

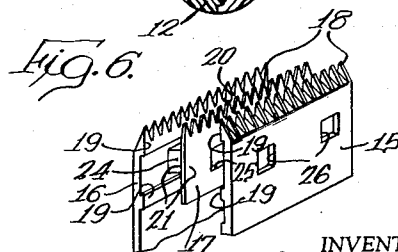
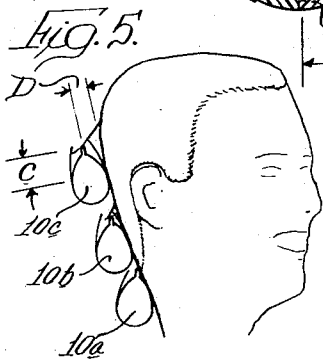
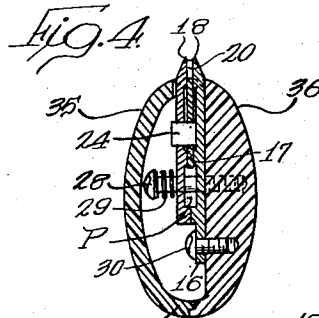
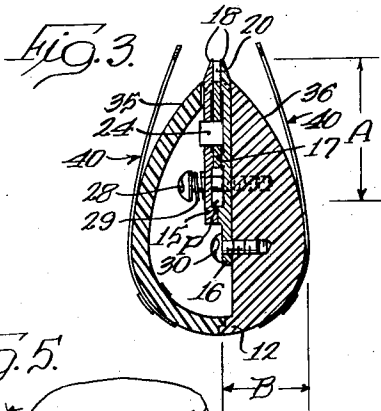
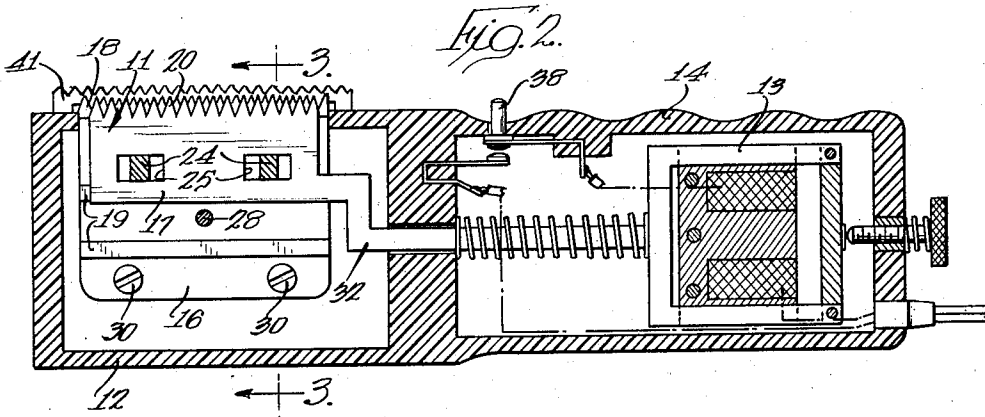
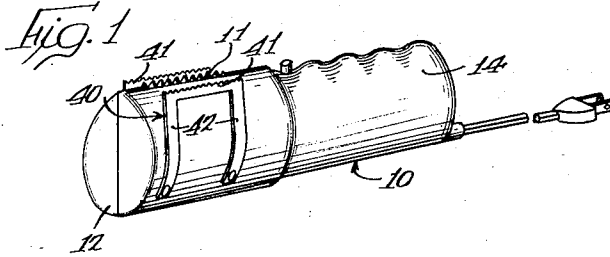
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HAIR CLIPPER

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2,883,747

HAIR CLIPPER

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The present invention relates to hair cutting devices and, more particularly, to power driven hair clippers.

With many hair clippers designed for use by a person who is not skilled in the tonsorial arts to cut his own hair or that of another, it is extremely difficult to obtain a smooth, evenly tapered haircut in a neat and workmanlike manner. Also, clippers of the power driven type having the cutter elements extending from one end of a handle have been found to be unwieldy and difficult to handle, for example, when the user is cutting his own hair. In particular, it is practically impossible for the user to trim easily and satisfactorily the hair on the back of his own neck with such clippers.

It is, therefore, one object of the present invention to provide a novel hair clipper which is simple to operate, and is easily handled to obtain professional-like hair clipping results.

