April 8, 1947. H. E. PAGE 2,418,722

DRY SHAVER

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Fig. 1

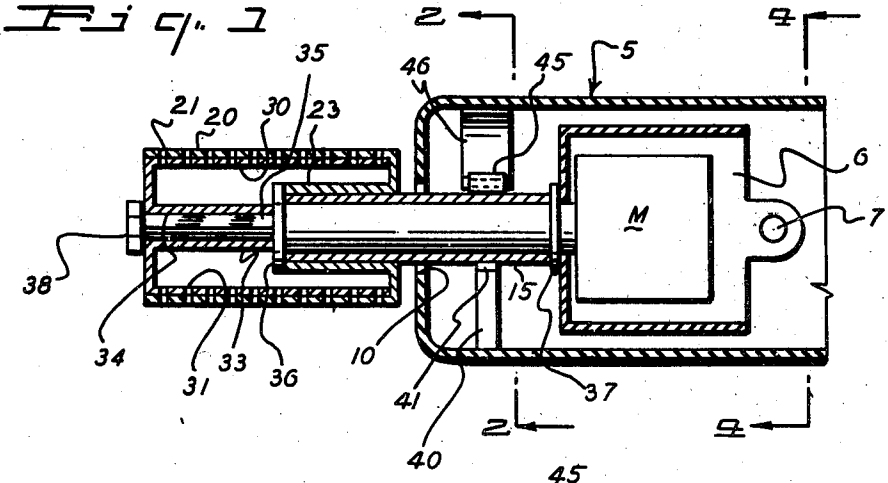


Fig. 3

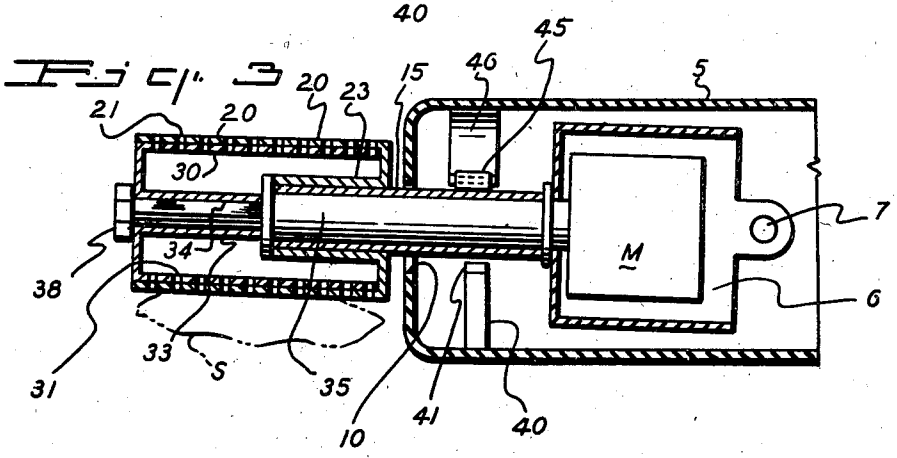
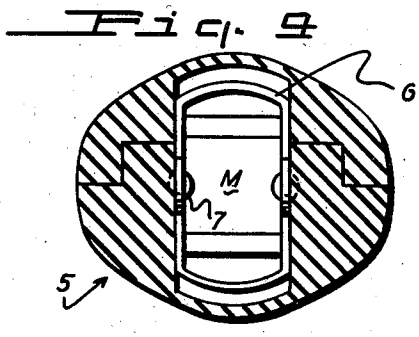


Fig. 4



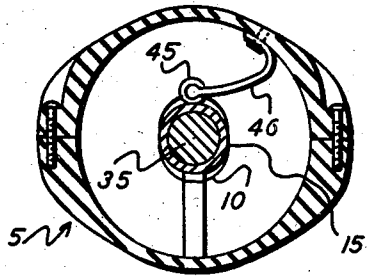


Fig. 2

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Application May 14, 1945, Serial No. 593,677

7 Claims. (Cl. 30—43)

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This invention has to do with power driven dry shavers, having more particularly to do with improvements in that type of electric dry shaver in which the cutting action is obtained by driving, in a rotary manner, an inner cutter head having radial cutting surfaces, within a cylindrical outer cutter head mounted for free rotational movement over the skin and relative to the inner cutter head.

