and 17c of the two door frames are provided with rails R3 and R4, the confronting sides 45 and 46 of which are beveled transversely, and one vertical edge of the rail R4 is formed with an astragal 47 to span the joint between the rails when the doors are closed.

This as well as the other forms of rails, illustrates the versatility of my door frame construction in its adaptation to single or double doors, and irrespective of the manner in which they are hung.

Although I have herein shown and described only two forms of doors and various forms of jamb rails, each embodying my invention, it is to be understood that various changes and modifications may be made therein without departing from the spirit of my invention and the spirit and scope of the appended claims.

I claim:

1. In a door: a panel; and a frame having side and end sections, each of which has in its inner edge a longitudinally extending dove-tail groove, and a right-angled groove paralleling the dove-tail groove; a pair of panel securing strips for each of said sections, one having a dove-tail tongue engaging within said dove-tail groove and coextensive in length therewith, and the other having a dove-tail tongue removably fitted transversely in said right-angled groove and coextensive in length therewith; and means extending through the last mentioned strip and into the respective section for detachably securing said strip to said section and the tongue in said groove.

2. In a door: a panel; and a frame having side and end sections, each of which has in its inner edge a longitudinally extending dove-tail groove, and a second groove paralleling the dove-tail groove; a pair of panel securing strips for each of said sections, one having a dove-tail tongue engaging within said dove-tail groove and coextensive in length therewith, and the other having a tongue removably fitted transversely in said second groove and coextensive in length therewith; and means extending through the last mentioned strip and into the respective section for detachably securing said strip to said section and the tongue in said groove.

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