

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN OR RELATING TO LONG-HAIR CUTTERS OR CLIPPERS FOR DRY SHAVERS

(71) We, BRAUN AKTIENGESSELLSCHAFT, a German Body Corporate, of 22 Rüsselsheimer Strasse, 6 Frankfurt-am-Main, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a long-hair cutter or clipper for dry shavers, with a reciprocating toothed cutting blade which is maintained by spring loading adjacent a cutter-associated comb.

Cutting arrangements of this character are as a general rule provided as an addition to the dry shaver or to the portion thereof for cutting short hairs, and serve to remove individual longish hairs of beard type and to cut hair to a neat contour in the area of the temples and neck. A satisfactory cutting effect, however, can only be achieved when both cutting parts of the long-hair cutter, namely the cutter-associated comb and the cutting blade, lie adjacent each other along their entire length, with a specific pressure which is as uniform as possible. In the individual assembling of these cutting arrangements that has been customary hitherto and in which the parts are fastened in succession to the shaver casing, for example by means of screwing or riveting, these requirements cannot be met. In particular, in the case of screw connections which pass through the cutter-associated comb, some stressing of this part of the cutter cannot be avoided, and high rejection rates, especially in mass-production, tend to arise.

The invention aims to provide a long-hair cutter or clipper which is easily assembled and in which the above-mentioned inadequacies are eliminated.

According to the invention the cutter-associated comb and the cutting blade together with a supporting member are combined into a functional modular unit adapted to be fastened as a whole to the casing of the

shaver, the toothed cutting blade lying between a face of the comb and a guiding and spring-loading face of the supporting member, and the comb, along the length thereof in the direction of blade movement, having a flange lying against a side face of the supporting member and providing a mounting face for the attachment of the cutter or clipper.

The formation according to the invention of the long-hair cutter in a modular form with a supporting member separate from the shaver casing makes pre-assembly and functional checking of the whole module possible independently of and unimpeded by the remaining sub-assemblies of the dry shaver. The provision of a flange on the comb to provide a mounting face ensures freedom from stresses tending to distort the operative face of the comb. The flange and the supporting member may be riveted or otherwise fastened together and apertured for screwing or bolting to the dry shaver. Hence assembly is facilitated and the modular unit is held in one piece and also attached to the dry shaver by fastenings exerting clamping forces at points spaced from the engaging faces of the comb and the cutting blade and in directions more or less parallel to those faces.

Preferably guides for the cutting blade are provided in the form of studs projecting upwardly from the supporting member and engaging in slots in the cutting blade. These studs may be integral with or inserted individually in the supporting member. The supporting member may be of a synthetic resin, in which case the studs or other guides are preferably moulded integrally with the supporting member. In order to ensure correct positioning of the movable cutting blade with respect to the guide studs and to avoid any tilting, it is desirable that the stud surfaces cooperating with the slots should be made convex. The convex surfaces may be formed on inserted or integral studs or provided by convex heads on the studs.

Between the free ends of springs provid-

[Price 25p]

ing the spring loading and the cooperating face of the cutting blade there may be interposed a strip of a material offering low frictional resistance, to reduce stresses along the cutting blade and to ensure a uniform specific pressure against the cutter-associated comb resulting from the spring loading, the friction effects being minimised.

One embodiment of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a section through the cutter head of the dry shaver,

Figure 2 is a front view of the module constituting the long-hair cutter,

Figure 3 is a section taken on the line III—III of Figure 2,

Figure 4 is a section taken on the line IV—IV of Figure 2, and

Figure 5 illustrates the modification of one detail according to Figure 3.

Upon the upper part 1 of the casing of a dry shaver there is detachably mounted a cutter-head frame 2 open at the top, and in such frame a perforated foil 3 is fastened by means of threaded studs 4 and screws 4a in conventional manner. From the casing there projects upwardly the oscillatable lever 5 of a drive motor (not shown) accommodated in the casing. A cutter assembly 7 is mounted on the end 6 of the oscillatable lever 5, such cutter assembly being pressed by a spring 8 against the perforated foil 3.

Along one side of the opening 9 in the cutter-head frame 2 there is installed a long-hair cutter 10, shown in greater detail in Figures 2 to 5, the cutter consisting essentially of a fixed cutter-associated comb 11 and a reciprocable toothed cutting blade 12 located beneath the comb, the blade being driven by means of an arm 14 of the motor-actuated oscillatable lever 5 through the intermediary of a fork 13 which straddles the arm.

