Sept. 23, 1941. Z. AUERBACH 2,256,543

BLADE INJECTING DEVICE FOR SAFETY RAZORS

Filed Oct. 26, 1940

Fig. 1.

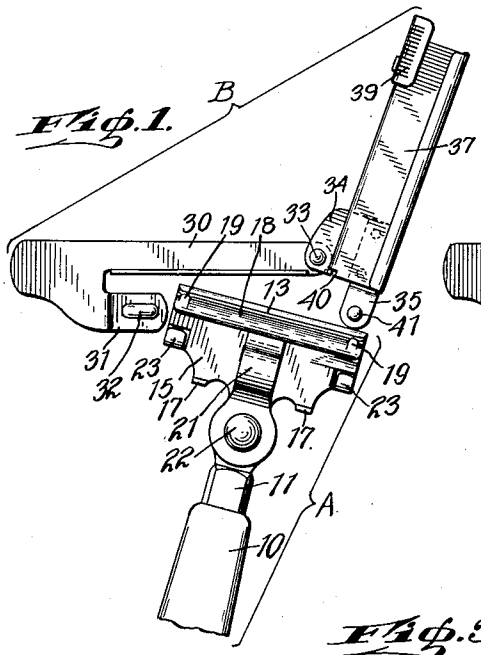



Fig. 2.

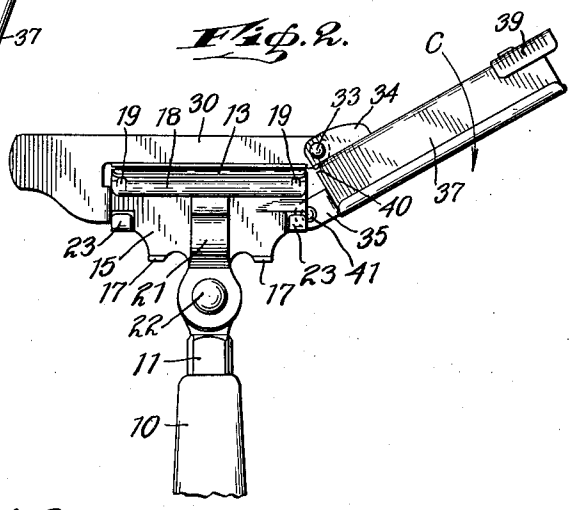



Fig. 3.

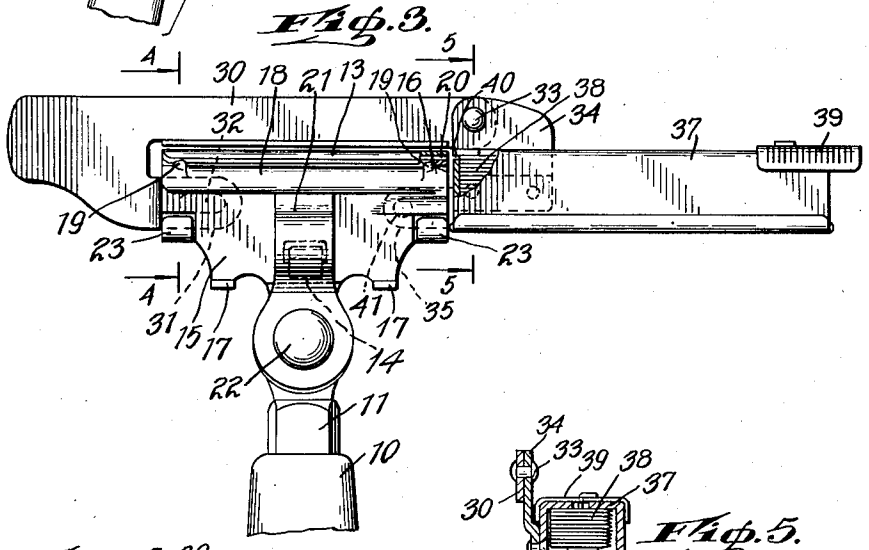
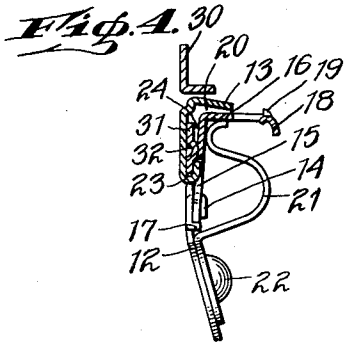



Fig. 5.




Fig. 4.




