Feb. 26, 1963 R. W. TURNER 3,078,475

ELECTRICALLY OPERATED BATHTUB SEAT

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Fig. 1

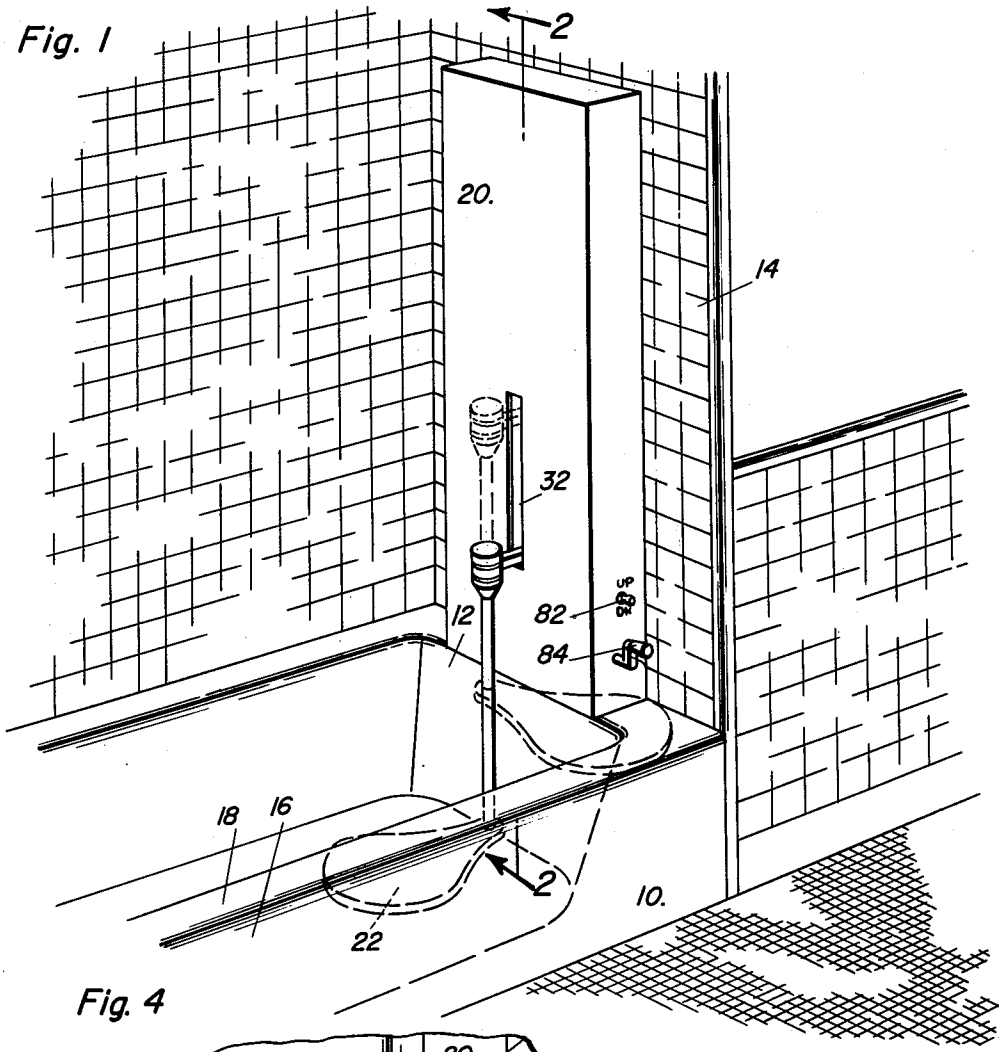
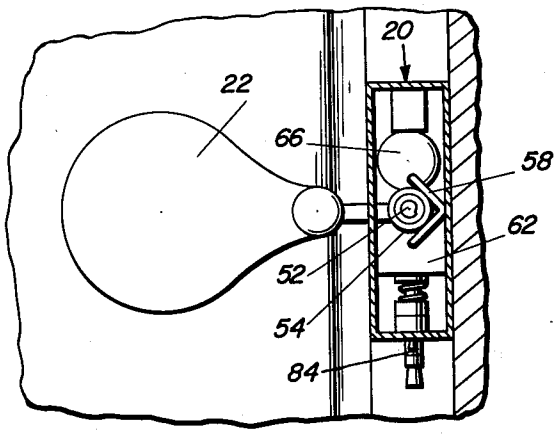


