

April 13, 1937.

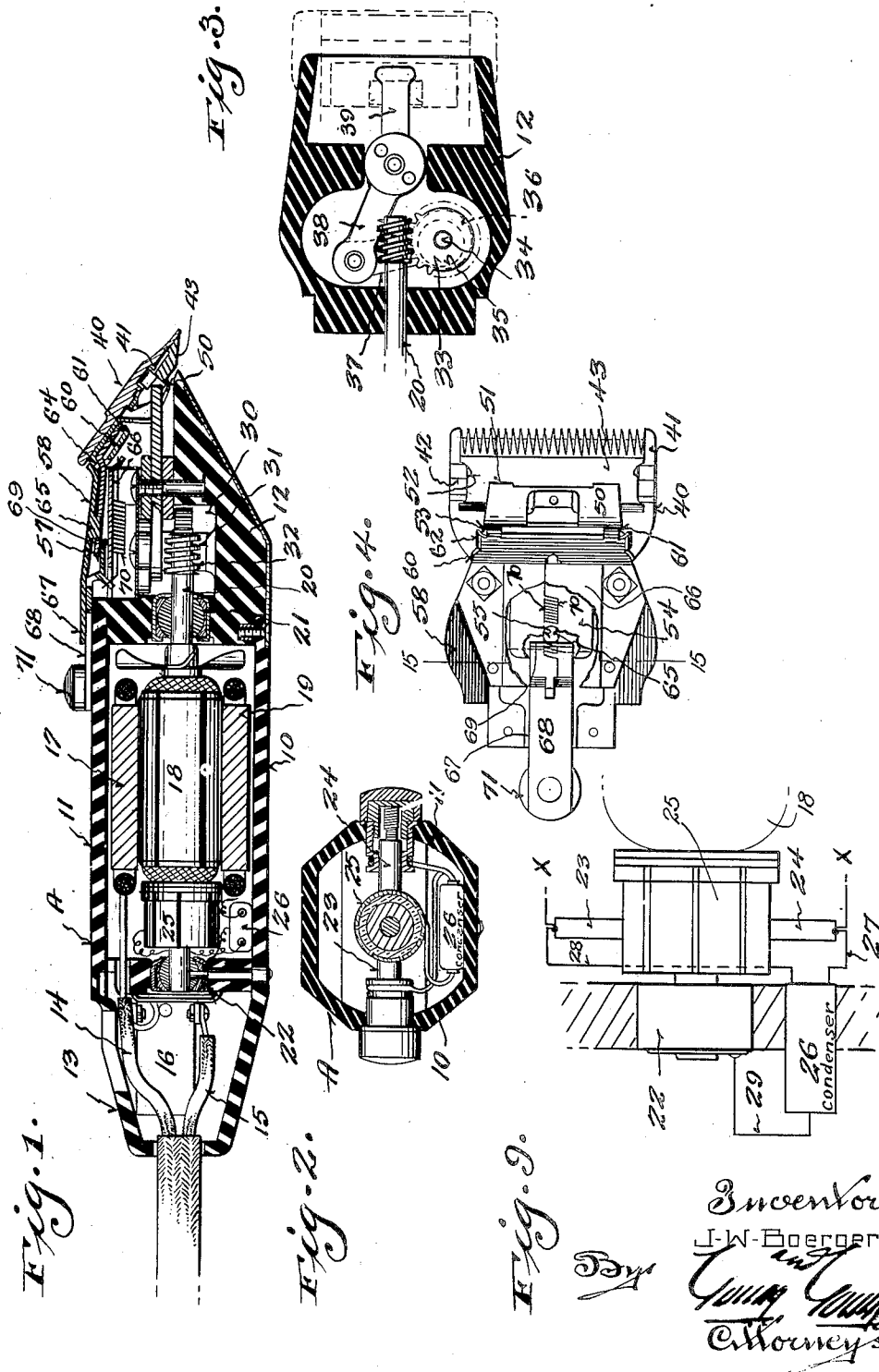
J. W. BOERGER

2,077,034

HAIR CLIPPER

Filed Dec. 7, 1934

3 Sheets-Sheet 1



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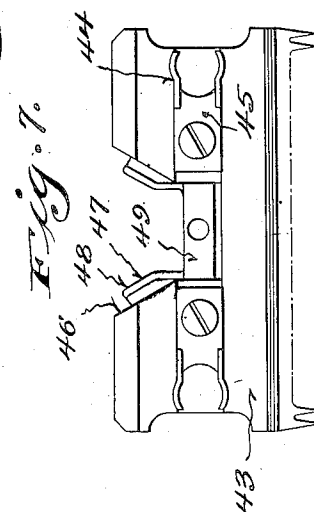
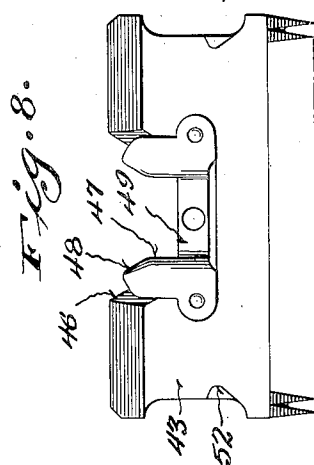
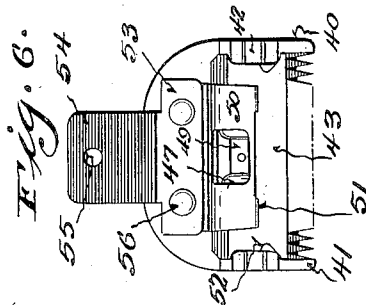
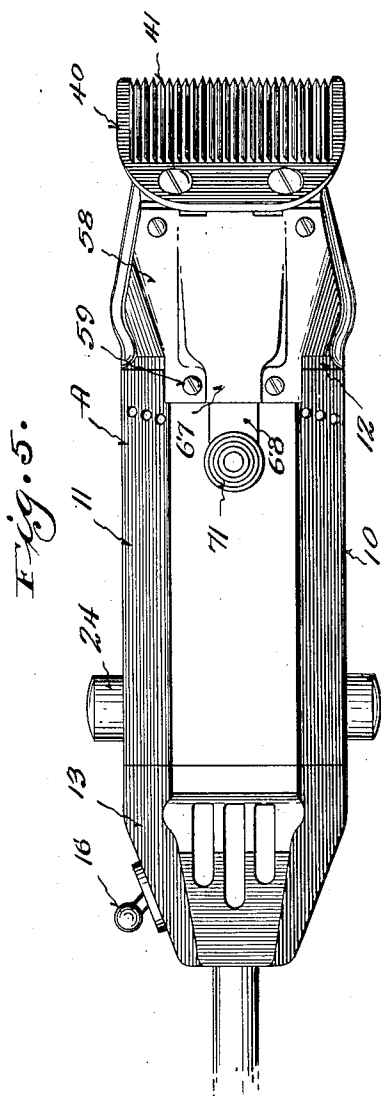
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Fig. 10.

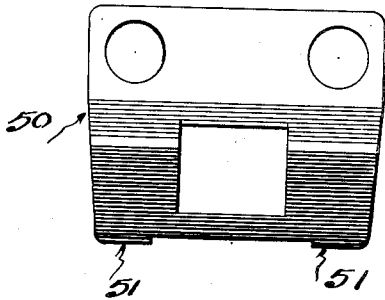


Fig. 11.



Fig. 12.

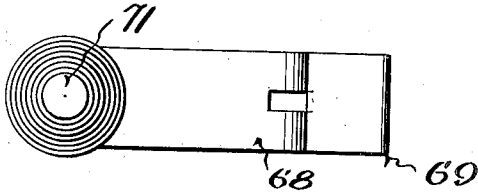


Fig. 13.

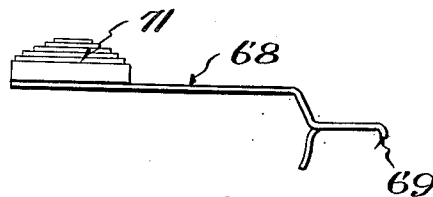


Fig. 14.

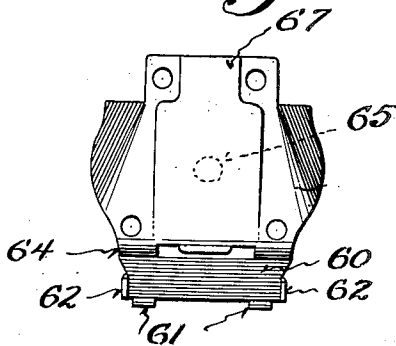
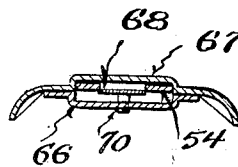


Fig. 15.



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UNITED STATES PATENT OFFICE

2,077,034

HAIR CLIPPER

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5 Claims. (Cl. 30—1)

This invention appertains to clippers of the general type used by barbers in cutting hair, and more specifically to self-contained, electrically driven hair clippers.

