# United States Patent [19]

**Bauerle**

[11] **3,763,558**

[45] **Oct. 9, 1973**


[54] **ELECTRIC SHAVER WITH CONCEALABLE LONG HAIR TRIMMER**


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[73] Assignee: **Firma Kuno Moser GmbH,** Unterkirnach, Germany



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[30] **Foreign Application Priority Data**

July 20, 1970 Germany ..... P 20 35 870.7

[52] **U.S. Cl.** ..... **30/34.1,** 30/43.1

[51] **Int. Cl.** ..... **B26b 19/20**

[58] **Field of Search** ..... 30/34.1, 43.1, 43.92



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*Primary Examiner*—Othell M. Simpson
*Assistant Examiner*—Gary L. Smith
*Attorney*—Michael S. Striker



[57] **ABSTRACT**

An electric shaver with an elongated long hair trimmer which is adjacent to one exposed longitudinal edge of the shear foil and is pivotable with reference to the head frame of the shaver between a concealed and an exposed or operative position. The movable clipping element of the trimmer is automatically coupled to the drive for the cutter which cooperates with the shear foil when the trimmer is pivoted to its exposed position. The trimmer is pivotable along an axis which is parallel to the adjacent exposed longitudinal edge of the shear foil. A spring propels the trimmer to the exposed position in response to actuation of a knob which disengages a latch serving to normally hold the trimmer in the concealed position in which the trimmer does not interfere with access to the adjacent portion of the shear foil.


