Feb. 9, 1954

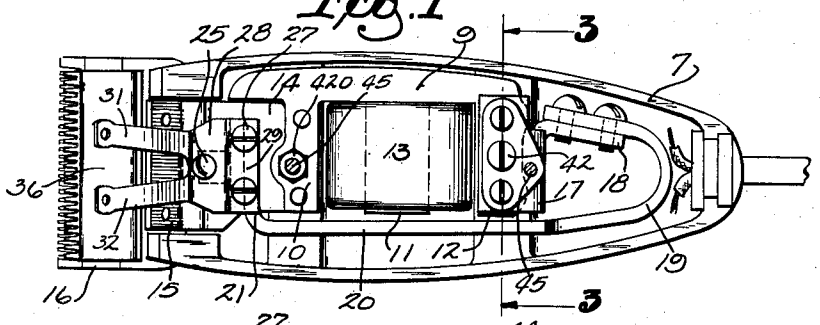
M. ANDIS ET AL

2,668,351

BLADE MOUNTING AND DRIVER FOR HAIR CLIPPERS AND THE LIKE

Filed May 4, 1948

Fig. 1



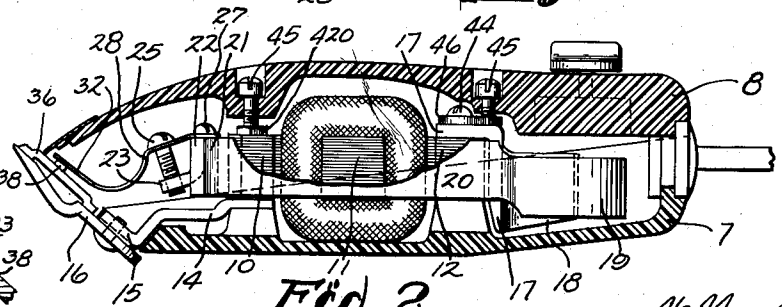


Fig. 2

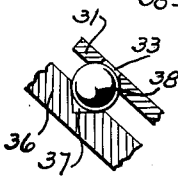


Fig. 5

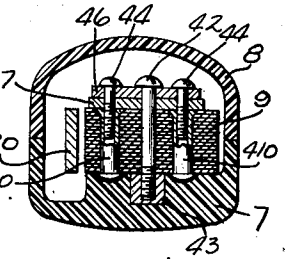


Fig. 3

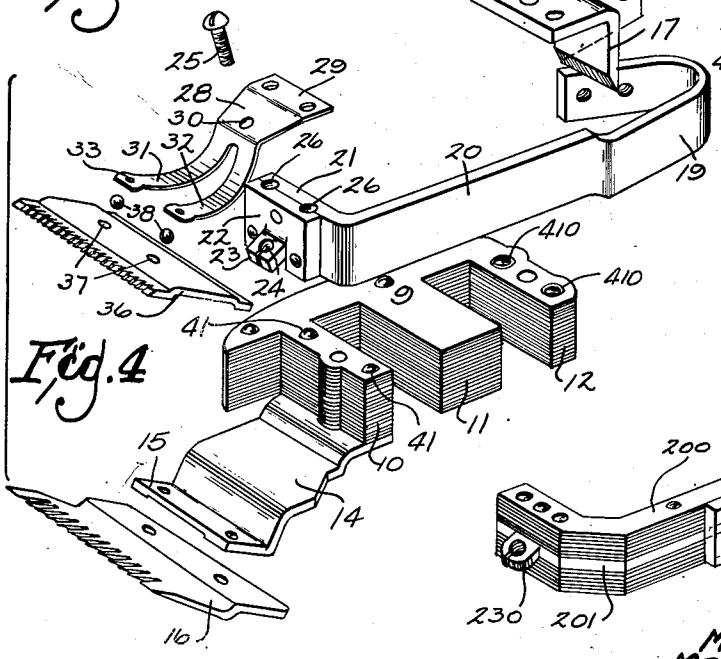


Fig. 4

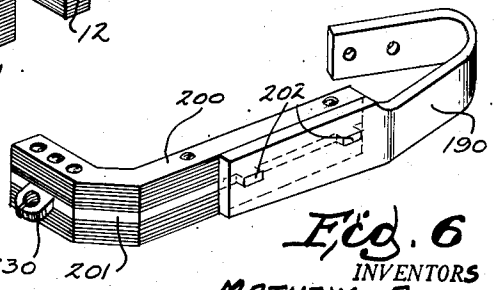


Fig. 6

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BLADE MOUNTING AND DRIVER FOR HAIR CLIPPERS AND THE LIKE

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Application May 4, 1948, Serial No. 24,974

5 Claims. (Cl. 30—210)

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This invention relates to improvements in blade mountings and drivers for hair clippers and the like.

