MULTIPLE BLADE SAFETY RAZOR WITH ALIGNING MEANS

FILTED JUNE 7, 1954

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Application June 7, 1954, Serial No. 434,938

3 Claims. (Cl. 30—50)

This invention relates generally to razors, and is particularly directed to an improved safety razor, and novel blade construction for use therewith.

The particular embodiment of the present invention, which is illustrated in the drawings and which will be described hereinafter in greater detail, comprises generally a plurality of superposed blade retaining plates adapted to receive cutting blades therebetween, and transversely extending pins for positioning the plates and blades.

It is a general object of the present invention to provide an improved safety razor and blade construction of the type described which permits of more rapid and efficient shaving, and the achievement of a closer shave with less effort and discomfort than was heretofore possible.

In the prior art, safety razors of this general type have been provided on their guard or blade retaining plates with spaced teeth which engage the skin to prevent cutting of the latter and permit the hair to contact and be cut by the blade edge. However, these teeth have in the past been rectangular in cross section with the result that they depress the hair and block the adjacent blade edge portions, to render the latter ineffectual.

That is, the depressed hairs were held under the teeth until the blade edge passed, with the result that they remain uncut and require repeated razor motion or "going over" along slightly different paths. Accordingly, it is another object of the present invention to provide a safety razor construction of the type described which includes novel guard plate teeth adapted to expose the entire blade edge and permit substantially all hairs in the path of the razor to contact the blade edge on one razor stroke.

It is still another object of the present invention to provide a safety razor construction having the advantageous characteristics mentioned above in which two cutting edges are inclined at different angles of incidence for effecting both coarse and close shaving substantially simultaneously. That is, as each blade completely cuts all the hairs in the path of razor movement, a pair of blades may be inclined at different angles relative to each other so as to effect both coarse and close shaving upon one stroke of the razor. Further, a pair of blades may be disposed at the same angle to afford double cutting action and insure thorough shaving without repetitious procedures. In either case, whether the blades be inclined at the same or different angles, the present invention provides a novel arrangement of teeth which combines with the two cutting edges to insure shaving of all hairs within the path of razor movement. More specifically, the teeth on an adjacent pair of blade retaining plates are disposed in alternate or staggered relation so that if a hair is held depressed by the teeth of one plate and missed by the associated blade, such a hair will be guided by the teeth of the next adjacent plate into contact with the cutting edge of the blade associated with the latter plate. In this manner, assurance is provided that no hairs will be missed upon any single movement of the razor.

It is still another object of the present invention to provide a novel two-part or multiple blade construction for use in conjunction with the instant razor, in which independent blades or blade parts are adapted to nest one within the other, so as to occupy a minimum of space and be adapted for use with conventional dispensing magazines. Further, the blade construction of the present invention requires a minimum of material so as to effect considerable savings in the cost of manufacture.

It is a further object of the present invention to provide a highly improved razor and blade construction having the characteristics indicated above, which is simple and durable in construction and operation, and which can be manufactured and sold at a reasonable cost.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described and of which the scope will be indicated by the appended claims.

In the drawings:

Fig. 1 is a front elevational view showing an assembled safety razor and two-part blade constructed in accordance with the present invention.

Fig. 2 is a plan view showing the assembly of Fig. 1.

Fig. 3 is a side elevational view showing the assembly of Fig. 1.

Fig. 4 is a partial, sectional view taken substantially along the line 4—4 of Fig. 2.

Fig. 5 is a fragmentary, perspective view illustrating the novel guard teeth of the present invention.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 1.

Fig. 7 is a plan view showing one element of the two-part blade of the present invention.

Fig. 8 is a plan view showing the other element of the two-part blade of the present invention.

Fig. 9 is a plan view showing the blade elements of Fig. 7 and Fig. 8 in coplanar nested relation as packed by the manufacturer.

Fig. 10 is a partial, side elevational view showing a slightly modified form of the present invention.

Referring now more particularly to the drawing, the embodiment of the invention illustrated therein comprises generally a handle or mounting member 20, and a shaving head, generally designated 21. The handle may be conventional, and preferably includes a threaded bore 22 opening inwardly through one end 23 of the handle.

