

Nov. 29, 1966

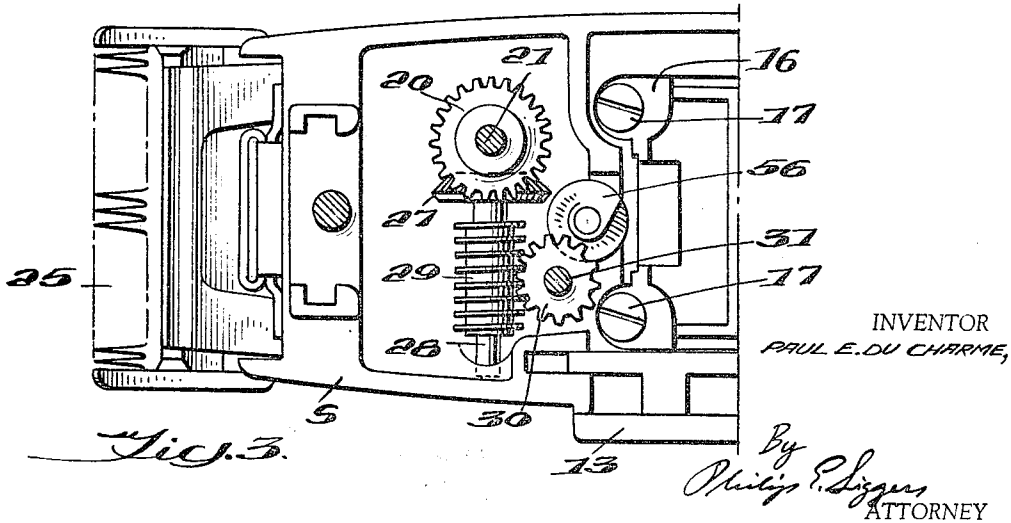
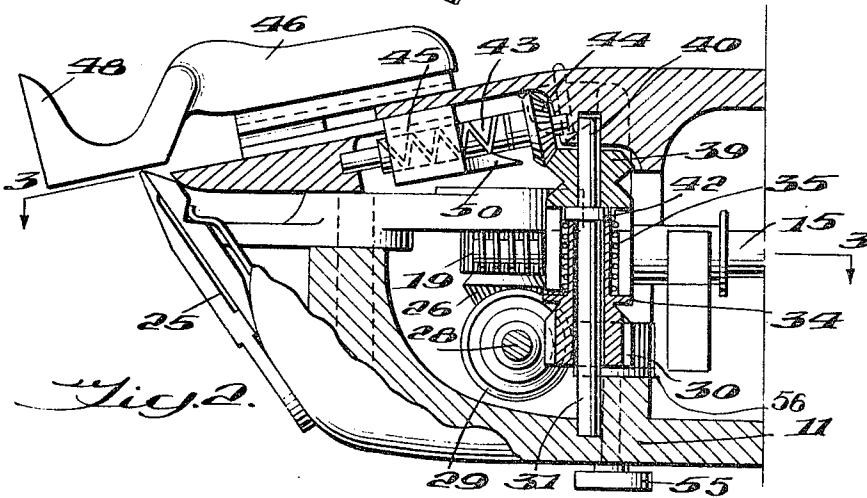
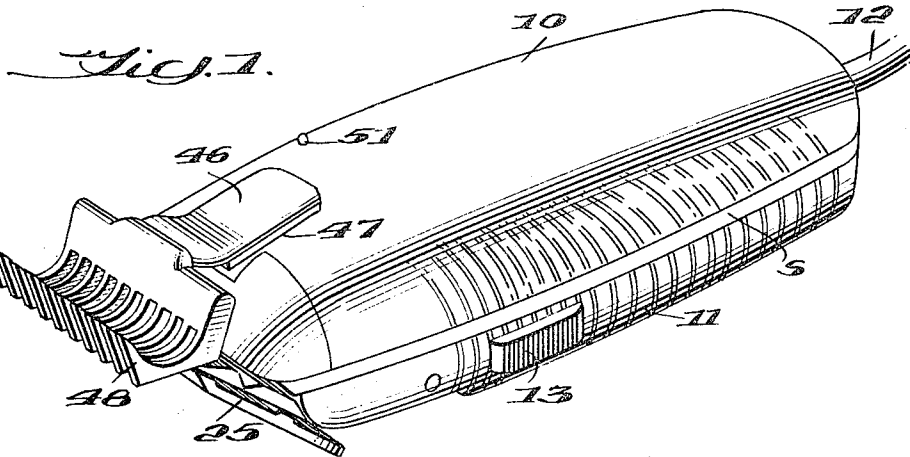
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3,287,805

