30. CUTLERY
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Oct. 5, 1943. A. F. WINTERCORN 2,330,853

ELECTRIC SAFETY RAZOR

Filed April 24, 1941

Fig. 3

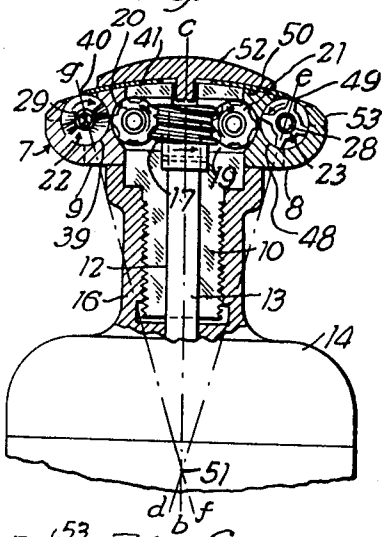


Fig. 1

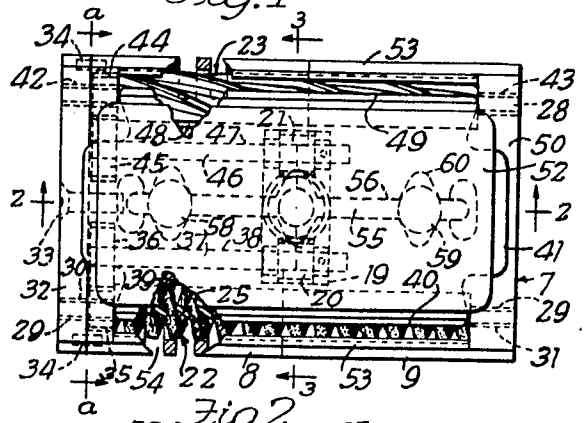


Fig. 2

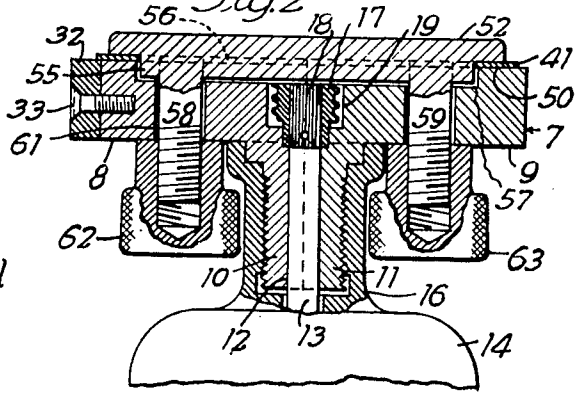


Fig. 6

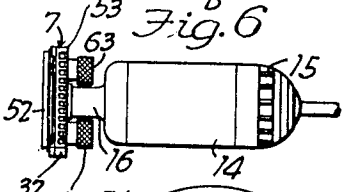


Fig. 4

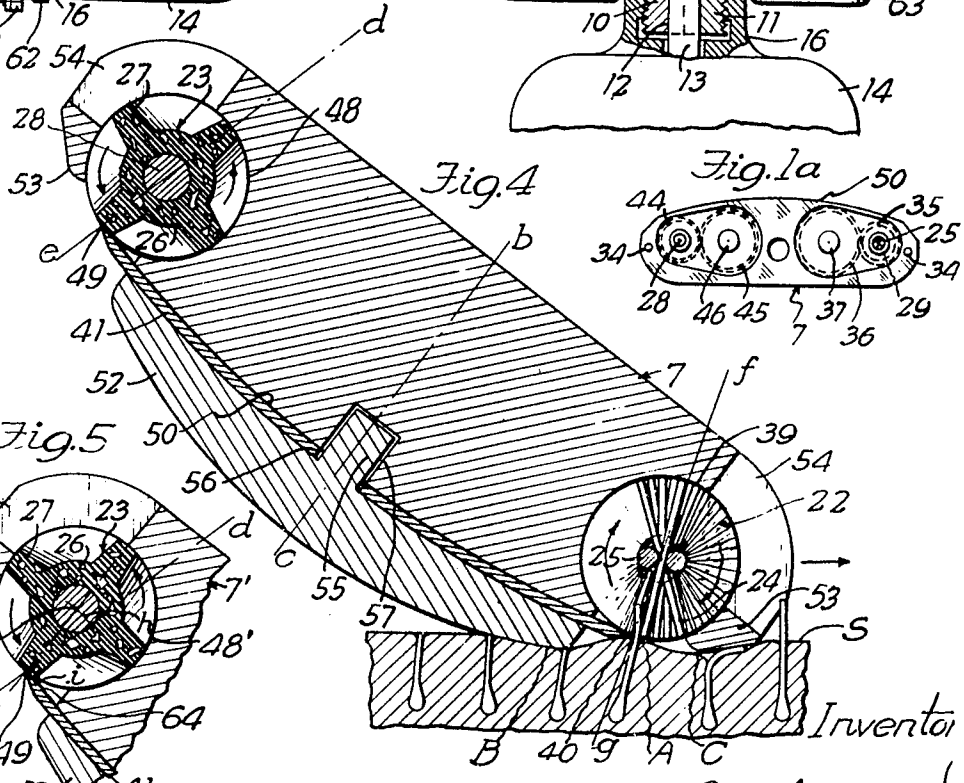
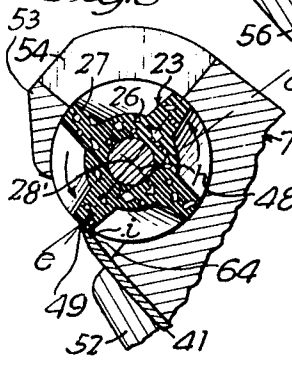


Fig. 1a

Fig. 5



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2,330,853

ELECTRIC SAFETY RAZOR

Andrew F. Wintercorn, Rockford, Ill.

Application April 24, 1941, Serial No. 390,034

21 Claims. (Cl. 30—34)

This invention relates to a new and improved electric safety razor.

The principal object of my invention is to provide a safety type electric razor embodying a power operated rotary brush, the main function of which is to work like a lawn mower reel to whisk the hair against the edge of the blade to be cut off, whereby to permit as close shaving with power and with the same degree of safety as with the ordinary hand operated safety razor.

The power operated rotary brush may, in accordance with my invention, be of a bristle type or may be made of soft rubber or any other material suitable for the purpose of brushing the hair against the cutting edge of the blade without danger of rolling the skin into the blade, the yieldable bristles or other material of the brush being only positive enough in its action to cause the hairs to be cut off by the blade in the rotation of the brush with respect to the cutting edge portion of the blade.

The invention is hereinafter described by reference to the accompanying drawing, in which—

Figure 1 is a top view of an electric safety razor made in accordance with my invention;

Fig. 1*a* is an end view of the head with the end plate removed, the view being taken on the line *a*—*a* of Fig. 1;

Figs. 2 and 3 are a longitudinal and a transverse section taken on the correspondingly numbered lines of Fig. 1;

Fig. 4 is a greatly enlarged fragmentary sectional view illustrating the operation of the razor;

