A. A. WARNER.

RAZOR.

APPLICATION FILED DEC. 17, 1909.

969,226. Patented Sept. 6, 1910.

Fig. 1.

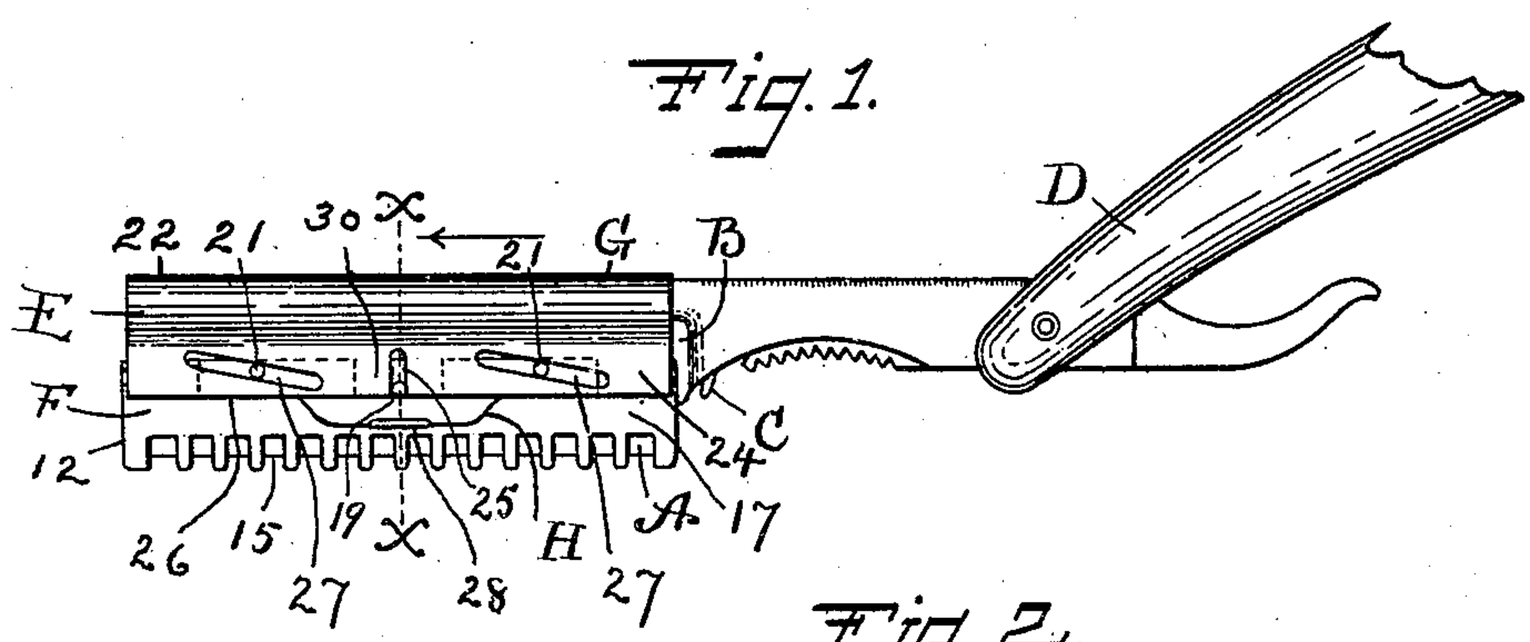


Fig. 2.

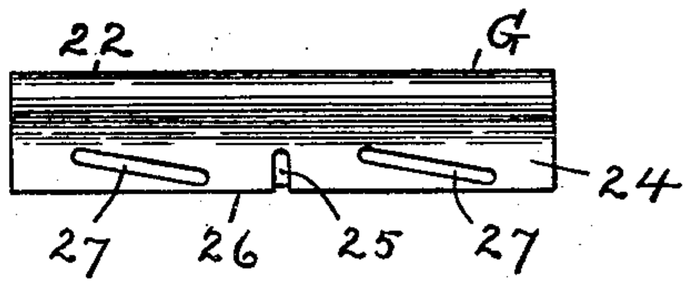


Fig. 3.

