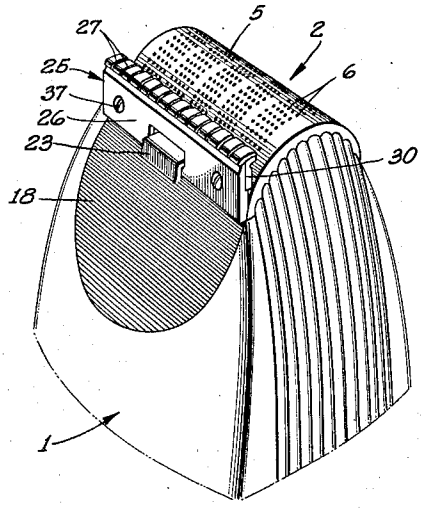
March 13, 1945. A. E. JENSEN 2,371,242

SHAVING MACHINE

Filed June 28, 1941

FIG. 1.



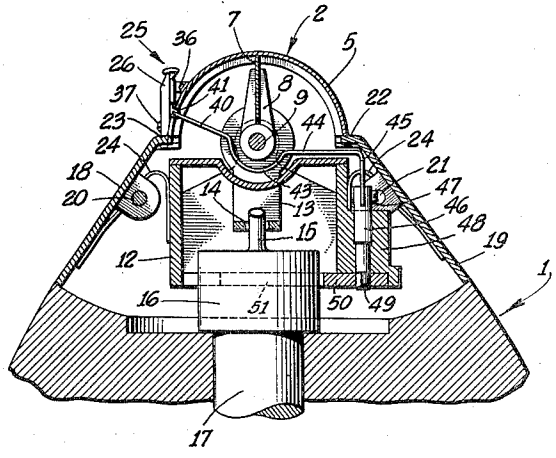


FIG. 2.

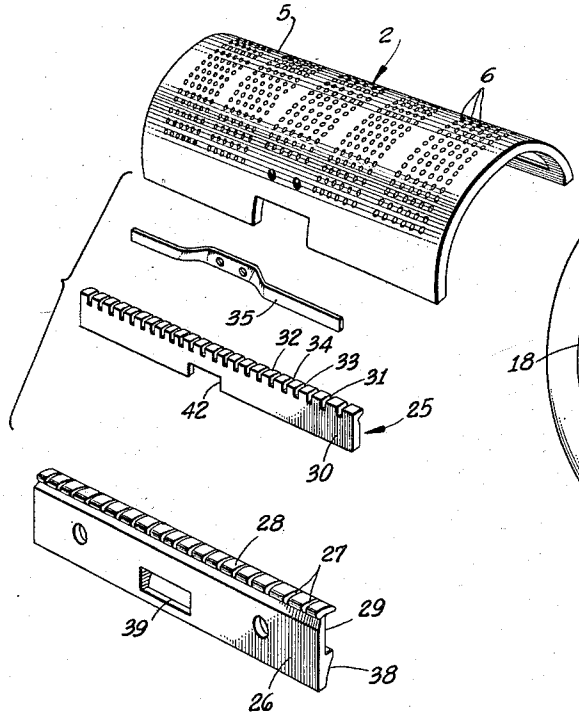


FIG. 4.

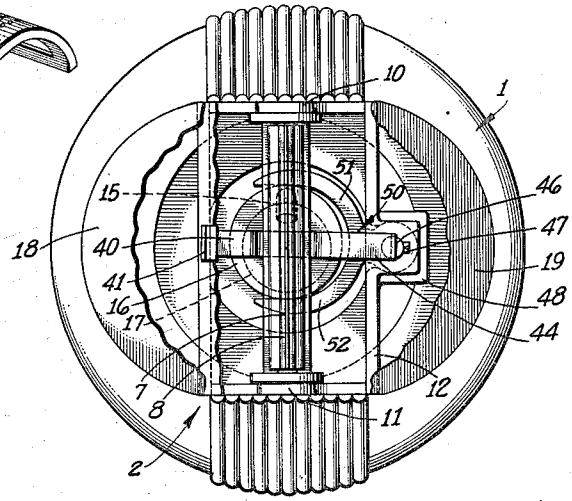


FIG. 3.

