Nov. 5, 1963 P. M. GIROUARD 3,109,237

ARCUATE DOUBLE EDGE RAZOR BLADE

Filed Jan. 7, 1960

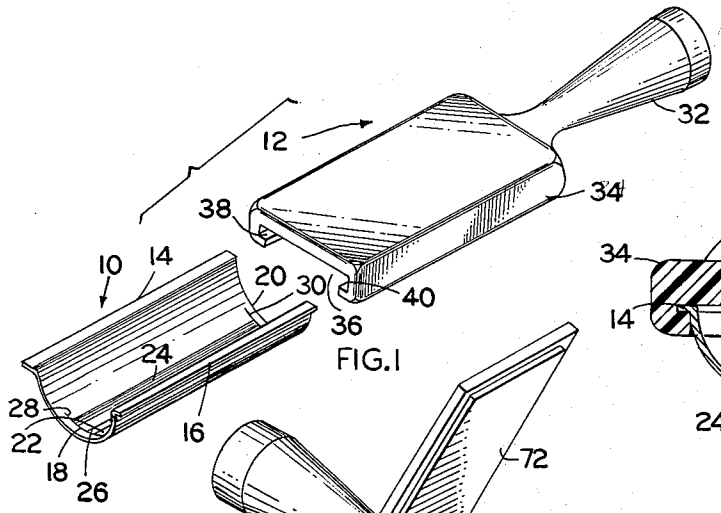


FIG. 1

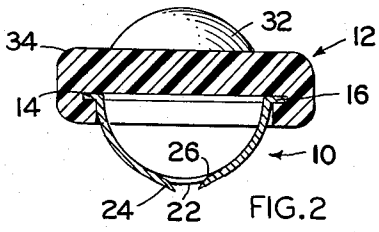


FIG. 2

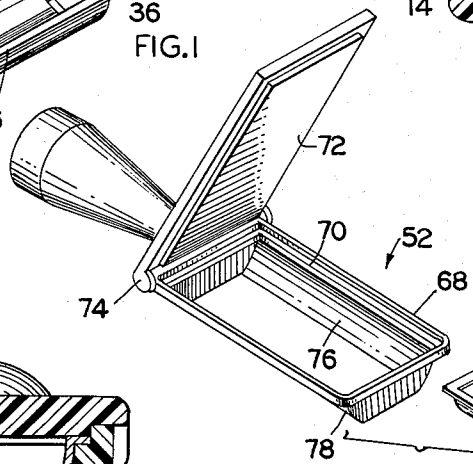
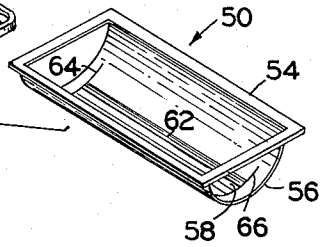


FIG. 3



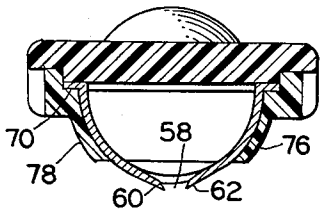


FIG. 4

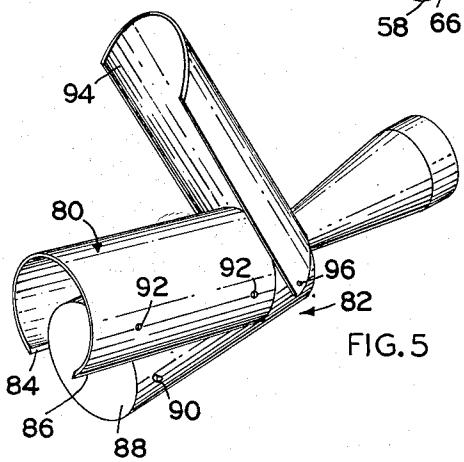


FIG. 5

FIG. 6

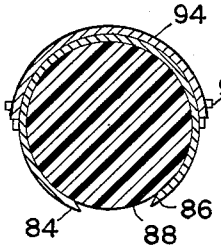


FIG. 7a

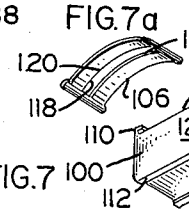


FIG. 7b

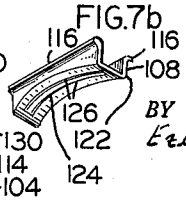


FIG. 7

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ARCUATE DOUBLE EDGE RAZOR BLADE

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1 Claim. (Cl. 30—354)

This invention relates to safety razors and more particularly comprises a new and improved razor blade and holder.