HAIR CLIPPER WITH CUT REGULATOR INDICATOR

Filed April 19, 1966

4 Sheets-Sheet 1



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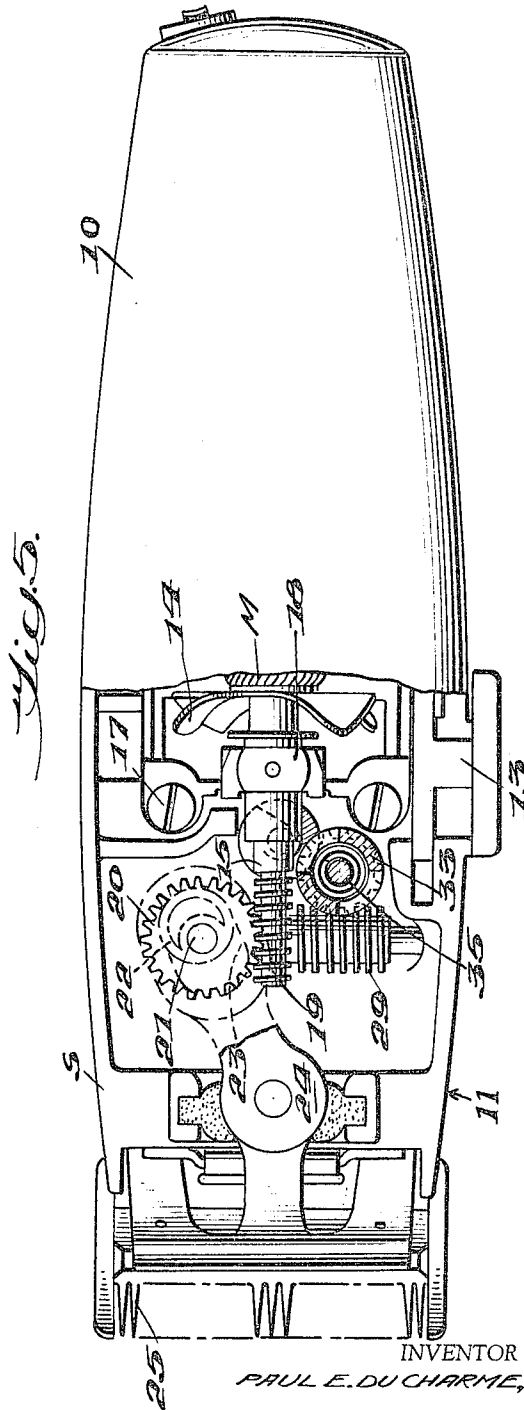
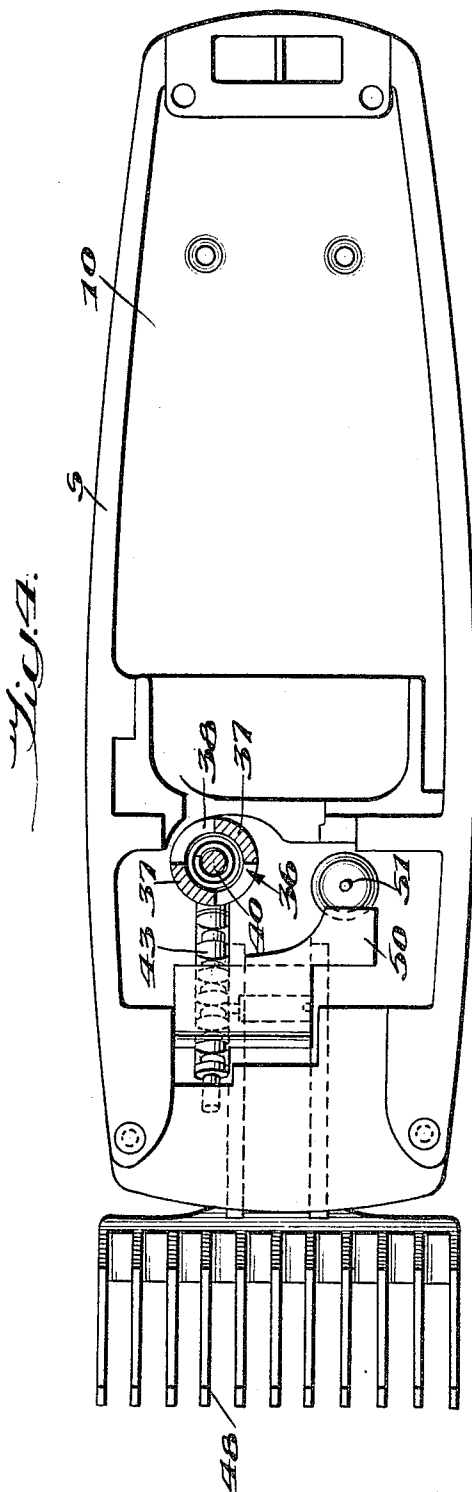
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4 Sheets-Sheet 2



