Aug. 1, 1961 A. LEMOS 2,994,324

ELECTROLYSIS EPILATOR

Filed March 4, 1959

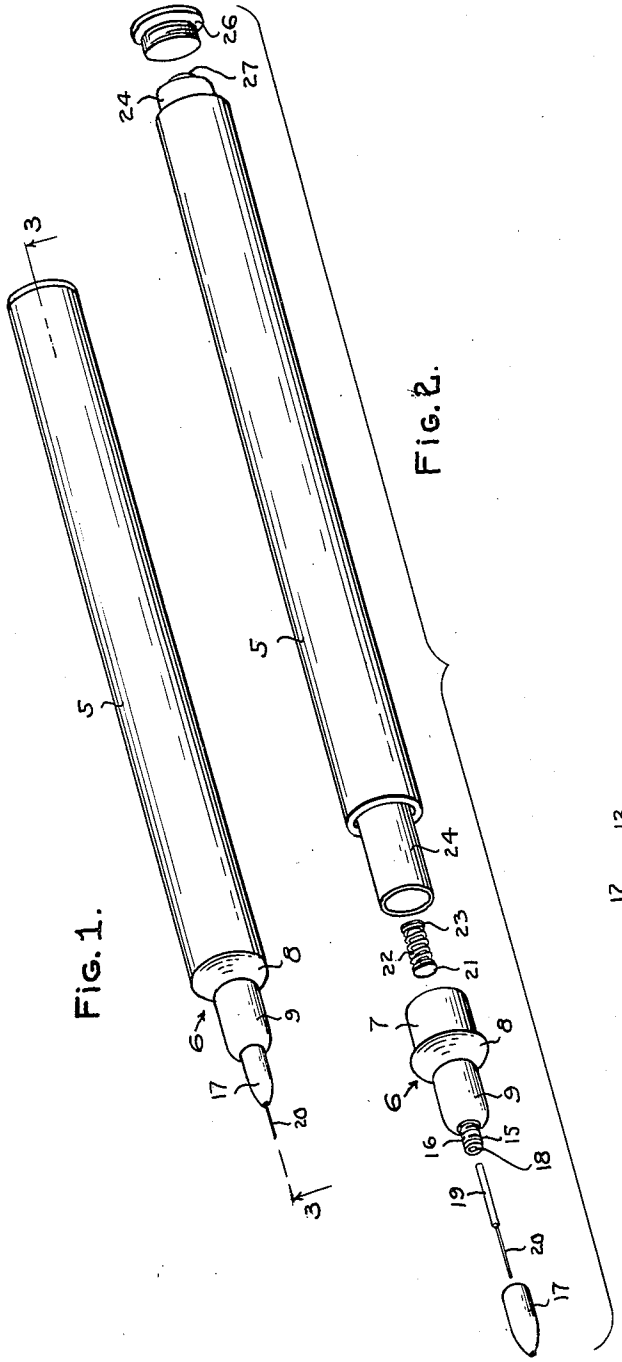


Fig. 1.

Fig. 2.

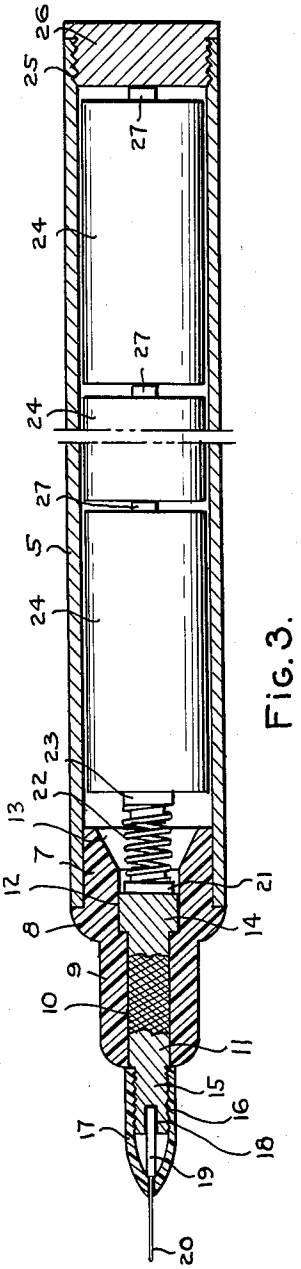


Fig. 3.

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ELECTROLYSIS EPILATOR

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This invention relates to a method and apparatus for the permanent removal of human hair.

