

June 23, 1925.

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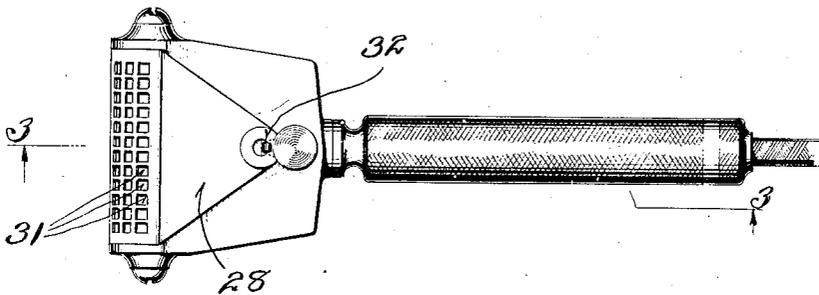
K. KAWALLE

SAFETY RAZOR

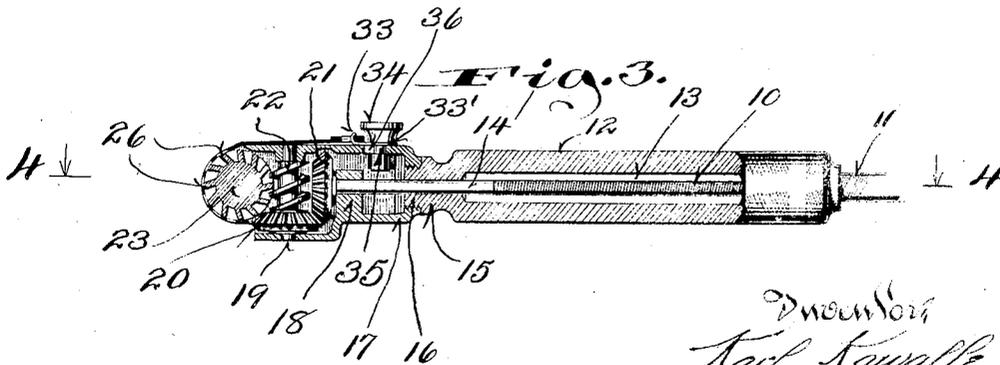
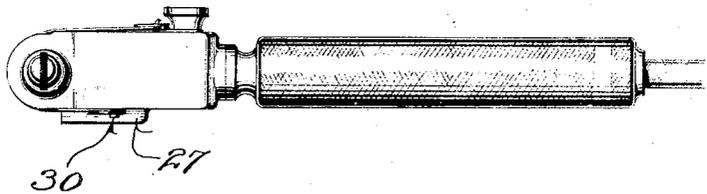
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*Fig. 1.*



*Fig. 2.*



Inventor  
Karl Kawalle

By *[Signature]*  
Attorney

June 23, 1925.

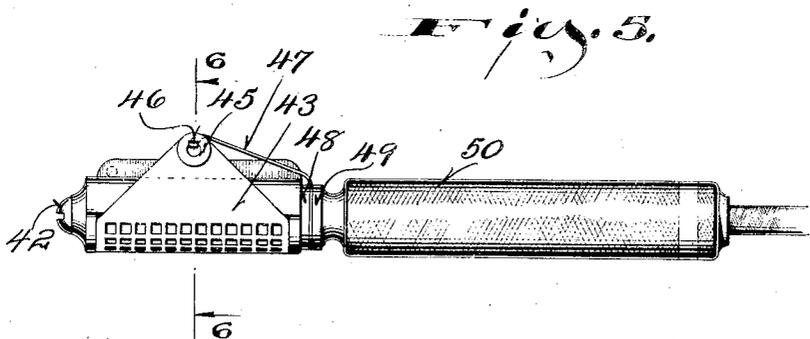
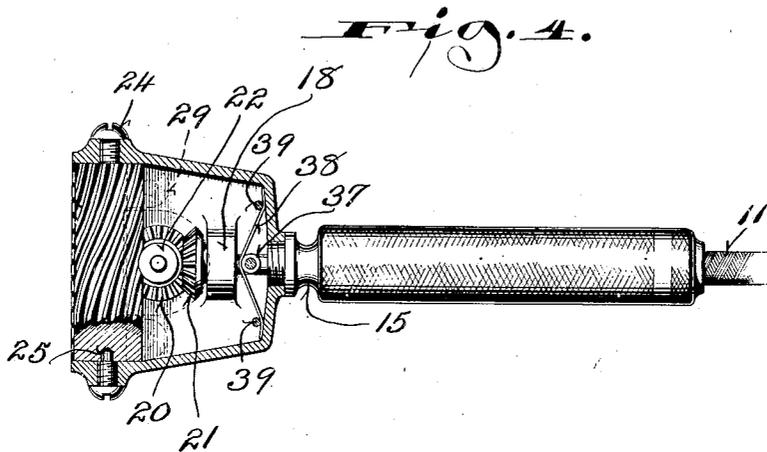
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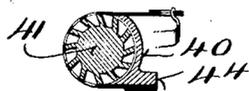
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*Fig. 6.*



Inventor:  
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Attorney.

# UNITED STATES PATENT OFFICE.

KARL KAWALLE, OF MANITOWOC, WISCONSIN.

SAFETY RAZOR.

Application filed July 3, 1922. Serial No. 572,685.

*To all whom it may concern:*

Be it known that I, KARL KAWALLE, a citizen of the United States, and resident of Manitowoc, in the county of Manitowoc and State of Wisconsin, have invented certain new and useful Improvements in Safety Razors; and I do hereby declare that the following is a full, clear, and exact description thereof.

