United States Patent

Cutler et al.

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[54] **WATERPROOF BATTERY OPERATED VIBRATOR**

[72] Inventors: **Lester M. Cutler,** Roslyn Heights; **Paul Friedman,** Old Westbury, both of N.Y.

[73] Assignee: **Vibra-Baths Home Products, Inc.**

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[52] **U.S. Cl.** **128/36,** 128/65, 128/64

[51] **Int. Cl.** **A61h 1/00**

[58] **Field of Search**.....128/24.1, 24.2, 34–36, 128/64, 65

[56] **References Cited**

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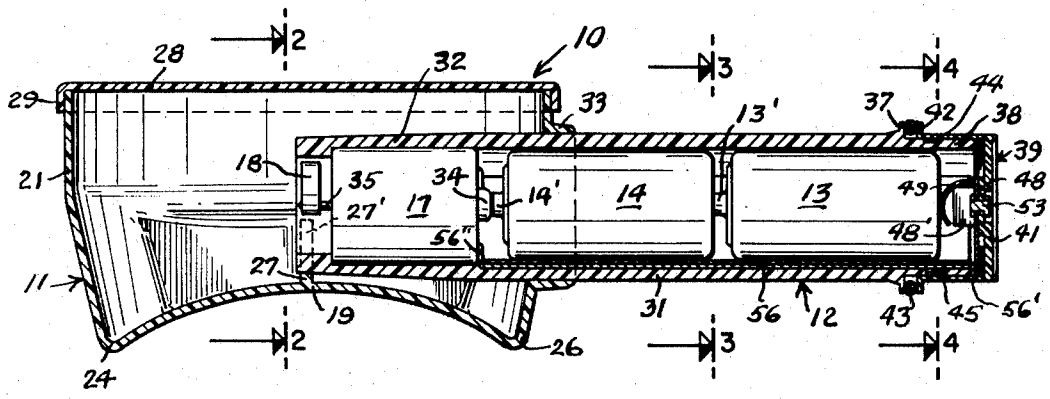
Primary Examiner—Lawrence W. Trapp

Attorney—J. B. Felshin and Marvin Feldman

[57] **ABSTRACT**

A vibrator having an enlarged hollow head and a handle extended through an opening into the enlarged head for engagement with an extension extending inwardly from one of the vibrating surface portions so as to impart vibratory movement thereto. The handle contains batteries, electric motor and an eccentric fly weight that will overly the inward extension of the body engaging portion and the handle sleeve extends between a flanged opening in the side wall of the enlarged head and the extension so that vibratory movement will be imparted to the side of the enlarged head and to the opposite body engaging portion thereof.

7 Claims, 6 Drawing Figures



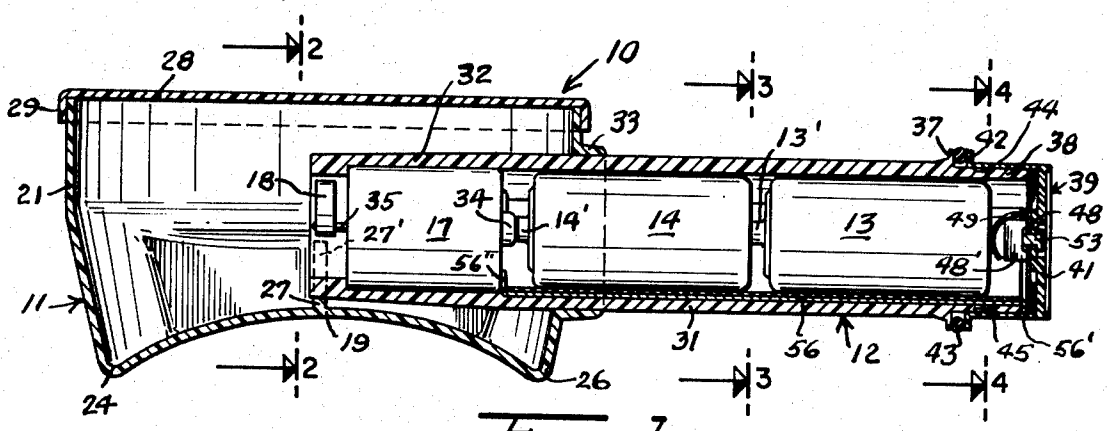


Fig. 1.

