Nov. 4, 1952 L. SCHEPONICK 2,616,167

ROTARY SHAVER

Filed May 23, 1951

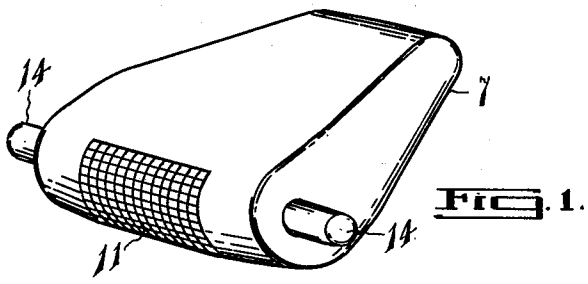


Fig. 1.

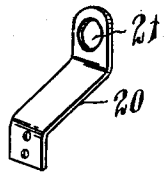


Fig. 6.

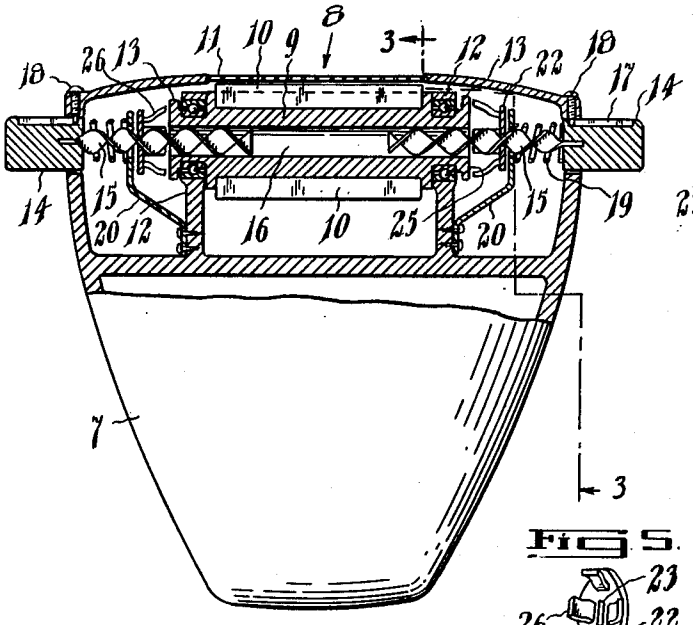


Fig. 2.

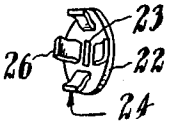


Fig. 5.

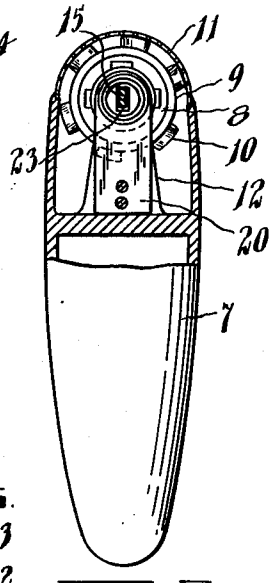


Fig. 3.

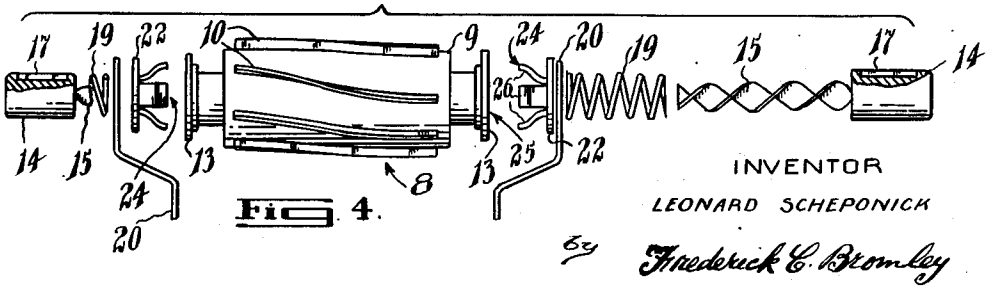


Fig. 4.

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ROTARY SHAVER

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Application May 23, 1951, Serial No. 227,817

4 Claims. (Cl. 30—43)

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My invention relates to improvements in rotary shavers of the kind in which a rotary cutter head is employed having blades which co-operate with a perforated guard or face plate to shear hairs with a scissor-like action.

The salient object of the invention is to provide an improved operating mechanism by which the rotary cutter head is motivated by hand manipulation.

More particularly the invention has for its object to provide an actuating mechanism comprising the provision of depressible buttons connected to helical elements by which rotary movement is imparted to the rotary cutting head. The buttons are arranged to be depressed by the hand of the user and are preferably disposed at the opposite ends of the rotary cutter.

A still further object of the invention is to provide a hand powered mechanism of this kind in which the helical actuators are associated with a clutch device devised to transmit rotation to the cutter head and allow it to spin freely when a button has been given an actuating movement. The clutch device may comprise a driven clutch member on the rotary cutter and a driving clutch plate engageable therewith and having an operable connection with the helical actuator.

A still further object of the invention is to provide hand operating mechanism of the character referred to and in which the driving clutch plate is self releasing with the return of the helical actuator and its associated operating button.

A still further aim of the invention is to provide a hand powered mechanism which is facile of operation and which requires very little hand pressure to motivate it, and one which will cause rapid spinning of the cutter head with each depressional movement of the operating button.

