

Nov. 11, 1958

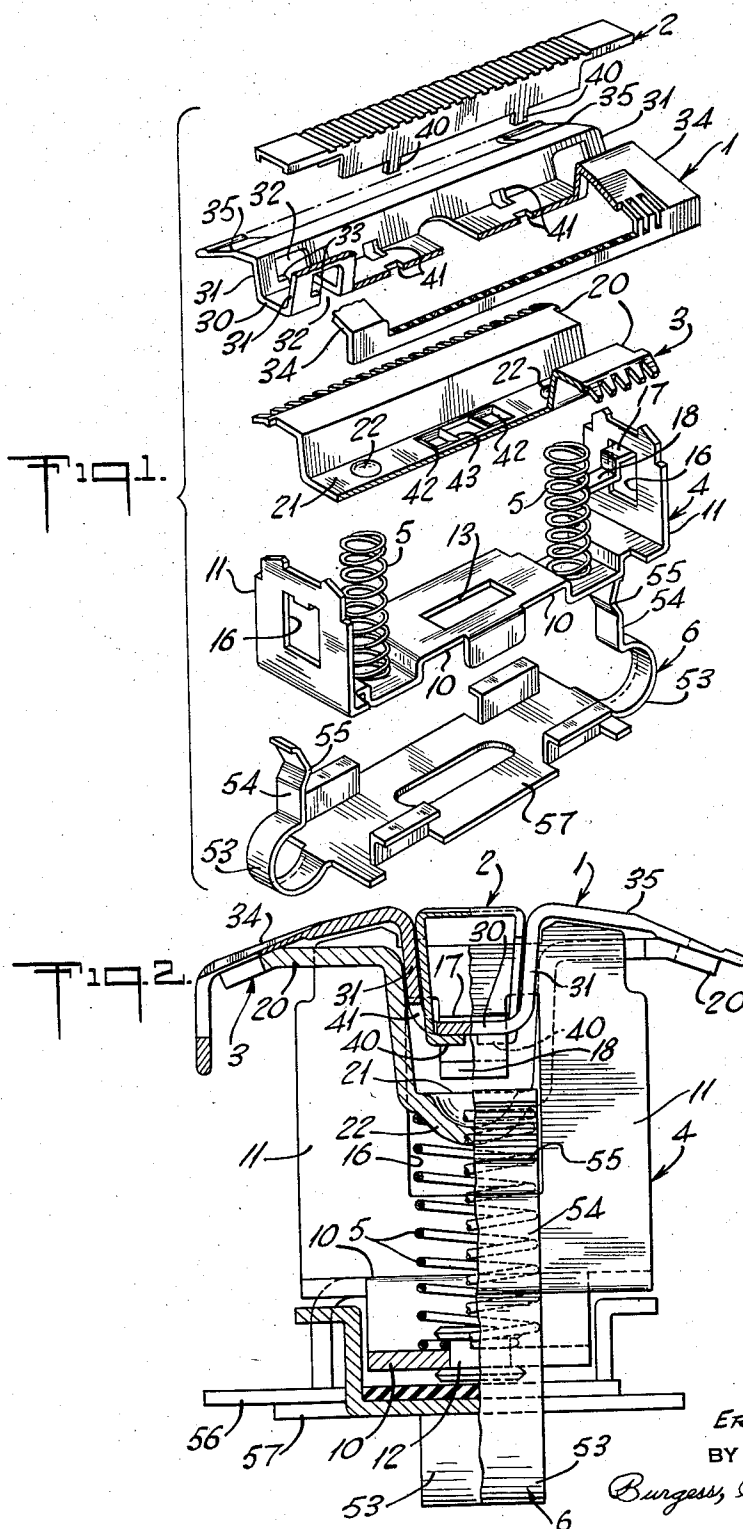
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ELECTRIC SHAVER SHEARING HEAD ASSEMBLY

