June 23, 1936. O. SPIESS 2,045,110

BATHTUB APPLIANCE

Filed Dec. 4, 1935 4 Sheets-Sheet 1

Fig. 1

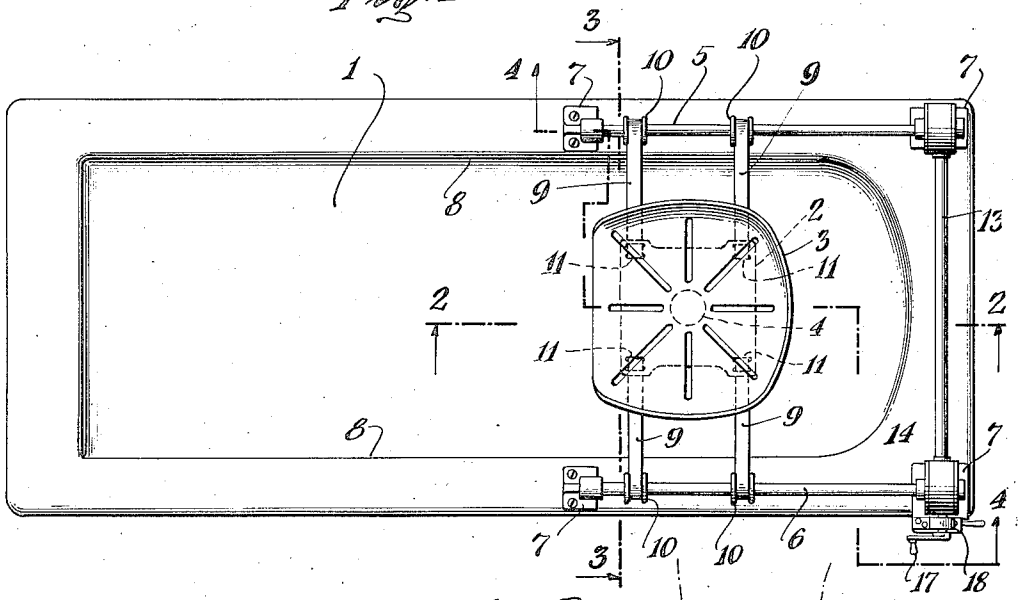


Fig. 2

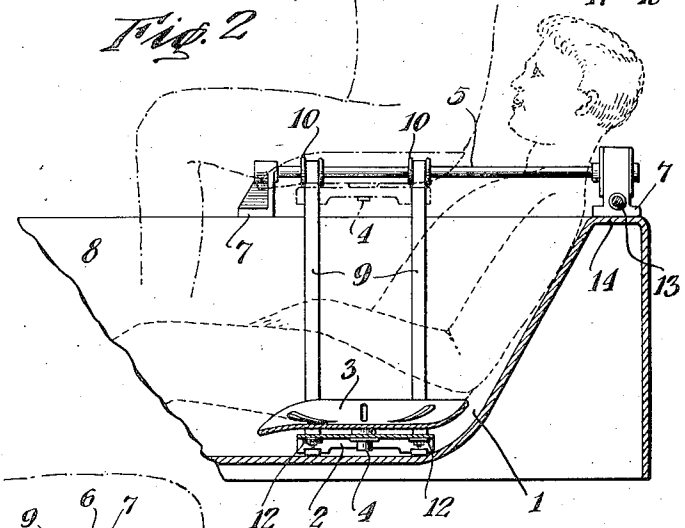
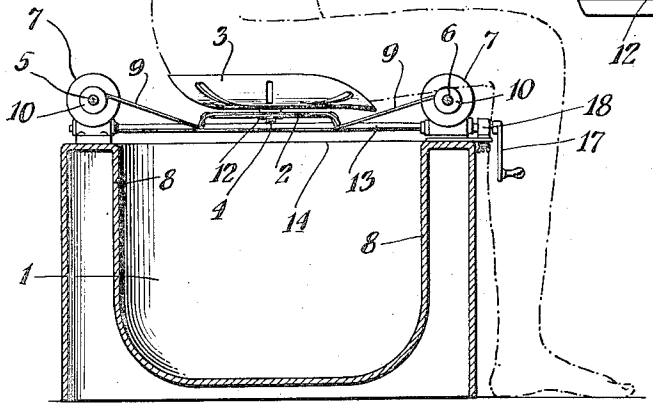


