

March 2, 1954

H. HABER  
ELECTRIC RAZOR

2,670,534

Filed Jan. 12, 1951

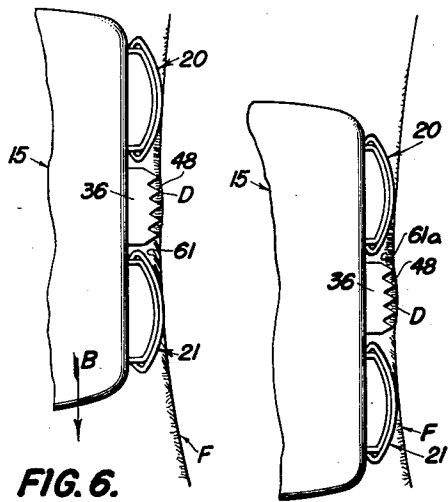


FIG. 6.

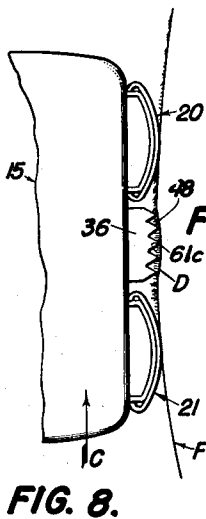


FIG. 8.

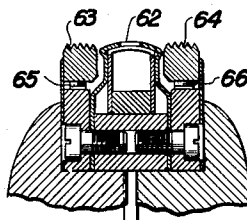


FIG. 10.

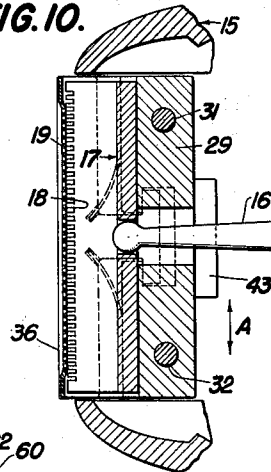


FIG. 4.

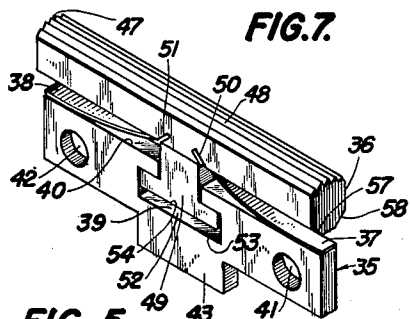


FIG. 5.

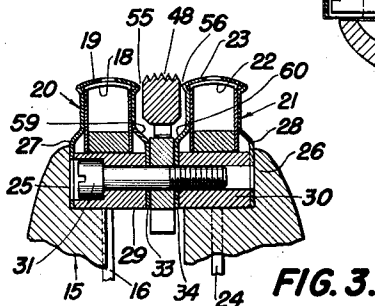


FIG. 3.

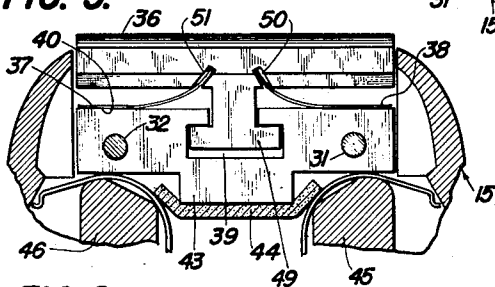


FIG. 2.

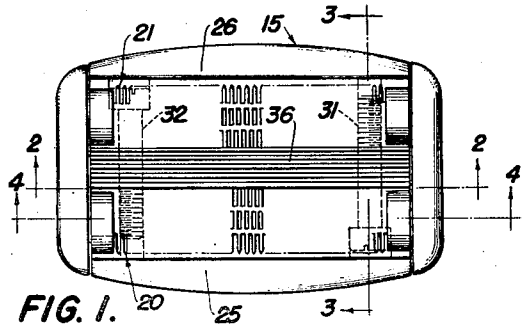


FIG. 1.

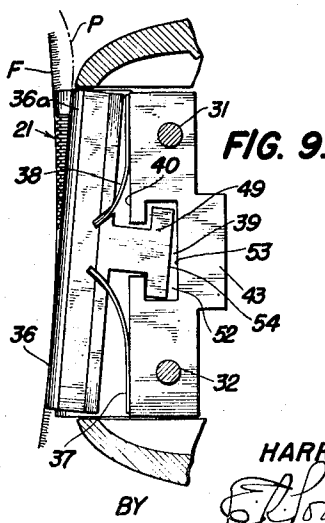


FIG. 9.

