ABSTRACT OF THE DISCLOSURE

A bathing tub open atop a removable enclosure includes a vertically movable horizontal platform for supporting elderly or invalid persons and is vertically movable from a position adjacent atop the enclosure down into the tub barrier. Provision is made for cleaning the tub by pivotally supporting the platform to the vertical position.

This invention relates to improvements in bathing devices more particularly, bathtubs and the like.

The bathing and cleansing care of elderly, invalid, or otherwise incapacitated persons is an ever increasing problem to nurses and personnel in hospitals, convalescing homes, or nursing homes. Invariably the bathing area is not a part of or is away from the patients room or convalescing area and provides problems in transportation of patients into a tub is a very difficult operation and in some instances a hazardous one to prevent accidents, falls or other bodily injury to patients.

Accordingly, it is a primary object of this invention to provide apparatus which overcomes the problems in bathing elderly or aged persons or those incapacitated by sickness, disease or injury, or otherwise largely unavailable to assist themselves in bathing.

Another object of this invention is to provide a portable and/or stationary bathing apparatus which is adaptable to be positioned adjacent the patient's bed and further includes a hydraulically or pneumatically raisable platform within the bathing tub whereby the patient can be easily moved from his or her bed onto the platform of the tub, which is at substantially the same level and which thereafter can be lowered into the tub area.

A further object of this invention is to provide a bathing apparatus which can be portable and readily adaptable to existing plumbing connections within a typical hospital or nursing home room.

A still further object of this invention is to provide a raisable platform in a tub, raised by either pneumatic or hydraulic means which is comfortable to the patient and which tub and/or platform further includes means for providing circulation of the water within the tub for its therapeutic effect.

A still further object of the invention is to provide a platform raised by either pneumatic or hydraulic pressure which includes means for easily cleaning the tub and/or the platform associated therewith.

A yet still further object of this invention is to provide a hospital bathing apparatus which is free from involved mechanical equipment and lifting apparatus around the outside of said apparatus which would otherwise hinder the usage thereof.

And other objects of the invention will become more apparent upon further reading of the specification and claims when taken in conjunction with the following illustrations of which:

FIGURE 1 is a perspective view of a typical utilization of the bathing apparatus of this invention.

FIGURE 2 is a sectional view taken along the line 2—2 of FIGURE 1.

FIGURE 3 is a sectional view taken along the line 3—3 of FIGURE 2.
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spaced around the tub and connected by a common pipe 46 to provide a circulatory system within the tub enclosure for the therapeutic purposes as hereinafter described.

Longitudinally spaced along the center line of the tub 40 are tandem hydraulic or pneumatic piston support members 48 and 50, the shaft of which is sealed relative to the tub area 40 by packing of O-rings 52 and 54 respectively. Outlets 56 and 58 are provided within the respective power cylinders 60 and 62 of the hydraulic or pneumatic system, the upper ends of piston supports 48 and 50 include support members 64 and 66 which are, preferably, hingedly attached to matching platform brace members 68 and 70 respectively. Although separate support members and brace members are shown a single length of each is within the scope of this invention. Each of the piston supports includes pistons 72 and 74, respectively, which are sealed relative to cylinder 60 and 62 and operable by the application of hydraulic or pneumatic pressure to the lower pressure space 76 and 78. The pressure fluid supply system includes a pump 80, valve 82, and accumulator tank 84. Although a separate hydraulic and/or pneumatic system is herein described, it is to be understood that by appropriate connection with the water inlet system will provide adequate source of hydraulic pressure fluid, with or without pump 80 in some instances so as to raise and lower platform 32 within tub enclosure 40.

A pump 86 is likewise provided within the outlet conduit 42 for connection either with the drain 88 or with the circular pipe 46 by appropriate operation of valves 90 and 92. As shown in this view a back rest 94 is adapted to be rigidly supported to the platform 32 by an interlocking arrangement of lug 96 with one of the longitudinal openings 36.

Suitable electrical connections, shown here schematically, are provided to be connected with a windup reel 100 and include appropriate electrical connection as the case may be with the motor's driving pumps 80 and 86 or for other means of control such as to solenoid operated valves 82, 90 and/or 92 as needed in the operation of the device of this invention. In fact, means could be provided to include one electrical power source for driving one or both of pumps 80 and 86 and/or in some instances, properly reduced in power to provide a means of self power for transporting the tub enclosure of this invention to other needed areas of a hospital or nursing home.

