May 6, 1952 C. K. NORWOOD 2,595,693

ROTARY SHAVING DEVICE

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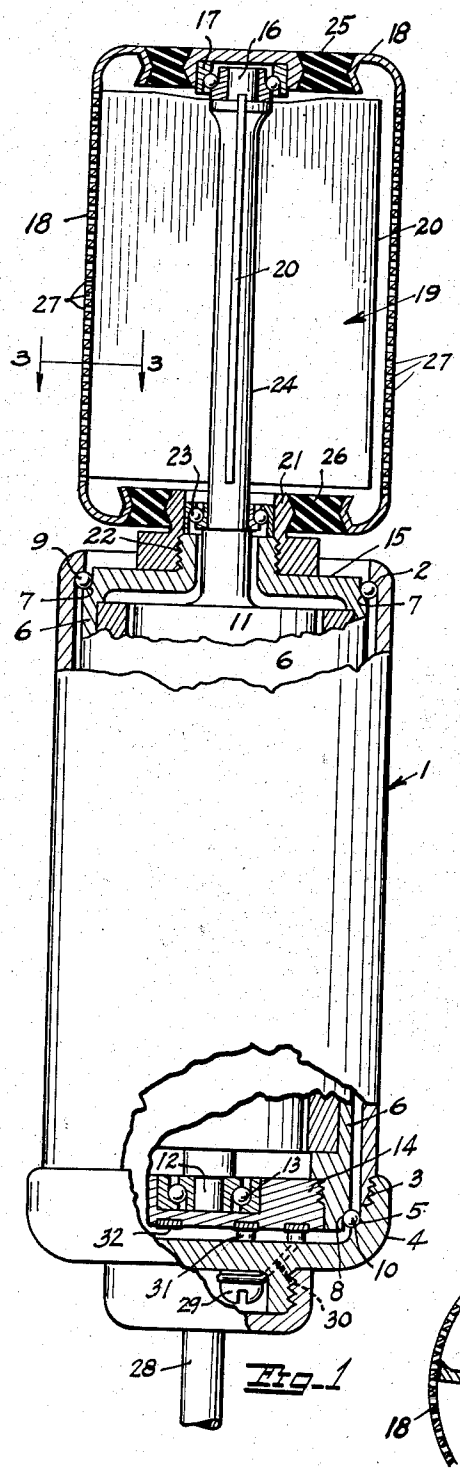


Fig. 1

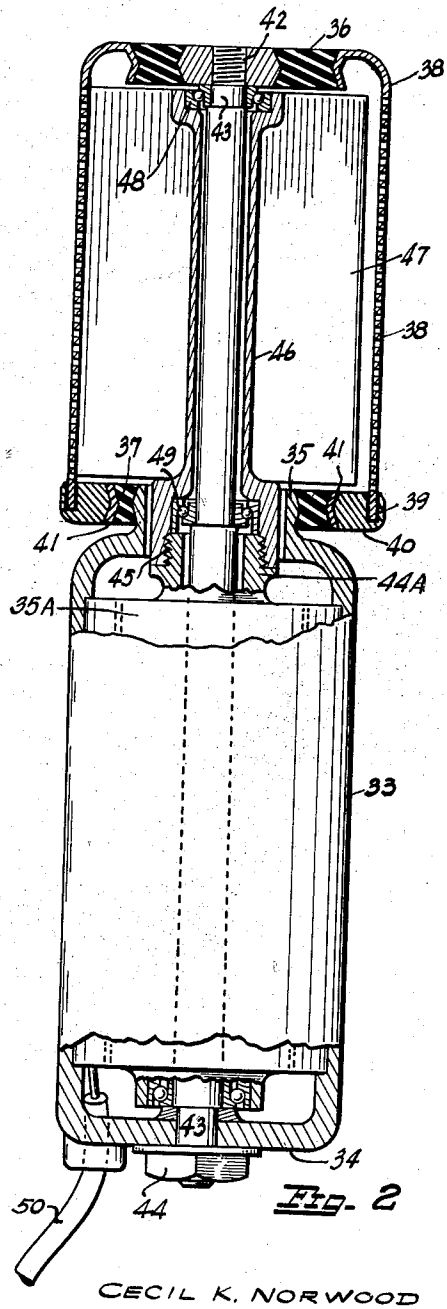


Fig. 2

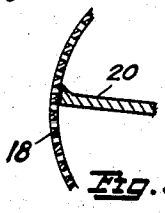


Fig. 3

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ROTARY SHAVING DEVICE

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1 Claim. (Cl. 30—43)

1

This invention relates to improvements in electric shaving devices.

It is one of the principal objects of the invention to provide a device of this character wherein rotary motion is applied to the cutter-head instead of reciprocal or vibratory motion as heretofore.

A further object is the provision of a guard surrounding the cutter-head and yieldingly mounted with respect thereto so that the cutter may be selectively free to rotate out of contact with the guard.

A still further object is the provision of an electric shaver which is of simple, efficient, durable and inexpensive construction and of smooth operation.

