Jan. 5, 1932. A. M. LUTES 1,839,924

HAIR CLIPPER

Filed Sept. 26, 1929 2 Sheets-Sheet 1

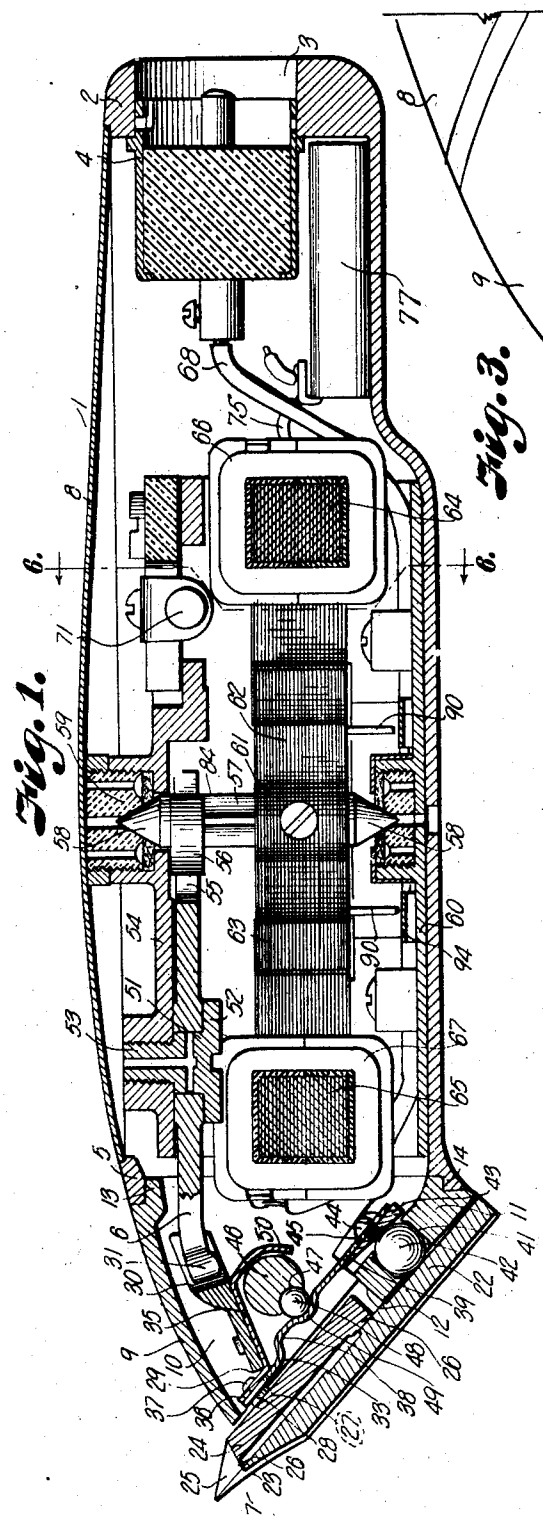


Fig. 1.

