

June 16, 1931.

A. J. DREMEL

1,810,469

ELECTRIC HAIR CLIPPER

Filed Aug. 22, 1927

2 Sheets-Sheet 1

Fig. 1.

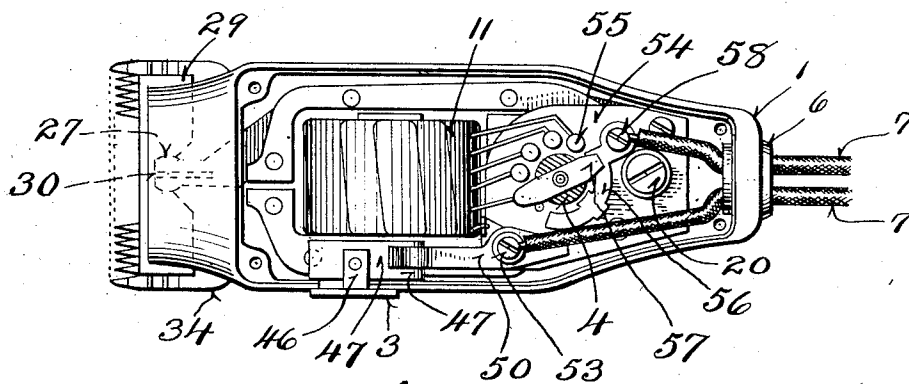


Fig. 2.

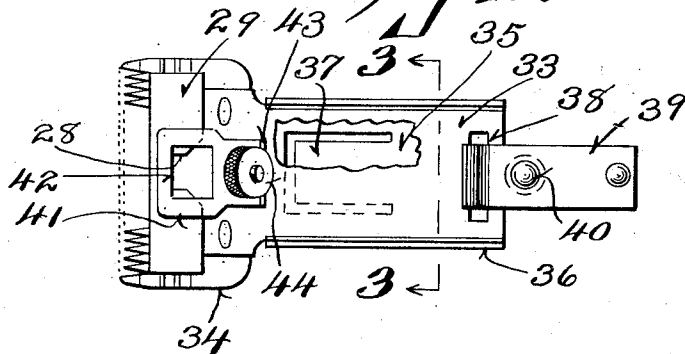


Fig. 3.

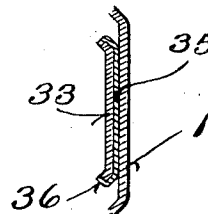
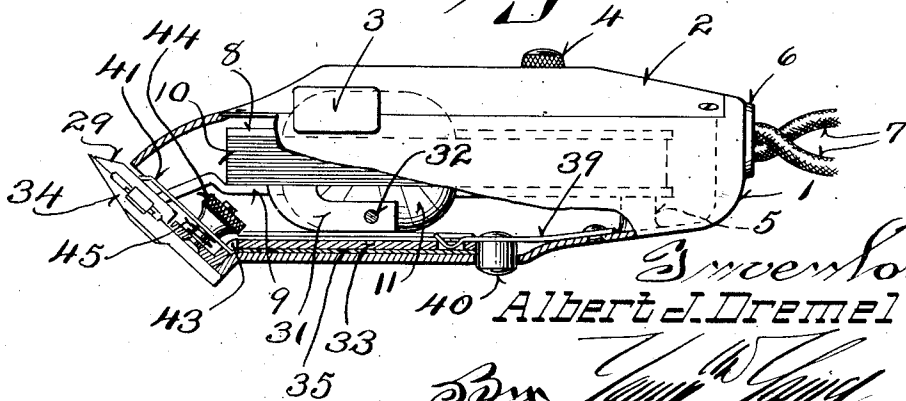


Fig. 4.



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Fig. 5.