**18 Claims, 20 Drawing Figures**

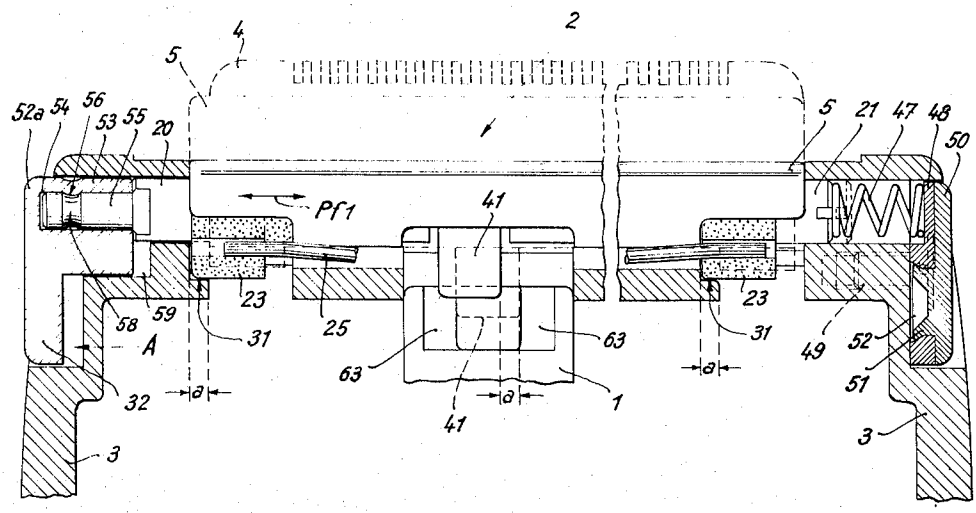


Fig. 1

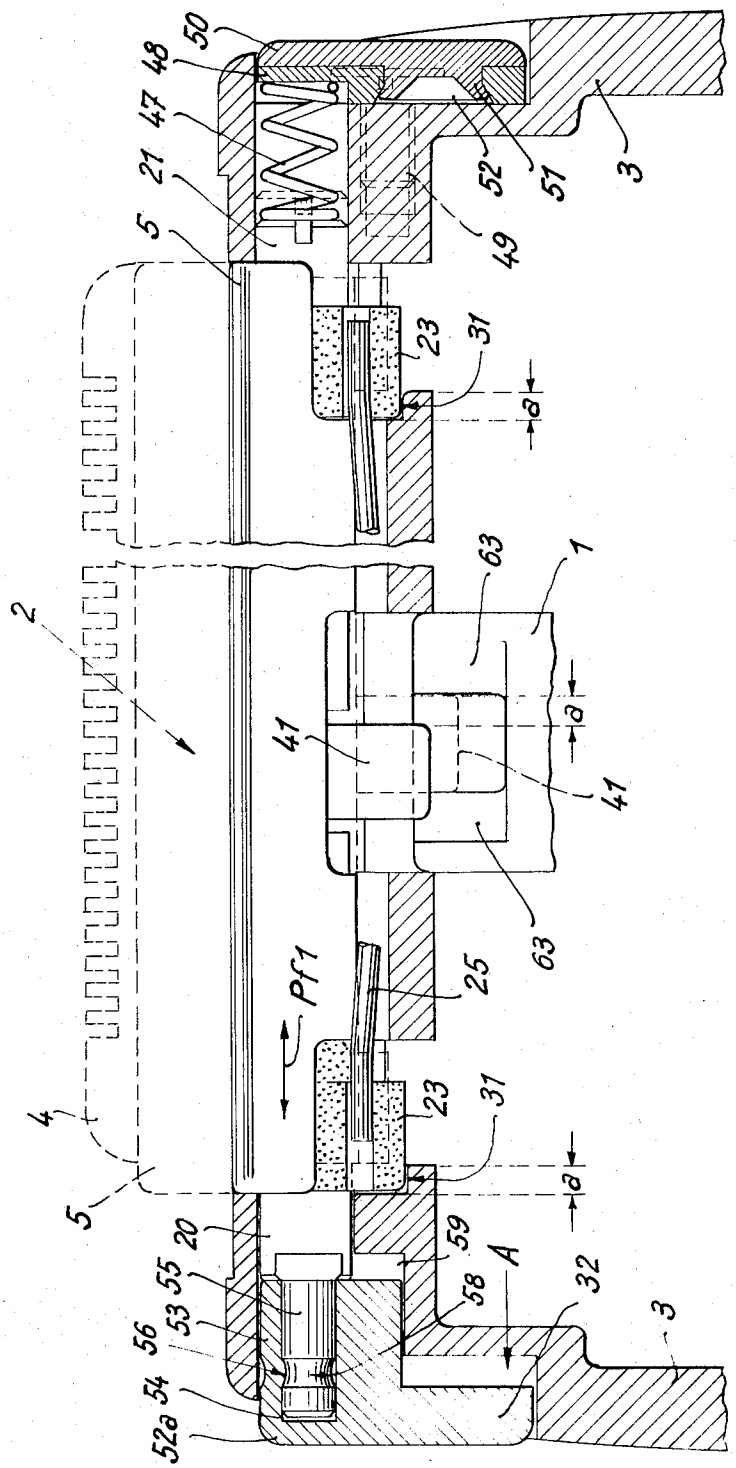

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Fig. 2

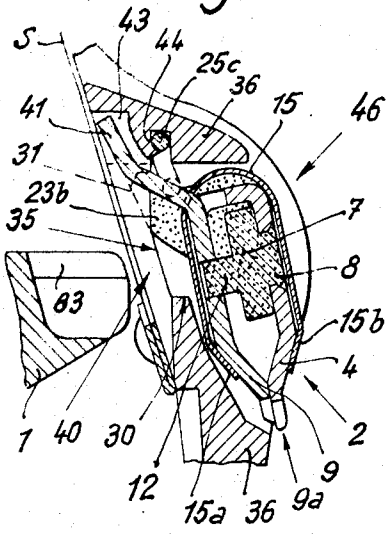



Fig. 3

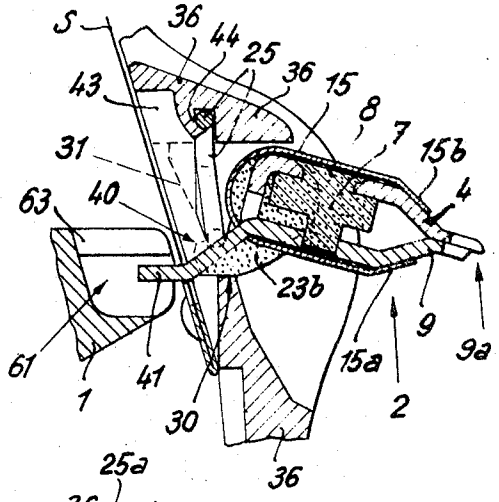



Fig. 4

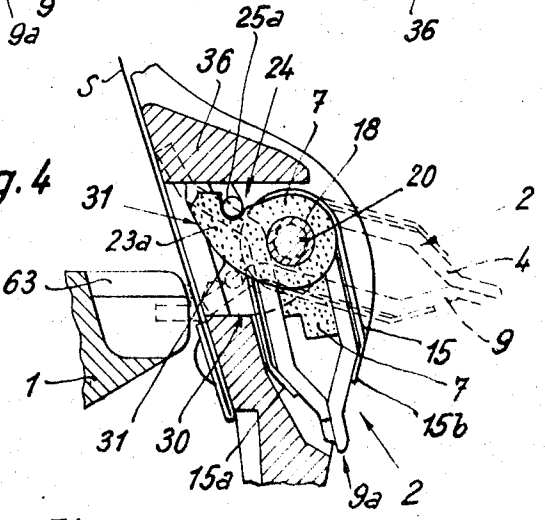



Fig. 5

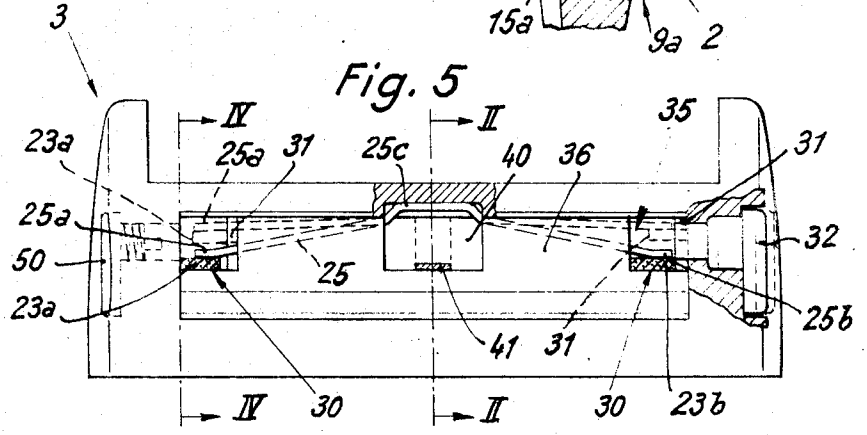


Fig. 6

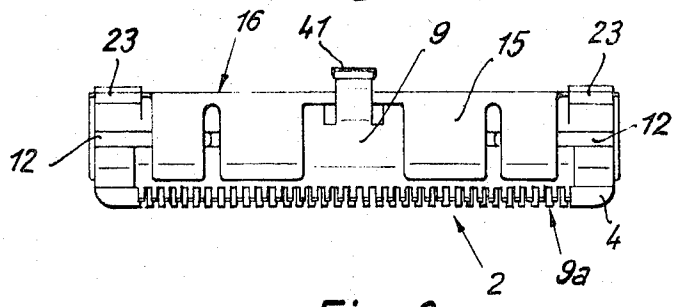



Fig. 7

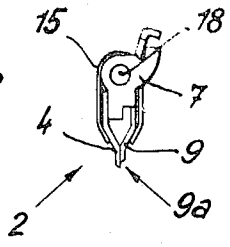



Fig. 8

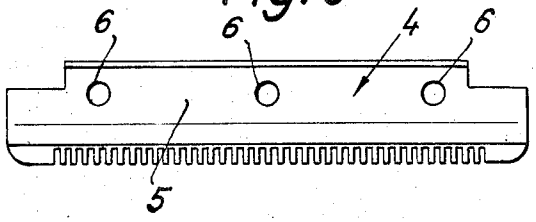



Fig. 9

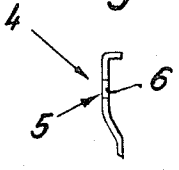



Fig. 10

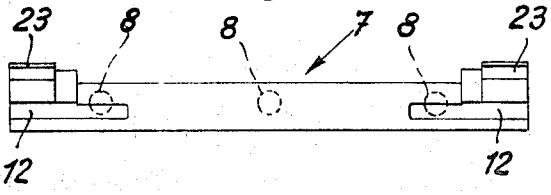



Fig. 11

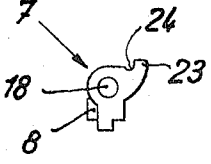



Fig. 12

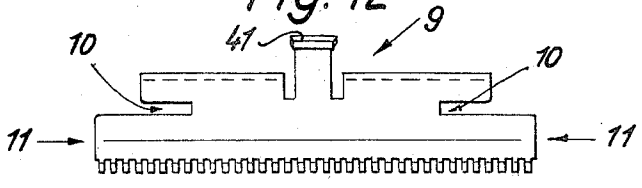



Fig. 13

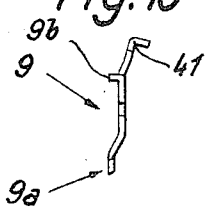



Fig. 14

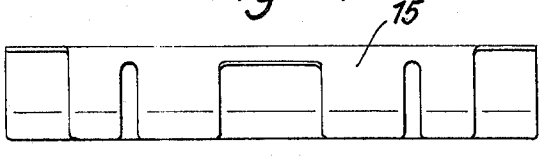



Fig. 15

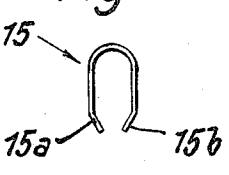


