Dec. 26, 1939. J. S. RYAN 2,184,781

ELECTRIC HAIR CLIPPER

Filed Dec. 24, 1936

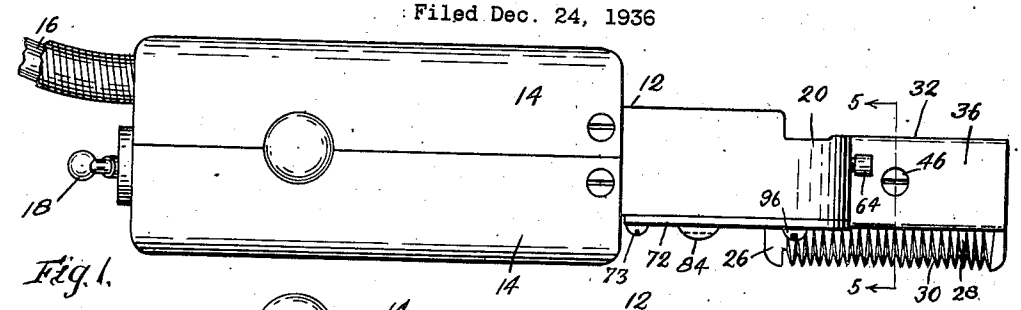


Fig. 1.

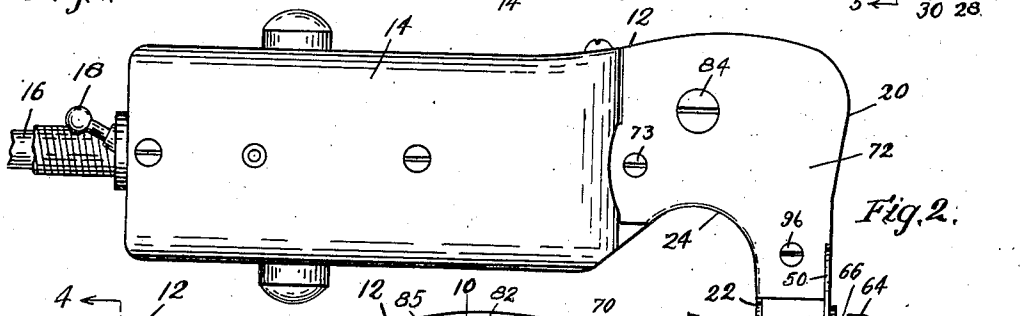


Fig. 2.

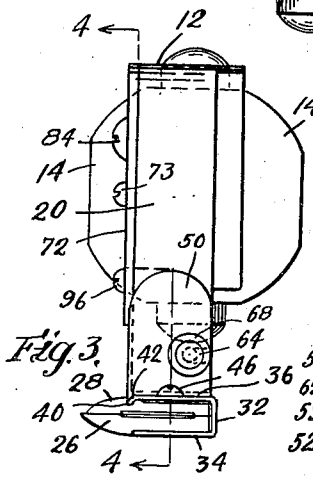


Fig. 3.

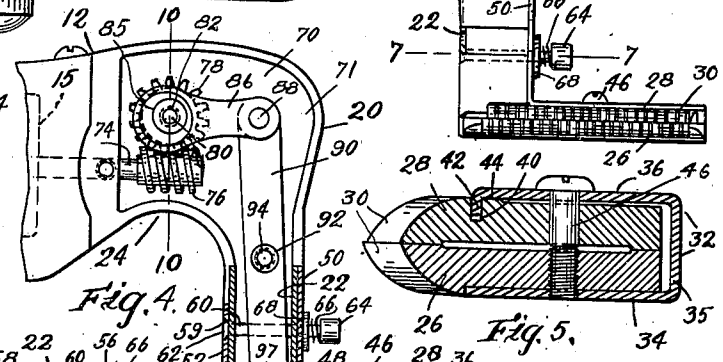


Fig. 4.

Fig. 5.

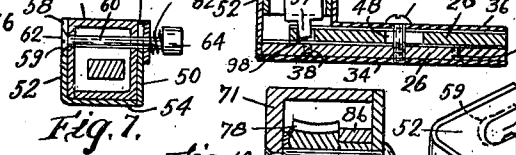


Fig. 7.

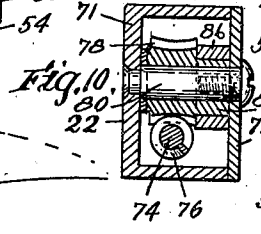


Fig. 10.

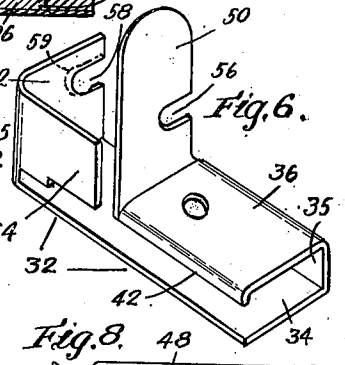


Fig. 6.

