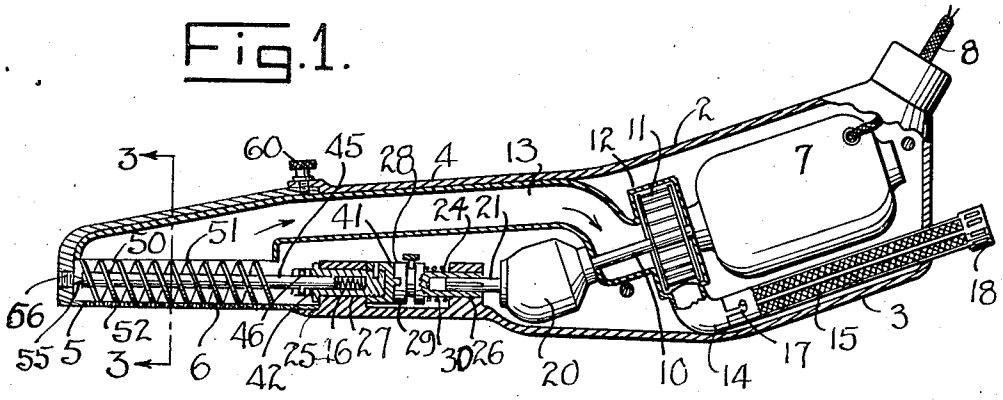
June 17, 1941. J. I. HILL 2,245,917

VACUUM SHAVER

Filed Jan. 25, 1938

Fig. 1.



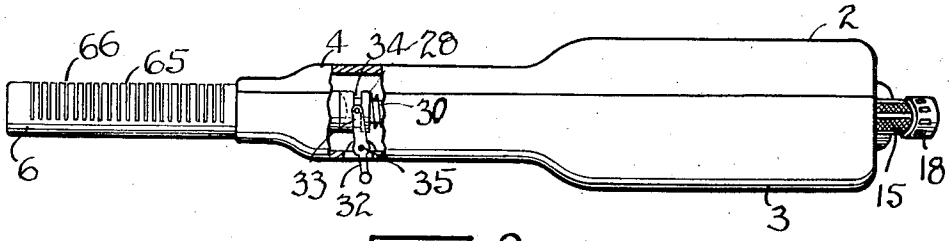


Fig. 2.

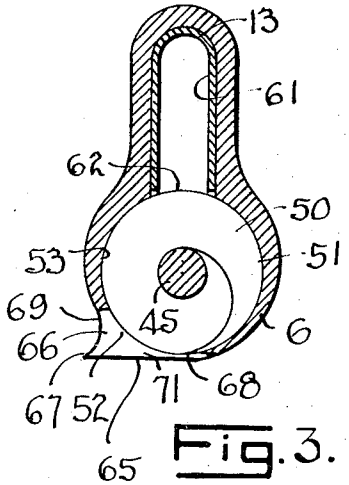


Fig. 3.

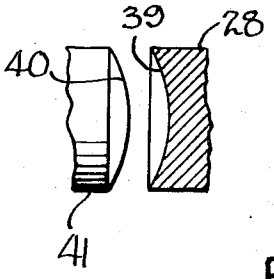


Fig. 4.

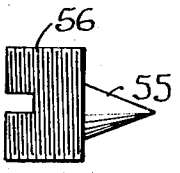


Fig. 5.

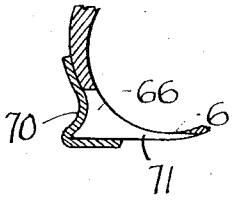


Fig. 6.

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VACUUM SHAVER

John I. Hill, Houston, Tex.

Application January 25, 1938, Serial No. 186,785

4 Claims. (Cl. 30—43)

The invention relates to a vacuum shaver whereby suction is applied to the surface being shaved with a view of cleaning the surface, raising the hair, and removing the cuttings.

With dry or mechanical shavers it is desirable to have a clean surface and to place the hair in a substantially upright position so that it may pass into the shaving device and at the same time remove the cuttings from the surface being shaved, so that such cuttings will not interfere with the entrance of the hair.

