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3,408,736

MULTIPLE PART SHEARING HEAD FOR DRY SHAVERS

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Fig. 2

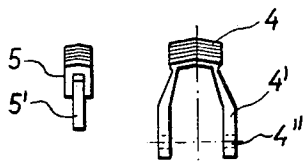


Fig. 1

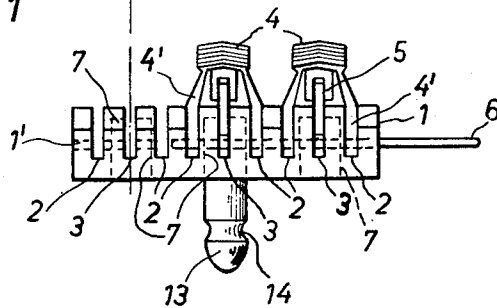
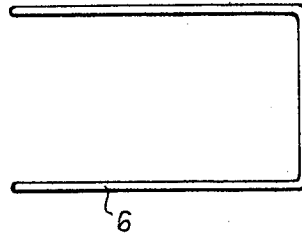


Fig. 3

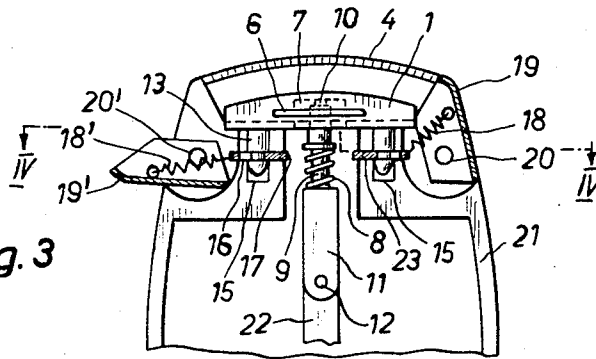
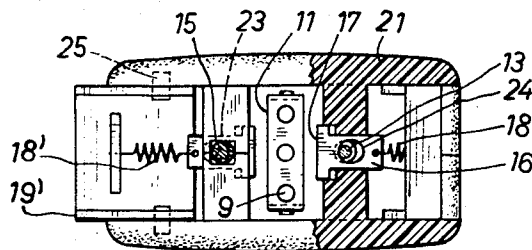


Fig. 4



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MULTIPLE PART SHEARING HEAD FOR DRY SHAVERS

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11,041/66

4 Claims. (Cl. 30—43.92)

ABSTRACT OF THE DISCLOSURE

A dry shaver having a multiple part shearing head carrying a plurality of elongate, outer stationary shearing elements and inner driven shearing elements. The outer shearing elements are inserted in corresponding grooves of a base plate and removably secured in the grooves by a locking member penetrating through aligned holes in the grooved portion of the base plate and in the outer shearing elements. The base plate is provided with circumferentially grooved plugs or bolts inserted into corresponding recesses in the shaver casing and removably secured in position by spring-biased locking pawls engaging said circumferential grooves in the bolts or plugs.

This invention relates to a multiple part shearing head for dry shavers of the kind having a plurality of elongate outer shearing elements of U-shaped cross section and associate elongate driven inner shearing elements resiliently applied against the outer shearing elements. In known shearing heads of this kind the outer shearing elements usually are secured to a portion of the shaver casing, for example by rivets. This type of fixing the outer shearing elements has the inconvenience that the shearing head can no longer be disassembled into its different components, thus rendering difficult a thorough cleaning of the shearing head after use of the shaver. It is also possible, when permanently securing the outer shearing element to the body of the shaver casing, that deformations will appear so that the inner shearing heads have to be reground to obtain the required precise fit within the outer elements, which results in the disadvantage that the inner shearing elements are no longer exchangeable.

It is an object of the invention to provide a multiple part shearing head for dry shavers in which are mentioned inconveniences are eliminated. According to the invention the outer shearing elements are arranged side by side on a common base plate and are engaged on the plate without constraint so as to be easily and separately removable therefrom.

Conveniently the outer shearing elements are each inserted in a corresponding grooves of the base plate and maintain therein by holding means, for example by the two branches of a U-shaped holding needle.

In a preferred embodiment of the invention the base plate also is removably mounted on the casing of the shaver, for example by means of spring pawls. Pivotaly mounted closure flaps covering the two lateral ends of the shear head when the shaver is operating may be held in opened and closed position by the same springs which hold the spring pawls in engaged position, one end of the springs being attached to the pawls and the opposite end to said closure flaps.

A preferred embodiment of the invention is illustrated in the accompanying drawings.

FIGURE 1 is an end view of a multiple part shearing head, partially shown in disassembled condition,

FIGURE 2 is a plan view of a holding element,

FIGURE 3 is a side view in elevation and partly in

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section of the shearing head, showing also a portion of the motor compartment with the front casing half removed.

FIGURE 4 is a section along the line IV—IV of FIGURE 3.

