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DRY SHAVER WITH HAIR PULLING MEANS TO AID IN CUTTING THE HAIR

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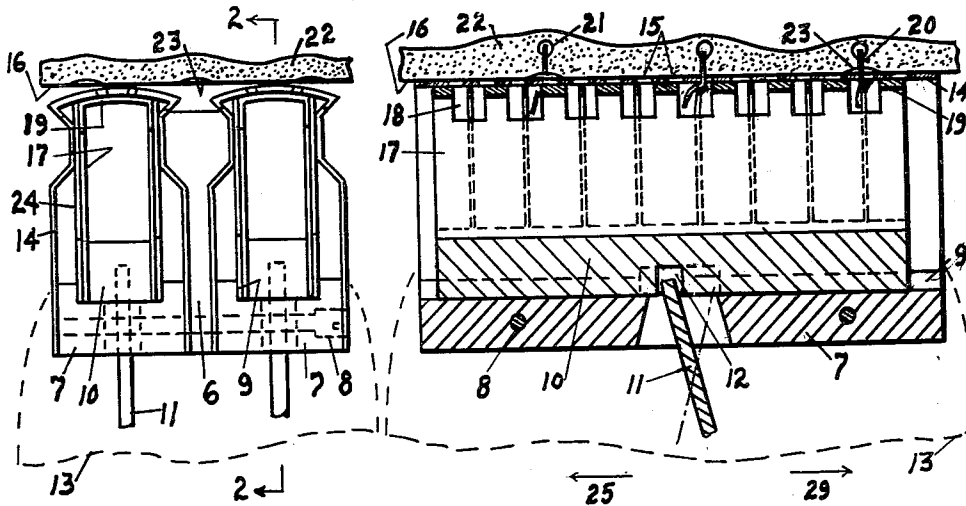


FIG. 1.

FIG. 2.

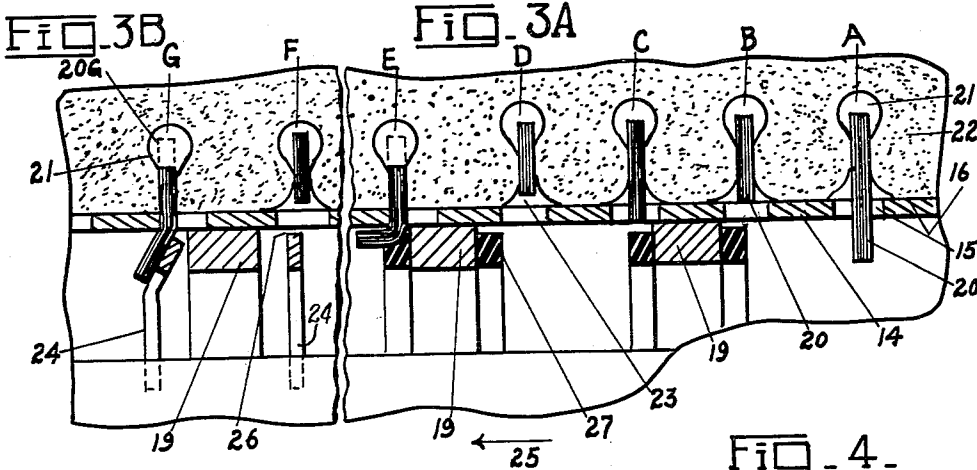


FIG. 3B.

FIG. 3A.

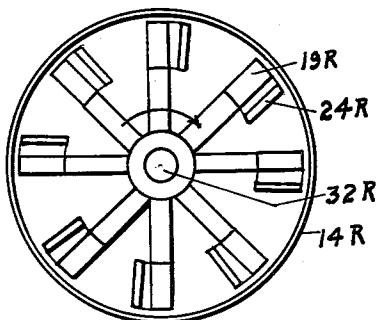


FIG. 5.

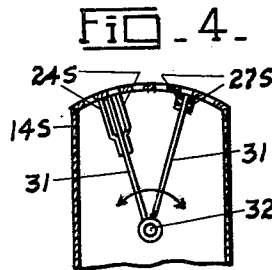


FIG. 4.

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**DRY SHAVER WITH HAIR PULLING MEANS
TO AID IN CUTTING THE HAIR**

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7 Claims. (Cl. 30—34)

This invention relates to dry shavers and the principal object of the invention is the provision of a razor in which the hair is clipped or sheared below the surface of the skin.

Another object of the invention is the provision of a razor having the above mentioned features which is adaptable to all types of razors such as power driven reciprocating cutters, oscillating cutters, rotary cutters and simple longitudinally stroked cutters.

Other and further objects will appear in the specifications and be specifically pointed out in the appended claims, reference being had to the accompanying drawings exemplifying the invention, in which:

FIG. 1 shows a side view of one form of a standard make of electric motor operated reciprocating cutter razor.