Fig. 16

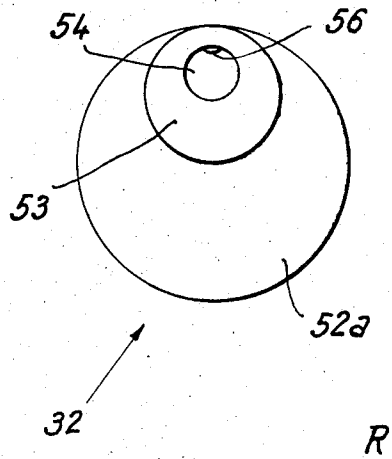



Fig. 17

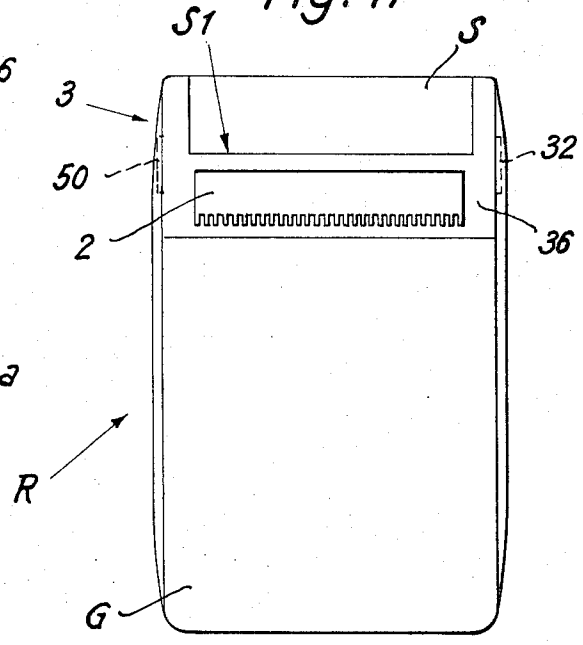



Fig. 18

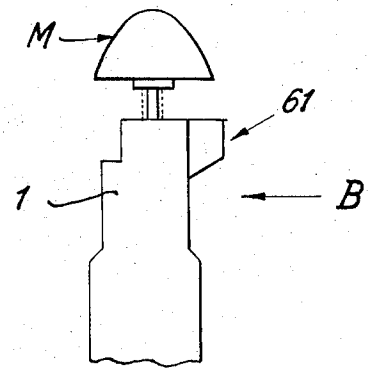



Fig. 19

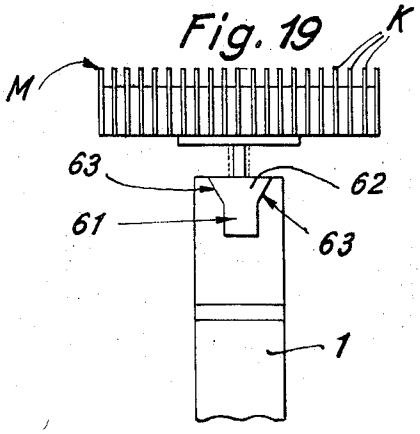
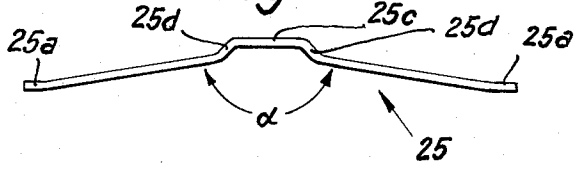



Fig. 20



# ELECTRIC SHAVER WITH CONCEALABLE LONG HAIR TRIMMER

## BACKGROUND OF THE INVENTION

The present invention relates to power shavers in general, especially to electric dry shavers, and more particularly to improvements in electric shavers which are provided with long hair trimmers for the clipping or trimming of sideburns or the like. Still more particularly, the invention relates to improvements in electric shavers or the type wherein the prime mover which operates the movable cutter for bristles which extend through the apertures of a foil comb or shear foil also serves to drive the movable hair clipping part or parts of the trimmer.

