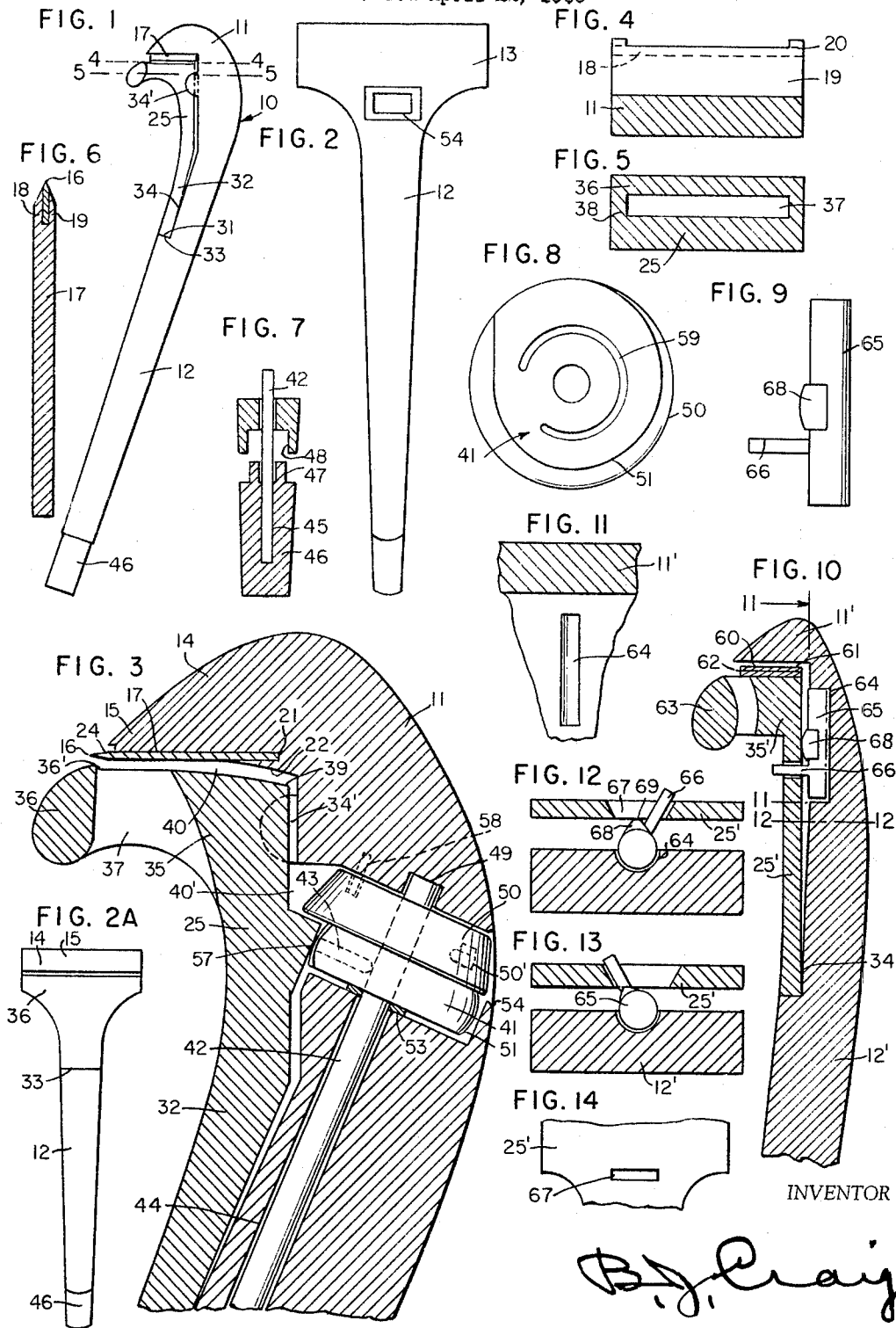


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ADJUSTABLE DISPOSABLE RAZOR

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1

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ADJUSTABLE DISPOSABLE RAZOR

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2 Claims. (Cl. 30—63)

The general object of the invention is to provide a disposable razor including an upper portion and a lower portion which together form a shaving head, and wherein a razor blade is permanently mounted on one of the portions, and wherein one of the portions includes a guard member which is beneath the cutting edge of the blade to vary the blade exposure. A novel adjusting means for shifting the guard member is provided for changing the blade exposure.

