

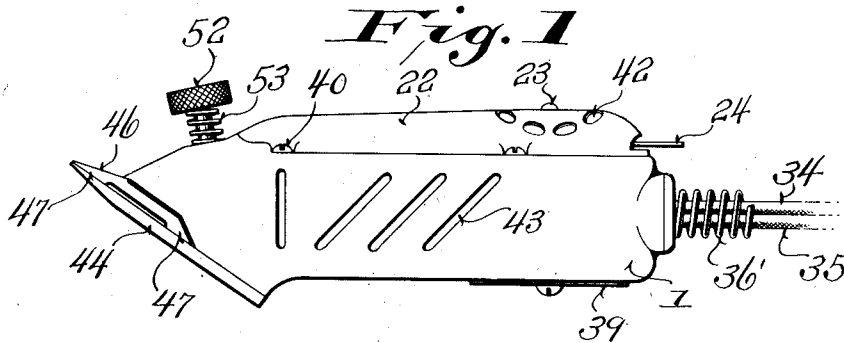
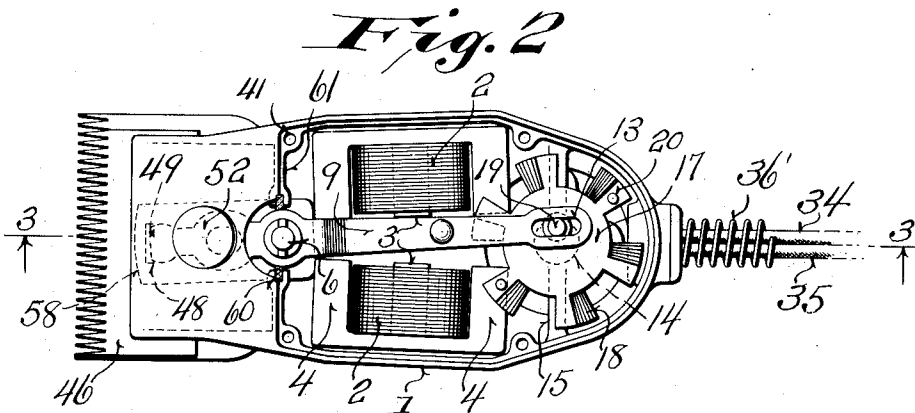
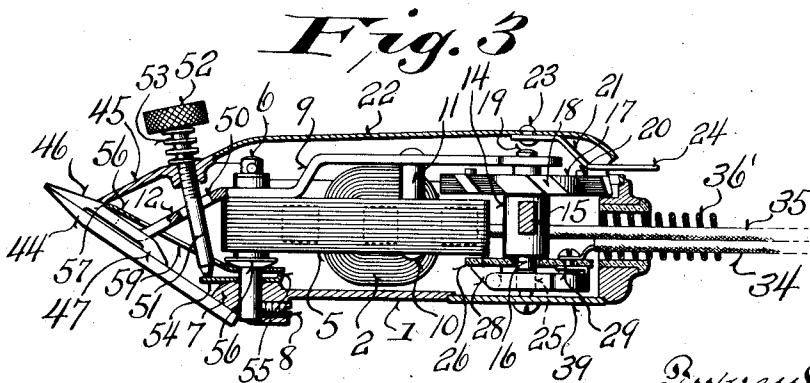
June 9, 1925.

