Feb. 3, 1953 J. W. BACKMAN 2,627,327

SHOWER STALL DOOR HINGE

Filed April 7, 1948

Fig. 1.

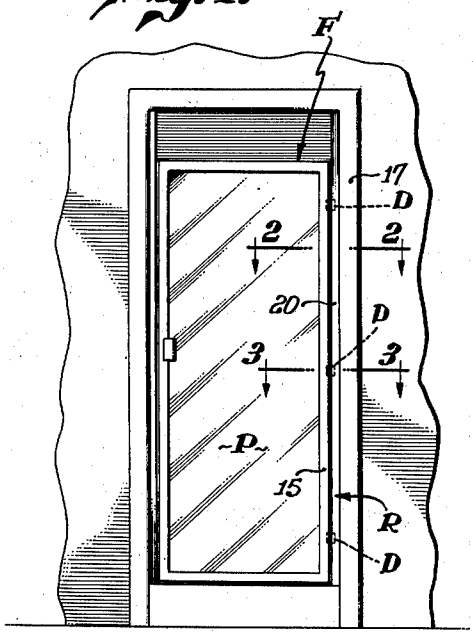


Fig. 3.

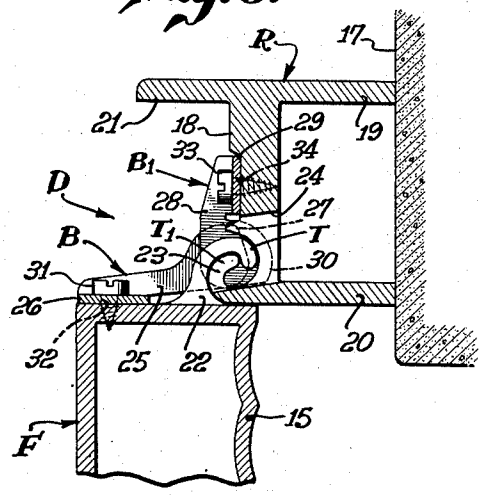


Fig. 2.

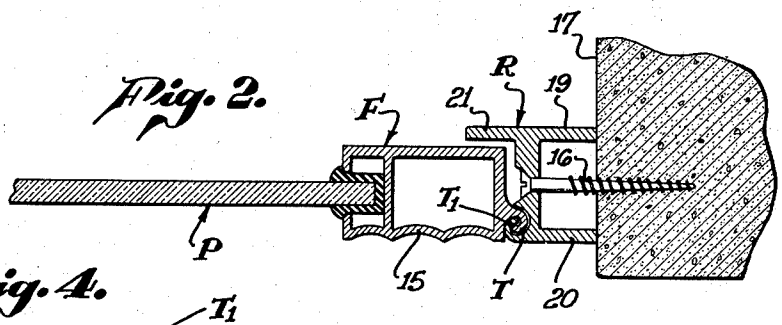
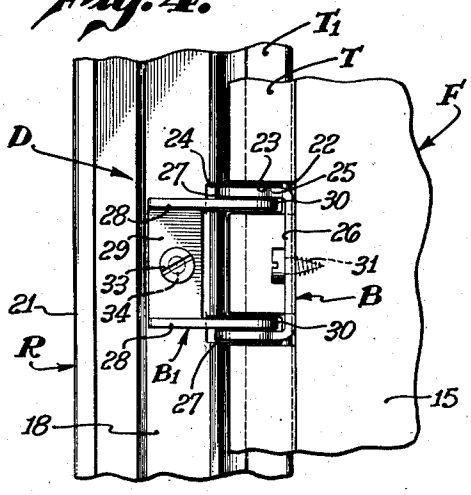


Fig. 4.



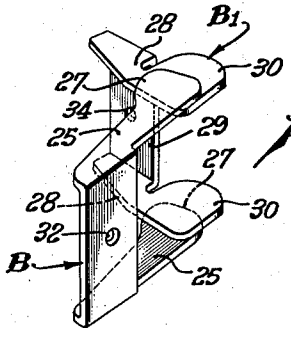


Fig. 5.

