P. CATUCCI.

RAZOR STROPPING MACHINE.

APPLICATION FILED JAN. 16, 1911.

1,100,353.

Patented June 16, 1914.

2 SHEETS—SHEET 1.

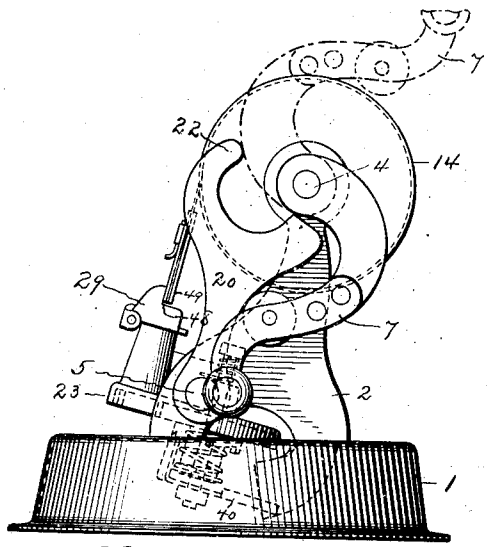


Fig. 1.

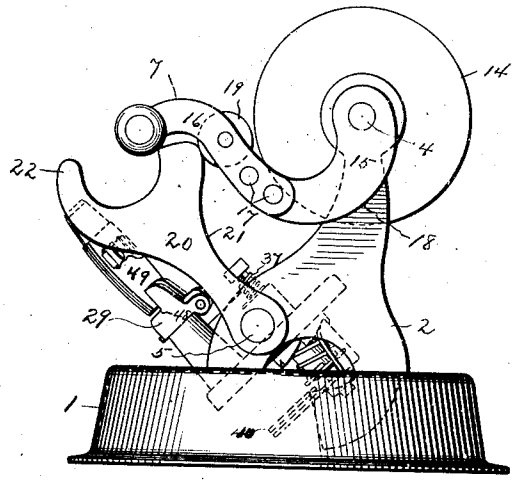


Fig. 3.

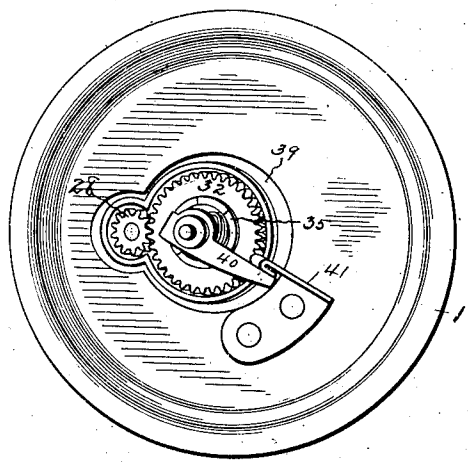


Fig. 2.

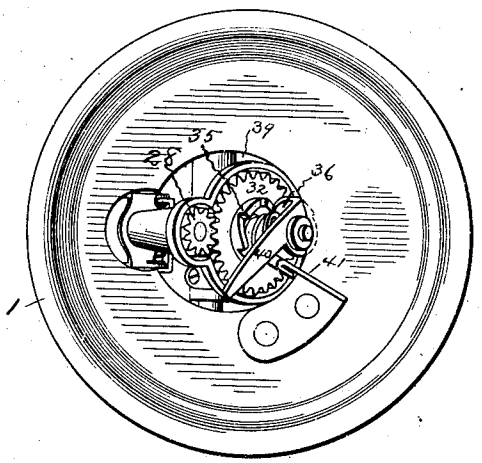


Fig. 4.

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2 SHEETS—SHEET 2.

