R. T. WINN.

SAFETY RAZOR.

APPLICATION FILED MAY 14, 1910.

985,089. Patented Feb. 21, 1911.

Fig. 1.

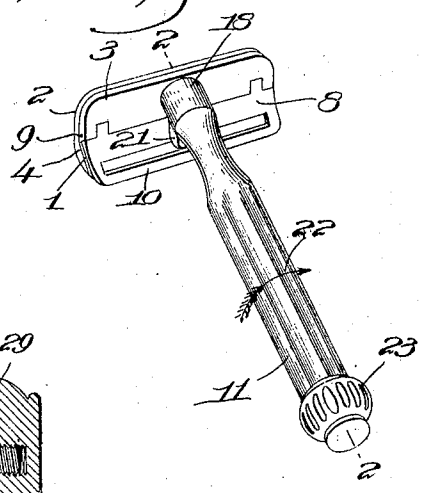


Fig. 6.

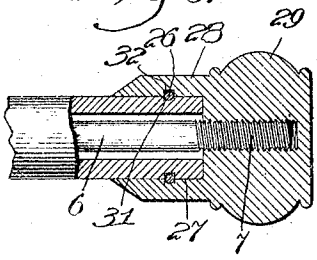


Fig. 2.

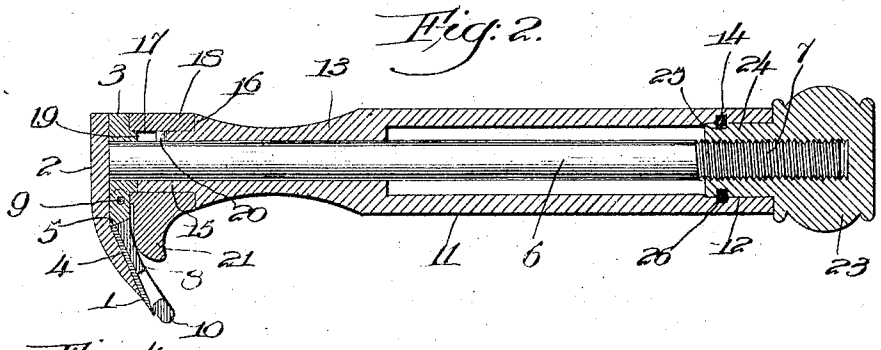


Fig. 4.

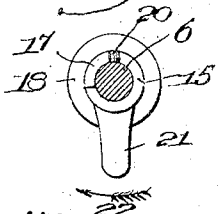


Fig. 3.

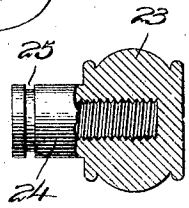
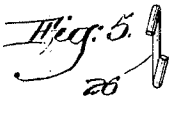


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SAFETY-RAZOR.

985,089. Specification of Letters Patent. **Patented Feb. 21, 1911.**

Application filed May 14, 1910. Serial No. 561,275.

To all whom it may concern:

Be it known that I, RICHARD T. WINN, a citizen of the United States, and resident of Cliftondale, county of Essex, and State of Massachusetts, have invented an Improvement in Safety-Razors, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to a safety-razor of the type wherein a removable blade is clamped in operative position in a suitable supporting head carried by a handle, and my present invention has for its object the production of novel, simple, and effective means for locking the blade-clamping instrumentality, and for unlocking it when the blade is to be removed from or applied to the head, so constructed and arranged that the parts can be produced inexpensively and readily and quickly assembled.

In some of its general features my present invention is similar to the safety-razor forming the subject-matter of United States Patent to Leslie No. 908,470 dated January 5, 1909.

Herein I provide the blade-supporting head with a rigidly attached spindle threaded at its outer end, and upon this spindle I mount the locking means for the blade-clamp and the controlling device therefor, said controlling device being made in the form of a nut screwed onto the threaded end of the spindle.

By the use of a novel combined coupling and friction device I provide for movement of the locking means on the spindle, both longitudinally and rotatably, through a manually effected rotation of the controlling nut, the latter and the locking means being positively connected by the coupling to move longitudinally in unison.

The coupling and friction device is simple yet thoroughly effective; it can be manufactured at a very low cost, and the assembling of the parts is accomplished with ease and rapidity by the use of such device.

The novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a perspective view of a safety-razor embodying one form of my invention, with a blade clamped in operative position; Fig. 2 is an enlarged longitudinal section on the line 2—2, Fig. 1, but with the spindle in elevation; Fig. 3 is a detail partly in elevation of the controlling nut illustrated in Fig. 2; Fig. 4 is an end view of the locking member or sleeve, showing the lateral locking projection and the segmental recess in the end of the locking member, the spindle being shown in section; Fig. 5 is an edge view of the combined coupling and friction device, detached; Fig. 6 is a longitudinal sectional detail of a modified form of construction of the controlling nut and the adjacent end of the locking member coupled thereto.

In connection with my present invention I use a flat and relatively thin but rigid steel blade 1 of any suitable character, and I have provided a blade-supporting or sustaining head shown in Fig. 2 as comprising two plates 2, 3 permanently connected in any suitable manner, and the flat inner face of the plate 2 forms a blade seat 4, the back of the blade resting against the abutment or shoulder formed at 5 by the plate 3. An elongated spindle 6 is fixedly attached to the head, and is screw-threaded at its outer end, at 7, for a purpose to be referred to. A blade-clamp and guard is provided by the plate 8, pivotally connected at 9 with the head to swing toward and from the blade-seat 4, the rounded edge 10 of said plate projecting beyond the edge of the blade to form a guard.

When in its operative position, Figs. 1 and 2, the clamping member 8 presses upon and firmly clamps the blade upon its seat. Upon the spindle I mount an elongated locking member, made as a sleeve 11 and having its exterior suitably shaped to provide for a firm grasp of the fingers of the user, the said member having its outer end counterbored, see Fig. 2, to form a tubular socket 12, while the inner solid end 13 of the said locking member is mounted to move longitudinally and also rotatably upon the spindle.

As will be seen from Fig. 2 a large part of the length of the sleeve is hollow, reducing the weight thereof, the solid portion 13 being of ample length to provide a firm bearing upon the spindle 6.

As shown in Fig. 2 I provide an internal

annular groove 14 in the socket 12, for a purpose to be described, the side walls of the groove being parallel to each other and in planes at right angles to the longitudinal axis of the sleeve. At its inner end the sleeve is reduced in diameter at 15, Fig. 2, leaving an annular shoulder 16, the reduced part 15 being longitudinally slotted at 17, and a collar 18 is driven onto the reduced end and against the shoulder 16, the collar projecting beyond the end of the portion 15 of the sleeve to form an annular seat 18 between the collar and the spindle, into which seat enters the hub or boss 19 on the blade-sustaining head. When the collar is fixed upon the sleeve the slot 17 in effect forms a deepened portion of the seat 18, into which enters a stop-pin 20 fixed in the spindle 6, so that rotation of the sleeve thereon is permitted through an angle of somewhat less than 90 degrees. The operations necessary to effect this construction are simple and inexpensive, and such as for the most part can be performed with great rapidity on screw-machines or similar apparatus.

While the pin and slot coöperate the locking sleeve 11 can be turned from locking position, Figs. 1 and 2, about a quarter of a revolution to unlocking position, the collar 18 having a lateral projection 21 to coöperate with the blade-clamp 8 and hold it pressed against the blade. This projection is rounded or convexed externally to engage readily and effectively with the blade-clamp, as shown in Fig. 2, when the latter is locked in its operative position.

Rotation of the sleeve in the direction of the arrow 22, Figs. 1 and 4, swings the projection 21 out of engagement with the blade-clamp, so that the latter releases the blade and permits it to be lifted out, and in practice when inserting or removing the blade the user of the device will turn it so that the blade-clamp and adjacent portion of the head will be upturned.

The locking member or sleeve 11 forms the handle of the apparatus, and its movement to lock or unlock the blade-clamp is effected by a controlling nut 23, Figs. 1, 2 and 3, internally threaded to screw onto the threaded end 7 of the spindle, and in Figs. 2 and 3 I have shown the inner end of the nut reduced in diameter to form a cylindrical extension 24 adapted to enter smoothly and rotatably into the socket 12. Said extension has an annular groove 25 formed in it, see Fig. 3, with parallel side walls at right angles to the longitudinal axis of the nut, said groove 25 being so located that when the extension is properly inserted in the socket 12 the grooves 14 and 25 will be directly opposite each other, as shown in Fig. 2. In the annular recess so provided I seat a combined coupling and friction device, shown separately in Fig. 5, and consisting of a split-ring 26 made of spring steel and having its ends laterally offset from the plane of the main portion of the ring, as shown. The ring is laterally as well as radially expansible when in place, by virtue of this construction. It is first snapped into the groove 25 in the nut extension, and by a suitable tool it is compressed and its ends brought together within the groove to permit the grooved end of the extension 24 to be pushed into the socket 12. When the two grooves are brought into register the ring at once expands to partly occupy both grooves, thus positively coupling together the nut and the locking member 11, while the ends of the ring tend to spread or separate laterally and bear frictionally against the sides of the grooves.

