Feb. 15, 1938. N. TOGAMI 2,108,569

ELECTRIC HAIR CLIPPER

Filed Oct. 26, 1936

Fig. 1.

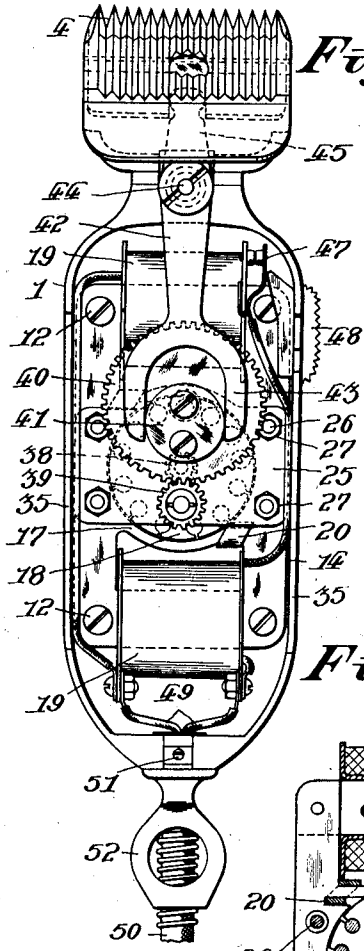



Fig. 2.

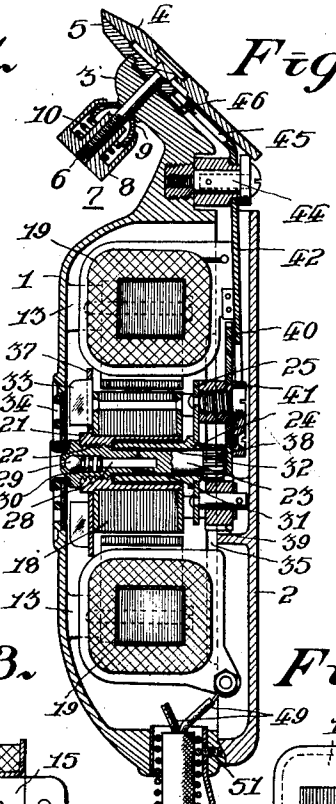



Fig. 3.

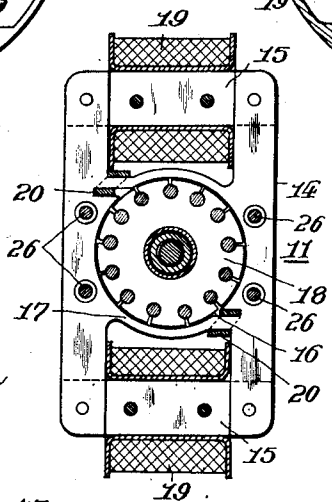



Fig. 4.

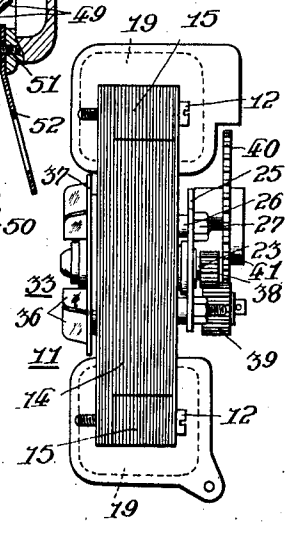
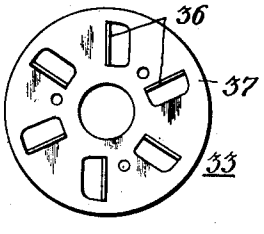



Fig. 5.




INVENTOR.
N. Togami
BY
Glascock Downing & Seebold
ATTORNEY.

Patented Feb. 15, 1938 2,108,569

# UNITED STATES PATENT OFFICE

2,108,569

## ELECTRIC HAIR CLIPPER

Nobufumi Togami, Saga-shi, Japan

Application October 26, 1936, Serial No. 107,672
In Japan June 29, 1936

1 Claim. (Cl. 30—216)

This invention relates to improvements in electric hair clippers and has for its object to provide an electric hair clipper simple in construction, handy in use, efficient and free from deterioration during long periods of use.

In order that the invention may be clearly understood reference is made to the accompanying drawing which illustrates by way of example an embodiment of the invention and in which:—

Fig. 1 is a bottom plan view of an electric hair clipper embodying the invention, with casing cover removed.

Fig. 2 is a vertical sectional view of the hair clipper.

Fig. 3 is a detail plan view partly in section of motor for driving the hair clipper on enlarged scale.

