

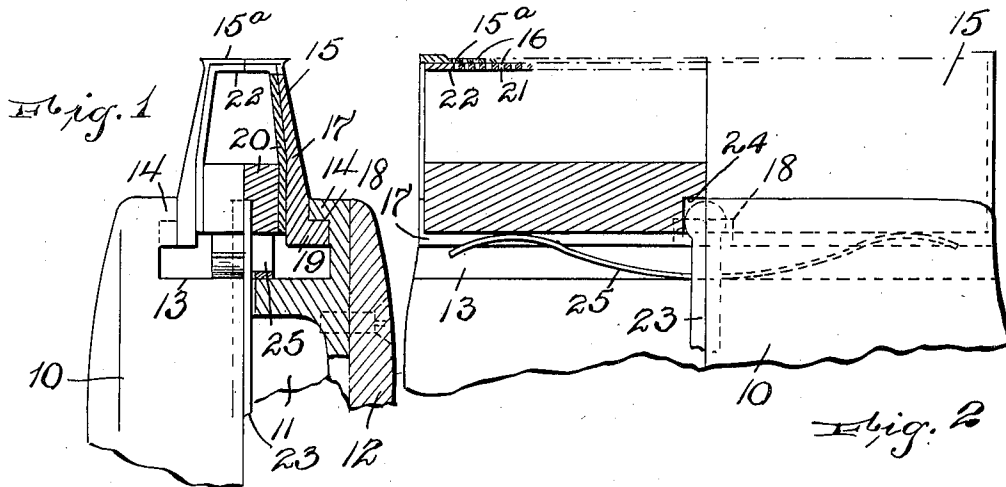
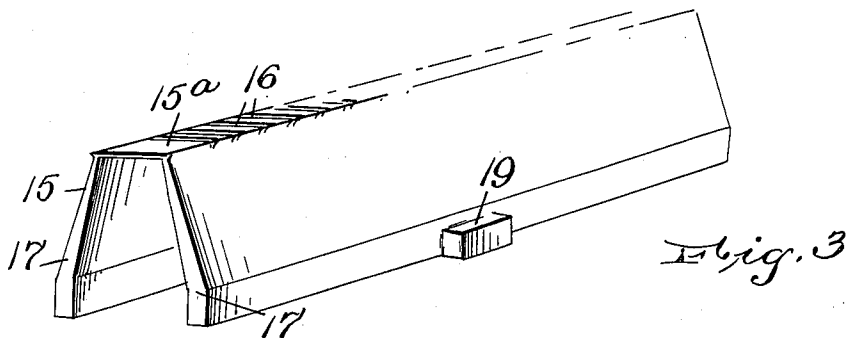
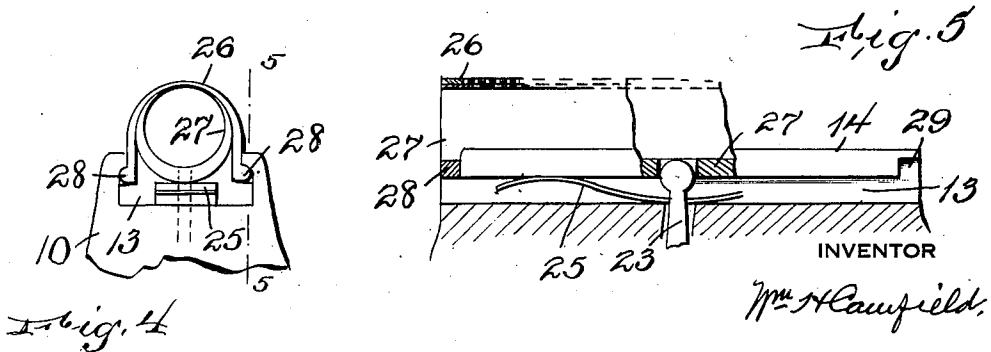
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DRY SHAVER

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DRY SHAVER

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7 Claims. (Cl. 30—43)

This invention relates to an improved dry shaver of the type having an inner cutter reciprocating in a fixed outer cutter, both cutters having fine slots for receiving hairs that are cut by the edges of the slots in reciprocating cutter in conjunction with the edges of the slots of the fixed cutter. In dry shavers of this type both cutters are hollow from end to end and the inner cutter is spring pressed to hold its cutting face in contact with the inside cutting face of the fixed cutter. The parts have in the past been assembled and held in a groove of the casing or handle by a set-screw. The set-screw projects from the handle and is inconvenient when the shaver is held in certain shaving positions.

