UNITED STATES PATENT OFFICE

3,360,856
MAGAZINE TYPE RAZOR
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Filed Aug. 29, 1966, Ser. No. 575,662
3 Claims. (Cl. 30—40.1)

ABSTRACT OF THE DISCLOSURE
This invention relates to a cutting instrument commonly known as a razor, and, more particularly, to a razor having a continuous type blade. Still, more specifically, the invention relates to a razor having a wire-type blade movable to place successive unused portions thereof in operable positions whereby the razor can be used for extended periods without requiring replacement of the blade. Additionally, this invention relates to a razor instrument having interconnected supply and take-up cartridges operable on rotation thereof to position a wire-type blade within a specially designed guide channel means whereby the supply cartridge is adaptable to contain a year's supply of cutting edges even with the use of a separate one daily.

Numerous types of razors are known in the prior art having elongated blades or flexible strips operable to place an unused portion thereof in a cutting or shaving position. However, these devices are limited in the amount of cutting edge available and, additionally, the structures are bulky and expensive to manufacture. Furthermore, the prior art devices are complicated in structure having multiple moving parts resulting in numerous operating and maintenance difficulties.

In the preferred specific embodiments of the invention, a razor is provided for shaving and the like having a housing means in which is rotatably mounted a supply cartridge or spool and preferably a take-up cartridge or spool operable to selectively supply a blade means through an aligning and guide channel means. The housing means has an upper main body or casing connected to a base handle member which is removable for replacing the supply cartridge as required. Within the main body, the take-up cartridge is of a spool shape having an elongated stabilizer stem extended within a hole in the handle member. The supply cartridge is rotatably mounted about the stabilizer stem adjacent the take-up cartridge. The upper surface of the take-up cartridge and adjacent inner surface of the main body are formed with mating ratchet means to provide rotation of the take-up cartridge in only one direction. A spring member is mounted within the hole in the handle member about the stabilizer stem against a shoulder thereon to resiliently maintain the ratchet means in operable engagement. In order to rotate the take-up cartridge, a cylindrical connector or stub shaft extends through an opening in the main body and is secured to a rotatable knob member. An O-ring seal is mounted about the knob member against the main body to prevent water and the like from entering into the housing means. The blade means consists of an elongated wire having a cutting edge or blade thereon and having opposite ends connected to the take-up cartridge and the supply cartridge, respectively, with an intermediate portion trained through the aligning and guide channel means. The wire blade is threaded through the aligning and guide channel means which is operable to rigidly hold the same against rotary movement and frictionally resist axial movement thereof. The wire blade is readily flexible in all directions so as to be easily positioned in the aligning and guide channel means so as to expose only an elongated cutting edge therefrom. The wire blade can be of any wire type shape such as rectangular, square, triangular, and the like, as shown in the additional embodiments of the blade means and corresponding aligning and guide channel means of this invention, having portions thereof cut away to expose a sharp cutting edge for the intended purpose of the razor.

Accordingly, it is an object of this invention to provide a new and novel razor overcoming the above-mentioned disadvantages of the prior art devices.

Another object of this invention is to provide a razor having an elongated blade providing a plurality of effective blade changes in one continuous length.

A further object of this invention is to provide a razor having an elongated flexible and pliable blade movable in substantially all directions for ease of usage and storage.

Still another object of this invention is to provide a razor having a supply cartridge and a take-up cartridge operable to selectively position an unused portion of an elongated flexible wire blade in an operating position as desired.

A still further object of this invention is to provide a razor having an alignment and guide channel operable to receive an elongated flexible wire with a cutting edge and hold the same rigidly against rotational movement and frictionally against axial movement.

One object of this invention is to provide a razor having a compact, maintenance-free structure operable to selectively supply new portions of an elongated blade without requiring operator handling thereof for obvious safety reasons and usable for extended periods of time without requiring the removal and replacing of the blade.

One other object of this invention is to provide a razor that is simple to use, compact in size, and relatively inexpensive to manufacture.

Various other objects, advantages, and features of the invention will become apparent to those skilled in the art from the following discussion taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of the razor of this invention;
FIG. 2 is an elevational sectional view taken along line 2—2 of FIG. 1;
FIG. 3 is a top plan view of the razor of this invention having portions broken away to illustrate the alignment and guide channel means thereof;
FIG. 4 is an enlarged fragmentary sectional view of a blade means and a guide channel of the razor of this invention;
FIG. 5 is a fragmentary front elevational view along line 5—5 in FIG. 3;
FIG. 6 is an enlarged cross-sectional view of one blade means of the razor of this invention; and
FIGS. 7, 8, and 9 are enlarged cross-sectional views of various embodiments of the blade means of the razor of this invention.

