Jan. 8, 1963 R. W. TURNER 3,071,779

POWER OPERATED BATHTUB SEAT

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Fig. 1

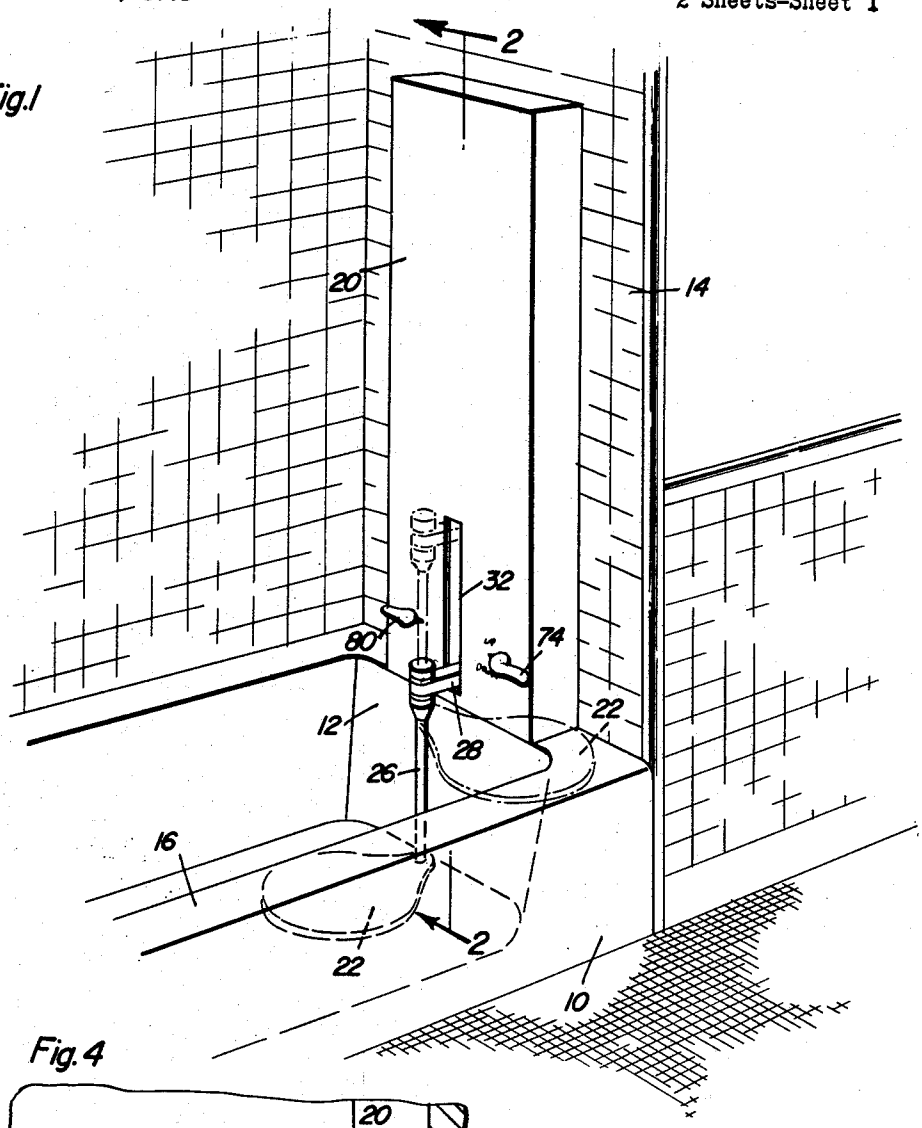
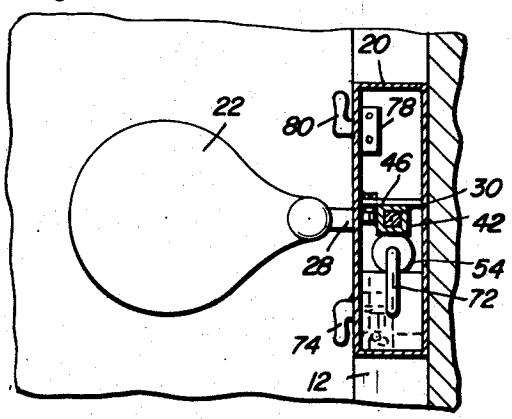