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SHAVING MACHINE

Arthur E. Jensen, Anaheim, Calif.

Application June 28, 1941, Serial No. 400,171

1 Claim. (Cl. 30—34)

My invention relates to a shaving machine and has particular reference to an improved shaving machine which includes a hair clipping mechanism particularly adapted to the cutting of relatively long hairs and operating as an adjunct to the conventional close shaving cutters used to cut relatively short hairs.

Conventional forms of shaving machines employ a thin stationary blade having a plurality of hair receiving apertures therein defining shearing edges across which is moved a reciprocating shearing blade to shear off the hairs which are extended through the apertures in the stationary blade. While these machines are admirably suited to cutting short hairs close to the skin surface to provide a close shave, they do not operate satisfactorily when an attempt is made to cut relatively long hairs because the hair receiving apertures are so small that a long hair is bent over and laid flat instead of being extended through the hair receiving apertures. If the thin stationary blade is so formed as to permit the ready cutting of long hairs, it is not satisfactory for close shaving short hairs. The hair receiving apertures are normally made of small size in order to permit the moving blade to be brought sufficiently close to the skin to provide the desired close shave without actually bringing the movable blade into contact therewith. If these apertures are enlarged to facilitate the cutting of long hairs, the skin tends to enter the apertures sufficiently to come into contact with the moving blade and a burning or abrading of the skin results.

The present invention is directed to improving the conventional shaving machine constructions to permit the cutting off of relatively long hairs, and it is an object of my invention to provide a shaving machine which is particularly adapted for the close-shaving of short hairs and which also includes a clipping mechanism particularly adapted to the cutting of long hairs.

It is also an object of my invention to provide a shaving machine of the character set forth in the preceding paragraph in which a slotted stationary blade or comb carrying a reciprocating shearing blade is secured to the stationary blade of a conventional shaving machine.

It is an additional object of my invention to provide a shaving machine of the character set forth in the preceding paragraphs in which the reciprocating blade is drivably connected to the same power source as is used to operate the movable blade of the conventional machine.

It is a still further object of my invention to provide a shaving machine of the character hereinbefore referred to in which the resilient character of the drivable connection is employed for normally urging the shearing blade into engagement with the comb to provide a self-sharpening action of the blade.

It is also an object of my invention to provide a machine of the character hereinbefore set forth which is so constructed as to permit its being readily taken apart for the purpose of cleaning.

It is an additional object of my invention to provide a shaving machine of the character set forth in the preceding paragraphs wherein the device for cutting long hairs is so constructed and arranged as to permit its being incorporated in a conventional shaving machine construction with a minimum of change of the construction.

Other objects and advantages of my invention will be apparent from a study of the following specification, read in connection with the accompanying drawing, wherein:

Fig. 1 is a perspective view of a substantially conventional form of shaving machine embodying the improvement of my invention;

Fig. 2 is a fragmentary longitudinal section through the hair cutting portion of the shaving machine;

Fig. 3 is an end elevation of the hair cutting mechanism with the stationary blade portion removed therefrom to expose the movable blade and the operating mechanism therefor; and

Fig. 4 is an exploded perspective view illustrating the appearance and manner of assembly of the clipping mechanism which is employed for clipping relatively long hairs.

Referring to the drawing, I have illustrated in Fig. 1 a substantially conventional shaving machine which includes a body portion 1 acting as a handle and as a housing for an electric motor of suitable construction and employed for the purpose of driving the hair cutting mechanism indicated generally at 2.

The conventional portions of the shaving mechanism 2 are preferably constructed along the lines disclosed in my copending application, Serial No. 213,640, filed June 14, 1938, and entitled "Shaving machine" and include a semi-cylindrical stationary blade structure 5 of extreme thinness and having a large number of hair receiving apertures 6 formed therein to define shearing edges on the inner surface of the blade member 5 adjacent each of the apertures 6. Coacting with these shearing edges is a movable blade 7 which is mounted upon a blade carrier 8. The carrier 8 is in turn supported for

oscillatory movement upon a transversely extending shaft 9 which may be journaled in suitable ears 10 and 11 formed upon an inner supporting structure 12.

