No. 659,234. Patented Oct. 9, 19

J. HUGHES.

BLOW-OFF VALVE.

(Application filed Feb. 23, 1900.)

(No Model.)

Fig. 1.

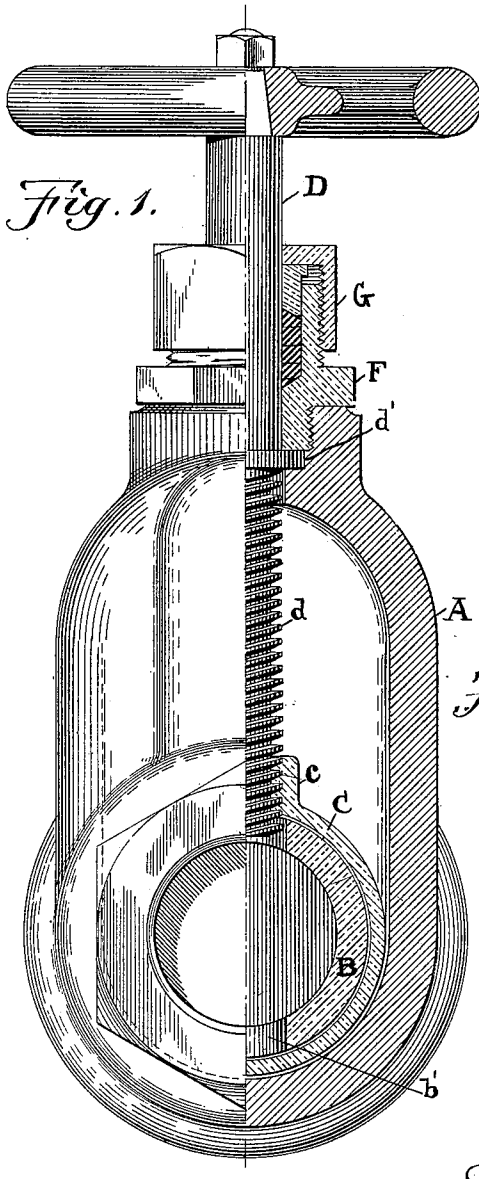


Fig. 3.

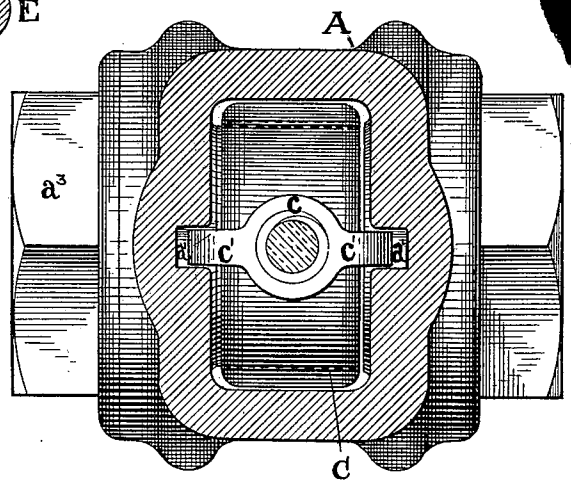


Fig. 2.

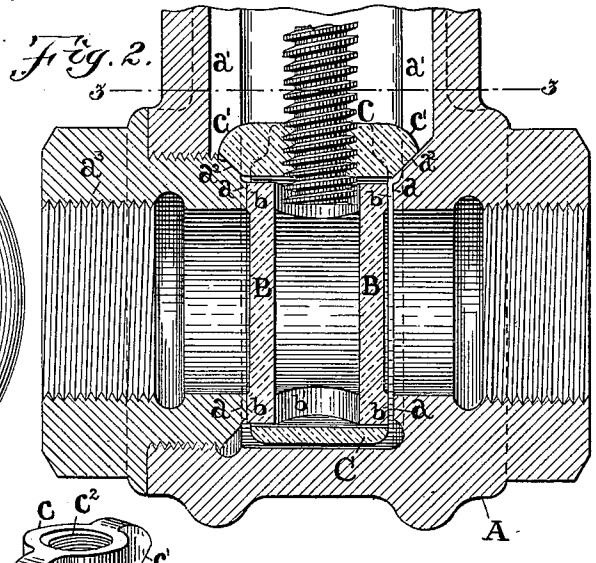
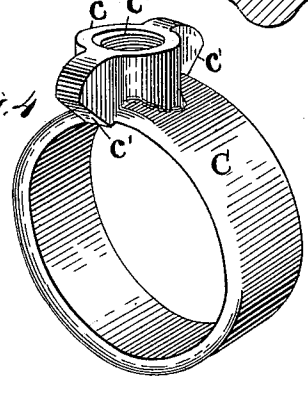


Fig. 4.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN HUGHES, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE CROSBY STEAM GAGE AND VALVE COMPANY, OF BOSTON, MASSACHUSETTS.

