DOOR FRAME STRUCTURE

Ralph T. Casebolt, Oakland, Calif.

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This invention combines extruded metal bar shapes particularly constructed to form hinge support adapters and door stop adapters for shower bath cubicle doorways or to form wall to wall adapters for prefabricated wall panels employed to set apart a shower and/or bath tub cubicle.

Shower stall doors for the support and stops of which the present invention is embodied are factory made of glass and metal framing or the like having fabricated therewith hinges and latches the entire assembly of which is supplied complete to the installer. So formed they are of relatively exact dimensions in nominal stock sizes and are available at minimum cost.

Upon installation of such doors it is in almost all cases found that the door opening and jambs forming the stationary part of a shower stall are not of standard dimensions thereby to any degree of accuracy for fitting purposes. They usually are designed by the architect and specified as of certain shape and between sides dimensions which nominally probably correspond with architectural standards.

The execution of the work by the workmen causes an unpredictable departure from preciseness in nominal sizes, and also in alignments. The sides of the door opening are usually neither vertical nor are they even substantially parallel. In the usual case the door opening may be wider at the top and narrower at the bottom than a specified uniform width intended; or the convergence may be the reverse. To meet these conditions adjustable hinge and latch side stops have been used to a limited extent. The present invention removes various objectionable qualities of such prior adapters.

The present invention has for its main object the provision for facilitating the mounting of such doors in such openings with minimum facilities in minimum time.

Other objects and advantages of the invention will become evident in the following description wherein reference is made to the accompanying drawings, in which:

Fig. 1 is a front perspective view of a tile finished shower stall within the door opening of which there has been installed a standard glass panel door;

Fig. 2 by isometric view illustrates the elements and assembly of the stop and latch side adapters of the door; and

Fig. 3 by similar view shows the elements and assembly of the door hinge to the hinge side of the door opening;

Fig. 4 further illustrates the various uses of the invention;

Fig. 5 shows a detail by isometric view.

A shower door 10 of standard horizontal and vertical dimensions is formed of a metal frame 12 carrying glass 14 and having a continuous strip hinge assembly 16 one plate 18 of which is fastened to the door edge proper and the other plate 20 of which is fastened for rotation with respect to the shower door 10 on a hinge pivot rod 22.

The door supports of the present invention comprise two bars of extruded interfitting shapes at each side of the door, two of which are directly fastened to the sides of the door opening and two of which are in turn respectively mounted on the first two mentioned bars directly.

The bar shapes are designated A, B and C. Bar shapes A and D as shown are fastened directly to the tile of the door opening between tile formed jams 24 and 26 with the outward or forward and inward or rearward faces thereof nominally in common vertical planes perpen-

dicular to the door jambs. The bars B are mounted in shapes A and C as shown but are turned vertically about with respect to each other on the right and left sides of the doorway so that symmetry of bar shapes B results with respect to the vertical center line of the doorway.

As assembled in the arrangement of parts shown in Fig. 2 bar shape A is of generally H section providing outer and inner identical walls 28 and 30 joined by a web 32 forming in the specific illustration a shallow jamb-side channel 34 and a deep door-side channel 36. Only the rim edges 38 and 40 of walls 28 and 30 of the jamb side channel 34 engage the door jamb tiles, being held thereto by screws (not shown) passing through the web and suitably anchored in the jambs by well known means.

Both of the channels 34 and 36 formed by bar shape A have the internal surfaces of the walls 28 and 30 accurately formed in axially parallel planes perpendicular to the adjoining uniplanar parallel surfaces 31 and 33 of web 32 and perpendicular to the common plane of the edges 38 and 40 and to the common plane of the edges 39 and 41.

The cross sectional configuration of bar shape C is in general similar to bar shape A, the parts being designated by like reference characters primed in the drawing. In channel C, as specifically arranged in Figs. 2 and 3, the jamb side channel 34 is deeper than the door side channel. In bar shape C the door side channel 36′ is filleted and provided with stop shoulders 42 the surfaces of which in a common plane perpendicular to the accurately parallel uniplanar inside faces of the walls 28′ and 30′, which surfaces are equally spaced apart to the corresponding spacing of the inside surfaces of walls 28 and 30 of bar shapes A.