Virtually all forms of safety razors heretofore developed are adapted to cut when drawn in but one direction along the skin. That is, the cutting edges of safety razors are so positioned that when the implement is held at a particular angle relative to the skin area to be shaved and the razor is drawn in one direction, the cutting edge will move across the skin and shave it, but when drawn in the other direction the blade will slide smoothly over the surface without performing the shaving function. While safety razors employing double edge blades may cut when drawn in each direction, nevertheless, the razor must be positioned in different angles to the surface of the skin to be effective. Of course, the single edge cutting blades used in other forms of safety razors will only cut in one direction.

The object of the present invention is to provide a safety razor and blade which may be drawn back and forth across the skin in short strokes and shave while moving in each direction.

To accomplish this and other objects, the safety razor includes a specially formed double edge blade. In several embodiments of my invention, the blade is semi-cylindrical in shape and is provided with a slot across its midsection parallel to and equidistant from the straight sides of the blade. The margins of the blade which define the sides of the slot are formed into cutting edges which face one another. Extending from the ends of the slot are cuts parallel to the ends of the blade which permit the cutting edges to be displaced from the uniformly curved surface of the blade body. The holder for the blade may take any one of several forms, two of which are shown. In one embodiment, the holder includes a recess provided with elongated opposing grooves at the margins of the recess which receive the parallel straight sides of the blade. When the sides of the blade are inserted into the grooves, the blade curves out of the body of the holder exposing the cutting edges. As these cutting edges face one another, the holder may be moved back and forth in short strokes across the skin and when moved in each direction the blade facing in the direction of motion will perform the shaving action.

In another embodiment of my invention, the substantially semi-cylindrical blade defines an arc in excess of 180° so that the straight parallel edges of the blade substantially face one another. In this embodiment of my invention, the straight sides are formed into cutting edges in effect disposed in the same relative relationship as the cutting edges of the blades in the other embodiments. This blade may be supported in a holder having a drum-type carriage with a radius of curvature identical to that of the blade. The blade lies on the surface of the drum and may be retained in place by a pair of pins which extend through small holes formed in the blade. An arcuate plate pivotally secured to the drum of the holder

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is adapted to overlie the major portion of the blade leaving exposed only the blade sides which serve as the cutting edges. As the cutting edges of the blade substantially face one another, the razor when moved back and forth in short strokes over the skin will perform the shaving action when the holder is moved in each direction.

These and other objects and features of my invention will be better understood and appreciated from the following detailed description of several embodiments thereof, selected for purposes of illustration and shown in the accompanying drawing, in which:

FIGURE 1 is an exploded view in perspective of a safety razor having a holder and blade constructed in accordance with my invention;

FIGURE 2 is a cross sectional view of the blade and holder shown in FIGURE 1 with the parts in assembled relationship;

FIGURE 3 is an exploded perspective view of another embodiment of safety razor constructed in accordance with my invention;

FIGURE 4 is a cross sectional view of the holder and blade of FIGURE 3 in their assembled relationship;

FIGURE 5 is a perspective view of still another embodiment of safety razor including holder and blade constructed in accordance with my invention;

FIGURE 6 is a cross sectional view of the blade and holder of FIGURE 5;

FIGURE 7 is a perspective view of still another razor blade holder of my invention; and

FIGURES 7*a* and 7*b* are perspective views of still other razor blades which are designed to be used with the blade holder of FIG. 7.

The embodiment of my invention shown in FIGURES 1 and 2 includes a blade 10 and holder 12. The blade 10 is made of a metal and is arcuate in shape, having straight parallel side flanges 14 and 16 and ends 18 and 20.