Filed June 28, 1956

3 Sheets-Sheet 1



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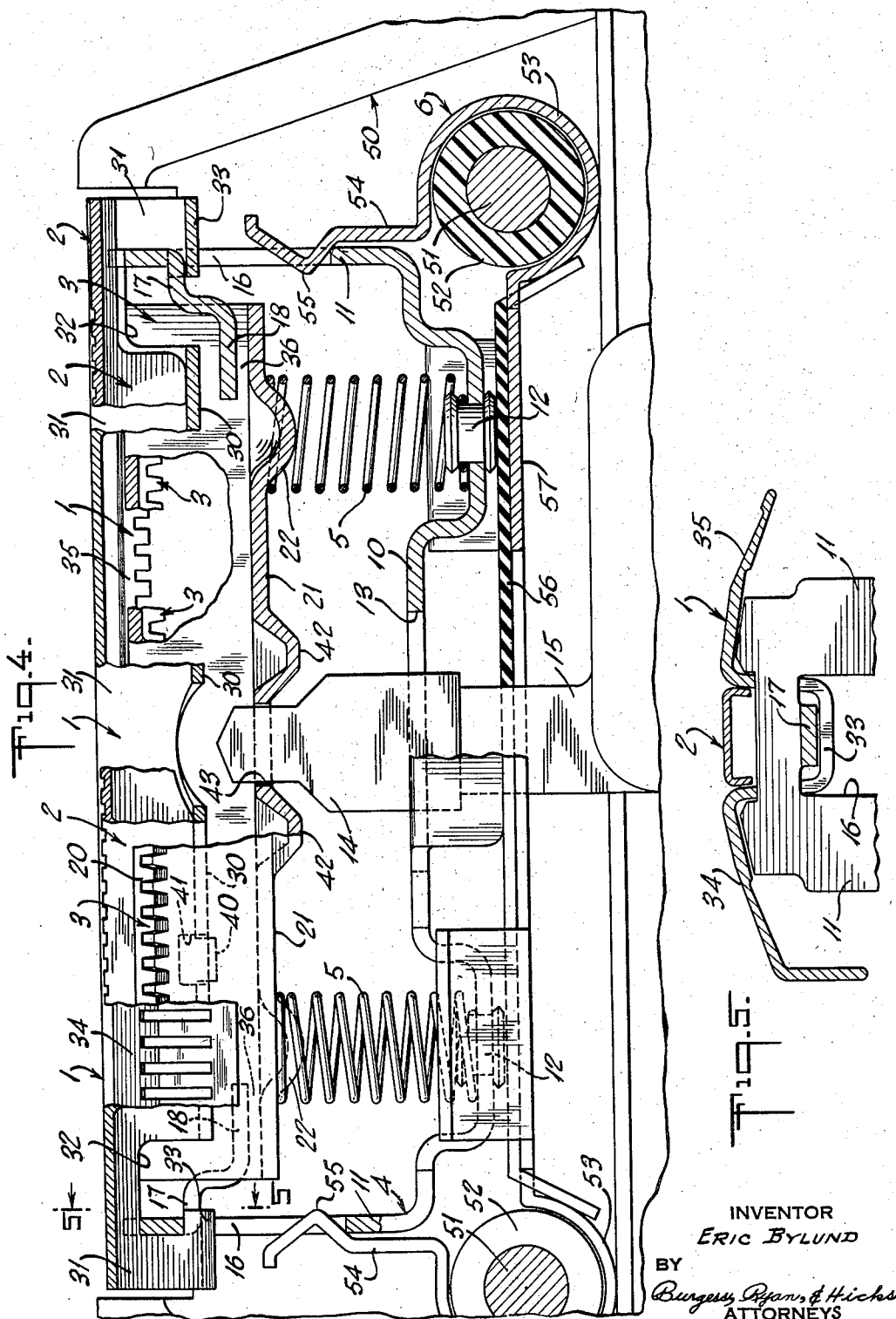
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ELECTRIC SHAVER SHEARING HEAD ASSEMBLY

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2 Claims. (Cl. 30-43)

This invention relates to electric shavers and in particular to the so-called shearing heads of such shavers which include an outer, stationary cutter and an inner, movable cutter.

The primary object of the invention is to provide a simple, economical construction of components capable of being put together as a sub-assembly, including the two cutters and spring means for holding them in engagement, for bodily attachment to and removal from the shaver motor housing or case.

The invention will be readily understood from the accompanying drawings in which:

Fig. 1 is an exploded, perspective view of the components of the head assembly plus its retaining spring;

Fig. 2 is a cross section on the line 2-2 of Fig. 3;

Fig. 3 is an enlarged, broken out, top plan view;

Fig. 4 is a broken out, vertical section, as one the line 4-4 of Fig. 3; and

Fig. 5 is a broken out, end elevation illustrating a detail.

The parts illustrated in Fig. 1 may be identified generally as the outer cutter 1 and its center filler piece 2, the inner cutter 3, the frame or yoke 4 with its inner cutter springs 5, all of which are assembled as below described to form the head unit, and the spring 6 which serves to hold the head unit on the shaver case.

The frame or yoke 4 is a sheet metal stamping having a base portion 10 and upstanding arms 11 at its opposite ends. In the preferred form illustrated it is what will be a spring yoke, meaning that the arms can be flexed toward or from each other somewhat but will return when released.

The springs 5 are preferably secured to the base of the yoke, as by rivets 12 (Fig. 4) and the center opening 13 serves to accommodate the head 14 of the usual actuating lever 15 by which the inner cutter is reciprocated. The arms of the yoke are stamped out to provide openings 16 and inwardly projecting cranked tabs forming shoulders 17 and offset shoulders 18. As will later appear, these shoulders form stops for limiting the outward movement of the respective cutters.

