C. E. DUNN.

RAZOR STROPPING MACHINE.

APPLICATION FILED MAY 24, 1907

907,014. Patented Dec. 15, 1908.

Fig. 1.

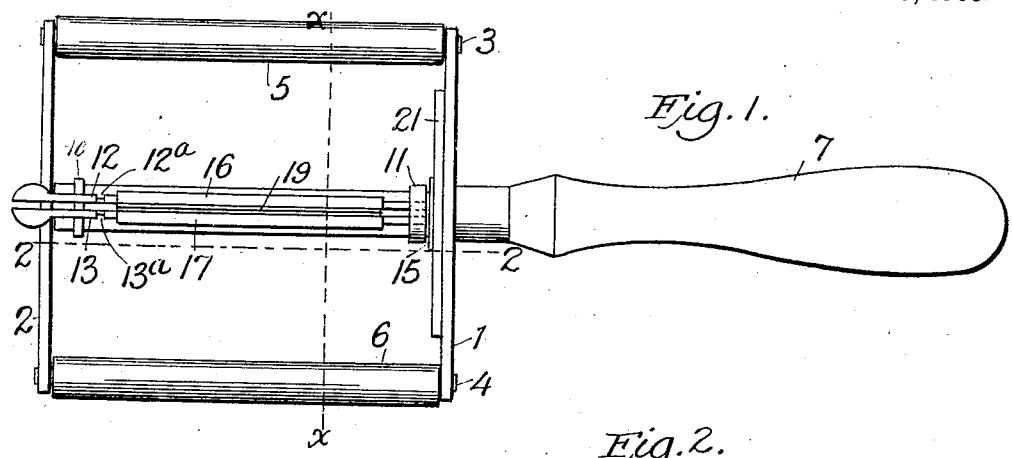


Fig. 2.

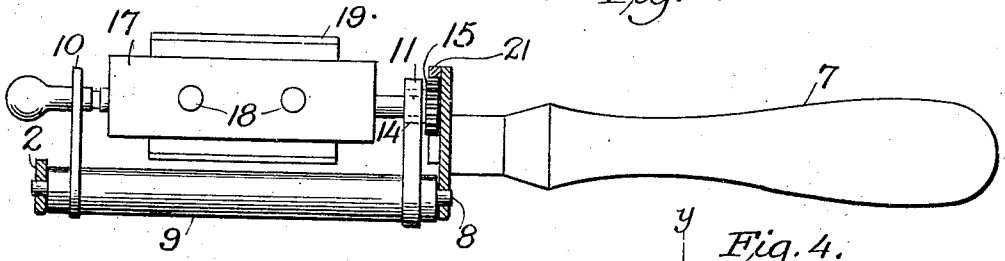


Fig. 3.

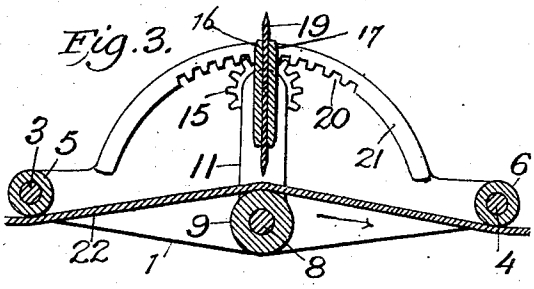


Fig. 4.

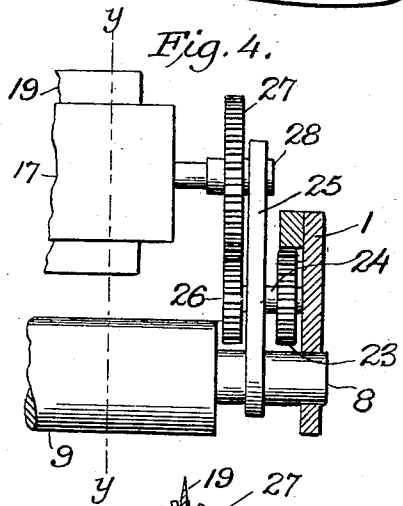


Fig. 6.

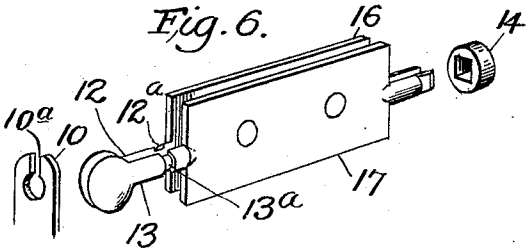
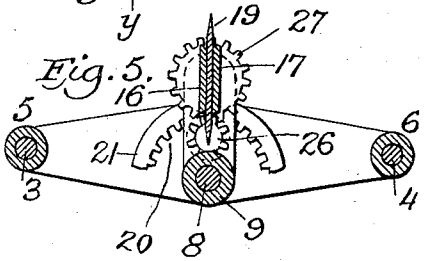


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

CLIFFORD E. DUNN, OF NEW YORK, N. Y., ASSIGNOR TO GILLETTE SAFETY RAZOR COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

RAZOR-STROPPING MACHINE.

