April 6, 1943. W. H. GREENLEAF 2,315,785

SAFETY SHAVING DEVICE

Filed June 26, 1939

Fig. 1.

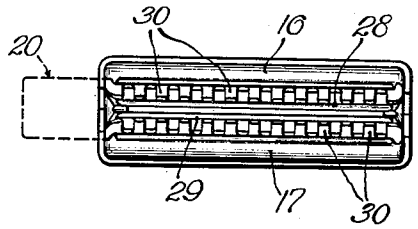


Fig. 3.

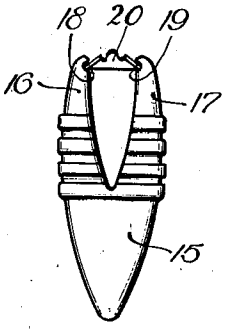


Fig. 2.

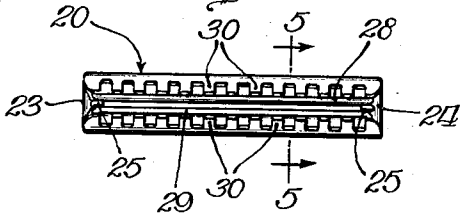


Fig. 4.

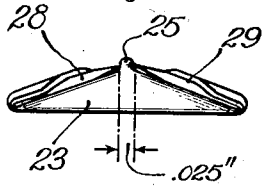


Fig. 5.

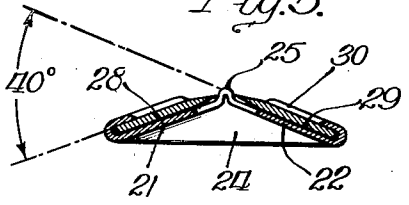


Fig. 6.

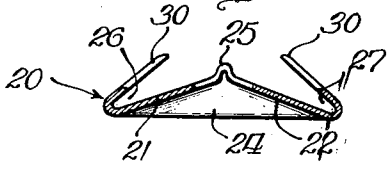


Fig. 8.

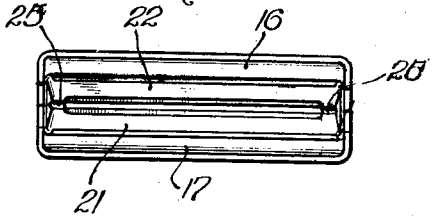
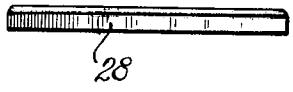


Fig. 7.



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2,315,785

SAFETY SHAVING DEVICE

William H. Greenleaf, Chicago, Ill.

Application June 26, 1939, Serial No. 281,143

5 Claims. (Cl. 30—32)

This invention relates to razors of the type in which two blades are positioned in slightly spaced relation to each other with their cutting edges oppositely disposed and with the blades in fixed angular relation to each other so as to enable each blade to serve effectively as a guard with respect to the shaving action of the other blade, and it has for its object the provision of a new and improved form and arrangement of parts in a device of this type whereby an improved mounting for the cutting blades may be provided, both with respect to holding the blades in operative position for a shaving operation and with respect to the holding of the blades without danger of dulling their edges and without danger of cutting the fingers of the user.

The means by which these objects preferably are obtained, as shown in the drawing, comprises a head member of sheet metal pressed into shape for holding the blades very strongly in fixed operative position with respect to each other, with the blades positively spaced at the desired distance apart and at the desired angle with respect to each other, the head member being formed and tightened upon the blades by precision machinery with the spacing kept accurate to within one or two thousandths of an inch and with the angle between the blades kept within one or two degrees of the angle desired. With such small tolerances as this in effect, and with the blades held positively with great rigidity in the designed relative positions with respect to each other, effective operation of the razor at all times is assured. Inasmuch as the blades are placed in position in the heads or holders by automatic machinery specially designed for the purpose, the blades are protected at all times against becoming dulled by accidental engagement at their edges with metal parts as would be likely to happen when the blades are inserted into a holder by hand.

It is one of the objects of this invention to improve devices of this type in sundry details hereinafter pointed out. The preferred means by which I have accomplished my several objects are illustrated in the accompanying drawing and are hereinafter specifically described. That which I believe to be new and desire to cover by Letters Patent is set forth in the claims.

