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2,608,756

COMB GUARD FOR ELECTRIC SHAVERS

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2 SHEETS—SHEET 1

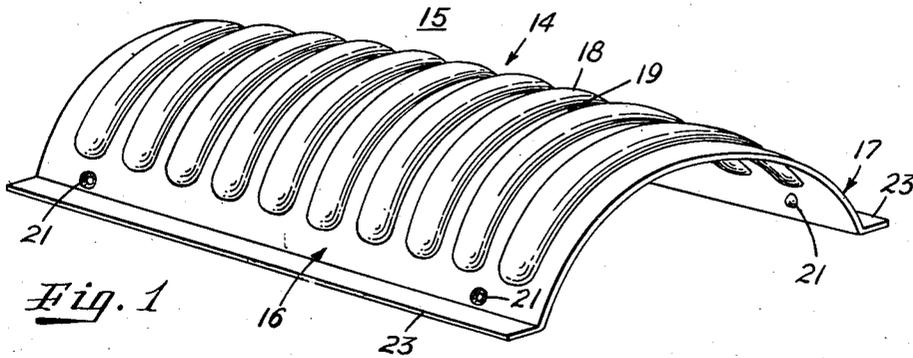


Fig. 1

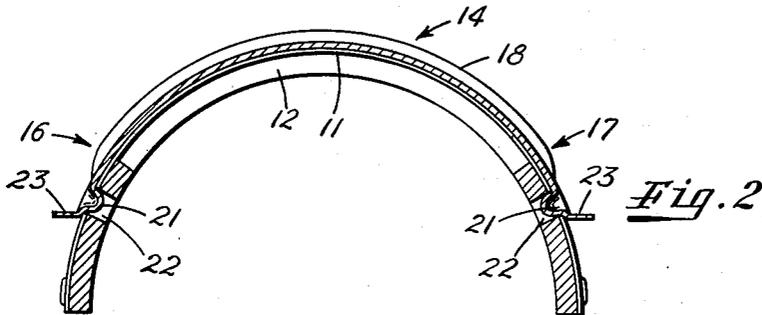


Fig. 2

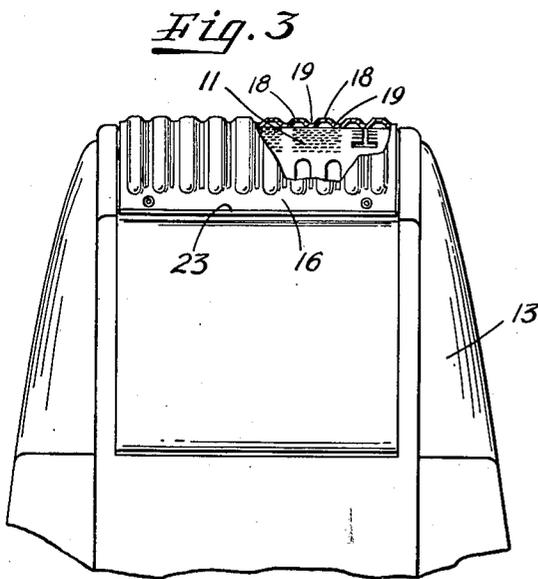


Fig. 3

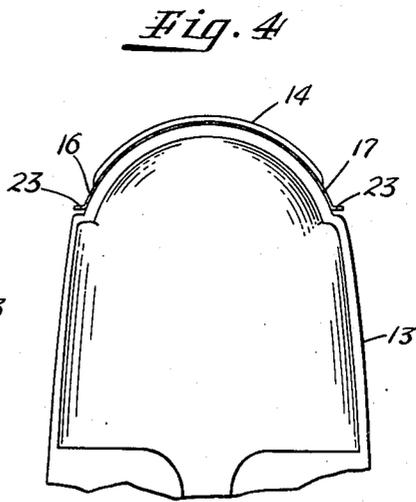


Fig. 4

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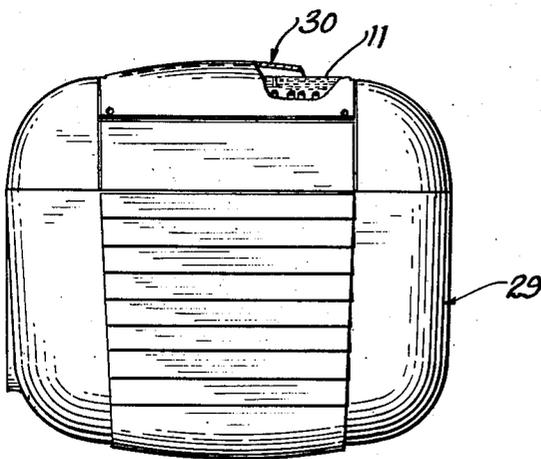
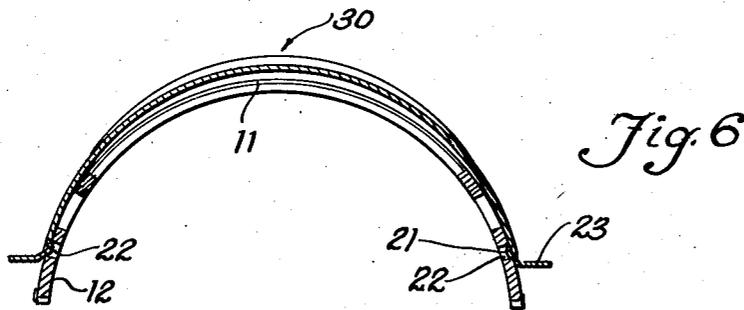
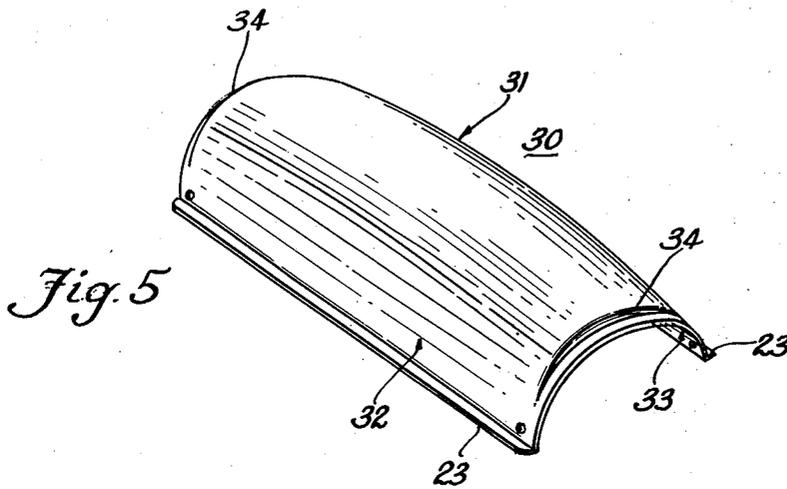
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2 SHEETS—SHEET 2



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COMB GUARD FOR ELECTRIC SHAVERS

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7 Claims. (Cl. 30—90)

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The present invention relates to a guard for shielding surfaces requiring protection and more particularly to a guard or a comb of an electric shaver. Specifically the present invention is a continuation in part of copending application Serial No. 782,763 filed October 29, 1947, now abandoned.

In electric shavers of the type disclosed and claimed in copending shaver application, Serial No. 71,927, filed January 21, 1949, there is provided an arcuate comb which is a precision device for a manufacturing standpoint. Such combs comprise a thin arcuate plate having a plurality of hair receiving openings therein as well as supporting ribs therefor. The comb is furthermore disposed so the inner surface is in shearing engagement with an oscillating blade. In order to guard and protect such combs it is desirable to provide a comb guard which should be an inexpensive device from the standpoint of manufacturing cost, should be of pleasing appearance, should be readily removable, and yet when attached to the comb in a protective manner should afford full and complete protection thereto. Also, since the comb is removable from the razor for cleaning purposes and the like it is desirable that the guard should be associated with the comb in its protective position whether the comb be associated or disassociated from the shaver.

