

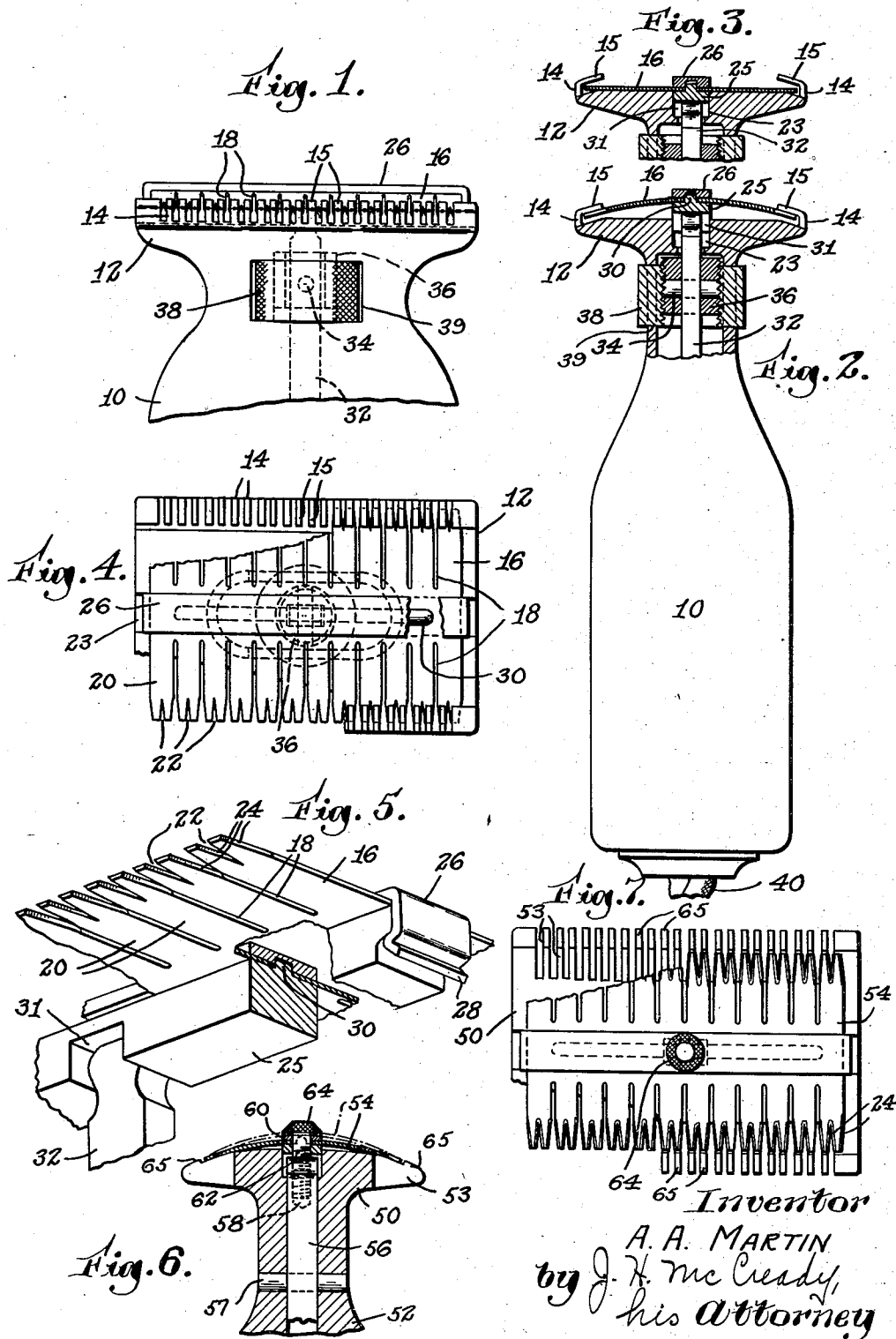
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HAIR CUTTING INSTRUMENT

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HAIR CUTTING INSTRUMENT

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This invention relates to hair cutting instruments of the clipper type wherein a plurality of cooperating teeth or shearing edges engage and sever the hair therebetween, and more particularly of the type disclosed in my copending application Ser. No. 134,823 filed April 3, 1937. Hair cutting clippers of this general nature have been known and in use for years, and closer cutting instruments commonly known as "dry shavers" have more recently come into use. While these latter instruments cannot sever the hair at the skin surface as is done with the razor employing a single continuous cutting edge, they do, by employing relatively thin guard teeth, sever the hair closely adjacent to such surface. It will be understood that it is desirable to sever the hair as closely as possible since the character of the shave depends upon this approximation. One object of my invention is the production of an improved instrument of this nature which will shave closer than other like instruments heretofore known.

