Jan. 2, 1951 J. W. DAVIS 2,536,540

WALK-IN BATH TUB AND MOUNTING THEREFOR

Filed Oct. 14, 1948 2 Sheets-Sheet 1

Fig. 1

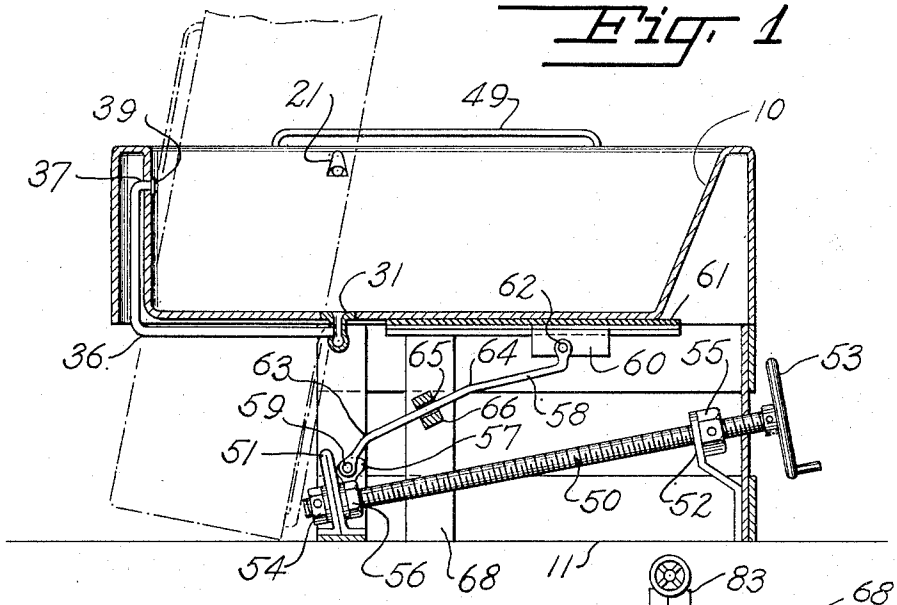


Fig. 3

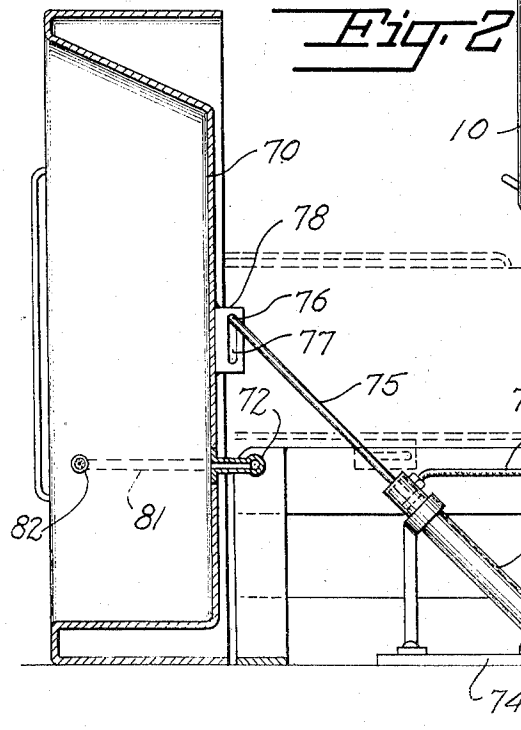
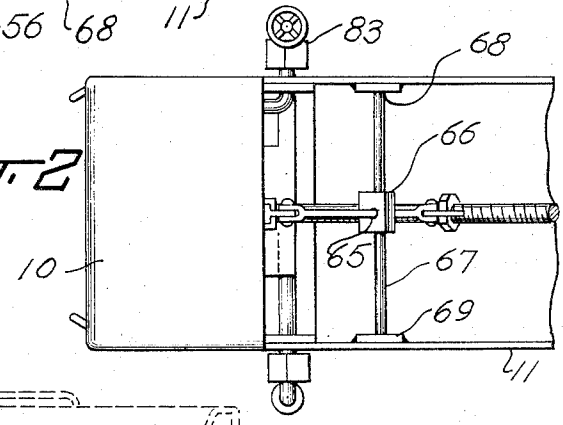


