

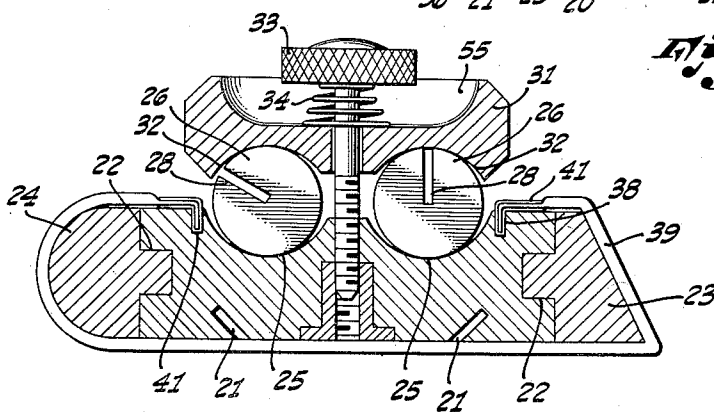
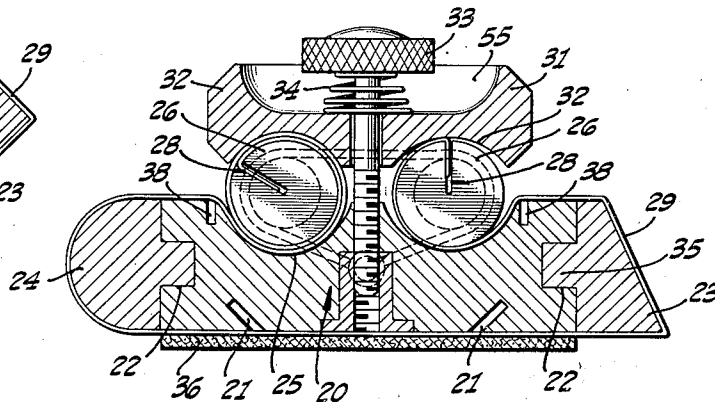
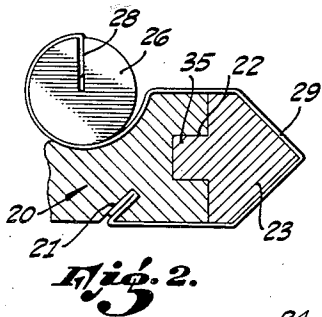
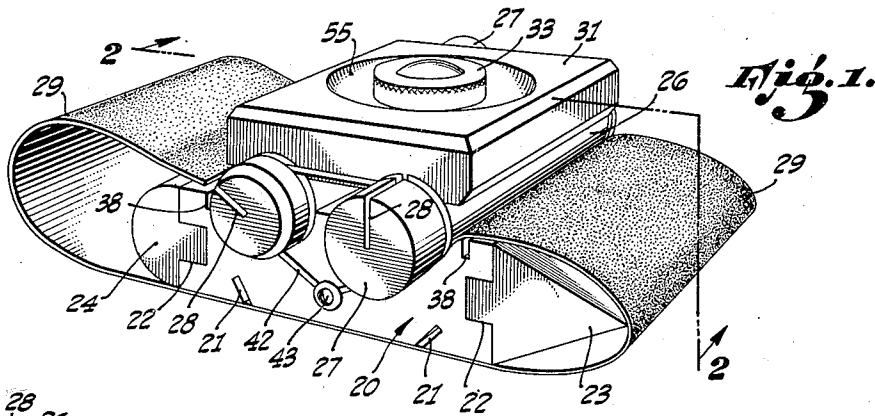
Feb. 3, 1948.

W. H. ANDREWS
HAND FINISHING TOOL

2,435,335

Filed July 19, 1946

2 Sheets-Sheet 1



WILLARD H. ANDREWS,
INVENTOR:

By *Robert M. Feller*
ATTORNEY.

Feb. 3, 1948.

