Sept. 26, 1944. J. C. FRIEL 2,359,028

HONE TYPE SAFETY RAZOR

Filed Feb. 24, 1944 2 Sheets-Sheet 1

Fig. 1.

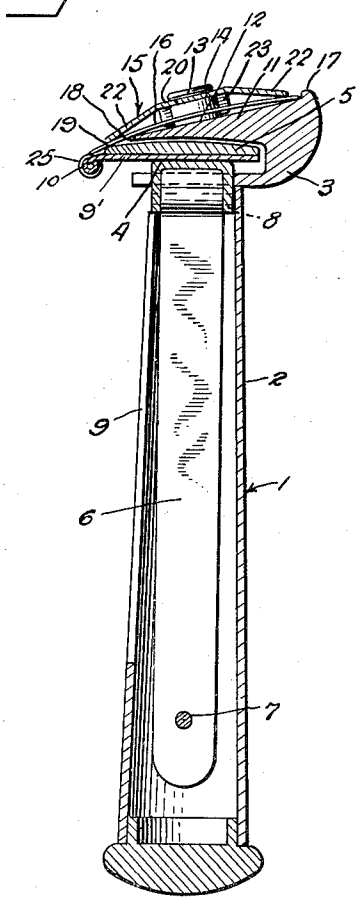


Fig. 2.

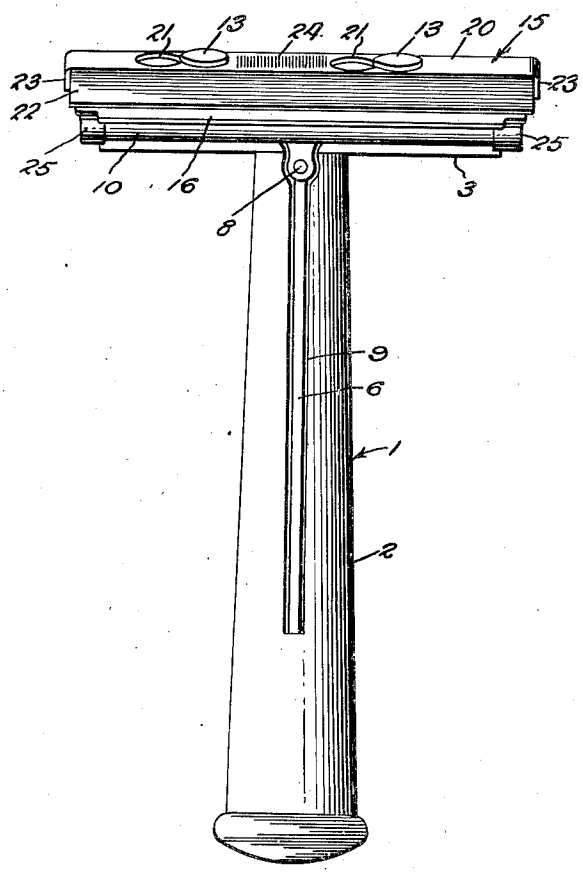


Fig. 3.

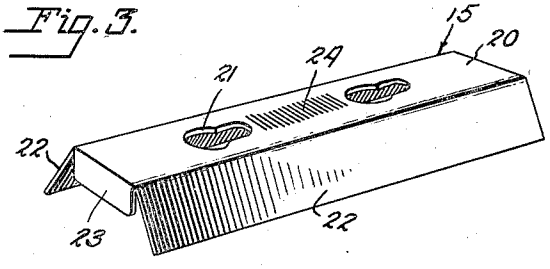
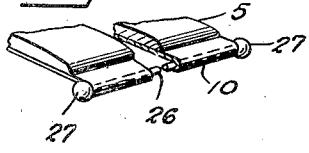


Fig. 4.



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Fig. 5.

