

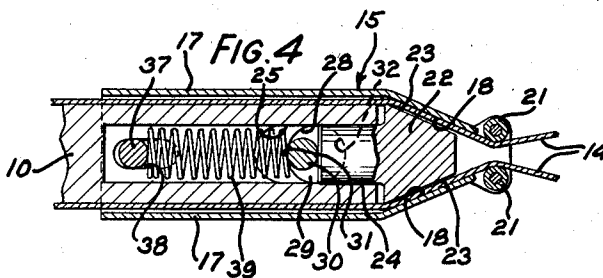
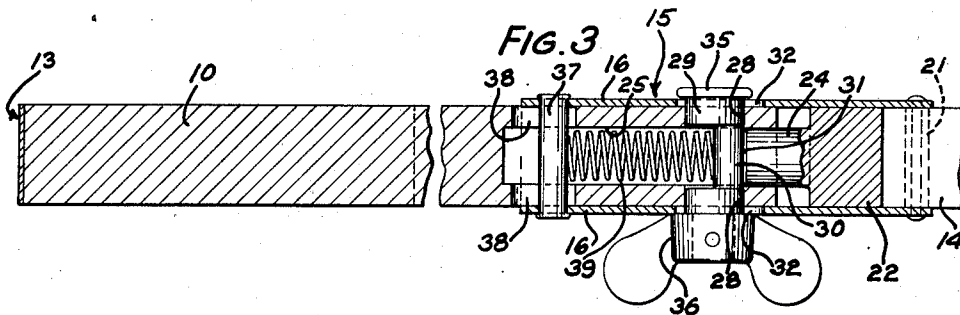
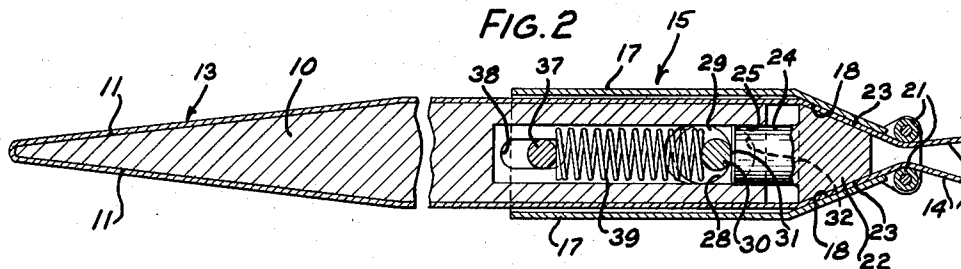
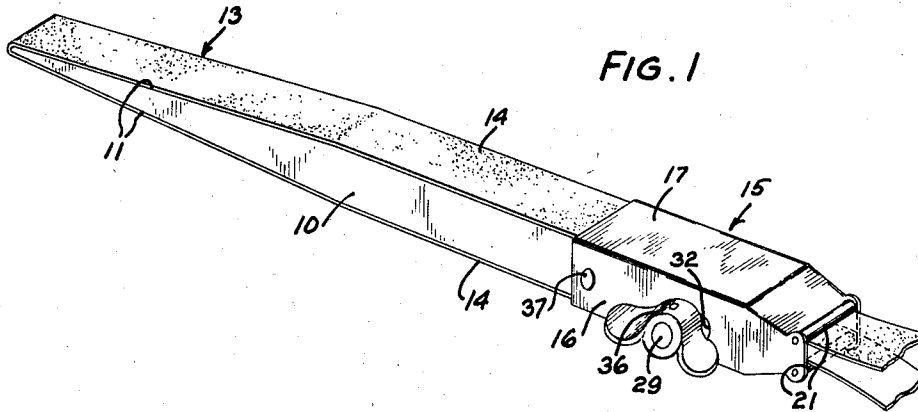
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ABRADING TOOL

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ABRADING TOOL

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5 Claims. (Cl. 51—187)

This invention relates to abrading tools and more particularly to abrasive strip holders.

