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ELECTRIC MOTOR FOR SHAVING DEVICES

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Fig. 1.

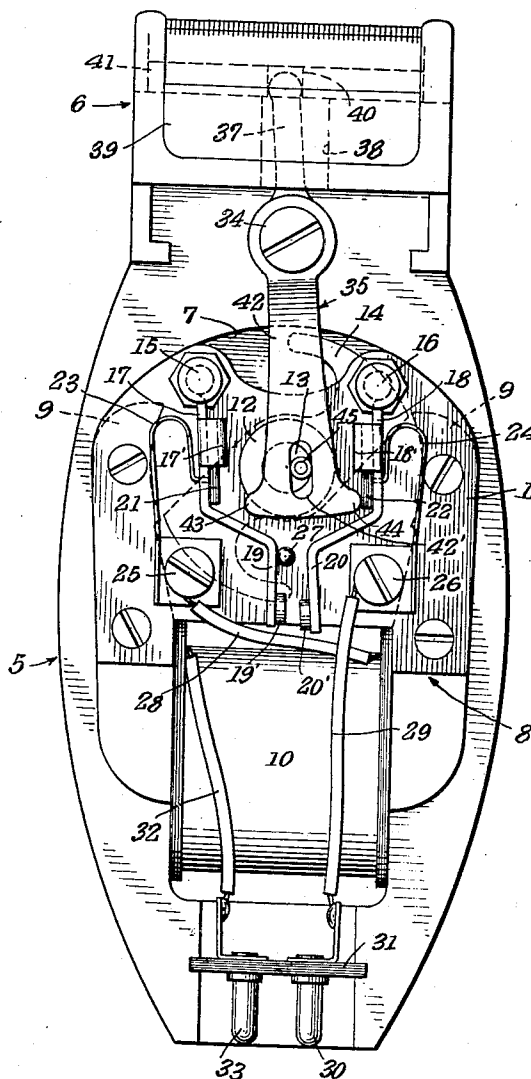
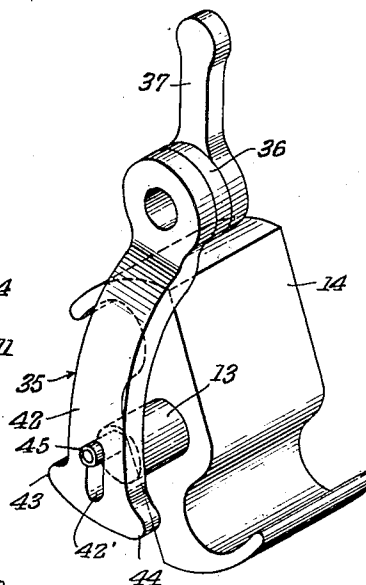


Fig. 2.



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ELECTRIC MOTOR FOR SHAVING DEVICES

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Application August 26, 1937, Serial No. 161,009

7 Claims. (Cl. 172-36)

My present invention relates to electric motors and more particularly to devices of the general character indicated which are especially adapted for use in connection with electric shaving devices, and aims to devise a motor which is simple in construction, easy and economical to fabricate and assemble, and consisting of the fewest possible number of moving parts so as to minimize wear and tear and resulting repairs.

In the accompanying specification, I shall describe and in the annexed drawing show an illustrative embodiment of the devices of the present invention. It is, however, to be clearly understood that I do not wish to be limited to the exact details herein shown and described for the purposes of illustration only, inasmuch as changes may be made therein without the exercise of the inventive faculties and within the scope of the claims hereto appended.

In the accompanying drawing,

Fig. 1 is a side elevational view of the aforesaid illustrative embodiment of the present invention, the cover of the casing adapted to house the same having been removed for the purposes of clarity.

Fig. 2 is a perspective view of the drive constituting part of the aforesaid illustrative embodiment of the present invention.

Referring now more in detail to the aforesaid illustrative embodiment of the present invention and with particular reference to the drawing illustrating the same, numeral 5 generally designates a casing shaped to conveniently fit the user's hand, there being illustrated in the drawing merely one-half of said casing for purposes of clarity, the two halves being identical. Removably affixed to the casing by any preferred means is a shaving head 6, the latter being no part of the present invention, and therefore, not being described in detail. While I prefer to utilize the head shown, described and claimed in my co-pending application, entitled "Electric shaver head," Serial Number 142,591 and filed May 14, 1937, I do not wish to be limited to the use thereof inasmuch as any type of head which is adapted to be operated by reciprocation may be used.

The casing 5 is provided with a cavity 7 which is adapted to house the motor 8.

The motor 8 comprises the laminated pole pieces 9, the lower ends of which are connected by the conventional yoke about which is wound a coil 10. Riveted or otherwise affixed to the outer faces of the pole pieces 9 are Bakelite or other similar insulating sheets 11, there being shown in the drawing only the front sheet, but it being understood that the rear surfaces of the pole

pieces 9 are provided with a similar sheet. Fixed in the sheets 11, at about the centers thereof, are registering bushings 12 having journalled therein a rotor shaft 13 on which there is fixed, intermediate the pole pieces 9, a rotor 14 adapted as is well known to be rotated when energized by the magnetic flux flowing between the pole pieces 9.

The front sheet 11 is provided with posts 15 and 16 to which are respectively secured arms 17 and 18 provided with offset portions 19 and 20. The arms 17 and 18 are provided on the inner surfaces thereof with insulating strips 21 and 22 held in place by inwardly bent lugs 17' and 18', formed integrally with the arms 17 and 18.

