C. I. WILLIAMS.

GAGE COCK.

APPLICATION FILED JULY 31, 1916.

1,357,667. Patented Nov. 2, 1920.

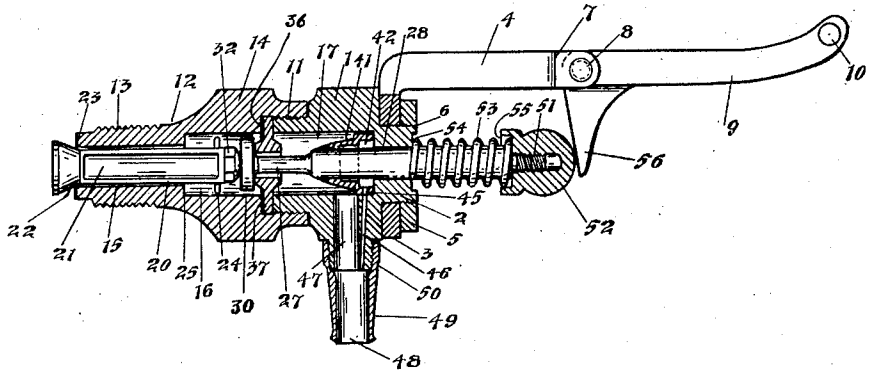


Fig 1

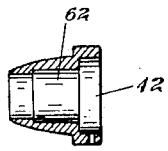


Fig 2

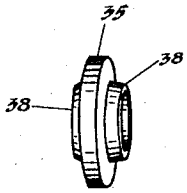


Fig 3

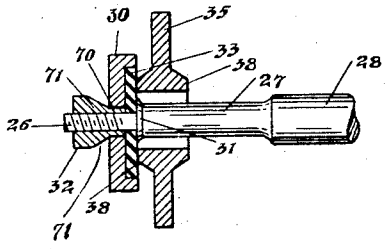


Fig 4

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GAGE-COCK.

1,357,667. Specification of Letters Patent. Patented Nov. 2, 1920.

Application filed July 31, 1916. Serial No. 112,204.

To all whom it may concern:

Be it known that I, CHARLES I. WILLIAMS, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Gage-Cocks, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to a gage cock and I declare the following to be a full, clear, concise and exact description thereof sufficient to enable anyone skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings in which like reference characters refer to like parts throughout the specification.

The object of the invention is to provide a gage cock that has interior means for preventing the leakage along the main valve stem thereof, without the employment of packing or a gland, thereby economizing in the expense of manufacture and, furthermore, eliminating the necessity of repairing and replacing the worn out packing.

The object will be understood by referring to the drawings in which:

Figure 1 is a vertical section of the gage cock, showing certain parts in elevation;

Fig. 2 is a detail view showing a vertical section of the thimble employed;

Fig. 3 is a detail view showing a perspective of a member employed to seat the main valve of the cock;

Fig. 4 is an enlarged detail view of the valve and immediate parts in connection therewith.

Referring more particularly to the drawings, the casing is represented by —1— and has a reduced end 2 adapted for the mounting of the collar portion 3 of the bracket 4. The collar portion 3 of the bracket 4 is held in given relation to the casing —1— upon the reduced end 2 by a hexagonal nut 5 threaded at 6 to said end 2. The outer end of the bracket 4 is bifurcated at 7 and furnished with a pivot 8, whereby to mount in a swinging manner the bell crank lever 9 having an aperture 10 for the attachment of a cord or chain, not shown.

The end of the casing —1— opposite the end 2 is reduced also and threaded at 11 for mounting the member 12 threaded at 13 for assembling the gage cock to a boiler and having a hexagonal portion 14 for the application of a wrench.

The interior of the member 12 is chambered at 15 which chamber is enlarged at 16 to aline with the chamber 17 of the casing —1—. The chambers 15 and 16 are adapted to receive the valve stem 20 having longitudinal peripheral grooves 21 for the passage of steam or water. The outer end of the stem 20 has formed integral therewith, the auxiliary valve 22 that remains normally open, although adapted to be seated against the adjacent edge of the member 12, which edge is reamed at 23 for the purpose, when the casing —1— is removed from the member 12. The inner end of the stem 20 is provided with a pin 24 that abuts against the shoulder 25 to prevent the withdrawal of the valve 22 and stem 20, a pin being used for this purpose to minimize the extent of surface tending to resist the passage of the steam or water.