Fig. 3



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June 23, 1936. O. SPIESS 2,045,110

BATHTUB APPLIANCE

Filed Dec. 4, 1935 4 Sheets-Sheet 2

Fig. 4

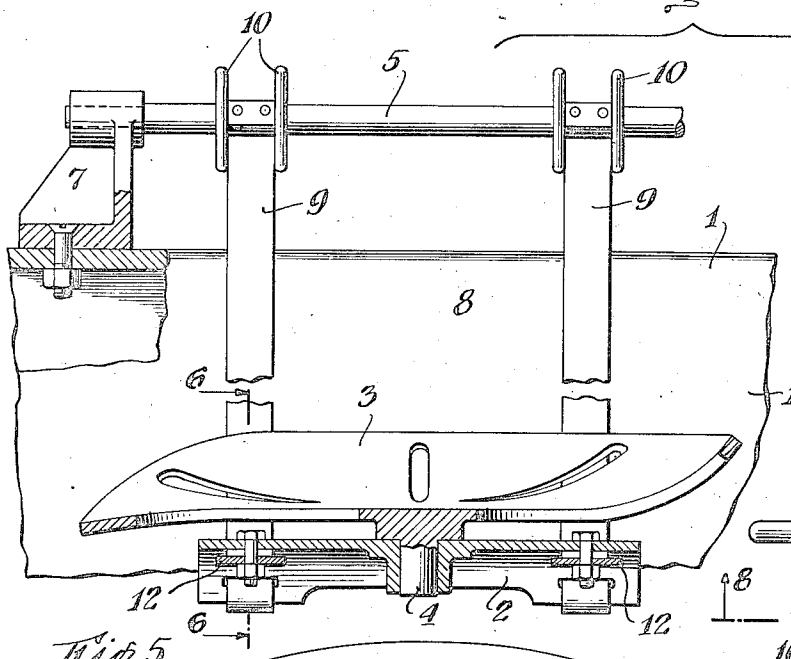


Fig. 5

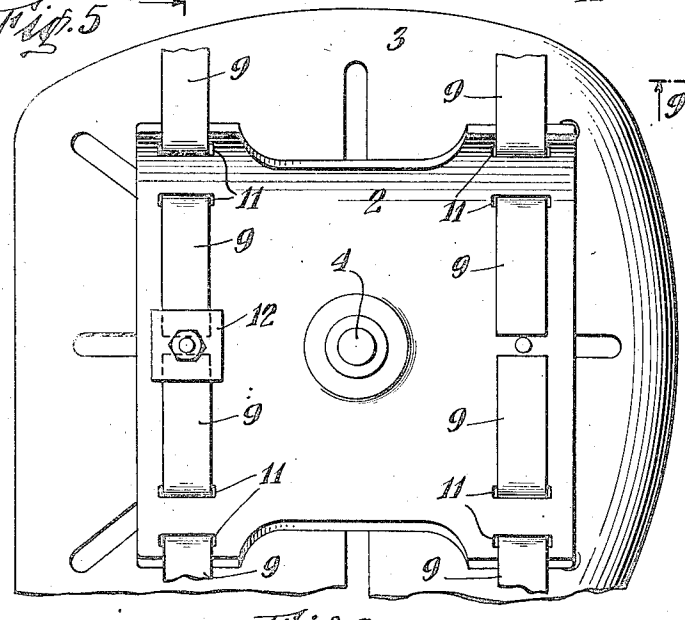
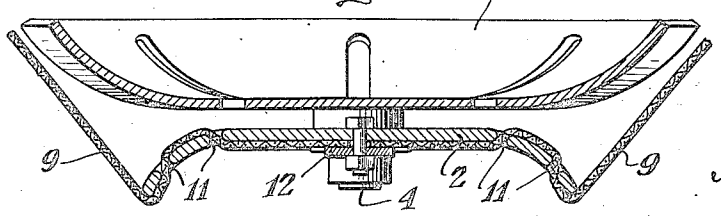


