

No. 689,231.

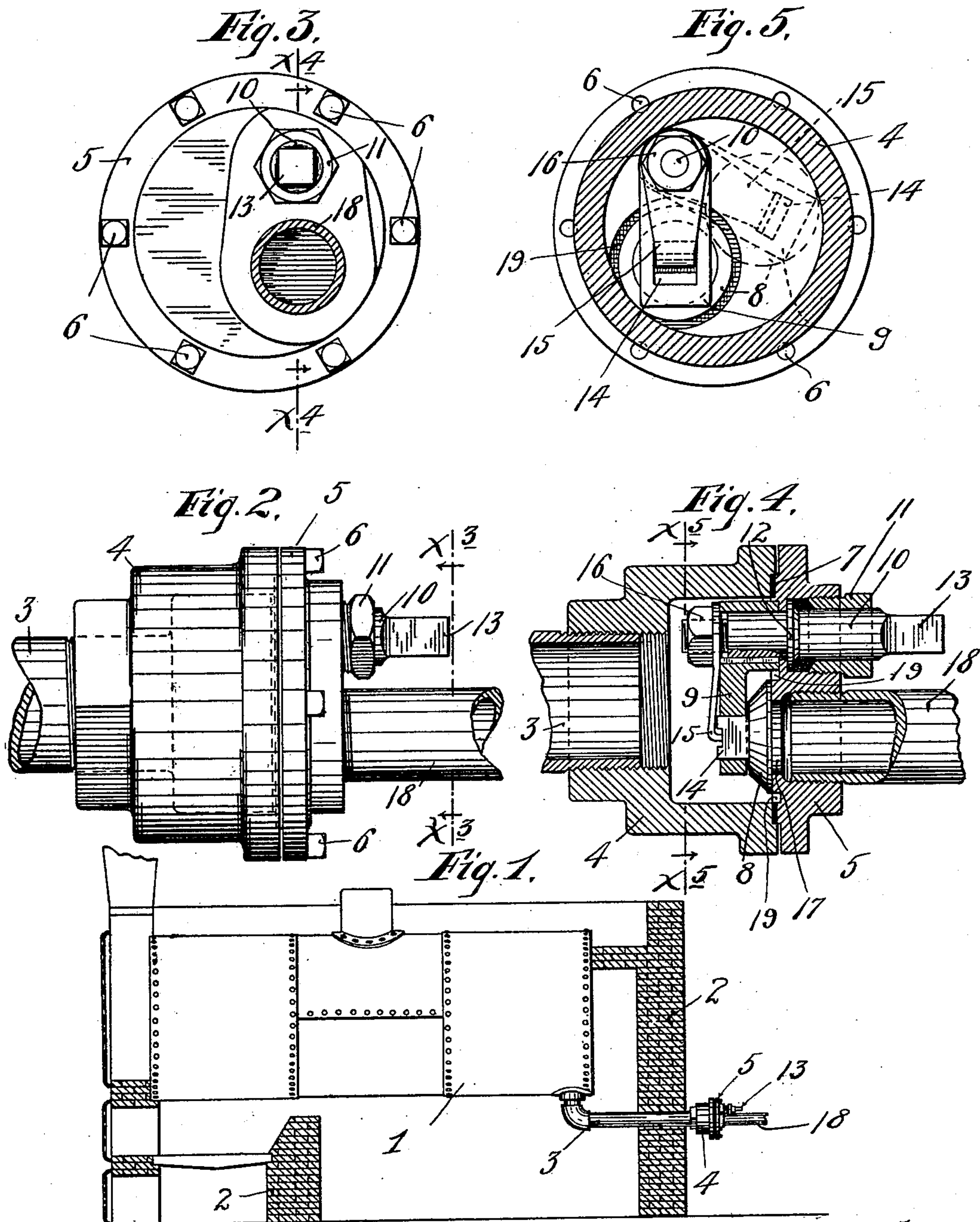
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J. ROLSTON & C. W. CRAMER.

BLOW-OFF DEVICE.

(Application filed June 27, 1901.)

(No Model.)



Witnesses.  
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# UNITED STATES PATENT OFFICE.

JOHN ROLSTON AND CHARLES W. CRAMER, OF MINNEAPOLIS, MINNESOTA.

## BLOW-OFF DEVICE.

SPECIFICATION forming part of Letters Patent No. 689,231, dated December 17, 1901.

