H. C. EARLE.

GATE VALVE.

APPLICATION FILED JUNE 5, 1911.

1,067,011. Patented July 8, 1913.

Fig. 1,

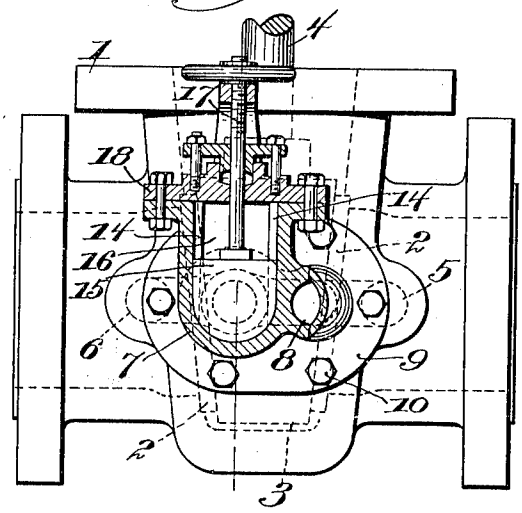


Fig. 3,

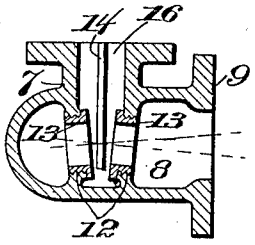


Fig. 2,

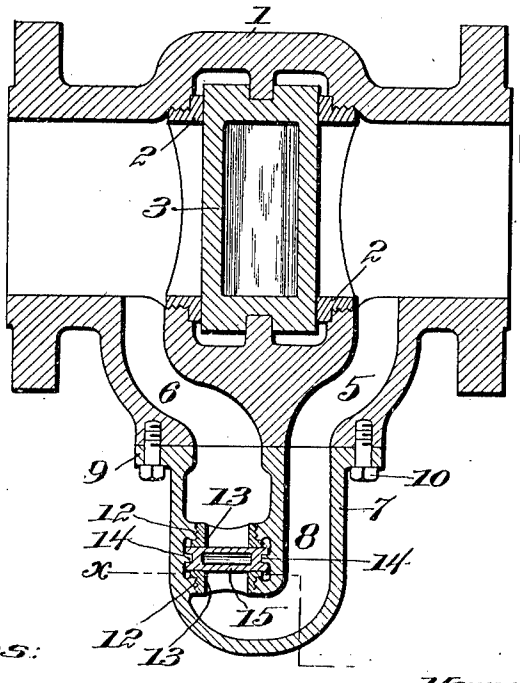
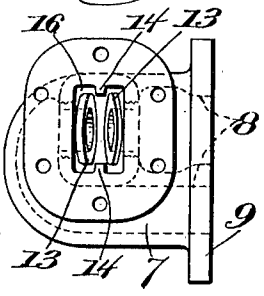


Fig. 4,



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UNITED STATES PATENT OFFICE.

HARRY C. EARLE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO WALWORTH MANUFACTURING COMPANY, A CORPORATION OF MASSACHUSETTS.

GATE-VALVE.

1,067,011. Specification of Letters Patent. Patented July 8, 1913.

Application filed June 5, 1911. Serial No. 631,266.

To all whom it may concern:

Be it known that I, HARRY C. EARLE, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Gate-Valves, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a gate valve of the kind which is used where the valve is subjected to heavy pressures, it being customary to provide such valves with a similar by-pass valve which can be opened to equalize the pressure and relieve the friction before opening the main valve.

This invention relates mainly to a novel construction and arrangement of the by-pass valve, the body of which is made in a single casting of such design that all the parts which have to be machined or finished are accessible through the regular passages to be employed, so that there are no openings to be plugged after the valve has been finished.

Figure 1 is a side elevation of a gate valve showing the by-pass valve connected therewith in vertical section, the section being taken on line *x* of Fig. 2; Fig. 2 is a horizontal section through the gate valve and by-pass valve; Fig. 3 is a longitudinal section through the by-pass valve casting and the valve seats therein; and Fig. 4 is a top plan view of the same.

The main gate valve 1 is of the usual construction, having the inclined valve seats 2 and the transversely movable valve 3 provided with the valve stem 4. The main valve casing is provided with by-pass passages 5 and 6 formed in one side of the valve, as best shown in Fig. 2, the side where the said passages open being machined or finished off to receive the by-pass valve 7. The casing for the by-pass valve is formed in a single piece having a U-shaped passage 8 which extends inward from a flanged face 9 which is adapted to be secured to the side of the main valve by means of bolts or cap screws 10. The ends of the U-shaped passage in the by-pass valve casing are arranged, as shown in Fig. 2, to be in alinement with the passages 5 and 6 in the main casting and the by-pass valve itself is located in the larger branch of the U-shaped passage 8 which has a contracted screw threaded opening to receive the valve seats 13, and is provided with guide tongues 14 for the valve 15. The casing is provided with a lateral flanged projection adjacent to the contracted opening, this projection containing a passage 16 to receive the valve 15 and valve stem 17, the guide members 14 extending the entire length of the walls of this opening, as best shown in Figs. 1 and 3. The valve stem and stuffing box are mounted in the usual way in the cap 18 which is bolted to the flange at the end of the passage 16, the full assembly being shown in Fig. 1. By this construction all parts of the interior of the by-pass casting which require machining are accessible through the permanent passages, the threads for the valve seats 13 being cut by a tool which can be inserted through the passage 8, and the seats themselves being inserted through the passage 16 and then screwed into place.

The construction is thereby simple and durable, the by-pass valve itself and the seats being readily accessible for inspection and replacement through the valve opening 16, so that all these parts can be removed, if necessary, without removing the by-pass casting from the main valve.

What I claim is:

The combination with a gate valve provided with by-pass passages leading from opposite sides of the valve to the outside of the valve casing; of a flanged by-pass valve casing adapted to be bolted to the wall of the main casing over the ends of the said by-pass passages, the said by-pass valve casing having a U-shaped passage, one branch of which is larger in diameter than the other and has a contracted portion of smaller diameter internally screw threaded; by-pass valve seats secured in said contracted portion by means of the screw threads therein; a lateral extension having a flange and a

passage leading to the space between the valve seats; a by-pass valve located in said passage and said space; and a cap for the said valve and its stuffing box secured on the flange at the end of said lateral extension.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

HARRY C. EARLE.

Witnesses:
JAS. J. MALONEY,
W. E. COVENLY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."