It is already known to provide an electric shaver, wherein the bristles which are to be severed extend through apertures provided in a foil comb, with a long hair trimmer having an elongated movable clipping blade extending along one edge of the foil comb. As a rule, the head frame of the shaver is separable from the main housing of the shaver and is attachable thereto in two positions in one of which the clipping blade of the trimmer, which latter is permanently installed in the head frame, is coupled to the drive for the cutter. Thus, whenever the operator wishes to use the trimmer, the head frame must first be detached from the housing and thereupon reattached to the housing in a different position. Furthermore, the trimmer which is permanently installed in the head frame extends well beyond the foil comb so that it reduces the accessibility of the adjacent portions of the foil comb, i.e., certain portions of the foil comb cannot be placed sufficiently close to the skin to permit satisfactory cutting of bristles by the corresponding portions of knives on the movable cutter.

It is further known to mount the long hair trimmer in such a way that it can be coupled to or detached from the drive for the movable cutter behind the foil comb without necessitating a change in the position of the head frame. To this end, the electric shaver comprises a specially designed coupling element which shares all reciprocatory movements of the cutter or the movements of the output member in the drive for the cutter. An electric motor which can drive the output member so as to reciprocate the cutter and the movable clipping blade of the long hair trimmer is disclosed in the British Patent No. 681,333. Such electric shavers still exhibit the drawback that the trimmer invariably projects well beyond the outline of the head frame and thus interferes with proper use of all portions of the foil comb. Also, the outwardly extending trimmer adversely affects the appearance of the shaver and necessitates the use of complicated cases or containers wherein the cutter is stored when not in use.

## SUMMARY OF THE INVENTION

An object of the invention is to provide a power shaver, especially an electric dry shaver, with a novel and improved long hair trimmer which does not interfere with full utilization of the foil comb when the shaver is used for the cutting of bristles in the customary way.

Another object of the invention is to provide novel and improved means for coupling the movable clipping element of the trimmer to the drive for the cutter which cooperates with the foil comb of an electric shaver.



A further object of the invention is to provide an electric shaver wherein the long hair trimmer can be fully or nearly fully concealed and protected when it is not in use to thus reduce the overall dimensions and to enhance the appearance of the shaver as well as to avoid damage to component parts of the trimmer.

An additional object of the invention is to provide an electric shaver wherein the long hair trimmer can be coupled to the drive for the cutter which cooperates with the foil comb without necessitating a detachment and reattachment of one or more component parts.

Still another object of the invention is to provide an electric shaver which can embody an elongated long hair trimmer without in any way affecting the accessibility and utility of those parts which are used for the cutting of relatively short bristles in the course of a normal shaving operation.

The invention is embodied in a power shaver which comprises a housing, an elongated apertured foil comb which is mounted in the housing and has a pair of longitudinally extending edge portions, a movable cutter which is mounted in the housing and is inwardly adjacent to the foil comb to sever the bristles which extend through the apertures of the foil comb, drive means which is mounted in the housing and is operable to move the cutter with reference to the foil comb, an elongated long hair trimmer which is preferably as long or nearly as long as one longitudinal edge of the foil comb, mounting means provided in the housing to support the trimmer to adjacent to and in at least substantial parallelism with one edge portion of the foil comb, the trimmer having a movable trimming or clipping portion and being pivotable with reference to the housing between operative and inoperative positions about an axis which is at least substantially parallel to the one edge portion of the foil comb, and coupling means for connecting the movable clipping portion of the trimmer with the drive means in the operative position of the trimmer.

The coupling means is preferably designed to automatically connect the movable clipping portion with the drive means in response to movement of the trimmer to its operative position. When in the inoperative position, the trimmer is preferably concealed in the housing to avoid interference with full utilization of all portions of the foil comb.

The novel features which are considered as characteristic of the invention are set forth in particular in the appended claims. The improved power shaver itself, however, both as to its construction and its mode of operation, together with additional features and advantages thereof, will be best understood upon perusal of the following detailed description of certain specific embodiments with reference to the accompanying drawing.

## BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an enlarged fragmentary central longitudinal sectional view of a power shaver which embodies the improved long hair trimmer;

FIG. 2 is a transverse sectional view of the long hair trimmer as seen in the direction of arrows from the line II—II of FIG. 5, with the trimmer shown in its concealed or inoperative position;

FIG. 3 is a similar sectional view but showing the trimmer in the exposed or operative position;

FIG. 4 is a transverse sectional view of the trimmer as seen in the direction of arrows from the line IV—IV of FIG. 5;

FIG. 5 is a fragmentary side elevational view of the power shaver with the foil comb and the cutter removed;

FIG. 6 is a smaller-scale side elevational view of the trimmer as seen from the right-hand side of FIG. 2;

FIG. 7 is an end elevational view as seen from the left-hand side of FIG. 6;

FIG. 8 is a side elevational view of the stationary clipping element in the trimmer of FIGS. 6 and 7;

FIG. 9 is an end elevational view of the clipping element shown in FIG. 8;

FIG. 10 is a side elevational view of a supporting member for the clipping elements of the trimmer shown in FIG. 6;

FIG. 11 is an end elevational view of the supporting member;

FIG. 12 is a side elevational view of the movable clipping element of the trimmer shown in FIG. 6;

FIG. 13 is an end elevational view of the clipping element shown in FIG. 12;

FIG. 14 is a side elevational view of a clamping member or clip in the trimmer of FIG. 6;