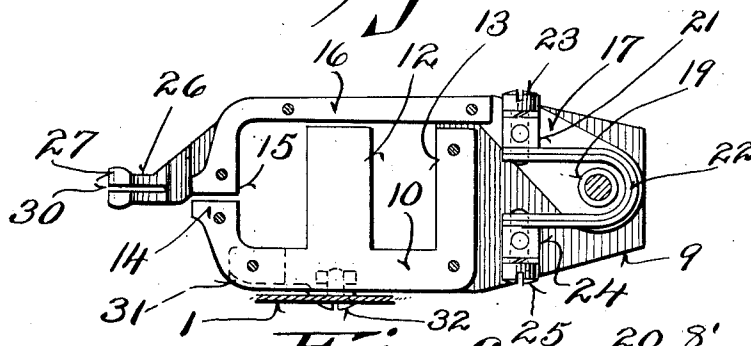


Fig. 6.

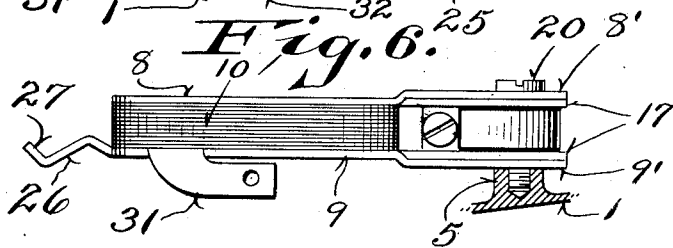


Fig. 7.

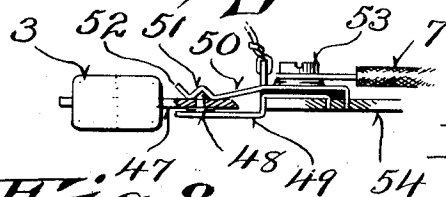


Fig. 8.

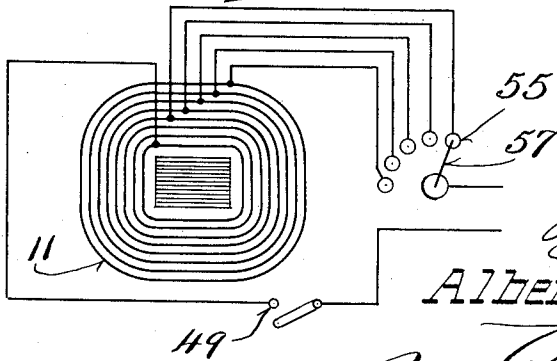
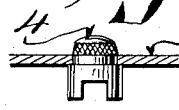


Fig. 9.



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UNITED STATES PATENT OFFICE

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ELECTRIC HAIR CLIPPER

Application filed August 22, 1927. Serial No. 214,750.

This invention relates to electric hair clip-
pers.

Objects of this invention are to provide an
electric hair clipper which is operated from
alternating current and does not have any
make and break contacts, which is reliable,
compact, and easily produced by ordinary
machine shop methods, which is easy to as-
semble, which is of sturdy construction, and
which has a long life.

Further objects are to provide a novel
form of electric hair clipper in which a frame
removable as a unit from a two-part casing
is provided and carries the laminated core
of the stationary magnet, in which the frame
is spring supported or yieldingly supported
with reference to the casing, whereby the
natural tendency of the frame to vibrate is
taken care of and the small vibrations of the
frame cushioned and prevented from being
transmitted to the casing.

Further objects are to provide a novel vi-
bratory armature operated from the magnet
and formed of laminations held between up-
per and lower plates, and to provide a con-
struction in which the main plates of the
frame provide wide side bearing surfaces
contacting with the faces of the armature and
preventing lateral swinging or motion, and
in which the armature is mounted upon a
main pin screwed into the main body of
the casing, such pin also acting as one of the
means of attaching the main frame in place
upon the casing in addition to furnishing
the pivot point for the armature, and gen-
erally to provide bearings for the armature
which are large and adequate and insure long
wear.

A further object is to provide a laminated
spring for the armature which surrounds the
pin and secures compactness while at the
same time providing the requisite yielding
characteristics.

It is required in certain places that the
clipper blades or portions contacting with
the head of a patron be sterilized between
each use. This invention provides means
permitting the ready removal of both blades
as a unit so that this unit may be sterilized
without disturbing other portions of the ap-

paratus and to so form this unit that it con-
stitutes a slidable removable blade unit.

