Sept. 5, 1933. J. A. KIMBERLY 1,925,098

SPRING WASHER

Filed May 13, 1931

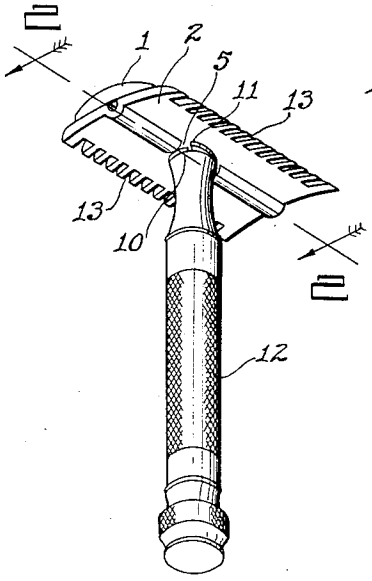


Fig. 1.

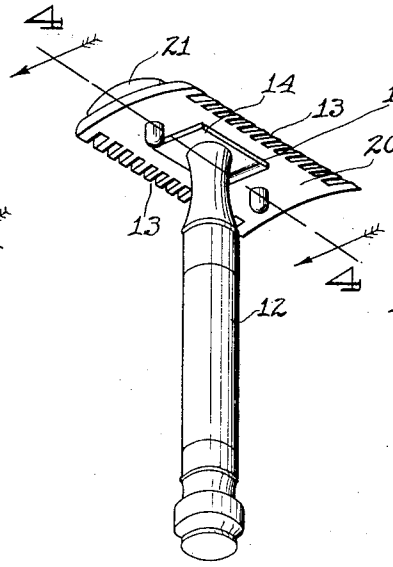


Fig. 3.

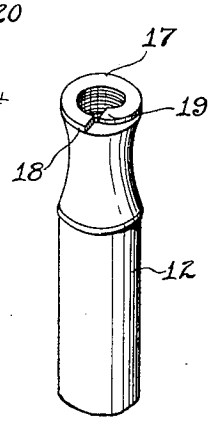


Fig. 5.

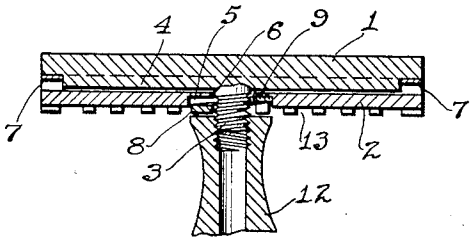


Fig. 2.

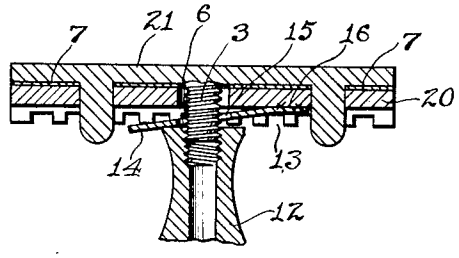


Fig. 4.

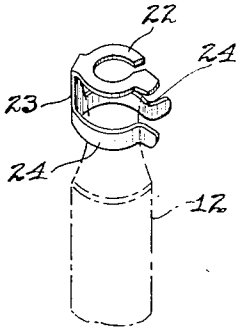


Fig. 6.

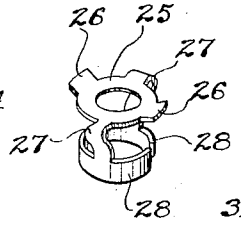


Fig. 7.

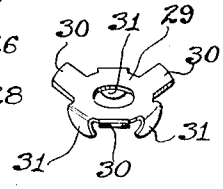


Fig. 8.

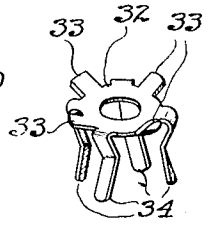


Fig. 9.

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Patented Sept. 5, 1933 1,925,098

UNITED STATES PATENT OFFICE

1,925,098

SPRING WASHER

John A. Kimberly, Neenah, Wis.