The embodiment of this invention shown in FIGURE 5 is adaptable and similar to the platform of this invention and indicated here by the numeral 110. The platform is adapted to be retained and held in tub 40 as herefore described but adaptable to include a central conduit 112 from which as various points along its longitudinal length, a plurality of conduits 114 extend outwardly at a common angle thereto so as to provide communication from the central conduit 112 to the exterior of the tub and cause circulation of the water therein in a given direction. This occurs by appropriate connection, e.g., of the piping 46 with the inlet to the longitudinal conduit 112. This may be provided by direct connection using flexible tubing or in some instances, as shown, may involve the supply of water to a small jet which interconnects with a bell-type connection 120. Supplying water through the jet will act as a jet pump picking up water within the lower portion of the tub supplying it through conduit 112 and thence conduits 114 into the tub. In some instances a cleanout plug 122 may be provided at the end of conduit 112 as needed.

In a typical operation, the enclosure 12 and its tub 40 is transported to the bedside of bed 10, or in the alternative, the bed is or the patient is transported to the tub. The platform 32 is then raised by supplying hydraulic or pneumatic pressure fluid into pressure cylinder spaces 76 and 78, as for example utilizing pump 80 and its associated hydraulic fluid accumulator space. The controls for this are suitably situated at 102 or other position about enclosure 12 where it would not be accidentally operated while bathing the patient. The platform is raised to a position where it is substantially level with the top of the tub 40. The patient is then transferred onto the platform and strapped or held as the case may be. In lowering the patient into the tub the pressure within chamber 76 and 78 is released by mechanically opening or electrically opening the valve 82 allowing the accumulated fluid to flow either to the accumulator tank 84 or the atmosphere as the case may be. Bathing water is then supplied into the tub utilizing the nozzle connection 22 or by other appropriate means. In some instances the water will already be within the tub as the patient is lowered thereinto. In the event only a certain level or amount of water is desired relative to the patient the platform is lowered or raised as needed by utilizing proper controls associated with hydraulic or pneumatic system. The back rest 94 may be previously positioned within adjustable opening 36 so as to provide support for the patient. In the event that a therapeutic circulatory water system is desired drain valve 90 is closed and valve 92 is opened and pump 86 starts which withdraws water through conduit 42 forcing it through conduit 46 and thence out through tangential outlets 44 in the embodiment shown in FIGURES 2, 3 and 4. If the alternate embodiment of FIGURE 5 is utilized the circulatory water is jetted through connection 119 where it picks up additional water in the lower portion of the tub as the case may be and it through conduit 112 and lateral conduits 114 where the water is caused to circulate in a constant direction within the confines of the tub area 40.

Suitable electrical connection and drain connection is made through access opening 16 as necessary. When it is desired to drain the water within the tub 40, valve 92 is closed and valve 90 opened, pump 86 started and will hence cause a fast withdrawal of liquids from within the tub area to the drain outlet.

The tub apparatus of this invention and its accessories must be adaptable to cleanliness and in the event that the tub area 40 and the platform 32 is to be cleaned, the platform is raised to an upper level and by reaching through hand opening 34 latch 35 releases platform 32 by hinge connection between members 64 and 66 and 70, respectively. Thereafter, the attendant may thoroughly clean the tub system and platform 32, both on the under and upper sides thereof.

Although the enclosure and the apparatus of this invention will be typically manufactured of metallic parts which can be stainless steel or otherwise coated or protected not only for non-corrosiveness and cleanliness purposes but also for patient comfort purposes. Although a typical example will utilize porcelain coated metal it is to be understood that some high strength synthetic resins may be appropriately used for the tub and enclosure and/or platform 32.

The invention has been described with reference to specific and preferred embodiments. It will be apparent, however, that other modifications can be made without departing from the spirit and scope of the invention. For example, the invention has been shown and described relative to adult usage. However it should be understood that the apparatus and inventive concepts herein are adaptable to infant usage.

What is claimed is:
1. A bathing apparatus comprising:
a) an enclosure including an upper tub space;
b) two pressure fluid actuated piston and cylinder means situated below said tub and within said enclosure, said piston and cylinder means tandemly spaced along the longitudinal axis of said tub, said pistons means including supports extending upwardly sealably through the bottom of said tub;
c) a rigid horizontal platform slightly smaller than the horizontal cross-section of and within said tub so as
to pass upwardly and downwardly therein, said platform releasably retained to and hinged underneath to said piston supports, so as to be pivoted to a vertical position; an adjustable back rest atop said platform; means to controllably supply and exhaust pressure fluid to said cylinder to raise and lower said platform; means to controllably support bathing liquid to said tub space; and means to controllably drain said bathing liquid from said tub space.

2. Apparatus according to claim 1 wherein said platform includes conduit means to cause circulatory liquid motion within said tub area; and liquid circulatory pump means connecting the drain of said tub with said conduit means.

3. Apparatus according to claim 2 wherein said pump means includes jet liquid circulatory means connecting the drain of said tub with said conduit means.

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