Feb. 14, 1933. A. J. JONES 1,897,982

SAFETY RAZOR

Filed Dec. 12, 1929

Fig. 1.

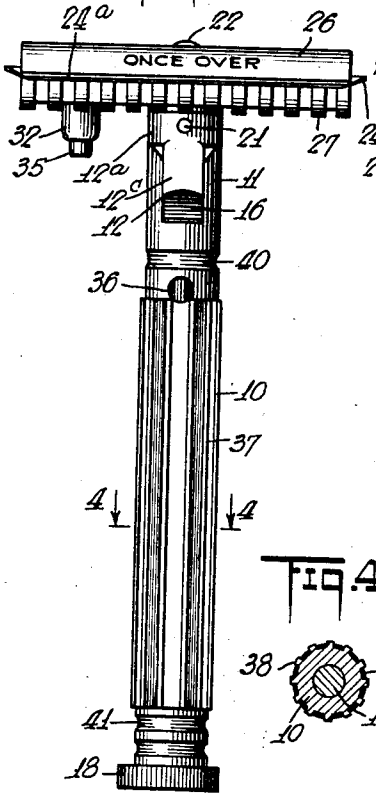


Fig. 2.

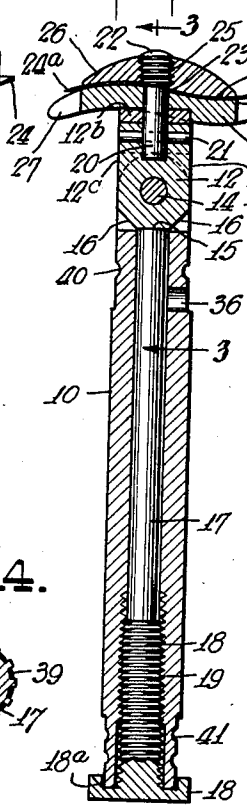


Fig. 3.

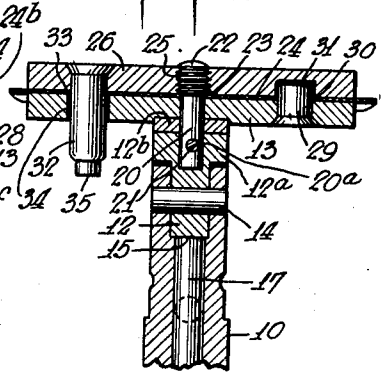


Fig. 4.

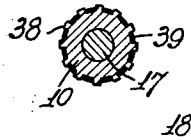


Fig. 5.

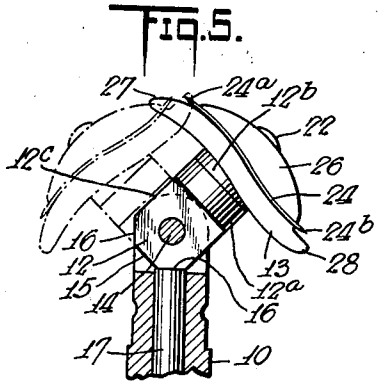


Fig. 9.

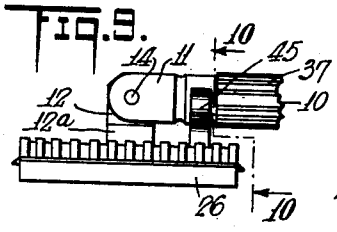


Fig. 10.

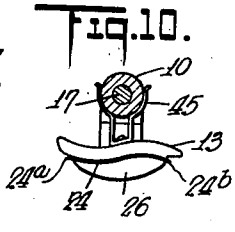


Fig. 6.

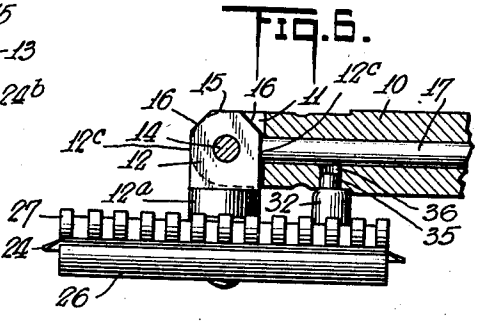


Fig. 7.

