P. P. HAAG.

STEAM VALVE.

APPLICATION FILED SEPT. 10, 1915.

1,193,780. Patented Aug. 8, 1916.

Fig. 2.

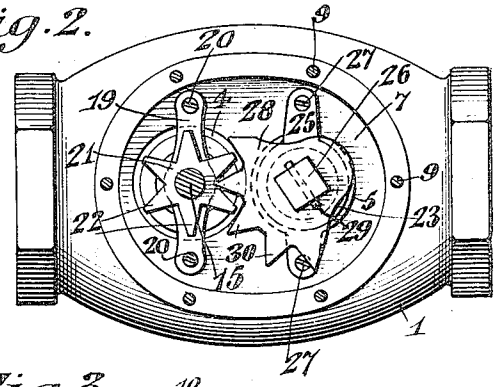


Fig. 1.

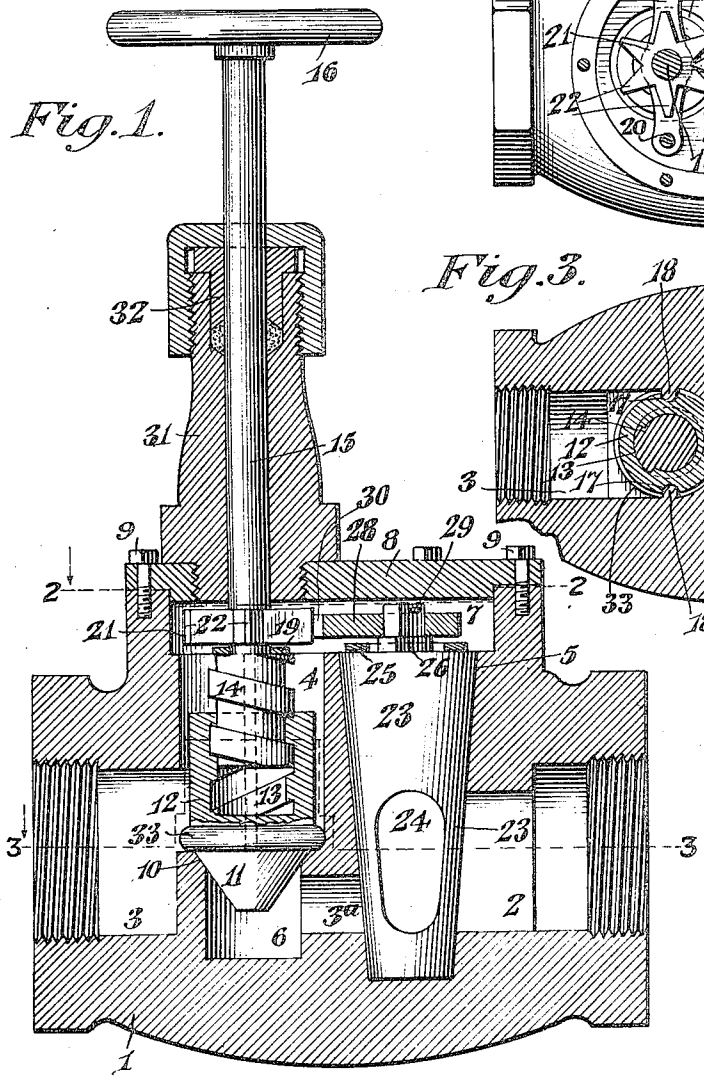
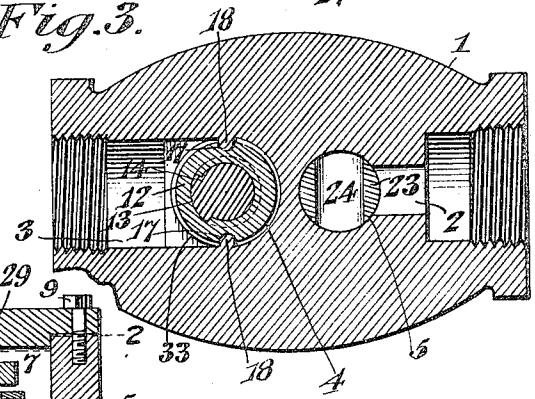


Fig. 3.



WITNESSES:

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STEAM-VALVE.

1,193,780. Specification of Letters Patent. Patented Aug. 8, 1916.

Application filed September 10, 1915. Serial No. 50,000.

To all whom it may concern:

Be it known that I, PLUMUS P. HAAG, a citizen of the United States, residing at Coffeyville, in the county of Montgomery and State of Kansas, have invented a new and useful Steam-Valve, of which the following is a specification.