Many efforts have been made to provide a disposable razor, that is a razor which has a blade permanently secured in place and wherein the razor is used until the blade becomes dull whereupon the entire razor is thrown away.

To be practical a disposable razor should operate similar to other safety razors and since the razor is only used until the shaving edge becomes dull the razor must be quite inexpensive to make and both the blade and the razor body must be provided at a very low cost. Further, the ends of the blade in the disposable razor must be protected so that the operator will not nick himself while shaving.

The present invention seeks to overcome the above problems by providing a body which can be economically made as by molding from an inexpensive plastic material and by embedding a blade in the razor head while the molding operation is being performed.

When a bare blade is embedded in a razor head the adhesion of the blade to the body of the head is not good. The present invention accordingly provides a blade which includes a core which has a covering such as a plastic extrusion thereon and which due to the characteristic of the plastic will adhere tightly to the core and wherein in turn the blade covering will adhere tightly to the material of which the head is made to thus greatly increase the engagement of the blade and the head.

The material used in making razor blades is being continually improved. The improved material is more expensive than the former material but it provides a longer lasting blade and gives a more comfortable and satisfactory shave. The present-day commercial blades however are rather expensive for use in disposable razors. The present invention therefore seeks to provide a disposable razor with a blade which is economical and yet long lasting.

This is accomplished by making the cutting portion of the blade as a very narrow, very thin core, and then providing the core with a covering such as an extrusion which will support the foil-like core in a razor for shaving and will also permit the blade to be inserted and held in conventional manner in a razor.

The present invention further contemplates the use of ears which extend across the ends of a thin razor blade and cover the end edges and are integral with the covering on the blade to prevent nicks occurring from the uncovered ends of the blade while leaving the central portions of the blade useful for shaving.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

FIG. 1 is a side elevation of a razor embodying the features of the invention;

FIG. 2 is a top plan view of the razor;

FIG. 2A is a front view of the razor;

FIG. 3 is a fragmentary, central, sectional view on an enlarged scale with the cam member and cam rod in elevation;

FIG. 4 is a section taken on line 4—4, FIG. 1;

2

FIG. 5 is a section taken on line 5—5, FIG. 1;

FIG. 6 is a transverse section showing a razor blade;

FIG. 7 is a fragmentary central sectional view showing the operating member for adjusting the blade exposure;

FIG. 8 is a bottom plan view of the cam member;

FIG. 9 is a side elevation of a modified cam member;

FIG. 10 is a view similar to FIG. 3, showing a modified razor in which the modified cam member is employed;

FIG. 11 is a section taken on line 11—11, FIG. 10;

FIG. 12 is a section taken on line 12—12, FIG. 10 on an enlarged scale and showing the lower member in advanced position;

FIG. 13 is a view similar to FIG. 12 showing the lower member in retracted position; and

FIG. 14 is a fragmentary front view of the lower member showing the slot through which the cam operating member extends.

Referring to the drawing by reference characters, a razor embodying the features of the invention is indicated generally at 10. As shown, the razor has a shaving head which includes an upper portion 11 which is arranged on and supported by an elongated handle 12. The upper portion may be made of material such as nylon, Celcon, Delrin, Teflon, Plexiglas, and others.

The portion 11 includes a transversely extending cap 13. The cap includes a forwardly projecting portion 14 which has a forward, transversely extending tip 15. The tip 15 acts as an upper guard for the cutting edge 16 of a blade 17. The blade 17, as shown in the drawing, comprises a core 18 of very thin material which can be sharpened. The core may be made of materials such as carbides (such as tungsten carbide) steel alloys, diamond impregnated material, Phosphor bronze, glass, ceramic materials, et cetera.

The core is so thin and narrow that it requires support and the core is provided with a covering material 19 which is firmly held by adhesion or welding et cetera, to one or more of the faces of the core, as shown in FIG. 6. The covering may be made of materials such as steel, brass, metal alloy, ceramics, plastics, glass fiber plastics, metal, metal fiber plastics, et cetera.