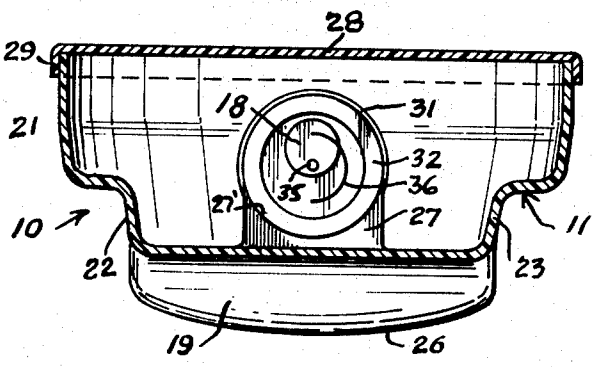


Fig. 2.

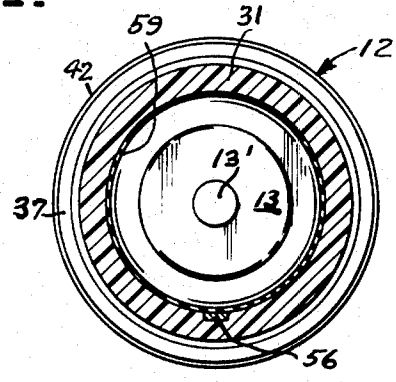


Fig. 3.

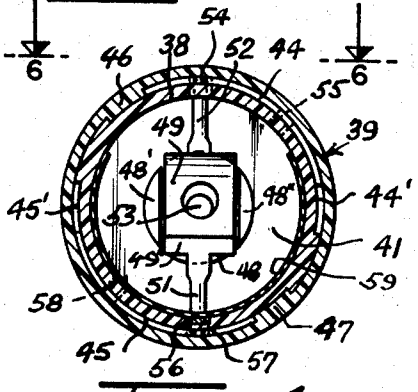


Fig. 4.

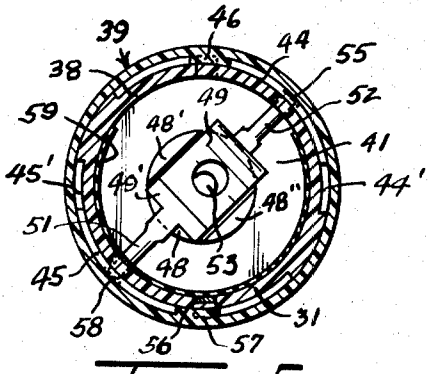


Fig. 5.

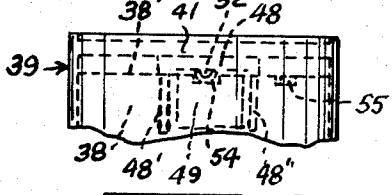


Fig. 6.

INVENTOR.
LESTER M. CUTLER
& PAUL FRIEDMAN
BY Polacheck, Saulsbury & Hough
ATTORNEYS.

WATERPROOF BATTERY OPERATED VIBRATOR

This invention relates to a waterproof battery operated body vibrator.

It is a principal object of this invention to provide a vibrator which is waterproof and can be used by a bather in a bathtub or swimming pool without fear of being electrocuted since the vibrator itself carries its own power in the form of low voltage batteries that cannot electrocute.

It is another object of the invention to provide a light weight hand vibrator formed of plastic parts in which the enlarged head is hollow, watertight and wherein the vibrator may be floated upon the water surface free of loss when grip on the vibrator is released.

It is another object of the invention to provide in an electric vibrator an enlarged head in which there are surfaces on opposite sides of the enlarged head, one of the surfaces being curved to fit the body contour of the bather and the other surface being flat to overly the more flattened and depressable body surfaces of the bather.

It is a further object of the invention to provide in a waterproof battery operated vibrator a handle assembly which in itself is the vibrator and which can be slid axially into the side wall of an enlarged head and contacted with an inwardly extending extension on one of the body engaging surfaces of the head to thereby give maximum transmission of the vibrations afforded by the handle sleeve and the fly weight member thereof.

It is a still further object of the invention to provide a closure cap for the handle sleeve that will be sealed on the end thereof and at the same time will serve as a switch for controlling the operation of the electric motor, the sealing of the cap upon the handle sleeve being effected by means of an O-ring lying between opposing flanges of the handle sleeve and the cap and the cap being retained upon an extension of the handle sleeve by means of a bayonet-like groove on the handle sleeve extension and inward projections of the cap operable therein.

Other objects of the invention are to provide a waterproof battery operated body vibrator having a vibrating head and a handle, which is of simple construction, has a minimum number of parts, will create intense vibration, has a self contained switch in the handle, of pleasing appearance, inexpensive to manufacture, efficient and effective in use.

