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S. J. BRUNO
SHOWER ENCLOSURE

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3 Sheets-Sheet 1

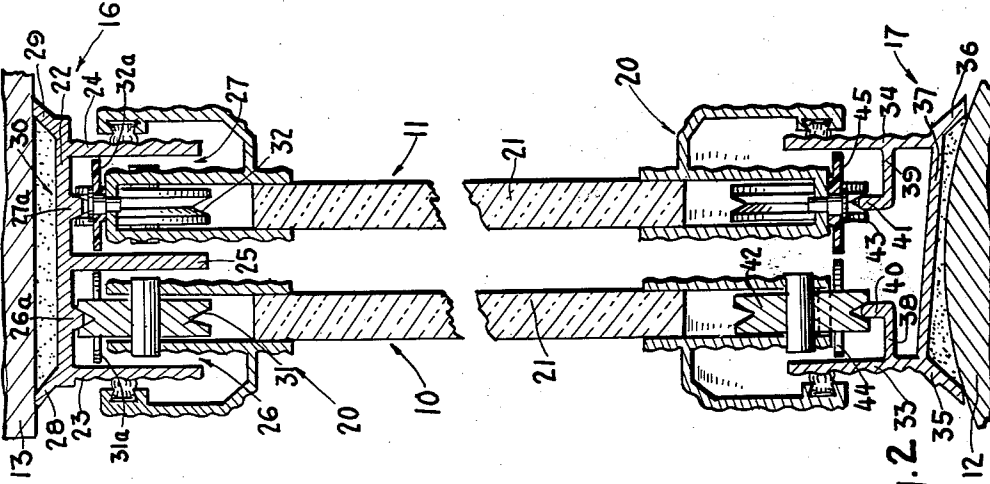


Fig. 2.33

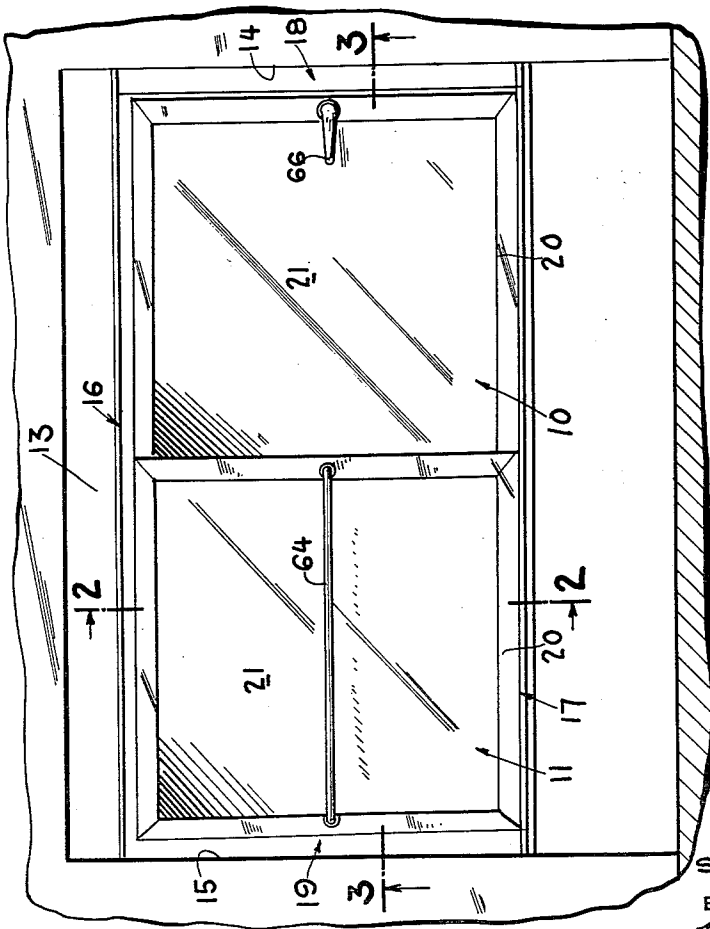


Fig. 1

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3 Sheets-Sheet 3

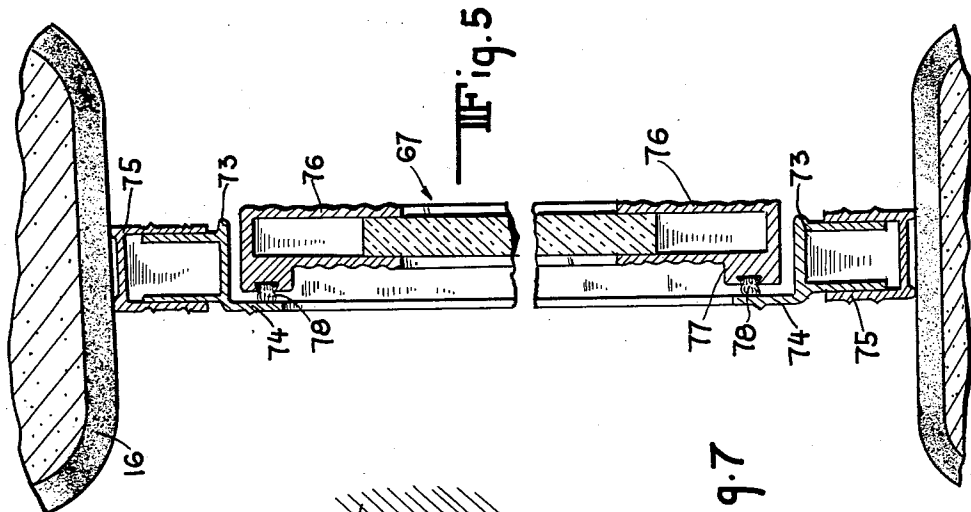
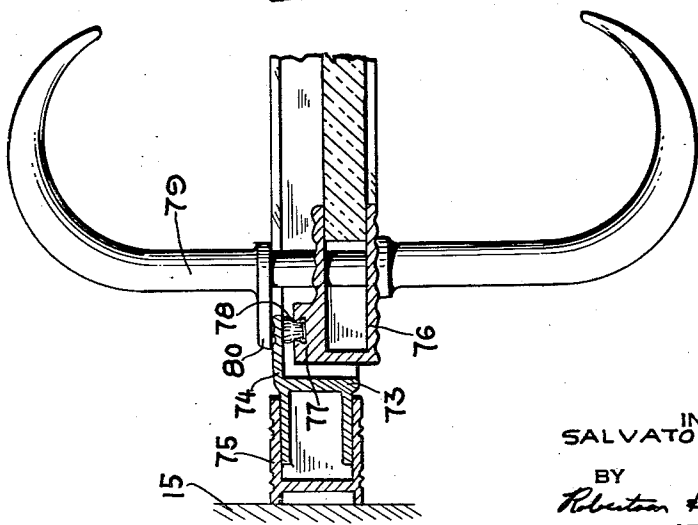
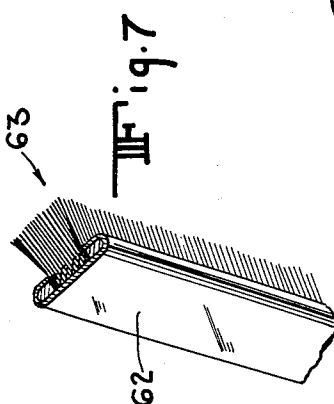
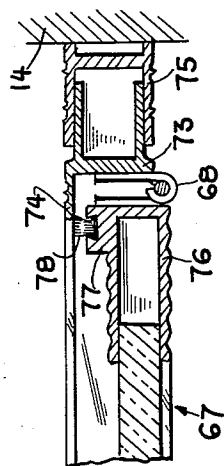


Fig. 6



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SHOWER ENCLOSURE

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This invention relates generally to shower enclosures, and more particularly is directed to an improved construction for sealing such enclosures against fluid leakage in both the sliding glass door and the hinged door types of compartment and bathtub shower enclosures.

Various types of sealing arrangements have been suggested which are specifically adapted to either sliding panel constructions such as windows and the like or to hinged panel constructions such as conventional doors. Applicant has devised a novel concept of sealing which is adapted for both types of shower enclosures, and which, due to its avoidance of the conventional complicated labyrinth arrangement, is inexpensive to manufacture and install while still providing a highly satisfactory fluid seal.

One of the objects of this invention is to provide a shower enclosure which is completely sealed against fluid leakage when the door means is in closed position.

Another object of this invention is to provide a shower enclosure in which the same size doors can be used with front openings of varying widths.

Another object of this invention is to provide a fluid tight shower enclosure in which the sealing means extends only in a direction transverse to the plane of the doors.

According to one aspect of the invention, the door assembly for closing the front of the shower enclosure includes a frame extending around all of the enclosure which has an inwardly directed flange thereon. The fluid tight shower door means fits within the frame and carries flexible sealing means which extend from the door means only in a direction transverse to the plane of the flange. The sealing means extends around the entire door means and is located so as to engage the flange means about its entire length when the door means is in closed position.

