

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) HAIR TRIMMER ATTACHMENT FOR ELECTRIC SHAVERS

(71) We, SPERRY RAND CORPORATION, a corporation organised and existing under the laws of the State of Delaware, United States of America of 1290 Avenue of The Americas, New York, New York 10019, United States of America, do hereby declare this 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:—

This invention is directed to new and useful improvements in electric shavers and more particularly to a hair trimmer cutter head attachment for such a shaver.

Electric shavers are known to include cutter heads that comprise a stationary outer cutter member having a plurality of hair receiving openings and a movable inner cutter member. In shaving, hair is removed as it enters the openings in the outer cutter member and it is shorn off by the movable inner cutter. Problems are presented in using such a shaver to trim sideburns and moustaches as it is difficult to manipulate the cutter head of the shaver around these areas.

One known shaver is equipped with an extra cutter head arrangement intended for use solely as a hair trimmer. The hair trimmer comprises a fixed elongated cutter having comb-like teeth projecting from the shaver casing. The trimmer further includes an elongated movable cutter having similarly arranged teeth in cutting engagement with the fixed cutter teeth. As the trimmer teeth project from the shaver casing it is a fairly simple matter to manipulate the shaver around sideburns and moustaches for trimming purposes. However, this hair trimmer device operates simultaneously with the cutter head that is used for shaving. Consequently, the movable hair trimmer cutter is in constant movement during shaving whether or not trimmer use is desired. In

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another known shaver, the shaving cutter head is detachable from the shaver casing for interchange with a separate and detachable trimmer cutter head having projecting comb-like cutter teeth. The detachable trimmer device can be substituted in place of the shaving cutter head when a hair trimming operation is desired. However, this trimmer device comprises in addition to the cutters and cutter drive member, a separate mounting plate to support the movable cutter and a plurality of springs and spring guides provided in the mounting plate to bias the movable cutter into cutting engagement with the fixed cutter. Manufacture and assembly of this device is costly and time consuming due to the intricate arrangement of springs and spring guides therein. It is an object of this invention to provide a long-hair trimmer for shavers.

Another object is to provide a long-hair trimmer attachment for an electric shaver wherein the trimmer attachment includes means for biasing the cutter members therein into cutting engagement.

A further object is to provide a long-hair trimmer attachment having means for securing the fixed and movable cutters within the hair trimmer attachment casing.

A still further object is to provide a hair trimmer attachment having means for oscillating the movable cutter. Still another object is to provide a springless hair trimmer cutter head attachment for an electric shaver, which attachment serves as an extension of the shaver casing.

There is provided by the present invention an auxiliary long-hair trimmer for electric shavers comprising,

- a cap adapted to be mounted in a shaver casing,
- a fixed comb-like member having a set of spaced cutter teeth,
- a movable cutter member having a second set of spaced teeth formed

thereon and mounted to provide co-
operation between said sets of teeth to
cut long hairs, said movable cutter
member having a bridge portion extend-
ing away from said second set of teeth,
said portion further having an end
remote from said second set of teeth,
d) means mounting said movable cutter
member for movement with respect
to said fixed comb-like member, said
mounting means supporting said mov-
able cutter member at said bridge
portion for movement relative to said
fixed comb-like member said mounting
means being provided with means for
flexing said movable member to urge
said remote end to tend to pivot said
bridge portion so as to press said
movable cutter into engagement with
the fixed comb-like member.

The above and other objects and advan-
tages of the present invention will appear
more fully hereinafter from a consideration
of the detailed description which follows
taken together with the accompanying draw-
ings wherein one embodiment of the inven-
tion is illustrated.

In the drawings:

Figure 1 is a perspective partial view of
the upper portion of an electric dry shaver
having a known detachable shaving cutter
head mounted thereon;

Figure 2 is an exploded perspective partial
view of the shaver with a long hair trimmer
attachment according to the present inven-
tion in place of the cutter head and adapted
to be mounted on the shaver casing to form
an extension thereof;

Figure 3 is an enlarged perspective view
of the fixed and movable cutter members
and the cutter drive member disassociated
from the cap;

Figure 4 is a section taken transversely of
the assembled long-hair trimmer;

Figure 5 is an enlarged fragmentary sec-
tional view of the trimmer cutters;

Figure 6 is an enlarged perspective view of
the cutter drive member of the present
invention.