Fig. 9.

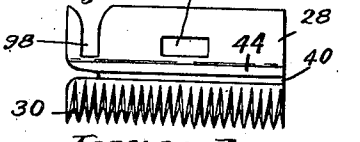


Fig. 8.

Inventor.

James S. Ryan

by T. T. Lemmon atty

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ELECTRIC HAIR CLIPPER

James S. Ryan, Woburn, Mass.

Application December 24, 1936, Serial No. 117,596

8 Claims. (Cl. 30—216)

This invention relates to electric hair clippers and particularly those wherein the handle of the clipper contains the electric motor that drives the cutting blade.

In the more common type of clipper the cutting blade is disposed crosswise of the handle at one end thereof and reciprocates transversely of the axis of the handle. The manipulation of such a clipper requires a conjoint sweeping movement of the forearm and a pivotal motion of the wrist that renders control of the clipper rather stiff so that, for instance, on unexpected movements of the head, the clipper cannot always be moved away from the head quickly enough to prevent contact between the head and the ends of the teeth.

A type of clipper has also been proposed wherein the cutting edge of the blade is disposed approximately parallel with and approximately in or close to the axis of the handle and reciprocates in a line parallel with the axis so that the device can be used in the fashion of a comb, and be swept through the hair with a forearm movement.

With both types of clippers a forearm movement is necessary for manipulating them. Such forearm movement is tiring and rather awkward and does not give the nicety of control that can be desired.

In the hair clipper of the present invention, the cutting blade is generally parallel with the handle, but, instead of being close to the handle, is so far offset laterally that it permits an entirely different manner of manipulation. Instead of using the clipper with a forearm movement and combing action, the disposition of the cutting blade is such that it can be passed over the head, and particularly the back of the head, by a rotary motion of the wrist, thereby rotating the clipper about the axis of its handle and so sweeping the cutting blade over the head in a long arcuate path. The amount of offset of the blade is substantial, a distance of one and three-quarters inch being satisfactory for the design illustrated. The distance is not critical but should be sufficient so that the blade stands out beyond the fingers of the hand grasping the handle and permits the aforesaid rotary motion of the wrist and also permits the blade to enter close spaces, as close behind an ear, for instance. Such a clipper constitutes an object of the present invention.

Another object of the invention is the provision of an improved form of driving mechanism between the driving motor and the reciprocating cutting blade.

A further object of the invention is the provision of an improved blade and comb holder with means removably securing it to the device.

A yet further object is generally to improve the construction and operation of electric hair clippers.

Fig. 1 is a plan view of the hair clipper embodying the present invention.

Fig. 2 is a side elevation of the hair clipper of Fig. 1.

Fig. 3 is an end view of the device of Fig. 1.

Fig. 4 is a section taken along line 4—4 of Fig. 3.

Fig. 5 is a section taken along line 5—5 of Fig. 1.

Fig. 6 is a perspective view of the blade and comb holder.

Fig. 7 is a section taken along line 7—7 of Fig. 2.

Fig. 8 is a plan view of a cutting blade.

Fig. 9 is a perspective view illustrating the manner of using the device.

Fig. 10 is a section taken along line 10—10 of Fig. 4.

The motor driven hair clipper embodying the present invention comprises a supporting handle frame 12 having removable handle plates or covers 14 that enclose an electric driving motor 15 receiving current through the cable 16 and started and stopped by the switch 18 located at the rear end of the handle. The handle frame 12 extends forwardly of the plates 14 and is provided with a hollow or chambered goose neck 20 having a downwardly or laterally projecting rectangular hollow extension 22 to which the cutting elements of the device are detachably secured. The goose neck is also provided with a notch or re-entrant part 24 in which the forefinger of the hand conveniently rests, as is indicated in Fig. 9, to guide the movements of the cutting elements.

The cutting elements comprise a comb 26 and a cutting blade 28, both substantially flat and rectangular and resting one upon the other. The similar long edges of the blade and comb are provided with cooperating cutting teeth 30. The blade and comb are retained in superimposed relation in a holder 32 with their long toothed edges disposed parallel to the axis of the handle. Said holder 32 comprises a resilient steel strip reflexed into substantially channel shape and provided with a bottom plate 34 and a top plate 36. The comb and cutting blades are located

between the aforesaid plates 34 and 36. The comb blade 26 is secured to the bottom plate 34 of the holder by suitable means as screws 38, see Fig. 4. The cutting blade 28 is provided in its top face with a longitudinally extended channel 40 which extends from end to end thereof behind the teeth 30. The top plate 36 of the holder has a downwardly extended rib 42 which is received loosely in said slot 40 for the purpose of permitting the cutting blade to vibrate in a direction parallel to the slot while retaining it in the holder against movement in a transverse direction. The top plate 36 of the holder is arranged to exert a substantial spring pressure on the cutting blade so as to force the cutting and comb blades into firm contact. The cutting blade 28 is provided with an upstanding ledge 44 behind the slot 40 against which the top plate 36 of the holder bears, the top surface of the cutting blade being otherwise relieved so that it is otherwise free from engagement with the top plate of the holder, thereby eliminating unnecessary friction.