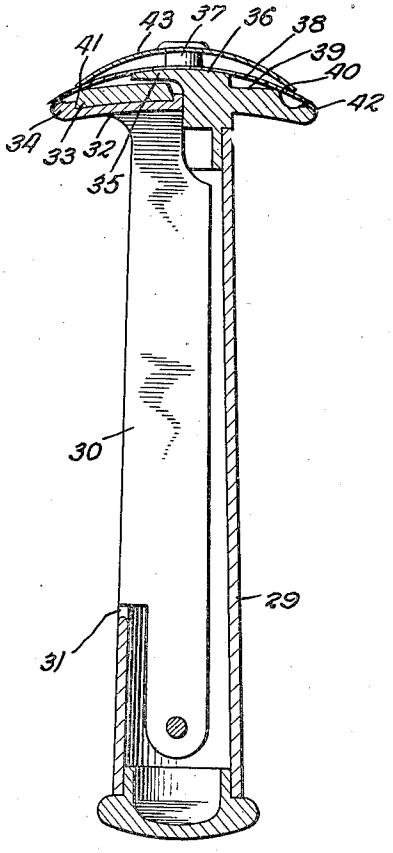


Fig. 6.

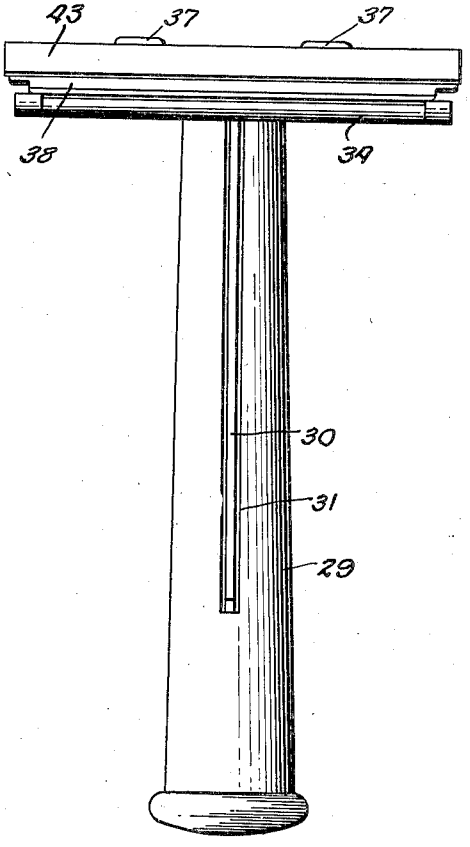
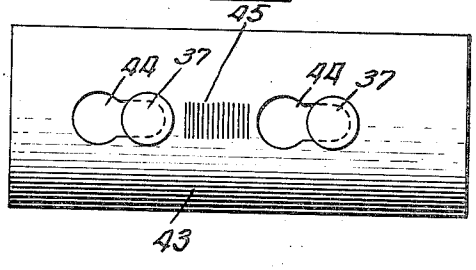


Fig. 7.



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UNITED STATES PATENT OFFICE

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HONE TYPE SAFETY RAZOR

James C. Friel, New York, N. Y.

Application February 24, 1944, Serial No. 523,711

16 Claims. (Cl. 30—36)

This invention relates to a safety razor of the type incorporating a hone which is operated against the blade to recondition the shaving edge while the blade remains in shaving position.

One of the objects of the invention is to provide blade holding means for resiliently engaging the blade solely on opposite sides of its longitudinal median portion along longitudinal substantially linear regions at a distance from the blade edges, leaving the intermediate portion free from pressure.

Another object of the invention is to provide a razor of the type described, having a blade table terminating rearwardly of the hone when the latter is in retracted position, having a flat blade seat sloping downwardly in a forward direction, the plane of the slope clearing the path of the hone, so that the blade lying flat upon the blade table when unstressed, overlies the hone with its shaving edge extending forward beyond the hone, and resilient blade retaining means engaging the blade on opposite sides of its longitudinal median portion, pressing upon the overhanging portion of said blade substantially throughout its longitudinal extent, deflecting the blade against the hone with its edge in the path of the hone and into proper shaving position, the blade being free between the lines of pressure to assume a natural upward camber incident to the downward displacement of its forward portion.

A further object of the invention is to provide means for grasping the hone to draw it back and forth against the blade, alternative to the normal operation through inertia, by wrist motion about the pivot of the lever which carries the hone.