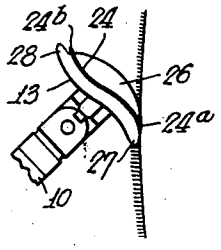
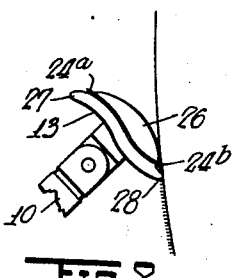


Fig. 8.



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1,897,982

UNITED STATES PATENT OFFICE

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SAFETY RAZOR

Application filed December 12, 1929. Serial No. 413,489.

An object of the present invention is to provide a double edged safety razor, one edge of which will give a coarse mowing cut or a "once over" shave and the other edge of which will give a fine planing cut or "close" shave.

A more specific object is to accomplish this result without the need for special adjustments of the razor or special care in establishing and maintaining a particular angle of the razor head relative to the surface to be shaved, and to rely upon features inherent in the construction of the razor itself, to assure the desired different shaving action at the two cutting edges.

Another object is to provide a razor substantially universally adjustable so that it may be set to accurately simulate razors of well known T head types, hoe types and straight types and in all of these positions permit both fine and coarse shaving.

Another object is to provide a razor, of simple practical construction, substantially devoid of crevices or recesses which might become clogged with dried soap, or hair and a razor which may be quickly and expeditiously adjusted or converted to assume the relative blade and handle positions which are characteristic of various conventional and standard razor types.

Other objects are to provide a razor which may be conveniently assembled, and has but few discernible parts, a razor which may be cleaned without disassembly, and one which affords a secure grip even though the user's fingers be wet and soapy.

In accordance with a preferred embodiment of the invention, the razor head is rotatably and pivotally adjustable relatively to the handle and is capable of being selectively secured in many relationships relatively to the handle.

The razor head preferably includes a guard and a backing plate, the mating or complementary faces of which are so designed that when a flexible blade is clamped between them, the edges of the blade will be automatically thrown into position to afford a close shave at one edge and a coarse shave at the other. Preferably this automatic blade setting is accomplished by a special compound curvature of the complementary blade clamping surfaces and by proper design of the associated guard structure. One edge of the blade is so related to its guard plate that it defines a very acute angle with the surface to be shaved, and as the blade is drawn over the face, this edge will give a light or coarse mowing or sweeping cut. The other edge of the blade is so related to its guard teeth that it turns in toward the face defining a less acute angle therewith, whereby it will afford a fine or deep planing cut. Thus in shaving, when the razor is in T formation, the desirable "once over" and "close" shave may be successively obtained by successively using opposite sides of the blade.

A peculiar feature is the fact that these differential shaving actions are not dependent, in any way, on the judgment of the user as to the proper angle at which the razor head should be disposed against the face. The opposite edges of the blade are rigidly held at different angles relatively to the longitudinal axis of the head and while the same angle of the razor head to the face is always maintained, one blade edge will be disposed at a more acute angle to the face than the other, thus affording the mowing and planing actions desired. These angles of blade to face are similar to the angles at which an expert barber holds a razor when giving a "once over" shave and a close shave. This feature is important in rendering the instrument conveniently manipulable by those who are accustomed to handling the Gillette or other T head type razor in which reversal of head involves no change of the angle of the head to the surface being shaved.

Likewise when the position of the head relatively to the handle is adjusted to convert

the razor into a hoe type, the angle of the head to the handle is not a matter of judgment on the part of the operator but is automatically fixed as an incident of the adjustment. Here again the differential shaving action is had, but it is necessary to swing the head through an angle of approximately 90 degrees and reset it in order to shift from the coarse cutting to the fine cutting side of the blade.

When the device is set up for use as a straight razor, i. e., with the head lying parallel to the handle, both edges of the blade tend to assume a position where there is no appreciable difference in their cutting actions. In fact, the razor cannot be set up as a straight type without slightly releasing the pressure on the blade and permitting the cutting edges of the latter to about equalize, in so far as their cutting action is concerned. This is entirely desirable since the user who is accustomed to shaving with a straight razor relies on the angle of the blade relatively to the face for whatever cutting action he prefers. In other words, such users are experts and when the device of the present invention is set up as a straight razor, it may be used right or left handed in a manner to suit the individual taste.