For a better understanding of the invention reference may be had to the following detailed description taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a longitudinal sectional view of a battery operated bath massage vibrator embodying the features of the present invention.

FIG. 2 is a transverse sectional view taken across the vibrator head and looking into the open end of the inwardly extending handle of the vibrator and upon the rotating eccentric, this view taken along the line 2—2 of FIG. 1.

FIG. 3 is an enlarged transverse sectional view taken through the vibrator handle and looking upon the positive terminal end of one of the batteries closed therein, this view being taken on line 3—3 of FIG. 1.

FIG. 4 is another transverse sectional view of the vibrator handle as viewed on line 4—4 of FIG. 1 and looking upon the interior of the turnable waterproof sealed switch cap turned to a contact position.

FIG. 5 is a similar sectional view as FIG. 4 where the switch cap has been turned to an off position.

FIG. 6 is a fragmentary elevational view of the end of the vibrator handle and looking generally in the direction of arrows 6, 6 of FIG. 4 upon the side of the cap and showing in phantom spaced notches in the end face of the handle proper with which detent engages when the switch cap is turned between on and off positions.

Referring now to the figures, 10 represents generally the assembled vibrator comprising generally an enlarged vibrating head formed of plastic material and a handle assembly 12 containing batteries 13 and 14, a switch cap 39, an electric motor 17 and a rotating offset eccentric 18 driven by the motor.

The enlarged vibrating head 11 is formed of a contoured enlarged hollow plastic cap shaped member having a bottom curved contour surface 19 adapted to be extended over rounded surfaces of the bather's body and an upwardly extending side wall 21 that is indented at opposite longitudinal sides 22 and 23 and to rigidify the side wall 21. At the same time the surface 19 becomes a rolling or straight curved surface extending longitudinally along the head 11 and extending straight across the head as best viewed in FIGS. 1 and 2. The shape provided by the surface 19 is not one of a mere concaved circular area but rather that of a flat rolled sheet surface having rounded ends indicated at 24 and 26 closed upon the tapered side wall 21 of the head 11 and at its sides closed by the indentures 22 and 23 upon this side wall 21. The indentures 22 and 23 relieve the sides of the surface 19 so that the rounded surface of the body such as the arm or the leg can extend transversely flush against the entire surface 19 of the enlarged body 21 to transmit maximum vibration to the body surface of the bather.

In order that maximum vibration is imparted to this surface 19 of the enlarged head an integral and upwardly extending cardle like projection 27 extends onto which the inner end of the handle assembly 12 bearing the eccentric fly weight are directly imparted to the projection 27 and the surface 19 of the enlarged head as well as to the full extent of the enlarged head including a plastic cap 28 tight fitted and in a water proof manner by its flange 29 and adhesive if necessary to keep out water from entering the interior of the head 11. This cap 28 provides a full circular vibrating area that can be used when the vibrator is depressed upon more flat rather than rounded areas of the bather's body so as to give maximum and more contact engagement of the vibrator with the body than can be had with the curved bottom area 19.

The handle assembly 12 is included in an elongated handle sleeve 31 that is tapered on its inner end as indicated at 32 in order that the handle assembly can be readily extended through a flanged opening 33 in the side wall 21 of the enlarged head and so that the vibration created by the revolving fly weight or eccentric 18 will be concentrated upon the extension 27 on the curved bottom wall and at substantially the center thereof so that vibrations of equal amplitude will be im-

parted forwardly and rearwardly along the rolled or curved bottom surface 19.

The flanged opening 33 is axially aligned with curved upper edge 27' of the upstanding projection 27 whereby to bridge the side wall 21 with the projection 27 so that vibration from the fly weight 18 will be imparted through the tapered end 32 of the sleeve 31 of the handle to the flange 33 in the side wall 21 and thereby directly to the side wall 21. Vibration is thus made directly upon the bottom of the head and as well upon the side wall of the head 11. There is a completely water tight connection as well as a vibratory connection in the handle sleeve 31 and the wall 21 of the head 11 and as well between the flange 29 of the diaphragm 28 with the wall 21 so that the head 11 is water-tight and containing air that is lighter than the water so as to give to the vibrator sufficient buoyancy that the vibrator can float upon the water and thereby is kept readily accessible to the bather whether in the bathtub or upon the vibrator being used in a swimming pool.