These and other objects will appear as my invention is more fully hereinafter described in the following specification, illustrated in the accompanying drawing and finally pointed out in the appended claim.

In the drawing:

Figure 1 is an elevation of an electric shaving device made in accordance with my invention and with fragments broken away and parts in section for convenience of illustration.

Figure 2 is a view similar to Figure 1 illustrating a modified form of the invention.

Figure 3 is a sectional detail view taken approximately along the line 3—3 of Figure 1.

Referring now more particularly to the drawing:

In Figure 1, reference numeral 1, indicates generally a handle of cylindrical formation and formed with a ball race 2 near its open end and externally threaded as at 3 at its opposite end for engagement with an internally threaded closure cap 4. The inner wall of the cap is formed with a ball race 5. Rotatably mounted within the handle is a housing 6 formed with ball races 7 and 8 at both of its ends. The ball races 2, 5, 7 and 8 accommodate ball bearings 9 and 10 by means of which the housing 6 is rotatable with respect to the handle 1. Within the housing 6 is securely mounted a motor housing 11 from whose one end extends a motor shaft 12 journaled in a bearing 13 mounted in a removably secured end wall 14 of the housing 6. The opposite end of the motor shaft extends through the permanently closed end 15 of the housing 6 and terminates at its outermost end 16 in a bearing 17 mounted in an end wall of a cylindrical guard 18 having apertures 27 formed therein. Secured to the motor shaft for rotation therewith within the guard 18 is a rotary cutter

2

head 19 comprising a plurality of radially disposed cutting blades 20 which may be of either straight or longitudinally curved or twisted formation. The cutting edge of each cutting blade is shaped as shown in Figure 3 with its leading edge in advance of the blade.

The guard 18 is secured to the housing 6 and made rotatable therewith by means of a coupling 21 secured as at 22 to the end wall 15 of the housing. The coupling is provided with a bearing 23 for one end of the hub 24 of the cutter head. Each end wall is provided with rubber insert rings 25 and 26 so that the guard 18 is yieldable toward and away from the cutting edges of the cutting blades 20 thus in the absence of pressure against the side of the guard the cutting blades will rotate out of contact with the guard. Pressure against the side of the guard when applied to the face of a user will, of course, move the guard into co-operative shearing contact with the cutting blades for cutting hair extending through the apertures in the guard. By the arrangement just described the guard and housing 6 are free to roll or rotate in either direction with respect to the handle 1 while the cutter head 19 rotates at a relatively high speed within and independent of the guard. Electrical energy is supplied to the motor 11 by means of wires 28 extending into the closure cap 4 and connecting with binding posts 29. The binding posts are connected by wires 30 and spring contacts 31 with collector rings 32 carried by the end wall 14 of the housing 6 and with which housing the motor is rotatable. The motor is, of course, electrically connected in the conventional manner with the collector rings.

In the modified form of the invention illustrated in Figure 2, the handle 33 is closed as at 34 at one of its ends and formed with a tubular extension 35 at its opposite end. A motor 35A is secured to the interior of the handle. To the tubular extension 35 is yieldingly and rotatably mounted, by means of rubber ring inserts 36 and 37, an apertured guard 38. The inner end of the guard is open as shown and is seated within an annular groove 39 formed in a collar 40 between which and the tubular extension 35 is interposed the rubber ring 37. Interposed between the ring 37 and the inner periphery of the collar 40 is another ring 41 moulded to the ring 37 to form a bearing between the guard mounting and the ring. Extending entirely through the handle 33 and terminating in threaded engagement, as at 42, with the outer end wall of the guard is a stationary shaft 43 threaded at its outermost end to

receive a nut 44 for maintaining the guard and handle in co-operative engagement with each other. The shaft 44A of the motor 35A is of hollow formation as shown and is externally threaded at one of its ends as at 45 for attachment to a hub 46 in the form of a sleeve to which radially disposed cutter blades 47 are attached for rotation within the guard. Bearings 48 and 49 are provided at both ends of the sleeve for its rotation about the shaft 43. Thus it will be seen that rotary motion is imparted to the cuter blades by the motor shaft within the guard which is freely rotatable in either direction with respect to the stationary handle.

Eelectrical energy is supplied to the motor by means of wires 50 from any convenient source of supply and extending through the end wall 34 of the handle and into the motor.

While I have shown a particular form of embodiment of my invention, I am aware that many minor changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention. Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

An electric shaving device comprising in combination a hollow cylindrical handle, bearings

disposed in the interior of the handle at each of its ends, a housing mounted within said bearings whereby the handle is rotatable with respect to the housing, a motor secured within the housing and having a shaft extending outwardly from one end of the housing and handle, a rotary cutter head secured to the motor shaft, an apertured cylindrical guard surrounding said cutter head, resilient insert rings secured to both ends of the guard, a bearing disposed in one of said rings for the outer end of said motor shaft, the other of said rings being attached to one end of said housing whereby in the absence of pressure against the side of the guard said cutter head will rotate concentrically with and out of contact with the sides of said guard.

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