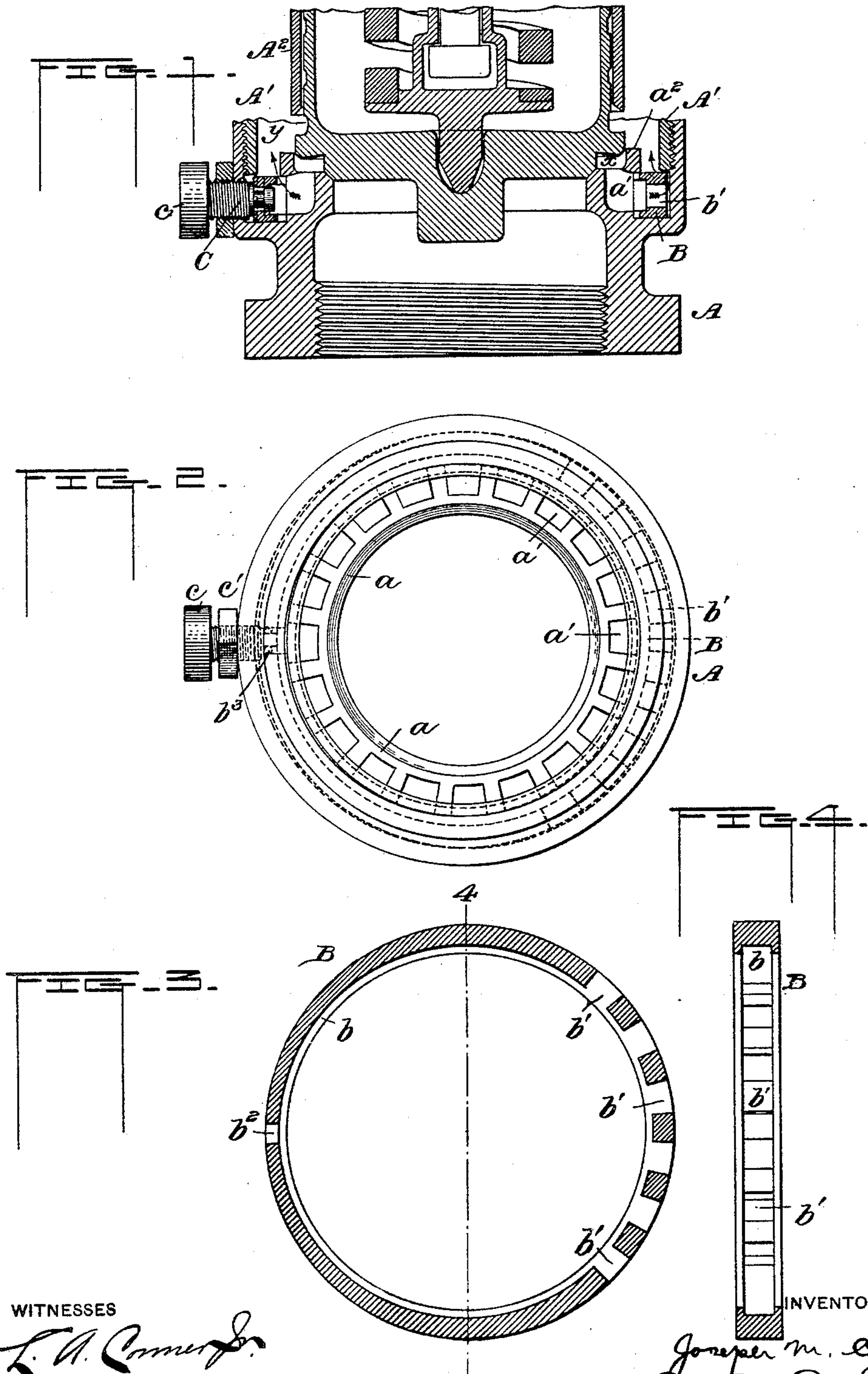


(No Model.)

J. M. COALE.
POP SAFETY VALVE.

No. 459,268.

Patented Sept. 8, 1891.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOSEPH M. COALE, OF BALTIMORE, MARYLAND.

POP SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 459,268, dated September 8, 1891.