It is an object of the present invention to provide a guard for a comb having the features enumerated above.

Another object of the invention is to provide a lightweight guard of the above character which can be readily positioned over the surface to be shielded or protected and which can be quickly, easily, and readily removed as desired.

Another object of the invention is the provision in a guard of the above character of novel means for securing the guard to the object to be protected.

Another object of the invention is to provide a guard of the above character that can be fashioned by a relatively simple forming process.

Another object of the invention is to provide a guard of the above character which is of relatively lightweight construction, which is relatively strong and durable, which is simple to construct, and which is relatively inexpensive to manufacture.

Further objects and advantages of the present invention will become apparent as the following description proceeds, and the features of novelty which characterize the invention will be pointed

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out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of the present invention reference may be had to the accompanying drawings in which:

Fig. 1 is a perspective view of a comb guard embodying the present invention;

Fig. 2 is a sectional view showing the comb guard shielding the comb of an electric shaver;

Fig. 3 is a cutaway elevational view of the cutting portion of an electric shaver showing the comb guard in position thereon;

Fig. 4 is an end view of Fig. 3;

Fig. 5 is a perspective view similar to Fig. 1 showing a modification of the present invention;

Fig. 6 is a sectional view similar to Fig. 2 showing the guard of Fig. 5 associated with an electric shaver; and

Fig. 7 is an elevational view partly in section of an electric shaver embodying the comb guard shown in Fig. 5 of the drawings.

The present invention is concerned with a guard for protecting delicate surfaces which guard is of lightweight construction and yet sufficiently strong to provide adequate protection and which guard can quickly and easily be located in shielding position relative to the delicate surface to be protected and which furthermore can also readily be removed from the surface which is being protected thereby. Since the present invention is particularly applicable for protecting arcuate shaped combs of electric shavers of the type disclosed in United States Letters Patent 2,234,891 it is illustrated and described in connection with such specific application.

Referring now to the drawings and particularly to Figs. 1 to 4 of the drawings, there is illustrated an electric shaver 13 which has mounted at one edge thereof a cutting surface comprising an arcuate comb 11 which includes supporting means in the form of ribs 12. The comb surface has a plurality of hair receiving openings and is also normally attached to the supporting ribs 12 to form a removable unit as is fully disclosed in the above mentioned Letters Patent.

In accordance with the present invention a comb guard generally designated as 15 is provided which is formed of relatively thin lightweight resilient sheet stock comprising a central arcuate shaped portion 14 and spaced opposed edge portions 16 and 17 integrally formed with the central portion 14.

The radius of curvature of the central portion 14 may be substantially the same as the radius of curvature of the comb 11 whereby the guard

touches the comb at the central portion as shown in Fig. 3 of the drawings. Preferably, however, the guard having the central portion 14 has at least in the central portion thereof a different radius of curvature so that the central portion 14 is spaced from the comb in the manner shown in Fig. 6 of the drawings whereby greater protection is afforded the comb 11 since if the guard is bumped it must be distorted substantially before the guard jams against the comb.

It will be understood that although the guard is shown in the drawings as serving to protect an arcuate shaped surface such as that of the comb 11, it can also be used to protect other delicate surfaces.

