May 1, 1934. A. L. STOWELL 1,956,882

TOOL HOLDER

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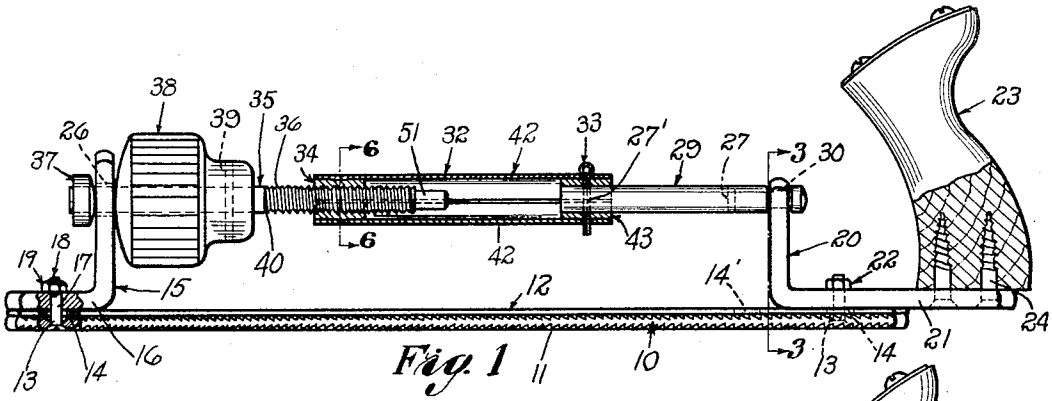