The engaging pressure between the cutting and comb blades can be adjusted by the tension adjusting screw 46, the head of which bears upon the top plate 36 of the holder and the body of which passes through a longitudinally elongated slot 48 of the cutting blade and is screw-threaded into the comb blade and the bottom plate 34 of the holder. By screwing down the screw 46 increased tension is put upon the resilient top plate 36 and the integral connection 35 between said plates, thereby to cause the top plate to exert increased tension upon the cutting and comb blades. The top plate 36 of the holder is provided at its inner end with an upwardly extended clamping ear 50. The bottom plate 34 is extended beyond said ear 50 and at the end thereof is provided with an upturned clamping ear 52 which is parallel to and spaced from the ear 50. Said ear 52 is also provided with a cover ear 54 which is reflexed forwardly and is terminated close to the edge of the ear 50. The ears 50, 52, 54 thus define a rectangular space which has dimensions approximately conformed to the rectangular end 22 of the goose neck 20 and is adapted to receive and engage said end snugly and with spring pressure due to the inherent resiliency of the ears.

The ears 50 and 52 are provided with opposed notches 56 and 58 which are open at the rear ends of the ears, the outer edge of the notch 58 being tapered or counter-sunk, as illustrated at 59, Fig. 7. The rectangular end 22 of the goose neck has a locking pin 60 extended therethrough and adapted to enter the notches 56 and 58 to hold the holder releasably connected with the goose neck. The pin 60 at one end has an outwardly tapered head 62 which is seated in the counter-sunk portion 59 of the notch 58, thereby to hold the holder aligned with the goose neck. The pin 60 has an enlarged button 64 at the other end which is engaged by a compression spring 66 that bears through a washer 68 against the ear 50 whereby to hold the head 62 of the pin releasably in the counter-sunk portion of the slot 58. By moving the pin axially against the spring the head can be withdrawn from the notch 58 and the holder removed from the goose neck.

The cutting blade 28 is reciprocated longitudinally by mechanism contained in the chamber 70 of the goose neck and under the removable cover 72 that is secured removably to the goose neck by an attaching screw 73. The electric motor that is contained in the handle 12 has a shaft 74 that is extended forwardly into the chamber 70 and has a worm 76 fixed thereto. Said worm meshes with a worm gear 78 which is journalled on a stud shaft 80 one end of which is fixed rigidly to the back wall of the chamber 70 and the other end of which has a tapped hole 82 therein into which the end of a screw 84, Figs. 2 and 3, is received whereby to additionally support the shaft by the cover 72 and at the same time to secure the cover onto the goose neck.

The worm gear 78 is provided with a hub 85 that is eccentric with respect to the axis of the stud shaft 80. One end of an eccentric strap 86 is received on the eccentric hub and the other end thereof has a pin 88 which is journalled in the upper end of a lever 90. Said lever is pivoted intermediate its ends on a stud shaft 92 fixed to the rear wall 71 of the chamber 70 and having a tapped hole 94 in its other end in which a screw 96, Fig. 2, passing through the cover is screw threaded. Thus the rotation of the eccentric 84 causes the reciprocation of the lever 90.

The lower end of the lever 90 is provided with a reduced projection 97 that is located loosely in a slot 98 in one end of the cutting blade 28. The notch 98 is open at the rear end of the blade and is flared outwardly thereat to provide an enlarged entrance to permit the holder containing the blade to be withdrawn and reapplied to the goose neck in longitudinally displaced positions of the blade.

The goose neck 20 projects laterally beyond the axis of the handle so as to support the cutting and comb blades a considerable distance from the handle. A distance of approximately one and three-quarter inches has been found in practice to be satisfactory. The distance is intended to be sufficient so that the blade is located substantially beyond the fingers that grasp the handle, as is illustrated in Fig. 9, and to provide a long radius of revolution for the cutting blade so that the cutting blade can be moved throughout a long cutting path over curved surfaces and particularly concave surfaces such as the back of the head, by a simple and easy rotation of the wrist which rotates the handle of the cutter about its axis. The cutting blade projects laterally from the handle sufficiently also to go behind the ears without bending the ears or resorting to any unnatural positions of the body or the hand. The cutting blade also can be rotated quickly away from the head upon unexpected movements thereof, so as to prevent cutting the head.