Further objects are to provide simple
means, such as a spring, for holding the
blade slide in place and to provide means
for detaching the blade slide operated from
the outside of the casing, and to provide
means such as a spring for holding the
blade slide unit from rattling.

Further objects are to provide a main con-
trol switch or cut-off switch which is held
in place by the two-part casing which is of
simple and reliable construction and ex-
tremely compact, and which is mounted on
the left hand side of the clipper, so that it
may be readily manipulated by the thumb
on the right hand of the operator.

Further objects are to provide a novel
form of current control or control switch,
which is adapted to adjust for any variation,
such for instance, as a variation in voltage,
which is adjusted from the outside of the cas-
ing, and in which the adjusting knob is held
in place by the casing and fits down over the
adjusting switch arm.

An embodiment of the invention is shown
in the accompanying drawings in which:—

Figure 1 is a view of the hair clipper with
the top removed and with a portion of the
adjusting knob in section;

Figure 2 is a view partly broken away of
the blade slide unit;

Figure 3 is a sectional view on the line
3—3 of Figure 2;

Figure 4 is a side elevation of the device
with parts broken away and in section;

Figure 5 is a view of the main frame with
the armature and magnet core and with the
top plate of the main frame sectioned off;

Figure 6 is a side elevation of the struc-
ture shown in Figure 5;

Figure 7 is a detail of the main switch;

Figure 8 is a wiring diagram of the clipper;

Figure 9 is a fragmentary detail showing
the adjustable current controlling switch
knob.

Referring to the drawings, it will be seen
that the clipper is formed of a casing having
a relatively large hollow bottom portion 1
and a removable cover or top portion 2. To-

gether, the casing parts form generally an oval shape tapering towards its rear and comfortably fitting within the hand of the operator. The main control switch has its manipulating thumb piece 3 (see Figures 1 and 4) located on the left hand forward side of the casing within ready reach of the thumb of the right hand of the operator. The current control knob, indicated by the reference character 4, projects slightly through the top of the casing towards its rear end. It is to be noted that the bottom portion 1 of the main casing is provided with an upstanding boss 5 and with an opening in its rear portion provided with an insulating bushing 6 through which the flexible cable or conductors 7 lead.

The main frame is carried within the casing and is composed of a top plate 8 and a bottom plate 9 between which the laminations forming the core of the stationary magnet 10 are clamped by rivets, screws, or other means. The plates 8 and 9 are provided with slightly offset rear ends or portions 8' and 9' shown most clearly in Figure 6. Preferably, the magnet is of the E type and the winding 11 (see Figure 1) is upon the central core. This central core 12 is also preferably of approximately twice the cross sectional area of the side arms, as shown in Figure 5, and indicated by the reference characters 13 and 14. Preferably, the arm 14 extends only part way across the device, as shown in Figure 5, and is opposite a similarly shaped end 15 of the magnetic portion 16 of the armature. This magnetic portion 16 of the armature is positioned in close proximity to the poles 12, 13, and 14 of the magnet, and is preferably laminated with the laminations held in place between the side plates 17. These portions 17 project rearwardly and are positioned between the portions 8' and 9', as shown in Figure 6. They are preferably provided with a spacing sleeve 19 rigid therewith. Through this spacing sleeve and through corresponding openings in the main frame plates 8 and 9, a main bearing screw or pin 20 extends which forms the pivotal point for the armature. This screw is preferably shouldered and clamps the main frame to the boss 5 of the bottom portion 1 of the casing, as shown in Figure 6. In addition to the spacing sleeve 19, the plates 17 of the armature carry between them a spring receiving block 21 (see Figure 5) to which one end of the U-shaped laminated spring 22 is secured in any suitable manner, as by means of the screw 23, a suitable split washer being provided for holding the screw against opening.