The bar shape B comprises front wall 44 and rear wall 46 joined by a hinge supporting web 48 to form a jambward channel 50 and a doorward stop and latch rail 52. The front and rear faces 54 and 56 of the wall parts 44 and 46 forming the channel 50 are accurately in parallel planes equally spaced apart to the distance between the internal faces of channels 34 and 36, and channels 34′ and 36′ so that the walls 44 and 46 can only slide between the walls 28 and 30. The forward faces 58 of the stops 52 are thereby maintained in a fixed common plane at the sides of the door opening when the bars B are assembled with bar shapes A and C. The edge surfaces 45 and 47 are in a common plane parallel to the bar axis and perpendicular to the slide surfaces 54 and 56 of the bar.

In the illustration of Fig. 2 it is assumed that the left side of the door opening or jamb 24 is inclined inwardly in the upward direction. Bar B has had its base channel inserted in the doorwardly disposed channel 36 and fixed with the right hand edge of the door stop in a vertical plane or line. To secure this vertically a spacing slug 49 or wedge shim 62 is placed to engage A and B between the web 32 and the inner edges of walls 28 and 46, the slug being fixed in the vertical sense by passing a fastening screw through its center. Each slug 62 is of uniform thickness, but slugs of different thicknesses may be employed. These slugs are also employed as shims to obtain fine adjustments of the bar shapes B. It will be noted that, as shown in Fig. 3, the bottom edges 45 and 47 of walls 44 and 46 engage shoulders 42 under compression from fastening screws which extend through web 48 and web 32 for anchorage in jamb 26, the bar shape B is thusly secured also.

In Fig. 3 it has been assumed that the right side 64 of the door opening is inclined toward its opening from top to bottom. As shown, the bottom ends of the edges 45 and 47 of bar shape B abuts shoulders 42 at the bottom of the joint of B and C and that they are separated a distance at 66 at the top end sufficient to bring the turn-
It is evident in Figs. 2 and 3 that the difference between the width of door frame 12 and door opening from jamb 24 to jamb 26 is filled by the four shaped sections from left to right A, B, B', C. Were the doorway substantially narrower or wider, the bars would be used differently, as will now be explained.

It has been pointed out that the walls and door jambs in and about shower stalls and bath tubs are not adequately precise to allow for direct application of a door or prefabricated panel therein. It is also true that the means of adaptation of such panels and doors must be accommodated to considerable horizontal differences between such doors or panels and the jambs or walls to which they are to be adapted.

By the use of two bar shapes A and C in conjunction with bar shape B, this invention extends the total width to which a panel or door 10 may be accommodated, to any of several fixed widths of the opening between bounding surfaces or jambs 24 and 26.

In Fig. 4 the range of uses is illustrated as extending between ten positions over nine intervals. For a fixed opening width A defined by a certain door and bar spaces B in all cases, the corresponding individual bars shape positions in combinations, and in combinations of relative positions of the bar spaces A and C, are shown in section for each opening width D, E, M, in the ascending sense of width of the openings from jamb 24 to jamb 26.

In a doorway of width D, a minimum opening, the bar shape B is unaccompanied by either of bar shapes A and C. The slug 62 may, and is shown to be, employed for alignment or spacing shim effect.

In doorways of widths E and F only one of the smaller, or bar shape A, is used. At E bar space B is seated in the deeper channel 36 of bar shape A, and at F it is seated in the shallower channel 34. In this way accommodation to the two fixed widths E and F have been added. Any adjustment for parallelism and verticality is accomplished with slugs 62.

Additional door widths G, H and I are accommodated to the door by adding the bar shape A to both sides of the door. Thus, by the addition only of bar shape A at one or the other, or at both sides of the door, and in any case in either one of two positions, five fixed jamb to jamb widths are accommodated to the door.