The above, and other objects, features and advantages of the invention will be apparent in the following detailed description of illustrative embodiments which is to be read in connection with the accompanying drawings forming a part hereof, and wherein:

FIG. 1 is an elevational view of a sliding door shower enclosure embodying the present invention;

FIG. 2 is an enlarged vertical sectional view taken along the line 2—2 of FIG. 1;

FIG. 3 is an enlarged horizontal sectional view taken along the line 3—3 of FIG. 1;

FIG. 4 is an elevational view of a hinged door shower enclosure embodying the present invention;

FIG. 5 is an enlarged vertical sectional view taken along the line 5—5 of FIG. 4;

FIG. 6 is an enlarged horizontal sectional view taken along the line 6—6 of FIG. 4; and

FIG. 7 is an enlarged perspective view of the sealing member utilized in the present invention.

Referring to the drawings in detail, and initially to FIGS. 1 to 3, inclusive, thereof, where the present invention is shown applied to a shower enclosure for a bathtub shower of the sliding door type. The shower enclosure includes a pair of glass paneled doors 10 and 11 which are slidably mounted and adapted to serve as an openable closure or shield for the bathtub shower. In this type of shower, the bathtub 12 is permanently enclosed along one longitudinal side and at both of the opposite ends by vertically extending walls 13, 14 and 15. Although the three walls 13, 14 and 15 are shown as structural walls with the bathtub 12 fitting into the alcove formed thereby, it is to

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be understood that, in those installations having the bathtub installed in a corner, one or the other of the end walls 14 and 15 may be formed by a fixed, glass paneled partition as a part of the shower enclosure. In either case, the tub 12 serves as a receptacle for the waste shower water and the upstanding walls 13, 14 and 15 define a compartment or enclosure that is open at the outer longitudinal side of the tub.

This open side of the shower compartment is adapted to be closed by the doors 10 and 11 which, for this purpose, are guided, at their upper and lower edges, by guide tracks 16 and 17, respectively. The lower guide track 17 is mounted on, and extends along, the outer longitudinal edge or rim of the tub 12, while the upper guide track 16 extends parallel to the lower track and is spaced vertically from the latter by end members 18 and 19 which are suitably secured to the walls 14 and 15. Guide tracks 16 and 17 and end members 18 and 19 combine to form an outer frame for the doors 10 and 11.

Each of the doors 10 and 11 is provided with a rectangular frame 20, of extruded metal or the like, within which is fitted a panel 21 of glass or any other suitable, preferably transparent or translucent material. The doors are each of a width slightly exceeding one half the width of the opening framed by the tracks 16 and 17 and the members 18 and 19 so that they can be extended across the outer frame and overlap slightly at the center. The inner and outer edges of guide tracks 16 and 17 and end frame members 18 and 19 combine with the inner edges of the frames 20 to form an inwardly directed flange about the entire shower enclosure front opening.

The doors 10 and 11 move in parallel vertical planes that are offset relative to each other and defined by the guide tracks 16 and 17. As seen in FIG. 2, the upper guide track 16 has a laterally extending top wall 22, side walls 23 and 24 depending from the opposite longitudinal edges of the top wall, and a central wall or partition 25 also depending from the top wall and spaced equally from the side walls so that two downwardly opening channels or grooves 26 and 27 are defined between the depending walls to receive the upper edge portions of the doors 10 and 11, respectively. If desired, and particularly in those installations where the upper guide track 16 is mounted against the ceiling or other permanent structure of the bathroom, the upper track 16 may further include outwardly flaring mounting wings 28 and 29 extending upwardly from the opposite edges of top wall 22 and adapted to abut, at their edges, against the ceiling to define a space 30 between the wings that can receive caulking or any other watertight sealing compound. Located centrally in each of the channels 26 and 27 are roller guide ribs 26a and 27a which guide grooved rollers 31 and 32 rotatable about a horizontal axis.

Preferably, the doors 10 and 11 have rollers 31a and 32a, respectively, which may be of nylon and loosely engage in the related channels 26 and 27 of the upper track, such rollers being rotatable about vertical axes. These rollers, as shown in FIG. 2, have diameters greater than the thickness of the door frames 20 so that the latter are held out of frictional contact with the surfaces of the depending walls 23, 24 and 25 and resistance to sliding of the doors is thereby minimized.

