United States Patent [19]

Rosenberg

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[54] **DOUCHE APPARATUS**

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[73] Assignee: **Cambridge Biomedical Corporation,** Boston, Mass.

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[52] **U.S. Cl.**..... **128/230,** 128/251, 137/355.2, 137/355.28

[51] **Int. Cl.**..... **A61m 1/00**

[58] **Field of Search**..... 128/230, 66, 248, 128/251, 65, 67; 137/355.2, 355.16, 355.28; 226/181, 184, 186, 187

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[57] **ABSTRACT**

A douche apparatus of compact design having a water reservoir or container engaged with a magnetically coupled pump positioned in a housing. The pump is also connected to one end of a flexible tube that is normally stored in the housing. The other end of the tube is connected to a nozzle. The major portion of the tube may be retracted into the housing by a windup mechanism located within the housing and having a handle accessible from outside the housing.

5 Claims, 5 Drawing Figures

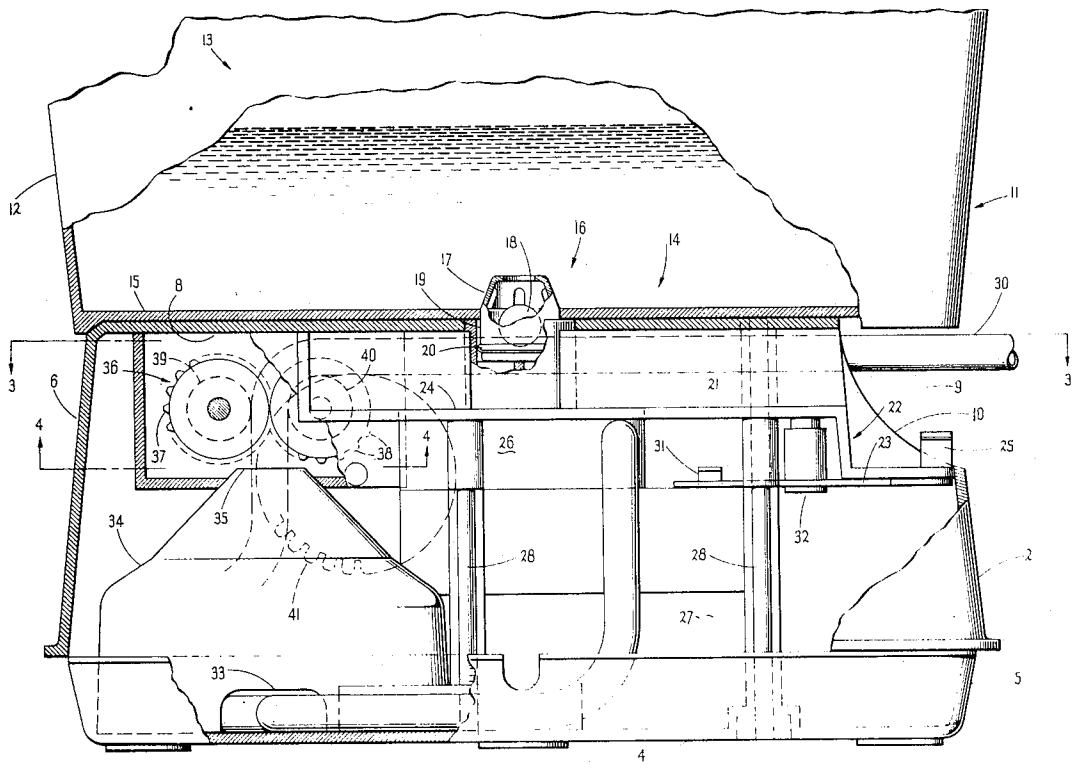
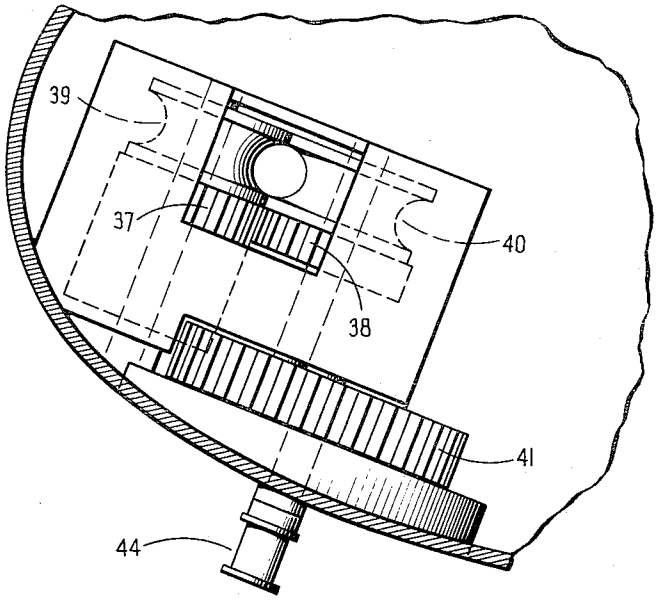