For the purpose of providing increased strength the guard 15 is shaped in a predetermined manner thereby to increase the strength and rigidity of the central portion 14. This means for increasing the strength and rigidity may take several forms, two of which are disclosed in the two modifications of the present invention illustrated in the drawings. As illustrated in Figs. 1 and 3 of the drawings the central portion 14 of the guard 15 is provided with a plurality of alternately spaced ridges 18 and grooves 19, which are formed therein by a simple stamping operation preferably simultaneously with the original forming of the guard 15. These ridges and grooves 18 and 19 respectively extend from the edge portion 16 to the edge portion 17. The central portion 14 of the guard 15 therefore presents a corrugated surface. It will be apparent that in addition to increasing the strength of the guard the ridges 18 provide line surfaces for engagement with foreign objects that might bump the guard. Furthermore the surface contact friction is reduced by virtue of the line contact with the ridges 18 thereby causing foreign objects which might bump the guard to be deflected more readily. The ridges 18 are spaced from the protected surface 11 so that even if the grooves 19 touch the protected surface as indicated in Fig. 3 the major portions of the ridges 18 would tend to deflect without transmitting the shock of the comb. It should be understood that in what is believed at present to be the preferred embodiment of the invention, no portion of the guard will touch the main cutting surface of the comb so that considerable shock can be absorbed either in the corrugations themselves or in the guard before any force is transmitted to the protected surface 11 through the guard 15. This is true particularly because the guard is formed of lightweight resilient material which will tend to deflect and absorb considerable shock in so doing. If the deflection can occur without causing the central portion 14 of the guard 15 to touch the comb 11, obviously the shock will have been absorbed completely without even affecting the protected surface.

For the purpose of securing the guard 15 in a shielding position with respect to the comb 11, the guard is provided adjacent the four corners thereof with projections 21 adapted to interfit with spaced recesses 22 defined in the arcuate comb 11 and the comb support 12. The projections 21 are preferably formed by a simple forming operation comprising deforming the edge portion 16 and 17 so that protrusions are produced which may be inserted into the recesses 22. These protrusions 21 as is clearly evidenced from Figs. 1 and 2 of the drawings are formed in the concave surface of the guard 15 and the protrusions on opposite edges of the guard tend to face each other. As illustrated two protrusions

21 are provided on each edge of the guard cooperating with two recesses 22 formed on each side of the arcuate comb 11. It should be understood that any number of desired projections or protrusions 21 may be employed. It will furthermore be obvious that the projections might be formed on the comb 11 and the recesses defined in the guard 15, although it is preferable not to have projections on the comb near the face engaging portion thereof for the particular application illustrated.

It will be understood that arcuate combs such as the comb 11 are removable from the shaver 13 for cleaning purposes and the like as well as to afford access to the oscillating blade arranged in shearing relationship therewith. With the present invention where the guard 15 is effectively clipped to the comb, it may be attached thereto both when the comb is associated with the shaver and also when the comb is removed therefrom, thus protecting the delicate comb structure under all conditions. In prior art arrangements the comb guards employed were usually associated with the shaver per se and would not provide the protecting function of the present comb guard when the comb was removed from the shaver.

The use of the projections 21 for securing the guard 15 in place relative to the comb 11 depends to a considerable extent upon the resiliency of the material used in forming the guard and the particular shape of the guard utilized. Preferably the edge portions 16 and 17 of the guard 15 are normally biased towards each other so as to require spreading thereof when placing the guard on the comb. This spreading action stresses the central portion 14 and insures that the projections 21 interfit with the recesses 22 to secure the guard 15 in position. As has been mentioned above when the guard is in position the shape is preferably such that the central portion is displaced from the comb as shown in Fig. 6 of the drawings although where corrugations are employed the grooves 19 may touch the comb 11 and still afford sufficient protection.

Since the comb structure 11 is a precision device accurately formed in the manufacture of the shaver to a degree of accuracy far exceeding that of any other part of the shaver the recesses 22 will be very accurately formed therein. Consequently, much greater accuracy with respect to the relationship of the guard with the comb is obtained as contrasted with arrangements where the comb is attached to the shaver and the guard attached to the shaver also. With the present arrangement proper positioning is insured in the relationship between the comb and guard due to the accuracy with which the comb was manufactured. It will be understood that considerable leeway in the manufacture of comb guards such as 15 for shaver 13 is possible with respect to the spacing between the edges 16 and 17 of the guard 15 due to the inherent resiliency thereof. Although the comb guard 11 is a relatively delicate member the supporting structure associated is sufficiently strong to withstand any reasonable pressures applied by the guard by reason of an extremely snug fit between the edge portions 16 and 17 of the guard and the comb 11.