The invention may be more fully understood from the following description in connection with the accompanying drawing wherein:

Fig. 1 is a side elevational view of a safety razor embodying the invention and showing the device set up as a T head tool,

Fig. 2 is a vertical sectional view through the razor, taken approximately on the line 2—2 of Fig. 1,

Fig. 3 is another vertical sectional view taken approximately on the line 3—3 of Fig. 2,

Fig. 4 is a transverse sectional view of the handle on the line 4—4 of Fig. 1,

Fig. 5 is a fragmentary sectional detail somewhat similar to Fig. 2 but showing in full and in dot and dash lines the two positions of the head adjustment which may be made when the razor is converted into the hoe type,

Fig. 6 is a view partly in section and partly in elevation, showing the device converted into the straight type razor,

Figs. 7 and 8 are diagrammatic edge views showing opposite edges of the T head razor in use and indicating the manner in which, with the same angularity relatively to the surface to be shaved, a coarse mowing cut is had with one edge and a fine planing cut with the other,

Fig. 9 is a view generally similar to Fig. 6 but illustrating a slight modification, and

Fig. 10 is a transverse sectional detail on the staggered line 10—10 of Fig. 9.

The hollow generally cylindrical handle 10 of the razor is bifurcated at one end to provide a pair of spaced parallel ears 11 having opposed flat inner faces. The handle is universally connected to a guard plate 13 by a coupling member which includes a body portion 12^a of cylindrical shape and of the same diameter as the adjacent portion of the handle. A reduced flattened extension or tail piece 12 of the coupling member is pivotally mounted between the ears 11 upon a cross pin 14. The coupling member is rotatably connected to the guard plate 13 by a swivel stud 20, drive fitted into a corresponding socket 20^a in the end of the coupling member and/or fixed therein by cross pin 21. A metal washer 12^b is interposed between the coupling piece and the flattened under surface of the guard plate and the guard plate is secured against disconnection from the coupling piece by the enlarged threaded end 22 of the stud 20 which is adapted to pass through a central opening in a wafer blade 24 and engage in a threaded opening 25 in the backing plate 26 which complements the guard plate 13. The unthreaded portion of the stud 20 which is disposed exteriorly of the socket 20^a is slightly longer than the combined thickness of the washer 12^b and the guard plate 13, whereby, when backing plate 26 is removed or partially unscrewed, both the guard 13 and the washer 12^b are free to rotate about the stud 20 but when the backing plate is screwed home to clamp a blade in position, the backing plate, guard, washer and coupling piece are clamped together tightly enough to prevent relative rotation of any of the parts. One of the advantages of using the washer is the fact that there is less liability of sticking when the backing plate is to be unscrewed to permit removal of the blade or when the entire razor head is to be rotated from one position of adjustment to another, since it will be obvious that the washer provides a pair of rotary bearing surfaces instead of the single one which would otherwise be present.

The use of the washer, furthermore, tends to simplify the structural problems in that it permits the guard plate to be a simple drop forging instead of a complicated casting which would require considerable subsequent machining. In this connection, it may be noted that the guard and backing plate are preferably both made of material which is hard enough to resist bending when dropped upon the floor or otherwise inadvertently subjected to rough usage. This is a great advantage over present types of razors using comparatively soft metal and where slight bending at any corner of the backing plate or guard plate throws the complementary clamping faces of these elements out of alignment and results in cracking of the blade when the misaligned clamping elements are moved together.

The tail piece 12 is provided with a flat bottom 15 and a pair of flat faces 16 at 45 degree angles to the surface 15. These three flat faces together with the parallel flat side faces 12c of the extension are adapted to serve as abutment surfaces for the flat end of clamping screw 17 working through the hollow handle 10 and adapted to act with the surfaces 15, 16 or 12c to lock the coupling member against pivotal movement around the pin 14 as a center. Screw 17 is formed with threads 18 along a portion of its length engaging with corresponding threads 19 within the handle. The knurled handle 18 of this screw is formed with a flange 18a telescoping over the reduced end of the handle 10 to exclude dust from the exterior of the latter.

