Sept. 13, 1955 F. H. MORALES 2,717,666

SHOWER STALL DOOR AND JAMB DEVICE

Filed March 3, 1952

Fig. 1.

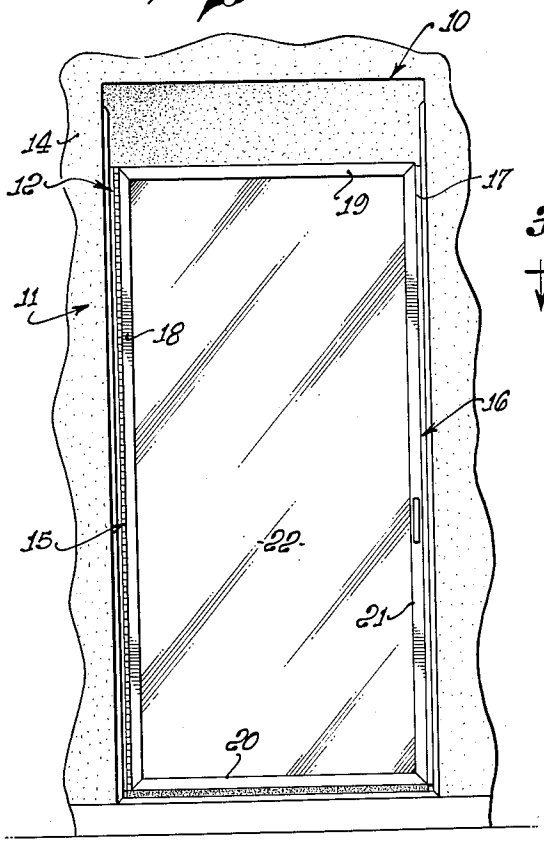


Fig. 2.

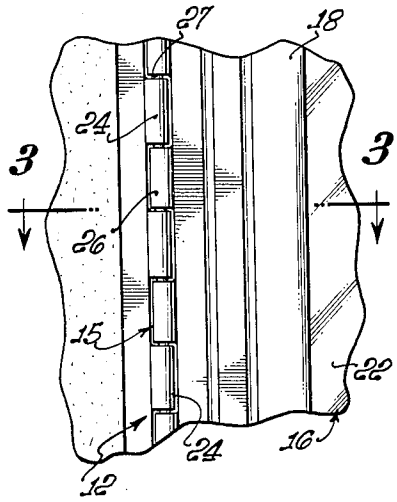
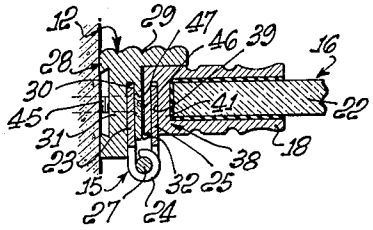


Fig. 3.



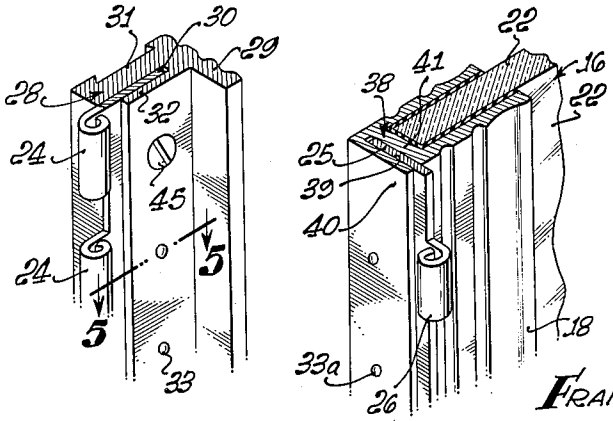
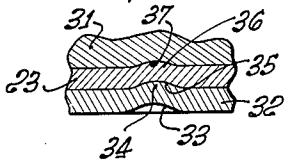


Fig. 4.

Fig. 5.



