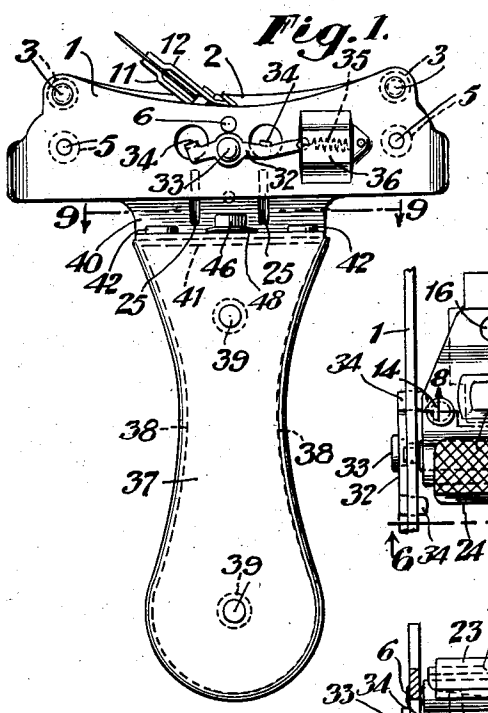
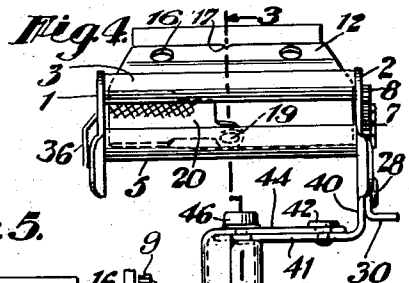
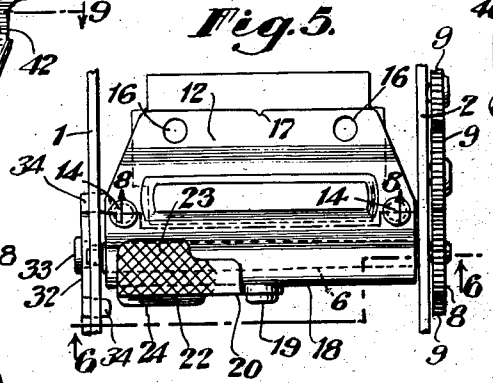
May 14, 1935. S. H. DRAKE 2,000,933

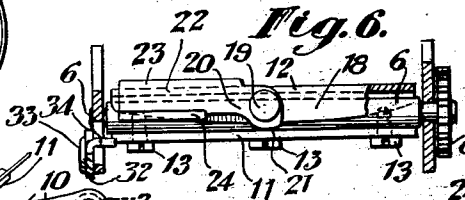
STROPPING DEVICE

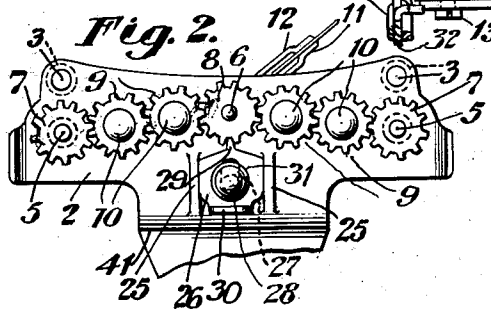
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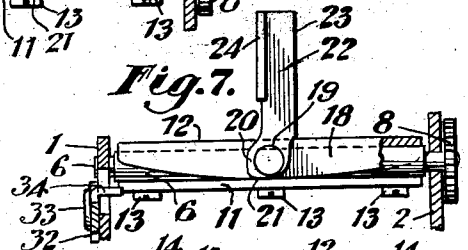