In practice the positive action of the ring as a coupling is so great that it is impossible to pull the nut away from the sleeve unless one part be held in a vise, and the other part can then only be separated by the exercise of great power. The nut and sleeve are thus coupled together to move longitudinally on the spindle as a unit, so that if the nut is screwed in or out on the threaded portion 7 of the spindle the locking member 11 and the locking projection 21 will be moved toward or away from the blade-clamp 8.

The frictional engagement of the ring 26 with the opposite sides of the two grooves 14, 25, will cause the locking sleeve to rotate in unison with the nut until the sleeve is positively stopped from such rotation, as will be apparent.

Supposing the blade is to be removed the operator rotates nut 23 in the direction of arrow 22, Fig. 1, and by the coupling and friction device the sleeve is moved outward a slight distance upon the spindle, away from the blade-sustaining head, relieving the pressure between the projection 21 and the blade-clamp 8, and thereupon the frictional action of the coupling device causes the sleeve to turn in unison with the nut to swing the projection 21 into inoperative or unlocking position. The blade-clamp is now free to swing away from the blade, and further rotation of the sleeve is stopped by engagement of the stop-pin 20 with one end of the segmental slot 17, a continued rotation of the nut only acting to move the sleeve outward along the spindle 6.

To lock a blade the operation is reversed, for after the blade-clamp is turned up against the seated blade the nut 23 is rotated oppositely to arrow 22 to first bring the projection 21 into operative position, continued rotation of said nut forcing the sleeve 11 longitudinally along the spindle toward the head, pressing the projection 21 securely against the blade-clamp and locking it in position. This manipulation of the locking

means is easily and quickly performed, and but a very slight rotative movement of the controlling nut is necessary to lock or unlock the blade-clamp.

By increasing or decreasing the initial lateral separation of the ends of the coupling ring 26 the frictional action between the nut and the locking member is increased or diminished, for the greater the separation of the ends of the ring the more forcibly will the confined ring bear upon the sides of the opposed grooves in the socketed end of the locking member and the extension of the nut.

In Fig. 6 I have shown a modification which is simply a reversal of the telescopic arrangement shown in Fig. 2 between the sleeve and the nut, for in Fig. 6 I form the socket 27 in the extension 28 of the nut 29, and extend the smooth end 30 of the sleeve or locking member into the socket, the end 30 having an annular groove 31 which registers with a similar groove 32 in the socket 27, the combined coupling and friction device 26 being seated in said grooves, as before described. Manifestly, said device 26 will act precisely as it does in the structure shown in Fig. 2, and in both forms the nut and sleeve are so arranged that a part of one enters a socket formed in the other, the coupling and friction device being held between and acting upon the concentric portions of the sleeve and nut.

Changes or modifications in details of construction and arrangement may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims annexed hereto.

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

1. In a safety-razor, a blade-sustaining head having a rigidly attached spindle screw-threaded at its outer end, a blade-clamp pivoted on said head, to engage a removable blade and clamp it upon the head, a locking member movably mounted on the spindle to coöperate with and hold the clamp against the blade, said member having a tubular socket in its outer end, a controlling nut longitudinally movable with said member and having a shank rotatably seated in the tubular socket thereof and screwed onto the spindle to move the locking member toward and away from the blade-clamp, and an annular friction device and coupling interposed between and concentric with the shank of the nut and the socketed end of the locking member, to effect by frictional engagement rotative movement of the latter into and out of locking position when the nut is turned on the spindle.

2. In a safety-razor, a head provided with a seat for a removable blade and having a rigidly attached spindle threaded at its outer end, means to clamp the blade upon the seat, a locking sleeve movable longitudinally and rotatably upon said spindle and coöperating with the clamping means, said sleeve having a tubular socket at its outer end and provided with an annular groove in the socketed portion, a controlling nut screwed onto the spindle and having an elongated shank entering the socket in the sleeve, said shank having an annular groove opposite the groove in the socket, and a split ring encircling the shank and seated in the opposed grooves and having its ends sprung apart laterally, to couple the nut and sleeve together and also serve as a friction connection between them to effect rotation of the sleeve when the nut is turned on the spindle.

