J. A. MACKIE AND F. W. WADDELL.

VALVE.

APPLICATION FILED MAY 20, 1921.

1,436,768. Patented Nov. 28, 1922.

Fig. 1.

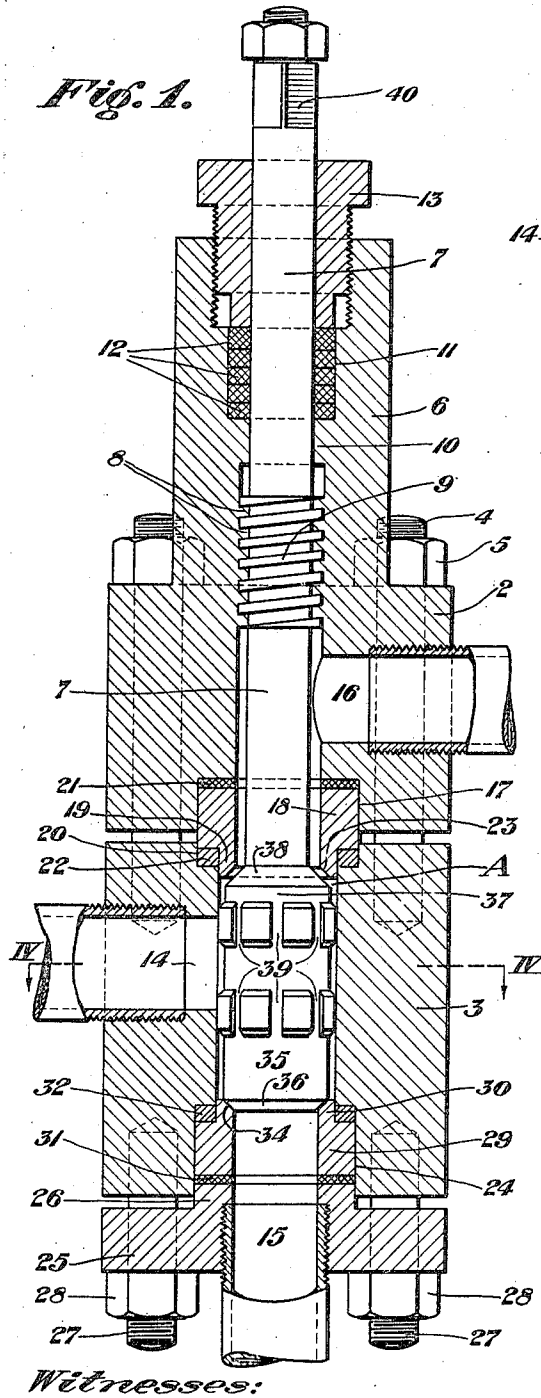


Fig. 2.

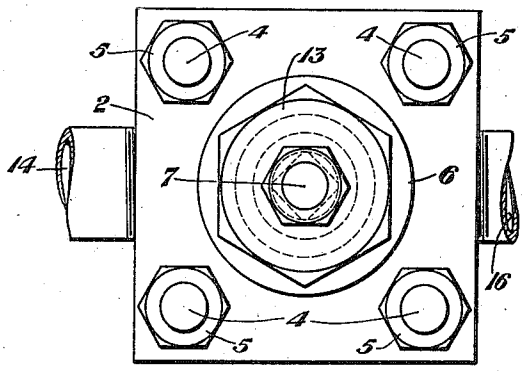


Fig. 4.

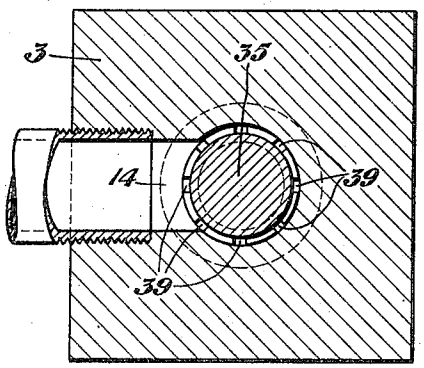
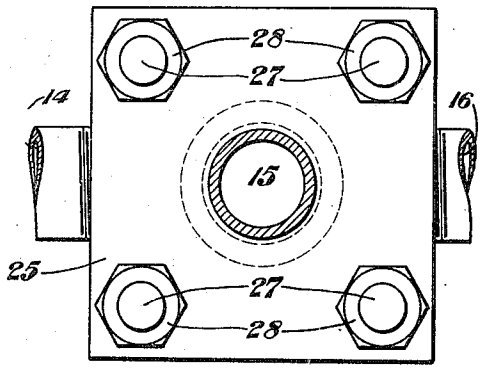


Fig. 3.



Witnesses:

Edwin Trueb

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by: D Anthony Usina

their Attorney.

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UNITED STATES PATENT OFFICE.

JOHN A. MACKIE, OF McKEES ROCKS, AND FREDERICK W. WADDELL, OF CRAFTON BOROUGH, PENNSYLVANIA.

VALVE.

Application filed May 20, 1921. Serial No. 471,237.

To all whom it may concern:

Be it known that we, JOHN A. MACKIE and FREDERICK W. WADDELL, a subject of the King of Great Britain, and a citizen of the United States, respectively, and residents of McKees Rocks, in the county of Allegheny and State of Pennsylvania, and Crafton Borough, in the county of Allegheny and State of Pennsylvania, respectively, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to valves, and more particularly to high pressure valves, and has for its principal object the provision of an improved valve of this class that will be devoid of leather cups, packings, etc., and one that may be readily repaired and reseated.

