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MOTORIZED SHAVER

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Fig1.

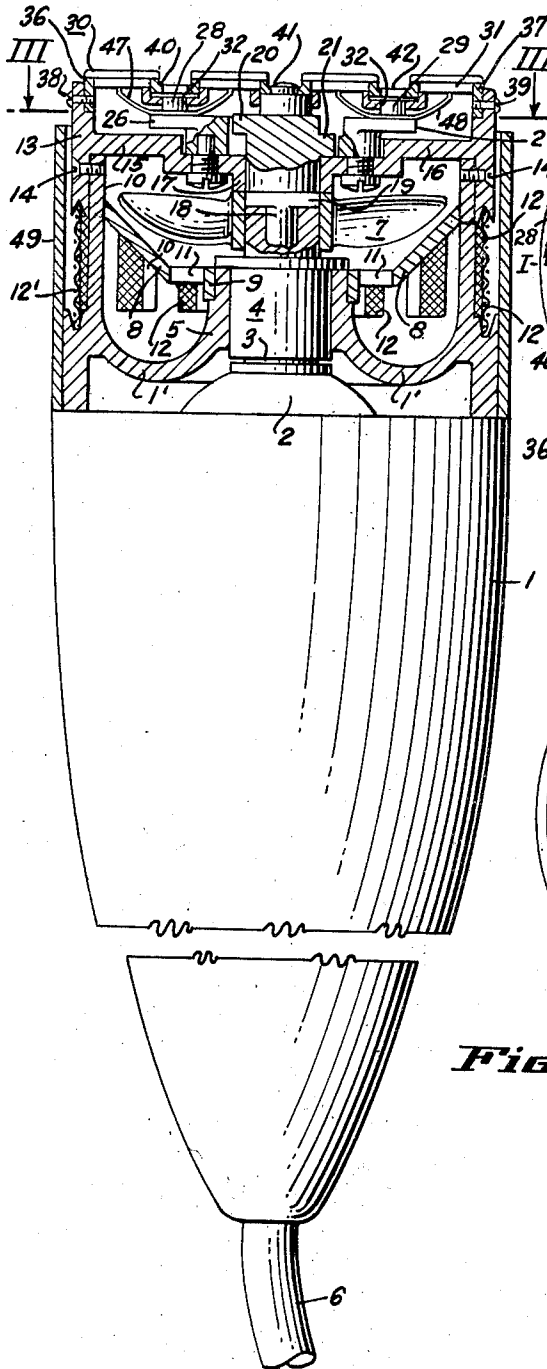


Fig2.

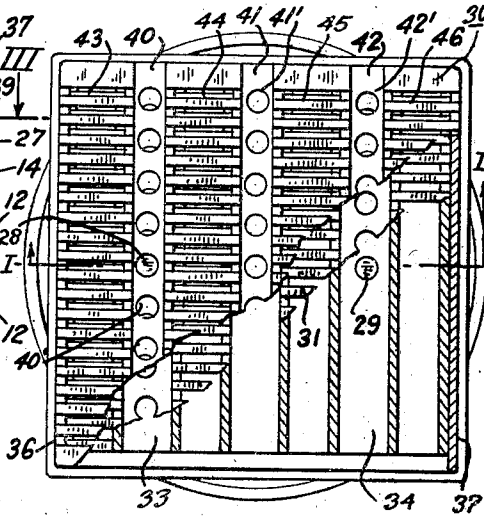


Fig3.

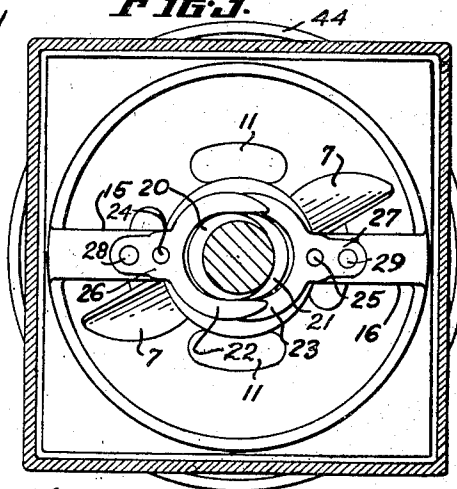
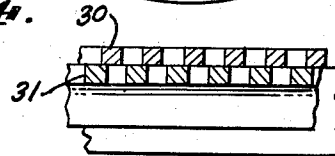


Fig4.