Fig. 4



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Fig.2

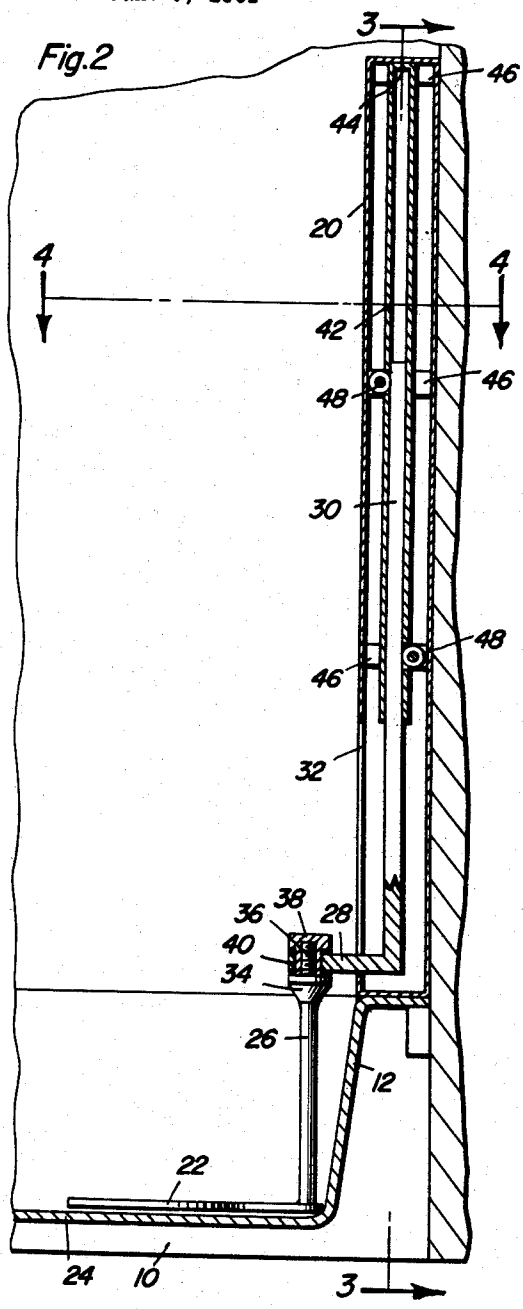
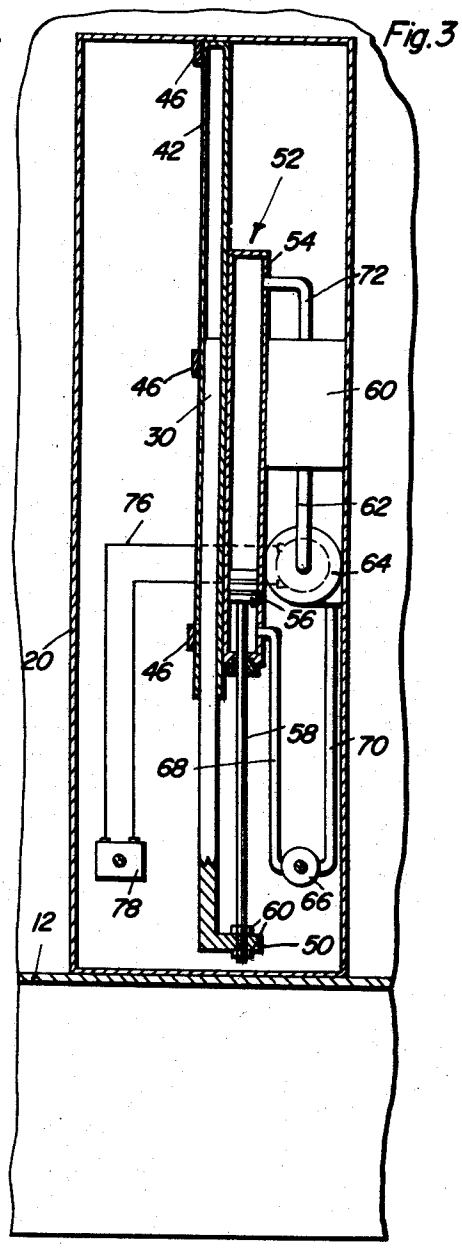


Fig.3



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POWER OPERATED BATHTUB SEAT

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This invention comprises a novel and useful power operated bathtub seat and more particularly pertains to a power operated lift for bathtubs adapted for either permanent or semi-permanent installation as desired.