W. H. ANDREWS

2,435,335

HAND FINISHING TOOL

Filed July 19, 1946

2 Sheets-Sheet 2

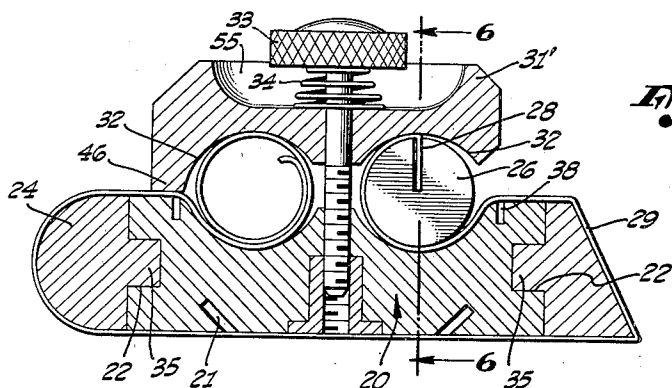


Fig. 5.

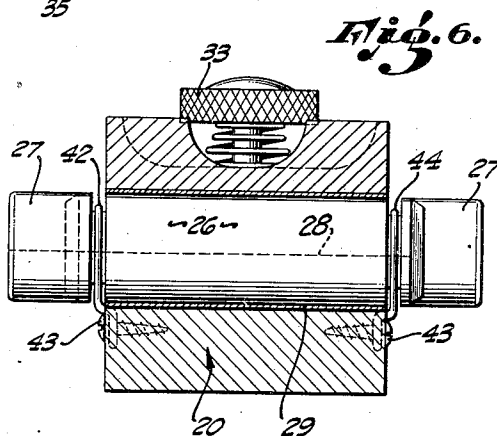


Fig. 6.

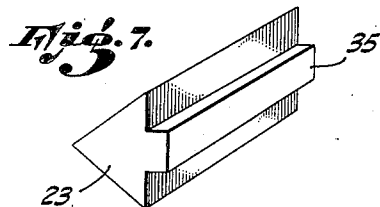


Fig. 7.

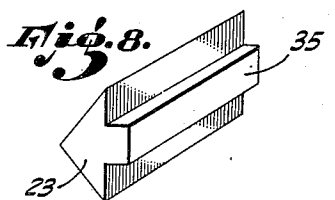


Fig. 8.

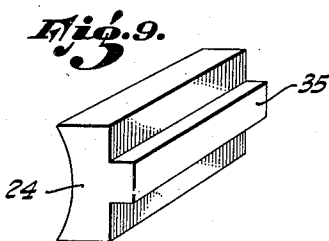


Fig. 9.

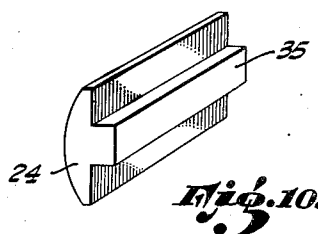


Fig. 10.

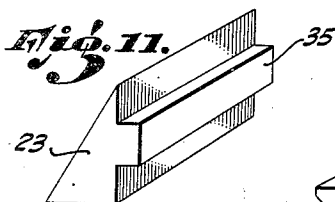


Fig. 11.

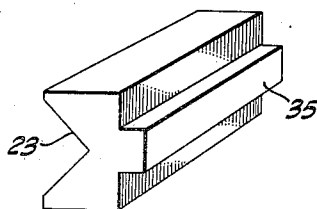


Fig. 12.

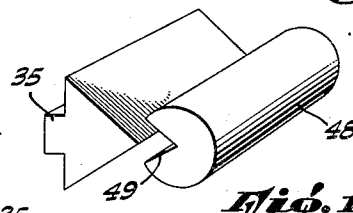


Fig. 13.

WILLARD H. ANDREWS,
INVENTOR:

By *Robert M. Fuldner*
ATTORNEY.

UNITED STATES PATENT OFFICE

2,435,335

HAND FINISHING TOOL

Willard H. Andrews, Los Angeles, Calif.

Application July 19, 1946, Serial No. 684,824

10 Claims. (Cl. 51—187)

1

My invention relates generally to hand polishing tools and more particularly to tools of this class which are adapted to hold elongated strips of sandpaper, emery cloth, polishing cloth, chamois and similar abrading and polishing materials. Hand tools embodying my invention find particular use in cabinet making and finish carpentry, but are not limited to these fields of use.