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SHOWER STALL DOOR AND JAMB DEVICE

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2 Claims. (Cl. 189—46)

The present invention relates to closure apparatus, and more particularly to hinge devices for pivotally supporting shower stall doors on their associated jambs.

An object of the present invention is to provide an improved arrangement for pivotally supporting shower stall doors on their associated door jambs.

Another object of the invention is to provide a simple, rapid and inexpensive manner of securing the plates of a hinge to a shower stall door, or door jamb, or to both.

A further object of the invention is to provide a shower stall door and jamb hinge construction that eliminates the use of screws and similar fastening elements for securing the hinge plates to the door frame and jamb, and which insures that no protuberances, and the like, are present to interfere with proper closing of the door.

Yet another object of the invention is to provide a shower stall door and jamb hinge construction which enables the hinge plate to be mounted readily, and accurately positioned, on the jamb and door frame.

Still a further object of the invention is to provide a shower stall door and jamb hinge construction, in which the hinge plates are attached more strongly to the door frame and jamb, and in which disalignment of the parts is minimized, thereby facilitating placing of the hinge pin through the interleaved hinge knuckle and insuring free swinging of the door between open and closed positions.

Another object of the invention is to provide a shower stall door and jamb hinge construction that enables random lengths of hinges to be used, with assurance that the several lengths of parts are properly related to each other, thereby decreasing substantially the amount of material wasted.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of a form in which it may be embodied. This form is shown in the drawings accompanying and forming part of the present specification. It will now be described in detail, for the purpose of illustrating the general principles of the invention; but it is to be understood that such detailed description is not to be taken in a limiting sense, since the scope of the invention is best defined by the appended claims.

Referring to the drawings:

Figure 1 is a front elevation of a shower door and jamb construction embodying the invention;

Fig. 2 is an enlarged front elevation of part of the hinge portion of the shower door and associated jamb;

Fig. 3 is a cross-section taken along the line 3—3 on Fig. 2;

Fig. 4 is a partially exploded, isometric projection of the hinge construction, illustrating the jamb, door frame and associated hinge;

Fig. 5 is an enlarged cross-section taken along the line 5—5 on Fig. 4.

The apparatus illustrated in the drawings is specifically designed to close the door opening 10 of a stall shower 11. This opening has vertically extending jamb members 12, 13 secured to the side walls 14 of the opening, one of the jamb members 12 being adapted to receive a hinge 15 for pivotally mounting the shower stall door 16, whereas the opposite vertical jamb member 13 may be provided with a suitable stop portion 17, against which the door can abut.

The shower stall door 16 may be of any suitable construction, except for the vertical side member 18 that is to be hingedly or pivotally connected to the side jamb member 12. This door may include a top 19, bottom 20 and vertical side member 21 at its free end suitably secured to the top and bottom, this vertical member 21 being adapted to contact the door stop 17. The other vertical side member 18 at the hinged side of the door is of a special configuration that will be described hereinafter. This vertical side member 18 is also secured to the top 19 and bottom 20 of the door frame in any suitable manner. The top 19, bottom 20 and side members 18, 21 are of channel shape, to receive a plate of glass 22, all in a known manner.

The door 16 is pivotally mounted on the jamb 12 by means of a piano type of hinge 15. This hinge includes a hinge plate 23 secured to the jamb member 12, and having vertically spaced knuckle portions 24. The opposed member of the hinge includes a plate portion 25 attached to the vertical door frame member 18, and which also has knuckles 26 which are staggered with respect to the other set of knuckles 24; so that the knuckles 24, 26 may be interleaved, one with respect to the other, to place them in alignment for the reception of a suitable pivotal connection, such as a piano wire 27, running the full length of the door frame.