Fig. 5 is a fragmentary sectional detail corresponding to a portion of Fig. 4 but illustrating a modified or alternative construction, and

Fig. 6 is a side view of the complete razor on a smaller scale.

Similar reference numerals are applied to corresponding parts throughout these views.

The safety razor in connection with which the invention is disclosed is of the Gillette type using double edged blades, but it will be understood that the invention should not be construed as limited in its application to this one particular type of safety razor, inasmuch as the rotary brush may be employed in connection with any safety razor blade whether it be a single edged or doubled edged type. Furthermore, while it is at present preferred to utilize removable blades of the conventional safety razor type, so that the razor's cutting edges may be replaced easily and economically, it will be understood that the invention is not to be regarded as limited to such a construction, inasmuch as a more or less permanent part may be provided on the razor furnishing the cutting edge or edges cooperating with the rotary brush or brushes.

The head 7 is made of two die cast parts 8 and 9, which are nearly alike so that production is simplified and cost is reduced. The two halves 8 and 9 have half round shanks 10 and 11, which when the two halves are placed together end to end form a bearing 12 for the drive shaft 13. The latter may be coupled to or be an extension of the armature shaft of an electric motor 14, which serves as a handle for the razor in the usual way, a switch knob 15 being provided on one end of the motor housing for turning the motor on and off. An internally threaded neck 16 on the opposite end of the motor housing threads on the shanks 10 and 11 to hold them in assembled relation and thus secure the two halves 8 and 9 of the head together. The shaft 13 has a helical gear 17 attached to the fluted end 18 thereof. A central cavity 19 is formed in the head 7 between the two halves 8 and 9 for this drive gear and the two companion helical gears 20 and 21 meshing therewith on diametrically opposite sides, provided for driving the rotary brushes 22 and 23, respectively.