Referring to the accompanying drawings, in which a preferred form of our valve is illustrated, Figure 1 is a vertical sectional elevation through the valve.

Figure 2 is a top plan view.

Figure 3 is a bottom plan view.

Figure 4 is a cross section on the line IV—IV of Figure 1.

Referring now more particularly to the drawings, the valve casing is composed of upper and lower cylindrical centrally apertured sections 2 and 3, respectively, secured together by stub screws 4 threaded into the lower section and having nuts 5 on their upper ends bearing against the upper section, the lower section having a centrally arranged aperture of larger diameter than the section 2 to form a valve chamber A.

The upper section 2 of the valve body is provided with an integral extension or neck 6 having a centrally formed aperture or opening therein through which the valve stem 7 passes. The aperture in the neck 6 is provided with a screw thread 8 adjacent its lower end to receive the operating thread 9 of the valve stem and is contracted at a point above the thread 8 to form a guide ring 10. The opening in the neck 6 is enlarged above the ring 10 forming a stuffing box 11 to receive the packing rings 12 and is screw threaded adjacent its upper end for the reception of a gland 13, which is adapted to be screwed down against the packing rings 12.

The particular valve shown in the drawings is a three-way valve and therefore is provided with inlet and outlet ports 14 and 15, respecticely, in the lower section and with a return port 16 in the upper section.

The upper section of the valve casing has its lower face provided with a recess 17 for the reception of a removable valve seat member which is composed of a body portion 18 adapted to fit snugly within the recess 17 in the portion 2 and a reduced portion 19 adapted to fit within the valve chamber A in the lower section 3 of the casing. The section 3 of the casing is also provided with a recess 20 in alignment with the recess 17 in the section 2 and the portion 18 of the valve seat member extends into this recess 20.

Suitable washers or gaskets 21 and 22 are located within the respective recesses 17 and 20 to position the valve seat member. The gaskets 21 and 22 serve to position the valve seat member with respect to the valve and it will be readily apparent that by varying the thickness of the gaskets the position of the valve seat member may be varied with respect to the valve to care for wear or reduction in size of the seat due to grinding or reseating.

The lower end of the reduced portion 19 of the valve seat member is beveled inwardly forming a seat 23.

The lower section 3 of the valve casing is provided with a recess 24 adapted to receive a valve seat member and is closed by a cap or bottom plate 25 having a projection 26 fitting snugly within the recess 24 and secured to the section 3 by stub screws 27, which are threaded into the section 3 and have nuts 28 on their outer ends bearing against the plate 25.

The valve seat member adapted to fit within the recess 24 is composed of a body portion 29 adapted to fit snugly within the recess 24 and a reduced portion 30 adapted to fit within the valve chamber A.

Suitable washers or gaskets 31 and 32 are located within the recess 24 between the seat member and the bottom of the recess 24 and the top of the seat member and the face of the projection 26 on the member 25, respectively, to position the seat member with respect to the valve, and it will be readily apparent that as set forth above when describing the functions of the washers or gaskets 21 and 22, by varying the thickness of the washers or gaskets 31 and 32 the position of

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the seat member may be varied with respect to the valve.

The reduced portion 30 of the seat member is beveled inwardly forming a valve seat 34.

The valve stem 7 is provided with an integral shoulder 35 at its lower end forming a valve which has its lower face beveled at 36 to snugly fit the valve seat 34. A second integral shoulder 37 forming a valve is spaced upwardly along the valve stem from the valve 35 and has its upper face beveled at 38 to snugly engage the valve seat 23. The valves 35 and 37 are of less diameter than the valve chamber, and spacer lugs or spiders 39 are provided between the valves to prevent knocking or chattering of the valve stem during use.

The upper end of the valve stem is provided with a squared portion 40 to receive a hand wheel, operating lever or the like.

The advantages of our improved valve will be readily appreciated by those skilled in the art, particular attention being directed to the following: The valve seats may be readily removed for grinding or re-seating, and the position of the seats relative to the valves may readily be varied by substituting gaskets of varying thickness to position the valve seats, therefore permitting the stroke of the valve to remain the same after reseating.

We claim:—

1. A valve comprising a casing having recesses surrounding the passage therein, opposing valve seats removably mounted in said recesses, said valve casing being divided transversely through one of said recesses forming upper and lower sections and the other of said recesses opening through the bottom of said lower section and being closed by a bottom plate, said casing sections and said bottom plate being removably secured together, and a vertically movable valve stem mounted in said casing and having integrally formed opposing valve faces thereon adapted to co-operate with said valve seats.

2. A valve comprising a casing having recesses surrounding the passage therein, opposing valve seats removably mounted in said recesses, said valve casing being divided transversely through one of said recesses forming upper and lower sections and the other of said recesses opening through the bottom of said lower section and being closed by a bottom plate, said casing sections and said bottom plate being removably secured together, a vertically movable valve stem mounted in said casing having integrally formed opposing valve faces thereon adapted to co-operate with said valve seats, and means for positioning said valve seats relative to said valve faces.

3. A valve comprising a casing having recesses surrounding the passage therein, opposing valve seats removably mounted in said recesses, said valve casing being divided transversely through one of said recesses forming upper and lower sections and the other of said recesses opening through the bottom of said lower section and being closed by a bottom plate, said casing sections and said bottom plate being removably secured together, a vertically movable valve stem mounted in said casing having integrally formed opposing valve faces thereon adapted to co-operate with said valve seats, and removable gaskets between the ends of said recesses and said valve seats for positioning said valve seats relative to said valve faces.

In testimony whereof we have hereunto signed our names.

JOHN A. MACKIE.
FREDERICK W. WADDELL