

Feb. 15, 1949.

A. R. TOWERS

2,461,858

SHAVING IMPLEMENT

Filed Feb. 21, 1945

4 Sheets-Sheet 1

Fig. 1.

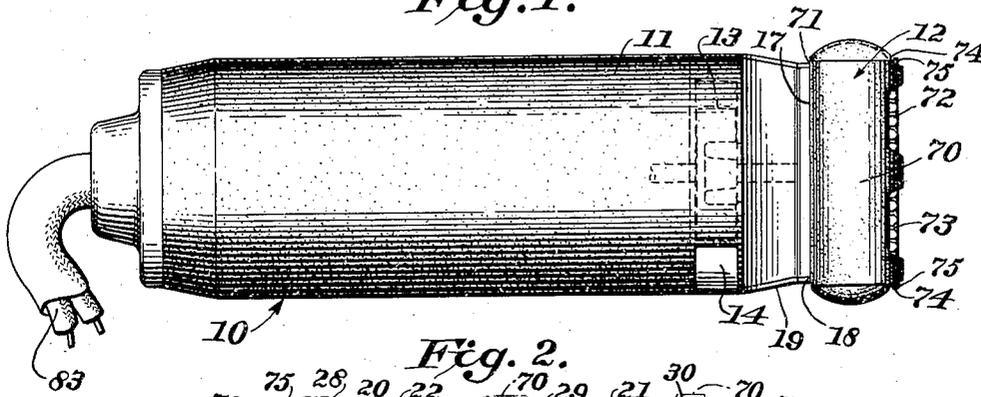


Fig. 2.

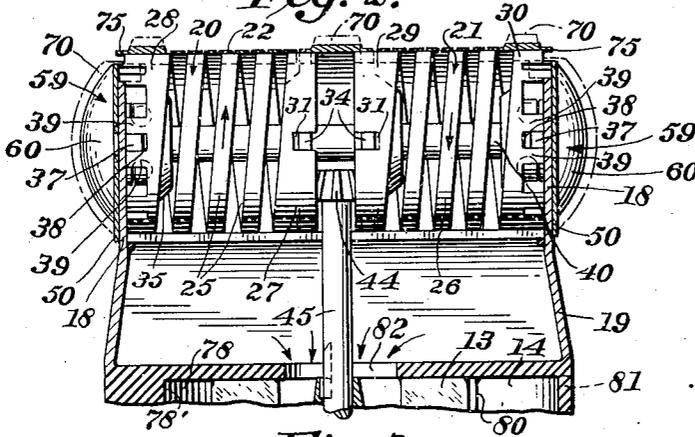
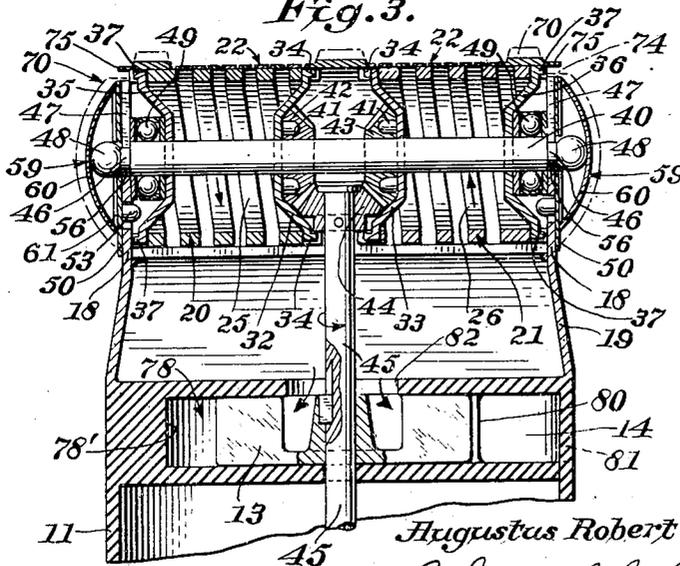


Fig. 3.



Inventor.

Augustus Robert Towers,
By Cushman, Dakin & Cushman
Attorneys.

