

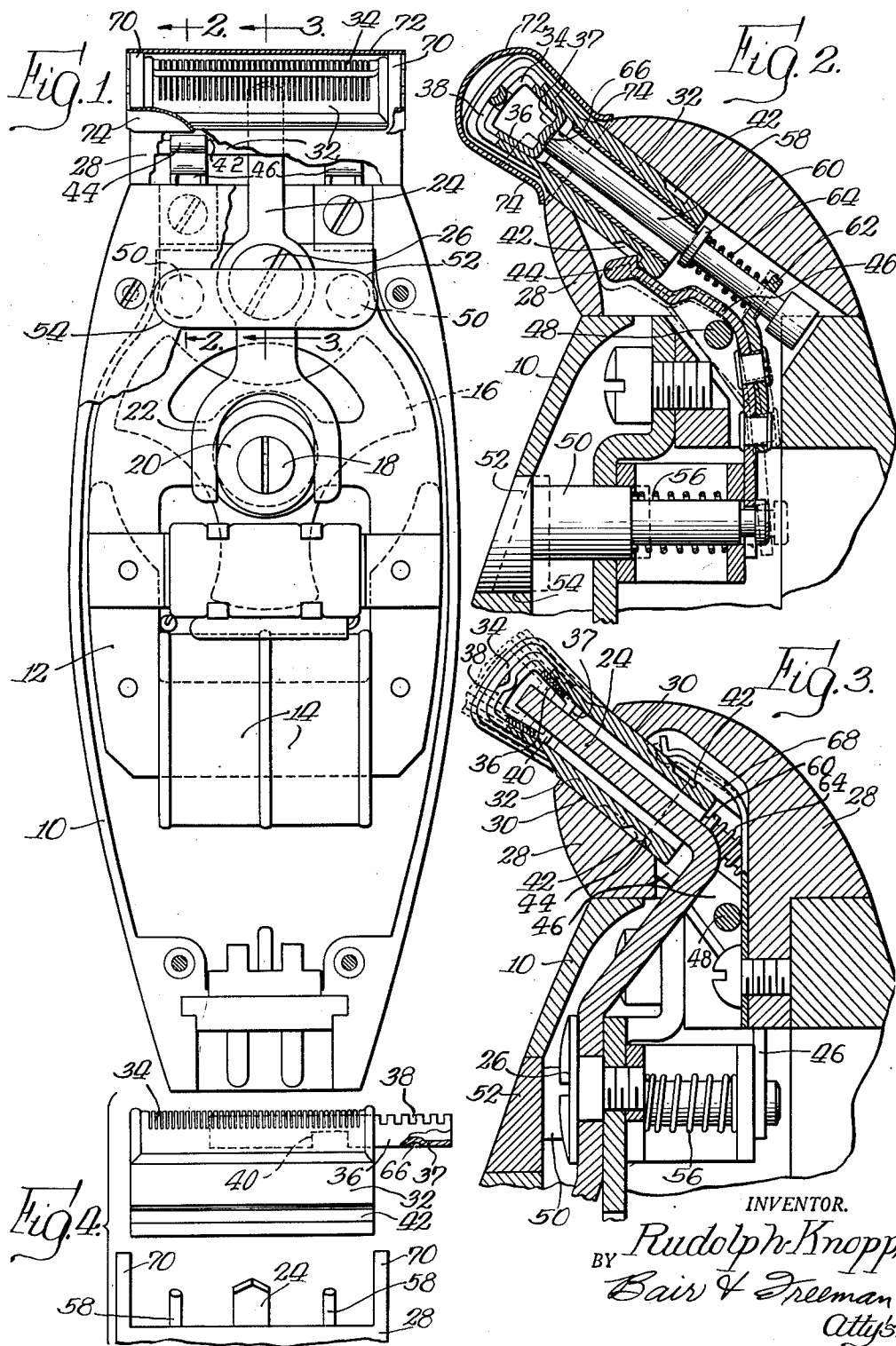
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SHAVER STRUCTURE

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SHAVER STRUCTURE

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mesne assignments, to Knapp-Monarch Com-
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4 Claims. (Cl. 30—43)

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My present invention relates to a shaver structure wherein the means for holding the shaver head is arranged for automatic release when it is desirable to clean it after use, and the shaver housing has provisions for causing the shaver head to retain the hair that is clipped from the user's face.

One object of the invention is to provide a comparatively simple mechanism for holding the head of the shaver so that the head can be released by merely depressing a push button mounted in the surface of the shaver housing.