FIG. 4



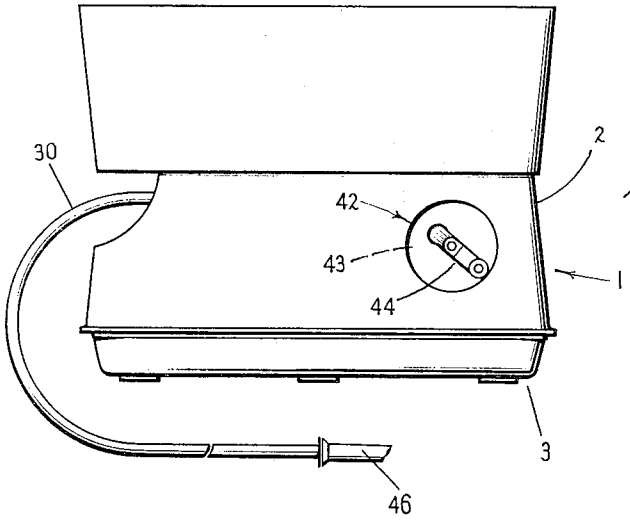
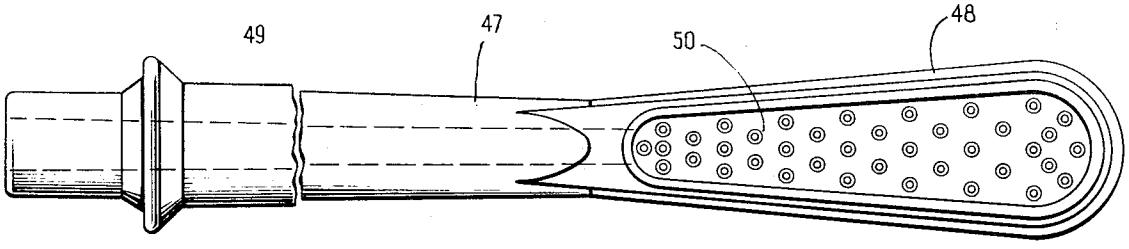