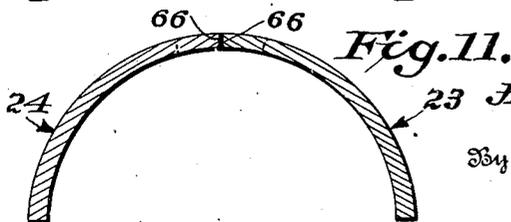
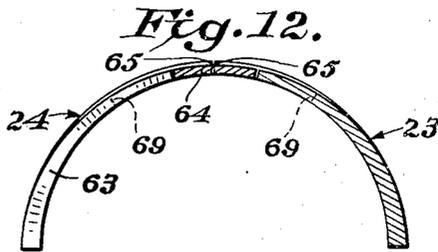
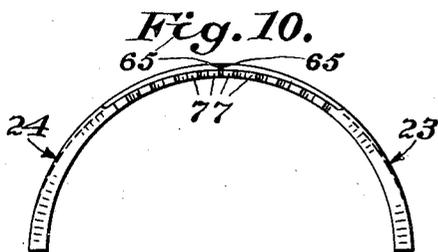
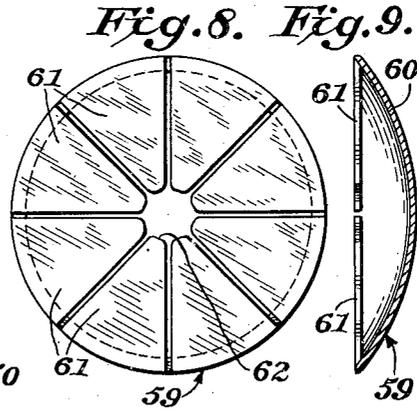
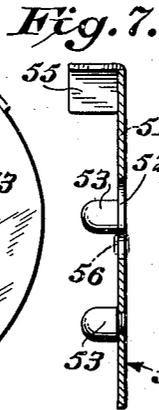
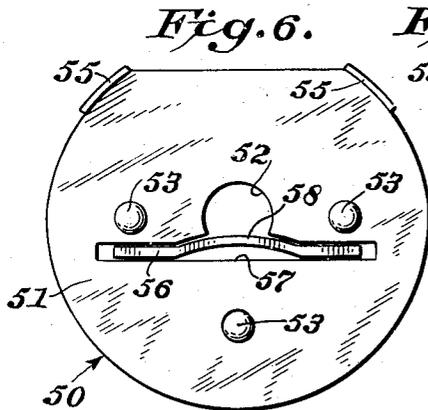
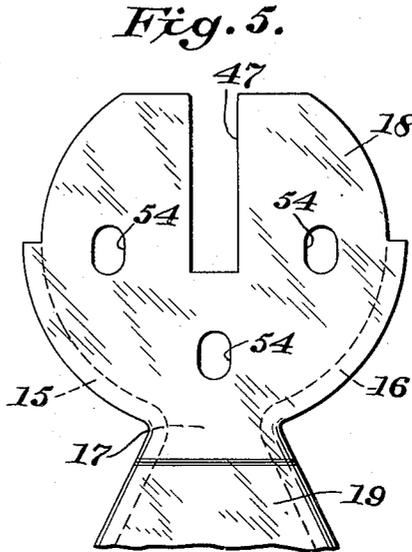
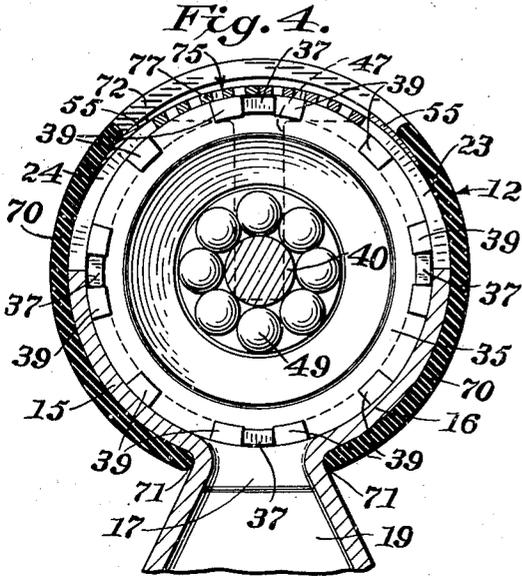
Feb. 15, 1949.

A. R. TOWERS
SHAVING IMPLEMENT

2,461,858

Filed Feb. 21, 1945

4 Sheets-Sheet 2



Inventor:

Augustus Robert Towers,
By Cushman, Keely & Cushman
Attorneys

Feb. 15, 1949.

A. R. TOWERS
SHAVING IMPLEMENT

2,461,858

Filed Feb. 21, 1945

4 Sheets-Sheet 4

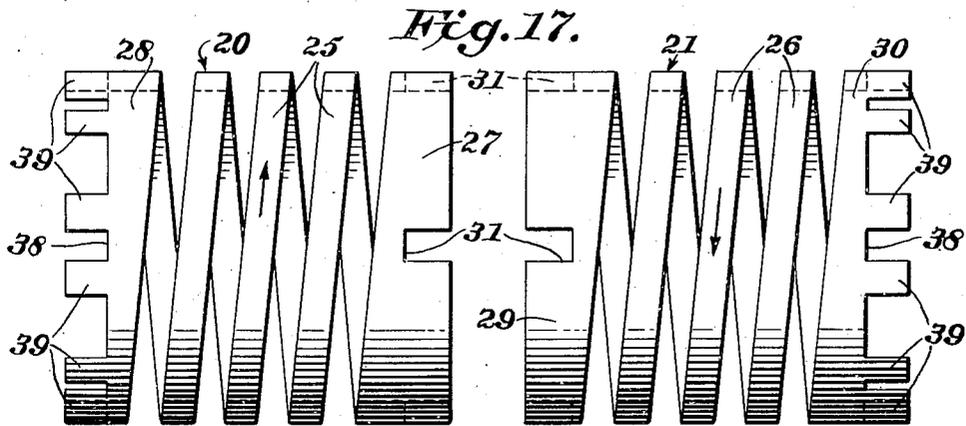


Fig. 18.

