MULTIPLE-BLADE RAZOR

Inventors: Clemens A. Ten; Harold B. Bickers, both of Staunton, Va.

Assignee: Philip Morris Incorporated, New York, N.Y.

Filed: Oct. 9, 1969

Appl. No.: 864,978

U.S. Cl. ........................................... 30/40, 30/90
Int. Cl. .......................................... 30 346.57, B26b 21/22, B26b 21/06
Field of Search ................................ 30/30, 40, 50, 346.5, 346.57, 30/206, 34 A, 90

References Cited

UNITED STATES PATENTS
2,663,931 12/1953 Lecours .................................. 30/206
3,137,940 6/1964 Curtis .................................. 30/40
3,177,582 4/1965 Curtis .................................. 30/90
3,430,341 3/1969 Choate .................................. 30/40
2,102,278 12/1937 Myer .................................. 30/346.57
3,072,809 1/1963 Jepson et al. .......................... 30/90 X

FOREIGN PATENTS OR APPLICATIONS
297,552 9/1928 Great Britain ......................... 30/346.57

Primary Examiner—Theron E. Condon
Assistant Examiner—K. J. Ramsey
Attorney—Watson, Leavenworth & Kelton

ABSTRACT

A safety razor of disposable character in the shape of a generally flat disk embodying a blade holder with a series of individual blades arranged at the periphery thereof in generally end-to-end relation, the holder being arranged in generally face-to-face relation with respect to a cover part and rotatable relative thereto, the cover part having a blade exposure opening at the periphery the said relative rotation permitting individual exposure of the respective blades at the opening, the other blades being protected from contact within the razor cover parts, and the razor being provided with a protective cover removably mounted over the blade exposure area. Directional detent means and a final stop means prevent repositioning of a used blade at the shaving area.

16 Claims, 9 Drawing Figures
MULTIPLE-BLADE RAZOR

BACKGROUND OF THE INVENTION

A great variety of razors have been proposed in the prior art of a character in which a series of blades or blade sections are adapted to be presented successively at a shaving area as the blade, or blade portion, at the shaving area becomes dulled with use. In one general type the blades are in a continuous strip form and mechanism is provided for advancing successive sections to the shaving area. In this respect the U.S. Patents to Merghenthaler No. 973,533, Goetzke No. 1,751,476, Abajian No. 2,757,449 and Hammons No. 3,348,306 are noted. The foregoing are examples only of many that are cited and are intended merely to indicate the general type.

Another general type comprises what may be referred to as the reel type of which the U.S. Patents to Carlson No. 1,007,847 and Curci No. 3,137,940 are at least illustrative. In this type the blades are arranged in the general manner of a reel with the blades extending generally parallel to the axis of the rotation of the reel.

GENERAL DESCRIPTION OF THE PRESENT INVENTION

The present invention comprises a disposable razor capable of presenting individual blades successively at a blade exposure area the razor being in the general form of a flat disk easily held in the hand, the razor including casing parts and a disk-shaped blade holder mounted therein having blades mounted at the periphery thereof in generally end-to-end relation the holder being rotatable relative to the casing parts whereby the blades are moved peripherally endwise to a blade exposure area in the casing. The nature of the construction is such that blades of simple shape and relatively small size may be mounted in the holder.

The construction has means including releasable detent elements for insuring that the respective blades are accurately located at the shaving blade exposure area but Curci successive advances to position new unused blades at the shaving area, except a final stop position is provided for the advance when the last new blade has reached the exposure area. The detent means is further designed such that if GENERAL user in advancing the blade holder overrun the next releasable latched position he may reverse the rotation to correct position the blade providing he has not overrun to the extent of reaching the succeeding fully latched setting.

Further features comprise effective drainage openings, and a conveniently applied and attractive protective cover removably mounted over the shaving area and the blade there exposed.

The razor is marked by simplicity of design and economy of manufacture such that it may be sold as a disposable razor. Notwithstanding the foregoing it is capable of providing a total number of shaves approaching those that may be obtained from a small package of blades adapted to be mounted in a standard razor. Because of its small compact shape it occupies but small space in a travel kit. Due to its pleasing appearance it is particularly adapted as a lady's razor.

