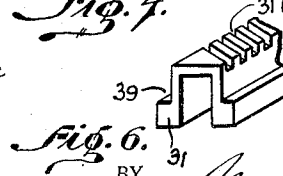
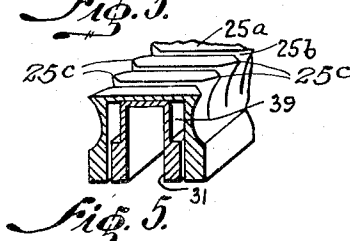
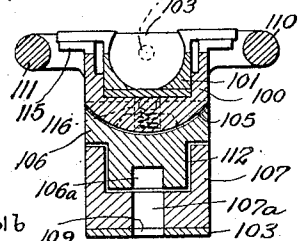
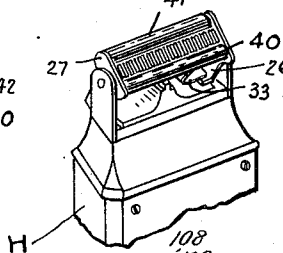
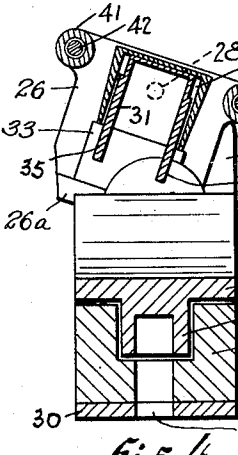
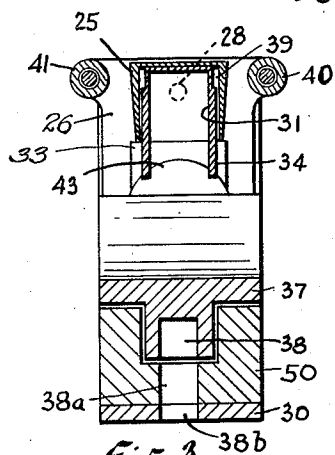
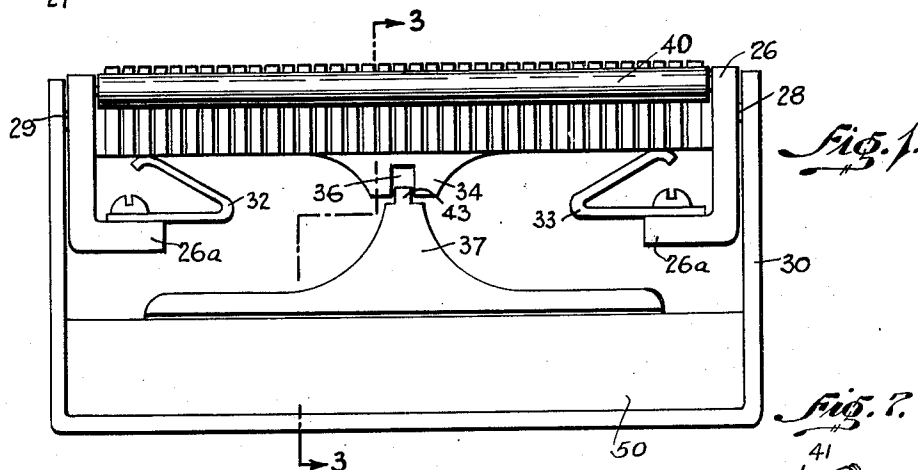
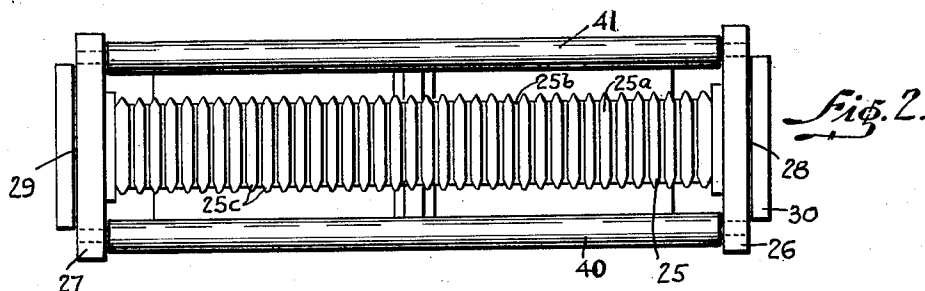


Nov. 16, 1937.

