S. P. JONES.

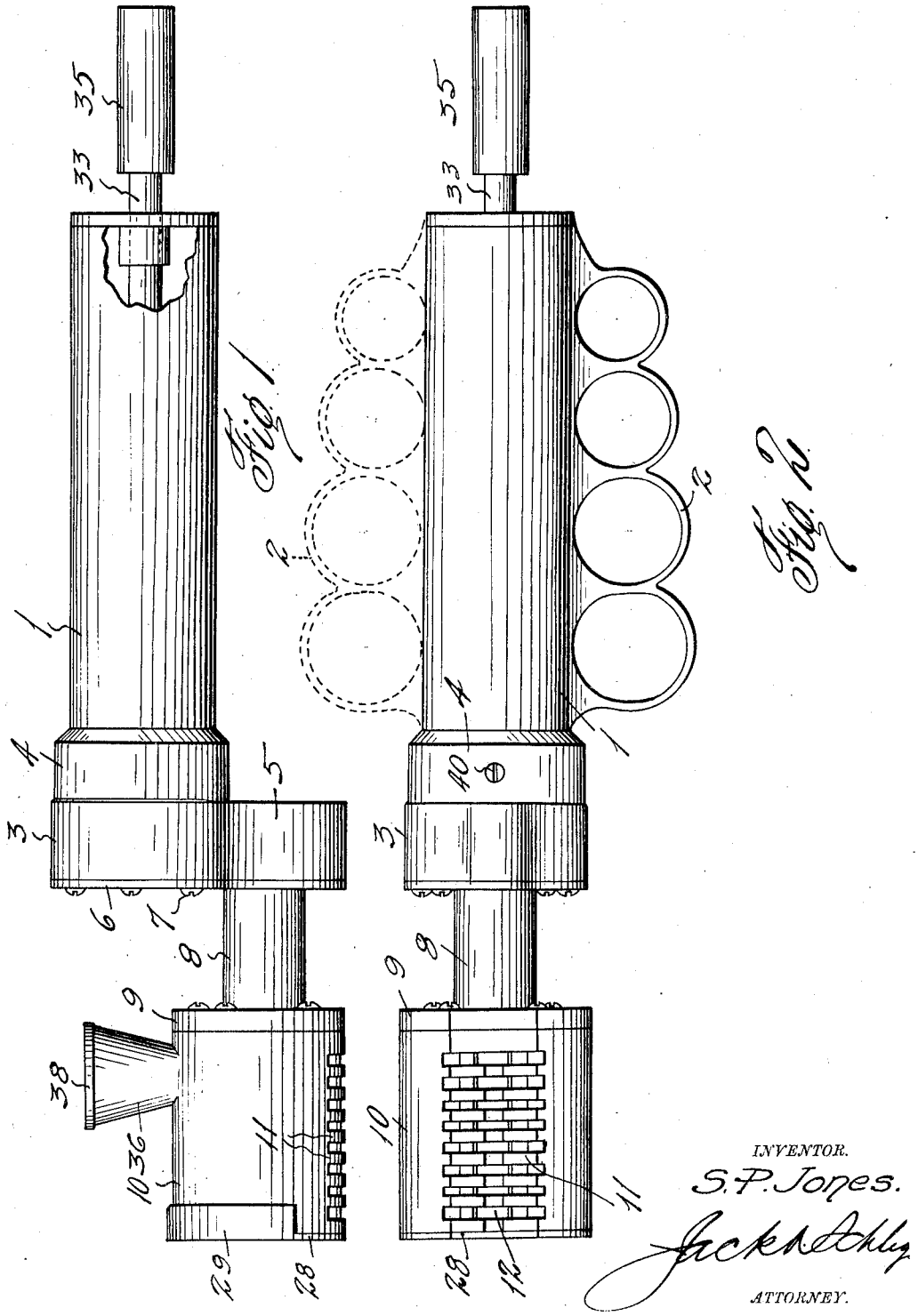
ROTARY RAZOR.

APPLICATION FILED SEPT. 17, 1918.

1,350,227.

Patented Aug. 17, 1920.

