No. 870,487. PATENTED NOV. 5, 1907.

L. A. BERTRAM.

BLOW-OFF VALVE.

APPLICATION FILED NOV. 14, 1906.

Fig. 1

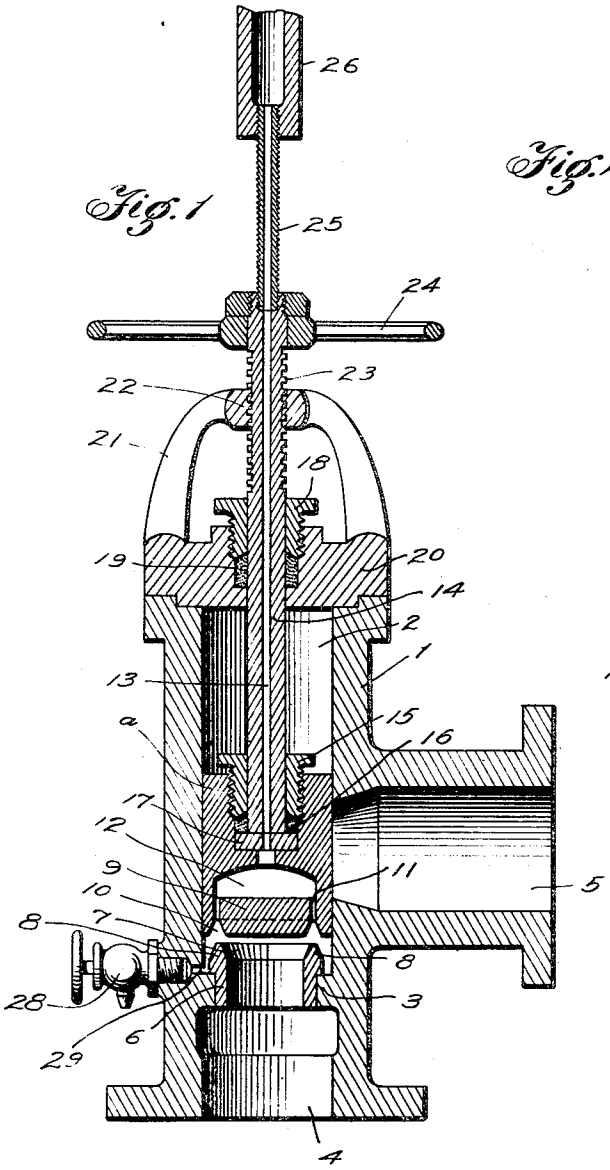
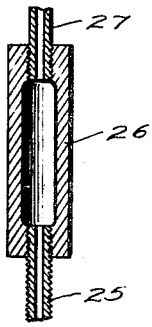


Fig. 2



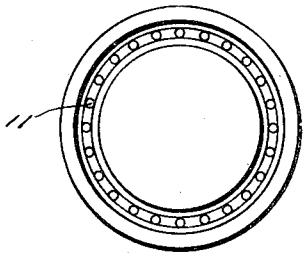


Fig. 3

Witnesses

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UNITED STATES PATENT OFFICE.

LAWRENCE A. BERTRAM, OF ALLEGHENY, PENNSYLVANIA.

BLOW-OFF VALVE.

No. 870,487. Specification of Letters Patent. Patented Nov. 5, 1907.

Application filed November 14, 1906. Serial No. 343,417.

To all whom it may concern:

Be it known that I, LAWRENCE A. BERTRAM, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Blow-Off Valves, of which the following is a specification.

This invention relates to blow-off valves, and one of the principal objects of the invention is to provide a valve of comparatively simple construction, which can be quickly operated to thoroughly clean the valve seat of the blow-off valve and prevent the accumulation of scale and sediment which collects around the seat of the usual blow-off valve and prevents the proper seating of the same.

Another object of my invention is to provide means whereby small jets of steam are forced through the valve immediately after the initial movement in unseating the valve prior to blowing off the steam from the boiler.

These and other objects may be attained by means of the construction illustrated in the accompanying drawing, in which:

Figure 1 is a central vertical section taken through a blow-off valve and its connections made in accordance with my invention. Fig. 2 is a sectional view through a coupling, and showing the threaded ends of a connecting tube and a valve stem secured thereto. Fig. 3 is an underside plan view of the valve head.

