Jan. 13, 1931. G. E. HOLDER 1,788,461

VALVE SEAT PULLER

Filed Oct. 26, 1929

Fig. 1.

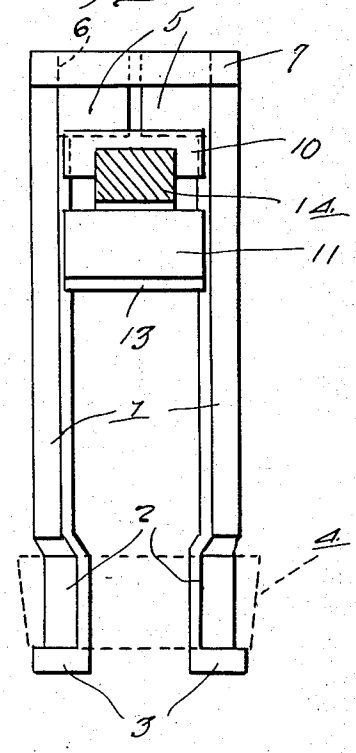


Fig. 2.

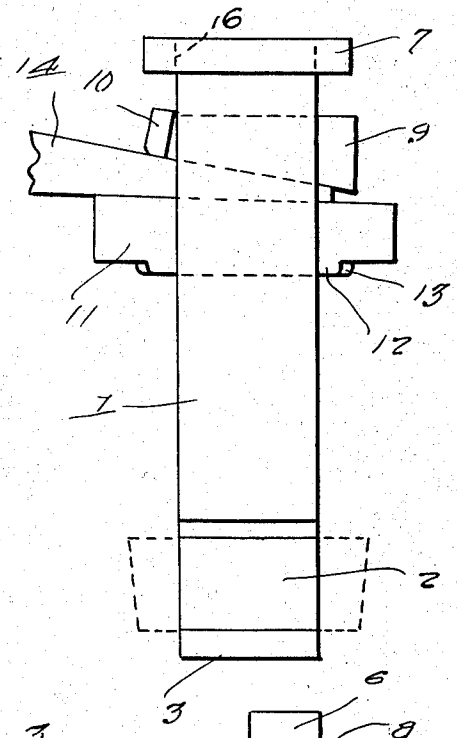
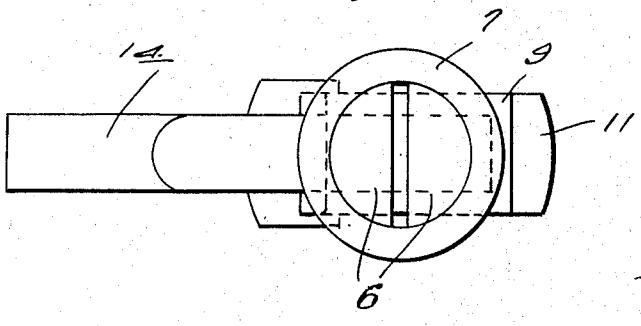


Fig. 3.



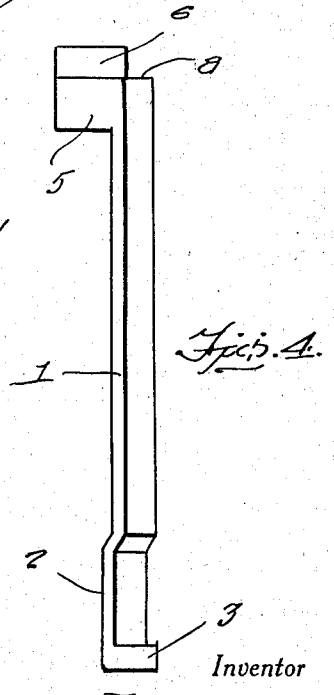
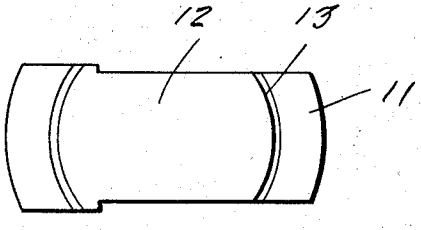


Fig. 4.

Fig. 5.



Inventor

George E. Holder

By Clarence A. O'Brien

Attorney

Patented Jan. 13, 1931 1,788,461

UNITED STATES PATENT OFFICE

GEORGE E. HOLDER, OF WEWOKA, OKLAHOMA

VALVE-SEAT PULLER

Application filed October 26, 1929. Serial No. 402,668.

This invention relates to valve seat pullers and more particularly to devices of this character which are especially adapted for removing the tapered valve seat from pumps but it is to be understood that a tool constructed in accordance with this invention may be used for any purpose and upon any type of valve seat or bushing for which it is found adapted.