Fig. 1

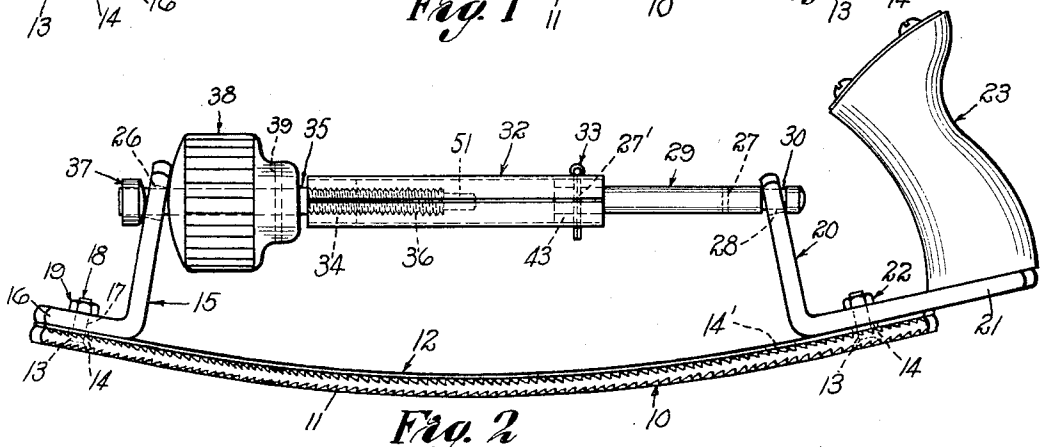


Fig. 2

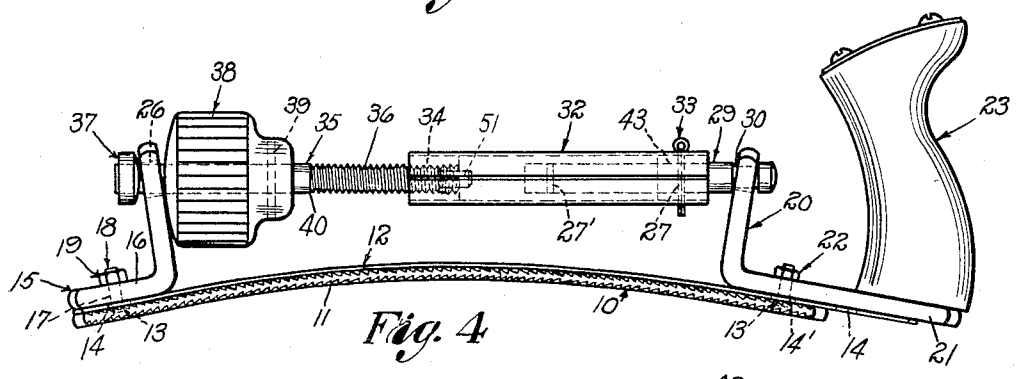


Fig. 4

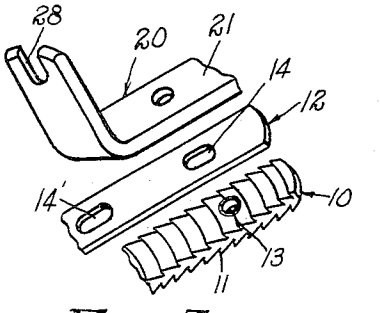


Fig. 5

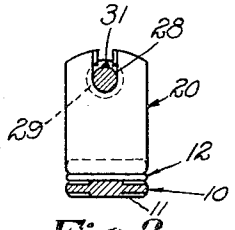


Fig. 3

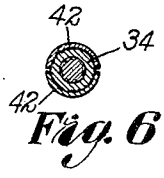


Fig. 6

Inventor
Austin L. Stowell

By H. Clay Lindsey.

Attorney

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TOOL HOLDER

Austin L. Stowell, New Britain, Conn., assignor to The Stanley Works, New Britain, Conn., a corporation of Connecticut

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3 Claims. (Cl. 29—80)

This invention relates generally to the art of tool holders, and is more particularly concerned with holders of that character which are designed for use with tools of the abrading type, such as rasps, files, and the like.

This invention has in view, as one of its objects, the provision of a tool holder of the type noted which is adaptable to various sized tools, and which includes means for limiting the operation of the flexing mechanism so that the tools held by the holder are never flexed beyond a safe point.

Another feature of the invention lies in the arrangement of the handle means and operating member for curving the tool. I propose to provide a handle which is located at the rear end of the holder and which may be grasped by a person using the tool. Adjacent, but spaced from the forward end of the holder, is an operating member or knob for varying the curvature of the tool and which may be grasped in the hand during the use of the tool. It is of advantage to space this knob rearwardly from the forward end of the holder, as this will permit the forward end of the abrading tool to come up against an abutment without interference by the knob and without any danger of the operator skinning, or otherwise injuring, his hand.

A further aim of the invention is to provide an improved, simplified, and cheap construction.

Other objects will be in part obvious, and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

For a full and more complete understanding of the invention, reference may be had to the following description and accompanying drawing, wherein:

Figure 1 is a view in side elevation of a tool holder made in accordance with the present invention, and this view develops the tool holder with a tool associated therewith, and certain parts are broken away and shown in section to more clearly bring out certain details;

Figure 2 is a showing, much along the same lines as Figure 1, but develops the tool in one adjusted position;

Figure 3 is a transverse section taken about on the plane represented by the line 3—3 of Figure 1;

Figure 4 is a side elevation of the device having a rasp of lesser length than that shown in Figure 2 and adjusted to a curvature opposite to that shown in that figure;

Figure 5 is a fragmentary group perspective of the parts at one end of the holder, and

Figure 6 is a sectional view taken on the line 6—6 of Figure 1.

Throughout the following description the tool holder provided by this invention is shown as associated with a file or rasp, but it is to be understood that the invention is not limited in this respect.

Referring to the drawing in detail, the flat file or rasp is designated by the reference character 10. This rasp has an effective abrading surface designated 11. The curvature of which is controlled by the tool holder. This tool holder comprises a bottom plate 12 which, by preference, is substantially coextensive with the largest sized rasps to be used, as shown in Figures 1 and 2. The rasp has, at each end, an opening 13, countersunk as shown. The bottom plate has, adjacent each of its extreme ends, an opening 14 and when the larger sized rasp, shown in Figures 1 and 2, is employed the openings 14 register with the openings 13. The plate 12 also has, adjacent its rear end but forwardly of the rear opening or slot 14, a second slot 14', the purpose of which is to permit the holder to be used with a shorter rasp, as hereinafter described more in detail. The openings or slots 14 and 14' are somewhat elongated, as shown in Figure 5.