In the type of work just described it is frequently desirable to sand and/or polish surfaces of tables and other furniture having intricate edge and corner designs cut therein. Such surfaces are to be found for example in moldings for picture frames, furniture, interior walls and the like. Previous operations involving the hand sanding and polishing of such surfaces required the use of a different special tool for each shape of surface involved. For example, in moldings having concave grooves therein it is the usual practice to provide a sanding block with a concave surface matching the contour of the groove and to stretch the abrasive material over the concave surface gluing or tacking it to the block. Such a procedure is not only wasteful of material but the preparation of individual blocks is unnecessarily time consuming and requires that the workmen be at all times provided with a large variety of differently shaped blocks.

Tools adapted to hold abrasive materials of the class described are generally adapted to operate only on flat surfaces or in square corners. While some attempt has been made to produce universal tools which will conform to any surface, these are usually complex in nature and require the use of complicated working parts, and furthermore frequently employ thick layers of resilient materials such as sponge rubber, the use of which tends to cause the abrasive material to operate more rapidly on the convex surfaces than on the bottoms of the grooves, thus resulting in destroying the desired contours of the surface operated on.

Bearing in mind the foregoing difficulties encountered in previous devices of the class described, my invention has for its major object, the provision of a hand abrasive tool adapted to receive head portions of a large variety of shapes over which the abrasive material may be stretched thus making possible the polishing of moldings and similar surfaces of many different contours.

Another object of my invention is to provide a tool for holding elongated strips of abrasive or polishing material on rollers whereby the material may be moved back and forth from one roller

2

to the other to bring a fresh portion of the strip over the working surface when desired.

It is also an object of my invention to provide a tool of the class described which is adapted to receive and hold an underpad of resilient material such as sponge rubber adapted to underlie the abrasive strip when desired.

A further object of my invention is the provision of a clamping means or tool of the class described which is adapted to securely hold strips of abrasive material stretched over the working surfaces of the sanding block.

It is a still further object of my invention to provide a tool of the class described which is economical to manufacture having few working parts and being assembled from sections of molding-like strips of wood or similar material.

The foregoing and other objects and advantages of my invention will become apparent from the following detailed description taken in connection with the attached drawings in which:

Fig. 1 is a perspective view of one form of sanding block embodying my invention showing a strip of abrasive material in position preparatory to being stretched thereon;

Fig. 2 is a partial elevational longitudinal section of the device taken on the line 2—2 in Fig. 1, and illustrating a method for holding short strips of material.

Fig. 3 is an elevational longitudinal section taken on the line 2—2 in Fig. 1, but with one of the working heads of a different shape than that shown in Fig. 1, and with a polishing strip stretched in place.

Fig. 4 is a longitudinal elevational section similar to Fig. 2 but with a sponge rubber underpad stretched in place;

Fig. 5 is an elevational section similar to Fig. 2 but showing a modified form of clamp;

Fig. 6 is a transverse elevational section taken on the line 6—6 in Fig. 5; and

Figs. 7 to 13 inclusive show some of the variously shaped working heads that may be used in connection with the devices illustrated in Figs. 1 through 6.

Referring now to Fig. 1, the numeral 20 throughout the drawings designates the main body of a sanding block embodying my invention, the body 20 having a number of transverse grooves cut therein for various purposes hereinafter described. Two angularly disposed and relatively narrow grooves 21 transversely disposed in the bottom surface of the body 20 serve as an anchoring means for one end of short sections of abrasive material, the method of anchor-

ing being illustrated in Fig. 2 and described later herein. Across the front and back ends of the block 20 are two grooves 22 adapted to receive the tongue of any one of a number of variously shaped working heads, for example the triangular and semi-circular heads 23 and 24 respectively shown in place in the device illustrated in Fig. 1.

Across the top of the body 20 are two parallel transversely disposed semi-circular grooves 25 adapted to form lower seats for a pair of slotted rollers 26. As can be best seen in Fig. 6, each of the rollers 26 is provided with a handle portion 27 projecting laterally beyond the side of the body 20. One of the rollers 26 has its handle projecting to the left and the other to the right, whereby one of the handles 27 may be grasped in each hand for manipulation as hereinafter described.

As previously mentioned each of the rollers 26 is provided with a slot 28 which serves to anchor one end of a strip of abrasive material. After the strip has been inserted as illustrated in Fig. 3 rotation of the roller 26 serves to wind the material 29 thereon. In this manner, various lengths of material can be used, the excess lengths being wound up on one or the other of the two rollers 26. As the material wears out, particularly over the sharp edges of the working heads 23 and 24, a fresh supply may be brought into place by simultaneously rotating both of the rollers, supplying material 29 from one and taking it up on the other.

