

Sept. 9, 1969

W. L. SCHWEITZER

3,465,371

LIFT FOR AIDING PERSONS IN AND OUT OF BATHTUBS

Filed Feb. 19, 1968

2 Sheets-Sheet 1

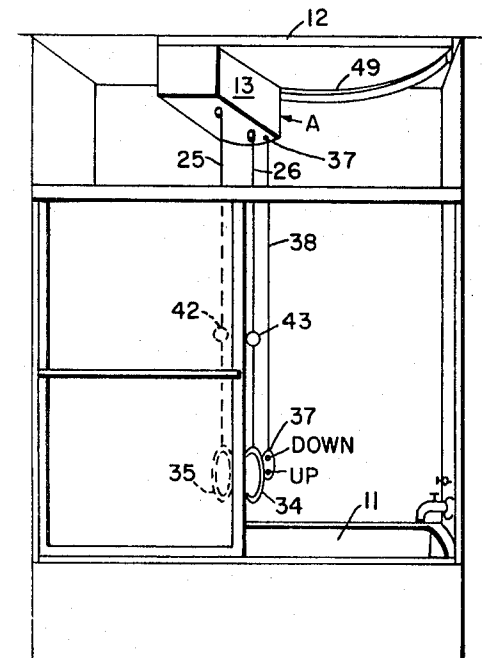


FIG. 1

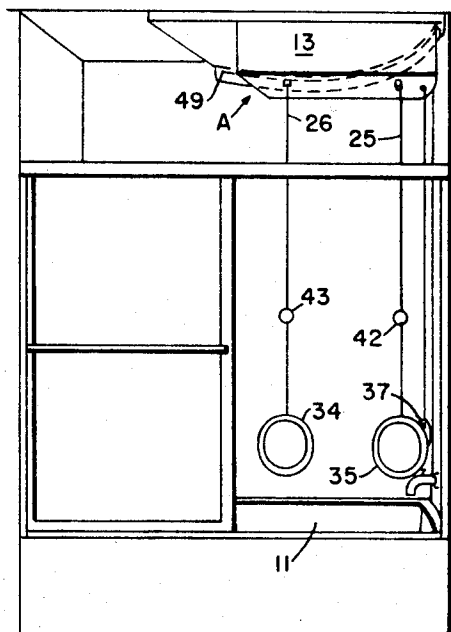


FIG. 2

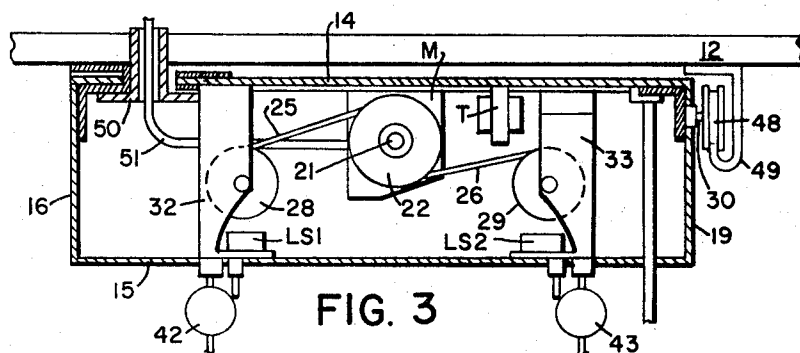


FIG. 3

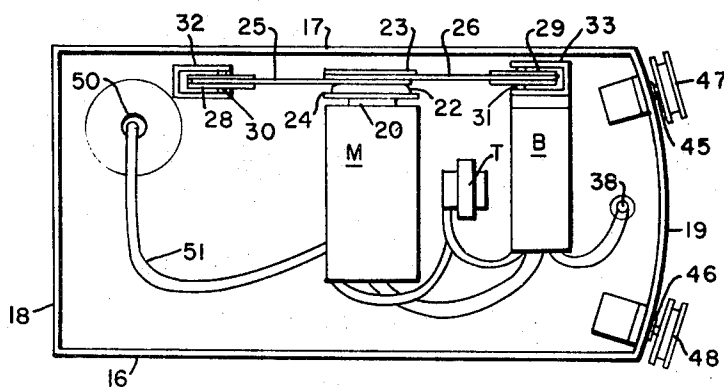


FIG. 4

INVENTOR
W. L. SCHWEITZER

Burch & Burch
ATTORNEY

Sept. 9, 1969

W. L. SCHWEITZER

3,465,371

LIFT FOR AIDING PERSONS IN AND OUT OF BATHTUBS

Filed Feb. 19, 1968

2 Sheets-Sheet 2.

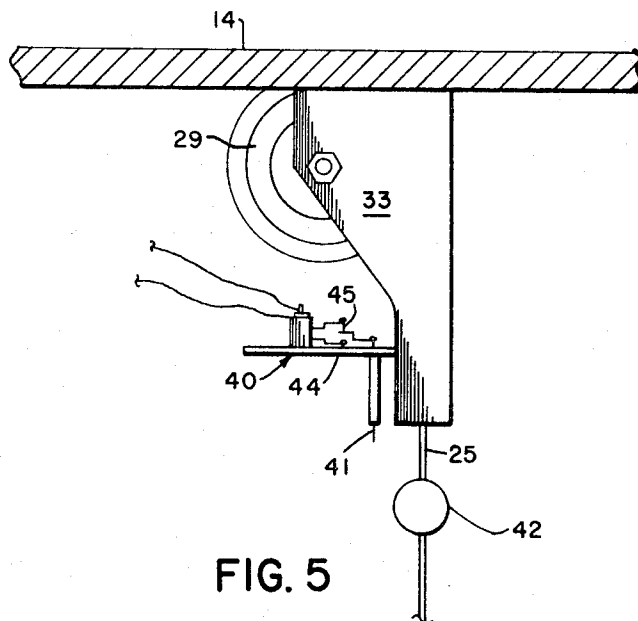


FIG. 5

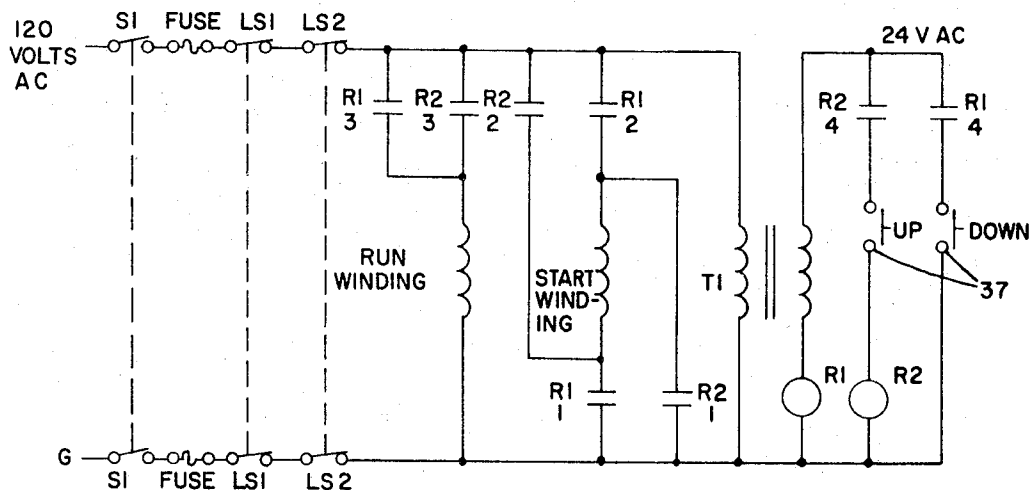


FIG. 6

INVENTOR
W. L. SCHWEITZER

BY

Birch & Birch
ATTORNEY

1

3,465,371

LIFT FOR AIDING PERSONS IN AND OUT OF BATHTUBS

William L. Schweitzer, 753 Murray Road,
Martinez, Ga. 30907

Filed Feb. 19, 1968, Ser. No. 706,474

Int. Cl. A47k 3/12; B66c 7/00

U.S. Cl. 4—185

3 Claims

ABSTRACT OF THE DISCLOSURE

A lift for use with bath tubs comprising spaced apart arm slings suspended from flexible cable means with each cable means reverse reeved around axially spaced pulleys driven by the armature shaft of an electric motor, which motor is mounted above a bath tub in a ceiling suspended housing pivoted at one end and having track engaging grooved rollers at the opposite end engaging a ceiling suspended arcuate track or trolley to permit the motor to wind the cable means to lift a user of the device, whereby the housing and arm slings serve to lift and the rollers and track and grooved roller provide for swinging a bath tub occupant to and from the bath tub.

The present invention relates to an articulated lift means for aiding persons in and out of bath tubs.

An object of the invention is to provide a novel lift arrangement mounted in coactive relation with respect to a bath tub, whereby, for example, invalids, elderly persons and paraplegics may be mechanically lifted in and out of a bath tub without likely injury and, for example, without the assistance of a person to perform the actual lifting and positioning of the person in or out of registry with the bath tub.

