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2,190,481

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Fig. 1.

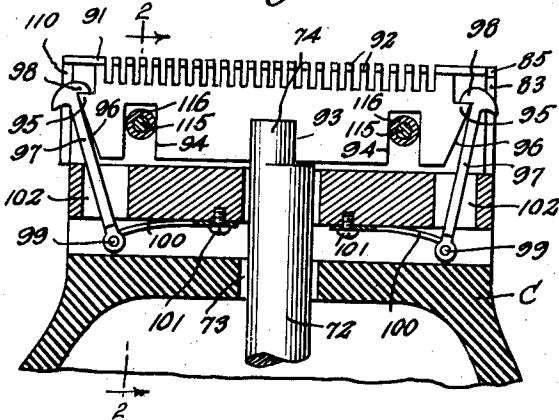


Fig. 2.

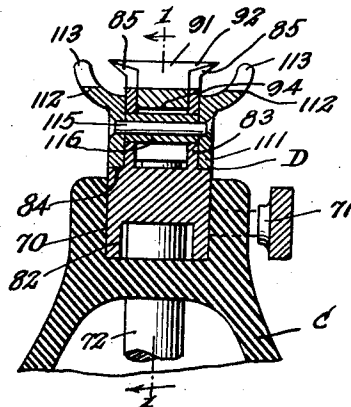


Fig. 3.

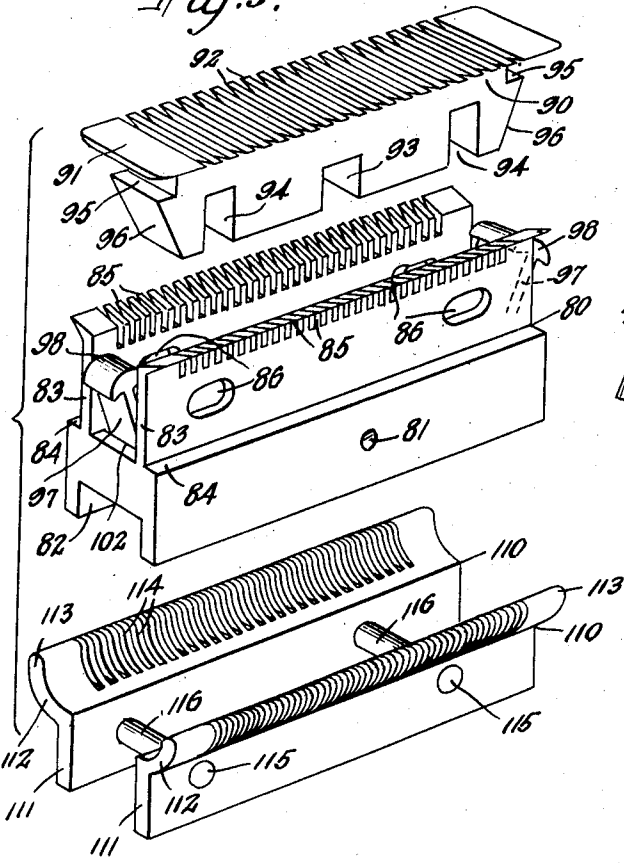
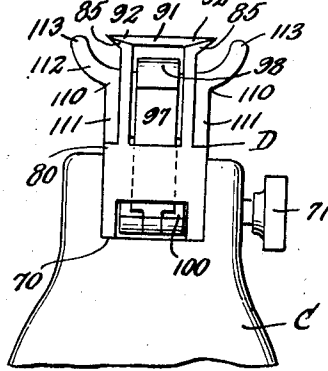


Fig. 4.



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5 Claims. (Cl. 30-43)

This invention relates to electric razors or dry shavers and is directed to an improved cutter head of the type which includes fixed and movable cutter elements respectively provided with complementary cutting teeth in which the teeth of the movable cutter element are adapted to engage the skin during the shaving operation.

The invention broadly comprehends in combination with a dry shaver of the indicated character, a guard element adapted to engage the skin which is connected to and movable with the movable cutter element and which is spaced from the cutting teeth thereof.

The invention further embodies in a dry shaver of this type a connection between the guard member and the movable cutter element which extends through a slotted portion of the fixed cutter element so as to guide the movable cutter and guard elements in their movement with reference to the fixed cutter element.

As a further feature the invention resides in the novel construction and assembly of the cutter elements so as to permit of ready disassembly of the movable cutter element from the fixed cutter element for the purpose of cleaning and regrinding the teeth thereof.

The invention further provides an improved means for releasably holding the movable element in assembled relation with the fixed element, which means also functions to resiliently impinge the confronting faces of the cooperating teeth of the fixed and movable cutter elements.

With the above and other objects and advantages in view, the invention is set forth in greater detail in the following specification, illustrated in the accompanying drawing and pointed out in the appended claims.

In the drawing:

Fig. 1 is a longitudinal vertical sectional view taken approximately on the line 1-1 of Fig. 2 and illustrating an adaptation of the invention.

Fig. 2 is a vertical transverse sectional view taken approximately on the line 2-2 of Fig. 1.

Fig. 3 is a collective perspective view illustrating the cutter and guard elements in separated juxtaposition.

Fig. 4 is an end view of the device as shown in Fig. 1.