In such shavers, the inner and outer cutter heads must necessarily frictionally engage each other throughout the cutting area in order to insure a sufficiently close shave, and consequently when the outer head is not in contact with the skin of the user, the inner cutter has sufficient drag on the outer cutter to cause the latter to rotate with it. The inner cutter is usually driven at a relatively high speed, of the order of 3,600 R. P. M. or more, so that if the outer cutter head is also rotating at such speed, by virtue of the drag, the instant the outer cutter head is placed in contact with the skin a skin burn is apt to result.

In my copending application Serial No. 590,997, filed April 30, 1946, I have described brake means for restraining rotary movement of the outer head in response to the driven rotary movement of the inner head, and while my present invention also has to do broadly with the utilization of means for braking the movement of the outer head when the latter is not in contact with the skin, it is a more specific object of the present invention to provide in such device, means for automatically releasing the brake pressure when the outer cutter head is pressed against the skin surface, in such manner that there is no resistance to freely rotating the outer head in either direction by contact with the skin.

Additional, subordinate objects and advantages are present in my invention but those will become apparent from the following detailed explanation of a presently preferred embodiment which is illustrative rather than being intended to be restrictive of the various specific constructions by which it is possible to carry out the invention within its broader scope as defined by the accompanying claims.

For purposes of the following description, I shall refer to the accompanying drawings, in which:

Fig. 1 is a medial longitudinal section;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 1 but showing the brake pressure relieved; and

Fig. 4 is a section on line 4—4 of Fig. 1.

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The numeral 5 denotes a hollow body providing a housing for a conventional electric rotary motor M secured in a mounting bracket 6 pivotally secured to the body by pivot pins 7.

The body has an elongated axial opening 10. A sleeve 15 rotatably and rockably extends through said opening.

An outer cylindrical cutter head 20, having perforations 21, has its hub portion 23 fixed on the outer end of the sleeve so that the outer head and sleeve rotate together.

An inner cylindrical cutter head 30, having perforations 31 registerable with perforations 21, has a hub 33 presenting a bore 34 of squared cross-section fitting on the squared outer end portion of the shaft 35 driven by motor M. Shaft 35 has spaced annuar flanges 36, 37 acting as stops to prevent axial movement of sleeve 15. So that the inner head may be readily removed for cleaning purposes, it is held on the shaft 35 by a threaded nut 38.

A stationary post 40 is formed integral with the body and carries a brake shoe 41 for engagement with the perphery of the sleeve 15, the latter being normally yieldably urged against the shoe by means of a roller 45 rotatably carried by one end of a leaf spring 46, the spring being secured at its other end to the body.

The function and cooperation of the parts will be apparent from the following description of operation.

With the motor energized, the inner cutter head is driven in a rotary manner by the shaft 35 and inasmuch as the peripheral surface of the inner head frictionally engages the inner surface of the outer head there is a tendency for the latter to be dragged along in a rotary movement. However, since the outer head is secured to the sleeve 15 and since the sleeve is normally braked by means of the spring loaded roller 45 urging the sleeve against the shoe 41, the outer head is prevented from rotating with the inner head.

However, during the shaving operation—that is, after the outer head is placed against the skin surface S—it is desirable that the user be able to freely roll the outer head back and forth over the skin relative to the inner head, to enter the whiskers through the registering perforations. Thus the braking pressure is automatically relieved when the outer head is pressed against the skin, as shown in Fig. 3, since such pressure will pivot the bracket 6 in the body and with it the motor, shaft 35 sleeve 15 and the heads and cause the spring 46 to yield and permit the inner end portion of the sleeve to move out of contact

with the shoe 41 (see Fig. 3), thus freeing the outer head to rotate freely over the skin. This rocking movement is permitted since the sleeve 15 may rock in the elongated opening 16.