One of the primary objects of my invention is to provide an electrically operated hair clipper of the type in which the driving motor is contained in the handle, or body portion of the clippers, which will be of a compact and rugged structure, and of exceptionally light weight, whereby the same can be efficiently and easily manipulated to bring about a haircut of the desired appearance.

Another salient object of my invention is to provide new and novel means for detachably connecting the stationary blade or combing plate, and the movable blade on the clipper body, whereby different sizes and types of blades can be readily associated with the clippers, and whereby the blade assembly can be easily taken apart to facilitate cleaning, sharpening, etc.

Another salient object of my invention is the provision of a detachable cover plate connected with the bottom of the clipper head or forward end of the casing directly below the gear housing in the upper part of the clipper head for detachably supporting the blade assembly, whereby the bottom of the fixed blade or combing plate lies below the bottom line of the motor housing and clipper casing, to allow more clearance for the operator.

A further object of my invention is the provision of resilient guide lugs carried by the upper reciprocatory blade and slidably received in the guide groove of the lower fixed blade or comb plate, whereby to efficiently compensate for wear on the guide surface, and thus insure the proper alinement of the movable blade with the lower fixed blade at all times.

A further important object of my invention is the provision of a novel tension plate carried by the fixed blade for holding the movable blade on the fixed blade, whereby the desired and proper tension between the blades is had.

A further object of my invention is the provision of an angularly disposed bracket plate carried by the fixed blade for reception in a wedge-shaped guide carried by the lock bracket or detachable cover plate, novel means being associated with the lock bracket or cover plate for detachably and rigidly holding the blade assembly in place on the clipper body.

A further object of my invention is the provision of novel means for forming the lock bracket or cover plate for detachable engagement with the

attaching plate of the fixed blade carrying bracket, whereby to insure proper rigidity between the blade assembly and the clipper head or body.

A still further object of my invention is to provide a novel guide bracket carried by the movable blade for the reception of the oscillating actuating lever, the bracket facilitating movement of the lever and functioning to guide the lever and movable blade in proper engagement when the blade assembly is connected with the clipper body.

A still further object of my invention is the provision of a condenser coupled across the brushes for the motor and grounded to the frame or any other metal part of the hair clippers, whereby to effectively reduce sparking in case of radio interference.

With these and other objects in view, the invention consists in the novel construction, arrangement, and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawing, in which drawing:—

Figure 1 is a central, longitudinal section through the improved clippers.

Figure 2 is a transverse section through the clippers.

Figure 3 is a horizontal section through the clipper head, illustrating the arrangement of the blade-driving mechanism therein.

Figure 4 is a detailed top plan view of the lock bracket or cover plate, showing the blade assembly connected therewith, parts of the view being shown broken away to illustrate structural details.

Figure 5 is a bottom plan view of the clippers.

Figure 6 is a top plan view of the blade assembly removed from the lock bracket or cover plate.

Figure 7 is a bottom plan view on an enlarged scale of the movable blade illustrating the novel resilient guide lugs carried thereby.

Figure 8 is a top plan view on an enlarged scale of the movable blade illustrating the novel guide bracket for the operating lever.

Figure 9 is a diagrammatic view showing the condenser placed across the motor brushes.

Figure 10 is a detail top plan view of the tension plate, taken on an enlarged scale.

Figure 11 is an edge elevation of the same.

Figure 12 is a top plan view taken on an enlarged scale of the thumb-actuated latch bolt.

Figure 13 is a side elevation of the same.

Figure 14 is a detail top plan view of the cover plate or lock bracket.

Figure 15 is a detail, transverse cross section through the head assembly taken substantially on the line 15—15 of Figure 4.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates the improved electric clippers, which comprises a housing or casing 10 preferably formed from moulded insulating material. This housing or casing 10 may embody an intermediate hollow body section 11, a removable clipper head section 12 for receiving the actuating mechanism and the rear section 13, for receiving the lead and return wires 14 and 15 and the switch 16.

The motor 17 is suitably anchored within the intermediate body section 11, and the same includes the desired armature 18 and field coils 19. The shaft 20 for the armature is rotatably mounted in suitable bearings 21 and 22, which can be carried respectively by the clipper head section 12 and the rear end of the intermediate or body section 10. The brushes 23 and 24 are connected with the field coils and engage the commutator 25.

