No. 715,650. Patented Dec. 9, 1902.

O. A. EN HOLM.

ELECTRICAL MASSAGE APPARATUS.

(Application filed Mar. 20, 1902.)

(No Model.)

Fig. 1

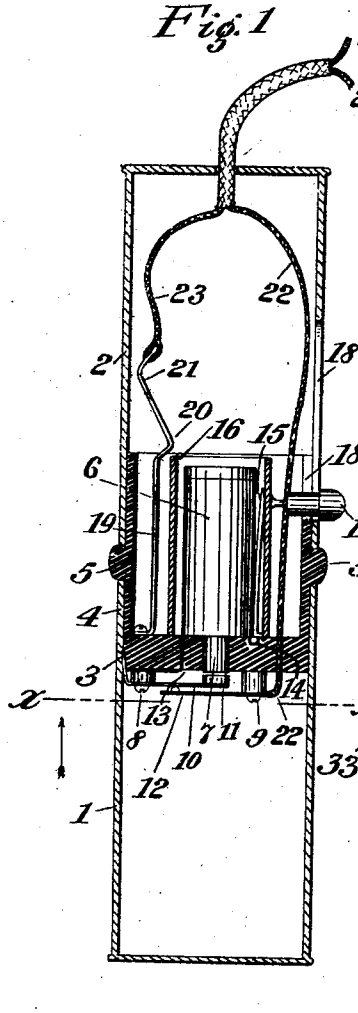


Fig. 3

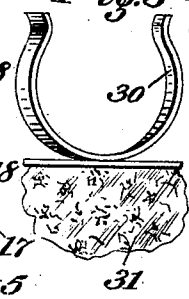


Fig. 4

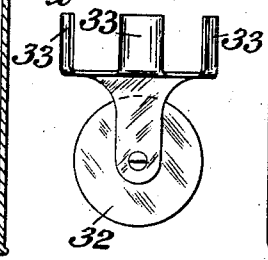


Fig. 6

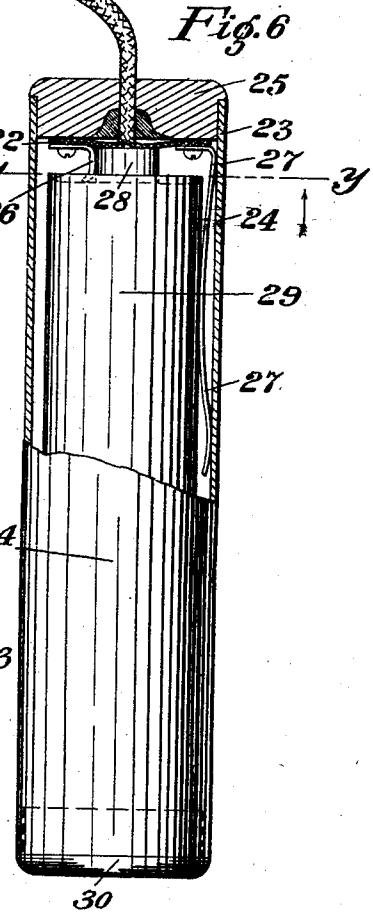


Fig. 2

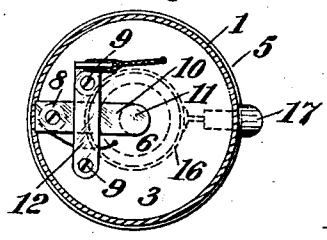


Fig. 7

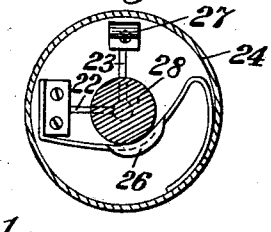
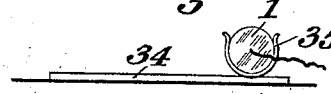


Fig. 5



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ELECTRICAL MASSAGE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 715,650, dated December 9, 1902.

Application filed March 20, 1902. Serial No. 99,089. (No model.)

To all whom it may concern:

Be it known that I, OSCAR A. EN HOLM, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electrical Massage Apparatus, of which the following is a full, clear, and exact specification.