A more specific object of the invention relates to the resilient blade retaining cap per se, and its means of attachment and release.

Other objects of the invention will appear as the following description of a preferred and practical embodiment thereof proceeds.

In the drawings which accompany and form a part of the following specification and throughout the several figures of which the same characters of reference have been used to denote identical parts:

Figure 1 is a longitudinal section through the razor;

Figure 2 is a front elevation;

Figure 3 is a perspective view of the blade retaining cap;

Figure 4 is a perspective view partly in section showing in detail an alternative form of guard construction;

Figure 5 is a side elevation, partly in section, of a modification of the invention;

Figure 6 is a front elevation;

Figure 7 is a plan view of the blade-retaining cap.

Referring now in detail to the several figures, the frame 1 includes in general all of the razor except the blade and blade retaining cap. It comprises the handle 2 with the head 3 secured at one end thereto, and the lever 6 and the parts carried thereby, including the hone 5. Said head is formed with a forwardly opening slot 4 receiving the hone 5 when the latter is in retracted position.

The hone is carried at the end of a lever 6 normally housed within the handle 2 and pivotally mounted therein at 7, adjacent the lower end. The hone is tiltably connected to the upper end of the handle by the pivot joint 8, constructed to give the hone a slight freedom of tilt in a transverse direction. The lever 6 is swingable to a position outside of the confines of the handle 2 through a longitudinal slot 9 in the forward side of the handle. The hone 5 is advanced or retracted with respect to the slot 4 by the movements of the handle 6, its upper surface executing an arcuate movement concentric to the pivot 7. The hone may be of some inherently abrasive material such as cast iron or some suitable material to which an abrasive substance may be applied, and is mounted upon a plate 9', movable with the handle, and having a turned over bead 10 at the forward edge constituting a guard.

That portion 11 of the head 3 which is above the slot 4 constitutes a blade table having a flat upper surface 12 sloping downwardly in a forward direction. A plurality of posts 13, in the illustrated Example 2 rise in longitudinal arrangement from the intermediate portion of the blade table 11 in fixed relation thereto, having grooves 14 near their upper ends, the portions of said posts above said grooves constituting retaining heads for the blade retaining cap 15.

When the blade retaining cap is not in place, the blade 16, which is of the thin, flexible, double edged type, lies unstressed, flat upon the surface 12 of the blade table 11, the latter preferably being provided with an upstanding bead 17 adjacent the inactive edge of the blade for protecting the latter, and for safety's sake. The slope of the surface 12 is such that when the blade is seated thereupon in unstressed condition, it is above the path of movement of the hone 5. The forward edge 18 of the blade table 11 terminates rearwardly of the forward edge 19 of the hone. The

blade extends forwardly beyond the hone and into proximity to the guard 10.

The blade retaining cap 15, which is best shown in Figure 3, and which is constructed of springy material, comprises an intermediate portion 20 having keyhole slots 21, corresponding in number to the pins 13, the larger portions of which slots slip over said pins, and the smaller portions of which enter the grooves 14 in said pins and are overlain by the heads thereof to retain the cap 15 in position. The cap is provided with the downwardly sloping side members 22 and with turned down end portions 23. The resilient side members 22 press upon the blade on opposite sides of its longitudinal median portion when the cap is in blade retaining position. To apply the cap, it is first placed over the pins 13, then pressed in a downward direction to somewhat flatten the side members 22, and to bring the intermediate portion 20 into the plane of the grooves in the pins 13. The cap is then shifted transversely to interlock the cap with the pins 13. Preferably, the cap has a roughened or corrugated finger engaging portion 24 to facilitate this sliding movement. When the cap is in place, the edges of the side members 22 press resiliently upon the blade both adjacent its active and inactive edges along a substantially linear region slightly back from said edges. Since the forward portion of the blade overhangs the forward edge 18 of the blade table, the pressure of the cap deflects this forward portion downwardly about the forward edge of the blade table until it contacts the forward edge 19 of the hone along a line somewhat back of the shaving edge of the blade. This contacting pressure holds the hone and guard lightly in retracted position, and also brings the shaving edge into the path of the hone.