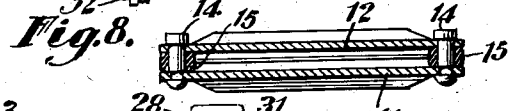


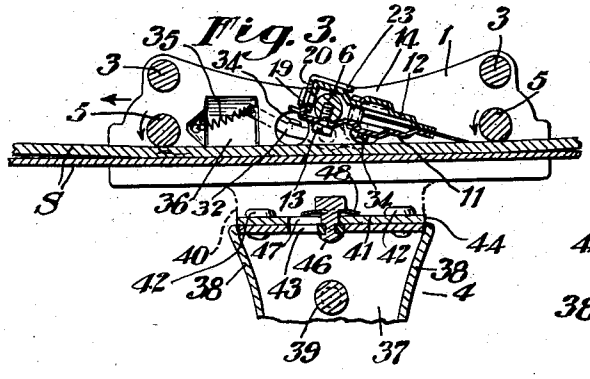


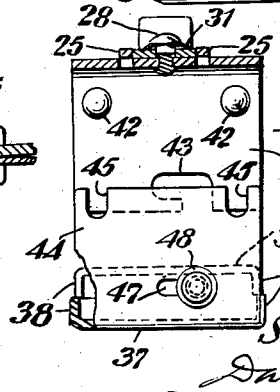












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Attorneys

Patented May 14, 1935 2,000,933

UNITED STATES PATENT OFFICE

2,000,933

STROPPING DEVICE

Samuel H. Drake, Groton, N. Y.

Application March 11, 1933, Serial No. 660,347

6 Claims. (Cl. 51—153)

The present invention relates more particularly to improvements in a razor blade stropping device of the type which performs the stropping operation by reciprocation of the device along a strop. An important object of the invention is to provide an improved stropping device of this type designed to facilitate its application to and removal from a strop, and to provide such a device designed to improve its operation.

Other objects of the invention will appear hereinafter.

In the drawing, Fig. 1 is a side view of the stropping device;

Fig. 2 an opposite side view of the upper portion of the device;

Fig. 3 a longitudinal section on the line 3—3 of Fig. 4, showing the device operatively engaged with a strop;

Fig. 4 an end view of the device;

Fig. 5 an enlarged plan view of a central portion of the device;

Fig. 6 a section on the line 6—6 of Fig. 5;

Fig. 7 a view similar to Fig. 6, showing the locking cam of the blade holder shifted to blade releasing position;

Fig. 8 a section on the line 8—8 of Fig. 5; and

Fig. 9 a section on the line 9—9 of Fig. 1, showing the handle partly removed from the body of the device.

The body of the stropping device includes a frame comprising opposite longitudinal side members in the form of flat sheet metal plates 1 and 2, and transverse parallel spacing rods 3 extending between said side plates and holding them in parallel relation. Said rods have reduced ends inserted through apertures in the side plates near the ends of the latter, and upset to rivet the rods to the plates and form a stiff frame structure. This frame structure supports the stropping mechanism. A rigid handle 4 depends from the center of the frame and is disposed on a line at a right angle, or substantially so to the plane of the frame. Between said handle and the frame there is a joint designed and arranged with relation to the body of the device to define a side entrance enabling the device to be conveniently applied to and removed from the strop transversely of the latter.

Within the frame are two transverse, parallel strop engaging shafts 5. Each of said shafts is spaced beneath one of the frame rods 3 and has reduced ends rotatably fitted in bearing apertures in the side plates of the frame. Midway between the shafts 5 there is another transverse shaft 6 arranged parallel to shafts 5 but spaced above the plane thereof. This shaft 6 also has reduced ends rotatably fitted in bearing apertures in the side plates. Mounted on the shaft is a holder or clamp for a safety razor blade. Between each of the strop engaging shafts 5 and the central shaft 6 there is a driving connection to rock the blade holder as the device is reciprocated along a strop and bring a supported blade into stropping contact with the strop at opposite sides of the axis of shaft 6. Each of said driving connections comprises a gear train at the outer face of the side plate 2. To an end of each shaft 5 there is fixed a gear 7 and to the central shaft 6 there is fixed a gear 8. Each gear 7 is in driving connection with the central gear 8 through a pair of meshing intermediate gears 9 rotatably mounted on headed stub shafts 10 fixed to the frame plate 2. All of these gears are disposed entirely within the contour of the plate.

