Jan. 7, 1941. N. TESTI 2,228,020

SHAVING IMPLEMENT

Filed Oct. 26, 1937 2 Sheets-Sheet 1

Fig. 1

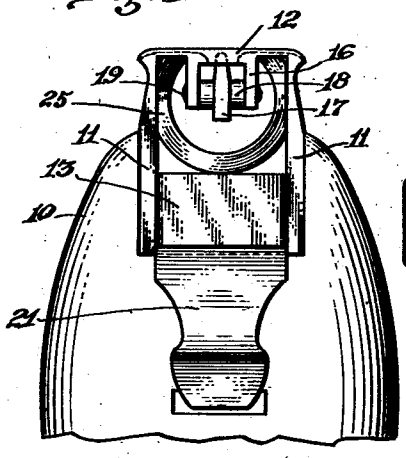



Fig. 2

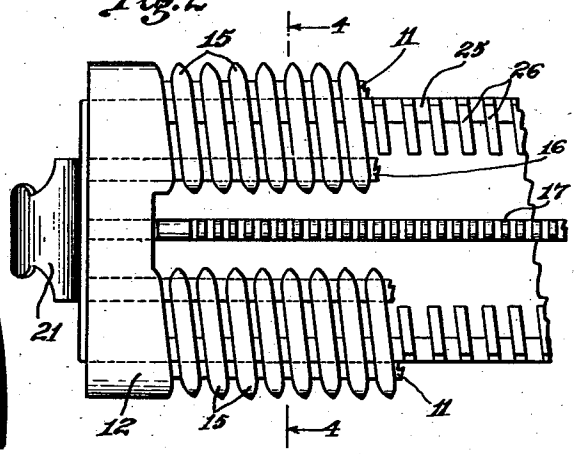



Fig. 3

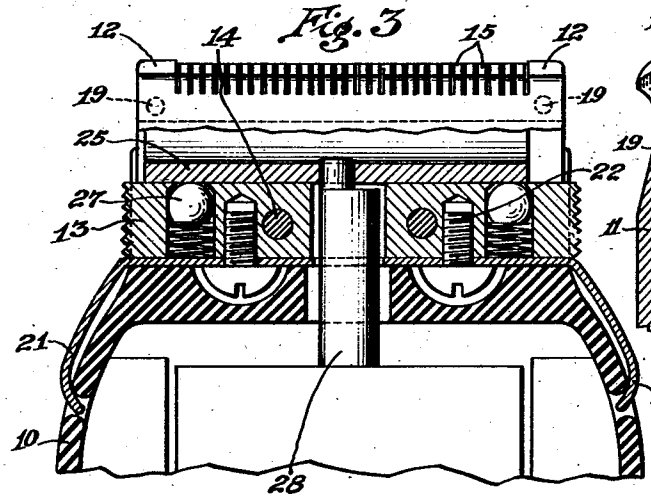



Fig. 4

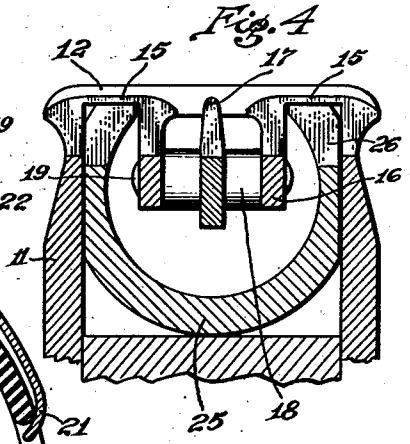
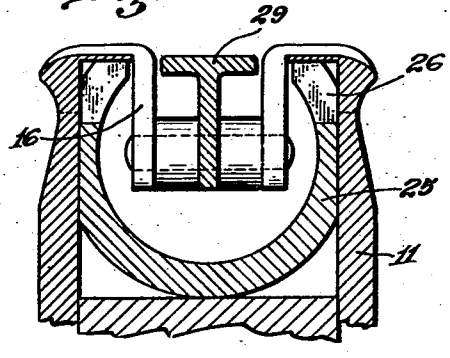