This invention relates to improvements in valves.

The object of the present invention is to provide a globe-valve structure in which the movable globe valve member may be entirely removed, for repairs or for other purposes, while the valve structure is subjected to the full head of steam or other fluid controlled by the valve.

Heretofore it has been necessary to stop the generation of steam or cut off the flow of other fluid under pressure at a main valve in order to permit repairs to various controlling valves, thus causing delay and material loss of time so that the leaky valves are often endured for long periods of time.

By the present invention two valves are combined in one casing and are operated simultaneously to open or close the passage through the valve.

When the valves are in the closed position, the second valve in order from the inlet to the casing may be bodily removed for repairs or for other purposes, while the fluid under pressure is held back by the first valve in order.

A full and complete understanding of the invention may be obtained from a careful consideration of the following detailed description, taken in connection with the accompanying drawing forming a part of this specification; it being understood that while the drawing shows a practical form of the invention, the latter is not confined to strict conformity therewith, but may be changed or modified as long as such changes or modifications mark no material departure from the salient features of the invention, as specifically pointed out in the claims hereto appended.

In the drawing, in which like reference characters designate like parts in each of the several figures:—Figure 1 is a longitudinal section view of my improved valve; Fig. 2 is a horizontal sectional view on the line 2—2 of Fig. 1; and Fig. 3 is a similar view on the line 3—3 of Fig. 1.

A main casing 1 is provided with the entrance opening 2 and the outlet 3, each of which is threaded in the ordinary manner for installation in a pipe line, (not shown). The casing 1 is somewhat longer than an ordinary globe valve casing in order to adapt the same for the reception of the additional valve mechanism of the present invention. The inlet opening 2 communicates by a somewhat reduced channel 3^a and channel 6 with the main valve chamber 4 which is arranged perpendicularly to the longitudinal axis of the casing. A long-taper valve-seat 5 is provided in advance of the main valve chamber 4, and the latter, in turn, is in direct communication with the outlet 3. A chamber 7 is formed in the top of the casing 1 and is in communication with the valve chamber 4 and seat 5. The area of the chamber 7 is sufficient to accommodate valve actuating mechanism to be described and the said chamber 7 is closed by a plate 8, made fast to the casing by suitable screws 9, or otherwise.

The lower extremity of the valve chamber 4 is provided with a tapered seat 10 to receive a conical valve 11 on the lower extremity of a reciprocatory cylindrical block 12 of a diameter somewhat less than the diameter of the chamber 4 in which it is adapted to be lowered and raised for seating and unseating the valve. For this purpose the block 12 is formed with an interior screw thread 13 of long pitch coacting with similar exterior threads 14 on the lower extremity of a valve stem 15 which latter is provided on its upper extremity with the customary hand wheel 16. The reciprocatory block 12 is provided on diametrically opposite sides with guiding grooves 17 receiving vertical ribs 18 formed in the valve casing 1 so as to guide the reciprocatory block 12 in its upward and downward movements and to hold it from turning on the valve seat 10. The upper end of the screw threaded portion 14 is flush with the bottom wall of the chamber 7 and a metallic plate 19 having a suitable perforation for the reception of the valve stem 15 therein, is placed over the threaded portion 14 and has terminal portions made fast to the lower wall of the chamber 7 by suitable fastening means such as screws 20. This plate prevents any lengthwise movement of the valve stem 15, so that in the manipulation thereof, the reciprocating block 12 is caused to rise or fall

bodily and to be held from rotation. The valve stem 15 has an actuating wheel 21 provided thereon in the form of a gear wheel having a plurality of outstanding teeth 22 for a purpose to be described and this wheel 21 is retained within the chamber 7 and immediately over the retaining plate 19 and acts to prevent any downward movement of the stem 15 by coming in contact with the plate 19. Mounted within the long taper seat 5 is a conical rotatable valve plug 23 having the usual passageway 24 provided therein to register, upon the turning of the plug, with the inlet opening 2, or to be turned crosswise thereto in order to cut off the flow of water or other fluid. A retaining plate 25 similar to the plate 19 is provided to hold the valve 23 in its proper position and this plate 25 has a suitable opening to permit of the passage therethrough of the squared shank 26 of the valve 23. The plate 25 is made fast to the lower wall of the chamber 7 by screws 27, in order to retain the plate in its engagement with the plug 23. The upper end of the squared shank 26 projects through a similar opening provided in a segmental rack member 28 and is held thereon by a cotter pin 29 or otherwise. The rack member 28 is provided with a series of outwardly projecting teeth 30 meshing with the teeth 22 of the gear wheel 21 whereby the plug 23 is caused to rotate upon turning the valve stem 15.