The head comprises an inner blade retaining or guard plate 25, generally rectangular in configuration and provided with a series of three longitudinally spaced apertures or openings 26, 27 and 28. The guard plate 25 is further provided with cutout portion or notches 29 and 30 extending inwardly from its opposite ends. Along its opposite side edges and extending outwardly therefrom, the plate 25 is formed with series of teeth 31 and 32, which will be described more hereinafter.

In assembled condition, the plate 25 is disposed adjacent to the end 23 of the handle 20 with the plate aperture 27 registering with the handle bore 22. An outer guard or blade retaining plate 35, also generally rectangular in configuration and smaller than the plate 25, is formed with three longitudinally spaced openings or apertures 36, 37 and 38, adapted to register with the apertures 26, 27 and 28 when the plate 35 is superposed upon the plate 25, as best seen in Fig. 4. Projecting from the opposite ends of the retaining plate 35 are a pair of lugs or pins 39 and 40, having reduced end portions 41 and 42, respectively, for a purpose appearing presently,
As best seen in Fig. 4, the reduced end portions 41 and 42 serve to define inwardly facing shoulders 43 and 44, respectively; and, in Fig. 3, it will be observed that the plate 35 is curved transversely, all for purposes appearing presently. Along its opposite side edges, the plate 35 is provided with series of teeth 52 and 53, which will perhaps be described in greater detail.

The head 21 also includes a clamping plate 45 having transversely extending pins 46, 47 and 48 adapted to extend inwardly through the plates 35 and 35 for positioning the latter with respect to each other and the clamping plate. It will also be observed from Fig. 3 that the clamping plate 45 is transversely curved in substantially the same shape as the plate 35.

In the assembly of Fig. 4, the inner guard plate 25 is disposed with its central aperture 27 in registry with the handle bore 22. A blade element or sheet 50 is arranged overlying the inner blade retaining plate 25, and the outer guard plate 35 is disposed overlying the blade 50 with the lug shoulders 43 and 44 abutting the outer blade surface and the lug extensions or pins 41 and 42 extending conformably through the blade to position the latter with respect to the plates 25 and 35. A second blade element or sheet 51 is disposed overlying the outer guard plate 35 or base retaining member 35; and, the clamping member or blade retaining plate 45 is disposed outwardly of and against the blade 51 with its transversely extending pins 46, 47 and 48 inserted through the blade 51, plate 35, blade 50 and plate 25. In addition, the pin 47 extends inwardly through threaded engagement between the hole 22 of the handle 20. The handle may be rotated on the threaded pin 47 for firmly holding the head 21 in position on the handle, and to draw the clamping plate 45 toward the outer guard plate 35 and thereby transversely flex the blade 51.

The blade retaining plates 25, 35 and 45 are each of a smaller lateral dimension than the next inward plate, as best seen in Figs. 2 and 3, and the series of outwardly extending teeth 52 and 53 of the outer guard plate are disposed adjacent to the respective series of teeth 31 and 32 of the inner guard plate. The teeth of each series are formed substantially identically, so that a detailed description of the teeth of one series will suffice. In Fig. 5, the teeth 31 are shown enlarged and in greater detail. Each of the teeth has its side walls 54 converging outwardly and meeting at the ridge 56 so as to define a generally triangular or wedge-shaped cross section. The free ends 55 of the teeth are flattened or beveled to permit smooth engagement with the skin of the face or otherwise. In operation, it will be understood that each adjacent pair of teeth defines a passageway therebetween which converges away from the skin of the user. That is, the ridge 56 of each tooth rides along the user's skin, bearing upon a minimum of skin area, so as to permit substantially all of the hair to rise into contact with the cutting edges of the blades, and thus expose substantially the entire blade edge for cutting action.

As illustrated in Fig. 3, the cutting edges of the blade 51 are inclined at an angle with respect to the cutting edges of the blade 50, so that the angle of cutting incidence of the two blades will be different. More particularly, the angle of incidence of the blade 51 will be greater than that of the blade 50, so that the latter blade will effect a coarse cutting or shaving action while the former will achieve a close shave. As the structure of the guard teeth, as described hereinbefore, assures substantially complete cutting of all the hair in the path of the hair movement, it will be appreciated that the coarse and close shave may be accomplished substantially simultaneously by a single stroke of the razor.