The inner cutter 3 is formed up to incorporate a central, longitudinally disposed channel with laterally projecting, toothed, flange portions 20. The base 21 of the channel is formed with projections 22 for encirclement by the springs 5 (Fig. 4) and a center opening to receive the actuating lever head. As will be recognized, the inner cutter can be assembled to the yoke between the yoke arms by passing one end of the channel base beneath one of the offset shoulders 18, flexing the adjacent yoke arm outwardly, lowering the other end of the channel base and then centering the cutter. The shoulders 18, when the inner cutter is thus centered between the yoke arms (as in Fig. 4) limit the upward movement of the inner cutter under the influence of springs 5. This arrangement has the advantage of making it possible to assemble one cutter at a time and, further, that when the outer cutter is removed the inner cutter is not projected

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outwardly and off the yoke by the inner cutter springs.

The outer cutter 1 is of the same general configuration as the inner cutter but is of a length to overlie the yoke arms. Adjacent their ends the center channel base 30 and side walls 31 are provided with bayonet or inverted L-shaped slots 32 (Fig. 1) the entrances to which are spaced apart a distance less than the distance between the yoke arms. Thus, to apply the outer cutter to the already assembled yoke and inner cutter, the yoke arms (one or both) are flexed somewhat toward one another so that their upper edges will enter the bayonet slots and then the arms are released. The end portions 33 of the outer cutter channel, it will be seen, are then positioned beneath and retained by the tab portions or shoulders 17 of the yoke arms.

In applying the outer cutter as just described, the toothed flanges 34, 35 of the outer cutter engage those of the inner cutter and depress it (compressing springs 5) so that when the outer cutter is positioned and then released, it is urged outwardly and its channel end portions 33 held in contact with shoulders 17 by the upward thrust of the inner cutter under the influence of its springs 5. However, the degree of offset of shoulders 18 in relation to shoulders 17 is such that when in the just described assembled position of the cutters and the yoke, the inner cutter channel base is spaced from the shoulders 18 as indicated at 36 in Fig. 4 so that when the inner cutter is reciprocated by the activating lever it is free of any contact with the yoke and engages only the nether surface of the outer cutter. As will be understood, relative lateral movement between the cutters is limited by the telescoping of the outer cutter channel in the inner cutter channel (Fig. 2).

In the form illustrated the channel of the outer cutter is closed by a filler piece 2 which has depending flanges to seat in the channel and tabs 40 which are passed through openings 41 in the channel base (Fig. 1) and bent over beneath to hold the filler piece in place (Fig. 2). It will be understood that the depressions 42 formed in the base of the inner cutter channel serve to reinforce the material on either side of the center opening 43.

As illustrated particularly in Fig. 4, the openings 16 in the yoke arms may serve also as latch openings to cooperate with latch means for securing the assembled head unit to a shaver case, a portion of which is indicated at 50 in Fig. 4. The details of construction of the remainder of the case form no part of the present invention.

In this form the case is provided, adjacent the head end, with posts 51 surrounded by collars 52 to receive and locate the end loop portions 53 of retaining spring 6. The upstanding spring arms 54 are spaced apart to accommodate the yoke arms 11 and are formed with reverse bend portions to create spring latch elements 55 to snap interlock with the lower edges of the yoke arm openings 16 and releasably hold the head unit. As shown, a thin layer 56 of rubber or other suitable material is interposed between the cross bar 57 of the spring and the base of the yoke. Its function is unimportant so far as the present invention is concerned and it need be stated only that its function is to block the entry of hair clippings into the motor cavity of the case.

It will be recognized that the individual components are such as to lend themselves to economical manufacture with a minimum of machinery, are readily put together and form a convenient sub-assembly ready for mounting on the shaver case.

In the light of the foregoing description of the principles of the invention, the following is claimed:

1. An electric shaver shearing head assembly comprising the combination of a spring yoke including an elongated base with resilient upstanding arms at its ends, an

outer cutter overlying and an inner cutter between the yoke arms, said cutters having longitudinally disposed center channel portions telescoped one into the other, bayonet slots formed in the channel portion of the outer cutter, said slots having inwardly and downwardly extending portions, the latter being open at their lower ends and spaced to receive portions of the yoke arms when the latter are flexed inwardly, and independently releasable means associated with the inner cutter and yoke arms for retaining the inner cutter against removal.

2. An electric shaver shearing head assembly comprising the combination of a spring yoke including an elongated base with resilient upstanding arms at its ends, an outer cutter overlying and an inner cutter between the yoke arms, said outer cutter having a longitudinally disposed center channel portion having bayonet slots formed therein, said slots having inwardly and downwardly ex-

tending portions, the latter being open at their lower ends and spaced to receive portions of the yoke arms when the latter are flexed inwardly, and inwardly directed tab means associated with the yoke arms, said tab means spaced to receive portions of the inner cutter when the yoke arms are flexed outwardly.

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