1,541,334

A. J. DREMEL
ELECTRIC HAIR CLIPPER

Filed Jan. 13, 1925

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 4

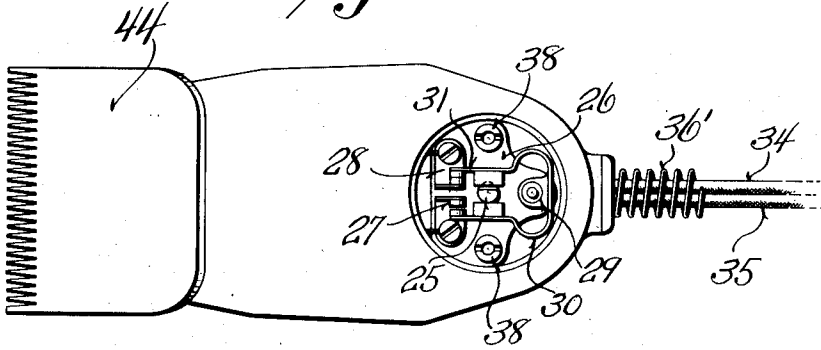


Fig. 5

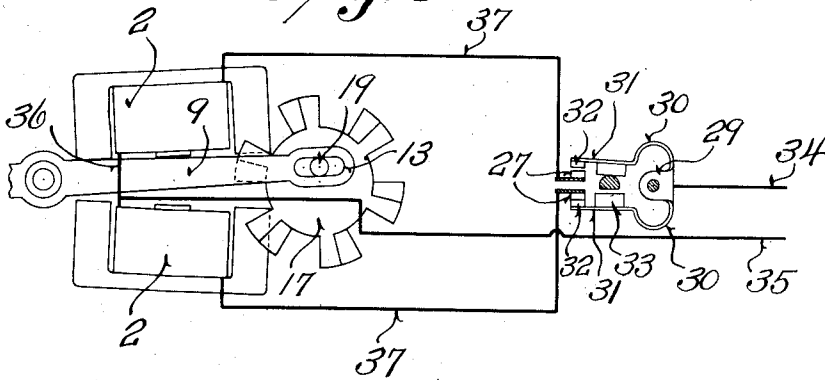
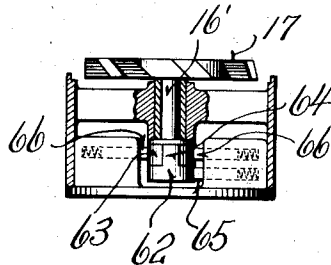


Fig. 6



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UNITED STATES PATENT OFFICE.

ALBERT J. DREMEL, OF RACINE, WISCONSIN.

ELECTRIC HAIR CLIPPER.

Application filed January 13, 1925. Serial No. 2,097.

To all whom it may concern:

Be it known that I, ALBERT J. DREMEL, a citizen of the United States, and resident of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Electric Hair Clippers; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to an electric hair clipper.

Objects of this invention are to provide an electric hair clipper which will operate upon either alternating current or direct current, which does not require a flexible driving shaft, but which is self-contained and is of such size and weight that it may be most easily held in the hand of the operator, and which is so constructed that it may be made very compact and small so that it may be readily manipulated by the operator with the utmost freedom.

Further objects are to provide an electric hair clipper in which a forced draft is maintained through the device, in which the device is prevented from becoming objectionably warm, and which may, therefore, be continuously run for an indefinite period without detrimental results.

Further objects are to provide an electric hair clipper which is provided with readily accessible contacts, in which simple types of contact are employed, and in which a novel form of switch and starting device is employed.

Further objects are to provide an electric hair clipper in which the movable or vibrating blade is yieldingly held against the stationary blade, in which the tension or pressure can be easily regulated to the exact amount desired, and in which the tensioning mechanism is extremely simple.

Further objects are to provide an electric hair clipper in which the main body portion may be most readily formed in which the parts may be most easily assembled, and in which a relatively small number of parts are employed.

Embodiments of the invention are shown in the accompanying drawings, in which:—

Figure 1 is a side elevation of the clipper.

Figure 2 is a plan view with the cover removed.

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

Figure 4 is a view from the under side

of the clipper showing the contact cover removed.

Figure 5 is a diagrammatic view with parts spaced apart to more clearly show the electrical connections.

Figure 6 is a transverse sectional view showing a modified form of construction.

The device comprises a main body portion 1 which is a hollow casing and which receives the magnets, contacts and associated parts of the apparatus. Within this casing a pair of magnets are positioned and are provided with coils 2. These magnets each comprise a central pole 3 and a pair of end poles 4. These electromagnets are preferably formed of a plurality of stampings or laminations in the usual manner and are what is ordinarily known as E-type magnets. Between the magnets an armature 5 is positioned and is formed also of a plurality of stampings. These stampings are pivoted upon a pin 6 which is seated within an enlarged boss 7 formed in the lower portion of the casing and is locked in place by means of a set screw 8. The pin 6 also carries a rocking bar 9 which is pivotally supported thereon, and which is rigidly attached to the armature 5 by means of a rivet 10,—a suitable spacer 11 being positioned above the armature and below the rocking bar 9. This rocking bar has a forward projecting portion 12 and a rear projecting portion. The rear projecting portion is provided with an elongated slot 13, as shown in Figure 2.