The support-providing element of the long-hair cutter is a supporting member 15 which fulfils a plurality of functions. By means of a downwardly bent flange 16 that extends over the entire width of the long-hair cutter (that is the full comb-length in the direction of blade movement, as shown in Figure 2) the cutter-associated comb 11 is, through the agency of two rivets 17, fastened to the supporting member 15 beneath and approximately parallel to the plane of the engaging faces of the comb 11 and the blade 12. On the face of the supporting member facing the blade 12, there are integrally formed two studs 18 and 19 which engage with longitudinal slots 20 (Figure 2) in the cutting blade 12 and guide such blade in the direction of movement. Alternatively the studs may be separately formed and pressed or screwed into position as shown in Figure 5.

In order to prevent any tilting of the cutting blade 12, it is advantageous to provide

the stud with a convex head 18a as shown in Figure 5. In the structure shown in this figure, the shank 18b of the stud is inserted in the supporting member 15. Further, recesses 21, 22 and 23 are provided in the supporting member to act as abutments for three pressure-exerting springs 24, 25 and 26.

Between the free ends of the springs 24, 25 and 26 and the under surface of the cutting blade 12 there is arranged a smooth-faced strip 27 of a material offering low frictional resistance, for example a synthetic resin, the strip ensuring uniform specific pressure of the cutting blade on the cutter-associated comb. In order to secure the proper positioning of the strip 27 upon the springs there are projections 28, 29 and 30 (Figures 2 and 4) integrally formed on the strip. Instead of the helical springs shown, an extended wire spring or leaf spring may be employed.

The cutter-associated comb and the cutting blade render mutual support to each other in and along the front region of contact by means of their teeth 11a and 12a respectively. In the rear region one or more projections 12b on the upper side of the cutting blade 12 serve a similar purpose.

The whole long-hair cutter module shown in Figures 2 to 5 forms a self-contained unit, compact and of small dimensions transverse to its length. Moreover the unit can be pre-assembled and pre-tested, and can, as is illustrated in Figure 1, be most advantageously secured on the inner side of the frame 2 of the cutting head by means of the screws 4a in the threaded studs 4, which screws 4a pass through holes 32 and 33 in the flange 16 and simultaneously hold the perforated foil 3 in place.

WHAT WE CLAIM IS:—

1. A long-hair cutter or clipper comprising a reciprocable toothed cutting blade spring-pressed against a comb, and arranged with a supporting member as a functional modular unit attachable to a dry shaver so as to be driven by a shaver motor, the toothed cutting blade lying between a face of the comb and a guiding and spring-loading face of the supporting member, and the comb, along the length thereof in the direction of blade movement, having a flange lying against a side face of the supporting member and providing a mounting face for the attachment of the cutter or clipper.

2. A long-hair cutter or clipper according to claim 1, wherein said flange and the supporting member are fastened together and apertured for screwing or bolting to a dry shaver.

3. A long-hair cutter or clipper according to claim 1 or 2, wherein the cutting blade has a bent-over forked extension passing through a gap in said flange to straddle a motor-driven lever arm of a shaver to which the cutter or clipper is in use attached.

4. A long-hair cutter or clipper according to any preceding claim, including guides for

ing the spring loading and the cooperating face of the cutting blade there may be interposed a strip of a material offering low frictional resistance, to reduce stresses along the cutting blade and to ensure a uniform specific pressure against the cutter-associated comb resulting from the spring loading, the friction effects being minimised.

One embodiment of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a section through the cutter head of the dry shaver,

Figure 2 is a front view of the module constituting the long-hair cutter,

Figure 3 is a section taken on the line III—III of Figure 2,

Figure 4 is a section taken on the line IV—IV of Figure 2, and

Figure 5 illustrates the modification of one detail according to Figure 3.

Upon the upper part 1 of the casing of a dry shaver there is detachably mounted a cutter-head frame 2 open at the top, and in such frame a perforated foil 3 is fastened by means of threaded studs 4 and screws 4a in conventional manner. From the casing there projects upwardly the oscillatable lever 5 of a drive motor (not shown) accommodated in the casing. A cutter assembly 7 is mounted on the end 6 of the oscillatable lever 5, such cutter assembly being pressed by a spring 8 against the perforated foil 3.