The two batteries 13 and 14 are ordinary dry cells and respectively have anode terminals 13' and 14', the terminal 13' of the battery 13 engaging negative end contact wall of the battery 14 and the anode terminal 14' of the battery 14 engaging with the contact projection 34 of electric motor 17 from which rotating shaft 35 extends on which the eccentric fly-weight 18 is fixed for rotation therewith. The path of rotation of the fly-weight 18 is indicated by arrow 36 in FIG. 2.

The rear end of the handle sleeve 31 has an annular flange extension 37 and a reduced external diameter portion 38 over which a switch cap 39 is slidable and tightly fitted and which has a rear end face wall 41 and a forward annular flange 42 that opposes the flange 37 on the sleeve 31 to have water-tight engagement therebetween by an O-ring 43 formed of rubber like material and when axially depressed makes for a gasket connection between the cap 39 and the end of the handle sleeve 31.

The outer surface of the sleeve extension 38 of the handle sleeve 31 is provided with opposing bayonet-like grooves 44 and 45 that together substantially surround the exterior surface of the extension 38 as seen in FIGS. 4 and 5 and while substantially axially spaced from the rear edge of the extension 38 and more adjacent to the flange 37 of the handle sleeve 31 have communication respectively with the rear edge of the extension 38 by longitudinal portions 44' and 45' of the respective bayonet-like slots 44 and 45 in the external surface of the extension 38. The cap 39 has extending interiorly from its inner surface projections 46 and 47 adapted to be respectively accommodatedin the bayonet-like grooves 44 and 45 of the handle sleeve extension 38. In this manner the cap 39 serves as a closure for the rear end of the handle sleeve 31 and can be removed for replacing the batteries 13 and 14 from the handle sleeve and with the bayonet grooves 44 and 45 of the sleeve extension 38 and the projections 46 and 47 of the cap being properly dimensioned, the cap 39 can have a tight fitting and waterproof connection with the O-ring 43 and the open rear end of the handle sleeve 31.

Not only does the cap 39 serve as a sealed closure for the end of the handle sleeve 31 when fixed to the handle sleeve extension 38 but it also serves as the switch for effecting the delivery of current from the batteries 13 and 14 to the fly-weight motor 17. The bayonet-like grooves extend peripherally about the exterior of the extension 38 sufficiently to allow for considerable rotation of the cap 39 upon the sleeve extension 38 and between open and closed contact positions without the cap being released from the bayonet grooves of the sleeve extension 38.

Extending inwardly from the end wall 41 of the cap 39 is an inwardly depressed boss 48 having diametrically spaced opposed extensions 48' and 48'' between which is disposed a diametrically extending spring contact 49 adapted to engage with end face terminal of battery 13 in a spring tight manner and from which there extends a contact arm 51 at one end and a corresponding arm 52 at the other end.

This contact 49 has a base portion 49' from which the arms 51 and 52 extend in opposite directions but by which the contact is made secure upon the depressed projection base 48 by a rivet 53 as best seen in FIG. 1 with its outer head lying within a central depressed recess in the outer face of the end portion 41 of the cap 39.

On the end face as best indicated at 38' of FIG. 6 at one side of the extension 38 are cut two slots 54 and 55 into which the outer ends of arm 52 of the contact can drop upon the switch cap 39 being turned. The under edge of the contact arm 52 is rounded as can be best seen in FIGS. 1 and 6 so that it can ride easily in and out of the notches 54 and 55 along the edge 38' of the sleeve extension 38. As shown in FIGS. 4 and 6 the arm 52 is lying in the notch 54 and with the arm 51 extending from the contact 48 in the opposite direction this arm 51 makes contact with a bent over end 56' of a conductor 56 as best seen in FIG. 1 and which lies in a diametrically opposite notch 57, FIG. 4, from the notch 54 into which the arm 52 extends so that when the cap 39 is turned to the on position of FIG. 4, current may then flow into the motor 17 from the batteries 13 and 14 and with which motor the conductor 56 has contact at 56'' and through the contact 49 into the negative end face terminal of the battery 13. Current will thus flow through arm 51 and the spring contact 49.

When the cap is turned to the off position as shown in FIG. 5 the arm 51 will enter notch 58 angularly spaced from the notch 57 and out of contact with the conductor end 56' that is located in notch 57. The notch 58 is diametrically opposite to the notch 55 into which the dead arm 52 extends when the arm 51 extends into the notch 58. Thus the end cap 39 serves as a switch member as well as a closure cap and if the end cap is worked angularly between the notches provided in the end face 38' of the sleeve extension 38, the end cap will remain in place upon the sleeve and in a waterproof manner and by further turning of the end cap 39 it can be removed from the sleeve extension 38 for the purpose of replacing the batteries 13 and 14 lying within the handle sleeve 31. The switch cap 39 serves a dual purpose.