Referring to the drawings for a more
detailed description of the present invention
and more particularly to Fig. 1, hereof, the
reference character 10 generally designates
a known electric shaver having a casing 11
detachably mounting a cap 12 which carries
an undulated sheet-like member 14 having
apertures 16 therein. A reciprocating inner
cutter (not shown) is carried within cap 12
to shear off facial hairs which protrude
through such apertures when used by an
individual in shaving. A latch member 18
is provided in the side of the casing 11 to
detachably secure cap 12 to the casing. The
foregoing structure is quite satisfactory in
shaving off hair from a man's face but when

the hairs are too long, such as when the
hair is part of a moustache or of sideburns,
other structure must be used to trim the
hair. In such cases a different type of hair
cutting structure is required and which to
date generally included a pair of flat plate-
like members in sliding engagement and with
comb-like teeth formed thereon to cut long
hairs.

To this end, the present invention provides
a long-hair trimmer generally designated by
the reference character 20 (Fig. 2) and in-
cludes a cap 22 open at one end 24. Cap 22
has a pair of transversely extending side
walls 26, a pair of longitudinally extending
front and rear walls 28 and 29 respectively,
and a top inclined wall 30 (Fig. 4). An
elongated slot 32 is formed in front wall 28
(for a purpose to be presently described)
and extends substantially the length of the
front wall. A projection 34 (Fig. 2) is formed
on the inner surface of one side wall 26 to
cooperate with latch 24 in detachably
securing or mounting cap 22 onto shaver
casing 11.

A comb-like cutter member 36 (Figs. 3
and 4) is secured to the inner surface of top
wall 30 by peened-over bosses 38 which
extend through openings formed in a pair
of legs 40 (one shown in Fig. 3) of member
36. As best seen in Fig. 4, member 36 is
substantially flat but is bent at 44 adjacent
one edge thereof where it has formed a set
of comb-like cutter teeth 46. Disposed in
sliding contact with member 36 are cutter
teeth 48 formed at one edge of a movable
cutter member 50. Member 50 is bent as
at 52 to extend then in parallel relationship
with legs 40 of member 36 (Fig. 4), the
two cutter members 36 and 50 extending
through the elongated slot 32 at their bent
portions 44 and 52, respectively. Cutter
member 50 is substantially flat and is pro-
vided with a large sized opening 54 sur-
rounded by a pair of parallel arms 56 and
58 and an end 60 remote from but in parallel
relationship with cutter teeth 48; the arms
constituting the bridge portion of the mov-
able cutter member. Arms 56 and 58 are
provided with openings 61 which are
dimensioned to receive pins 62 formed on
a floating intermediate body portion 64 of
a cutter drive member 66 (see particularly
Figs. 3 and 6). Cutter drive member 66 has
ends 68 and 70 which are secured to bosses
72 and 74 by suitable fastening means, as,
for example, screws 76. As better seen in
Fig. 3 bosses 72 and 74 shown in phantom
view are seated in recesses 77 and 78 formed
in ends 68 and 70, respectively.

Cutter drive member 66 is formed of
suitable plastic material as, for example,
nylon which makes it possible to have flex-
ible hinge-like members 79 and 80 joining
floating portion 64 to ends 68 and 70. Float-

ing portion 64 has inclined surfaces 82 from which pins 62 extend to accommodate the arms 56 and 58 of cutter member 50 in a generally inclined position and parallel to the inner surface of top wall 30. Floating portion 64 has a pair of parallel ribs 84 and 86 joining inclined surfaces 82 and said ribs extend above surfaces 82 to engage and restrain movement of arms 56 and 58 with respect to surfaces 82. Ribs 84 and 86 define an opening 90 and disposed in alignment therewith are a pair of upwardly extending tongues 92 which are dimensioned to receive therebetween a cutter drive arm 94 (Figs. 2 and 3) operatively connected to a motor (not shown) in casing 11. Ends 68 and 70 of cutter drive member 66 have integrally formed therewith a pair of arms 96 and 98 which extend parallel to, but spaced from, floating portion 64. The free ends of arms 96 and 98 are provided with protuberances 99 which as shown in Figs. 3, 4 and 5, engage remote end 60 of movable cutter member 50. Arms 96 and 98 are somewhat but not completely rigid; and when movable cutter member 50 is assembled to the cutter drive member 66, member 50 is flexed slightly whereby arms 96 and 98 urge the end 60 of member 50 to tend to pivot the bridge portion about pins 62 and inclined surfaces 82 to urge cutter teeth 46 and 48 in firm sliding contact with each other.

