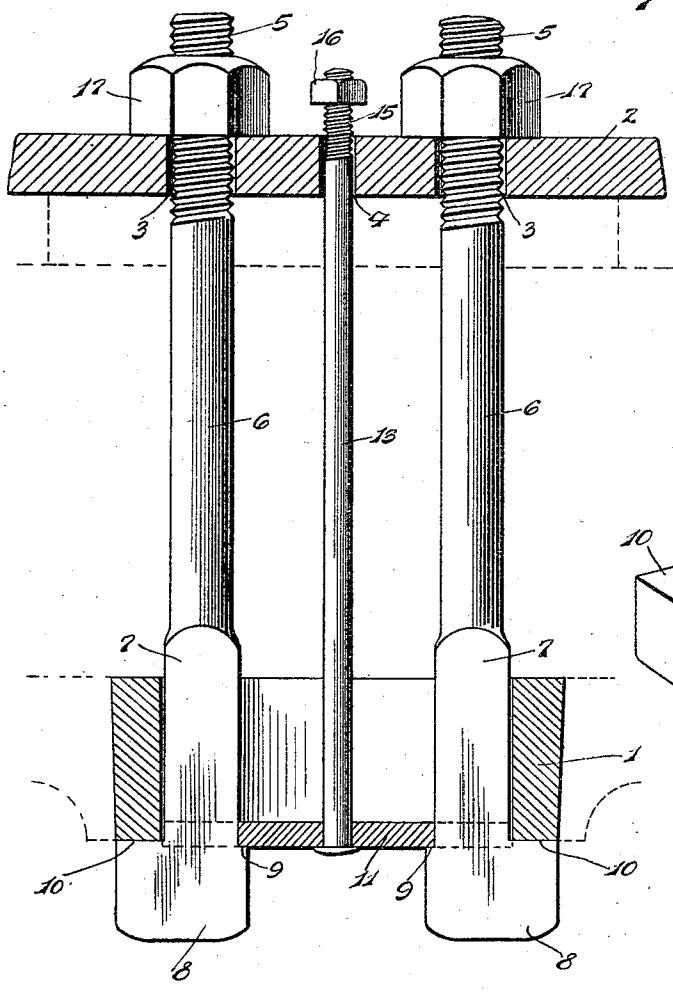
May 13, 1924. 1,493,534

O. HARDIN

DEVICE FOR EXTRACTING LINERS AND VALVE SEATS

Original Filed Sept. 10, 1921

Fig. 1.



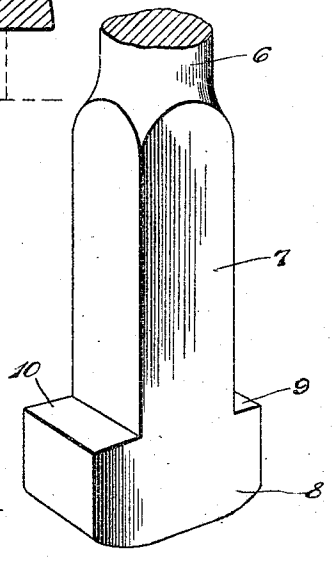
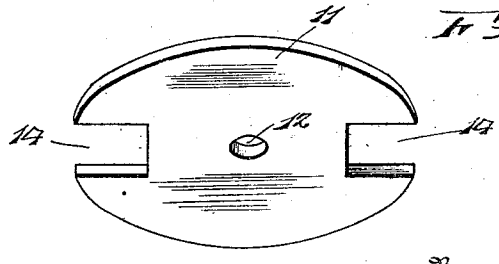


Fig. 2.

Fig. 3.



Inventor

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By

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Patented May 13, 1924. 1,493,534

UNITED STATES PATENT OFFICE.

OTIS HARDIN, OF TONKAWA, OKLAHOMA.

DEVICE FOR EXTRACTING LINERS AND VALVE SEATS.

Application filed September 10, 1921, Serial No. 499,605. Renewed October 2, 1923.

To all whom it may concern:

Be it known that I, OTIS HARDIN, a citizen of the United States, residing at Tonkawa, in the county of Kay and State of Oklahoma, have invented certain new and useful Improvements in Devices for Extracting Liners and Valve Seats, of which the following is a specification.

This invention relates to means for removing liners and valve seats from pumps and has for its object the provision of simple, inexpensive and easily manipulated means whereby liners and valve seats which may have become corroded or broken may be effectually removed from a pump without disassembling the pump. The invention is illustrated in the accompanying drawing and will be hereinafter fully set forth.

