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2,816,351

FILE

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FIG. 1.

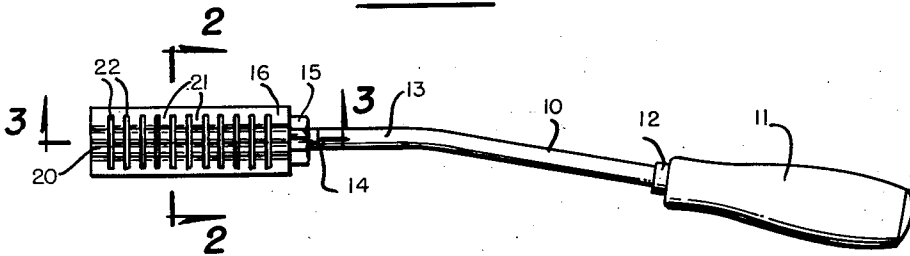


FIG. 2.

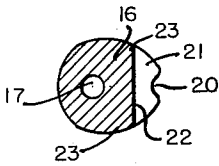


FIG. 3.

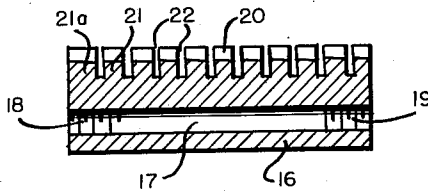
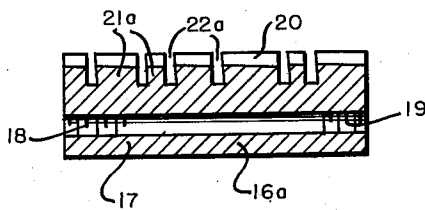


FIG. 4.



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FILE

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1 Claim. (Cl. 29—78)

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This invention relates to files.

It is an object of the present invention to provide a novel file which is adapted to smooth and round the corners of many and varied articles, parts and pieces, and which may be used on a large variety of substances and materials, for example lumber, plastics, aluminum, brass and mild steel.

It is another object of the present invention to provide a file of the above type which is adapted for either push or pull operation, depending on the requirements of the job at hand.

Other objects of the invention are to provide a file bearing the above objects in mind which is of simple construction, has a minimum number of parts, is inexpensive to manufacture and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a side elevational view of a preferred embodiment of the present invention;

Fig. 2 is a transverse sectional view thereof taken along the line 2—2 of Fig. 1;

Fig. 3 is a longitudinal sectional view taken along the line 3—3 of Fig. 1; and

Fig. 4 is a view similar to Fig. 3 of a modified form of the present invention.

Referring now more in detail to the drawing, 10 represents a shank member to which is secured a wooden handle 11 by means of collar 12, the end of the handle 10 remote from handle 11 being integrally formed with the bent shank 13, substantially as illustrated. The shank 13 terminates in the externally threaded portion 14 and has screwed thereon the lock nut 15.

A filing member 16 of elliptical cross section (Fig. 2) is provided with the offcenter longitudinal bore 17 which extends through the filing member and terminates at each end in the internally threaded portions 18 and 19. The internally threaded portions 18 and 19 are adapted to selectively receive therewithin the externally threaded portion 14 of the shank 13 whereby to reverse the direction of the filing head, as will be obvious.

As shown in Fig. 2, the filing member 16 at the side thereof remote from the bore 17 is provided with a longitudinal groove 20. Longitudinally spaced teeth 21 are formed by cutting slots 22 transversely in longitudinally spaced relationship to each other through and below the groove 20. Then each groove section is cut or ground at about a two degree angle with the axis of the tool. While the teeth 21 may be unequally spaced, the deviation is slight. The cross slots 22 may be cut one degree or two degrees from a plane at right angles to the longitudinal axis of the filing member 16.

The longitudinal bore 17 through the filing member facilitates the removal of any foreign matter or chips that may lodge in the threaded areas 18 and 19.

The flaps 23 (Fig. 2) on each side of the file member 16 adjacent the teeth 21 facilitate chip elimination and

also facilitate the observance of the operation by the operator when material is being removed.