In the drawing,

Fig. 1 is an edge face view of my improved razor;

Fig. 2 is a corresponding face view of the shaving head removed from the handle or support;

Fig. 3 is an end view of the razor;

Fig. 4 is an end view of my improved shaving head on an enlarged scale;

Fig. 5 is a cross sectional view taken on an enlarged scale at the line 5—5 of Fig. 2;

Fig. 6 is a cross sectional view of the head member before the cutting blades have been inserted thereinto;

Fig. 7 is a face view of one of the cutting blades; and

Fig. 8 is a view similar to Fig. 1 but with the shaving head in inverted position.

Referring now to the several figures of the drawing, in which corresponding parts are indicated by the same reference characters,—15 indicates a handle or supporting member in the form of a block having a deep groove therein at one edge so as to provide two oppositely disposed plate portions 16 and 17 having inwardly opening mounting grooves 18 and 19 oppositely disposed therein near the outer edge portions of said plates. The block 15 is preferably in the form of a moulding or casting from material which will keep its shape when immersed in moderately warm water and which has a high degree of strength to resist breakage and which will resist wear as metal parts are pressed into and out of the mounting grooves 18 and 19.

In the arrangement shown, the shaving head comprises a head member 20 of sheet metal pressed into the form as shown in Fig. 6 for reception of a pair of blades therein. This head member 20 comprises two oppositely disposed sheet portions 21 and 22 having a central opening therebetween and being connected together by end bars 23 and 24 formed integrally with the side sheet portions, the end portions of the head being pressed into strongly braced condition with the end members 23 and 24 holding the side sheet portions very strongly in position with respect to each other. At their middle points, the end bar portions are provided with spacing lugs 25 formed integrally with the sheet metal.

In the condition of the parts as shown in Fig. 6, the outer edge portions of the side sheets 21 and 22 are turned backwardly upon the sheet portions so as to provide inwardly opening channels 26 and 27 into which the cutting blades 28 and 29 are slidable into the positions as shown in Fig. 5. The size and arrangement of the several parts are such that the end portions of the cutting edges of the blades engage the spacing lugs 25 so as to hold the blades positively in the desired spaced relation, with the outer edges of the blades fitting snugly in the channels 26

and 27. When the blades have been slid into position by automatic machinery by which the blades are firmly gripped and accurately controlled, the backwardly turned edge portions of the channels are pressed firmly down on the blades for securing them strongly in position in the head member. In the arrangement shown, the edge portions of the channels are cut away at a portion of their length so as to provide spaced lugs or fingers 30 for engagement with the edge portions of the blades.

In the preferred form of arrangement as shown in Figs. 4 and 5, the cutting blades 28 and 29 are separated from each other by a distance of .025 inch, which is the normal spacing for the blades. This distance is fairly critical for satisfactory work, with respect to the action of each blade as the guard for the other blade so as to prevent the user from cutting his face. There is a tolerance, however, of one or two thousandths of an inch in either direction without seriously affecting the operativeness of the device.

In the arrangement as shown in said Figs. 4 and 5, the cutting blades 28 and 29 are positioned at an angle to each other of about 140 degrees, which is the angular relation preferred. This also is quite critical for effective operation. I have found that if this angle is made greater than about 146 degrees, it is necessary that the razor be pressed very hard against the face in order to make it cut. If, on the other hand, the angle is made less than about 130 degrees, it is almost impossible for the user to employ the razor in the designed manner without cutting the face, and with the angle appreciably smaller than said 130 degrees limit it is possible to cut the face very badly. I have found that the best results are attained when the blades are at an angle of about 140 degrees from each other as shown,—that is to say, with each blade at an angle of about 20 degrees from the directly transverse plane. With the blades at this desired angle, the handle can be moved back and forth so as to put the two blades alternately into action, each blade serving as a guard for the other blade, and each blade being positioned at its angle of greatest effectiveness with the handle held in the same position with respect to the face for the cutting action by either of the blades.