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SHOWER STALL DOOR HINGE

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3 Claims. (Cl. 189—46)

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My invention relates to hinges for doors, and more particularly, although not necessarily, to hinges for shower stall doors of the type disclosed in Patent No. 2,136,729, issued November 15, 1938, to William Stahl.

Hinges of this type comprise two transversely curved tongues, one fixed on the door and the other fixed on the door jamb, and both are coextensive in length therewith. They are interengaged at their curved portions by inserting one longitudinally into the other, and they are secured against longitudinal movement relatively by locking devices, such as screws, which extend through slots transversely in the tongues. As the frames and jambs for shower stall doors are constructed of extended aluminum, and the hinge tongues are integral therewith, they, too, are constructed of aluminum. Where the locking devices, such as screws, are employed they are constructed of steel or other metal relatively hard as compared to aluminum. As such locking devices have physical contact with the hinge tongues in supporting the weight of the door and preventing longitudinal movement relatively, under continued opening and closing of the door the locking devices wear away the tongues at the points of contact. This results in allowing the door tongue to move longitudinally downward relative to the jamb tongue, and, in consequence, the door is permitted to sag until its bottom edge engages the sill of the doorway to prevent free opening and closing of the door.

My invention has for a purpose the provision in a door hinge of the type specified, of a door supporting and locking device which permanently secures the tongues against longitudinal movement relatively, to permanently prevent sagging of the door and thus at all times insuring free swinging movement of the door to open and closed positions. The locking device is so constructed and associated with the door and jamb that while necessitating slotting of the hinge tongues, its parts are out of physical contact with the tongues, and thus cannot wear away the tongues to produce door sagging. Further, the parts of the device are constructed of hard metal to minimize wear resultant of relative movement thereof, and such wear is further reduced by constructing one part of the device of porous metal such as porous bronze, which is oil treated to give it the requisite lubricating property to reduce friction between the two parts of the device as they turn one upon the other.

I will describe only one form of door hinge and one form of door supporting device therefor embodying my invention, and will then point out the novel features thereof in claims.

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In the accompanying drawings:

Fig. 1 is a view showing in front outside elevation a door applied to a shower stall, the door being closed and having applied to the door and the jamb on which it is hung, a hinge embodying my invention.

Fig. 2 is an enlarged horizontal sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged horizontal sectional view taken on the line 3—3 of Fig. 1 but with the door in open position.

Fig. 4 is a fragmentary elevational view of the door and jamb as it appears when viewing the same in the direction of the arrow shown in Fig. 3.

Fig. 5 is a detailed perspective view of the two brackets of the door supporting and locking device in the positions which they assume when the door is in open position.

With specific reference to the drawings, my invention by way of example is shown applied to a hinge of the form disclosed in the aforesaid patent, and wherein one transversely curved tongue T thereof is an integral part of one vertical rail 15 of the extruded metal door frame F containing a glass panel P, while the other tongue T1 which is transversely but oppositely curved from the tongue T, is integral with a jamb rail R likewise of extruded aluminum and secured by screws 16 to one vertical wall 17 of the doorway to the shower stall. The frame rail 15 is of the same tubular construction as the frame rail in the aforesaid patent, but the jamb rail R is composed of a web 18 with integral flanges 19 and 20 at its edges which bear at their edges against the wall 17, and a bridge flange 21 which spans the inner joint between the jamb rail and the door rail 15 when the door is closed, to prevent escape of water from the shower stall.

The door supporting device of my invention is designated generally at D and comprises, in its present embodiment, one member B secured to the frame rail 15, and another member B1 secured to the web 18, the tongues T and T1 being formed with pairs of registering slots 22 and 23 respectively, for receiving parts of the members, and the web 18 being formed with a pair of slots 24 which register with the slots 23 of the tongue T1, but do not extend through the flange 20, as best shown in Fig. 3.

The first member B of the device is best illustrated in Fig. 5 as comprising a substantially U-shaped bracket preferably constructed of steel,

and having a pair of arms 25 held rigidly in spaced parallelism by a cross member 26, and ears 27 on the free ends of the arms. The second member B1 comprises a substantially U-shaped bracket constructed preferably of porous bronze to absorb a suitable lubricant, and having a pair of arms 28 held rigidly in spaced parallelism by a cross member 29, and ears 30 on the free ends of the arms.