Fig. 2



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Filed Oct. 14, 1948 2 Sheets-Sheet 2

Fig. 4

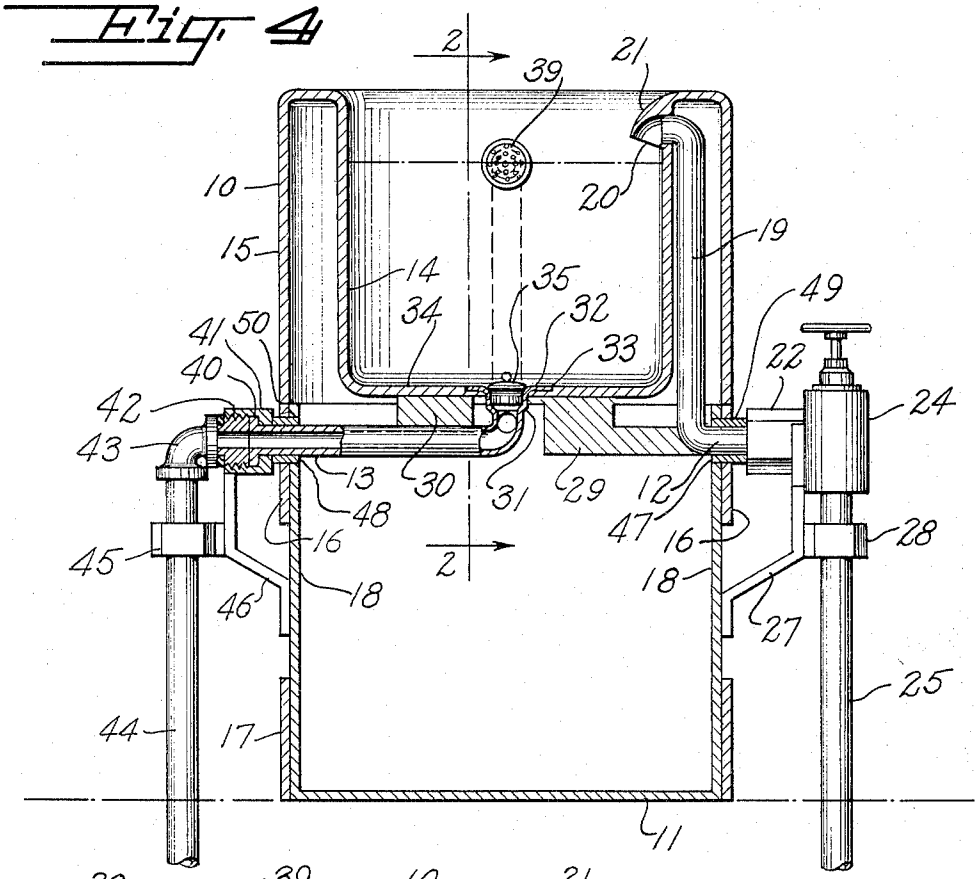
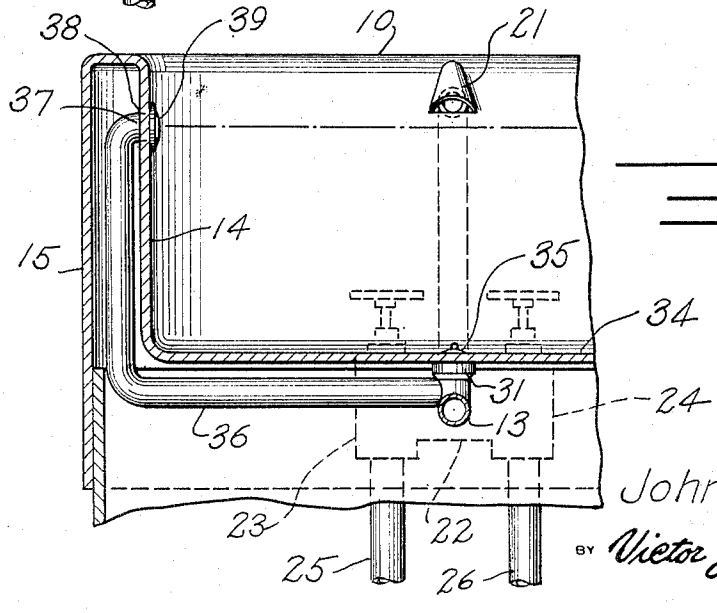


Fig. 5



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WALK-IN BATHTUB AND MOUNTING THEREFOR

John W. Davis, El Monte, Calif.