The primary object of the invention is to provide a small portable device which will enable the user to first condition the skin, by dry cleansing the surface and ruffling the hair, prior to using the device as a shaver.

Another object is to provide a device which will permit the user to dispense with the customary preparations of the surface to be shaved.

Another object of the invention is to provide an apparatus which will perform a shaving operation while suction is being applied thereto.

Another object of the invention is to provide a device wherein either a combination suction and shaving action may be obtained or whereby the shaving action may be suspended while the suction is continued.

Another object of the invention is to provide a motor for mechanical shavers which also operates a suction fan.

Another object of the invention is to provide a rotating shaving blade which is adjustable to compensate for wear.

Another object of the invention is to provide a clutch mechanism for release of the shaving blade while the driving motor continues to operate.

Another object of the invention is to provide a removable housing for mechanical shavers so that the shaving blade may be readily removed and adjusted.

Another object of the invention is to provide a spiral worm shaving blade wherein the cutting faces are inclined with respect to the axis.

Other and further objects of the invention will be readily apparent when the following description is considered in connection with the accompanying drawing, wherein—

Fig. 1 is a side elevation with the housing shown in section to illustrate the general arrangement and combination of the parts.

Fig. 2 is a bottom plan view of Fig. 1.

Fig. 3 is a section taken on the line 3—3 of Fig. 1.

Fig. 4 is a broken detail view of the clutch connection between the shaver and the driving motor.

Fig. 5 is a view of the eccentric bearing for supporting the end of the shaving blade.

Fig. 6 shows an attachment for the cutting head so that the hair will not enter the blade when it is desired to use only the suction device.

In Fig. 1 a housing 2 is of peculiar contour in that it is made up of a handle portion 3 which will be grasped by the user. The handle portion 3 extends at an angle with respect to the operating end thereof, so that the cutting head 5 may have the surface 6 thereof applied to the surface to be shaved without inconvenience.

This entire housing 2 may be streamlined and arranged as shown in the bottom plan view in Fig. 2.

Inside of the handle portion 3 is a motor 7 which may be operated by the electrical connection 8. A shaft 10 is driven by the motor and carries a suction fan 11, which is rotated inside of the casing 12. This fan is arranged to exhaust air from the conduit 13 and to discharge it in through the tube 14 into the screen or receptacle 15.

This receptacle 15 has a releasable connection 17 with the tube 14 so that it may be readily removed for cleaning. This screen 15 is arranged to receive dirt, dust, and cuttings which are drawn through the conduit 13 by the suction of the fan 11. A knurled head 18 on the container 15 may facilitate its removal.

Beyond the fan 11 a speed changing unit 20 may be positioned to be operated by the shaft 10. In some instances this unit may contain gearing for increasing the rate of rotation of the output shaft 21 from the unit and in other instances it may be so designed that it will reduce the speed of the output shaft 21. This would depend upon the size and speed of the motor 7 and the rate of rotation which is desired at the shaver. It will be noted that this unit also changes the axis of rotation of the output shaft 21 so that the handle is inclined backwardly at an angle with respect to the axis of the shaver assembly, which is indicated generally at 25.

The housing 4 carries the bearings 26 and 27 in which the shaver assembly is mounted. The output shaft has a sleeve 24 splined thereon for longitudinal sliding movement and this sleeve carries a head 28 which forms part of a clutch 29. A spring 30 serves to urge the head 28 to the left as viewed in Fig. 1.

A clutch handle 32 is formed on a yoke 33

which fits in the groove 34 in the head 28. This handle extends from the housing, as seen in Fig. 2, and when it is pressed to the left it will serve to retract the head 28 because of the fact that this handle is pivoted at 35 in the housing.

The head 28 is provided with a friction face 39 which is arranged to cooperate with a corresponding friction face 40 on the cap 41. This cap 41 is pinned or otherwise affixed on a short shaft 45 slidable therein. A spring 46 tends to urge the shaft 45 to the left but the spring pins 46 engage a depressed area in the shaft 45 and hold such shaft against complete removal and at the same time cause the shaft 45 to rotate with the sleeve 42.

