

June 24, 1941.

J. A. HANLEY

2,246,586

DRY SHAVING CUTTER MOUNT

Filed Nov. 9, 1939

FIG. 1.

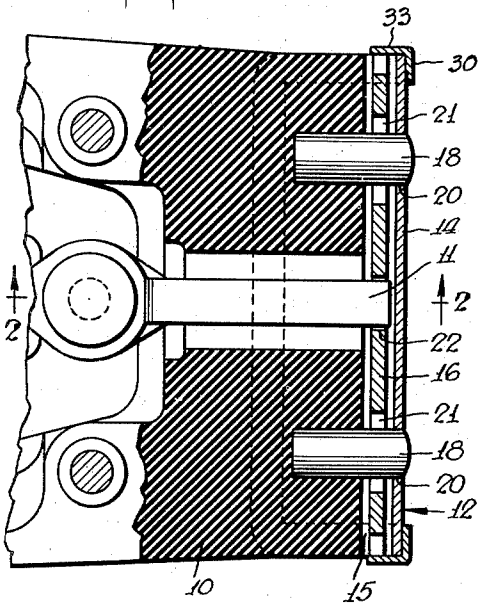


FIG. 2.

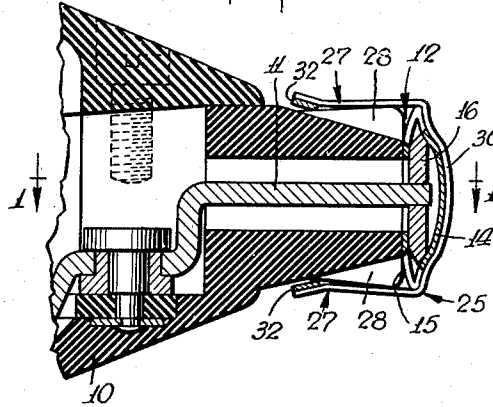


FIG. 3.

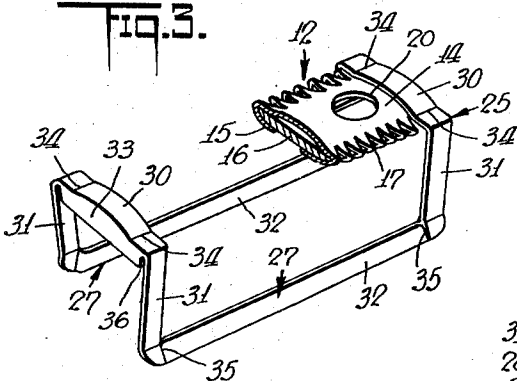


FIG. 4.

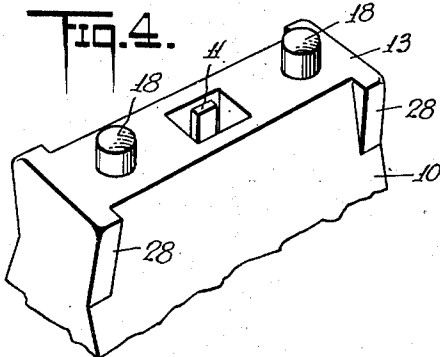
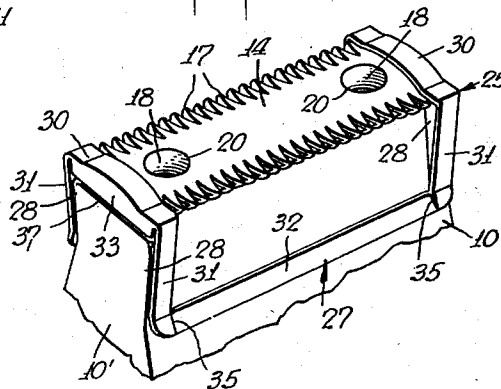


FIG. 5.



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2,246,586

DRY SHAVING CUTTER MOUNT

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Application November 9, 1939, Serial No. 303,597

16 Claims. (Cl. 30-43)

The present application relates to dry shaving apparatus, and is more particularly concerned with the means for mounting the cutting or shearing assembly into operative relationship therewith.

One object of the present invention is to provide new and improved means of simple and inexpensive construction, for mounting the shearing plate or cutting assembly of a dry shaving apparatus.

