

A. McD. STUART.
 RAZOR STROPPING DEVICE.
 APPLICATION FILED AUG. 15, 1911.

1,046,505.

Patented Dec. 10, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

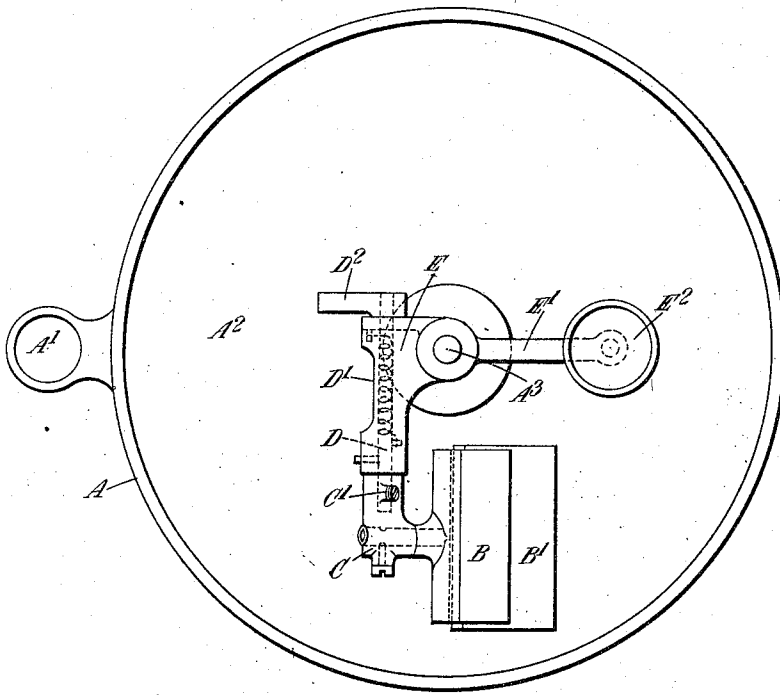
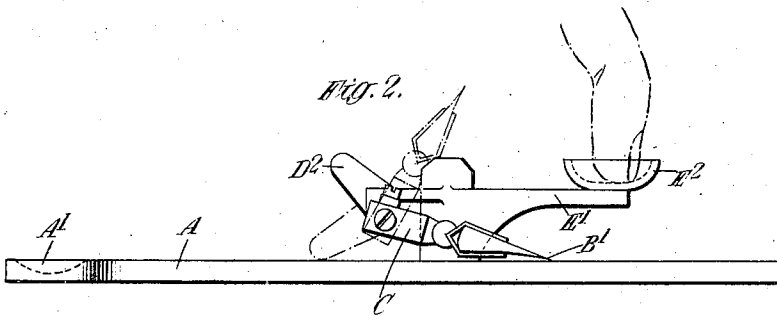


Fig. 2.



Witnesses:

P. P. Pizzetti
 Harry L. Allen

Inventor:

