June 23, 1942. E. C. BRULL 2,287,020

SHAVER

Filed March 16, 1939

Fig. 1

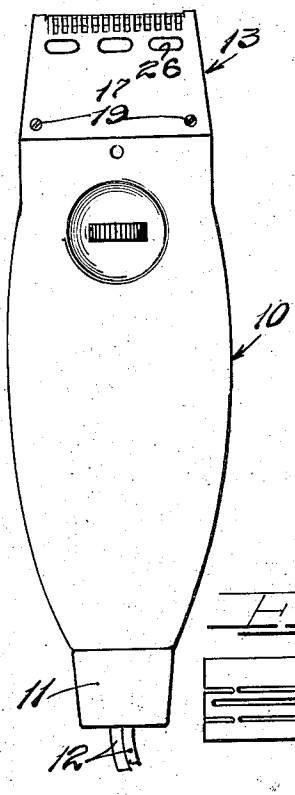


Fig. 2

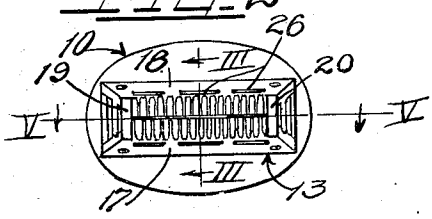


Fig. 3

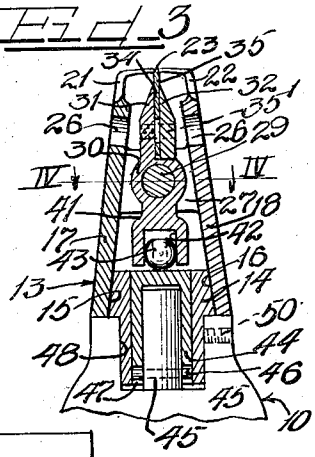


Fig. 7

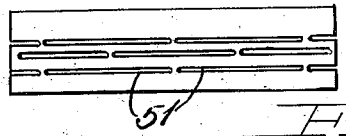


Fig. 5

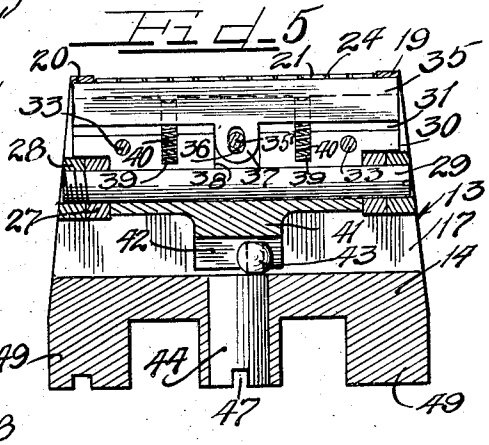


Fig. 6

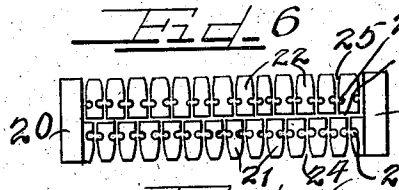
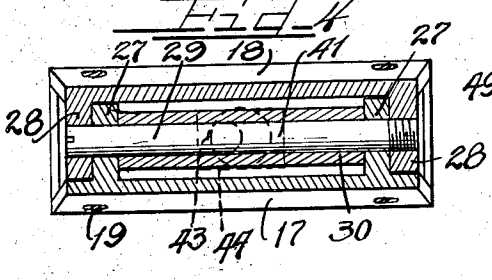


Fig. 4



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2,287,020

SHAVER

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Application March 16, 1939, Serial No. 262,115

16 Claims. (Cl. 30—43)

This invention relates in general to devices for clipping hairs, especially mechanically actuated shavers, and is particularly concerned with improvements in the cooperatively associated clipping or shaving instrumentalities.

More specifically, the present invention seeks to provide an improved cutting head construction and associated cutter blade mechanism, which are simple in construction, efficient in operation and which are not apt to get out of order or give trouble over long periods of use.

A further object of the herein described invention is to provide an improved shaving device in which the hairs will be more efficiently guided to and held during the cutting operation.

A further object is to provide a shaving device having an improved cutting blade arrangement.

Another object is to provide a device of the herein described type utilizing a novel cutter-blade construction.

Still another object of the invention is to provide as an article of manufacture an improved cutter blade of such construction as to enable its being fabricated by simple and relatively low cost manufacturing operations.