Another object is to provide the removable portion of the shaver head in the form of an outer cutter and an inner cutter, spring operated pressure pins for the inner cutter being retained in the shaver housing, and cooperating with the inner cutter to cause it to shearingly coact with the outer cutter in a proper manner when the shaver head is mounted on the housing.

Still another object is to arrange the pressure pins and the springs so as to serve the further purpose of projecting the shaver head from the housing when the push button is depressed so that the head is readily removable to facilitate cleaning.

A further object is to provide means to prevent the shaver head from being projected all the way out of the housing so as to avoid any possibility of it dropping on a tile floor or the like, where it might be damaged.

Still a further object is to provide, for the purpose of contributing to cleanliness, means for closing in the ends of the shaver head so that the hair cut thereby is retained instead of dropping from the razor as it is being used.

An additional object is to provide a guard for the shaver head which may be sprung into position for protection purposes, or readily removed when it is desirable to use the shaver.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my shaver structure whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

Fig. 1 is a front elevation of a shaver showing it on an enlarged scale, and with a portion of the cover broken away to show internal details.

Fig. 2 is an enlarged sectional view on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 1, and

Fig. 4 is a partial front view showing the shaver

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head removed from the shaver housing, and being disassembled for cleaning.

On the accompanying drawing I have used the reference numeral 10 to indicate a shaver housing in which is mounted a motor comprising a U-shaped field 12, field coils 14 thereon, and a three pole armature 16. The armature has a suitable contact breaker mechanism (not shown) for interrupting the current of the coils 14 as shown and claimed in my co-pending application Serial No. 628,521, filed November 14, 1945, now abandoned.

On the shaft of the armature, an eccentric 18 is provided surrounding which is a roller 20. The roller 20 cooperates with a fork 22 of a shaver head operating arm 24. The arm is pivoted with respect to the housing 10 by means of a shouldered screw 26.

The upper end of the housing has therein a shaver head holding member 28. This member is provided with a slot 30 to receive the outer cutter 32 of the shaver head. This cutter is provided with lateral slots 38 on its outer end.

Within the outer cutter is an inner cutter 36 having slots 34 in its outer end. The slots 34 and 38 cooperate with each other for cutting whiskers when the inner cutter is reciprocated relative to the outer cutter. The reciprocation of the inner cutter is effected by oscillating the arm 24, the arm entering an opening 40 of the inner cutter for propelling it in accordance with the oscillation of the arm.

The outer cutter 32 is provided with grooves 42 on opposite sides thereof with which the heads 44 of a pair of latch levers 46 coact to hold the cutter head in position in the head holding member 28. The latch levers 46 are both pivoted on a pin 48 (see Fig. 2) and their ends 44 may be unlatched from the groove 42 by means of a push pin 50 for each latch lever. A head 52 on the push pins constitutes a push button for moving the pins 50 toward the right in Fig. 2 to the dotted position for release purposes.

The head 52 is countersunk in an opening 54 of the housing 10, so that it is normally flush with the surface of the housing. The pins 50 are constrained to the solid line position of the head 52 by means of a spring 56.

For providing pressure of the cutting slots of the inner cutter relative to the cutting slots of the outer cutter, the inner cutter must be biased upwardly and toward the left in Fig. 2. This is accomplished by a pair of pressure pins 58 having flanges 60, between which and extensions 62 of the latch levers 46, springs 64 are interposed.

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Normally the springs 64 cause the outer ends of the pins 58 to engage in depressions 66 of the inner cutter 36, and the pins may oscillate slightly during reciprocations of the inner cutter.

In connection with the outer cutter 32 I provide a safety spring 68 (see Fig. 3) the purpose of which will hereinafter appear.

As shown in Figs. 1 and 4, the shaver head holding member 28 has a pair of flanges 70 which serve as enclosures for the cutter head. When the head is not in use, a cover member 72 may be slipped onto it and this member has a cross section such as shown in Fig. 2 so that the converging flanges 74 thereof may spring over the head when positioning the cover thereon and will thereafter be retained on the cutter head due to their inherent resilience.

Practical operation

In the operation of my shaver structure, when the cover 72 is removed and the coils 14 are energized with electric current, the motor will rotate for reciprocating the inner cutter in the usual manner. During shaving operations the hair will be sheared between the slots or teeth 34 and 38 of the outer and inner cutters, and will fall within the inner cutter. They are retained in the inner cutter by reason of its bottom wall 37 (see Fig. 2) and by reason of a wall 70 for the cutter head which is formed on the cutting head holding member 28.

After the shaving operation the cutter head can be readily removed by pressing on the push button 52 which releases the cutter head and at the same time permits it to be projected outwardly due to the springs 64 causing the pins 58 to press outwardly on the inner cutter. Projection of the head completely from the head holding member 28 however, is prevented by means of the safety spring 68 dropping into the upper groove 42 as shown by dotted lines in Fig. 3. This avoids the possibility of the cutter head parts dropping onto a marble floor or into a lavatory and thereby causing damage.