Fig. 6



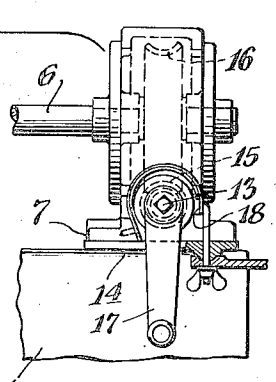


Fig. 7

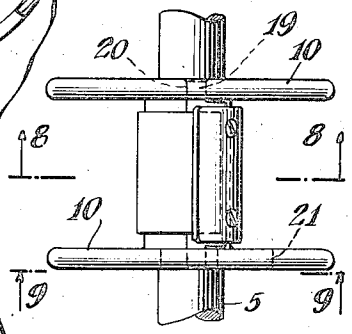


Fig. 8

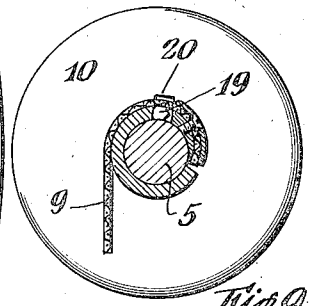
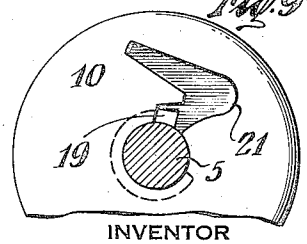


Fig. 9



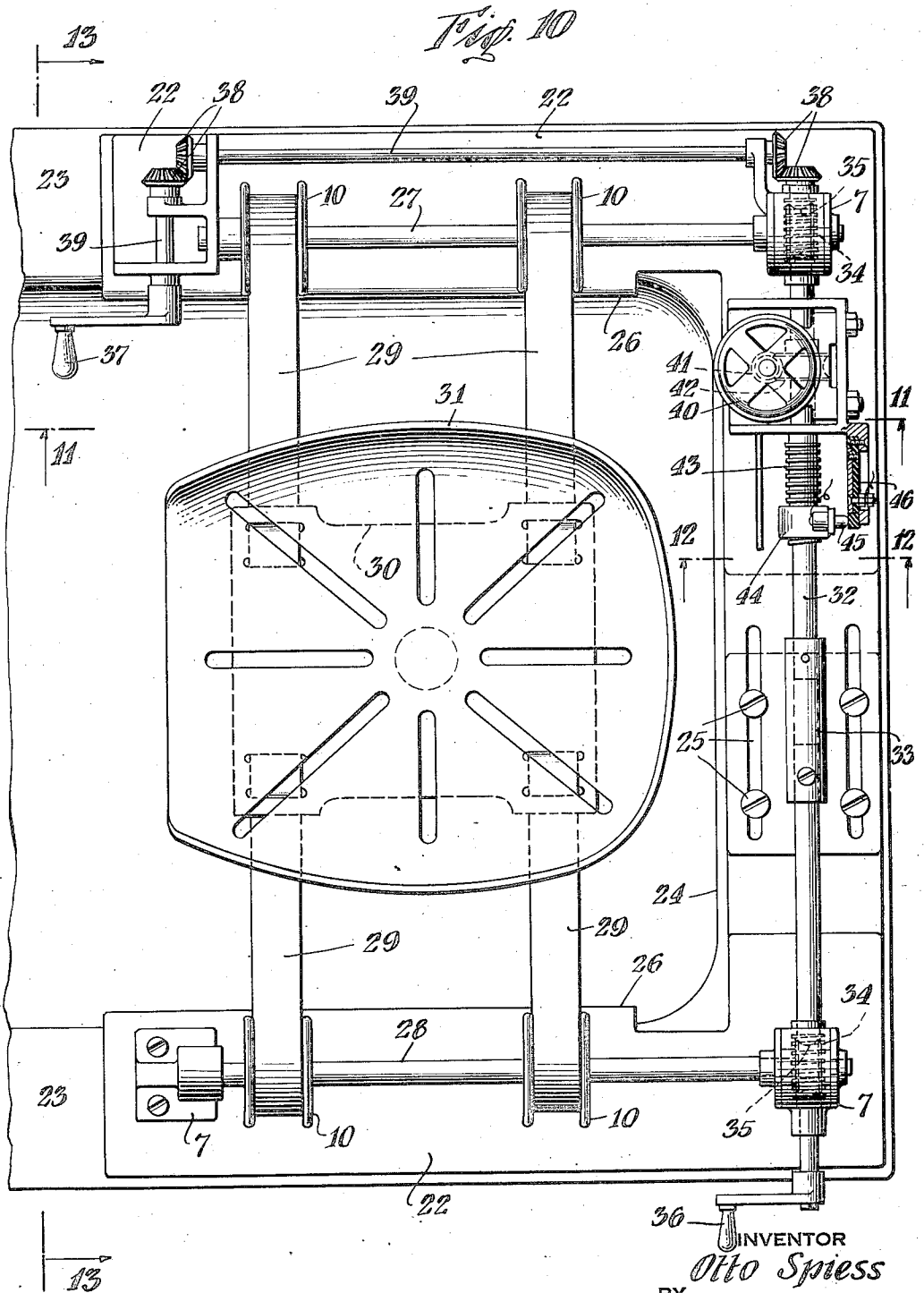
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June 23, 1936. O. SPIESS 2,045,110