Fig. 4



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Fig. 2

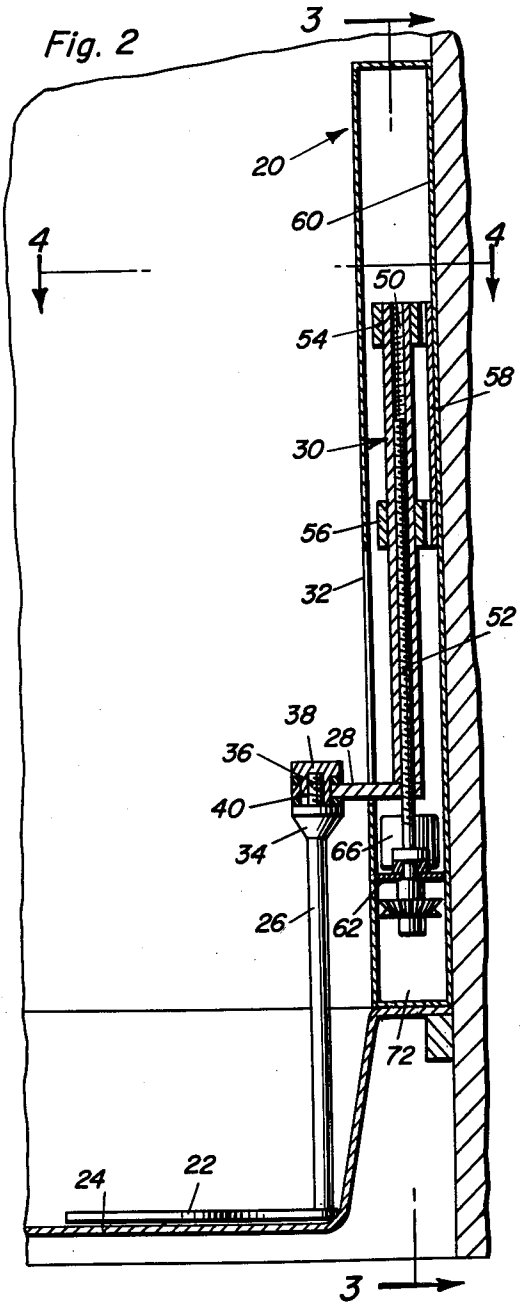
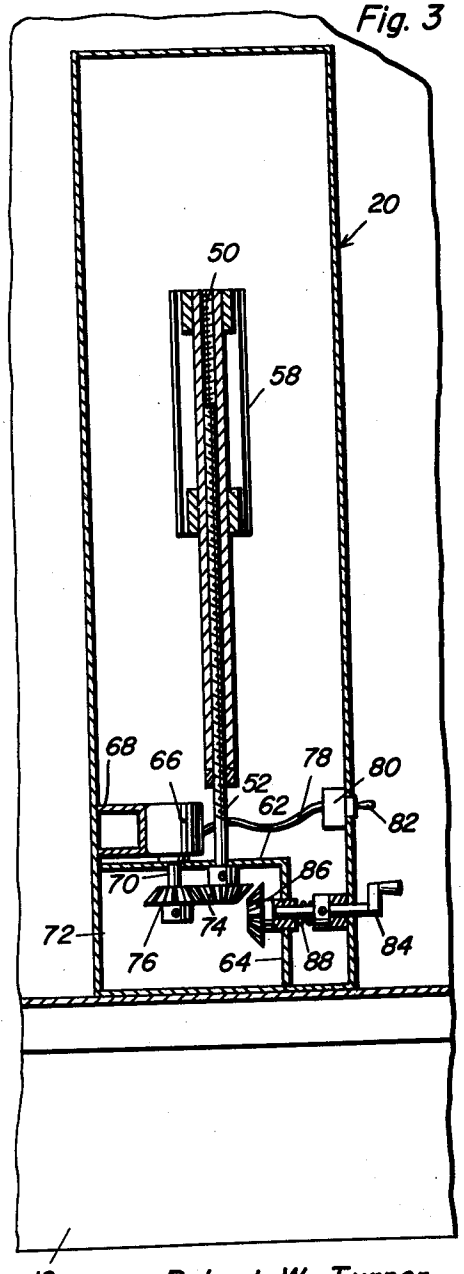