Fig. 5




INVENTOR
Nicholas Testi
BY
ATTORNEY

Jan. 7, 1941. N. TESTI 2,228,020

SHAVING IMPLEMENT

Filed Oct. 26, 1937 2 Sheets-Sheet 2

Fig. 6

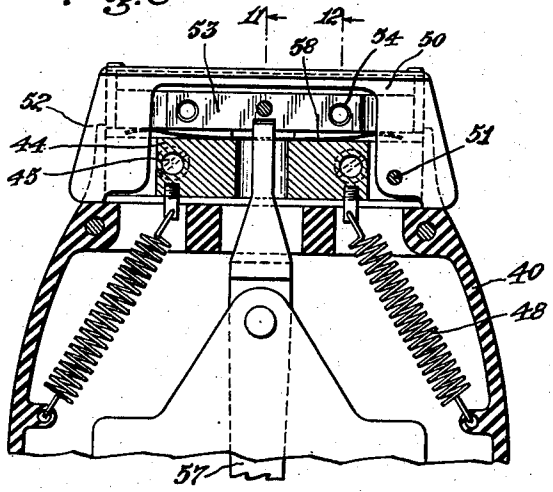



Fig. 7

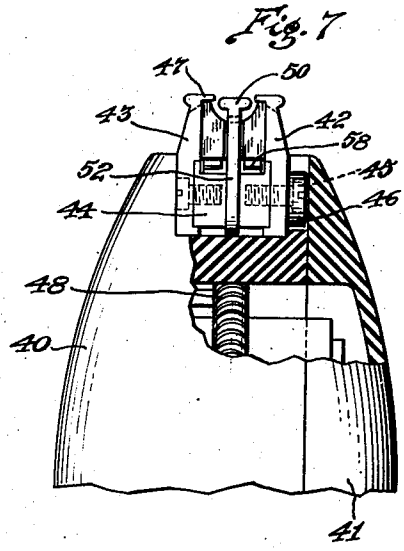



Fig. 8

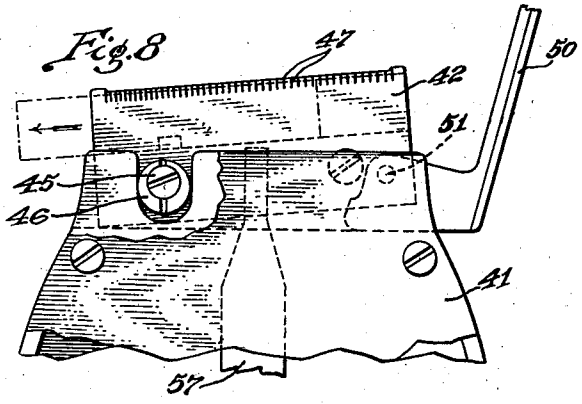



Fig. 9

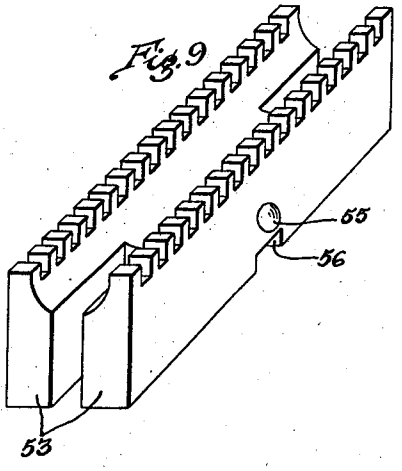



Fig. 10

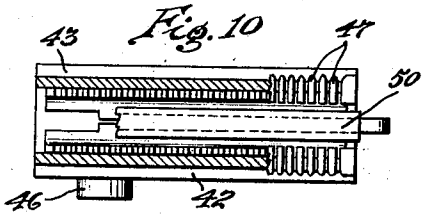



Fig. 11

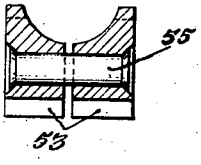
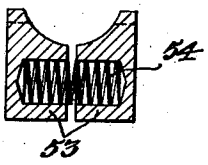