The modern bathtub is a prolific source of accidents due to falls and the like, particularly for aged persons and invalids. Moreover, great physical exertion and difficulty is frequently encountered for such persons when the use of a bathtub is desired.

It is therefore the primary purpose of this invention to provide a device which will largely overcome the aforementioned difficulties and hazards attending the use of a bathtub either for its normal purpose in a home or for hydro-therapeutic use in hospitals and the like.

More specifically, the primary purpose of this invention is to provide a power operated lift which will greatly facilitate and render safe and convenient the lifting of a person into and out of a bathtub.

A further object of the invention is to provide a device in accordance with the preceding objects which shall include a horizontally swingable seat movable between a position overlying the bottom of the bathtub and the position to one side of the latter to enable a person to be readily lowered into or lifted from a bathtub in a sitting position, be swung over the side of the bathtub, and facilitate placing of a person upon and removing the person from the seat.

Yet another object of the invention is to provide a device in accordance with the preceding objects in which the support means for the seat, the power operating means for the support means and the control mechanism for the power operating means may be compactly, unobtrusively but accessively housed in a container or cabinet at one end of and above a bathtub whereby to present a minimum obstruction of the interior of the bathtub and the normal use of the latter.

Still another object of the invention is to provide a power operated lift in accordance with the preceding objects whereby the advantages and dependability of a hydraulic fluid cylinder and piston unit may be utilized to effect a smooth and positive lifting and lowering of the seat with safety, and without jarring; and whereby the seat may be securely and safely locked in desired position while retaining its function as being horizontally swingable.

A further important object of the invention is to provide a power operated lift in conformity with the above-mentioned objects whereby the control means of the same shall be located in convenient access to a person using the seat of the device; and which will yet permit the locating of a hydraulic pressure pump and an electric motor for the driving the same at a remote position relative to the device as required.

Still another object of the invention is to provide a power operated lift in accordance with the preceding objects wherein there is provided a vertically reciprocable securely mounted and guided support member carrying the seat together with improved means for connecting the power operating means to the support member and a further improved means for pivotally mounting the seat upon the support member in a dependent relation therefrom.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter

described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a fragmentary view in perspective showing a portion of a bathtub and bathroom arrangement and illustrating the manner in which the power operated lift mechanism of this invention may be conveniently and compactly associated therewith, alternative positions of the horizontally swingable seat of the device being shown in dotted lines therein;

FIGURE 2 is a vertical longitudinal sectional view taken substantially upon a plane indicated by section line 2—2 of FIGURE 1 and showing in particular the disposition of the support means, and the stationary guide therefor;

FIGURE 3 is a further view in vertical section taken substantially upon a plane indicated by section line 3—3 of FIGURE 2 and showing further details of the support means, the power operating means and the control means therefor; and

FIGURE 4 is a further detail view in horizontal section taken substantially upon the plane indicated by section line 4—4 of FIGURE 2.

In the accompanying drawings, referring particularly to FIGURE 1 there is shown a portion of a bathroom having a conventional form of a bathtub **10** therein having one end wall as at **12** positioned adjacent a vertical wall **14** of the bathroom. As will be seen, the bathtub is of the type having outside side wall **16** over which a person must pass when entering or leaving a bathtub.

Indicated by the numeral **20** is a housing or cabinet enclosing the power operated mechanism in accordance with this invention and by means of which a lift in the form of a seat or platform **22** may be vertically raised or lowered either with or without a person thereon, and may be swung horizontally as between the dotted line position shown in FIGURE 1 at various positions throughout its vertical range of travel.

As will be best apparent by a comparison of FIGURE 1 with FIGURE 2 the housing or cabinet **20** is disposed above the bathtub **10** and above the end wall **12** thereof particularly, and in some instances may rest upon this end wall. In other instances, where convenient, the cabinet may be recessed within the vertical wall **14**. In any event, this cabinet or housing is positioned outside of or to one side of the bathtub basin or chamber so as to in no way interfere with the normal use of the bathtub.

