Nov. 13, 1951 J. A. C. GALVAO 2,574,472

MOTOR OPERATED SHAVING DEVICE

Filed June 8, 1949

Fig. 1.

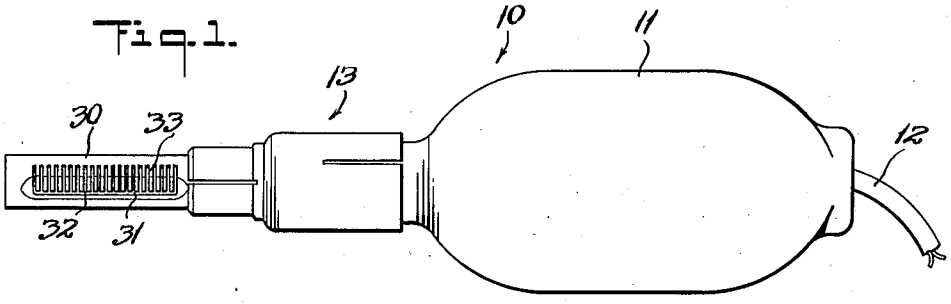
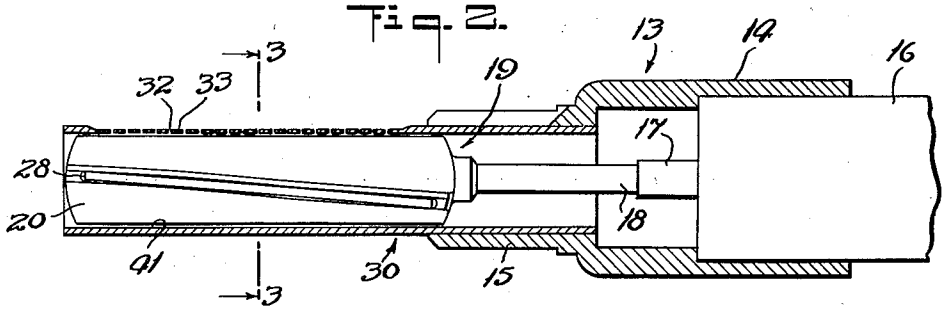


Fig. 2.



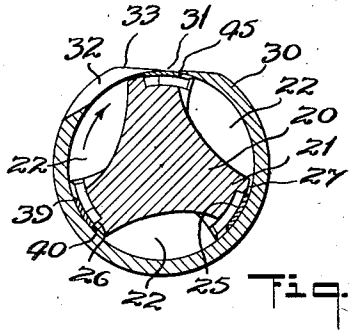


Fig. 3.

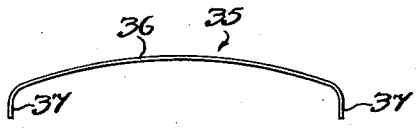


Fig. 4.

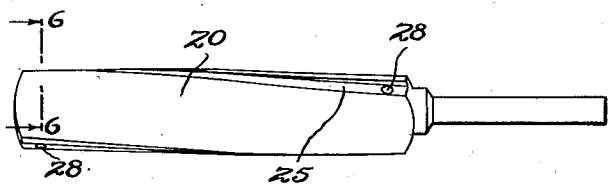


Fig. 5.

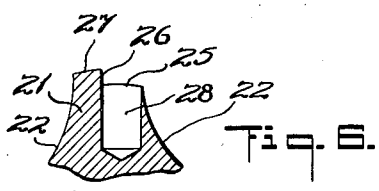


Fig. 6.

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Patented Nov. 13, 1951

2,574,472

UNITED STATES PATENT OFFICE

2,574,472

MOTOR OPERATED SHAVING DEVICE

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Application June 8, 1949, Serial No. 97,791

1 Claim. (Cl. 30—43)

1

This invention relates to a motor operated shaving device. It is particularly directed to a rotary shaving device and constitutes an improvement over the device described in my Patent No. 2,271,858, issued February 3, 1942, for "Shaving Device."

An object of this present invention is to provide a shaving device comprising an outer cylindrical tube or casing and a rotor therein and coextensive therewith, the casing being formed with a longitudinal slot and the rotor being provided with a plurality of helical shearing devices, including removable blades for the shaving operation.

Another object of this invention is to provide a device of the character described, which includes a plurality of blades on the rotor and in which each blade is curved longitudinally so as to press against the inner side of the casing or tube and also so that it does not catch within the slot in the tube.

Still another object of this invention is to provide a device of the character described, in which the rotor is provided with a plurality of blades and with helical ridges formed with shoulders for pushing the blades and to keep them in position.

Still another object of this invention is to provide a shaver of the character described in which the clearance between the rotor and the tube is less than the thickness of the blades in order to keep the blades from jumping over the shoulders of the helical ridges.

Still another object of this invention is to provide a shaver of the character described in which each helical ridge has a ledge for a blade provided with holes at the ends thereof, and each blade has bent ends or fingers which fit into the holes, so as to make it easy to put the blades in place or to remove them for replacement.

Yet another object of this invention is to provide a strong, rugged, and durable shaver of the character described, which will be relatively inexpensive to manufacture, easy to clean, and which shall yet be practical and efficient to a high degree.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists of the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter described, and of which the scope of invention will be indicated in the following claim.