The blade holder or clamp comprises a pair of opposed sheet metal plates 11 and 12 ribbed by corrugations to stiffen them. Along one edge the plate 11 is secured to the shaft 6 by screws 13. The companion plate 12 is unsecured to the shaft but is loosely held to the plate 1 by rivets 14 arranged on a line parallel to the shaft and between the shaft and the forward free end of the holder. The plate 12 is rockable upon said rivets and the portions of the two plates forward of the rivets form blade gripping jaws. Compressible rubber spacing washers 15 surround the rivets between the plates and prevent contact of a supported blade with the rivets. Near their forward edges the plates have apertures 16 to register with apertures in the blade, and directly at its forward edge each plate has a central notch 17 also serving as a guide to assist in properly positioning the blade in the holder. The rear edge of the rockable plate has an inturned flange 18. Pivotally mounted as at 19 upon said flange at a central point is a manually operable cam member 20 having a cam edge 21, engageable with the rear margin of the plate 11, to rock the plate 11 to blade gripping position. The cam member has an operating arm 22 formed at one edge with a forwardly bent flange 23 to abut the outer face of the plate 12 and limit the blade gripping throw of the cam. Said flange has a knurled upper surface. The opposite edge of the cam arm has a rearwardly bent flange 24 engageable by the thumb to force the cam to release position. The cam edge has flat portions engageable with the margin of plate 11 to releasably retain the cam in its blade locking position, shown in Fig. 6 and

in its blade releasing position, shown in Fig. 9. The corrugations of the plates afford space therebetween inward of the forward clamping margins to accommodate any type of conventional safety razor blade. The terms "forward" and "rear" applied to the edges of the blade gripping plates are employed in the specification and in certain of the claims merely for convenience in identifying the blade gripping edges and the opposite, non-gripping edges respectively.

There is provided a locking device to hold the blade holder in an angular position most convenient for insertion and removal of the blade. The side plate **2** of the frame has upon its outer face two vertical parallel guides **25** formed by slitting the plate and pressing out the portions thereof between the slits. Disposed between said guides in a position directly beneath the gear **8** is a locking slide **26** formed of a sheet metal stamping and having straight edges in engagement with the guides. The slide has a vertical slot **27** through which projects a rivet **28** secured to the side plate **2** and retaining the slide between the guides. At its upper edge the slide has a locking tooth **29** engageable between adjacent teeth of the gear **8** to lock the shaft **6** and hold the blade holder in a tilted position most convenient for insertion or removal of the blade. At its lower edge the slide has an outturned manipulating tab **30** to shift it to locking and unlocking positions. A spring washer **31** interposed between the slide and the outer head of the retaining rivet frictionally resists accidental shifting of the slide.

The strop engaging shafts **5** are widely spaced apart beyond the reach of a blade in the holder and in addition to rocking the blade holder they serve to guide or train the strop in a plane and keep it at a proper definite angular stropping relation to the supported blade. Just before the rocked blade reaches said flat trained portion of the strop its final movement is resisted by a cushioning and reversing means. This means includes a small lever **32** pivoted at the outer face of the frame plate **1** upon a rivet **33** secured to said plate. Said lever is preferably formed of a sheet metal stamping and it has inturned lugs **34** disposed at opposite sides of its pivot. These lugs project through apertures in the frame plate and into the path of the rocking blade holder. The lever has a tail portion to which is connected a tension spring **35** anchored to the frame plate. A portion **36** of said plate is pressed outward between parallel slits and forms a housing for the spring. The spring normally holds the lever in a neutral position. Near each limit of its rocking movement the blade holder engages one of the lugs **34** and rocks the lever slightly to increase the tension of the spring. When the movement of the device along the strop is reversed the tensioned spring acts immediately to rock the lever and cause it to automatically elevate the edge of the razor blade from the strop to avoid cutting the strop.

