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ELECTRICAL CHARGE GENERATING AND RETAINING ELECTRIC SHAVER HEAD

Filed Feb. 12, 1959

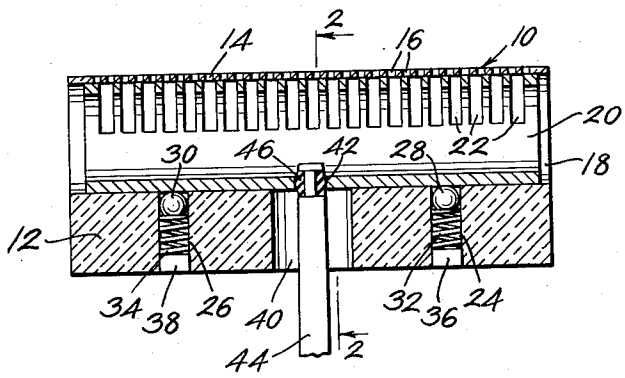


FIG. 1.

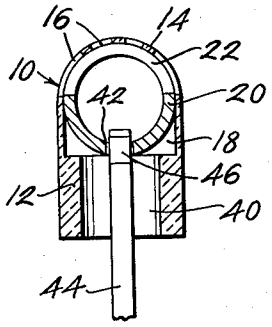


FIG. 2.

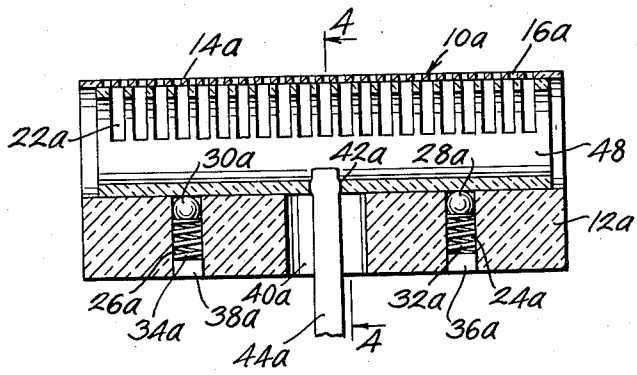


FIG. 3.

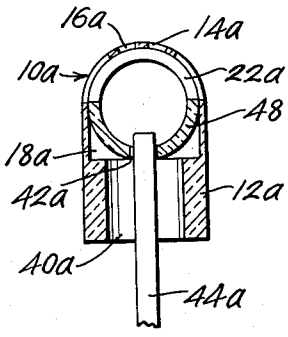


FIG. 4.

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ELECTRICAL CHARGE GENERATING AND RETAINING ELECTRIC SHAVER HEAD

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This invention relates to an improvement in electric shaver heads and more particularly to shaver heads as used in the dry shaver type of razor having a motor-operated cutter member reciprocatingly or otherwise movable relative to a stationary shear plate.

It is a primary object of the invention to provide an improved shaver head for a razor of the above category which, when moved in contact with the user's skin, is adapted to generate and retain a static electrical charge to provide a hair-lifting effect whereby individual hairs will be set into optimum cutting position in the path of the shaver head during its operative movement.

It is a further important object to provide an improved shaver head which may be used in existing razors and one which is both pleasing to the eye and simple of construction and manufacture.

It is another object of the invention to provide an improved shaver head which obviates the discomfort many people who suffer from allergies experience when a metallic object comes into contact with the skin of the face.

It is another object of the invention to provide an improved shaver head which is adapted to be employed either with single or multiple-head electric dry shavers.

For a better understanding of the present invention together with other and further objects thereof, reference is had to the following description taken in connection with the accompanying drawing and its scope will be pointed out in the appended claim.

In accordance with the invention, the improved shaver head comprises a cutter member in combination with a shear plate wherein at least the shear plate is made of a dielectric material.

Referring to the drawings:

FIGURE 1 is an elevation, partly in section, of one embodiment of the improved shaver head of the present invention;

FIGURE 2 is a view along line 2—2 of FIGURE 1;

FIGURE 3 is an elevation, partly in section, of another embodiment of the improved shaver head of the present invention; and

FIGURE 4 is a view along line 4—4 of FIGURE 3.