Fig. 22.

Fig. 19.

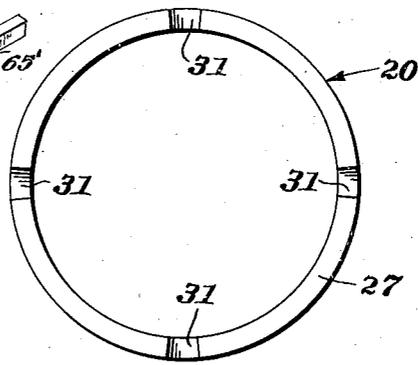
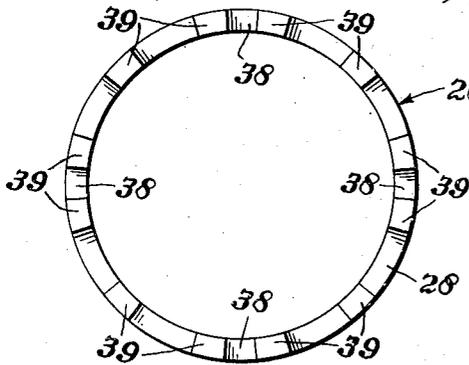
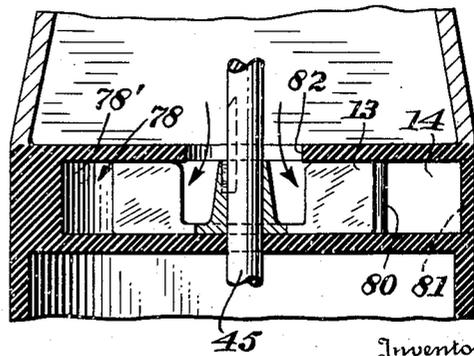
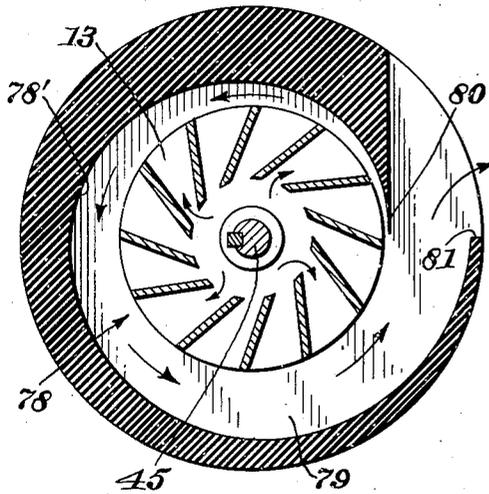


Fig. 20.

Fig. 21.



Inventor:

Augustus Robert Towers,
By: Cushman, Kirby & Cushman
Attorneys

UNITED STATES PATENT OFFICE

2,461,858

SHAVING IMPLEMENT

Augustus Robert Towers, Richmond, Va.

Application February 21, 1945, Serial No. 578,968

16 Claims. (Cl. 30-43)

1

The present invention relates generally to shaving implements and refers particularly to safety razors of the dry shaver type.

An object of the invention is the provision of a razor having one or more movable cutters in association with one or more comb plate sections capable of being pressed down upon the cutters to effect the cutting or shaving operation.

A further object is to provide a cover guard for the shaving head formed of a flexible and pliable rubber-like material adapted to envelope the head and which is of slightly smaller size than the head so that it will be stretched over the same and thereby exert an over-all constrictive force upon the head which causes the comb plate sections to be pressed at all cutting points against the movable cutters. It is to be understood that openings are provided in the cover guard to expose the shaving surfaces of the shaving head. In this connection the comb plate sections are either detachably mounted in the shaving head or so associated therewith as to permit said sections to be readily pressed down upon the cutter by the cover guard. Furthermore, the cover guard protects the shaving head from damage, absorbs vibration and protects the face of the person being shaved.

A further object is the provision of a cover guard having areas in advance and in rear of the shaving surface, the first of which tends to tauten the skin and the other of which tends to raise and straighten the whiskers into a position to be cut at the next shaving stroke.

Another object is to provide a razor having a pair of rotary cutters moving in opposite directions, thus making it possible to cut with the grain of the whiskers at one stroke and against the grain at the next stroke.

A still further object is the provision of a razor having auxiliary shaving surfaces on the ends of the shaving head.

Another object is to provide a razor having oppositely facing comb plates or sections which form angular openings or slots between oppositely facing and overlapping teeth and means for separating the plate sections to increase the size of the angular slots.

A further object is the provision of a shaving implement having a suction fan associated with the cutters so as to draw the cut whiskers away

2

from the shaving head, said fan being of the centrifugal type and being associated with a volute air discharge channel.