The covering extends the full width of the core, as shown in FIG. 4, and the ends of the core are covered by guard means such as ears 20 integral with the covering 19. The ears 20 prevent nicking the skin when shaving which frequently occurs if the end edges of a blade are not protected. The core between the ears 20 is exposed for shaving, as shown in FIG. 5.

To secure the blade firmly in the upper portion 11, it is preferably embedded in the upper portion when the latter is formed, as by molding. The material of the upper portion (as shown in FIG. 3) engages the top of the blade, the rear edge of the blade at 21 and extends along the bottom of the blade a short distance in a fin 22.

The material of the upper portion 11 and the covering on the blade are caused to adhere to each other so that the thin and flexible blade is stiffened by the covering 19 and also by engagement with the portion 11.

Razors as described above need no specially prepared blade seat to hold the blade in place. The tip 15 is entirely free from engagement with the cutting edge as shown in the drawing.

The cutting edge 16 of the blade projects beyond the forward edge of the tip 15 and the upper facet 24 on the cutting edge is exposed just below the tip 15.

The razor includes a lower portion 25 which like the upper portion 11 is secured to and supported by the handle 12. The portion 25 may be made of the same material of which the portion 11 is made. The portions 11 and 25 constitute a shaving head. The lower portion is generally in the shape of an inverted L and is arranged

3

at the front of the handle adjacent to the junction of the upper portion 11 and the handle. The end 31 of the stem 32 of the L, as shown, at its lower end engages a shoulder 33 on the handle and the lower portion of the stem just above the shoulder 33 is secured as by adhesive at 34 to the handle.

The center of the radius about which the lower portion 25 swings is just above the point of attachment and this location at 34 is almost directly below the center of a guard member on the stem 32 so that the guard member 35 moves substantially parallel to the plane of the blade 16.

The upper portion 11 has wings 34' thereon. The wings 34' are arranged at each side of the lower portion 25 and serve to keep the member 25 in proper position as it moves back and forth.

The lower portion 25 is made of a material which will permit the stem 32 to move backwardly and forwardly above the shoulder 33 to adjust control. The lower portion 25 is biased to move backwards (to the right in FIG. 3) and in this figure the lower portion is shown in its extreme backwards position.

The guard member 35 includes a transversely extending guard rail portion 36. A slot 37 for soap and cut whisks to pass through is arranged in the guard member 35. Spaced tongues 38 connect the guard rail 36 and the lower portion 25 as shown in FIG. 5. The rail portion 36 includes a transversely extending protuberance 36' which extends upwardly and is arranged just below the cutting edge 16 of the blade. The upper surface 39 of the guard member 35 is spaced from the blade and from the fin 22 as at 40 to allow the guard member to move backwardly and forwardly.

In order to move the lower portion 25 against its bias a cam member 41 is provided. The cam member is arranged in a recess or cam receiving pocket 40' and is mounted on a rod 42 and is secured to the rod by a set screw 43. The rod 42 extends through a bore or recess 44 in the handle and at its lower end the rod 42 is rigidly secured in a hole 45 in the rotary operating member 46. The member 46 has a reduced end 47 which fits in a socket 48 in the handle. The upper end of the rod 42 engages the upper wall of a recess 49 in the upper portion to form a bearing.

The cam member 41 includes an upper generally cylindrical dial portion 50 and a lower cam portion 51. The upper surface of a bearing washer 53 on the rod 42 engages the lower face of the cam member. The lower face of the washer engages the lower face of the cam pocket 40' to form a bearing for the cam. The portion 50 of the cam member is inclined and it serves as an indicator which is visible through a window 54 in the head member. The periphery of the portion 50 of the cam member has numerals or other indicia 50' thereon which are visible through the window 54 in the upper portion. When the cam member and rod are rotated by the operating member 46 the indicia may be read through the window 54 to determine the blade exposure.

The portion 51 is of eccentric shape and has a rounded periphery which engages a planar cam surface 57 on the lower portion 25. When the operating member 46 is rotated in one direction the cam portion 51 of the cam member 41 will push the portion 25 to the left in FIG. 3 against the bias of the member 32. When the member 46 is operated in a reverse direction it will allow the bias to move this portion to the right in FIG. 3. To limit the movement of the cam 50 a pin 58 on the portion 11 works in a slot 59 in the upper face of the cam.