The present invention is designed to provide an outer cutter of metal or other material that can be inserted and put in place and also withdrawn without removing the inner cutter with it. This enables the ready changing of the outer cutter to make available cutters with slots of various widths to accommodate users when hair requires slots of a particular width.

The ready removal of the outer cutter enables the user to easily and quickly clean the cutter in marked contrast to the present necessity of removing both cutters and taking the shaving head unit apart.

The invention also provides a cutter that can be made of material having a limited flexibility which is held in shape and in place by the inner cutter under the influence of a spring.

An added advantage of this invention is that the outer cutter retreats under pressure heavier than usual shaving pressure for removal and this in turn lessens the chances of damage in case of dropping the shaver or hitting it sharply against a hard surface. The prior rigidly held steel cutters with their thin brittle slotted portions are easily broken when dropped or knocked against a hard surface but the improved spring pressed shaving head is much less apt to be damaged in such accidents. As these cutters are expensive the use and installation of this improved construction is economical and of considerable utility.

In dry shavers the high speed of the inner cutter appears to cut each hair repeatedly since the hair removed from the shaver is usually as fine as dust. The small particles work into the space between the two cutters, especially on the inclined or curved abutting side portion of the cutters and impair the speed and operation of the shaver. The present shaver enables one to quickly and easily clean the shaving head as the

readily removable outer cutter presents a trough-like surface for cleaning in contrast to those cutters that have a bore which enables cleaning only from the ends. The inner cutter can be cleaned in place or lifted out and cleaned.

The invention is illustrated in the accompanying drawing. In the drawing Figure 1 is an end view of a shaving head of a dry shaver made according to the present invention, the right hand half being shown in central cross-section. Figure 2 is half central section of the construction shown in Figure 1 and half in elevation. Figure 3 is a perspective view of one form of outer cutter embodied in the present invention. Figure 4 is an end view of a modified form of construction and Figure 5 is a section on line 5—5 in Figure 4 but showing the parts still further broken away to more clearly illustrate the invention.

The invention is adapted for use in dry shavers which comprises a casing 10 which forms the handle of the device and which has a chamber 11 for an electric motor which drives the movable cutter of the shearing head. A cover 12 forms part of the casing. At the top of the casing is a groove 13 which is a seat for the shearing head, the walls of the groove having overhanging portions 14.

The shearing head comprises a metal outer cutter 15 of ordinary commercial type as far as concerns the shearing part. The form shown in Figures 1 to 3 is of the type that has a flat shear plate 15^a with minute cross slots 16, the shear plate being supported by side walls 17 which fit inside the opposed overhangs 14. The overhanging portions are provided with recesses 18. The cutter has projections 19 which co-operate in registering and seating the outer cutter by entering the recesses 18.

The cutter when not so held is free to slide longitudinally in the groove when the projections are pushed out of the recesses and are in the lower wider part of the groove 13.

Inside the hollow outer cutter is the movable cutter 20 which has a form that fits inside the outer cutter and has the cutting teeth 21 formed by slotting the top plate 22 of the cutter 20. The inner cutter 20 is reciprocated from the motor by suitable means such as the oscillating or rocker arm 23 which fits into a recess 24 in the bottom of the movable cutter.

The movable inner cutter 20 is held upwardly against the outer cutter 15 by a suitable spring or springs. The form shown embraces a flat spring 25 which has an opening for the arm 23 and rests in the bottom of the groove 13 and has

its ends supporting the cutter 20. Other forms of springs may be used provided they will hold the inner cutter against the outer cutter to resist normal shaving pressure but submitting to manual pressure on the cutter when the outer cutter is pushed down to clear the projections 19 from the recesses 18.

