July 5, 1960 E. PANZA 2,943,390

ELECTRIC DRY SHAVER HAVING ROTARY OPERATING BLADE MEANS

Filed Sept. 12, 1958

Fig. 1

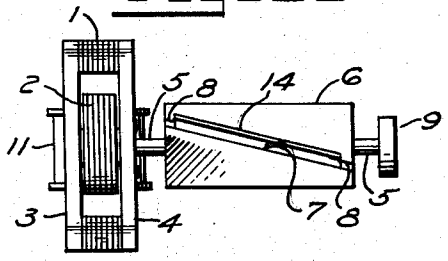


Fig. 2

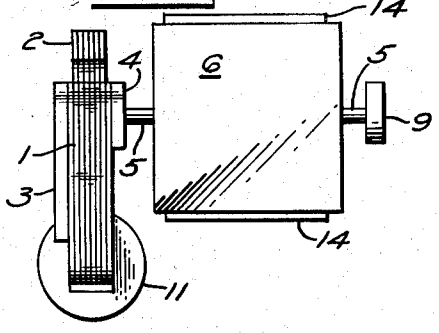


Fig. 3

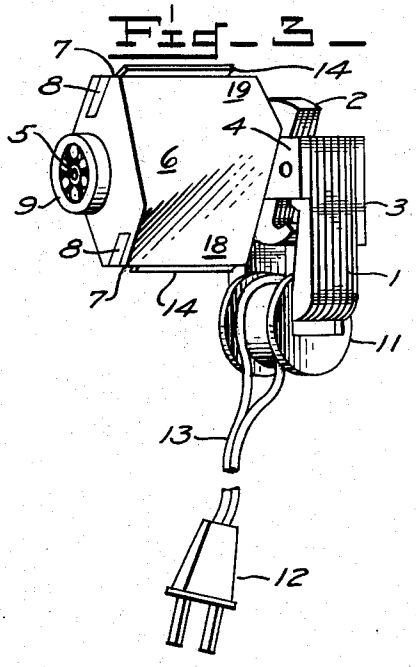


Fig. 4

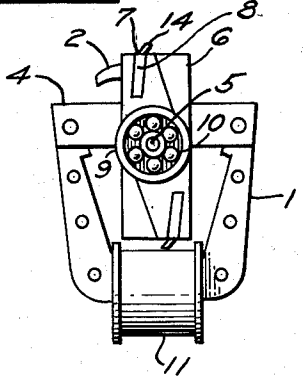


Fig. 5

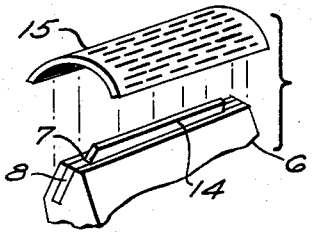


Fig. 6

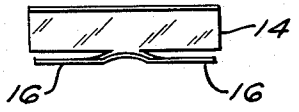
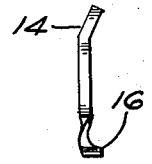


Fig. 7



INVENTOR.

Eugene Panza

BY

L. S. Michelman atty.

United States Patent Office 2,943,390 Patented July 5, 1960

2,943,390

ELECTRIC DRY SHAVER HAVING ROTARY OPERATING BLADE MEANS

Eugene Panza, 67 Avon Place, Springfield, Mass.

Filed Sept. 12, 1958, Ser. No. 760,633

2 Claims. (Cl. 30—43)

This application is a continuation in part of a prior application filed by the inventor herein on December 16, 1957, Serial No. 703,227, entitled Revolving Electric Shaver.

This invention is concerned with a means for supporting and locating the cutting edge or blade of an electric razor in order to get a more efficient shave.

There have been many efforts made to improve shavers of the electro-motor type to enable the user to obtain a clean, close shave. These attempts have failed to a great extent. There have been attempts to put more than one head or cutting edge on the device, and various other arrangements have been tried to solve the problem.

It is a principal object of the within invention to provide a cutting edge on an electric shaver which operates so that a close shave may be obtained at all times, no matter what kind of a beard is being shaved.

It is a further object of the within invention to provide an electric shaver having an arrangement whereby the user himself may change the cutting blades, making it a simple matter to maintain efficient operation of the device at all times.

It is still another object of the within invention to provide an electric razor having cutting edges which are located in a geometrical position and which will operate efficiently at all times because of the location of the blades.

It is yet another object of the within invention to provide an electric razor which is extremely simple to manufacture and may be sold to the consumer at a low price.

It is an additional object of the within invention to provide an electric razor which is not only low-priced, but is so simple in construction that the consumer, even though he may have a limited knowledge of mechanical things, could service and clean the razor himself.

The aforementioned objects are attained by the use of a simple electric razor having the conventional motor of the electro-dynamic type, in which there is a stator and rotor. The rotor has a rotating shaft upon which is mounted a blade head that has a unique shape and in which there are slots for receiving the cutting blade. The cutting blade itself thus has a unique feature, in that it has spring legs which cooperate with the blade and with the slot in the blade head to enable the blade to remain in a fixed position while in operation and also to enable the user to remove the blade very easily for the purpose of replacing, cleaning, or sharpening same.

For a more detailed description, reference is made to the accompanying drawings, in which:

Figure 1 is a top plan view of the electric shaver arrangement.

Figure 2 is a side elevational view looking at the bottom of Figure 1.

Figure 3 is a perspective view of the electric shaver arrangement.

Figure 4 is an end view looking at the right hand side of Figure 1.

Figure 5 is an exploded view in perspective of one of the cutting edges within the screen.

Figure 6 is a front elevational view of one of the blades.

Figure 7 is a side elevational view of the blade in Figure 6.