While the conductor strip 56 may extend in a groove on the inner face of the sleeve 31 with its inner face flush with the inner face of the sleeve 31, it is preferable that this conductor strip 56 be covered throughout its length by an insulating sheet 59 of thin insulating material to thereby prevent shunting of the batteries 13

and 14 resulting from a frayed outer surface of the battery and at the same time to make for a tight fitting connection of the batteries within the interior of the handle sleeve 38 and prevent rotational or axial movement therein.

It should now be apparent that there has been provided a battery operated vibrator that is watertight made from a minimum number of molded or plastic parts assembled in such a way that maximum vibratory impulses will be effected upon the undercurved surface of the vibrator head and as well upon the flat circular diaphragm forming the top surface of the head.

It should also be apparent that a switch cap has been formed and made attachable to the rear end of the handle in a watertight manner and as well can serve as a switch for the turning on and off of the vibrator motor.

What is claimed is:

1. A watertight battery operated vibrator comprising a hollow enlarged head having under and top surfaces and a side wall interconnecting the surfaces with an opening therein, an extension extending inwardly from one of the surfaces, a handle sleeve assembly having a handle sleeve extending through the opening in the side wall of the enlarged head and engaging tightly with the extension extending inwardly from the one surface and said handle sleeve having a rearwardly extending extension, batteries and an electric motor lying within the handle sleeve, said electric motor having an eccentric fly-weight over lying the inward extension of one of the surfaces of the enlarged head when the handle sleeve is projected through its opening to its full extent and engaging with the inward extension of the vibrating portion of the head, and a closure cap removably secured to the handle sleeve extension in a watertight manner and switch means associated with the parts of the handle for controlling the operation of the motor therewithin.

2. A watertight battery operated vibrator according to claim 1 wherein the enlarged head has a longitudinally extending inwardly curved body engaging portion and said extension extending inwardly from the inwardly curved body engaging portion intermediate and centrally of its length thereof and the opposite body engaging portion being flat in form of a diaphragm and having a depending flange tightly fitting the upper edge of the side wall of the head.

3. A waterproof battery operated vibrator as defined in claim 2 and said opening in the side wall through which the handle sleeve is extended being flanged for watertight engagement of the exterior of the handle sleeve with the side wall of the enlarged head with the inner ends being thrust inwardly into the enlarged head and with its end in the engagement with the extension of the curved body engaging portion of the enlarged head so that vibratory motions are created at the inner end of the handle sleeve can be transmitted to the side wall of the enlarged head and to the diaphragm surface area thereupon.

4. A waterproof battery operated vibrator as defined in claim 1 and said handle sleeve having adjacent to its extension a flange and said closure cap having a flange and an O-ring interposed between the flanges of the handle sleeve and the cap, and bayonet-like grooves provided in the external surface of the sleeve extension and said cap having inwardly extending projections operable in the bayonet-like grooves of the sleeve extension.

5. A waterproof battery operated vibrator as defined in claim 1 and the rear end of the handle sleeve extension having bayonet-like grooves opposing one another and said closure cap having inwardly extending projections operable in the grooves, said handle sleeve extension having a pair of spaced notches in the end face thereof, a spring contact secured to the cap and engageable with end face terminal of a battery and having an arm extending radially therefrom and adapted to enter either one of the notches in the end face of the handle sleeve extension, a conductor strip extending from one of the notches and engageable by the contact arm when lying within the notches and extending forwardly along the interior of the handle sleeve and connected to the electric motor.

6. A water proof battery operated vibrator as defined in claim 5 and a second pair of notches lying opposite to the first pair of notches within the end face of the sleeve extension and a second arm extending diametrically to the first arm and from the contact switch and operable in the second pair of notches to serve asstop, means when effecting the movement or rotation of the cap upon the handle sleeve extension.

7. A water proof battery operated vibrator as defined in claim 6 and said handle sleeve having an annular flange adjacent to its sleeve extension and said closure cap having an annular flange opposing the flange on the handle sleeve when assembled upon the extension and an O-ring disposed between the flange of the handle sleeve and the flange of the closure cap whereby the closure cap will be retained in water tight engagement with the end of the handle sleeve.

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