Another object of the present invention is to provide a novel hair clipper of the foregoing character with which it is possible to achieve a smooth, even, tapered cut without lifting the body of the clipper from the skin and which can be used after a minimum of practice by a person inexperienced in the art of hair cutting.

A further object of the present invention is to provide a novel hair clipper of the type set forth which is suitable for both trimming and for providing a complete haircut on either the user's own person or another person.

Still a further object of the present invention is to provide an improved clipper of the above type with which an even tapered cut can be achieved on the back and sides of the user's neck and head.

Still a further object of the present invention is to provide a clipper of the character set forth having an improved cutter element which facilitates both right handed and left handed use of the clipper.

Other objects and advantages of the present invention will become apparent as the following description proceeds taken in connection with the accompanying drawing wherein:

Figure 1 is a pictorial representation of a hair clipper embodying the present invention.

Fig. 2 is a longitudinal section view through a clipper of the type shown in Fig. 1.

Fig. 3 is a section view taken substantially in the plane of line 3—3 of Fig. 2.

Fig. 4 is a section view similar to that shown in Fig. 3 but showing a housing having a somewhat different cross sectional configuration.

Fig. 5 is a diagrammatic representation of a clipper illustrative of the present invention in use for obtaining a smooth, even, tapered haircut on the back of a user's head.

Fig. 6 is an exploded, isometric representation of a cutter mechanism useful in the hair clipper shown in Fig. 1.

While an illustrative hair clipper is shown in the drawing and will be described below in detail, it should be understood that there is no intention to limit the invention to the specific forms disclosed. On the contrary, the

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intention is to cover all modifications, alternatives, equivalents and uses falling within the scope of the invention as expressed in the appended claims.

In accordance with the present invention, as exemplified by the foregoing objects, there is shown in Fig. 1 of the drawing a hair clipper 10 which can be used for cutting the user's own hair or the hair of another with both ease and facility. This clipper is useful for obtaining a professional-like, evenly tapered haircut, particularly along the difficultly accessible sides and back of the user's head. And additionally, the illustrative hair clipper 10 is useful for shaving, trimming and other hair cutting operations on the head, face, legs, and other parts of the body of the user.

The hair clipper 10 shown in the drawing comprises a flat, oscillating type cutter mechanism 11 mounted within a housing 12 and driven by a motor 13, such as a vibrator (Fig. 2) mounted within a handle portion 14. The motor is desirably electrically energized from a power supply system such as the usual 110 volt A.C. household line, although it can be constructed for use on either A.C. or D.C., as well as for use with storage battery or a dry cell. Alternatively, mechanical power means such as, for example, a spring motor can be used.

In order to make the hair clipper 10 suitable for use when either side is held against the user's skin or scalp, the cutter mechanism 11 is constructed in a novel manner (as shown in Fig. 6) to prevent the movable element of the cutter mechanism from coming into contact with the user's skin or scalp regardless of which side of the clipper is used. This is accomplished by the provision of two stationary cutter elements or blades 15 and 16 having a movable element on blade 17 between them. The stationary cutter elements are plate-like members having a plurality of teeth 18 extending from one edge thereof. The facing surfaces 19 of the stationary elements are ground and honed to afford a smooth, flat bearing surface against which the movable blade 17 is guided.

The inner or movable blade 17 comprises a flat body portion also having a plurality of teeth 20 on the edge thereof corresponding to the stationary teeth 18. The external flat surfaces 21 of the movable blade are also ground and honed smooth and flat. In operation, the movable blade 17 oscillates and this movement of the teeth 20 between the teeth 18 of the stationary blades 15, 16 creates a shearing or scissors-like cutting action.

Means are desirably provided to limit and guide the oscillating action of the inner blade relative to the outer blades. Although any suitable means can be used, one illustrative means is shown for example and comprises a pair of projections 24 on one of the stationary blades 16 extending through elongated slots 25 in the movable blade 17 and received in slots 26 or apertures in opposite stationary blade 15. A constant pressure is exertive on the movable blade 17 to insure a clean shearing action between the teeth 18, 20 by the stationary blades 15, 16 which are held together with the movable blade 17 between them by means of a screw 28 and spring 29. The force exerted by the spring 29 and stationary blades on the movable blade can be adjusted to achieve the most satisfactory action.