The cutter head may now be pulled out easily by hand as to the position in Fig. 4, and the inner cutter will be entirely free for removal so that the hair contained within the cutting head can be blown out or brushed out by means of a pipe cleaner or the like.

Since the pressure pins 8 are carried by the shaver rather than the cutting head as is usual, there are fewer parts in the cutter head itself, and it can accordingly be renewed at less expense. Also when the cutter head is out of position the inner cutter is entirely loose so as to be removed without any trouble whatsoever. These are desirable features in connection with the cleaning of the shaver after it has been used.

The end member 70 guards the shaver head against damage at this point, and also prevents touching the cutter ends during operation. The shaver head is thereby protected against injury and when the shaver is not in use the cover 72 permits of further protection.

I have provided a shaver structure having a number of advantages as above pointed out. The shaver is simple to construct and inexpensive to manufacture, and changes may be made therein without departing from the real spirit and purpose of my invention. It is accordingly my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

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I claim as my invention:

1. A shaver comprising a casing adapted to receive a shaver head, a shaver head received in one end of said casing and having outer and inner cutters, a motor in said casing for driving said shaver head, pressure pins for said shaver head, means for urging said pressure pins into engagement with said cutter head in a direction to project it from said casing, means for retaining said shaver head in mounted position in said casing comprising a latch mounted in said casing and having a catch portion normally engaged with said outer cutter, said latch carrying said pressure pins, said pressure pins projecting said shaver head from said casing when said latch is unlatched.

2. A shaver comprising a casing adapted to receive a shaver head, a motor therein for driving a shaver head, a shaver head received in one end of said casing and having outer and inner cutters, pressure pins for said shaver head having shoulders, means for urging said pressure pins into engagement with said cutter head in a direction to project it from said casing, means for retaining said shaver head in mounted position in said casing comprising a latch pivotally mounted in said casing and having a catch portion engaging with said outer cutter, said pressure pins being slidably carried by said latch, spring means interposed between said latch and said shoulders on said pressure pins for urging them into engagement with said cutter head in a direction to project it from said casing, said pins thereby projecting said cutter from said casing when said latch is unlatched, and a spring returned push button slidably mounted in said casing and operatively connected with said pivoted latch at a point spaced from the pivot therefor to operate it to released position.

3. A shaver comprising a casing adapted to receive a shaver head, a motor therein for driving a shaver head, a shaver head received in one end of said casing and having outer and inner cutters, means for retaining said shaver head in mounted position in said casing comprising a latch mounted in said casing and having a catch portion engaged with said head, said outer cutter having a groove and a land adjacent said groove and located outwardly of the groove, spring means biasing said cutter head outwardly relative to said casing, said spring means projecting said cutter from said casing when said latch is unlatched, and a safety spring carried by said casing and normally engaged on said land when said head is at its inner limit of reception in said casing and entering said groove when said outer cutter is so projected for thereby limiting the projection of said cutter head from said casing.

4. A shaver comprising a casing adapted to receive a shaver head, a motor therein for driving a shaver head, a shaver head received in one end of said casing and having outer and inner cutters, said shaver head having a groove, pressure pins for said shaver head, means for urging said pressure pins into engagement with said cutter head in a direction to project it from said casing, means for retaining said shaver head in mounted position in said casing comprising a latch mounted in the casing and cooperating with said groove, said pressure pins projecting said cutter from said casing when said latch is unlatched, a push button for operating said latch, and a safety spring mounted in said casing and engaging in said groove when said cutter head is

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unlatched for limiting the projection thereof
from said casing.

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REFERENCES CITED

The following references are of record in the
file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,036,557	Viall et al.	Apr. 7, 1936
2,180,738	Hogg et al.	Nov. 21, 1939
2,186,122	Rand, Jr.	Jan. 9, 1940
2,221,314	Nyhagen	Nov. 12, 1940

Number
2,222,106
2,223,294
2,259,002
2,275,022
2,286,093
2,287,686
2,320,807
2,379,969
2,395,296

5

10

Number
784,482

6

Name	Date
Knapp	Nov. 19, 1940
Muros	Nov. 26, 1940
Knapp	Oct. 14, 1941
Thomas	Mar. 3, 1942
Hicks	June 9, 1942
Jones	June 23, 1942
Upham	June 1, 1943
Kobler et al.	July 10, 1945
Schwab	Feb. 19, 1946

FOREIGN PATENTS

Country	Date
France	July 12, 1935