Additional widths J and K, not shown, are obtained by substituting bar shape C as shown at the left in Fig. 4 for width J and inverted for width K, for one of the bar shapes A.

More widths L, M, N are obtained by substituting bar shape C for both bar shapes A.

Quite evidently single bar shapes C may be employed alone to accommodate bar shapes B to corresponding widths.

Referring now to the illustration for the doorway width M, it is noted that the door hinge assembly is juxtaposed in its proper relation to bar shape B. Because of the comparative ease and economy of assembly under factory conditions the bar shape B is assembled to the hinge and the hinge to the door in the factory. The hinge plate 20 and the web 48 are fastened together at the factory, but have screw openings therein left for assembly of the door, shape B and shape A or C at the site of installation. It should be noted that the web 48 of bar shape B has its outer surface flush with the adjoining edges of the channel bar C.

It will be observed that the fastening of the door to the jamb, and the bar shape A or C, as well, requires only the passing of screws through holes 72 and 74 and directly into the suited anchorage in the jambs. No separate courses of fastenings are required first for shape C and then for shape B, and then for hinge plates 20. It is preferred to employ three screws to assemble the door with the bars B and C as shown at width M in Fig. 4.

While the invention has been particularly described as applied to the fitting of a door to a permanent part of a building, it is evident that similar principles apply where fixed panels are fitted between walls, or between a wall and a door. The principles are also applicable for fitting the horizontal edges of panels to top and bottom frame elements and to ceiling and floor surfaces.

1. A door-frame structure for installation within a rectangular door opening comprising: oppositely disposed side jamb assemblies; each said assembly comprising an outer jamb bar and an inner stop bar; each outer jamb bar being generally H-shaped in cross-section and comprising two parallel side flanges of equal width connected by a web; said side flanges and web defining first and second oppositely disposed channels of unequal depths; each inner stop bar being generally H-shaped in cross-section and comprising two parallel side flanges of unequal widths connected by a web; the wider of the two flanges of said H-shaped stop bar defining an inwardly projecting rail, and said web and parallel flanges defining an outwardly projecting channel portion; the channel portion of each H-shaped bar proportioned to snugly fit alternately in said first and second channel recesses of an associated H-shaped bar and into normal abutting engagement with the web of said H-shaped bar; said jamb assemblies positionable within said door opening in a first alternative position of use with the first channel of each H-shaped bar of each assembly facing toward an adjacent side of the door opening and with the channel portion of each H-shaped bar received within the second channel recess of a respectively associated H-shaped bar; said jamb assemblies positionable within said door opening in a second alternative position of use with the first channel of each H-shaped bar of each assembly facing outwardly toward an adjacent side of the door opening and with its second channel receiving the channel portion of an associated H-shaped bar, and with the second channel of the H-shaped bar of the second assembly facing outwardly toward an adjacent side of the door opening and with its first channel recess receiving the channel portion of an associated H-shaped bar; said jamb assemblies positionable within said door opening in a third alternative position of use with the second channel of each H-shaped bar of each assembly facing outwardly toward an adjacent side of the door opening and with the channel portion of each H-shaped bar received within a first channel recess of a respectively associated H-shaped bar; the difference in depth between the first and second channels of the H-shaped bars in their above specified three positions of use operable to provide three different door opening spans measured across from inner stop bar to inner stop bar. 2. The combination of claim 1 and wherein there is provided for each assembly at least one slug alternatively positionable within said first and second channels of each H-shaped bar adjacent the web thereof to space the H-shaped stop bar received in a said channel from the web of said H-shaped bar to thereby provide additional variations in door opening spans.

References Cited in the file of this patent

UNITED STATES PATENTS

1,458,025 Biele June 5, 1923
1,496,525 Coco June 3, 1924
1,614,318 Ricken Jan. 11, 1927
1,708,545 Lehman Apr. 9, 1929
1,724,186 Fox Aug. 27, 1929
1,750,921 Bright Mar. 18, 1930
1,919,393 Reinhardt July 25, 1933
2,284,074 Stahl May 26, 1942
2,595,506 Backman May 6, 1952