It is desirable of course that the material 29 be tightly stretched over the working surfaces during the operation of the device. To this end a clamping cap 31 is provided having two transverse semi-circular grooves 32 therein adapted to seat over the rollers 26. A clamping screw 33 with a knurled head is provided and passes through the cap 31 and is threaded into the body 20. Tightening of the screw 33 draws down on the cap 31 and prevents rotation of the rollers 26. Any degree of tension in the material 29 as may be desired can be achieved by holding one of the rollers 26 and twisting the other prior to tightening the screw 33. In order to maintain a minimum amount of tension on the cap 31, such as to prevent the material 29 from unwinding of its own resilience, while it is being shifted, a coil spring 34 is placed around the screw 33 immediately under its head, thus urging the cap 31 downwardly at all times, even when the screw 33 is loosened for the purpose of shifting the material 29 or replacing the same.

As can be seen in Fig. 1 the cap 31 is shaped and positioned to form a convenient handle for grasping and manipulating the polishing tool. To further adapt the device to be held in the hand, the cap 31 is recessed as indicated by the numeral 55 thus providing space for the head of the clamping screw and presenting a relatively flat surface for the hand.

As illustrated in Fig. 2 one end of a short remnant strip of abrasive material may be folded over and inserted in the slot 21, the other end is then passed over the working head 23 inserted in the roller and tightened as before. This procedure can also be used to advantage to use rolled material to its bitter end thus avoiding waste.

Working heads of the shape designated by the numerals 23, 24, are shown in Figs. 7 to 13 inclusive and may be inserted in the device by sliding the tongue 35 into the groove 22. All working heads are interchangeable and the

tongue 35 is of the same width for all and adapted to make relatively loose sliding fit with the groove 22. The working heads are retained in place by tension in the abrasive material 29 as will be appreciated from an examination of Fig. 3. When polishing or sanding flat surfaces the motion of the tool will be longitudinal thereof while transverse motion is used for contoured surfaces requiring the use of the shaped working heads.

If desired, various polishing materials such as felt, chamois, sheep skin or the like may be secured to strips of cloth, paper, leather or similar material and stretched in place as illustrated in Fig. 3 wherein a felt pad 36 is shown glued to a strip of material corresponding to the abrasive strip 29, shown in Fig. 1.

For some types of work it may be desirable to provide the abrasive material 29 with an underlying pad of soft rubber. For this purpose two transverse and relatively narrow slots 38 are provided in the upper surface of the body 20 and serve to anchor such an underpad 39 (see Fig. 4). The pad 39 is provided at each of its ends with an L-shaped clip 41 crimped thereto. Clip 41 is adapted to press snugly into the slot 38 and the length of the pad 39 is such that there is a slight tension therein with two working heads in place. I prefer to construct all of the working heads with the same peripheral length of cross-section whereby they are completely interchangeable and the rubber pad 39 will have the same tension therein regardless of the heads or combination of heads used.

In order to prevent the rollers 26 from slipping endwise from the device when the clamping screw 23 is loosened a wire clip 42 is provided at each side of the body 20 being secured thereto by a screw 43 as best seen in Fig. 6. The clip 42 passes around both of the rollers 26, annular grooves 44 being formed in the latter to receive the clip.

In some applications it may be desirable to provide a tool of the class described adapted to use abrasive material supplied in rolls. Such an adaptation is illustrated in Fig. 5 wherein it will be seen that a single roller 26 is used, supply rolls of abrasive material being located in the cylindrical space formed by the groove 25 in the body and a groove 32 in the cap 31'. In order to secure the supply end of the abrasive material 29, the cap 31' is formed with a depending rear portion 46 which when the clamping screw 33 is tightened presses downwardly on the material 29 clamping it against the top surface of the body 20.

One of the shapes of working head frequently required for cabinet and finished carpentry work is a cylinder which may be of any of a wide variety of diameters. In order to provide for cylindrical heads of various diameters I have provided the arrangement shown in Fig. 13. This arrangement makes use of common doweling 48 with a V-shaped notch 49 formed along one side thereof. A section of doweling thus notched is placed over the pointed end of the triangular working head 51 and the material 29 passed over both the doweling and head holding them in place as previously described.