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5 Claims. (Cl. 4—176)

1

This invention relates to plumbing fixtures and particularly bathtubs of the adjustable or pivotally mounted type as may be used for invalids, and in particular a bathtub mounted on a stand in an elevated position for the convenience of an attendant bathing an invalid, and the invention includes means for actuating a bathtub from a horizontal to a vertical position or vice-versa and means for supplying hot and cold water to the bathtub and for draining water therefrom through the pivotal mounting means.

The purpose of this invention is to provide a bathtub for the use of invalids wherein the tub may be adjusted to a vertical position to facilitate backing an invalid therein and then swung over to a horizontal position while the invalid is in the tub, and in which, in the horizontal position, the bathtub is elevated above the floor to facilitate bathing the invalid by an attendant.

This application is a continuation, in part, of my co-pending applications filed November 18, 1946, with the serial numbers 710,684, 710,685, both now abandoned, and 710,686, now Patent No. 2,514,848, issued July 11, 1950, and includes the bathtub and tilting mounting elements and also the water supply and drain connections of the tub as included in these applications with improvements thereon.

In the usual type of pivotally mounted bathtub, the tub is mounted to move into a closet or enclosure and the water supply and drain connections, which are usually provided at the end of the tub, travel with the movement of the tub, and for this reason, flexible connections, such as hose, are provided. Rubber hose or other flexible connections wear with continuous use so that they are objectionable for permanent installations of this type. With this thought in mind, this invention contemplates a bathtub having a swivel connection whereby it may be turned from its usual horizontal position to a substantially vertical position and in which the water supply and drain connections communicate with the tub through the swivel mounting.

The object of this invention is to provide means for mounting a bathtub on a stand in which the tub may be pivotally adjusted to a vertical position.

Another object of the invention is to provide means for actuating a bathtub pivotally mounted on a stand from a horizontal to a vertical position with comparatively little effort.

Another object of the invention is to provide means for incorporating tubular shafts in a pivotal mounting of a bathtub wherein water

2

may be supplied to the tub through a tubular shaft at one side and conveyed to a high point in the tub, and drained from the tub through a drain connection provided through a tubular shaft at the other side and wherein the tubular shafts of the supply and drain connections are in alignment.

Another object of the invention is to provide a pivotal mounting for a bathtub through which water supply and drain connections may pass which is adapted for permanent installation and also adapted for continuous use.

A further object of the invention is to provide a pivotally mounted bathtub which, in the horizontal position, is mounted upon a stand, and in which the water supply and drain connections are incorporated in the pivotal mounting means, which is of a comparatively simple and economical construction.

With these and other objects and advantages in view, the invention consists of the new and useful combination, construction and arrangement of parts as hereinafter more fully described, set forth in the claims appended hereto, and disclosed in the accompanying drawings forming part hereof, wherein:

Figure 1 is a view showing a longitudinal section through a bathtub and stand on which the tub is pivotally mounted, and illustrating a hand actuated screw with a follower and arm for adjusting the position of the tub;

Figure 2 is a plan view of the tub shown in Figure 1 showing the tub in a vertical position and with the outer end of the stand broken away;

Figure 3 is a view similar to that shown in Figure 1, showing the tub in the vertical position in full lines, and in the horizontal position in dotted lines, and illustrating a modification wherein the tub is raised and lowered by a hydraulic cylinder;

Figure 4 is a view showing a cross-section through a pivotal mounting of a bathtub with parts broken away and parts of the pipe shown in elevation;

Figure 5 is a longitudinal section through one end of the tub taken on line 5—5 of Figure 4 with parts broken away and with the pipe shown in elevation.

Referring now to the drawings in detail wherein like reference characters denote corresponding parts, the pivotal bathtub of this invention includes a tub 10 mounted on a stand 11 by tubular shafts 12 and 13 and, in the design shown, the tub is provided with an inner wall 14 and an outer wall or depending skirt 15.