One advantage of utilizing a flat ended screw working against flattened abutment surfaces to lock the razor head at various angles relatively to the handle, is the fact that no "feeling about" is necessary in order to locate the head at exactly the proper angle for coaction with the screw. This is due to the fact that if the clamping surface with which the screw end is to be engaged, is slightly out of true, it will be cammed into proper position as the screw end strikes it. Also it avoids the needs for mating stud and socket members which are difficult to clean.

The peculiar construction of the head itself is best seen in Fig. 2 wherein, it will be noted that the guard plate is provided with the oppositely inclined guard teeth 27 and 28, at opposite edges and that the guard plate and its associated narrower backing plate have coacting complementary clamping surfaces of general compound curvature in transverse section, so that as the backing plate is screwed home against the guard the flexible blade 24 is so clamped that one of its edges 24a is thrown downwardly to follow its associated guard teeth 27 and rigidly clamped, whereas, the other edge 24b is thrown upwardly or outwardly to follow its set back guard teeth 28 and rigidly clamped.

Many expedients might be resorted to in securing the blade between the clamping members but I have shown, in addition to the stud 20, a stud 29 fixed to the guard plate and adapted to pass through one of the end openings 33 in the blade and enter a socket 31 in the under face of the backing plate. A stud 32 fixed to the opposite end of the backing plate passes through the other blade opening 33, through an opening 34 in the guard plate and terminates in a reduced end 35 adapted for coaction with a recess 36 in the tubular handle 10, as will be later described.

The handle of the razor combines beauty and utility in that it is longitudinally externally corrugated as at 37 to provide a secure grip and the parallel lines of corrugation or the parallel ribs serve to define pockets 38, the walls of which protect enamel or equivalent material 39 baked in the pockets. The enamel is thus effectively safe guarded against chipping and the appearance of the handle is enhanced. In practice, the handle is cut from tubular externally ribbed stock and the ends thereof turned to reduce their diameter, to provide ornamental annular grooves 40, also adapted to receive and protect a decorative enamel 41, and to permit the flange 18a of screw head 18 to snugly overlap the reduced end of the handle 10 and effectively perform its dust excluding function.

The threads 22 of the stud 20 and the corresponding threads of the backing plate are so pitched that when the handle has been rotated to firmly clamp the blade between the guard and the backing plate, the former will also be tightly clamped against the washer 12b which in turn will be pressed against the flat top 12c of the coupling piece. The stud 32 will then be at approximately 90 degrees from the opening 36 in the handle. Thus, in order to swing the head to the position of Fig. 6, it is first necessary to rotate it through an angle of about 90 degrees.

In placing the blade in the head, it is impossible to clamp the blade in the wrong position, that is to say, it is impossible to reverse the guard plate and backing plate, end for end, since in operation the blade is laid over the two upstanding studs 22 and 29 and when the backing plate is applied, it can only be applied one way since the only clearance for the stud 32 is afforded by opening 34.

In operation, assume that the razor is set as shown in Figs. 1, 2, and 3. The opposite edges of the backing plate bear the respective legends "once over" and "close shave", and as is customary the user of the razor will first remove the worst of his beard with a "once over" shave. To obtain this shaving action, he holds the razor at an angle to his face as shown in Fig. 7 and with the edge of the backing plate marked "once over" against the face. If the angle of the head to the face is materially changed, the backing plate or the guard will simply slide over the face and no cutting action will be had. The blade edge 24a being rigidly held at an acute angle to the face, insures a coarse mowing cut.

For the fine planing cut or "close shave", the head is turned around as shown in Fig. 8 and as the razor is drawn over the face, the blade edge 24b which is at a less acute angle to the face, will tend to cut deeply into the beard and remove it by a planing action. The angle of the razor head to the face remains the same since attempting to vary the angle would again cause the razor to ride on the guard or on the backing plate.

Prior T head razors, in attempting to provide a differential cutting action, required

some adjustment to loosen up the blade before the close shave could be had, whereas, with the present invention, no such adjustment is necessary and the user simply screws the blade tight and noting the legends uses the razor as he would any ordinary T head type, but is able to obtain either kind of shave with it. Furthermore, failure to tighten up the blade, merely results in equalization of the cutting actions at opposite edges of the blade and gives a medium shave with both edges or a shave which is more dependent on the dexterity of the user.