Along one side of the opening 9 in the cutter-head frame 2 there is installed a long-hair cutter 10, shown in greater detail in Figures 2 to 5, the cutter consisting essentially of a fixed cutter-associated comb 11 and a reciprocable toothed cutting blade 12 located beneath the comb, the blade being driven by means of an arm 14 of the motor-actuated oscillatable lever 5 through the intermediary of a fork 13 which straddles the arm.

The support-providing element of the long-hair cutter is a supporting member 15 which fulfils a plurality of functions. By means of a downwardly bent flange 16 that extends over the entire width of the long-hair cutter (that is the full comb-length in the direction of blade movement, as shown in Figure 2) the cutter-associated comb 11 is, through the agency of two rivets 17, fastened to the supporting member 15 beneath and approximately parallel to the plane of the engaging faces of the comb 11 and the blade 12. On the face of the supporting member facing the blade 12, there are integrally formed two studs 18 and 19 which engage with longitudinal slots 20 (Figure 2) in the cutting blade 12 and guide such blade in the direction of movement. Alternatively the studs may be separately formed and pressed or screwed into position as shown in Figure 5.

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the stud with a convex head 18a as shown in Figure 5. In the structure shown in this figure, the shank 18b of the stud is inserted in the supporting member 15. Further, recesses 21, 22 and 23 are provided in the supporting member to act as abutments for three pressure-exerting springs 24, 25 and 26.

Between the free ends of the springs 24, 25 and 26 and the under surface of the cutting blade 12 there is arranged a smooth-faced strip 27 of a material offering low frictional resistance, for example a synthetic resin, the strip ensuring uniform specific pressure of the cutting blade on the cutter-associated comb. In order to secure the proper positioning of the strip 27 upon the springs there are projections 28, 29 and 30 (Figures 2 and 4) integrally formed on the strip. Instead of the helical springs shown, an extended wire spring or leaf spring may be employed.

The cutter-associated comb and the cutting blade render mutual support to each other in and along the front region of contact by means of their teeth 11a and 12a respectively. In the rear region one or more projections 12b on the upper side of the cutting blade 12 serve a similar purpose.

The whole long-hair cutter module shown in Figures 2 to 5 forms a self-contained unit, compact and of small dimensions transverse to its length. Moreover the unit can be pre-assembled and pre-tested, and can, as is illustrated in Figure 1, be most advantageously secured on the inner side of the frame 2 of the cutting head by means of the screws 4a in the threaded studs 4, which screws 4a pass through holes 32 and 33 in the flange 16 and simultaneously hold the perforated foil 3 in place.

WHAT WE CLAIM IS:—

1. A long-hair cutter or clipper comprising a reciprocable toothed cutting blade spring-pressed against a comb, and arranged with a supporting member as a functional modular unit attachable to a dry shaver so as to be driven by a shaver motor, the toothed cutting blade lying between a face of the comb and a guiding and spring-loading face of the supporting member, and the comb, along the length thereof in the direction of blade movement, having a flange lying against a side face of the supporting member and providing a mounting face for the attachment of the cutter or clipper.

2. A long-hair cutter or clipper according to claim 1, wherein said flange and the supporting member are fastened together and apertured for screwing or bolting to a dry shaver.

3. A long-hair cutter or clipper according to claim 1 or 2, wherein the cutting blade has a bent-over forked extension passing through a gap in said flange to straddle a motor-driven lever arm of a shaver to which the cutter or clipper is in use attached.

4. A long-hair cutter or clipper according to any preceding claim, including guides for



the cutting blade in the form of studs projecting from the supporting member and engaging in slots in the cutting blade.

5 5. A long-hair cutter or clipper according to claim 4, wherein the stud surfaces cooperating with the slots in the cutting blade are convex.

10 6. A long-hair cutter or clipper according to claim 4 or 5, wherein the guides are formed integrally with the supporting member.

7. A long-hair cutter or clipper according to any preceding claim, wherein the supporting member is of synthetic resin.

15 8. A long-hair cutter or clipper according to any preceding claim, wherein a strip of material offering low frictional resistance is interposed between springs providing the

spring loading and the cooperating face of the cutting blade.

9. A dry shaver incorporating a long-hair cutter or clipper as claimed in any preceding claim. 20

10. A long-hair cutter or clipper for dry shavers substantially as herein described with reference to the accompanying drawings. 25

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