In FIGURES 9 to 14 inclusive I show a modification of the invention. In the modification parts similar to those previously described are indicated by single primed numerals.

In the modification the razor includes an upper portion 11' and a handle 12'. Below the portion 11' I show a lower part 25' which has a guard portion 35' thereon.

4

In the modification the blade has a wide, thin, foil-like core 60 which has a covering 61 on each face thereof. As shown, the covering extends over all of the core except the sharpened edge 62.

The blade is secured on the guard member 35' and is entirely free from attachment to the upper portion 11'. The guard rail 63 in the modification does not have the protuberance portion 36' which is shown on the guard portion 36 previously described.

The upper portion 11' has a longitudinally extending semi-cylindrical recess 64 therein in which a cylindrical cam rod 65 rotates. The cam rod 65 is shorter than the rod 42 previously described and the rod includes an operating portion 66 which passes through a slot 67 in the depending portion of the lower portion. The rod 65 may be turned by shifting the operating portion 66 from the position shown in FIG. 12 to the position shown in FIG. 13 and vice versa.

The cam rod 65 has a cam 68 thereon and the cam member bears against the inner face of the depending member 25' which latter is biased to move to the right in FIG. 10.

When the operating member 66 is in the position shown in FIG. 13 the portion 25' engages the flat surface of the cam 68, as shown in FIG. 13 and the member 35' is in its position closest to the portion 12'.

When the operating member 66 moves in the slot 67 towards the position shown in FIG. 12 the portion 25' is moved away from the portion 12' and consequently the guard member 35' and the guard portion 63 thereon will move relative to the blade sharpened edge 62 to thus alter the blade exposure.

Having thus described the invention, I claim:

1. A razor including a handle having a shaving head thereon, said shaving head including an upper portion and a lower portion, a blade secured to one of said portions and spaced from the other portion, said blade including an exposed sharpened edge, said lower portion including a guard member for the sharpened edge of the blade, said guard member having a depending portion integrally secured at its lower end to the handle, said guard member being made of a material so that the guard member may move backwardly and forwardly relative to the sharpened edge of the blade, said guard member being biased to move in one direction, said handle having a cam rod receiving recess therein, a cam rod rotatable in said recess, an operating member fixed on the cam rod and rotatable to turn the cam rod, a cam member, said cam being secured on said cam rod to turn therewith, said cam member including a portion having an operating cam face periphery, said guard member including a portion having a cam surface aligned with and in engagement with the periphery of the cam face, the construction being such that when the rod is rotated in one direction the cam face will shift said cam surface to thereby move the guard member in a direction against its bias and when the rod is turned in an opposite direction the bias of the guard member will cause the guard member to move in a reverse direction.

2. A razor including an upper portion and a lower portion, a handle supporting the portions, a blade in said upper portion, said upper portion of the razor having a transversely extending tip thereon, said tip being disposed above and parallel to the sharpened edge of the blade and spaced therefrom to form an upper guard for the sharpened edge of the blade, said lower portion including a guard member, said guard member including a depending portion, the lower end of the depending portion being integrally connected to the handle and in the connected area the depending portion and the handle being immovable with respect to each other, the upper part of the guard member being made of a material so that it may move backwardly and forwardly to a limited extent beneath the sharpened edge of the blade, said depending

5

portion being biased to move towards the handle, said guard member being disposed parallel to and beneath the cutting edge of the blade, said handle having a longitudinal bore therein, a cam receiving pocket intersecting said bore, a rod in one end of said bore, an operating cap on the rod and located at the free end of the handle and rotatable to turn said rod, a cam member arranged in said pocket, said cam member being secured on said rod to turn therewith, means in the upper portion of the razor to mount the other end of said rod for rotation, said cam member including a portion having an operating cam face periphery, said guard member depending portion having a surface aligned with and in engagement with the periphery of the cam face, the construction being such that when the rod is rotated in one direction the cam face will move the guard depending member in one direction against the bias of the depending member and when the rod is turned in an opposite direction the bias of the depending member will cause the depending member to move in a reverse direction.

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