When the razor is to be used as a hoe type the handle 18 is slightly rotated to withdraw the screw 17 from engagement with the face 15 of the tongue 12. The razor head is then rocked about the pin 14 as a center and the screw 17 reengaged with one of the surfaces 16. The angularity of these surfaces to the surface 15 is such that the head of the razor is automatically set at the proper hoeing angle (barber's angle) by merely tightening the screw against either face 16. No "tilting" of the head is necessary, the weight of the handle aiding to draw the razor over the face and rendering shaving a substantially effortless operation. As seen in Fig. 5, however, the razor must be shifted through about 90 degrees from one position of adjustment to the other, if the user desires first a "once over" shave and then a "close" shave. This adjustment is, of course, very simply performed as explained above. Here again the angle of the head relatively to the surface to be shaved remains the same regardless of which way the head is tilted, i. e., whether the fine edge or the coarse shaving edge is being used.

In connection with the straight razor set up, however, it is undesirable to attempt to accurately define the necessary angle of the razor to the face, since with straight razor users who are, for the most part experts, this angle is a matter of choice.

The razor is so designed, therefore, that in order to set it for straight razor use, the handle must be rotated through approximately 90 degrees, in order to bring the stud 32 into registration with locking recess 36 and to permit the razor head to be swung into parallelism with the handle as shown in Fig. 6. Stud 36 is effective as a finger piece to assist in such relative rotation of the parts.

It will be perfectly apparent from Fig. 2 that a quarter turn on the handle 10, such as is necessary to bring the stud 32 over the opening 36 will result in considerably relieving the clamping pressure on the blade 24. As such pressure is relieved the blade tends to straighten itself out, edge 24^b tends to move toward the guard teeth 28 and edge 24^a tends to move away from its teeth 27. In other words, the shaving action at opposite sides of the head will be substantially the same and the angle of the head to the face is to some extent, a matter of the user's choice, it being understood, of course, that the inherent nature of the razor which involves the use of a guarding mechanism will to a large extent, limit this range of angles.

When the razor is set for the T head or hoe type, no means is used for locking the head against rotation on its swivel stud 20 since in both of these positions, the head is firmly clamped against the handle as an incident of clamping the blade and no means to prevent swiveling of the head is needed. When the razor is set in such a position that the head parallels the handle, however, the tongue 12 is no longer tightly clamped against the guard plate and there might be a tendency of the head to swivel on the stud 20 in the absence of some means to prevent it. Such means, in the present instance, is afforded by the reduced end 35 of the stud 32, which enters the recess 36 in the handle and locks the head against swiveling.

Figs. 9 and 10 illustrate a slight modification of the locking principle of Fig. 6, where a clamp or clip 45 is fixed to the under surface of the guard plate and when the guard plate is swung parallel to the handle, this clip straddles the handle and prevents turning of the head about the stud 20.

The razor can be quickly assembled for use since only three relatively separable elements are used and, due to the special arrangement of guarding means which clamp the blade along the two lines at the inner ends of the guard teeth, can be washed and dried without disassembly or adjustment. No soap can work between the backing plate and guard when the blade is tightly clamped.

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

1. In a razor, a backing plate and guard plate, the latter having oppositely turned teeth at opposite sides and a thin double-edged flexible blade clamped between them, the two plates being reversely transversely curved whereby a similar curvature is imparted to the clamped blade, the blade as an incident of its normal clamping being automatically disposed in such a relation to the guard and backing plate edges that one blade edge is rigidly held at an acute angle to the surface being shaved, and thereby held against close cutting, and the other blade edge is rigidly held at a less acute angle to the surface being shaved to cause a close planing cut.

2. A safety razor including a handle and a head including cooperating blade clamping members, a coupling device pivoted to the handle and having a portion permanently rotatably connected to one of the clamping members and adapted for threaded engagement with the other clamping member, the

relation of the clamping members and the coupling piece being such that when the blade is tightly clamped, the longitudinal axis of the head is disposed in parallelism with the pivotal axis of the coupling piece, and coacting latching means associated with the handle and with the under side of one end of the head, said means being engagable with each other only when the head has been rotated on the coupling piece to bring the longitudinal axis of the head at right angles to the pivotal axis of the coupling piece and to relieve pressure on the blade and the coupling piece has been pivoted to swing the head to parallelism with the handle.