An L-shaped bracket 15, preferably formed from strap metal is mounted on the forward end and the upper face of the bottom plate. The horizontal arm 16 of this bracket has an opening 17 adapted to register with the openings 13 and 14 in the forward ends of the rasp and bottom plate respectively, and these aligned openings are adapted to receive a bolt 18 secured in place by a nut 19. The head of the bolt engages in the countersink of the opening 13. The bolt and nut rigidly clamp the forward ends of the rasp and the bottom plate together and secure the bracket in place, all in assembled relation.

Another bracket 20 is secured to the rear end of the plate in the same general manner as is the front bracket. This rear bracket has a relatively long arm 21 projecting rearwardly from the bottom plate 12. The bracket and the rear ends of the plate 12 and rasp 10 are secured in assembled relation by the bolt and nut arrangement, designated generally by the numeral 22. Fixed upon the rearwardly extending arm 21 is a handle member 23 which is properly shaped to

afford a good grip for the user. This handle member may be fastened on the arm in any preferred manner, such as by means of screws 24.

The upward extending arm of the bracket 15 is provided with an opening 26. The upstanding arm of the rear bracket member 20 is bifurcated so as to provide a notch 28. A rod or link 29 is provided with a circumferential groove 30 having a projection 31 which may be formed by staking or pinching the metal in the bottom of the groove. The link 29 is located in a notch 28 by positioning the grooved portion of the link in the notch with the projection 31 pointing upwardly, and then staking, or deforming, the upper ends of the walls forming the notch. The rod is held against rotation with respect to the bracket member 20, and is held against removal therefrom. The other end of the link 29 telescopes into a sleeve designated generally by the numeral 32. A non-rotatable connection between these parts is provided in the form of a cotter pin 33 which passes through aligned openings in the sleeve 32 and the link 29. The rod 29 has two transverse openings longitudinally spaced apart and corresponding with the openings 14 and 14' in the rear end of the bottom plate. The rearmost opening or aperture in this rod is designated by the numeral 27, and the forward one by the numeral 27'. The sleeve 32 has, at its forward end, an internally threaded nut 34, and journaled in the upstanding arm of the forward bracket 15 is a stem 35 having a thread 36 adapted to be received by the nut 34. The stem 35 extends through, and is adapted to turn in, the opening 26, and has a head 37 adapted to abut against the bracket 15 so as to prevent longitudinal movement of the stem 35 in a rearward direction. Carried by this stem, just rearwardly of the bracket 15, is an operating knob or member 38, by means of which the stem may be turned so as to adjust the curvature of the rasp. This knob may also be grasped by one hand of the user while the other hand is grasping the handle 23, this giving an arrangement which will permit easy operation of the tool. In the present instance the knob 38 is shown as secured to the stem by a crosspin 39. The thread 36 terminates as at 40, and the threads 34 and 36 are so proportioned as to length as to allow of the desired adjustment in the curvature of the rasp, while at the same time excessive flexing, which might result in breaking of the tool, is guarded against.

The sleeve, designated generally by the numeral 32, is preferably formed of a plurality of parts brought together so as to effect economy in manufacture. In the present instance, this sleeve comprises two generally semi-cylindrical strips 42 brought together in complementary form and secured at their opposite ends, as by welding, to the nut 34 and a tubular collar 43. The strips 42 may be formed by blanking out a strip and bending the strip into circular shape, both of which operations may be carried out simultaneously. The members 34 and 43 may be screw machine products and thus produced in large quantities at extremely low costs. By preference, the strips 42 are welded in place, an operation which may be cheaply carried out.

When it is desired to use the tool with the larger sized file, say the standard file of 14 inches, the rear bracket 20 is connected to the bottom plate, as shown in Figure 1 and 2, in this case the bolt 22 being positioned in the opening or slot 14 at the rear end of the bottom plate. The link 29 is connected to the sleeve 32 by passing the cotter pin through the foremost opening 27' in the link, as shown in Figure 1.