The end of the auxiliary valve stem 20 is adapted to abut against the reduced end 26 of the main valve stem 27, which is enlarged further at 28, to hold said auxiliary valve 22 normally open. The main valve 30 is disposed upon the reduced end 26 and held between the shoulder 31 and the nut 32 screw mounted to the end 26. The nut 32 has an extended tubular portion at 70 which projects through the central aperture of the main valve 30 and a conical portion 71 adapted to center and hold the valve 30 in equipoise when assembled. The valve 30 is provided with an annular recess for the reception of the seat disk 33 which rests normally against one side of the double faced seating member 35 having a central orifice through which projects the main valve stem 27. The member 35 is confined in a steam tight manner between the shoulder 36 formed in the member 12 and the adjacent edge of the casing —1—, a copper washer 37 being interposed. The central portion of the member 35 has annular rings at 38—38 to form seats for the valve 30.

A thimble 41, having an annular chamber 42 and an antechamber 62 is mounted in a loose manner upon the portion 28 of the main valve stem 27 and in fixed relation to the casing —1—. This annular chamber 42 has an orifice 45 forming an outlet that alines with the conduit 46 of the casing —1—, which conduit lies adjacent the main

conduit 47. The conduits 46 and 47 converge and open into the conduit 48 of the thimble 49 that is threaded to the casing at 50.

The enlarged portion 28 of the main valve stem 27 projects through a suitable aperture 54 formed in the closure part of the casing —1— and has its free end reduced and threaded at 51 for mounting the cap 52. A coiled spring 53 is disposed upon this portion 27 of the stem 26 and bears at one end against the casing —1—, provided with the recess 54, and at the other end against the cap 52, provided with the recess 55 therefor.

In operation, the gage cock is assembled to a boiler, not shown, by means of the threads 13. In order to test the accuracy of the gage glass, also not here shown, as to the height of the water in the boiler, the bell crank lever 9 is rocked upon its fulcrum 8, whereby the arm 56 thereof will press the valve stem 27 inward against the normal tension of the coiled spring 53. This movement of the stem 27 will open the main valve 30 and permit the water or steam from the boiler to pass along the chambers 15, 16 and 17, the auxiliary valve 22 being normally open and its stem 20 provided with the longitudinal grooves 21 for the passage of water, if the water is at the required height in the boiler. The water from the chamber 17 will pass out through the conduits 47 and 48. However, the water which creeps along the enlarged portion 28 of the valve stem 27 will be stopped as it reaches the chamber 42 and siphoned therefrom through the orifice 45 and conduits 46 and 48, because of the vacuum created by the greater flow of water through the conduits 47 and 48.

The antechamber 62 retards the pressure of the steam and water as it creeps along the portion 28 of the valve stem 27, whereby its flow is reduced to a minimum degree when it reaches the chamber 42, and the chamber 42 arrests the flow of the water and steam, which is subsequently withdrawn through the conduits 46 and 48, thus avoiding the necessity for the use of a packing or gland in that location of the portion 28 of the stem, whereby to prevent the steam or water from dripping or leaking out of the casing —1—.

In the event that the main valve 30 should leak, the casing —1— can be detached from the member 12 by unscrewing said casing, whereupon the steam or water pressure will automatically close the auxiliary valve 22 to prevent the passage of said water or steam from the boiler. The member 35 can be reversed, then, whereby to present a new and unworn seat against the valve 30.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a gage cock having a valve stem, a casing having a closure part, a thimble in said casing, said thimble having an aperture for the projection of said stem, and said thimble having a chamber for preventing any leakage.

2. In a gage cock having a valve stem, a casing having a closure part, a removable thimble in said casing having an aperture for projection of said stem, and an annular chamber in said thimble for preventing any leakage.

3. In a gage cock having a valve stem, a casing having a closure part, a removable thimble in said casing, an aperture in said thimble for the projection of said stem, a chamber in said thimble, and a passageway leading to said chamber, whereby to prevent any leakage in said gage cock.

4. In a gage cock having a valve stem, a casing with an outlet conduit, a removable thimble, an aperture in said thimble for the projection of the valve stem, a chamber in said thimble, an antechamber connected with said first named chamber, and a passageway from said first named chamber to said outlet conduit, whereby to prevent any leakage in said gage cock.

In testimony whereof I have affixed my signature.

CHARLES I. WILLIAMS.