In operation, when the electric motor (not shown) in casing 11 is energized, cutter drive arm 94 is reciprocated to engage the oppositely disposed tongues 92 at either end of its travel to move in like fashion, floating portion 64. Flexible hinge members 78 and 80 by nature of their construction permit movement of portion 64 even though ends 68 and 70 are fixed. Portion 64 in turn moves cutter member 50 relative to fixed cutter member 36 whereby cutter teeth 46 and 48 become effective to shear or trim long hair which enters between said teeth.

It will be apparent from the foregoing that the long-hair trimmer attachment described above provides novel structure whereby the movable cutter is biased into sliding engagement with the fixed cutter without the utilization of springs. A further advantage is that the cutter drive member 66 may be secured directly to the trimmer cap 22 thereby eliminating the necessity of providing separate supporting means for the movable cutter. Moreover, the novel trimmer attachment comprises a minimum number of component parts simplifying assembly thereof and reducing manufacturing costs.

Although one embodiment of the present invention has been illustrated and described in detail it is to be specifically understood that the invention is not limited thereto. Various changes can be made in the design and arrangement of parts without departing

from the scope of the invention as defined by the appended claims.

WHAT WE CLAIM IS:—

1. An auxiliary long-hair trimmer for electric shavers comprising,
 - a) a cap adapted to be mounted in a shaver casing,
 - b) a fixed comb-like member having a set of spaced cutter teeth,
 - c) a movable cutter member having a second set of spaced teeth formed thereon and mounted to provide co-operation between said sets of teeth to cut long hairs, said movable cutter member having a bridge portion extending away from said second set of teeth, said portion further having an end remote from said second set of teeth,
 - d) means mounting said movable cutter member for movement with respect to said fixed comb-like member, said mounting means supporting said movable cutter member at said bridge portion for movement relative to said fixed comb-like member said mounting means being provided with means for flexing said movable member to urge said remote end to tend to pivot said bridge portion so as to press said movable cutter into engagement with the fixed comb-like member.
2. The auxiliary long-hair trimmer of Claim 1, wherein the fixed comb-like member and said movable cutter member are carried on members formed integrally with the cap, and a slot is provided in the cap through which the two sets of teeth protrude.
3. The auxiliary long-hair trimmer of Claim 1 or 2, wherein the comb-like member is secured to a member depending from the end wall of the cap, and said mounting means includes a cutter drive member having a floating portion, and having two ends, between which said floating portions located, secured to said depending member of the cap, said floating portion of the cutter drive member having means thereon engaging the bridge portion of the movable cutter member to effect movement of the latter in a plane parallel to said wall.
4. The auxiliary long-hair trimmer of Claim 3, wherein the floating portion of the cutter drive member is joined to the two ends of the latter by flexible hinges integrally formed with the floating intermediate portion and the two ends.
5. The auxiliary long-hair trimmer of Claim 3 or 4, wherein the movable cutter member is substantially flat, and said means pivotally urging the remote end of said movable cutter member includes an arm extending from each of said two ends of the



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ing portion 64 has inclined surfaces 82 from which pins 62 extend to accommodate the arms 56 and 58 of cutter member 50 in a generally inclined position and parallel to the inner surface of top wall 30. Floating portion 64 has a pair of parallel ribs 84 and 86 joining inclined surfaces 82 and said ribs extend above surfaces 82 to engage and restrain movement of arms 56 and 58 with respect to surfaces 82. Ribs 84 and 86 define an opening 90 and disposed in alignment therewith are a pair of upwardly extending tongues 92 which are dimensioned to receive therebetween a cutter drive arm 94 (Figs. 2 and 3) operatively connected to a motor (not shown) in casting 11. Ends 68 and 70 of cutter drive member 66 have integrally formed therewith a pair of arms 96 and 98 which extend parallel to, but spaced from, floating portion 64. The free ends of arms 96 and 98 are provided with protuberances 99 which as shown in Figs. 3, 4 and 5, engage remote end 60 of movable cutter member 50. Arms 96 and 98 are somewhat but not completely rigid; and when movable cutter member 50 is assembled to the cutter drive member 66, member 50 is flexed slightly whereby arms 96 and 98 urge the end 60 of member 50 to tend to pivot the bridge portion about pins 62 and inclined surfaces 82 to urge cutter teeth 46 and 48 in firm sliding contact with each other.