The invention relates to safety razors. It comprises a rotary member having a plurality of spiral blades thereon, means for driving the rotary member, a metallic guard having apertures therein extending over the rotary member, means for maintaining the guard under slight tension so that it will fit snugly against the rotary member, and a handle by which the device may be conveniently manipulated.

It is the object of the invention to do away with the inconveniences heretofore encountered in shaving. It does away with all need for a shaving brush, soap, mug, lather and razor strop; it is self sharpening so that there is no necessity for resharpening and renewing blades.

It is an object to provide a structure which may be used by the most inexperienced with the best results. The device is rapid, thorough and effective, producing a clean close shave. It is not dangerous like the ordinary razor, and eliminates all possibility of cutting the face, the guard being interposed between the cutting edges and the face.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claim, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claim.

In the accompanying drawing, is illustrated one complete example of the physical embodiment of the present invention constructed according to the best mode so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a plan view of the invention.

Figure 2 is a side elevation thereof.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a side plan of a modification, and

Figure 6 is a cross section on the line 6—6 of Figure 5.

The device is operated from a suitable source of power, by which flexible shaft 10, encased in flexible tube 11 is rotated, the shaft extending into handle 12 to which tube 11 is suitably affixed. Handle 12 is cylindrical in shape and provided with a suitable roughened surface to enable the hand to get a good grip thereon. It is provided with a longitudinal chamber 13 for the reception of the flexible shaft 10, which is secured to a rigid shaft 14, journaled in the end 15 of the handle. The end 15 is provided with a reduced portion 16 in threaded engagement with casing 17, which is hollowed interiorly and provided with a bearing 18, extending upwardly from its bottom wall and maintaining rigid shaft 14 in proper operative position.

Apertures are provided at the bottom and top wall of the casing for the reception of the reduced end of shaft 19, which is provided with a bevelled gear 20, meshing with bevel gear 21 rigid on shaft 14. The rotation of shaft 14 is operative thru the gears to turn worm 22. The casing is enlarged adjacent its outer end, and receives a rotor 23, cylindrical in shape, and having flat ends. A pair of screws 24 are threaded in the sides of the casing and provided with stubs 25 received in recesses in the rotor 23 and supporting the rotor in position for rotation. The rotor is provided with a number of blades 26, on which worm 22 acts to give motion to the rotor. Bevel gear 20 is received in a minor enlargement 27 in the casing. A flexible guard 28 is provided with a bifurcated end, terminating in eyes 29 straddling the enlargement 27 and maintained in place by pins 30, extending from the casing 17. The guard completely covers half of the rotor 23, and has openings 31 therein thru which the hair is adapted to project when the razor is moved over the face. The guard in the operation of the device is maintained snugly against the face, and the rotation of the rotor brings the blades 26 against the hair.

The blades have an appreciable thickness, and are provided with a sharp cutting edge.

As the ends of the blades are maintained in contact with the guard 28, the cutting edge is maintained always sharp; the razor is self sharpening; the hair engaged between the blades and the guard is readily severed. As the cutting action does not depend upon the movement of the hand of the operator but upon the contact of the blade with the guard, there is no pulling upon the hair, the razor is merely moved over the face, and the hair is removed without any discomfort. The interposition of the guard between the blades and the face prevents all possibility of cutting the face, so that the razor may be used by the most inexperienced, who may move it rapidly over the beard, getting a thorough and effective cutting action.

It is essential to the cutting operation that guard 28 should be maintained snugly against the blades 26, for if the guard and blade be separated slightly, the hair will not be severed. To accomplish this result, the guard 28 is tapered at its upper end into an eye 32, which receives a hook 33 on a retainer 33' held in position between the upper surface of the casing and button 34. The button is rigid with a pin 35, extending thru a slot 36 in the casing and having a cylinder 37 at its end, against which the middle of a spring 38 contacts, the spring being maintained under tension against the cylinder by means of pins 39 extending upwardly thru the casing and the ends of the spring being gripped between the casing and the pins.

The tension on the spring 38 operates thru the medium of retainer 33, the limit of movement of which is determined by slot 36 to maintain guard 28 in snug position with relation to blades 26. The ends of rotor 23 fit closely against the adjacent portions of the casing so that there is no possibility of accidental catching of the hair with resultant danger of pulling. The cutting

action is so thorough that there is no need for softening the beard and the inconveniences, heretofore experienced calling for brush, soap, mug and lather, are obviated.

In the modification shown in Figures 5 and 6, the casing is formed into a semi-cylindrical member 40, extending substantially as a prolongation of handle 12. The rotor 41 is driven directly by the rigid shaft, the outer end being supported by a screw 42. A guard 43 is secured to a flange 44 on the lower part of semi-cylinder 40, and extends about rotor 41, terminating in an eye 45 thru which a lip 46 of spring 47 projects, the end of the spring being held between the end 48 of the semi-cylinder and the end 49 of handle 50. This construction simplifies the casing structure and obviates the need for worm 22 and bevel gears 20 and 21.

In both modifications of the device, the blades are spiral. This makes the cutting operation substantially continuous, whereas if the blades extended parallel to the axis of the rotor, a snipping action would be produced, inasmuch as the hair along the entire transverse dimension of the rotor would be acted on at the same time.

I claim:

A power driven razor comprising a body portion, a handle extending outwardly therefrom, a driving shaft extending through said handle into said body portion, a worm extending at right angles to said driving shaft and operatively coupled thereto, a rotor having a plurality of spirally arranged cutting teeth meshing with said worm, and a guard plate having an aperture therein and cooperating with said rotor.

In testimony that I claim the foregoing I have hereunto set my hand at Manitowoc, in the county of Manitowoc and State of Wisconsin.

KARL KAWALLE.