FIG. 2 is a sectional view on line 2—2 of FIG. 1.

FIG. 3A is an enlarged diagrammatic sectional view better illustrating the operation of the actual cutting procedure.

FIG. 3B is an enlarged diagrammatic sectional view of a preferred modification of my invention.

FIG. 4 is a diagrammatic sectional view of an oscillating cutting razor.

FIG. 5 is a diagrammatic sectional view of a rotary cutting razor.

Referring to the drawings in which like characters and numerals of reference refer to similar parts throughout the several views, the numeral 6 denotes the body of a familiar make of electrically driven reciprocating razor to which cutting heads 7 are attached on either side thereof by means of screws 8. Each cutting head 7 is provided with a recessed trough 9 which forms a longitudinal slide for rapidly reciprocating the longitudinal bar 10 by means of the oscillating levers 11, the upper ends of which levers are loosely confined within the pockets 12, the levers 11 being operated by the customary electric motor, not shown, confined within the casing 13, shown by dotted lines.

To both vertical opposite sides of the cutter head 7 is attached, as by spot welding, the inverted U-shaped very thin shield 14, perforated at the upper side by numerous slots 15 in the usual manner for the entrance of hair or whiskers, this part of the shield 14 being adapted to be drawn over the surface of the skin 16. To the reciprocating bar 10 is also attached, as by spot welding, the inverted U-shaped cutting or shearing element 17 which is provided at its upper end with a plurality of spaced slots 18 thus forming cutting edges 19 on either side of each slot 18. The reciprocation of the inverted U-shaped cutting element 17 through the alternate oscillation of the levers 11 will now cut or shear any hair penetrating through slots 15 and 18 as they periodically register as will be readily understood.

As so far described, the structure is conventional. It is of considerable advantage however, to cut the hair or whiskers at a point that will lie below the surface of the skin, not only for better appearance but also because of the longer interval of time required between shaves. To better understand how I accomplish the feature of cutting the hair 20 at this point I refer to FIG. 3A at Example A which shows the hair 20 protruding a natural distance out of the surface 16 of the skin before shaving, the innermost part of the hair terminating in the sac 21, the flesh of the face being denoted by 22.

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In Example B the hair 20 is shown even with the skin surface after being cut by a razor edge which directly contacts the skin surface 16, such as a hand razor or a safety razor. Example C shows the hair 20 protruding a short distance beyond the skin surface after being cut with the conventional electrically operated razor, the short protrusion beyond the skin surface being caused by the thickness of the shield 14. It therefore follows that the electric shaving instrument does not and cannot cut the hair 20 as close to the skin surface 16 as a direct contact razor edge and to overcome this difficulty I provide means, as will be hereinafter described, to accomplish this feat so that the hair 20 will be cut at a point even below the surface 16 of the skin as illustrated by Example D in FIG. 3A. It will be understood that, at each outwardly protruding hair 20, there is a small indentation 23 at the skin surface 16 which has some bearing in my shaving operation.

The operation of my razor is now as follows: as the upper perforated part of the shield 14 is drawn over the skin surface 16, the hair 20 protrudes through slots 15 and 18 as they periodically register, see FIGS. 2 and 3A, and ordinarily, the cutting edge 19 would slice off the protruding hair 20 at the underside of the slotted shield 14 as will be readily understood, this action still leaving the hair 20 still protruding a slight distance out beyond the skin surface, the thickness of shield 14, as previously explained, see Example C, FIG. 3A. To overcome this defect I provide a very thin flexible spring hair pulling element 24, FIG. 3B, which gently engages the hair 20 immediately before the cutting edge 19 comes into contact with the hair, this flexible arm engaging the protruding hair and pulling it around part way under the slotted shield 14 as illustrated at Example G in FIG. 3B, stretching the hair 20 slightly so that it is drawn somewhat out of its sac 21 as indicated by the dotted lines 20G. The cutter edge 19 which is moving in the direction of arrow 25 then cuts off the hair 20G at the inner face of shield 14 as previously but the hair 20G then immediately loses its stretched condition and recedes into its sac 21, leaving the cut off end of the hair below the skin surface as indicated by Example F, the skin at the indentation 23 having been pulled flat against the outer surface of shield 14 during the above described stretching procedure but will again resume its normal shape as the hair 20G recedes below the skin surface. The stretching element 24 is in this case also formed into an inverted U-shaped configuration and also preferably spot welded to the outer surface of the cutter element 17 at the reciprocating bar 10, the pulling elements being located on either side of the cutting edges 19 and a slight distance therefrom, the upper edge of each pulling element 24 being a very slight distance therefrom, and below the lower surface of shield 14, perhaps one-half the thickness of a hair, as indicated at 26 in FIG. 3B. Instead of using the thin spring metal pulling elements 24 to gently pull the hair outward from the skin surface 16 prior to being sheared off by the edge 19, a soft rubber strip 27 directly attached to either side of the cutter 19 may be used as indicated at E in FIG. 3B, showing the hair 20 being pulled over in the direction of arrow 25 immediately prior to being sheared off by the cutting edge 19, after which the hair 20 will recede into its original position into sac 21 with its cut off end again below the skin surface 16. The soft rubber hair pulling element 27 is also preferably located on either side of each cutting element 19 and a very slight distance from the lower surface of shield 14, about half the diameter of a hair, the soft rubber being slightly distorted while pulling so that only a pleasant effect is felt by the user while shaving. When the cutting ele-