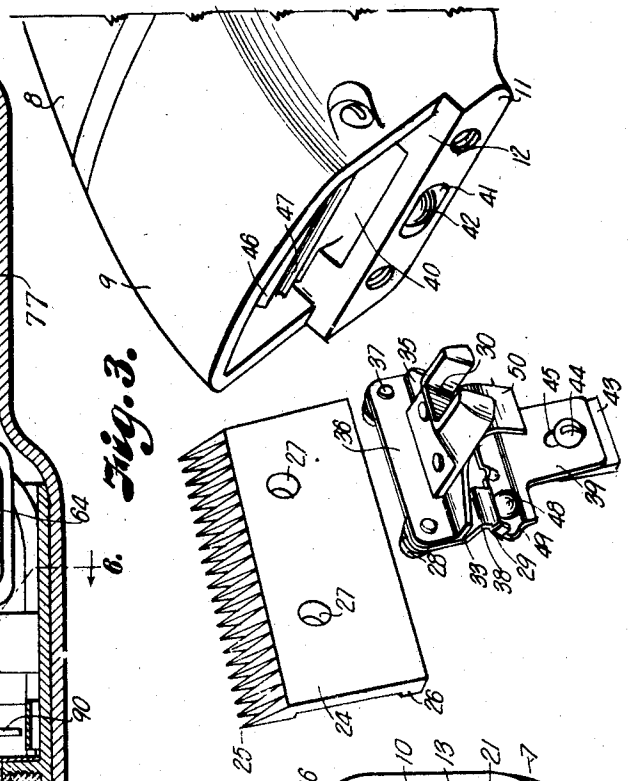


Fig. 3.

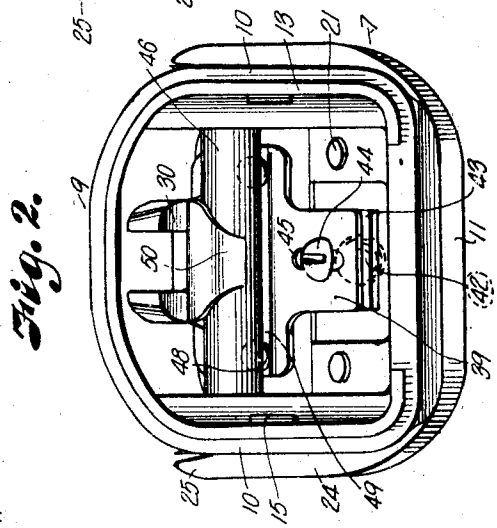


Fig. 2.

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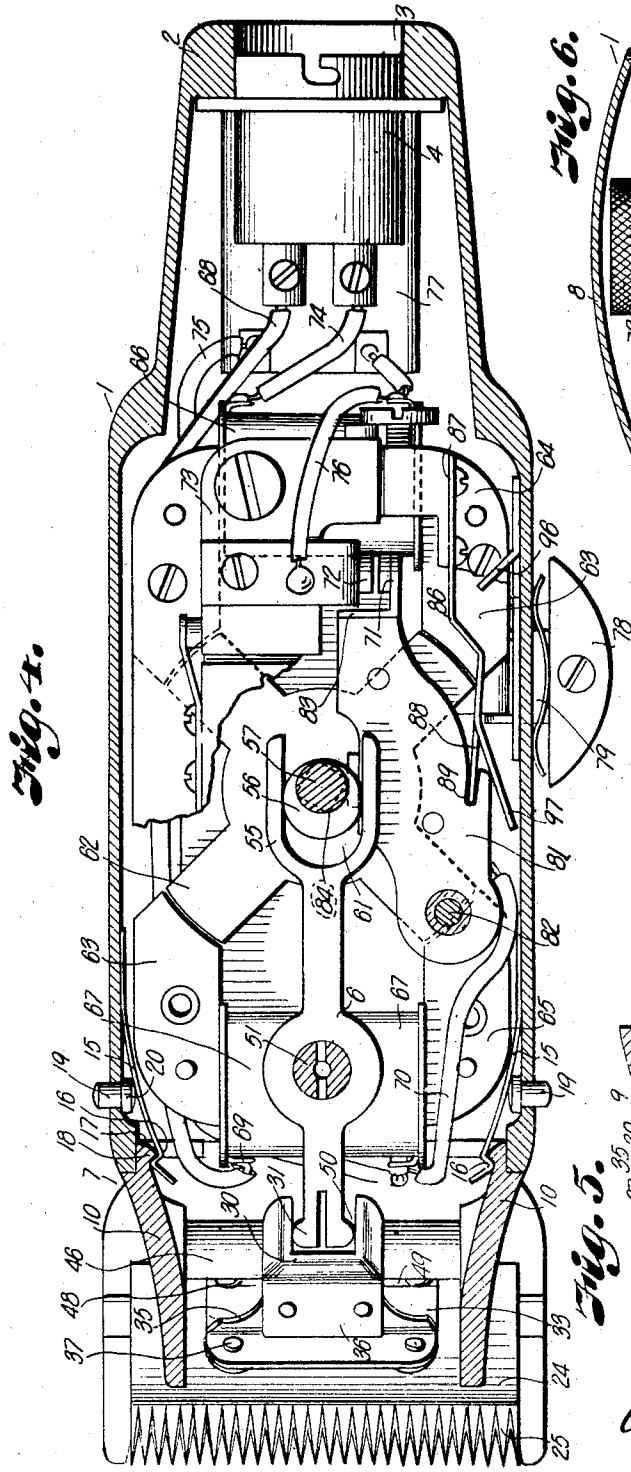