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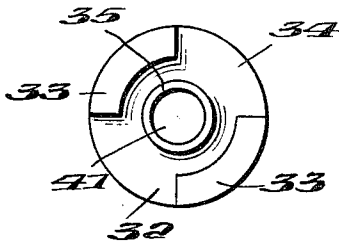
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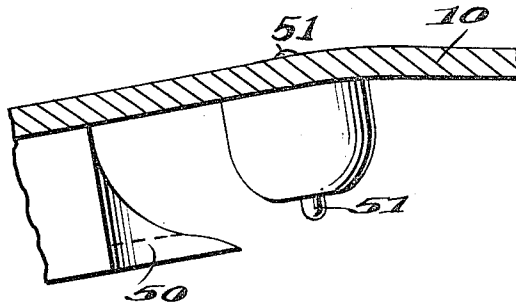
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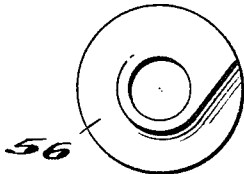
*Fig. 6.*



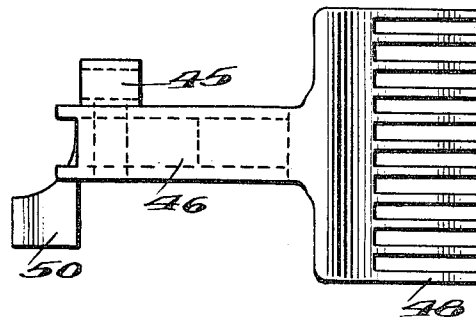
*Fig. 7.*



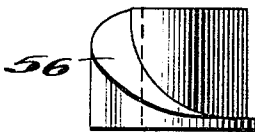
*Fig. 11.*



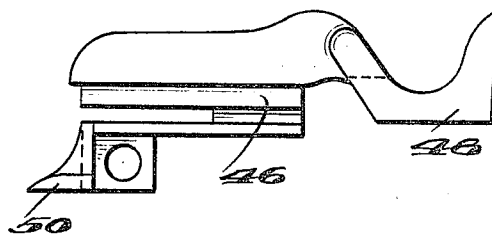
*Fig. 8.*



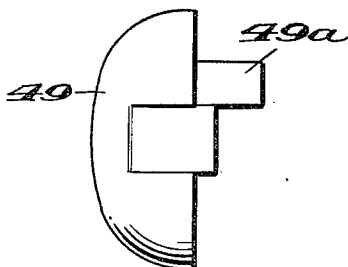
*Fig. 12.*



*Fig. 9.*



*Fig. 10.*



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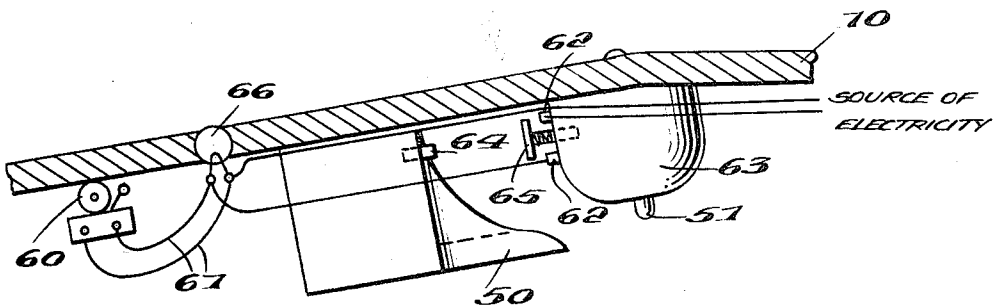
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*Fig. 13.*



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## 3,287,805 HAIR CLIPPER WITH CUT REGULATOR INDICATOR

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Filed Apr. 19, 1966, Ser. No. 549,744  
9 Claims. (Cl. 30—202)

This application is a continuation-in-part of my application Serial No. 375,500 filed June 16, 1964, now abandoned, and the invention is an improvement on the invention disclosed in my pending application Serial No. 283,767, filed May 28, 1963.

This invention relates to improvements in electric hair clippers, and a principal object is to provide a mechanism which may be installed on commercial hair clippers with a minimum of structural change therein, and when installed will make it possible to "taper-cut" or "shingle" a persons' hair with very little skill required on the part of the person cutting the hair.

Another object is to provide a mechanism of the character indicated which is readily mounted and dismounted, and when detached permits the commercial clipper to be used in the customary way.

Another object is to provide a scalp-engaging comb as an attachment for commercial electric hair clippers which will be moved relative to the clipper blade assembly by the power of the electric motor and which can be adjusted to give a zero inch cut at the start of its cycle of movement, or anywhere between a zero inch cut and a one-fourth inch cut at the start of the cycle, which permits the operator to trim the sideburns at various desired lengths and taper upwards from the selected length cut.