2 SHEETS—SHEET 1.



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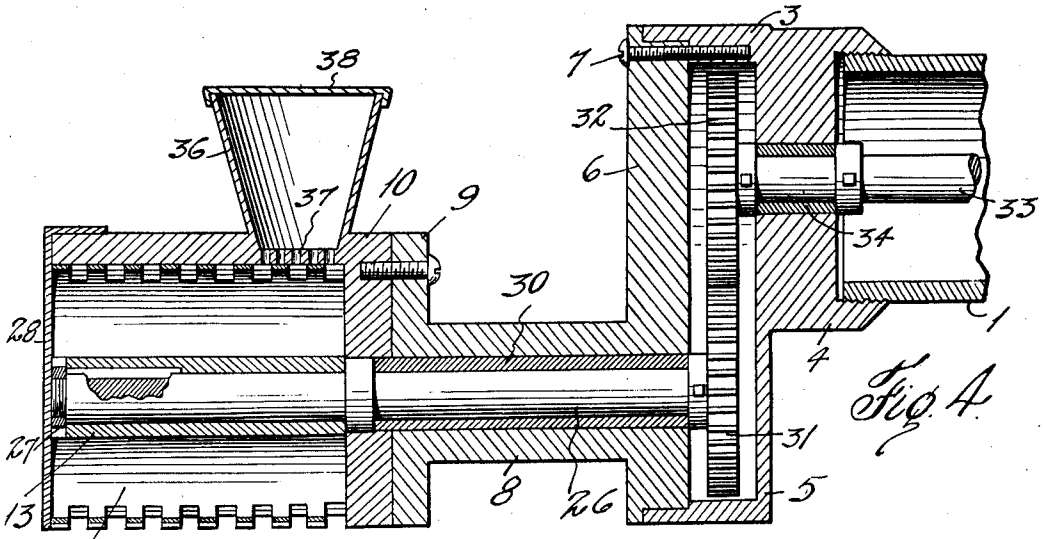


Fig. 4.

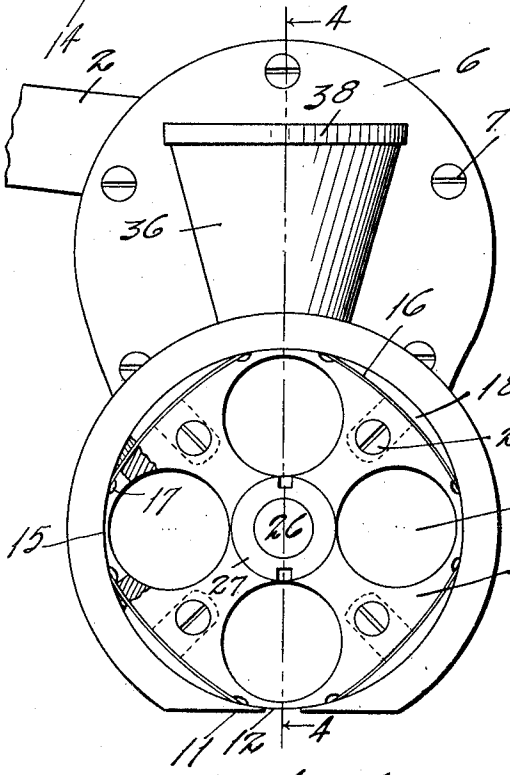


Fig. 3.

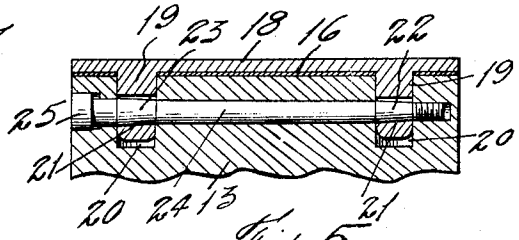


Fig. 5.

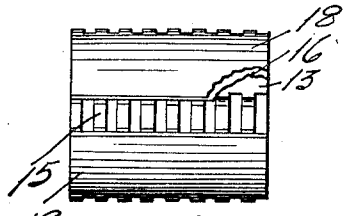


Fig. 6.

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UNITED STATES PATENT OFFICE.

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ROTARY RAZOR.

1,350,227. Specification of Letters Patent. Patented Aug. 17, 1920.