It will be evident from the above that by pressing down on the shearing head the release of the projections 19 allows the outer cutter 15 to slide longitudinally from the slot, the inner cutter being held in place by the arm 23. When the cutter 15 is to be inserted the cutter 20 is pushed down by the thumb and the cutter 15 slid along in the groove and when it has reached its normal position the cutter clicks into place with the projections 19 snapping into the recesses 18. The seating of the outer cutter is caused by the spring 25 acting on the inner cutter 20 and thus supporting the outer cutter.

By means of this construction various individual outer cutters can be readily placed or removed from the same inner cutter. Such ready installation and removal of the skin-engaging part of the cutter enables various individuals to have their own outer cutters for the one shaver.

The co-operating elements that hold the outer cutter in place also act to register the outer cutter in its relation to the inner cutter. This replaces two separate parts in the former commercial dry shavers, which use a set-screw for holding the outer cutter against removal and use a pin or ridge over which a slot in the outer cutter fits as a registering means. The present means combines both these functions.

This construction also enables the use of outer cutters made of non-metallic substance such as Celluloid, such flexible and pliable cutters being held in shape by the pressure of the inner cutter. The material is hard enough for the shearing action and can be made in various colors to add to the appearance of the shaver. The low cost of such outer cutters makes the replacement of broken outer cutters, or the possession of a number of cutters at low cost, easy.

In Figures 4 and 5 the invention is illustrated as applied to a round shearing head. The outer cutter is shown at 26 and the inner cutter at 27. The outer cutter is provided with projections 28 at the ends with correspondingly placed recesses 29 in the overhanging parts of the walls of the groove 13.

I claim:

1. In a dry shaver a casing having a groove, an outer cutter slidable longitudinally for installation in the groove, and a spring-pressed inner cutter pressing upwardly and fitting inside the outer cutter, the outer cutter and a wall of the groove having co-acting means for holding the outer cutter in position when under upward pressure permitting free removal of the outer cutter when said pressure is overcome.

2. In a dry shaver, a casing having a groove, an outer trough-like cutter slidable in the groove, the cutter having a projection on a side wall thereof, a wall of the casing having a recess for receiving the projection, and a spring pressed inner cutter inside the outer cutter and pressing upwardly on the outer cutter and thus holding the aforesaid projection in the recess the outer cutter being freely removable when the spring pressure is overcome.

3. In a dry shaver, a casing having a groove, one of the walls of the groove having an overhang with a downwardly opening recess, an outer cutter slidable in the groove, the cutter having side walls, one side wall having a projection to enter the recess when pressed upwardly, an inner cutter adapted to reciprocate in the outer cutter, and a spring resting on the bottom of the groove and supporting the inner cutter which in turn yieldingly holds the outer cutter with its projection in the recess of the overhang.

4. In a dry shaver, a casing having a groove, an inner cutter, a spring in the groove pressing upwardly on the inner cutter and an outer cutter of material having a limited flexibility fitting over the inner cutter and held in the walls of the groove and also held in shape by the pressure of the inner cutter.

5. In a dry shaver, a casing having a groove, an inner cutter, a spring in the groove pressing upwardly on the inner cutter and an outer cutter fitting over the inner cutter and held in the walls of the groove and also held in shape by the pressure of the inner cutter the outer cutter being freely removable when the spring pressure is overcome.

6. In a dry shaver, a casing having a groove for the reception of the outer cutter of a shearing head, one wall of the groove having an undercut portion and a recess in the overhang of the undercut portion, and an outer cutter slidable longitudinally in the groove and including a projection adapted to fit in the recess when the outer cutter is in position, and spring means for yieldingly holding the outer cutter with its projection in the recess of the casing in order to hold the outer cutter against longitudinal movement.

7. In a dry shaver, a casing having a groove for the reception of a shearing head, a shearing head comprising an inner cutter, an outer cutter having rigid side walls fitting in the groove of the casing and readily slidable over the inner cutter and in the groove, and co-operative means on a wall of the cutter and on a wall of the groove for holding the outer cutter in shaving relation with the inner cutter and being readily released by a lateral movement of the outer cutter, whereby the outer cutter can be readily removed from the groove without necessitating the removal of the inner cutter.

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