No. 907,014. Specification of Letters Patent. Patented Dec. 15, 1908.

Application filed May 24, 1907. Serial No. 375,389.

To all whom it may concern:

Be it known that I, CLIFFORD E. DUNN, a citizen of the United States, residing in the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Razor-Stropping Machines, of which the following is a full, clear, and exact specification.

My invention relates to razor stropping machines and is particularly adapted for use in holding and stropping thin flexible razor blades either those having a single edge or those having their two opposite edges sharpened forming what are called double edge blades, and the said invention, has for its object to provide a swinging support for said blade which shall expose both its edges and in connection therewith means for swinging said support actuated by a relative movement between the strop and blade support so that the opposite edges of the blade shall alternately be subjected to the action of the strop.

Other objects of said invention are to provide means for protecting the edge of the blade being stropped and to provide means for reversing the blade support so as to bring both edges of a double edge blade into stropping position, and the invention consists in the combination of elements hereinafter described and particularly illustrated in the accompanying drawing, wherein

Figure 1 is a plan view of said device. Fig. 2 is a longitudinal section thereof on the line 2—2 of Fig. 1. Fig. 3 is a cross section thereof on the line *x*—*x* of Fig. 1. Fig. 4 is an enlarged sectional view of a modification thereof. Fig. 5 is a cross section on the line Y—Y of Fig. 4, and Fig. 6 is an isometric view of separate parts illustrating the manner of holding the spring fingers or plates.

The side frames 1 and 2 are connected by rods 3, 4, which have loosely journaled on them strop carrying or guiding rollers 5, 6, and to plate 1 is suitably attached a handle 7. Intermediate of the connecting rods 3, 4, a third rod 8 is secured to the two plates 1, 2, and upon this rod is loosely mounted a friction roller or sleeve 9 over which the strop passes and by the rotation of which the blade is rocked to the stropping position. This is accomplished by rock arms 10, 11, which are fixed to said roller 9 and at their outer ends carry the blade support consisting of a pair of spring fingers 12, 13, which when in position with a blade held between them form a substantially round split shaft having a bearing in a slot 10^a in arm 10 and have their inner ends squared to fit a hole in a hub 14 of a pinion 15 which is mounted to revolve in a bearing in arm 11. The spring fingers 12, 13 are notched at 12^a 13^a to permit their insertion in the restricted neck of slot 10^a, and said fingers carry blade clamping plates 16, 17. Plate 17, as illustrated in Figs. 2 and 6, has small bosses 18, which enter perforations in the blade 19 and hold the same in place, and plate 16 may be similarly constructed. Pinion 15 meshes in a short rack 20 formed upon the inside of a flange 21 on the plate 1.

The operation of this form of the device which is illustrated in Figs. 1, 2, 3 and 6 of the drawing is as follows. The razor blade 19 having been inserted between clamping plates 16, 17 so as to be firmly held by bosses 18 entering the perforations therein, the inner squared ends of spring fingers, 12 13 which may be beveled are inserted in the square hole in hub 14 of pinion 15 and the notches 12^a and 13^a in the opposite ends of those spring fingers are entered in the restricted neck of slot 10^a when the said fingers may be pushed home in said hub bringing the enlarged rounded part of said fingers within the rounded bearing in slot 10^a. This will hold the spring fingers firmly in position in said slot and the spring of the fingers which will preferably be made of metal will hold the blade firmly in position. The strop 22 passes under rollers 5, 6 and over roller 9 thereby rotating said roller when the strop is moved relatively to the stropping machine and rocking arms 10, 11, and causing pinion 15 to turn in engagement with fixed rack 20, the ends of which form stops to limit the extent of movement thereof, so that as the blade is swung from its upright position, where it is perpendicular to the strop, toward the strop, it is turned so that it edge is brought into stropping position relative to the strop. For instance, assume that the strop is moving (relatively to the stropping machine) in the direction of the arrow (Fig. 3,) arm 11 will

be swung to the right in said figure, causing the lower edge of blade 19 to rotate toward the right and bringing the left side of said lower edge into position to be stropped. A reversal of the relative movement between said strop and stropping machine will cause the other side of said edge to be stropped. When one cutting edge has been sufficiently stropped, the spring fingers may be pulled out of their seat in hub 14, turned and the blade reversed and replaced and the opposite edge will then be in stropping position. By this device I am enabled to strop a blade so that it shall constantly be maintained in proximity to the strop. The edge being stropped never passes outside the blade holder, but is always between it and the strop, and this renders the device particularly desirable in stropping thin single edge blades, to which my invention is equally applicable, for in such use the blade is at all times protected and the liability of cutting the operator done away with and damage to the blade prevented.

