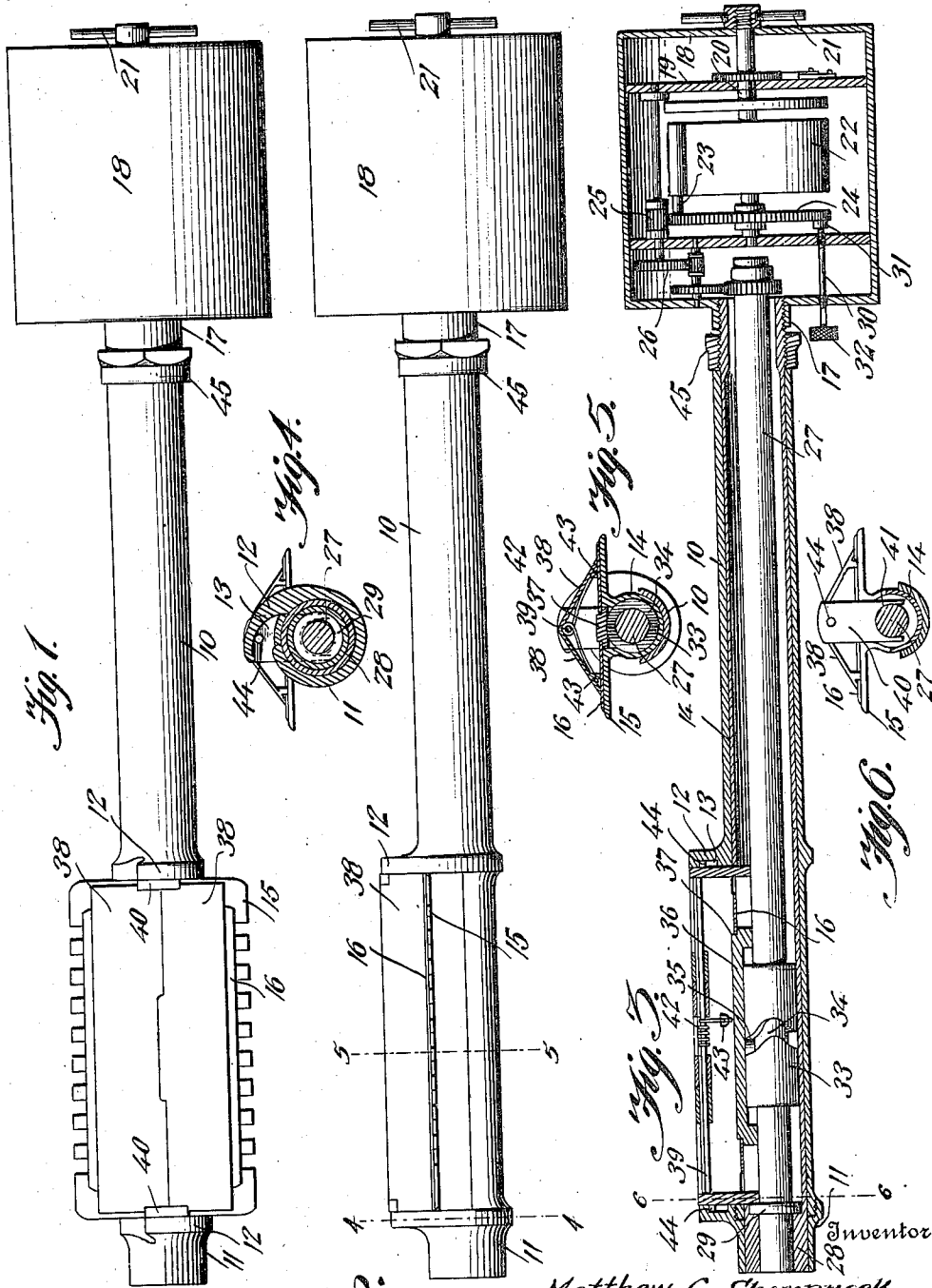


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SAFETY RAZOR.
APPLICATION FILED JAN. 19, 1912.

Patented Apr. 22, 1913.

1,059,774.



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SAFETY-RAZOR.

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To all whom it may concern:

Be it known that I, MATTHEW C. SHARPNECK, a citizen of the United States, residing at Cornville, in the county of Yavapai and State of Arizona, have invented new and useful Improvements in Safety-Razors, of which the following is a specification.

The invention relates to razors, and more particularly to the class of safety razors.