Further, as may be seen from Figures 5 and 6, the frames 8 and 9 carry between them a second spring receiving post or block 24 and the spring is similarly attached to this block by means of a screw 25, a split washer being

provided for this screw also, as shown in Figure 5. The blocks 21 and 24 are riveted or otherwise rigidly secured to the armature plates and to the main frame plates respectively, so that a very rigid construction results.

It is to be noted particularly that the spring is laminated and also is spaced from the main pivot pin or screw 20 and is preferably out of contact with the spacing sleeve 19. In addition to this, the curved portion of the U-shaped spring has for its center, the axis of the screw 20, or pivot pin. The bottom plate 17 of the armature extends forwardly and is provided with a downwardly bent portion 26 terminating in an upwardly bent arm 27. The arm 27, as may be seen from Figure 5, is provided with rounded faces which fit within the slot or notch 28 of the movable blade 29 (see Figures 1, 2, and 5).

Further, it is to be noted that the arm composed of the members 27 and 26, is provided with a saw cut or slot 30 so that the ends may be compressed slightly towards each other and may fit any size notch or cutout 28 in the movable blade 29 within small limits of variation in manufacture. In addition to this, by having the spring 22 out of contact with the sleeve 19 (see Figure 5) rattling is also prevented.

It is to be noted at this point that the side plates or upper and lower plates of the armature cooperate with the portions 8' and 9' of the main frame to provide wide bearing surfaces for the armature and thus prevent the transmission of excessive stresses to the pivot pin 20. The pivot pin 20 also has a wide bearing face or contact surface with the sleeve 19, and thus wear and rattling are prevented.

The main frame is supported at its forward end by means of a spring 31 secured thereto and provided with a downturned rearwardly projecting arm, as shown in Figures 4, 5, and 6. This spring arm 31 is secured to the bottom portion 1 of the main casing by means of a screw and nut 32 (see Figure 6). Thus, the natural tendency of the magnet to vibrate is cared for and cushioning means are interposed between the casing and the main frame.

In actual tests conducted with this apparatus, it has been found that the casing is remarkably free from vibration. Obviously, this idea could be extended and the main frame could be wholly spring supported or yieldingly cushioned, as required.

The front of the casing carries a removable blade slide unit which is illustrated particularly in Figures 1 to 4, inclusive. This unit consists of a main plate or slide plate 33 which is riveted or secured by screws or otherwise to the stationary blade 34, and which is adapted to slide into a channel-like guide 35 (see Figures 2 and 3) secured to the bottom of the casing. This channel-like guide 35 is

formed of spring metal and both the guide and the slide 33 are provided with upturned marginal edges. In addition to this, the slide 35 is provided with inwardly turned bevelled portions or lips 36 which bear against the upturned ends of the slide 33, as shown most clearly in Figure 3. This provides a wedging action and aids in preventing rattling.

In addition to this, the guide 33 is provided with a tongue 37 (see Figure 2) which is punched therefrom and slightly pressed upwardly to bear against the underside of the slide 33 and to thus cooperate with the bevelled ends and inturned lips 35 to prevent rattling. The slide 33 is provided with a transverse slot 38 adjacent its rear end into which the downturned lip of a latching spring 39 (see Figures 2 and 3) is adapted to snap. The spring 39 is riveted to the casing bottom 1 and carries a knob or pin 40 which projects slightly through the bottom of the casing, as shown in Figure 4. It is thus apparent that to release the blade slide unit, all that is necessary is to press upwardly on the pin or button 40 and to withdraw the blade slide unit from the device. After it has been sterilized it may be readily reinserted by merely pushing it into place, the spring 39 snapping into locking engagement, as shown in Figure 4.

A small relatively light spring 41 (see Figures 2 and 3) is provided for yieldingly holding the movable blade 29 in contact with the stationary blade 34. This spring is provided with a cut-out portion 42 through which the arm 26 (see Figures 4 and 5) freely projects without contacting with the spring. The spring bears against a shoulder formed on the slide 33 by means of the notch 43 and is urged downwardly by means of the thumb screw 44, such thumb screw being carried by a threaded pin riveted to the main slide 33. Thus, the pressure exerted by the spring 41 may be easily regulated while the blade slide unit is removed from the device. It is preferable to provide a small helical spring 45 below the spring 41, as shown in Figure 4, to hold the spring 41 against completely contacting or closing with reference to the stationary blade 34 to thus facilitate insertion and removal of the movable blade. For example, when the thumb screw 44 is loosened the spring 45 will rock the spring 41 upwardly a slight distance and permit ready removal or insertion of the movable blade.