Application filed May 8, 1891. Serial No. 392,006. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. COALE, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Pop Safety-Valves; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to safety-valves of the class known as "pop-valves." It is desirable in this kind of valve to be able to govern the reduction in pressure that occurs when the valve blows off, so that the boiler may be relieved of one, two, three, or more pounds of steam-pressure, as may be thought best. In order to accomplish this result, it is customary to make an extra outlet or outlets from the pop-chamber, usually in the valve itself, and to provide some means for adjusting the size of this outlet.

In my invention I make the outlets in the valve-seat and adjust their area from outside the valve-casing, the combination being such that the adjustment can be effected while the valve is in operation, if desired.

Figure 1 shows a valve-seat and valve provided with my improvements. Fig. 2 is a top plan view. Fig. 3 is horizontal section of the annular valve, and Fig. 4 is a cross-section of it on line 4 4, Fig. 3.

The base A, which is attached to or connected with the boiler in any suitable manner, contains a valve-seat z and a pop-chamber x , surrounding the same. Outside of the pop-chamber is an annular well which communicates with the pop-chamber by means of a series of ports a' , formed in the base A.

In the well is received an annular valve or ring B, the interior circumference of which is preferably eccentric to its outer circumference, so that one side is thin and the opposite side thick, as shown in Fig. 3. The ring has an internal groove b , and through its thicker side passes one or more ports b' . At the point where the inner and outer faces of the ring are most nearly tangential is a hole b^2 to receive the inner end of an operating device,

preferably a screw C, which passes through a threaded hole in the outer wall of the well and has a head c , whereby it can be turned. A jam-nut c' locks the screw at any desired point. The inner end of the screw is turned down to enter the hole b^2 , and is grooved to engage with a pin or pins b^3 , whereby the ring is secured to the screw. Upon turning the screw the ring is moved diametrically in the well, the bottom of which is flat to permit the ring to slide smoothly thereon. The ring is held down to this seat by the lower end of the valve-casing A', which screws down inside of the base A. The flange a^2 , which forms the outer wall of the pop-chamber x , overhangs the ring, as shown in Fig. 1, and forms a practically steam-tight joint with the upper flat surface thereof. The inner diameter of the ring is such that when the screw C is turned in as far as it will go the ports b' are closed by the outer face of the ring on that side coming in contact with the outer wall of the well, the thickness of the ring on this side being such that its inner edge does not emerge from under the flange a^2 . On the side where the screw C is attached the inner edge of the ring has been carried just under the flange, so that any steam passing through the ports a' into the groove b is confined in the groove and cannot escape; but a slight slacking of the screw draws the ring diametrically to the left in Figs. 1 and 2 and gives a lune-shaped opening between the ring and the outer wall of the well on one side and between the ring and the flange a^2 on the other side. Through these openings the steam can escape from the ring to the annular chamber y between the valve-casing A', and thence to the outer air. The area of these openings can be adjusted with great accuracy to permit the steam to escape from the pop-chamber at the necessary speed to insure the closing of the valve at the desired point.

The construction of the ring and the operating device may be modified to some extent to suit various conditions in service; but the arrangement shown and above described is preferred.

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

1. A pop safety-valve having the seat sur-

rounded by an annular well and provided with ports extending from the pop-chamber to said well, and an annular valve located in said well and adapted to slide diametrically
5 to close and open said ports, substantially as described.

2. A pop safety-valve having its seat surrounded by a well and provided with ports extending from the pop-chamber to the well,
10 and an eccentric ring located in said well having an internal groove and one or more ports through its thicker side, substantially as described.

3. The combination, with the base A, having the valve-seat a , ports a' , and the flange
15 a^2 , overhanging an annular well, of the ring

B, located in said well and fitted to slide under the flange a^2 , said ring having the groove b and ports b' , substantially as described.

4. The combination, with the base A, having the valve-seat a , ports a' , and an annular
20 well, of the ring B, located in said well and having the groove b and ports b' , and a screw C or other suitable means for sliding the ring diametrically, substantially as described. 25

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

JOSEPH M. COALE.

Witnesses:

JASPER M. BERRY,
FRANK W. COALE.