BATHTUB APPLIANCE

Filed Dec. 4, 1935 4 Sheets-Sheet 3

Fig. 10



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June 23, 1936. O. SPIESS 2,045,110

BATHTUB APPLIANCE

Filed Dec. 4, 1935 4 Sheets-Sheet 4

Fig. 11

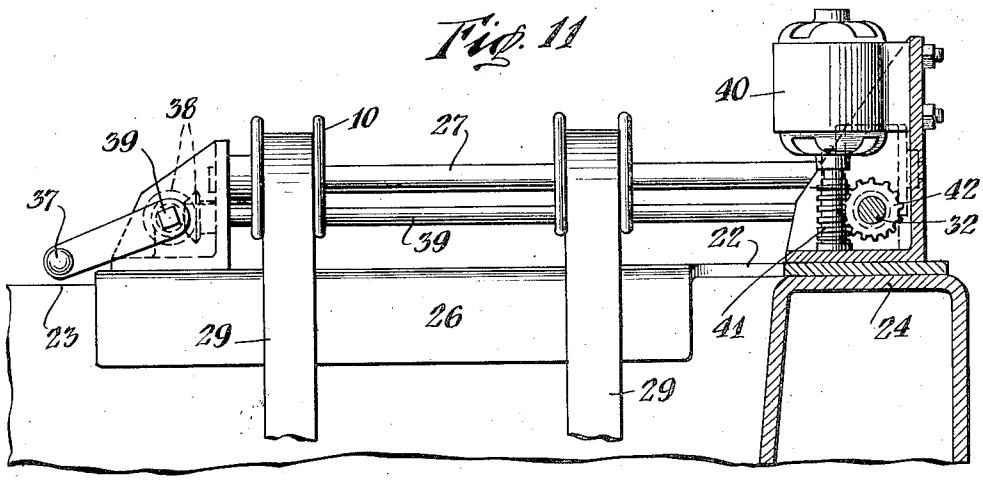


Fig. 14

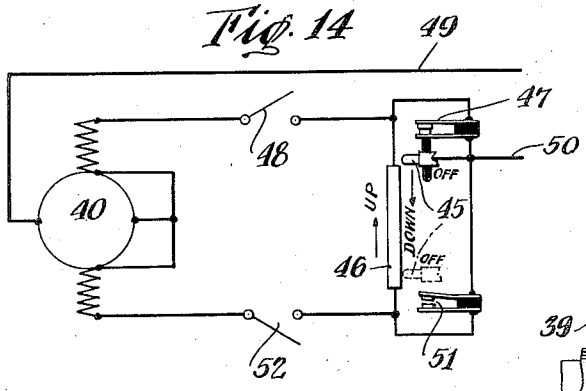


Fig. 12

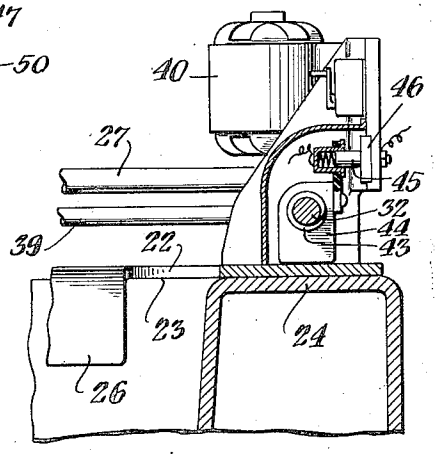
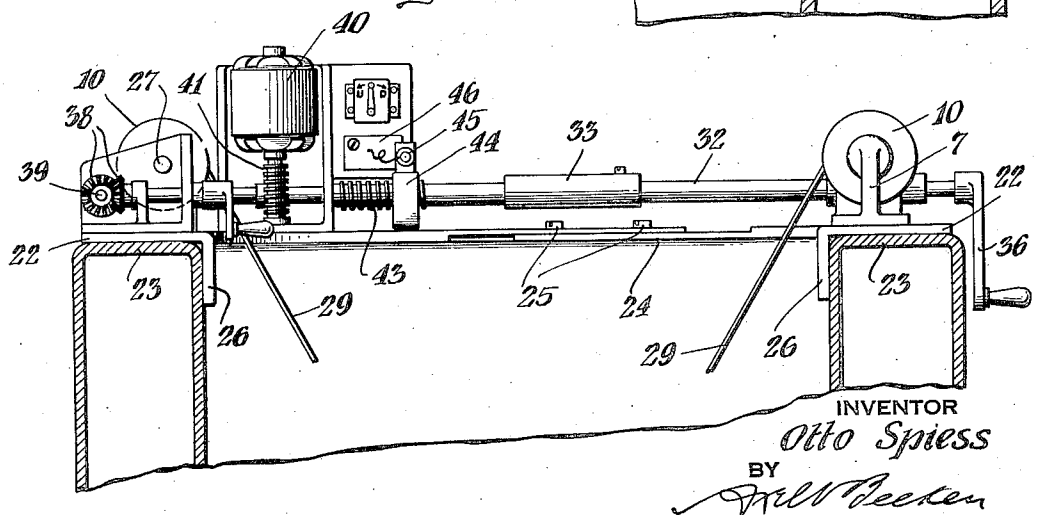


Fig. 13



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Patented June 23, 1936

2,045,110

UNITED STATES PATENT OFFICE

2,045,110

BATHTUB APPLIANCE

Otto Spiess, New York, N. Y.

Application December 4, 1935, Serial No. 52,743

2 Claims. (Cl. 4—185)

This invention relates to improvements in supporting devices for bathers in bathtubs, and is especially directed to an improved arrangement whereby the bather may be conveniently lowered into and raised out of the water in the tub. It is designed to facilitate the use of bathtubs by persons suffering from some physical disability, and who require assistance in getting into and out of a tub. Owing to the fact that bathtubs are commonly placed against a wall, it is moreover difficult for a nurse or other assistant to support much of the bather's weight over the tub.