Other features and advantages will be made apparent from a consideration of representative embodiments of the principles of the invention as described hereinafter and depicted in the drawings wherein:

FIG. 1 is a view in perspective of one form of the assembled razor;

FIG. 2 is a front view thereof with the front cover removed and the blade section seen in elevation;

FIG. 3 is a vertical section on the plane III—III of FIG. 2;

FIG. 4 is a fragmentary sectional view taken on the approximate plane IV—IV of FIG. 2;

FIG. 5 is a fragmentary view looking from the front with the front cover removed but showing the male detent element on the cover and the blade carrier in its final position;

FIG. 6 is a perspective view of the protective cap;

FIG. 7 is a horizontal cross-sectional view taken on the plane VII—VII of FIG. 2 showing the protective cap expanded at one end for release thereof;

FIG. 8 is a vertical view with the front cover broken away in part of another form of the invention; and

FIG. 9 is a vertical section taken on the plane IX—IX of FIG. 8.

Referring first to the form shown in FIGS. 1 to 6 inclusive, the razor comprises in general three major elements: a disk-shaped blade carrier 10; a front cover disk 11; and a rear cover disk 12. These elements are preferably formed of a suitable plastic material but one or more could be composed of metal. The blade carrier has front and rear cylindrical extensions 13 and 14 respectively extending into circular openings of the front and rear covers respectively and being supported therein for rotation of the blade carrier in the cover parts. The blade carrier supports a series of blades 20 at the periphery thereof extending in general in end-to-end relation to each other. The number of blades and correspondingly the shape of the blade carrier may vary depending upon preferences. In the form of FIGS. 1 to 5 the carrier is adapted to support five blades and accordingly has a generally pentagonal shape in outline. In FIG. 2 the blade carrier is rotatable counterclockwise until final (fifth) position is reached.

Each blade is pressed in and frictionally supported in a slot in a peripherally located flange 21 as shown particularly in FIG. 3. The shape and character of the blades may vary those in the present instance corresponding approximately in dimensions and shape with a standard injector-type blade. In general the blades are flat or planar in shape and are arranged in the blade holder or carrier 10 with the plane of each blade extending generally in the direction of the axis of the holder about which it rotates so that the cutting edges are presented forwardly of the razor as appears for example in FIG. 3. Also the blades may be plain or may be provided with a self-contained guard such as a fine wire wound spirally around the blade, the respective turns extending over the front cutting edge of the blade. A blade of that character is disclosed in the U.S. Pat. Application of Clemens A. Iken, Ser. No. 709,126, filed Feb. 29, 1965, now U.S. Pat. No. 3,505,734 issued Apr. 14, 1970.

The blade holder preferably is of a somewhat open grile work comprising an inner plate section 25 from which extend the cylindrical portions 13 and 14, and the radial legs 26 which support the outer series of flanges 21 and a second series of flanges 27 spaced inwardly from the respective outer flanges 21 by openings 28 which serve as soap clearance and drainage passages. Formed in the central plate portion 25 by a pattern of slots in each case are a series of flexible fingers 29 each having a nose portion 30 offset in the direction toward the rear cover 12 and elastically engaging the outer surface of an annular flange 31 extending axially inwardly of the cover 12. As indicated particularly in FIG. 2 there are three such fingers 29 angularly spaced around the blade holder whereby the blade holder is supported in proper position by a three-point support free of looseness or rattling within the outer cover parts. The nose 30 of the fingers 29 also elastically presses against the wall of the rear cover 12 tending to urge forwardly the blade carrier.

The blade holder is of course rotatable in the cover parts to position successively the individual blades at the shaving area indicated at 35 in FIG. 1. The central hub portions 13 and 14 are preferably formed with irregular outer surfaces to assist in providing a frictional grip thereon and the formations may be in the form of a decorative pattern which in the present instance comprises a series of blind holes 34 and 35 formed in the front and rear hub portions respectively.

The cutout openings in the cover parts 11 and 12 forming the shaving area 33 register with the slot openings 28 in the blade carrier and form a free soap passage front to rear. One of the cover members, which in the present example is the rear cover 12, has integral laterally extending regularly spaced fingers 36 engaging against the rim of the opposed cover member.
3

11 thereby forming rectangular openings 37 which serve as drainage openings and also are adapted to receive locking lugs of a protective cover as will be described hereinafter. The two cover parts are secured together by appropriate means such as welding or cement.

As shown particularly in FIGS. 1 and 3 the front cover is provided with a rounded protrusion 38 which serves as a guard or soap bar. Suitable position indicator means are embodied showing the number of the blade exposed at the shaving area.