While the above described novel tooth structure permits substantially all of the hairs in the razor path to engage with the blade edges, there are still some hairs which may be missed, as by inadvertently varying the blade pressure, or due to irregular facial contours, or otherwise. For this reason, it is preferred to stagger or alternate the teeth of the guard plates 25 and 35. That is, the teeth 51 will be staggered with respect to the teeth 52, and the teeth 52 will be staggered with respect to the teeth 53. By this tooth arrangement, a hair which was missed, as by laying transversely under one of the teeth 31, will be permitted to rise between a pair of the teeth 52 for cutting by the blade 51.

In Fig. 10, is shown a slightly modified form of the present invention wherein the inner guard plate 25 is transversely curved, as is the inner cutout portion of the outer guard plate 35, so as to effect flexing of the blade 50 to increase the angle of incidence thereof. In this form, both of the blades will serve to achieve a close shave, one following the other to insure cutting all of the hairs in the path of the razor, as mentioned hereinabove.

The blades or blade parts 50 and 51 are illustrated in greater detail in Figs. 7, 8 and 9. Thus, the blade element 50 comprises a sheet having cutting edges 56 and 59 formed along its longitudinal sides, and is provided with a relatively large, generally rectangular central opening or base 60 and, and, the clamping member 45 is configured, as by the notches 61 and 62 to conformably receive the positioning pins 41 and 42 which locate the guard plate 25 and blade 50 with respect to the guard plate 35.

The blade or blade-part 51 is generally rectangular in configuration, substantially conforming in size and shape with the cutout portion 60. The blade element 51 has end extensions 63 and 64 adapted to conformably engage within the notches 61 and 62; and, the side edges of the blade element 51 are sharpened at 65 and 66 which serves to decrease the blade thickness. Thus, the blade 51 is adapted to nest conformably within the cutout portion 60 of the blade 50, as illustrated in Fig. 8, with the end extensions 63 and 64 snugly engaged within the notches 61 and 62, and the sharpened edges 65 and 66 spaced from the bounding edges of the cutout portion. The blade element 51 is provided with the through apertures 67 and 68 and 69 which are registrable with the guard plate apertures 36, 37 and 38 for receiving the pins 46, 47 and 48 to accurately position the blade relative to the guard plate 35 and clamping plate 45.

Obviously, the blade part 51 may be formed of material cut out from the blade part 50, so as to provide two blades from substantially the same amount of material as was heretofore required for one blade. Further, the disposition of the blade parts in their coplanar nested relation, one within the other, will afford greater ease in handling, permitting use in conventional blade dispensers, and provide a convenient space saving mode of blade storage, as when packaged, or between periods of use.

From the foregoing, it is seen that the present invention provides a highly improved safety razor construction, and novel blade adapted for use therewith, which fully accomplishes their intended objects, and which are well adapted to meet practical conditions of manufacture and use.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention and scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a razor, an inner guard plate, an outer guard plate positioned outwardly of and in facing relation with respect to said inner guard plate, end lids on said outer guard plate and extending transversely inwardly therefrom for positioning a blade between said inner and outer guard plates, a clamping plate positioned outwardly of and in facing relation with respect to said outer guard plate, and
a plurality of pins extending transversely inwards from said clamping member through said outer and inner guard plates for positioning said outer and inner guard plates relative to each other and said clamping plate, said pins being adapted to pass through and position a second blade disposed between said clamping and outer guard plates.

2. In a razor, an inner guard plate having a pair of apertures formed therein, a first blade having a central cutout portion and disposable over said inner guard plate, an outer guard plate having a pair of apertures formed therein and disposable over said first blade with its apertures in registry with the apertures of said inner guard plate, a pair of transverse end lugs on said outer guard plate and extendable through the cutout portion of said blade for positioning the latter, a second blade conforming in shape with the cutout portion of said first blade and disposable over said outer guard plate, said second blade being provided with a pair of apertures registrable with the apertures of said inner and outer guard plates, a clamp plate disposable over said second blade, and a pair of transverse pins on said clamping plate and insertable through the apertures of said inner and outer guard plates and said first and second blades to properly position the same.

3. A device according to claim 2, wherein said inner guard plate is formed with end openings for receiving said end lugs, to position said inner and outer guard plates relative to each other.

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