March 5, 1929. W. J. PARKINSON 1,704,442

BUSHING PRESS

Filed April 3, 1924

Fig. 1

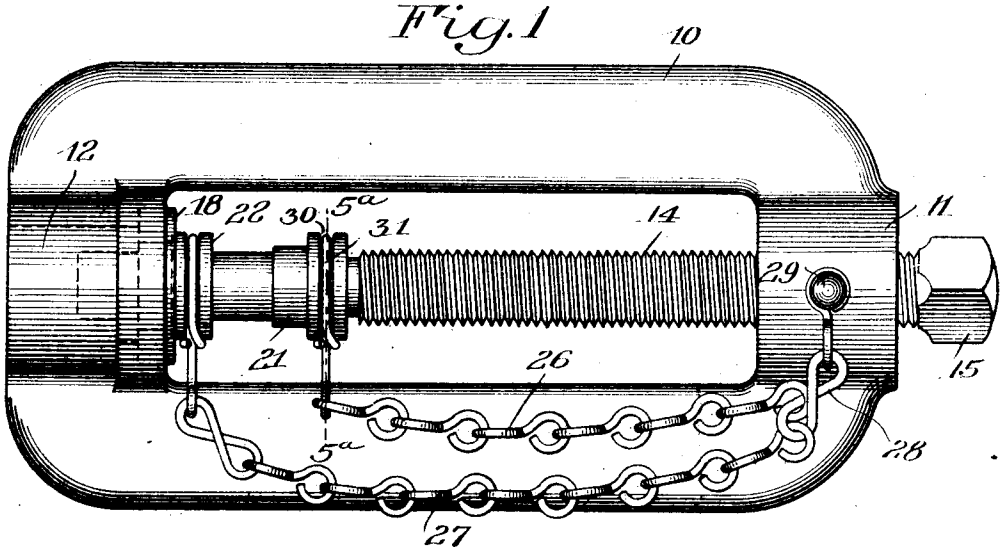


Fig. 2

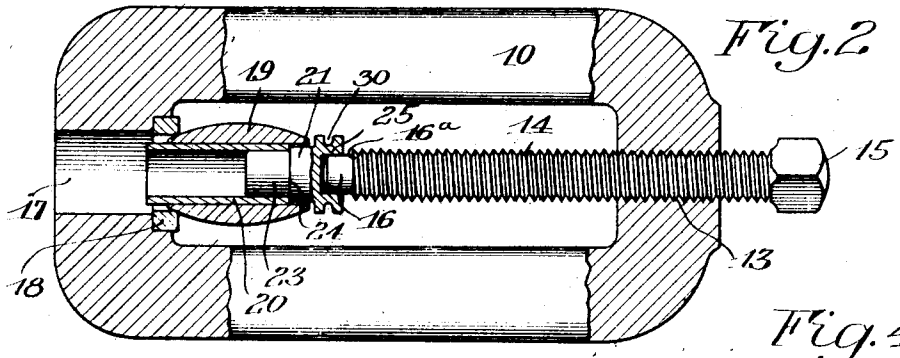


Fig. 4

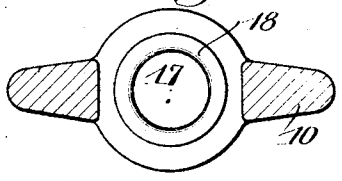


Fig. 3

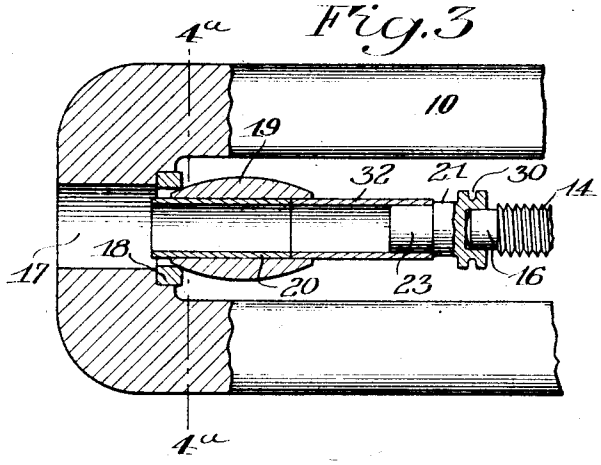
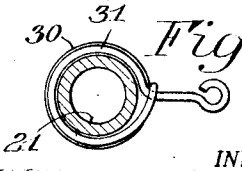


Fig. 5



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Patented Mar. 5, 1929. 1,704,442

UNITED STATES PATENT OFFICE.

WILLIAM J. PARKINSON, OF ROCHESTER, NEW YORK.

BUSHING PRESS.

Application filed April 3, 1924. Serial No. 703,871.

This invention relates to hand tools or presses for inserting and removing bushings, one object of the invention being to provide an efficient implement of this variety having a practical and self contained construction operating in a convenient manner to facilitate quick and easy removal of an old bushing from a bearing and the insertion of a new one. A further object is to provide a tool of this character particularly adapted for use with the bushings of spring supporting means of automobile bodies and applicable moreover to a variety of sizes of bushings.

To these and other ends the invention resides in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Figure 1 is a view of an implement embodying the present invention, showing the parts compactly arranged for packaging and shipment.

Figure 2 is a similar view, but with some of the parts in sections and illustrating a step in the actual use thereof.

Figure 3 is a fragmentary view similar to Figure 2 showing a further step in the use of the parts.

Figure 4 is a sectional view on line 4^a—4^a in Figure 3; and

Figure 5 is a sectional view on the line 5^a—5^a in Figure 1.

Similar reference numerals throughout the several views indicate the same parts.

