Aug. 15, 1944. L. C. SAXE 2,355,898

ELECTRIC RAZOR HEAD ASSEMBLY

Filed Dec. 28, 1940

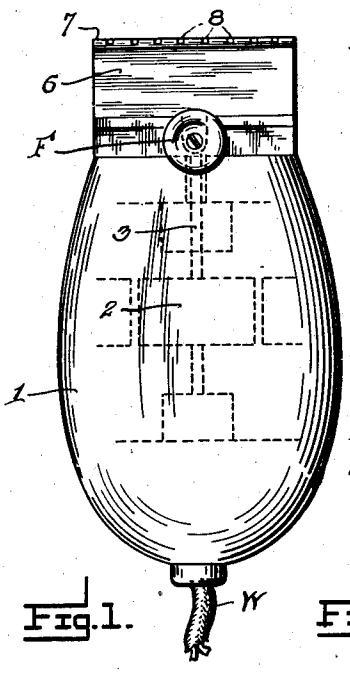


Fig. 1.

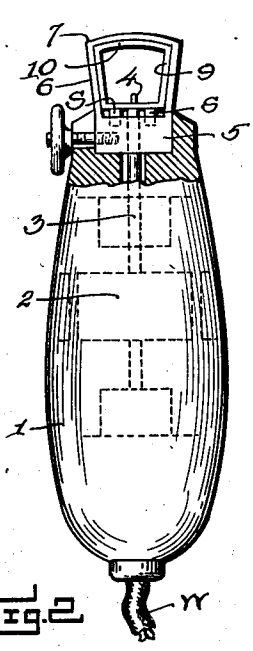


Fig. 2

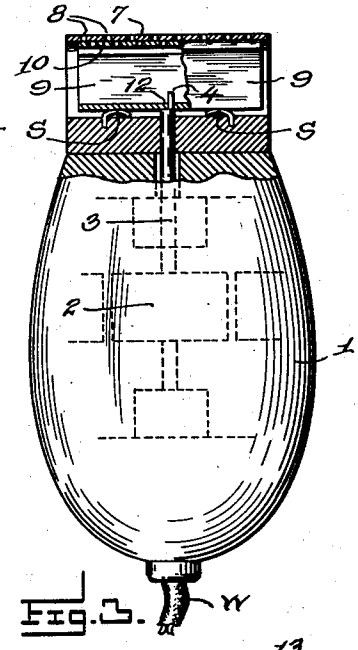


Fig. 3.

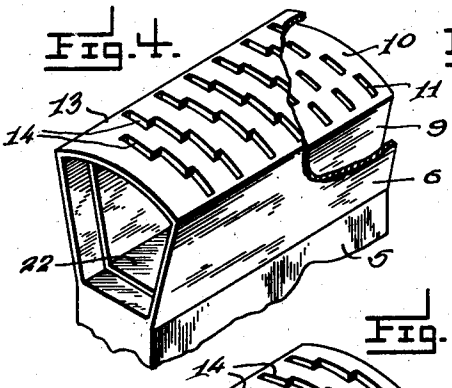


Fig. 4.

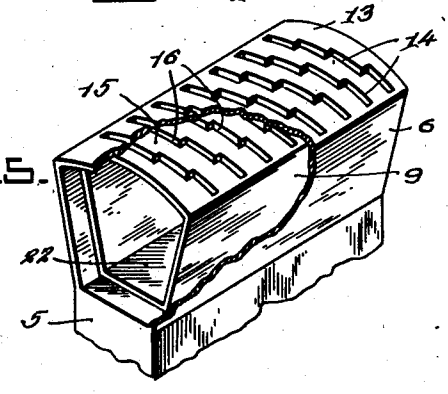


Fig. 5.

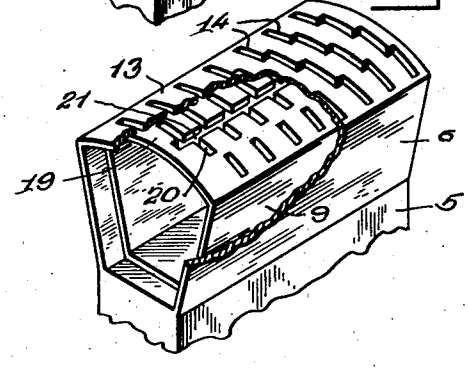


Fig. 6.