Application May 13, 1931. Serial No. 536,960

4 Claims. (Cl. 151—38)

This invention relates to safety razors and the object of the invention is to provide a safety razor consisting of a cap, guard and handle and adjustable spring means being provided between the guard and handle whereby the tension on a blade mounted between the cap and guard may be adjusted.

Another object of the invention is to provide a safety razor of the character described in which the blade may be adjusted to give as close a shave as desired.

A further object of the invention is to provide a means for applying an adjustable tension to the guard by rotation of the handle to vary the pressure on the blade and to prevent rotation of the cap and guard on the handle during shaving irrespective of the adjustment.

Another object of the invention is to provide a safety razor in which the angle of the cutting edges of the blade may be adjusted very accurately.

These objects and the several novel features of the invention are hereinafter more fully described and claimed and the preferred form of construction by which these objects are attained is shown in the accompanying drawing in which—

Fig. 1 is a perspective view of a safety razor embodying my invention.

Fig. 2 is a section taken on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of an alternative form of safety razor embodying my invention.

Fig. 4 is a section taken on line 4—4 of Fig. 3.

Fig. 5 is a perspective view showing the tension spring secured to the handle as an alternative form.

Figs. 6, 7, 8 and 9 are prespective views of alternative forms of spring clips embodying my invention.

The razor is of the well-known type utilizing thin blades and the razor comprises a cap 1 and a guard 2 as shown in Fig. 1. The cap 1 is provided with a threaded stud 3 and with a rib 4 which fits in a channel provided therefor in the guard 2. The threaded stud 3 extends through an aperture 6 in the guard 2 as shown in Fig. 2 and the aperture 6 opens into a recess 5 provided in the inner face of the guard 2. The blade 7, shown in Fig. 2, is provided with a slot through which the rib 4 of the cap extends and is provided with an enlarged opening at the center (not here shown) through which the stud 3 extends. A helical spring 8 is secured in the recess 5 at the point 9 by brazing, soldering or otherwise securing the spring in position and this spring is preferably made of spring bronze or other non-rusting metal and extends about the stud 3, as shown. This flat helical spring is formed to provide a single coil in which the end 10, shown in Fig. 1, is raised above the end 11 which is secured to the guard 2.

To assemble the razor the handle 12 is threaded onto the stud 3 as shown in Fig. 2 and upon engaging the helical spring 8 forces the guard 2 toward the cap 1, thus bindingly securing the blade 7 between the guard 2 and the cap 1. In this type of razor the movement of the guard toward the cap 1 fixes the thin metal blade 7 and causes the cutting edges thereof to fit closely against the edges 13 of the guard. Also by unthreading the handle slightly the blade tends to flatten out to raise the cutting edges slightly away from the guard and causing the blade to take a closer cut when used.

The object of my invention is to provide a yieldable means between the handle and guard so that the tension on the guard applied through the yieldable means may be varied by threading or unthreading the handle 12 onto or off from the stud 3. By applying this pressure through a yieldable means such as the spring 8, the edges of the blade 7 may be varied slightly in position in relation to the guard edges 13 and by means of the spring 8 a very fine adjustment of the position of the blade edges may be obtained. With a razor of this type not equipped with my yieldable adjustment the handle may be unthreaded to allow the blade to assume the position for a close shave but when so unthreaded the entire head of the razor may rotate on the handle during shaving so that it is not practical to use the razor when so adjusted. With my device the spring not only gives a yieldable adjustment but maintains a pressure on the handle so that the head cannot rotate thereon and thus the razor may be utilized at practically any adjustment.

An alternative form of the construction is shown in Fig. 3 in which a flat spring plate 14 is provided having an aperture 15 shown in Fig. 4 through which the threaded stud 3 extends. This spring plate 14 is brazed, soldered or otherwise secured to the guard 20 at 16 and extends from the guard at a slight angle as shown in Fig. 4. As the handle 12 is threaded onto the stud 3 pressure is applied to the flat spring plate 14 to force the guard 20 toward the cap 21 and this pressure may be varied by threading or unthreading the handle 12 onto the stud 3. The action of this alternative form of razor is the same as that described in Figs. 1 and 2.