The within invention embodies the use of a conventional electric motor which comprises a stator 1 and a rotor 2 which are mounted within the outside support 3 and the inside support 4 in the customary and conventional manner. A shaft 5 is integrally connected with the rotor 2 and moves as the rotor 2 moves.

Mounted upon the movable shaft 5 is a blade head 6. The blade head 6 is so designed that its most outer point, in which there is a slot 7, is diagonal to the longitudinal axis of the shaft 5 and is at an angle of between 25 to 35 degrees, this angle proving to be most efficient for the desired results.

Hereinafter in the specification this outer point where the slots 7 are located shall be referred to as the extended portions of the head. In the drawing, Figure 3 for example, shows the upper extended portion as 19 and the lower extended portion as 18. The use of the expression, upper and lower, is merely to identify the extended portions. It is not to actually state that one is above or below the other since the extended portions rotate on the shaft 5 as the motor moves the shaft 5. As stated in the previous paragraph, the extended portions 18 and 19 are diagonal to the longitudinal axis of the shaft.

The blade head 6 has not only a slot 7 in its upper extended portion 19 but also a slot 7 in its lower extended portion 18. At the end of each of these slots is a slot closure 8 which terminates the slot 7 end on the upper surface of the head 6. The purpose of the slot closure 8 is to retain the blade 14 within the slot 7 so that it cannot be moved therefrom.

The shaft 5 has its opposite end from the rotor 2 mounted in the ball bearing assembly 9. A plurality of ball bearings 10 are located in the conventional manner in the ball bearing assembly 9.

Mounted on the stator 1 in the conventional manner is a solenoid 11 which is electrically connected to a conductor 13 which is connected to a plug 12. The plug 12, when connected into the electrical socket, passes current through the conductor 13 to the solenoid 11 and sets up a magnetic field causing the rotor to spin within the stator 1 in the conventional manner.

The blade 14 is unique in that at its lower portion it has two spring legs 16 which fan out from its center portion. The blade 14 also has a slight curve in its upper portion which facilitates cutting as the head 6 spins with the shaft 5. It is very simple to insert the blade 14 in the slot 7 since the spring leg 16 will exert a pressure against the slot ends 8, maintaining the blade in a fixed position while in operation. It is simple matter to take pliers or any other grasping instrument to pull the blade from the slot 7 for the purpose of replacing it.

The blade operates beneath a conventional screen 15 as shown in Figure 5. The electric razor is operated in the usual manner of moving the screen surface 15 over the area to be shaved. While this is going on the motor is running and the head 6 spinning with the shaft 5. Since the blades 14 are mounted within the slot 7 at an angle to the longitudinal axis of the shaft 5, a greater efficiency in cutting is attained, since the area upon which the screen 15 is being applied is not even and the blade 14 is not fixed in a line along the axis of the shaft 5. That is to say, because the surface which is to be shaved is generally not flat, the angle at which the blade 14 is spinning actually insures closer cutting of the beard or hair with each revolution of the head 6.

One embodiment of the head **6** is shown in the disclosure; it is, however, feasible that the actual shape of the head **6** might be changed, depending upon the situation, keeping in mind, however, that the slot **7** must be maintained at an angle to the axis of the shaft **5**. The purpose of the shape of the head **6** as disclosed herein is to keep the weight of the motor light and give balance to the rotation so that the shaft **5** and head **6** will be in equilibrium during roation and any undue thrusts while in rotation will be prevented.

It is a simple matter to change the blades, as already mentioned, which makes this particular electric shaver easy for the user to service himself, thereby keeping maintenance cost down and maintaining a high degree of efficiency at all times.

For the purpose of the within disclosure the housing in which the moving parts disclosed herein are located has been omitted, since it is felt that this could be a matter of mechanical expedience and not a part of the within invention. It has also been left out of the disclosure for the sake of simplicity and to keep this disclosure free from undue detail.

The dimensions in the drawings have been exaggerated in order to teach more clearly the disclosure. It is contemplated that some mechanical equivalents can be employed without departing from the spirit and scope of this invention.

In view of the foregoing disclosure, I claim:

1. An electric shaver assembly having an electric motor, a rotating shaft operated by said motor, a symmetrical blade head mounted on said shaft and rotatable therewith, said head having extended portions, an elongated slot in each of said extended portions furthest away from said rotating shaft, a closure located at each end of each of said slots, said slot adapted to hold a cutting blade having spring members opposite its cutting edge for locking said blade within the said slot against the said closure at the slot ends, each of said slots being at an angle to the longitudinal axis of said shaft and a plurality of screen members one of each being mounted proximate one of each of said blades for assisting the blade in the shaving operation.

2. An electric shaver assembly having an electric motor, a rotating shaft operated by said motor, a symmetrical blade head mounted on said shaft and rotatable therewith, said head having extended portions, said head having a cross section with 6 sides, an elongated slot in the side furthest away from said rotating shaft, a closure located at each end of each of said slots adapted to hold a cutting blade having a curved cutting edge, said blade also having spring fingers opposite from the said cutting edge for movably locking said blade within the said slot against the closure at said slot ends, each of said slots being at an acute angle to the longitudinal axis of said shaft and a plurality of screen members, one of each being mounted proximate said blades for assisting the shaving operation.

References Cited in the file of this patent

UNITED STATES PATENTS

1,264,605	Bonham	Apr. 30, 1918
1,420,943	Philp	June 27, 1922
2,196,098	Bruecker	Apr. 2, 1940
2,220,800	Jepson	Nov. 5, 1940
2,321,932	Nyhagen	June 15, 1943
2,647,308	Dodson	Aug. 4, 1953
2,795,042	Ritchey et al.	June 11, 1957
2,858,607	Kane	Nov. 4, 1958

FOREIGN PATENTS

498,822	Belgium	Feb. 15, 1951