With the foregoing and other objects in view the invention will now be more fully described, reference being had to the accompanying drawings in which:

Figure 1 is a view of the complete razor.

Figure 2 is an enlarged view partly in section of the shaving head.

Figure 3 is an enlarged sectional view of the shaving head and the exhaust fan.

Figure 4 is an enlarged transverse section taken through the shaving head.

Figure 5 is an enlarged view of one end of the shaving head frame.

Figures 6 and 7 are enlarged end and sectional views respectively of one of the end plates of the shaving head.

Figures 8 and 9 are enlarged rear and sectional views respectively of the end caps of the shaving head.

Figure 10 is an enlarged end view of the comb plate sections in assembled relation.

Figure 11 is an enlarged central transverse section through the comb plate sections.

Figure 12 is an enlarged transverse section through an intermediate portion of the comb plate sections.

Figure 13 is an enlarged top view of the shaving head showing the comb plate sections in assembled relation and the cover guard in position.

Figure 14 is an enlarged end view of the shaving head with the end plate removed.

Figure 15 is an enlarged top view of the comb plate sections in separated position.

Figure 16 is an enlarged fragmentary sectional view of one end of the shaving head.

Figure 17 is an enlarged view of the helical cutters.

Figure 18 is an enlarged view of the outer end of one of the cutters.

Figure 19 is an enlarged view of the inner end of one of the cutters.

Figure 20 is a transverse section through the casing showing the exhaust fan and its outlet passage.

Figure 21 is a fragmentary section longitudinally of the casing showing the exhaust fan and

3

Fig. 22 is a perspective view of one of the spacers.

Referring now to the drawings the numeral 10 designates generally the razor forming the subject matter of the present invention. This razor is provided with an elongated casing 11 having a shaving head 12 at one end thereof, and an exhaust fan 13 mounted in the casing 11 below the shaving head and having a discharge opening 14.

Referring to Figures 1 to 4 it will be observed that the shaving head 12 is of substantially cylindrical form and is provided with curved wall portions 15 and 16 preferably forming an integral portion of the casing 11. Referring particularly to Figure 4 the wall portions 15 and 16 are spaced from each other at their lower ends to form a passage 17 communicating with the fan 13. The wall portions 15 and 16 are connected at their opposite ends by means of a pair of end frame sections 18 (see Figure 5). These frame sections 18 are preferably formed integrally with the wall portions 15 and 16 although, if desired, they may abut these portions and form a continuation of the side walls 19 of the casing 11. It will be observed that the walls 15 and 16 terminate at about the center portion of the shaving head and form a substantially semi-cylindrical frame for receiving a pair of rotary helical or spiral cutters 20 and 21. Extending upwardly and around the cutters and cooperating with the wall sections 15 and 16 to complete the shaving head, is a comb plate 22 consisting of a pair of comb plate sections 23 and 24.

Referring to Figures 2, 3 and 17, it will be observed that the convolutions 25 of the cutter 20 extend in the same direction as the convolutions 26 of cutter 21. However, these cutters are rotated in opposite directions, thus making it possible to cut with the grain of the whiskers at one stroke and against the grain at the next stroke.

The means for supporting and rotating these cutters will now be described in detail. Referring particularly to Figures 2, 3 and 17 it will be observed that the convolutions 25 of the cutter 20 are positioned between an inner ring 27 and an outer ring 28. This is also true of cutter 21 which is provided with an inner ring 29 and an outer ring 30 embracing the convolutions 26. Each inner ring 27 and 29 is provided with a set of notches 31, these notches being diametrically opposed and in alignment. A pair of inner plates or disks 32 and 33 respectively, are each provided with a set of outwardly projecting lugs 34 which are received within the notches 31. At the outer ends of the shaving head are located additional disks or plates 35 and 36 respectively. Each of these disks is provided with a set of four evenly spaced lugs 37 which fit into cooperating notches 38 formed in the outer rings 28 and 30 of the cutters 20 and 21. In addition to the notches 38, each of the rings 28 and 30 are provided with a plurality of cutter fingers 39 which project outwardly from and lengthwise of the cutters for a purpose to be hereinafter described.

All four of the disks 32, 33, 35 and 36 are loosely mounted upon a shaft 40 extending axially of the shaving head. That is, the disks are not fixed to the shaft but are capable of being rotated thereon. It will be observed that the inner disks 32 and 33 are of dish-shaped formation and are provided with centrally disposed openings for receiving the shaft 40. A plurality of inwardly extending pins 41 are formed on these inner disks and project into openings formed in bevel gears 42 and 43 (see Figure 3). These gears mesh with

4

a third bevel gear 44 fixed to the upper end of a shaft 45 mounted in and longitudinally of the casing 11. Rotation of the shaft 45 and gear 44 in the direction of the arrow imparts rotation to the gear 42, disk 32 and cutter 20 in one direction and at the same time rotate the gear 43, disk 33 and cutter 21 in the opposite direction (see arrows on cutters).