It is a primary object of the invention to provide a novel and improved connection between the vibratory armature of a hair clipper motor and the blade to be driven therefrom. It is sought to provide novel and improved means for adjusting the pressure of the movable blade upon the fixed blade of the clipper and to provide a simple and inexpensive and relatively frictionless connection to the movable blade.

Other objects relate to the improvement of details of the mechanism as will appear more particularly from the following disclosure:

In the drawings:

Fig. 1 is a plan view of mechanism embodying the invention as it appears with the cover of the case removed.

Fig. 2 is a view in longitudinal section through a hair clipper embodying the invention.

Fig. 3 is a detail view taken in transverse section on the line 3—3 of Fig. 1.

Fig. 4 is a view in perspective illustrating in relatively separated positions the component parts of the armature and driving connections.

Fig. 5 is a fragmentary detail view in longitudinal section through one of the blade driving connections.

Fig. 6 is a detail view in perspective showing the modified armature and spring arrangement.

The hair clipper case, which also serves as its handle, comprises a base section 7 and a removable cover section 8. Fixed in the base section is the laminated core unit 9, the body of which extends along one side of the case, there being legs 10, 11, and 12 projecting laterally toward the other side of the case. The winding 13 fits over the central leg 11 in the usual way.

All of the metallic parts of the hair clipper are assembled to the core unit 9. A bracket 14 connected to the core leg 10 projects downwardly and forwardly therefrom and has an upturned flange at 15 to which the fixed blade 16 of the clipper is attached. Connected to the leg 12 at the other end of the core is a bracket 17 which carries the mounting arm 18 for a spring and armature unit which comprises spring 19 and armature 20. The spring is bent backwardly upon itself and continues in one piece to provide the armature 20 which extends past the several poles 12, 11 and 10 in sequence. At its free end, the armature 20 is bent to provide an inwardly extending arm 21 to which is attached by screws or rivets a block 22 having an obliquely disposed lug at 23 apertured at 24 to receive the tension screw 25.

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The combined thickness of the block 22 and the armature arm 21 accommodates the tapped holes 26 for the mounting screws 27 by which the tension spring 28 is secured in place. The tension spring 28 comprises a piece of spring metal having a broad rear end portion 29 secured to the armature. It is apertured at 30 to receive the tension screw 25 and beyond the tension screw it is bifurcated to provide spaced legs at 31 and 32, each of which is provided with a countersunk opening at 33 as best shown in Fig. 5.

Beneath the openings 33, the movable shear blade 36 has complementary openings 37, also shown in Fig. 5. Small ball bearings 38 are confined between the tension spring legs 31 and 32 and the movable shear blade 36 provides a driving connection to the shear blade which freely accommodates relative movement between the tension spring and the blade without substantial friction. It is more satisfactory to socket the driving balls in recesses or apertures as herein disclosed than to provide bosses in the tension spring legs or the shear blade. Hardness of the metal of both of these parts makes embossing difficult, whereas it is a simple matter to drive the blade universally through separate balls as herein described.

The mounting of the tension spring and armature unit is sufficiently rigid in a vertical plane to withstand the back pressure developed by the tensioning of tension spring 28 when the tension screw 25 is turned downwardly into the threaded lug 23. Thus, any desired amount of pressure may be exerted through the bifurcated tension spring legs 31, 32 upon the movable shear blade 36.

The bifurcation of tension spring 28 to provide the separate tension spring legs 31 and 32 is extremely desirable because it permits accommodation of the relative movements of the parts which results from the fact that the armature oscillates in a horizontal plane while the driven blade 36 reciprocates in a plane obliquely disposed with reference to horizontal. The single tension screw 25 exerts a pressure which, in the respective legs 31, 32 is equalized in the course of the very slight relative displacement which occurs in the reciprocation of the blade.