The handle **3** of the device is formed of two sheet metal stampings **37** having flat face portions of similar contour and having inturned contour flanges **38** disposed in edge to edge abutment. Rivets **39** secure together said stampings or sections of the handle. Said rivets are enlarged between the handle sections. Between the handle and the frame there is a releasable joint permitting detachment of the handle from the body of the device for compact packing. As previously mentioned this joint is also designed to permit transverse entry of the strop to the stropping mechanism.

For joining the handle to the frame, the side plate **2** has a depending integral portion **40** located midway between the ends of the plate and turned laterally inward to form a flat flange **41**. Said flange extends to a point approximately midway between the side plates and it is disposed in a plane parallel to the plane of the strop engaging shafts **5** and spaced below the lower edge of the side plate **1**. Adjacent the side plate **2** the flange bears two fixed headed studs **42** spaced along a fore-and-aft line. At its free inner edge the flange is formed with a bayonet slot **43** having a lateral branch opening through said edge. One section of the handle is integrally formed with a flat right angular flange **44** to bear against the upper face of the frame flange **41**. At its outer edge the flange **44** has notches **45** to receive the studs **42** and, at the handle, said flange has a headed locking pin **46** mounted to slide in a fore-and-aft slot **47** in the flange. A spring washer **48** interposed between the upper head of said pin and the flange frictionally resists sliding of the pin and serves to hold it in locking and unlocking positions. The handle is attached by sliding the flange **44** laterally onto the flange **41** until the notches **45** receive the studs **42** and the shank of the locking pin enters the bayonet slot. The slot **47** is then positioned in register with the fore-and-aft branch of the bayonet slot and the locking pin is slid therealong to rigidly lock the handle in place. The handle is readily releasable upon mere retraction of the frictionally held pin along the bayonet slot.

The device is designed throughout for easy and efficient operation. Its open side enables it to be readily hooked over a strop transversely of the latter and avoids the necessity of threading the strop endwise through the device. A thick substantial strop having both a leather ply and a fabric ply, as indicated at S in Fig. 3, may be employed and the device may be readily changed from one side of the strop to the other without releasing the hand from the device. Both sides of the strop are thus rendered available without inconvenience or delay. In using the device the handle is pulled downward to engage the widely spaced end shafts or rollers **5** with the strop and straighten the active portion of the strop between the rollers. By keeping said shafts pressed down against the strop the latter is maintained in proper angular relation to the blade. Even if only one shaft contacts the strop however the blade holder will still be positively rocked since each shaft has a driving connection with the blade holder. The lever **32** and spring **35** normally prevent the blade from dropping down to the stropping line and thus avoid cutting of the strop when the device is applied. As previously pointed out, said lever and spring also prevent cutting of the strop upon reversal of the device. The design of the device also enables the blade to be conveniently inserted and removed without releasing the device from the hand. The locking slide **26** may be readily shifted by the thumb of the hand which grasps the handle, to lock the blade holder in a convenient position. Then the thumb may be readily inserted upward through the clearance afforded between the handle joint and the frame, to engage the flange **24** of the cam **20** and operate the cam for clamping or releasing the blade.

What I claim is:

1. A blade stropping device to reciprocate along

a strop, comprising a frame; a blade holder pivotally supported by the frame to rock a supported blade into engagement with the strop at opposite sides of the pivot axis of the holder; driving means engageable with the strop and operatively connected to the blade holder to rock the latter as the device is reciprocated along the strop; and means independent of said driving means to automatically rock the blade away from the strop upon reversal of movement of the device along the strop and comprising a lever pivotally supported intermediate its ends by the frame and having portions at opposite sides of its pivot engageable by the blade holder near the limits of its rocking movement toward the strop to rock said lever, and a spring to yieldably resist rocking of the lever.