When it is desired to use a file of shorter length, say 12 inches, the bracket 20 is secured to its forwardly position, as shown in Figure 4, and in this position it is held in place by the bolt passing through the slot 14'. In this event, the connection between the brackets is shortened up by securing the sleeve to the link 29, as shown in Figure 4 and in which case the cotter pin 33 extends through the opening 27 in the link.

If the file is desired to be used for smoothing up a flat surface, the screw mechanism between the two brackets is adjusted, as shown in Figure 1, and in which figure the file is straight. If it is desired to operate upon a concave surface, the screw or stem 35 is turned by means of the knob 38 so as to shorten up, or reduce, the distance between the upper ends of the bracket, as shown in Figure 2. When it is desired to operate upon a convex surface, the distance between the upper ends of the brackets is increased so as to render the surface 11 of the file concave, as brought out in Figure 4. Obviously, the particular curvature of the effective surface 11 may be adjusted with a high degree of accuracy and to any desired nicety. It will be observed that, irrespective of whether the shorter or longer file is carried by the holder, excessive flexing of the file or rasp cannot take place, and thus breaking of the rasp is guarded against, a feature of importance as these rasps are rather expensive. In Figure 2 the arrangement is shown as being adjusted to its full extent, further convexity being prevented due to the nut 34 reaching the end 40 of the thread 36. In the event that a workman negligently or carelessly attempts to flex the rasp to concave shape to an extent beyond the capabilities of the rasp, the threaded portion 36 of the stem will be disengaged from the nut 34 of the sleeve 32. Figure 4 shows the device adjusted about as far as it can be to obtain maximum convexity. By preference, the end of the stem is provided with a pilot or guiding extension 51 which serves to hold the sleeve and the stem in substantial alignment when the thread has been screwed out of the nut. With this arrangement, should the stem shown in Figure 4 be further turned to such an extent that the threaded portion 36 leaves the nut, the pilot 51 will remain in the nut and thus prevent the adjacent ends of the sleeve and stem from separating or becoming disengaged.

In using the device, one hand grasps the handle 23 and the other hand the knob 38 so that the tool may be very nicely controlled and steadily held. Since the knob 38 is somewhat removed from the forward end of the rasp, this forward end may be worked into a corner. Furthermore, the hand of the operator which grasps the knob 38 is protected against injury.

The foregoing construction presents the advantage of providing a tool holder for rasps and the like which may accommodate tools of various sizes and which is operable to vary the curvature of the effective surface of the tool to a high degree of accuracy within certain safe limits.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. In a tool holder of the character described, a bottom plate, a bracket carried by each end of the bottom plate and having arms upstanding therefrom, said bottom plate adapted to carry a file on the face opposite to that carrying the brackets, means for detachably affixing said brackets and files of different lengths on the bottom plate, screw mechanism extending between said arms for flexing the bottom plate and tool carried thereby, said screw mechanism being adjustable to the size of the tool carried by the bottom plate, and means for limiting the operation of the screw mechanism to prevent flexing of the tool beyond certain safe limits.

2. A file holder of the character described comprising a bottom plate, a bracket carried by the bottom plate at each end thereof and having upstanding arms, a handle member carried by one of said brackets, and screw mechanism spaced from the bottom plate and extending between said arms; said screw mechanism including a link non-rotatably connected to one of said bracket arms, a sleeve assembly, and a stem rotatably carried against longitudinal movement by the other of said arms; said sleeve assembly including a pair of complementary semi-cylindrical portions forming a cylinder, a collar within one end of the cylinder and adapted to receive said link, and a nut in the other end of said cylinder threaded onto said stem, said semi-cylindrical members being secured to said collar and nut.

3. A file holder comprising a bottom plate including means for attaching files of different lengths thereto, a bracket carried by the bottom plate at each end thereof and having upstanding arms, and screw mechanism spaced from the bottom plate and extending between the arms, said screw mechanism consisting of a link non-rotatably connected to one of the bracket arms, a sleeve threaded at one end and connected to the link at the other end, and a stem threaded into the sleeve and extending through an opening in the other bracket arm.

AUSTIN L. STOWELL.