Aug. 18, 1936. M. B. BEHRMAN 2,051,160

RAZOR BLADE

Filed Aug. 24, 1933 2 Sheets-Sheet 1

Fig. 1.

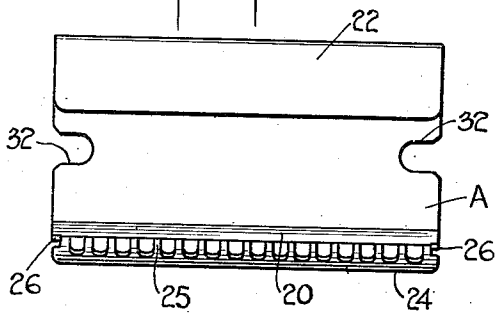


Fig. 2.

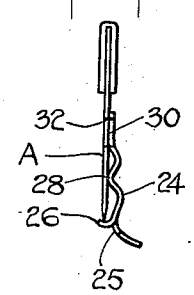


Fig. 3.

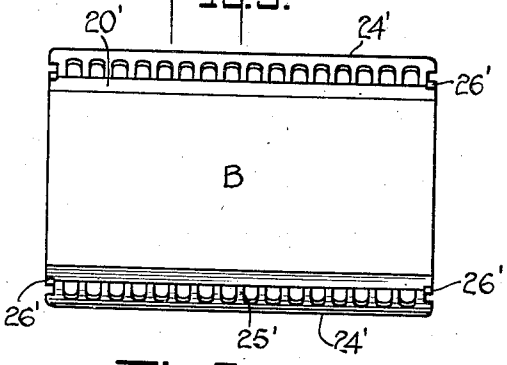


Fig. 4.

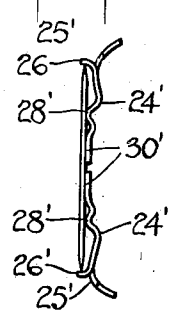


Fig. 5.

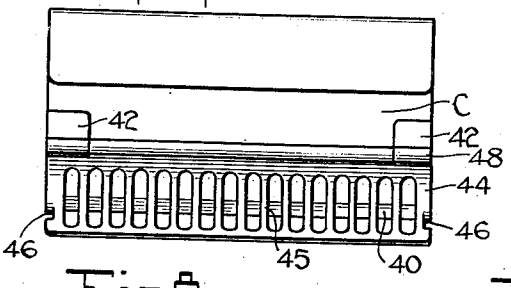


Fig. 6.

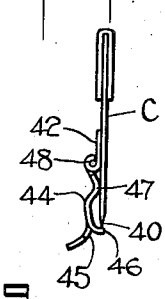


Fig. 7.

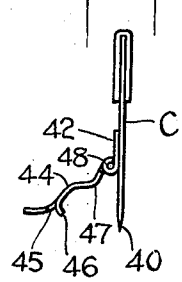


Fig. 8.

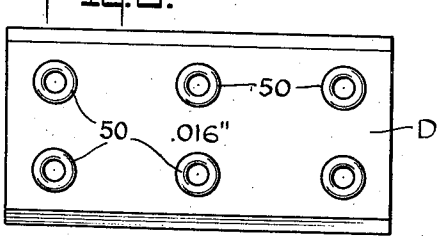
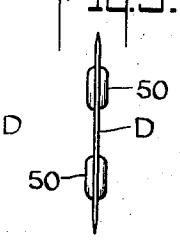


Fig. 9.



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Aug. 18, 1936. M. B. BEHRMAN 2,051,160

RAZOR BLADE

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Fig. 10.

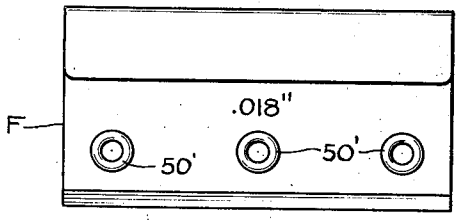


Fig. 11.

