Dec. 20, 1960 J. L. BONANNO 2,965,748

ILLUMINATED ELECTRIC RAZOR

Filed March 6, 1959

Fig. 1.

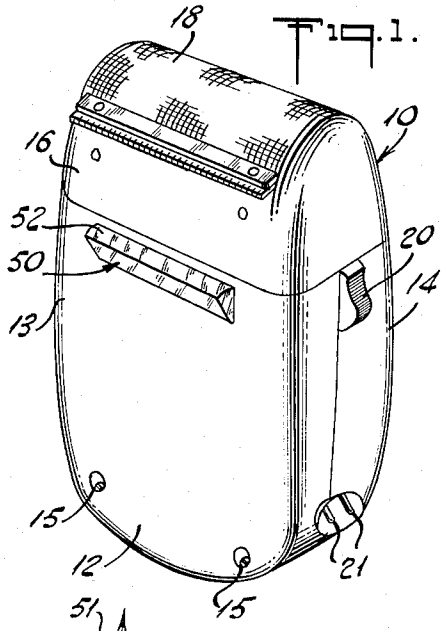


Fig. 2.

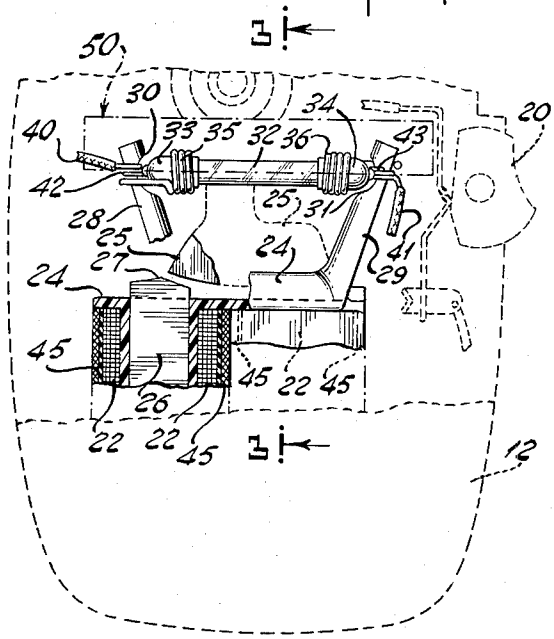


Fig. 3.

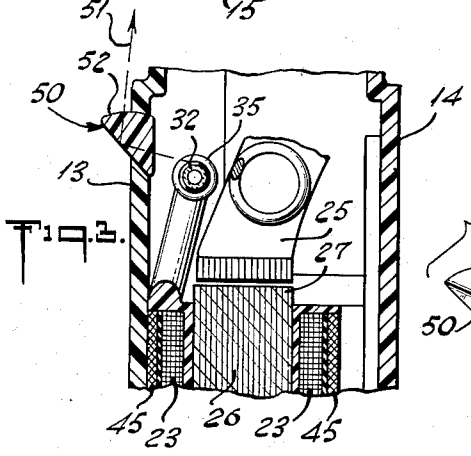


Fig. 4.

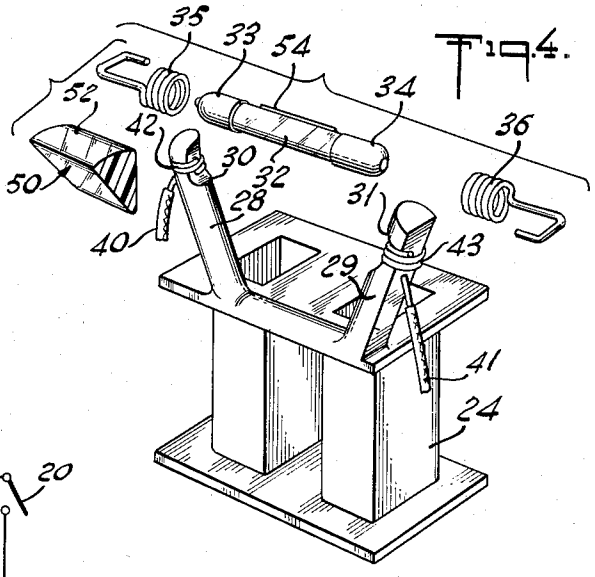
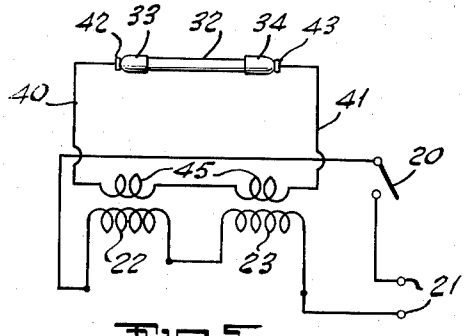


Fig. 5.



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ILLUMINATED ELECTRIC RAZOR

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3 Claims. (Cl. 240—2)

The present invention relates to an electric razor and particularly to a lighting arrangement therefor.