Fig. 12




INVENTOR
Nicholas Testi
BY Thos. Hennay.
ATTORNEY

Patented Jan. 7, 1941 2,228,020

# UNITED STATES PATENT OFFICE

2,228,020

## SHAVING IMPLEMENT

Nicholas Testi, Boston, Mass., assignor to Gillette Safety Razor Company, Boston, Mass., a corporation of Delaware

Application October 26, 1937, Serial No. 171,099

7 Claims. (Cl. 30—43)

This invention relates to dry shaving implements of the type employing relatively movable shearing members. The successful operation of such implements depends upon many factors. For example, they are necessarily very compact in construction so that correct dimensions, clearance and adjustment of parts are all of extreme importance. The two co-operating shearing members must be maintained reliably without variation in intimate shearing contact. Any obstruction tending to separate the shearing members, even to an infinitesimal amount, greatly impairs the shearing efficiency of the whole implement. It is, therefore, of the greatest importance to keep the interior of the shaving head clear and free from shaving debris which otherwise is likely to pack and force the shearing members apart or to impose an excessive load on the motor.

The object of the present invention is to improve dry shaving implements in the respects above discussed by providing more space within the shaving head, by making it more accessible for cleaning purposes and by increasing the effective area of the implement and at the same time rendering its face-engaging surface smoother and more comfortable for the user.

To these ends an important feature of the invention consists in a spacer element which is arranged as a comb plate or guard between two opposed series of shearing teeth, that is to say, the implement of my invention presents two spaced series of shearing teeth separated from each other to a greater extent than heretofore and presenting in that space a smooth or serrated guard member to prevent the skin of the user from bulging substantially below the plane of the face-engaging surface of the implement. The exposed edge of the guard may serve as a comb to straighten and direct hairs to the shearing teeth or it may be merely a smooth spacer or filler arranged for smooth engagement with the face of the user.

The guard member interposed between the two series of shearing teeth may be permanently secured in place or it may be removable to permit access to the interior of the shaving head for the purpose of cleaning. It may have further useful functions when employed in a shaving implement in which the shaving head is retained yieldingly in position. In such combination it may be shaped as a cam or lever operative to displace temporarily the cutter head and interrupt the driving connection to the reciprocatory cutter. The cutter may thus be stopped and held at rest to facilitate cleaning or it may be freed from its connections so that it can be temporarily removed from the shaving head for inspection, replacement or cleaning.

Another important feature of the invention consists in a cutter member which is expansible under spring actuation and thus, as a self-contained unit, it tends to engage the co-operating shearing faces and maintain close and uninterrupted contact therewith.

In all the respects noted the novel features of my invention contribute to the design of a dry shaving implement of improved shaving efficiency, reliable in operation and better adapted to be maintained in a clean condition with proper adjustment of shearing parts than in implements heretofore available.

Fig. 1 is a view of the implement in side elevation and on an enlarged scale, a portion of the casing being shown as broken away;

Fig. 2 is an end view of the implement on a still larger scale and with portions broken away;

Fig. 3 is a view in longitudinal cross-section corresponding to Fig. 1;

Fig. 4 is a view in cross-section on the line 4—4 of Fig. 2;

Fig. 5 is a similar view illustrating an alternative construction;

Fig. 6 is a view in longitudinal cross-section of the upper portions of an implement of still another construction;

Fig. 7 is a view in side elevation, partly in section, corresponding to Fig. 6;

Fig. 8 is a view in front elevation corresponding to Fig. 6;

Fig. 9 is a view in perspective and on a greatly enlarged scale of the cutter employed in the implement of Figs. 6–8;

Fig. 10 is a plan view, with parts broken away, of the shearing head of the implement shown in Figs. 6–8; and

Figs. 11 and 12 are sectional views of the cutter on the lines 11 and 12 respectively of Fig. 6, and on an enlarged scale.

The implement includes in its structure a casing 10 of "Bakelite" or other plastic material shaped to serve as a hollow handle for the implement and also as a housing for its operating motor. The casing 10 is provided at its upper end with a socket or channel for the metallic head of the implement and is arranged to hold the head firmly in place although permitting temporary detachment thereof as will be presently explained. The head comprises a pair of oppositely disposed side portions 11 connected at each end by relatively wide guard bridges 12. Spacer blocks

13 are interposed between the side portions and all are held in assembled relation by transverse bolts 14.