Another object is to provide mounting means for the shearing plate assembly of a dry shaving apparatus, by which the shearing plates are subjected to no distorting pressure, although securely mounted and operatively associated with the motor, and are readily assembled and, whenever occasion arises, disassembled all without resort to tools.

Various other objects of the invention will be apparent from the following particular description, and from an inspection of the accompanying drawing, in which—

Fig. 1 is a longitudinal cross-section on an enlarged scale through the cutting end of a dry shaving apparatus, showing the shearing assembly mounting embodying the present invention, and taken on line 1-1 of Fig. 2.

Fig. 2 is a view in longitudinal cross-section taken on line 2-2 of Fig. 1.

Fig. 3 is a perspective view of the shearing assembly mounting clip with an associated fragment of the shearing assembly.

Fig. 4 is a fragmentary perspective view of the operating end of the motor casing, and

Fig. 5 is a perspective assembly view of the operating end of the dry shaving apparatus shown with the shearing assembly mounted in position.

The present case is a continuation in part of my copending application Serial No. 155,844, filed July 27, 1937 now Patent No. 2,231,466, issued Feb. 11, 1941.

Referring now to the drawing, the dry shaving apparatus comprises a motor casing 10 of suitable shape for convenient retention in the hand, and a motor assembly enclosed therein and having a reciprocable arm or lever 11 for actuating the movable part of the shearing assembly 12, as will be hereinafter described. The casing 10 desirably tapers at its forward end to a narrow generally rectangular support 13 for the shearing assembly 12 and its corners and edges are rounded as shown in Fig. 4. The motor casing and the motor assembly by themselves form no part of the present invention, and may be of suitable

construction such as that shown in the copending application above identified.

The shearing head 12 by itself is not per se claimed herein since it is the subject matter of my prior U. S. Patents No. 2,102,529, issued December 14, 1937, and No. 2,151,965, issued March 28, 1939. It may be briefly noted that such head comprises a pair of thin plates including an outer sheathing or guard plate 14, having inturned flanges 15 straddling the serrated edges of an inner shearing plate 16, and notches at the edges to form teeth 17. The inturned flanges 15 of the outer plate abut the end 13 of the casing 10, while the cutting edges 17 protrude laterally beyond the reduced forward end of the casing. Preferably short studs 18 are set into the forward end of the casing, and serve as positioning means for the shearing assembly, said studs fitting snugly in corresponding apertures 20 in the outer or fixed shearing plate 14, and extending through elongated slots 21 in the inner plate 16, to permit and guide reciprocation thereof by the extremity of the operating lever 11, which extends into a corresponding hole 22 therein. Desirably the parts making up the shearing head are of stainless steel and are therefore of low cost, especially as the need for plating and polishing operations is obviated.

Releasable clip means 25 is provided for fixing the shearing assembly to the casing 10, and maintaining it in cooperative relationship with the end of the lever 11. This means comprises a generally U-shaped spring metal clip, straddling the shearing assembly, and having a pair of jaws 27 embracing the casing 10. These jaws 27 desirably converge inwardly, and straddle key lugs, ledges or enlargements 28, molded integrally with the outwardly converging casing end, and diverging outwardly towards the extremity thereof. Accordingly, the clips will readily snap over the casing end and become anchored at the lateral key ledges 28 in latch engagement therewith, thereby maintaining the shearing assembly in place against the casing end 13. At the region of the keying lugs 28, the casing end 13 is of the full width of the shearing assembly, so that said assembly is effectively held in position against rocking displacement.

The clip is generally in the form of a rectangular open metal frame desirably stamped from a single metal blank, and transversely bent to afford the U-shaped jaws 27 and a pair of connecting straps 30 therebetween. Each of the jaws 27 comprises a pair of lateral bars 31, integral at one end with the ends of the straps 30, and a

longitudinal beam 32, interconnecting said lateral bars at the other end. The clip is rectangular in plan view, and U-shaped in both side and end views.

Each strap 30 is desirably angle-shaped in cross-section, having unitary therewith a narrow web 33 the length of which is the same as that of the corresponding strap 30. Web 33 preferably does not quite reach lateral bars 31 as shown in Fig. 3, there being a rounded bay 36 between the end of web 33 and the adjacent edge of bar 31. Desirably, the straps 30 are indented as at 34 to conform to the bevelled shape of the fixed shearing plate 14.

