

A. K. JOHNSON.
BUSHING TOOL.
APPLICATION FILED OCT. 25, 1918.

1,382,835.

Patented June 28, 1921.

Fig. 1.

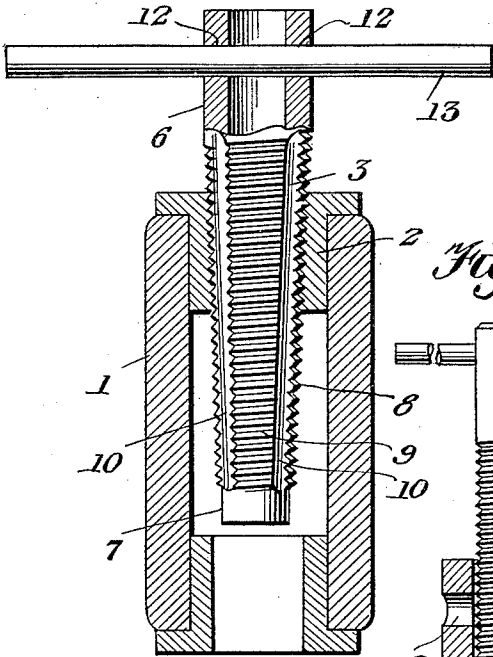


Fig. 2.

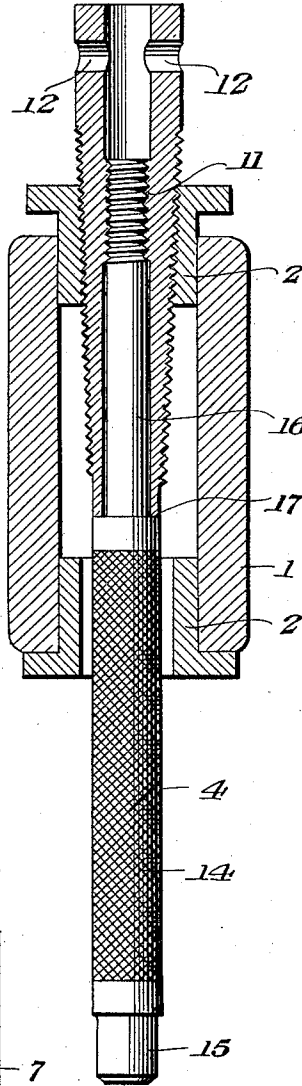


Fig. 4.

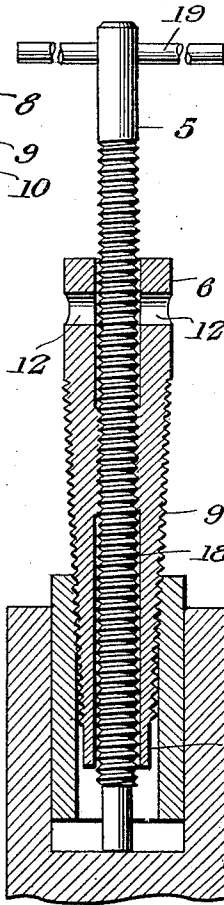
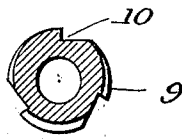


Fig. 3.



Witnesses
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BUSHING-TOOL.

1,382,835.

Specification of Letters Patent. Patented June 28, 1921.

Application filed October 25, 1918. Serial No. 259,664.

To all whom it may concern:

Be it known that I, ARTHUR K. JOHNSON, a citizen of the United States, residing at Holly, in the county of Prowers and State of Colorado, have invented new and useful Improvements in Bushing-Tools, of which the following is a specification.

This invention relates to a bushing tool for removing bushings from articles containing them and the present invention is an improvement over that filed by me on Dec. 29, 1917, Serial No. 209,599.

The principal object of the present invention is to provide means for removing bushings from articles having the bore extending entirely through them as well as from those articles in which the bushings are located in pockets or recesses.

In this embodiment of the invention the bushing engaging member of the tool is made similar to that described in the before mentioned application with the exception that said part is provided with a screw threaded bore to receive either of a pair of extracting or operating members, one member being used when the device is used in place of the device described in the before mentioned application, and the other for removing blind bushings as from pockets or recesses which are accessible in only one direction.