The cross slots 22 may be cut with a circular cutter, although tests have shown that a flat bottom slot remains open longer and is easier to open in the event of "plugging."

By reason of the internally threaded portions 18 and 19 at opposite ends of the filing member 16, the latter may be effectively mounted on the shank 13 for either pulling or pushing over the corners of the work piece. It can also be used on work in a vise or in a lathe chuck as well as on parts held in the hand. The design of this file makes it practically non-clogging, and it is easy to clean and can be resharpened.

It will be apparent that the cross slots 22 between the cutting edges are deep enough to accommodate the chips and permit them to escape. The forms of the cutting edges are such, it will be noted, that a neat, round corner can be accomplished, even by an unskilled worker.

After the filing head 16 is positioned on the shank 13, it is quickly locked in place by turning the nut 15 tightly thereagainst. Thus, the file head may be secured to the shank 13 with its teeth headed in either direction, making it adaptable for either push or pull operation.

Rough, sharp and jagged corners can be smoothed and rounded with comparative ease and safety with the invention due to the fact that the file tends to stay on the work and does not slip off, as is the tendency with other filing types. As the filing area of the tool is preshaped, a neat, smooth, round corner can be produced with comparative ease quickly and safely, even by a novice. For delicate work, the file head may be removed from the shank and held between the thumb and fingers whereby to facilitate lighter and more concentrated control.

In construction, the cutting edges or teeth 21 may be cut or ground with any desired back clearance, so that the "bite" or depth of cut can be controlled.

As shown in Fig. 4, the teeth 21a can be unequally spaced by providing the unequally spaced cross slots 22a whereby chatter or wavy cutting action may be avoided.

In other respects the form of the invention shown in Fig. 4 is the same as that shown in Figs. 1 through 3, and like reference numerals identify like parts throughout the several views.

The invention may be resharpened after becoming dull from prolonged use, thus making it as good as new.

The cross slots 22 between the cutting edges or teeth 21 are deep enough and wide enough to accommodate the chips and permit them to escape whereby to minimize clogging or loading. The slots 22 may be easily cleaned out, as will be obvious.

The forward tooth 21a (Fig. 3) is slightly thicker than the rest of the teeth partly because it is adapted to absorb the brunt of the work and also so that it may be end ground without appreciably weakening it.

The file head 16 is formed of tool steel and hardened. It is left "dead" hard as tempering is unnecessary.

The slots 22 could be cut at an angle cross the head 16, which might be an advantage for certain types of work, although it would mean an increased manufacturing cost. Also, the file head 16 could be formed with half the teeth 21 heading in one direction and half in the other so that push or pull operation could be accomplished with one setting of the head 16 on the shank 13. The file may be made of a variety of sizes or of one size which appears to be sufficient for most work. Using the same general design, but with modifications, this file can be made to work well on internal, corners, such as the edge of the bore on a work piece on a lathe.

While various changes may be made in the detail construction, it should be understood that such changes shall

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be within the spirit and scope of the present invention as defined by the appended claim.

What I claim as new and desire to protect by Letters Patent of the United States is:

A file comprising, in combination, handle means including an elongated externally threaded shank having a handle connected to one end thereof, said handle being concentric with said one end of said shank, the opposite end of said shank defining an obtuse angle with said one end of said shank so as to provide finger clearance for said handle, a file head member, means for eccentrically mounting said file head member on said opposite end of said handle, said file head member at one side having a curved outer surface with a longitudinally extending groove extending from end to end thereof, said file head member having an offset bore extending therethrough from end to end at the side thereof remote from said groove, each end of said bore being internally threaded for threaded engagement with the opposite end of said shank, the longitudinal axis of said file head member being parallel to the longitudinal axis of said opposite

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end of said shank, a plurality of laterally extending and longitudinally spaced apart slots at diverse intervals extending through and below said groove to define a plurality of longitudinally spaced teeth of varying size, the frontmost of said teeth being slightly thicker than the remaining teeth to facilitate use and sharpening of the tool.

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