The brush 22 has bristles 24 on the twisted two-wire core 25 thereof. The brush 23, on the other hand, has a soft rubber body 26 with integral helical ribs 27 provided thereon, the soft rubber body being carried on a shaft 28. While the brush 23 is preferably of molded rubber construction, I may provide the helical ribs 27 in the form of strips of sheet rubber projecting spiralwise from a center shaft. Furthermore, while I have disclosed a brush 22 with bristles and the other brush 23 of molded rubber construction, it must be understood that I do not limit the invention to use of either of these specific materials, but contemplate broadly the use of any yieldable material suitable for the purpose of whisking the hairs against the cutting edge of the blade, the yieldable material being positive enough only to cause the hairs to be cut off by the blade in the rotation of the brush with respect to the cutting edge portion of the blade but not positive enough to cause the skin to be worked against the cutting edge. In other words, the shearing action can occur between the tips of the bristles and the cutting edge of the blade only so long as hair and not skin is introduced between the brush and the cutting edge of the blade, the bristles being yieldable in the event of contact with the skin during

rotation of the brush and hence incapable of working the skin against the cutting edge of the blade. As will soon appear, the brush rarely comes into contact with the skin and then only momentarily. I may employ only one rotary brush, like the brush 22 or brush 23 or some other brush capable of performing the function described, the other edge of the double edged blade being either kept in reserve or being exposed adjacent a conventional guard for use in wet shaving in the old way without power. On the other hand, when two brushes are used, both brushes may be like the brush 22 or like the brush 23.

The brush 22 has the ends of its core wires 25 received with a press fit in sleeves 29 concentric with the body of the brush, and these sleeves have a working fit in bearings 30 and 31 in the opposite ends of the head 7, the bearing 30 being provided in a separate plate 32 fastened onto the end of the head part 8 by means of the screw 33. Suitable dowel pins 34 on the two ends of the plate 32 serve to insure accurate alignment of the plate with respect to the head. A small pinion 35 suitably keyed or otherwise fixed to the sleeve 29 on one end of the brush 22 meshes with a larger pinion 36 keyed or otherwise fixed on the end of a shaft 37 mounted in a bore 38 in the head part 8 parallel to the longitudinal recess 39 in which the brush 22 operates. The shaft 37 has a driving connection at its inner end with the helical gear 20. The shaft 13 turns in a counterclockwise direction, as indicated by the small arrow in Fig. 3, and causes the gear 20 to turn in a counterclockwise direction, as viewed in Fig. 3, so that the brush 22 is turned in a clockwise direction toward the adjacent cutting edge 40 of the blade 41.

The brush 23 has the opposite ends of its shaft 28 pressed into sleeves which work in bearings 42 and 43 in the opposite ends of the head, the bearing 42 being provided in the removable end plate 32. A gear 44 keyed or otherwise suitably fixed on one end of the shaft 28 behind the plate 32 meshes with another gear 45 of somewhat larger size keyed or otherwise suitably fixed on the end of the shaft 46 having a working fit in a bore 47 provided in the head part 8 parallel to the longitudinal recess 48 in which the brush 23 operates. The gear 21 is turned in a clockwise direction, as viewed in Fig. 3, thus causing the brush 23 to be turned in a counterclockwise direction toward the adjacent cutting edge 49 of the blade 41. It will be observed that the drive gearing for the brush 23 differs from the drive gearing for the brush 22 only from the standpoint that the speed of the brush 22 is stepped well above the speed of its countershaft 37, whereas the brush 23 is turned at a speed more nearly the same as the speed of its countershaft 46. The object in this is to compensate by the increased speed for the greater flexibility and yieldability of the bristles of the brush 22 as compared with the rubber ribs of the brush 23. It must be understood that while I have shown provisions for higher speed operation of one brush, I do not limit the invention by any means to these specific drive ratios, inasmuch as in actual practice it may be found desirable to step up or reduce the speed of either of the brushes in relation to the other. In passing, it will be seen that the removal of the plate 32 will not only expose the drive gears for such lubrication as may be necessary or desirable but will also permit quick and easy removal and replacement of either of the brushes 22 and 23.