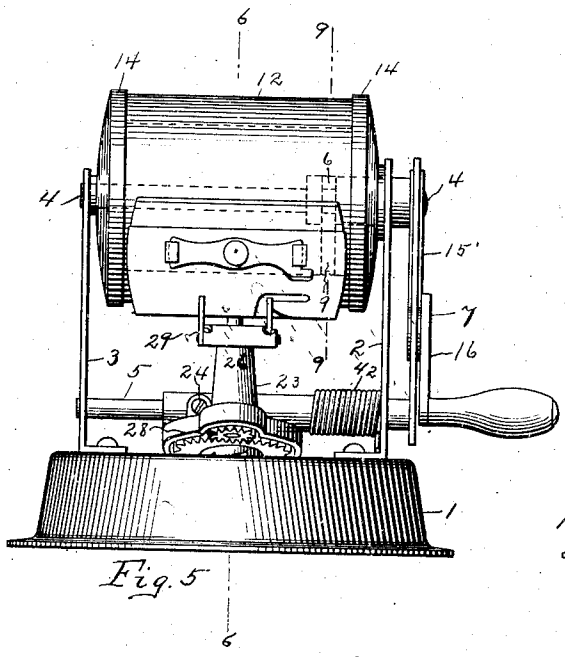


Fig. 5

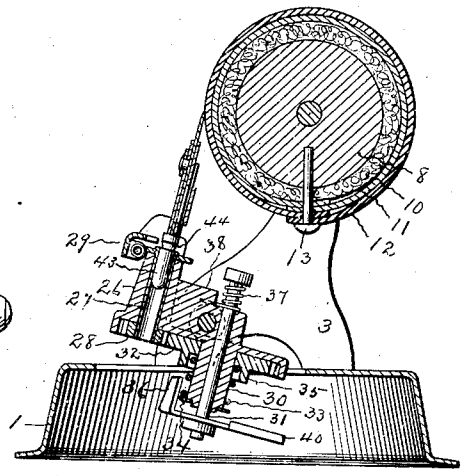


Fig. 6.

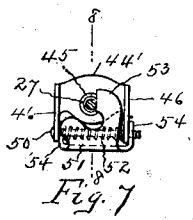


Fig. 7

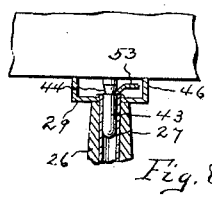


Fig. 8.

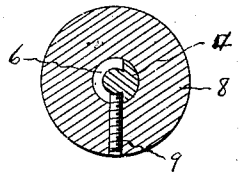


Fig. 9.

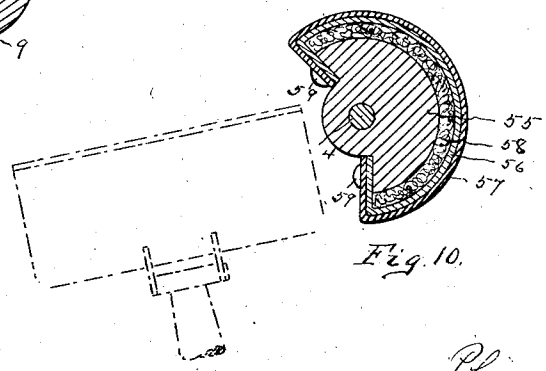


Fig. 10.

WITNESSES

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PLINY CATUCCI, OF NEWARK, NEW JERSEY, ASSIGNOR TO A. F. MEISSELBACH & BROTHER, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

RAZOR-STROPPING MACHINE.

1,100,353. Specification of Letters Patent. Patented June 16, 1914.

Application filed January 16, 1911. Serial No. 602,829.

To all whom it may concern:

Be it known that I, PLINY CATUCCI, a citizen of the United States, residing in Newark, county of Essex, and State of New Jersey, have invented new and useful Improvements in Razor-Stropping Machines; and I declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it pertains to make and use the same.

During recent years, the so-called "safety razor" has come into general use, and many devices have been proposed for sharpening the blades of such razors. Owing to the many different styles of blade holders, each providing for a different style of blade, it has become desirable or necessary to provide some character of sharpening device which may be used for any one of the several different makes of blades. It is to provide such a device which will take all of the standard blades now on the market that my present invention was principally designed.

Other objects accomplished by my invention may be set forth as follows: The relative movement of the blade holder and strop roller to permit the free rotation of the blade about its transverse axis in order to present both sides of the blade edge alternately to the strop. The positive rotation of the blade in contradistinction to devices which merely whirl the blade about the transverse axis, and depend upon the impetus given to the blade to complete the rotation. The provision of means whereby the accidental reverse rotation of the roller crank will not result in a reverse rotation of the roller itself and a consequent cutting of the sharpening strop. The provision of a mutilated strop roller which may be substituted for the usual cylindrical strop roller, the remaining mechanism remaining unchanged, whereby blades greater than the standard length may be sharpened.

In carrying out these several specified and other objects, I make use of the structures set forth in the drawings forming a part hereof, in which:—

Figures 1 and 2 are respectively side elevation and bottom plan views showing the parts in position just before the blade holder recedes from the strop roller, preparatory to reversing the blade. Figs. 3 and 4 are similar views, respectively, showing the positions occupied by the parts when the blade is completely reversed and about to return to contact with the strop roller. Fig. 5 is a front elevation of the device, Fig. 6 is a sectional view on line 6—6 of Fig. 5. Fig. 7 is a plan of the rotating blade holder support. Fig. 8 is a sectional view on line 8—8 of Fig. 7 showing the blade holder in position. Fig. 9 is a section on line 9—9 of Fig. 5. Fig. 10 is a sectional view of the mutilated roller for use with long blades.