The free ends of the offset portions 19 and 20 of the arms 17 and 18 are provided with facing contact points 19' and 20' which are normally maintained in contact with each other by means of leaf springs 23 and 24, the inner ends of which are secured to the arms 17 and 18, and the outer ends of which are secured to posts 25 and 26. In order to limit the movement of the arms 17 and 18, toward each other when the contacts 19' and 20' are held apart as will hereinafter more fully be explained, I provide the sheet 11 with a pin 27.

The post 25 is connected by a wire 28 to one end of the coil 10, and the post 26 is connected by a wire 29 to an outlet prong 30 connected by an insulating support 31 fixed in the lower end of the casing 5. The other end of the coil 10 is connected by a wire 32 with another outlet prong 33 likewise fixed upon the support 31.

Mounted in the casing 5 near the upper end thereof is a stud 34 on which there is pivotally mounted a rocker 35. The rocker 35 consists of a hub 36 which is mounted on the stud 34 from one end of which extends a straight arm 37 extending through a slot 38 in the outer cutter 39 of the head 6 into a slot 40 formed in the inner cutter 41 of the head 6, the arrangement being such that reciprocation of the arm 37 results in reciprocation of the inner cutter 41 to carry out the cutting operation well known to those skilled in the art.

Also extending from the hub 36 of the rocker 35 in the direction opposite to that in which the arm 37 extends, is an arcuate arm 42, the outer end of which is provided with contact-breaking wings 43 and 44, and the arm 42 is provided intermediate the wings 43 and 44 with a slot 42' adapted to receive a roller 45 eccentrically mounted upon the end of the rotor shaft 13. If desired, instead of using a roller, there may be substituted an ordinary pin.

This completes the description of the aforesaid illustrative embodiment of the present invention, and the operation thereof may be briefly summarized as follows:

5 The prongs 30 and 33 are adapted to engage a source of current either alternating or direct. Current entering the prong 33 enters the coil 10 through the wire 32. This current energizes the pole pieces 9 so as to rotate the rotor 14. From
10 the coil 10 the current passes by way of the wire 28 to the post 25 and from this point it travels through the spring 23 to the arm 17. From the arm 17 the current passes by way of the offset portion 19 through the touching contact points
15 19' and 20' to the offset portion 20 of the arm 18. From the arm 18 the current passes by way of the spring 24 to the post 26 and then through the wire 29 to the prong 30, completing the circuit.

20 Of course, the motor is started by initially spinning the rotor 13 by means of a conventional starting wheel, not shown herein.

As the rotor 14 rotates, the eccentrically mounted pin 45 engaged in the slot 42' of the
25 rocker 35 causes the latter to be reciprocated on the stud 34, and this movement is imparted to the inner cutter 41 of the head 6 through the arm 37.

30 As the rocker 35 is reciprocated, the wings 43 and 44 alternately engage the insulating strips 21 and 22 carried by the arms 17 and 18 so as to rapidly make and break the circuit through the contact points 19' and 20', the arrangement
35 being such that the circuit is made and broken twice during the course of each revolution of the rotor 14 and the moments of the breaking occurring when the rotor is bridging the pole pieces 9.

This completes the description of the operation of the aforesaid illustrative embodiment of the
40 present invention. It will be noted from all of the foregoing that the devices of the present invention are simple in construction, easy and economical to fabricate and assemble, and in view of the use of very few moving parts, presents a
45 motor in which there is minimum of wear and tear, thus reducing the probability of the device getting out of order and consequent repairing.

Other objects and advantages of the devices of the present invention will readily occur to those
50 skilled in the art to which the present invention relates.

What I claim this invention is:

1. In a motor having a pair of circuit-making-and-breaking contact points, a pivotally mounted

unitary rocker arm having an extension to translate rotary to reciprocatory motion and another extension to complete and interrupt the circuit through said contact points.

2. In a motor having a pair of circuit-making-and-breaking contact points, a pin eccentrically associated with the rotor of said motor, and a pivotally mounted unitary rocker arm having an extension to translate the rotary to reciprocatory motion and another extension provided with a
10 slot receptive of said pin, and operated by the rotation thereof to complete and interrupt the circuit through said contact points.

3. In a motor having a pair of circuit-making-and-breaking contact points, a pivotally mounted
15 unitary rocker arm having an extension to translate rotary to reciprocatory motion, and another extension having a winged portion engageable with said contacts to make and break the circuit therethrough.

4. In a motor having a pair of circuit-making-and-breaking contact points, a pivotally mounted unitary rocker arm having an extension to translate rotary to reciprocatory motion, and another
25 T-shaped extension having winged portions alternately engageable with said contacts to make and break the circuit therethrough.

5. In a motor having a pair of circuit-making-and-breaking contact points, a pin eccentrically associated with the rotor of said motor, and a
30 pivotally mounted unitary rocker arm having an extension to translate the rotary to reciprocatory motion, and another extension provided with a slot receptive of said pin, said second extension having a winged portion engageable with said
35 contacts to make and break the circuit therethrough.

6. In a motor having a pair of circuit-making-and-breaking contact points, a pin eccentrically associated with the rotor of said motor, and a
40 pivotally mounted unitary rocker arm having an extension to translate the rotary to reciprocatory motion, and another T-shaped extension provided with a slot receptive of said pin, said second extension having winged portions alternately
45 engageable with said contacts to make and break the circuit therethrough.

7. In a motor operated tool operated by a rotary electric motor of the magnetic type, a make and break device for said motor, an oscillating
50 lever for transmitting motion from said motor to said tool, and means on said lever for operating said make and break.

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