June 4, 1946. H. AARON 2,401,292

DRY SHAVER

Original Filed March 21, 1938

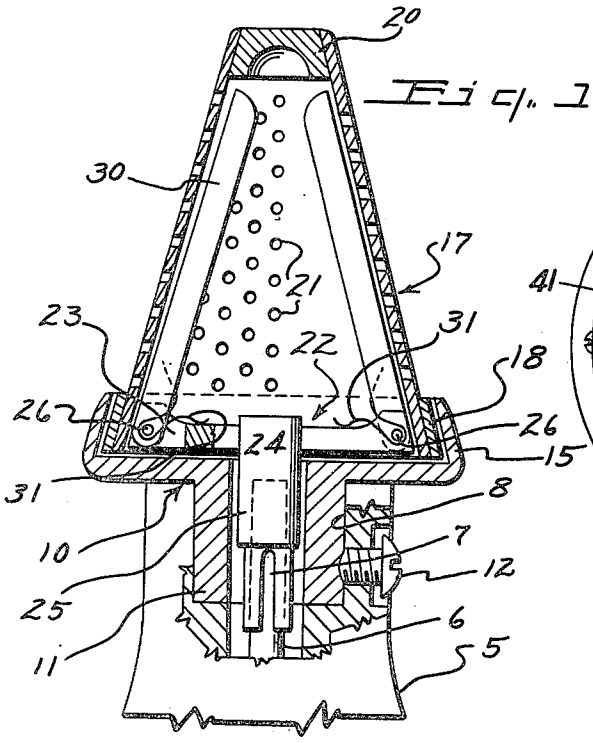


Fig. 1

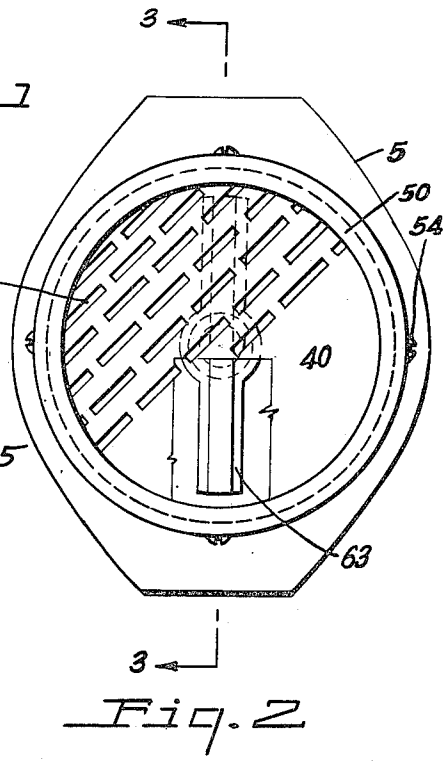


Fig. 2

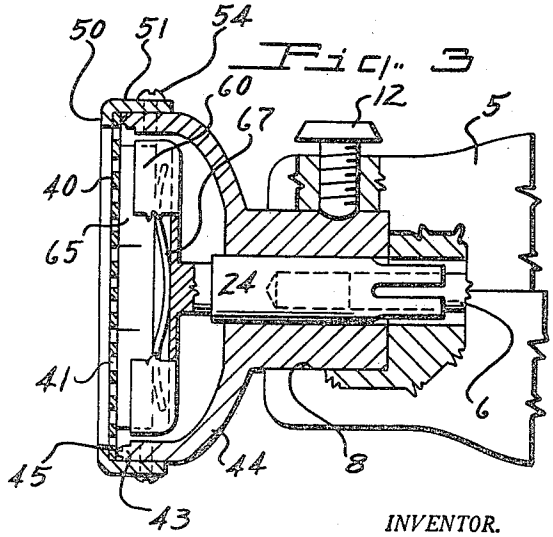


Fig. 3

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5 Claims. (Cl. 30—43)

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My invention has to do with dry shavers and is a division of my copending application Serial No. 197,094, filed March 21, 1938, Patent No. 2,381,867, issued August 7, 1945.

In my said copending application I show a dry shaver having a base which carries a drive shaft. On the base is mounted a shaving head comprising a cylindrical skin-contacting guard or outer shell having hair-admitting perforations and being so mounted on the base as to be freely rotatable relative thereto and relative to the drive shaft when the guard is held against the skin while the base is manually moved laterally. A movable cutter element is disposed within the guard as for oscillatory movement relative to the base and guard and independently of the guard. Thus the cylindrical guard may be freely rolled over the surface of the skin independently of the other elements.

My present invention relates to improvements upon and modifications of the invention shown and claimed in my said copending application.

In my present invention I utilize, in combination with a freely rotatable outer guard member, a cutter element which has a cutting blade or blades mounted on a blade carrier to move relative thereto towards the inner surface of the guard in response to centrifugal or spring action whereby to insure a clean severing of hairs admitted through perforations in the guard and eliminating any necessity of flexing the outer guard member for such purpose.

My present invention has other subordinate objects and advantages which will become obvious from the following detailed explanation of presently preferred embodiments thereof, which are intended as illustrative rather than limitative upon the invention.

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

Fig. 1 is a medial vertical section partly in side elevation, of one form of the invention;

Fig. 2 is a top plan view of a further embodiment of the invention; and

Fig. 3 is a section taken on line 3—3 of Fig. 2.

Referring first to the embodiment of Fig. 1, I show a handle 5 within which is housed a conventional drive motor, not shown, whose drive shaft 6 has a flattened upper end 7 extending vertically into an end recess 8 in the handle.