In the present case this comprises a window 41 in the front cover at which are successively exposed the numerals formed on the rear face of the blade carrier such as indicated at 42 for the numeral 1, the blade carrier in the present instance being adapted to be rotated counterclockwise relative to the casing parts as viewed in FIG. 2.

Directional detent-locating means and final stop means are provided to prevent rotation of a previously used blade into the shaving position 33. In the present case the directional detent means comprises a pair of notches 46 and 45a extending radially inwardly from the respective flange portions 27 defining a notch 46 adapted to receive a fixed male detent lug 47 located on an axially extending annular flange 48 of the front cover 11, the lug 47 being shown in section in the upper portion of FIG. 2. The detent lugs 45 and 45a each have an inclined forward cam face and the fixed lug 47 has a complementary rear inclined cam face. The lugs 45 and 45a are located in the respective sections of the annular rib 27 which are flexible. Accordingly as the blade carrier is rotated counterclockwise the notch 46 snaps over the fixed lug 47 determining the respective shaving positions as shown in the upper portion of FIG. 2, but the cam surfaces on lugs 47 and 45a permit release of the locating detent means for advance of the next blade 20 into the shaving position. The forward square face of lug 47 and the matching square faces on lugs 45 and 45a prevent, however, reverse rotation of the blade carrier 10. The detent lug 45a also has a rear inclined face 45b whereby if the user in advancing the blade carrier inadvertently overruns the next position the user may reverse the rotation to bring the blade carrier back into the latched position providing the user has not overrun the desired advance to the extent of reaching the succeeding fully latched position.

A final limiting stop means for the last blade is provided, that is in the present case, when the blade marker "5" reaches the window 41. This position is indicated in FIG. 5. It will be noted in FIGS. 2 and 5 that the flange section 27a has a modified detent lug means 45c which is longer than lugs 45a and has a square shoulder portion extending beyond the inclined cam face of fixed lug 47, and which accordingly forms a positive stop and the user is informed that all of the blades have been brought successively to the shaving position.

Preferably the razor is provided with a protective cap 55 shown separately in perspective in FIG. 6 and applied in FIGS. 2, 3 and 7. The cap in general resembles an inverted trough with a concave upper wall 56 and sloping end walls 57 each of which has an integral lug 58 adapted to engage in one of the drainage openings 37. Projecting downwardly from the upper wall 56 are a pair of locating flanges 59 adapted to engage against the particular outer flange 21 of the blade carrier 10 positioned at the shaving area. The cap is made of electric plastic material and the distance between lugs 58 in normal relaxed condition of the cap is less than the distance between the top pair of drainage holes 37 as shown in FIG. 2. In applying the cap one or both of the end walls 57 are cammed outwardly and the cap is snapped into locked position. To remove the cap it is manually compressed by pressure applied preferably near the end wall as indicated by arrows A in FIG. 7 causing the end wall to be expanded outwardly to a position indicated by full lines at 57' in FIG. 7 which distance between the top pair of drainage holes 37 as shown in FIG. 2. The corresponding hole 37 permits the ready removal of the cap. It will be noted that the flanges 59 do not extend for the full width between the side flanges of the cap permitting them to be flexed inwardly.

The form of razor shown in FIGS. 8 and 9 is comprised of two major elements rather than three, as in the case of the first form of the invention. In this second form the blade holder also serves as the rear cover of the razor. The two major elements comprising the blade carrier 60 and the front cover 61 are provided with telescoping parts formed by the annular rib 62 on the blade carrier and the rib 63 on the cover member 61, the two parts being suitably held together and maintained coaxial as by means of a screw 64 extending through the front cover and threaded into a central boss 65 in the blade carrier 60. The blade carrier is generally similar to that of the first form of the invention to the extent at least of having an outer generally annular flange 66, and an inner generally annular flange 62 just referred to supported by radial legs 67 on the central disk portion 68 of the blade carrier, the annular flanges 62 and 66 being separated by soap clearance openings 69 for the respective blades 70. In this case the blade carrier is provided with six blades and correspondingly is of hexagonal shape and the razor as a whole is in general of hexagonal shape. The front cover is provided with a window 72 at which the respective blade numbers 73 are adapted to be exposed.

Since the blade holder and front cover are each hexagonal in shape it will be readily apparent to the user that a shaving position is properly established when the two parts coincide in outline. However, if desired suitable detent means may be produced including a final fixed stop similar in general to those embodied in the first form of the razor shown in FIGS. 1 to 6. Also a protective cap may be employed similar to that shown in FIG. 5.