The blade mechanism is mounted within the housing 12 by means of suitable screws or other devices 30 extending through apertures in the lower edge of one of the stationary blades 16. An arm 32 extends from the movable blade 17 into operative engagement with the motor 13. The external surfaces of the teeth 18 on the stationary blades 15, 16 are rounded and smooth and afford a comb-like action to guide the hairs to be cut into the spaces between the teeth. With the movable blade 17 positioned between two stationary blades 15, 16 it is easily seen that either side of the clipper can be

used and that the movable blade will never come into direct contact with the user's skin or scalp. Additionally, the haircutting action of the cutter mechanism has been found to be substantially improved by providing two shearing points instead of one. With the novel cutter mechanism, the hairs are cut at two points, namely, the points of contact of the movable blade with both of the stationary blades, and a more effective cutting action is obtained.

For purposes of achieving facility and ease of use in accomplishing a uniformly tapered, professional-like hair cut, the clipper housing 12 is formed in the shape of an elongated cylinder, one end portion of which is shaped to form an easily grasped handle 14. The cutter mechanism 11 is mounted in a radial plane within the housing and with the cutter elements 15, 16, 17 (Fig. 3) projecting radially outwardly from the housing 12 adjacent the end thereof opposite from the handle 14. As the handle 14 is rotated about its longitudinal axis, the cutter teeth 18, 20 describe an arced or curved plane having as its axis the longitudinal axis of the housing.

Provision is made for facilitating the rotation of the handle 14 to produce a tapered haircut, or, in other words, to cut the hairs into uniformly increasing lengths beginning at the neck and working upwardly. This is accomplished by the particular cross sectional configuration of the housing. To this end, the housing surfaces 35, 36 adjacent each of the stationary blades 15, 16 respectively of the cutter mechanism 11 slope in a smooth curve away from the cutter teeth. Thus, the body of the clipper 10 can be held in place with one surface 35 or 36 against the skin or scalp and, as the handle 14 is rotated, the cutter teeth 18, 20 are lifted away from the skin in a smooth and even motion by virtue of the cam-like action of the housing surface which remains against the skin. If the clipper is moved laterally with a combing action as it is rotated, an evenly tapered haircut will result (Fig. 5). It can be seen also that the slope of the tapered cut will depend on both the rate of rotation of the handle and the rate of transverse combing movement of the clipper. Thus, by rotating the handle and traversing the clipper along the scalp, a controlled uniformly tapered haircut can be achieved.

Each peripheral cam-like surface 35, 36 of the housing 12 desirably slopes away from the cutter teeth of the cutter mechanism 11 in a smoothly curved plane. The cross section of that portion of the housing 12 defining these cam-like surfaces 35, 36 may be described as being oval, elliptical or tear-drop in shape (Figs. 3 and 4). It is important to provide a smoothly sloping curved surface which will elevate or cam the cutting elements away from the user's skin or scalp smoothly and evenly as the handle and housing is rotated about its longitudinal axis. This action enables the user to achieve a tapered cut by feel as well as by sight. Although there is no one critical slope which the peripheral surfaces 35, 36 of the housing 12 should take, it will be understood that the invention contemplates a slope which will afford a smooth and even transition of the cutter teeth 18, 20 from a point close to the scalp to a point away from the scalp without lifting the body of the clipper from the skin or scalp and while maintaining an adequate support for the clipper (Fig. 5). The cross section of the clipper housing 12 adjacent the cutter teeth can vary from a tear-drop configuration, which is substantially elliptical or oval. In one preferred form of the invention, shown in Fig. 3, the cross section of the clipper housing 12 containing the cutter mechanism 11 is substantially a tear-drop in which the length of the major axis is equal to approximately twice the length of the minor axis. An elliptical cross-sectional configuration is shown in Fig. 4 in which the length of the major axis is substantially twice the length of the minor axis. To further define the shape of the housing the perpendicular distance (shown as A on Fig. 3) between the tip of the cutter teeth and the

longitudinal axis P of the housing should be equal to approximately one to three times the perpendicular distance (shown as B on Fig. 3) between the geometric longitudinal axis of the housing and a point on the peripheral surface of the housing spaced at an angle of about 90° from the cutter teeth 18, 20 of the cutter mechanism 11.