FIG. 15 is an end elevational view of the clamping member;

FIG. 16 is an end elevational view of a manually operated actuating member as seen in the direction of arrow A shown in FIG. 1;

FIG. 17 is a side elevational view of the fully assembled power shaver, with the trimmer shown in concealed position;

FIG. 18 is an end elevational view of the movable cutter and of a portion of the drive means for such cutter and for the movable clipping element of the trimmer;

FIG. 19 is a diagrammatic side elevational view as seen in the direction of arrow B shown in FIG. 18; and

FIG. 20 is an elevational view of a leaf spring which is used in the power shaver to bias the trimmer to its operative position.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to FIG. 17, there is shown a power shaver R which includes a housing G having a detachable portion in form of a head frame 3 which supports an elongated foil comb or shear foil S provided with apertures (not specifically shown) for entry of bristles which are to be severed by the knives K of a reciprocable cutter M shown in FIGS. 18 and 19. The drive means which is operable to reciprocate the cutter M along the concave internal surface of the foil comb S includes an output member 1 which is oscillatable or rotatable by an electric motor (not shown) in the main portion of the housing G in a manner not forming part of the present invention.

When properly mounted in the head frame 3, the foil comb S resembles a trough which overlies and is closely adjacent to the knives K. Two exposed longitudinal edge portions S1 (one shown in FIG. 17) of the foil comb S extend in parallelism with the longitudinal direction of the cutter M, and the illustrated edge portion S1 is adjacent to and parallel with an elongated long hair trimmer 2. In accordance with a feature of the invention, the trimmer 2 is pivotably mounted in the head frame 3 of the housing G for movement between an inoperative or concealed position shown in FIG. 2 and operative or exposed position shown in FIG. 3. The mounting means (best shown in FIG. 1) which serves to pivotably support the trimmer 2 in the head fram 3 defines for the trimmer a pivot axis which is preferably parallel to the adjacent exposed edge portion S1 of the foil comb S. In accordance with another advantageous feature of the invention, the movable clipping or trimming element 9 (shown in FIGS. 12 and 13) of the trimmer 2 is automatically coupled with the preferably oscillatory output member 1 of the drive for the cutter M when the trimmer is pivoted to the operative position of FIG. 3 so that the movable clipping element 9 cooperates with a stationary clipping or trimming element 4 of the trimmer 2 as soon as the motor in the housing G is started by closing a suitable switch, not shown. The motor can be driven by an expendable energy source in the housing G, by a rechargeable energy source in the housing and/or by electric current supplied by a suitable outlet by way of a cable or cord, not shown.

The long hair trimmer 2 is preferably assembled into a discrete unit which is thereupon mounted in the head frame 3. FIGS. 6 and 7 show the trimmer 2 in fully assembled condition but detached from the head frame 3, and FIGS. 8 to 15 illustrate the four components of the trimmer 2 drawn to approximately twice their normal size.

FIGS. 8 and 9 show the stationary clipping element 4 of the trimmer 2. This clipping element 4 has an elongated rear portion or holder 5 provided with three equidistant circular openings 6 for reception of preferably elastic projections or pins 8 provided on an elongated supporting member or carrier 7 shown in FIGS. 10 and 11. The rear portion or holder 5 is provided with a row of forwardly extending teeth 5*a* which can cooperate with similar teeth 9*a* provided on the elongated movable clipping element 9 which is best shown in FIGS. 12 and 13. The supporting member or carrier 7 preferably consists of a single piece of suitable synthetic plastic material and its projections 8 are preferably deformed (see FIG. 3) to form rivet heads which hold the rear portion 5 of the stationary clipping element 4 against any and all movements with reference to the carrier. However, it is equally within the purview of the invention to provide the carrier 7 with cylindrical projections 8 which completely fill the respective openings 6 to thus hold the clipping element 4 against lengthwise and/or sidewise movements with reference to the carrier. The means for holding the clipping elements 4 and 9 against movements away from the adjacent surfaces of the carrier 7 comprises an elastic clamping member or clip 15 shown in FIGS. 14 and 15.

The carrier 7 is provided with guide means which permit the clipping element 9 to move back and forth lengthwise of the clipping element 4 whereby the teeth 5*a* cooperate with the teeth 9*a* to sever the hair which penetrate through the spaces between the teeth 9*a* and into the spaces between the teeth 9*a* and into the spaces between the teeth 5*a*.

The movable clipping element 9 has two elongated slots 10 of constant width which are open at their outer ends, namely, at the end faces 11 of the clipping element 9. The carrier 7 has two elongated guide rails 12 each of which extends into one of the slots 10. The distance between the guide rails 12 and the distance between the slots 10 determine the extent to which the

clipping element 9 can reciprocate with reference to the carrier 7. The clipping element 9 is further guided by the clipping element 4 because the row of teeth 9*a* abuts against the row of teeth 5*a* when the long hair trimmer 2 is fully assembled in a manner as best shown in FIGS. 2–4 and 6–7. Furthermore, the rearmost portion 9*b* of the clipping element 9 is bent substantially at right angles to the main body portion and abuts against a similarly bent flange 5*b* of the rear portion 5 as well as against the adjacent surface of the carrier 7 to thereby further insure that the clipping element 9 is confined to lengthwise oscillatory movements.

The aforementioned clamping member or clip 15 overlies the major part of the movable clipping element 9 but leaves the teeth 9*a* exposed. The clip 15 is elastic and substantially U-shaped so as to confine the parts 4, 7, 9 (see FIGS. 2–4 and 6–7) and to thus hold the clipping elements 4, 9 against movement away from the carrier 7. The bias of the clip 15 suffices to insure that the slots 10 of the clipping element 9 cannot move away from registry with the guide rails 12, i.e. that the clipping element 9 is confined to reciprocatory movements in its own plane even though it is not positively secured to the carrier 7. The flanges of the U-shaped clip 15 have inwardly bent tips or prongs 15*a*, 15*b* (see particularly FIG. 15) which bear against the adjacent portions of exposed surfaces on the clipping elements 4 and 9 (see FIGS. 6 and 7) and follow the outlines of such surfaces.