The following is a discussion and description of preferred specific embodiments of the razor of this invention, such being made with reference to the drawings, wherein the same reference numerals are used to indicate the same or similar parts and/or structure. It is to be understood that such discussion and description is not to unduly limit the scope of the invention.

Referring to the drawings in detail and in particular to FIG. 1, the razor of this invention, indicated generally at 14, includes a support or housing means 15 having a cartridge means 16 comprised of a supply cartridge or spool 17 and a take-up cartridge 19 rotatably mounted therein to carry and selectively transfer an elongated blade means 20.
More particularly, as shown in FIG. 2, the housing means 15, preferably constructed of a durable plastic material or the like, includes a main body or casing 22 to which is releasably connected a handle member 24 so as to outwardly resemble a conventionally available safety razor structure. The main body 22 generally has a generally rectangular shape in transverse cross-section having a top wall 26, sidewalls 27, a rear wall 28, a front wall 29, and a bottom wall 31 having an enlarged access opening 33 therethrough. Therefore, it is seen that the main body 22 defines a cylindrical enlarged cavity 35 adapted to receive and working mechanism of the invention as will be explained.

The handle member 24 includes a cylindrical hand hold portion or shaft 37 having a closure plate 38 mounted on the upper end extended transversely therefrom. The outer peripheral edge 40 of the closure plate 38 is of an irregular outer edge contour adapted to fit in interlocking engagement with a correspondingly shaped locking edge 41 of the main body 22 about the periphery of the opening 33 to completely enclose the same. As the main body 22 and the handle member 24 are preferably constructed of a plastic material, the area about the opening 33 can be heated and deformed to receive the closure plate 38 in a generally snap-in operation to provide a rigid, waterproof sealed structure. It is obvious that the outer surface of the hand hold portion 37 can be scored or formed with light serrations to achieve a roughened non-skid surface to 15. In the grasping of the razor 14 during usage, the upper end of the handle member 24 is formed with a circular cavity or hole 42 extended through the closure plate 38 adapted to receive the take-up cartridge 19 in the assembled condition.

The take-up cartridge 19 has a central spool with an inner cylindrical section 43 and a pair of parallel retainer walls 46 and 47. Integral with the cylindrical section 44 and extended laterally of the retainer wall 47 is a stabilizer stem or shaft 49 operable to control rotational movement of the take-up cartridge 19 as will be explained. Extended laterally of the other retainer wall 46 is a stub shaft 51 adapted to receive a knob member 53. Adjacent the lower end of the stabilizer stem 49 is formed an integral shoulder portion 54 extended laterally therefrom.

The supply cartridge 17 is also of a generally spool shape having a central tubular or hub section 55 to which is connected laterally extended parallel guide channel walls 56 and 57 of substantially the same length and size as the retainer walls 46 and 47 of the take-up cartridge 19. The hub section 55 is formed with a central hole 59 adapted to receive the stabilizer stem 49 as will be explained.

In assembly of the razor 14, the take-up cartridge 19 is first placed within the enlarged cavity 35 of the main body 22 with the stub shaft 51 extended through a similarly sized opening 61 in the top wall 26. The supply cartridge 17 is mounted about the stabilizer stem 49 and the blade means 20, which is carried on the hub section 55, is trained through an aligning and guide channel means 63 in the front wall 29 of the main body 22 and connected to the take-up cartridge 19. In order to retain the cartridges 17 and 19 within the cavity 35, the closure plate 38 of the handle member 24 is mounted within the opening 33 on locking engagement of the edges 40 and 41, and the stabilizer stem 49 is inserted into the hole 42. Within the hole 42 is a compression spring member 65 having opposite respective ends against the shoulder portion 54 and a bottom wall 66 of the hole 42 whereby the take-up cartridge 19 is resiliently urged upwardly for reasons to become obvious. The stub shaft 51 of the take-up cartridge 19 is secured by an adhesive or the like to the knob member 53, and an O-ring seal 68 is mounted between the inner surface of the knob member 53 and the top outer surface of the top wall 26 to prevent water and the like from entering into the enlarged cavity 35 through the opening 61. It is seen, therefore, that rotation of the knob member 53 operates to move the blade means 20 from its supply cartridge 17 through the aligning and guide channel means 63 onto the take-up cartridge 19 as will be further explained in detail.

As shown in FIGS. 3 and 4, the aligning and guide channel means 63 includes an elongated guide channel 70 mounted within the front wall 29 so as to have a blade slot 72 open forwardly and outwardly therefrom. The guide channel 70 is constructed of an irregularly shaped rigid material preferably molded during the mold manufacturing process 23 of the main body 22. The guide channel 70 extends the entire length of the front wall 29 having opposite end sections 73 curved inwardly to properly guide the blade means 20 towards the take-up cartridge 19 from the supply cartridge 17. The guide channel 70 is also formed with an inner irregularly-shaped slot or groove 74 adapted to receive the correspondingly sized and shaped blade means 20 to prevent rotational movement and frictionally restrict the axial movement thereof.