Application filed September 17, 1918. Serial No. 254,418.

To all whom it may concern:

Be it known that I, SIDNEY P. JONES, citizen of the United States, residing at Waco, in the county of McLennan and State of Texas, have invented certain new and useful Improvements in Rotary Razors, of which the following is a specification.

This invention relates to new and useful improvements in rotary razors.

This application is a continuation in part of my application, Serial No. 214,519, filed January 30, 1918, and is intended to embody the generic and fundamental features set forth in said previous application, and also to include additional features and certain improvements which have been made.

There has been some activity in this particular field of endeavor which has resulted in the issuance of several patents, none of which however, so far as applicant is able to learn, have come into actual use. Applicant has demonstrated by experiment and practice that certain features of construction are necessary to produce a practical and commercial rotary razor. According to his tests all of the devices evolved up to the time he entered the field are impractical and incapable of functioning satisfactorily.

It is evident that the cutting blade must approach and pass over the skin in much the same manner as the shaving operation is carried out by the usual razor. It is obvious therefore that any blade which attempts to approach the surface to be shaved at a wide angle will not shave satisfactorily and smoothly, but is likely to make the operation painful as well as injurious to the one being shaved.

The factor of safety must enter largely into a successful device of this character in order that the device may be freely and expeditiously used. Such a device must be sanitary and therefore capable of being easily and readily cleansed.

The end sought in the production of a successful rotary razor, which it is understood is operated by mechanical means, is to save time, conserve labor and eliminate to some extent the necessity of trained barbers. The practical and successful rotary razor must be easily manipulated by untrained operators and persons of ordinary ability. The device must do the work more quickly than it can be done with the ordinary hand razor, and it must be of such construction as to enable the operator to reach all of the places necessary to shave. It must be of light construction and easy of manipulation so as not to tire or tax the operator.

With the foregoing requirements in view I have endeavored to produce a rotary razor capable of accomplishing the results sought. My invention contemplates a rotating blade carrying member operating across a guard so that the blades approach and pass over the skin in substantially tangential relation thereto. In shaving one holds the ordinary razor blade so that its broad side is close to the face, but if the razor is tilted too far outward it either scrapes or cuts the skin. I therefore have mounted the blades in such a manner that they will pass the guard and the face at this point in a manner similar to the stroke of the ordinary razor.

Gage plates for the cutting blades are also important elements as the cutting edges can not be projected too far. Another important feature is the offsetting of the head and guard with relation to the length of the handle so that the guard will not be tilted by the knuckles of the holder's hand.

The rotary blade carrying member also has provision for accommodating and accumulating lather as it is removed. The member is inclosed and the inclosure carries the guard which prevents the blade from cutting the skin but at the same time permits close shaving. The inclosure for the rotary member may be termed a head, and one of the features is to so mount the head that the guard and its shaving panel or opening may be readily brought into engagement with any part of the face or neck which it is necessary to shave, as for instance under the nose and ears.

In my first application I contemplated mounting an electric motor in the handle of the device, but while I reserve the right to do this, I have found it more practical to operate the device by means of a flexible shaft or equivalent connection thus reducing the size and weight of the device. It is proposed to arrange the parts so that the handle is reversible and may be used either by a right-handed or left-handed person. In designing a structure embodying the invention simplicity and a few number of parts is highly desirable and necessary. The head is arranged so that it may be dipped in hot water or a cleansing solution or placed un-

der a faucet and the accumulated lather and other foreign matter quickly and effectually removed.

In a more specific embodiment of the invention a fixed head is formed with a toothed or ribbed guard along one side and this guard may be provided with a vertical central slot through which the shaving operation is carried out, but the structure is not to be limited to a slot. The slot extends to the top of the guard. Within the head a rotating blade carrying member or cylinder is mounted to revolve. Shaving blades are mounted on the cylinder with their cutting edges parallel to the shaving slot of the guard and arranged to travel across said slot substantially tangential thereto. The blades have a length equal to that of the slot and the top of the head is covered by a very thin cap so that the shaving guard may be brought into contact with any portion of the face and the shaving operation performed close up under any projection. This would not be possible if there was a bearing or projection at the top of the head.