BLOW-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 659,234, dated October 9, 1900.

Application filed February 23, 1900. Serial No. 6,149. (No model.)

To all whom it may concern:

Be it known that I, JOHN HUGHES, a citizen of the United States, and a resident of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Blow-Off Valves, of which the following is a specification.

My invention relates to blow-off valves, and is an improvement upon the invention of Francis W. Johnstone described in Letters Patent of the United States, dated February 16, 1892, No. 468,878. Its objects are, first and principally, to avoid pressing the "stirrup" against the bottom of the valve-casing and the strains resulting therefrom, and, second, to provide guides for the stirrup in its vertical movement.

A blow-off valve is a valve attached to a boiler or other receptacle and through which the water or fluid is blown out under the pressure in the boiler or receptacle for the purpose of clearing it from sediment or any foreign matter or simply reducing the water or fluid therein.

In the accompanying drawings, which illustrate my invention, similar letters refer to similar parts throughout.

Figure 1 is a perspective view with a portion shown in central vertical section. Fig. 2 is a vertical central transverse section, partly in perspective, through the lower portion of Fig. 1. Fig. 3 is a sectional view on line 3 3, Fig. 2. Fig. 4 is a perspective view of the stirrup.

The valve-casing comprises the main body A, with its inlet-passage, and the removable plug a^3, with its corresponding outlet-passage. It is furnished with the valve-seats $a\ a\ a\ a$, arranged one opposite the other and with the oblique seats $a^2\ a^2$ and the vertical grooves $a'\ a'$ leading therefrom. The upper end of the valve-casing is adapted to receive the valve stem or spindle D, with its flange d', and the nut F. The sliding valve B fits loosely in the stirrup C and is finished with seats $b\ b\ b\ b$ to engage the corresponding seats $a\ a\ a\ a$. It has a hole running through it for the passage of the stem D. The stirrup C has a tubular projection c, threaded at c^2 and having the wings $c'\ c'$, adapted to rest upon the oblique seats $a^2\ a^2$. The stem D is threaded at d for engagement with the projection c, has a flange d', which engages the valve-casing, and is surmounted by the hand-wheel E. F is a nut adapted to engage the valve-casing and prevent the lateral or upward movement of the stem D and to engage also the packing-nut G.

The arrangement and operation of the valve is as follows: When the various parts are assembled and the valve attached to a boiler under steam-pressure or other receptacle under fluid-pressure, the sliding valve is loosely held by the stirrup C and rests firmly against the seat of the outlet-passage, held there by the pressure of the steam. The stem D engages the winged projection c of the stirrup and has entered the upper part of the opening of the valve B. The wings $c'\ c'$ are seated at $a^2\ a^2$ and rest in the grooves $a'\ a'$. The stirrup is not otherwise in contact with the valve-casing. The stem D is limited to a rotary motion by the flange d' and nut F, and the stirrup C is limited to a vertical motion by the confinement of its wings c' in the grooves a'. When the hand-wheel is turned, the stem is rotated, drawing upward upon itself the stirrup and the valve carried by it until both are clear of the space between the seats $a\ a\ a\ a$. In the patent referred to and in valves of a similar type there has always been the danger of injuring the working parts by undue strains or wrenching caused by pressing the stirrup or valve against the valve-casing. I avoid this danger by limiting the downward movement of the stirrup, as explained. I also secure a more satisfactory vertical movement of the stirrup by means of the guiding-grooves.

Having explained my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a blow-off valve the combination, with the valve-casing A and removable plug a^3, of the sliding valve B; the winged stirrup C; the stem D; the nut F; and the hand-wheel E; substantially as described.

2. In a blow-off valve the combination, with a valve-casing having a removable part and furnished with two oppositely-disposed valve-seats and above these two other seats with grooves leading vertically therefrom, of a

sliding valve having valve-seats corresponding to those of the valve-casing, and perforated for the passage of a stem; a stirrup adapted to carry said valve, and having a threaded upper projection furnished with wings adapted to run in said grooves and rest upon said other seats; and a threaded rotary stem adapted to raise and lower said stirrup; together with means for actuating said stem; substantially as described.

3. In a blow-off valve the combination, with a valve-casing having a removable part and furnished with two oppositely-disposed valve-seats and above these two other seats, of a sliding valve having corresponding valve-seats; a stirrup adapted to carry said valve and having a projection from its upper part adapted to engage said other seats thereby determining its downward movement; together with means for raising and lowering said stirrup; substantially as described.

4. In a blow-off valve the combination, with a valve-casing having a removable part and furnished with oppositely-disposed valve-seats, of a sliding valve having corresponding valve-seats; and a stirrup adapted to carry said valve; together with means for raising and lowering said stirrup, and for determining its downward movement by contact of its upper part with the valve-casing; substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN HUGHES.

Witnesses:
WATERMAN L. WILLIAMS,
RALPH W. FOSTER.