INVENTOR  
HARRY HABER  
BY *E. L. Lomax*  
ATTORNEY

# UNITED STATES PATENT OFFICE

2,670,534

ELECTRIC RAZOR

Harry Haber, New York, N. Y.

Application January 12, 1951, Serial No. 205,758

5 Claims. (Cl. 30—34)

1

This invention relates to electric razors—more particularly to the dry shaver type of razor having a motor-operated cutter member reciprocatingly or otherwise movable relative to a stationary slotted shear plate—this application being a continuation-in-part of my application filed February 28, 1950, Serial No. 146,711, now abandoned.

It is primarily within my contemplation to provide a razor of the above category having a hair-lifting member coactively associated with the shearing portion whereby individual hairs will be set into optimum cutting position in the path of the shearer head during its operative movement. And in this aspect of my invention it is a further object to employ the said hair-lifting member in association with conventional shearer head components, whereby a standard electric shaving device may readily be modified and adapted for use in accordance with my invention.

It is a further object of my invention to provide a hair-lifting member of the type above-mentioned which will serve its intended function without any interference whatsoever with the cutting action of the shearer head. And in the accomplishment of this objective I employ a novel form of floating hair-lifting member yieldably urged to an extreme operative position beyond the plane of the cutting head, and yet which will be retractable to and below the said cutting plane under the action of normal shaving pressure. And in this aspect of my invention it is a further object to enable such floating member to operatively adjust itself not only in a direction at right angles to the cutting plane of the razor, but also at various other angles, with limitations, with respect to said plane, whereby the said hair-lifting member may variably position itself for face contour adjustments. And in the further accomplishment of this aspect of my invention a shaving or cutting action is rendered possible along only a portion of the shearing head, while in the region of the other portion thereof the said hair-lifting member is operatively engageable with the skin.

It is within my contemplation to enable the said hair-lifting member to move in various directions completely independently of the razor head whereby the said cutting and hair-lifting members may serve their respective functions without interference.

It is also an important object of this invention to provide a device the elements of which may be readily and firmly assembled, with the

2

said hair-lifting member in free but interlocking engagement with fixed or stationary elements of the device.

And it is within my contemplation to enable my invention to be employed either with single or multiple-head electric dry shavers.

Other objects, features and advantages will appear from the drawings and the description hereinafter given.

Referring to the drawings,

Figure 1 is a plan view of a two-headed razor showing a preferred form of my invention.

Figure 2 is a fragmentary section of Figure 1 taken along line 2—2, the motor-operating elements and the razor handle being removed.

Figure 3 is a fragmentary view of Figure 1 taken along line 3—3.

Figure 4 is a fragmentary section of Figure 1 taken substantially along line 4—4, showing a portion of the cutter reciprocating actuator connected to a motor not shown.

Figure 5 is a perspective view of a preferred form of a hair-lifting member and mounting therefor, in accordance with my invention.

Figures 6, 7 and 8 are enlarged semi-diagrammatic views of the razor of my invention shown in three operative positions against a face.

Figure 9 is a section substantially like Figure 2, showing the razor operatively applied against a face, with the hair-lifting device of my invention in a tilted position, and

Figure 10 is a sectional view substantially similar to that of Figure 3, showing a modified form of my invention, as applied to a single head razor.

In the form of my invention illustrated, the housing 15 contains therein the shearing components as well as the driving mechanism therefor—the driving mechanism, except for the reciprocating actuator 16 (Figure 4) being omitted since such mechanism is well-known to those skilled in the art and need not be described in further detail for the purposes of this application. Suffice it is to say, for present purposes, that the said actuator 16, reciprocated in the direction of arrows A by a motor, imparts a reciprocating action to the cutter member 17, the upper multi-edged blade portion 18 of which is in slidable engagement with the slotted shear plate 19, as in conventional razors of this category. As will be seen from Figure 3, the particular embodiment illustrated has two shearer heads 20 and 21, the former containing the aforesaid cutter member 18 and slotted shear plate 19, and the latter containing the cutter member 22 and

3

slotted shear plate 23, the cutter member 22 being reciprocatingly actuated by the actuator 24 (Figure 3) operatively connected to a motor not shown. The upper housing walls 25 and 26 support the shells 27 and 28, respectively, of housings 20 and 21, said shells containing at the base thereof, respectively, the blocks 29 and 30. The screws 31 and 32 extend transversely through said blocks, and serve to keep said heads in assembled relation.