Referring to the drawing by characters of reference, C designates generally the handle of a dry shaver which houses a motor, not shown, and which handle is provided at its upper end with a groove 70 into which extends the terminal of a set screw 71. The rotary shaft 72 of the motor extends upwardly through an opening 73

in the handle C and protrudes through and beyond the grooved upper end 70 and is provided with an eccentric pin 74 at the terminal thereof.

The cutter head D in this form of the invention consists of a fixed cutter element 80 which is of substantially H-shaped formation in cross section, the lower portion of which is of a width and length to snugly fit within the groove 70 and is provided on one side with a depression 81 to accommodate the terminal of the set screw 71 for releasably retaining the fixed cutter element within the grooved portion of the handle C.

The fixed element 80 defines a longitudinal groove 82 on its underside and is provided with a pair of parallel upstanding side walls 83, the outer surfaces of which are set back from the outer surfaces of the lower portion to provide longitudinal shoulders 84. The upper end portions of the side walls 83 are provided with laterally projecting edges 85 and are transversely slotted so as to define longitudinally spaced cutting teeth, the upper and lower faces of which converge outwardly. The walls 83 are formed with longitudinally spaced aligned pairs of slots 86, the purpose of which will be hereinafter set forth.

A movable cutter element, designated generally by the reference character 90, is of substantially T-shaped cross sectional configuration and of a size to snugly fit between the side walls 83 of the fixed cutter element and reciprocate longitudinally with reference thereto. The upper portion 91 of the movable cutter element is formed with laterally projecting edges 92, the lower surfaces of which correspond to the inclination of and flatly engage against the upper surfaces of the edges 85. The upper portion of the movable cutter element 90 is transversely slotted to provide cutting teeth complementary to the cutting teeth defined by slotting the upper portion of the walls 83.

The lower portion of the movable cutter element 90 is provided with a central notch 93 and longitudinally spaced notches 94, while the opposite longitudinal ends are each recessed to provide a shoulder 95 and an inwardly inclined face 96. The central notch 93 is adapted to be engaged by the eccentric pin 74 so that upon rotation of the motor shaft 72 the movable cutter element 90 is caused to reciprocate with reference to the fixed cutter element 80.

In order to detachably retain the movable cutter element in assembled relation with reference to the fixed cutter element and at the same time exert a tension to impinge the undersurfaces of

the teeth of the movable cutter element against the upper surfaces of the teeth of the fixed cutter element, a pair of latch arms 97 are provided, the upper hooked terminals 98 of which are adapted to engage with the shoulders 95 and the lower terminals of which are fulcrumed by pins 99 to the terminals of leaf springs 100 which are anchored at 101 to the underside of the fixed cutter element 80 within the longitudinal groove 82. The latch arms protrude through slots 102 formed in the web of the H-shaped fixed element 80 to provide a clearance for the rocking movement of the latch arms when the movable cutter element 90 is reciprocated.

15 The cutter head further includes a pair of guard elements, designated generally by the reference character 110 and each of which consists of a base portion 111 and a cross sectionally arcuate flange portion 112 which is curved upwardly and has the upper free terminal 113 thereof spaced from and parallel to the edges of the complementary cutting teeth of the fixed and movable cutter elements 80 and 90. The flanged portions are transversely slotted as at 114 to provide guard teeth corresponding to the cutting teeth.

In order to connect the guard elements 110 with the fixed cutter element 80 and to provide means whereby the same will be reciprocated by and with the movable cutter element 90 and have guided movement with reference to the fixed cutter element, transverse rivet pins 115 extend transversely through the base portions 111 of the guard elements 110, through the slots 86 in the walls 83 and through the notches 94 of the movable cutter element 90. The rivet pins between the inner surfaces of the bases 111 are surrounded by a hardened tubular sleeve 116 which prevents wear on the rivet pins. Obviously, the engagement of the notches 94 of the movable cutter element with the sleeves 116 of the rivet pins causes the guard elements 110 to be reciprocated by and with the movable cutter element so that the guard elements and the tooth portion of the movable cutter element are both in motion and move simultaneously while in con-

tact with the skin during the shaving operation.

What is claimed is:

1. A cutter head for dry shavers including fixed and movable cutter elements having complementary cutting teeth, and a reciprocatory guard connected with the movable cutter element to move therewith and adapted to engage with the skin.

2. A cutter head for dry shavers including fixed and movable cutter elements having complementary cutting teeth in which the teeth of the movable cutter element are adapted to engage with the skin, and a reciprocatory guard element connected to and movable with the movable cutter element.

3. A cutter head for dry shavers including fixed and movable cutter elements having complementary cutting teeth in which the teeth of the movable cutter element are adapted to engage with the skin, and a reciprocatory guard element connected to and movable with the movable cutter element, said guard element having a toothed free edge spaced from and parallel to the teeth of the movable cutter element and adapted to engage with the skin.

4. A cutter head for dry shavers including a pair of inner and outer interfitting relatively longitudinally reciprocable cutter elements having complementary cutting teeth, and a guard element having a free edge terminal spaced from and parallel with the cutting teeth and connected to the outer cutter element for reciprocation therewith.

5. A cutter head for dry shavers including a pair of interfitting fixed and reciprocable cutter elements having complementary cutting teeth, keeper means at the opposite ends of the movable cutter element and rockable spring pressed latches adjacent the opposite ends of the fixed cutter element and adjustably engaged with the keeper means of the movable cutter element for assembling the cutter elements and for drawing and maintaining the confronting surfaces of the cutting teeth into engagement with each other.

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