Similar reference numerals refer to like parts throughout the specification and drawings.

The supporting base 1 is of pressed metal and of inverted cup shape as shown. Mounted upon this base are the two upright standards 2 and 3, carrying at their upper ends the horizontal shaft 4 and at their lower forward sides the oscillating shaft 5. The shaft 4 is reduced in diameter for a greater portion of its length as shown in dotted lines in Fig. 5. Near the right hand end, as shown in the figure, and also in Fig. 9 there is a partial circumferential groove 6, for a purpose hereinafter set forth. Upon the outer end of the shaft 4 is rigidly secured the operating crank 7. Loosely mounted upon the shaft 4 between the upper ends of the standards 2 and 3 is the wooden strop roller 8 having its central aperture bored to conform with the different diameters of the shaft 4. The screw 9 is inserted through the face of the roller 8 in a position to permit its inner end to take into the groove 6. This serves the double purpose of securing the roller 8 to the shaft 4 and of permitting the shaft to rotate in a reverse direction for a portion of a revolution without carrying the roller 8 with it, and thus prevents the cutting of the strop, when a blade is in position as hereinafter to be described.

The roller 8 has its outer surface surrounded with a layer of thick felt 10 and a thinner layer of softer fabric 11 to form a suitable resilient backing for the sharpening strop 12, the latter being reversible and held in position by means of buttonholes which take over the button pin 13. In order to form a protection for the edges of the strop 12 and also to give the device a neat finish, I provide the ends of the roller 8 with convexly rounded and flanged caps 14, the

flanges of which extend slightly over and inclose the extreme edges of the strop 12.

The operating crank 7 secured upon the end of the shaft 4, not only serves to rotate the strop roller, but also serves to actuate the blade holder as hereinafter described. It is constructed of two parts, 15 and 16, secured together by the rivets 17, as shown. The part 15 has its outer edge struck on an involute arc to form a cam 18. The part 16 is provided with an anti-friction roller 19 the periphery of which is in alinement with the cam 18.

The oscillating shaft 5 carries the blade holder and reversing mechanism. Upon its outer end is rigidly secured the upstanding cam arm 20 which is provided with the cam edge 21 and stop arm 22, both in a plane to engage the cam 18 and the roller 19 of the crank 7. Mounted upon the shaft 5, between the standards 2 and 3 is the small casting 23, said casting being rigidly secured in its correct position by means of a set screw 24. The casting 23 is provided at its forward side with an upstanding hollow shank 26 to receive the hollow shaft 27, the latter having rigidly secured thereto at its lower end the small spur gear 28 and the holder clip 29 at its upper end. At the rear side and beyond the shaft 5, the casting 23 has the hollow shank 30 which receives the oscillating and reciprocating shaft 31 and also the larger spur gear 32, the latter being loosely mounted to rotate upon the outer cylindrical surface of the shank 30 and in mesh with the spur gear 28. The gear 32 is held in position by means of the spring 33, surrounding the shank 30 and located between the collar 34 and the face of the gear 32. The spring 33 not only serves to hold the gear 32 in place, but also acts as a friction device for preventing a too free rotation of the gear 32 under the impulse given it by the actuating parts.

Projecting from the lower face of the gear 32 is the crown ratchet 35, for engagement with the actuating pawl 36, the latter being rigidly secured to the lower end of the shaft 31. As above described, the shaft 31 extends through the hollow shank 30, and it is held in position by means of the combined torsion and compression spring 37 upon its upper end, said spring having one of its ends secured directly to the shaft 31 as by passing it through a hole in said shaft, while its other end is bent around the fin 38 on the casting 23. In this manner, the pawl 36 is always held in engagement with some tooth of the ratchet 35 ready to rotate it and with it the gear 32 whenever the operating parts actuate the pawl.

Reference to Figs. 2 and 4 will show that the opening 39 is provided in the base 1 so that the casting 23 and its parts may project beneath.

The pawl 36 is provided with an arm or extension 40 which projects upon the opposite side of the shaft 31 into the position to engage a stationary cam device 41, the latter being secured to the under side of the base 1. This cam 41 is formed of a piece of sheet metal bent into the shape as shown and having its operating edge bent over and slightly inclined from the vertical.