The forms of working heads illustrated in Figs. 7 to 13 illustrate only a few of the possible shapes and it is obvious that the use of devices embodying my invention is not limited to the shapes shown.

When using heads with concave working surfaces such as those illustrated in Figs. 9 and 12 the material 29 is left somewhat looser than when using convex heads. Thus when working pressure is applied, the material will be pressed down into the concave head conforming to the surface thereof.

One of the principal advantages of the device shown and described herein is that it can be constructed from sections of molding-like strips of wood or similar material. The body 20, the working heads, the rollers 26, and the clamping cap 31 or 31' can all be cut from long strips of this sort and require relatively few additional fabrication operations. An additional advantage to be gained by constructing a block in this manner is that sanding tools of different widths may be constructed using differing lengths of section cut from the same molding-like stock.

While the device shown and described herein is fully capable of achieving the objects and providing the advantages hereinbefore stated, it is subject to considerable modification and I do not mean to be limited to the form shown herein but rather to the scope of the appended claims.

I claim:

1. In a hand tool of the class described comprising in combination: a plurality of rollers having means therein adapted to secure the end of a strip of abrasive material; a work engaging member of generally prismatic shape, a portion of the cross-sectioned contour of which is shaped to correspond to the cross-sectional contour of a work piece being polished; a body member having groove means therein adapted to receive said rollers; tongue-and-groove means in said body and said working member for effecting interlocking engagement between them; a strip of abrasive material having each of its ends secured to one of said rollers and being passed around said working members and said body whereby rotation of said rollers tensions said abrasive material and holds said working members in secure engagement with said body member; and clamping means operatively engaged with said body member and adapted to frictionally engage said rollers to immobily secure the same with said tension in said abrasive material.

2. In a hand tool of the class described adapted to abrasively polish contoured surfaces of a work piece, the combination of: a pair of rollers having longitudinal grooves therein adapted to receive and secure ends of a strip of abrasive material; a plurality of generally prism-shaped working members each having a tongue on one side thereof and having the surface generally opposite said tongue contoured correspondingly to said work piece, whereby said working member is adapted to back up the strip of abrasive material and hold the same in intimate contact with said work piece; a body member having a pair of semi-circular transverse grooves therein adapted to receive said rollers for rotation therein, said body having other transverse grooves therein adapted to receive said working member tongues for removable interlocking engagement with said body; an elongated strip of abrasive material adapted to be wrapped longitudinally around said body when said working members are in place, to have its ends secured in said roller grooves, whereby to be tensioned by rotation of the same and to secure said working members in said interlocking engagement with said body; and operable clamping means operatively engaged with said body and adapted to clamp said rollers when said strip ends

are secured therein and urge said rollers into said semi-circular grooves to prevent rotation thereof.

3. In a hand tool for holding and backing up elongated strips of polishing material wrapped therearound, the combination of: a generally flat body block with roller receiving means formed therein; a pair of longitudinally slotted rollers each adapted to rest for controlled rotation in said roller receiving means and to wind a length of said strip thereon; a plurality of means in said body each adapted to receive a working head of any one of various selected cross-sectional shapes whereby to back up said polishing material when wrapped around said body, and adapt the same selectively to operate on variously shaped surfaces; and clamping means adapted and positioned to frictionally engage said polishing material wound on said rollers whereby to hold said material wrapped around said body.

4. In a hand tool of the class described for holding and backing up strips of abrasive material, the combination of: a body block adapted to back up a strip of abrasive material wrapped therearound; a pair of rollers transversely mounted in the top of said block each having means adapted to receive and secure an end of said strip when wrapped around said block, said rollers being mounted for rotation whereby to wind said strip thereon and tension the same; a clamping block mounted adjacent the top of said body block and adapted to selectively clamp said rollers against said body block whereby to immobilize the same and maintain said tension; and a plurality of working heads removably mounted on said body block, each contoured to conform to shaped work surfaces whereby said working heads are adapted to back up said strip and adapt the same to operate on said work surfaces.