These clipper type instruments employ a stationary toothed member and cooperating therewith is a toothed member arranged to have a relative shearing movement. In accordance with the preferred embodiment of my invention, the movable shearing member comprises a relatively thin and resilient sheet metal blade having fingers projecting therefrom with shearing edges adjacent to their free ends for cooperating with the stationary teeth, the arrangement being such that the shearing edges are brought closely adjacent to the face whereby shearing the hair very closely to the skin surface. The blade and fingers are preferably of a resilient nature and means is provided for holding the blade in flexed position with its fingers in shearing contact with the comb teeth and preferably this same means is power driven to give a reciprocating and clipping action to the blade. The production of such an instrument employing a relatively inexpensive sheet metal blade which can be easily removed for cleaning and replaced with a new blade when necessary or desirable comprises a further object of my invention.

A further feature of my invention resides in the production of an improved shaving instrument of the clipper type wherein is employed a clipping blade similar in material and shape to the double edged blade used in the well known "Gillette" safety razor, the instrument also preferably being of a form similar to that razor. The blade is slotted inwardly from its two longitudinal edges in a manner forming a plurality of fingers

for engaging with the comb teeth of the instrument, and in its working position, the blade is held with its fingers in contact with the comb teeth and is reciprocated longitudinally to effect the shearing action.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof selected for purposes of illustration and shown in the accompanying drawing in which,

Fig. 1 is a fragmentary front elevation of an instrument embodying my invention;

Fig. 2 is a side elevation of the instrument, the head end being shown in section;

Fig. 3 is a like view of the head with the parts in another position,

Fig. 4 is a top plan view of the head with portions broken away,

Fig. 5 is an enlarged fragmentary perspective view of the blade unit,

Fig. 6 is a fragmentary side sectional view of a modified form of the invention,

Fig. 7 is a top plan view of the head thereof, with portions broken away.

Referring first to the form of my invention illustrated in Figs. 1-5 of the drawing, 10 indicates a body member which serves as a handle and 12 indicates a head or comb plate on the forward end thereof. The head is of rectangular shape and is generally similar to the corresponding head of the well known "Gillette" safety razor. Comb teeth 14 are formed along the opposed longitudinal edges of the head and these teeth project laterally toward and from thence rearwardly with the ends 15 of the teeth overhanging the outer face of the head. Cooperating with these teeth is a toothed blade generally indicated at 16.

The blade 16 which I preferably employ is constructed of thin sheet stock substantially like that now used in flexible safety razor blades and the general outline of the blades is substantially like the well known double edged safety razor blade in common use. The blade is slotted inwardly from its longitudinal edges at 18 whereby providing outwardly projecting fingers 20. Each of these fingers is also preferably notched at 22 to provide two teeth on the free end of each finger. Furthermore the notches 22, as well as the outer ends of the slots 18 are preferably V-shaped whereby forming teeth with side edges converging outwardly. These edges may be bevelled along one face of the blade at 24 in a manner forming sharp shearing edges therealong at the other face of the blade.

The blade is supported for longitudinal reciprocation on and with a bar 25 within a corresponding recess 23 within the head 12, and a clip 26 secures the blade in place on the bar, the clip 5 having resilient ends 28 engaging undercut shoulders on the bar ends and the bar having a longitudinal rib 30 engaging within a slot in the blade. The bar is recessed at 31 to receive the outer end of a rod 32 pivoted on a pin 34 carried in a block 10 36. The block is adjustable longitudinally of the handle by means of a knurled bushing 38 threaded to the block and rotatably mounted but held against longitudinal movement within an opening 39 in the handle. Any convenient power 15 means such as an electric motor mounted within the handle 10 may be connected to and oscillate the rod 32 about the pin 34, power current being supplied to such motor through a cord 40.