The body portion is provided with a bearing 14 adjacent its rear end which is supported by suitable webs 15. Within this bearing the vertical shaft 16 of a fly wheel or fan 17 is revolubly carried. This fan is provided with slanting radial projections 18 as most clearly shown in Figures 2 and 3, and is provided with an offset pin or crank pin 19 which is positioned within the slot 13 of the rocking bar 9. The flywheel or fan 17 is provided with a pair of diametrically opposed hardened pins 20. A small spring arm 21 is pivotally secured to the cover 22 of the casing by means of a small rivet 23, located axially of the shaft 16. This spring arm extends downwardly and outwardly through a slot in the cover plate 22 to provide a manipulating handle 24 for a purpose hereinafter to appear. The lower end of the shaft 16 is cut away to provide a cam-like member 25, as most

clearly shown in Figures 3, 4 and 5. This cam portion 25 is slightly greater than a half cylinder.

An insulating plate 26 is positioned above the lower end of the shaft and carries a pair of stationary contacts 27 (see Figures 4 and 5) which are carried by suitable clips 28. Further, a spring member is provided with an ear 29 which is securely bolted to the insulating plate 26, as is most clearly shown in Figures 4 and 5. This member is preferably provided with a pair of curved portions 30 on opposite sides from which spring arms 31 project. These spring arms carry the movable contacts 32 in their ends which cooperate with the stationary contacts 27. A pair of hard fiber or other insulating blocks 33 are secured to the spring arms 31 intermediate their ends and adjacent the cam 25, as shown in Figures 4 and 5.

The electrical connections comprise the flexible conductors 34 and 35 which, as shown in Figures 1 to 4, lead through the rear end of the device through a suitably bushed aperture and preferably through a short supporting helical spring 36'. The conductor 34 leads to the member 29 and the conductor 35 leads to the common terminal 36 of the two magnet coils 2. The other ends of the magnet coils are connected by means of conductors 37 with the stationary contacts 27, as shown most clearly in Figure 5. Figure 5, it is to be noted, is merely a diagrammatic view and the cam 25 has been moved from its correct position in order to more clearly show the electrical connections.

It is to be noted, however, that the cam 25 is so arranged that it opens one of the circuits through one of the coils and closes the other circuit when the crank pin 19 has passed a slight distance beyond the longitudinal axis of the clipper, as shown in Figure 5.

In other words, when the rocking arm 9 is positioned towards one side, the other magnet is energized and draws the rocking arm towards it. Thus a continuous vibration of the rocking arm takes place with a consequent rotation of the flywheel or fan 17.

In order to start the device, the manipulating handle 24 (see Figures 1 and 3) is moved to one extreme position, for example to the right hand side, and is depressed so as to engage one of the hardening pins 20. It is then quickly slid to the left and released, thus giving the flywheel 17 a start in a clockwise direction. This starts the device operating.

When it is desired to stop the device, the spring lever 24 is depressed and the hardened pins 20 slide beneath such lever until the motion of the rotary fan or flywheel 17 is arrested by one of the pins being held by

the spring arm. It is to be noted that the pins 20 are so positioned upon the flywheel with reference to the spring arm 24 that when in arrested position the cam 24 stands transversely between the hardened blocks 24 (see Figure 5) and thus holds the contacts open. It is thus unnecessary to provide an additional switch for the device as the starting lever 24 and the cam constitute in effect a novel and effective form of electrical switch.

It is preferable to provide elongated nuts 38 upon the bolts which secure the insulating plate 26 in position, as shown in Figure 4, to provide sockets for the reception of attaching screws for the contact cover plate 39, such contact plate being shown in Figure 3 and seated within an appropriate recess formed in the body portion 1 of the device. The cover plate 22 is secured by means of screws 40, (see Figure 1) which pass into threaded apertures 41, formed in bosses in the main body portion, as shown in Figure 2.