In order to eliminate sparking from radio interference, a condenser 26 of the desired capacity is bridged across the brushes 23 and 24 by means of wires 27 and 28. A third wire 29 leads from the condenser and is grounded to the frame or any other metal part of the hair clippers.

While as stated, the bearings 21 and 22 can be of any desired character, the same are preferably of the self-centering type, whereby to facilitate the alinement thereof with the armature shaft.

The clipper head section 12 is provided with a suitable compartment 30 for the gearing 31, and thus the clipper head section forms a housing for the gearing.

By referring to Figures 1 and 3 it will be noted that the armature shaft 20 is extended into the gearing housing and is provided with a worm 32 meshing with a worm wheel 33. The worm wheel 33 is rotatably mounted on a suitable stub shaft 34, and has connected therewith a cam 35, which is surrounded by a cam strap 36. The cam strap is formed on an oscillating lever 37, which is pivotally connected with one end of a link 38 rigidly secured to the operating lever 39.

The forward lower part of the clipper head section 12 detachably supports the blade assembly 40 in a novel manner, as will be later set forth, and it is to be noted that this assembly includes the lower fixed blade or comb plate 41. The inner face of this comb plate or blade in the rear of the teeth thereof is provided with a guide groove 42 and slidably supports the movable cutting blade 43. The inner face of the movable blade 43 is provided with resilient guide lugs 44 formed on attaching plates 45 disposed on each side of its transverse axis. These attaching plates 45 can be set within a groove formed within the inner face of the movable blade so as to prevent twisting of the resilient lugs 44, and these lugs are adapted to be slidably received within the guide groove 42 of the fixed blade. Thus these lugs 44 act as a guide for the movable blade, and take up wear as the same occurs, and insures the proper alinement of the movable and fixed blades at all times.

At this time it is to be noted that the rear central part of the movable blade is bifurcated as at 46 for the reception of the forward end of the operating lever 39. I have provided novel means

for taking up wear between the movable blade and operating lever, and for insuring the proper guiding of the operating lever 39 in place when the blade assembly 40 is associated with the clipper head. This means includes a sheet metal bracket 47 having folded side wings 48 and a connecting bridge 49, which is also received within the guide groove 42. The wings 48 overlie the walls of the bifurcated portion of the movable blade, and the same are flared outwardly, to form an enlarged or flaring throat to guide the forward end of the lever in place.

The inner face of the fixed blade 40 in rear of the movable blade 43 has anchored thereto the resilient tension plate 50. This tension plate overlies the outer face of the movable blade, and the same is provided with depending fingers 51, which engage the outer face of the movable blade. This provides an exceptionally simple and durable means for bringing about the desired tension between the blades. The side edges of the movable blade can be beveled, as at 52, so as to facilitate the riding of the tension plate on top of the movable blade, when the movable blade is assembled on the fixed blade.

Overlying the attaching portion of the tension plate 50 is the attaching foot 53 of the angularly extending attaching bracket 54. This bracket extends in rear of the blade assembly, and is provided with an opening 55, the purpose of which will later appear. It is to be noted that fastening elements 56 extend through the fixed blade, the attaching bracket, and attaching foot of the tension plate, and securely fasten these three elements together. The attaching bracket 54 in rear of the opening 55 is beveled, as at 57, for a purpose which will also later appear.

Detachably connected with the clipper casing is a cover plate or lock bracket 58, which is held in place by means of screws or like fastening elements 59, and the plate or bracket also serves as means for detachably coupling the clipper head 12 with the intermediate or body section of the casing. The forward end of the lock bracket or cover plate is provided with a forwardly and angularly extending supporting foot 60, and this foot has formed on its front edge fingers 61, and similar fingers 62 on its side edges. This foot is adapted to engage over the attaching plate 53 of the attaching bracket 54, and the fingers 61 and 62 are adapted to hook over the front and side edges of the said attaching foot 53. At the point of juncture of the foot 60, with the cover plate or lock bracket 58, a slot 64 is provided, through which is adapted to extend the attaching bracket 54. The inner face of the cover bracket has formed thereon, or secured thereto, a locking pin 65, which is adapted to detachably fit within the keeper opening 55 formed in the attaching bracket.

Rigidly secured to the inner face of the cover plate or lock bracket 58 is a guide plate 66 for the attaching bracket 54. Particular attention is directed to the fact that the guide is of a wedge shape, and thus the distance between the guide and the cover plate gradually increases toward the rear end of the guide.