In the drawings—

Figure 1 is a view, partly in side elevation and partly in section, of an apparatus embodying the invention, the device being arranged to withdraw a valve seat and a portion of the pump structure being indicated by dotted lines;

Fig. 2 is a detail perspective view of one of the lifters;

Fig. 3 is a detail perspective view of the spacer.

In the drawings, the reference numeral 1 indicates a valve seat which is to be removed from the pump and 2 indicates a plate or bar which is to be set across the pump, when the valve seat is to be withdrawn, in the position usually occupied by the valve cap. The plate or bar 2 is provided with openings 3 therethrough which openings are spaced apart a distance approximately equal to the internal diameter of the valve seat, as will be readily understood. Another opening 4 is formed through the plate or bar 2 midway between the openings 3, as clearly shown in Fig. 1, for a purpose which will presently appear. The openings 3 receive the upper threaded ends 5 of lifting rods or bolts 6, the lower ends of which are angular in cross section, as shown at 7, and constructed at their extremities with laterally extending heads 8 presenting shoulders 9 at their inner sides and larger shoulders 10 at their outer sides. The apparatus includes a spacer disc 11 having a central opening 12 to receive the lower end of the retaining rod 13 and provided at diametrically opposite points in its periphery with angular notches 14 which are adapted to fit around the angular portions 7 of the lifting rods or bolts 6. As shown clearly in Fig. 1, when the spacer is in position, the portions thereof immediately adjacent the bases of the notches 14 will rest upon the shoulders 9 so that the spacer will be carried by the said shoulders and will be prevented from falling through the pump. The retaining rod 13 extends through the opening 4 in the plate or bar 2 and is constructed with threads 15 at its upper extremity receiving a nut 16 whereby if the bar or plate 2 be raised, the rod 13 and the spacer 11 will be prevented from relative downward movement. Nuts 17 are mounted upon the threaded ends 5 of the lifting bolts or rods 6 and are turned home against the plate or bar 2 for a similar purpose.

It is thought the use of the device will be readily understood from the foregoing description, taken in connection with the accompanying drawings. The valve seat 1 is a tapered ring which is held in its position in the pump body casting by friction, as will be readily understood. When the valve seat is to be extracted, the rods or bolts 6 are inserted downwardly through the bore of the valve seat and are turned so that the shoulders 10 will project under the lower edge of the seat, the bar or plate 2 being engaged over the upper ends of the said bolts or rods and sufficient play being given to permit the heads 8 to pass downwardly through the seat and then spread outwardly to engage under the same. The spacer disc 11 is then lowered into engagement with the angular portions 7 of the lifting rods or bolts and by its engagement with the inner sides thereof will spread the same into locking engagement with the seat which is to be removed. The nuts 16 and 17 are then turned home against the bar or plate 2, after which the said bar or plate is raised by hand or through the application of other lifting force and as it is raised it will obviously act through the said nuts upon the rods 6 and 13 to raise the same and lift the valve seat from its position so that it will be easily withdrawn from the pump.

To extract the liner of a pump cylinder, the device is used in exactly the same manner except that the bar 2 is placed across the end of the cylinder after the head or cap thereof is removed.

My device is exceedingly simple in the construction and arrangement of its parts

and may be produced, applied and operated at a very low cost and, when in use, will effectually serve its intended purpose.

Having thus described the invention, what is claimed as new is:

1. Means for extracting liners and valve seats from pumps comprising a pair of lifting rods provided at their lower ends with laterally extending heads presenting shoulders on their opposite sides, the outer shoulders being adapted to engage under the member to be extracted, a spacing disk resting upon the inner shoulders of said heads and maintaining the heads in engagement with the member to be extracted, and means for lifting the lifting rods.

2. Means for extracting liners and valve seats from pumps comprising a pair of lifting rods provided at their lower ends with lateral heads adapted to be engaged under the member to be extracted, a spacing disc fitted between the said lifting rods and engaging the same to maintain the heads thereof in operative engagement with the member to be extracted, a lifting rod extending from said spacer disc, and a lifting bar operatively connected with all said lifting rods.

3. An apparatus for the purpose set forth comprising a pair of lifting rods having threaded upper ends and angular lower ends and provided at their lower ends with laterally extending heads presenting shoulders on their opposite sides, the outer shoulders being adapted to engage under the member to be extracted, a spacer disc provided with diametrically opposite angular notches engaging around the angular lower portions of the lifting rods and resting on the inner shoulders presented by the heads, a rod extending upwardly from said spacer disc and having a threaded upper end, a bar or plate constructed with openings receiving the upper ends of said lifting rods, and nuts mounted on the several lifting rods and adapted to be turned home against the last-mentioned bar or plate.

In testimony whereof I affix my signature.

OTIS HARDIN. [L. S.]