It is also an object of the invention to provide a cutting head of improved construction, wherein the frame parts of the head are secured together in a novel manner, and in which the securing means serves as a support for the moving cutter-blade mechanism.

Other objects and features of the invention will more fully appear from the following detailed description taken in connection with the accompanying drawing which illustrates several embodiments thereof, and in which:

Figure 1 is a plan view of a shaver having the present invention applied thereto;

Figure 2 is an end view of the same looking towards the cutting head;

Figure 3 is an enlarged transverse section taken through the head end of the shaver, taken substantially on line III—III of Figure 2;

Figure 4 is a transverse sectional view through the shaver head, taken substantially on line IV—IV of Figure 3;

Figure 5 is an enlarged longitudinal section through the head, taken substantially on line V—V of Figure 2;

Figure 6 is an enlarged plan view showing one arrangement of hair receiving slots in the shaver head; and

Figure 7 is a similar view showing a different arrangement of hair receiving slots.

As shown on the drawing:

The present invention is susceptible of use in mechanical shavers and may be actuated by any suitable power source. In the present instance, the invention is illustrated as being embodied in a shaver of the electric type, wherein a casing 10 is provided which encloses the driving motor. This casing may be provided as in the usual practice with a connection plug 11 at one end by means of which the driving motor may be connected to a source of suitable electric energy through a pair of conductors 12. The shaver head assembly as generally indicated at 13 is mounted at the opposite end of the casing 10, the head embodying the hair cutting instrumentalities.

More specifically, the head comprises a base member 14 of elongate construction and having beveled lateral opposed edges 15 and 16.

Extending upwardly from the base member, there is provided a pair of converging frame parts 17 and 18 which may be connected at their lowermost edge portions to the beveled edges 15 and 16, respectively, as by screws 19—19, as shown in Figure 1.

These frame parts at their uppermost ends are joined by end bridging portions 19 and 20.

Between the bridging portions 19 and 20, the upper margins of the frame parts 17 and 18 are reduced in thickness and arranged to provide a plurality of inwardly extending teeth 21 and 22 having their free ends spaced apart to define a longitudinally extending slot 23.

As shown in Figure 6, the teeth 21 are in ailgnment and are spaced apart by intervening hair guiding slots 24, and that the teeth 22 are similarly aligned and spaced apart by hair guiding slots 25, the slots 24 and 25 being in staggered relation on opposite sides of the slot 23. With this arrangement, the ends of the teeth define cutting sections at the sides of the longitudinal slot 23, and it will be noted that the innermost end of each hair guiding slot has a cutting section disposed directly across the longitudinal slot from it. If a hair is guided by a hair guiding slot into the slot 23 this hair will be forced against a cutting section on the opposite side of the slot 23 and severed by the cooperating action of a laterally moved cutting blade to be described later in detail. While the principal cutting of the hairs will take place in the longitudinal slot 23, provision is also made for cutting hairs in the hair guiding slots 24 and 25, by providing these slots with confronting edge recesses 24' and 25'. These recesses will hold some of the hairs entering the hair guiding slots against

movement by the cutting blade and the edges of these recesses will cooperate with the cutting blade to effect a shearing action and thus increase the efficiency of the device.

If desired, the upper margins of the frame parts 17 and 18 may be provided below the rows of teeth with openings 26 for the passage of hair particles removed during the shaving operation.

Substantially midway of their height, the frame parts 17 and 18 are respectively provided with inwardly extending end lugs 27 and 28, as shown in Figures 4 and 5, which are in overlapping relation and are secured together by a common screw 29, this screw extending longitudinally between the frame parts 17 and 18 for a purpose later to be described. It will be noted that the overlapping projections 27 and 28 on each end of the associated frame member form a bridging connection between the frame members as well as a support for the screw 29.

Supported for rotative movement on the screw 29 is a blade support 30. This blade support is provided with an integral jaw 31 which extends above the pivot 29 and is associated with a companion jaw 32 which may be secured to the jaw 31 as by suitable securing means such as rivets 33. The faces of the jaws 31 and 32 are spaced apart to define a groove 34 arranged to receive and support a cutter blade 35 in edgewise position therein.

