

May 10, 1932.

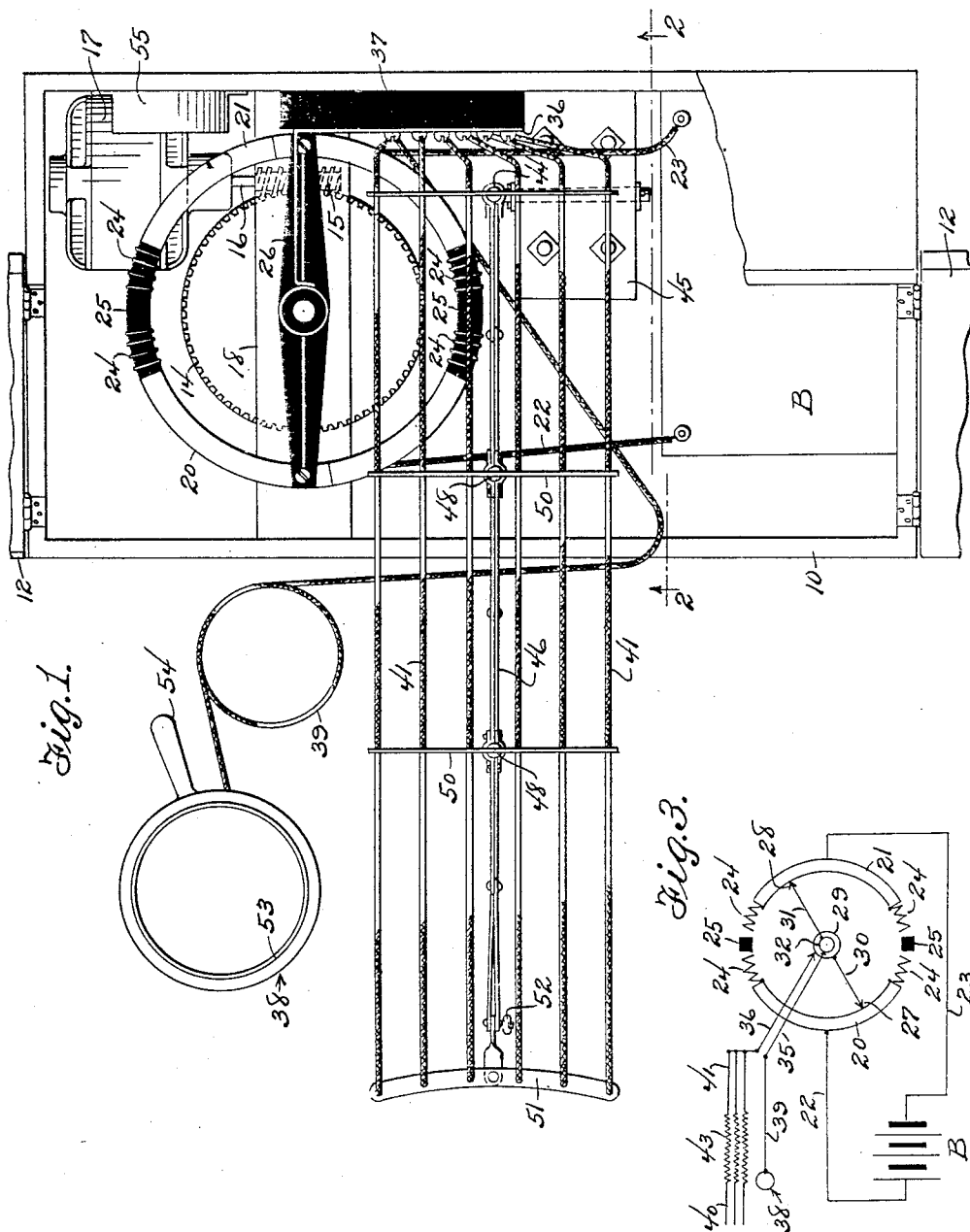
J. B. MILES

1,858,104

DEPILATORY

Filed Nov. 19, 1930

2 Sheets-Sheet 1



Jennings B. Miles

INVENTOR

Victor J. Evans
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Cross Reference