Preferably the blade is normally flat, as illustrated in Figs. 3 and 5, and it will preferably be assembled in and between the bar 25 and the clip 26 before being placed in the razor. To assemble the blade unit with the razor, the bushing 38 is rotated to withdraw the element 32 into the 25 handle. The blade unit is then inserted longitudinally of the head 12 and beneath the teeth 15 to the position illustrated in Figs. 3 and 4. The bushing 38 is then rotated to force the block 36 and element 32 outwardly to the position of 30 Fig. 2 wherein the teeth of the blade fingers 20 are brought into resilient contact with the comb teeth 15. It will be apparent that in this position the blade is flexed from its normally flat shape to an outwardly convex position wherein the resiliency in the blade maintains the contact between 35 the shearing teeth, the blade preferably having no contact with the body member except at said teeth.

The motor, preferably located within the handle 10, which oscillates the element 32 about its pivot 34 and reciprocates or vibrates the blade longitudinally, comprises no part of this invention and it has therefore been deemed unnecessary to illustrate or describe the same herein, 45 motors for this purpose being old and well known.

The blade is inserted in the razor in such position that the sharp shearing edges formed by the bevels 24 face the comb teeth 15 and are directly adjacent to and cooperate with such teeth, and the blade is held definitely to such position during its reciprocation by the sliding engagement of the bar 25 within the recess 23. As the blade is reciprocated longitudinally and the teeth 15 55 passed over and in contact with the skin to be shaved, the hair will pass into the openings between the teeth and be sheared cleanly by these edges. The razor admits of shaving either dry or with lather. Should it be desired to clean the blade and razor at any time or to substitute a 60 new blade, this can be done conveniently merely by rotating the bushing 38 as already described. It will be furthermore apparent that the blades are of very economical construction, whereby a new blade may be substituted at little expense, 65 and the flexible character of the blade insures a full and proper contact at the cutting edges at all times.

In Figs. 6 and 7 I have illustrated a modified form of the invention. In this case the outer face 70 of the head 50 on the handle 52 is convex transversely and the opposed longitudinal edges are slotted to provide comb teeth 53 therealong. The blade and blade unit are substantially the same as illustrated in Fig. 5 and already described except that the blade 54 is normally concavo-con-

vex, the bevels corresponding to the bevels 24 being formed on the convex face of the blade.

The blade reciprocating element 56 is pivotally mounted on a pivot pin 57 fixed in the handle 52 and has a tapped hole 58 in its outer end. The 5 blade supporting bar is recessed to receive this end of the element and a hole in alignment with the hole 58 is formed through the bar and its clip 60 for receiving the shank portion of a tap bolt 62 having a knurled head 64. Threading of this 10 bolt tightly in the hole 58 in the manner illustrated in Figs. 6 and 7 is adapted to hold the blade in fixed position on the element 56. It will be understood that the blade is otherwise secured in the blade unit in the manner already described 15 in reference to Fig. 5, the faces of the bar and clip cooperating with the blade being given the necessary contour.

The normal shape of the blade is illustrated in broken lines in Fig. 6. The blade is first assembled in the bar and clip and this unit, substantially in the shape illustrated in said broken lines, is placed on the head of the razor. The bolt 62 is then passed through the unit and threaded 20 tightly into the element 56. This action draws the blade down as illustrated in full lines in Fig. 6, wherein the blade teeth are brought into flat and resilient contact with the comb teeth 53, and secures the blade unit to the element 56. It will be noted that the comb teeth are extended outwardly at 65 adjacent to their free ends whereby providing shoulders facing the blade teeth. These shoulders are of a height substantially equal to the thickness of the blade teeth and, in the flattened position of the blade, the ends of 30 the blade teeth approach very closely to the shoulders which act to shield such ends against engagement with the skin being shaved.

It will now be apparent that I have produced a relatively simple razor of the clipper type and 40 have adapted a thin and flexible blade thereto which can be produced with great economy which will provide a close and resilient shaving contact between the clipping teeth. Furthermore the razor is constructed to have the blade applied 45 thereto and removed therefrom with great convenience and give a closer and cleaner shave than has been possible with like instruments heretofore known.