Those portions of the clipping elements 4, 9 which are immediately adjacent to the respective teeth 5*a*, 9*a* together form a body of substantially V-shaped cross-sectional outline (see FIGS. 2-4 and 7). The prongs 15*a*, 15*b* bear against such portions of the elements 4, 9 to thus insure that the row of teeth 9*a* is biased against the row of teeth 5*a*. The prongs 15*a*, 15*b* further serve to prevent accidental separation of the clip 15 from the parts 4, 7 and 9 because they must be forcibly spread apart in order to provide room for separation of the clip from the clipping elements 4 and 9. As shown in FIGS. 2–4 and 7, the combined width of the parts 4, 7, 9 in the region 16 (FIG. 6) of the bent-over portions 5*b*, 9*b* substantially exceeds the normal distance between the prongs 15*a*, 15*b*.

The mounting means for the trimmer 2 is installed in the head frame 3 of the housing G and comprises registering axially movable trunnious 20, 21 which extend into blind bores or sockets 18 (FIG. 11) provided in the end faces of the carrier 7. The bores 18 are preferably tapped and the trunnious 20, 21 are preferably provided with external threads to mesh with the carrier 7. The latter is further formed with hook-shaped abutments 23 (FIGS. 1, 10, 11) which are adjacent to the sockets 18 and remote from the teeth 5*a*, 9*a*. The abutments 23 are formed with grooves 24 for the end portions 25*a*, 25*b* of a substantially V-shaped spring 25 (see particularly FIG. 20). The grooves 24 are disposed at one side of the common axis of the sockets 18 (see FIG. 11). The end portions 25*a*, 25*b* of the spring 25 bear against the abutments 23 and the median portion 25*c* of this spring reacts against the head frame 3 so that the spring 25 biases the carrier 7 in a counterwise direction, as viewed in FIGS. 2–4 and 11 to thereby urge the trimmer 2 (when the latter is properly mounted in the head frame 3) to the operative or extended position of FIG. 3. The median portion 25*c* of the spring 25 is flanked by two short connecting portions 25*d* and the end portions 25*a*, 25*b* make in the unstressed condition of the spring 25 an obtuse angle alpha which preferably substantially exceeds 90°. The angle alpha is normally between 130° and 160°.

The head frame 3 is provided with pairs of stops 30 and 31 which serve to arrest the trimmer 2 in its operative and inoperative positions. These stops cooperate with the abutments 23 on the carrier 7. The stops 31 engage the abutments 23 in the inoperative position of the trimmer 2 (FIG. 2) and the stops 30 are engaged by the abutments 23 when the trimmer 2 dwells in the operative position of FIG. 3. The positions of the stops 31 are best shown in FIGS. 4 (side elevation), 5 (front elevation) and 1 (top plan view). The stops 30 limit the extent of pivotal movement of the trimmer 2 under the action of the spring 25. With reference to FIGS. 2–4, the trimmer 2 turns about the common axis of the trunnious 20, 21 in a counterclockwise direction to advance toward its operative position under the action of the spring 25, and in a clockwise direction in order to stress the spring 25 while returning to the inoperative or concealed position of FIG. 2. During clipping of long hairs, the trimmer 2 (in the operative position of FIG. 3) is moved downwardly so that the teeth 5a of the stationary clipping element 4 slide along the skin and the abutments 23 bear against the stops 30 of the head frame 3. Since the forces which tend to pivot the trimmer 2 from the position of FIG. 3 back to the position of FIG. 2 are not likely to develop when the trimmer is in use, the spring 25 suffices to normally insure proper retention of the trimmer in its operative position. The user must apply finger pressure to pivot the trimmer 2 against the opposition of the spring 25 when the trimmer is to be returned from the operative position of FIG. 3 to the inoperative position of FIG. 2. At the end of such pivoting of the trimmer 2 about the common axis of the trunnious 20 and 21, the trimmer performs a relatively small lengthwise movement in the axial direction of the trunnious (see the distance *a* in FIG. 1). Such lengthwise movement of the trimmer 2 takes place in a direction toward a depressible releasing member or knob 32 which is mounted in the head frame 3 and is to be shifted in a direction to the right, as viewed in FIG. 1, to release the trimmer 2 to the action of the spring 25 which is then free to pivot the trimmer to the operative position of FIG. 3. During manual pivoting of the trimmer 2 against the opposition of the spring 25, the abutments 23 or the carrier 7 move toward and are ultimately shifted sideways to abut against the stops 31 in the head frame 3. The abutments 23 and the stops 31 then constitute a simple latch which holds the trimmer 2 in the operative position and can be disengaged in response to depression of the knob 32.

FIGS. 1 and 5 show that the stops 30 and 31 are slightly offset with reference to each other. This allows for lengthwise movements of the trimmer 2 through a distance at least approximating the distance *a* shown in FIG. 1. Such lengthwise movement of the trimmer 2 takes place in response to depression of the knob 32 (arrow Pf1 in FIG. 1). The stops 30 are provided in recesses or cutouts 35 machined into a side wall or cheek 36 of the head frame 3. Each recess 35 is of rectangular outline, as seen from the interior of the frame 3. That surface bounding each recess 35 which is nearest to the main portion of the housing G constitutes the respective stop 30. The length of each stop 30 slightly exceeds

the corresponding dimension of the respective abutment 23 so that the abutments 23 are free to move in the respective recesses 35 toward and away from the associated stops 30. Such movements take place under the action of the spring 25 upon depression of the knob 32 which then moves the abutments 23 away from alignment with the stops 31 so that the spring 25 is free to pivot the trimmer 2.