The bathtub seat **22** is a flat plate-like platform which is adapted to move into close juxtaposition to or rest upon the bottom wall **24** of the bathtub and closely adjacent to the end wall **12** thereof, so that when resting flat upon the bottom wall it will not in any way constitute a hazard or a discomfort to a person standing or sitting thereon. The seat **22** is supported or carried at one end by a vertical rod **26** rigidly attached or integral therewith and which constitutes a connecting means by which the seat is secured to a lateral projection or arm **28** of a support **30** in the form of a vertically elongated member which as shown in FIGURE 4 is preferably not circular in cross-section. The housing **20** is provided with a vertically elongated slot **32** at its lower portion through which projects and in which is slidably received the arm **28** of the support. The vertical extent of the slot **32** is of course sufficient to accommodate the necessary vertical range of travel of the support arm **28**.

An important feature of this invention resides in the pivotal connection of the element **26** to the arm **28** so that the seat may rotate about a vertical axis of the element **26** between the dotted line position shown in FIGURE 1. This pivotal connection consists of a diametrically enlarged collar portion **34** disposed just beneath the

externally threaded extremity 36 of the rod 26. A gland or nut 38 is engaged upon the threaded extremity 36 and has its lower diametrically reduced end portion abutting against the collar 34. This bushing or nut extends through an aperture or opening 40 adjacent the extremity of the support arm 28 so that the bushing 38 is freely rotatable in this aperture. As will be observed from FIGURE 2, the diameterically enlarged upper end of the bushing 38 bears against the top surface of the arm 28, while the diametrically enlarged collar 34 bears against the lower side thereof so as to enable easy rotation of the bushing and thus of the rod 26 in the support arm 20 while permitting axial movement relative thereto. In this manner, it will be observed that at any time the seat may be readily swung horizontally about the vertical axis of the element 26 as desired, so as to enable the seat to be disposed above and overlie the outer side wall 16 of the tub as shown in dotted lines in FIGURE 1, thereby facilitating the user seating himself upon or arising from the seat in the upper position of the latter. It will be understood that with the user seated upon the seat 22, he may swing the latter horizontally to overlie the tub and then by operating the actuating mechanism may lower himself into the tub. The reverse operation can be employed to assist the user in leaving the bathtub.

Referring again to FIGURES 2 and 3 it will be observed that the support member 30 which is of non-circular cross section is slidably received in a vertically elongated tube 42 which constitutes a guide for the same. This tube preferably has a closed upper end as at 44 which may abut against and if desired be secured to the top of the housing 20, while its lower end is open to slidably receive therein the upper portion of the support member 30. As shown in FIGURES 2 and 3, the length of the stationary guide tube 42 is such that the major portion of the support 30 is received in sliding guided relation therein to thus provide the necessary strength and rigidity to support the weight of the user in the offset position of the seat 22.

Extending across and rigidly secured to the side walls of the housing 20 are transverse brace members which may consist of plates or straps each indicated by the numeral 46. It is intended that the guide tube 42 shall be secured to these straps rigidly in any suitable manner, the arrangement being shown in FIGURE 3.

To facilitate sliding movement of the support within the guide, the latter may be cut-away to receive therein guide rollers 48 as shown in FIGURE 2 which rollers bear against the sides of the support element 30 to reduce the friction of the latter within the guides.

At its lower end the support member 30 is provided with a pair of arms projecting laterally therefrom and preferably at right angles thereto and lying in the same transverse plane. These include the previously mentioned support arm 28 and a second arm 50, shown in FIGURE 3. The support arm 28 slides in the slot 32 as previously mentioned and serves to carry the seat 22. The second arm 50, however, serves as a means by which the power operating mechanism is operatively connected to the support for effecting vertical movement of the latter in the stationary guide 42.

The power operated support includes a hydraulically operated cylinder and piston unit indicated generally by the numeral 52 as shown in FIGURE 3. This unit consists of a vertically disposed cylinder 54 provided with a piston 56 slidable therein, the piston in turn having a piston rod 58 whose lower end is detachably secured as by fastening nuts 60 to the previously mentioned second arm 50. It will thus be apparent that when the piston 56 is caused to vertically reciprocate within the stationary cylinder 54 which is likewise rigidly mounted in the housing 20, as for example, by being fixedly secured to the guide sleeve 42, a corresponding vertical travel will be imparted to the support member 30 and the seat carried thereby.

In order to effect actuation of the hydraulic cylinder piston unit 52 there is preferably provided a hydraulic fluid pressure system of any suitable character. It is to be understood that the system herein disclosed in its general terms only may be of any type well understood by the those skilled in the art so that a specific illustration and description of various conventional components need not be here described.