Having thus described my invention, what I 50 claim as new and desire to secure by Letters Patent of the United States is,

1. A hair cutting instrument comprising a body member, a comb plate carried thereby and having 55 comb teeth, a flexible sheet metal blade having fingers projecting therefrom and cooperating with the comb teeth, and power driven means including a lever pivoted in the body member and cooperating with the blade to reciprocate the blade and fingers transversely of the comb teeth, 60 said means including a surface engaging the blade and holding it flexed in a direction keeping the fingers in resilient contact with the comb teeth.

2. A hair cutting instrument comprising a body 65 member, a comb plate carried thereby and having comb teeth along opposite edges thereof, said teeth projecting laterally of the comb plate and from thence rearwardly with the ends of the teeth overhanging the outer face of the comb plate, a 70 blade having fingers projecting from opposite edges thereof and cooperating with the comb teeth, and means carried by the body member and cooperating with the blade to hold the fingers in contact with said overhanging ends of the 75

comb teeth and reciprocate the blade and fingers transversely of the comb teeth.

3. A hair cutting instrument comprising a body member, a comb plate carried thereby and having comb teeth along opposite edges thereof, said teeth projecting laterally of the comb plate and from thence rearwardly with the ends of the teeth overhanging the outer face of the comb plate, a normally flat and flexible sheet metal blade having fingers projecting from opposite edges thereof and cooperating with the comb teeth, and means, including a power driven element pivoted to the body member, connected to the blade in a manner flexing the blade outwardly into contact with said overhanging ends of the comb teeth and reciprocating the blade and fingers transversely of the comb teeth.

4. A clipping blade unit comprising a rectangular and resilient sheet metal blade slotted inwardly from its two longitudinal edges to form a plurality of relatively long and resilient fingers projecting outwardly to such edges, the free ends of the fingers and the free ends of the slots being notched to form a plurality of teeth on the end of each finger having side edges converging outwardly.

5. A clipping blade unit comprising a rectangular and resilient sheet metal blade slotted inwardly from its two longitudinal edges to form a plurality of fingers projecting outwardly to such edges, each finger having a plurality of teeth on its free end with the side edges thereof converging outwardly and bevelled along one face to form shearing edges at the other face.

6. A hair cutting instrument comprising a body member, a comb plate carried thereby and having comb teeth along opposite edges thereof, a blade comprising a single piece of flexible sheet metal located over the outer face of the comb plate and having fingers integrally projecting from opposite edges thereof and cooperating with the comb teeth, power driven means cooperating with the blade and fingers to reciprocate them transversely of the comb teeth and including a surface engaging the blade and holding it flexed in a direction keeping the fingers in resilient contact with the comb teeth.

7. The combination defined in claim 6 wherein

the teeth are located beneath the comb fingers and have lateral projections thereon shielding the ends of the fingers, and wherein the fingers are held in contact with the teeth by flexing the blade toward the body member.

8. A hair cutting instrument comprising a body member, a comb plate carried thereby and having comb teeth, means providing a guideway at the outer face of the comb plate spaced from and parallel with the comb teeth, a blade holding frame fitting for longitudinal sliding movement within the guideway, a blade comprising a single piece of resilient sheet metal carried by the frame over the outer face of the comb plate and having fingers projecting therefrom and cooperating with the comb teeth, and means holding the frame in position flexing the blade from its normal position and the fingers thereof in resilient contact with the comb teeth, longitudinal reciprocation of the frame within the guideway being adapted to reciprocate the blade and fingers transversely of the comb teeth.

9. A clipping blade unit comprising a rectangular and resilient sheet metal blade slotted inwardly from one edge thereof to form a plurality of relatively long and resilient fingers projecting outwardly to such edge, the free ends of the fingers and the free ends of the slots being notched to form a plurality of teeth on the end of each finger having side edges converging outwardly and said edges being bevelled along one face of the blade to form sharp shearing edges at the other face thereof.

10. A hair cutting instrument comprising a body member, a comb plate carried thereby and having comb teeth along opposite edges thereof, a flexible sheet metal blade having fingers projecting from opposite edges thereof and cooperating with the comb teeth, a blade holding clip, means cooperating with the clip for guiding the blade for longitudinal reciprocation on the comb plate, and a power driven element pivoted to the body member and cooperating with the clip to effect such reciprocation and hold the blade flexed from its normal position in a direction keeping the fingers in clipping engagement with the comb teeth.

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