Another important characteristic of the shape of the housing adjacent the cutter mechanism lies in the definition of the relationship of the distance between the tip of the cutter teeth and the point of contact of the housing with the skin or scalp (shown as C in Fig. 5) to the perpendicular height of the cutter teeth above the skin (shown as D in Fig. 5). To accomplish the desired haircutting results, it has been found that the distance C between the cutter teeth and the point of contact of the housing surface with the skin should vary in increments which are approximately equal to between about one-to-three times the increments of change in height D of the cutter teeth above the skin. The surface of the housing is smoothly curved to prevent an abrupt elevation of the cutter teeth, and thus a smooth, even, cam-like action is obtainable by rotating the housing to elevate the cutter teeth above the skin or scalp.

The motor 13 shown in the drawings comprises an electromagnetic vibrating mechanism connected in series with a pushbutton switch and acting against the force of a spring to cause the movable blade to oscillate relative to the stationary blades. If desired, a solenoid can be used instead of the electromagnet. Instead of using an electric cord and convenience plug for energizing the hair clipper from a 110 volt household outlet as shown in the drawing, the handle 14 can be enlarged somewhat to include a battery case and thereby make the unit self-powered. Alternatively, the vibrator or motor can be constructed for use with a storage battery such as a six or twelve volt automobile battery. Furthermore, the unit may be mechanically powered such as, for example, by a hand wound spring or an inertia-type mechanism.

In order to energize the motor, a pushbutton switch 38 is desirably mounted in a convenient position for actuation by the user's thumb or forefinger. The switch should be located in a position corresponding to and aligned with the cutter teeth of the cutter mechanism 11 in order to serve as an indicator for enabling the user to locate the position of the cutter mechanism 11 relative to the handle 14. If desired, a lock can be provided on the switch 38 to hold it in the closed position for continuous use of the clipper 10.

Provision is made for enhancing the clipping action of the cutter mechanism 11 by insuring that the hairs to be cut are raised upwardly for engagement by the cutting teeth 18, 20. To this end a pair of resilient combs 40 are affixed to either side of the cutter mechanism housing 12. These combs comprise a rake-like strip member 41 (Fig. 1) extending parallel to the cutting teeth 18, 20 and fixed to the upper housing by means of one or more resilient arms 42. The combs 40 are normally held outwardly away from the sloping surfaces 35, 36 of the clipper 10 so as to insure a raking action lifting the hairs as the clipper 10 is moved along the skin or scalp. This action is illustrated in Fig. 5 which shows a clipper 10a adjacent the neck and positioned for a close cut, a clipper 10b adjacent the upper neck and positioned for a medium cut, and a clipper 10c adjacent the scalp and positioned for a relatively long cut.

To obtain a close cut at the nape of the neck, the combs are pressed close to the housing by exerting a force on the handle of the clipper. In this position the combs are ahead of and out of the way of the cutter teeth. As the clipper is moved up the neck and rotated so as to obtain the desired tapered effect, the comb is pressed close to the skin by the resilient arms. This holds the hair away from the skin or scalp and in a posi-

tion where it is readily engaged and cut by the cutting blades as shown at 10b and 10c in Fig. 5.

A novel hair clipper has thus been described with which it is possible to obtain a uniformly and smoothly tapered professional appearing haircut. The handle being a longitudinal extension of the cutter housing makes the clipper extremely maneuverable and it is possible to perform a satisfactory haircut even in difficultly accessible places, such as around the ears and along the back of the user's neck. Although an illustrative clipper and cutter mechanism has been shown and described, it should be understood that the invention is not to be limited to the specific mechanical means disclosed. Thus, the cutter mechanism is desirably removable in order to facilitate interchange of blade sizes when finer or coarser cuts are desired and the movable element is desirably replaceable in the event of wear or damage.

We claim as our invention:

1. A hair clipper for cutting hair on a person's skin or scalp, said clipper comprising, in combination, a tubular housing, a cutter mechanism mounted in one end portion of said housing and having cutter teeth extending radially therefrom, the other end portion of said housing forming a handle, a motor within said handle portion for energizing said cutter mechanism, the peripheral surfaces of said tubular housing adjacent said cutter teeth having a smooth curved slope, said surfaces serving to support the clipper on the skin or scalp and to cam the blade away from the skin or scalp as the handle is rotated to vary the position of the cutter teeth above the skin or scalp, and a pair of combs resiliently mounted on said housing adjacent said blade and extending parallel to said blade for lifting the hairs and facilitating the cutting thereof, whereby the hair is cut into evenly increasing lengths as the clipper is simultaneously rotated to move the cutter teeth away from the skin or scalp and translated in the direction of increasing hair length.

