July 28, 1925. 1,547,193

N. O. ANDERSON

ELECTRICALLY DRIVEN HAIR CLIPPER

Filed Nov. 28, 1924

Fig. 1.

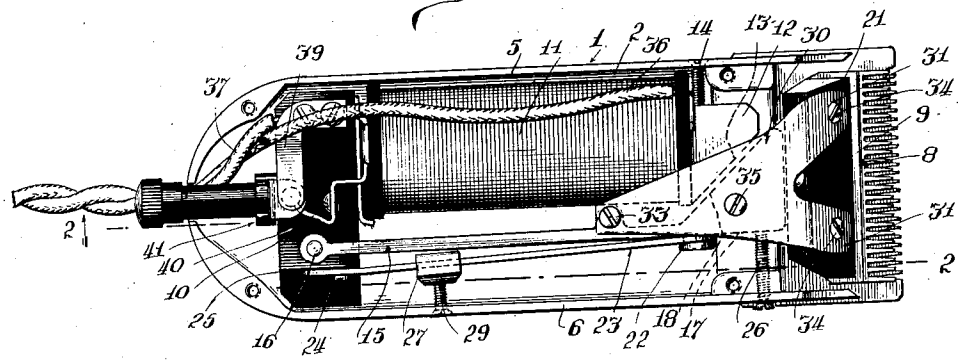


Fig. 2.

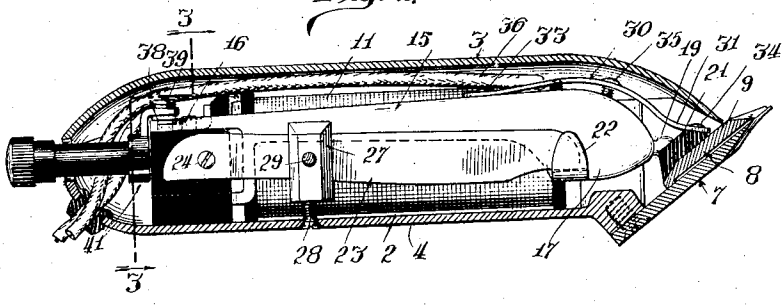


Fig. 3.

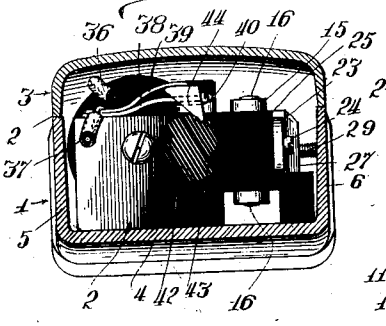
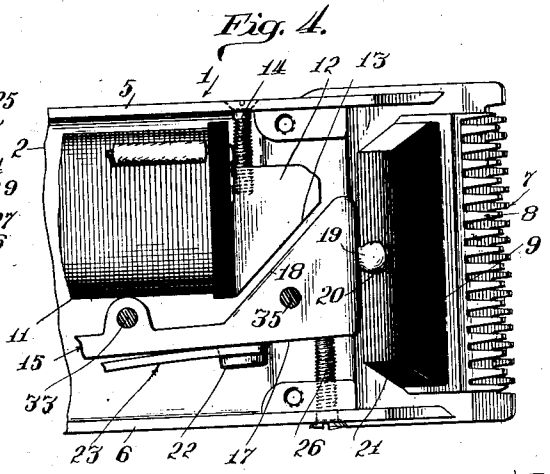


Fig. 4.



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Patented July 28, 1925. 1,547,193

UNITED STATES PATENT OFFICE.

NILS OLAF ANDERSON, OF CHICAGO, ILLINOIS.

ELECTRICALLY-DRIVEN HAIR CLIPPER.

Application filed November 28, 1924. Serial No. 752,542.

To all whom it may concern:

Be it known that I, NILS OLAF ANDERSON, a subject of the King of Sweden, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Electrically-Driven Hair Clippers, of which the following is a specification.

This invention relates to improvements in electrically driven hair clippers and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

One of the objects of the present invention is to provide an improved hair clipper adapted for alternating current use and to so form and arrange the various parts thereof, that the contact areas of the coacting electromagnet and vibrating armature, as well as the motive force or power thereof is materially increased without the necessity of enlarging the clipper as a whole.

A further object of the invention is to provide a ball and socket joint between the movable or vibrating cutter and the actuating armature which will readily permit said cutter to make its full complete stroke without binding and so that said vibrating cutter may be held under an even tension against the fixed cutter during said entire stroke.

These objects of the invention as well as the many advantages thereof will more fully appear as I proceed with my specification.