The cylinder is provided with vertical pockets spanned by arched ribs and act to collect the lather. Cutting blades overhang the pockets at each side and the ribs bridge the space therebetween so that the flesh cannot be pinched or cut. The blades are suitably clamped on the cylinder. Plates have their edges terminating along the edges of the blades and form gages determining the projection of said cutting edges, as without these gages the blades would cut the skin. Each cutting edge is disposed between a gage plate and the arched ribs adjoining, and such a structure is highly important as it supports the flesh on both sides of each cutting edge. An inlet is provided on the housing for admitting water or other cleansing agents for the purpose of cleaning out the lather after the device has been used.

The head is supported so that the guard portion overhangs and projects laterally thus facilitating its application to the surface to be shaved. The head is supported on a bracket member which projects laterally from a handle portion. That portion of the bracket member which supports the head is offset from the handle member which facilitates the application of the shaving guard to the surface to be shaved. It is preferable to form the handle member with finger grips or guards so that the device will not easily slip from the hand of the manipulator, and where this is done the bracket is mounted on the handle member so as to be reversed when the device is to be used by a left-handed operator. Suitable driving elements are mounted in the handle, bracket and head and connected with the cylinder for rotating the same. A flexible shaft connection is provided so that the device may be coupled with a flexible shaft and suitably driven.

It is obvious that various structures might be evolved, but the principal features herein set forth have been found necessary to produce a complete and satisfactorily operating device. The offset guard and shaving slot together with the rotating cylinder and disposition of the cutting blades is considered essential, and the other features are highly important and greatly advantageous.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, in which an example of the invention is illustrated, and wherein—

Figure 1 is a side elevation of a device constructed in accordance with this invention,

Fig. 2 is a front elevation of the same,

Fig. 3 is a plan view with the cap removed,

Fig. 4 is a sectional detail on the line 4—4 of Fig. 3.

Fig. 5 is a sectional detail of one of the blade clamps and the fastening therefor, and

Fig. 6 is a detail of the cylinder.

In the drawings the numeral 1 designates a vertical tubular handle member having a longitudinal finger guard or clip 2 along one side. At the upper end of the handle member a horizontal bracket 3 is mounted, the bracket has a depending boss 4 into which the upper end of the member 1 is screw-threaded. The bracket is recessed and has a lateral extension or arm 5. A plate 6 is seated in the upper side of the bracket and fastened by screws 7 or other means. That portion of the plate 6 carried on the arm 5 supports a vertical shank 8 having a laterally directed flange 9 at its upper end. The particular construction of these parts may be varied and the main object sought is to offset the shank 8 laterally from the handle member 1. The flange 9 presents a flat surface on which is mounted a cylindrical housing or head 10. On that side of the housing which is most remote from the handle member 1 and which is called the shaving panel or front I dispose two rows of transverse teeth 11 directed toward a vertical slot 12 extending longitudinally from the base of the head to its top or outer end. The teeth of one row are preferably transversely alined with those of the other row and the width of the slot therebetween may be varied in the manufacture if desired. The faces or outer surfaces of the teeth are flat as is evident from Fig. 3. The teeth constitute a guard and are brought in contact with the surface to be shaved similar to the guard on the ordinary safety razor. It would be within the province of the invention to use a plurality of openings instead of the slot. By offsetting the head 10

from the handle 1 and presenting the guard it is obvious that the latter may be brought readily into contact with the surface to be shaved as the fingers of the operator may be accommodated under the arm 5 and the handle is held away from the working surface. It is obvious that if the head and handle were alined it would be necessary to tilt the device at an angle to the face and thus all of the guard would not be brought into contact with the surface to be shaved. Furthermore by offsetting the head and guard a slight oscillation of the handle member imparts a swing of considerable amplitude to the guard.

Within the head a revolving cylinder or blade carrying member 13 is mounted. This cylinder has its upper end terminating flush with the upper end of the head and is provided with a plurality of pockets or cavities 14 extending throughout its length and open at each end. The outer side of each pocket is bridged by a plurality of circumferential ribs 15 which may be disposed to rotate in alinement with the teeth 11. Thus when the cylinder is revolved the ribs will pass across the slot 12 and bridge the same between the ends of the teeth. This arrangement prevents the flesh being drawn in and pinched and at the same time permits the lather to be taken into the pockets and collected.

