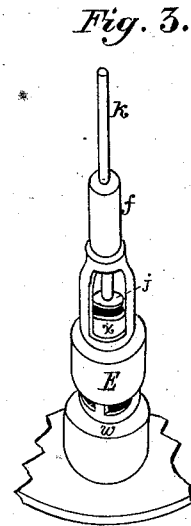
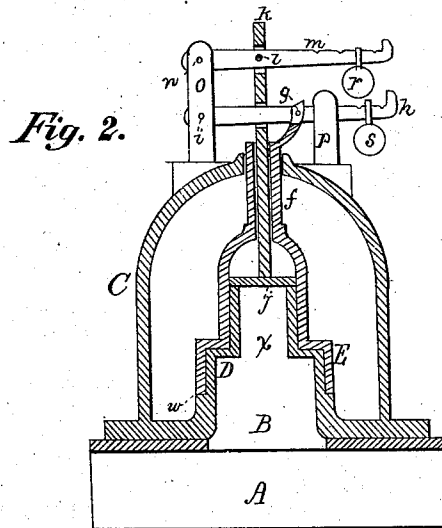
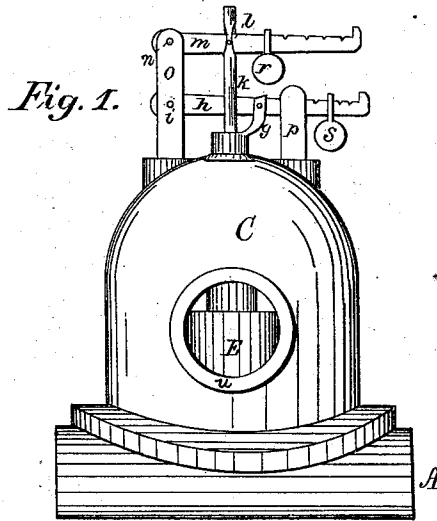


A. M. JOHNSTON & S. GISSINGER.
Safety-Valve for Steam Boilers.

No. 159,580.

Patented Feb. 9, 1875.



WITNESSES
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ALEXANDER M. JOHNSTON AND SAMUEL GISSINGER, OF PITTSBURG, PA.

IMPROVEMENT IN SAFETY-VALVES FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 159,580, dated February 9, 1875; application filed August 17, 1874.

To all whom it may concern:

Be it known that we, ALEXANDER M. JOHNSTON and SAMUEL GISSINGER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Safety-Valve for Steam-Boilers; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Our invention relates to an improvement in safety-valve for steam-boilers; and consists in a blow-off dome, a double valve-seat, two valves, one operating within the other, the stems of said valves being pivoted to weighted levers, the valve having the smallest diameter being used for the purpose of allowing the steam to escape from the boiler when slightly above the required pressure, and the larger valve being used for the purpose of relieving the boiler from undue pressure, caused by a sudden increased pressure of steam, or steam and gases combined.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is a side elevation of my improvement in safety-valve for steam-engines. Fig. 2 is a vertical section of the same. Fig. 3 is a perspective view of the valves with their ports in an open position.

Referring to the drawing, A represents a section of a steam-boiler, surmounted by a steam-dome, C, and provided with the safety-valves E and j, arranged in the interior of the dome. B is an opening extending from the steam-boiler into the valves. D represents the double valve-seat, having an opening, x, leading into the small valve j. The large valve E rests on the lower seat, w, and its stem f, which is provided with openings, as shown in Fig. 3, surrounds the small valve j and its stem k, the stem f of the valve E being pivoted, at g, to the weighted lever h, and the stem k of the small valve j being pivoted,

at l, in the weighted lever m, as shown in Figs. 1 and 2. The weighted levers h and m are pivoted to the standard o, as shown at i and n, and provided with suitable weights r and s, respectively. The lever h is also provided with a guide, p.

In the operation of the above-described parts, the small valve j is used for the purpose of allowing the steam to escape from the boiler when the same is slightly above the required pressure, and the operation is such that the overplus of steam ascends through the openings B and x, and pressing against the under surface of the small valve j, lifts the same, and allows the steam to flow out through the openings in the valve-stem f into the dome C, from which it finds escape through the opening u arranged in the side of the same, as shown in Fig. 1. The larger valve E is used for the purpose of relieving the boiler from undue pressure, when caused by a suddenly-increased pressure of steam, or steam and gases combined, and when the small valve j would be inadequate for the purpose.

Between the valve-seat w and the double valve-seat D are arranged a series of openings, as shown in Fig. 3, the object of which is such that, when the small valve j would fail to discharge the overplus of steam, the force of the same would also lift the larger valve E, and the steam would be discharged through these openings into the steam-dome C, and from thence through the opening u in the side of the same.

Having thus described our improvement, what we claim as of our invention is—

The combination of the double seat D, valves E and j, levers h m, weights r and s, standard o, and dome C, constructed, arranged, and operating, with relation to each other substantially as herein described, and for the purpose set forth.

ALEXANDER M. JOHNSTON.
S. GISSINGER.

Witnesses:

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