The method comprises the use of an instrument having a self-contained source of electrical energy and with the instrument being provided with a needle at one end to be inserted through a pore in the skin along side the hair to be removed, to a depth that engages the papilla of the hair and with the needle constituting a negative source of current, while the instrument, held by the hand of the operator constitutes the positive source of current.

The apparatus comprises an elongated cylindrical barrel for the reception of a plurality of dry cell batteries arranged in such manner that the barrel constitutes a handle for the manipulation of the instrument while the needle, injected to the papilla constitutes the negative side of the source of current.

Novel features of construction and operation of the device will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings wherein has been illustrated a preferred form of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

FIGURE 1 is a perspective view of an assembled device constructed in accordance with the invention,

FIGURE 2 is an exploded perspective view illustrating the several elements embodied in the device and,

FIGURE 3 is an enlarged longitudinal sectional view taken substantially on line 3—3 of FIGURE 1.

Referring specifically to the drawing, the numeral 5 designates an elongated cylindrical barrel, forming a receptacle for the reception of a plurality of dry cell batteries in end to end relation. The barrel 5 is open at its opposite ends, as shown.

Fixedly engaged within one end of the barrel, as by a friction or press fit, is a coupling device, illustrated as a whole, by the numeral 6. The coupling device is preferably formed of plastic, hard rubber or other suitable material of a non-conducting material. The coupling device 6 embodies a hub portion 7, an enlarged collar 8 and a reduced sleeve portion 9. The collar 8 at assembly is flush with the outer diameter of the barrel 5, as clearly shown in FIGURE 3. The coupling device 6 is axially bored at 10 to receive a metallic shaft 11. The coupling device 6 is further provided with a relatively enlarged bore 12 and the bore 12 terminates inwardly in a conical concentric recess 13. The shaft 11 is preferably knurled upon its outer surface to be frictionally engaged within the bore 10 in a press fit that prevents axial displacement of the shaft. The shaft 11 at one end is provided with an enlarged head portion 14, that seats in the bottom of the bore 12. The shaft 11 at its opposite end is provided with a reduced extension 15, that is externally threaded at 16 to receive a chuck 17 for a needle device, to be described. The reduced portion 15 is axially recessed at 18, to receive a relatively slender needle holder 19, carrying a needle 20. The chuck 17 is also formed of a non-conducting matrial, such as plastic and the chuck 17 is forwardly tapering both internally and externally to form a guide means for its engagement over the needle, to securely hold the needle holder or supporting end portion 19 in the reduced extension 15. The needle holder 19 is formed of a metallic substance such as lead and whereby the needle may be molded therein.

Disposed in contacting relation with the head 14 of the

shaft 11, is a metallic button 21, connected with a compressible coil spring 22. The spring 22 at its opposite end is provided with a contact button 23. The button 21 is guided into contacting relation with the head 14 by the tapering wall of the recess 13. Disposed within the barrel 5, are a plurality of relatively slender type of dry cell batteries 24, arranged in end to end contacting relation and with the batteries being disposed in a manner to dispose their negative sides downwardly toward the spring 22. The spring 22 biases the batteries in electrical contact throughout the length of the barrel. The opposite end of the barrel is internally threaded at 25 to receive a closure cap 26. The cap 26 serves to force the several batteries 24 into contacting engagement by compressing the spring 22, when the cap 26 is screwed into closure position. The barrel 5 is preferably formed of a light weight metal having a high degree electrical transmission and with the barrel forming a handle portion whereby the user may manipulate the device with one hand. Aluminum has been found desirable as a metal for forming the barrel. The threaded reduced end 15 of the shaft 11 projects axially beyond the reduced portion 9 of the coupling device 6. In assembling the device, the shaft 11 is forcibly engaged within the bore 10 of the coupling device 6, being frictionally held against displacement by the knurling of the shaft to a point where the head 14 rests upon the bottom of the enlarged bore 12. In such position, the reduced portion 15 will project outwardly beyond the reduced portion 9 of the coupling. The spring and its buttons 21 and 23 is then dropped into the barrel, to be self-centered by the walls of the tapering recess 13. The batteries are then inserted within the barrel in a reverse manner or, with the negative side of the first battery engaging the button 23. The other batteries are progressively inserted in a similar manner where their positive contacts 27 engage the negative end of the next successive battery. With the batteries installed, they are forced downwardly by the closure cap 26, to compress the spring 22 so that the cap 26 may be screwed into position. The needle holder 19 is then inserted within the recess 18 of the extension 15 after which the chuck 17 is engaged over the needle 20, to firmly seat the needle holder 19 is electrical contact with the bottom of the recess 18. The coupling 6 is preferably press fitted into the end of the barrel to be held against accidental displacement.