Extending along the center of the blade 10 is a slot 22 which terminates short of the ends 18 and 20 of the blade. The marginal side edges 24 and 26 of the slot 22 are formed into cutting edges facing one another and parallel with the side flanges 14 and 16 of the blade. A pair of cuts 28 and 30 are formed in the plate 10 parallel with its ends 18 and 20, and the central portions of these cuts are coincident with the ends of the slot 22. The cuts free the cutting edges 24 and 26 of the blade so as to allow them to be displaced from the semi-cylindrical surface of the blade body.

The holder 12 includes a handle 32 and a main body portion 34. The body portion 34 is generally rectangular in shape and is provided with a recess 36 extending upwardly from the lower surface of the body. Grooves 38 and 40 are formed at the sides of the recess 36 and face one another. These grooves are adapted to receive the side flanges 14 and 16 of the blade. This arrangement is clearly shown in FIGURE 2.

The side flanges 14 and 16 of the blade which fit within the grooves 38 and 40 of the body may be bent from the otherwise smooth curve of the blade as suggested in FIGURE 1 so as to more readily fit within the slots provided. However, the grooves 38 and 40 could if desired be so formed in the body 34 as to face downwardly at an angle approximately 45° from that shown. When so shaped, the side flanges 14 and 16 of the blade need

not be specially bent as shown, but rather could follow the curvature of the major portion of the blade.

Preferably, the cord of the arcuate or semicircular cross section of the blade **10** is slightly longer than the distance between the grooves **38** and **40** which receive the sides of the blade. When so formed, it will be necessary to bend slightly the blade **10** to reduce its radius of curvature so as to insert the side flanges **14** and **16** of the blade into the grooves provided in the body. If the relative dimensions of the blade and body are as suggested, the compressive action applied to the blade would force the cutting edges **24** and **26** formed on the sides of the slot **22** to move out of the curved surface of the major portion of the blade body so as to render the exposures of those cutting edges more pronounced. Because the cuts **28** and **30** are provided along the ends of the slot **22**, the cutting edges **24** and **26** of the blade will not be subjected to the same forces as the ends of the blade beyond the cuts when the blade is bent and as a result, the cutting edges **24** and **26** will extend substantially tangentially from the cylindrical surface of the blade.

In the embodiment of my invention shown in FIGURES 3 and 4, the blade **50** is somewhat modified from the blade shown in FIGURES 1 and 2 and the holder **52** is substantially different from the holder **12**. The blade **50** is generally semi-cylindrical in shape but includes a frame-like rim **54** as a support. The semi-cylindrical portion of the blade **50** includes a slot **58**, cutting edges **60** and **62** and cuts **64** and **66**.

The holder **52** includes a rectangular frame **68** having a seat **70** on its inner surface which receives the rectangular rim **54** of the blade. A cover **72** hingedly secured to the frame **68** as suggested at **74** is moved to the position shown in FIGURE 3 to allow the blade **50** to be inserted within the frame **68**. After the blade is inserted within the frame so that its rectangular rim **54** is disposed on the seat **70**, the cover **72** is closed so as to hold the blade in position.

This may be effected by spring loading the hinge **74** to bias the cover **72** to the lower or closed position wherein it bears against the top of the rim **54** of the blade. The holder **52** also includes a pair of downwardly extending curved walls **76** and **78** which lend additional support to the blade **50**. These walls **76** and **78** cover a substantial part of the cylindrical portion **56** of the blade **50** as is clearly shown in FIGURE 4, lending the blade support and limiting the exposure of the cutting edges **60** and **62**. The cutting edges **60** and **62** of the blade with the portions of the blade body immediately adjacent to the edges extend tangentially from the lower portions of the flanges **78** and **76**. Should these portions along with the cutting edges become bent so as to extend under normal conditions a substantial distance out of the cylindrical surface of the portion **56** of the blade **50**, the walls **76** and **78** will insure the proper angle of inclination for the cutting edges for shaving.