Between each pocket a cutting blade 16 is mounted on the cylinder so that its cutting edges overhang the base of the ribs lying on each side thereof. The ribs may be routed out as indicated at 17 just under each cutting edge so as not to obstruct the latter. It is obvious that single blades could be used instead of double blades. One of the very important and essential features is the disposition of the cutting blades. It will be seen that the blades 16 are mounted on the cylinder so as to pass the guard in nearly parallel relation to the same and to pass over the surface to be shaved in substantially tangential relation thereto. This causes the cutting edge to engage the beard in a manner similar to that carried out in the usual hand shaving operation where the blade is laid nearly flat against the face. It will be seen that if the blade is disposed at much of an angle, for instance like the blade of an ordinary lawn mower beater, the action will be very similar to the action of a lawn mower and the shaving operation would be unsatisfactory and somewhat painful. By disposing the blade so that it passes in nearly parallel relation to the guard the shaving operation is more naturally performed. A clamp plate 18 is mounted on each blade and holds the same on the cylinder. These plates have their outer surfaces curved in harmony with the ribs 15 so as to produce a cylindrical surface as will be evident from Fig. 3. The clamp plates 18 have their longitudinal edges in close proximity to the cutting edges of the blades and thus act as gages controlling the cutting action of the blades. It will be seen that when the guard is brought into contact with the skin of the person to be shaved the smooth faces of the plates 18 and the ribs 15 will support the flesh on each side of each cutting edge through the slot 12; and the said plates acting as gages for the cutting edges of the blades will control the shaving operation. The routed portions 17 not only give clearance for the cutting edges of the blades but permit the same to lie below the plane of the ribs if desired.

Each plate 18 has on its under side an ear 19 which penetrates the blade 16 and is received in recess 20 in the cylinder. These ears have eyes 21, as shown in detail in Fig. 5, said eyes having one wall inclined to receive the tapered shoulders 22 and 23 respectively of a locking pin 24 mounted in the cylinder. This locking pin has one end screw-threaded into the cylinder and has a screw head 25 at its outward end countersunk in the top of the cylinder. It will be seen that as the pin is screwed into the cylinder the shoulders 22 and 23, being inclined, will ride over the inclined surfaces of the eyes 21 and thus draw the plate 18 against the blade 16 and fasten the same on the cylinder. The shoulder 22 is smaller than the shoulder 23 so as to pass through the upper eye 21.

The cylinder is keyed on a countershaft 26 and confined against longitudinal displacement by a nut 27 countersunk in its top and fastened on the shouldered end of said shaft. As before stated the top or outer end of the cylinder terminates flush with the outer end or top of the head and the slot 12 extends to the top of the head. A thin cap 28 is fastened on the head by means of a depending flange 29 snugly embracing said head. This cap covers the cylinder and the flange is omitted at the guard. By this arrangement the upper end of the slot may be brought close under a projection, as for instance in shaving the upper lip. If a projecting bearing was carried on top of the head it would be difficult to shave the upper lip or get under any other projection. By removing the cap 28 and the nut 27 the cylinder may be quickly removed from the head and by withdrawing the pins 24 the cutting blades 16 may be readily removed and replaced.

The countershaft 26 is mounted in a bushing 30 disposed in the shank 8 and has its lower end secured in a gear 31 disposed within the arm 5 of the bracket 3. This gear meshes with a second gear 32 confined in said bracket and driving the gear 31. The relative proportions of these gears will

control the speed of rotation of the cylinder. The gear 32 is fastened on the upper end of a driving shaft 33 mounted in a bushing 34 in the boss 4 and extending through the handle member 1. The driving shaft 33 projects from the lower end of the handle member 1 and carries a coupling sleeve 35, by which it may be attached to a flexible shaft, not shown. It is obvious that the flexible shaft may be driven by any suitable means.