Fig. 3



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ELECTRICALLY OPERATED BATHTUB SEAT

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3 Claims. (Cl. 4—185)

This invention comprises a novel and useful electrically operated bathtub seat and more particularly pertains to a power operated lift for bathtubs which affords a positive vertical upward and downward travel to a seat and is adapted to either permanent or semi-permanent installation as desired.

The modern bathtub, as is well known, is a prolific source of accidents due to falls and the like, particularly for aged persons and invalids. Great physical exertion and difficulty is frequently encountered by such persons or by others assisting them in the use of the bathtub. It is therefore the primary purpose of this invention to provide a lifting device which will largely overcome the aforementioned difficulties and hazards attending the use of a bathtub either for its normal use in a home or for hydrotherapeutic purposes 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 the 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 a bathtub and a position to one side of the latter to enable a person to be readily lowered into and lifted from a bathtub in a seating position, be swung over the side of the bathtub and facilitate placing of a person upon and removing the person from the seat.

A still further 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 efficiently housed in a container or cabinet at one end of or above the bathtub whereby to present a minimum obstruction of the interior of the bathtub in 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 wherein there is attained a positive lifting and lowering action independent of the influence of gravity for lifting or lowering a person into and out of the bathtub, and whereby the seat may be securely locked and retained in any desired elevated position while retaining its function of being horizontally swingable.

Yet another purpose of the invention is to provide a device in accordance with the preceding objects which shall be of simple construction, and shall combine the advantages of the screw-type of lifting or jack means with a source of power such as a manually operated crank or electric motor to effect the desired raising and lowering of a person.

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 perspective view showing a portion of the 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 and its support carriage being indicated 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 seat when the latter is in its lowered position within the bathtub and showing certain details of the positive actuating means for raising and lowering the seat;

FIGURE 3 is a further vertical transverse sectional view taken substantially upon the plane indicated by section line 3—3 of FIGURE 2 and further illustrating a manual operated means which may be utilized to effect raising and lowering of the seat in the event of failure of the power operating means; and

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

Referring particularly to FIGURE 1, there is shown a portion of a bathroom having a conventional form of a bathtub **10** therein with 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 an outside side wall **16** with a top surface **18** over which a person must pass when entering or leaving the 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** of any suitable shape or contour, may be vertically raised or lowered either with or without a person thereon, and may be swung horizontally as between the dotted line positions 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 the 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 proximity to or rest upon the bottom wall **24** of the bathtub and closely adjacent to the end wall **12** thereof, so that when resting upon the bottom wall it will not in any way constitute a hazard or 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 supporting carriage indicated generally by the numeral **30** and which may conveniently be in the form of a vertically elongated member of cylindrical shape. The housing **20** is provided with a vertically elongated slot **32** in its lower front face 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** in the raising and lowering of the seat by the power actuating means.