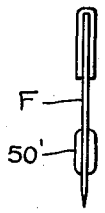


Fig. 12.

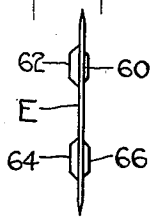


Fig. 13.

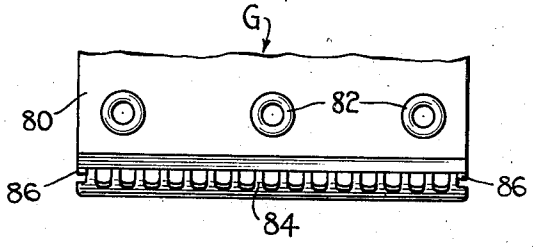


Fig. 14.

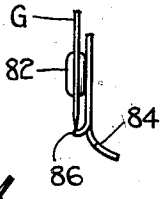


Fig. 15.

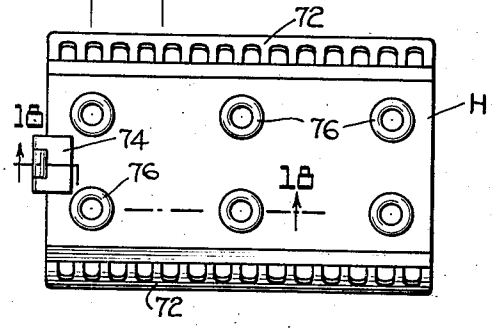


Fig. 16.

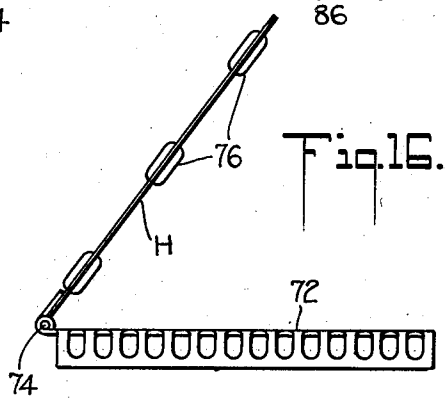


Fig. 17.

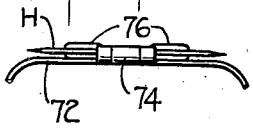
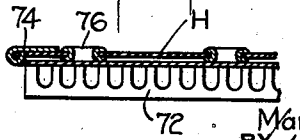


Fig. 18.



INVENTOR
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Patented Aug. 18, 1936

2,051,160

UNITED STATES PATENT OFFICE

2,051,160

RAZOR BLADE

Marcus B. Behrman, Brooklyn, N. Y., assignor to American Safety Razor Corporation, Brooklyn, N. Y., a corporation of Virginia

Application August 24, 1933, Serial No. 686,587

8 Claims. (Cl. 30—30)

My present invention relates generally to safety razors and more particularly to the incorporation in the blade of means for predetermining the positional relation of the shaving edge of the blade for shaving purposes.

The holder and a blade to be replaceably associated therewith, for functioning as a safety razor, requires that the shaving edge of the blade shall, for maximum efficiency of the shaving operation, assume a predetermined positional relationship with reference to the guard, which may be described roughly as a positional relationship with reference to the guard, both in a vertical plane and in a horizontal plane.

It is one of the objects of my invention to incorporate in the blade features of construction whereby the positional relationship of the shaving edge vertically with reference to the guard is predetermined. By this arrangement I attain the further objective that by varying the characteristics of these features so embodied in the blade, the shaving characteristics of the razor can be changed.

In one embodiment of my invention I show an arrangement for attaining this objective by the incorporation in the blade of spacing protuberances and by the arrangement I show, the further objective is attained of a clear passage between the blade and the member upon which it seats, through which lather, hair and the like can be discharged.

I have illustrated another embodiment of the invention in which I attain the objectives of the first mentioned embodiment, and the further objective of the horizontal positioning of the shaving edge with relation to the guard, and this I accomplish as hereinafter set forth by making the guard part of the blade.