G. P. SCHMITT
RAZOR AND HAIR CLIPPER
Filed June 17, 1936

2,099,537



INVENTOR.
George Philip Schmitt.
BY *Maxwell E. Sparrow*
ATTORNEY.

UNITED STATES PATENT OFFICE

2,099,537

RAZOR AND HAIR CLIPPER

George Philip Schmitt, New York, N. Y.

Application June 17, 1936, Serial No. 85,625

14 Claims. (Cl. 30-43)

This invention relates to improvements in razors and hair clippers.

It is a purpose of this invention to provide a practical, efficient, economical and simple hair cutter in which the cutting elements automatically adjust themselves angularly with relation to the handle upon which they are mounted to always present the maximum skin engaging cutting surface, irrespective of the position the handle is held by the operator, as the device is being moved over the surface of the skin and around sharp curves. The invention is particularly adapted for use in power driven razors of the type used for dry shaving, that is, without the aid of lather or soap and in which a movable cutting element is employed. The cooperating cutting elements may be made to swing from side to side while one of the elements is in motion for the cutting operation. Therefore, it is a further purpose of this invention to provide means to bring about this simultaneous, dual motion.

A further purpose of this invention is to improve the hair cutting efficiency of a power driven hair clipper or razor.

A further purpose of this invention resides in providing an improved movable cutter member for a power driven razor which will operate in an efficient manner with relation to the stationary cutting element.

The above and other purposes and advantages may be attained by the novel design, construction and arrangement of parts, as hereinafter described and illustrated in the accompanying drawing, constituting a feature of this disclosure, and in which:

Fig. 1 is a side elevational view of a cutter unit for power razors embodying the invention.

Fig. 2 is a top plan view thereof.

Fig. 3 is a sectional view taken along line 3-3 of Fig. 1.

Fig. 4 is a view similar to Fig. 3, but showing the cutter unit in an angular position.

Fig. 5 is a perspective detailed view of a section of cutter unit or head embodying the invention.

Fig. 6 is a perspective partial view of inner cutter element, showing the slots in angular relation.

Fig. 7 is a perspective view of the top part of a power razor embodying and employing the invention.

Fig. 8 is a sectional view of a power razor head in a modified form.

The drawing shows some examples of power razors incorporating the invention and by which the same may be realized. Referring to Figs. 1-7,

inclusive, let the numeral 25 represent the hollow head carrying a skin-engaging shear-plate, which head may be rectangular in shape, having in the shear plate thereof the plurality of alternately disposed blades and slots, 25a, 25b, respectively, the blades 25 being here shown as having tapered end projections 25c for guiding the hair into the slots 25b for the cutting operation. The hollow head 25 is fixedly secured to the depending end members 26, 27, which are pivotally or swingably attached to the ends or arms of the substantially U-shaped base member 30, as by means of the pintles 28, 29, respectively.

The reciprocable hollow cutter member 31 which is made to operate within the hollow head or element 25 is provided with slots which may be straight across, as shown at 25b in Figs. 1 and 5, or angularly disposed with relation to the cutter as indicated by the numeral 31b in Fig. 6. The side walls of cutter 31 are provided with downwardly-disposed extensions 34, 35 having the preferably centrally located recesses or slots 36 within which partially projects the transverse preferably arcuate central extension 42 of slide 37. Cutter 31 is retained in the skin-engaging shear-plate head 25 with its cutting edges in engagement with the underside of the shear plate, by means of, for example, leaf springs 32, 33, having their free upper ends bearing against the cutter 31 and which are secured at their lower ends to the end members 26, for which purpose the latter may be provided with the intumed portions 26a. Slide 37 is mounted for reciprocation in slideway 50 of the base 30 which slideway has a longitudinal groove or channel which slidably receives the longitudinal projection or rail 50a of slide 37.

Slideway 50 is made part of or is secured to the base or support 30. Slide 37, slideway 50 and base 30 have registering openings 38, 38a, 38b, respectively, to receive the conventional motor-driven shaft and eccentric pin (not shown) for engagement with the slide 37, to reciprocate the latter for the hair-cutting operation.

The cutter 31 is preferably provided with the side recesses or cut-outs 39 adjacent the tapered end projections 25c of the top shearing plate, the purpose of said cut-outs 39 being to prevent any binding of the cutter thereby assuring easy movement of the cutter with relation to the shear plate; and also to provide clearances for hairs, particularly long ones to straighten out prior to the cutting operation.