In practice I employ a plurality of devices D (preferably three see Fig. 1) in order to adequately support the door on the jamb rail. To hang the door, the rail R, before it is secured to the wall 17 by the screws 16, is connected to the door by interengaging the hinge tongues T and T1 to hingedly connect one to the other. This is accomplished by first alining opposed ends of the tongues and then sliding the jamb tongue onto the door tongue so that the hooked portions thereof interlock transversely. When the two tongues are brought into proper position lengthwise the slots 22 or 23 of one tongue register with those of the other tongue to permit application of the door supporting device.

Each device is applied as follows: A screw 31 is extended through an opening 32 in the member 26 of the bracket B, and threaded in the rail 15 to secure the bracket B to the rail, with the arms 25 positioned transversely of the rail and the ears 27 within the slots 22 and 23 and projecting into the web slots 24. The bracket B1 is secured to the outer side of the web 18 of the jamb rail, by extending a screw 33 through an opening 34 in the member 29 and threading it in the web. The arms 28 extend across the web, with the ears 30 in the tongue slots and projecting into the web slots.

As shown in Figs. 4 and 5, the length of the bracket B1 is less than that of the bracket B, for a distance corresponding to the thickness of the ears 27 so that in assembling the two brackets, the ears 30 can be extended between the ears 27 but to have contact therewith, and whereby the bracket B is supported for turning movement on the bracket B1 to allow the necessary rotative movement of the tongue T on the tongue T1.

Once all of the locking devices are individually applied as described, the door and the jamb are lifted into the doorway and the jamb rail R secured to the wall 17 by the screws 16, so that the door is now hung on the jamb rail by the hinge tongues. As so hung the devices serve to secure the tongues in fixed longitudinal position relatively and yet allow free turning movement of the door on the jamb, since the ears 27 and 30 are out of contact with the walls of the slots 22, 23, and 24, and at their points of contact are lubricated by the oil in the pores of the ears 30 to reduce friction to minimum, particularly between the upper ears 27 and 30 where the load of the door is actually supported. Inasmuch as the ears are spaced from the walls of the slots in the tongues, no wear of the tongues at these points can occur, and since the ears are of hard metals their wearing qualities are substantially permanent, the supporting and locking functions of the devices are practically permanent to support the door tongue against downward movement on the jamb tongue and thus permanently prevent sagging of the door to maintain it clear of the sill of the doorway and thus insure, at all times, free swinging movement of the door to open and closed positions.

It will be noted that the slots 24 do not extend through the flange 20, and that the slots 22 in the tongue T are to the inner side of the flange 20. As a consequence, a continuous and unbroken surface of the flange 20 is presented to view when the door is in closed position.

Although I have herein shown and described only one form of door hinge including one form of locking device, 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.

What I claim is:

1. In a vertical hinge construction for a metal framed door mounted on a metal door jamb, a vertical member of the door frame and said jamb having continuous interfitting marginal portions, means supporting the weight of the door and holding it against vertical movement, comprising: first bracket means secured to the inner edge of the door frame and formed with plate-like heads extending horizontally through slots formed in the interfitting margins of the door frame and door jamb; and second bracket means secured to the inner edge of the door jamb and formed with plate like heads extending horizontally through the slots formed in the interfitting margins of the door frame and door jamb into engagement with and supporting the plate like heads of the first bracket means.

2. In a vertical hinge construction for a metal framed door mounted on a metal door jamb, a vertical member of the door frame and said jamb having continuous interfitting marginal portions, means supporting weight of the door, comprising: first bracket means secured to the inner edge of the door frame and formed with plate-like heads extending horizontally through slots formed in the interfitting margins of the door frame and door jamb; and second bracket means secured to the inner edge of the door jamb and formed with plate-like heads extending horizontally through the slots formed in the interfitting margins of the door frame and door jamb into engagement with and supporting the plate-like heads of the first bracket means and also projecting into grooves in the inner vertical face of the door jamb, said grooves in the door jamb being covered from view in the closed position of the door.

3. Means for supporting the weight of a door as set forth in claim 2 and in which the heads of said second bracket means are arranged between the heads of said first bracket means and are formed from a material impregnated with a lubricant.

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