The closure plate 8 is provided with a suitable threaded opening for the reception of the lower threaded end of a post 31 which is provided with a longitudinal bore for the passage of the valve stem 15. In order to prevent leakage, the upper end of the post 31 is provided with the usual packing gland 32.

Upon the manipulation of the hand wheel 16 in the proper direction the threaded end 14 of the stem 15 raises the valve 11 from its seat and simultaneously the gear wheel 21 actuates the rack member 28 and causes the rotation of the valve plug 23 sufficiently to bring the passage-way 24 into alinement with the inlet 2, thus by one operation permitting the steam or other fluid to pass entirely through the valve casing 1. When for any reason it is desirable to remove the valve 11, the hand wheel 16 is first operated to close both valves. The screws holding the closure plate 8 may be then removed and the plate 8 turned to give access to the screws 20 and on the removal of the screws the plate 8 together with the valve stem 15, wheel 21, threaded portion 14, and block 12 may all be lifted from the valve casing for any repairs that may be needed. During this time the flow of fluid through the valve structure is entirely cut off by the valve 23 which remains in its closed position.

It will be noted that the connecting means between the two valves, consisting of the wheel 21 and rack 28, are separable from each other when it is desired to remove the reciprocable valve.

The block 12 is of somewhat smaller diameter than the chamber 4 in order to avoid the binding of the same in its up and down movement and it is provided immediately above the tapered valve 11 with a circumferential bead 33 of a diameter to snugly fit the bore 4, and to cause the valve 11 to properly seat itself when actuated in a downward direction by the hand wheel 16.

By the above described arrangement of parts, it will be seen that a double valve structure has been provided which is of such a nature as to be cheaply manufactured, is readily operated by the manipulation of a single actuating member, and renders unnecessary the installation in the pipe line of an additional cut-off valve, or delaying repairs until such time as the fluid under pressure is no longer supplied to the pipe line.

What is claimed is:—

1. A valve structure comprising a casing having a passageway for fluid therethrough, communicating spaced-apart valve chambers intersecting the passageway at right angles thereto and in parallel relation to each other, valves mounted within the respective chambers, one of the valves being rotatable and the other reciprocable, a manipulating means connected to the reciprocable valve to lower and raise the valve to and from its seat, and means connecting the manipulating means to the rotatable valve for actuating the latter simultaneously with the reciprocable valve, said connecting means being separable, whereby when the valves are in their closed position, the reciprocable valve may be bodily removed without disturbing the other valve.

2. In a valve, a casing having an inlet, and an outlet, separate valve chambers provided in the casing between the inlet and outlet, and a channel leading from the side of one of the valve chambers to a point below the valve seat of the other chamber, in combination with a rotatable valve located in the chamber nearest the inlet, a reciprocable valve mounted in the other chamber, a rotary valve stem, means connecting the stem to the reciprocable valve to raise and lower it from its seat, and separate means connecting the said stem with the rotatable valve to turn the latter, the last-named connecting means being separable, whereby the reciprocable valve may be removed bodily from the valve structure at will without disturbing the position of the rotatable valve.

3. A valve comprising a casing having a passage therethrough with inlet and outlet openings, a rotatable tapered valve adjacent

to the inlet opening and at right angles to the passage through the casing, a reciprocatory valve in the casing movable in a direction parallel with the longitudinal axis of the first named valve and located adjacent to the outlet opening, means individual to the valves for retaining them in place, and means common to both valves for simultaneously rotating the first named valve and reciprocating the second named valve to control the flow of fluid through the valve, whereby when the valves are closed the reciprocatory valve may be bodily removed from the casing without opening the passage therethrough.

4. A valve structure comprising a casing with a passage-way therethrough and with valve chambers intersecting the passage way and spaced apart lengthwise of said passage-way, and said casing being also provided with a chamber into which each valve chamber opens, a valve in each valve chamber, interconnected actuating means for moving both valves simultaneously to the open or closed position and located in the last named chamber, manipulating means for the actuating means, separate, removable retaining means in the last named chamber for the valves, and a removable closure for the last named chamber, whereby, when the valves are closed, the valve remote from the inlet to the casing may be bodily removed without opening the passage way through the casing.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

PLUMUS P. HAAG.

Witnesses:
A. D. HUNT,
R. V. NELSON.