The blade carrier 8 includes a downwardly extending driving bracket 13 which is apertured as indicated at 14 to receive an upwardly extending pin 15. The pin 15 is carried by an enlargement or head 16 associated with a driven shaft 17 which is either drivably engaged with the motor enclosed in the housing 1 or constitutes the shaft of such motor. The pin 15 is eccentrically disposed with respect to the axis of rotation of the shaft 17 so that as the shaft is rotated, the blade carrier 8 is oscillated from side to side about the axis 9 to cause the movable blade 7 to sweep back and forth over the inner surface of the stationary blade 5 and shear at the shearing edges such hairs as may be extended through the apertures 6.

The stationary blade structure 5 may be removably attached to the casing 1 as by mounting on the casing a pair of lever members 18 and 19 hinged as at 20 and 21 and carrying inwardly turned ends 22 and 23 adapted to be extended into suitable notches or apertures formed in the edges of the stationary blade 5. The members 18 and 19 are normally urged into a position engaging the stationary blade 5 as by means of springs 24.

The mechanism above described comprises a shaving machine constructed along the lines defined in my copending application above mentioned. This particular form of construction has been illustrated and described for convenience, it being understood that the improvement of my invention to be described hereinafter may also be incorporated in conventional shaving machine constructions of other types.

The improvement to which reference has been had hereinbefore comprises a clipping mechanism indicated generally at 25 adapted particularly to the cutting of relatively long hairs and operating in conjunction with the conventional close shaving mechanism heretofore described. The clipping mechanism 25 includes a stationary shearing blade or comb 26 which is slotted along its upper edge in a direction transverse to the length of the member to provide a plurality of hair receiving slots 27 disposed between a plurality of comb-like teeth 28. The rear face of the member 26 is grooved or channeled to provide a longitudinally extending recess 29 of rectangular cross section adapted to closely receive and guide a movable shearing blade 30. The blade 30 is also provided with a plurality of slots 31 dividing the edge of the blade 30 into a plurality of teeth 32, each of which in turn defines shearing edges 33 and 34 adapted to coact with similar shearing edges formed by the penetration of the slots 27 into the guiding channel 29.

The blade 30 may be retained within the channel 29 by means of a leaf spring 35 which is preferably secured to the stationary blade structure 5 as by means of rivets 36 in a position to resiliently urge the blade 30 into the recess 29 when the comb member 26 is secured to the stationary blade 5 in a position such as that illustrated in Fig. 2 as by means of rivets or screws 37. In order to provide a solid seating of the comb member 26 with the stationary blade 5 to permit the secure attachment of the comb to the stationary blade, the lower part of the rear surface of the comb 26 is curved as indicated at 38 to conform to the curvature of the stationary blade 5.

The comb member 26 is preferably provided with a centrally positioned rectangular aperture 39 which may be engaged by the inwardly turned lug 23 carried by the attachment member 18 to permit the member 18 to engage the member 26 and thereby hold the member 26 and the stationary blade 5 securely in its proper location upon the casing 1.

Reciprocation of the reciprocating blade 30 may be effected by means of an oscillating arm 40 which has its outermost end turned upwardly as indicated at 41 to engage a notch 42 formed in the lower edge of the reciprocating blade 30. The arm 40 is preferably contoured as illustrated in Fig. 2 to include a downwardly curved portion 43 adapted to pass under the shaft 9 and that portion of the blade carrier 8 which surrounds the shaft 9. The rearward portion of the member 40 is extended substantially horizontally as indicated at 44 and includes a downwardly turned end 45 which may be received within a suitable slot formed in the upper end of a rock shaft 46 and secured therein as by means of a lock screw 47. The rock shaft 46 may be journaled for oscillatory movement in a bearing bracket 48 formed as a part of the supporting structure 12 and is preferably squared as indicated at 49 on its lower end or otherwise formed to provide a drivable engagement with a yoke member 50.