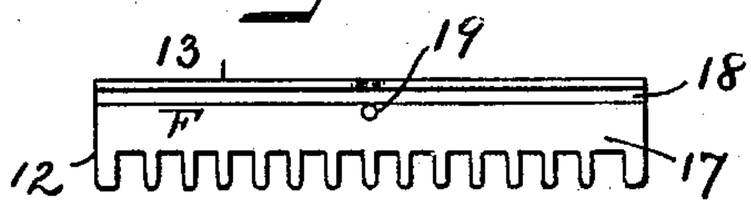


Fig. 5.

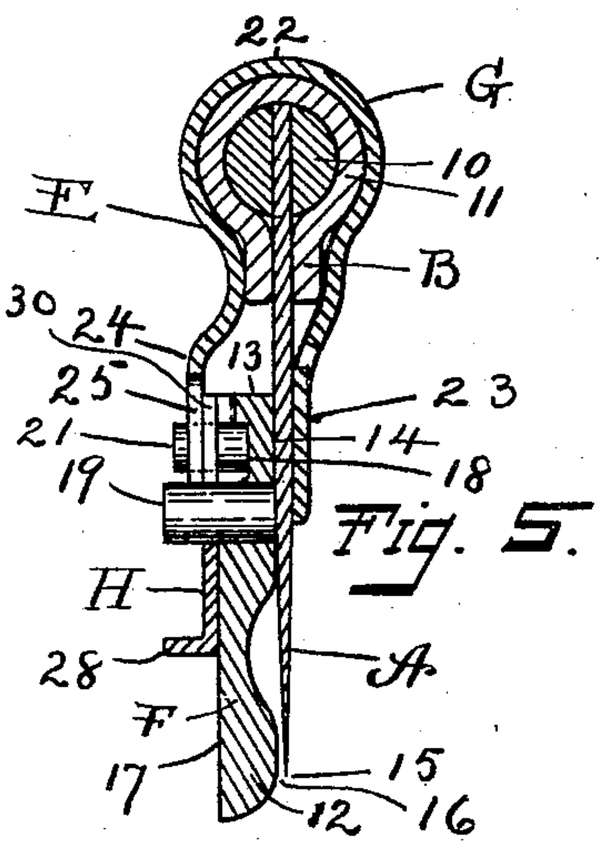


Fig. 4.

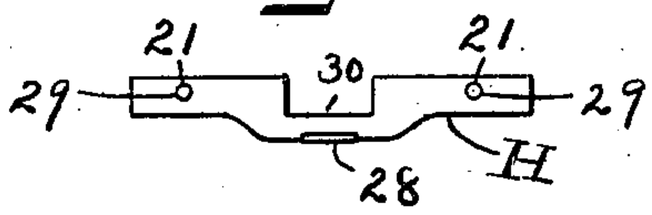


Fig. 6.

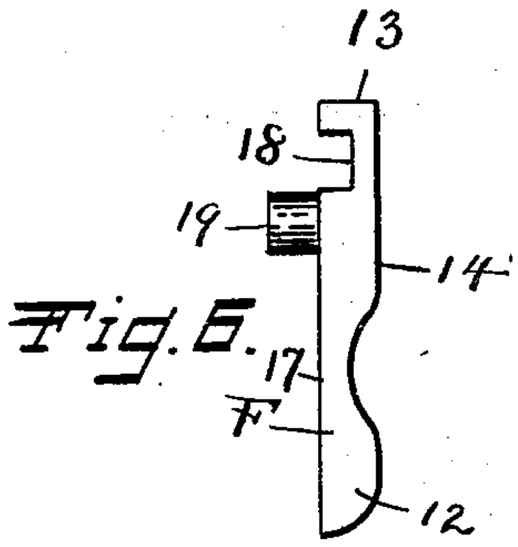
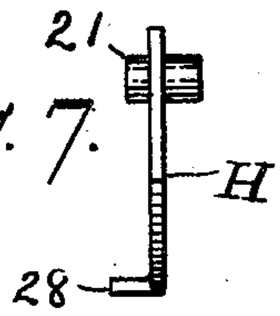


Fig. 7.



Witnesses.

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RAZOR.

969,226. Specification of Letters Patent. **Patented Sept. 6, 1910.**

Application filed December 17, 1909. Serial No. 533,614.