The primary object of the invention is the provision of a razor of this character in which the cutting blade thereof is reciprocated through the medium of a motor, thereby assuring a sheer cutting action upon the beard when shaving, thus obviating the necessity of the person manipulating the razor for this purpose, other than guiding the same over the face of the user.

Another object of the invention is the provision of a safety razor in which the blade thereof is reciprocatingly mounted and operated through the medium of a motor, the safety blade being readily and easily removed from the holder, so that the same may be cleaned and also for enabling the convenient cleaning of said holder.

A further object of the invention is the provision of a safety razor in which the reciprocatingly mounted blade is automatically actuated to assure a positive cutting action, during the use of the razor.

A still further object of the invention is the provision of a safety razor which is simple in construction, durable, light in weight, yet possessing the requisite strength, thoroughly reliable and efficient in operation, and inexpensive in manufacture.

Other objects will be in part obvious and in part pointed out hereinafter. The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the drawings: Figure 1 is a top plan view of a safety razor constructed in accordance with the invention. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical longitudinal sectional view through the same. Fig. 4 is a sectional view on the line 4-4 of Fig. 2. Fig. 5 is a sectional view on the line 5-5 of Fig. 2. Fig. 6 is a sectional view on the line 6-6 of Fig. 3.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings by numerals, the safety razor comprises a tubular outer shank provided at one end with suitable external threads for detachably connecting thereto a collar 11, the latter and the said shank 10 being formed with alining outwardly extending curved ears 12 provided with cam grooves 13 in their inner faces, in which is detachably engaged a blade clamping device, presently described.

Extending longitudinally through the shank 10 and removable therefrom is an inner tubular shank 14, the same being formed with a guard plate 15 adapted to lie between the ears 12, and on which is detachably supported a reciprocatingly mounted razor blade 16, the same being actuated in a manner presently described.

The inner end of the inner tubular shank 14 is provided with suitable external screw threads for the detachable connection thereto of a nipple 17 projecting centrally from one end of a motor casing 18, in which is arranged a motor frame 19 having journaled therein a central main spring winding and unwinding arbor 20, the latter projecting at one end outwardly through the opposite end of the casing 18, and is provided with a finger key 21, as usual. Fixed to the arbor 20 is one end of a coiled main spring 22, the opposite end of which is connected to a lug or pin 23 fixed to a driving gear 24, the same being loose upon the arbor 20 and meshing with a pinion 25 journaled in the frame 19, the said pinion operating a train of gears 26 for rotating a driven shaft 27 located centrally and extending longitudinally throughout the inner tubular shank 14, the outer end of the shaft 27 being journaled in a bearing 28 formed at the outer end of the said inner tubular shank 14, and this shaft 27 is provided with an abutment ring 29 adapted to contact with the bearing 28, so as to prevent longitudinal displacement of said shaft 27 upon the rotation thereof.

The driving gear 24 is normally held against rotation by means of a brake rod adjustably threaded in the casing 18 and frame 19, the inner end of which is formed with a brake shoe 31 adapted to be brought into contact with the driving gear 24, while

its outer end is formed with a knurled head 32, whereby it may be operated and on the contact of the shoe 31 with the driving gear 24, the latter will be held locked against rotation, so that the spring 22 can be readily wound about the arbor 20 on the turning of the key 21 for this purpose.

Formed on the driven shaft 27 is a cam roller or sleeve 33 provided with a zig-zag shaped or cam slot 34, into which engages a pin or lug 35 depending from a reciprocatingly operating shuttle or block 36 for the blade 16, the said shuttle or block 36 being formed with a raised elongated boss 37 adapted to be received in a correspondingly shaped opening formed centrally in the blade 16, thereby detachably connecting the latter to the shuttle or block 36; thus it will be seen that on rotation of the driven shaft 27, the shuttle 36 will be reciprocated and likewise the blade 16 moved therewith upon the guard plate 15 for cutting operation.

The blade retaining or clamping device comprises a pair of guard shutters or shield plates 38 hinged together at their meeting edges by means of a common pintle 39, the latter having fixed to opposite ends legs 40 provided with notches 41 adapted to receive the driven shaft 27, the legs 40 being received in suitable recesses formed in opposite ends of the guard plate 15 when the guard shutters or wings 38 are superimposed upon the same.