FIG. 1

FIG. 5



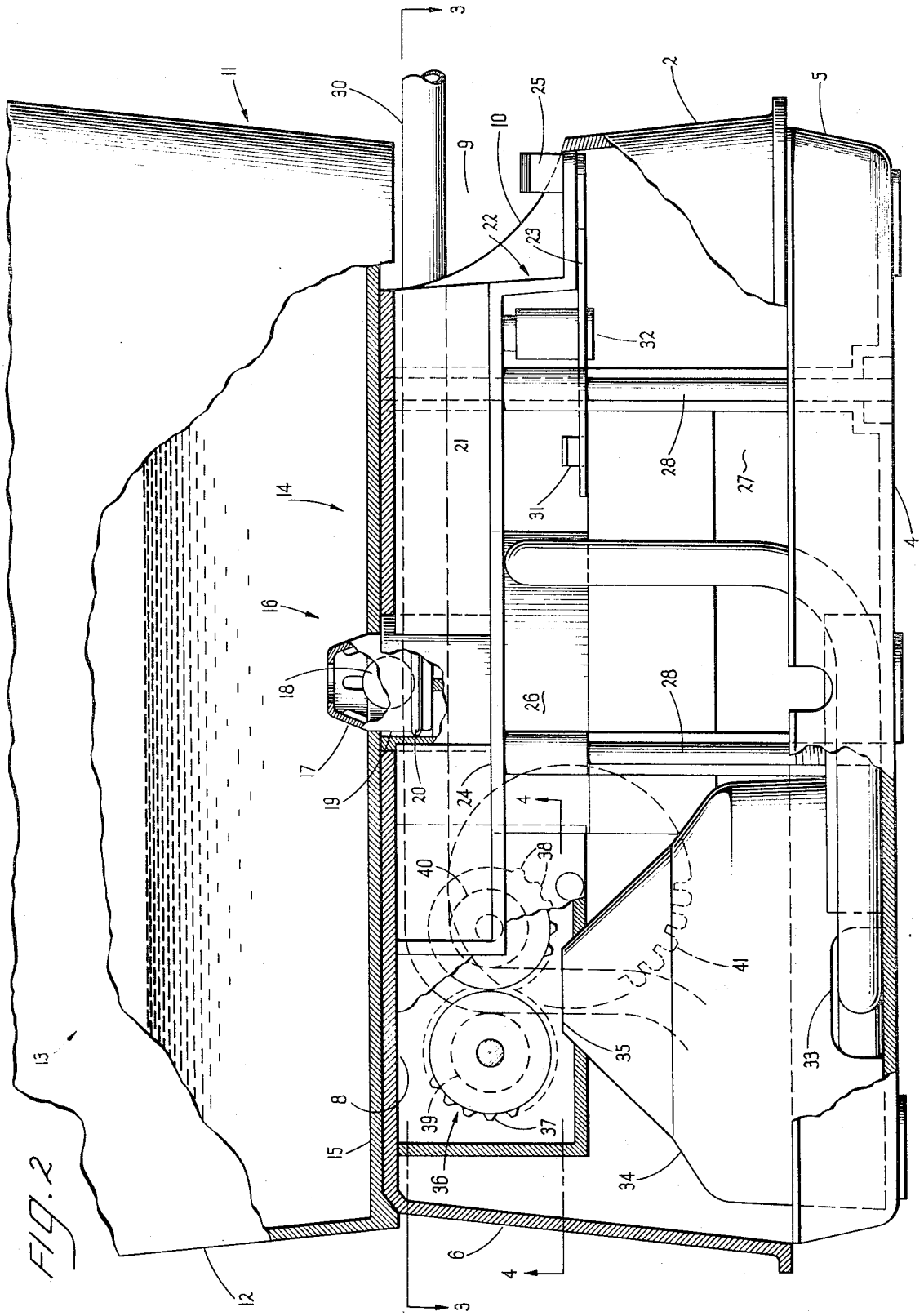

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FIG. 2

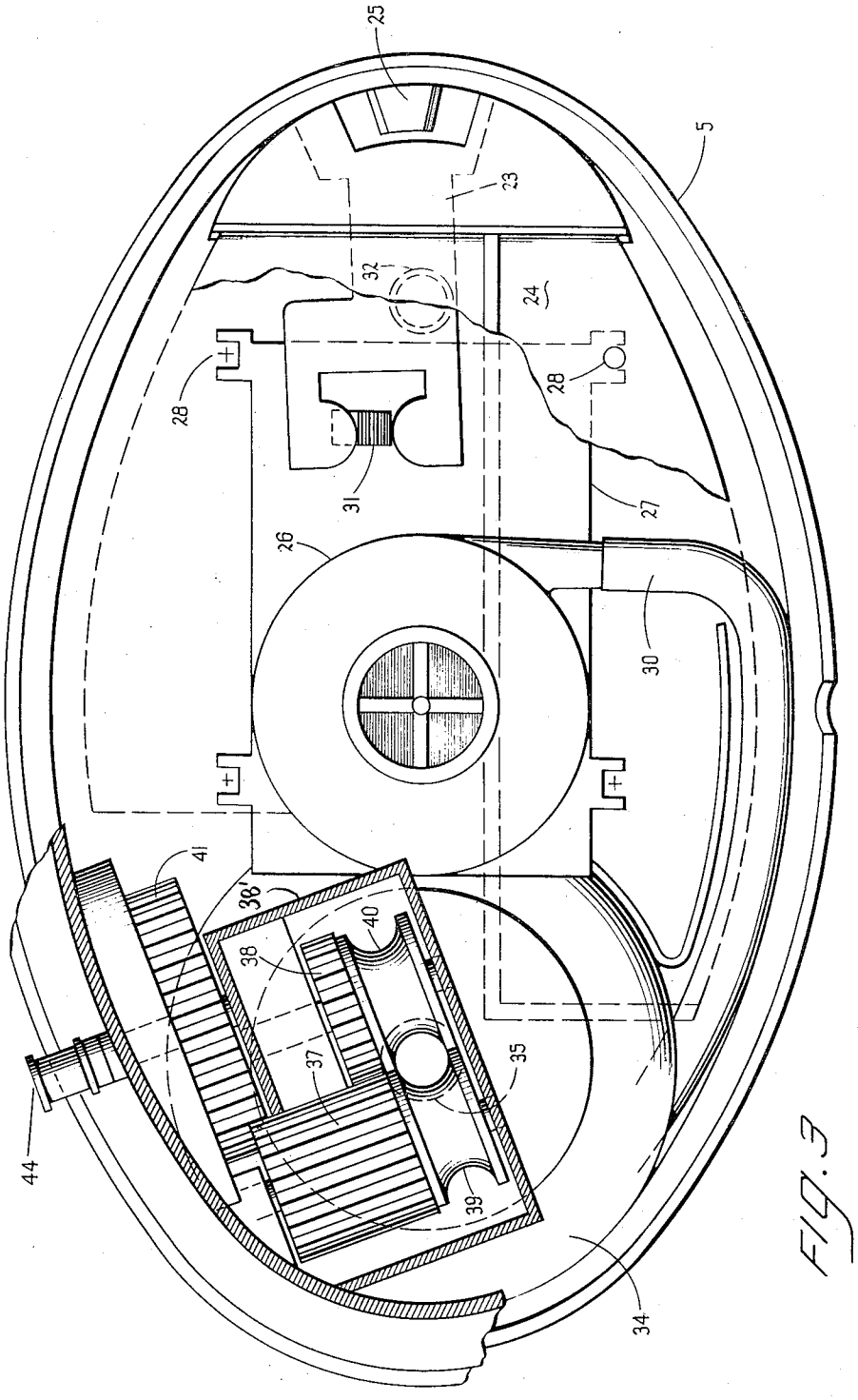

FIG. 3

DOUCHE APPARATUS

SUBJECT MATTER OF THE INVENTION

The present invention relates to a douche apparatus of compact design.

BACKGROUND OF THE INVENTION

Douche apparatus and devices that are currently being marketed are usually stored in the bathroom of one's home. These units conventionally are provided with electrical power means that pump water from a separable reservoir through a flexible tube and out of the nozzle. As a consequence, it is necessary to design apparatus of this type as a compact unit capable of being easily cleaned and with means that provide easy storage for both the flexible tube and for the reservoir.

It is also important to provide a design which is not likely to malfunction and in which adequate isolation is provided between the electrical and water systems of the unit. Further, the unit must be sufficiently portable for convenience in handling and storing.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a douche apparatus that is compact in nature, easy to operate, assemble, and is attractive in appearance. A further object of the present invention is to provide a douche apparatus having a flexible fluid tube of sufficient length to permit convenient usage and flexibility of use. The flexible tube is provided with a nozzle of unique design adapted to provide a directive spray of a fine but forceful nature.

A further object of the present invention is to provide means integral with and contained in the housing of the douche apparatus that readily retracts and stores the entire flexible tube and attached nozzle when not in use. This retraction or wind-up mechanism provides means for positive winding or unreeling of the flexible tube, thereby eliminating the need for reliance upon springs.