It is obvious from the above that when the hone reciprocates against the shaving edge, all parts of the shaving edge are pressed against the hone, for should there be any longitudinal misalignment between the shaving edge and the hone, the part first contacted by the hone is lifted against the yielding pressure. If the blade were held rigidly in place, as by a nonresilient cap or cover, the resultant inflexibility of the forward or shaving edge of the blade would prevent the blade from being evenly sharpened across its entire forward, or shaving, beveled edge, and would prevent the hone from sliding freely back and forth beneath the shaving edge and in continuous contact therewith.

The normal method of operating the hone is to reciprocate it through inertia by sudden rotary movement of the frame about the pivot 7, imparted by a snapping motion of the wrist while the razor is held in the hand. The hone may be alternatively operated by grasping the ends of the guard and drawing the hone back and forth, and to facilitate this mode of operation, the ends of the guard are preferably slightly extended longitudinally to form the fingerholds 25 shown in Figure 2.

An alternative construction is to bend the bead 10 about a rod 26 having knob extensions 27 at its outer ends.

One of the most advantageous features of this razor is the fact that the blade is free from localized strains which generally cause blades of this type to break. The retaining cap 15 is spaced from the blade, except along the lines of resilient pressure hereinbefore described, so that the middle portion of the blade, which is structurally the weakest part, due to the presence of the apertures which receive the pins, is free to camber upwardly responsive to the downward deflection of the forward portion of the blade, and thus is free from any localized stresses in its intermediate longitudinal portion.

It is obvious that by removing the cap the blade may be reversed to bring the inactive edge into shaving position.

The group of Figures 5 to 7, inclusive, disclose a modification of the invention in which the frame is so constructed as to expose both edges of the blade in shaving position, only one edge being in the path of the hone so that to sharpen the other edge the blade must be reversed in the frame.

The frame comprises the slotted handle 29 having the hone carrying lever 30 pivotally mounted therein, which emerges from the slot 31 in the front of the handle. Fixed to the top of the lever 30 is a transverse plate 32 upon which the hone 33 is mounted, the front edge portion of said plate constituting the guard 34. The hone, as shown, is dovetailed into a groove in the plate 32.

The handle 29 is provided with the head 35 having a recess in its forward side to receive the rearward portion of the plate 32 and hone 33 when the lever is retracted. The upper face of the head 35 forms a convex blade table 36 with longitudinally spaced headed posts 37 rising therefrom.

The blade table 36 is considerably shorter in a widthwise direction than the width of the blade 38, and is symmetrical with respect to a longitudinal plane embracing the axis of the handle 29. The side of the head 35 remote from the hone is formed with a recess 39 beneath the blade, the contour of the wall of which recess is such that the head provides a ridge 40 contacted lightly by the blade when the latter is in shaving position. This ridge and the outward edge 41 of the hone when the latter is in retracted position, are symmetrically located with respect to the longitudinal plane embracing the axis of the handle. The head terminates in a guard 42, the guards 34 and 42 being also symmetrically positioned. The longitudinal marginal portion of the blade overhangs the channel 46 between the ridge 40 and guard 42.

The blade retaining cap 43 is a concavo-convex resilient member having a deeper curvature when free than that of the blade table 36, the longitudinal edges of which contact the blade along lines intermediate the front edge of hone 41 and front guard 34, and between the rear edge of blade table 40 and rear guard 42. The cap 43 is provided with the keyhole slots 44. It is put in place by pressing it upon the blade until the heads of the posts protrude through the large ends of the keyhole slots, then moving it longitudinally until the shanks of the posts are within the small ends of the keyhole slots. The corrugations 45 on the cap form a non-slip pressure spot to assist in manipulating the cap.

The resilient pressure of the cap warps the blade into surface contact with the blade table and brings the blade into light contact with the hone 33, on the one side, and the ridge 40 on the other, with the edges of the blade in shaving position with respect to the adjacent guards.

The hone and guard 34 are held in retracted position by the blade.