More particularly as shown in the embodiment of FIGS. 4 and 6, the blade means 20 is formed from an elongated flexible wire 76 of circular shape in transverse cross-section having cooperating arcuate portions 78 and 79 cut away to leave an elongated cutting blade or edge 81. The lower arcuate portion 79 has its upper part extended substantially horizontally for reasons to be explained. Diagonally opposed to the cutting edge 81 is a V-shaped cutout portion 83 adapted to form a similarly shaped protrusion in the inside surface of the guide channel 70 to prevent the rotation of the blade means 20 therein. It is seen in FIG. 4 that the blade means 20 fits in nesting engagement with a substantial inner surface portion of the guide channel 70 and the cutting edge 81 extends forwardly and outwardly of the blade slot 72 as in a conventional razor. This snug fit operates to hold the circular wire-type blade means 20 against rotational movement and frictional contact of the abutting surfaces holds the same against axial movement except on rotation of the knob member 53.

In the use and operation of the razor 14 of this invention, the blade means 20 is trained through the aligning and guide channel means 63 having opposite ends connected to the supply cartridge 17 and the take-up cartridge 19, respectively, as by the overlapping of adjacent turns of the blade means 20. As shown in FIG. 3, the top surface of the knob member 53 is formed or inscribed with turning arrows 84 to indicate the proper direction of rotation and, additionally, arrowheads 86 thereon are used to show one completed rotation thereof. It is seen that one rotation of the knob member 53, counterclockwise as viewed in FIG. 3, operates to move the unused portion of the blade means 20 from the supply cartridge 17 into the aligning and guide channel means 63 so as to present a fresh cutting edge 81 available within the blade slot 72 for cutting purposes. At the same time, a correspondingly used portion of the blade means 20 is wound on the take-up cartridge 19 with the desired resistance of movement of the blade means 20 generated by the frictional engagement of the tight-fitting blade means 20 within the guide channel 70. As shown in FIG. 5, the front wall 29 is provided with a plurality of substantially upright projections 88 along the sides of the blade slot 72 adapted to guide and properly position, for example, a person's beard relative to the cutting edge 81 as found in conventional razors.

In order to prevent rotation of the knob member 53 in the wrong direction, the inner surface of the top wall 26 and adjacent portion of the main body 22 is provided with ratchet means 89 having first and second mating sections 91 and 93. It is obvious that on rotation of the knob member 53, counterclockwise as shown in FIGS. 1 and 3, the inclined portions of the mating sections 91 and 93 permit rotational movement of the take-up cartridge 19 against the bias of the spring member 65. However, the take-up cartridge 19 cannot be rotated count-
wise, as shown in FIG. 3, as the upright abutting portions of the mating sections 91 and 93 prevent the relative movement of the same in this direction as similarly found in conventional ratchet structures. The size of the cylindrical section 46 of the take-up blade 19 and the length of the blade slot 72 is regulated so that one complete rotation of the knob member 53 assures the placement of an unused portion of the cutting edge 81 within the blade slot 72 even on the first rotation of the knob member 53. This is necessary as the diameter of the take-up cartridge 19 is continually changed due to successive layers of the blade means 20 being wound thereon. Additionally, it is obvious that the blade means 20 could be color coded to indicate when an unused portion of the blade means 20 is spaced within the blade slot 72.

It is seen that the razor 14 of this invention presents a compact, lightweight structure usable for shaving and the like in a conventional manner, having a blade means 20 readily replaceable with an unused portion merely by rotation of the knob member 53. The extreme flexibility and small size of the blade means 20 permits the mounting of a considerable amount of the same within the main body 22 similar to a spool of wire so that the blade means 20 can be used for extended periods such as a year or more without the necessity of replacement. However, it is obvious that the handle member 24 can be removed for replacing the supply cartridge 17 if necessary. The razor 14 has numerous advantages in that the operator never needs to touch or handle in any manner the cutting edge 81 so that possible injury to himself is at a minimum. Additionally, the conventional disposal of shaving blades presents a considerable hazard in the handling of waste baskets by housewives, trash collectors, etc., and this risk is completely removed by the razor of this invention.

In other preferred embodiments of the razor 14, the structure remains substantially identical except for the shape in transverse cross-section of the blade means 20 as shown in FIGS. 7, 8 and 9 and the corresponding shape of the matching guide channel means 63 which must be of a similar inner contour for proper operation.

