Dec. 12, 1939. H. H. BLACKWELL 2,183,442

ELECTRIC VACUUM SHAVER

Filed June 21, 1938

Fig. 1.

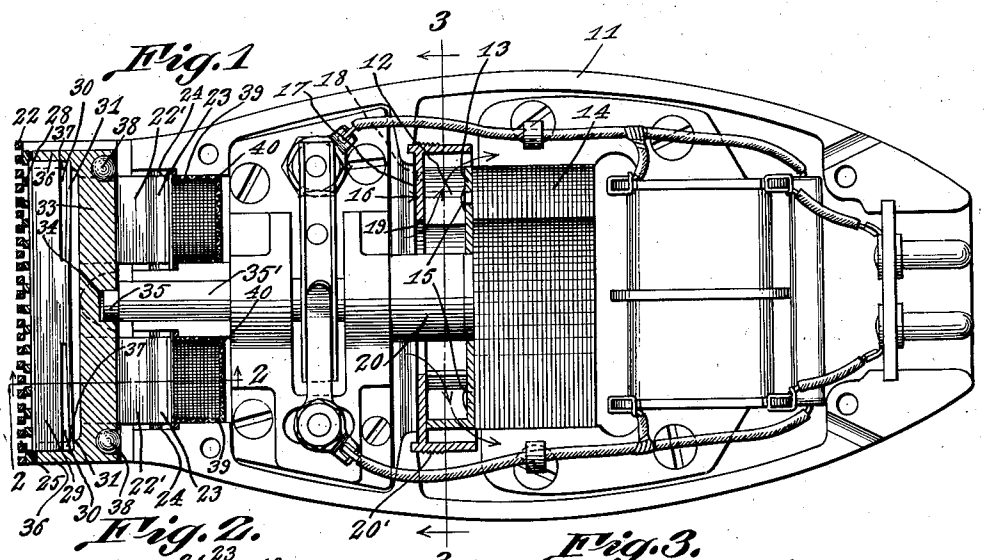


Fig. 2.

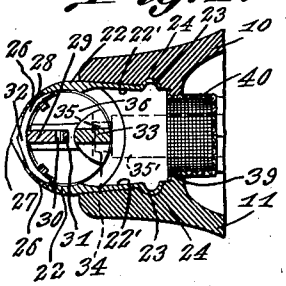


Fig. 3.

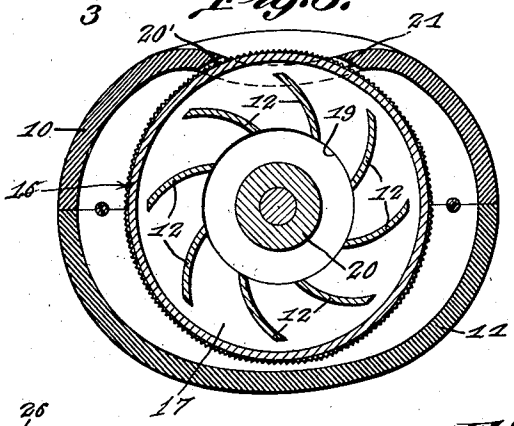


Fig. 4.

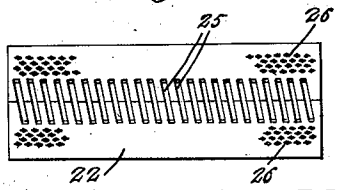


Fig. 5.

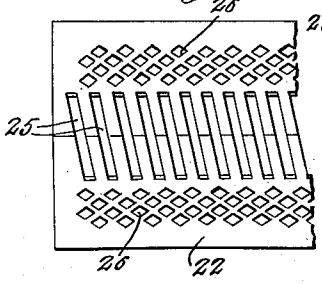


Fig. 6.

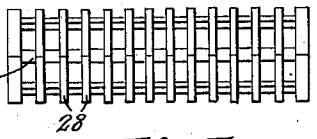


Fig. 7.

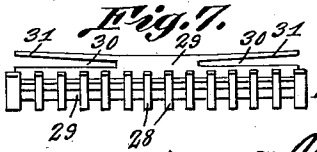


Fig. 8.

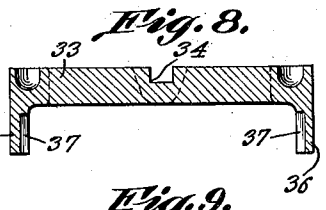
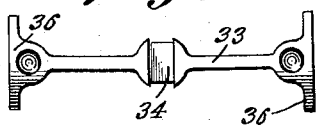


Fig. 9.