I have illustrated a still further embodiment of my invention in which a guard is provided as part of the blade in which the two are so associated that ready access may be had to either blade or guard, for purposes of cleaning them.

Another feature of my invention is an arrangement whereby in that embodiment of my invention in which the guard is made as part of the blade, the association is such as to permit of the employment of a double-edged blade.

It will of course be understood that the embodiments of my invention herein disclosed, are for purposes of illustration only, and that it may be embodied in many other forms, such as will readily suggest themselves to persons skilled in the art, without thereby departing from the spirit thereof, as defined in the claims.

For the attainment of these objects and such other objects as will hereinafter appear or be pointed out, I have illustrated embodiments of my invention in the drawings, in which:

Figure 1 is a plan view of one embodiment of my invention;

Figure 2 is an end view of the blade shown in Figure 1;

Figure 3 is a plan view of another embodiment;

Figure 4 is an end view of Figure 3;

Figure 5 is a plan view of a still further embodiment;

Figure 6 is an end view of the blade of Figure 5 with the guard in the position of use;

Figure 7 is an end view of the blade of Figure 5 with the guard raised for cleaning purposes;

Figure 8 is a plan view of a double-edged wafer type blade showing a still further embodiment of my invention;

Figure 9 is an end view of the blade of Figure 8;

Figure 10 is a plan view of a single-edged blade with stop means similar to that shown in Figure 8;

Figure 11 is an end view of the blade of Figure 10;

Figure 12 is an end view of a double-edged wafer type blade, having stop means of varying dimensions associated therewith, whereby various spacings of the shaving edge from the guard may be obtained;

Figure 13 is a plan view of a portion of a blade including the shaving edge and adjacent portions thereof, and showing the association therewith of guard means and spacing means similar to that shown in Figure 8;

Figure 14 is an end view of the blade shown in Figure 13;

Figure 15 is a plan view of a double-edged blade, having hingedly associated therewith, guard means, and having further associated therewith protuberances for spacing the blade from the guard means;

Figure 16 is a side elevation showing the blade and the guard separated for cleaning purposes;

Figure 17 is an end view of the blade of Figure 15, with the guard and blade in contact; and

Figure 18 is a sectional view on the line 18—18 of Figure 15, showing the blade and guard in contact.

Upon viewing Figures 1 and 2 of the drawings, it will be observed that I have attempted to show a guard carried by a single-edged blade in fixed relation to the shaving edge. The blade is generally referred to by the reference character A

and has the shaving edge 20 and is shown as of the type having a rigid back 22.

The member 24 is shown in this embodiment as in fixed association with the blade in any preferred or desired manner as by spot welding or riveting, as indicated at 30 and as so designed and associated as to provide a guard for the shaving edge 20 and the desired position of the latter with reference to the former. The guard is shown at 25, and is provided with the stops 26 to determine the position of the shaving edge in one plane, and the portions 28 to determine the position of the shaving edge in another plane i. e., the spacing of this edge above the guard 25 and the space so provided between member 24 and the blade will serve further to permit lather and hair to pass therebetween and thereby prevent obstructive accumulations at the shaving edge.

In effecting association of blade and guard in permanent form, I have found it convenient to proceed in the following manner. The member 24 is first of all placed in position on the blade with the shaving edge of the blade contacting with the stops 26, and the positioning elements 28 in contact with the blade. The two may then be permanently fixed in such position by welding the member 24 to the blade, as indicated in the drawings.

A blade with the guard thus associated therewith may be assembled with a holder of any desired type suitable for the purpose, and it is obvious that such holder may be of very simple construction for gripping the blade since no provision is needed therein for attaining the proper relation between the shaving edge and the guard.

To assist in fixing the blade in the gripping holder, I may employ positioning recesses 32 in the blade for cooperation with means on the gripping holder.