A further object is to provide an attachment of the character described which requires very little change in the cutting habits or technique of the operator.

Another object is to provide a scalp-engaging comb which is reciprocable by the motor previously mentioned, but can be stopped by the operator at any point in its cycle of movement, and when so stopped, will permit constant length cutting of hair at any selected length up to say three-quarters of an inch. The operator's control of the comb is such that waves or designs can be cut in the hair, also the well known "butch cuts" such as a "flat top" can be made by a relatively unskilled operator.

A still further object is to provide an indicator or "tell-tale," which can be felt and seen and/or heard by the operator during the hair-cutting operation, and which will inform him of the position of the reciprocable scalp-engaging comb, thus guiding his manipulation of the instrument.

Due to the continual rise in the cost of haircuts, the parents of many children in this country have purchased hair clippers and have cut their children's hair, often with somewhat ludicrous results.

The automatic taper-cut clippers of my invention make it possible for a parent after a little practice to cut his child's hair neatly and rapidly.

I am aware that a number of patents have issued on hair clippers which attempt to solve these problems. Among these patents are the McArdle et al. Patent No. 1,753,750; the Greco et al. Patent No. 1,988,199; the Hagenbecker Patent No. 2,103,418; the Klitthoff Patent No. 2,707,328; the Maloy Patent No. 2,726,447; the Hall Patent No. 2,882,595; the Seifert Patent No. 2,911,715; the Mazzoni Patent No. 2,941,293; and the Clark Patent No. 2,974,412. However, these patented constructions do not have the advantages of the clippers of my invention. Generally speaking, these patented clippers are unlike commercial clippers now sold in the United States and require radically different operating techniques.