In the use of the device, the user grasps the barrel 5 in one hand and then inserts the needle downwardly into a pore of the skin along side of the hair to be removed. The needle is inserted to a depth corresponding to the depth of the papilla of the hair. In such position, current flows from the positive pole of the battery means, through the cap 26, barrel 5, and through the ground including the hand of the user, his arm and his body and to the needle 20 and then through element 11 to the negative pole of the battery means, FIGURE 3, and then back to the cap 26. A negative charge of electricity is thereby applied at the point of the needle 20 to destroy the papilla. The term "battery means" is employed to include one or more batteries. The needle is maintained in the contacting engagement with the papilla for a predetermined number of seconds, after which the needle is withdrawn and permitting the hair to be manually pulled outwardly. The destroying of the papilla permanently destroys any tendency for a future growth of the hair. The operation is continued over the area of the skin. When the needle is withdrawn, the flow of current is interrupted, hence there is no constant drain upon the batteries 24. The needle 20 and the needle holder 19 may be replaced by merely unscrewing the chuck 17, to receive a replacement needle assembly.

The device embodies the following novel features:

(1) A self-contained source of electrical energy.

(2) No water pad or other moisture is necessary for a positive connection for the electrical energy.

(3) The device is light in weight.

(4) The handle forming barrel constitutes a positive electrode.

(5) The needle constitutes a negative electrode.

(6) No drain on the batteries when the device is not in use.

Electrolysis epilators heretofore employed have required a remote source of electrical energy and it has been necessary in such devices heretofore to provide a moisture pad upon which the operator either places his hand or his foot in order to establish a flow of electrical energy and the devices presently employed are both bulky and expensive to manufacture. The device eliminates all of the foregoing objections to prior devices of this nature and provides for a very compact instrument that is highly effective for its purpose. The device is extremely cheap to manufacture. Only by killing the hair root or papilla by a negative charge, can the user be sure that the unwanted hair has been permanently destroyed. A fine needle is the only means by which the hair root can be reached. The device is strong, durable and the batteries are relatively long lasting in view of the fact that there is no drain on the batteries when the device is not in use. It has been that the only successful way of permanently destroying the papilla is through the medium of a slight negative current. The needle should not pierce the skin, but follow the hair into the pore to the root. Epilators have been used for many years, but in no instance has there been provided an instrument that is self-contained as to its source of electrical energy and whereby the handle forming barrel constitutes the positive connection through the body to the negative electrode, which is the needle. The device of this invention constitutes not only a novel type of instrument for destroying unwanted hair, but establishes an entirely new method with the elimination of the well known moisture pads and the remote source of electrical energy.

It is to be understod that the invention is not limited to the precise construction shown, but that changes are contemplated as readily fall within the spirit of the invention as shall be determined by the scope of the subjoined claim.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

A user-manipulated, unitary epilator apparatus for inducting a negative electrical charge at a hair papilla for destroying the same, said apparatus comprising an elongated, current conducting handle forming barrel, a current conducting cap removably received in one end of said barrel, a tubular sleeve of non-conducting material projecting axially from the other end of said barrel, said sleeve having an axial bore extending therethrough and including an intermediate shoulder and an inwardly diverging terminal end communicating with the interior of said barrel, a current conducting shaft disposed axially within said sleeve bore and having an inner headed end seated on said shoulder and an outer terminal end projecting beyond said sleeve, said shaft including an axial recess opening into the terminal end thereof and having external threads on said terminal end, a current conducting needle assembly comprising a supporting end portion having a thin needle element projecting therefrom, said supporting end portion forming a shoulder with said needle element and being removably received in said shaft recess, said needle element being insertable into a skin pore adjacent a hair to terminally contact a hair papilla, a tubular chuck-sleeve circumposed about said needle assembly rearwardly of said needle portion and threadedly engaged on said threaded shaft portion, said chuck-sleeve including an inner abutment portion engaging said needle assembly shoulder and axially retaining said needle supporting end portion in current-conducting relation within said shaft recess, a source of potential comprising battery means disposed axially within said barrel and having a positive pole in engagement with said barrel cap and a negative pole spaced axially from said shaft head, and a current conducting compression spring disposed axially within said barrel with one end received in said diverging sleeve bore portion to engage said shaft head, the other end of said spring engaging the negative pole of the battery means.

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