Fig. 4.

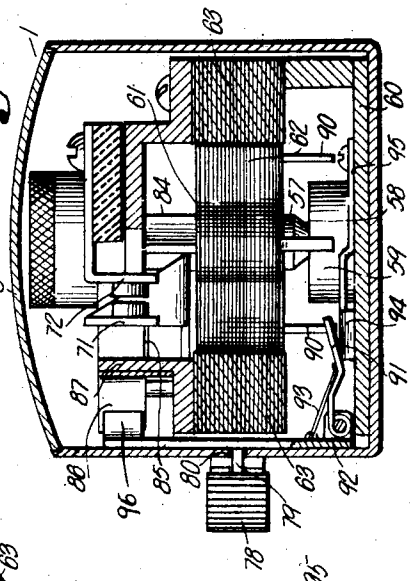


Fig. 6.

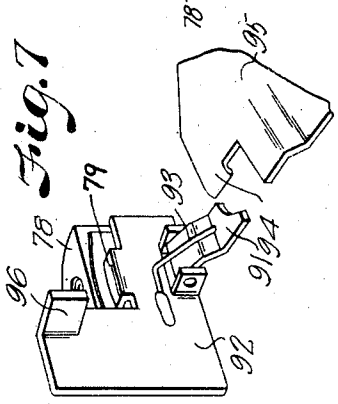


Fig. 7

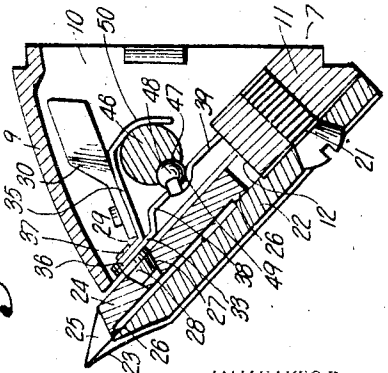


Fig. 5.

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Patented Jan. 5, 1932 1,839,924

UNITED STATES PATENT OFFICE

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HAIR CLIPPER

Application filed September 26, 1929. Serial No. 395,335.

My invention relates to clippers and has for its principal objects to incorporate a motor in a clipping device, to reduce the number of parts necessary for transmission of motion from a motor to clipping mechanism, to assure close frictional engagement between the sliding blades of a clipper, to reduce the friction between parts incident to oscillating movement of one blade upon another, and to facilitate assembly and disassembly of clipping mechanism for replacing cutting members. The motor described below is described and claimed in my co-pending application, Serial Number 395,336, filed Sept. 26, 1929.

In accomplishing these and other objects of the invention, I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a central section of a clipper constructed in accordance with my invention.

Fig. 2 is an end view of the head member detached from the body.

Fig. 3 is a perspective view of a movable blade member, the head portion of a clipper housing, and a coupling for transmitting motion from actuating mechanism in the housing to the blade, the parts being shown in disassembled position.

Fig. 4 is a cross section of the clipper giving a plan view of the mechanism.

Fig. 5 is a central longitudinal section of the head member and clipping mechanism mounted thereon.

Fig. 6 is a transverse vertical section on the line 6—6, Fig. 1.