The illustrated shearing head comprises a base plate 1 provided with six identical parallel transverse grooves 2 and three parallel transverse grooves 3 which also are identical among themselves, a groove 3 being arranged between two grooves 2. The grooves 2 are arranged to receive the two spaced stems 4' of the three stationary outer, U-shaped cutters or shearing elements 4. The grooves 3 serve as guide for the stems 5' of the movable inner cutters or shearing elements 5.

In FIGURE 1 two outer cutters 4 are shown inserted in the base plate 1 and secured in their position by means of a U-shaped holding needle 6. The two parallel branches of the needle 6 penetrate through aligned bores 1' provided in the ribs formed in the base plate 1 between the grooves 2 and 3 and through corresponding bores 4'' in the stems of the outer cutters. The movable inner cutters 5 are inserted in the outer cutters 4. The third outer cutter 4 and the corresponding inner cutter 5 are shown removed from the base plate 1 and are separately represented. The holding needle 6 is partly pulled out of the base plate. This needle is conveniently formed with two branches as shown in FIGURE 2, penetrating through two series of aligned holes 1' and 4''.

The base plate 1 is provided with three recesses 7 situated in the longitudinal central axis and in the region of the grooves 3. A driver member 11 is pivotally mounted on an axis 12 and is operatively connected to the motor, not shown, by a lever arm 22. The driver member 11 carries three extensions 9 in spaced alignment, corresponding to the distance between the three recesses 7. Driving sleeves 10 are placed over the upper ends of the extensions 9 and are urged by springs 8 engaged on the extensions 9 between the sleeves and the member 11 into engagement with the recesses 7, in order to impart reciprocating motion, as is well known, to the movable inner cutters, not shown in FIGURE 3. The base plate 1 carries two identical bolts 13 provided each with a circumferential groove 14 forming a neck portion of reduced diameter. When the base plate is mounted on the casing 21 formed by two halves and containing the motor, the bolts 13 engage in corresponding recesses 15 of the casing. Sliding pawls 16 provided each with a projecting portion 17 and a slot 24 are engaged in recesses 23 of the casing. Springs 18 and 18' exert a pull on the pawls 16. The bolts 13 penetrate through the slots 24 in the pawls 16 and the springs 18 and 18' hold the pawls in engagement with the circumferential grooves 14 of the bolts. The projecting portions 17 of the pawls 16 limit the outward movement of the pawls 16 when the shearing head is removed from the casing 21, to enable insertion of the bolts 13 into the recesses 15 and through the slots 24 of the pawls 16. The outer ends of the springs 18 and 18' are attached to flaps 19 and 19', respectively, which are pivotally mounted in the two casing halves 21 by means of pins 25 engaging corresponding holes 20, 20' in the casing 21. The points of attachment of the springs 18, 18' on the flaps 19, 19' are so situated, that the flaps are maintained by spring pressure either in open or in closed position.

In the described and illustrated example of the shearing head according to the invention, the base plate 1 is shown as being removable from the casing of the shaver; the base plate could also be permanently secured to the casing, or it could form an integral part of the casing.

I claim:

1. A multiple part shearing head for dry shavers having

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a plurality of elongate, outer, stationary shearing elements of U-shaped cross-section and associated inner driven shearing elements resiliently applied against the outer shearing elements, wherein the outer shearing elements are inserted side by side in grooves of a common base plate and are locked in the grooves by means of a needle inserted through aligned holes provided in the outer shearing elements and in the base plate so that the outer shearing elements are arranged on the plate without constraint and are easily and separately removable therefrom.

vided in the grooved portion of said base plate and in said stationary shearing elements for holding said stationary shearing elements on the base plate, a plurality of bolts projecting from the other side of said base plate, said casing being recessed for receiving said bolts, said bolts being each provided with a circumferential groove, and spring biased pawls movably mounted in said casing to yieldingly engage said circumferential grooves of the bolts and lock said base plate to said casing.

2. A shearing head according to claim 1 in which each of the two stems of each of the outer U-shaped shearing elements is inserted in a corresponding groove of the base plate.

3. A shearing head according to claim 1 in which said needle is of U-shape.

4. A dry shaver having a multiple part shearing head according to claim 1 and comprising a casing, an elongate base plate removably secured to said casing, said base plate having one side thereof provided with first transverse grooves adapted to receive said outer, stationary shearing elements and with second transverse grooves arranged intermediate said first transverse grooves and adapted to receive said driven inner shearing elements, locking means penetrating through aligned transverse holes pro-

References Cited

UNITED STATES PATENTS

2,379,969	7/1945	Kobler et al.	30-41.6
2,793,430	5/1957	Carissimi	30-43.92
3,056,198	10/1962	Ream	30-43.1
3,191,298	6/1965	Locke	30-43.92
3,191,300	6/1965	Locke	30-43.92
3,220,109	11/1965	De Haan et al.	30-41.6
3,339,277	9/1967	Locke et al.	30-34.2
3,339,278	9/1967	Kleinman	30-43

FOREIGN PATENTS

811,207	4/1959	Great Britain.
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