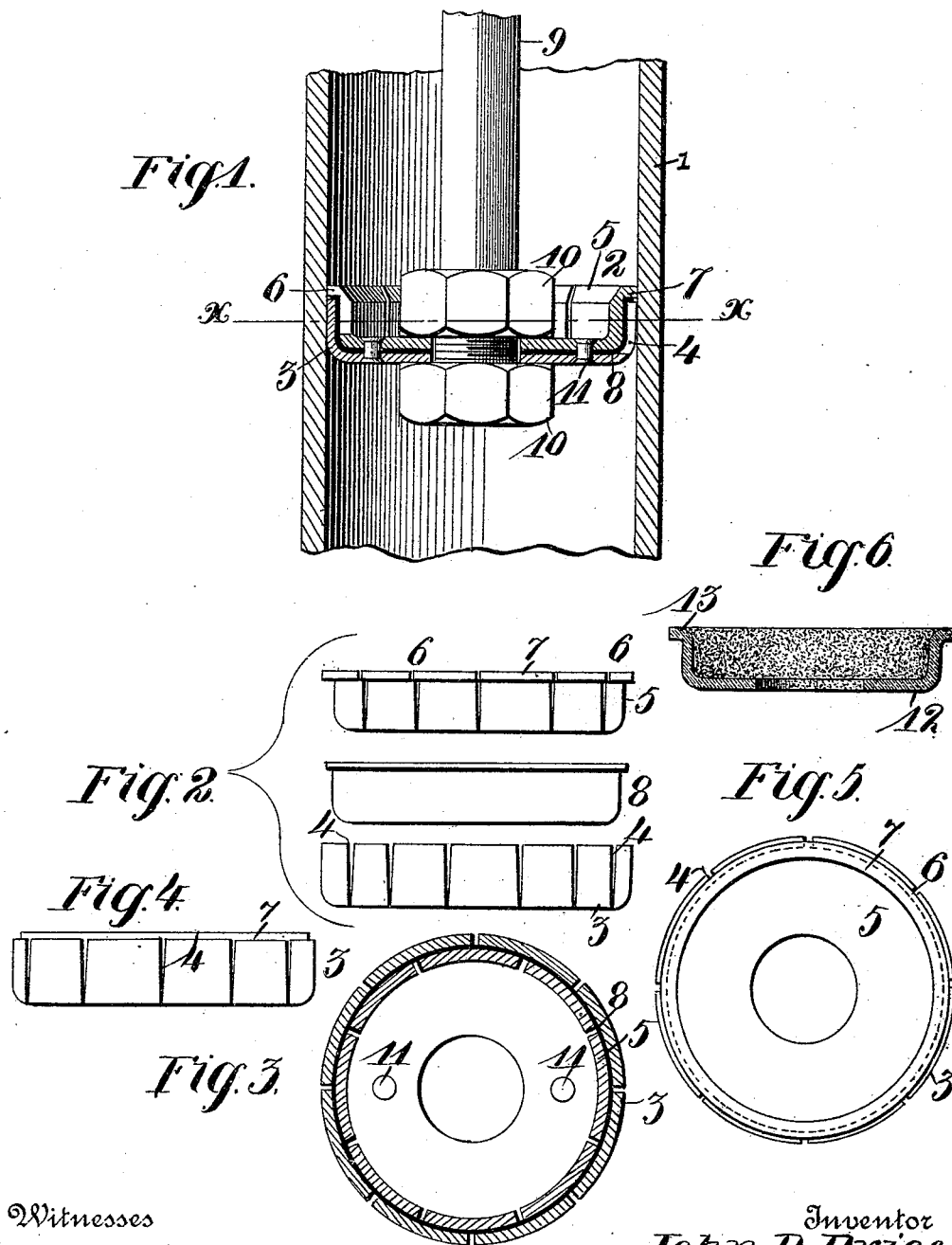


(No Model.)

J. D. PRICE.
METALLIC PACKING FOR PISTONS.

No. 458,130.

Patented Aug. 18, 1891.



Witnesses
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Inventor
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By *his* Attorneys, *Higdon Higdon*

UNITED STATES PATENT OFFICE.