The preferred embodiment of the invention herein disclosed by way of illustration comprises a frame 10 in the shape of an elongated loop which may be readily formed in manufacture as a casting or forging. The opposite ends of the loop are enlarged as shown to provide bosses 11 and 12, respectively, to afford a substantial body of metal at each of these portions. The boss 11 has a threaded bore 13 formed therethrough in which is threadedly engaged an arbor 14 provided at its outer end with means for turning the same, as for example the angular head 15. The inner end of the arbor is formed as at 16 with a reduced portion the purpose of which is explained hereafter. It is to be noted that the frame has a substantial length, as does also arbor 14 for the purpose of accommodating bearings and bushings of various lengths.

The boss 12 at the opposite end of the frame has an opening 17 therethrough in alignment with the arbor, which opening is larger than and adapted to receive the bushings to be extracted. This opening terminates at its inner end in a circular anvil or shoulder formed in the present instance by a hardened steel ring 18 having an inner diameter adapted to receive and support the tapering ends of the bearings with which the tool is intended to be used, as illustrated in Figure 2. The specific bearing 19 shown in the latter is the "perch" or spring shackle support employed in various makes of automobiles, the bushing to be extracted being shown at 20. The tool frame is applied to the bearing 19 so that the end of the latter is received in and supported by the end of ring 18 into which it enters for a slight distance and by which it is centered and held.

The reduced end 16 of the arbor is adapted to fit closely in one size of bushing for which the tool is intended, with the shoulder 16^a at the end of the thread engaged with the bushing end, to force the bushing out of the bearing by turning and advancing the arbor while the bearing is held by the anvil ring 18. The arbor 14 is furthermore equipped with a plurality of adapters or tips 21 and 22 of different sizes for adapting the tool for use with various sized bearings and bushings. These adapters are in the present instance similar in construction, comprising as in the adapter 21, a reduced end portion 23 having a shoulder 24 for engagement in the end of the bushing 20 as shown and as described above in connection with the end 16 of the arbor itself. That is to say, the reduced portion 23 is of such a diameter as to fit closely the bore of the bushing while its shoulder 24 engages the end of the latter but clears the sides of the bushing opening in the bearing 19. Each adapter has at its other end a socket 25 detachably fitting the reduced end 16 of the arbor so that all of the adapters are capable of use with the arbor selectively and interchangeably as well as for cooperation one with another in applying or removing the bushings, as the work in hand may require.

In order to retain the adapters in association with the tool so as to be at all times conveniently within reach and to prevent

displacement and loss of the same, there is provided for each adapter a flexible element, in the present instance chains 26 and 27, one end of each of which is secured to a common link means 28 fixed by a stud 29 to the frame. The opposite ends of these chains are secured to the respective adapters in an ingeniously simple manner for permitting rotation of the adapter in use without interference by the chains. For this purpose each adapter is formed at the end thereof cooperating with the arbor with a circumferential groove 30 in which the circular end portion 31 of the terminal link of the chain is received. By this means any one of the adapters may be selected to suit the size of the work in hand and may be fitted to the arbor and rotated with the latter without interference by its retaining element or chain.

Figure 1 shows the parts compactly associated for packaging and shipping. Figure 2 illustrates the use of the tools in the initial step of extracting an old bushing, while Figure 3 illustrates the next step of inserting the new bushing 32 which is employed to simultaneously push out the old bushing 20. The integral end 16 of the arbor and the two adapters shown together provide for the handling of bushings of three different sizes, but of course a still larger number of adapters may be provided. The invention thus provides a practical and convenient implement with which an otherwise troublesome operation may be quickly and easily accomplished with a minimum risk of injury to the bushings and bearings.

I claim as my invention:

1. A bushing press comprising a frame in the form of a loop having in one end thereof a threaded bore and in the other end a bushing receiving opening with a circular inner end shoulder adapted to receive and support a bearing, an arbor threadedly engaged in said bore, a detachable adapter for the end of said arbor having a reduced portion for insertion in a bushing and a shoulder for engagement with the end of the bushing and also having a groove formed therein and a flexible retaining member for the adapter having one end surrounding the latter with the groove and the other secured to the frame.

2. A bushing press comprising a frame in the form of an elongated loop having in one end thereof a threaded bore and in the opposite end a bushing receiving opening with a circular inner end shoulder adapted to receive and support a bearing, an arbor threadedly engaged in said bore, a detachable adapter for the end of said arbor having a reduced portion for insertion in a bushing and a shoulder for engagement with the end of the bushing, and a flexible retaining connection for the adapter secured to said frame and including a part rotatably secured to said adapter and cooperating with the frame to prevent winding of the connection about the arbor.

3. A bushing press comprising a frame having a threaded portion in one end thereof and having its opposite end constructed to receive a bearing or the like having an opening therein, an arbor threaded in said portion, an adapter at one end of said arbor arranged for longitudinal movement by the arbor in alinement with the opening of said bearing when the latter is held at a predetermined position upon the frame whereby to force bushings or the like into or from said bearing and a retaining device for the adapter comprising a flexible element connected with the frame and carrying a part adapted to rotate upon and to project laterally from the adapter into engagement with the frame and arranged to be held against rotation by the frame when the adapter is in operating position.

4. A bushing press comprising a frame having a threaded portion in one end thereof and having its opposite end constructed to receive a bearing or the like having an opening therein, an arbor threaded in said portion, an adapter at one end of said arbor arranged for longitudinal movement by the arbor in alinement with the opening of said bearing when the latter is held at a predetermined position upon the frame whereby to force bushings or the like into or from said bearing and a retaining element for the adapter comprising a part extending laterally of the axis of the arbor and having a retaining portion for the adapter relative to which the latter is arranged to rotate, the retaining element being held against rotation through engagement of said part with the frame when the adapter is in operating position.

WILLIAM J. PARKINSON.