The bottom track 17 embodying the present invention has a profile or cross-sectional configuration that is best seen in FIG. 2 and includes spaced apart, parallel vertical side walls 33 and 34 which, at their lower edge portions, diverge or flare away from each other to form wings 35 and 36, respectively. A bottom wall 37 extends laterally between the side walls 33 and 34 immediately above the wings 35 and 36 and, as shown, slopes or inclines downwardly from the outer side wall 33 to the inner side wall 34. Flanges 38 and 39 extend laterally toward each

other from the internal surfaces of side walls 33 and 34, respectively, and are spaced upwardly from the bottom wall 37. The flanges 38 and 39 have widths that are substantially less than one half the distance between the side walls, and the spaced free edges of the flanges are turned upwardly to define rails, as at 40 and 41. The doors 10 and 11 have grooved support rollers 42 and 43 rotatably mounted in the lower portions of their respective frames 20 and projecting downwardly from the latter to ride on the rails 40 and 41, respectively, thereby to facilitate the sliding movement of the doors 10 and 11. The rollers 42 and 43 may also be of nylon to reduce the noise of operation and to avoid the necessity of providing a lubricant. The doors 10 and 11 may also have rollers 44 and 45 which are similar to upper rollers 31a and 32a and prevent frictional contact between walls 33 and 34 and doors 10 and 11 thereby facilitating sliding of doors 10 and 11.

In mounting the lower track 17 on the outer longitudinal edge of a bathtub 12, the rim of the tub may extend between the wings 35 and 36, as shown in FIG. 2, with the remainder of the space under the bottom wall 37 being filled by a suitable caulking, or other watertight, compound. Where the lower track 17 is to be mounted on a tub having a wide, flat rim, or on the sill of a stall or compartment shower, the lower edges of the wings 35 and 36 may rest upon the bathtub rim or sill and the entire space under the bottom wall 37 and between the wings may be filled with a caulking compound.

End frame members 18 and 19 have spaced inwardly directed channels 46 and 47, which receive the ends of doors 10 and 11 and are formed by inwardly directed walls 50, 51, and 52 which are connected by end web 53. Outwardly directed walls 54 and 55 extend from end web 53 and are received in channel member 56. This construction permits to adjustment of the end frame members 18 and 19 inwardly and outwardly so that the same size doors can be used for shower enclosures having various widths. After proper adjustment of end frame members 18 and 19, the elements thereof are fixed against further relative movement by screws or the like in a manner which will be obvious to one skilled in the art. Channel member 46 can be suitably secured to the side walls 14 and 15, as by caulking or the like.

In order to provide a construction for sealing the inside of the shower enclosure against fluid leakage when doors 10 and 11 are closed, integral flange portions 57 are formed on the frames 20 which have an integral, continuous, U-shaped holding member 58 formed on the inner surface of each flange portion adjacent the free end thereof. The seal is provided by sealing means 59, carried in the U-shaped holding member, which engages walls 50 and 52 on the end frame members 18 and 19 when the doors are closed and which engages walls 23, 24 of upper track 16 and walls 33, 34 of lower track 17 at all times. Thus, it is obvious that this construction provides a complete seal at the top, bottom and ends of the opening in the shower enclosure when the doors are closed. In order to prevent leakage between the two doors where they overlap, sealing means 60 carried in auxiliary U-shaped holding members 61 are provided. The sealing means 59 and 60 are best shown in FIG. 7 and include a metallic backing 62 having curled over edges which clamp and hold a plurality of tufts of textile material, shown generally as 63.

The doors may have towel bars 64 and 65 and either one or both doors may have a handle 66 connected thereto. Due to the identical construction of the top and bottom of the doors and the sliding means carried thereby, it is obvious that if it is desired to permit their use with both left and right hand shower arrangements all that is necessary is to turn the doors upside down without any necessity for relocation of the towel bars and handle.

Referring next to FIGS. 4, 5 and 6, the use of applicant's inventive concept for a hinged door type of shower enclosure. Walls 13, 14 and 15 define, together with the

floor a shower compartment having one open side which is adapted to be closed by hinged door 67, hinged as by piano type hinge 68. The outer frame between the door and the walls includes top and bottom members 69 and 70 and end wall members 71 and 72. In this form, members 69, 70, 71 and 72 are all identical in construction and include a U-shaped member 73 having an inwardly directed flange 74 integrally formed on its rear edge. Member 73 is adjustably held in U-shaped element 75 secured to the related wall by caulking or the like. After adjustment, member 73 and element 75 are fixed against relative movement, as by screws.