The top surface 50 of the head 7 is struck on an arc from the point 51 as a center, this point being on the axis of the shaft 13, as indicated in Fig. 3, where the axis is marked *b*—*c* and the intersecting radii are marked *d*—*e* and *f*—*g*. The blade 41 is a conventional, thin, flexible, wafer type safety razor blade, which is arranged to be clamped down onto the surface 50 by means of a cap or clamp 52, thus conforming the blade to the curvature of the head. The head has guards 53 on its opposed parallel longitudinal edges, parallel to the longitudinal recesses 39 and 48 and in a predetermined spaced parallel relation to the cutting edges 40 and 49 of the blade 41. These guards are slotted, as indicated at 54, for the free discharge of hair from the brushes. The cap 52 is generally similar to the blade clamping cap on the ordinary Gillette safety razor and has a longitudinal rib 55 extending along the middle of the bottom thereof, which fits in a slot 56 in the blade and in a groove 57 in the head, so as to locate the blade 41 accurately with respect to the head when clamping the blade thereon. There are two studs 58 and 59 projecting downwardly from the cap 52 near its opposite ends, and these pass through holes 60 in the blade at opposite ends of the slot 56 and through holes 61 in the head to receive knurled nuts 62 and 63 arranged to be tightened up against the flat bottom of the head in the manner indicated in Fig. 2.

In Fig. 3, the axes of the brushes 22 and 23 are illustrated as located on the radii *d*—*e* and *f*—*g* so that the edge portions of the blade 41 are disposed substantially tangent to the periphery of the brushes. Due to the yieldability of the material of the brushes 22 and 23, the cutting edges 40 and 49 may be located in close contact with the brushes, thus assuring close shaving, the yield of the brush material eliminating any mechanical problems as regards interference with the fairly free turning of the brushes by reason of frictional drag imposed by the edge portions of the blade in contact with the peripheries of the brushes. It is, therefore, not important to have close precision in the setting of the edge portions of the blade with respect to the peripheries of the brushes, since it is ultimately the keen cutting edge of the blade, in any event, that is relied upon for cutting the hairs, the brushes being merely yieldable hair feeding means cooperating with the cutting edges in a generally similar manner as a lawn mower reel cooperates with its associated cutter bar. However, in the case of the rubber brush 23, which may, for example, be of sponge rubber construction or of other soft rubber material, it may be found desirable, especially in the event of the use of semi-soft rubber, to locate the axis 28′ displaced from the radius *d*—*e* to a small extent, as indicated at *h* in Fig. 5, so that the periphery of the brush is substantially tangent to the adjacent bevel surface *i* on the inner side of the blade 41, instead of being approximately tangent to the arc of the blade. In that way there is no danger of the circle defined by the periphery of the brush intersecting the trailing edge portion 64 of the beveled edge portion *i* of the blade and giving rise to frictional drag on the operation of the brush and possibly a tendency toward the blade fluttering. Any drag imposed by the blade on the brush would, of course, in time also mean wear, although a slight rubbing

action is desirable from the standpoint of a honing effect. The brushes will automatically be trimmed down to the correct radius by the cutting edges of the blade in the rotation of the brushes with respest thereto if they happen to be too large in diameter or if a few bristles happen to project beyond the rest. In that way there is no likelihood of the brush coming in contact with the skin in the operation of the razor during which the cutting edge portion of the blade is moved in close contact with the skin. (See Fig. 4.)

