June 23, 1942. A. P. STONE 2,287,069

STUD REMOVER

Filed Sept. 6, 1938

FIG. 1

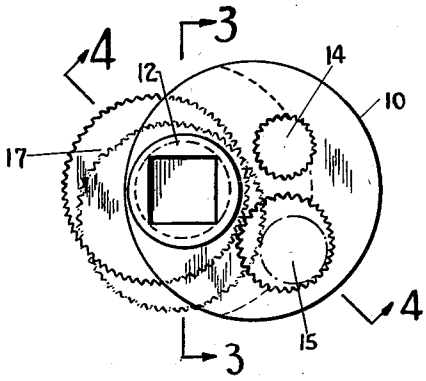


FIG. 2

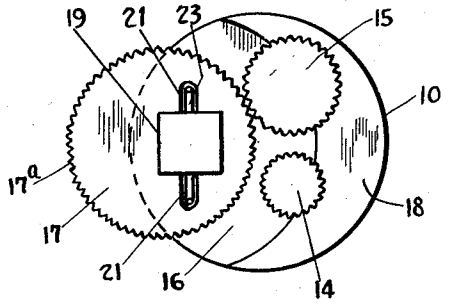


FIG. 3

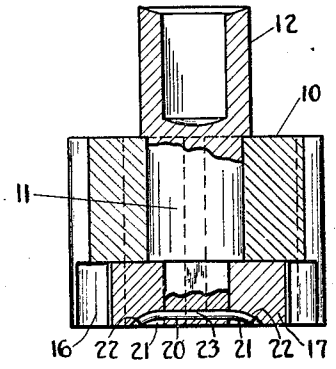
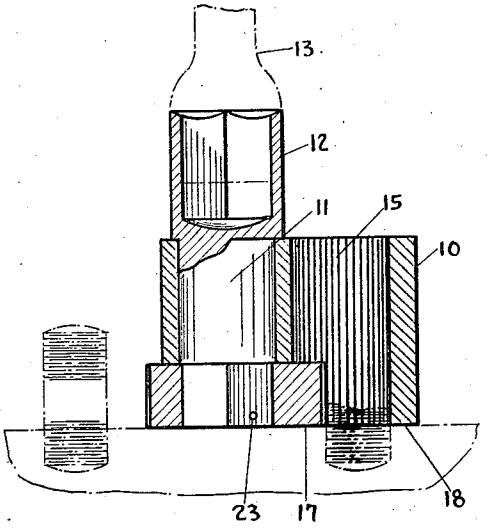


FIG. 4



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STUD REMOVER

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2 Claims. (Cl. 81—53)

This invention relates to stud removers.

In motor, machine and like constructions, dowels, studs, and similar elements are often threaded into the structure and become rusted or corroded in such structure so as to be difficult of removal. Such studs may be long or short or may become broken off and can be removed only with great difficulty.

Heretofore, stud removers of various kinds have been provided but these are not entirely satisfactory. They have included structures in which are, in effect, cooperating jaws, but such devices as have heretofore been provided are difficult to manipulate or are not effective to use under certain conditions such as where short dowels or studs are to be removed or dowels or studs which have broken off with only a very small portion thereof projecting from the socket or aperture in which they are threaded.

The purpose of the present invention is to provide a simple, inexpensive stud remover, which will be capable of easy and effective use in removing all sorts of studs or dowels from machines, motors, or like structures and regardless of the length of the stud or dowel just so long as there is a small portion, at least, projecting upon which the tool can be adjusted.

A further purpose of the invention is the provision of a simple but effective structure for mounting an element on an end of a shaft or the like.

The foregoing and other purposes of the invention are attained in the stud remover illustrated in the accompanying drawing and described below. It is to be understood that the invention is not limited to the specific form thereof shown and described.

Of the accompanying drawing:

Figure 1 is a top plan view of a stud remover embodying the invention.

Figure 2 is a bottom plan view thereof.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a section on line 4—4 of Figure 1, showing the device as used for removing a broken stud as from an engine block.

Referring to the drawing, the numeral 10 indicates a cylindrical block in which is journalled a shaft 11 arranged at one side of the block and which may be formed with a suitable socket element 12 to be turned by a wrench 13 indicated in dotted lines in Figure 4, the socket element 12 extending above the block 10. The block 10 is formed with two apertures or bores 14, 15, extending through the same and the inside of which may be knurled or roughened as indicated. These bores or apertures, being arranged to receive therein studs of various sizes over which the stud remover shown may be engaged as indicated in Figure 4, the smaller sizes of studs being fitted into opening or aperture 14 and the larger sizes into the aperture 15.