Application filed June 27, 1901. Serial No. 66,219. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN ROLSTON and CHARLES W. CRAMER, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Blow-Off Devices; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention has for its object to provide an improved blow-off device for boilers; and to this end it consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a view, partly in side elevation and partly in section, showing a boiler equipped with one of our improved blow-off devices. Fig. 2 is an enlarged detail view in side elevation, showing the blow-off device removed. Fig. 3 is a section on the line  $x^3 x^3$  of Fig. 2. Fig. 4 is a section on the line  $x^4 x^4$  of Fig. 3, and Fig. 5 is a section on the line  $x^5 x^5$  of Fig. 4.

The numeral 1 indicates an ordinary boiler, and the numeral 2 the surrounding masonry. From the lower portion of the rear end of the boiler a blow-off pipe 3 extends, as shown, first downward and then horizontally rearward through the rear wall of the masonry. To the outer end of the primary section 3 of the blow-off pipe is rigidly secured a two-part valve-casing 4 5, the sections of which, as shown, are drawn together by screw-bolts 6. A packing-strip 7, placed between the sections 4 and 5, affords a steam-tight joint between said parts. The inner surface of the casing-section 5 affords a valve-seat for a slide-valve 8, carried at the free end of an oscillating arm 9, the hub of which is keyed or otherwise secured on the inner end of an operating-stem 10, which stem works rotatively through the said casing-section 5. In this preferred construction the said section 5 is provided with a stuffing-box 11, which cooperates with a flange 12 on said stem 10 to clamp the packing material. The outer end

of said stem 10 is shown as squared at 13 to adapt it for the application of a wrench. The valve 8 is flat on its working face, and on its back it is tapered or conical, for an important purpose to be hereinafter noted. As shown, the said valve 8 is provided with a square hub, which works through a correspondingly-formed seat in the arm 9. The valve 8 is held tightly seated by means of a flat spring 15, which, as shown, is secured on the inner end of the stem 10 by a nut 16.

By applying a wrench or suitable tool to the square shank 13 of the stem 10 the valve 8 may be vibrated between the positions indicated by full and by dotted lines in Fig. 5. When the valve is in its normal position, (indicated by full lines in Figs. 4 and 5,) it closes a discharge-orifice 17 in the casing-section 5, which orifice opens into a discharge or supplemental blow-off pipe 18, which, as shown, is screwed into the said section 5. The pipe 18 will be led to a distant point, where the steam-and-water discharge in the blowing-off action may be safely discharged.

The valve-case of the casing-section 5 is provided with an annular groove or channel 19, which nearly or quite surrounds the discharge-orifice 17, which the valve 8 opens and closes. The clearing-groove 19 extends across the path of movement of the valve 8, and its edges serve to scrape into the said groove any rust or dirt which may stick to the face of the said valve. Under the movements of the valve 8 the groove 19 serves to scrape the face of the valve clear of all rust or sediment, so that the valve and its seat are caused to wear evenly and maintain close joints.

In view of the beveled form of the outer face of the valve 8 all deposits or incrustations within the casing and around the valve will be forced away from the valve-seat with a wedge action and will be broken up, so that they will be readily carried out through the discharge-pipe under the blowing-off action.

As is evident, the valve above described may be very quickly and easily opened and closed without danger of being broken or displaced.

Hitherto a great deal of annoyance has been caused by the valves of blow-off devices becoming corroded and stuck or clogged by the accumulation of sediment. Furthermore,



loss of life has occurred in many instances by the breaking of the valve connections, occasioned by pounding the stuck valves in order to release the same.

5 Our invention overcomes the above objections and dangers.

What we claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A blow-off device for boilers, comprising  
 10 a valve-casing interposed in the blow-off passage, a slide-valve within said casing for opening and closing the passage therethrough, a rotary stem projecting through said casing, and provided at its inner end with an arm for  
 15 action on said valve and a spring applied to said arm and acting on said valve, to hold the same seated, substantially as described.

2. A blow-off device for boilers, comprising  
 20 a valve-casing interposed in the blow-off passage, a slide-valve therein, provided with a discharge-orifice, a clearing-groove crossing the path of movement of said valve, in the

vicinity of said orifice, and means for moving said valve to and from its closed position, substantially as described. 25

3. A blow-off device, comprising a casing 4 5, the interior of the latter affording a flat valve-seat provided with a discharge-orifice 17, the beveled disk-like valve 8 with hub 14, a stem 10, projecting through said casing, and 30 provided at its inner end with the arm 9 in which the hub 14 of said valve 8 is loosely mounted, and the spring 15 applied to said arm 9, and acting on the hub of said valve to hold said valve seated, substantially as de- 35 scribed.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN ROLSTON.

CHARLES W. CRAMER.

Witnesses:

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