Herbert H. Blackwell,
INVENTOR

BY Victor J. Evans & Co.
ATTORNEYS

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ELECTRIC VACUUM SHAVER

Herbert H. Blackwell, Roanoke, Va.

Application June 21, 1938, Serial No. 214,979

2 Claims. (Cl. 30—43)

This invention relates to an electric vacuum shaver of that type described in my application of the same title filed August 3, 1937, Serial No. 157,211, allowed February 25, 1938, and issued as Patent No. 2,129,559.

An object of the present invention is to provide an improved suction fan the same being carried directly by the armature of the motor and having a milled periphery projecting through a slot in the shaver handle to facilitate the motor being started by manually spinning the fan.

A further object of the invention is to provide a generally improved cutting head through the medium of which both long hairs and stubble may be effectively removed at the same time.

A further object is to provide a novel comb which coacts with the reciprocatory cutter, the comb having a median row of diagonal slots to facilitate long hairs entering the comb and having rows of diamond-shaped slots on the opposite sides of the median row to promote stubble entering the comb in such manner that the cutting head will always effect a shearing cut on the stubble to most effectively provide a clean, cool and close shave.

A further object is to provide novel foraminous hair receiving traps into which hair may be sucked by the suction fan and retained therein, the traps being easily and quickly exposed for removal of the hair by simply removing the comb and cutter head assembly from the handle by straight line movement.

A further object of the invention is to provide a dry shaver of this character which will be formed of a few strong simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming part of this specification,

Figure 1 is a plan view of an electric vacuum shaver constructed in accordance with the invention and showing the cover plate of the handle removed to expose the working parts.

Figure 2 is a detail cross sectional view taken on the line 2—2 of Figure 1 and showing the comb and cutter head assembly and one of the hair traps.

Figure 3 is a cross sectional view taken on the line 3—3 of Figure 1 showing the centrifugal fan having a knurled periphery projecting through the handle for starting the motor.

Figure 4 is a plan view of the comb showing the slot and the diamond-shaped openings.

Figure 5 is a fragmentary enlarged plan view of the comb shown in Figure 4.

Figure 6 is a plan view of the reciprocatory cutter head.

Figure 7 is a side elevation of the cutter head.

Figure 8 is a longitudinal sectional view of the frame for the cutter head.

Figure 9 is a plan view of the cutter head frame.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, 10 and 11 designate companion shells forming the hollow handle of the shaver. All of the working parts are carried by one of the shells, as for example, the shell 11, as best shown in Figure 1.

In carrying out the invention centrifugal fan blades 12 are secured to an annular plate 13 through any preferred means and the plate is fixedly secured to the armature 14 of the motor by rivets 15, or other connectors. A substantially cylindrical housing 16 for the blades is provided at the forward end with a flange 17 which may be secured to the blades by tits 18, or otherwise, and which is provided with an enlarged central opening 19 to permit air entering along the hub 20 of the motor.

The housing 16 is of greater diameter than the diameter of the fan blades so that a space exists between the latter and the housing through which the indrawn air exits rearwardly along the motor and cools the motor after first having sucked into the hair receiving trap all hair severed from the beard.

As will be seen by referring to Figure 3 the periphery of the cylindrical housing is milled as shown at 20' and projects for a portion of its length through a slot 21 formed in the shell 10. Since the fan is secured directly to the motor armature the operator may start the motor through the medium of the milled housing 16.

The comb 22 is substantially semi-cylindrical in contour and is provided with spring clips 22' having knobs 23 struck therefrom. These knobs engage in correspondingly shaped sockets 24 formed in the shells and detachably secure the comb, and cutter head assembly, to the shells. The comb is provided with a median row of obliquely disposed slots 25 which permit long hairs entering the comb to be sheared off by the

cutter head. On each side of the row of slots the comb is provided with rows of minute diamond-shaped openings 26 through which stubble may enter the comb to be sheared off by the cutter head. The diamond-shape of the minute openings 26 promote an oblique cutting edge always being presented to the reciprocating cutter which is not the case when circular openings are used. Thus a quicker, as well as a cleaner shave will be produced than is possible with conventional dry shavers.