The clip can readily be fabricated by appropriate bending of a single metal stamping and without soldering or welding operation. If desired however, the ends of web 33 could be soldered or welded to bars 31 for rigidity of the box corners of the clip.

In mounted position of the clip, the transverse straps 30 seat on the extremities of the shearing assembly beyond the shearing edges thereof, while the lateral bars 31 of the jaws 27 embrace the casing at the key lugs 28 and serve to latch the clip and with it the shearing unit to the casing. The longitudinal beam elements 32 of the jaws 27 are desirably depressed inwardly of the bars 31 as at 35 and serve merely to connect the ends of lateral bars 31. They are not in engagement with the case, but clear the same as best shown in Fig. 2. Were the beam 32 resiliently to engage the casing, there would be a tendency, due to the convergence of the casing at that region, for the clip to be resiliently urged to relax its hold upon the case.

It is seen that the mounting clip described is of open construction to expose the shearing edges and the entire intervening area of the shearing assembly, and its two webs 33 cover the sharp corners of said assembly so as to protect the skin against possibility of abrasion. These webs 33 in the assembled construction are desirably in the corresponding planes of the walls 10' of the casing, but the free edge of each web 33 is spaced as at 37 from the casing wall, so that there is eliminated the possibility of interfering with the security with which the clip jaws retain the shearing assembly upon the casing.

In resiliently clamping the extremities of the shearing assembly with respect to the keying lugs 28 of the casing, the clip described avoids the possibility of any locally applied distorting strain, which might interfere with the effectiveness of the cutting or shearing operations. The clip secures and mounts the shearing assembly without imposing any undue frictional load upon the motor in driving the inner shearing plate 16. It is readily applied without the need for skill, and readily removed whenever occasion arises, without the need of any tool.

As many changes could be made in the above construction, and many apparently widely different embodiments of this invention can be made without departing from the scope of the claims herein, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a dry shaving apparatus, a motor casing having latch conformations thereon, a shearing head on said casing, and means for removably

mounting said shearing head on said casing, including a unitary spring clip removable from the shearing head and having latch engagement with said conformations.

2. In a dry shaving apparatus, a motor casing having latch conformations thereon on opposite sides thereof near one end, a shearing head on said casing end, and means for removably mounting said shearing head on said casing end, including a unitary U-shaped spring clip removable from said shearing head and having jaws in latch engagement with said conformations.

3. In a dry shaving apparatus, a motor casing, a shearing head on one end of said casing, and means for removably mounting said shearing head on said casing including a U-shaped clip straddling said casing, and comprising a strap removably seated on said shearing head, and a pair of side members flanking said shearing head and said casing end, and having shearing head retaining engagement with said casing end.

4. In a dry shaver, a casing having a narrow rectangular end, a relatively flat shearing plate assembly resting upon said end with lateral shearing conformations protruding therebeyond, said assembly including an inner and an outer shearing plate, operating means, within the casing coacting with the inner plate, and means for maintaining in fixed relation with respect to said casing the outer of said plates, said means comprising a clip structure including transverse straps removably extending over the ends of said fixed plate and U-shaped parts connecting the corresponding ends of the straps, said casing having conformations with which the lateral bars of said U-shaped parts snap into engagement.

5. A dry shaver assembly of the type comprising an insulating handle casing having a rectangular shearing plate assembly superposed over the end thereof with the lateral shearing edges thereof protruding; the combination of removable resilient mounting means for said shearing assembly, said mounting means constituting a clip comprising strap members engaging the ends of the shearing assembly and lateral U-shaped spring clip jaws straddling the ends of said assembly, the casing having a key conformation for snapping lock engagement with said clip jaws, said clip having an open frame conformation between the strap members thereof, leaving the shearing edges exposed.

6. In an automatic shaver, an insulating handle casing comprising a narrow rectangular end, a flat shearing assembly against said end and a frame-shaped spring clip including straps extending across the ends of the shearing assembly and U-shaped open lateral clip jaw members extending along the lateral walls of the casing and across the width thereof, said casing having lateral outwardly flaring lugs over which the legs of the U-shaped clip jaw members are snapped.