In the accompanying drawings showing several forms of my invention:

FIG. 1 is a full-size perspective view of a John Oster Mfg. Co. Model 12, "Universal" clipper, shown equipped with the scalp-engaging comb that forms part of my invention. (This clipper bears the Patent No. 1,888,688.)

FIG. 2 is an enlarged fragmentary vertical section through the forward or cutting end of the improved clipper, showing the comb nearly in its extreme forward position.

FIG. 3 is a fragmentary horizontal section, on the scale of FIG. 2, approximately on the line 3—3 of FIG. 2.

FIG. 4 is a plan view of the upper half of the improved clipper, shown inverted or inside out; the view being on the scale of FIGS. 2 and 3.

FIG. 5 is a plan view of the improved clipper with the casing broken away to show some of the gearing of the invention.

FIG. 6 is an enlarged plan view of the lower clutch element.

FIG. 7 is an enlarged detail in elevation and section, showing one form of an indicator or tell-tale and part of the cam which operates it.

FIG. 8 is an enlarged plan view of the comb and slide and cam assembly, omitting the worm that operates it.

FIG. 9 is a side elevation of the assembly of FIG. 8.

FIG. 10 is a top plan view, approximately full size, of the end element that is mounted in the upper casing at the forward or cutting end.

FIG. 11 is an enlarged plan view of the cam which is manually turned to disconnect the comb-operating mechanism from the motor-driven mechanism of the clipper.

FIG. 12 is a side elevation of the cam of FIG. 11.

FIG. 13 is a fragmentary and somewhat diagrammatic view, in vertical longitudinal section, showing an arrangement of tell-tale mechanisms which yields a visible, audible and tactile signal or message.

Referring particularly to the drawings, the commercial clipper selected for illustrating the principles of my invention has two plastic shells or casing parts, 10, 11 which are secured together by screws (not shown) at the forward and rear ends of the casing, permitting disassembly, inspection and oiling of the mechanism enclosed in the casing. Electric current is conducted by a cord 12 (FIG. 1) to a motor M (one end of which is shown in FIG. 5) and a thumb switch 13 is mounted on the lower casing for reciprocation to start and stop the motor. A four-bladed fan 14 is fixed to motor shaft 15 to circulate air through the casing to cool it so that it can be comfortably held in the hand. The bottom wall of casing part 11 is slotted (not shown) to permit this air circulation. The motor is set on a metal frame 16 which is secured by screws 17 to ribs on the interior of the lower casing part 11. Motor shaft 15 is supported on a bearing 18 (FIG. 5) and has a worm 19 fixed to its forward end. Worm 19 drives a worm gear 20 fixed to a shaft 21 which is supported in a bearing so as to be vertical if the casing is horizontal. On the upper end of shaft 21 a cam 22 is fixed. Cam 22 is received in a slot 23 of a lever 24 which rocks in a plane that is parallel to the longitudinal axis of the clipper. The forward end of lever 24 engages the reciprocating part of a standard clipping cutter 25, unnecessary to describe. Thus the motor may rock lever 24 to operate the clipper in the usual manner. None of the parts so far described are parts of my invention.

Secured to shaft 21 directly below worm gear 20 is a bevel gear 26 (FIG. 2) which meshes with a bevel gear 27 (FIG. 3) fixed to a shaft 28 that extends transversely of the lower casing half 11 and has its ends received in bearings supported on the casing. On transverse shaft 28 a worm 29 is fixed; worm 29 drives a worm gear 30 splined to the lower end of another vertical shaft 31. The worm gear 30 is below and fixed to a clutch element

32 (FIGS. 5 and 6) consisting of two arcuate jaws 33, spaced apart about one quadrant and integral with a disk 34 that is secured directly to worm gear 30. A coil spring 35 is fixed at its upper end to shaft 31 and extends above the jaws 33; this spring presses against disk 34 and tends to keep worm gear 30 in mesh with worm 29, but yields to disengage these gears when a certain part to be described is operated.