The face-engaging surface of the implement comprises two series of transverse obliquely disposed teeth 15 which are located between the guard bridges 12 and are formed by obliquely slotting the parallel flanges into which merge the upper edges of the side portions 11. Each series of shearing teeth extends inwardly from the body of its respective side portion 11 and terminates in a down-turned flange 16, and these flanges, as shown in Figs. 1 and 2, are spaced from each other by a substantial distance. Midway between the down-turned flanges 16 is rigidly secured an elongated comb plate or spacer bar 17. This bar is set edgewise and held in place by spacing collars 18 and rivets or bolts 19 which pass through the flanges 16 near the ends of the head and beyond the range of the shearing teeth. Its upper edge is serrated with substantially the same spacing as the stationary shearing teeth 15. Preferably the serrations are at right angles to the longitudinal axis of the bar 17 instead of being obliquely disposed as are the shearing teeth 15.

It will be noted that the bar 17 divides the space between the opposed ends of the stationary shearing teeth into approximately equal parts and that it is located substantially flush with the face-engaging surface of the shearing teeth 15 thus preventing the skin of the user from bulging into the opening between the two series of shearing teeth sufficiently to become scratched by the ends of the teeth. The serrations of the bar 17 act also as the teeth of a comb to straighten out and direct the individual hairs to the shaving zone of the teeth.

A spring retaining strip 21 is secured to the bottom of the head of the implement by screws 22 and is provided with two outwardly and downwardly extending hooked ends which may be snapped into openings provided for that purpose in the sides of the casing 10 and, when so located, will hold the head of the implement firmly upon its seat, at the same time permitting movement for a convenient release when the hooked ends are sprung outwardly.

The cutter 25 comprises an elongated open-sided cylindrical member having spaced upstanding side walls with straight parallel outer faces arranged to slide upon the inner faces of the side members 11. The side walls of the cutter are slotted to form teeth 26 with upper horizontal or transverse shearing edges arranged to cooperate with the stationary shearing teeth 15 of the implement. The teeth 26 are shorter than the stationary teeth 15 and are, therefore, overhung at their inner ends by stationary teeth. The cutter 25 is located above the spacer blocks 13 and is provided with an aperture to receive an eccentric pin which projects upwardly from the upper end of the motor shaft 28 as shown in Fig. 3, together with a portion of its operating motor. Each of the spacer blocks has a receptacle for a spring-pressed ball 27 which normally urges the cutter 25 upwardly maintaining its movable shearing teeth 26 in yielding engagement with the stationary shearing teeth 15.

The bar 17 shown in Fig. 4 converges toward its upper edge to a smooth serrated surface and has a combing action when moved across the face. The implement shown in Fig. 5 is similar to that already discussed except that it is provided with a bar 29 which is T-shaped in cross-section and which substantially fills the space between the down-turned flanges 16 of the implement head.

The alternative form of implement shown in Figs. 6 to 12 is equipped with a spacer bar 50 and possesses the advantages hereinabove discussed and certain additional advantages which will be now pointed out. The casing 40 of the implement shown in Figs. 6 to 12 has a removable cover plate 41 and a recess for the metallic head of the implement. As herein shown, the head comprises similar side members 42 and 43 provided with opposed series of stationary shearing teeth 47. The side portions are held in assembled relation by spacer blocks 44 and transverse screws 45. The left hand screw 45 as shown in Figs. 7 and 8 is provided with a slotted eccentric collar 46 which is received in a slot provided for it in the casing 40 beneath the cover plate 41. By loosening the clamping screw 45 and turning the eccentric collar 46 in one direction or the other the head may be adjusted longitudinally in its position in the casing 40 and consequently the relative position of the movable shearing teeth in the cutter and the stationary shearing teeth in the members 42 and 43 may be adjusted to give the implement the proper open time in its cycle. The spacer blocks 44 are each provided with a downwardly extending pin to which is secured a tension spring 48 extending obliquely to an ear provided for that purpose upon opposite sides of the casing. These springs tend to hold the head firmly but yieldingly in place within the recess provided for it in the casing 40 but permit it to be temporarily displaced as will presently appear.