It is to be noted that the cover plate is provided with a series of apertures 42 arranged in a circle above the fan 17 and that the sides of the body portion are provided with elongated slots or apertures 43 opposite the magnetic coils 2. Thus the fan causes a constant circulation of air through the apparatus and outwardly from the device, the air being directed against the coils and maintaining such coils cool. Further the rigidly rotating fan causes a continuous circulation of air, certain portions of which pass the contacts and keep them relatively cool also. This ventilating feature has been found in actual practise extremely important and has permitted the use of a very much smaller device than has heretofore been possible. Further, the fan acts in the nature of a flywheel and carries the rocking bar 9 past dead center. Kinetic energy is stored in the rotating flywheel and aids the device when it is suddenly heavily loaded.

The cutting portion of the clipper comprises a stationary cutter plate or blade 44 (see Figures 1, 3 and 4) which is secured in a slanting manner to the under side of the main casing 1, it being noted from Figure 3 that the main casing has a forwardly and downwardly projecting portion 45. The movable blade 46 is recessed centrally to provide sliding ribs or feet adjacent opposite edges, as indicated at 47 in Figure 1 to reduce friction. This movable blade is provided with a cutout portion 48 (see Figure 2) within which the round end 49 of the forward projecting portion 12 of the oscillating lever 9 snugly fits. This forward projecting portion 12 imparts vibratory motion to the movable blade 46. It is to be noted from Figure 3 that the projecting portion 12 of the oscillatory lever is provided with an

aperture 50 through which the adjusting screw 51 projects. This adjusting screw is threaded through the forward projecting portion of the casing and is provided with a knurled adjusting head 52,—the spring 53 being preferably provided, as shown in Figure 3 to prevent inadvertent motion of the screw. This screw bears at its lower end against a washer or rocking member 54, which is adapted to rock upon the boss 7 of the main casing. The rocking member is provided with an upturned flange 55 at its rear side which engages the rear projecting portion of a tensioning leaf spring 56. The leaf spring it is to be noted is positioned upon the pin 6 which pivotally carries the armature, and such pin is provided with a rounded integral collar 56 so that the spring may freely rock about such collar. The forward end of the spring is downturned and fits against a shoulder 57 formed on the movable plate 46, as shown most clearly in Figure 3. The forward end of the spring is rounded, as shown at 58 so that it will freely rock as the blade oscillates. It is to be noted also from Figure 3 that the spring is cut away, as indicated at 59, so as to clear the screw 51 and the projecting portion 12 of the oscillatory lever.

It will be seen, therefore, that by adjusting the screw 51 by means of the knurled head 52 that the exact spring pressure desired may be transmitted through the washer 54, and the spring 56 to the movable blade 46.

In order to prevent the entrance of small lengths of hair into the body of the casing, a pair of felt washers 60 (see Figure 2) are carried in suitably recessed webs 61 extending transversely from opposite sides of the main casing 1. These washers bear against a rounded portion of the oscillating lever and of the armature 5 and thus effectively seal the device against entrance of hair.

In the modified form shown in Figure 3, the parts are substantially the same as previously described with the exception, however, that the shaft 16' of the fan 17 is provided with a rotary contact. This contact comprises a continuous ring 62 mounted upon an insulating drum 63 carried by the shaft and provided with a single projecting finger 64. A spring pressed brush 65 bears upon the continuous ring 62 and is connected to one of the incoming leads. A pair of similar spring pressed brushes 66 adapted to be alternately engaged by the contact fingers 64 are connected to the magnet coils.

It will be seen that an electric hair clipper has been provided which is wholly self-contained, which is mechanically ventilated, which will run relatively cool for an indefinite period, which is extremely compact, and which is of light weight and may be easily manipulated without tiring the operator.

It will further be seen that an electric hair

clipper has been provided which will run equally well on alternating current or direct current.

It will further be seen that an electric hair clipper has been provided in which the parts are relatively simple, are comparatively few in number and are easily accessible.

Although the invention has been described in considerable detail, it is to be understood that the invention may be variously embodied and is, therefore, to be limited only as claimed.