The blade is free for outward movement in the groove, but is retained against removal from the groove by means of a pin 35' which extends into a slot 36 formed in a projection 37 on the lowermost edge of the blade, the projection 37 being disposed within a central groove 38 communicating with the groove 34. There is sufficient clearance between the projection 37 and the walls of groove 38 to permit slight longitudinal tilting movement of the blade, but retain the blade against excessive longitudinal shifting.

The outermost edge of the blade 35 forms a cutting edge which is pressed against the under surface of the teeth 21 and 22 on either side of the slot 23, by means of suitable springs 39—39 seated in suitable recesses 40 on either side of the groove 38, these springs having their outer ends bearing against the lower edge of the blade 35. The under surfaces of the teeth 21 and 22 which are engaged by the cutting edge have a radius of curvature with its center coincident with the axis of the pivot screw 29.

For moving the blade support, the blade support is centrally provided with a downwardly projecting portion 41 having an end groove 42 having its axis extending longitudinally of the blade support. This groove is cooperatively associated with a ball crank pin 43 on the upper closed end of a cup-shaped member 44 rotatively supported in the base member 14.

The cup-shaped member 44 provides a socket for receiving therein the end of a motor driving shaft 45 fitted with a diametrically extending pin 46 having projecting ends adapted to removably enter suitable slots 47 at the open end of member 44.

In order that the cutting head may be removably associated with the casing 10, the casing at its head end is longitudinally grooved as shown at 48 for receiving shank portions 49—49 integrally formed with and projecting below the body of the base member 14. The base may be removably retained in connected relation with the casing by means of a retaining screw 50, as shown in Figure 3.

It will be noted that as the driving shaft 45 is rotated, the ball crank 43 will operate to cause oscillatory movement of the blade support to move the blade over the under surface of the teeth 21 and 22 across the slots therein. Since the blade 35 is of greater width than the slot 23, the cutting edge of the blade will readily move across the slot 23 without interference. Moreover, the hairs entering the slots 24 and 25 during cutting operation will be pushed against the ends of the teeth directly opposite the slots which operate to hold the hairs against further movement while they are being cut by the cutter blade.

Referring to Figure 7, there is shown a slightly modified arrangement of hair receiving slots. In this construction, instead of providing a single longitudinally extending slot with laterally disposed slots in staggered relation as previously described, the area between the bridging members 19 and 20 is provided with a plurality of rows of aligned slots in end to end relation, these slots being indicated at 51. It will be noted that the slots of each row have their ends spaced apart, and that the slots of adjacent rows are in staggered relation.

From the foregoing description it will be apparent that the invention disclosed herein provides an improved shaver having a cutting head construction and associated cutter-blade mechanism which are simple in arrangement, efficient in operation and which are not apt to get out of order or give trouble over long periods of use; which includes improved means for more efficiently guiding the hairs into a cutting position; which includes an improved cutting blade arrangement, having novel means for supporting the cutting blade; and which utilizes as an article of manufacture an improved cutter blade of such construction as to enable its being fabricated by simple and relatively low cost manufacturing operations.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim as my invention:

1. In a device of the character described, a cutting head having a thin portion with a longitudinally extending slot along the entire length thereof, a flat cutter blade extending longitudinally of the head and having a cutting edge of greater width than the slot, said blade edge being aligned longitudinally with said slot and in engagement with the inner side of said portion, said blade being movable across said portion.

2. In a shaver, a cutting head having a thin portion with a plurality of longitudinally extending slots therein, certain of said slots terminating in the ends of said cutting head, a movable cutter blade extending longitudinally of the head and having a cutting edge engaging the inner side of said portion, the longitudinal axis of the blade being parallel to the axes of said slots.

3. In a shaver, a cutting head having a thin perforate portion, a flat cutter blade disposed edgewise and having a cutting edge, a transversely extending pivotal support between the ends of said blade for enabling longitudinal tilting movements and for limiting outward movements thereof, means normally urging the blade outwardly with respect to said pivotal support

for bringing the cutting edge into engagement with the under side of said portion, the blade being movable across said portion.

4. In a shaver, a cutting head having a thin perforate portion, a flat cutter blade disposed edgewise thereto and having a cutting edge, a transversely extending pivotal support between the ends of said blade for enabling longitudinal tilting movements and for limiting outward movements thereof, separate springs disposed on either side of and acting to move the blade outwardly with respect to said pivotal support and press its cutting edge against the under surface of said portion.