My invention relates to electrical massage apparatus; and its object is to provide apparatus of this character in such form that the electrodes and circuit-controller may be manipulated with one hand, the whole apparatus be portable, the battery readily removable without disarranging the rest of the apparatus or necessitating adjustment of circuit connections, and the electrode mounted in such manner as to permit a strong and compact arrangement of the various parts.

The invention will be described more in detail with reference to the form thereof shown in the accompanying drawings, in which—

Figure 1 is a sectional view of the electrodes and adjacent parts, the contacts of the interrupter being shown for clearness in line with each other. Fig. 2 is a sectional end view taken on the line *x x* in Fig. 1. Fig. 3 is an attachment for employing a medicament in connection with the electrodes. Fig. 4 is an attachment for employing a massage-roller. Fig. 5 is an attachment for employing a footplate. Fig. 6 is a side view, partly in section, of the battery and battery-holding case; and Fig. 7 is an end sectional view taken on the line *y y* of Fig. 6.

In the drawings, 1 and 2 represent the electrodes, these preferably being of spun or stamped metal and cylindrical in shape. They are fitted upon a support 3 and insulated from each other. The support 3 is preferably cylindrical in form, with an annular flange 4, upon which the electrodes are fitted, an annular shoulder 5 upon the support separating the electrodes. Upon the support 3 is mounted the coil 6 and core 7 of an electromagnet and the contact-posts 8 and 9. Upon contact-posts 8 and 9 are mounted, respectively, the vibrating tongue 10 and its armature 11 and the stationary contact 12, respectively, thus providing the circuit-interrupter. One end of the coil 6 is connected to the post 8 by wire 13 and the other end to a metallic spring 15 by wire 14. The spring 15 maintains contact with the inside of the metallic cylinder 16, which incloses coil 6 of the magnet and is arranged to slide longitudinally along the coil, an insulated button 17, attached to the cylinder and projecting through a slot 18 in the flange 4 and electrode 2, being provided for the purpose. A spring 19 is also attached to the support 3 and projects forward in such manner as to interpose a shoulder 20 in the path of the movement of the cylinder 16, but at such point that when the cylinder is against the support, as shown in Fig. 1, the cylinder and shoulder will not contact. The end 21 of spring 19 contacts with the electrode 2 and is of such shape that when the shoulder 20 is engaged by the cylinder 16 the end 21 will slide along the side of the electrode, and thus permit the shoulder 20 to be depressed by the cylinder, so that a contact is maintained between the cylinder and the shoulder as the cylinder is moved forward and backward. The spring 19, at least from shoulder 20 to the end 21, is of course a conductor. The circuit-conductors 22 and 23 from the battery are attached, respectively, to post 9 and the end 21 of spring 19.

The battery-case 24 is preferably cylindrical in form, and through the head 25 of the case the conductors 22 and 23 pass to the contacts 26 and 27. The battery is perfectly a dry cell in order that it may be portable, and adapted to slip into the case 24. The contact 26 is suitably inclined, so that the contact 28 of the carbon pole of the battery will engage and make contact with the spring when the battery is inserted in the case and is of sufficient elasticity to maintain the contact between the parts. The contact 27 is in the form of a metallic leaf-spring located longitudinally in the case and adapted to maintain contact against the side or zinc-pole 29 of the battery. A suitable plug 30 closes the end of the case and also serves to hold the battery in place against the spring-contact 26.

In the operation of the device thus far described the battery-cell is pushed into the case, the carbon contact 28 making contact with spring 26 and the zinc with spring 27. The user of the device grasps the electrode 2 in

one hand, the thumb or finger resting upon the button 17. The electrode 1 is applied to such part of the body as is to be treated, and with the thumb the button 17 is pushed back. This causes cylinder 16 to slide along the magnet and bring the cylinder into engagement with the shoulder 20. The circuit is then established from the battery by pole 28, spring 26 to conductor 22, thence to binding-post 9, contact 12 tongue 13, binding-post 8, electrode 1 and by wire 13, coil 6 and wire 14 to spring 15, thence by cylinder 16 to shoulder 20 and spring 21 to electrode 2 and by wire 23 to spring 27, zinc pole 29 of the battery. A short circuit also leads from the electrode 1 through the body of the user to the electrode 2, the circuit being established through the coil of the magnet. The same attracts armature 11, and thus breaks the circuit by separating the contacts 12 and 13, and immediately upon breaking this circuit the attraction of the armature 11 ceases and the circuit is again made. This continues in the usual manner and electrifies the body of the user. By sliding the brass cylinder 16 farther back, the same maintaining the contact with springs 15 and 19, the potential of the current is increased in accordance with well-known principles in proportion to the extent the cylinder is drawn back.

