No. 652,495. Patented June 26, 1900.

E. C. TERRY.

BALANCE VALVE.

(Application filed Nov. 2, 1899.)

(No Model.)

Fig. 1.

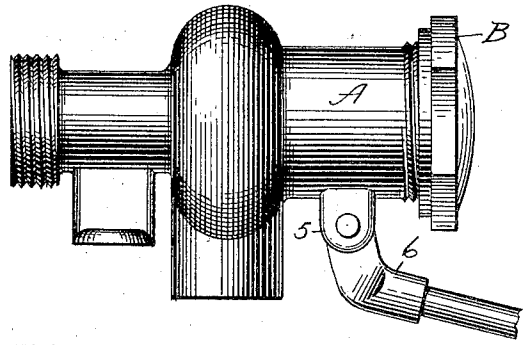


Fig. 2.

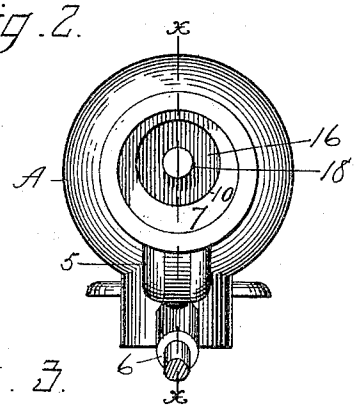


Fig. 3.

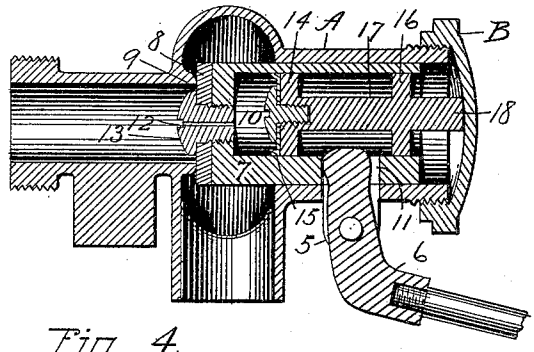
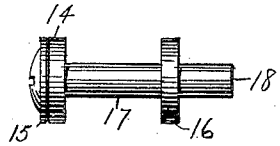


Fig 4.



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UNITED STATES PATENT OFFICE.

EDWARD C. TERRY, OF HARTFORD, CONNECTICUT.

BALANCE-VALVE.

SPECIFICATION forming part of Letters Patent No. 652,495, dated June 26, 1900.

Application filed November 2, 1899. Serial No. 735,578. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. TERRY, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Balance-Valves, of which the following is a specification.

My invention relates to improvements in balance-valves; and the main objects of my improvements are simplicity and economy in construction and efficiency in operation.

In the accompanying drawings, Figure 1 is a side elevation of my valve. Fig. 2 is an end view of the same with the cap removed. Fig. 3 is a sectional view on the line *x x* of Fig. 2, and Fig. 4 is a detached side elevation of the internal piston.

The case A is of an ordinary form and need not be specifically described further than to note that it has a removable screw-cap B at one end and is provided with lugs 5, by which to pivot the ordinary lever 6, that moves the sliding valve 7 in the ordinary manner. The sliding valve 7 on its exterior is of the ordinary cylindrical form and is fitted to slide within the bore of the case to withdraw and present its packed end 8 to the ordinary valve-seat 9 of the case. This valve is also interiorly and longitudinally bored to form the cylindrical piston-chamber 10; but I prefer to make said chamber eccentric to the said valve, as best shown in Fig. 2, and I make the slot or recess 11 for the short arm of the lever 6 to work in on that side of the valve where the wall of the piston-chamber is the thickest, as shown in Fig. 3. A perforation is made in the valve to form a communicating passage with the exterior of the valve and the piston-chamber within the said valve, which passage 12 is preferably made through the screw 13.

Within the piston-chamber 10 of the valve I place the piston 14, which fits said cylinder and is provided with a suitable packing 15 to make it tight. The piston has also a guiding portion or disk 16, that fills the piston-chamber sufficiently to properly guide that end of the piston. The body of the piston is reduced, as at 17, so that the short arm of the lever 6 may not interfere with its operation and also to save metal, and at the outer end of said piston is a stem 18, that is adapted to abut against the inner side of the screw-cap B, as shown in Fig. 3, which cap forms an abutment that is rigid with the case A.

When the valve 7 is moved away from its seat to open it, the water in the piston-chamber can run out through the hole 12 and permit the valve to slide back over the piston. When the valve 7 is closed, the water entering the piston-chamber through the hole 12 will force the piston into the position shown in Fig. 3, and if the piston-chamber is of the same diameter as the opening in the pipe leading to the valve-seat 9 the valve will be balanced. Of course these diameters may, if desired, be varied to throw the valve out of balance without changing the general construction.

By making the piston in a separate piece from the cap or case A and letting it merely rest against a fixed abutment it will center itself within the piston-chamber and is less liable to leak than in a construction where the piston is mounted on a fixed stem. I am also enabled to make the piston-chamber eccentric to the sliding valve, because screwing on the cap does not rotate the piston.

By making the piston-chamber eccentric to the sliding valve the pressure of the water within the piston-chamber is at the upper side of the sliding valve, while the pressure of the lever 6 is at the lower side of the valve, whereby the said pressures balance each other. I am also enabled to form the bearing-face for the lever where the metal is the thickest.

It is apparent that some changes from the specific construction herein disclosed may be made, and therefore I do not wish to be understood as limiting myself to the precise form of construction shown and described, but desire the liberty to make such changes in working my invention as may fairly come within the spirit and scope of the same.

I claim as my invention—

1. In a balance-valve, the combination of the case, the sliding valve mounted therein and having a longitudinal piston-chamber, a freely-sliding piston centered within the said chamber solely by the walls thereof, and a screw-cap closing the end of the case, the said cap being formed separately from the said piston and case and rigidly secured in a fixed position on said case, against which cap the

said piston abuts by the pressure of the water in the said piston-chamber when the said piston is at rest, substantially as described.

2. In a balance-valve, the combination with the case, of a sliding valve mounted therein, and having a piston-chamber eccentric to the said valve, a freely-sliding piston centered within the said chamber solely by the walls thereof, a lever pivoted on the said case with one arm extending into an opening at one side of the said sliding valve and in the thickest portion of the wall of the said eccentric piston-chamber, and a screw-cap covering the end of the case and against which the end of the said piston may abut under the pressure of the water when the valve is closed, substantially as described.

3. In a balance-valve, the combination of the sliding valve having a longitudinal piston-chamber formed therein eccentrically to the said valve, a piston fitted within the said chamber and the operating-lever for moving the said sliding valve, the said lever being in engagement with the said valve on the side that is farthest from the piston, substantially as described.

4. The combination of the case, with a perforated and longitudinally-sliding valve having a piston-chamber therein, means for reciprocating the said valve, the sliding piston fitted at its head end to the said piston-chamber and having a guiding portion for its opposite end also fitted to the said piston-chamber while the portion between the said head end and guiding portion is of a reduced diameter, the said piston also having an outwardly-projecting stem extending in the rear of the said guiding portion, and the cap on the said case against which cap the said stem of the said piston abuts for resisting the pressure of the water within the said piston-chamber, substantially as described.

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