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Patented Sept. 23, 1941 2,256,543

# UNITED STATES PATENT OFFICE

2,256,543

## BLADE INJECTING DEVICE FOR SAFETY RAZORS

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Application October 26, 1940, Serial No. 362,946

4 Claims. (Cl. 30—40)

The invention relates generally to the type of safety razor in connection with which there is employed for the purpose of changing blades, a blade injecting device provided with means for aligning it with the blade holding channel of the razor so that, as a blade is driven out of the injector in the operation of changing blades, it enters the blade channel and at the same time ejects a blade, if any, already in the channel. Usually the aligning means, besides effecting alignment, also spreads the parts enclosing the blade channel in order to permit of the easy ejection therefrom of a blade that may already be present therein and the easy insertion of a substitute blade therefor. In most cases the injector comprises not only the mechanism for ejecting a blade and injecting it into the razor but also a magazine of blades from which blades may be fed one by one as blade changing is required. The object of the invention is to devise a blade injecting device that will make certain and sure connection with the razor head for aligning purposes, and will spread the blade channel evenly and uniformly along its length so that pressure of the blade edge on the stops, which most frequently takes place on the stop that is remote from the end at which the blade is introduced, will be relieved, thus avoiding cutting or marring. To explain further, in most razors of this type, while the blade channel is spread to an ample distance to permit the passage of a blade clear of the stop that is near the entrant end of the channel, the stop on the remote end is frequently subject to considerable cutting friction before a blade in the head is ejected or the advancing end of the incoming blade is properly seated behind it.

The application of the invention to an injector device combined with a magazine of blades will be described as the preferred embodiment, although as will become apparent from the description addition of a magazine of blades is not essential to the invention.

Referring to the drawing,

Fig. 1 is a view in front elevation of the two component parts of the complete shaving unit including razor and injector;

Fig. 2 is a view in front elevation showing the two units partially assembled in co-operative relation;

Fig. 3 is a view in front elevation showing the two units completely assembled in co-operative relation;

Fig. 4 is a view on the line 4—4 of Fig. 3;

Fig. 5 is a view on the line 5—5 of Fig. 3.

Referring to the drawing more in detail:

The complete shaving unit is composed of the razor proper designated as a whole by the letter A and the magazine injector designated as a whole by the letter B (see Fig. 1).

First describing the razor A:

It is in all essential respects, so far as the present invention is concerned, similar to that shown and described in Rodrigues United States Patent No. 1,969,945, issued August 14, 1934, and is also, and has been for some years, a well-known article of commerce in the United States. Describing its essential features, it comprises a conventional handle 10 from which projects a shank 11 on which are mounted the operating parts. These consist of a back supporting plate 12 terminating in a blade-clamping plate 13, the two merging into each other at an angle of 90° or thereabouts. Hingedly mounted on the back supporting plate 12 by means of the hook-shaped connection 14 which projects from and is a part of the plate 12 is a plate 15 terminating in the blade platform 16, the two, as in the case of the back plate and the clamping plate, merging into each other at an angle of approximately 90°. The lugs 17, 17 which project from the plate 12 serve to retain the plate 12 in the hinged connection with the hook-shaped connection 14. The blade platform 16 terminates in a guard 18 and at each end of the guard is a stop 19, the stops serving as abutments against which the extreme ends of the blade edge are forced when the latter is in shaving position.

The clamping-plate 13 and the blade platform 16 are so related to each other in relative position as to form a channel 20 in which a blade is retained with its edge against the stops 19 when the apparatus is ready for use in shaving.

The blade platform is normally pressed upwardly toward the blade-clamping plate 13 and also rearwardly toward the plate 12 by the spring 21 secured to the back plate 12 by the rivet 22. The rivet may, if desired, form a pivot on which the spring can swing sidewise for the purpose of releasing the blade-holding parts 13 and 16 when desired, although this feature forms no part of the invention.

The back plate 12 is cut away to form at its ends hook-shaped channels 23, 23 which help in aligning the injector fingers as will presently be explained.

It will be plain that by inserting a tool of proper design and dimensions in the channel 24 between the plate 12 and the plate 15, the blade platform 16 may be forced forwardly, thus widening the blade channel 20, and also downwardly,

thus increasing the depth of the blade channel 20. The effect, of course, is to wholly or partially release any blade that may be present in the blade channel 20. Thus far the unit differs in no essential respects from what is already known and in common use as above stated.

Describing the member B of the unit:

It comprises what may be termed a draw-bar 30 terminating in a reversely turned aligning finger 31, the whole having the general shape of a shank and hook, although it does not function as such in the ordinary sense. The aligning finger 31 is provided with a nub 32 which functions as a cam as will be presently described.

The draw-bar 30 is pivotally connected at 33 with a flange 34 affixed to one side of a magazine injector of the general type shown and described in Rodrigues United States Patent No. 2,109,017, issued February 22, 1938. The only difference between the present device and that of the patent referred to consist in the presence in the one now being described of the flange 34 and a specially-shaped aligning finger 35.

Briefly describing the magazine injecting device itself with the exception of the two features noted, it comprises a box-like receptacle 37 in which may be placed a stack 38 of blades, and a thumb-and-finger piece 39 connected with a plunger on the inside of the box and which travels reciprocably in a path whereby it may be used to eject, as wanted, blades from the stack one by one through the orifice 40 and thence into shaving position in the blade channel 20 of the razor. The aligning finger 35, like the aligning finger 31, is provided with a nub—in this case indicated by the numeral 41 which also functions as a cam.