Electric razors are used often under conditions of illumination which do not permit one to see how well the face is being shaved. Indeed such conditions prevail quite generally. As a result unnecessary time may be spent going over a portion of the face which is already adequately shaved, or parts of the face may be left incompletely shaved. Feeling the face does not always give an accurate indication of the appearance and may leave inadequately shaved parts undetected. Accordingly it is an object of this invention to provide an electric razor which produces a high illumination on the very part of the face which is being shaved so that the user can see at all times what the condition is.

Another object of my invention is to provide an electric razor with sufficient illumination precisely where required, with a minimum expenditure of power or mechanical complexity.

Another object of the invention is to provide an electric razor with a protected internal light source which provides a high degree of illumination along the cutting head.

Other objects and advantages of my invention will be pointed out and become apparent from the following description and the drawing in which:

Fig. 1 is a perspective view of one embodiment of the invention;

Fig. 2 is a partial sectional view showing portions of the vibrator and the lamp;

Fig. 3 is a partial sectional view taken along the line 3—3 of Fig. 2;

Fig. 4 is an exploded view of the lamp assembly and its support; and

Fig. 5 is a diagram of the circuit connections for the lamp.

The electric razor **10** has a casing **12** which may have front and back portions **13** and **14** held together by screws **15** or other suitable fastening means. The top of the casing **16** has a cutting head **18**. The casing **12** is provided with a switch **20** and input terminals **21** to which a power cord (not shown) may be connected.

It will be understood that the present invention is applicable to electric razors of any type but for the sake of definiteness the one herein illustrated is shown as including a vibrating motor comprising vibrator coils **22**, **23** wound on a coil form **24** preferably made of insulating material. A magnetic core **26** extends through the coil form and provides pole pieces **27** for a vibratory magnetic armature **25**. In a manner well understood in the art the armature **25** may be spring biased and connected to the cutting head **18** for actuating the same.

The coil form **24** has a pair of upstanding diverging arms **28** and **29** provided with inwardly facing notches **30** and **31**. A tubular or cylindrical lamp **32** is mounted between the arms **28** and **29**. The lamp may have a low wattage rating, of say, one to three watts and a low voltage rating of say, two to six volts. The lamp may have a length of somewhat more than an inch and a diameter of perhaps one quarter of an inch. The filament of the lamp extends longitudinally between a pair of metallic end caps **33** and **34** which serve as the terminals. The lamp is supported between the arms **28** and **29** by a pair of coil spring holders **35** and **36** which are adapted to tightly fit over the end caps **33** and **34** and engage the arms **28** and **29**.

Current is fed to the lamp by wires **40** and **41** which may have bared portions **42** and **43** wound round the supporting arms **28** and **29** in the notches **30** and **31**. A current is conducted from wires **40** and **41** to the lamp by the holders or retainers **35** and **36** and/or by direct contact between the wire portions **42** and **43** and end caps **33** and **34**. Wires **40** and **41** are connected to one or more coils **45** which are wound on either or both vibrator coils **22** and **23**. The number of turns on the coil **45** relative to the number of turns on the vibrator coils is so small that the vibrator coils and coil **45** form a voltage step-down transformer providing the required voltage of say two to six volts for lighting the lamp. Coil **45** is suitably insulated from the vibrator coils by one or more layers of insulation.

An elongated prismatic lens **50** is mounted in a slot in the casing for redirecting the light from the lamp toward the cutting head, as indicated by the arrow **51**. The lens **50** has a substantially triangular cross section with its upper face **52** being curved to form a lens for focusing the light in the required direction. The lens may be made of Lucite or other suitable material. In order to concentrate the transmission of light toward the lens a reflector or reflective coating **54** may be provided on the side of the lamp opposite the lens.

Although I have illustrated my invention by showing one embodiment thereof, it will be understood by those skilled in the art that many modifications and variations may be made without departing from the spirit and scope of my invention, and, therefore, the invention is not to be construed as limited except as defined in the following claims.

What is claimed is:

1. In an electric razor including a casing, a cutting head and a motor; an elongated lamp, means for mounting said lamp in said casing near the cutting head and parallel to the axis of the cutting head, said casing having an elongated slot parallel to and in proximity to said lamp, and a prismatic lens in said slot for directing the light from said lamp along the outside of said casing toward said cutting head, said lens being of generally triangular cross section and having a first side substantially parallel to the side of said casing containing the slot, the lens having a second side facing the cutting head, said second side extending outwardly from said first side of the lens an appreciable distance beyond the casing, the third side of the lens being at an acute angle to the first side and extending therefrom outwardly through the

casing whereby the light from the lamp enters the lens through the first side and is internally reflected by the third side and then is directed by the second side along the outside of the casing toward the cutting head.

2. The apparatus defined in claim 1, wherein the second side of the lens has a convex surface for converging the light directed toward the cutting head.

3. The apparatus defined in claim 1 including, a pair of spaced arms integral with the motor and extending therefrom toward the cutting head and a pair of resilient cups fastened to the ends of said arms and engaging the ends of said lamp, whereby the lamp and motor form a unitary assembly.

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