In operation, it will be apparent that all hairs will be cut off squarely and without discomfort to the operator, because the cutting or shearing action does not depend upon the movement of the blade relative to the hair as in the old conventional Gillette razor, but instead the power operated brush cooperating with the blade whisks the hair toward the cutting edge in the manner shown in Fig. 4, similarly as a lawn mower reel cooperates with its associated cutter bar, so that the blade can do the cutting without any "razor pull." There should, therefore, be no necessity for going over the same area more than once. With the power operated brush, low lying hair on the neck and, in fact, any longer hairs which the clipper type electric razors find it difficult to remove will be removed just as readily as short stubble. The fact that the entire cutting edge of the blade is used instead of having to thread the hairs through fine slots to get them into the path of the cutter makes the shaving action with this razor much quicker and more positive than in the clipper types of razors, and while the present razor has been designed with a view primarily to dry shaving, there is no reason to believe that it could not also be used for wet shaving, inasmuch as the rotary brushes could be quickly and easily rinsed off after removal of the blade and can be dried by whirling of the brushes under power of the motor. The slots **54** in the guards are sufficient to permit discharge of lather as well as hair. The use of the cutting edge of the razor blade, as distinguished from the slotted or perforated guards on the clipper type razors, permits as close shaving as the operator desires, because there is no limitation inherent in the construction of the razor, such as the thickness of the intervening wall of the guard. The yield in the material of the brush is an important safety factor, especially in closer shaving, at which time the skin is apt to bulge inwardly to some extent, past the cutting edge of the blade toward the periphery of the brush. The rotary brush being of yieldable material will under such circumstances attend only to the cutting off of the hair, working in hair shearing relation to the cutting edge, and will glide over the bulged skin instead of forcing or rolling it against the cutting edge of the blade. The brush, in other words, is yieldable in the event of contact with the skin and is capable only of causing the shearing off of hair close to the skin in the manner clearly illustrated in Fig. 4. There is, therefore, no danger of the operator getting the skin pinched between the brush and the edge of the blade and cut. In Fig. 4, which is a greatly enlarged view (Figs. 1 to 3 show the razor about twice its actual size), there is a clear illustration of the manner in which the skin S bulges inwardly at A when the razor is in shaving position, bearing on the skin at the points B and C, and under these conditions, the cutting edge **40** of the blade works across the top or crest of the bulge. Normally, therefore, there is no occasion or opportunity for the skin to bulge inwardly beyond the cutting edge of the blade, but if, in too close shaving or in careless handling of the razor, there should be any skin overlapping the edge of the blade, the brush **22** or **23**, as the case may be, will not cause any pinching or clipping of the skin. An operator exercising ordinary care, equivalent to what he is accustomed to exercising with the ordinary safety razor, will find that there is no danger of his cutting himself with this razor. The critical dimensions from B to C and from B to **40** and from **40** to C correspond approximately to the dimensions on the hand-power Gillette safety razor, the correctness of which has been demonstrated by years of practical experience, and it is considered an important feature of the present invention that it enables power operation, as herein disclosed, without necessitating any radical departure from these all important critical dimensions.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. In a safety razor comprising a handle carrying a head adapted to support a blade, a blade mounted thereon having a straight cutting edge, and a clamp for holding the blade in operative position on the head, the combination of a guard on said head in front of the blade's cutting edge serving with the clamp to guide and gauge the same in operation over the skin contacted by the clamp and guard, an elongated rotary brush disposed longitudinally under the blade and behind the guard in close relationship to said cutting edge to function like a lawn mower reel to whisk hairs against the cutting edge so as to be cut off, the radially extending portions of said brush being yieldable laterally in the event of contact with the skin during rotation of the brush so as to be incapable of positively forcing the skin toward the cutting edge, and means for driving said brush.

2. In a Gillette type safety razor comprising a handle carrying a head adapted to support a blade, a blade mounted thereon having opposed parallel straight cutting edges, and a blade hold-down clamp member over said blade having smooth top surfaces spaced to the rear of and above the two cutting edges, the combination of guards on said head in front of the cutting edges each having a smooth top surface which in slidably contacting the skin being operated over by the cutting edge cooperates with the related surface on the clamp member similarly contacting the skin to guide and gauge the operation of said cutting edge, an elongated rotary brush cooperating with each cutting edge disposed longitudinally under the blade and behind the guard in close relationship to the associated cutting edge to whisk hairs against the cutting edge to function like a lawn mower reel so as to be cut off, the radially extending portions of said brushes being yieldable laterally in the event of contact with the skin during rotation of the brush so as to be incapable of positively forcing the skin toward the cutting edge, and means for driving said brushes.