In the accompanying drawings in which is

2

shown various illustrative embodiments of this invention:

Fig. 1 is a top plan view of the shaver embodying the invention;

Fig. 2 is a partial view of the shaver with portions in cross-section;

Fig. 3 is a cross-sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a side elevational view of one of the blades;

Fig. 5 is a side elevational view of the rotor; and

Fig. 6 is an enlarged partial cross-section taken along line 6—6 of Fig. 5.

Referring now in detail to the drawing, 10 designates the shaver embodying the invention. The same comprises a motor casing 11 of usual construction, serving as a handle. Insulated wire 12 is connected to the rear of the handle for carrying the electric current to the motor. On the front end of the handle 11 is an adapter 13, comprising a tubular portion 14. It is formed at its forward end with a tubular portion 15 of reduced diameter.

The motor 16, within the handle or casing 11, is provided with an armature shaft 17, adapted for connection with the stem 18 of rotor 19 in any usual well known manner.

The rotor 19 comprises a blade holder 20 formed with a plurality of helical ridges 21 and with helical troughs or depressions 22 between the ridges. The angular extent of each ridge 21 is less than 360 degrees divided by the number of ridges. There is shown herein, for purpose of illustration, a rotor with three ridges and the angular extent of each ridge is about 60 degrees, although any suitable number of ridges may be employed and the angular extent of each ridge from end to end may be varied. Each ridge 21 is formed with depressed ledge 25, likewise helical in shape and following the curvature of the ridge. Extending from each ledge 25 is a helical radial shoulder 26 extending to an outer part-cylindrical surface 27. Each ledge 25 is formed at the ends thereof with a pair of radial holes 28 for the purpose hereinafter appearing. It will now be understood that the rotor 19 will be rotated by the electric motor 16.

Fitted within the tubular portion 15 of the adapter 13 and fixed thereto, is one end of a tube or casing 30. Said tube 30 is formed with a longitudinal slot 31, terminating short of the ends of the tube. A portion of the tube adjacent one side of slot 31 is formed with a plurality of parallel circular slots 32 forming comb teeth 33. Look-

ing at Fig. 3 of the drawing, the blade holder 20 rotates in a clockwise direction, thus the ledges 25 are at the leading sides of the ridges 21. The comb teeth 33 are at one side of the slot 31 and as the rotor rotates the ridges 21 will pass beneath the comb teeth before reaching slot 31. The outer ends of combs 33 and a portion of the tube 30 adjacent to slot 31, may be reduced in thickness or beveled down as shown at 34 in Fig. 3 of the drawing to form a flat surface.

Mounted on each shoulder 25 is a shaving or shearing blade 35. The blade 35 may be made of spring steel and has a central longitudinally curved portion 36 and a pair of fingers 37 at the ends thereof offset to the same side, that is, away from the curvature of portion 36. The fingers 37 of each blade 35 are inserted in the pair of the openings 28 formed in the ridge 21 at ends of the ledge 25. The underside of the blade is ground to form a cutting edge 39 as shown in Fig. 3 of the drawing. The opposite edge 40 of the blade adjacent to the cutting edge contacts the shoulder surface 26. The clearance between the outer surface 27 of the rotor and the inner surface 41 of the tube 30 is preferably less than the thickness of the blade. Therefore pressure will be exerted upon the blade to hold its fingers 37 in the openings or sockets 28.

In shaving, when the motor is operating, the rotor turns and the device is moved against the face so that the hairs will project through the slot 31. As the rotor turns the cutting edge 39 of the blade will shear the hairs against the outer edge 45 of the tube along the slot 31. It will be noted that the blades are removable very easily without any detachment of screws or any other fastening device, since the fingers 37 merely fit into the holes 28. The shape of the blade is such that the longitudinally curved portion 36 presses against the inner surface 41 of the tube 30 to insure a good shearing action as well as causing application of pressure to hold the fingers 37 in the holes or sockets 28.

Since a plurality of blades are used the shaving operation is efficient. The shoulders 36 serve to push the blades around as the rotor turns, to hold them in cutting position. The clearance of the rotor is less than the thickness of the blades in order to keep the blades from jumping over the shoulders.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings, is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States:

A shaver comprising a tubular casing formed with a longitudinally extenidng slot and with comb teeth extending transversely of the slot, a rotor extending longitudinally in said casing and rotatable therein, said rotor being formed with radial ridges extending longitudinally of the rotor helically thereof and having edge faces confronting the annular wall of the casing, each ridge having its said forward edge face formed with a longitudinally extending recess forming a depressed ledge and a shoulder along the rear edge of the ledge, the ridges being also formed with radially extending sockets adjacent ends of their ledges, and blades extending along the ledges of said ridges and having opposite ends formed with fingers removably fitted into said sockets, the blades being bowed outwardly longitudinally between their fingers and sharpened along their front edges and having their rear edges bearing against the shoulders, said blades having their outer surfaces contacting the inner surface of the annular wall of the casing and thereby pressed inwardly to flatten the blade and maintain the fingers in the sockets.

JOSEPH A. C. GALVAO.

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