The jamb member 12 has a web portion 28 that may be placed against the side wall 14 of the door opening 10. This jamb member also has a flange 29 extending at right angles to the web portion 28, which can overlap the inner side of the vertical door frame member 18 and prevent leakage of water in an outward direction from the inside of the shower stall 11. The web portion 28 is provided with a vertically disposed groove 30 running substantially through its entire length, which may be defined by the body 31 of the web and by a flange 32 parallel to and spaced outwardly from its body portion.

The hinge plate 23 of the hinge is disposed in this groove 30, its inner end contacting the base of the groove, which is accurately formed to insure the proper location of the hinge knuckles 24 in a vertical position when the web 28 is appropriately secured in a vertical position to the side wall 14 of the door opening 10. Following insertion of the hinge plate 23 to its full extent in the groove 30, it is attached to the web 28 by pressing the flange member 32 inwardly at longitudinally spaced points. This pressing action forms dimples or indentations 33 in the flange 32, which correspondingly force the hinge plate material 23 into the material of the base portion 31 of the web 28. As more clearly disclosed in Fig. 5, the inward pressing or punching action provides a protuberance 34 in the flange 32 fitting into a hollow socket or dimple 35 formed in the hinge plate. The deformation of the hinge plate material also provides a protuberance 36 on the opposite side of the hinge plate fitting into a shallow socket or dimple 37 that the pressing operation forms in the web base 31.

In the manner just described, the hinge plate 23 is firmly secured to the jamb member 12 with assurance that it is appropriately mounted therein and properly oriented with respect thereto.

In a similar manner, the other portion of the hinge is attached to the side member 18 of the shower stall door 16. Thus, this side member also has a web portion 38, provided with a vertically extending groove 39 which opens outwardly in the same direction as the other groove 30. This groove 39 also may be of substantially the same depth as the web groove 30. It is defined by an outer vertically extending flange 40 integral with the other portions of the vertical side member 18 of the door and by the base portion 41 of the web 38, the width of the groove being only slightly greater than the thickness of the hinge plate member 25. This hinge plate 25 can

be inserted in the groove 39 to its fullest extent, determined by engagement of the end of the plate with the base of the groove 39, and the hinge plate shifted in the groove until its knuckles 26 are in staggered relation with respect to the knuckles 24 of the other hinge member. That is to say, the knuckles 26 of the door hinge member are disposed in alignment with the spaces or gaps existing between the knuckles 24 of the jamb hinge member. The door hinge member may then be firmly secured to the door frame in the same manner as the other hinge member was attached to the jamb 12, by forming inwardly directed indentations or dimples 33*a* in the flange 40 at spaced longitudinal points along its length. These indentations or dimples form protuberances, which, in turn, produce shallow sockets in the hinge plate 25, and also similar protuberances on the opposite side of the hinge plate that are pressed into shallow sockets formed in the web base 41 of the door frame member.

The jamb member 12, with its hinge part attached thereto by the indentations and protuberances, may now be secured to the wall 14 of the door opening 10, as by means of vertically spaced screws 45 passing through the flange 32 and web base 31 and into the wall. These screws preferably have countersunk heads 46 fitting into a corresponding counterbore 47 in the flange 32; so that each head 46 does not extend beyond the outer surface of the flange. Following attachment of the jamb and hinge member to the wall, the door 16 with its hinge member secured to its side member 18 may then be placed adjacent the jamb 12, with its knuckles 26 appropriately interleaved with the other hinge knuckles 24, the piano wire, or corresponding pivotal member, then being inserted through all the interleaved knuckles, to pivotally secure the door member 16 to the jamb member 12.

The door may now be swung freely between open and closed positions. Alignment of all of the knuckles 24, 26 is assured, inasmuch as the proper location of the hinge plates in their grooves can take place without error, simply by fully inserting them in the grooves until they bottom therein.