Disposed between and in engagement with the inner walls 33 and 34 of shells 27 and 28, respectively, is the stationary spacer and mounting 35 for the hair-lifting member 36, member 35 supporting the two springs 37 and 38 which in turn support said member 36 and maintain it disposed between the heads 20 and 21. In the preferred embodiment of my invention, member 35 is a relatively thin slab or wall containing in the center thereof an inverted T-shaped aperture 39 extending down from the upper wall 40 thereof—the said member 35 having two holes 41 and 42 positioned to receive therethrough the said screws 31 and 32, respectively. The base of said member 35 consists of an extension 43 resting upon the transverse support 44 operatively supported between the walls 45 and 46 of the razor. The said hair-lifting member 36 has a preferably slightly arcuate operative upper surface 47 containing the longitudinal flutes or serrations 48. Extending downwardly from the medial portion of member 35 is the inverted T-shaped extension 49, adapted for loose interlocking engagement with the said inverted T-shaped aperture 39. Member 49 is so proportioned with respect to aperture 39 as to permit a tilting movement of said member 35, as clearly shown in Figure 9. The member 35 is also provided with slitted portions 50 and 51 to receive therein the terminals of said springs 37 and 38—the said springs being curved upwardly from member 35 to member 36, whereby the portions of member 36 flanking extension 49 are spaced above the correspondingly positioned portions of member 35, and whereby the space 52 is provided between the bottom wall 53 of extension 49 and the bottom wall 54 of the apertured portion 39. The upper portion of member 36, which is disposed between the said heads 20 and 21 of the razor, is preferably proportioned so as to leave small spaces 55 and 56 between said member 36 and said heads, thereby permitting a slight lateral movement of said member, and freedom of operative movement of said member without interference or restriction by the razor heads of the device. The lower corners 57 and 58 of member 36 are chamfered so as to permit a maximum of movement of said member with respect to the sloping inner walls 59 and 60 of shells 27 and 28, respectively (Figures 3 and 5). It is preferred also that the member 36 be made of some friction material, such as hard rubber, although that is not an absolute requirement where serrations 48 are employed.

In the operative employment of the razor above described, shaving movements are made as in conventional razors, the reciprocating action of the cutter members 18 and 22 with reference to their respective shear plates 19 and 23, effecting a cutting of hairs in the path of the razor. However, the hair-lifting member 36 performs the additional function of engaging the hairs in the path of the razor, and lifting them away from the face so that they will stand out therefrom, whereby such hairs will be presented for maxi-

4

mum cutting efficiency, particularly since the upstanding hairs are able to enter the slots within the shear plates 19 and 23 for shearing engagement by the cutting elements 18 and 22. As will more clearly hereinafter appear, the springs 37 and 38 urge the member 36 outwardly to an extreme outermost level as limited by the interlocking engagement of extension 49 with apertured portion 39. The shaving pressure of the instrument against the face will cause a yieldable depression of member 36, but will nevertheless not interfere with the slidable engagement of the shearer heads with the face during the shaving movement. It is due to the frictional engagement of member 36 with the face during such movement that flattened hairs are lifted to an upstanding position for presentation to the advancing shearer head.

Figures 6 to 8 diagrammatically illustrate this action. In Figure 6 the razor is shown moving in the direction of arrow B along the face F. It will be observed that head 21 has passed over the inclined hairs 61 shown positioned between said head 21 and the hair-lifting member 36. As the razor continues its down stroke, the serrated surface 48 of member 36 engages the hairs 61, and lifts them to a substantially upright position schematically shown in Figure 7 and identified as 61a. These hairs are now presented to the advancing shearer head 20 in a more effective cutting position than the corresponding inclined hairs 61 shown in Figure 6. Accordingly as the razor continues its down stroke beyond the position shown in Figure 7, the shearer head 20 will effectively cut hairs 61a. However, should some hairs still be in an inclined position, as might be the case if the razor head missed some hairs 61a or smoothed them down in the direction of the razor's movement, or if a partly cut stubble were left, the return movement of the razor in the direction of arrow C (Figure 8), will engage the hairs 61c (corresponding to hairs 61 and 61a in Figures 6 and 7) and again lift them to an upright position for presentation to the now advancing shearer head 21. Thus the lifting action of hairs engaged by member 36 is effected by actual contact of the serrated surface 48 thereof with the hairs during the operative shaving movement of the razor. It should further be noted, however, that since the upper operative surface of the member 36 is, in the preferred form shown, convexly curved transversely, and since said member 36 intercepts the cutting plane of said heads 20 and 21, a slight depression D will be formed in the face where the member 36 engages it. This depression causes a stretching of the skin between the crest of the curvature and the cutting portion of the razor, thereby drawing the hairs in such area away from the skin and into an upright position. This action therefore supplements the direct hair-lifting action of member 36.

