Sept. 24, 1940. B. R. NYHAGEN 2,215,650

MOTOR DRIVEN DRY SHAVER

Original Filed July 14, 1936

FIG. 1.

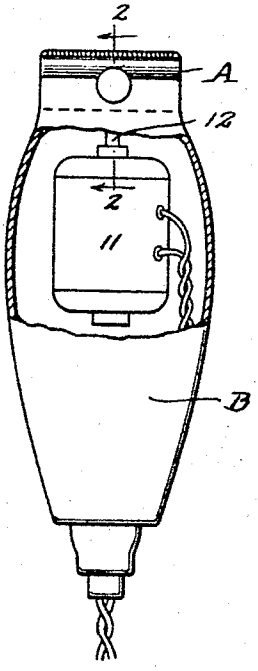


FIG. 2.

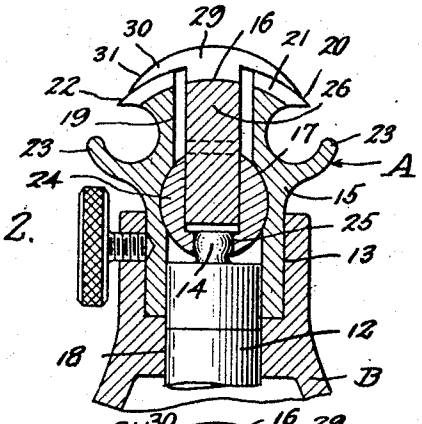


FIG. 3.

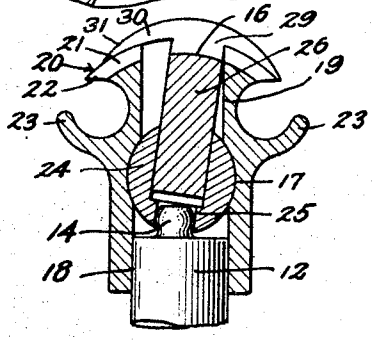


FIG. 4.

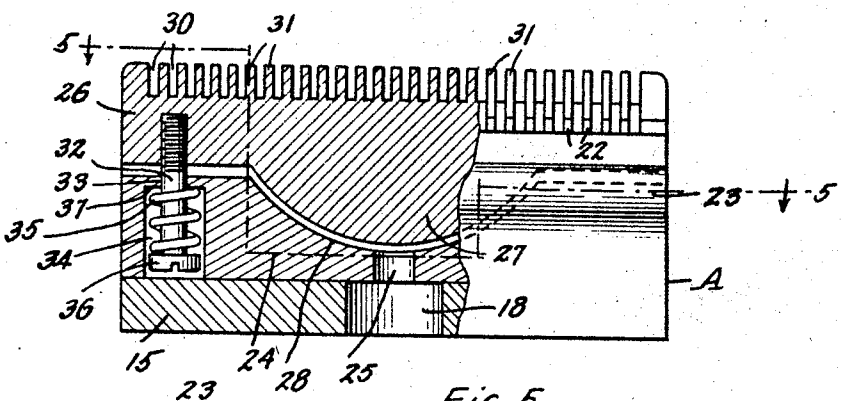
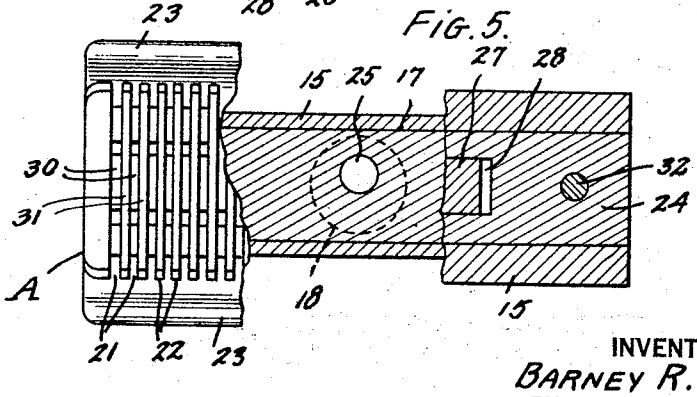


FIG. 5.



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MOTOR DRIVEN DRY SHAVER

Barney R. Nyhagen, New York, N. Y.

Original application July 14, 1936, Serial No. 90,555. Divided and this application June 23, 1938, Serial No. 215,363

5 Claims. (Cl. 30—43)

This invention relates to motor driven razors or hair cutting implements and broadly comprehends an improved device of this character wherein the movable cutter element is exposed for contact with the skin in order to serve as a means for raising the hair and properly guiding and presenting the same between the cutting edges of the teeth of the cutter elements, while the movable element also acts to massage the skin during the shaving operation, and the invention being a division of my United States Letters Patent, No. 2,124,985, granted July 26, 1938.