In the drawings:—

Fig. 1 is a top plan view of a hair clipper embodying my invention, with the cover removed to more clearly illustrate the interior construction thereof.

Fig. 2 is a longitudinal vertical section through the same as taken on the line 2—2 of Fig. 1.

Fig. 3 is a transverse vertical sectional view through the improved hair clipper as taken on the line 3—3 of Fig. 2.

Fig. 4 is a view on an enlarged scale of the parts shown at the right hand end of Fig. 1, with the tension member removed therefrom to more clearly show the construction of said parts.

The improved clipper includes a casing 1 which is of a length greater than its width and thickness and is of such dimensions and conformation as to have the proper feel when held in the hand. Said casing comprises a hollow, open top body 2, and a cover 3, the body having a bottom wall 4 and side walls 5 and 6 respectively. The cover is comparatively shallow and rests at its side edges upon the side walls of the body, said body and cover being secured together in any suitable manner. The corners of said cover and body are rounded and so are the rear ends thereof as shown in Figs. 1 and 2 so as to impart the desired shape and feel to said casing. The front end of the casing is formed at an angle less than a right angle with respect to the bottom wall of the casing to provide an inclined seat to which is secured in any suitable manner, a comb-like stationary cutter blade 7. Associated with said stationary cutter blade is a movable comb-like blade 8 which carries a block 9 on its top surface between its ends, said movable cutter being reciprocated transversely of the fixed cutter blade as will later appear.

In the rear end of the body 2 is located a transversely extending block 10 preferably made of an insulation material, said block being secured in position therein in any suitable manner. Forward of said block and adjacent the side wall 5 is located an electro-magnet 11, the rear end of which is suitably attached to said block and the front end of which carries a pole piece 12 forming a continuation of the magnet core. Said pole piece is cut on an angle at one side to provide a contact surface 13 of a substantially large area, said contact surface being arranged in a vertical plane and extending at substantially an angle of 45° to the axis of the magnet. By this angular arrangement the contact surface 13 is greatly increased without increasing the size of the magnet. The forward end of said magnet is held in position by means of a screw 14 which passes through the side wall 5 of the body and is threaded into said pole piece as shown in Fig. 1.

Between said magnet 11 and the side wall 6 is located an edgewise arranged armature bar 15 which extends substantially parallel with the magnet. The rear end of said bar is bifurcated to embrace a part of the block 10 and a vertically disposed pin 16 pivotally connects said armature bar to said block. The front end of said bar terminates in an enlarged head 17 which is cut away on one side to provide an angularly disposed contact surface 18 which is con-

plemental to and is adapted to be attracted by the contact face of the pole piece of the magnet when the same is energized in the manner well known. The front end of the head carries a ball 19 which normally seats in a socket 20 in a block 21 fixed to the movable cutter blade 9. Upon that side of the armature bar 15 opposite the magnet and near the head is provided a lug 22 in which rests the forward end of an edgewise disposed duplex tension bar 23, the rear end of which is secured by a screw 24 to a vertical shoulder 25 on the block 10. Said tension bar performs two functions, the first to urge the forward end of the armature bar downwardly so that the movable cutter blade may bear firmly against the fixed blade and second, to swing the armature bar away from the magnet when the same is de-energized. This last movement of the armature bar is limited by a stop screw 26 threaded through the side wall 6 and adapted to be engaged by the head of said bar.

To move the tension bar 23 downwardly I provide thereon a yoke block 27 into which is threaded a screw 28 which extends through the bottom wall of the body. By turning the screw in the proper direction the desired tension on the movable cutter blade with reference to the fixed cutter blade may be easily attained. A second screw 29 is threaded through the side wall 6 of the casing and engages said yoke block so that said block which determines the point of lateral flexing of the tension bar, may be properly adjusted. By turning the screw in one direction or the other the block 27 is moved toward or away from the side wall 6 which, of course, will induce the desired tension for lateral movement of the armature. As the lateral adjustment of said block is relatively small, the head of the screw 28 is so formed to permit the screw to rock to compensate for the adjustment of the block 28.

Mounted on the top surface of the head of the armature bar is a resilient member of a substantially Y-shaped formation and including a body 30 and two spaced arms 31—31. Said member is arched longitudinally and the body is secured to the armature bar just to the rear of the head by a screw 33 and the forward ends of said spaced arms engage upon and are fixed to the block 21 on the movable cutter bar by screws 34—34. A screw 35 passes through the middle of the arched part of the spring member and is threaded into the head of the armature bar. By means of said screw the Y-shaped spring member may be adjusted to impose the proper tension upon said movable cutter bar at points spaced on each side of the ball and socket joint 19 and 20 before mentioned. By means of this construction a positive and even tension is imposed upon the movable cutter blade at points near and between its ends so that said blade is held evenly and flat against the fixed cutter blade. Thus, the movable blade is held against any twisting with respect to the fixed cutter blades so that the comb-like teeth are always parallel and will wear down evenly without becoming dull.