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ments 19 move in the direction of arrow 29 to complete its reciprocation, the hair pulling elements 24 or 27 on the opposite side of cutting edge 19 will operate in the same manner as previously described. The soft rubber hair pulling elements 27 may be attached to the cutting elements 19 by gluing or riveting. It will be noted that the thin spring hair pulling elements 24 are slightly bent as illustrated as each hair is temporarily pulled prior to cutting.

The above description referred entirely to a razor of the reciprocating type but this invention may also be used with oscillating type razors as indicated in FIG. 4 with equal effect, the oscillating blades being numbered 31 and which operate within shield 14S about shaft 32. The flexible spring pulling elements are indicated by 24S while, if soft rubber is used, they are indicated by 27S. FIG. 5 illustrates a rotary type razor showing how the hair pulling elements 24R would be attached, only on the forward side of the cutter elements 19R, the operation thereof being readily understood, 14R indicating the razor body and 32R the shaft, the shield not being illustrated for clarity reasons. The soft rubber pulling elements 27 may also be used in FIG. 5 in place of the flexible spring hair pulling elements 24R.

From the foregoing description it will be apparent that I have evolved a razor which will shear off hair to below the skin surface by gently pulling the hair prior to the shearing thereof so that a greater time element will endure between shaving requirements and incidentally create a smoother and better appearing skin surface after shaving.

Various changes may be made in the embodiment of the invention hereinabove specifically described without departing from or sacrificing the advantages of the invention as defined in the appended claims.

I claim:

1. A dry shaver comprising a body, a thin perforated shield attached to the upper part of said body, said shield being adapted to be drawn across the skin of a user, said perforations in said shield being adapted to receive the protruding hair on said skin as said shield is drawn across said skin, slotted shearing elements reciprocating closely underneath said perforated shield and forming a hair shaving means therewith, means within said body for reciprocating said shearing elements, and a hair pulling element interposed between each pair of said reciprocating shearing elements and attached to said reciprocating shearing elements.

2. As in claim 1, the said hair pulling elements comprising a thin flexible flatspring the upper edge of which contacts the lower face of said perforated shield when at rest.

3. In a dry shaver, a housing, a perforated shearing head secured to said housing, the upper face of said shearing head being adapted to contact the skin, movable shearing

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elements associated with and operating underneath and contacting the bottom face of said shearing head, and a flexible spring hair gripping and pulling means separate from said movable shearing elements and adapted to physically contact the hair extending through the perforations of said shearing head, said hair gripping means being attached to said movable shearing elements.

4. In a dry shaver, a housing, operating means within said housing, a perforated shearing head secured to said housing, the outer face of said shearing head being adapted to be drawn over and against the skin during the process of shaving, movable shearing elements associated with and operating underneath and contacting the inner face of said perforated shearing head, and a flexible spring hair gripping and pulling means adapted to physically contact the hair extending through the perforations of said perforated shearing head and adapted to grip and pull said hair downwardly through said perforations immediately prior to the severance of said hair by the following shearing element, each of said flexible spring hair gripping and pulling means being attached to the aforesaid movable shearing element closely in front thereof.

5. In a dry shaver, a housing, operating means within the housing, a perforated shearing head secured to said housing, the outer face of said perforated shearing head being adapted to be drawn over and against the skin, movable shearing elements associated with and operating underneath and contacting the bottom face of said perforated shearing head, and a flat flexible spring hair gripping and pulling element attached to each movable shearing element slightly in advance of each of said movable shearing elements.

6. As in claim 5, the said flexible hair gripping and pulling elements being of substantially the same width and the upper edge thereof of the same height as the aforesaid shearing elements.

7. In a dry shaver, a housing, a perforated shearing head secured to said housing, the outer face of said shearing head being adapted to contact the skin, movable shearing elements associated with and operating underneath and adjoining the inner face of said shearing head, and a flexible spring hair gripping and pulling means adapted to physically contact the hair extending through the perforations of said shearing head, said flexible spring hair gripping and pulling means being attached closely to and on either side of each of said movable shearing elements.

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