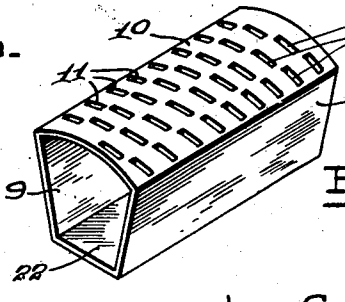


Fig. 7.

INVENTOR

LEO C. SAXE.

BY Lester L. Sargent

ATTORNEY

Patented Aug. 15, 1944 2,355,898

UNITED STATES PATENT OFFICE

2,355,898

ELECTRIC RAZOR HEAD ASSEMBLY

Leo C. Saxe, Washington, D. C.

Application December 28, 1940, Serial No. 372,164

4 Claims. (Cl. 30—43)

The object of my invention is to provide a more efficient and more useful head for electric shaving machines, whereby a greater surface-cutting area is provided and the machine is so shaped that the shaving may be done close to the nose.

It is an especial object of my invention to provide a razor head which may be readily attached to other electric razors now in use in place of the less efficient heads with which many of them are equipped.

It is also an object of my invention to provide a razor head having slots disposed in offset relation so as to provide a plurality of offset cutting edges and also to provide somewhat larger slots than those in most razors now in use, so that more efficient shaving may be accomplished.

I attain these and other objects of my invention by the heads illustrated in the accompanying drawing, in which:

Figure 1 is a front elevation of a complete razor;

Fig. 2 is an end elevation partly in section to show the removable head and cutter element;

Fig. 3 is a front view with parts broken away and shown in section to show the driving shaft, cutter element and springs;

Fig. 4 is a perspective view in which continuous staggered slots are provided in the head and spaced staggered slots are provided in the cutter element;

Fig. 5 is a perspective view in which continuous staggered slots are provided in both the head and cutter element;

Fig. 6 is a perspective view in which continuous staggered slots are provided in the head and spaced staggered slots with a central contacting slot are provided in the cutter element;

Fig. 7 is a perspective view of the cutter element detached from the rest of the razor.

Like numerals designate like parts in each of the several views.

Referring to the accompanying drawing, there is illustrated a conventional electric razor handle or body 1 having a suitable conventional motor 2, a driven shaft 3, which shaft is provided with an offset extension pin 4 for causing a reciprocatory movement of the cutter element; a head 5 is detachably secured to the handle by the thumb screw F. The head 5 has sides 6 and top 7 which has slots such as the transverse spaced staggered slots 8. Longitudinally slidable within the head 8 is a cutter element 9, having its cutter element of similar contour as the contour of the head 7 and having suitable transverse spaced staggered slots such as the slots 11.

Referring to Figs. 4, 5 and 6 there is illustrated a modified head 13 having continuous and connected staggered slots 14 extending substantially from end to end.

Referring to Fig. 5 there is shown a form of the invention in which the cutter element 15 has continuous and connected staggered slots 16. These figures show applicant's preferred forms and Fig. 5 shows the form which applicant considers best. In the form the slots of both elements are continuous, thus affording the largest amount of effective cutting surface without unduly widening the blade.

Referring to Fig. 6, there is shown a form of the invention in which the cutter element 19 has staggered slots 20 which open into a longitudinal central slot 21.

Spaced under the cutter element are suitable springs such as a pair of leaf springs S bearing against the bottom of the cutter element and tending to press its top member 10 into close engagement with the under surface of the head 7. Applicant uses leaf springs rather than coil springs because they are less expensive and can be mounted by merely seating their ends or shanks in suitable slots in the razor head, as shown in Fig. 3. W indicates the conventional electric wires leading to the conventional electric motor 2 contained within the handle 1. The extension pin 4 of motor shaft 3 engages in a suitable slot 12 which preferably is elliptical in shape to cause a longitudinally slidable movement of the cutter element when the motor shaft 3 is rotated. When the head and cutter element are of the preferred shape shown in the accompanying drawing, this slot is necessarily elliptical since no rotary motion of the cutter element in this form of the invention is possible.