36 indicates one of the current conductors which passes through an insulating thimble in the rear end of the body and is operatively connected to the magnet coil winding at the forward end thereof. 37 indicates the other current conductor which also passes through said thimble and is secured to a spring contact finger 38. Said finger is fixed to the block 10 near the side wall 5 and extends toward the longitudinal median plane of the casing. A second leaf spring 39 is also fixed to the block 10 and bears against the finger 38 to increase the resiliency thereof. Said contact finger normally engages upon a fixed contact 40 which is secured to the top of the block 10 and is operatively connected to the coil winding at the rear end of the magnet.

Means are provided for moving said finger 38 out of engagement with said fixed contact and said means are as follows:—41 indicates a switch member rotatively mounted at its forward end in the block 10 and having a turning knob projecting beyond the rear end of the casing, said switch member being located in the median plane of the casing. On said switch member adjacent the block is a ratchet cam member having pairs of diametrically opposite high and low recesses 42 and 43 respectively and associated with said ratchet cam is a depending extension 44 made integral with the spring contact finger 38. When said extension is in one of the high recesses 42, it is out of engagement with the fixed contact 40 so that the circuit to the magnet is broken and the clipper is idle. When the switch stem is turned in a clockwise direction to bring one of the low recesses into position to be engaged by said extension the finger 38 engages the fixed contact and the circuit to the coil is completed and the same is energized. When the magnet is energized the pole piece attracts the armature and causes it to engage said pole piece imparting a reciprocation in one direction to the movable cutter blade. Thus the current pulsations of an alternating electric current, due to the rise and fall of the electromotive force of each cycle will cause the armature to vibrate in unison with said cycles toward and away from the pole piece; vibrating the movable cutter blade upon the fixed cutter blade. By means of the adjustments heretofore described, the proper degree of tension between said cutter blades may be secured and maintained.

While in describing my invention I have

referred to the same as embodied in a hair clipper adapted for use in connection with an alternating current but this is to be taken by way of illustration only and not by way of limitation, as the angularly disposed contact surfaces of the magnet and armature respectively are also of advantage by reason of their enlarged superficial areas in hair clippers adapted for use in connection with a direct current.

I claim as my invention:—

1. A hair clipper embodying therein a fixed cutter blade, a movable cutter blade, a vibratory armature operatively connected at one end to said movable cutter blade and pivotally mounted at its other end for a swinging movement about a vertical axis, means operable to cause said armature to bear down upon said movable cutter blade, said means comprising a spring member extending parallel with said armature and also normally acting to urge said armature laterally in one direction.

2. A hair clipper embodying therein a fixed cutter blade, a movable cutter blade, a vibratory armature operatively connected at one end to said movable cutter blade and pivotally mounted at its other end for a swinging movement about a vertical axis, said armature having a lug near said first mentioned end, and an edgewise disposed flat spring fixed at one end near said pivoted end of the armature and engaging at its other end upon said lug, and means operating upon said spring member to vary the tension thereof and to regulate the downward pressure it imposes on said armature.

3. A hair clipper embodying therein, a casing, a fixed cutter blade at one end of the casing and a block member in the other end of the casing, an electromagnet secured at one end to said block and extending parallel with and adjacent to one side wall of the casing, said magnet having a pole piece with an angularly disposed contact surface at the other end near said fixed cutter blade, a second cutter blade movable upon the fixed cutter blade, an armature arranged parallel with said magnet and having one end pivoted in said block and having a head at the other end with a contact surface complemental to that of said pole piece, means connecting said armature head to the second cutter blade, and a spring member mounted at one end to said block and operatively connected at its other end to said armature near said head, said spring member capable of being actuated to impose both a downward pressure and a lateral tension in one direction to said armature.

4. A hair clipper embodying therein, a fixed cutter blade, a movable cutter blade reciprocable thereon, a vibratory armature having a head at one end, means providing a ball and socket joint between said head and movable cutter blade, an arched spring fixed at one end to said armature and at its other end to said movable cutter blade, and a screw threaded into said head and passing through said spring between its ends to vary the tension of said spring.

In testimony whereof, I have hereunto set my hand, this 10th day of November, 1924.

NILS OLAF ANDERSON.