A base 10 has a depending neck 11 which fits and is held in the recess 8 as by a set screw 12. The base has a tapered annular flange 15.

A frusto conical guard 17 has its base portion

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reinforced by an annular ring 18 and said base portion rotatably fits within the flange 15 and against the top surface of the base 10 so that the guard is held against the skin of the user while the handle is moved laterally, the frusto conical guard will freely rotate relative to the base. For purposes of assembly the base may be made in two sections or segments.

The guard is made of thin shell-like stock formed into the frusto conical shape and is interiorly reinforced at its top as by a cone 20. The guard is provided with a plurality of small perforations 21 each of a size to pass a hair to be severed.

The cutter element 22 comprises a horizontal cross bar 23 having a depending central shaft 24 formed with a split, resilient bearing 25 at its lower end, which latter fits over and resiliently grips the flattened top end 7 of the motor shaft.

On each of the outer ends of the bar 23 I pivotally mount, by a pin 26, a cutter blade 30. Thus the two opposite cutter blades 30 are free to swing outwardly about their pivotal mountings in response to centrifugal action as the carrier is rotated, which centrifugal action may be augmented, if desired, by a pair of leaf springs 31. The springs 31 also serve to maintain the blades in the relatively upright position shown in Fig. 1 when the device is not in use.

From the foregoing it will be observed that the guard 17 is free to roll over the skin of the user independently of the rotation of the cutter element, and as hairs pass inwardly through the perforations 21, they are severed by the blades 30, which by virtue of centrifugal action rotate against the inner surface of the guard.

In the embodiment of Figs. 2 and 3, in lieu of the frusto conical guard member before described, I substitute a flat, circular plate 40 provided with hair-admitting perforations or slots 41, the guard plate being adapted to be held against the surface of the skin as before described.

The guard plate is loosely supported on the edge of a cylindrical wall 43 upstanding from the base 44, so that the guard plate may freely rotate. To reduce the friction between the guard plate and the supporting edge of the wall 43, the wall edge may be formed with a relatively narrow, rounded bead 45 upon which the guard plate rests, although other types of bearings may be used, such for instance as ball bearings. To retain the guard plate in place, a detachable bezel may be provided with one flange 50 overhanging the edge of the guard plate and the other flange

51 fitting over the cylindrical wall 43 and being retained thereon by screws 54.

The cutter element comprises a horizontally disposed carrier 60 from which the shaft 24 depends. The outer face of the carrier is provided with a longitudinal channel 63 within which a cutting blade 65 loosely rests, being resiliently urged outwardly of the channel and towards the inner surface of the guard by means of an underlying leaf spring 67.

Thus it will be observed that in the embodiment of Figs. 2 and 3 the guard plate is also freely rotatable independently of the movement of the cutter element and hairs passing through the perforations will be severed by the blade 65.

While I have shown and described only two of the physical forms which my invention may take, I do not intend thereby to limit the invention to such specific adaptations since, in its broader aspects, the invention contemplates other modifications which the foregoing description will suggest to those working in the art.

I claim:

1. In a dry shaver having a base carrying a driven shaft, a shaving head comprising, in combination, a skin-contacting guard provided with hair-admitting perforations, said guard being mounted for free rotary movement relative to and independently of the base and shaft in response to movement of the base when the guard is in contact with the skin of the user, a blade carrier secured to the shaft and a blade loosely carried by the carrier adjacent the inner surface of the guard, whereby in cooperation with the guard to sever hairs admitted through said perforations.

2. In a dry shaver having a base carrying a driven shaft, a shaving head comprising, in combination, a frusto-conical skin-contacting guard disposed axially of the shaft and provided with hair-admitting perforations, and a blade carried by the shaft for relative radial movement towards the inner surface of the guard whereby in cooperation with the guard to sever hairs admitted through said perforations, said guard being mounted for free rotary movement relative to and independently of the base, blade and shaft in response to movement of the base when the guard is in contact with the skin of the user.

3. A dry shaver comprising a base presenting an upwardly and inwardly disposed annular flange, a driven shaft in the base, a frusto conical skin-contacting guard rotatably secured to the base by said flange for free rotary movement relative to the base and shaft in response to lateral movement of the base when the guard is in contact with the skin of the user, a blade carrier disposed transversely of the base and secured on the shaft, and a blade pivotally mounted at its lower end on an end of the carrier for movement towards and away from the guard.

4. In a dry shaver having a cylindrical base whose outer end edge provides a bearing surface, a driven shaft mounted for rotation axially of the base, a disc-like guard plate having hair-passing perforations, said plate being supported by said bearing surface for free rotation relative to and independently of the base and shaft, a bezel carried by the base and having a portion overhanging the peripheral portion of the plate, and a cutter blade carried by the shaft for rotation against the undersurface of the plate.

5. In a dry shaver having a cylindrical base whose outer end edge provides a bearing surface, a driven shaft mounted for rotation axially of the base, a disc-like guard plate having hair-passing perforations, said plate being supported by said bearing surface for free rotation relative to and independently of the base and shaft, a bezel carried by the base and having a portion overhanging the peripheral portion of the plate, a cutter carrier disposed diametrically of the base and operatively connected to the shaft, an outwardly opening longitudinal trough in the carrier, and a cutter blade loosely mounted in the trough for movement towards and away from the undersurface of the plate.

HARRY AARON.