The general object of the invention is to provide a supporting device of the type indicated, arranged so that the bather may readily be placed thereon and removed therefrom, and provided with convenient means for lowering and raising the bather. A further object is to provide such an arrangement that is adapted for use with ordinary bathtubs.

Other objects and advantages will appear from the following description considered in connection with the accompanying drawings, in which

Fig. 1 is a plan view of a bathtub with one embodiment of the invention installed thereon;

Fig. 2 is a fragmentary longitudinal vertical section on line 2—2 of Fig. 1, showing the location of the bather when the seat is in lowered and raised positions respectively;

Fig. 3 is a transverse vertical section on line 3—3 of Fig. 1, showing the location of the bather when initially occupying the seat in raised position;

Fig. 4 is an enlarged fragmentary vertical section on line 4—4 of Fig. 1, parts being broken away;

Fig. 5 is an enlarged fragmentary bottom plan view of the seat structure and straps or flexible connections, with one clamp plate removed;

Fig. 6 is a vertical section of the seat structure on line 6—6 of Fig. 4;

Fig. 7 is an enlarged fragmentary plan view of a strap reel;

Fig. 8 is a vertical sectional view through the reel on line 8—8 of Fig. 7;

Fig. 9 is a similar view on line 9—9 of Fig. 7;

Fig. 10 is a plan view similar to Fig. 1 showing a modified form;

Fig. 11 is a fragmentary vertical longitudinal section on line 11—11 of Fig. 10;

Fig. 12 is a fragmentary section on line 12—12 of Fig. 10 showing the electrical control;

Fig. 13 is a fragmentary transverse vertical section on line 13—13 of Fig. 10; and

Fig. 14 is a diagram of the electrical connections of the embodiment shown in Fig. 10.

1 indicates a bathtub of any suitable construction and 2 is a support, within the boundaries of the tub, carrying a seat 3 mounted to turn in a horizontal plane on the support as by means of pivot 4. Suitable means to lift and lower the support and seat are provided. In the present instance, two shafts 5 and 6 are located in suitable bearings 7 on sidewalls 8 of the tub, and these shafts are preferably provided with a plurality of flexible connections or straps 9 carried by reels 10 and connected to support 2 as by being threaded through slots 11 in said support and held in position in any suitable manner as by means of clamps 12. The straps can be adjusted to provide the proper length as will be apparent. Means to actuate the two shafts in unison in either direction are provided, here taking the form of a third shaft 13 extending on top of endwall 14 of the tub and suitably supported there. Shaft 13 is provided here with two worms 15 engaging worm wheels 16 on shafts 5 and 6 and a handle 17 is carried by shaft 13. If desired, a brake 18 of the ordinary band type may be provided for shaft 13. As will be seen particularly from Fig. 6, support 2 is preferably of such shape as to direct straps 9 in a direction to clear seat 3, so that the latter may rotate freely. The straps may be secured to the reels in any suitable manner, such, for instance, as shown in Figs. 7, 8 and 9, where the inner end of the strap is provided with a reinforcing element 19 having projecting ends, one of which fits into an opening 20 in one reel face and the other of which fits into a slot 21 in the other reel face to thereby admit of tilting the reinforcing element to permit its insertion and removal in the reel.

It will now be understood that the bather can gain occupancy of the seat, when the latter is in its elevated position, without climbing over the sidewalls of the tub. This is indicated diagrammatically in Fig. 3 where it will be noted that shaft 6 and its elements afford substantially unobstructed access to the seat. The lower part of the legs of the bather are now brought into a substantially horizontal position, and the seat is swung approximately ninety degrees in a horizontal plane thus bringing the bather within the boundaries of the tub. The legs of the bather may now be lowered, as indicated in the upper dotted line position of Fig. 2. The brake is now released and handle 17 is rotated thereby paying out the flexible connections and lowering the support and seat to the position indicated in full

lines in Fig. 2. When it is desired to remove the bather, the reverse operation takes place.