3. In combination, a safety razor head having opposite longitudinal edges formed to provide guard portions for contact in front of the cutting edge with the skin being shaved, a blade

having opposed longitudinal straight cutting edges and mounted on the head with said edges in spaced posterior relation to said guard portions, an elongated rotary brush in a longitudinal recess provided therefor in at least one of said guard portions for operation under and close to the associated cutting edge of said blade to function like a lawn mower reel to whisk hairs against the cutting edge so as to be cut off, the radially extending portions of said brush being yieldable laterally in the event of contact with the skin during rotation of the brush so as to be incapable of positively forcing the skin toward the cutting edge, a drive gear centrally located in the head, and a countershaft mounted in the head parallel to the brush having a gear driving connection at one end with the central drive gear and having a gear driving connection at the other end with the adjacent end of the brush.

4. In combination, a safety razor head having opposite longitudinal edges formed to provide guard portions for contact in front of the cutting edge with the skin being shaved, a blade having opposed longitudinal straight cutting edges and mounted on the head with said edges in spaced posterior relation to said guard portions, two elongated rotary brushes in parallel relation in longitudinal recesses provided therefor in said guard portions for operation under and close to the cutting edges of said blade to function like a lawn mower reel to whisk hairs against the cutting edges so as to be cut off, the radially extending portions of brushes being yieldable laterally in the event of contact with the skin during rotation of the brushes so as to be incapable of positively forcing the skin against the cutting edges, a single power operated helical gear centrally located in the head, and parallel countershafts mounted in the head on opposite sides of said helical gear parallel to the brushes, each having a driving gear connection at one end with the helical gear and having a driving gear connection at the other end with the adjacent end of the associated brush, whereby the brushes are driven in opposite directions turning toward the associated cutting edges.

5. In a safety razor, comprising a body provided with supporting means for a straight edged blade, the combination of a guard on the body in spaced parallel relation to the cutting edge of the blade, an elongated rotary brush on said body in a longitudinal recess provided therefor in the guard for hair shearing action with the edge of the blade, the material of said brush being yieldable radially in the event of contact with the skin during rotation of the brush so as to be incapable of positively forcing the skin against said cutting edge, and means for driving the brush so as to turn toward the cutting edge of the blade.

6. In combination, a safety razor body adapted to support a straight edged removable and replaceable blade, and a guard on the body in spaced parallel relation to the cutting edge of the blade, an elongated rotary brush on said body in a longitudinal recess provided therefor in the guard for hair feeding action with the edge of a blade removably mounted on said body, the material of said brush being yieldable so as to be incapable of forcing skin against said cutting edge, a drive shaft substantially normal to the plane of the head and blade, a helical gear on said shaft in said head, a countershaft mounted for rotation in the head parallel to the brush having a drive gear connection at one end with the helical gear and having a drive gear connection at the other end with the adjacent end of the brush, a hollow handle for supporting and moving the head, extending therefrom substantially at right angles and having the drive shaft extending therethrough, and means for driving said shaft.

7. In combination, a safety razor head having opposite longitudinal edges formed to provide guard portions for contact in front of the cutting edge with the skin being shaved, a blade having opposed longitudinal straight cutting edges and mounted on the head with said edges in spaced posterior relation to said guard portions, two elongated rotary shearing members in parallel relation in longitudinal recesses provided therefor in said guard portions for operation under and close to the cutting edges of said blade, a drive gear on the same end of each of said shearing members, a removable end plate adjacent said gears on said head closing one end of said longitudinal recesses and having bearings provided therein for the adjacent ends of the shearing members, the shearing members with their drive gears being removable endwise from said recesses upon removal of said plate, and means having detachable driving engagement with said gears to drive the shearing members in opposite directions toward the associated cutting edges.

8. In combination, a safety razor head having opposite longitudinal edges formed to provide guard portions for contact in front of the cutting edge with the skin being shaved, a blade having opposed longitudinal straight cutting edges and mounted on the head with said edges in spaced posterior relation to said guard portions, an elongated rotary brush in a longitudinal recess provided therefor in one of said guard portions for operation under the associated cutting edge of said blade in close relation thereto to function like a lawn mower reel to whisk hairs toward the cutting edge so as to be cut off, the radially extending portions of said brush being yieldable laterally in the event of contact with the skin during rotation of the brush so as to be incapable of positively forcing the skin toward the cutting edge, a drive gear on one end of said brush, a removable end plate on the head alongside the gear and having a bearing therein for the adjacent end of the brush, the brush with its gear being removable endwise from the recess upon removal of said plate, and means having a detachable driving connection with the gear to turn the brush toward the associated cutting edge.