Another alternative form of the invention is shown in Fig. 5 in which a flat helical spring 17 is secured direct to the handle at 18 or may be a part of the handle and this helical spring is provided with an extending end 19 which is normally spaced from the end of the handle 12. With this construction the spring is on the handle itself and is carried thereby so that when threaded onto the stud 3 the spring presses the guard toward the cap and has the same effect as the form of the device shown in Figs. 2 and 4. If desired, the spring 17 may be a separate spring and not secured to either the handle or the guard but has the disadvantage that it is apt to be lost when disassembling the razor for cleaning. In the forms where the helical spring is used it is desirable that the coil of the spring be in the direction of rotation of the handle when it is threaded onto the stud 3 as a smoother adjustment may be attained in this way.

A series of alternative forms of springs are provided, as shown in Figs. 6, 7, 8 and 9, which are adapted to be clipped onto the handle to prevent loss of the springs when the razor is disassembled. In the form shown in Fig. 6 a flat helical spring washer 22 is provided having an integral depending arm 23 from which a pair of spring clips 24 extend. These spring clips 24 are adapted to be engaged over the end of the handle 12 to secure the helical spring 22 thereon as shown.

In the form shown in Fig. 7, a ring 25 is provided having extending spring lugs 26 and a pair of depending arms 27 are provided having semi-circular ends 28 adapted to be engaged about the end of the handle 12 to secure the device thereto.

In the form shown in Fig. 8, a ring 29 is provided having three extending spring lugs 30 for engaging the guard and also having three depending springs lugs 31 adapted to engage over the end of the handle.

In the form shown in Fig. 9, a ring 32 is provided having spring lugs 33 for engaging the guard and provided with depending legs 34 adapted to be engaged over the end of the handle 12. In all of these forms, the device is clipped directly onto the handle so that it cannot be readily lost off from the handle and in each case a central aperture is provided through which the stud 3 may extend into the handle. In all other respects the operation of these devices is the same as the form of the device shown in Fig. 5. In all of the forms shown the fineness of adjustment attainable results in a smooth close shave which is not obtainable with the ordinary type of razor.

From the foregoing description, it becomes evident that the device is very simple and efficient in operation, cannot get out of order, provides a device by which minute adjustments may be made and provides a device which accomplishes the objects described.

Having thus fully described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is—

1. A spring washer for use between a handle and a member having a stud onto which the handle is threaded, comprising a series of spring lugs engaging the sides of the handle, a compressible spring washer supported on the end of the handle by the spring lugs, the spring lugs and washer being normally free to rotate on the handle and the spring washer being provided with an aperture through which the stud may be threaded into the handle, the spring washer being adapted to be compressed between the handle and the said member as the handle is threaded onto the stud to yieldably maintain the handle in position in relation to the said member.

2. A spring washer comprising a compressible spring portion adapted to be positioned on the end of a handle, a series of spring lugs formed integrally with said compressible portion and adapted to engage the sides of the handle to support the compressible portion on the end thereof, the device being normally rotatable on the end of the handle and the handle being threadable onto a stud to place the compressible portion under pressure.

3. A spring washer comprising a yieldable spring portion adapted to be positioned on the end of a handle, the spring portion being provided with a central aperture through which a stud may be threaded into the handle and yieldable means for maintaining the spring washer on the end of the handle, the said means allowing turning movement of the spring washer in relation to the handle.

4. The combination with a rotatable nut member having a concave reduced portion near the end, of a spring washer having a series of spring fingers adapted to be sprung over the end of the nut member to loose engagement with the concave reduced portion thereof, a stud adapted to be threaded into the nut member, the washer being supported by the spring fingers on the end of the nut member and being apertured to receive the stud, a series of spring lugs extending from the spring washer and the spring fingers of the washer fitting the concave reduced portion of the nut member loosely to allow rotation of the spring washer in relation to the nut member and stud.

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