The lower edges of the skirt 15 rest upon the upper edge of a band 16 positioned around the upper end of the stand 11. A similar band 17 is provided around the lower end of the stand and the bands are connected by vertically disposed plates 18.

The tubular shafts 12 and 13 are aligned and the shaft 12 extends upward providing a vertical extension 19 that opens into the bathtub at a point 20 under a lip 21. The outer end of the shaft 12 extends into a fitting 22 having hot and cold water valves 23 and 24 therein and the valves are provided with supply connections 25 and 26, respectively. The fitting 22 is mounted on a plate 18 of the base 11 by a bracket 27 which is provided with extending lugs 28 in which the supply connections 25 and 26 are held. The shaft 12 is secured, preferably by welding, in a lug 29 on the underside of the tub, as shown in Figure 4.

The shaft 13 is held in a similar lug 30 on the underside of the tub and the inner end thereof extends upwardly forming an elbow with a small bell 31 at the upper end. The bell 31 is provided with a flange 32 that is positioned in a recess 33 in the bottom 34 of the tub. A plug 35 may be provided to close the drain, as shown. The tubular shaft 13 is also provided with an extension 36 that extends upwardly to a point 37 where it extends through an opening 38 in the inner wall 14 of the tub, and the inner end thereof is provided with a perforated disc 39 which is permanently open, thereby preventing water reaching the inlet opening 20 of the supply pipe.

The outer end of the shaft 13 is provided with a bead 40 that is positioned in a coupling member 41 which is threaded on a connection 42 extending from an elbow 43 of a drain connection 44. The drain connection is carried by a lug 45 on a bracket 46 that is mounted on the plate 18 of the base 11.

The shaft 12 is pivotally mounted in a sleeve 47 in the side wall and band 16 of the base 11 and the shaft 13 is pivotally mounted in a sleeve 48 of the opposite side of the base and with these openings aligned, the tubular shafts provide a pivotal mounting of the bathtub in the base.

With the swivel connections 22 and 41 at the ends of the shafts, the bathtub may readily be adjusted about the shafts to substantially a vertical position, as shown in Figure 3, wherein an invalid may be placed therein and then the tub may be actuated to a substantially horizontal position for use. The drain is always open, by means of the overflow connection and hot or cold water, or both, may be supplied to the tub with the tub in substantially any position.

The upper edges of the sides of the tub may also be provided with handles 49 and the tub may be adjusted or actuated by any suitable means.

In the design shown in Figure 1, the position of the tub is adjusted by a threaded rod 50 rotatably mounted in bearings 51 and 52 and provided with a hand wheel 53 at the outer end. The threaded rod is secured longitudinally by nuts 54 and 55 and as the rod is rotated, a follower 56 thereon travels along the rod. The follower is provided with an ear 57 to which a rod 58 is pivotally attached by a pin 59 and the opposite end is pivotally attached to a slider 60, slidably mounted in a track 61 on the lower surface of the tub, by a pin 62. The rod 58 is provided with a flat section positioned between the points 63 and 64 and this section is slidably mounted in a socket 65 of a block 66 which is pivotally mounted in the stand by a transversely

positioned bar 67, the ends of which are pivotally mounted in bearings in the plates 68 and 69.

As the follower 56 travels up the rod 50 from the position shown in Figure 1, the end of the tub positioned on the stand moves upwardly with the slider 60 traveling in the track 61 and with the rod 58 sliding in the guide formed by the socket and block on the rod 67. By this means, the bathtub may be conveniently turned from the horizontal position to a vertical position, and then back to the horizontal position by turning the hand wheel 53.

In the modification illustrated in Figure 3, a tub 70 is pivotally mounted on a stand 71 at the point 72 with aligned tubular shafts similar to the shafts shown in Figure 4 and the tub is actuated by a hydraulic cylinder 73, mounted on a base 74 and provided with a piston rod 75, the end 76 of which is slidably mounted in a slot 77 in a lug 78 extending downwardly from the lower surface of the tub 70. The cylinder 73 is provided with fluid connections 79 and 80 and fluid under pressure may be supplied through either of these connections wherein fluid under pressure supplied through the connection 79 will force the piston downwardly to actuate the tub from the position shown in full lines in Figure 3 to the position shown in dotted lines, and with the fluid supplied through the connection 80, the tub will be actuated to the upright position.