5. A shaver comprising a pair of spaced frame parts, means including a pin for interconnecting said parts, said parts having inwardly deflected perforate outer margins, a frame rotatively supported on said pin, a groove along the length of said frame extending radially of and in spaced relation from said pin, a flat cutter blade supported edgewise in said groove having its cutting edge operatively associated with said margins, said blade being free to move outwardly against the inner surfaces of said margins.

6. A shaver comprising a pair of spaced frame parts interconnected at their ends by overlapping bridging portions, a pivot passing through and being supported by the bridging portions, said parts including a thin perforate portion, a blade support rotatable on the pivot, a cutter blade carried edgewise in the blade support, a second pivot supporting said cutter blade on said blade support for outward and longitudinal tilting movements, said blade having a cutting edge coacting with the perforate portion.

7. In a shaver, a flat blade having a vertically slotted projecting portion formed on an edge opposite the cutting edge thereof.

8. In a device of the character described, a cutting head having a thin portion, a relatively narrow longitudinally extending slot in said portion, a plurality of hair guiding slots communicating with and laterally extending from the opposite sides of the longitudinally extending slot, the hair guiding slots on one side being staggered with relation to the corresponding slots on the other side to define teeth therebetween, edge recesses in the slot defining sides of said teeth, an edge-wise disposed and laterally movable cutter blade extending longitudinally of the head and having a cutting edge engaging the inner surface of said portion.

9. In a device of the character described, a cutting head having a thin portion, a relatively narrow longitudinally extending slot in said portion, a plurality of hair guiding slots communicating with and laterally extending from the opposed sides of the longitudinally extending slot, said slots defining spaced rows of staggered teeth, edge recesses along intermediate portions of the slot defining sides of said teeth, the edge recesses in each row of teeth being in longitudinal alignment with respect to said longitudinal slot, and an edge-wise disposed and laterally movable cutter blade extending longitudinally of the head and having a cutting edge engaging the inner surface of said portion.

10. In a shaver, a cutting head of a thin material deformed to provide a generally rectangular wall portion having a substantially flat outer surface, depending spaced side walls integrally formed with said first wall portion, overlapping end projections extending between said wall portions, blade supporting means pivotally supported on said projections, a flat cutting blade removably carried by said means in edgewise position, said blade having a cutting edge extending longitudinally of the head and engaging said inner arcuate surface.

11. In a device of the character described, a cutting head having a spit portion defined by transversely spaced shearing faces extending lengthwise of said portion, a plurality of slots extending outwardly from said shearing faces in opposed staggered relation, a laterally movable cutter blade extending longitudinally of said head across said slots and engaging against the inner side of said cutting head portion, said cutter blade being wider than the space between said shearing faces.

12. In a shaver, a cutting head having a generally rectangular split wall portion defined by transversely spaced shearing faces, said wall portion having a substantially flat outer surface and an arcuate inner surface, support walls for said cutting head extending angularly away therefrom, slots extending outwardly from said shearing faces in opposed staggered relation through said split wall portion and terminating in said support walls, a cutter blade having a cutting edge, said blade being actuatable to move said cutting edge over said arcuate inner surface.

13. In a shaver, a cutting head having a perforate hair receiving portion, a flat cutter blade disposed edgewise against the perforate portion of said cutting head, an oscillating member having a slot for slidably receiving said flat cutter blade, coil springs between said oscillating member and said cutter blade for maintaining the latter against the perforate portion of said cutting head.

14. In a shaving device, a cutting head having a portion with a plurality of aligned rows of slots extending longitudinally along said portion, the slots in each row having their ends in spaced apart relation, the slots in adjacent rows being in staggered relation, and slots in every other row terminating in the ends of said cutting head, a cutter blade having a surface defining cutting edges in parallelism with the axes of said slots and in full face engagement with the under side surface of said portion, said cutter blade surface being movable over said under side surface.

15. A shaver having spaced opposed sidewalls defining a frame portion substantially rectangular in cross-section, inwardly extending overlapping projections on the ends of a pair of opposed sidewalls, inwardly deflected perforate outer edge margins on said sidewalls, a pivot member interconnecting said projections, a cutter blade rotatively supported on said pivot member and having a cutting edge for engaging the under surfaces of said margins.

16. As an article of manufacture, a shaver blade comprising a generally rectangular flat body portion having longitudinally extending parallel edges, one of said edges defining a cutting edge, and a narrow projection on and extending from substantially the central portion of the other of said edges, and a slot through said projection.

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