To all whom it may concern:

Be it known that I, ALONZO A. WARNER, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Razors, of which the following is a specification.

My invention relates to improvements in safety razors, and the objects of my improvements are convenience and efficiency in use, and particularly as applied to the guard.

In the accompanying drawing:—Figure 1 is a side elevation of my safety razor, showing the handle in part broken away. Fig. 2 is a side elevation of the clamp member. Fig. 3 is a side elevation of the guard plate. Fig. 4 is a side elevation of the slide plate. Fig. 5 is a sectional view on the line *x x* of Fig. 1 on an enlarged scale. Fig. 6 is an end view of the guard plate. Fig. 7 is an end view of the slide plate.

My razor comprises a blade A of sheet metal which is removably held in a blade holder B by means of lugs 10 on the back edge of the blade, fitting and adapted to be received longitudinally in a tubular back 11 in the said blade holder, and held against longitudinal displacement by means of a latch C adapted to engage with the inner end of the blade, constituting essentially a flat blade with a cylindrical back, and provided with a handle D.

My razor is provided with a guard member or guard and means of support therefor E, comprising a guard 12 and means for adjustably holding the same in position on the blade A as will be herewith described. The said guard 12 has the usual comb formation and extends along the front edge of an essentially rectangular plate F constituting a guard plate. Backwardly from the said guard 12 along the inner face and extending from the same to the back edge 13 the said guard plate F is provided with a plane bearing surface 14 which is of appreciable width and adapted to bear against the side of the said blade A. The plane of the said bearing surface 14 is set inwardly from the said guard 12 so that when the same is in contact with the blade the guard is set away from the edge 15 of the blade by a space 16 affording clearance between the blade and guard. The outer surface 17 of the said guard plate F is generally a plane surface, and is provided with a longitudinal way in the form of a groove 18 adjacent the said back edge 13 and with an outwardly projecting pin 19 located preferably equidistant from the ends and at a point opposite to the said bearing surface 14. The said guide pin 19 is a fit for a cross-wise slot 25 in the front clamping wing 24 of a clamp member G yet to be described and the said groove 18 is a fit for and adapted to serve as a guide for the inner ends of a pair of guide pins 21 which pass through and are fixedly secured to a slide plate H, also to be described. As a support for my guard plate F I provide the said clamp member G and slide plate H. The said clamp member G comprises a tubular back 22 fitting over the said cylindrical back 11 of the blade A and two forwardly projecting clamping wings comprising a rear clamping wing 23 adapted to bear and exert a clamping pressure against the rear side of the blade remote from the said bearing surface 14 and a front clamping member 24 extending correspondingly along the said outer surface 17 of the guard plate F and adapted to exert a clamping pressure on the front side of the blade indirectly through the said sliding plate H which is interposed between the same and the said surface 17 of the guard plate F. The said front clamping member 24 is provided at the middle of its length with the said cross-wise slot 25 extending backward from the front edge 26 which as described is a fit for the said guide pin 19 and adapted as a guide for said guide pin and in coöperation with the same serves to maintain the longitudinal relation of the guard plate and clamping member constant and unvaried throughout the range of adjustment provided for the guard 12. On each side of the said guide slot 25 the said front clamping wing 24 is provided with two diagonal parallel bearing slots 27 adapted to receive and serve as guides for the extreme outer ends of the said guide pins 21 on the slide plate H. The said slide plate H comprises generally a flat plate of a thickness sufficient to fit between the said front clamping wing 24 and the guard plate F, projecting below the said front edge 26 of the same at the middle at which point the same is turned outwardly to provide an operating handle 28 and provided on each side with holes 29 adapted to fixedly receive the body of the said guide pins 21, the ends of which pins project on each side in

a manner and for the purpose described. By means of the said inner ends of the pins 21 in engagement with the said groove 18 the said slide plate H may be slid back and forth longitudinally relatively to the said guard plate and without change in the lateral or cross-wise relation of the said slide plate and guard plate. Because of the engagement of the outer ends of said pins 21 with the said diagonal parallel slots 27 in said clamp wing 24 such longitudinal movement on the part of the slide plate is accompanied by a lateral or cross-wise movement of the slide plate and guard plate combined as a unit relatively to the said clamping wing 24. To provide clearance for the said slide plate H for the guide pin 19 the same is cut away as at 30, at the middle, along the edge remote from the handle 28. Accordingly, my guard plate F is clamped to the blade A by means of the clamp member G with a predetermined clearance between the guard and blade and the amount of projection of the said guard 12 relatively to the edge 15 of the blade may be varied and without change in the relative longitudinal relation of the said guard and blade. Furthermore my guard is readily removable and is reversible and adapted to be placed in position on either side of the blade for either left hand or right hand use.