One further object of the present invention is to provide a unique and compact storage means for receiving the wound-up portion of the flexible tube within the housing.

A still further object of the present invention is to provide a wind-up mechanism for the flexible tube which is not likely to damage the flexible tube by applying too great a force or tension on it when the tube is wound up.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing objects and advantages of the present invention will be more clearly understood when considered in conjunction with the accompanying drawings in which:

FIG. 1 is an elevational view of a douche apparatus embodying the invention with the water reservoir positioned on the housing and with the flexible tube extended from the housing, all ready for use;

FIG. 2 is a longitudinal cross-sectional view taken essentially lengthwise of the douche apparatus but viewed from the side opposite that shown in FIG. 1;

FIG. 3 is a cross-sectional view taken essentially along the line 3—3 of FIG. 2;

FIG. 4 is a cross-sectional detail taken essentially along the line 4—4 of FIG. 2; and

FIG. 5 is a perspective view of the nozzle attached to the tube shown in FIG. 1 but on an enlarged scale.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, there is illustrated a douche apparatus embodying the present invention in which there is provided a housing 1. This housing consists of an upper member 2 and bottom 3. The bottom 3 (FIG. 2) includes a bottom wall 4 that is integral at its periphery with an upwardly outwardly flared lip 5. Preferably, the shape of the bottom 3 is oval. The upper edge of the lip 5 butts and is secured to the lower edge of an upper member 2. The butting edges may be suitably secured by a suitable tongue groove or other forcefit arrangement.