An important feature of the invention resides in the provision of complemental pull rods for engaging under the valve seat and having means for connecting the ends of the pull rods together in a manner to drag a wedge between said connecting means and the pump chamber for forcing the pull rods together with the valve seat outwardly from said casing.

Other objects of the invention are to provide, in a manner as hereinafter set forth, a valve seat puller of the aforementioned character which will be simple in construction, strong, durable, efficient in its use and which may be manufactured at low cost.

Other objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing wherein like characters of reference designate corresponding parts throughout the several views, and wherein:—

Figure 1 is a side view of a valve seat puller constructed in accordance with this invention the actuating wedge being shown in cross-section.

Figure 2 is a view of the device taken at right angles to Figure 1.

Figure 3 is a top plan view thereof.

Figure 4 is a detail view in elevation of one of the pull rods.

Figure 5 is a detail view in bottom plan of the pump chamber engaging bar.

Referring to the drawings in detail, the reference character 1 designates a pair of separable, parallel spaced puller rods, the inner opposed faces of which are flat and the outer faces of which are arcuate. At their lower ends the puller rods 1 are provided with inwardly offset portions 2 which terminate in outwardly extending right angularly disposed valve seat engaging flanges 3 which engage under said valve seat, the latter being shown in dotted lines in Figures 1 and 2 of the drawing and designated by the reference character 4. The flanges 3 engage under the valve seat 4 on diametrically opposite sides thereof.

At their opposite ends the puller rods 1 are provided with laterally and inwardly extending complemental head sections 5 upon the top of which are mounted the complemental segments 6, the peripheral edges of which are spaced inwardly from the outer sides of the puller rods 1, as seen most clearly in Figure 4 of the drawings. The puller rods 1 are maintained in assembled position through the medium of the retaining ring 7 which encircles the segments 6 and rests on the top of the shoulder 8 provided by the upper end of said puller rods and the complemental heads 5.

A block 9 having an inclined lower face is positioned between the puller rods 1 and in engagement with the underside of the complemental heads 5 and said block is provided with a cross bar 10 at one end to prevent the same from passing entirely between the puller rods.

A supporting bar 11 extends between the puller rods 1 and has its opposite end projecting laterally therefrom. The supporting bar 11 is provided with a thickened intermediate portion 12 the opposite ends of which are curved to provide the arcuate shoulders 13. The supporting bar 11 is adapted to be mounted across the pump chamber from which the valve seat is to be removed and the thickened portion 12 extends thereinto in a manner to engage the shoulders 13 with the inner walls of the chamber for the purpose of preventing lateral movement of the supporting bars thereon. A wedge 14 is then driven between the supporting bar 11 and the block 9 and it will thus be seen that said block, ring 7 and the puller rods 1 will be forced outwardly and away from the pump chamber and the valve seat 2 will be carried therewith on the flanges 3.

It is believed that the many advantages of a valve seat puller constructed in accord-

ance with this invention will be readily understood, and although the preferred embodiment of the invention is as illustrated and described, it is to be understood that changes in the details of construction may be had which will fall within the scope of the invention as claimed.

What is claimed is:—

1. A valve seat puller of the character described comprising a pair of separable puller rods, valve seat engaging means on one end of the puller rods, a pair of laterally and inwardly extending complementary head sections on the opposite ends of the puller rods, reduced complemental segments on the upper ends of the head sections, a retaining ring encircling said segments for coupling the upper ends of the puller rods together, a supporting bar extending between the puller rods and slidable longitudinally therebetween and having its opposite end portions projecting laterally therefrom, a tapered block inserted between the puller rods in engagement with the complemental head section and a wedge adapted to be driven between the supporting bar and the block for moving the puller rods longitudinally past the supporting bar.

2. A valve seat puller of the character described, comprising a pair of parallel spaced puller rods having inwardly offset lower end portions terminating in outwardly directed right angularly disposed valve seat engaging flanges, laterally and inwardly offset complemental head sections on the opposite ends of the puller rods, complemental segments mounted on the head sections, a retaining ring encircling the segments for securing the upper ends of the puller rods together, a supporting bar extending between the puller rods in spaced relation to the head sections and extending laterally therefrom for engagement, at its opposite end, with a cylindrical supporting body, said supporting bar being provided with a thickened intermediate portion providing shoulders on its lower side for engagement with the inner walls of the cylindrical support, a block interposed between the puller rods in engagement with the complemental head sections, and in spaced relation to the supporting bar and a wedge insertable between said supporting bar and the block for forcing the puller rods away from the cylindrical support with which the supporting bar is engaged.

In testimony whereof, I affix my signature.

GEORGE E. HOLDER.