JOHN DANIEL PRICE, OF PUEBLO, COLORADO, ASSIGNOR OF ONE-THIRD TO
THOMAS H. PRICE, OF SAME PLACE.

METALLIC PACKING FOR PISTONS.

SPECIFICATION forming part of Letters Patent No. 458,130, dated August 18, 1891.

Application filed April 7, 1891. Serial No. 387,955. (No model.)

To all whom it may concern:

Be it known that I, JOHN DANIEL PRICE, of the city of Pueblo, Pueblo county, State of Colorado, have invented certain new and useful Improvements in a Metallic Packing for Hydraulic Piston-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in "pistons;" and it consists in the novel arrangement and combination of parts, as will be more fully hereinafter described, and designated in the claims.

In the drawings, Figure 1 is a vertical section of my complete invention. Fig. 2 is a side elevation of the same, showing the parts detached. Fig. 3 is a horizontal cross-section taken on the line *xx* of Fig. 1. Fig. 4 is a side elevation of a modification of my invention. Fig. 5 is a top plan view of the same, and Fig. 6 is a vertical section of a composition cup which I employ in carrying out my invention.

My invention is especially adapted to be used in connection with hydraulic cylinders. However, its use may be extended without materially parting from the true nature of the same.

Referring to the drawings, 1 indicates a cylinder, and 2 the piston itself, which is constructed as follows, to wit:

3 indicates a metallic cup, the same being preferably stamped out of a disk of metal.

Said cup is provided with a series of slits 4, so as to render the same expansive under heavy pressure. 5 indicates a similar cup, which is provided with a series of slits 6. Said cup is also provided with an outward flange 7, the length of the same being about equal to the thickness of cup 3 and in its normal position overlies cup 3, as shown in Fig. 1. The slits 6 formed in said cup are to render the same susceptible to expansion under heavy pressure. Interposed between said cups 3 and 5 is a stratum of impermeable material 8, such as india-rubber, the same being adapted to effect a water-tight structure. The cups are so constructed relative to

the slits that the joints can be broken when the same are put together in their normal position, thereby making a perfectly tight and expansible piston. Said cups 5 and 3, and also the stratum of impermeable material 8, are provided with a perforation in which the piston-rod may be inserted and secured, as shown in Fig. 1, in which figure it can be readily perceived that the piston-rod 9 is firmly secured to the piston 2 by means of nuts 10. Interposed between the same is the piston itself. The cups 3 and 5, as well as the impermeable stratum 8, are firmly secured together by means of rivets 11, as shown in Fig. 1.

Referring to the modification as shown in Figs. 4, 5, and 6, in place of using two metallic cups, as in the first-mentioned construction, I substitute in lieu of cup 5 a composition cup 12, the same being composed of a mixture of gutta-percha and copper filings. This mixture, of course, will form an impermeable cup, and when used in connection with cup 3 will form a perfectly water-tight and expansible piston without the agency of the impermeable stratum 8. Cup 12 is provided with a circular flange 13, the extent of the same being somewhat less than the thickness of cup 3, so that when they are put together in their normal position the composition cup 12, or especially the flange 13 of the same, will not be subjected to the abrasive effect consequent to the functional operation of the piston.

Having fully described my invention, what I claim is—

1. In a piston, a metallic cup 3, provided with slits 4 in the sides thereof, a second cup 5, having similar slits 6, an outwardly-projecting flange 7 thereon, a packing of impermeable material between said cups, rivets passing through the cups and packing to hold the same together, a piston-rod passing through central apertures in the cups, and nuts 10 screwed on said rod, one above and the other below said piston, substantially as described.

2. In a piston, a metallic cup provided with slits in the sides thereof, an outwardly-pro-

jecting flange thereon, an impermeable composition cup of gutta-percha and copper filings located within said first-mentioned cup, a flange on said composition cup, the diameter of which cup, including its flanges, is less than the diameter of the metallic cup and flange, a piston-rod passing through the center of said cups, and nuts screwed thereon,

one above and the other below the piston, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN DANIEL PRICE.

Witnesses:

J. A. STAFFORD,
JNO. LYELL.