More particularly, as shown in FIG. 7, a blade means 94 is shown formed from a circular wire, similar to the blade means 20, having an identical cutting blade or edge 81. A cordal portion 95 is cut away to leave a flat surface extending substantially perpendicularly to the cutting edge 81. It is obvious that this structure will provide a rigid surface, namely the portion 95, to receive the inward pressure against the cutting edge 81 and operable with a similarly shaped guide channel (not shown) to prevent rotation of the blade means 94 in the same manner as previously explained for the blade means 20.

Another embodiment is shown at FIG. 8 having a blade means 98 formed from a square wire in transverse cross-section with adjacent sides 101 and 103 cut away by arcuate portions 105 and 107, respectively, to form a cutting blade or edge 109. Rigidity and stability is achieved by the other sides 111 and 112 mounted within a correspondingly shaped guide channel (not shown). It is seen that the arcuate portion 107 cuts away a larger section to achieve a substantially horizontally extended portion of the cutting edge 109 for best cutting results.

Still another embodiment of a blade means 115 is shown in FIG. 9, wherein an isosceles triangular shaped wire is formed with arcuate portions 117 and 118 cut out of the sides 119 and 121 of identical length, respectively, to form a cutting edge 123. The third side 124 is formed with a V-shaped notch 126 adapted to fit within a similarly shaped protrusion in a corresponding guide channel (not shown) as previously described for the blade means 20.

It is obvious that the blade means 94, 98, and 115 will operate and function as previously described for the blade means 20 with the primary concern being (1) the provision of a proper interlocking contour to prevent rotation of the respective blade means within its corresponding guide channel; (2) providing engaging surface contact to frictionally resist axial movement of the respective blade means during usage and only permit movement thereof on rotation of the corresponding knob member; and (3) having the blade means 20 readily flexible in all directions so as to be usable similarly as a conventional wire structure for easy storage and handling.

The razor structure of this invention provides an attractive structure that is simple to operate, inexpensive to manufacture, and substantially maintenance-free. The housing means provides for encasement of all the moving parts which is desirable to prevent the loss of any parts which would make the razor useless. The use of the wire-type blade allows a new cutting edge to be used each time while having a supply of the blades enough to last a year or longer. It is obvious that the use of a stainless steel wire will allow the blade means to last indefinitely and the cost of a wire-type blade is considerably less than conventional razor blades. The new and novel razor of this invention provides safety to the user as the external disposal of a cutting blade is not required.

Furthermore, it is seen that the use of a wire having a cutting edge therealong presents a new and novel cutting tool which can be readily dispensed from a continuous wire spool or individual segments as desired. The wire blade can be readily dispensed in any given length from a cartridge similarly to the single-edged conventionally available razor blade dispensers of today.

As will be apparent from the foregoing description of the preferred embodiments of the applicant's razor, a relatively simple and inexpensive structure has been provided which is easily operable and maintainable so as to provide a new and novel cutting instrument. Applicant's construction eliminates a great deal of time-consuming and somewhat hazardous work involved in changing blade structures in the razor and results in a substantial monetary savings in the cost of razor blades. It is obvious that the razor of this invention could be manufactured and sold at a substantial savings relative to the prior art devices now available.

We claim:

1. A razor comprising:
   (a) support means,
   (b) cartridge means to hold and supply wire and mountable on said support means,
   (c) a guide channel in said support means having a portion open outwardly therefrom,
   (d) said wire having a cutting edge therealong and positionable within said guide channel with said cutting edge projecting through said open portion,
   (e) said cartridge means having a take-up cartridge and a supply cartridge,
   (f) said take-up cartridge having a laterally extended stabilizer stem and a knob member extended transversely of said support means adapted to be rotated to move said wire within said guide channel,
   (g) said supply cartridge rotatably mounted on said stabilizer stem adapted to feed said wire into said guide channel on rotation of said knob member,
   (h) said stabilizer stem mounted within said support means,
   (i) ratchet means mounted between said main body and said take-up cartridge adapted to permit rotation thereof in only one direction,
   (j) bias means connected to said stabilizer stem to maintain bias in said ratchet means to assure rotation in only one direction.

2. A razor as described in claim 1, wherein:
   (a) said support means having a main body and a handle member,
   (b) said stabilizer stem mounted within said handle member,
   (c) said bias means having a spring member mounted about said take-up cartridge to maintain bias in said
ratchet means to assure rotation in only said one
direction.

3. A razor as described in claim 1, wherein:
(a) said wire of generally circular shape in tran-
sverse cross section having an irregularly cut-out por-
tion diametrically opposed to said cutting edge adapt-
ed to engage a like cut-out portion in said guide
channel to prevent rotational movement therein
while permitting lateral flexibility in all directions
upon placement and removal from said take-up and
supply cartridges, respectively.

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MYRON C. KRUSE, Primary Examiner.