In operation, when the electric motor (not shown) in casing 11 is energized, cutter drive arm 94 is reciprocated to engage the oppositely disposed tongues 92 at either end of its travel to move in like fashion, floating portion 64. Flexible hinge members 78 and 80 by nature of their construction permit movement of portion 64 even though ends 68 and 70 are fixed. Portion 64 in turn moves cutter member 50 relative to fixed cutter member 36 whereby cutter teeth 46 and 48 become effective to shear or trim long hair which enters between said teeth.

It will be apparent from the foregoing that the long-hair trimmer attachment described above provides novel structure whereby the movable cutter is biased into sliding engagement with the fixed cutter without the utilization of springs. A further advantage is that the cutter drive member 66 may be secured directly to the trimmer cap 22 thereby eliminating the necessity of providing separate supporting means for the movable cutter. Moreover, the novel trimmer attachment comprises a minimum number of component parts simplifying assembly thereof and reducing manufacturing costs.

Although one embodiment of the present invention has been illustrated and described in detail it is to be specifically understood that the invention is not limited thereto. Various changes can be made in the design and arrangement of parts without departing

from the scope of the invention as defined by the appended claims.

WHAT WE CLAIM IS:—

1. An auxiliary long-hair trimmer for electric shavers comprising,
 - a) a cap adapted to be mounted in a shaver casing,
 - b) a fixed comb-like member having a set of spaced cutter teeth,
 - c) a movable cutter member having a second set of spaced teeth formed thereon and mounted to provide co-operation between said sets of teeth to cut long hairs, said movable cutter member having a bridge portion extending away from said second set of teeth, said portion further having an end remote from said second set of teeth,
 - d) means mounting said movable cutter member for movement with respect to said fixed comb-like member, said mounting means supporting said movable cutter member at said bridge portion for movement relative to said fixed comb-like member said mounting means being provided with means for flexing said movable member to urge said remote end to tend to pivot said bridge portion so as to press said movable cutter into engagement with the fixed comb-like member.
2. The auxiliary long-hair trimmer of Claim 1, wherein the fixed comb-like member and said movable cutter member are carried on members formed integrally with the cap, and a slot is provided in the cap through which the two sets of teeth protrude.
3. The auxiliary long-hair trimmer of Claim 1 or 2, wherein the comb-like member is secured to a member depending from the end wall of the cap, and said mounting means includes a cutter drive member having a floating portion, and having two ends, between which said floating portions located, secured to said depending member of the cap, said floating portion of the cutter drive member having means thereon engaging the bridge portion of the movable cutter member to effect movement of the latter in a plane parallel to said wall.
4. The auxiliary long-hair trimmer of Claim 3, wherein the floating portion of the cutter drive member is joined to the two ends of the latter by flexible hinges integrally formed with the floating intermediate portion and the two ends.
5. The auxiliary long-hair trimmer of Claim 3 or 4, wherein the movable cutter member is substantially flat, and said means pivotally urging the remote end of said movable cutter member includes an arm extending from each of said two ends of the

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cutter drive member, said arms being in engagement with a surface opposite the surface of the movable cutter member which is in engagement with the floating intermediate portion.

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6. The auxiliary long-hair trimmer of Claim 5, wherein said arms are aligned with each other and arranged parallel to the two sets of teeth, and said floating portion of said cutter drive member has an aperture for receiving a driving arm to actuate same.

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7. An auxiliary long-hair trimmer substantially as hereinbefore described with reference to Figures 2 to 6 of the accom-

panying drawings.

8. An electric shaver incorporating a long-hair trimmer substantially as hereinbefore described with reference to Figures 2 to 6 of the accompanying drawings.

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