By the structure as thus far described, it will be seen that the rotation of the crank 7 will carry with it the roller 8 and its strop 12 while the roller 19 will engage the cam arm 20 and thus oscillate the shaft 5 and the parts mounted thereon to the position shown in Fig. 3. During this oscillation, the arm 40 in engagement with the cam 41 will, through the pawl 36 and the ratchet 35, rotate the gear 32, a partial revolution, and thus the shaft 27 will be given a half revolution. Further rotation of the crank 7 will permit the upper end of the cam arm 20 to slide along the involute cam 18 and thus restore the parts to the position shown in Fig. 1, such restoration being effected by means of the torsion spring 42 mounted upon the shaft 5 with its ends engaging respectively the base 1 and some part of the casting 23.

During the return of the parts as above described, the spring 37 by its torsion effect, will hold the arm 40 against the cam 41 and by its compression effect will permit the pawl 36 to ride backward over the tooth and engage the next tooth of the ratchet 35, and thus be ready for the next oscillation of the shaft 5 upon the next rotation of the crank 7. At this point, it may be well to state that if by accident or even design, the crank 7 should be given a reverse rotation, the involute cam edge 18 would engage the stop arm 22 and thus prevent injury to the stop, it being understood, of course, that the screw 9 and the groove 6 are operating as heretofore set forth.

The blade holder is provided with a shank 43, having a circumferential groove 44 therein, and to this shank there is secured some one of the various clamping devices hereinafter described. The shank 43 is inserted into the upper end of the hollow shaft 27, the latter having secured thereto the clip 29 as above described. This clip is designed to secure the rotation of the holder and blade with the shaft 27 and also to permit the easy engagement and disengagement of the shank 43 from the shaft 27.

It is constructed in the following manner: The plate of metal 44′ is provided with a central aperture 45 to receive the upper end of the shaft 27 which is riveted in place. The ends of this plate are bent upwardly to form the lugs 46, which, as shown, are notched at 48 to receive the body of the holder plates 49. The lower corners of the

lugs are perforated to receive the pin 50 which latter carries the pivoted catch 51 and the torsion compression spring 52.

The catch 51 consists of a small piece of sheet metal cut out to provide a clip projection 53 which engages the groove 44 of the holder shank 43, and is bent at right angles as shown in Fig. 6 with the hinge lugs 54 to receive the pin 50. The lugs 54 are located, one inside of one of the lugs 46, the other outside of the other lug 46, the construction being such as to provide for a slight sliding motion of the entire catch 51, as well as an oscillating motion upon the pin 50. The spring 52 is located on the pin 50 and bears with one end upon the inner lug 46 and its other end upon the inner lug 54, to resist the sliding motion, while the ends of the spring 52 also bear respectively upon the adjacent flat faces of the catch 51 and the plate 44′ to resist with the torsion tendency of the spring 52 the lifting of the clip projection 53 from the upper face of the plate 44′. It will thus be seen that when the shank 43 is inserted into the hollow shaft 27, its lower rounded end will displace the clip projection 53 and with it the entire catch 51 laterally against the spring 52 until the projection 53 snaps into the groove 44. When the shank 43 is removed from the shaft 27, the groove 44 will raise or tilt upwardly the projection 53 against the torsion tendency of the spring 52 until the parts are completely disengaged. I regard this clip feature as a very important part of my invention, for without it or some equivalent means the shank or the holder cannot be held without a tendency to jump out of position, while the very lightness of the clamping, though sufficient to prevent this jumping out tendency, yet permits of easy disengagement of the parts. It frequently happens that a call is made for a stropping device for blades longer than the accepted standard. The strop as thus far described is designed to permit the reversal of the blade and holder without contacting the end of the blade with the strop roller, only when the blades are of standard length; *i. e.*, about one and three quarter inches long. Blades of greater length will, when reversing, strike the roller and thus be useless for the purpose. I provide two distinct ways of overcoming this difficulty. I may set the cam arm 20 upon the shaft 5 at a greater angle from the vertical and thus cause a greater oscillation of the shaft 5 so as to carry the blade farther away from the strop roller, or I may preserve the usual adjustments and substitute for the usual strop roller 8, what I term a mutilated roller 55; *i. e.*, a roller having a sector of about three-eighths cut from it as shown in Fig. 10. The felt backing 56 and the strop 57 are lapped around the backing 58 and buttoned to the two buttons 59 upon the cutaway parts of the roller. The long blade in its reversal is so timed as to turn into this cutaway part as shown, and therefore, no interference between the long blade and the strop roller results. As above indicated, the strop is designed for use with all standard makes of blades, that is, the single edge, thin, the double edge, thin, perforated or not perforated; "sectional razor" blades, thin backed, etc., etc.

From the description of the parts related to the gear 32 and the spring 33, it will be noted that means are provided for adjusting the gears 32 and 28 so as to properly time the reversal of the blade with the passage of the button pin 13. If the reversal did not take place as this button passed nearest the blade, the interference would damage the blade. This timing may be accomplished by lifting the gear 32 out of its seat giving it a slight turn in the opposite direction and then letting it drop back into place in mesh with the gear 28.