The electrical control of the apparatus is secured through the medium of the main switch whose thumb piece 3 has been previously described. This thumb piece is provided with an integral inwardly projecting slotted tongue 46 which is riveted to an insulating movable strip 47. The insulating strip 47, as may be seen from Figure 7, is provided with a rivet 48 adapted to form contact between the bottom switch blade 49 and the upper switch blade 50. Preferably,

one of these blades, for example, the upper blade, is provided with a notched portion or recessed portion 51 and with an upturned end portion 52 so that the rivet 48 will snap into place and be frictionally held against inadvertent motion. It may be easily snapped out of place by sliding the thumb piece 3 forwardly and under these conditions, the insulating strip 47 will be interposed between the stationary blades 49 and 50 and the rivet will be out of engagement therewith, thus opening the electrical circuit. The stationary blades 49 and 50 are held in place by means of a terminal screw 53 connected to one of the conductors 7 of the cable and electrically connected with the upper blade 50 and insulated from the lower blade 49. Preferably, the blades 49 and 50 are each provided with downturned ends, as shown in Figure 7, which fit within apertures formed in an insulating plate 54 carried by the main frame. The downturned ends prevent rocking of the stationary blades. The insulating plate 54 carries a plurality of contacts 55 which are connected to different points within the magnet winding 11, as will hereinafter appear, and these contacts 55 are adapted to be connected to a contact ring or segment 56 by means of the adjustable switch arm 57. The contact segment or ring 56 is connected to one of the conductors 7 of the cable by means of the terminal screw 58.

The wiring diagram has been illustrated in Figure 8 and it will be seen that the winding 11 has its inner end connected to the blade 49. The outer portions of the winding are connected to the contacts 55 which are adapted to be engaged by the movable adjustable switch arm 57. The adjustable switch and the cut-off switch are shown conventionally in Figure 8.

From this diagram, it is apparent that the entire control of the device is secured by the main cut-off switch and that as the voltage varies, the correct tap for the winding may be selected by means of the adjusting switch 57, so that the exact current supply required may be controlled, and excessive motion of the armature prevented, even if there is a material variation in the voltage supply for the device.

It will be seen that an electric hair clipper has been provided which is of novel construction, which is so made that the main frame may be bodily positioned or removed from the casing as a unit, and in which freedom from rattling is assured, together with a very long life due to the wide bearing surfaces and the sturdy and reliable construction employed.

It will be seen further that a removable blade slide unit has been provided which may be very quickly removed from the main body of the clipper for sterilizing without disturbing any portion of the apparatus.

It will be seen further that the device can be made by ordinary machine shop processes in a ready and easy manner, and that no fragile or delicate parts are employed.

5 Although the invention has been described in considerable detail, such description is intended as illustrative rather than limiting as the invention may be variously embodied and as the scope of such invention is to be
10 determined as claimed.

I claim:

1. A device of the class described including a casing, a frame mounted therein and carrying an electro-magnet, a vibratory armature pivotally joined to said frame adjacent the rear end of said armature, and a laminated U-shaped spring surrounding the pivot point of said armature and fastened at its ends to said armature and said frame.
2. In a device of the class described, the combination of a frame having an upper and a lower plate, a laminated electromagnet clamped between said plates, a vibratory armature cooperating with said electromagnet and having an upper and a lower plate and a laminated body clamped therebetween, the upper and lower plates of said armature slidably bearing against the upper and lower plates of said frame, and means pivotally joining the plates of said armature and the plates of said frame.

In testimony that I claim the foregoing I have hereunto set my hand at Racine, in the county of Racine and State of Wisconsin.

ALBERT J. DREMEL.