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EXTRACTING DEVICE

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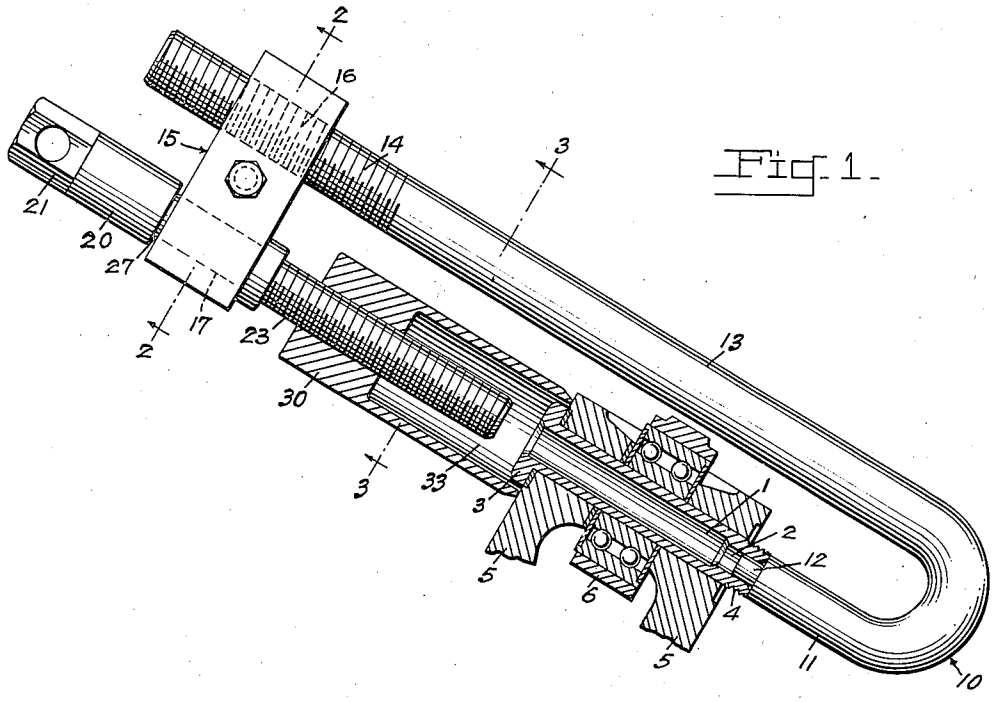


Fig. 1.

Fig. 2.

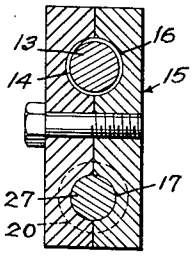
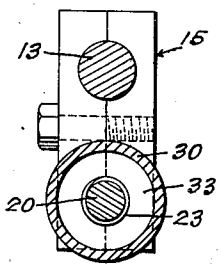


Fig. 3.



Inventors
Harris A. Auberg
Joe W. Heward

By C. E. Herrstrom & H. E. Thibodeau
Attorneys

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EXTRACTING DEVICE

Harris A. Aaberg, Benson, Minn., and Joe W. Heward, Three Oaks, Mich.

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4 Claims. (Cl. 29—85)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to us of any royalty thereon.

This invention relates to a device for extracting or removing pins, bolts and the like, and is especially adapted to remove such elements from inaccessible places and machine parts. Merely by way of illustration the improved tool of this invention is shown in connection with the extracting of the rocker shaft (stud) from its position in the cylinder head of an internal combustion engine. In the accompanying sheet of drawing,

Figure 1 shows the improved tool in position for extracting the rocker shaft, only a fragmentary portion of the cylinder head casting appearing; and

Figure 2 and Figure 3 are cross-sections taken respectively, on lines 2—2 and 3—3 of Figure 1.

The rocker shaft (or stud) 1 is shown in Figure 1 as passing through suitable holes in the cylinder head casting 5. The rocker shaft 1 is shown as being hollow, although so far as concerns the application of the improved device it would suffice if merely a recess (designated 2) were provided at one end of the shaft. The rocker shaft 1, which serves to provide a bearing for the rocker 6, is provided with means for preventing axial movement of the shaft, such as a flanged head 3 (at its left end, as viewed in Figure 1) and a thread (right) end 4 to receive a nut (not shown).

The improved tool is in the form of an elongated J-shaped rod 10, its short leg 11 being provided at its end with a reduced portion 12 adapted to be received in the recess 2 (or hollow) of the rocker shaft. The end of its long leg 13 is threaded (at 14) to receive a cross-piece 15 formed from two pieces (see Fig. 2) bolted together. The cross-piece 15 is tapped (16) to be screwed on the said threads 14 of rod 10, and is bored (17) to provide a bearing for a short rod 20 to which is provided with a recessed portion 21, Figure 1, to receive the said cross-piece 15. One end of short rod 20, is provided with suitable flats to accommodate a monkey or socket wrench; the other end of short rod 20 is threaded to receive a thimble member 30. Thimble member 30 is provided with a socket opening 33 adapted to receive the flanged head 3 of the rocker shaft 1 (or a nut, if this were used in place of the flanged head).