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MOTORIZED SHAVER

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4 Claims. (Cl. 30—43)

This invention relates to motorized shavers and more particularly to shavers for human use.

Among the objects of the invention is to multiply the capacity without seriously increasing the number of working parts.

Another object is the provision of means to create a suction through the cutting mechanism for drawing the skin against the cutter guard and removing the severed beard.

Another object is to keep the skin dry during the shaving operation.

A further object is to simplify the disassembling of the mechanical units to facilitate cleaning and maintenance.

Other objects and advantages will appear as the description progresses.

In this specification and the accompanying drawing the invention is disclosed in its preferred form. But it is to be understood that it is not limited to this form; because it may be embodied in modifications within the spirit of the invention as defined in the claims following the description.

In the one sheet of drawings:

Fig. 1 is a side elevation of a motorized shaver constructed in accordance with this invention, with the cutting and ventilating assemblies shown in longitudinal section on the line I—I, Fig. 2.

Fig. 2 is a top planal view of the cutter guard, partially broken away and disclosing the shearing blade.

Fig. 3 is a cross section on the line III—III, Fig. 1, looking into the driving mechanism of the shearing blade, and the suction fan.

Fig. 4 is an enlarged side view fragmentary detail of a portion of the shearing blade and cutting guard.

In detail the construction illustrated in the drawing, referring first to Fig. 1, comprises the manual casing 1, enclosing the motive mechanism indicated and inclusively designated as 2. The motor shaft 3 runs in the bearing 4, fixed in the neck 5 that is an integral part of the casing 1. The motor 2 is energized by electric current entering through the flexible cord 6.

The fan 7 is fixed upon the protruding end of the shaft 3. The conical baffle 8 has the collar 9 encircling the neck 5 and flaring upwardly and contacting the annular cage 10 which forms an integral part of the casing 1. This baffle has the openings 11 beneath the fan and surrounding the neck 5. The cage 10 has the peripheral openings 12 therethrough, between the top of the

baffle and the partition 1', that separates the motive mechanism from the cutting mechanism. The screen 12' surrounds the cage and overlies the openings 12; permitting the escape of the forced draft, but retaining the hair clippings within the cage.

The cutting mechanism comprises the head 13, the lower portion of which telescopes over the top of the cage and is secured thereto by any suitable means, such as the screws 14. This head has the inwardly extending lugs 15, 16, supporting the axial bearing 17 concentric with the motor shaft 3. The studshaft 18 forms a continuation of the motor shaft and runs within the bearing 17. The end of the motor shaft is drilled axially to receive the stud on the shaft 18, and has a transverse slot to receive the driving key 19 formed on the studshaft, which is driven thereby.

The head of the studshaft 18 has a pair of eccentrics 20, 21, formed thereon, see also Fig. 3. These eccentrics engage their respective yokes 22, 23, that are mounted on the lugs 15, 16, on the pivots 24, 25, fixed therein. Each yoke has an extension 26, 27, having the upwardly extending pins 28, 29, fixed therein respectively.

The reciprocating shearing blades 30, 31, have holes, such as 32, longitudinally centered therein and engaging their respective pins 28, 29. These blades have the longitudinal center channels 33, 34, between the shearing ribs which are provided with transverse slots milled entirely through their respective shearing ribs to form a multiplicity of cutting blades 31—31 thereon.

The corrugated cutting guard has the end flanges 36, 37, telescoping within the top of the sleeve 13 where they are secured by the screws 38, 39. The guard has the transverse grooves 40, 41, 42, between the slotted cutting ribs which are milled entirely through to form the several rows of cutting blades 43, 44, 45, 46. The cutting guard snugly fits the cross-sections of the shearing blades, so that the cutting blades 31—31 and 43—46 cooperate to shear off the stubble beard projecting through the guard. To insure a close contact of these blades the resilient bow springs 47, 48 are centered on their respective pins 28, 29, and urge their respective shearing blades outwardly.