By the use of my improved construction, a shaving head can be very quickly and easily placed in position in the handle 15 ready for a shaving operation. As the razor is moved back and forth over the face with each blade acting as a guard for the other blade, a substantial massaging effect is brought about by which the general tone condition of the face is improved. By reason of my improved arrangement, each blade when acting as a guard for the other blade stands at a very small angle with respect to the face, with the result that there is a very slight tendency if any at all for the blade to be dulled by the guarding action. In the use of the device, the hair and shaving cream are caused to pass between the blades 28 and 29 into the chamber between the plate portions 16 and 17 of the handle, the arrangement being such that the hair and shaving cream can be very quickly and easily washed out by a stream of water directed into the chamber from one end. If it is desired, the shaving head can be very quickly withdrawn from operative position and reinserted in inverted position, as shown in Fig. 8, so as to insure complete protection for the cutting edges of the blades.

By my improved construction in which spacing lugs 25 are employed at the ends of the device, the blades 28 and 29 are held positively in the desired spaced relation to each other, and the blades are held very strongly at all times against movement out of the desired angular relation with respect to each other.

While I prefer to employ the form and arrangement of parts as shown in my drawing and as above described, it is to be understood that my invention is not limited to the arrangement shown except so far as the claims may be so limited, since changes might well be made in the form and arrangement of parts without departing from the spirit of my invention.

I claim:

1. A shaving head for a safety shaving device comprising in combination a head member of sheet metal pressed into form providing inwardly opening channels along opposite edges with a central opening therebetween, and two blades gripped tightly in said channels so as to be held firmly by said head member with their cutting edges oppositely disposed at a short distance from each other and with the blades in fixed angular relation to each other at such an angle as to cause each blade in turn at every shaving stroke of the other blade to serve effectively as a guard for preventing the user from cutting himself.

2. A shaving head for a safety shaving device comprising in combination a head member of sheet metal pressed into form providing two sheet portions in angular relation to each other and turned backwardly upon themselves at their outer edges to provide inwardly opening channels with a central opening therebetween, and two blades gripped tightly in said channels so as to be held firmly by said head member with their cutting edges oppositely disposed at a fixed distance apart as controlled by the depth of said channels and with the plates held in angular relation to each other corresponding to the angular relation of such sheet portions and at such an angle as to cause each blade in turn at every shaving stroke of the other blade to serve effectively as a guard for preventing the user from cutting himself.

3. A shaving head for a safety shaving device comprising in combination a head member of sheet metal pressed into form so as to provide two side sheet portions in angular relation to each other with a central opening therebetween, and integrally formed end portions drawn into strongly bracing position between the side sheet portions, said side sheet portions being turned backwardly upon themselves at their outer edges for providing inwardly opening channels, and two blades gripped tightly in said channels so as to be held firmly by said head member with their cutting edges oppositely disposed at a fixed distance apart and with the blades held in angular relation to each other corresponding to the angular relation of said side sheet portions and at such an angle as to cause each blade in turn at every shaving stroke of the other blade to serve effectively as a guard for preventing the user from cutting himself.

4. In a safety shaving device, the combination of a handle comprising oppositely disposed plate portions with a comparatively large chamber therebetween, with inwardly opening grooves oppositely disposed in said plate portions near their free edges, and a shaving head slidably mounted in said grooves comprising a head member having a central opening therethrough throughout substantially its full length and blades rigidly mount-

ed in said head member with their cutting edges facing inwardly in slightly spaced relation to each other and with the blades in such angular relation to each other as to cause each blade in turn at every shaving stroke of the other blade to serve effectively as a guard for preventing the user from cutting himself.

5. In a safety shaving device, the combination of a handle in the form of a block having a deep groove therein at one edge face so as to provide oppositely disposed plate portions in spaced relation to each other having mounting grooves opening inwardly near their outer edges, and a shaving head slidably mounted in said mounting grooves comprising a head member having a central opening therethrough throughout substantially its full length and blades rigidly mounted in said head member with their cutting edges facing inwardly in slightly spaced relation to each other and with the blades in such angular relation to each other as to cause each blade in turn at every shaving stroke of the other blade to serve effectively as a guard for preventing the user from cutting himself.

WILLIAM H. GREENLEAF.