I claim:

1. An electric hair clipper comprising a handle containing an electric driving motor, said handle having a forwardly projecting goose neck which extends laterally of and considerably beyond the side of the handle, cooperating cutter and comb blades located at the end of said goose neck generally parallel with the axis of the handle, and driving mechanism connecting said cutter blade and said electric motor, said goose neck being long to support the cutter and comb blades at one side of the handle beyond the fingers of the hand that grasps the handle and to sweep the cutting edges of said blades in a line that is mainly parallel with the said blades when said handle is rotated about its axis.

2. An electric hair clipper comprising a handle containing an electric driving motor, said handle having a forwardly projecting goose neck which

extends laterally of and considerably beyond the side of the handle, cooperating cutter and comb blades located at the end of said goose neck generally parallel with the axis of the handle, and driving mechanism connecting said cutter blade and said electric motor, said goose neck having a re-entrant finger-receiving notch in front of the forward end of said handle and behind the laterally projecting part of said goose neck.

3. An electric hair clipper comprising a handle having a reduced hollow forward part provided integral with a long hollow edgewise directed lateral projection, a high-speed electric motor in said handle, cutter blades mounted on the end of said projection transversely of the plane thereof and parallel with the handle axis and considerably outside the line of the handle, a straight lever pivoted in and extended lengthwise of said hollow projection having at its outer end an operative connection with a cutter blade for reciprocating it, an eccentric in said hollow forward part of said handle, an eccentric strap generally parallel with the axis of said handle connecting said eccentric with the inner part of said lever for reciprocating it, and reduction gearing in said hollow forward part for driving said eccentric.

4. In a hair clipper having a handle, and a cutter holding member, the combination therewith of a cutter holder comprising spaced top and bottom plates having a resilient connecting and spacing plate integral therewith at the similar sides thereof and said top plate having a down-turned rib at its opposite side, superimposed cutter and comb blades between said plates, said comb blade having means securing it to said bottom plate and said cutter blade having a groove therein in which said rib is loosely received for guiding said cutter blade for reciprocatory movement parallel with said rib, adjustable means for changing the pressure of engagement of said blades, and releasable means for connecting said holder with said cutter holding member.

5. In a hair clipper having a handle, and a cutter holding member, the combination therewith of a cutter holder comprising spaced top and bottom plates having a resilient connecting and spacing plate integral therewith at the similar sides thereof and said top plate having a down-turned rib at its opposite side, superimposed cutter and comb blades between said plates, said comb blade having means securing it to said bottom plate and said cutter blade having a groove therein in which said rib is loosely received for guiding said cutter blade for reciprocatory movement parallel with said rib, a tension adjusting screw bearing on said top plate and having a screw-threaded connection with said bottom plate for adjusting the engaging pressure of said blades, and means for attaching said holder detachably to said cutter holding member.

6. In a hair clipper having a handle, and a cutter holding member, the combination therewith of a cutter holder comprising spaced top and bottom plates having a resilient connecting and spacing plate integral therewith at the similar sides thereof and said top plate having a down-turned rib at its opposite side, superimposed cutter and comb blades between said plates, said comb blade having means securing it to said bottom plate and said cutter blade having a groove therein in which said rib is loosely received for guiding said cutter blade for reciprocatory movement parallel with said rib, said holder having an upstanding ear that is disposed against a side of said cutter holding member, and means connecting said ear detachably with said cutter holding member.

7. In a hair clipper having a handle, and a cutter holding member, the combination therewith of a cutter holder comprising spaced top and bottom plates having a resilient connecting and spacing plate integral therewith at the similar sides thereof and said top plate having a down-turned rib at its opposite side, superimposed cutter and comb blades between said plates, said comb blade having means securing it to said bottom plate and said cutter blade having a groove therein in which said rib is loosely received for guiding said cutter blade for reciprocatory movement parallel with said rib, said top and bottom plates having opposed upstanding ears that are disposed on opposite sides of said cutter holding member, said ears having aligned notches, and a locking pin carried by said cutter holding member adapted removably to enter said notches and having clamping means bearing on said ears.

8. In a hair clipper, the combination of a handle having at one end a narrow hollow projection provided with a lateral-edgewise projecting hollow cutter support, a high speed electric motor in said handle, a cutter holder on the end of said support and having a releasable connection therewith, cooperating cutter and comb blades in said holder transverse of the plane of said cutter support having cutting edges parallel with said handle, and means for reciprocating said cutter blade in the direction of the axis of said handle including a lever in said support, means pivotally supporting said lever intermediate its ends for reciprocation in the plane of said handle, said cutter blade having a notch therein and the lower end of said lever being loosely located in said notch, an eccentric journaled on an axis crosswise of said handle in said projection between said handle and lever, an eccentric strap extended forwardly from said eccentric operatively connecting said eccentric and lever for reciprocating the latter, and motor-driven reduction gearing in said extension for operating said eccentric.

JAMES S. RYAN.