2. A blade stropping device to reciprocate along a strop, comprising a frame; a blade holder pivotally supported by the frame to engage a supported blade with the strop at opposite sides of the pivot axis of the holder; a handle for reciprocating the device; and a manually releasable joint between said handle and frame comprising a flange on the frame having a bayonet slot with a branch thereof opening through one edge of the flange, said flange having studs spaced inward from said edge, a flange on the handle to abut said frame flange and having notches at one edge to engage said studs and position the handle flange on the frame flange, a locking pin borne by said handle flange to enter said branch of the bayonet slot and mounted to slide into locking engagement with the other branch of the bayonet slot to lock the flanges together, and frictional means to yieldably resist sliding of said pin and hold it in locking position.

3. A blade stropping device to reciprocate along a strop, comprising a frame; a blade holder pivotally supported by said frame to rock a supported blade into engagement with the strop; an element rotatably supported by the frame and engageable with the strop for rotation thereby as the stropping device is reciprocated; a gear wheel driving connection between said rotatable element and the blade holder to rock the latter; a manually operable locking slide mounted on the frame and engageable with said driving connection between gear teeth thereof to releasably lock the blade holder against rotation and hold it in a position for convenient insertion or removal of the blade; means to yieldably resist shifting of said locking slide to hold it in locking and unlocking positions; and means on the frame to guide the shift of the locking slide.

4. A blade stropping device to reciprocate along a strop, comprising a frame; a blade holder pivotally supported by the frame to engage a supported blade with the strop at opposite sides of the pivot axis of the holder; a handle for reciprocating the device; and a manually releasable joint between said handle and frame comprising a flange on the frame having a bayonet slot with a branch thereof opening through one edge of the flange, a flange on the handle to abut said frame flange and slide thereon, a locking pin borne by said handle flange to enter said branch of the bayonet slot and mounted to slide into locking engagement with the other branch of the bayonet slot to lock the flanges together, frictional means to yieldably resist sliding of said pin and hold it in locking position, and retaining means on one of said flanges for edgewise sliding reception of the other flange and located for retaining engagement therewith at points materially spaced apart and materially spaced from the bayonet slot to prevent wobbling and lateral shift of one flange on the other.

5. In a blade stropping device to reciprocate along a strop and including a frame and a blade holder pivotally supported by said frame to rock a supported blade into engagement with a strop; a pair of strop guiding elements rotatably supported by the frame at opposite sides of the blade holder; driving means operatively connecting said strop guiding elements to the blade holder to rock the latter and including a central gear fixed to the blade holder, and gear trains at opposite sides of the central gear operatively connecting said strop guiding elements thereto; a manually operable locking slide mounted on the frame and engageable with said central gear between gear teeth thereof to releasably lock the blade holder against rotation; means to yieldably resist shifting of said locking slide to hold it in locking and unlocking positions; and guide means on the frame to guide the shift of the locking slide.

6. A blade stropping device adapted to receive a strop and be reciprocated therealong comprising a body including a frame, a blade holder rockably borne by said frame to swing a supported blade into engagement with the upper face of a strop, and strop guiding means borne by the frame to engage the upper face of the strop to flatten the strop into a stropping plane beneath the blade holder; a substantially rigid handle depending vertically from the center of said body of the device; and a substantially rigid connection between said handle and one side only of said body and comprising an inwardly extending lateral flange carried by the frame and spaced directly beneath said body, a flange on the upper end of the handle to abut said frame flange and slide thereon, one of said flanges having a bayonet slot with a branch opening through one edge of the flange and the other flange having a locking pin to enter said branch of the bayonet slot and mounted to slide into locking engagement with the other branch of the slot to lock the flanges together, and retaining means on one of said flanges for edgewise sliding reception of the other flange and located for retaining engagement therewith at points materially spaced apart and materially spaced from the bayonet slot to prevent wobbling and lateral shift of one flange on the other, the body of the device and said handle connection forming a side mouth for transverse entry of the strop to the strop guiding means.

SAMUEL H. DRAKE.