A feature of the invention is that it provides a rotary shaver by which a smooth shave can be obtained with a scissor-like action in cutting hairs.

The shaving device is highly advantageous in that it can be conveniently carried from place to place as when travelling and it is always ready for instant use. Moreover, it is a time-saving device which is particularly useful where electrical power is not available, as would be required for an electric shaver.

The invention is illustrated in the accompanying drawings in which Fig. 1 is a perspective view of a rotary shaver constructed in accordance with my invention.

Fig. 2 is a sectionized plan view of the shaver.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

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Fig. 4 is an exploded view of the rotary cutter and the parts of the hand powered mechanism.

Fig. 5 is a perspective view of the driving element of the clutch, and

Fig. 6 is a detail of a bearing plate against which an end of a spring is seated for the return of the push button.

In carrying out my invention I provide a case of any suitable shape or form, such as that generally indicated at 7 for housing the various operating parts and capable of being conveniently held in the hand. Within the case there is housed a rotary cutter 8 which is a cylindrical member comprising a hub 9 carrying a plurality of radial blades 10 which may be suitably secured thereto in accordance with the dictates of the manufacturer. The blades co-operate with the foraminous guard plate 11 in a cutting operation. The guard plate provides openings in which hairs may enter and be sheared closely to the skin in a cutting operation. Such a guard plate provides against the cutting of the skin of the face and enables a close shave to be obtained.

The rotary cutter is journalled at its ends by means of anti-friction bearings 12 and at each end there is provided a driven clutch plate 13 which is disposed at the outside of the bearings.

The hand operating mechanism which is novel comprises the provision of buttons 14, there being one such button at each end of the rotary cutter and disposed to project from a side wall portion of the case 7. Each button forms a part of the hand operating mechanism for rotating the cutter 8.

The hand actuating mechanism at one end of the cutter is similar to that at the other end and each comprises a button 14 as aforesaid. The button is depressible and to this end is suitably arranged in the case 7 for axial reciprocation. The button is attached firmly to a helical actuator 15 which extends into an axial opening 16 provided in the cutter 10 and is free to move inward as a unit with the button. The bore 16 of the cutter hub serves as a guide passage for the helical element 15. The button 14 is constrained to a limited endwise movement by any desirable expedient such as the provision of a longitudinal slot 17 in which is engaged freely an end of a screw 18 or like device. The ends of the slot serve as abutments to limit movement of the button. The slot and screw connection precludes rotation of the button, and since the helical element is fixed to the button it cannot turn.

The button is normally retained in an outward position as by the provision of a spring

19. The spring may be of the coiled type such as that shown in the drawing. It is seated at its inner end against a bearing plate 20. Plate 20 is fixed in the case and supplied with an aperture 21, Fig. 6, through which the helical element 15 freely extends. There is provided a driving clutch plate 22 which is engaged with the helical element 15 as by means of a transverse slot 23. The driving plate 22 of the clutch may be supplied with one or a plurality of bearing surfaces 24 for engaging the radial surface 25 of the driven clutch member 13.

It is preferable to supply fingers 26 on the clutch member 22 in order to form a plurality of the bearing surfaces 24, which fingers are uniformly disposed circumferentially.

With this arrangement it will be manifest that on depression of the button 14 the helical element 15 will move inwardly and thus rotate the driving clutch member 22. The actuating of this clutch member induces its fingers 26 to bear upon the driven clutch member while it rotates. The engagement thus drives the cutter head. Spring 19 returns the button along with the helical element and relieves the driving clutch member of pressure at the end of a depressional movement so that it is free to disengage itself from the driven clutch when pressure on the button is released. Bearing plate 20 is a rigid member which is firmly supported in the case in approved manner. Since the inner end of spring 19 is seated on the plate 20 the driving plate 22 has unhampered releasing movement with respect to the driven clutch member 13 when the button 14 and the associated helical element 15 are allowed to return after a depressional movement.

From the foregoing description it will be manifest that the rotary cutter is continuously driven by repeated depressional movements of the button at the side of the casing. Either or both of the buttons may be used. In the use of the two buttons they may be depressed simultaneously or otherwise. The shaving device is easy to use and is highly effective. Moreover it is inexpensive to manufacture.

What I claim is:

1. In a rotary shaver, a case, a rotary cutter journalled therein, a helical element mounted in said case in axial alignment with said rotary cutter for depressional movements, a button rigid with said helical element for manual depression, a device co-acting with said button for preventing said helical element from turning, a driving member engaged with said helical element in a manner to be rotated by a depressional movement thereof, and a clutch forming a driving connection between said driving member and said rotary cutter.

2. A rotary shaver as defined in claim 1, and in which the device co-acting with the button for preventing turning of the helical element comprises a slot formed in said button endwise thereof, and a screw on said case having an end engaged loosely in said slot.

3. A rotary shaver as defined in claim 1, and in which said clutch comprises a plate rotatable with said rotary cutter and having a radial friction face, and means on said driving member for engaging said friction face when the driving member is rotated in one direction by said helical element.

4. A rotary shaver as defined in claim 1, and in which a spring serves to return the helical element after a depressional movement, and in which the tension of said spring is taken on the case.

LEONARD SCHEPONICK.

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