Struck out from the central portion of the cover plate itself is a guide-way 67, which slidably receives the latch bolt 68. The forward edge of the latch bolt is provided with a depending finger 69, which is adapted to ride over the inner face of the guide plate 66. This sliding bolt is normally urged toward the front of

the cover plate or lock bracket, and over the attaching bracket by a tension coil spring 70, the opposite ends of which are anchored, respectively, to struck out lugs formed on the lock bolt and the guide 66. The lock bolt slides on the outer face of the clipper casing, and the same is provided with a thumb-piece 71 to facilitate actuation thereof against the tension of its coil spring 70.

When it is desired to remove the blade assembly 40 from the clipper head, the latch bolt 68 is moved rearwardly, and the same slides from out of engagement with the guide 66, and the attaching bracket 54. The inner blade assembly can now be rocked so as to move the attaching bracket away from the lock pin 65. The inner blade assembly can now be pulled from the clipper body.

When it is desired to again associate the blade assembly with the clipper body, the attaching plate 54 is inserted through the slot 64 in the cover plate into the guide 66. The beveled end 57 of the attaching plate will strike the lock pin 65, and thus allow the attaching bracket to ride over the lock pin. When the opening 55 reaches the lock pin, the same will ride into the opening, and the lock bolt being wedged in place between the guide 66 and attaching bracket will firmly hold the parts connected. The engagement of the foot 60 with its tongues 61 with the plate 53 adds to its rigidity.

From the foregoing description, it can be seen that an exceptionally simple and durable means has been provided for detachably uniting the blade assembly with the clipper head, and for taking care of wear as the same occurs between the blades.

Changes in details may be made without departing from the spirit or scope of this invention, but what I claim as new is:—

1. In hair clippers, a blade assembly including a fixed blade and a movable blade, means for reciprocating the movable blade, guide means upon the blades, a tension plate having an arched portion rigidly secured to the fixed blade in rear of the movable blade and an arched portion overhanging the movable blade, said arched portion being provided with fingers engaging the outer face of the movable blade, the movable blade having its rear end bifurcated, and the tension plate provided with an opening, and said means for reciprocating the movable blade including an oscillating lever extending through the opening in the tension plate and received within the bifurcated portion of the movable blade.

2. In hair clippers, a clipper head, a lock plate carried by the lower face of said clipper head, a blade assembly including a rearwardly and angularly directed attaching plate having a keeper opening, a rigid lock pin carried by the inner face

of the lock plate, a wedge-shaped guide connected to the inner face of the lock plate and housing the lock pin, the attaching plate being movable into and out of the guide, and releasable means for wedging the attaching plate toward the lock pin to hold the lock pin in the keeper opening.

3. In hair clippers, a clipper head, a lock plate carried by the lower face of the clipper head, a forwardly extending supporting foot formed on the lock plate and extending at an angle thereto, a blade assembly including a fixed blade and a movable blade, means for reciprocating the movable blade, an attaching bracket including a securing portion rigidly connected to the fixed blade, an angularly and rearwardly directed attaching plate, the supporting foot engaging the securing portion and having an entrance slot for the reception of the attaching plate, and means for detachably locking the attaching plate to the lock plate.

4. In hair clippers, a clipper head, a lock plate carried by the lower face of the clipper head, a forwardly extending supporting foot formed on the lock plate and extending at an angle thereto, a blade assembly including a fixed blade and a movable blade, means for reciprocating the movable blade, an attaching bracket including a securing portion rigidly connected to the fixed blade, an angularly and rearwardly directed attaching plate, the supporting foot engaging the securing portion and having an entrance slot for the reception of the attaching plate, means for detachably locking the attaching plate to the lock plate, and fingers on the foot engaging the front and sides of the securing portion of the attaching bracket.

5. In hair clippers, a clipper head having operating mechanism therein including an oscillated lever, a lock plate assembly secured to the lower face of the clipper head, an inwardly projecting lock pin on the lock plate, a forwardly and angularly extending supporting foot on the lock plate, a removable blade assembly including a fixed blade and a movable blade having detachable connection with the oscillating lever, an attaching bracket having a securing plate rigidly connected with the fixed blade and an attaching plate extending at an angle thereto, the supporting foot being adapted to receive the securing plate and having fingers engaging the front and side edges thereof, and a slot through which the attaching plate is movable, said attaching plate having a keeper opening for receiving the keeper pin, a guide secured to the inner face of the lock plate for the attaching plate, said guide gradually converging toward the lock plate toward the forward end thereof, and a movable latch bolt carried by the lock plate movable in the guide for wedging the attaching plate toward the lock plate.

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