Referring to the drawing for a more particular description of my invention, the numeral 1 designates the valve casing having a central, vertical bore 2, provided with an annular interior flange 3, an outlet port 4, and a right angularly extended intake coupling 5. A valve seat 6 provided with a flaring mouth 7 is seated upon the annular flange 3, and the outer wall of the mouth 7 of the valve seat is inclined inwardly, as at 8. The valve head 9 is provided with an annular A-shaped recess 10 adapted to fit the upper edge of the valve seat 6, and at the bottom of said recess, a series of perforations 11 extend through said head. Above the head 9, a chamber 12 is formed, and communicating with said chamber is a duct 13 extending centrally through the valve stem 14, said valve stem being fitted to a screw threaded portion of the valve head by means of a gland 15 seated upon a suitable packing 16 disposed between a washer 17 and the lower end of said gland. A stuffing box or gland 18 is seated upon a suitable packing 19 above the bore 2 in the casing, said stuffing box being secured to a suitable cover 20 provided with yoke arms 21 having a threaded connection 22 with the threaded portion 23 of the valve stem. Fitted to the upper end of the valve stem is a hand wheel 24, and extending from the upper end of the valve stem is a tubular threaded connection 25 to which a coupling 26 is attached, the opposite end of said coupling being threaded to receive the outer end of a tube 27 leading to the boiler. A drain cock 28 communicates with a duct 29 at the side of the valve seat 6. The valve head *a* is fitted to the bore 2, and said valve head may be raised and lowered by means of the hand wheel 24.

The operation of my invention may be briefly described as follows: When it is desired to blow off steam from the boiler, the hand wheel 24 is operated to raise the valve from its seat, and this operation permits the steam to pass through the duct 13 in the valve stem into the chamber 12 and through the series of perforations 11 to thoroughly clean the valve seat 6 and the A-shaped groove in the valve head. A further movement of the valve upward permits the steam to enter through the intake 5 and out through the outlet 4, as will be understood.

Owing to the restricted duct or passage 13 in the valve stem, the force of steam through such a restricted passage exerts considerable force of steam through the perforations 11 in the valve head. Moreover, by the relative arrangement of the valve and its seat and the intake branch and outlet, the initial movement of the valve cleans the valve seat and the secondary movement of the same opens communication between the intake and outlet to blow off the steam.

From the foregoing it will be obvious that my blow-off valve operates automatically to clean the valve and valve seat at the initial movement of the valve prior to the blow-off operation, and that the valve, as a whole, is simple in construction, not liable to get out of order, and will operate efficiently to remove the scale and sediment that collects around the ordinary valve seat.

Having thus described the invention, what I claim is:

1. A blow-off valve provided with an oppositely beveled valve seat, a valve head provided with a V-shaped annular groove, a series of perforations extending through the groove, a tubular valve stem, and means for seating and unseating the valve.

2. In a blow-off valve, the combination of a perforated valve head, a valve seat therefor, and a laterally extended intake located above the valve seat, a tubular stem for the valve, and means for unseating the valve for cleaning the same, substantially as described.

3. A blow-off valve comprising a perforated head, a valve seat therefor, a tubular valve stem, and means for unseating the valve and cleaning the same prior to the blow-off operation, substantially as described.

4. A blow-off valve comprising a perforated head, a valve seat therefor, a tubular valve stem, and means

whereby the initial movement of said valve opens communication between the tubular valve stem and the valve seat, and the subsequent movement of the valve opens communication between the intake branch and the outlet, substantially as described.

5. A blow-off valve comprising a casing, a valve mounted to move in said casing and provided with a valve head having an annular groove therein to fit an oppositely beveled valve seat, perforations in the grooves, a steam chamber above the valve head, and a tubular valve stem communicating with said chamber, and means for seating and unseating the valve head.

In testimony whereof, I affix my signature in presence of two witnesses.

LAWRENCE A. BERTRAM.

Witnesses:
BURT MORROW,
JAMES H. MCKINLEY.