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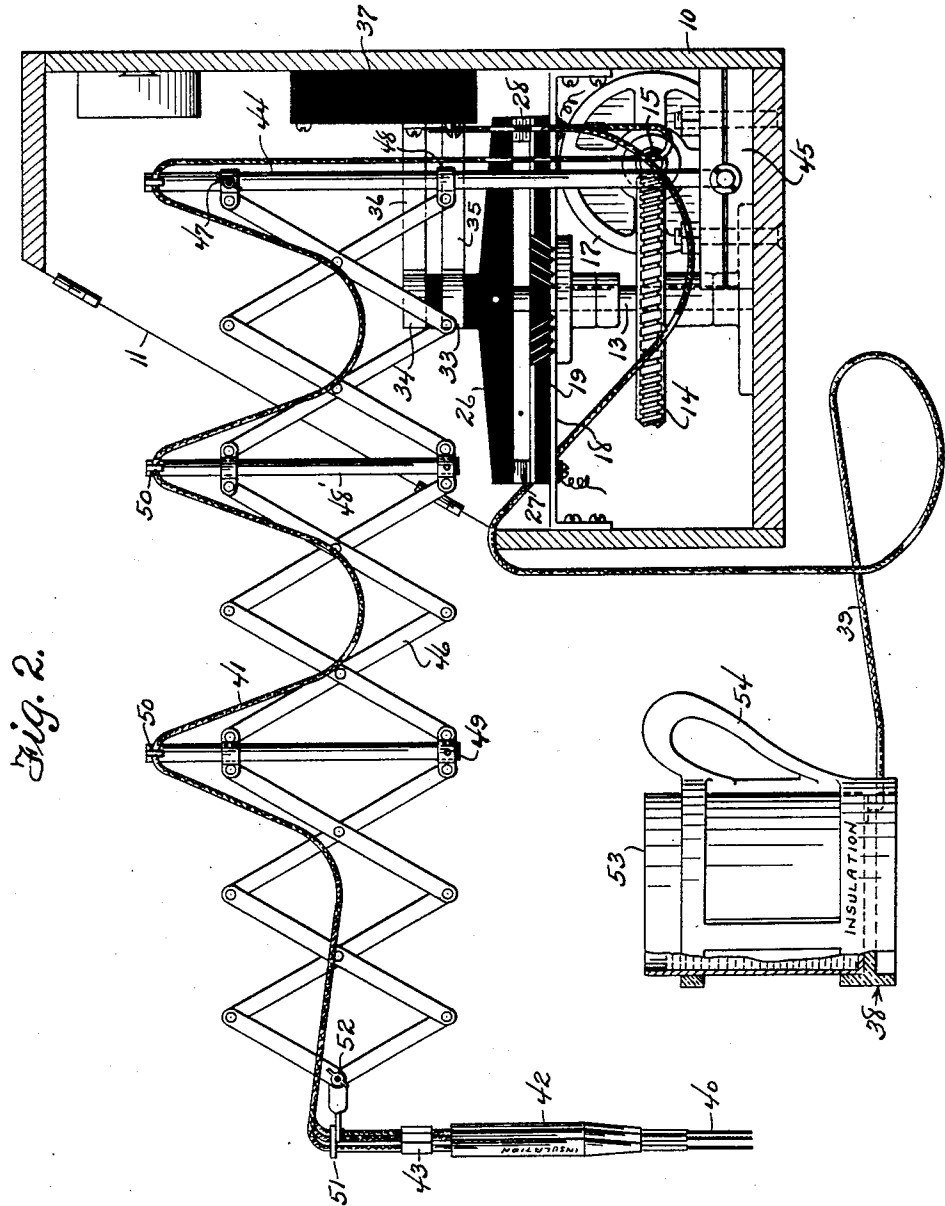


Fig. 2.