The bottom of the block 10 is recessed as indiciated at 16 and the lower end of shaft 11 carries a gripping wheel 17 eccentrically mounted on said shaft so as to rotate with eccentric action in the recess 16, the bottom of the wheel 17 and the lower unrecessed faces 18 of the block 10 being substantially flush in the bottom plane of the stud remover.

The wheel 17 is preferably knurled or roughened as at 17a and is so dimensioned that in one position thereof, as indicated in full lines in the drawing, it will clear a stud engaged in either aperture 14 or 15, thus permitting the tool to be engaged over studs of various sizes which may be engaged in the apertures 14 and 15, but by turning the wheel it can be caused, because of its eccentric action, to move into gripping relation with a stud in either of apertures 14 or 15 as indicated in Figure 4. As will be obvious from Figure 4, because of the wheel or element 17 being flush with the bottom of the stud remover, it is possible to grip and remove even very short studs or broken-off studs by use of the tool.

The drawing illustrates an effective way for securing an element such as the wheel 17 on the end of a member such as shaft 11, the wheel being preferably formed with a non-circular opening and the shaft or element 11 having a non-circular end engaged in said opening as shown at 19.

Referring to Figures 2 and 3, the end of the shaft 11 at 19 is formed with a transverse bore as at 20 and the wheel 17 is formed with transverse notches 21, 21 aligned with the bore 20 and being curved or tapered as indicated at 22, 22, so that a piece of comparatively stiff, semi-flexible wire 23 may be utilized as a key for securing the wheel 17 on the shaft 11, this wire being engaged in the bore 20 from one side thereof through a notch 21 and being driven through and into engagement with the other notch 21, the curved or tapered portions 22 of which flex wire to some extent to guide it through the aperture 20 and also to hold it tightly in place. This wire, as will be obvious, can easily be driven out of the bore 20 by pressing a suitable tool against one end of the wire to remove and replace the wheel 17. This key permits a flush gripping wheel construction so that the tool is capable of use

as indicated in Figure 4 on even the shortest of studs or dowels.

In use, the tool will be applied over the stud, as shown in Figure 4, with the stud engaged in whichever aperture 14 or 15 is the most effective depending on the diameter of the stud and then a wrench will be applied to the socket 12 and turned in a direction counter to that at which the stud was threaded into the block from which it is to be removed, which first turns the gripping wheel 17 so that its periphery 17a grips the stud between it and the opposite wall of an aperture 14 or 15. Continued rotation of the wrench 13 will turn the block 10 and the stud gripped therein and will thread the stud out of the socket in which it has been threaded.

Modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. A stud remover comprising a block formed with two adjacent apertures of different sizes for receiving studs of various sizes, the bottom of said block being recessed, a shaft rotatably extended through said block, said shaft having eccentrically secured on its bottom end a gripping wheel, the lower face of which is substantially flush with the bottom surface of the block, the spacings of said apertures with respect to the axis of said wheel and the proportions of the wheel being such that the wheel may be turned on its axis to grip studs or the like of various sizes in either of said apertures against portions of the walls thereof remote from the axis but permitting the wheel to be turned to a position in which it clears both apertures, and means on said shaft at the top of said block for rotating said shaft relative thereto to move said wheel to grip a stud in either of said apertures against said remote portions thereof and by continued rotation of the shaft to turn said block so as to turn a stud gripped in the block.

2. A stud remover comprising a block formed with two adjacent apertures of different sizes to provide relatively fixed jaws for receiving studs of various sizes, a shaft rotatably extended through said block, said shaft having eccentrically secured thereon a gripping wheel, the spacings of said apertures with respect to the axis of said gripping wheel and the proportions of the wheel being such that the wheel may be turned on its axis to grip studs or the like of various sizes in either of said apertures against portions of the walls thereof remote from the axis but permitting the wheel to be turned to a position in which it clears both apertures, and means on said shaft for rotating the same relative to said block to move said wheel to grip a stud in either of said apertures against said remote portions thereof, whereby continued rotation of the shaft will turn the block so as to turn a stud gripped therein.

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