The hinge member for the jamb or door may be constituted as a single piece, or a plurality of random lengths may be used. So long as the proper spacing between the knuckles is maintained, a plurality of hinge members may be firmly attached to the jamb 12 or door frame 16 by the simple expedient of providing a sufficient number of vertically spaced dimples and protuberances 33—37 in the flange, hinge plate and web base. Even if some gaps are present between the vertically designed hinge sections, water cannot leak through these gaps, since the hinge plate 23 or 25 does not open into the interior of the shower stall 11 at all. It is to be noted that the hinge plates are fully confined within the jamb 12 and door frame member 18, which are solid, continuous members running along the entire length of the jamb and door construction. The use of the random lengths of hinges obviously minimizes waste of materials to a considerable extent, since it is unnecessary to provide a hinge whose opposed parts are of one-piece construction throughout their lengths.

The hinge construction can be manufactured very economically. The jamb 12 and door frame member 18 are ordinarily made of a ductile metal, such as aluminum or aluminum alloy. The grooves 30, 39 can be formed in the respective parts by an extruding operation, which produces the parts in a very accurate and rapid manner. After the parts are formed, it is a simple operation to insert the plates 23, 25 of the hinge in the jamb 12 and the door frame member 18. By use of a suitable tool, such as a punch, pressure can be applied to the respective flanges 32, 40 to produce the longitudinally spaced indentations 33 which securely lock each hinge plate to both the base portion 31 of the web and the flange 32 itself. The protuberances 34, 36 formed by the indentations 33 constitute an integral part of the hinge, jamb member and door member themselves, which results in a much stronger construction than has heretofore been available.

Inasmuch as the hinge members are preferably attached to the jamb member 12 and the door member 18 at the manufacturing plant, assurance is had that the hinge members will not be bent or distorted through separate handling, as might occur when the parts are fastened together by use of screws. Any bending or disalignment that might be present in the hinge members themselves is eliminated upon insertion of their hinge plate into the grooves 30, 39, and this assurance of alignment of the hinge plates throughout their lengths also produces alignment of the hinge knuckles 24, 26 with respect to each other. Accordingly, interleaving of the knuckles is obtained much easier, as well as the threading of the piano wire hinge element 27 through all of the interleaved knuckles.

The hinge 15 is also attachable as a unit to the jamb member 12 and frame member 18, the piano wire 27 being in place within the interleaved hinge knuckles 24, 26. The hinge plate 23 is inserted within the jamb member 12 and secured thereto in the member described above. The other hinge plate 25, which is already pivoted to the front plate 23 by the hinge element 27, is then fastened within its companion frame member 18. Since the parts of the hinge 15 have previously been assembled to each other, it is unnecessary to shift the plates within the jamb and frame members to obtain the required staggered and interleaved relation of the knuckles 24, 26.

The inventor claims:

1. In combination: a metallic shower stall door member; a metallic jamb member; each of said members having a vertically extending groove extending substantially throughout its vertical length and defined by a base portion and a flange portion, each groove opening outwardly in the direction in which said door member swings to open position and said grooves being substantially parallel to each other when said door member is closed; said jamb member having a door stop portion substantially normal to said jamb member flange portion and engageable by said door member when in closed position; a hinge having opposed plates pivotally secured to each other; said plates being disposed in said grooves and being of substantially the same length as said grooves; each flange being indented in a direction toward its associated groove to force the material of said flange into the plate disposed in its associated groove and to force the material of such plate into its associated base portion.

2. In combination: a metallic shower stall door member; a metallic jamb member; each of said members having a vertically extending groove extending substantially throughout its vertical length and defined by a base portion and a flange portion, each groove opening outwardly in the direction in which said door member swings to open position and said grooves being substantially parallel to each other when said door member is closed; said flanges being closely adjacent and confronting each other when said door member is closed to prevent leakage between said flanges; a hinge having opposed plates pivotally secured to each other; said plates being disposed in said grooves and being of substantially the same length as said grooves; each flange being indented in a direction toward its associated groove to force the material of said flange away from the confronting faces of said flanges and into the plate disposed in its associated groove and to force the material of such plate into its associated base portion.

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