Due to the free floating support of member 36, it will readily adjust itself to contour irregularities without materially affecting the cutting action of the razor. For example, by referring to Figure 9, it will be seen that a high spot or protuberance on the face that engages one end of member 36 will cause an inward deflection thereof—thereby preventing such protuberance from forcing the cutting heads of the razor out of contact with the face which would be the case if member 36 were not free floating. The protuberance P (represented by a dot-dash contour line) of face F is shown engaging the end 36a of the

5

hair-lifting member 36, depressing it inwardly beyond the outermost surface of the shaving head 20. This obviously permits the shaving head to maintain its operative contact with the face. Obviously, said member 36 will yield inwardly, due to the shaving pressure, at right angles to the direction of the shaving stroke, as well as at slight inclinations longitudinally—thereby providing complete flexibility without interfering with the shaving operation.

Figure 10 illustrates a modified form of my invention having a single shaving head 62 flanked by hair-lifting members 63 and 64 yieldably mounted on springs 65 and 66 substantially in the manner of the form first above described. It is not deemed necessary to give a further detailed description of this structure, since the members 63 and 64 are each substantially like the corresponding member of Figures 1 to 9. With this form of my invention each stroke of the razor produces hair-engaging contact of members 63 and 64 on opposite sides of the head 62, thereby assuring a lifting of hairs held flat against the skin by the shaving soap or cream, and the presentation of such hairs in upstanding position to the advancing shaving head.

It is thus apparent that in both forms above illustrated a novel form of hair-lifting member is arranged in cooperative relation to a cutting head having conventional shearing components, whereby the hairs are positioned for optimum cutting efficacy during the customary shaving strokes of the razor.

In the above description, the invention has been disclosed merely by way of example and in preferred manner; but obviously many variations and modifications may be made therein. It is to be understood, therefore, that the invention is not limited to any specific form or manner of practicing same, except insofar as such limitations are specified in the appended claims.

I claim:

1. In an electric razor of the class described, a housing, two spaced shearer heads each having an outer shear plate and an inner cutter element cooperatively associated therewith, a yieldably mounted hair-lifting member disposed between said heads, and a support for said member, said support being disposed below the said member and having at the upper medial portion thereof an inverted T-slotted portion, said member having at the bottom medial portion thereof an inverted T-shaped extension in interlocking engagement with said slotted portion, and spring means on said support and in engagement with said member.

2. In an electric razor of the class described, the combination according to claim 1, said hair-lifting member being in closely spaced juxtaposed relation to but separated from said shearer heads.

3. In an electric razor of the class described, a shearer head having an outer shear plate and an inner cutter element cooperatively associated therewith, a hair-lifting member adjacent said shearer head and having an operative outer sur-

6

face at a level adjacent that of the said shear plate, and a support for said member, said support being in interlocking engagement with said member, said support being disposed below the said member and having at the upper medial portion thereof an inverted T-slotted portion, said member having at the bottom medial portion thereof an inverted T-shaped extension in interlocking engagement with said slotted portion, and spring means on said support and in engagement with said member.

4. In an electric razor of the class described, a shearer head having an outer shear plate and an inner cutter element cooperatively associated therewith, a hair-lifting member adjacent said shearer head and having an operative outer surface at a level adjacent that of the said shear plate, and a support for said member, said support being in interlocking engagement with said member, said support being disposed below the said member and having at the upper medial portion thereof an inverted T-slotted portion, said member having at the bottom medial portion thereof an inverted T-shaped extension in interlocking engagement with said slotted portion, and two oppositely disposed springs extending upwardly from lateral portions of said support into engagement with said hair-lifting member at points adjacent said T-shaped extension.

5. In an electric razor of the class described, a shearer head having an outer shear plate and an inner cutter element cooperatively associated therewith, a hair-lifting member adjacent said shearer head and having an operative outer surface at a level adjacent that of the said shear plate, and a support for said member, said support being in interlocking engagement with said member, said support being disposed below the said member and having at the upper medial portion thereof an inverted T-slotted portion, said member having at the bottom medial portion thereof an inverted T-shaped extension in interlocking engagement with said slotted portion, and spring means on said support and in engagement with said member, said extension being loosely disposed in said slotted portion.

HARRY HABER.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

Number	Name	Date
2,170,215	Rand	Aug. 22, 1939
2,210,110	Andis	Aug. 6, 1940
2,288,162	Hulst	June 30, 1942
2,309,431	Alexay	Jan. 26, 1943
2,335,413	Hicks	Nov. 30, 1943
2,343,705	Rand	Mar. 7, 1944
2,371,242	Jensen	Mar. 13, 1945

##### FOREIGN PATENTS

Number	Country	Date
523,492	Great Britain	July 16, 1940
660,801	Germany	June 2, 1938