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UNITED STATES PATENT OFFICE

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DEPILATORY

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This invention relates to a method of and an apparatus for the removal of superfluous hair and has for an object the provision of an apparatus by means of which hair may be effectually removed without pain and swelling or disfigurement usually occurring where hair is removed through the use of an electric needle.

In the use of an electric needle for the removal of hair, use is made either of a continuous positive or a continuous negative current. The patient experiences considerable pain and discomfort from the action of either of these currents. Negative current, if applied for an appreciable time to the tissues, causes an alkaline reaction. This dilates the tissues and causes a painful swelling. It also has the effect of stimulating the sensitive nerves and produces an alkaline caustic which is destructive to the tissues or hair roots. Positive current causes an acid reaction. It contracts the tissues, reduces swelling and has a quieting effect upon the nerves if applied at short intervals. However if continuously applied for any appreciable period the contraction of the tissues produces pain. The caustic acid produced by the positive current however also destroys tissues or hair roots.

In order to overcome the above and other disadvantageous features, the present invention utilizes both negative and positive currents alternately, which are applied at short intervals only, so that while the negative current dilates the tissues and causes swelling, it is not applied for a sufficient period to cause pain or discomfort, while the application of the positive current will counteract the swelling, and as these currents are alternately applied for short periods only, no discomfort will result as the tissues will be maintained practically in their normal condition, although a destructive action is occurring at the hair roots practically all the time.

An object of the present invention is to provide an apparatus for the above purpose, by means of which positive and negative current may be alternately applied for relatively short predetermined periods, so as to avoid pain and swelling incident to the application

of current in one direction for an appreciable period.

Another object of the invention is the provision of means for gradually reducing the strength of the current, interrupting the flow, and gradually increasing the current strength between each change in direction of flow, to avoid shock which accompanies the interruption and direction of change where said gradual reduction and increase is not present.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is a plan view of the invention with the top of the cabinet open and partly broken away.

Figure 2 is a vertical section on the line 2—2 of Figure 1 with a portion of one of the electrodes broken away and shown in section.

Figure 3 is a diagram of the wiring.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the reference character 10 indicates a cabinet which may be of suitable size and shape, and which is provided with an opening 11, normally closed by hinged closures 12.

Mounted in suitable bearings provided in the cabinet is a vertically disposed rotatable shaft 13, and fast upon this shaft is a worm gear 14 which is driven by a worm 15, mounted upon the shaft 16 of an electric motor 17. Mounted upon a support 18 within the cabinet is an insulated block 19, the support 18 also serving as a mounting for one of the bearings of the shaft 13. Mounted upon the insulated block 19 is a pair of opposed arcuate contact plates 20 and 21, the former being connected to the positive pole of a battery or other source of current B by means of a conductor 22, while the plate 21 is connected to the negative pole of the battery by means of a conductor 23. Carried by the block 19 and connected with the opposite ends of the plates 20 and 21 are variable resist-

ances 24, and these resistances are separated by an insulating member 25 which may form a part of the block 19.

Disposed above the contact plates 20 and 21 and fast upon the shaft 13 is an insulating arm 26 which carries at opposite ends brushes 27 and 28. These brushes are arranged for wiping engagement with the contact plates 20 and 21 and the resistance 24. The brush 27 is connected with a contact member 29 fast upon the shaft 13 by means of a conductor 30, while the brush 28 is connected by means of a conductor 31 with a contact member 32, also fast upon the shaft 13. Brushes 33 and 34 respectively engage the contact members 29 and 32 and these brushes are carried at the outer ends of arms or conductors 35 and 36 respectively which are mounted upon an insulating block 37 arranged within the housing.

The conductor 35 is connected to an electrode 38 by means of a conductor 39, while the conductor 36 supplies current to a plurality of electric needles 40 through conductors 41 arranged in parallel. The needles 40 are carried by holders 42 and the conductors 41 have each connected therein a fixed resistance 43, so that current supplied to each of the needles 40 will be of a uniform strength.