An object of this invention is the provision of an abrasive strip holder having simple and practical means for supporting and clamping an abrasive strip and for readily releasing and permitting movement of the strip on the holder without removing parts thereof or the use of tools.

In accordance with the above object, the present invention, in one embodiment thereof, provides an abrasive strip holder for use in hand polishing operations and the like comprising a support member over a forward end face of which is folded an abrasive strip having its end portions strung along opposite faces of the member. The strip ends are threaded between the member and a slidable sleeve carried by the rear or handle end of the holder and within the sleeve is a wedge block arranged to cooperate with inclined faces on the sleeve to clamp the ends of the strip therebetween. Housed in the support member is a compression spring which is operatively associated with the sleeve and a rotatable cam member journaled in the support member, the cam member being operatively engaged with the wedge member. In the operation of the holder the strip ends are first clamped to the sleeve and thereafter drawn taut on the support member by a 180° movement of the member, the initial rotary movement of the cam member being effective to clamp the strip ends to the sleeve and the continued rotary movement serving to draw the strip ends taut on the support member. Upon the strip becoming worn, it is released by rotating the cam member 180°, whereupon the strip may be freely drawn along the support member to reposition it. Thereafter, the ends of the strip are pulled to take up any slack therein and the cam member is given a 180° rotation.

Other objects and advantages of this invention will more fully appear from the following detailed description, taken in conjunction with the accompanying drawing, in which:

Fig. 1 is a perspective view of an abrasive strip holder embodying the features of the invention; Figs. 2 and 3 are fragmentary longitudinal vertical and plan sections, respectively, through the holder shown in Fig. 1, and

Fig. 4 is a fragmentary vertical section similar to Fig. 2, but showing the parts of the holder in the relative positions which they assume when the clamping device has been actuated to release the abrasive strip.

Referring to the drawing, the numeral 10 indi-

cates a support member which may be of any suitable material, such as aluminum, hard rubber, or phenolic resin. In the embodiment of the invention as shown, the support member is in the form of a bar of hard phenolic resin which is flat and square in cross section at its rear end, which is used as a handle. The forward or working end of the support is tapered upon two sides, as indicated at 11 to more readily permit its use where space is limited and to increase the visibility of the user in applying it.

Over the forward end face of the support bar 10 is folded an emery or abrasive ribbon strip 13 having a width substantially the same as that of the sides of the support and having its end portions 14 strung along the two tapered sides thereof.

Slidable upon the support bar 10 is a clamping device 15 comprising in the particular embodiment illustrated a sleeve member which is arranged at the rear or handle end of the holder. Opposite inner faces of side walls 16 of the sleeve are freely slidable for a limited distance upon sides of the bar which are disposed at right angles to the tapered bar sides. Suitable clearance is provided between adjacent inner faces of side walls 17 of the sleeve and the end portions 14 of the strip 13 which are threaded therebetween. At their rear ends, the side walls 17, which extend beyond the end face of the support bar 10, slope toward each other to provide a wedge-like space between inner inclined faces 18 of the walls 17. The side walls 16 are tapered at their rear end to conform to the slope of the walls 17 and extend beyond the ends thereof to provide opposite bearings for a pair of spaced rollers 21 over which extend the opposite end portions 14 of the abrasive strip 13. Although in the drawing the abrasive strip is shown as extending a short distance from the rear or handle end of the holder, it is to be understood that it may extend for any distance which is found suitable.

Freely slidable within the wedge-like space between the inclined faces 18 of the sleeve is a wedge block 22 having oppositely sloping faces 23 which have an inclination similar to the sleeve faces 18 and which cooperate therewith to grip or clamp the end portions 14 of the abrasive strip 13 therebetween. A cylindrical shank portion 24 of the wedge block is freely slidable in an aperture 25 provided in the rear end of the support bar 10. Formed at right angles to the aperture 25 in the support bar is a second aperture which extends through the bar and thus provides spaced

bearings 28 in which are journaled opposite ends of a rotatable cam member 29. The member 29 intermediate its ends is provided with an eccentric cam portion 30 which is cylindrical except at one point on its periphery, as indicated at 31, which is flat. When the cam member 29 is rotated to its operative position, as shown in Figs. 2 and 3, wherein the abrasive strip 13 is drawn taut and clamped to the support bar 10, the flat face 31 of the cam member abuts a flat end face of the shank portion 24 of the wedge block 22 and thus serves to retain the parts in the operative position shown.