In Figure 3 I show my invention applied to a safety razor blade of the wafer type, having two shaving edges, each shaving edge 20' being shown for purposes of illustration as having a guard fixedly associated therewith substantially as in Figure 1. Therefore, for purposes of convenience of description, the same reference characters have been applied to each half of the blade as in Figure 1, except that the members are primed and the description of Figure 1 will therefore apply to Figure 3 as well.

In the embodiments of Figures 5, 6 and 7, I have shown a modification of the already described embodiments, whereby the guard portion 45 of the member 44 can be moved away from the shaving edge 40 of the blade C for blade cleaning purposes, and the like. This relative movement between the blade and the guard is permitted by hinging the member 44 to the blade proper at the points marked 42 by means of pintles to which the reference character 48 has been applied.

In Figure 7 I show the guard swung away from the blade, and in Figure 6 moved into its operative relation thereto so as to permit the parts 47 and 46 of the member 44 to predetermine the spatial relation of the shaving edge in reference to the guard as already described in connection with the earlier embodiments.

By the embodiments of Figures 5, 6 and 7 I not only attain all the advantages of the earlier described embodiments, but also the additional advantage incident to the fact that the guard can be moved away from the shaving edge of the blade.

It will be observed that in the embodiments of Figures 1 to 7 inclusive, the means by which the spacing of the shaving edge of the blade with reference to the guard is determined entirely by formations in the guard carried by the blade.

I will now proceed to describe embodiments of my invention wherein the spacing of the shaving edge of the blade from the guard is determined by formations in the blade proper, and reference is made to Figures 8 and 9 wherein the double-edged blade D is shown as provided with protuberances as arranged in two groups, substantially parallel to and symmetrically of the shaving edges. As the blade is reversed to permit one or the other of the shaving edges to be used for shaving purposes, its adjacent group of members 50 will serve to space that edge.

In Figure 10 I show these protuberances employed with a single edged blade in which event only one group of protuberances are used for the one shaving edge, the group however being duplicated on opposite sides of the shaving edge, to permit of reversibility of the blade. So also, a set of blades can be employed with protuberances of different elevations so that a selection can be made for shaving purposes in accordance with the character of shave which it is desired to have.

In Figure 12 I show a double edged blade in which the group of protuberances 60 and 66 on one surface are of different elevations to each other, and also respectively of different elevations from the groups of protuberances 62 and 64 on the opposite surface of the blade.

In the embodiment of Figure 8, these protuberances are shown for purposes of illustration only as constituted by a series of eyelets, the rims of which are turned down by a stamping or swaging operation, to form the elevated portions of protuberances. It will be understood, of course, that these protuberances can be formed in the blade or from the blade in any other desired or preferred manner without departing from the broader phases of my invention.

It will further be understood that the blade of the top of Figure 8 can be employed with a conventional holder wherein the position of the shaving edge in a horizontal plane in reference to the guard can be determined in any conventional manner or in a manner already described in connection with the previously described embodiment.

In Figures 13 and 14 I have indicated the application to the guard and blade combination of Figures 1 to 7 of spacing protuberances. In these figures the whole unit is indicated by G and 80 is the blade proper, having integral stops 82, while 84 is a guard member with blade stops 86.

Figures 15, 16, 17 and 18 show a blade H of the double edged type 70 with a guard member 72 therefor, and the blade and the guard are united at one side thereof by the hinged member 74. Spacing members 76 are provided on the blade to secure the proper spacing. The function of these various elements will be clear from what has preceded, that of the hinge, of course, being to permit spacing of the blade edge and guard for purposes of cleaning, while the hinge, in connection with the spacing members provides for bringing the blade and guard together so as to secure accurate spacing of the shaving edge and the guard.

It will be noted that in this form no use is made of stop members corresponding to stops 26 of Figure 1, as the double edge of the blade

makes this construction useless for obtaining accurate spacing of both edges from the guard. Such accurate spacing may be secured by suitable assembling devices such as are well known in the art, which will assure proper placing of the blade in relation to the guard.

It is obvious that my invention is applicable to razor blades of various types, although it has been shown, by way of example as applied to wafer type blades.