The invention consists in certain features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a sectional view showing my tool used for the purpose of removing bushings from an automobile knuckle, parts of the tool being shown in section.

Fig. 2 is a longitudinal section through the bushing engaging member of the tool, the impact operating member being shown in elevation in operative relation therewith.

Fig. 3 is a cross section through the bushing engaging member.

Fig. 4 shows the bushing engaging member in section with the lifting pin or jack-screw operating member in position.

In Fig. 1 the knuckle is shown at 1 and

the bushings at 2, said bushings being in the ends of the knuckle. As shown the improved tool consists of a bushing engaging member 3, an impact operating member 4 and a jackscrew operating member or lifting pin 5. The engaging member is provided with a plain cylindrical part at each end thereof, these parts being indicated by the numerals 6 and 7. These two parts are connected together by the tapered part 8 which is provided with the screw threads 9 and the longitudinally extending grooves 10 thus in effect constituting a tap. This part of the device is similar to that described in the pending application. The engaging member is provided with a screw threaded bore 11, though I prefer to limit the zone of the screw threads to an intermediate part of the bore. The cylindrical part 6 is provided with the transverse holes 12 which communicate with the upper end of the bore and are adapted to receive the handle bar 13 by which the engaging part may be rotated to cut its way into the bushing.

The impact operating member or pin 4 is provided with a knurled handle part 14 ending in a striking or impact head 15 and with a shank 16 having a screw threaded end for engaging the internal screw threads in the engaging member.

When the device is used for removing bushings accessible at both ends as shown in Fig. 1, the engaging member is rotated into the bushing by means of the handle so that it will firmly seat in the bushing by means of the threads cutting grooves therein. After the engaging member has entered far enough into the bushing the impact member is introduced through the other end of the knuckle into the small end of the engaging member and the threads of the two parts placed in engagement. This will bring the shoulder 17, at the junction of the shank 16 with the handle 14, against the small or impact end of the engaging member. Then by striking the head 15 with a hammer the bushing will be forced out of the knuckle.

When the device is to be used for extracting blind bushings from pockets as shown in Fig. 4 the engaging member is forced into the bushing as before and then the jackscrew or lifting pin 5 is inserted in the bore of said member. As shown, the lifting pin is formed with a long screw threaded shank having a plain cylindrical part or head at its end of less diameter than the screw

threaded part. A hole in the other end of the shank is fitted with a bar 19 to form a handle for the pin. By rotating the pin in the bore the end or head thereof will finally
5 pass beyond the end of the engaging member and bear against the bottom of the pocket. Upon the continued rotation of the pin or jackscrew the engaging member will be forced rearwardly along the pin and will
10 carry the bushing from the pocket.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may
15 make such changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

It will be observed that the impact head
20 or end of the operating member, whether constructed as shown in Fig. 2 or in Fig. 4 is reduced diametrically so that any spreading of the impact surface due to battering or hammering the same, or to the contact there-
25 of with an object serving to cause longitudinal or axial displacement of the bushing, will not interfere with the subsequent introduction of the member through the bore of another bushing, and thus limit the life or
30 length of utility of the tool.

What I claim is:

1. A bushing extractor comprising a member having a tapered thread-forming outer surface and a longitudinal bore and pro-

vided with means whereby it may be rotated, 35 and an extracting member engageable with said bore for imparting a longitudinal impulse to the thread-forming member.

2. A bushing extractor comprising a member having a tapered thread-forming outer 40 surface and a longitudinal bore and provided with means whereby it may be rotated, and an extracting member engageable with said bore for imparting a longitudinal impulse to the thread-forming member, the 45 bore and extracting member having complementary threaded portions.

3. A bushing remover comprising a tapered tap member having a screw-threaded bore, and a shank member having a screw- 50 threaded portion for coacting with the screw-threaded bore to impart a longitudinal impulse to said tap member, the shank member being longer than said tap member whereby both ends of said shank member 55 project beyond the ends of said tap member.

4. The combination with a tapered hollow sleeve having cutting elements on the exterior thereof forming a tap member and having interior screw-threads, of a screw- 60 threaded member co-acting with said interior screw-threads and projecting from one end of said tap member, and means for turning said screw-threaded member to impart a longitudinal impulse to said tap member. 65

In testimony whereof I affix my signature.

ARTHUR K. JOHNSON.