In Figs. 4 and 5 I have illustrated a modified form of device wherein a reducing gear is employed to retard the turning of the blade. In this form frame plate 1 is made narrower and rack 20 engages a pinion 23 fixed upon a short axle 24 which is journaled in rocking arm 25 which is in all respects the same as rocking arm 11, except that it is longer. Pinion 26 is fixed upon the opposite end of shaft 24 and meshes with pinion 27, which is in all respects the same as pinion 15 except that it is larger and that its hub 28, which corresponds to hub 14, extends on each side thereof, on one side being journaled in a bearing in arm 25 and on the other side perforated to receive spring fingers 12, 13. In this form the rack 20 is in the form of the arc of a circle of less diameter than in the previous form as pinion 24 is pivoted closer to the axis 8 than is pinion 15. The spring fingers 12, 13 and the mounting and method of securing same form what I term a reversible blade support, by which I mean a support that can be reversed so as to bring the opposite edge in stropping position and this without removing the blade therefrom. In this form I do not deem it necessary to employ stops to limit the extent of movement of the blade, as by reason of the interposed pinions, the blade will approach the strop more slowly and in the opposite direction, viz: the top edge (in Fig. 4) will move toward the strop and increased pressure will cause the blade to bear upon the strop with increased stropping effect, until it is sufficient to cause the roller to slide on the strop.

In the first form additional movement would not only tend to take the blade being stropped away from the strop, but might cause the opposite end to come into position where it would cut or gouge the strop, and therefore in this form a stop to limit the extent of movement of the blade is desirable.

What is claimed is:

1. A stropping device comprising a frame, a rotating roller therein, rocking arms controlled by said roller, a blade support mounted in said arms and means for turning said blade support relatively to the rocking arms as they rock.

2. A stropping device comprising a frame, a rotating roller therein, rocking arms fixed to said roller, a blade support mounted in said arms, a pinion on said support and a rack on the frame for turning said support as the same is rocked.

3. A stropping device for stropping a double edged blade comprising a reversible blade support, means for rocking said support and means for turning the support as it rocks.

4. A stropping device for stropping a double edged blade comprising a reversible blade support and a friction device engaging the strop and operated by the relative movement of the strop and stropping device and means connecting said friction device and blade support for alternately stropping each side of the same edge of said blade.

5. A stropping device for stropping a double edged blade comprising a reversible blade support and means for alternately presenting opposite sides of the same edge of the blade to the strop.

6. A stropping device comprising a frame, a rotating roller therein, rocking arms controlled by said roller, a blade support mounted in said arms, means for reversing the position of said blade support with respect to the rocking arms and means for turning the blade support as it rocks.

7. A stropping device comprising a frame, a rotating roller therein, rocking arms fixed to said roller, a blade support mounted in said arms, means for reversing the position of said blade support with respect to the rocking arms, a pinion on said support and a rack on the frame for turning said support as the same is rocked.

8. A stropping device comprising a frame, strop guiding rods therein, a roller in position to be turned by said strop, rocking arms fixed to said roller, a blade support carried by said arms comprising a pair of spring fingers detachably mounted in one of said arms, means for securing a perforated blade to said fingers, a pinion journaled in the other of said arms, a detachable connection between said spring fingers and said pinion, and a rack on said frame in position to engage said pinion substantially as described.

9. A stropping device comprising a blade support, means for rocking said support and

means for turning the blade support as it rocks, adapted to maintain the edge being stropped between the support and the strop.

10. A stropping device comprising frame plates, 1, 2, friction roller 9, rocking arms 10, 11, fixed to friction roller 9, blade-support 12, 13, reversible with respect to rocking arms 10, 11, pinion 15, rack 20 and handle 7.

11. A stropping device comprising a blade support, means for rocking said support and means for turning the blade support as it rocks, and stops to limit the extent of movement of said rocking arms.

In testimony whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

CLIFFORD E. DUNN.

Witnesses:
ADOLPH F. DINSE,
HERMAN J. SCHWARTZ.