More particularly the invention resides in a device of the indicated character which includes fixed and movable cutter elements each having teeth provided with cooperative cutting edges between which the hair to be cut is adapted to be engaged, the movable cutter element being so arranged as to contact with the skin in order to agitate and massage the same while functioning to raise the hair to a position perpendicular to the plane of the skin so as to properly guide and present the same to the cooperative cutting edges of the teeth and thereby insure a close and uniform severing of the hair without the necessity of employing shaving soaps or creams.

As a further feature the invention provides in a device of the indicated character, a fixed cutter element and a movable cutter element mounted in the fixed cutter element for longitudinal, reciprocatory and transverse oscillatory movement and in which the toothed portion of the movable cutter member is resiliently mounted and tensioned so as to pull and maintain the teeth thereof into frictional contact with the tooth of the fixed cutter element.

With the above enumerated and other objects in view, reference is now made to the following specification and the accompanying drawing in which there is disclosed an embodiment of the invention, while the claims cover variations and modifications falling within the scope of the invention.

In the drawing:

Fig. 1 is a side view of a motor driven dry shaver with a portion of the handle broken away to show the underlying structure.

Fig. 2 is an enlarged fragmentary transverse sectional view taken approximately on the line 2—2 of Fig. 1 showing the movable cutter element in an intermediate position.

Fig. 3 is a view similar thereto showing the movable cutter element oscillated to one of its side positions.

Fig. 4 is an enlarged side view of the cutter head removed from the holder with parts broken away and shown in section.

Fig. 5 is a sectional plan view taken approximately on the line indicated at 5—5 in Fig. 4.

Referring to the drawing by characters of reference, A designates generally the cutter unit and B the holder member therefor which member consists of a hollow handle constituting a housing for a motor 11 diagrammatically illustrated in the present instance as an electrical motor and having a shaft 12, one terminal of which extends into the groove 13 formed at one end of the handle and is provided with an eccentric or crank pin 14.

The cutter unit A consists of a fixed cutter element 15 and a movable cutter element 16 which is mounted in the fixed cutter element for longitudinal reciprocation and transverse oscillation. The fixed cutter element is of generally rectangular configuration and is formed with a longitudinally extending substantially circular bore 17 having a motor shaft receiving opening 18 intermediate its ends opening through the lower surface and extending upwardly and communicating with the bore 17.

The upper portion of the fixed cutter element is provided with a longitudinal slot 19 opening through the upper end and communicating with the bore 17. The upper surface 20 of the element 15 is of arcuate convex formation and is struck from a center coinciding with the center of the bore 17. The upper surface is provided with transverse longitudinally spaced grooves 21 defining a series of transverse teeth 22 which receive therebetween and in the grooves 21 the hair to be severed. In this form of the invention, the opposite sides of the fixed cutter member 15 are provided with longitudinally extending guard flanges 23 which are curved upwardly and which are adapted to be disposed in contact with the skin during the shaving or cutting operation.

The movable cutter element 16 includes a substantially cylindrical base rod 24 of a diameter to snugly fit within the bore 17 of the fixed element 15 and of a length approximating the length of said bore while the same is provided with a radial opening 25 intermediate its ends and extending inwardly from the periphery thereof to receive the eccentric or crank pin 14 of the motor shaft 12. The movable cutter element 16 also includes a cutter bar 26 which is of a lesser thickness than the width of the slot 19 and which has an enlarged depending key portion 27 intermediate its ends engaging within a keyway 28 in the intermediate upper portion of the base rod 24.

The cutter bar 26 is provided at its upper end with an arcuate T-shaped head 29 which is formed with longitudinally spaced transverse grooves 30 defining a longitudinal series of transverse teeth 31. The under surfaces of the T-shaped head are of concave arcuate formation and are struck from a center corresponding with that of the axis of the bore 17 and of the base

rod 24 so as to coincide with the surface 20 of the fixed element.

The cutter bar 26 is yieldably connected with the base rod 24 by means o a pair of studs 32 threadedly engaged in the cutter bar 26 adjacent the opposite ends thereof and extending downwardly therefrom through apertures 33 and thence into recesses 34 in the base rod 24. Coiled expansion springs 35 surround the studs and are interposed between the kerfed heads 36 thereof and the upper or inner ends 37 of the recesses so that a tension is exerted to normally pull the lower surfaces of the T-shaped upper end 29 into frictional contact with the upper surface 20 of the fixed cutter element. When the motor shaft 12 is rotated, the eccentric pin 14 engaging in the opening 25 of the base rod 24 effects a compound longitudinal reciprocation and lateral oscillation of the movable cutter element with reference to the fixed cutter element.