In Figs. 10 to 14 a more elaborate mechanism is disclosed involving the use of a motor to effect the lifting and lowering of the support and seat, and also involving an adjustable mechanism that may be more readily adapted to various sizes of tubs. As there shown, a framework 22 is provided to carry the elements of the device. This framework rests on top of sidewalls 23 and endwall 24 of the tub and is made in two telescoping parts adjustable by means of a slot and bolt connection 25 to accommodate varying widths of tubs. The framework is provided with dependent flanges 26 to prevent undue separation of the parts of the framework. Shafts 27 and 28 are carried on the framework on top of the sidewalls of the tub, and these shafts have flexible connections 29 that carry support 30 and turnable seat 31 which may be constructed as previously described. 32 indicates a third shaft carried by the framework on top of endwall 24 and this shaft is in two parts and can be lengthened or shortened by means of sleeve 33 in a manner well known. Shaft 32 carries worms 34 engaging with worm-wheels 35 on shafts 27 and 28 so that rotation of shaft 32 will raise or lower the support and seat in the manner previously described, and, of course, this operation may be effected by turning crank 36 or by turning crank 37 within convenient reach of the bather. Crank 37 is not connected directly to shaft 27 but is connected to shaft 32 by suitable gearing, such as bevel gears 38 and shafts 39. Shaft 32 can also be operated automatically. In the form shown in the drawings, 40 indicates a reversible motor provided with a worm 41, on its armature shaft, meshing with worm wheel 42 on shaft 32. Shaft 32 carries a reversible worm 43 and engaging this worm is one member 44 of a limit switch. The arrangement is such that rotation of shaft 32 will cause member 44 to slide on framework 22 in one direction or the other depending on direction of rotation of shaft 32. Member 44 carries a contact 45 that engages stationary member 46 of the limit switch. In Fig. 14 is shown an electrical diagram indicating the motor control. When member 44 has reached the limit of its movement its contact member 45 is out of engagement with stationary member 46 and the circuit through the motor will be broken. When contact 45 disengages 46 it will close spring contact 47, but as manual switch 48 is open no circuit through the motor will be established. When, however, switch 48 is closed a circuit will be established through the motor from line wires 49 and 50 by way of spring contact 47. Member 44 and its contact 45 now begin to travel but before the circuit is broken at spring contact 47, contact 45 will have engaged stationary member 46 and the circuit remains uninterrupted until contact 45 disengages stationary member 46 at the other end when the circuit is broken and spring contact 51 is closed. Switch 52 is at this time open and therefore no circuit is established. Switch 48 is now opened, and when it is desired to operate the device in the opposite direction switch 52 is closed thereby establishing a circuit through the motor in the other direction from the line wires 49 and 50 by way of spring contact 51.

I claim:

1. The combination with a bathtub; of a support within the boundaries of the tub; a seat mounted to turn on the support in a horizontal plane to thereby admit of occupancy by the bather, when the seat is in an elevated position, from the exterior of the tub without stepping over the walls thereof and when thereafter swung horizontally of lowering the bather into the tub and vice versa; shafts at opposite sides of the tub; flexible connections from said shafts to said support; and means to rotate the shafts in unison in either direction to thereby lift and lower the support.

2. The combination with a bathtub; of a support within the boundaries of the tub; a seat mounted to turn on the support in a horizontal plane to thereby admit of occupancy by the bather, when the seat is in an elevated position, from the exterior of the tub without stepping over the walls thereof and when thereafter swung horizontally of lowering the bather into the tub and vice versa; a framework to engage the top of the sidewalls and one of the endwalls of the tub; means to adjust said framework to fit various widths of tubs; two shafts on the framework one at each side of the tub; a third and adjustable shaft on the framework at the end of the tub; gearing connecting all three shafts; and connecting means between the two shafts and the support to lift and lower the latter.

OTTO SPIESS.