The embodiment of my invention shown in FIGURES 5 and 6 includes a generally semi-cylindrical blade **80** and a blade holder **82**. The blade **80**, unlike the blades in the other embodiments illustrated, does not include a central elongated slot across its mid-portion but rather has cutting edges formed on its straight parallel sides **84** and **86**. However, because the blade **80** defines an arc which is somewhat more than 180°, the cutting edges on the sides **84** and **86** generally face one another as do the cutting edges in the other blades of my invention. The holder **82** includes a drum or cylinder **88** provided with a pair of pins **90** (one of which is shown in FIGURE 5) on each side of the drum. These pins **90** extend substantially radially outward from the surface of the drum and are adapted to extend through openings **92** provided in the blade **80** to retain the blade on the drum. These pins co-operate with a curved plate **94** hingedly secured to the drum **88** by pins **96** to retain the blade on the drum. The hingedly connected plate **94** is adapted to move between the position shown in FIGURE 5 (the position in which it is placed when the blade is to be mounted) and a position wherein it lies flat upon the upper surface of the blade **80**. This position is suggested in FIGURE 6. It will be appreciated from an inspection of FIGURE 6 that when the blade is assembled on the holder **82**, the cutting edges **84** and **86** have substantially the same relative positions as the cutting edges **24** and **26** of the embodiment of FIGURES 1 and 2 and the cutting edges **60** and **62** of the embodiment of FIGURES 3 and 4.

In FIGURES 7, 7*a* and 7*b* I have illustrated still other embodiments of my invention. These embodiments are particularly designed for use by women for shaving their underarms and legs. A separate blade is provided for each of these tasks. The razor shown in FIG. 7 includes a generally block-shaped frame or holder **100** having opposite sides **102** and **104** adapted to receive blades **106** and **108** as shown in FIGS. 7*a* and 7*b* respectively. The side **102** of the holder has a pair of flanges **110** forming grooves **112** which engage the edges of blade **106** of FIG. 7*a* to retain the blade in position. Similarly, the side **104** has flanges **112** which form grooves **114** to engage the edges **116** of the blade **108** of FIG. 7*b*.

The blade **106** is arcuate in shape, and the centrally located slot **118** along the sides of which the cutting edges **120** are formed, follows the curve of the blade so that each cutting edge itself is curved. The cutting edges extend out of the surface of the blade from its convex side (this being permitted by slits extending from the ends of the slot as described fully in connection with the other embodiments of my invention), and thus the blade is particularly well suited to shave a concave surface such as the underarms.

The blade **108** removably secured to the side **104** of the holder is designed to shave the legs of the user. It will be noted that the blade includes an arcuate section depending from a pair of parallel side walls **122** which include edges **116** slidable within the grooves **114** of the holder. The arcuate section is provided with an elongated slot **124** whose sides define the cutting edges **126** of the blade. These cutting edges extend out of the main curved surface of the blade from its concave face (as do the cutting edges of the other blades), and thus, when the blade is mounted on the side **104** of the holder **100**, it may readily be employed to shave the legs or other concave surface.

With either blade mounted on the holder, the user may grasp the holder between the thumb and fingers and move it back and forth in short strokes in the prescribed manner to shave the desired part of the body.

Having described my invention in detail, it will be apparent that each of the several embodiments of my invention may be used in the manner suggested in the introduction. By holding the handle or body of the holder and moving the holder back and forth in short rapid strokes along a path perpendicular to the cutting edges of the blades, the cutting edges will perform the shaving function when moved in each direction. This feature of my invention will increase the speed of shaving as well as render a better shave than the safety razors of the prior art. With safety razors of the prior art, the users generally draw the razors in but one direction over the skin while with my safety razor the shaving action in two directions will effect a closer shave.

Having described my invention in detail, those skilled in the art will appreciate that numerous modifications may be made of the illustrated embodiments without departing from the spirit of my invention. For example, in any of the embodiments of my invention, the blade may be formed integrally with the holder. This in fact is suggested in the case of the blade **108** in the embodiment of FIGURE 7 wherein the blade includes side walls **122** which effectively form part of the frame or holder when assembled. Therefore, I do not intend to limit the scope of my invention to the embodiments illustrated and described.

Rather, it is my intention that the breadth of my invention be determined by the appended claim and their equivalents.

What is claimed is:

A razor blade comprising a sheet of metallic material arcuate in cross section and having straight parallel side edges at the ends of the arc, a slot cut in the sheet parallel with and equidistant from the side edges of said sheet, cutting edges formed in the sheet at the side margins of said slot, means in the sheet enabling the cutting edges to be displaced out of the arc of the cross section of the sheet, and flanges forming part of the sheet and extending outwardly from the side edges.

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