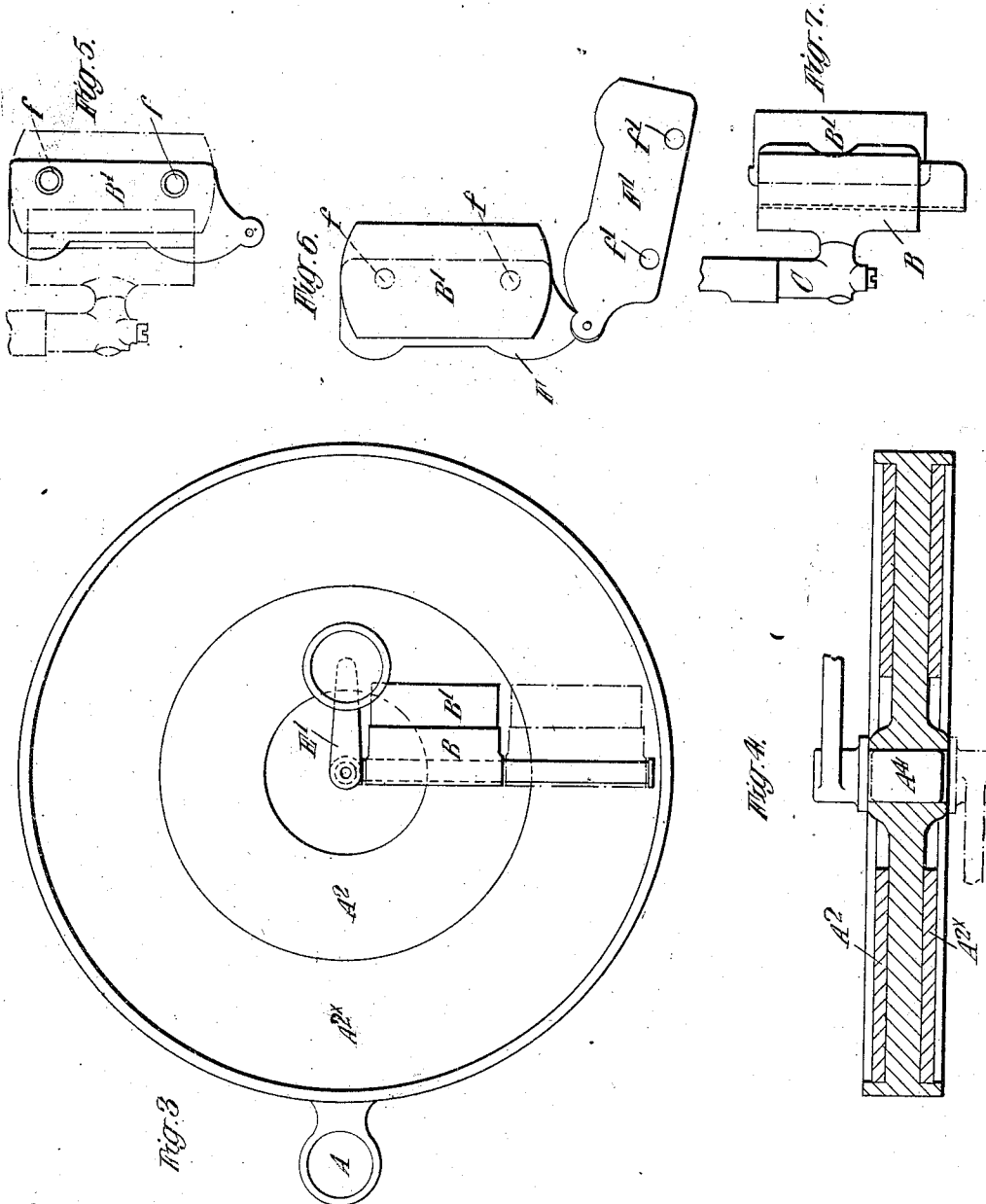
Alexander McDonald Stuart
 by Hugh Brown Limb & May
 Attys

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ALEXANDER McDONALD STUART, OF ROSENHEIM, INVERNESS, SCOTLAND.

RAZOR-STROPPING DEVICE.

1,046,505.

Specification of Letters Patent.

Patented Dec. 10, 1912.

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To all whom it may concern:

Be it known that I, ALEXANDER McDONALD STUART, a subject of the King of Great Britain, residing at Rosenheim, Island Bank, Inverness, Scotland, have invented certain new and useful Improvements Relating to Razor-Stropping Devices, of which the following is a specification.

This invention relates to razor stropping devices particularly those intended for the blades of safety razors, and has reference to devices of the kind in which a stropping surface of disk or drum form and a blade holder are capable of rotary movement relatively to each other, the blade holder being adjustably mounted upon a radial arm or in a bracket or bearing situated near the stropping surface so that one or other side of the blade can be brought into contact therewith. In devices of the drum type it is common to provide means for tilting over the blade-holder about its bearings at each reversal of the stropping motion, but in devices of the disk type the stropping of the two sides of one and the same edge of the blade has necessitated an adjustment of the blade in the blade holder.

According to the present invention the stropping device comprises a stropping surface of disk form and a radial arm to which the blade holder is hinged or pivoted in such a way that after one side of the blade has been stropped by a relative rotary motion between the radial arm and the stropping surface, the stropping of the other side of the blade can, after a simple adjustment of the blade holder about its hinge or pivot, be stropped in the same manner. By the term "radial arm" I mean an arm mounted upon a bearing having its axis coincident with that of the stropping surface. The adjustment of the blade holder is preferably such that the radial arm can always be rotated in the same direction. The relative positions of the stropping surface and the blade may be so chosen that a "heel and toe" motion is also involved in the circular motion of the blade and blade holder.