Fig. 4 is a side view of the motor.

Fig. 5 is a detail plan view of fan in enlarged scale.

Referring now to the drawing, 1 represents a casing forming the handle of the hair clipper with a cover 2 on bottom, in which driving means are enclosed. A cutters support 3 is formed integral with the casing 1, on which a cutter set of a stationary comb-like cutter 4 and a reciprocating comb-like cutter 5 of usual construction is held in position by means of a bolt 6 and an adjustable holding nut 7.

The holding nut 7 comprises two members 8 and 9. The member 9 is associated with the member 8 to be pushed therein but not to get out thereof, and is normally forced outward by means of spring 10. It will be appreciated that, when this nut is screwed on the bolt 6, pressure on the cutters may be properly adjusted.

An alternating-current motor of shaded pole type 11 is enclosed in the casing 1 and secured thereto by means of screws 12 screwed in lugs 13 provided in said casing, for driving the reciprocating cutter 5. The laminated field core of the motor is built up of substantially H-shaped thin sheet-steels 14 and rectangular thin sheet-steels 15 arranged on the top and bottom of said H-shaped thin sheet-steels in a suitable manner to form a rectangular ring-shaped core with an intermediate cross member corresponding to the horizontal stroke of H. The intermediate cross member is formed with a large hole 16 so as to provide field poles 17, in which a rotor 18 is mounted. Field coils 19 and shading coils 20 are mounted on the field core. A bushing 21 is securely fitted in a central hole of the rotor 18 and has an internally threaded end 22 into which a rotor shaft 23 is screwed. A second bushing 24 is inserted between the unthreaded part of the rotor shaft 23 and the face of the enlarged bore of the first bushing 21 with its outer end secured to a plate 25 securely mounted on the field core over one end of the rotor 18 by means of bolts 26 and nuts 27. The rotor shaft 23 is centrally bored in part as indicated by 28 and the outer end of the bore is normally closed by means of a ball 29 supported by means of a spring 30 to provide an oiling means. Suitable oil ways as indicated by 31 and 32 are provided, so that oil supplied into the bore 28 through its end opened by forcing in the ball 29 against the spring 30 will circulate to satisfactorily lubricate the rubbing faces of the rotor shaft 23, bushing 24 and bushing 21.

A fan 33 is fixedly mounted on one end of the rotor 18, which is adapted to take in atmospheric air through inlets 34 provided on the casing 1 and to cause it to circulate in the casing to find its outlets at 35, thereby the motor being cooled. The fan 33 is shown in the drawing as constructed in a form of a thin circular disc 37 with blades 36 struck out therefrom as clearly seen in Fig. 5.

On one end of the rotor shaft 23, a toothed wheel 38 is secured, which meshes with a pinion 39 which in turn meshes with a gear wheel 40, said pinion and gear wheel being rotatably mounted on the plate 25. A circular disk 41 is eccentrically fixed on the gear wheel 40, with which the fork end 43 of a lever 42 pivoted at 44 on the support 3 provided in the casing 1. The other end 45 of the lever 42 is bent along the face of the support 3 on which the cutters 4 and 5 are held to engage with a notch 46 provided in the reciprocating cutter 5 as usual. Thus, it will be appreciated that, when the motor is in operation, the lever 42 will be swung about the pivot 44 and hence the cutter 5 will be reciprocated to co-operate with the stationary cutter 4.

In the circuit of the field coils 19, there is a contact spring 47 which is normally opened, a slide button 48 being positioned downwards from the position as shown in Fig. 1, and is closed when the slide button is moved against the contact spring 47 in the position as shown. 50 represents a cord for leading-in wires 49 and is securely held in position by means of a screw 51 which secures also a hanger 52 to the casing 1.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I claim:

In a clipper, a casing forming a handle for the device, a set of cutters supported at one end of

the handle, said casing having a central portion of substantially rectangular cross-section so as to provide a motor housing in the middle portion thereof, an induction motor supported in the housing, said motor comprising an elongated laminated core having an over-all shape in the nature of a rectangular parallelepipedon so as to substantially fit within said casing, field coils encircling the end portions of said core adapted to form a primary field for said motor, a split cross member positioned intermediate of the field coils forming poles for the motor, a short circuited coil associated with each leg of said split cross member, a hollow shaft extending transversely of said casing and a secondary member rotatably mounted on said shaft, a valve supported in one end of said hollow shaft for admitting lubricating fluid and said shaft having radial openings so that the lubricating fluid may reach the outer face of the shaft.

NOBUFUMI TOGAMI.