To provide more space interiorly of the casing for the mechanism now being described, a plastic shim or spacer S may be interposed between the casing parts 10, 11.

As shown in FIG. 4, a complementary clutch element 36 is provided with two spaced-apart arcuate jaws 37 that fit in the spaces between the jaws 33. A disk 38 is integral with jaws 37 and is also integral with a bevel gear 39. See FIG. 2. The bevel gear and disk assembly 38, 39 is fixed to a shaft 40 journaled in the upper casing 10. Shaft 40, when the parts are assembled as in FIGS. 1 and 2, is received in a counterbore 41 (FIG. 6) in shaft 31 and the upper end of coil spring 35 bears against a shoulder 42 formed on shaft 40. A reversible worm 43 (FIGS. 2 and 4) is rotatably supported on a casing extension 49 (see FIG. 10) and is driven by a bevel gear 44 meshing with bevel gear 39. A nut 45 (FIGS. 2 and 8) is mounted on worm 43 to reciprocate thereon. Nut 45 is fixed to an arm 46 that extends through a straight slot 47 cut in the upper casing 10 at the forward end. Arm 46 is secured to a comb assembly 48 that is adapted to engage the scalp. When the parts are in operation, nut 45 travels back and forth on reversible worm 43 and causes the comb 48 to move back and forth, guided by slot 47. The total movement of the assembly 48 is preferably one-half an inch, but it would be possible to build the attachment so that it will reciprocate through a one inch path. The assembly moves in a straight path which is about 63° relative to the plane of the clipper blade assembly 25. See FIG. 2.

Also secured to nut 45 is a cam 50 (FIGS. 4, 7, 8 and 9) which slidably engages a spring-pressed pin 51 supported on casing part 10 and projecting outwardly from the top thereof. (The spring on pin 51 is not shown but is a coil spring that engages a shoulder on the pin and acts to hold the lower end of the pin pressed inwardly of the casing except when the cam 50, in its reciprocation, pushes the pin outwardly to project above the casing.) The cam 50 at the other extremity of its movement engages a stop 49a (FIG. 10) provided on the casing extension 49. The action will be understood from the somewhat diagrammatic view of FIG. 7. The cam will force the pin 51 outwardly each time it moves rearwardly or toward the axis of the pin and the operator, who holds the clipper in his hand, by touching the casing where the pin protrudes will know that the comb assembly is at its extreme inward position (the so-called zero cut position) when the pin is at its extreme upper or outer position; and when the pin is innermost, almost or quite sunk into the casing, the comb assembly is projected to the maximum extent (one-half inch or more) permitted by the geometry of the parts. Thus the operator will be guided in his effort to achieve a properly tapered haircut by the tell-tale or indicator just described. This indicator is only one of several types of indicators which may be employed for the same purpose.

Referring to FIG. 2, a knurled button or knob 55 is outside of the bottom wall of casing part 11, and it turns a short shaft that is fixed to a spiral cam 56, shown in FIG. 6. The cam 56 contacts the lower face of worm gear 30 (FIG. 3) and when turned lifts the worm gear and disk 34 against the pressure of coil spring 35. Thus the worm gear may be separated from the worm 29 and no longer driven by the latter. The operator by turning knob 55 can instantly stop reciprocation of the comb assembly and use the clippers in the usual manner, and when taper-cutting is to be resumed, he needs only turn

knob 55 in the opposite direction, whereupon the pressure of spring 35 causes re-engagement of the gears and restores the flow of power to the reciprocable comb.