Opposite ends of the cam member 29 project from the support bar 10 and into slots 32 formed in and extending longitudinally of the clamping sleeve. At one end the member 29 is provided with a flange or head 35 and the opposite end is reduced in diameter and fixed thereto is an operating handle 36, which in the present embodiment is a wing nut. Supported at opposite ends in apertures in the side walls 16 of the clamping sleeve is a pin 37, the portions thereof intermediate the side walls passing freely through slots 38 formed in and extending longitudinally of the support bar 10 at opposite sides of the aperture 25 through which the pin also extends. The slots 38 and 32 in the support bar and sleeve, respectively, it will be noted, permit a limited relative movement between the bar and sleeve. Carried in the aperture 25 is a coiled or helical spring 39 compressed between and bearing against the eccentric portion 30 of the cam member 29 and the pin 37.

In the operative position of the abrasive strip holder, as shown in Figs. 2 and 3, the spring 39 is constantly urging the clamping sleeve forward toward the tapered end of the support bar 10, thereby holding the inclined faces 18 of the side walls 17 in gripping engagement with the abrasive strip ends 14. At its opposite end the spring is pressing against the eccentric portion 30 of the cam member 29 which serves as a stop member for the spring. The pressure of the spring 39 against the eccentric cam portion 30 and the abutting of the flat face 31 of the latter against the end face of the wedge block 22 prevents the cam member 29 from being accidentally rotated to its inoperative position, as shown in Fig. 4. It will be noted that in the operative position (Figs. 2 and 3) that the cam member 29 and the pin 37 are positioned intermediate the ends of the slots 32 and 38, respectively, with the result that the maximum force of the spring is being used to urge the clamping sleeve forward to grip the strip ends 14 between the inclined faces 18 of the sleeve walls 17 and the inclined faces of the wedge block 22.

Upon the strip 13 becoming worn in use it may readily be repositioned upon the bar 10 by first rotating the cam member 29 180° by means of the handle 36 which moves the eccentric portion 30 to the position shown in Fig. 4. This movement of the cam portion 30 immediately removes the pressure from the wedge block 22 and thus releases the strip ends 14 for movement. Continued rotation of the cam portion 30 causes a relative longitudinal movement (Figs. 2 and 3) between the sleeve and the support bar 10. Since the pin 37, supported on the sleeve, is engaged by the spring 39, the spring is compressed by the advancing eccentric cam portion 30. At the termination of the 180° rotary movement of the cam member 29, the cam member comes to a stop at the right ends of the slots 32 in the sleeve.

At that stage the wedge block 22 has been moved to the left with the sleeve by engagement between the inclined faces 18 of the sleeve and the inclined faces 23 of the wedge member, the pin being spaced from the left ends of the slots 38 in the support bar 10, all as shown in Fig. 4. In this position of the parts the wedge block 22 is free to slide for a limited distance and the end portions 14 of the abrasive strip 13 are released so that the strip is free for movement. While thus released, one or the other of the end portions of the strip may be grasped and freely drawn along the support bar 10 and over the associated roller 21 to position unworn portions of the strip along the forward side faces of the bar.

To again clamp the end portions 14 of the strip between the inclined sleeve faces 18 and the wedge block faces 23 and thereafter draw the ends taut on the support bar 10, the ends of the strip are pulled to take up any slack therein and the cam member 29 is given a 180° rotary movement. During the initial rotary movement of the cam member, it slides the wedge block to the right (Fig. 4) and grips the strip ends to the inclined sleeve faces 18 and in its continued rotary movement is effective to cause a relative longitudinal movement (Fig. 4) between the support and the sleeve which serves to draw the strip ends 14 taut on the support bar. In this movement of the cam member, after the wedge block has clamped the strip ends to the inclined sleeve faces 18, the eccentric cam portion 30 is advanced to the position shown in Figs. 2 and 3 and during this latter movement the wedge block and the sleeve with the strip ends gripped therebetween under pressure of the spring move towards the right as a unit along the support bar, thus drawing the strip ends taut on the bar.