The hydraulic system includes a hydraulic fluid reservoir 60 from which the hydraulic fluid is delivered by intake conduit or pipe 62 to a combined motor pump unit indicated generally by the unit 64 and which may consist of a hydraulic pump coupled to an electric motor for operation thereby. By means of a manually operated control and distributing valve indicated generally by the numeral 66 and which may be of any suitable construction, together with the necessary conduits 68, 70 and 72, communication is established between the hydraulic pump and either end of the hydraulic cylinder 54 at the opposite sides of the piston 56. It will be understood that any suitable pressure relief means, not shown, is provided to prevent the developing of excessive pressures in the device. The arrangement is such and the conduit connections and the valves 66 are such that upon manual operation of the latter by the manual control lever 74 shown in FIGURES 1 and 4, the hydraulic pressure may be selectively applied to the underside of the piston while the top side of the piston is being vented back to the reservoir 60, thereby effecting a lifting of the support member 30 and of the seat 22 and the person carried thereby. Alternatively, the valve 66 may be manipulated to vent the pressure from below the piston 56 and if desired apply pressure above the piston to thereby effect lowering of the seat. However, an important feature of the invention now may be turned to a cut-off position so as to thereby lock the conduit 72 and 68 against passage of fluid therethrough thereby positively locking the piston 56 and consequently the support member 30 and the seat 22 carried thereby in a selected vertically disposed position.

The electric control means for the electric pump motor combination 64 includes a suitable electric circuit indicated generally by the numeral 76 which is connected to the motor unit and to a suitable source of electric current, not shown, together with a switch 78 disposed within the housing 20 and provided with a control handle 80. The control handle 74 and 80 are disposed upon the housing 20 at a convenient position relative to that end wall of the tub in which the power lift is disposed so as to be an easy access to the user.

Although the entire power operating mechanism and controls may be compactly housed in and mounted upon the cabinet 20 as illustrated and described hereinbefore, it is an important feature and advantage of this invention that in some instances the hydraulic fluid pressure generating means including the motor pump combination 64, and the reservoir 60 may be mounted remotely from the device, as for example in an attic or basement or in other quarters with a suitable piping or conduit system connecting the same to the fluid pressure operating unit.

This arrangement renders the lift mechanism capable of being located independently of the hydraulic pressure generating means thereby enabling the device to be readily installed in substantially any type of bathroom with a minimum obstruction of the use of the bathtub, the working parts being well concealed and yet readily accessible as desired.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A power operated lift for bathtubs comprising a vertically movable support having a seat mounted thereon, said support comprising a single vertically elongated member of uniform non-circular cross-sectional area and shape throughout its length, a vertically elongated tube guidingly enclosing the upper portion of said member for guided rectilinear vertical reciprocatory movement, said tube being of a cooperating cross-sectional internal area and shape to that of said member, mounting means rigidly supporting said tube with its lower end disposed above one end of a bathtub, said member at its lower end having a laterally projecting lift arm, a vertically extended fluid cylinder and piston unit disposed adjacent and parallel to said tube and connected to said lift arm, a source of fluid pressure and control and supply means selectively connecting said source to said cylinder on opposite sides of said piston for effecting positive lifting and lowering of said member, said member lift arm, tube, mounting means and unit being laterally offset from the basin of said bathtub, a seat arm extending laterally from the lower end of said member, said seat arm projecting over said end wall and overlying the bottom of said bathtub, said seat being dependingly supported by said seat arm for turning about a vertical axis whereby to selectively position said seat within and without the sides of said bathtub.

2. The combination of claim 1 wherein said tube has vertically spaced openings in opposed side walls thereof, antifriction rollers extending through said openings into guiding engagement with said member.

3. The combination of claim 1 including a vertically elongated housing enclosing said tube, element, cylinder and piston unit and said source of power and having a front wall disposed above said bathtub end wall, said housing having a vertical slot in said front wall, said seat arm extending through and being guidingly received in said slot, brace means extending transversely of and fixedly secured to said housing and engaging said tube on its upper and lower ends and intermediate said ends.

4. The combination of claim 3 wherein said tube has vertically spaced openings in opposed side walls thereof, antifriction rollers extending through said openings into guiding engagement with said member, said rollers being rotatably supported by said brace means.

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