A special feature is to be noted and that is the median portion of the comb is deformed to provide a pointed ridge 27, best shown in Figure 2. The purpose of this ridge is to prevent any tendency of the cutter head to turn and confine the cutter head to accurate reciprocatory movement, as will now be explained. Also this ridge 27 serves to lift flat hairs and guide them into the slots of the cutter, and to facilitate a close trimming of mustache or side-burns.

The cutter head comprises a plurality of parallel arcuate cutter bars 28 which are connected together at the center through the medium of a bar 29 having slots 30 to form leaf springs 31 which yieldably hold the cutter head on contact with the inner surface of the comb. The cutter bars 28 are provided with a pointed ridge 32 which nicely fits in the ridge 27 of the comb and confines the cutter head to rectilinear reciprocatory movement.

The cutter head is carried by a frame 33, best shown in Figures 8 and 9, comprising a bar having a notch 34 therein to receive the eccentrically disposed end 35 of the motor shaft 35'. The frame is provided with disc heads 36 at the ends to close the ends of the comb and these heads are provided with slots 37 on their inner faces to receive the ends of the beforementioned bar 29 of the cutter head. As the frame 33 is reciprocated by the rotating motor shaft it will carry the cutter head longitudinally of the comb first in one direction and then in the opposite direction to simultaneously shear off long hairs through the slots 25 and stubble through the diamond-shaped openings 26.

The frame 33 is provided with ball bearings 38 which reduce friction between the frame and the shells during movement of the cutter head.

By now referring to Figures 1 and 2 it will be seen that the shells are provided with substantially rectangular openings 39 through which air may be drawn longitudinally of the shaver through the comb and cutter head. Substantially rectangular reticulate hair traps 40 are arranged on opposite sides of the motor shaft 35' and receive the hairs cut from the comb and cutter head by the suction of the centrifugal fan. In order to empty the hair trap it is simply necessary to hold the comb at the ends between the thumb and forefinger and jerk the same outwardly, the spring clips 22 yielding during such movement and permitting the comb, cutter head and frame to be detached as a unit from the handle. The open front ends of the traps are thus exposed so that the handle may be inverted and the entrapped hair dumped into any convenient receptacle.

The large number of slots and openings in the comb covers a relatively large surface which may be in active contact with whiskers. Also this feature, in connection with the open-end construction of the blades of the cutter head permit a relatively free circulation of air, which is most important.

It will be pointed out that the cutter head is automatically kept clean of clippings all during operation, and should not require regular cleaning after shaving as is necessary with most other dry shavers.

In addition to cooling the motor, the circulation of air cools the cutter head, a quite important factor on account of the friction which is inherently necessary between cutter and comb, and cools and dries the face, a condition which is essential for a good shave.

It will be pointed out that the cutter head is held snugly against the comb by the action of leaf springs which are made integral with the cutter head, reacting against the ball bearings in the bottom ends of the frame, and this has special merit in its practicability and simplicity.

Since a description of the operation has been given as the description of the parts progressed, it is thought that the invention will be fully understood without further explanation.

What is claimed is:

1. An electric vacuum shaver comprising a hollow handle, an electric motor in the handle, a fan connected to the motor to be driven thereby, a comb on the handle having a median row of obliquely disposed slots and having rows of diamond-shaped openings on opposite sides of the median row, said slots and said openings permitting hair being drawn through the hollow handle by the fan, a cutter head coacting with the comb to simultaneously sever long hairs through the slots and stubble through the diamond-shaped openings, and means connecting the cutter head to be driven by the motor, said comb being deformed outwardly to provide a pointed ridge, said cutter head being provided with a pointed ridge which nicely fits within the ridge of the comb, both of said ridges confining the cutter head to rectilinear reciprocatory movement.

2. An electric vacuum shaver comprising a hollow handle, an electric motor in the handle, a comb carried by the handle having a median row of obliquely disposed slots, and having rows of diamond-shaped openings on opposite sides of the median row, spring clips integral with the comb and detachably engaging the hollow handle for permitting the comb to be disengaged from the handle by straight line movement, a cutter head mounted within the comb for reciprocatory movement, a connection between the motor and the cutter head to permit the cutter head to be driven by the motor, a frame carrying said cutter head, leaf springs integral with the cutter head to hold the same snugly against the comb, and interfitting means between the comb and the cutter head confining the cutter head to rectilinear reciprocatory movement.

HERBERT H. BLACKWELL