The tell-tale device of FIG. 7 is perhaps the simplest and most trouble-free mechanism that may be devised for informing an operator of the clipper of my invention when the comb attachment has reached one limit of movement in its reciprocation. Broadly, it constitutes a tactile signaling mechanism. If desired, an audible signal may be operated simultaneously with, or in lieu of, the spring-retracted, cam-projected pin 51 of FIG. 7. As shown in diagrammatic FIG. 13, a bell or buzzer 60 may be installed inside the casing 10, 11 with conductors 61 leading to the source of electricity. A pair of contacts 62 may be mounted on the spring housing 63, or elsewhere. When the cam member 50, which travels with the comb attachment, moves rearwardly, its abutment 64 will engage a spring-projected switch member 65 and will push the switch against contacts 62 to close the circuit of the buzzer to give a sound signal. This will occur each time the comb attachment is in or near its most retracted position. Instead of a buzzer or bell, one could install on the clipper a well-known mechanism which makes a clicking noise, such as the "tick" of a cooking timer for kitchens. Such a signal would be felt by the operator's fingers, even if he were a little deaf, and thus would be a combined tactile and sound signal.

If preferred the tell-tale mechanism may include a small electric bulb 66 which is mounted below an aperture drilled in the top 10 of the casing and which will light up the instant the comb attachment reaches its fully retracted position, or nears that position. In lieu of a bulb, a glowing wire in an evacuated envelope or other known light signal may be employed for the function stated.

Obviously each of the described signal devices may be used alone, or any two may be used together, or all three as illustrated diagrammatically in FIG. 13.

While the invention has been described in considerable detail, various changes and modifications may be made within the scope of the appended claims. Thus the signal device may be set to give a signal a fixed time before the comb attachment reaches its most retracted position, so that an operator having slow reflexes or a slow reaction time may be able after receiving the signal to position the clippers properly for each upward movement or "stroke."

What I claim is:

1. In combination with a standard hair clipper having a casing, a rapidly reciprocated cutter blade mounted on the forward end of the casing, an electric motor housed in the casing, and mechanism connecting the motor with the blade, also in the casing; a scalp-engaging comb attachment slidably mounted on the outside of the casing and on the upper side thereof adjacent said cutter blade, said comb attachment being guided to slide at an acute angle to the general plane of the cutter blade, said comb attachment having comb teeth projecting in the general plane of the blade, or in planes parallel to said general plane, but projecting forwardly or in advance of the blade so that the comb teeth encounter hairs on a scalp, and the scalp itself, before the hairs can be cut by the blade; another mechanism interposed between the motor and the comb attachment to effect reciprocation of the comb attachment at a relatively slow rate; means adapted to engage and disengage or declutch said other mechanism from said motor, said means including a knob outside the casing and a spiral cam inside the casing; said other mechanism including a worm with right and left hand threads driven by the motor, a worm gear driven by said worm, a spring tending to hold the worm gear in mesh with said worm; said spiral cam engaging the worm gear to move it away from said worm when said knob is turned in one direction; said spring causing re-meshing of the worm gear and worm when the knob is turned in the opposite direction.

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2. The invention defined in claim 1, wherein the comb in each reciprocation moves an indicator which is mounted on the casing and can be seen and felt by the operator, said indicator advising the operator when the comb in its cycle of movement reaches its retracted position.

3. The invention defined in claim 2, wherein the comb has a cam fixed thereto and the indicator consists of a pin which is projected outwardly of the casing by a thrust imparted by said cam during movement of the comb, the pin being automatically restored to a position substantially within the casing when said cam moves away.

4. In combination with an electric motor-operated hair clipper having a mechanism interposed between the motor and the clipper blade to operate the blade; another mechanism including a clutch which is controlled from outside the clipper body, said clutch engaging the second-mentioned mechanism with the first-mentioned mechanism; a comb attachment that is reciprocated slowly in advance of the clipper blade, when the clutch is engaged, so as to space the blade varying distances from the scalp of the person whose hair is being cut; and a tell-tale device mounted on the clipper body and having a part which is projected outwardly of the clipper body synchronously with one movement of the reciprocating comb attachment, said part being retracted automatically within the clipper body synchronously with the other movement of the comb attachment, thereby advising the operator when the comb attachment is in its retracted position.