It will thus be seen that by the structure described I have accomplished the objects set forth and have produced a stropping device which is at once neat in appearance, cheap in construction and not liable to disarrangement in the hands of those unaccustomed to the handling of mechanical structures more or less complicated.

I claim:

1. In a razor stropping device, the combination of an oscillating support, a rotating blade holder carried by said support, a gear wheel carried by said support, a pinion connected to said blade holder and engaging said wheel, means actuated by the oscillation of said support for intermittently actuating said gear wheel and pinion to positively rotate said blade holder, and a rotating stropping roller located in position to strop a razor blade mounted in said holder.

2. In a razor blade stropping device, the combination of a supporting frame, a stropping roller and a blade support mounted in said frame, means for rotating said roller and oscillating said blade support, a rotating blade holder, a gear train upon said blade support connected to said holder and means actuated by the oscillation of said blade support for operating said gear train to positively and intermittently rotate said holder.

3. In a razor stropping device, the combination of a frame, a rotating stropping roller, and an oscillating blade support mounted in said frame, a rotating blade holder upon said blade support, means for holding one face of a razor blade in contact with said roller during a partial revolution thereof, spur gear and cam connections between said frame and said blade holder actuated by the oscillations of said blade sup-

port to positively and intermittently rotate said blade holder, to bring the other face of the blade into contact with said roller.

4. In a razor stropping device, the combination of a rotatable stropping roller, an oscillating blade support, a blade holder rotatably mounted upon said blade support, and means including a pair of spur gears for positively rotating said blade holder one-half revolution during the oscillation of said blade support away from said roller.

5. In a razor stropping device, the combination of a frame, a rotatable stropping roller and a blade support mounted upon said frame, a blade holder rotatably mounted in said support, means for relatively separating said stropping roller and said blade support, spur gear and cam connections between said frame and said blade holder for positively rotating said holder one half a revolution when said holder and roller are separated, and a spring for resiliently pressing a blade, held in said holder against said roller.

6. In a razor stropping device, the combination of a rotatable stropping roller and an oscillating blade support, a blade holder rotatably mounted upon said support, and a multiplying gear train connected with said holder and mounted upon said support for positively rotating said holder one half a revolution during each oscillation of said support.

7. In a razor stropping device, the combination of a supporting base, an oscillating shaft mounted upon said base, a casting carried by said shaft, a hollow shaft mounted in said casting, a gear train for rotating said hollow shaft and pawl and ratchet mechanism associated with said supporting base and said gear train for converting the oscillations of said first named shaft into positive intermittent rotary motion of said hollow shaft.

8. In a razor stropping device, the combination of a supporting base, an oscillating shaft, a blade holder carried by said shaft, a gear train for rotating said blade holder and pawl and ratchet mechanism associated with said base and said gear train for converting the oscillations of said shaft into positive intermittent rotary motion of said blade holder.

9. In a razor stropping device, the combination of a supporting base, a stropping roller mounted upon said base, an oscillating shaft also mounted upon said base, a blade holder and clip carried by said shaft, a gear train for rotating said holder and clip, a projection upon said base, a pawl and ratchet mechanism actuated by the oscillations of said shaft in conjunction with the projection upon said base for transforming the oscillating motion of said shaft into intermittent rotary motion of said blade holder and clip.

10. In a razor blade stropping device, a mutilated stropping roller in combination with means including a gear train for rotating said roller and a blade-holder and means for rotating said blade-holder upon an axis at right angles to that of said roller and thereby alternately presenting the reverse faces of a razor blade to the stropping face of said roller.

11. In a razor blade stropping device, the combination of a rotary cylindrical stropping roller, having a section of its face cut away, means for holding the edge of a razor blade against the stropping surface of said roller and means including a gear train for simultaneously separating said blade and roller and rotating said blade in the plane of its axis with its ends passing into the space within the cutaway portion of said roller.

12. In a razor stropping device, the combination of a frame, a rotating stropping roller, and an oscillating blade support mounted in said frame, a rotating blade holder upon said blade support, means for holding one face of a razor blade in contact with said roller during a partial revolution thereof, spur gear and cam connections between said frame and said blade holder actuated by the oscillations of said blade support to positively and intermittently rotate said blade holder, to bring the other face of the blade into contact with said roller, and means for preventing a reverse rotation of said roller.

This specification signed and witnessed this 13th day of January, 1911.

PLINY CATUCCI

Witnesses:
LOUIS M. SANDERS,
M. L. SANDERS.