The side wall 36 of the frame 3 is provided with an aperture 40 for a coupling finger or motion receiving finger 41 of the movable clipping element 9. The central portion of the aperture 40 has an extension 43 which accommodates the coupling finger 41 in the inoperative position of the trimmer 2. The extension 43 has an open side which faces the adjacent portion of the foil comb S. A second extension 44 of the aperture 40 in the wall 36 of the head frame 3 is adjacent to the extension 43 (see FIG. 2) and serves to receive the median portion 25c of the spring 25. The median portion 25c including the connecting portions 25*d*) of the spring 25 is U-shaped (see FIG. 20) and can be held in the extension 44 with at least some friction.

That portion of the side wall 36 which normally conceals the trimmer 2 (FIG. 2) is bounded by a slightly convex surface 46. This surface enables the user to utilize the entire exposed part of the foil comb S, i.e., also that part which is adjacent to the edge portion S1 and to the trimmer 2 when the latter is held in the inoperative position of FIG. 2.

As shown in FIG. 1, the trunnion 21 of the mounting means for the trimmer 2 is biased by resilient means here shown as a relatively strong helical spring 47 which urges the trimmer 2 in a direction toward the release knob 32. The outer end convolution of the spring 47 bears against a plate-like retainer 48 which is secured to the head frame 3 by a screw 49 or an analogous fastener. A cover 50 which consists of synthetic plastic material overlaps the plate 48 and the head of screw 49 and is recessed into the adjacent portion of the frame 3. The cover 50 has a deformable connecting portion 51 which can be received in a recess 52 of the plate 48 by snap action.

The cover 50 is adjacent to that end of the trimmer 2 which is remote from the release knob 32. The latter is rigidly connected with the trunnion 20 so that the trunnion 20 moves the trimmer 2 at least through the distance *a* when the release knob 32 is depressed in a direction toward the cover 50. Such lengthwise displacement of the trimmer 2 against the opposition of the spring 47 suffices to move the abutments 23 out of registry with the stops 31 so that the spring 25 is free to pivot the trimmer 2 to the operative position of FIG. 3 in which the abutments 23 engage the stops 30 in the recesses 35 of the side wall 36. The release knob 32 consists of a single piece of synthetic plastic material and has an exposed handgrip portion 52 of circular outline and an eccentric sleeve 53 (see also FIG. 16) which has a bore 54 for a cylindrical extension 55 of the trunnion 20. The sleeve 53 is received in a bore 59 of the head frame 3 and the extension 55 has a circumferential groove 58 for a ring-shaped portion 56 of the sleeve 53. The portion 56 couples the trunnion 20 to the release knob 32. This portion 56 can be formed while the sleeve 53 is in a deformable state.

As a rule, the trimmer 2 must be tested prior to mounting in the head frame 3. Therefore, it is desirable to assemble the trimmer in the manner as shown in FIGS. 6–7, i.e., as a self-sustaining unit which can be readily tested prior to mounting in the head frame 3. The testing involves cutting of hairs in order to determine whether or not the parts 4, 7, 9, 15 are properly assembled so that the teeth 5a, 9a are ready to cut long hairs. The parts 4, 7, 9, 15 must be finished with a certain (preferably high) degree of precision because any substantial deviations from proper size or shape might affect the operativeness of the assembled trimmer.

Another advantage of the trimmer 2 is that it occupies little room so that the dimensions of the head frame 3 need not be unduly increased in order to provide room for concealment of the parts 4, 7, 9, 15 in the inoperative position of the trimmer. The cost of the trimmer 2 is reasonable because that part (carrier 7) which has the most complicated configuration can be mass-produced from synthetic plastic material, e.g., by an injection molding process. The clipping element 4 and (or the clipping element 9) preferably consists of stainless steel or a like metallic material and the element 9 is freely slidable in the longitudinal direction of the carrier 7 to the extent determined by the slots 10 and guide rails 12. The projections 8 can be simply forced into the openings 6 of the clipping element 4 to hold the latter against lengthwise and sidewise movements with reference to the carrier 7, or such projections can be deformed with or without heating to hold the element 4 also against a movement away from the adjacent surface of the carrier 7. In FIGS. 1–5, all such surfaces of the carrier 7 which are not shown in section are indicated by stipling.

When the user decides to trim long hairs, e.g., the sideburns, the release knob 32 is depressed to shift the trimmer 2 through the distance *a* and to thus disengage the abutments 23 on the carrier 7 from the stops 31. The spring 25 pivots the trimmer until the abutments 23 reach the stops 30. At such time, the finger 41 of the movable clipping element 9 is withdrawn from the extension 43 of the operative 40 in the side wall 36 and engages with a coupling portion 61 of the output member 1. The coupling portion 61 has an inlet 62 which is flanked by inclined surfaces 63 (see FIGS. 1–4) which enable the finger 41 to properly engage the coupling portion 61 even when the latter is in motion, i.e., while the output member 1 reciprocates the knife M along the internal surface of the foil comb S. Analogously, the finger 41 can be returned into the extension 43 while the output member 1 is in motion, simply by pivoting the trimmer 2 from the operative position of FIG. 3 to the inoperative position of FIG. 2. The entire exposed surface of the foil comb S is then available for the shaving operation.

FIG. 5 shows the spring 25, the abutments 23 and the knob 32 in solid lines (operative position of the trimmer 2) and in broken lines (inoperative position of the trimmer). When the trimmer 2 is pivoted to the inoperative position, the spring 47 is free to expand and moves the trimmer lengthwise so that the abutments 23 engage the stops 31 so whereupon the stops 31 maintain the trimmer in the inoperative position as long as the release knob 32 remains in the position shown in FIG. 1.