5. In a hand tool of the class described for holding and backing up strips of abrasive material, the combination of: a body block adapted to back up a strip of abrasive material wrapped therearound; means in said block to receive a roll of said material with a length thereof wrapped around said block; means mounted in said block to tension said length; clamping means operably engaged with said block, frictionally engaged with said material, and adapted to hold said length in said tensioned condition; and means in said block adapted to receive working members of various selected shapes, said working members being adapted and positioned to back up portions of said abrasive materials and adapt the same selectively to operate on work pieces of various shapes.

6. In a hand tool for holding and backing up elongated strips of polishing material wrapped therearound, the combination of: a generally flat body block with means formed therein adapted to receive a roller and a supply roll of said polishing material with a length thereof wrapped around said block; a longitudinally slotted roller adapted to rest for controlled rotation in said roller receiving means and to wind a portion of said length thereon; a plurality of means in said body each adapted to receive a working head of any one of various selected cross-sectional shapes whereby to back up said polishing material when wrapped around said body and adapt the same selectively to operate on variously shaped surfaces, and a clamping block secured to said body adjacent said roller receiving means and adapted to exert clamping pressure against said polishing material, said pressure being applied adjacent the

ends of said length wrapped around said body whereby to hold said wrapped length in tension against said body.

7. In a hand tool of the class described comprising in combination: a roller having means therein adapted to receive the end of a strip of abrasive material; a work engaging member of generally prismatic shape, a portion of the cross-sectioned contour of which is shaped to correspond to the cross-sectional contour of a work piece being polished; a body member having groove means therein adapted to receive said roller and a supply roll of said material; tongue-and-groove means in said body and said working member for effecting interlocking engagement between them; a supply roll of abrasive material positioned in said groove means and having a terminal length thereof passed around said working members and body with the end thereof secured to said roller whereby rotation of said roller tensions said abrasive material and holds said working members in secure engagement with said body member; and clamping means operatively engaged with said body member and adapted to frictionally engage said abrasive material and said roller to immobily secure the same with said tension in said abrasive material.

8. In a hand tool of the class described comprising in combination: a plurality of rollers having means therein adapted to secure the end of a strip of abrasive material; a work engaging member of generally prismatic shape, a portion of the cross-sectioned contour of which is shaped to correspond to the cross-sectional contour of a work piece being polished; a body member having groove means therein adapted to receive said rollers; tongue-and-groove means in said body and said working member for effecting interlocking engagement between them; a strip of abrasive material having each of its ends secured to one of said rollers and being passed around said working members and said body whereby rotation of said rollers tensions said abrasive material and holds said working members in secure engagement with said body member; clamping means operatively engaged with said body member and adapted to frictionally engage said rollers to immobily secure the same with said tension in said abrasive material; and a spring member in said clamping means adapted to maintain a predetermined minimum pressure of said fric-

tion engagement such as to permit movement of said abrasive material in response to rotation of said roller but to prevent unwinding of said material due to its own resilience.

9. In a hand tool of the class described for holding and backing up strips of abrasive material, the combination of: a block adapted to back up a strip of abrasive material wrapped therearound; means mounted in said block to tension said strip; clamping means operably engaged with said block and adapted to frictionally engage said abrasive material whereby to hold the same in said tensioned condition; and means in said block adapted to receive working members of various selected shapes, said working members being adapted and positioned thereby to back up portions of said abrasive material and adapt the same selectively to operate on work pieces of various shapes.

10. In a hand tool of the class described for holding and backing up strips of abrasive material, the combination of: a block adapted to back up a strip of abrasive material wrapped therearound; means mounted in said block to tension said strip; clamping means operably engaged with said block and adapted to frictionally engage said abrasive material whereby to hold the same in said tensioned condition; means in said block adapted to receive working members of various selected shapes; a member engaged with said block having an outwardly projecting tongue positioned to underlie said abrasive material; a plurality of longitudinally grooved cylindrical working members each adapted to selectively rest with said groove over said tongue and to back up said abrasive material and adapt the same to operate on semi-circularly grooved work pieces.

WILLARD H. ANDREWS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,046,641	Lunday	July 7, 1936

FOREIGN PATENTS

Number	Country	Date
456,289	Germany	Feb. 2, 1928
633,261	France	June 10, 1930
721,019	France	Feb. 26, 1932