To facilitate cleaning I mount on the head opposite the slot 12 a funnel 36 which communicates with the interior of the head through perforations 37 acting as a strainer. The outer flared end of the funnel is normally closed by a slip cap 38. When it is desired to clean the cylinder and remove the lather therefrom the cap 38 is removed and the funnel placed under a faucet whereby a stream of water is admitted through the perforations 37 and enters the pockets 14 as the cylinder is revolved. The cap 28 may be removed if desired during the cleaning operation or the waste may escape through the guard. It would also be possible to immerse the head and cylinder in a sterilizing or antiseptic solution or carry out any other sanitary provision.

In using the device the coupling 35 is attached to a driving element such as a flexible shaft which may be driven by an electric motor whereby motion is imparted to the shaft 33, gears 32 and 31, shaft 30 and cylinder 13. The shaft 33 may be operated in either direction as the cylinder blades will cut in both directions. The operator grasps the handle 1 and places his or her fingers in the guard 2. As shown in Fig. 2 the guard 2 is at substantially right angles to the slot 12 and this is the proper position for a right-handed operator, but if the device is to be used by a left-handed operator then the parts must be adjusted by rotating the member 1 to bring the guard 2 into the position shown in dotted lines in Fig. 2. For this purpose the member 1 is screw-threaded in the boss 4 and a set screw 40 employed for fastening the parts in position. The cylinder or blade carrying member 13 having been set in motion rotates at such a speed as to cause the cutting edges of the blades 16 to pass the slot quite rapidly. The face of the party to be shaved having been lathered in the usual way the operator now brings the guard formed by the teeth 11 and slot 12, into contact with the face of the customer and moves the guard longitudinally or in any other direction over the skin. In fact the razor may be moved in all directions as the guard protects the skin against being cut. The rapidly revolving blades cut the beard and the lather and cut hairs are collected in the pockets 14. A reversing foot switch such as dentists commonly use may be employed so that the direction of rotation of the cylinder may be reversed when desired so that shaving may be accomplished in both directions. It is understood, of course, that where such a switch is used the flexible shaft is driven by a motor such as is usually employed with such switches. It is not considered necessary to illustrate either the motor or the switch, as both are well known and in common use.

The guard and its shaving slot being offset together with the blades passing in parallel relation to the guard makes possible a smooth close shave in considerable less time than is now necessary with the present equipment and it is obvious that untrained operators may readily use the device and it is practically impossible to cut the face of the person being shaved.

What I claim is:

1. In a rotary razor, an elongated handle member, a shaving guard mounted on the handle member, a rotating cylindrical member coöperating with the guard, and cutting blades having their edges exposed on the periphery of the cylindrical member, lather accumulating pockets in the cylindrical member, said cylindrical member having openings between the cutting edges of the blades communicating with the lather accumulating pockets.

2. In a rotary razor, an elongated handle member, a shaving guard mounted on the handle member, a rotating cylindrical member coöperating with the guard, and cutting blades having their edges exposed on the periphery of the cylindrical member, lather accumulating pockets in the cylindrical member, said cylindrical member having openings between the cutting edges of the blades communicating with the lather accumulating pockets, the cylindrical member having clearance recesses under the cutting edges of the blades and disposed longitudinally of said cutting edges.

3. In a rotary razor, a handle member, a shaving guard mounted on the handle member, a rotating cylindrical member coöperating with the guard and presenting a substantially continuous periphery, cutting blades having their edges exposed on the periphery of the cylindrical member, lather accumulating pockets extending longitudinally of the cylindrical member between the cutting edges of the blades, and circumferential ribs in the cylindrical member contiguous to the periphery of said member and bridging said pockets.

4. In a rotary razor, a handle member, a shaving guard mounted on the handle, a rotating member having a substantially continuous cylindrical surface exposed through the guard, and cutting blades having their edges presented on the periphery of the

member, lather accumulating pockets formed in the rotating member and communicating with the surface of the member through openings located between the cutting edges of adjacent blades, said openings being disposed so as not to break the continuity of the cylindrical surface of the member.

5. In a rotary razor, a handle member, a head supported by the handle member and offset laterally therefrom, a shaving guard carried by the head in parallel relation to the handle member and presented on the offset side of the head, a rotating cylinder within the head, cutting blades carried by the cylinder and coöperating with the guard, means for removably fastening the blades in the cylinder, the outer end of the head being open and the guard extending to said outer end, and a removable cap covering the outer end of the head, said cap being thin and free from projections.