3. In a safety-razor, a head provided with a seat for a removable blade and having a rigidly attached spindle threaded at its outer end, means to clamp the blade upon the seat, a locking member for said means, longitudinally and rotatably movable on the spindle and provided with a socket at its outer end, a controlling nut screwed onto the spindle and provided with an extension revoluble in the socket of said locking member, and an annular, spring friction device coöperating with said nut and locking member within the socket of the latter to positively connect said parts and frictionally engage the same to effect rotative movement of the locking member by rotation of the nut.

4. In a safety-razor, a head provided with a seat for a removable blade and having a rigidly attached spindle threaded at its outer end, means to clamp the blade upon the seat, a locking member for said means, longitudinally and rotatably movable on the spindle, a controlling nut screwed into the spindle and extended into the outer end of the locking member and revoluble therein, opposed annular grooves in the latter and the part of the nut extended thereinto, respectively, and a radially and laterally expansible ring seated in said grooves to connect said parts and effect rotative movement of the locking member by rotation of the nut on the spindle.

5. In a safety-razor, a head provided with a seat for a removable blade and having a rigidly attached spindle threaded at its outer end, a controlling nut screwed thereon, means to clamp the blade upon the seat, a locking member for said means, longitudinally and rotatably movable on the spindle, an annular, spring friction device and coupling cooperating with the locking member and the nut and concentric therewith, one of said parts loosely embracing and revolving upon the adjacent end of the other, and opposed annular grooves in such concentric portions of the locking member and nut, said friction device and coupling being seated in both the grooves to couple together the locking member and nut and frictionally engaging the

sides of the grooves to effect rotative movement of the former by rotation of the latter on the spindle.

6. In a safety-razor, a head provided with a seat for a removable blade and having a rigidly attached spindle threaded at its outer end, a controlling nut screwed thereon, means to clamp the blade upon the seat, a locking member for said means, longitudinally and rotatably movable on the spindle, the nut being located adjacent the outer end of the locking member, one of said parts having a tubular socket and the other part extending revolubly thereinto, opposed annular grooves in the concentric portions of said parts, and a radially expansible split-ring seated in the opposed grooves to couple the locking member and nut, the ends of the split-ring being laterally expansible to bear against the sides of the grooves and by frictional engagement therewith effect rotative movement of the locking member by rotation of the nut on the spindle.

7. In a safety-razor, a head provided with a blade-seat and having a rigidly attached spindle threaded at its outer end, a clamping-plate movable toward and from the blade-seat, and means on the spindle to lock the clamping-plate in operative position, said means including a locking sleeve longitudinally movable on the spindle and provided with a socket at its outer end, a device to permit limited rotative movement of the sleeve, a controlling nut screwed onto the spindle and having a cylindrical extension to enter and rotate in the socket of the sleeve, said extension being provided with an annular groove, the socket portion of the locking sleeve having an opposed annular groove, and a combined friction and coupling ring seated in the opposed grooves, to positively couple the sleeve and nut to move longitudinally in unison and acting frictionally to effect rotative movement of the sleeve by rotation of the nut on the spindle.

8. In a safety-razor, a head provided with a blade-seat and having a rigidly attached spindle threaded at its outer end, said head having a circular boss concentric with the spindle, a blade-clamp pivoted on the head, a locking sleeve longitudinally and rotatably movable on the spindle and reduced in diameter at its inner end and provided with a segmental slot, a collar fixedly mounted on such reduced portion and extending beyond the same, to inclose the slot and also form an annular seat for the boss on the head, said collar having a lateral projection to coöperate with and lock the blade-clamp in operative position, a stop-pin on the spindle, extended into the segmental slot, a controlling nut on the threaded end of the spindle, and a connection between said nut and locking member to move the latter longitudinally in unison therewith along the spindle and effect limited rotation of said member to lock and unlock the blade-clamp.

9. In a safety-razor, a blade-sustaining head having a rigidly attached spindle and a circular boss concentric therewith, a blade-clamp pivoted on the head, a locking member rotatable and longitudinally movable on the spindle and reduced in diameter at its inner end, said reduced portion having a segmental slot therein, a collar fixed on such reduced portion and projecting beyond it to form an annular seat for the reception of the boss, a laterally extended locking projection on the collar to coöperate with the blade-clamp and hold it in operative position, a stop-pin on the spindle to enter the segmental slot and limit rotative movement of the locking member on the spindle, and a controlling device longitudinally movable with and rotatable relatively to the locking member, operatively connected with the spindle.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

RICHARD T. WINN.

Witnesses:
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