From the foregoing description, it will be apparent that an abrasive strip holder is provided having simple and practical means whereby abrasive strip strung thereon may be clamped thereto and constantly held taut and which may be readily released and moved thereon without removing parts of the holder or the use of tools.

It will be understood that the embodiment herein described is merely illustrative of the invention and one application thereof, the invention being limited only by the scope of the appended claims.

What is claimed is:

1. An abrasive strip holder comprising a support member for an abrasive strip folded over an end face thereof and having its end portions strung along opposite positions of the member, a clamping device carried on said support member for engaging the end portions of the strip, said device comprising relatively slidable members having cooperating inclined faces for clamping the end portions of the strip therebetween, and means operatively associated with said relatively slidable members for effecting relative sliding movement therebetween to clamp the end portions of the strip.

2. An abrasive strip holder comprising a support member for an abrasive strip folded over an end face thereof and having its end portions strung along opposite portions of the member, a clamping device carried on said support member for engaging the end portions of the strip, said device comprising relatively slidable members having cooperating inclined faces for clamping the end portions of the strip therebetween, and means including a cam element movable in said support member and operatively associated

with said relatively slidable members for effecting relative sliding movement therebetween to clamp the end portions of the strip.

3. An abrasive strip holder comprising a support member for an abrasive strip folded over an end face thereof and having its end portions strung along opposite portions of the member, a clamping device carried on said support member and slidable relative thereto for engaging the end portions of the strip and drawing the strip taut on said support member, said device comprising relatively slidable members having cooperating inclined faces for clamping the end portions of the strip therebetween, and means operatively associated with said relatively slidable members for effecting sliding movement therebetween effective in an operative movement to first slide one of said members to clamp the end portions of the strip and thereafter to effect a relative sliding movement between the clamping device and support member to draw the strip taut on the support member.

4. An abrasive strip holder comprising a support member for an abrasive strip folded over an end face thereof and having its end portions strung along opposite portions of the member, a clamping device carried on said support member and slidable relative thereto for engaging the end portions of the strip and drawing the strip taut on said support member, said device comprising a sleeve member slidable on and surrounding the handle end of the support member and extending therefrom, said extending portion of the sleeve member having inner inclined faces, a slidable wedge block within the extending sleeve portion having faces cooperating with said inclined faces of the sleeve for clamping the end portions of the strip therebetween, and means operatively associated with said slidable sleeve member and wedge block effective in an opera-

tive movement to first slide the wedge block to clamp the end portions of the strip and thereafter to effect a relative sliding movement between the clamping device and support member to draw the strip taut on the support member.

5. An abrasive strip holder comprising a support member for an abrasive strip folded over an end face thereof and having its end portions strung along opposite portions of the member, a clamping device carried on said support member for engaging the end portions of the strip and drawing the strip taut on said support member, said device comprising a sleeve member slidable on and surrounding the handle end of the support member and extending therefrom, said extending portion of the sleeve member having inner inwardly inclined faces, a slidable wedge block within the extending sleeve portion having faces cooperating with said inclined faces of the sleeve for clamping the end portions of the strip therebetween, a rotary cam element journaled in said support member and directly engageable with said wedge block, a pin supported in apertures in opposite side walls of the sleeve and extending through spaced slots in the support member whereby the clamping device is slidable relative to the support member for a limited distance, and a compression spring housed in an aperture formed longitudinally in the support member and engageable at opposite ends with said pin and cam element for constantly exerting pressure in opposite directions upon said support and sleeve members, said cam element effective in an operative movement to first slide the wedge block to clamp the end portions of the strip and thereafter to effect a relative sliding movement between the clamping device and support member to draw the strip taut on the support member.

CLYDE E. BIERMA. 40