As shown in Figs. 6 to 10 the spacer bar 50 is pivotally mounted upon a transverse pin 51 which extends through the right-hand end of the head. As shown in Fig. 6 the bar 50 is provided at its left-hand end with downwardly extending abutment portions 52 which rest upon the bottom of the socket when the bar is in its shaving position. In the implement of these figures, however, the bar 50 has another function besides affording access to the interior of the head, viz., the function of temporarily lifting one end of the head of the implement and interrupting the operating train to the cutter 53, causing this to remain at rest and permitting it to be removed from the head, if desired.

The cutter as herein shown comprises two elongated sections 53 presenting together a hemispherical channel in their upper face and being yieldingly connected to permit a transverse expanding movement. To this end a headed stud 55 extends loosely through the two sections 53 limiting the amount of possible separation. A pair of compression springs 54 is mounted in the cutter one at each end thereof as shown in Fig. 6 and these springs tend to normally urge the cutter sections apart so as to maintain yielding transverse engagement between the vertical portions of the stationary and movable shearing teeth. The cutter is provided with a transverse groove 56 in its bottom face and in its driving or operating train is included the lever 57 which is operated by the motor, not shown. A leaf spring 58 interposed between the spacer blocks 44 and the cutter 53 tends always to hold the cutter upwardly in engagement with the overhanging teeth of the head.

Normally the guard bar 50 occupies the position shown in Fig. 6, the tension of the springs 48,

transmitted to the head tending to hold it in position.

If now it is desired to get access to the interior of the head for purposes of cleaning, the bar 50 may be swung in a clockwise direction against the tension of the spring 48, whereupon not only is the desired space opened but one end of the head is tilted outwardly as shown in Fig. 8, carrying the cutter out of its engagement with its operating connection and bringing it to a standstill in convenient position for cleaning or for temporary removal.

Having thus disclosed my invention and described several preferred embodiments for purposes of illustration but not in a limiting sense, what I claim as new and desire to secure by Letters Patent is:

1. A shaving implement having a casing containing driving mechanism, a head containing a reciprocatory cutter operated by said mechanism, means for yieldingly holding the head in position on the casing, and means for temporarily moving the head away from the casing to interrupt the driving connection to the cutter.

2. A shaving implement having a casing, a head yieldingly held in place upon the casing and containing a reciprocatory cutter, and lever means mounted in the head and effective temporarily to displace the head with the cutter therein.

3. A shaving implement having a handle with a socket, a head containing a reciprocatory cutter, a spring normally holding the head in its socket, and a cam movable to displace the head against the action of said spring.

4. A shaving implement having a head with two series of shearing teeth spaced apart from each other, a handle having a socket for the head, a spring normally holding the head in its socket, and a spacer bar located between the series of teeth and having connections movable to displace the head against the action of said spring.

5. A shaving implement having a hollow handle provided with an internal motor and an external socket, a head having parallel series of shearing teeth spaced from each other, a movable guard occupying the space between said series of teeth and having a cam shaped portion arranged to displace the head when the guard is moved.

6. A shaving implement comprising a hollow handle having a socket in one end, a head located in said socket and having a series of shearing teeth therein, springs connected to said head and extending within the handle for holding the head in its position within said socket, and a pivotally mounted device under the control of the operator for displacing the head against the action of said springs

7. A shaving implement including in its structure a handle provided with a seat, an oscillatory driving member projecting a limited distance above the seat, a head normally positioned on the seat and having two spaced parallel series of shearing teeth, a cutter engaged by said driving member and having teeth co-operating with those of the head, and an elongated guard occupying the space between said series of teeth, pivotally mounted in the head and having a cam reacting with a portion of the handle to displace the head temporarily from its seat and disengage the cutter from its driving member when the guard is rocked.

NICHOLAS TESTI.