Referring to FIGURES 1 and 2, a shaving head **10** is comprised of a base **12** having a shear plate **14**. Shear plate **14** is a relatively thin member of U-shaped cross section with the legs of the U attached to base **12**. It will be understood that plate **14** may be formed integral with base **12**. Plate **14** is provided with a plurality of hair receiving openings **16** communicating the outer surface of plate **14** with the interior space **18** formed by the shear plate **14** and base **12**. The inner surface of shear plate **14** remote of base **12** is arcuate and concentric with the outer semi-cylindrical surface of plate **14**. A cutter member **20** is positioned within space **18** in movable relation to base **12** and plate **14**. Cutter member **20** may conveniently be tubular in shape and of a size sufficient to provide mating slidable contact with the arcuate interior surface of plate **14**. The surface of cutter member **20** mating with plate **14** is provided with a plurality of openings **22** of similar size and shape as openings **16** in plate **14**. Part of the openings **22** may be off-set from at least part of the openings **16** axially along the tube comprising cutter **20**. The openings **22** communicate the central opening of tubular cutter **20** into which the cut hairs fall as they are cut by the shearing acting between

shear plate **14** and cutter **20** upon relative movement therebetween. As best seen in FIGURE 1, a pair of bores **24** and **26** may be provided in base **12** with a ball bearing and the like **28** and **30** positioned within each bore and biased against cutter member **20** by means of springs **32** and **34**. The bores **24** and **26** may be plugged at one end by means of plugs **36** and **38**.

Base **12** is provided with a central opening **40** and cutter member is provided with a central opening **42** in alignment with opening **40** in base **12** of somewhat smaller diameter. The driving mechanism, except for the reciprocaitng actuator **44** is omitted since such mechanism is well-known to those skilled in the art and need not be described in detail for the purposes of this application. Actuator **44** is seen to pass through opening **40** of base **12** which is of a diameter sufficient to permit the necessary movement thereof. The upper end of actuator is seen to be positioned within opening **42** of cutter **20**. As the actuator **44** is reciprocated from side to side, FIGURE 1, this motion is imparted to cutter **20** which moves relative to shear plate **14**.

As shown in FIGURES 1 and 2, base **12** and shear plate **14** are constructed of a dielectric material and cutter **20** is constructed of a conductor. Actuator **44** is provided with an annular ring **46** of insulating material and positioned in contact with cutter **20**. It has been found that where shear plate **14** is constructed of a dielectric material adapted to develop a static electrical charge, a charge is developed and retained therein on being brought into rubbing contact wth the skin. The purpose of insulator ring **46** is to prevent the accumulated charge from leaking off to the actuating mechanism and being dissipated. Alternately, a collar of insulation material (not shown) may be inserted in opening **42** of a size sufficient to receive actuator and be a part of cutter **20**. The static charge built up in the head **10** is found to provide an attracting force for the hairs to be cut and tends to set them into optimum cutting position in the path of the shearer head during its operative movement.

While many dielectric materials are suitable for the purpose of developing a static electrical charge, it is further required that the dielectric material have a surface hardness comparable with steel, in order to maintain a sharp edge over an exended period of use. Several such dielectric materials are now available, such as "Pyroceram," a trade name for a heat treated glass ceramic developed by the Corning Glass Works of Corning, New York. Using the Vicker's Diamond Pyramid test at 500 grams, load, the hardness of "Pyroceram" is 618 or approximately equal to Rockwell C54. This material in addition to providing the requisite mechanical characteristics generates and retains static electricity generated by friction. Other dielectric materials having similar physical and electrical properties as "Pyroceram" are contemplated to be used in carrying out the teachings of the instant invention.

Referring to FIGURES 3 and 4, the same parts are identified by the same numbers as in FIGURES 1 and 2, but followed by a suffix *a*. For example, the base is identified by the reference numeral **12***a*. The shaver head **10***a* of FIGURES 3 and 4 is provided with a cutter **48** of a dielectric material having similar electrical and physical properties as the dielectric material used in shear plate **14***a*. In this instance, the insulator ring **46**, FIGURE 1, is not required. The construction of head **10***a* provides an increase in generation and retention of the static charge but is somewhat more expensive to manufacture than head **10**.

Following the teaching of the present invention, there is provided an improved shaver head which has all the self-sharpening features and durability of prior art shaver heads and in addition provides means of developing a

static charge to attract the hairs to be cut. The attraction of this charge provides a cleaner shave and for those individuals whose skin is subject to irritation by the contact of a metal shear plate, this irritation is obviated.

Although the above described embodiments disclose the invention as applied to single head shavers, it is to be understood that the invention may be applied with equal success to multi-head shavers. Further, the invention may be applied to heads of shapes other than that shown and to other designs. For example, the shear plate may be provided with a plurality of minute holes and a cutter bar be reciprocated across the holes in a sweeping action and the like.

While there have been described what at present are considered to be the preferred embodiments of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention. It is aimed therefore, in the appended claim, to cover all such changes and modifications which fall within the true spirit and scope of the invention.

What is claimed is:

An electric shaver head comprising in combination, a cutter member adapted to be driven and a shear member, at least one of which being of a heat treated glass ceramic

which when in frictional contact with human epidermis generates and retains a static electrical charge thereon, said generating member being electrical conducting, having a hard and wear resistant surface, the combination further including electrical insulating means, positioned and arranged to insulate the generating member from the driving mechanism of an electric shaver to which it is attached to prevent the generated charge from leaking off.

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