2. A hair clipper as defined in claim 1 wherein the perpendicular distance between the tip of the cutter teeth and the longitudinal axis of the housing is equal to about one to three times the perpendicular distance between said axis and a point on the surface of the housing spaced at an angle of about 90° from the tip of the cutter teeth.

3. A hair clipper as defined in claim 1 wherein the cross sectional configuration of the portion of the housing mounting the cutter mechanism is substantially teardrop shaped and wherein the cutter mechanism lies in the plane of the longer axis.

4. A hair clipper as defined in claim 1 wherein the cross sectional configuration of the portion of the housing mounting the cutter mechanism is substantially elliptical and wherein the cutter mechanism lies substantially in the plane of the major axis.

5. A hair clipper for cutting hair on a person's skin or scalp, said clipper comprising, in combination, a tubular housing, a cutter mechanism mounted in one end portion of said housing and having cutter teeth extending radially therefrom, the other end portion of said housing forming a handle, a motor within said handle portion for energizing said cutter mechanism, said one end portion of said housing having smoothly curved sloping peripheral surfaces and being substantially elliptical in cross section, said cutter mechanism lying substantially in the plane of the major axis of said ellipse, said surfaces serving to support the clipper on the skin or scalp and to cam the blade away from the skin or scalp as the handle is rotated to vary the position of the cutter teeth above the skin or scalp, and a pair of combs resiliently mounted on said housing adjacent said blade and extending parallel to said blade for lifting the hairs and facilitating the cutting thereof whereby the hair is cut into evenly increasing lengths as the clipper is simultaneously rotated to move the cutter teeth away from the skin or scalp

and translated in the direction of increasing hair length.

6. A hair clipper as defined in claim 2 wherein the major axis of said elliptical housing is equal to about twice the length of the minor axis.

7. A hair clipper for cutting hair on a person's skin or scalp, said clipper comprising, in combination, a tubular housing, one end portion of said housing forming a handle, a motor within said handle portion, a pair of spaced cutter elements secured within the other end of said housing, a plurality of teeth extending from corresponding edges of said element and outwardly from said housing, a movable element positioned between said spaced elements, means drivingly connecting said movable element to said motor, a plurality of teeth extending from one edge of said movable element and in juxtaposition with said teeth on said spaced elements, the peripheral surfaces of said tubular housing adjacent said cutter teeth being smoothly convex and having a continuously curved slope, said surfaces serving to support the clipper on the skin or scalp and to cam the cutter element away from the skin or scalp as the handle is rotated to vary the position of the cutter teeth above the skin or scalp, and a pair of combs resiliently mounted on said housing adjacent said blades and extending parallel to said blades for lifting the hairs and facilitating the cutting thereof, whereby either side of the cutter mechanism may be used for cutting hairs without having the movable cutter element come into contact with the user's skin or scalp and the hair is cut into evenly increasing lengths as the clipper is simultaneously rotated to move the cutter teeth away from the skin or scalp and translated in the direction of increasing hair length.

8. A hair clipper for cutting hair on a person's skin or scalp, said clipper comprising, in combination, a tubular housing, one end portion of said housing forming a handle, a motor within said handle portion, a pair of spaced cutter elements secured within the other end of said housing, a plurality of teeth extending from corresponding edges of said element and outwardly from said housing, a movable element positioned between said spaced elements, resilient means for holding said spaced elements against said movable element, means drivingly connecting said movable element to said motor, a plurality of teeth extending from one edge of said movable element and in juxtaposition with said teeth on said spaced elements, the peripheral surfaces of said tubular housing adjacent said cutter teeth being smoothly convex and having a continuously curved slope, said surfaces serving to support the clipper on the skin or scalp and to cam the cutter element away from the skin or scalp as the handle is rotated to vary the position of the cutter teeth above the skin or scalp, and a pair of combs resiliently mounted on said housing adjacent said blades and extending parallel to said blades for lifting the hairs and facilitating the cutting thereof, whereby either side of the cutter mechanism may be used for cutting hairs without having the movable cutter element come into contact with the user's skin or scalp and the hair is cut into evenly increasing lengths as the clipper is simultaneously rotated to move the cutter teeth away from the skin or scalp and translated in the direction of increasing hair length.

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