The outer ends of the shaft 40 are provided with reduced portions 46, each of which is received within and rests upon the inner end of an open ended slot 47 formed in one of the end frame sections 18 (see Figures 3 and 5). In order to retain the shaft in operative position against longitudinal movement, it is provided at each end exteriorly of the reduced portion 46 with an enlarged ball-like end portion 48. Each end portion projects outwardly from its respective frame section 18. Sets of ball thrust bearings 49 are positioned at the opposite ends of the shaving head between the dished portions of the disks 35 and 36 and their respective end wall section 18 to facilitate rotation of these disks and the cutters 20 and 21. A pair of end plates 50 are mounted on the ends of the shaft 40. Each plate (see Figure 6) consists of a disk-like portion 51 having a centrally disposed opening 52 which receives one of the heads 48 of the shaft 40. Each disk portion is provided with a plurality of inwardly extending pins 53 which pass through openings 54 in one of the end frame sections 18. A pair of spaced fingers 55 project inwardly from the peripheral edges of each disk 51 and engage over their respective end portions of the comb plate sections 23 and 24. In order that the fingers 55 will exert an inward pressure upon the comb plate sections, a spring 56 is secured in a slot 57 formed in each of the disks 51. As shown in Figure 6 each spring is provided with a central bowed portion 58 which bears against the reduced portion 46 of the shaft and tends to press the disk downwardly and thus cause the fingers 55 to exert pressure on the comb plate sections.

In order to detachably retain all of these parts in operative position, a pair of end caps 59 are provided. These caps have an outer curved portion 60 and a plurality of inwardly extending spring fingers or clips 61. As shown in Figure 8, the inner ends of these fingers form a centrally disposed opening 62 which receives one of the heads 48 of the shaft 40. These caps 59 may be easily attached to the ends of the shaft by snapping the clips over the head 48 of its respective end of the shaft.

With a construction of this character it will be observed that if desired or necessary the shaving head may be easily and quickly dismantled by first removing the end caps 59 and the end plates 50. The comb plate sections 23 and 24 are next removed and the shaft 40 may then be lifted out of the slots 47 in the end frame sections 18. Thereafter, the disks and the cutters may be removed from the shaft 40.

Referring to Figures 13 and 15 it will be observed that the comb plate sections 23 and 24 together form substantially a semi-cylindrical construction which engages the top longitudinal portions of the wall 15 and 16 whereby the rotary cutters 20 and 21 are enclosed within the shaving head.

Referring to Figures 10 and 12 it will further be observed that the comb plate sections have their inner sides of a shape to conform to the periphery of the rotary cutters, while the thickness of each section decreases from its outer

edge portions toward a center line along the top of the shaving head. Thus the thinnest parts of the comb plate sections are along this center line. The comb plate sections have what may be considered auxiliary slots 63 that serve to increase the shaving area and which extend transversely of the comb plate sections in parallel relation. These slots are of suitable size to accommodate all sizes of human whiskers in the thicker parts of the plate sections.

Referring particularly to Figures 13 and 15, it will be observed that the center line edge portions of said plates are formed with a plurality of projecting teeth 64 except at the outer end portions 65 and the middle portion 66, which are straight. The teeth of comb plate section 23 are positioned in staggered relation to the teeth of the plate 24. Therefore, when the plate sections are brought together as shown in Figure 13, the teeth of one section fit into the spaces between the teeth of the other section. This provides a comb cutting blade arrangement wherein the adjacent teeth of opposite sections are arranged in overlapping relation. The construction is such that when the straight end edge portions 65 and the centrally disposed straight edge portions 66 abut, there is a clearance between the overlapping teeth 64 which provide angularly disposed slots. One set of these slots 67 will be inclined in one direction while the other set of slots 68 will be inclined in the reversed direction. Furthermore, both sets of slots will communicate with straight slots 69 formed in the plate sections between the teeth and also between adjacent slots 63.

The angular slots 67 and 68 are located within the thinnest zone of the comb plate sections and are preferably of a smaller size than the main slots 63 so as to prevent the skin of the shaver from squeezing through to the cutting surface of the rotary cutter. The size of the angular slots 67 and 68 is governed by the distance between the adjacent edge portions 65 and 66. The width of these angular slots may be regulated or adjusted by having different size spacers or separators 65' placed between the plates or the distance may be predetermined by having an extending edge of one plate bear against the edge of the other. The thinness of the comb plate section in the zone of the angular slots permits closer shaving at that point but with safety because of the smaller openings of the slots. The main slots 63 accommodate whiskers of greater diameter because of their wider openings and with safety since the skin surface is held further away from the rotary cutters by the thickened part of the comb plate sections. In a stroke of the razor over the skin surface the whiskers are cut progressively shorter as it passes from thick to thin zone which of course is a desirable feature leading to a close shave.