In order to support the needles 40, the cabinet 10 has mounted therein a substantially L-shaped arm 44 whose lower end is pivotally mounted between bearing blocks 45 which may be adjusted to hold the arm 44 in any desired position. Mounted upon the arm 44 is a toggle arm 46 which is adjustably secured to the arm 44 as shown at 47 and slidably attached thereto as shown at 48. The arm 46 may thus be adjusted horizontally and pivotally upon the arm 44. The toggle arm 46 carries at intervals vertically disposed rods 48 whose lower ends are fixed to the toggle arm 46 as shown at 49 and whose upper ends are slidable upon the arm. Horizontally disposed arms 50 are carried at the upper ends of the rods 48, and these arms 50 are provided with openings for the passage of the conductors 41. A similar arm 51 is adjustably secured to the outer end of the toggle arm 46 as shown at 52.

The electrode 38 may be of any desired type, the one shown consisting of a cup or container 53 which is carried by a holder 54 and which is adapted to contain water.

In the use of the invention, the patient's hand or arm is placed in contact with the electrode 38 and one or more of the needles 40 is inserted. Operation of the motor will then rotate the insulated arm 26 in a clockwise direction and when positioned as shown in Figure 3 of the drawings, current will flow from the negative contact plate through the brush 28, the conductor 31, the contact 32, the conductor 35, the conductor 39, the

electrode 38 and through the patient back through the electrodes or needles 40 to the battery. The electrode 38 will then be the negative electrode in that it is connected with the negative side of the battery B. Continued rotation of the arm 26 in a clockwise direction will cause the brush 28 to leave the plate 21 and engage the plate 20, so that the polarity of the electrodes will be reversed and the electrode 38 will become the positive electrode, while the electrodes or needles 40 will become the negative electrodes. As the brushes leave one electrode the strength of the current is gradually reduced due to the contact of the brushes with the variable resistance 24, current being entirely interrupted when the brushes engage the insulating members 25. As the brushes leave these insulating members and engage the variable resistance 24, the strength of the current will be gradually increased until maximum strength is reached by engagement with the contact plates 20 and 21. It will thus be seen that the full strength of the battery is supplied to the electrodes for a relatively short period or during the engagement of the brushes with the plates 20 and 21, and that between each change of polarity of the brushes the strength of current is gradually reduced, the flow interrupted and the strength gradually increased. This overcomes shock incident to the sudden interruption and resumption of current flow, while the alternate reversal of polarity of the electrodes prevents undue swelling and consequent pain which accompanied the application of a positive current for a period of any length, as well as the undue contraction and consequent pain which accompanies the application of negative current for a period of an appreciable length.

An ammeter 55 may be arranged within the housing and suitably connected in the electric circuit.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having described the invention what is claimed is:—

1. In an electric hair removing device, a cabinet, a pair of arcuate-shaped positive and negative contact plates therein and connected with a source of current, a rotatable member movable above said plates, brushes carried by said member for contact with the plates, an electrode electrically connected with one of the brushes, a pivotally adjustable extensible arm mounted within the cabinet and an electrode carried by said arm and electrically connected with the other brush, whereby operation of the rotatable member will reverse the polarity of the electrodes.

2. In an electric hair removing device, a

cabinet, a pair of arcuate-shaped positive and negative contact plates therein and connected with a source of current, a rotatable member movable above said plates, brushes carried by said member for contact with the plates, an electrode electrically connected with one of the brushes, a pivotally adjustable extensible arm mounted within the cabinet, a plurality of conductor wires carried by the arm and electrically connected with the other brush, a fixed resistance for each wire, and an electrode connected with each wire.

3. In an electric hair removing device, a cabinet, a pair of arcuate-shaped positive and negative contact plates therein and connected with a source of current, a rotatable member movable above said plates, brushes carried by said member for contact with the plates, an electrode electrically connected with one of the brushes, a pivotally adjustable extensible arm mounted within the cabinet and an electrode carried by said arm and electrically connected with the other brush, whereby operation of the rotatable member will reverse the polarity of the electrodes, and means located between the plates in the path of the brushes to gradually decrease and increase the strength of the current between each change of poles.

In testimony whereof I affix my signature.
JENNINGS B. MILES.

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