The upper member 2 encloses the operating mechanism of the douche apparatus. It comprises an upwardly inwardly inclined wall 6 having an outer surface that is essentially oval in top plan view. The upper edge of the wall 6 is integral with the top wall 8. An opening 9 is formed in the upper member 2. This opening 9 is defined by an edge 10 that extends across one end of the top wall 8 and continues arcuately and downwardly in essentially a U-shaped configuration into wall 6.

A water reservoir or container 11 is formed with a side wall 12 having a taper from a wide, open end 13 to a closed end 14. The closed end 14 is defined by wall 15 having a periphery that is integral with the narrower end of side wall 12. The interior parameter of the water reservoir 11 is such that the reservoir when detached from the housing 1 and inverted will nest over the housing 1 for storage purposes, with the inner surfaces of wall 12 and outer surfaces of upper member 2 being in facing relation. A centrally located water passage 16 is located in the wall 15. This water passage 16 consists essentially of a casing 17 that is open at its upper and lower ends. The casing contains a weighted sphere 18 that normally closes the outlet passage in the bottom of the water passage 16 when the container 11 is detached from the housing and is held in an upright position for containing water. The sphere 18 contained within the lower portion 19 of the casing 17 is normally of sufficient weight to maintain water within the container 11. The lower portion 19 is provided with an O-ring 20 that normally provides a good friction and watertight seal with the upper end of the pump described hereafter. The sphere 18 is also arranged and located so that it may be moved vertically within the casing 17 in a manner as hereafter described, thereby permitting water to flow through the water passage 16 and out through the outlet in the cylindrical member 17.

Turning now to the interior construction of the housing, there is provided a horizontally extending divider 21. This divider has a stepped section 22 that interconnects the lower platform 23 with an upper platform 24. The lower platform 23 extends inwardly from just below the lowermost portion of edge 10 and provides an aperture through which one end of the actuating lever 25 extends. The upper platform 24 extends parallel to and is spaced from the top wall 8, thus providing an elongated recess within which the nozzle (described later) may be stored when the flexible tube is in its retracted position. The upper platform 24 is provided with an arcuate segment that engages and secures the pump housing 26. The pump housing 26 is integrally formed with the power-source housing 27. These units

may have essentially a rectangular configuration, as illustrated in FIG. 2, and are rigidly secured within the housing 1 by a plurality of vertically extending rods 28. These rods 28 may be positioned in pairs on opposite sides of the pump and power housings. The rods may extend lengthwise through channels or grooves formed in the pump and power housings 26 and 27. These rods 28 may also be provided with means for securing and supporting the divider 21 through which the rods extend. The upper ends of the rods are suitably anchored in the top wall 8 with the bottom ends of the rods being suitably secured in a removable fashion to the bottom 4 of the housing.

The power-source housing 21 contains a conventional motor to which is connected a driving magnet that is preferably annular in configuration. The driving magnet and motor are of conventional design. The driving magnet is magnetically coupled to a driven magnet (not shown) that is positioned within the pump housing 26. The driven and driving magnets are conventionally isolated one from the other by a fluid, impermeable, but magnetically permeable wall that permits rotation of the driven magnet by the driving magnet in a manner conventionally known. The driven magnet is in turn coupled to a centrifugal pump, also not shown, that is located in an upper, cylindrical end of the pump housing 26. The centrifugal impeller is supported in a bearing means that includes an upwardly extending pin that is coaxial with the upper section 29 of the pump housing. This pin projects into the lower portion 19 when the water reservoir or container 11 is positioned on the housing. This pin engages and upwardly displaces the sphere 18 opening the valve or water passage 16 so that the water within the container 11 may flow downwardly through the water passage 16 and into the pump housing 26.

Projecting upwardly from the power-source housing 27 is an electrical switch 31 that is engageable by a forked end of the actuating lever 25. The actuating lever 25 is pivotally supported on a pin 32 that is supported between the lower surface of the lower platform 23 and the upper surface of the power-source housing 27. The switch 31 controls the power to the power source which in turn causes the pump within the pump housing to be actuated. The operator turns the switch on and off by moving the accessible free end of the actuating lever 25.