A convenient form of the device comprises a circular base of wood or metal having attached to or laid on it a flat disk or ring of prepared stropping leather or other suitable material; the blade is fixed in a holder which is pivotally mounted upon a member which in turn is rotatably mounted upon the radial arm. The manner in which

the blade holder and the aforesaid member are mounted is such that the respective axes about which they are capable of turning are at right angles to each other, thereby constituting a kind of universal joint and thus enabling the edge of the blade when brought into contact with the stropping surface to take an even bearing upon the same. The radial arm is pivoted at the center of the base that carries the stropping surface, the axis of the pivot being perpendicular to the said stropping surface, so that the holder and blade may be capable of being continuously rotated about the pivot during the stropping operation. If the blade is so mounted in the holder that the edge of the blade lying on the stropping surface is radial, considered with reference to the axis of rotation, the effect is practically the same as if the blade were being stropped on an ordinary flat strop of infinite length with its edge the whole time at right angles to the direction of its motion. If, however, the blade is so mounted in the holder that the edge is inclined to its radial position the effect is the same as if the blade were being stropped on the infinite flat strop referred to above, but with its edge at an angle to the direction of motion. The degree of this angle will not be the same at all parts of the edge owing to the difference in curvature of the paths followed by the different portions of the edge, but in practice this is unimportant. I am thus enabled to obtain the desirable effect of a "heel and toe" motion or an effect closely approximating to the same, without the necessity of employing separate mechanism to procure such motion.

In order that the invention may be clearly understood and readily carried into effect, I will now describe the same more fully with reference to the accompanying drawings, in which:—

Figure 1 is a plan and Fig. 2 an elevation of one constructional form of the device. Fig. 3 is a plan of a modified form of the device. Fig. 4 represents a cross section of a further modification. Figs. 5 and 6 illustrate one form of blade gripper or "adapter," as it may be termed, for insertion into the blade holder proper. Fig. 7 illustrates a modified form of adapter in position in the blade holder.

A is the base of the device and A' is a small handle thereon suitably shaped for being pressed by the finger or thumb so as to

hold the base firmly during the stropping of a blade.

A² is a ring of prepared stropping leather or other suitable material covering the base A.

B is the blade holder, rotatably mounted in a member C which is fixed by a screw C' or otherwise to the end of a spindle D. This spindle is carried in bearings by the radial arm E and has coiled around it a spring D' by means of which the blade holder B is normally pressed toward the stropping surface A² on the base A. A tilting piece D² on the end of the spindle enables the spindle to be turned in opposition to the spring, when desired, the blade holder being thereby raised away from the base, as shown in dotted lines in Fig. 2. The aforesaid radial arm E is mounted upon a pivot pin A³ projecting upward from the base A and is formed with an arm or handle E' terminating in a small cup E² adapted for the insertion of the finger of the operator when he wishes to exert the necessary pressure to rotate the mechanism.

The blade holder may be designed to receive blades of any particular shape or size, but in order to adapt the device for use with different blades, I find it convenient to employ what I call "adapters," these being metal clips of a known kind but suitably designed for the reception of the blades and for insertion into the blade holder proper. In Figs. 1 and 2 a broad backed single edged blade B' is shown with the blade holder B shaped to receive it, while in Figs. 5, 6 and 7 two different kinds of adapter are illustrated. The adapter shown in Figs. 5 and 6 is suited for double edged blades of the kind that are formed with holes for engagement with positioning pins on the usual razor handle; it consists of two pivoted metal plates F, F', the lower plate F having two bosses f, f, adapted to project through the slots in the blade and through two recesses f', f', in the upper plate F' when the latter is swung about its pivot into position upon the blade. The blade and adapter are then fitted into position in the blade holder as seen in Fig. 6. In Fig. 7 a modified form of adapter is shown adapted for a narrow backed single-edged blade; it consists of a mere sheet of metal bent into the form of a clip.