In this modification, both edges of the blade are available for shaving without reversing the

blade. It is only necessary to reverse it for sharpening the normally remote edge.

While I have in the above description disclosed what I believe to be preferred and practical embodiments of the invention, it will be understood to those skilled in the art that the specific details of construction and arrangement of parts as shown and described are by way of illustration and not to be construed as limiting the scope of the invention defined in the appended claims.

What I claim as my invention is:

1. A razor comprising a frame including a handle, a guard, and a head fixed to said handle having a blade seat sloping toward said guard; a blade retaining cap having an intermediate portion and resilient side portions deflected bladeward from said intermediate portion, means for positioning a blade on said seat with its forward portion overhanging the edge of said seat, and interlocking means between said cap and head for holding said cap in blade retaining position with said side portions longitudinally resiliently engaging said blade on opposite sides of said blade positioning means, respectively engaging the overhanging portion of said blade deflecting it toward said guard, and the rearward portion of said blade, holding it against said seat.

2. A razor comprising a frame including a handle, a guard, and a head fixed to said handle having a flat blade seat sloping toward said guard, and blade positioning pins for allocating a blade on said seat with its forward portion overhanging the forward edge of said seat and its shaving edge in proximity to said guard, a blade retaining cap having an intermediate portion and resilient side portions deflected bladeward from said intermediate portion, and interlocking means between said cap and pins for holding said cap in blade retaining position with said side portions longitudinally resiliently engaging said blade on opposite sides of said pins, respectively engaging the overhanging portion of said blade deflecting it toward said guard, and the rearward portion of said blade, holding it against said seat.

3. A razor comprising a frame including a handle, a guard, and a head fixed to said handle having a flat blade seat sloping toward said guard, and blade positioning pins for allocating a blade on said seat with its forward portion overhanging the forward edge of said seat and its shaving edge in proximity to said guard, a blade retaining cap having an intermediate portion and resilient side portions deflected bladeward from said intermediate portion, and interlocking means between said cap and pins for holding said cap in blade retaining position with said side portions longitudinally resiliently engaging said blade on opposite sides of said pins, respectively engaging the overhanging portion of said blade deflecting it toward said guard, and the rearward portion of said blade, holding it against said seat, said seat being bounded at its rear by a ridge extending above the plane of said seat adjacent the inactive edge of said blade.

4. A razor comprising a frame including a hollow handle, a head fixed to said handle provided with a forwardly opening hone receiving slot and a forwardly and downwardly sloping flat face constituting a blade table, a lever pivoted at its lower end in said handle and swingable through a slot in the forward side of said handle, a hone and a guard carried by said lever, said guard being forward of said hone, the length of said lever being such that said hone swings to a retracted position within said slot, the forward edge of said hone projecting forwardly of said blade table, means for allocating a blade on said blade table with its forward portion overhanging the forward edge of said blade table and its shaving edge in proximity to said guard, the slope of said blade table being such that a blade seated thereupon in flat unstressed condition clears the path of movement of said hone, a blade retaining cap having downwardly directed resilient opposite side portions, and interlocking means between said cap and allocating means for holding said cap in blade retaining position with said side portions longitudinally resiliently engaging said blade on opposite sides of blade allocating means, respectively engaging the overhanging portion of said blade deflecting it against said hone with its shaving edge in the path of movement of said hone, and engaging the rearward portion of said blade, holding it against said blade table.

5. A razor comprising a frame including a hollow handle and a head fixed to said handle provided with a forwardly opening hone receiving slot and a forwardly and downwardly sloping flat face constituting a blade table, a lever pivoted at its lower end in said handle and swingable through a slot in the forward side of said handle, a hone and a guard carried by said lever, said guard being forward of said hone, the length of said lever being such that said hone swings to retracted position within said slot, the forward edge of said hone projecting forwardly of said blade table, pins for allocating a blade on said blade table with its forward portion overhanging the forward edge of said blade table and its shaving edge in proximity to said guard, the slope of said blade table being such that a blade seated thereupon in flat unstressed condition clears the path of movement of said hone, a blade retaining cap having downwardly directing resilient opposite side portions, and interlocking means between said cap and pins for holding said cap in blade retaining position with said side portions longitudinally resiliently engaging said blade on opposite sides of said pins, respectively engaging the overhanging portion of said blade deflecting it against said hone with the shaving edge in the path of movement of said hone, and engaging the rearward portion of said blade, holding it against said blade table.