For the purpose of facilitating the removal and replacement of the guard 15 relative to the shaver 13 there are provided laterally extending flanges 23 which are integral with the edges 16 and 17. As illustrated in Fig. 2 of the drawings these flanges are effectively extensions of the extreme outer edges of the portions 16 and 17.

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It will be understood that the guard 15 described above can readily be made as a sheet metal stamping in a simple and inexpensive manner, the guard preferably being formed by a single stamping operation. The guard further-
 5 more can be quickly and easily removed from the shaver 13 or applied thereto. To remove the guard from the shaver 13 it is only necessary to engage one of the flanges 23 with one's thumb and the other flange 23 with a finger of the same
 10 hand. A slight pulling force tends to spread the portions 16 and 17 of the guard 15 apart so that the projections 21 slide out of the recesses 22. When the guard is removed it assumes an unstressed position in which the portions 16
 15 and 17 are moved closer to each other than is probably the case when the guard is associated with the comb 11 as is shown in Fig. 2. To replace the guard 15 it is merely necessary to hold the guard in any suitable manner as for example
 20 between the thumb and forefinger of the hand and push it into place with the projections 21 lined up with the recesses 22. The portions 16 and 17 are caused to spread apart against the inherent resilience of the central portion 14 and
 25 a slight lateral movement when the guard is approximately in position will cause the projections 21 to snap into the recesses 22. The inherent resilience of the guard will maintain the projections 21 in the recesses 22 thus securing
 30 the guard in the shielding position.

Referring now to Figs. 5, 6 and 7 of the drawings there is illustrated a modification of the present invention in which a shaver generally
 35 designated as 29 is provided with a guard 30 having a central portion 31 and edge portions 32 and 33 corresponding respectively with the portions 14, 16 and 17 of the guard 15. As in the preceding embodiment the guard 30 is
 40 adapted to be associated with the comb 11 having a comb supporting structure 12 with recesses 22 defined therein. The corresponding parts of Figs. 5, 6 and 7 are designated by the same reference numerals as in the preceding figures in-
 45 sofar as possible.

For the purpose of increasing the inherent strength and rigidity of the guard 30 without employing the corrugations comprising the
 50 ridges 18 and grooves 19, the guard 30 is arched lengthwise as is clearly indicated in Fig. 7 of the drawings. This arching is produced by a stamping operation which stretches the metal and reinforces the same in a manner which is equivalent to the corrugations or ribs of the preceding
 55 embodiment. As is clearly shown in Fig. 6 of the drawings the central portion 31 of the guard 30 is spaced a substantial distance from the comb 11 so that a considerable distortion of the guard 30 is necessary before it engages the delicate comb surface. In this manner a substantial
 60 portion of any shock applied to the guard 30 is absorbed without transmitting the same to the comb. For further strengthening the guard, if desired, suitable creases or deformations such as 34 may be provided at either end thereof hav-
 65 ing a different radius of curvature than the central portion 31 of the guard. If desired, the ends of the guard may rest on the casing portion of the shaver 29 so that the shielding portion of the guard is completely spaced from the
 70 comb as is shown in Fig. 7 of the drawings. As in the preceding embodiment the guard 31 may be removed with the comb to protect the same when the latter is not associated with the comb.