Fig. 7 is a perspective view of portions of a switch and cam plate and rotor-shifting finger.

Referring in detail to the drawings:

1 designates a recessed body forming an elongated chamber having a rear end wall 2 provided with an opening 3 forming a seat or socket to receive a plug 4 later described and comprising a housing. A bridge bar 5 extending across the side walls of the body at the front upper edge thereof forms a front opening through which a blade-actuating bar 6 may extend for transmitting motion from actuating mechanism in the housing to clipper mechanism supported in a head 7 mounted on the front end of the housing. A plate 8 is seated in inner peripheral rabbet edges of the housing to close the same.

The head member is mounted in the front end opening of the housing and includes a hood-like top 9, side walls 10 and a transverse base or bottom member 11 projecting forwardly from the walls 10 to form a ledge 12. A rib 13 projects from the rear faces of the side walls, hood and base to be received in the front end opening and engage the edges of the transverse top bar 5, and side walls, and base 11 of the body. The lower front edge of the body floor is rabbeted to form the sill 14 of the front end opening.

Leaf springs 15 secured to the side walls of the body have end hook portions 16 adapted to slide over the arcuate end edges 17 of the head side walls to engage in notches formed by ribs 18 for latching the head to the body.

Plungers 19 slidable in openings in the side walls adjacent the springs are adapted to be moved inwardly against the springs for displacing the same from the head ribs to permit the head to be removed from the body. Keeper flanges 20 on the plungers retain the same in the body openings.

Fixed to the base 11 of the head by bolts 21 is a stationary blade member 22 having a serrated edge forming teeth 23 extending upwardly beyond the outer edge of the hood 9.

A movable blade member 24 having a serrated edge forming teeth 25 and a longitudinal recess forming transverse bearing ribs or footing portions 26 is adapted to move transversely over the upper face of the blade member 22. The member 24 is provided with apertures 27 forming sockets to receive knobs 28 on a bracket-like coupling member 29 having a yoke 30 forming a socket to receive the end 31 of the oscillating bar 6 whereby motion is transmitted from the actuating mechanism to the movable blade.

The coupling 29 includes a plate 33 having the knobs 28 attached to the upper edge portion thereof and an angularly extending plate

35 having its front edge bent to form a flange 36 engaging the upper edge portion of the plate 33. The knobs 28 comprise the lower ends of rivets 37 whereby the flanged edge 36 of the plate 35 is attached to the plate 33. The yoke member is attached by rivets to the angularly extending plate 35.

The plate 33 is offset upwardly at 38 to space the rearwardly extending portion from the blade member and has a lower edge portion narrowed to form a tongue 39 movable in a recess 40 formed in the rear face of the base 11. The length of the recess is limited to leave portions of the base solid for forming openings therein to receive the bolts 21.

A longitudinal groove 41 is formed in the bottom of the recess 40 to form a race for a ball 42 extending above the bottom of the recess and comprising a ball bearing for the tongue of the coupling. The upper edges of the groove are turned or peened inwardly to form keeper flanges to retain the ball.

A tapered wedge member 43 is adjustably attached to the under surface of the tongue by a screw 44 movable in a slot 45 extending longitudinally in the tongue.

The tongued lower end of the coupling is yieldingly retained in engagement with the ball bearings by a transverse bar or bearing member 46 fixed in the side walls of the head having a longitudinal groove or race 47 formed in its periphery to receive balls 48 running in an opposite similar recess or groove 49 comprising an indentation in the coupling plate 33. The tension of the spring-like coupling plate bearing against the ball bearing 42 may be adjusted by moving the wedge 43 along the tongue 39 as clearly indicated in Fig. 1.

When the blades are to be disassembled, the yoke and bearings are retained by an arcuate wing 50 on the plate 35 which overlies and engages the transverse bar 46 or bearing member.