The yoke member 50 includes a pair of spaced arms 51 and 52 extending on opposite sides of the head member 16 and closely embracing the same. In contra-distinction to conventional constructions, the head member 16 is preferably slightly eccentric with respect to the axis of rotation of the shaft 17 so that as the shaft 17 rotates, the yoke member 50 is oscillated in a pivotal fashion about the rock shaft 46. This oscillation of the rock shaft 46 is in turn transmitted to the member 40 and the resulting oscillation of the member 40 produces a reciprocation of the blade 30 within its guiding slot 29 to move the shearing edges 33 and 34 past the coacting shearing edges formed in the comb 26 to thereby cut any hairs which may be extended through the hair receiving slots 27.

It is desired to provide a self-sharpening action for the coacting blades 26 and 30 and for this purpose the oscillating arm 40 is made of spring material having such shape as to normally extend upwardly to a point higher than the bottom of the notch 42. Thus when the blade structure is assembled in the manner illustrated in Fig. 2, the arm 40 will be depressed in opposition to its inherent resilience to provide a constant urging of the blade 30 upwardly into engagement with the under surface of the teeth 27. Similarly, the spring 35 continuously urges the blade 30 inwardly into the recess 29 with the result that such wear as may take place along the contacting surface of the blade 30 and the comb 26 is continuously taken up and such wear acts to maintain the hair shearing edges continually sharpened.

Attention is directed at this point to the small number and minor character of the changes which must be made to the conventional shaving constructions in order to incorporate therein the long hair clipping improvement of my invention. The members 26 and 35 are each secured to a substantially standard stationary blade structure 5 as by means of screws or rviets and the movable blade 30 is merely slid into the channel 29. The bearing bracket 48 may be attached to the supporting structure 12 as by soldering, welding or

other suitable means and in so doing the entire assembly of yoke **50**, rock-shaft **46** and oscillating arm **40** may be incorporated in the conventional construction. The only other change which need be made is the substitution of an eccentric head member **16** for the conventional concentric member now employed.

Attention is also directed to the positioning of the long hair clipping structure **25** at one side of the stationary blade **5** and extending substantially parallel to the axis of the blade supporting shaft **9**. By so positioning the clipping structure **25**, a minimum of interference with the useful area of the stationary blade **5** is achieved while at the same time disposing the comb **26** in a position to permit its being used for the clipping of long hairs without requiring any particular manipulation of the device.

It will be observed that by merely presenting the comb **26** to the skin surface that long hairs may be readily clipped, whereas, a mere reversal of the machine to present the upper and right-hand portions of the stationary blade **5** as viewed in Fig. 2 to the skin will permit the close shaving of relatively short hairs.

To facilitate the ready understanding of the appended claims I have used the terms "stationary blade" and "movable blade" to refer to the coacting members of the conventional close-shaving mechanism while the terms "comb member" and "movable shearing member" have been used to refer to the coacting members of the long hair clipping device.

While I have shown and described the preferred embodiment of my invention, I do not desire to be limited to any of the details of construction shown or described herein, except as defined in the appended claim.

I claim:

In a clipping attachment for use with shaving machines having a shaving mechanism actuated by a crank which is rotated by a self-contained driving means, said driving means being provided with an eccentric member, the combination of: a comb having a plurality of slots cut in a straight edge to define a plurality of stationary shearing edges; a movable shearing member carried by said comb and mounted for reciprocating movement past said shearing edges, said movable shearing member being slotted to define a plurality of shearing edges positioned to coact with the shearing edges of said comb; means for securing said comb to said shaving mechanism in a position to be simultaneously placed against the skin to be shaved; and means for coupling said movable shearing member to said driving means comprising an oscillatable member engaging said eccentric member, a rock-shaft coupled to said oscillatable member, and a driving arm extended between said rock-shaft and said movable shearing member for reciprocating said member simultaneously with actuation of said shaving mechanism.

ARTHUR E. JENSEN.