The device may also be used conveniently in the application of a medicament to the body. For such purpose it is not necessary to interrupt the current. The medicament may be applied externally to the body and the electrode connected with the carbon pole of the battery placed upon the medicament while contact is made with the other electrode, as by grasping it with the hand. The passage of the current between the electrodes then tends to transfer the medicament from the electrode connected to the carbon pole of the battery to that connected to the zinc-pole. This causes the medicament to enter the body, and thus reach such place beneath the skin as it is desired to apply it to. A suitable and convenient attachment for this purpose is shown in Fig. 3, wherein 30 is a clamp adapted to surround and make electrical contact with electrode 1, and 31 is a sponge or other suitable absorbent material attached to the clamp 30 and adapted to be saturated with medicament. It is only necessary with this to grasp the electrode 2 with one hand and apply the sponge over the place to which the medicament is to be applied. The button 17 is not manipulated for this purpose, as the circuit is from the battery by wire 22, post 9 contacts 12 13, post 8, electrode 1, the body of the user, electrode 2, and 23 to the battery.

In Fig. 4 I have illustrated a roller 32, of conducting material, mounted in a metallic bearing having clips 33 33, adapted to engage the electrode 1. With such attachment the device is manipulated as before described, rolling the roller over the body.

In Fig. 5 a foot-plate 34 is provided with a metallic clip 35, adapted to receive the electrode 1. With this attachment the electrode may be conveniently applied to the sole of the foot.

The batteries are made in standard sizes, and when one is exhausted it is only necessary to take out the plug 30 of the case and remove the battery. A new battery is then inserted in the case and of course makes contact at its respective poles with the spring 26 and 27.

Having thus described my invention, I declare that what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a support comprising a sleeve of insulating material having a closed end, of two electrodes rigidly mounted thereon, a circuit-interrupter mounted in said sleeve, and means also mounted in said sleeve for controlling the operation of the circuit-interrupter, said means projecting through one of the electrodes.

2. The combination with a support comprising a sleeve of insulating material having a closed end, of two electrodes rigidly mounted thereon, a circuit-interrupter comprising an electromagnet and interrupter-contacts mounted in said sleeve upon the end thereof, means also mounted in said sleeve for controlling the operation of said interrupter, and an electric circuit including said interrupter.

3. A support of insulating material, two electrodes mounted thereon and insulated from each other, an electromagnet and interrupter-contacts mounted on said support, a circuit including said magnet and interrupter-contacts and contacting with the respective electrodes on opposite sides of the magnet and a movable cylindrical conductor of non-magnetic material surrounding said magnet and included in said circuit.

4. The combination of two electrodes supported from a common support, an electric circuit including said electrodes, a metallic clip adapted to be attached to one of said electrodes, and a body of absorbent material carried by said metallic clip, substantially as described.

5. The combination of two electrodes supported from a common support, an electric circuit including said electrodes, a metallic clip adapted to be attached to one of said electrodes, and a conductor attached to said clip, substantially as described.

6. The combination of a case, a battery to be inserted in said case, spring-clips carried by said case and adapted to engage the respective poles of the battery, two electrodes, flexible conductors between said electrodes and the respective poles of the battery, and a circuit-interrupter in the circuit formed between the electrodes and the battery.

7. A support of insulating material in the form of a sleeve with a closed end, a faradic coil mounted in said sleeve, and electrodes

adapted to be fitted upon said sleeve and connected with said coil.

8. A support of insulating material in the form of a sleeve with a closed end and having an exterior annular shoulder, a faradic coil mounted in said sleeve, and two electrodes, also in the form of a cylinder with a closed end, each adapted to be fitted upon said support and against said shoulder, and each connected with said coil.

In testimony whereof I affix my signature in presence of two witnesses.

OSCAR A. EN HOLM.

Witnesses:
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HENRY BEST.