Door 67 includes a glass panel held at its edges in a frame 76 which includes an integral U-shaped holding member 77 and sealing means 78, which when the door is closed engages flange 74 to prevent fluid leakage from inside the shower compartment. Sealing means 78 is also of the type shown in FIG. 7 and described above. A rotatable handle 79 having latch means 80 which engages a portion of flange 74 may also be provided.

Although particular embodiments of the invention have been described in detail herein and shown in the accompanying drawings, it is to be understood that the invention is not limited to those particular embodiments, and that various changes and modifications may be effected without departing from the scope and spirit of the invention, except as defined in the appended claims.

I claim:

1. In a shower enclosure, parallel, spaced, horizontal, channel-shaped track-supporting means arranged in opposed relation; parallel, spaced, vertical, channel-shaped means arranged in opposed relation and forming an enclosure with said horizontal means; parallel, spaced sliding door panels mounted in said track-supporting means; and frame means along each edge of each of said sliding door panels, each frame means comprising a unitary structure including transversely aligned, coextensive, reversely arranged, integrally connected, channel-shaped means, one of said reversely arranged channel-shaped means being adapted to receive said door panel, and the other having fixed to an unexposed surface thereof a sealing means throughout its entire extent adapted to cooperate with said channel-shaped track-supporting means.

2. In a shower enclosure, parallel, spaced, horizontal, channel-shaped track-supporting means arranged in opposed relation; parallel, spaced, vertical, channel-shaped means arranged in opposed relation and forming an enclosure with said horizontal means; parallel, spaced sliding door panels mounted in said track-supporting means; adjustable, channel-shaped uprights mounted within said vertical members, each having flange means forming pockets for the reception of said sliding door panels at each end of said enclosure; and frame means along each edge of each of said sliding door panels, each frame means comprising a unitary structure including transversely aligned, coextensive, reversely arranged, integrally connected, channel-shaped means, one of said reversely arranged channel-shaped means being adapted to receive said door panel, and the other having fixed to an unexposed surface thereof a sealing means throughout its entire extent adapted to cooperate with said channel-shaped track-supporting means.

3. In a shower enclosure, parallel, spaced, horizontal, channel-shaped track-supporting means arranged in opposed relation; parallel, spaced, vertical, channel-shaped means arranged in opposed relation and forming an enclosure with said horizontal means; parallel, spaced sliding door panels mounted in said track-supporting means; frame means along each of three adjacent edges of each of said sliding door panels, each frame means comprising a unitary structure including transversely aligned, coextensive, reversely arranged, integrally connected, channel-shaped means, one of said reversely arranged channel-shaped means being adapted to receive said door panel, and the other having fixed to an unex-

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posed surface thereof a sealing means throughout its entire extent adapted to cooperate with said channel-shaped track-supporting means; and similar frame means along the fourth edge of each of said door panels, having sealing means along the entire extent of each of said reversely arranged, channel-shaped means.

4. In a shower enclosure, parallel, spaced, horizontal, channel-shaped track-supporting means arranged in opposed relation; parallel, spaced, vertical, channel-shaped means arranged in opposed relation and forming an enclosure with said horizontal means; parallel, spaced sliding door panels mounted in said track-supporting means; frame means along each edge of each of said sliding door panels, each frame means comprising a unitary structure including transversely aligned, coextensive, reversely arranged, integrally connected, channel-shaped means, one of said reversely arranged, channel-shaped means being adapted to receive said door panel, and the other having fixed to an unexposed surface thereof a sealing means throughout its entire extent adapted to cooperate with said channel-shaped track-supporting means; and separate roller means adapted to rotate in horizontal and vertical planes, said roller means being mounted on certain of said frame means for cooperation with said horizontal track-supporting means.

5. In a shower enclosure, parallel, spaced, horizontal, channel-shaped track-supporting means arranged in opposed relation; parallel, spaced, vertical, channel-shaped means arranged in opposed relation and forming an enclosure with said horizontal means; parallel, spaced sliding door panels mounted in said track-supporting means; frame means along each of three adjacent edges of each of said sliding door panels, each frame means

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comprising a unitary structure including transversely aligned, coextensive, reversely arranged, integrally connected, channel-shaped means, one of said reversely arranged channel-shaped means being adapted to receive said door panel, and the other having fixed to an unexposed surface thereof a sealing means throughout its entire extent adapted to cooperate with said channel-shaped track-supporting means; similar frame means along the fourth edge of each of said door panels, having sealing means along the entire extent of each of said reversely arranged channel-shaped means; and separate roller means adapted to rotate in horizontal and vertical planes, said roller means being mounted on certain of said frame means for cooperation with said horizontal track-supporting means.

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