6. A razor comprising a frame including a hollow handle and a head fixed to said handle provided with a forwardly opening hone receiving slot and a forwardly and downwardly sloping flat face constituting a blade table, a lever pivoted at its lower end in said handle and swingable through a slot in the forward side of said handle, a hone and a guard carried by said lever, said guard being forward of said hone, the length of said lever being such that said hone swings to retracted position within said slot, its forward edge projecting forwardly of said blade table, pins rising from said blade table for allocating a blade on said blade table with its forward portion overhanging the forward edge of said blade table and its shaving edge in proximity to said guard, the slope of said blade table being such that a blade seated thereupon in flat unstressed condition clears the path of movement of said hone, a blade retaining cap having an intermediate portion and resilient side portions deflected bladeward from said intermediate portion, said intermediate portion being provided with keyhole slots interlocking with grooves on

said pins for holding said cap in blade retaining position with said side portions longitudinally resiliently engaging said blade on opposite sides of said pins, respectively engaging the overhanging portion of said blade deflecting it against said hone with its shaving edge in the path of movement of said hone, and engaging the rearward portion of said blade, holding it against said blade table.

7. A razor comprising a frame including a hollow handle and a head fixed to said handle provided with a forwardly opening hone receiving slot and a forwardly and downwardly sloping flat face constituting a blade table, a lever pivoted at its lower end in said handle and swingable through a slot in the forward side of said handle, a hone and a guard carried by said lever, said guard being forward of said hone, the length of said lever being such that said hone swings to retracted position within said slot, the forward edge of said hone projecting forwardly of said blade table, pins for allocating a blade on said blade table with its forward portion overhanging the forward edge of said blade table and its shaving edge in proximity to said guard, the slope of said blade table being such that a blade seated thereupon in flat unstressed condition clears the path of movement of said hone, a blade retaining cap having downwardly directing resilient opposite side portions, and interlocking means between said cap and pins for holding said cap in blade retaining position with said side portions longitudinally resiliently engaging said blade on opposite sides of said pins, respectively engaging the overhanging portion of said blade deflecting it against said hone with the shaving edge in the path of movement of said hone, and engaging the rearward portion of said blade, holding it against said blade table, said blade table being bounded at its rear by a ridge extending above the plane of said blade table adjacent the inactive edge of said blade.

8. A razor as claimed in claim 4, said guard having longitudinal end extensions affording fingerholds for reciprocating said hone.

9. A razor as claimed in claim 4, said guard including a core rod having longitudinal end extensions constituting finger-holds for reciprocating said hone.

10. A razor comprising a frame including a handle, a guard, and a head fixed to said handle having a blade seat with the forward portion sloping toward said guard, a dished blade retaining cap of resilient material, means for positioning a blade on said seat with its forward portion overhanging the edge of said seat, and interlocking means between said cap and head for holding said cap in blade retaining position with its edges pressed resiliently against said blade on opposite sides of said blade positioning means, the forward edge of said cap engaging the overhanging portion of said blade, deflecting it toward said guard.

11. A razor comprising a frame including a hollow handle, a head fixed to said handle provided with a forwardly opening hone receiving slot and a forwardly and downwardly sloping face constituting a blade table, a lever pivoted at its lower end in said handle and swingable through a slot in the forward side of said handle, a hone and a guard carried by said lever, said guard being forward of said hone, the length of said lever being such that said hone swings to a retracted position within said slot, the forward edge of said hone projecting forwardly of said blade table, means for positioning a blade on said blade table with its forward portion overhanging the forward edge of said blade table and its shaving edge in proximity to said guard, a dished blade retaining cap of resilient material, and interlocking means between said cap and positioning means for holding said cap in blade retaining position with its edges pressed resiliently against said blade on opposite sides of said positioning means, the forward edge of said cap engaging the overhanging portion of said blade, deflecting it into contact with the forward edge of said hone with its shaving edge in the path of movement of said hone.