9. A power shaver comprising, in combination, a thin keen edged blade and a rotary cylindrical brush of relatively yieldable material in close contact peripherally with one side of the cutting edge portion of the blade, the other side of the cutting edge portion being adapted to have sliding shaving contact with the skin, whereby said brush is adapted to whisk only hairs toward the cutting edge so as to be cut off, the radially extending portions of the brush being yieldable laterally in the event of contact with the skin during rotation of the brush so as to be incapable of positively forcing toward said cutting edge any skin protruding beyond the cutting edge.

10. A power-operated shaver comprising, in combination, a handle carrying a blade supporting head, said head having a face contacting guard portion on one of its longitudinal edges

and having a longitudinal brush receiving recess provided therein parallel to and adjacent said guard portion, a blade on said head providing a cutting edge portion overhanging said recess, means on said head providing a face contacting portion in posterior relation to the cutting edge portion of said blade and in a common plane with the face contacting guard portion, which plane is spaced above the cutting edge portion of the blade, a rotary brush of material yieldable to the skin in said recess, drive means therefor, and means for detachably securing said blade on the head with the cutting edge portion held in close relation to said brush, said rotary brush being positioned spaced below the common plane of the aforesaid face contacting portions, the cutting edge portion of said blade in the shaving operation lying approximately tangent to the ridge of a rounded elongated bulge of skin formed by engagement of the device with the face, similarly as in wet shaving with a Gillette safety razor, whereby normally to keep the skin clear of the rotary brush while permitting cutting off hair therefrom close to the surface of the skin, the brush being yieldable so as to glide over any skin protruding beyond the cutting edge.

11. A power-operated shaver comprising, in combination, a handle carrying a blade supporting head, said head having a guard portion on one of its longitudinal edges and having a longitudinal recess provided therein parallel to and adjacent said guard portion, a blade on said head providing a cutting edge portion overhanging said recess, a rotary brush of material yieldable to the skin in said recess, drive means therefor, and means on said head for holding said blade with respect to the head so that the cutting edge portion is held in close relation to said brush, said rotary brush being positioned spaced below the common plane of the face contacting surfaces of said guard and blade-holding means, the cutting edge portion of said blade in the shaving operation lying approximately tangent to the ridge of a rounded elongated bulge of skin formed by the device on the face, similarly as in wet shaving with a Gillette safety razor, whereby normally to keep the skin clear of the rotary brush while permitting cutting off hair therefrom close to the surface of the skin, the brush being yieldable so as to glide over any skin protruding beyond the cutting edge.

12. A power-operated shaver comprising, in combination, a handle carrying a blade supporting head, said head having a guard portion on one of its longitudinal edges and having a longitudinal recess provided therein parallel to and adjacent said guard portion, a thin flexible blade on said head providing a cutting edge portion overhanging said recess, a rotary brush of material yieldable to the skin in said recess, drive means therefor, and clamp means on said head for flexing said blade with respect to the head so that the cutting edge portion is held in hair cutting relation to said brush, said rotary brush being positioned spaced below the common plane of the face contacting surfaces of said guard and clamp means, the cutting edge portion of said blade in the shaving operation lying approximately tangent to the ridge of a rounded elongated bulge of skin formed by the device on the face, similarly as in wet shaving with a Gillette safety razor, whereby normally to keep the skin clear of the rotary brush while permitting cutting off hair therefrom close to the surface of the skin, the brush being yieldable so as to glide over any skin protruding beyond the cutting edge.

13. A power-operated safety razor comprising a head adapted to support a blade, a thin wafer-like blade mounted thereon having a straight cutting edge, a clamp member superimposed on the blade in spaced relation to the cutting edge holding the blade in operating position on the head, a skin engaging guard on said head in front of and spaced from the cutting edge, gauge means for gauging the height and width of an elongated ridge of skin formed when the razor is operatively disposed in normal shaving relation to the skin of a face to be shaved, said gauge means being provided on said clamp and guard at a predetermined elevation and fore and aft spaced relationship with reference to the cutting edge so that the latter is disposed with the skin-engaging side of its cutting edge portion in operative engagement with the crown of the elongated ridge of skin bulged toward the blade from said gauge means, an elongated rotary cylindrical brush of material yieldable to the skin and of a small diameter and disposed close to and substantially tangent to the opposite side of the cutting edge portion of the blade, and substantially entirely within the guard, in hair shearing relationship to said cutting edge, said brush being yieldable so as to glide over any portion of the skin protruding beyond the cutting edge portion of the blade, and means for driving said brush to turn toward said cutting edge.