The actuating bar 6 is pivotally mounted on a post 51 for oscillation transversely in the housing, the post having a radial supporting flange 52 and a screwthreaded stem 53 engaged in a screwthreaded opening in the upper wall 54 of a motor case presently described. The rear end of the bar is bifurcated to form a fork 55 to receive a cam 56 on a shaft 57, the cam operating alternately against opposite arms of the fork for oscillating the bar to move the blade 24 backward and forward across the stationary blade.

The shaft 57 has cone ends 58 mounted in bearings 59 in the top 54 and bottom 60 of the motor case located in the housing.

The shaft 57 may be rotated in any suitable manner and preferably comprises the shaft of a rotor 61 formed of laminations and comprising a cruciform armature having branches 62 alternately attracted and repelled by the pole pieces 63 of U-shaped magnets 64 and 65 forming the cores of electromagnets 66 and 67 intermittently energized as presently described to effect rotation of the rotor. The ends of the pole pieces are curved conformably to the arcuate ends of the armature arms.

A conductor 68 leads from the plug to the coil of the magnet 67 at 69 and a conductor 70 leads from the other end of the coil to a contact point 71 movable backward and forward into and out of contact with a point 72 connected with the other magnet through a pivoted oscillating plate 73 adapted for adjustment to vary the spacing between the contacts 71 and 72.

A conductor 74 leads from the second magnet to the plug for completing the circuit through the motor.

Wires 75 and 76 connected respectively to the conductor 70 and plate 73 lead to a condenser 77 for reducing the spark across the gap which might interfere with electrical apparatus such as radio, located near the device.

The flow of current through the magnets is controlled by a switch 78 including a bar 79 movable in a slot 80 formed in one side wall of the housing for controlling a horizontal plate 81 formed of insulating material and pivotally mounted on a pin 82 and having a lateral ear 83 supporting the contact 71. The inner edge of the plate is normally spaced from the shaft 57 as presently described and is adapted to bear against a cam-like surface on the shaft forming arris edges 84 whereby rotation of the shaft will cause said projecting edges and the flat face portions of said shaft to alternately engage the edges of the plate and effect shifting of the plate laterally for rapidly alternately moving the contact 71 toward and away from the contact 72. The conductor 70 from the magnet 67 is connected to a conducting bar 85 fixed to the lower surface of the plate 81 and connected to the contact 71.

The plate 81 is urged toward the shaft by a leaf spring 86 fixed to a bracket 87 and having a portion 88 engaging the outer edge of the plate and extending in a notch 89 in said edge.

In order to assure rotation of the rotor in a predetermined direction, means are provided to effect energization of the magnets when the arms of the rotor are in a selected relation to the end edges of the magnet poles. Said means include depending legs 90 at the outer ends of the rotor arms engageable by a horizontally extending finger or pawl 91 pivotally mounted at the lower end of a leg 92 on the switch bar. The finger is urged downwardly by a spring 93 extending inwardly from said leg and normally engages the case floor 60.

A cam track 94 on the floor of the motor

case forms an upwardly inclined track in the path of the finger when the switch is moving toward motor energizing position whereby the moving finger may rise on the cam into a position to engage one of the depending legs and upon continued movement shift the rotor to position the arms thereof adjacent the poles of the magnets.

In order to remove the finger from the path of the legs when the rotor begins to move under energization of the magnets, the forward end of the track 94 is limited and spaced above the floor of the motor case. The track preferably comprises a leaf resiliently supported by a strap 95 fixed to the floor of the case whereby the finger may drop below the path of the rotor legs, after shifting the rotor and when the switch is retracted to deenergize the motor the finger will move beneath the track and out from under the rear end thereof and thus be repositioned for again moving onto and over the track to shift the rotor.

The cam-like front end of the leaf engages the floor of the case to form an inclined entrance portion of the track and assures the movement of the finger onto the track.