In operation the guard plate is clamped to the blade by the clamp member, the sliding plate being interposed between one of the clamping wings and the said plate, the guide pins in the side plate being in engagement with the way 18 by their inner ends and with the diagonal slots 27 by their outer ends, and the guide pin 19 is in engagement with the crosswise slot 25, the guard 12 being adjacent the edge of the blade. In case it is desired to shift the guard relatively to the edge of the blade the operating handle 28 of the slide plate is moved longitudinally and the desired change is effected through the coöperation of the guide pins and slots which are engaged in the manner described.

I claim as my invention:—

1. A safety razor having a blade, a guard plate provided with a guard and a clamp member having means for clamping said guard plate on said blade, and comprising means of adjustment of the said guard plate relatively to the said blade consisting of a longitudinal way on said guard plate, diagonal slots on said clamp member, guide pins having ends, and means whereby the said guide pins may be removed back and forth and the inner ends of the said guide pins being engaged with the said way and the outer ends engaged with the said diagonal slots.

2. A safety razor having a blade, a guard plate provided with a guard, a clamp member having means for holding said guard plate on the said blade, and means of adjustment of the said guard plate relatively to the said blade comprising a longitudinal way on said guard plate, diagonal slots on said clamp member and guide pins fitting and engaged with the said way and slots, a slide plate carrying the said guide pins and serving as means whereby the same may be moved back and forth relatively to the said way and slots.

3. A safety razor having a blade, a guard plate provided with a guard, and a clamp member having means for clamping said guard plate to the said blade comprising front and back clamping wings, means of adjustment of the said guard plate relatively to the said blade comprising a longitudinal way in the said guard plate, diagonal slots in the said front clamping wing, and guide pins each receivable in the said way and slots and provided with means whereby they may be moved to different positions therein.

4. A safety razor having a blade, a guard plate provided with a guard, and a clamp member having means for holding the said guard plate on the said blade, comprising a front clamping wing, means of adjustment of the said guard plate relatively to the said blade comprising a longitudinal way on the said guard plate, diagonal slots on the said front clamping wing, guide pins receivable in the said way and slots, and provided with means whereby they may be moved back and forth relatively to the said way and slots, means for maintaining constant the longitudinal relation of the said guard plate and blade, the said last means comprising a guide pin in said guard plate and a crosswise slot in said front clamping wing in engagement with the said latter pin.

5. A safety razor having a blade and a guard plate provided with a guard, a pair of clamping wings united by a tubular back serving to hold said guard plate in position on the said blade, the said tubular back fitting the back of the said blade, a slide plate interposed between the said guard plate and one of the said clamping wings, the said guard plate provided on the outer side with a guide pin centrally located and a longitudinal way near the back edge, the said wing adjacent the said side plate provided with parallel diagonal slots and a crosswise slot fitting and adapted to receive the said guide pin, the said side plate provided with a pair of guide pins, the said guide pins penetrating the said slide plate, the inner ends fitting and received in the said longitudinal way, and the outer ends fitting and received in the said diagonal slots, and an operating handle, rigid with the said slide plate, whereby the said plate may be operated back and forth so as to change the relative position of the said guard plate and the said blade.

6. In a safety razor, in combination, a blade, a plate provided with a guard, means for holding said plate in position on said blade, and means for adjusting transversely the said plate relatively to the said blade combined with means for maintaining parallelism and means for maintaining the longitudinal relation of the said plate and blade, the said means comprising a spring clamp member provided with clamping wings, diagonal slots and a cross wise slot in one of said wings, a guide pin and a longitudinal way on said plate, a slide plate provided with guide pins, and interposed between the said plate and said latter wing, the pins on said slide plate engaged with said way and said diagonal slots and the pin on said plate engaged with the said cross slot.

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