14. In combination, in a power-operated shaver, a straight edged razor blade, and a rotary helix disposed parallel to and in light wiping contact with one side of the edge portion of said blade, said helix being yieldable mainly in a direction at right angles to the outer end of a radius thereof, whereby it is adapted to sweep hair over the edge so as to be cut off but will yield in the event skin protrudes between the blade and helix.

15. In combination, in a shaving device, a straight edged razor blade, and a rotary substantially cylindrical brush comprising substantially radially projecting bristles that are yieldable mainly to any force in a direction at right angles to the radially outer ends thereof, whereby the brush is adapted to whisk hair to the cutting edge of said blade but will yield in the event skin protrudes between the blade and brush, said brush being disposed substantially parallel to and in light wiping contact with one side of the edge portion of said blade.

16. In combination, in a shaving device, a straight edged razor blade, and a rotary substantially cylindrical brush comprising helically extending soft rubber ribs that are yieldable mainly to any force in a direction at right angles to the radially outer ends thereof, whereby the brush is adapted to whisk hair to the cutting edge of said blade but will yield in the event skin protrudes between the blade and brush, said brush being disposed substantially parallel to and in light wiping contact with one side of the edge portion of said blade.

17. A cutting implement, comprising a blade having a sharp cutting edge capable of cutting through the standing material to be cut, and a rotary generally cylindrical brush in close working contact peripherally with the cutting edge portion of the blade adapted to sweep that por-

tion of the material projecting above the plane of the cutting edge over the cutting edge to be cut off thereby, said brush comprising radially extending portions which are flexible and therefore yieldable in the event of the introduction of a foreign object between the brush and cutting edge to prevent the cutting of such object.

18. In a safety razor, comprising a body provided with supporting means for a straight edged blade, the combination of a guard on the body in spaced parallel relation to the cutting edge of the blade, an elongated rotary bristle brush on said body in a longitudinal recess provided therefor in the guard for hair shearing action with the edge of the blade, the bristles of said brush being yieldable radially in the event of contact with the skin during rotation of the brush, so as to be incapable of positively forcing the skin against said cutting edge, and means for driving the brush so as to turn toward the cutting edge of the blade.

19. In a safety razor, comprising a body provided with supporting means for a straight edged blade, the combination of a guard on the body in spaced parallel relation to the cutting edge of the blade, an elongated rotary brush of soft rubber on said body in a longitudinal recess provided therefor in the guard for hair shearing action with the edge of the blade, the soft rubber of said brush being yieldable radially in the event of contact with the skin during rotation of the brush so as to be incapable of positively forcing the skin against said cutting edge, and means for driving the brush so as to turn toward the cutting edge of the blade.

20. A cutting implement, comprising a blade having a sharp cutting edge capable of cutting through the standing material to be cut, and a rotary generally cylindrical bristle brush in close working contact peripherally with the cutting edge portion of the blade adapted to sweep that portion of the material projecting above the plane of the cutting edge over the cutting edge to be cut off thereby, the bristles of said brush being flexible so as to yield in the event of the introduction of a foreign object between the brush and cutting edge to prevent the cutting of such object.

21. A cutting implement, comprising a blade having a sharp cutting edge capable of cutting through the standing material to be cut, and a rotary generally cylindrical brush of soft rubber in close working contact peripherally with the cutting edge portion of the blade adapted to sweep that portion of the material projecting above the plane of the cutting edge over the cutting edge to be cut off thereby, the soft rubber of said brush being adapted to yield in the event of the introduction of a foreign object between the brush and cutting edge to prevent the cutting of such object.

ANDREW F. WINTERCORN.

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CERTIFICATE OF CORRECTION.

Patent No. 2,330,853. October 5, 1943.

ANDREW F. WINTERCORN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, first column, line 68, claim 6, for the word "feeding" read --shearing--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of January, A. D. 1945.

Leslie Frazer

(Seal) Acting Commissioner of Patents.