In operation, the rotation of motor shaft 3 causes the offset pin 4 to give a longitudinally slidable reciprocatory movement to the cutter element 9, whereby the cutter element 10 will slide back and forth under head 7 and hairs projecting through the slots 8 and 11, or 8 and 16, or 8 and 20, or 14 and 11, or 14 and 16, or 14 and 20, or 18 and 11, or 18 and 16, or 18 and 20 will be shaved by the cutter element during its reciprocatory travel under the head 7.

It will be noted that in my head and cutter element all of the slots are spaced in a staggered relation and that there is a relatively wide operating surface provided on the head and that the operating surface of the head and cutter elements are only slightly curved, whereby a more efficient action of the razor in actual use is made possible.

Due to the staggered arrangement on the broad face of my head and cutter element, the razor cuts over the entire exposed surface of the head of the razor and does not cut over the same space twice as is true of many razors of the prior art. The efficiency of the razor is multiplied over the razors now in use due to the increased operating cutter surface, and its shape makes possible shaving close to the nose which is not possible with electric razors having cylindrical heads.

The thought underlying my invention is that the portions of the metal between the openings on the head and cutter should be about three times wider than the open slots, which are very narrow. Because of the relatively large amount of metal between the slots the cutters are very wear-resistant. The openings cannot be much wider because of the necessity of cutting the hairs in an erect position, which could not be accomplished if the openings were any, or more than slightly wider. It has been found by manufacturers that the open spaces or slots through which the hairs protrude to be cut by the cooperative cutter must be approximately 1/96 of an inch wide, thereby prohibiting the hairs which protrude through these slots from moving from side to side or bending while they are being clipped by the cooperative cutter. By making four series of slots and staggering these slots, as shown in the drawing an increased cutting area is provided by my device, thus permitting the cooperative cutter to contact all the hairs of a given surface which lie within the swath of the razor in one movement of the razor upward and downward. Hence, in one stroke, the following rows of openings in the head receive the whiskers, and the razor cuts that part of the beard which could not be cut because they were under the preceding row of metal partitions.

The especial advantage of my device is that the member 5 of the head is of the same size as the heads of many other razors now on the market and this head may be readily applied in place of electric razor heads that are less efficient due to the difference in contour and in number and arrangement of slots from that disclosed in the accompanying drawing.

The screw F detachably engages the portion 5 of the head to permit of the convenient attachment or detachment of the razor head from the handle or body 1 of the electric razor.

What I claim is:

1. In a head for electric razors, the combination of a detachable head having a broadly arcuate operating surface, said head having a series of continuous and connected staggered slots, a cutter element of similar contour to the head and having a corresponding series of staggered slots in its top surface, leaf springs having one of their ends securely fixed in the head, and having their free ends bearing against the cutter element to hold it in operative contact with the under surface of the head, and means for actuating the cutter element from an electric motor shaft.

2. In a head for electric razors, the combination of a detachable head having a broadly arcuate operating surface, said head having a series of very narrow continuous staggered slots in its top surface to prevent the bending from side to side of the hairs in the slots, a cutter element of similar contour to the head and having a series of very narrow continuous staggered slots in its top surface, resilient means holding the cutter element in operative contact with the under surface of the head, and means for actuating the cutter element from an electric motor shaft.

3. In a head for electric razors, the combination of a detachable head having a broadly arcuate head, said head having a series of continuously connected staggered slots, a cutter element of similar contour to the head, said cutter element having a series of continuously connected staggered slots in its top surface, said slots being sufficiently narrow to allow but one hair to enter a slot at a time at any given point in the slot and preventing bending from side to side of the hairs received in the slots, leaf springs each having one of its ends fixed in the head and having a free end resiliently pressing on the cutter element to hold it in operative contact with the under surface of the head, and means for actuating the cutter element from an electric motor shaft.

4. In a head for electric razors, the combination of a detachable head having a broadly arcuate operating surface, said head having a series of connected and continuous staggered slots, a cutter element of similar contour to the head, and having a like series of slots in its top surface, L-shaped leaf springs having their downturned ends fixed in the head and having their free ends pressing against the cutter element to hold it in operative contact with the under surface of the head, and means for actuating the cutter element from an electric motor.

LEO C. SAXE.