Since the angular slots 67 and 68 communicate with the slots 69, there is a tendency to comb, straighten and guide the whiskers into these latter slots. Furthermore, the closed opposite ends of the slots 69 act as claws or obstacles to catch and force flat-lying whiskers into the slots. By having the comb plate sections thick at one end there is given an added structural strength to the plate sections. Furthermore, since the points of the teeth 64 of one plate section extend across the center line and into the thicker zone of the opposite plate section when the sections are brought together as shown in Figures 12 and 13, these points are prevented from gouging into the flesh. This is due to the fact that the outer surfaces of

the comb plate sections in their thicker parts are above and act as guards for the thinner points of the teeth that overlap and extend beyond the center line. In other words, the curved opposed sections 23 and 24 taper off or decrease in thickness circumferentially from points adjacent the inner closed ends of the slots 63 and towards the ends of the teeth 64 (Fig. 12). This arrangement provides means for bringing the skin closer to the moving cutter in the area of the teeth 64 without danger of injuring or "burning" the skin. Moreover, the selective adjustment of the slots 67 and 68 allows these slots to be narrowed so as to insure a smooth, clean shave. The thickness of a human hair is approximately .008 of an inch and the slots 67 and 68 in the shaving head should not be much wider since if they are the skin will squeeze through them. It is also necessary to have extreme thinness in the metal from which the shaving head is stamped so as to insure a close shave, i. e., this metal should be about .002 of an inch adjacent the close-shaving area. Such accuracy in constructing the shaving head calls for precision die work with very little tolerance allowed to the die maker. In the present invention the shaving head has the transverse slots 69 of about $\frac{1}{64}$ or .015 of an inch in width which is about the size of slots in shaving heads now on the market. While a portion of the slots 69 are located in the thicker part of the sections 23 and 24, their inner end portions taper off or decrease in thickness the same as the teeth 64 in order to insure a closer smooth shave in the area formed by the intermeshing of these teeth. This arrangement provides means for bringing the skin closer to the moving cutter, and avoids injuring or "burning" the skin. Heretofore, to make slots of less than $\frac{1}{64}$ inch presented a difficult problem which is simply solved by the present construction, since by bringing the oppositely facing sections 23 and 24 toward each other with the teeth 64 of one section fitting into the spaces between the teeth of the other, the slots 67 and 68 may be narrowed to insure maximum efficiency of the shaving implement.

As stated at the outset by having the cutters 20 and 21 rotate in opposite directions it is possible to cut with the grain of the whiskers at one stroke and against the grain at the next stroke.

In order to insure an efficient shaving operation means are provided to exert an overall constrictive force upon the shaving head so as to cause the comb plates to be pressed at all cutting points against the rotary cutters. This means comprises a cover guard 70 preferably made of a flexible and pliable elastic or rubber-like material. This cover guard is of similar shape to the shaving head but is slightly smaller in size so that it must be stretched over to envelop the shaving head. As shown in Figures 1 and 4 this guard is provided with a longitudinally extending opening 71, the edges of which engage the restricted portion 17 of the casing where it joins the wall portions 15 and 16 of the shaving head. Furthermore, openings 72 and 73 are provided in the cover guard to expose the main shaving surfaces. End openings 74 are also provided in the cover guard to expose auxiliary cutting surfaces which will be explained in detail hereinafter.

In addition to exerting an overall constrictive force upon the shaving head, the cover guard also protects the head from damage, absorbs vibration and also protects the face of the per-

son being shaved. Furthermore, that part of the cover guard which advances ahead of the shaving surface clings to and tautens the skin just as the running of the fingers ahead of a razor blade does in the old style type of shaving. That part of the cover guard which follows behind the shaving surface tends to raise and straighten the whiskers into a position to be cut at the next shaving stroke.

To facilitate the cutting of the hair around the ears and nostrils and in case of a moustache, there is provided a clipper 75 at each end of the shaving head. Referring particularly to Figures 2, 3 and 4, 13 and 14 it will be observed that the outer rings 28 and 30 of each of the cutters are provided with the plurality of outwardly projecting fingers 39 as herein before described. Certain of these fingers are also formed by reason of the slots 38 which receive the lugs 37. Associated with the fingers 39 are a plurality of teeth 77 formed on the opposite ends of the comb plate sections 23 and 24. When these plate sections are in operative position the teeth 77 will overlie the fingers 39. As the fingers 39 are integral with the cutters and since the cover guard 70 and the fingers 55 of the end plates 50 press the teeth 77 inwardly into engagement with the cutting edges of the fingers 39, a cutting action is provided at each of the clippers 75.

For the purpose of keeping the razor and particularly the shaving head in a clean condition and to prevent clogging of the cut whiskers in the head the centrifugal type exhaust fan 13 is provided. As shown in Figures 20 and 21 this fan is mounted in a chamber 78 and fixed to the shaft 45 which rotates the bevel gear 44. The curved side wall 78' of chamber 78 is of volute configuration and forms with the peripheral portion of the fan 13 an air discharge channel 79 of gradually increasing width. It will be observed that the inner end 80 of the side wall 78' of the chamber is spaced from the outer end 81 of the side wall to form therewith the discharge opening 14. The chamber is provided with an inlet opening 82 (see Figures 2 and 3) into which air is drawn from the shaving head. It will be observed that the disks 32, 33, 35 and 36 not only constitute a supporting means for the rotary cutters 20 and 21 but also prevent the cut whiskers from coming into contact with the gears 42, 43 and 44 and the thrust bearings 49. In other words, these parts are protected by the disks and the cut whiskers are drawn past the same into the casing and discharged through the opening 82. I have found from actual experience that efficient operation is obtained by reason of the centrifugal type fan and the volute air discharge passage.