In using the improved tool, the cross-piece 15 is turned in one direction or the other to adjust the distance between the distal edge of socket mouth 33 and the reduced portion 12 of the short leg 11, in accordance with the work which the tool is required to perform. In the example illustrated in Figure 1, this distance would be somewhat greater than the distance between the threaded end (4) of shaft or pin 1 and its head 3, to enable the tool to be applied with the longitudinal axis of shaft 1 in alignment with the longitudinal axis through short rod 20 and short leg 11. The short rod 20 is then turned, by using a monkey or socket wrench or the like to its flat surfaces 21, to advance the thimble 30 towards the work and to abut its distal edges against the cylinder head casting 5. Further turning will now cause the J-shaped rod 10 to advance toward the cross-piece 15, its short leg 11 pushing the shaft or pin 1 in the same (leftward Figure 1) direction. It should be noted from Figure 1 that sufficient space is left, in adjusting the device to the work (by turning the cross-piece 15, as described), in the socket mouth 33 between the end of the short rod 20 and the head or nut 3, for the left end of the shaft (i. e. its head 3) to be received as it is pushed out of the casting 5, as described.

We claim:

1. In a device for removing pins and the like having a head at one end and a centered recess at the other end, the combination of an elongated J-shaped rod, the short leg of which is provided with a reduced shoulder adapted to be received in the said recessed end of the pin, a cross-piece provided with a tapped hole in alignment with the long leg of the said J-rod and a bored hole alignable with the axis of the said short leg of the J-rod, the said long leg being threaded for screwing in the said tapped hole of the cross-piece, a short rod disposed in alignment with the said axis of the short leg of the J-rod and provided with a pair of integral collars, the said short rod passing through the said bored hole of the said cross-piece with the said cross-piece held between the said collars against axial movement relative to the cross-piece, the said cross-piece being constructed of two halves presenting matching faces through the diameters of the said tapped and bored holes and bolted together, whereby the cross-piece may be positioned on the same short rod, the distal end of the short rod being adapted to accommodate a tool, a thimble member the longitudinal axis of which is in alignment with the said short rod and alignable with the said short leg of the J-rod and adapted to be positioned between the two, the mouth of

the thimble member facing the said short leg of the J-rod and presenting a socket opening, the closed end of the thimble member being tapped, and the proximal end of the short rod being threaded for screwing into the thimble member.

2. In a device for removing pins and the like having a head at one end and a centered recess at the other end, the combination of an elongated J-shaped rod, the short leg of which is provided with a reduced shoulder adapted to be received in the said recessed end of the pin, a cross-piece provided with a tapped hole alignable with the long leg of the said J-rod and a bored hole in alignment with the axis of the said short leg of the J-rod, the said long leg being threaded for screwing in the said tapped hole of the cross-piece, a short rod adapted to be disposed in alignment with the said axis of the short leg of the J-rod and provided with a pair of integral collars, the said short rod passing through the said bored hole of the said cross-piece with the said cross-piece held between the said collars against axial movement relative to the cross-piece, the distal end of the short rod being adapted to accommodate a tool, a thimble member in alignment with the said short rod and the said short leg of the J-rod disposed between the two, the mouth of the thimble member being positionable to face the said short leg of the J-rod and presenting a socket opening, the closed end of the thimble member being tapped, and the proximal end of the short rod being threaded for screwing into the thimble member.

3. In a device for removing pins and the like having a head at one end and a centered recess at the other end, the combination of an elongated J-shaped rod, the short leg of which is provided with a reduced shoulder adapted to be received in the said recessed end of the pin, a cross-piece provided with a tapped hole in alignment with the long leg of the said J-rod and a bored hole alignable with the axis of the said short leg of the J-rod, the said long leg being threaded for screwing in the said tapped hole of the cross-piece, a short rod adapted to be disposed in alignment with the said axis of the short leg of the J-rod and passing through the said bored hole of the said cross-piece, the distal end of the short rod being adapted to accommodate a tool, a thimble member the longitudinal axis of which is in alignment with the said short rod and alignable with the said short leg of the J-rod disposed between the two, the mouth of the thimble member being positionable to face the said short leg of the J-rod and presenting a socket opening, the closed end of the thimble member being tapped, and the proximal end of the short rod being threaded for screwing into the thimble member.

4. In a device for removing pins and the like having a head at one end, the combination of an elongated J-shaped rod, a cross-piece provided with a tapped hole in alignment with the long leg of the said J-rod and a bored hole alignable with the axis of the short leg of the J-rod, the said long leg being threaded for screwing in the said tapped hole of the cross-piece, a short rod adapted to be disposed in alignment with the said axis of the short leg of the J-rod and provided with a pair of integral collars, the said short rod passing through the said bored hole of the said cross-piece with the said cross-piece held between the said collars against axial movement relative to the cross-piece, the said cross-piece being constructed of two halves presenting matching faces through the diameters of the said tapped and bored holes and bolted together, whereby the cross-piece may be positioned on the same short rod, the distal end of the short rod being adapted to accommodate a tool, a thimble member the longitudinal axis of which is in alignment with the said short short leg of the J-rod, and adapted to be disposed between the two, the mouth of the thimble member being positionable to face the said short short leg of the J-rod and presenting a socket opening, the closed end of the thimble member being tapped and the proximal end of the short rod being threaded for screwing into the thimble member.

HARRIS A. AABERG.
JOE W. HEWARD.