While there have been shown and described

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particular embodiments of the present invention, it is not desired that the invention be limited to the constructions shown and described, for it will, of course, be obvious to those skilled in the art, that changes and modifications may be made without departing from the invention and it is therefore aimed in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the present invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. In combination, an electric razor having an arcuate shaped comb, a comb guard for said comb comprising an arcuate shaped central portion and spaced opposed edge portions formed from a single piece of resilient material, said guard being additionally distorted in shape to strengthen the same, said central portion of said guard being shaped to overlie said comb, means formed on said edge portions of said guard and cooperating means formed on said comb to secure said guard in a shielding position directly to said comb and overlying said comb whereby said guard may shield said comb whether or not said comb is attached to said razor, extension means on said edge portion of the guard defining a finger catch for aiding in removing said guard from said comb, said central portion of said guard being of such resilient character that when said guard is positioned in shielding relationship with said comb said opposed edge portions are stressed positively to interlock said respective means on
 45 said comb and edge portions.

2. A comb guard for an electric razor of the type having an arcuate shaped comb with spaced recesses defined on opposite sides of the comb, comprising a flexible member formed of resilient material having an arcuate shaped central portion and spaced opposed edge portions, said arcuate shaped edge portion shaped to overlie said arcuate comb, projections on said edge portions cooperable with said spaced recesses releasably to fasten said guard directly to said comb, and grasping means comprising an extension formed on at least one of said edge portions for removing and positioning said guard relative to said comb, said central portion being of such resilient nature that when said guard is positioned in shielding relationship with respect to said comb that said opposed edge portions are spread apart and placed under stress positively to secure said projections in said recesses.

3. A guard for a body having a predetermined curved surface and having recesses formed therein comprising, an arcuate member formed from resilient material having a curved portion shaped to overlie the curved surface of said body in a nesting protective manner and normally spaced further therefrom at the center portion thereof than at any other portion, projections formed on opposite extreme edges of said curved portion shaped to interfit in said recesses in said body, said member being curved in such a manner relative to said body as to require stressing in placing said guard on said comb whereby the inherent resilience of said member maintains said projections in said recesses thereby positively to maintain the guard in position, and flanges formed on opposite edges of said curved portion projecting outwardly therefrom to form means for grasping said guard.

4. A guard for an arcuate shaped body having fastening means associated therewith, comprising an arcuate shaped member formed from

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resilient material and being more concave than said body even when associated with said body, flanges integral with the edge portions of said member and extending outwardly therefrom, and means integral with said member cooperable with said fastening means on said body for securing the guard in position.

5 5. In combination, an electric razor having an arcuate shaped comb, a guard formed from resilient material comprising a curved portion having alternately spaced ridges and grooves for strengthening said portion, said curved portion 10 shaped to overlie said arcuate shaped comb, and a flange integral with said curved portion forming a manually actuable means for said guard where- 15 by the latter can be readily positioned and removed, and means acting between said comb and said guard for securing said latter member directly to said comb in shielding relationship thereto.

20 6. A guard for a body having an arcuate shaped surface including recesses defined at predetermined positions on the arcuate surface of said body, comprising an arcuate shaped member 25 formed from resilient material and slightly more concave than said body even when associated with said body whereby the center portion of said guard is spaced further from said body than any other portions of said guard, and projections 30 formed on opposite sides of said arcuate member shaped to be received by said recesses in said body

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when the member is in shielding relation with respect to the body to lock the guard in position.

7. A guard for a razor having an arcuate comb including guard fastening means defined thereon, comprising an arcuate sheet metal stamping of light weight shaped to have sufficient strength for protecting said arcuate comb, said guard having a curved portion shaped to overlie said comb in nesting relationship, with the center portion 10 spaced therefrom to a greater extent than the spacing between other portions of said guard and comb to limit jamming of said guard against said comb when an external force is applied to said guard while on said comb, means integral 15 with said curved portion cooperable with said guard fastening means for securing said guard directly to said comb whether or not said comb is associated with said razor, and means integral with said curved portion for grasping said guard 20 to position and remove the same with respect to said comb.

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REFERENCES CITED

25 The following references are of record in the file of this patent:

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2,320,807	Upham	June 1, 1943