Since various changes may be made in the two forms of a razor shown and described herein and further different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained herein shall be interpreted as illustrative and not in a limiting sense.

We claim:

1. A razor comprising a front cover of a generally flat disklike shape and having an opening for a blade exposure area for shaving at a position at the periphery thereof, a generally disklike blade holder arranged adjacent to said cover in generally face-to-face relation therewith, said holder and said cover being mounted for relative rotation about an axis perpendicular to the plane of said disklike blade holder, and said holder having a series of planar blades each individually and separately mounted therein and arranged in succession at the periphery thereof in generally end-to-end relation with the plane of each blade extending generally in the direction of said axis and adapted to be presented successively at said blade exposure area by said relative rotation.

2. A razor in accordance with claim 1 in which each of said blades is mounted in a flange at the periphery of said holder with a slot opening through the holder adjacent the inside of the flange and the cover has a slot opening registering with the holder slot opening said openings providing a free soap passage front to rear of the razor.

3. A razor in accordance with claim 1 in which said cover includes a blade guard located adjacent said shaving blade exposure area.

4. A razor in accordance with claim 1 in which the blades are arranged in slots in said holder with portions of the holder overlying the outer face of the blades from the back edge to provide an outer guard area.

5. A razor in accordance with claim 1 in which said blade holder is comprised of plastic material and said blades have a press fit therein.

6. A razor in accordance with claim 1 embodying detent means for appropriately locating the respective blades at said blade exposure area.

7. A razor in accordance with claim 1 embodying detent means permitting positive reverse rotation of said blade carrier in one direction to position successively the blades at said blade exposure area and operative to releasably latch the carrier at such positions but preventing reverse rotation from a fully latched position.
8. A razor in accordance with claim 1 embodying stop means to prevent further relative rotation when the last of the series of blades has arrived at said blade exposure area.

9. A razor in accordance with claim 1 in which said cover has a window, and said holder has appropriate indicia located for successive exposure at said window to indicate the number of the series of blades located at a given time at said blade exposure area.

10. A razor in the form generally of a flat disk comprising front and rear cover members forming a casing, and a blade holder disk rotatively mounted therein between said members with an integral hub part projecting through a central opening in one of said members and exposed for manual engagement to rotate said holder disk, said cover member having an opening for a blade exposure area for shaving, said holder having mounted at the periphery thereof a series of individual blades arranged to be presented successively at said blade exposure area by rotation of said holder.

11. A razor in accordance with claim 10, embodying detent means for appropriately locating the blades at said blade exposure area comprising an element fixed on the interior of one of said cover members and a series of complemental elements each resiliently mounted on said holder.

12. A razor in accordance with claim 10 in which said blade holder has a plurality of elastic fingers extending rearwardly therefrom and tracking on said rear cover to elastically urge the blade holder into proper position within the casing.

13. A razor comprising front and rear members each generally disk shaped and arranged face to face said rear member having a series of individual blades located generally end to end at the periphery thereof, and said front member having an opening for a blade exposure area for shaving at a position at the periphery thereof, said members being mounted together for relative rotation whereby the respective blades may be presented successively at said blade exposure area, and having relatively telescoping annular flange parts for maintaining a fixed coaxial relation while permitting relative rotation.

14. A razor in accordance with claim 13 provided with means at the axis thereof for maintaining the said front and rear members secured together but relatively rotatable.

15. A razor in the form of a generally flat disk having a shaving-blade exposure area adjacent the periphery of the disk and extending for a minor portion only of the peripheral circumference, and a removable protective cap for covering said blade exposure area said cap being applicable radially of the disk at the outer peripheral edge thereof and extending for only a minor angular portion thereof including the blade exposure area, said cap being of elongated shape in the general direction of the periphery of the disk, and releasable interlocking means between each end of said cap and said disk for ready application and removal of the cap, said interlocking means comprising a lug element and a complemental notched opening element, one of said elements being located on the disk and the other element in the cap.

16. A razor in accordance with claim 15 in which said cap is of elastic material with sidewalls and end walls and said interlocking means comprises at each end a lug on the interior of the end wall and a complemental opening in the razor disk the relation being such that the lug is cammed into locking engagement by outward flexing of the end wall, and release is effected by compressing the sidewalls to flex the corresponding end wall outwardly to free the lug from the complemental opening.