7. In an automatic shaver, an insulating handle casing comprising a narrow rectangular end, a flat shearing assembly against said end and a frame-shaped clip member including end straps engaging the extremities of the shearing assembly, said straps being angle-shaped in cross-section and overlapping the end edges of the assembly, said clip having spring jaw members unitary with said straps and connecting the latter, said jaw members converging inwardly, said closing having corresponding conformations for spring clip engagements, with the shearing

conformations of the shearing assembly exposed for action between the strap members of the clip member.

8. In apparatus of the character described, an insulating handle casing having walls converging toward each other to a narrow rectangular operating end, said casing presenting outwardly widening keying lugs along the edges of said converging conformations, a flat shearing plate assembly resting on said narrow end of the casing with the lateral shearing edges thereof extending beyond the same and a removable open frame spring clip member straddling said plate assembly and having inturned clip jaws snapped over said keying lugs.

9. In apparatus of the character described, an insulating handle casing having lateral walls converging toward each other to a narrow rectangular operating end, said casing presenting outwardly widening keying lugs along the edges of said converging conformations, a flat shearing plate assembly resting on said narrow end of the casing with said lateral edges thereof extending beyond the same, and a removable open frame spring clip member straddling said plate assembly and having inturned clip jaws snapped over said keying lugs, each of said jaws including lateral bars engaging the respective keying lugs and connecting straps having clearance with respect to the handle casing.

10. In apparatus of the character described, an insulating handle casing having lateral walls converging toward each other to a narrow rectangular operating end, said casing presenting outwardly widening keying lugs along the edges of said converging conformations, a flat shearing plate assembly resting on said narrow end of the casing with the lateral shearing edges thereof extending beyond the same, and a removable open frame spring clip member straddling said plate assembly and having inturned clip jaws snapped over said keying lugs, said spring clip member comprising a pair of straps extending along the ends of the shearing assembly, each of said straps having a down-turned outer web, said webs extending over the ends of the shearing assembly.

11. In a dry shaving apparatus, a motor casing, a shearing head on one end of said casing, and means for removably mounting said shearing head on said casing, including a clip having a pair of end sections engaging the ends of said shearing head, and formed at each side with three webs intersecting substantially at a point to form a corner enclosing a corresponding side portion of said shearing head, and a bar interconnecting said sections.

12. In a dry shaving apparatus, a motor casing, a shearing head on one end of said casing, and means for removably mounting said shearing head on said casing, including a clip having a pair of end sections engaging the ends of said shearing head, and formed at each side with three webs intersecting substantially at a point to form a corner enclosing a corresponding side portion of said shearing head, two of said webs being each unitary with the third web, but being spaced at their adjacent edges, and a bar interconnecting said sections.

13. In a dry shaving apparatus, a motor casing, a shearing head on one end of said casing, and means for removably mounting said shearing head on said casing, including a clip having a pair of end sections engaging the ends of said shearing head, and formed at each side with three webs intersecting substantially at a point to form a corner enclosing a corresponding side portion of said shearing head, jaws extending from said sections, and having a shearing head retaining engagement with said casing, and one of the webs of each corner forming an integral continuation of a corresponding jaw, and means interconnecting said sections.

14. As an article of manufacture a spring clip unit for an automatic shaver, said unit comprising a frame generally rectangular in plan view and U-shaped in side and in end view, the laterally exposed U-shaped members constituting spring clip jaws, the connections between said jaws constituting end straps for engaging a shearing plate assembly.

15. As an article of manufacture, a spring clip unit for a dry shaver, said unit being U-shaped in end view, and having strap portions adapted to seat upon the ends of the shearing head on the shaver, and a pair of converging side jaws unitary with and connecting said straps.

16. As an article of manufacture, a clip for removably securing a shearing head on one end of a motor casing of a dry shaver, said clip comprising a pair of end straps, each of which has a web in angular relationship therewith and extending substantially the full length of said strap, a bar at each end of said strap integral therewith, and forming therewith a corner for enclosing the side portions of the shearing head, said bar being spaced slightly from the adjacent end of the corresponding web and jaws adapted to have shearing head retaining engagement with the casing head, each of said jaws being integral with the corresponding ends of the straps.

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