The bottoms of the grooves 40—42 are provided with the holes 40', 41', 42', registering with similar holes through the underlying portions of the cutting blades respectively.

This invention operates substantially as follows: When the motor 2 is running, the fan 7

creates a strong suction through the slotted cutting guard, shearing blades, and the openings 40'—42' and a forced draft through the openings 11 in the baffle 8, discharging into the cage 10. This forced draft passes freely outward through the screen 12', leaving the cuttings in the cage 10. This escaping blast is directed longitudinally by the surrounding tubular deflector 49, telescoping over the casing and terminating below the level of and spaced away from the head 13. This directs the escaping blast against the face of the user, keeping it cool and comfortable during the shaving operation.

The suction created by the fan 7 pulls the skin of the face tightly against the cutting guard and causes the stubble beard to project between the blades 43, 46 and be severed by the reciprocating blades 31, 31 beneath. The beard cuttings accumulate within the cage 10 behind the screen 12'. This suction has the further advantage that it evaporates any perspiration. Motorized shavers will not work satisfactorily on wet skin.

The accumulations can be removed from the cage by removing the deflector 49, and the sleeve 13, which releases the screen 12'. The screen can be cleaned by brushing or washing, and the accumulations blown out of the cage by the fan blast.

The four rows of cutting blades increases the capacity of the conventional motor shaver about four times with about the same number of working parts. The cutting guard should be moved across the face in the direction of the slots in the guard. The grooves 40, 41, 42, permit the skin to readjust itself as the guard moves forward, so that every hair will enter the slots in the guard and be severed. Thus avoiding the necessity of repeated trips across the skin, which is the cause of skin irritation resulting from the use of some forms of electric shavers, not having the suction and cooling effect of the fan, nor the multiplicity of slots present in this invention.

When the head 13 is removed the whole assembly of the shaver parts above the fan 7 comes with it, without disturbing the delicate adjustment thereof.

Having thus described this invention what is claimed and desired to secure by Letters Patent is:

1. A shaver in the class described, comprising a casing having lateral openings and a transverse partition therein; a baffle in said casing between said partition and the tops of said openings and forming an open cage in the outer end portion of said casing; a screen on said casing surrounding said cage; a motive means in the

other end portion of said casing and having a shaft protruding perpendicularly through said partition; a head on the outer end portion of said casing; a cutting guard fixed in said head and having reciprocating shearing blades guided therein; blade driving means mounted in said head and driven by said shaft; and a fan on said protruding shaft between said baffle and head and discharging through said baffle and said screen.

2. A shaver in the class described, comprising a casing having lateral openings and a transverse partition therein forming an open cage in the outer end portion of said casing; a screen on said casing and surrounding said cage; a motive means in the other end portion of said casing and having a shaft protruding through said partition; a head on the outer end portion of said casing and covering said cage; a cutting guard fixed in said head and having reciprocating shearing blades guided therein and driven by said shaft; a fan on said shaft below said head and discharging through said screen; and an external deflector surrounding and spaced away from said screen and head and removably mounted upon said casing.

3. A shaver in the class described, comprising a casing having a transverse partition therein; a motive means in said casing with a driven shaft protruding perpendicularly through said partition substantially parallel with the longitudinal axis of said casing and having eccentrics thereon; a removable head on said casing; rocker arms pivoted on said head on opposite sides of said shaft and engaging said eccentrics respectively; a cutting guard fixed on said head and having a plural series of cutting blades on each side of the axis of said shaft respectively; a plural series of shearing blades bearing against each of said series of cutting blades and reciprocated by said rocker arms respectively.

4. A shaver in the class described, comprising a casing having lateral openings and a transverse partition therein, forming an open cage in the outer end portion of said casing; a motive means in said casing below said partition and having a driven shaft protruding through said partition; a head on the outer end portion of said casing and covering the end of said cage; a cutting guard in said head and having reciprocating shearing blades therein; a studshaft mounted in said head and driven by said driven shaft; and blade reciprocating means interposed between said blades and studshaft.

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