If desired, the spring 19 may be made separately from the armature to enable the armature to be laminated. Such a construction is shown in Fig. 6 using a spring 190 which is very similar in shape to the spring portion 19 of the one-piece unit. However, it laps the armature 200 which is made of separate laminations, having one relatively heavy lamination disposed centrally at 201 which may integrally carry lugs

202 received through apertures in spring 190 and there upset or riveted to hold the spring and armature in assembly.

The same heavy lamination at 201 carries the lug 230 which is provided with a tapped aperture to receive the tension spring adjusting screw exactly as already described.

It will be noted that each of the forelegs 10 and 12 is provided with three apertures. In each case the center aperture receives an elongated mounting bolt 42 which holds the core 9 to the tapped insert 43 molded into the base portion 7 of the handle casing.

The laminations comprising the core are held together by rivets 41 and 410, the latter rivets in the rear leg 12 of the core being tapped to receive the bolts 44 which hold the bracket 17 for the armature spring and also hold a plate 46 which is tapped to receive the rear screw 45 which holds the cover 8 in place. The forward screw 45 which holds the cover is threaded into a tapped bore provided in the forward mounting bolt 420.

The rivets 41 which hold the laminations of the core together also rigidly attach to the core the bracket plate 14 which carries the stationary shear blade 16. Thus, all of the metal parts of the clipper comprise a single integrated unit which may be handled as such, the unit being anchored to the lower or base portion of the handle casing by means of bolts 42 and 420 and having the upper or cover portion of the handle casing connected to it by cap screws 45.

We claim:

1. In a hair clipper having a shear blade and a motor provided with an armature, the combination with a movable blade reciprocable on the shear blade, of a tension spring mounted on the armature and bifurcated to provide tension spring fingers extending from the armature downwardly and curvilinearly toward said movable blade, said fingers having terminal portions substantially parallel to the movable blade and in immediate proximity thereto at points spaced longitudinally of the path of travel of the movable blade, the said fingers and blade having complementary sockets, and separate balls in the respective sockets constituting universally pivotal driving connections between said fingers and movable blade, and means for supporting said fingers on said armature subject to the bias of said tension spring toward the movable blade to maintain said balls in said sockets.

2. The device of claim 1 in further combination with a tension screw threaded to the armature and having a shoulder portion engaged with said armature for regulating the bias of said fingers upon the movable blade through said balls.

3. In a hair clipper of the type having a vibratory motor including an armature with a spring mounted at one end, the other end being oscillatory, the combination with a shear blade fixed obliquely adjacent the oscillatory end of the armature and a movable blade reciprocable on the shear blade, of a tension spring mounted on the oscillatory end of the armature and bifurcated to provide tension spring fingers, said fingers extending from the armature downwardly and curvilinearly toward said movable blade and having terminal portions substantially parallel to the movable blade and in immediate proximity thereto at points spaced longitudinally of the path of travel of the movable blade, the said fingers and blade having complementary sockets, separate balls in the respective sockets constituting universally pivotal driving connections between said fingers and movable blade, and tension adjusting means comprising a screw threadedly connected to the oscillatory end of the armature and in thrust bearing engagement with said tension spring to exert bias through said fingers upon the movable blade, whereby to maintain said balls in said sockets and to maintain the movable blade subject to pressure against the shear blade.

4. In a hair clipper having relatively fixed and movable blades and a vibratory armature, the combination with a movable blade having ball sockets, of a tension spring fixed to the armature to partake of the vibratory movement thereof and extending therefrom toward the movable blade, the tension spring being bifurcated to comprise tension spring fingers having terminal portions in immediate proximity and substantial parallelism to the movable blade and having sockets complementary to those of the movable blade, said fingers having intermediate curvilinear portions, a tension adjusting screw threadedly connected to the armature and engaging said tension spring in a direction to bias the extremities of said fingers toward the movable blade, and separate balls in the respective sockets of the blade and the fingers to transmit the bias of said screw to the movable blade in all positions of oscillation of the armature, tension spring, and separate movable blade.

5. The device of claim 4 in which are armature has a lamination provided with a threaded lug in which the screw is engaged.

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