I claim:

1. An electric hair clipper comprising an electromagnet, a vibratory armature actuated thereby, a rotary member driven by said armature, contacts controlled by said rotary member and controlling said electromagnet, a stationary blade, and a vibratory blade actuated by said armature.

2. An electric hair clipper comprising a stationary electromagnet, a vibratory armature actuated thereby, a rotary member connected to said armature and driven thereby, contacts for alternately permitting the energization of said electromagnet, a stationary blade, and a movable blade connected to said armature.

3. An electric hair clipper comprising a stationary electromagnet, a pivotally mounted armature actuated thereby, a ventilating member for causing a blast of air to play over said electromagnet, said member being driven from said armature, a pair of clipper blades, and means connected to said armature for causing relative motion between said blades.

4. An electric hair clipper comprising a stationary electromagnet, a pivotally mounted armature actuated thereby, a rotary ventilating member for causing a blast of air to play over said electromagnet, said member being driven from said armature, a pair of clipper blades, and means connected to said armature for causing relative motion between said blades.

5. An electric hair clipper comprising an electromagnet, a vibratory armature actuated thereby, a rotary ventilating member driven from said armature for causing a blast of air to play upon said electromagnet, contacts actuated by said rotary member and controlling the energization of said electromagnet, a pair of clipper blades, and means connected to said armature for causing relative motion of said blades.

6. An electric hair clipper comprising a pair of spaced electromagnets, a pivotally mounted armature positioned between said electromagnets, a rotary member having a crank operatively connected with said armature, said member having ventilating fins for causing a blast of air to play over said electromagnets, a pair of clipper blades, and means operatively connected with said ar-

mature for causing relative motion of said blades.

7. An electric hair clipper comprising a pair of spaced electromagnets, a pivotally mounted armature positioned between said electromagnets, a rotary member having a crank operatively connected with said armature, said member having ventilating fins for causing a blast of air to play over said electromagnets, contacts controlled by said rotary member and controlling said electromagnets, a pair of clipper blades, and means operatively connected with said armature for causing relative motion of said blades.

8. An electric hair clipper comprising a casing, an electromagnet mounted therein, an armature actuated by said electromagnet, a ventilating device driven by said armature, said casing having apertures adjacent said electromagnet and adjacent said ventilating device, a pair of clipper blades, and means operatively connected to said armature for causing relative motion between said blades.

9. An electric hair clipper comprising a pair of electromagnets, a pivotally mounted armature located between said electromagnets, a rocking bar secured to said armature and projecting from opposite sides of the pivot, one projecting end of said lever being slotted, a rotary ventilating member having a crank pin located within said slot, a plurality of contacts controlling said electromagnets, said rotary member having a cam for actuating said contacts, a stationary blade, and a movable blade connected with a projecting end of said rocking bar.

10. A clipper comprising a stationary blade, a movable blade operated by electromagnetic mechanism including an electromagnet, an armature actuated by said electromagnet and connected to said movable blade, and a rotary member controlling the

energization of said electromagnet and operated by said armature.

11. A clipper comprising a stationary blade, a movable blade operated by electromagnetic mechanism including an electromagnet and an armature, a rotary member, contacts connected to said electromagnet and controlled by said rotary member, said armature being connected to said movable blade and said rotary member, and said rotary member being provided with fan blades.

12. A clipper comprising a stationary blade, a movable blade, electromagnetic mechanism including a vibratory armature connected to said movable blade, a pivot pin supporting said armature, a leaf spring carried by said pin and having one end bearing upon said movable blade, and means for adjusting the pressure exerted by said spring.

13. A clipper comprising a stationary blade, a movable blade, electromagnetic mechanism including a vibratory armature connected to said movable blade, a pivot pin supporting said armature, a spring carried by said pin and having one end bearing upon said movable blade, and an adjusting means for tensioning said spring, whereby the pressure of said spring upon said movable blade may be varied.

14. A clipper comprising a stationary blade, a movable blade, electromagnetic mechanism including a vibratory armature connected to said movable blade, a pivot pin supporting said armature, a spring carried by said pin and having one end bearing upon said movable blade, a tilting washer having a portion bearing against the other end of said spring, and means for tilting said washer.

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.