Another object of the invention is to provide a novel assembly to aid persons in and out of bath tubs, whereby the same, when assembled in an enclosing housing for the respective parts thereof, is readily installed as a unitary article of manufacture for use in connection with any standard bath tub.

Yet another object is to provide a power controlled bath tub lift in combination with trolley guides to permit swinging of a bather into bathing and non-bathing positions with a minimum effort.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be particularly summarized in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views:

FIGURE 1 is a side view of a standard type of bath tub and enclosure with an isometric illustration of the present invention mounted on the ceiling to swing to and from within the tub enclosure;

FIGURE 2 is a similar view to FIG. 1, but showing the same swung outward so as to place a bather into non-bathing position over a side of the bath tub.

FIGURE 3 is a side view in cross section of the lift housing and of the interior parts of the lift mechanism in side elevation;

FIGURE 4 is a top plan view of the lift mechanism as it appears removed from attachment to the ceiling above the bath tub;

FIGURE 5 is an automatic cut-out for the lift motor when the arm slings are raised to their uppermost positions, and

FIGURE 6 is a diagrammatic illustration of a preferred circuit such as is used in connection with the present invention.

Referring in detail to the drawings, and first with ref-

2

erence to FIGS. 1 and 2, there is shown a usual type of bath tub 10 which may or may not be enclosed with sliding glass partitions 11. In the event that such partitions are provided, the same must be open when the present novel invention is to be put into operation to lift and swing a person from the tub so as to position the person for transfer to the floor or to a wheel chair, as the case may be.

As shown in these first figures, the tub enclosure includes a ceiling panel 12 to which the present novel invention generally designated A is mounted and anchored to the bathroom ceiling over a tub 11. The unit A comprises a housing 13 formed with a top wall 14, a bottom wall 15, side walls 16 and 17 and end walls 18 and 19, see FIGS. 3 and 4. End wall 19 is curved transversely and mounts a set of guide rollers as hereinafter described. The top wall 14 serves to mount the several components of the unit A, namely any suitable electric reversible motor M with a forward reduced bell portion 20 to mount a driven shaft 21 with a double sheave means 22. The sheave means includes axially aligned grooved drums or pulleys 23 and 24 around which are reeved lift cables 25 and 26. The cables pay or lead off the pulleys tangentially in opposite directions to spaced idler pulleys 28 and 29 rotatable on bearing means 30 and 31, respectively, each bearing being mounted in a similar bracket 32 and 33.

From the idler pulleys 28 and 29 the respective cables lead downward through spaced openings in bottom wall 15 of the housing 13 and there are coupled or formed thereon arm slings 34 and 35. The brackets are spaced apart to so space and position the slings as to provide for comfortable application over the arms to the arm pits of a person using the device.

Now, with further reference to the reversible motor, the same may be in suitable circuit connection with a transformer T if an A.C. motor is desired in a D.C. power line and a circuit breaker or fuse box B, which in turn connects to contact means of any standard form of on-off switch 37. This switch may be controlled by a manual pull cord 38 positioned to dangle within convenient reach of a person using the lift device to operate the switch 37 to start or stop the motor M. Also, in FIG. 5, there is shown a cable actuated motor cut-off switch 40 having a switch control plunger 41 extending below one of the bracket ends and below the housing bottom wall 15. The free end of the plunger when engaged by ball means 42 or 43 secured to cables 25 and 26 at a calibrated point thereon will open the switch contacts 44 and 45 when the cables are reeved upward over idler pulleys 28 and 29 to a predetermined position for the most desired position for a person to use the lift. Thus, a tall, large individual should have the starting point of the arm slings located at a higher position than a smaller individual and the ball means 42 and 43 are frictionally adjustable on the cables to regulate the respective arm sling positions.

The end curved wall 19 of the housing 13 is formed with spaced openings to mount the shafts 45 and 46 of grooved rollers or wheels 47 and 48, see FIGS. 3 and 4. These wheels roll along a curved or arcuate track 49 so curved and so proportioned in spaced parallel relation from the curved exterior front portion of the side 19 as to provide smooth, frictionless motion of the wheels along the track rails 49. Thus the housing 13 may be articulated to move outboard to inboard positions with respect to the bath tub over which the unit A is mounted on a pivot 50 formed with a hollow bore for a power line 51 to the motor M, fuse box B and transformer T.

A preferred circuit arrangement is shown diagrammatically in FIGURE 6 and includes a power switch S' through the fuse box to the limit switch means LS1 and

LS2, referenced 45 in FIGURE 5, for control of four pole control relays R1 and R2 for connection with the start winding and run winding of the motor M. The motor M is under control of UP and DOWN switch buttons generally shown in FIGURE 1.