Coiled about the pintle 39 connecting the guard wings or shutters 38 is a spring 42, the ends being connected in any suitable manner to the shutters or wings 38, although in this instance, by means of eyes 43, so that the shutters will be sustained under tension and in close contact with the blade 16 upon the guard plate 15, so as to hold said blade 16 against outward displacement from the guard plate, when it is reciprocated thereon.

Formed on the legs 40 and projecting outwardly therefrom are retaining lugs 44, which latter detachably engage in the cam grooves 13 formed in the ears 12, so that upon the turning of the outer shank 10 upon the inner shank 14, the clamping device will be locked in the ears for the holding of the blade 16 upon the guard plate 15, it being seen that on reversely turning the said outer shank 10, the clamping device may be freed from the ears 12, thereby permitting the ready removal of the blade 16 from the guard plate 15 of the razor.

Threaded on the inner end of the inner tubular shank 14, between the inner end of the outer tubular shank 10 and the nipple 17 on the motor casing 18, is a locking collar 45 which, when turned in one direction, locks the outer shank 14 against turning movement, so that there will be no possibility of the clamping device for the blade

16 becoming accidentally loose, during the use of the razor. On reversely moving the collar 45, the shank 10 may be turned for freeing the clamping device, as hereinbefore described.

It is obvious that when the spring 22 is wound, and on the unwinding thereof, the driven shaft 27 will be rotated, thus reciprocating the blade 16 upon the guard plate 15, whereby on the application of the razor to the face of the user, the blade 16 will, in its movement, effect a sheer cutting action upon the beard, so that it is only necessary for the user to guide the razor over the face for shaving purposes.

If desired, in lieu of the spring motor, any suitable electric motor can be attached to the driven shaft 27 for operating the same.

From the foregoing, taken in connection with the accompanying drawings, it is thought that the construction and operation of the invention will be readily understood, without requiring a more extended explanation.

What is claimed is:

1. A safety razor comprising tubular inner and outer shanks, a collar detachably fitted upon the outer end of the outer shank, outwardly extending curved ears formed on the shank and collar in spaced alining relation to each other and provided with cam grooves in their inner faces, a guard plate formed on the inner shank and extending between the ears, a motor casing detachably fixed to the inner end of the said inner shank, a driven shaft disposed within the inner shank and having an abutment ring near the outer end thereof for engagement with the inner shank to prevent outward longitudinal displacement of the said shaft, spring motor mechanism located within the motor casing and having gear connections with the driven shaft for rotating the same, a sleeve formed on the driven shaft and having a cam slot therein, a shuttle overlying the sleeve and having a lug engaging the said cam slot for reciprocating said shuttle on the rotation of the shaft, a boss formed on the shuttle, a slotted blade detachably engaging the boss and superimposed upon the guard plate, a blade retaining clamp having hinged plates engageable with the blade, legs depending from the hinged connection between the said plates and having notches receiving the driven shaft, retaining lugs formed on and projecting outwardly from the legs and engaging the cam recesses in the ears for locking the blade retainer thereto, and tension means connected with the plates and the hinged connection therebetween for sustaining the said plates in close contact with the blade.

2. A safety razor comprising tubular inner and outer shanks, a collar detachably fitted upon the outer end of the outer shank,

outwardly extending curved ears formed on the shank and collar in spaced alining relation to each other and provided with cam grooves in their inner faces, a guard plate
 5 formed on the inner shank and extending between the ears, a motor casing detachably fixed to the inner end of the said inner shank, a driven shaft disposed within the inner shank and having an abutment ring
 10 near the outer end thereof for engagement with the inner shank to prevent outward longitudinal displacement of the said shaft, spring motor mechanism located within the motor casing and having gear connections
 15 with the driven shaft for rotating the same, a sleeve formed on the driven shaft and having a cam slot therein, a shuttle overlying the sleeve and having a lug engaging the said cam slot for reciprocating said shuttle on the rotation of the shaft, a boss formed
 20 on the shuttle, a slotted blade detachably

engaging the boss and superimposed upon the guard plate, a blade retaining clamp having hinged plates engageable with the blade, legs depending from the hinged con- 25
 nection between the said plates and having notches receiving the driven shaft, retaining lugs formed on and projecting outwardly from the legs and engaging the cam recesses in the ears for locking the blade retainer 30
 thereto, tension means connected with the plates and the hinged connection therebetween for sustaining the said plates in close contact with the blade, and means for locking the motor against rotation. 35

In testimony whereof I affix my signature in presence of two witnesses.

MATTHEW C. SHARPNECK.

Witnesses:

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 N. F. WYKOFF.