Owing to the blade holder being situated in such a position that the blade is inclined to a true radial direction, the effect of stropping is similar to that which would be obtained by stropping upon an ordinary flat strip of infinite length with the edge of the blade inclined to the direction of motion. In order to strop the blade upon one side all that is necessary is to place the blade in position in the holder, and rotate the same by applying the finger to the cup E². When

one side of the blade has been stropped sufficiently, the other side is presented to the stropping surface by adjusting the blade holder about the hinge or pivot that secures it to the radial arm. The blade holder might for instance be swung bodily around the center line of the radial arm until the opposite side of the blade came in contact with the stropping surface, in which case the continued stropping action would of course be effected by a rotation in the opposite direction to that previously adopted. The construction illustrated in Figs. 1 and 2, however, is simpler and avoids the necessity of reversing the direction of rotation of the holder. In this construction, in order to reverse the blade, the tilting piece D² is pressed, the blade holder is swung through two right angles about its bearing in the member C and the pressure on the tilting piece D² then removed. The rotation is then continued in the same direction as before. In order to prevent any injury to the stropping surface or the blade by an accidental rotation of the holder in the wrong direction, means of any known kind may be employed for raising the blade away from the stropping surface immediately such motion commences. Such means may for example be similar to those already adopted on stropping devices of the reciprocating type used with ordinary flat strops.

Razors of the ordinary type may, for the purposes of this invention, be considered as single edged blades, and the arrangements described above for stropping such blades may be employed, with such constructional modifications as may be necessary, to strop them.

It is sometimes advantageous, especially when very blunt blades have to be dealt with, to have more than one kind of stropping surface. This may be achieved by providing a set of separate interchangeable rings or disks presenting stropping surfaces differing in effect. An alternative method, in the case of two surfaces, is to cement one surface to one side of the main base and the second surface to the other side and to so arrange the blade holder and the rotating mechanism that the base may be used either side up; a device of this kind is shown in Fig. 4 where A² and A^{2x} are the two stropping surfaces, and the rotary part of the device, instead of being mounted on a pivot pin as in Figs. 1 and 2, is provided with a hub A⁴ for insertion into a hole in the base A. A third method is that illustrated in Fig. 3 in which there is mounted on the main base concentric rings A², A^{2x} of different stropping materials, the blade holder B and its support being so arranged that the distance of the holder from the center of rotation can be varied to bring the blade in contact with the particular surface selected.

In the foregoing description it has been assumed that the stropping surface is flat, that is to say, lies in one plane, but it will be understood that it might be mounted on a conical or frustum-shaped base, the apex being either above or below the general level of the base, and in using the term "disk" in my claims I wish to include such obvious modifications in shape. When the apex is below the base, the appearance of the base may be that of a dish with a sloping brim. Instead of using the base in a horizontal position it may be mounted in bearings so as to lie in a vertical plane.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A razor stropping device comprising a circular base, stropping material supported thereby, an arm concentrically rotatable with respect to the base, a spindle rotatable about its own axis and mounted to lie along the said arm, a member secured to the outer end of the said spindle, a blade holder mounted upon the aforesaid member and rotatable about an axis transverse with respect to the spindle, and a spring arranged to thrust the edge of the blade holder toward the stropping material.

2. A razor stropping device, comprising a circular base, stropping material supported thereby, an arm concentrically rotatable with respect to the base, a spindle rotatable about its own axis and mounted to lie along the said arm, a member secured to the outer end of the said spindle, a blade holder mounted upon the aforesaid member and rotatable about an axis at right angles to the spindle, a tilting piece mounted at the other end of the spindle, and a spindle controlling spring arranged to thrust the edge of the blade holder toward the stropping material.

3. A razor stropping device, comprising a circular base, stropping material supported thereby, an arm concentrically rotatable with respect to the base, a spindle rotatable about its own axis and mounted to lie along the said arm, a member secured to the outer end of the said spindle, a blade holder mounted upon the aforesaid member in a position capable of holding the blade with its edge inclined to a radial line touching the line of contact of the said edge with the stropping surface, a tilting piece mounted at the other end of the spindle, a spindle controlling spring arranged to thrust the edge of the blade holder toward the stropping material, and a handle on the aforesaid arm having a cup-shaped end.

4. A razor stropping device, comprising a flat circular base, a pivot pin projecting upward from the center thereof, a ring of stropping material covering the base, an arm mounted rotatably upon the aforesaid pivot pin, a spindle rotatable about its own axis and mounted to lie along the said arm at an inclination to a true radial direction, a member secured to the outer end of the said spindle, a blade holder mounted upon the aforesaid member and rotatable about an axis at right angles to the spindle, a tilting piece mounted at the other end of the spindle, a spindle controlling spring arranged to thrust the edge of the blade holder toward the stropping material, and a handle on the aforesaid arm having a cup-shaped end.

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

ALEXANDER McDONALD STUART.

Witnesses:

JOHN CAMERON,
WILLIAM PAULIN.