Briefly the circuit operation starts with actuating the "Up" button to energize R' which in turn energizes the motor run and start windings of the motor M, thereby running the motor in the raise direction. If the "Up" button is released for any reason, the motor will stop.

Actuation of the "Down" button is similar except that its circuit connection applies opposite polarity to the start winding and reverse rotation of the motor M.

The motor pole controls relays R1 and R2 and are electrically interlocked so that they cannot be energized simultaneously. Also, the limit switch means LS1 and LS2 deenergize the entire circuit if the lift arrangement reaches its upper limit and the ball means 42 and 43 open the switch means contacts 44 and 45, see FIGURE 5.

Operation and use of the device

The use of the device is believed generally clear from the foregoing description; however, to make the entire operation clear the use will be followed through step-by-step.

First, for example, it is assumed a person using the device is elderly and still blessed with reasonable ability to move around without assistance on his own feet, but sufficiently unsteady to make it hazardous without assistance to climb into and out of a bathtub; and there is a full tub of bathing water and the sliding tub partitions 10 are open to permit entry to the bathtub by the bather. The bather first applies the arm slings 34 and 35 under his arm pits and the ball means 42 and 43 are adjusted on the cables to suitable positions to stop the lift motor M at a predetermined height or elevation of the arm slings before the motor M is started. However, at this stage of the operation, the housing 13 is pivoted on the ceiling pivot outward so the grooved guide rollers 47 and 48 travel along the curved trolley and cause the cables and arm slings to position outward or outboard of a side of the tub, as above said, under the user's arm pits. The unit A is now pulled inward or inboard of the tub and the user is supported over the tub and preferably with his feet in the water as the arm slings and cable give the user security from slipping or falling even though he may manipulate his legs over the side of the tub from the bathroom floor.

Once the user or bather has himself positioned over the tub, that is, with his feet resting on the tub bottom, he may close the switch to the motor M and the cable means will pay out from the sheave means and gently lower his body into the water in the tub. When in the tub, in bathing position, the bather deenergizes the motor and removes the arm slings, until he is ready to again use the device to assist him in leaving the bath tub.

The use of the device to remove the bather is substantially identical to the entry operation except that the arm slings are applied and the motor M started to raise the bather to his feet in the tub before the housing 13 is swung outboard of the bathtub.

Without further description it is believed that the advantages of the present invention over the prior art is apparent and while only several preferred embodiments of the same are illustrated, it is to be expressly understood that the same is not limited thereto as various changes may be made in the combination and arrangement of the parts illustrated, as will now likely appear to others and those skilled in the art.

What is claimed is:

1. Means for lifting and swinging, and swinging and lowering a person with respect to a bathtub comprising in combination with a bathtub a housing formed with top, bottom, side and end walls, said housing being pivotally mounted from a mounting on pivot means in the ceiling above said bathtub at one end and having the end wall opposite to the ceiling pivoted end of the housing outwardly curved, grooved rollers extending exteriorly from the curved part of the said curved end wall and carried thereby, said rollers traversing a curved track secured to said ceiling to provide for swinging the housing on the said ceiling pivot, and mechanism in said housing comprising reversible power means having sheave means driven thereby, said sheave means having cable means reeved thereon and extending tangentially therefrom in opposite directions, said cable means each reeving over a space idler pulley and depending through spaced openings in the bottom wall of said housing, sling means on the free end of each cable, means, and switch means to start and stop said power means to wind and unwind said cable means, to thereby raise or lower said sling means according to the position on the curved track of said housing with respect to the bathtub.

2. Means for lifting and swinging and swinging and lowering a person with respect to a bathtub as described in claim 1, wherein said power means is a reversible electric motor with a driveshaft and said sheave means are back-to-back in aligned position in the driveshaft of said motor.

3. Means for lifting and swinging and swinging and lowering a person with respect to a bathtub as described in claim 1, wherein the cable means include motor control cable mounted means engageable with a motor operator switch, to thereby cut off the motor at a predetermined position of said cable mounted means to regulate the height of said sling means.

References Cited

UNITED STATES PATENTS

82,774	10/1868	Weed	212—12
2,680,855	6/1954	Robinson	5—83
2,815,927	12/1957	Howard	254—168
2,953,969	9/1960	Pepple	254—144
2,957,582	10/1960	Lusk	254—144
3,036,721	5/1962	Neher	214—75

HARVEY C. HORNSBY, Primary Examiner

U.S. Cl. X.R.

212—12, 73; 254—150, 173