In operation it will be appreciated that the grooved upper surface of the movable cutter element 16 will contact with the skin in order to agitate and massage the same, thereby promoting circulation coincident with the shaving operation. It will also be apparent that this movement of the movable cutter element while in contact with the skin will, through the medium of the moving teeth, raise the hair to a position perpendicular to the plane of the skin and thus properly guide and present the same to the coacting cutting edges of the teeth so as to effect a close and uniform severing of the hair without the necessity of using shaving soaps and creams and without causing irritation to the skin.

What is claimed is:

1. In a power driven hair cutting implement, a holder and actuating member and a cutter unit carried thereby including cooperative cutter elements relatively fixed and movable with reference to said holder and actuating member, the fixed cutter element having a longitudinally extending circular bore and a longitudinally extending slot communicating with said bore and opening through the upper end of said fixed cutter element, the upper end of said fixed cutter element having an arcuate convex upper surface struck from a center coinciding with the axis of the bore and formed with longitudinally spaced transverse grooves, the movable cutter element comprising a circular base fitted within the bore for reciprocation and oscillation, and a cutter bar of lesser width than the slot extending through said slot and having a substantially T-shaped upper end provided with longitudinally spaced lateral grooves and having arcuate concave under surfaces coinciding with the curvature of the arcuate upper surfaces of the fixed cutter element.

2. In a power driven hair cutting implement, a holder and actuating member and a cutter unit carried thereby including cooperative cutter elements relatively fixed and movable with reference to said holder and actuating member, the fixed cutter element having a longitudinally extending circular bore and a longitudinally extending slot communicating with said bore and opening through the upper end of said fixed cutter element, the upper end of said fixed cutter element having an arcuate convex upper surface struck from a center coinciding with the axis of the bore and formed with longitudinally spaced transverse grooves, the movable cutter element comprising a circular base fitted within the bore for reciprocation and oscillation, and a cutter bar of lesser width than the slot extending through said slot and having a substantially T-shaped upper end provided with longitudinally spaced lateral grooves and having arcuate concave under surfaces coinciding with the curvature of the arcuate upper surfaces of the fixed cutter element, and resilient means for drawing the arcuate surfaces of the fixed and movable cutter elements into contact with each other.

3. In a power driven hair cutting implement, a holder and actuating member and a cutter unit carried thereby including cooperative cutter elements relatively fixed and movable with reference to said holder and actuating member, the fixed cutter element having a longitudinally extending circular bore and a longitudinally extending slot communicating with said bore and opening through the upper end of said fixed cutter element, the upper end of said fixed cutter element having an arcuate convex upper surface struck from a center coinciding with the axis of the bore and formed with longitudinally spaced transverse grooves, the movable cutter element comprising a circular base fitted within the bore for reciprocation and oscillation, and a cutter bar of lesser width than the slot extending through said slot and having a substantially T-shaped upper end provided with longitudinally spaced lateral grooves and having arcuate concave undersurfaces coinciding with the curvature of the arcuate upper surfaces of the fixed cutter element, and resilient means for drawing the arcuate surfaces of the fixed and movable cutter elements into contact with each other, said fixed and cutter elements being provided respectively with interengaging key and keyway means.

4. In a power driven hair cutting implement, a holder and actuating member and a cutter unit carried thereby including cooperative cutter elements relatively fixed and movable with reference to said holder and actuating member, the fixed cutter element having a longitudinally extending recess opening through the upper end thereof, the upper end of said fixed cutter element having an arcuate convex upper surface formed with longitudinally spaced transverse grooves defining teeth, the movable cutter element movably fitted within the recess in the fixed cutter element and projecting through the recess and provided with longitudinally spaced grooves defining teeth overlying and engaging the upper surface of the teeth of the fixed cutter element, and said movable cutter element engaging the actuating member for imparting to the teeth of the movable cutter element combined reciprocatory and oscillatory movements relative to the teeth of the fixed cutter element.

5. In a power driven hair cutting implement, a holder and actuating member and a cutter unit carried thereby including a fixed cutter element having a convex outer surface, a movable cutter element of concavo-convex form in cross section mounted for combined reciprocatory and oscillating movement of the concave surface thereof upon and over the convex surface of the fixed cutter element so that the outer convex surface of the movable cutter element is exposed for contact with the skin.

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