The cutter head may be provided with longitudinally-disposed side guards, an example of which are the rollers 40, 41 mounted on shafts

42 secured to the pivoted end members 26, 27. The side guards prevent the blade projections 25c from irritating the skin during the cutting of the hairs.

5 The openings 38a and 38b in the parts 50 and 30 are made larger longitudinally of the base 50 than the opening 38, but of the same lateral extent to permit of the lateral movement of the eccentric pin to reciprocate the cutter member 31.

10 It will be observed that both the skin-engaging shear-plate and cutter in engagement therewith are pivotally mounted to swing together with relation to the base 30, and since the latter is adapted to be immovably mounted on handle H

15 (see Fig. 7) which may house the motor operating the eccentric pin, the said plate and cutter are free to be swung with relation to the handle H. It will be further observed that regardless of the angular position assumed by the cutting elements, slide 37 at extension 43, will always engage the cutter member 31 in slot 36 to reciprocate the cutter.

During the shaving or hair-cutting operation, the cutting elements automatically take their proper angular hair clipping position independent of the position of the handle and frame upon which they are pivotally mounted, and as the shaving operation progresses, the cutting elements will pivot from side to side, their swinging movement in either direction being limited by the top of arcuate projection or extension 43, which is so proportioned with respect to the depth of the slot 36 that the bottom of the latter engages a side of the projection before swinging past the center thereof, thereby serving as a stop for the swinging motion of the head in both directions. The relative angular position between the handle and the surface of the skin may remain unchanged and as the shear-plate is passed over the skin it will remain flat thereagainst going around the curves of the applied skin surface and pivoting or swinging when necessary.

In Fig. 8, part 103 corresponds to base 30; 107 to slideway 50; 109, 107a and 106a to openings 38b, 38a and 38, respectively of Figs. 3 and 4. Part 106 corresponds to slide 37 of Figs. 3 and 4, but in this instance slide 106 has a transverse arcuate channel or groove 105 to rockingly or swingably receive the cutter 100 having the laterally extending and spaced cutter parts 115 bearing upwardly against shear blades of a head 101. The specific construction of cutter 100 and head 101, as shown in Fig. 8, are claimed in a divisional application, Serial No. 134,536, filed April 2, 1937. The head 101 is fulcrumed or pivoted by suitable means, as a pin 108, to base 103. A spring 116 may tensionally hold the cutter member 100 in slidable engagement with the stationary cutter head 101. 110 and 111 are the side guard members.

The cutter member 100 and slide 106 reciprocate together in slot 112 with respect to the shear plate of head 101 and the slideway 107, the reciprocation being effected by a motor-driven shaft and an eccentric pin (not shown) extending within opening 106a and operating in openings 109 and 107a which are larger or wider longitudinally of the head than the former opening.

70 I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore, desire the present embodiment to be considered in all respects as illustrative and not restrictive; reference being had to the ap-

ended claims rather than to the foregoing description to indicate the scope of the invention.

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

1. A shaving instrument comprising cooperable 5 cutting members, one reciprocable with relation to the other, a support for said members, said members being jointly and freely swingable with relation to said support by skin contact, and reciprocating means for driving said reciprocating 10 member and having an operative connection therewith constructed to maintain the operative connection in different relative positions without preventing said swinging adjustment.

2. A shaving instrument comprising cooperable 15 cutting members, one reciprocable with relation to the other, a handle, means for supporting said members on said handle, said members being jointly and freely swingable with relation to said handle by skin contact, and reciprocating means 20 for driving said reciprocating member and having an operative connection therewith constructed to maintain the operative connection in different relative positions without preventing said swinging adjustment.

3. A shaving instrument comprising cooperable 25 cutting members, one reciprocable relative to the other, a support for said members having a connection therewith permitting free swinging motion of the members relative thereto by variations of the skin surface bearing thereagainst, and a reciprocating driving member having an operative connection with the reciprocating cutting member constructed to maintain the operative connection in different relative positions 35 without preventing said relative swinging movement.

4. A shaving instrument comprising cooperable 40 cutting members, one reciprocable relative to the other, a support for said members having a connection therewith permitting free swinging motion of the members relative thereto by variations of the skin surface bearing thereagainst, and a reciprocating driving member having an operative connection with the reciprocating cutting 45 member constructed to maintain the operative connection in different relative positions without preventing said relative swinging movement, said reciprocating driving member having means to receive a rotary driving member constructed to 50 cause reciprocating driving movement of the first-mentioned driving member and the reciprocating cutting member.