The shaft 45 carries the cutting blade 50 which is in the nature of a helix in which the worm portions 51 of the blade are inclined and provided with a flat peripheral face 52 which is arranged to travel on the inside face 53 of the cutting head 6. This construction is best seen in Fig. 3. The outer end of the cutter blade 50 is arranged to rotate upon a bearing 55 which is formed on an eccentric screw or support 56. This screw is rotatably mounted in the cutting head 6 so that rotation of it will tend to move the blade 50 toward and away from the inside periphery 52 of the head. Thus in event of wear the adjustment of this screw 56 will always make it possible to adjust the position of the blade to perform the proper cutting action.

The head 6 is peculiarly formed, as seen in Fig. 3, as a separate portion which will be affixed on the housing 2 by a set screw 60. This head has an upper raised portion which fits over the elongated part 61 of the conduit 13 so that an opening 62 is provided directly behind the cutter blade 50. Thus the suction from the fan 11 will be applied directly to the blade portion 51 and create a suction by these blades to withdraw any material picked up by the blade.

The contact face 65 of the head 6 is arranged with a plurality of openings or slots 66 into which the hair will pass in order to come in contact with the rotating blade 50. As seen in Fig. 3, this cutting surface 65 may have a projecting lip 67 to assist in guiding the hair into the blade. The thinner surface 68 will determine the depth of the cut which will be made with respect to the hair. In event it is desired to close off the front face 69 of the slot 66 a cover plate 70 may be affixed thereon as seen in Fig. 6. In this manner the suction will be applied only to the lower portion 71 of the slots so that the amount of suction will in this manner be increased. This attachment may be used when it is desired to use the device merely to clean the surface and when the clutch 28 is being manipulated to hold the cutter blade 50 inoperative.

In operation it seems obvious that with the suction being applied through the slots 66 that particles of foreign matter will be drawn into the device so as not to interfere with the shaving action and at the same time this suction will raise the hair so that it will be drawn into the slots 66 to facilitate the shaving action. The cutter blade may be rotated at any desired speed depending upon the type of speed changing unit 20 which is utilized. When wear occurs on the blade the screw 56 may be adjusted to compensate therefor and when it is desired to remove the blade it is only necessary to release the screw 60, remove the head 6, and then the cutter blade 50 can be readily withdrawn.

Broadly the invention contemplates a combination suction shaver wherein both the suction and shaver may be utilized or where the shaving operation can be suspended so that continued suction produces cleaning action upon the surface over which the shaver is passed.

What is claimed is:

1. A vacuum shaver comprising a housing, a motor therein, a suction fan, a shaver device, means connecting said fan and device to said motor so that a suction is applied to the surface while the shaver operates, and clutch means to release said shaver while said fan continues to operate so that the suction produced by the fan effects cleaning action upon the surface over which the shaver is passed.

2. An electrical shaver comprising a housing, a motor therein, a shaver attachment, a suction device, means to drive both said shaver and suction device from said motor, said means including a release therefrom for the shaver to permit said device to be separately operated so that the surface to be shaved can first be conditioned by passage of the shaver over the surface before using the shaving mechanism.

3. A vacuum shaver comprising a housing, a motor therein, a suction fan, a shaver device including a cutter head, a rototable blade in said cutter head, said head having slots therein leading to said blade, means connecting said fan and blade to said motor including a release for the blade so as to operate said fan independently, and a removable shield adapted to cover a portion of said slots so that the surface to be shaved can first be conditioned by application of suction through the open portion of the slots before using the shaver device.

4. A vacuum shaver comprising a housing, a motor therein, a suction fan, a shaver device, means connecting said fan and device to said motor so that a suction is applied to the surface while the shaver operates, and a cover member to be applied to said shaver device to cover a portion of the opening thereto while the suction is maintained, whereby the suction applied to the surface is increased.

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