Connected to the pump housing 26 and in fluid communication with the passage 16 is one end of the flexible tube 30. The flexible tube 30 extends downwardly into an opening 33 at the bottom end of a substantially frusto-conic storage bin 34. This bin 34 contains an intermediate segment of the flexible tube in coiled form when the tube is in its retracted position. The bin 34 is rigidly secured to the upper surface of the bottom 4 and is formed with a tapered upper portion terminating in an opening 35 through which the tube 30 extends. Positioned immediately above the opening 35 is the wind-up or take-up mechanism 36. This mechanism includes a casing 37' in which is journalled meshing gears 37 and 38. These gears are each integrally formed with a pulley segment 39, 40. The pulley segments are aligned one with the other and define an opening therebetween that is essentially circular in cross-section with a diameter slightly less than the outer diameter of the flexible tube 30. The flexible tube passes between these pulley segments and is slightly pinched by it, thus providing a frictional engagement by which the flexible tube 30 may be moved upon corresponding rotation of the gears. The gears are simultaneously operated through a gear train that includes a gear coaxially mounted with gear 37 that meshes with gear 41. Gear 41 which is of larger diameter than gears 38 and 39 is supported for rotation in an opening within the wall or upper member 2. This gear is integrally formed with a handle best illustrated in FIG. 1 at 42. This handle 42 has a cover 43 that is secured by appropriate flanges to the wall 6. Secured to the cover 43 is a finger grip 44 that is pivotally secured to the cover 43 and is spring-loaded by conventional means to normally lie flat within a recess formed in a cover 43. The user pivots the finger grip 44 out of the recess within the cover 43, and rotates the cover 43 using the finger grip as a control. Since the cover 43 is secured integrally to the gear 41, rotation of the cover will in turn actuate the gear train, thus causing the flexible tube to be moved in either direction between the pulley segments of 40 and 41, depending on the direction of rotation of the finger grip 44.

Secured to the free end of the flexible tube 30 is the nozzle 46. This nozzle 46 comprises a tubular member that is removably secured to the flexible tube. The free end of the flexible tube fits over an offset section of the nozzle, and may be secured to it by suitable and conventional means. In this connection, the offset section within the flexible tube may be provided with a series of helixes or ridges that frictionally engage the inner wall of the tube 30 at its free end. The nozzle 46 is provided with a hand-grip section 47 of suitable and conventional style and length. Extending angularly and preferably at a 15-degree angle from the handle section, is the spray end 48 of the nozzle. This spray end 48 includes an enlarged recess within the spray end. This recess is formed with an elongated aperture that is closed by a tight-fitting cover 50. This tight-fitting cover is formed with a plurality of very fine holes, having a bevelled outer end. In an actual embodiment, the cover is provided with 39 holes having a diameter of 0.025-inch. These holes are spaced substantially uniformly over the cover 50 which is approximately 1½ inches long with a tapered width extending from a wide end of approximately ½-inch to a narrower end of approximately ¼-inch.

The nozzle 46 is designed primarily for topical use. A conventional nozzle may be used for other purposes.

I claim:

1. A douche apparatus comprising:

a housing;

a reservoir positioned above the housing and resting on a top wall thereof;

both said housing and reservoir having aligned passages;

valve means coupling between said passages and for controlling liquid flow from said reservoir;

pump means contained within said housing below said passages and including a valve actuating means for selectively opening said valve means to deliver liquid to said pump means, and switch means;

a flexible tube secured at one end to said pump means and having its other end extending through an opening in said housing to external of said housing and having a syringe nozzle attached to its said other end;

an actuating lever disposed adjacent said tube at the tube segment that extends through said opening, said lever operable to change the position of said switch means to operate said pump means and valve actuating means for pumping liquid through said pump means and flexible tube;

a storage bin contained within the housing being of a frusto-conic shape and having a bottom aperture and a top aperture for accommodating the tube;

and a take-up mechanism for engaging a segment of said tube for moving it to and from said storage bin and including;

a first pair of pulleys, each having meshing gears associated therewith, arranged coplanar with each other and defining an opening therebetween for gripping said tube,

a drive gear engaging with one of said meshing gears, and means external of said housing for rotating said drive gear.

2. The douche apparatus of claim **1** wherein said opening in said housing is defined by a divider that forms a part of a compartment for receiving said tube and further comprises means for supporting said actuating lever.

3. The douche apparatus of claim **2** wherein said divider is stepped and said lever is pivotally supported therefrom and therebelow.

4. The douche apparatus of claim **3** wherein one of said meshing gears is longer than the other.

5. The douche apparatus of claim **4** wherein said valve means includes a casing having apertures therein and a sphere which is moveable upwardly by said valve actuating means which includes a pin.

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