5. A shaving instrument comprising a base, a head having shearing openings for the reception 55 of hair, means detachably mounting said head on the base for free swinging movement relative thereto and for bodily detachment therefrom, a reciprocating cutter beneath said head in shearing arrangement therewith and carried by the 60 head for swingable movement therewith relative to the base, said base carrying driving means for the reciprocating cutter to maintain operative connection therewith in different relative positions and permitting swinging movement of the 65 head and cutter relative to said base.

6. A shaving instrument comprising a base, a head having transverse shear blades, means detachably mounting said head on the base for 70 free swinging movement relative thereto and for bodily detachment therefrom, a reciprocating cutter mounted beneath the blades and carried by the head for swingable movement therewith relative to the base, and a reciprocating driving member carried by the base, said driving mem- 75

ber operating to reciprocate the cutter upon reciprocating movement of the driving member and permitting transverse swinging movement of the cutter relative to the driving member.

5 7. A shaving instrument comprising a base, a head having transverse shear blades, means detachably mounting said head on the base for free swinging movement relative thereto and for
10 bodily detachment therefrom, a reciprocating cutter mounted beneath the blades and carried by the head for pivotal movement therewith relative to the base, and a reciprocating driving member carried by the base and having an inter-
15 fitting driving connection with the reciprocating cutter constructed to maintain the operative connection therewith in different relative positions and permitting swinging movement of the head and cutter relative to said driving member.

20 8. A shaving instrument comprising a base, a head pivotally mounted on the base and having transverse shear blades, a reciprocating cutter mounted beneath the blades and carried by the head for pivotal movement therewith relative to
25 the base, a reciprocating driving member carried by the base, said cutter having a transverse slot therein, and the driving member having an arcuate projection operating in said slot to reciprocate the cutter upon reciprocating movement of the driving member and permitting
30 transverse swinging movement of the cutter relative to the driving member.

9. A shaving instrument comprising a base, a head pivotally mounted on the base and having
35 transverse shear blades, a reciprocating cutter mounted beneath the blades and carried by the head for pivotal movement therewith relative to the base, a reciprocating driving member carried by the base, said cutter having a transverse slot
40 therein, the driving member having an arcuate projection operating in said slot to reciprocate the cutter upon reciprocating movement of the driving member and permitting transverse swinging movement of the cutter relative to the driving member, and said slot and projection being
45 so proportioned as to limit the relative transverse swinging movement.

50 10. A shaving instrument comprising a support having end arms, a shearing element, means mounting said element for free swinging movement relative to said arms by variations of the skin surface bearing thereagainst, said shearing element having openings for the reception of

hair, a cutter beneath said element in shearing arrangement therewith, said cutter being swingable with and reciprocable relative to said shearing element.

11. A shaving instrument comprising a support, a hollow head provided with end members and swingably carried by said support, said head having transverse slots and shear blades therebetween, a reciprocating cutter housed in the hollow head and having transverse blades bearing
10 against the blades of the head in shearing arrangement, and resilient means associated with said members and pressing the cutter against the underside of the head.

12. A shaving instrument comprising a support having end arms, a shearing element having end members swingably connected with said arms and having openings for the reception of hair, a cutter beneath said element in shearing arrangement therewith, said cutter being swingable with and reciprocable relative to said support, and a longitudinal skin-engaging side-guard carried by said members.

13. A shaving instrument comprising a U-shaped member, a hollow head provided with
25 end members and pivotally supported in the U-shaped member, said head having transverse slots and shear blades therein, a reciprocating cutter housed in the hollow head and having transverse blades bearing against the blades of the head in
30 shearing arrangement, the end members having inwardly projecting portions, and springs carried by said inwardly projecting portions and bearing against the cutter resiliently pressing the same against the underside of the head.

14. A shaving instrument comprising a U-shaped member, a hollow head provided with end members and pivotally supported in the U-shaped member, said head having transverse slots and shear blades therein, a reciprocating
40 cutter housed in the hollow head and having transverse blades bearing against the blades of the head in shearing arrangement, the end members having inwardly projecting portions, springs carried by said inwardly projecting portions and bearing against the cutter resiliently pressing the same against the underside of the head, and a reciprocating driving member slidably mounted in the U-shaped member and having a driving connection with the cutter permitting swinging
45 movement of the cutter relative thereto.

GEORGE PHILIP SCHMITT.