The thickness of each aligning finger is approximately equal to the thickness of the channel 24 when the parts are brought together with a blade in the channel by the pressure of the spring 21—at least the thickness is no greater in order to permit easy entrance of the aligning fingers into this channel.

The mode of operation will now be described:

It being assumed that there is a blade in shaving position in the blade channel 20 and it is desired to eject it therefrom and to substitute a new blade from the magazine, the aligning finger 31 is first introduced to its full length into one end of the channel 24, as shown in Fig. 2. The magazine is then swung down in the direction of the arrow C until the finger 35 enters the other end of the channel to its full length, as shown in Fig. 3. In the course of introducing the aligning fingers in this way, the nubs 32 and 41, which are sufficiently high for the purpose, cause the blade platform 16 to swing forwardly on its pivot 14 and thus free the blade in the blade channel 20 from pressure thereon of the top plate 13 and also widen the blade channel to relieve pressure on the abutments 19, 19. The used or worn blade being now free or perhaps only partially so (since a slight residual friction is desirable) a substitute blade may be driven into the blade channel 20 by manipulation of the thumb-and-finger piece 39, the substitute blade driving the worn blade before it and out through the end of the blade channel 20. The blade ejection orifice 40 and the aligning fingers and the associated parts are so related in dimensions that the orifice 40, when the parts are in co-operative position, registers with the blade channel 20, although the registration is such that the path of travel of the cutting edge of the substitute blade is slightly to the rear of the stops 19, 19 in order that the cutting edge of the substitute blade may not be injured.

After the substitute blade has been introduced into the blade channel 20, the magazine is removed by reversal of the process of inserting it, whereupon the spring 21 forces the blade platform 16 upwardly and rearwardly, clamping the substitute blade firmly between the blade clamping plate 13 and the blade platform 16 and bringing the stops 19, 19 against the edge of the blade with the heel of the blade backed up against the rear plate 12. The implement is thereby equipped with a new blade ready for shaving.

It may be added that a moderate amount of slack in a vertical direction is permissible as between the aligning fingers and the channel 24—in order to permit of easy entree into the channel 24. This is permissible because the edge of the draw-bar contacts with the clamping plate as shown in Fig. 3 and thus vertical alignment of the orifice 40 and the blade channel 20 is assured.

I have described above certain embodiments of my invention, but I wish it to be understood that this is illustrative and not limitative of my invention and that I reserve the right to make various changes in form, construction, and arrangement of parts falling within the spirit and scope of my invention, as set forth in the claims.

1. A blade injecting device for safety razors of the type provided with a blade holding channel and also with an aligning channel for the reception of the aligning finger of a blade injector, and in which the aligning channel is open at its ends, said device comprising a draw-bar provided at one end with a reversely directed aligning finger, a second aligning finger pivotally connected with the other end of the draw-bar and in one angular position of its pivotal motion extending toward the first-mentioned aligning finger, and a blade injector connected with the second-mentioned aligning finger in such relation thereto that the blade discharge passage of the injector is in registry with the blade holding channel of the razor for the transfer of a blade, when the second-mentioned aligning finger is swung to the said angular position and when the respective fingers are projected into opposite ends of the aligning channel.

2. A blade injecting device for safety razors of the type provided with a blade holding channel and also with an aligning channel for the reception of the aligning finger of a blade injector and in which the aligning channel is open at both its ends, said device comprising a draw-bar provided at one end with a reversely directed aligning finger, a second aligning finger pivotally connected with the other end of the draw-bar and in one angular position of its pivotal motion extending toward the first-mentioned aligning finger, the aligning fingers being of a cam shape that tends to expand the aligning channel, and a blade injector connected with the second-mentioned aligning finger in such relation thereto that the blade discharge passage of the injector is in registry with the blade holding channel of the razor for the transfer of a blade when the second-mentioned aligning finger is swung to said angular position and when the respective fingers are projected into opposite ends of the aligning channel.

3. A blade injecting device for safety razors, such device comprising a draw-bar provided at one end with a reversely directed aligning finger

and at the other end with a second aligning finger pivotally connected to said end and in one angular position of its pivotal motion extending toward the first-mentioned aligning finger, the aligning fingers being of a cam shape, and a blade injector connected with the second-mentioned aligning finger in such relation thereto that when the said aligning fingers are opposed to and in line with each other the blade discharge passage of the injector is directed in a plane approximately parallel with the draw-bar.

4. A blade injecting device for safety razors, such device comprising a draw-bar provided at one end with a reversely directed aligning finger and at the other end with a second aligning finger pivotally connected to said end and in one angular position of its pivotal motion extending toward the first-mentioned aligning finger, and a blade injector connected with the second-mentioned aligning finger in such relation thereto that when the said second aligning finger is opposed to and in line with the first the blade discharge passage of the injector is directed in a plane approximately parallel with the draw-bar.

ZEMACH AUERBACH.