In this design the overflow connection 81, similar to the connection 36, extends directly up one side of the tub to the point 82, and it will be understood that the overflow may open into the upper part of the tub at any convenient point.

In the design shown in Figure 2, the supply connection is provided with a single valve 83 and it will be understood that any suitable number of valves may be used in the supply and drain connections to compensate for different conditions.

It will also be understood that any other suitable means may be used for raising and lowering the tub, and the supply and drain connections may be extended to other points or located in different positions, without departing from the spirit of the invention.

It will be understood that modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. In a bathtub, the combination which comprises a stand for supporting a bathtub in an elevated position with one end of the bathtub extended beyond the end of the stand, means pivotally mounting the bathtub on the end of the stand adjacent the said projecting end, water supply and drain connections extended through the said pivotal mounting means, a connection extended from the said water supply connection to a high point in the bath tub, a connection from the said drain connection to a low point in the bath tub, said low point of the drain connection positioned below the point of entry of the connection from the supply connection and operating means for actuating the bathtub from a horizontal to a vertical position and for returning the bathtub to a horizontal position.

2. In a bathtub, the combination which comprises a bathtub stand, a bathtub positioned on said stand with one end thereof projecting beyond the associated end of the stand, tubular means pivotally mounting said tub on the end of the stand at a point spaced from the project-

ing end of the tub whereby when tilted, the tub is positioned substantially vertical with the open upper surface extended outwardly to facilitate the entrance of an invalid into the tub, a water supply connection with a valve therein extended through the said tubular pivotal mounting on one side of the tub to a point of entry in the upper edge of the tub, a drain connection extended through the tubular pivotal mounting on the other side of the tub to an outlet in the lower part of the tub and to an overflow connection in the upper part of the tub spaced below the point of entry of the said supply connection and operating means for actuating the tub from a vertical to a horizontal position with an invalid therein.

3. A bathtub mounting comprising a tub, a base upon which the tub is positioned, aligned tubular supply and drain shafts pivotally mounting the tub on the base, a connection from the inner end of the supply shaft to a point in the upper part of the tub, a water supply connection on the outer end of the supply shaft, a connection from the inner end of the drain shaft to a point in the lower part of the tub, an overflow connection from the drain connection to a high point in the tub spaced below the point of entry of the supply connection to the tub, a drain connection on the outer end of the said drain shaft, and swivel connections in the connections on the outer ends of the supply and drain shafts.

4. An adjustable bathtub comprising a stand for supporting a bathtub in a horizontal position, a tub positioned on the stand with one end extending beyond the end of the stand, aligned water supply and drain connections pivotally mounting the tub on one end of the stand, a connection from the water supply connection to a point in the upper part of the bath tub, a connection from the drain connection to an outlet connection in the lower part of the tub and to an overflow connection in the upper part of the tub spaced below the point of entry of the said

supply connection, an operating rod positioned in the stand, means journaling the rod in an inclined position in the stand, a hand wheel on one end of the rod and positioned beyond the end of the stand whereby the rod may be manually rotated, an actuating member mounted on the rod, a coacting member mounted on the undersurface of the tub, and means operating the said coacting member by the actuating member on the rod to adjust the position of the tub.

5. An adjustable bathtub comprising a stand including spaced horizontally disposed U-shaped frames connected at the ends by vertical members for supporting a bathtub in a horizontal position, aligned water supply and drain connections extended through opposite sides of the stand and spaced from one end thereof, a tube extended from the said supply connection to an inlet opening in the upper part of the bath tub, a tube extended from the said drain connection to a low point in the bath tub and to an overflow opening in the upper part of the tub and spaced from the point of entry of the supply tube, a tub pivotally mounted on and connected to said supply and drain connections, an operating rod positioned in the stand, means journaling the rod in an inclined position in the stand, a hand wheel on the outer end of the rod positioned beyond the end of the stand for manually rotating the rod, an actuating member on the rod, a coacting member mounted on the undersurface of the tube, and means operating the said coacting member by the actuating member on the rod to adjust the position of the tub.

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REFERENCES CITED

The following references are of record in the file of this patent:

"Cross-Connections in Plumbing Systems," U. S. Department of Commerce, National Bureau of Standards Research Paper RP1086, April 1938.