12. A razor comprising a frame including a hollow handle, a head fixed to said handle provided with a forwardly opening hone receiving slot and a forwardly and downwardly sloping face constituting a blade table, a lever pivoted at its lower end in said handle and swingable through a slot in the forward side of said handle, a hone and a guard carried by said lever, said guard being forward of said hone, the length of said lever being such that said hone swings to a retracted position within said slot, the forward edge of said hone projecting forwardly of said blade table, pins for positioning a blade on said blade table with its forward portion overhanging the forward edge of said blade table and its shaving edge in proximity to said guard, a dished blade retaining cap of resilient material, and interlocking means between said cap and pins for holding said cap in blade retaining position with its edges pressed resiliently against said blade on opposite sides of said pins, the forward edge of said cap engaging the overhanging portion of said blade, deflecting it into contact with the forward edge of said hone with its shaving edge in the path of movement of said hone.

13. A razor comprising a frame including a hollow handle and a head fixed to said handle having a convex blade table, longitudinally spaced blade positioning pins rising from said blade table, the width of said blade table being less than the width of a double edged blade whereby both sides of said blade overhang said blade table, a lever pivoted at its lower end in said handle and swingable through a slot in said handle, a hone and guard carried by said lever, said guard being forward of said hone, one side of said head being formed with a hone receiving slot, the forward edge of said hone being beneath the adjacent overhanging portion of said blade when said hone is in retracted position, the opposite side of said head having a guard and being formed with a ridge beneath the adjacent overhanging portion of said blade, a concavo-convex blade retaining cap of resilient material, and interlocking means between said cap and pins for holding said cap in blade retaining position with its edges pressed resiliently against the overhanging portion of said blade on opposite sides of said pins, deflecting the overhanging portions respectively into contact with the forward edge of said hone and with said ridge, said cap, pins, blade table, guards, and the forward edge of said hone when retracted and said ridge, being symmetrically disposed with respect to a longitudinal plane through said head embracing the axis of said handle.

14. A razor comprising a frame including a hollow handle and a head fixed to said handle having a convex blade table, longitudinally spaced blade positioning pins rising from said blade table, the width of said blade table being less than the width of a double edged blade whereby both sides

of said blade overhang said blade table, a lever pivoted at its lower end in said handle and swingable through a slot in said handle, a hone and guard carried by said lever, said guard being forward of said hone, one side of said head being formed with a hone receiving slot, the forward edge of said hone being beneath the adjacent overhanging portion of said blade when said blade is in retracted position, the opposite side of said head having a guard and being formed with a channel beneath the adjacent overhanging marginal edge portion of said blade, a concavo-convex blade retaining cap of resilient material, and interlocking means between said cap and pins for holding said cap in blade retaining position with its edges pressed resiliently against the overhanging portions of said blade on opposite sides of said pins, deflecting one of the overhanging portions into contact with the forward edge of said hone and both edges into shaving proximity to the respective adjacent guards.

15. A razor comprising a frame including a handle and a head secured to said handle, said head being provided with a longitudinal hone receiving slot opening along the front of said head, said head having a blade seat sloping forwardly toward said slot the front edge of said blade seat forming the upper edge of said slot, means for positioning a blade on said seat with its forward portion overhanging the front edge of said seat, a hone slidable back and forth within said slot against the edge of the blade, the front edge of said hone projecting beyond the front edge of said blade seat when said hone is in retracted position, a resilient blade retaining cap having bladeward extending longitudinal side portions, interlocking means between said cap and head for holding said cap in blade retaining position with said side portions resiliently pressed against said blade on opposite sides of said blade positioning means, respectively engaging the overhanging portion of said blade deflecting it against the front edge of the retracted hone, and the rearward portion of said blade, holding it against said seat.

16. A razor as claimed in claim 15, including a guard carried by said hone positioned forwardly of the adjacent blade edge.

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