I claim:

1. In a dry shaver having a body, a perforated, cylindrical outer cutter head rotatably carried by the body, a rotatably driven inner cutter head mounted in and concentric with the outer head, the inner cutter head having frictional contact with the outer head, brake means normally opposing rotation of the outer head and brake release means operable in response to pressure of the peripheral surface of the outer head against the skin of the user to free the outer head for rotation in either direction relative to the inner head.

2. In a dry shaver having a body, a sleeve rotatably carried by the body and projecting axially therefrom, said sleeve being externally displaceable, a rotatably driven shaft journalled in the sleeve, a perforated cylindrical outer cutter head fixed to the sleeve, an inner cutter head coaxial with and nested in the outer head, the inner cutter head having light frictional engagement with the outer head whereby to tend to cause the latter to rotate therewith, and a brake shoe carried by the body for normal braking engagement with the periphery of the sleeve and being disengageable therefrom in response to lateral displacement of the sleeve.

3. In a dry shaver having a body, a sleeve rotatably carried by the body and projecting axially therefrom, said sleeve being externally displaceable, a rotatably driven shaft journalled in the sleeve, a perforated cylindrical outer cutter head fixed to the sleeve, an inner cutter head coaxial with and nested in the outer head, the inner cutter head having light frictional engagement with the outer head whereby to tend to cause the latter to rotate therewith, a brake shoe carried by the body for normal braking engagement with the periphery of the sleeve and being disengageable therefrom in response to lateral displacement of the sleeve, and resilient means yieldably opposing said lateral displacement.

4. In a dry shaver having a body, a sleeve rotatably carried by the body and projecting axially therefrom, said sleeve being externally displaceable, a rotatably driven shaft journalled in the sleeve, a perforated cylindrical outer cutter head fixed to the sleeve, an inner cutter head coaxial with and nested in the outer head, the inner cutter head having light frictional engagement with the outer head whereby to tend to cause the latter to rotate therewith, a brake shoe carried by the body for normal braking engagement with the periphery of the sleeve and being disengageable therefrom in response to lateral displacement of the sleeve, and resilient means yieldably opposing said lateral displacement, said resilient means comprising a spring loaded roller carried by the body and having rolling engagement with the sleeve.

5. In a power driven dry shaver having a body, a sleeve rotatably and rockably mounted in the body to project therefrom at its outer end, an outer cylindrical cutter head fixed on and coaxial with the outer end of the sleeve, a brake shoe stationarily carried by the body, resilient means rotatably engaging the sleeve periphery to normally urge the sleeve into engagement with the shoe, a driven shaft journalled in the sleeve and an inner cutter head fixed on the shaft and having radial cutting surfaces disposed to cut hairs entered through the perforations in the outer cutter head, said sleeve being rockable in response to pressure of the outer cutter head against the skin of the user to move the sleeve out of engagement with the shoe.

6. In a dry shaver having a body, a motor pivotally mounted in the body and having a driven shaft projecting therefrom, a sleeve rotatably mounted on the shaft, said motor, shaft and sleeve being laterally swingable on said pivot, an inner and an outer cutter head fixed respectively on the shaft and sleeve, and means on the body responsive to swinging movement of the sleeve to control rotary movement thereof.

7. In a dry shaver having a body, a rotatably driven shaft carried by and projecting from the body, a sleeve rotatably mounted on the shaft, said shaft and sleeve being laterally displaceable with respect to the body, an inner and an outer cutter head fixed respectively on the shaft and sleeve, and means on the body responsive to lateral displacement of the sleeve to control rotary movement of the outer cutter head.

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