6. In a rotary razor, a handle member, a head supported by the handle member and offset laterally therefrom, a shaving guard carried by the head and presented on the offset side thereof, a rotating cylinder within the head, and cutting blades carried by the cylinder and coöperating with the guard, the cylinder having longitudinal lather accumulating pockets contiguous to the cutting edges of the blades, said blades having their cutting edges overhanging said pockets.

7. In a rotary razor, the combination with a support, and a guard carried by the support and having shaving openings, of a rotating member operating in juxtaposition to the openings of the guard, arcuate ribs provided on the rotating member and passing under the openings of the guard, the rotating member having lather accumulating pockets under the ribs, cutting blades mounted on the rotating member with their cutting edges disposed transversely of the ribs and adjacent the ends of the latter, and gage members confining the blades on the rotating member and covering said blades except along their cutting edges.

8. In a rotary razor, the combination with a support, and a guard carried by the support and having shaving openings, of a rotating member operating in juxtaposition to the openings of the guard, arcuate ribs provided on the rotating member and passing under the openings of the guard, the rotating member having lather accumulating pockets under the ribs, cutting blades mounted on the rotating member with their cutting edges disposed transversely of the ribs and adjacent the ends of the latter, and gage members confining the blades on the rotating member and covering said blades except along their cutting edges, the ribs of the cutting member being recessed under the cutting edges of the blades to give the same clearance.

9. In a rotary razor, a handle member, a head carried by the handle member, an open guard at one side of the head, a rotating blade carrying member disposed in the head and coöperating with the guard, in combination with means carried by the head for admitting a fluid to the head for cleansing the same and the rotating member.

10. In a rotary razor, a handle member, an offset head mounted on the member and adjustable arcuately in a horizontal plane with relation to the vertical axis of the handle member, a shaving guard mounted on the head, a rotating blade carrying member within the head, and a finger guard mounted on the handle member, the head being adjusted arcuately to the finger guard for use by either right-handed or left-handed operators.

11. In a rotary razor, a handle, a head mounted on the handle and having a shaving guard extending to its outer end, a removable cap fitting on the outer end of the head and having its front edge flush with the shaving guard, a cylindrical rotating member having a substantially smooth surface and disposed in the head with its surface exposed through the guard, and cutting blades mounted on the cylindrical member, said member having lather accumulating pockets relatively between the cutting edges of the blades and communicating with the surface of the member between the said cutting edges.

12. In a rotary razor, a handle, a shaving guard mounted on the handle, a cylindrical rotating member having a substantially continuous surface exposed through the shaving guard, and cutting blades having their edges exposed on the periphery of the member, the member having lather accumulating pockets and openings in its surface between the cutting edges of the blades, said blades having their edges overhanging the openings which communicate with the pockets.

13. A razor including guard means, cutting means rotating past said guard means, and a rotor carrying said cutting means and having lather-accumulating pockets formed therein with openings adjacent said cutting means and communicating with said pockets.

14. In a rotary razor, a handle, a guard carried by the handle, a rotor coöperating with the guard, and cutting blades having their edges exposed on the periphery of the rotor, lather-accumulating pockets in the rotor, said rotor having openings between the cutting edges of the blades communicating with the lather-accumulating pockets.

15. A razor including a rotor adapted to be driven in either direction and having lather-accumulating pockets formed therein with openings through the periphery of said rotor, cutting means on said rotor fac-

ing in opposite directions, and a guard means coöperating with the cutting means when the rotor is driven in either direction.

16. A razor including a rotor adapted to be driven in opposite directions, blades having double edges exposed in opposite directions on the face of the rotor, said rotor having lather-accumulating pockets formed therein with openings adjacent said cutting means and communicating with said pockets, and two series of guard fingers extending in opposite directions and having a gap between the free ends thereof.

17. A razor including a handle having a laterally-offset support, a rotor mounted on said laterally-offset support and having lather-accumulating pockets formed therein with openings through the periphery of the rotor, and cutting blades on the rotor having their edges disposed adjacent said openings.

In testimony whereof I affix my signature.

SIDNEY P. JONES.