5. In combination, a hair clipper having a casing, an electric motor housed in the casing, and a hair-cutting blade supported on one end of the casing for reciprocation by the motor; and a comb attachment mounted in guides on top of the casing and adapted to reciprocate slowly in a plane disposed approximately 60° from the plane in which the blade reciprocates; said comb attachment when in its most forward position spacing the blade one-half inch to one inch away from the scalp of the person whose hair is being cut, and when in its rearmost position lying about in the plane of the blade so that the blade may then make a fine or close-to-the-scalp cut; mechanism operated by said motor for effecting slow reciprocation of the comb attachment; manually controlled means operable from outside the casing to connect said mechanism with and disconnect said mechanism from said motor; and a tell-tale device mounted on the casing and operated by the comb attachment in its reciprocation, said tell-tale device having a part which is projected and retracted relative to the casing, thus advising the operator when the comb attachment is in its rearmost position.

6. An electric hair clipper having a casing, a motor within the casing, and a hair-cutting blade at the forward end of the casing; a comb attachment reciprocably mounted on top of the casing and adapted to engage the scalp of the person whose hair is being cut; operator-controlled means to connect the comb attachment to, and disconnect it from, the motor to effect slow reciprocation of said comb attachment at the will of the operator; a tactile tell-tale device supported on the casing in such a manner that it may be felt by the operator's hand; and means connected to the comb attachment to operate the tactile tell-tale device during each reciprocation of the comb attachment, so that an operator holding and operating the hair clipper, by his sense of touch alone, can determine when the comb attachment is in its most retracted position relative to the clipper blade.

7. An electric hair clipper having a casing, a motor within the casing, a source of electricity for driving the motor, and a hair-cutting blade operated by the motor and disposed at the forward end of the casing; a comb attach-

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ment reciprocably mounted on top of the casing and adapted to engage the scalp of the person whose hair is being cut; operator-controlled means to connect and disconnect the comb attachment and the motor, the comb attachment when motor-driven slowly reciprocating longitudinally of the casing; a light-emitting tell-tale device supported on the casing and having a circuit connectible with the source of electricity; and means fixed to the comb attachment to effect closing of the circuit of said light-emitting tell-tale device when the comb attachment reaches its most retracted position relative to the clipper blade; means being provided to automatically open said circuit to extinguish said light when the comb attachment moves forwardly toward a position in advance of the blade.

8. An electric hair clipper having a casing, a motor within the casing, a source of electricity for driving the motor, and a hair-cutting blade operated by the motor and disposed at the forward end of the casing; a comb attachment reciprocably mounted on top of the casing and adapted to engage the scalp of the person whose hair is being cut; operator-controlled means to connect and disconnect the comb attachment and the motor, the comb attachment when motor-driven slowly reciprocating longitudinally of the casing; a sound-emitting tell-tale device supported on the casing and having a circuit connectible with the source of electricity; and means fixed to the comb attachment to effect closing of the circuit of said sound-emitting tell-tale device when the comb attachment reaches its most retracted position relative to the clipper blade; means being provided to automatically open said circuit to silence the sound-emitting device when the comb attachment moves forwardly toward a position in advance of the blade.

9. An electric hair clipper having a casing, a motor within the casing, a source of electricity for driving the motor, and a hair-cutting blade operated by the motor and disposed at the forward end of the casing; a comb attachment reciprocably mounted on top of the casing and adapted to engage the scalp of the person whose hair is being cut; operator-controlled means to connect and disconnect the comb attachment and the motor, the comb attachment when motor-driven slowly reciprocating longitudinally of the casing; a light-emitting tell-tale device supported on the casing and having a circuit connectible with the source of electricity; a sound-emitting tell-tale device supported on the casing and having a circuit connectible with the source of electricity; a tactile tell-tale device supported on the casing in such a manner that it may be felt by the operator's hand; means fixed to the comb attachment to effect closing of the circuits of said light-emitting tell-tale device and said sound-emitting tell-tale device simultaneously, when the comb attachment reaches its most retracted position; other means fixed to the comb attachment to operate said tactile tell-tale device, so that an operator holding the hair clipper may be informed by his sight, his hearing and his sense of touch, when the comb attachment is in its most retracted position.

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