The shaft 45 extends through the fan chamber 78 and is adapted to be rotated by any desired power means such as an electric motor (not shown) which may be mounted in the casing below the fan. A conductor cord 83 is adapted to connect the source of power to the usual electric outlet.

It is to be understood that the invention is not limited to the details of construction shown in the drawings and that the phraseology employed in the specification is for the purpose of description and not of limitation.

I claim:

1. In a shaving implement, a shaving head, a cutter movably mounted in said shaving head, said shaving head including a comb plate overlying the cutter and having openings associated

with the cutter, and a cover guard of stretchable material enveloping the shaving head and causing the comb plate to be pressed against the movable cutter, said cover guard having at least one opening exposing a shaving portion of the comb plate.

2. In a shaving implement, a shaving head, a cutter movably mounted in said shaving head, said shaving head including a comb plate overlying the cutter and having openings associated with the cutter, and a cover guard of stretchable material enveloping the shaving head and having at least one opening exposing a shaving portion of the comb plate, said cover guard being of smaller size than the shaving head and exerting an over-all constrictive force against said shaving head whereby the comb plate is caused to be pressed at all cutting points against the movable cutter.

3. In a shaving implement, a shaving head, a rotary cutter mounted in said shaving head, said head including a comb plate overlying said cutter, and a cover guard of stretchable material enveloping the shaving head and having a plurality of openings exposing the shaving portions of the comb plate, said cover guard being of smaller size than the shaving head and exerting an over-all constrictive force against said shaving head whereby the comb plate is caused to be pressed at all cutting points against the rotatable cutter.

4. In a shaving implement, a shaving head having a comb plate formed of two curved abutting sections, a rotary cutter mounted within said shaving head, and means carried by said shaving head and exerting pressure to force said comb plate sections against said rotary cutter during operation of said implement.

5. In a shaving implement, a shaving head having a comb plate formed of two curved complementary sections, the adjacent edges of said comb plate sections being provided with a plurality of teeth with wedge-shaped ends, adjacent teeth inwardly of the wedge being spaced to form straight slots, the teeth of said sections being arranged in staggered and overlapping relation to form angular slots connected to the straight slots, the opposite ends of the adjacent edges of the comb plate sections being substantially straight and extending lengthwise of said sections, means insertable between said pairs of adjacent edge portions to separate the sections and increase the width of the angular slots, and a rotary cutter mounted in said shaving head and cooperating with the slots in the comb plate sections to effect the shaving operation.

6. In a shaving implement, a shaving head having a comb plate formed of two curved complementary sections, the adjacent edges of said comb plate sections being provided with a plurality of teeth with wedge-shaped ends, adjacent teeth inwardly of the wedge being spaced to form straight slots, the teeth of said sections being arranged in staggered and overlapping relation to form angular slots connected to the straight slots, each comb plate section having a plurality of straight slots formed therein between and overlapping said first-mentioned slots, and a rotary cutter mounted in said shaving head and cooperating with the slots in the comb plate sections to effect the shaving operation.

7. A comb plate for a shaving implement comprising a pair of curved sections having cooperating adjacent edges, said edges being provided with a plurality of teeth with wedge-shaped ends,

adjacent teeth inwardly of the wedge being spaced to form straight slots, the teeth of said sections being arranged in staggered and overlapping relation to form angular slots connected to the straight slots.

8. In a shaving implement, a casing provided with a shaving head at one end thereof, having a rounded outer portion forming a comb plate provided with a plurality of hair receiving slots, a rotary cutter mounted in said shaving head, said cutter comprising a pair of helical elements cooperating with said slots to effect the shaving operation, the convolutions of each element extending in the same direction as those of the other element, and means for rotating said helical elements in different directions.

9. In a shaving implement, a casing provided with a shaving head at one thereof of substantially cylindrical formation, substantially the inner half of said head being fixed to said casing, the outer portion of said head comprising a sectional comb plate formed of removable curved sections, a shaft mounted within and axially of said shaving head, a pair of helical cutter elements rotatably mounted on said shaft, the convolutions of each element extending in the same direction, and means for rotating said helical elements on said shaft in different directions.

10. In a shaving implement, a casing provided with a shaving head at one end thereof of substantially cylindrical formation, substantially the inner half of said head being fixed to said casing, the outer portion of said head comprising a sectional comb plate formed of removable curved sections, a shaft mounted within and axially of said shaving head, a pair of inner and outer cutter supporting disks mounted on said shaft, each disk having a plurality of spaced outwardly projecting lugs, a pair of helical cutter elements mounted in said shaving head, the convolutions of each element extending in the same direction, each cutter element having at each end thereof a plurality of slots for receiving the lugs of one of the disks, oppositely disposed bevel gears mounted on said shaft, said gears being secured to one of the inner disks, and means including a third bevel gear meshing with the other bevel gears for rotating said helical cutter elements on said shaft in different directions.