3. A safety razor including a handle and a head, the latter including cooperating blade clamping members, a coupling device pivoted to the handle, permanently rotatably connected to one of the clamping members and adapted for threaded engagement with the other clamping member, the relation of the clamping members and the coupling piece being such that when the blade is tightly clamped, the longitudinal axis of the head is disposed in parallelism with the pivotal axis of the coupling piece, coacting means on the handle and head to latch the head against rotary movement relatively to the coupling piece when the head is disposed parallel to the handle.

4. A safety razor including a handle and a head, the latter including cooperating blade clamping members, a coupling device pivoted to the handle, permanently rotatably connected to one of the clamping members and adapted for threaded engagement with the other clamping member, the relation of the clamping members and the coupling piece being such that when the blade is tightly clamped, the longitudinal axis of the head is disposed in parallelism with the pivotal axis of the coupling piece, coacting means on the handle and head to latch the head against rotary movement relatively to the coupling piece when the head is disposed parallel to the handle, said means being out of alignment when the blade is clamped tightly by the head and being alignable only after a partial rotation of the head to relieve the pressure on the blade.

5. A safety razor including a handle and a head, the latter including cooperating blade clamping members, a coupling device pivoted to the handle, permanently rotatably connected to one of the clamping members and adapted for threaded engagement with the other clamping member, the relation of the clamping members and the coupling piece being such that when the blade is tightly clamped, the longitudinal axis of the head is disposed in parallelism with the pivotal axis of the coupling piece, coacting means on the handle and head to latch the head against rotary movement relatively to the coupling piece when the head is disposed parallel to the handle and said means comprising a downwardly projecting pin on the head engageable with a suitable receiving opening in the handle.

6. A safety razor including a handle and a head, the latter including cooperating blade clamping members, a coupling device pivoted to the handle, permanently rotatably connected to one of the clamping members and adapted for threaded engagement with the other clamping member, the relation of the clamping members and the coupling piece being such that when the blade is tightly clamped, the longitudinal axis of the head is disposed in parallelism with the pivotal axis of the coupling piece, coacting means on the handle and head to latch the head against rotary movement relatively to the coupling piece when the head is disposed parallel to the handle, said means comprising a downwardly projecting pin on the head engageable with a suitable receiving opening in the handle and said pin comprising a stud fixed to one of the clamping members and adapted to pass through an opening in the blade.

7. A razor including a handle and a head pivotally connected together, the head including a pair of complementary clamping plates, a screw stud permanently securing the center of one clamping plate to the handle, said secured clamping blade having an opening at one end and a second unthreaded stud at the other, the complementary clamping plate having a threaded central opening for engagement with the screw stud, being shaped at one end to receive the unthreaded stud and at its other end carrying an elongated stud projecting through the fixed clamping elements and keeper means on the handle adapted to coact with said elongated stud to block rotary movement of the head with respect to the handle when the head is in one position of pivoted adjustment with respect to the handle.

8. A razor including a handle and a head pivotally connected together, the head including a pair of complementary clamping plates, a screw stud permanently securing the center of one clamping plate to the handle, said secured clamping blade having an opening at one end and a second unthreaded stud at the other, the complementary clamping plate having a threaded central opening for engagement with the screw stud, being shaped at one end to receive the unthreaded stud and at its other end carrying an elongated stud projecting through the fixed clamping elements, and said last mentioned stud being engageable with an opening in the handle when the head is rocked into parallelism with the handle.

9. A safety razor including a backing plate, a guard and a thin double-edged flexible blade clamped between them and flexed

as an incident of its clamping to dispose its cutting edges in approximately parallel planes out of the normal plane of the body of the blade, the guard including teeth at each side, one set of such teeth curving in one direction to provide substantial blade clearance and permit a deep planing cut, the other set of teeth curving in the other direction to prevent substantial blade clearance and permit only a coarse mowing cut.

Signed at New York city in the county of New York and State of New York this 10th day of December, A. D. 1929.

ARCHDALE J. JONES.