The plate 81 is normally held by the leaf spring in open-circuit position. The switch includes an ear 96 adapted to move against a lateral branch 97 of the spring 86 to shift the plate on its pivot 82 into engagement with the flat faces of the rotor shaft and bring the contact points together.

The switch, notched insulating plate, leaf spring and cam track are so related to the rotor and magnets that the rotor arms will be positioned slightly behind the pole pieces with respect to desired direction of rotation of the rotor when the switch is moved to the left in Fig. 4 to close the circuit through the magnets. A further predetermined relation consists in the presentation of a flat face of the shaft to the plate when the rotor is shifted by the switch pawl.

What I claim and desire to secure by Letters Patent is:

1. A clipper comprising a housing, actuating mechanism in the housing, a head removably supported by the housing, clipping mechanism including a fixed blade supported by the housing, and a reciprocating blade, a bracket engageable with the reciprocating blade including a resilient leaf having a lateral groove, balls in said groove, a yoke on the bracket, a transverse bar fixed to the head having a ball bearing track for said balls, means engaged with the actuating mechanism and with said yoke for oscillating the movable blade, and a wing on the yoke adapted to engage the transverse bar when the blades are disassembled to retain the balls and the yoke in their position in the head.

2. A clipper comprising a housing, actuating mechanism in the housing, a head removably supported by the housing, clipping mechanism including a fixed blade supported by the housing, and a reciprocating blade, bracket engaged with said reciprocating blade including a resilient leaf having a lateral groove, ball bearings in said groove, a yoke on the bracket, a transverse bar fixed to the head engaging said ball bearings, and means engaged with the actuating mechanism and with said yoke for oscillating the movable blade.

3. A clipper comprising a housing, a motor in the housing, a head member at one end of the housing, clipping mechanism supported by the head, member including a blade fixed to the head member, and a movable blade, means enabling the motor to actuate the clipping mechanism, resilient means retaining the movable blade in sliding engagement with the fixed blade, and wedge means for adjusting the tension of the resilient means.

4. In a device of the character described including a housing, a fixed blade member, a movable blade member, and actuating means, means including a ball retained by the fixed blade member and a resilient plate attached to the movable blade member and engaging the ball for retaining the movable blade member in contact with the fixed blade member.

5. In a clipper including a housing and actuating mechanism in the housing, a head removably attached to the housing including a transverse bottom wall having a recess, and a ball groove in the bottom of the recess, a ball in said groove, a blade member fixed to the head, a blade member movable by the actuating mechanism, a bearing member in said head, and a spring-like tongue on said movable blade member operating in said recess and bearing against said bearing member and said ball to yieldingly retain said movable blade member in operable relation with the fixed blade member.

6. In a clipper including a housing, actuating mechanism, and a head including a fixed blade mounted on the housing, a ball bearing movably supported by the head, a movable blade member supported by the head, a resilient leaf attached to the movable blade member and engaging the ball bearing, and means including a bar fixed to the head for holding the leaf in engagement with the ball bearing.

7. In a device of the character described including a frame, a member fixed to the frame, and a movable member, means including a ball retained by the frame, a bearing member in the frame, and a resilient plate attached to the movable member and engaging said ball and the bearing member for retaining said movable member in operative relation with said fixed member.

8. In a clipper comprising a housing, ac-

tuating mechanism in the housing, a head supported by the housing, a blade on the housing, and a reciprocating blade, a bracket engaged with said reciprocating blade including a resilient leaf having a groove, ball bearings in said groove, a track in the head for said ball bearings, and means operably connecting the actuating mechanism with said blade.

9. In a clipper comprising a housing, actuating mechanism in the housing, a head supported by the housing, a blade on the housing, and a reciprocating blade, a bracket engaged with said reciprocating blade including a resilient leaf having a groove, ball bearings in said groove, a track in the head for said ball bearings, means on the bracket engaging said track, and means operably connecting the actuating mechanism with said reciprocating blade.

In testimony whereof I affix my signature.

ARTHUR M. LUTES.