11. In a shaving implement, a casing provided with a shaving head at one end thereof of substantially cylindrical formation, substantially the inner half of said head being fixed to said casing, the outer portion of said head comprising a sectional comb plate formed of removable curved sections, a shaft mounted within and axially of said shaving head, a pair of helical cutter elements removably mounted on said shaft, means to rotate said cutter elements, and a pair of end plates removably mounted on opposite ends of said shaft exteriorly of said shaving head and adapted to retain the cutter elements against axial movement on said shaft, each end plate being provided with a pair of inwardly extending gripper fingers engageable over adjacent outer end portions of said comb plate sections to exert pressure on said sections.

12. In a shaving implement, a casing provided with a shaving head at one end thereof of substantially cylindrical formation, substantially the inner half of said head being fixed to said casing, the outer portion of said head comprising a sectional comb plate formed of removable curved sections, a shaft mounted within and axially of said shaving head, a pair of helical cut-

ter elements removably mounted on said shaft, means to rotate said cutter elements; a pair of end plates removably mounted on opposite ends of said shaft exteriorly of said shaving head and adapted to retain the cutter elements against axial movement on said shaft, each end plate being provided with a pair of inwardly extending gripper fingers engageable over adjacent outer end portions of said comb plate sections, and spring means carried by each end plate and engageable with the shaft to urge said fingers down upon said comb plate sections.

13. In a shaving implement, a shaving head having a comb plate formed of two complemental sections, the adjacent edges of said comb plate sections being provided with a plurality of teeth with wedge shaped ends, adjacent teeth inwardly of the wedge being spaced to form slots, the teeth of said sections being arranged in staggered and overlapping relation to form angular slots connected to the first mentioned slots, the opposite ends of the adjacent edges of the comb plate sections being substantially straight and extending lengthwise of said sections, spacing elements inserted between said pairs of adjacent straight end edge portions of said comb plate sections to separate the sections and increase the width of the angular slots, and a cutter movably mounted in said shaving head and cooperating with the slots in the comb plate sections to effect the shaving operation.

14. A comb cutting plate for a shaving implement including a pair of sections having their inner opposed edges provided with a plurality of teeth with substantially wedge shaped ends, said sections having transverse slots between the teeth, and the teeth on one section being staggered relative to the teeth on the other sections so that when the sections are brought together, the teeth intermesh and form a clearance between the overlapping teeth to provide angularly disposed slots which communicate with said transverse slots.

15. A comb cutting plate for shaving implements comprising a pair of curved sections having their inner opposed edges provided with a plurality of teeth with wedge shaped ends, said sections decreasing in thickness towards the inner opposed ends thereof, each of said sections having transverse slots between the teeth thereof, and auxiliary slots extending inwardly from the ends of said sections opposite the teeth and positioned between said transverse slots, the teeth of each comb plate section being staggered relative to the teeth of the other comb plate section so that when the plate sections are brought together, the teeth of one section intermesh with the teeth of the other section and form a clearance between the overlapping teeth to provide angularly disposed sets of slots, one set of slots being inclined in one direction while the other set is inclined in a reverse direction, and said angular slots communicating with said transverse slots.

16. In a shaving implement, a shaving head having a comb cutting blade formed of opposed sections, the adjacent inner edges of said sections having a plurality of intermeshing teeth provided with wedge shaped ends, means for separating the interfitting teeth to form angular slots therebetween, each of said sections having transverse slots extending inwardly from the sides of the teeth and communicating with said angular slots, and a cutter movably mounted in

11

said shaving head and cooperating with the slots in the comb plate sections to effect the shaving operation.

AUGUSTUS ROBERT TOWERS.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
907,974	Crouch -----	Dec. 29, 1908
2,134,609	Hay -----	Oct. 25, 1938
2,166,605	Muros -----	July 18, 1939
2,185,042	Strong -----	Dec. 26, 1939

12

Number	Name	Date
2,198,266	Gardner -----	Apr. 23, 1940
2,201,951	Brans -----	May 21, 1940
2,202,633	Holsclaw -----	May 28, 1940
2,213,872	Trachtenberg -----	Sept. 3, 1940
2,223,294	Muros -----	Nov. 26, 1940
2,223,410	Faveluke -----	Dec. 3, 1940
2,238,886	Jensen -----	Apr. 22, 1941
2,245,917	Hill -----	June 17, 1941
2,270,800	Johnson -----	Jan. 20, 1942
2,275,810	Weiland -----	Mar. 10, 1942
2,320,807	Upham -----	June 1, 1943
2,323,046	Jenkins -----	June 29, 1943
2,324,070	Dalkowitz -----	July 13, 1943