As shown in FIGS. 2–4, the foil comb S overlies the exposed side of the aperture 40 so that it must be provided with a cutout or slot (not shown) for the coupling finger 41. However, it is equally within the purview of the invention to shorten the foil comb S or to mount it

in the head frame 3 at a level above the aperture 40, as viewed in FIGS. 2–4, so that the foil comb need not be weakened by the provision of a cutout or slot for the finger 41. For example, and refering to FIG. 2, the lower edge portion of the foil comb S can terminate at a level above the extension 43 of the aperture 40 so that the foil comb, even without a cutout therein, cannot interfere with movements of the finger 41 into and from motion receiving engagement with the coupling portion 61 of the output member 1 of the drive means for the knife M. Such mounting of the foil comb S would add little to the length or bulk of the shaver.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features which fairly constitute essential characteristics of the generic and specific aspects of my contribution to the art and, therefore, such adaptation should and are intended to be comprehended within the meaning and range of equivalence of the claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims:

1. In a power shaver, a combination comprising a housing; an elongated shear foil mounted in said housing and having a longitudinally extending edge portion; a movable cutter mounted in said housing inwardly adjacent to said shear foil; drive means mounted in said housing and operable to move said cutter with reference to said shear foil; an elongated hair trimmer having a movable hair clipping portion, a stationary hair clipping portion cooperating with said movable hair clipping portion and abutment means; mounting means provided in said housing and supporting said trimmer adjacent to and in substantial parallelism with said edge portion, pivotable with reference to said housing between an operative and an inoperative position about an axis which is substantially parallel to said edge portion, and movable length-wise in the direction of said axis between a pair of axially displaced positions; resilient means mounted in said housing and arranged to bias said trimmer to said operative position; means for moving said trimmer length-wise between said axially displaced positions; at least one first and at least one second stop offset with reference to each other in the longitudinal direction of said trimmer, said abutment means being brought in registry with said first and said second stop, respectively, during length-wise movement of said trimmer between said pair of axially displaced positions and respectively engaging said first and said second stop in the operative and inoperative positions of said trimmer; and coupling means for connecting said movable clipping portion with said drive means in the operative position of said trimmer.

2. A combination as defined in claim 1, wherein said projections are at least slightly elastic and are provided with rivet heads arranged to hold said stationary clipping portion against any movement with reference to said supporting member.

3. A combination as defined in claim 1, wherein said supporting member consists of synthetic plastic material.

4. A combination as defined in claim 1, wherein said supporting member further comprises guide means for restricting said movable clipping portion to reciprocatory movements in the longitudinal direction of said trimmer, said stationary clipping portion also comprising means for guiding said movable clipping portion.

5. A combination as defined in claim 4, wherein said guide means of said supporting member comprises at least one elongated guide rail and said movable clipping member has an elongated slot for said guide rail.

6. In a power shaver, a combination comprising a housing; an elongated shear foil mounted in said housing and having a longitudinally extending edge portion; a movable cutter mounted in said housing inwardly adjacent to said shear foil; drive means mounted in said housing and operable to move said cutter with reference to said shear foil; an elongated hair trimmer comprising a stationary clipping portion, a movable clipping portion cooperating with said stationary clipping portion, a supporting member having projections extending into openings provided therefore in said stationary clipping portion, and a clamping device for biasing said movable clipping portion against said stationary clipping portion; mounting means in said housing supporting said trimmer adjacent to, in substantial parallelism with said edge portion and pivotable with reference to said housing between an operative and an inoperative position about an axis which is at least substantially parallel to said edge portion; and coupling means for connecting said movable clipping portion with said drive means in the operative position of said trimmer.

7. A combination as defined in claim 6, wherein said clamping device is a substantially U-shaped clip consisting of elastomeric material and said clipping portions have rows of teeth extending beyond said clip.

8. A combination as defined in claim 7, wherein said clip has a plurality of prongs bearing against said clipping portions adjacent to said rows of teeth.

9. A combination as defined in claim 6, wherein said trimmer further comprises abutment means and further comprising resilient means reacting against said housing and bearing against said abutment means to bias said trimmer to said operative position.

10. A combination as defined in claim 9, wherein said abutment means comprises a plurality of grooved abutments provided on said supporting member, said resilient means having portions received in the grooves of said abutments.

11. A combination as defined in claim 1, wherein said housing is provided with a recess and said first stop is located in said recess.

12. A combination as defined in claim 1, wherein said housing is provided with an aperture having an extension and wherein said resilient means has a substantially U-shaped portion received in said extension.

13. A combination as defined in claim 12, wherein said resilient means is a substantially V-shaped spring having end portions engaging said abutment means and making an angle of between about 130°–160°, said U-shaped portion of said resilient means being located substantially midway between said end portions.

14. A combination as defined in claim 1, wherein said mounting means comprises a pair of trunnions mounted in said housing and secured to said trimmer, said second resilient means being arranged to bias said trimmer by way of one of said trunnions and said release means being rigid with the other trunnion.

15. A combination as defined in claim 14, wherein said release means comprises a one-piece knob consisting of synthetic plastic material and having an exposed substantially circular handgrip portion and a sleeve ec-

centric with reference to said handgrip portion and connected with said other trunnion.

**16.** A combination as defined in claim **15**, wherein said other trunnion has a circumferential groove and said sleeve has a ring-shaped portion which extends into said groove.

**17.** A combination as defined in claim **14**, further comprising a plate-like retainer provided in said housing for said second resilient means, a plastic cover for said retainer, and means for securing said cover to said retainer by snap action.

**18.** A combination as defined in claim **1**, wherein said means for moving said trimmer length-wise comprises second resilient means operative to move said trimmer to one of said axially displaced positions, and release means connected to said trimmer for moving the latter against said second resilient means to the other of said axially displaced positions.

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