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

1. A razor blade having a shaving edge, a member inseparably associated with one of the flat surfaces of said blade and carrying means, in adjustable relation thereto, adapted to overlie said blade and to position said shaving edge in relation to the surface to be shaved, and means interposed between the surface of said blade and said positioning means for limiting the approach of said positioning means toward the blade surface, whereby the spatial relationship between the shaving edge and the positioning means when it is in a limiting position is determined and invariable.

2. For use with a safety razor, a blade having a shaving edge, a member inseparably associated with said blade and carrying means adapted to position said shaving edge in relation to the surface to be shaved, means interposed between said blade and said positioning means for limiting the approach of said positioning means toward the blade surface, and means for limiting the position thereof in the plane of the blade surface, whereby the spatial relationship between the shaving edge and the positioning means when it is in a limiting position is determined and invariable.

3. A wafer type safety razor blade having a shaving edge, a member inseparably associated with the surface of said blade and carrying guard means adapted to overlie said blade and pivotally related thereto for positioning said shaving edge in relation to the surface to be shaved, and cooperating means inseparably associated with said blade and positioning means and positioned therebetween, for limiting their approach to each other, whereby the spatial relationship between said shaving edge and said positioning means, when it is in its limiting position, is predetermined and invariable.

4. For use with a safety razor, a wafer type blade having a shaving edge, a member inseparably associated with one of the flat surfaces of said blade and carrying adjustable means adapted to overlie said surface and position said shaving edge in relation to the surface to be shaved, and means cooperative between said blade and said positioning means for limiting the approach of said positioning means toward the shaving edge, whereby the spatial relationship between the shaving edge and the positioning means when it is in a limiting position is determined and invariable.

5. For use with a safety razor, a blade having a shaving edge, a member inseparably associated with said blade but positionally variable in relation thereto, and carrying means adapted to position said shaving edge in relation to the surface to be shaved, means interposed between said blade and said positioning means for limiting the approach of said positioning means toward the blade surface, and means adapted to abut the shaving edge when said positioning means is in its limiting position in relation to the blade surface for limiting the position thereof in the plane of the blade surface, whereby the spatial relationship between the shaving edge and the positioning means when it is in a limiting position is determined and invariable.

6. For use with a safety razor, an integral shaving element constituted by a wafer type blade having a cutting edge, a guard member, and uniaxial hinge means uniting said blade and said member along one of the edges of said member, whereby said blade and said member may be brought into overlying relation for shaving purposes, and may be moved about said hinge means so as to bring them out of said overlying relation for cleaning purposes, said hinge means being of such character that when said guard member is brought into adjacent overlying relation to the blade it will always assume a predetermined relation thereto, and the axis of said hinge means being disposed parallel to said shaving edge.

7. For use with a safety razor, an integral shaving element constituted by a wafer type blade having a cutting edge, a guard member, and uniaxial hinge means uniting said blade and said member along one of the edges of said member, whereby said blade and said member may be brought into overlying relation for shaving purposes, and may be moved about said hinge means so as to bring them out of said overlying relation for cleaning purposes, said hinge means being of such character that when said guard member is brought into adjacent overlying relation to the blade it will always assume a predetermined relation thereto, and a rigid back permanently associated with said blade.

8. For use within a safety razor adapted to removably receive, and to support for use in shaving, an integral shaving unit, said unit consisting of a wafer type blade having at least one shaving edge thereon, and a guard element hingedly united to said blade, said union of guard element and blade being permanent, and said guard element having portions thereof adapted when in one of its positions to overlie the surface of said blade in predetermined relation and other portions thereof so positioned in a predetermined relation to the shaving edge as to determine its position relatively to the surface to be shaved, and when in other positions to be spaced from the blade surface and shaving edge, for purposes of cleaning the blade, and said integral unit having portions thereon adapted to engage complementary portions of the holder when it is inserted thereinto.

MARCUS B. BEHRMAN.