An important feature of this invention resides in the pivotal connection of element **26** to the arm **28** so that the seat may rotate about the vertical axis of the element **26** and between the upper and lower dotted line positions 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 a lower diametrically reduced cylindrical 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 diametrically 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 28 while preventing 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 user to be disposed above and overlie the outer side walls 16 of the tub as shown in dotted lines in FIGURE 1 and thereby facilitating the user seating himself upon or rising 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.

The carriage 30 comprises a cylindrical member having an internally threaded bore 50 therethrough in the lower portion of which is threadedly engaged an actuating screw 52. The exterior surface of the cylindrical carriage 30 is guidingly secured in upper and lower guides 54 and 56 and which are fixedly received in the V-shaped support bracket 58 in a manner shown in FIGURE 4. The support bracket 58 in turn is fixedly secured to the rear wall 60 of the housing or cabinet 20.

Spaced above its lower end, as will be seen from a comparison of FIGURES 2 and 3, the cabinet is provided with a horizontal partition 62 together with a vertical partition 64. Mounted upon and supported by the partition 62 is an electric motor 66 which is also suitably secured against a mounting bracket 68. This motor has a drive shaft 70 extending through the partition 62 into a gear chamber 72. The lower end of the elevating screw 52 extends through the top wall 62 and is suitably rotatably journalled therein to permit rotation but prevent axial sliding movement. Secured to the elevating screw is a gear 74 meshing with the corresponding gear 76 carried by the motor shaft 70. The motor is provided with any suitable control circuit, of which one conductor is indicated at 78 and controlled by switch 80 with a control member 82 suitably disposed upon the exterior of the cabinet as will be best seen by a comparison of FIGURES 1 and 3.

As will be understood, suitable limit switches, not shown, will be provided to stop operation of the motor when actuation of the lift screw has elevated the carriage and the attached seat to either its upper or lower extreme of travel.

An emergency manual operating means is also provided for manual use in the event of failure of the motor 66 or its control circuit. This manual means conveniently comprises a crank 84 extending through a side wall of the cabinet 20 and carries a gear 86 adapted to mesh with the gear 74 on the end of the lift screw 52. A spring means 88 surrounds the shaft of the crank 84 and yieldingly urges the latter out of engagement with the gear 74. The arrangement is such that upon manual gripping of the

crank 84 it may be pushed inward against the resistance of the return spring 88 to cause engagement of the gears 86 and 74 and thus establish a manual drive of the lift screw.

Inasmuch as any suitable and conventional type of electrical control circuit may be provided to effect operation of the motor 66 or the manual control of the switch 80, the description of the same is deemed to be unnecessary for the purposes of describing the invention hereinafter claimed.

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 bathtub lift comprising a single elongated and vertically disposed internally threaded tube open at its upper and lower ends, a vertically disposed lift screw having its upper portion threadedly engaged in and supported and guided solely by said tube, bearing and support means engaging and constituting the sole support of the lower end of said screw and rotatably journaling and preventing axial movement of said screw, a gearing assembly disposed beneath and connecting the lower end of said screw to a source of power, a vertically elongated stationary support bracket, means fixedly mounting said support bracket in adjacent and parallel relation to said tube, at least one tubular guide member on said support bracket slidingly and guidingly embracing the upper portion of the tube exterior, said tube and screw being positioned above and outwardly beyond an end wall of a bathtub, a laterally projecting arm on the lower end of said tube overlying said bathtub end wall, a seat pivotally secured to said arm for rotation about a vertical axis lying within the walls of a bathtub, vertically extending guide means engaging said arm and preventing horizontal swinging of said arm and tube about the vertical axis of said screw.

2. The combination of claim 1 including a housing enclosing said tube, screw, support bracket and gearing assembly, said housing having a front wall extending vertically above the end wall of a bathtub and a back wall, said support bracket being secured to said back wall and said guide means comprising a slot in said front wall in which said arm is slidingly disposed.

3. The combination of claim 1 wherein said support bracket is V-shaped in cross-section with a pair of integral vertically extending flanges, said guide member being positioned within the dihedral angle of said flanges and being secured to the latter.

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