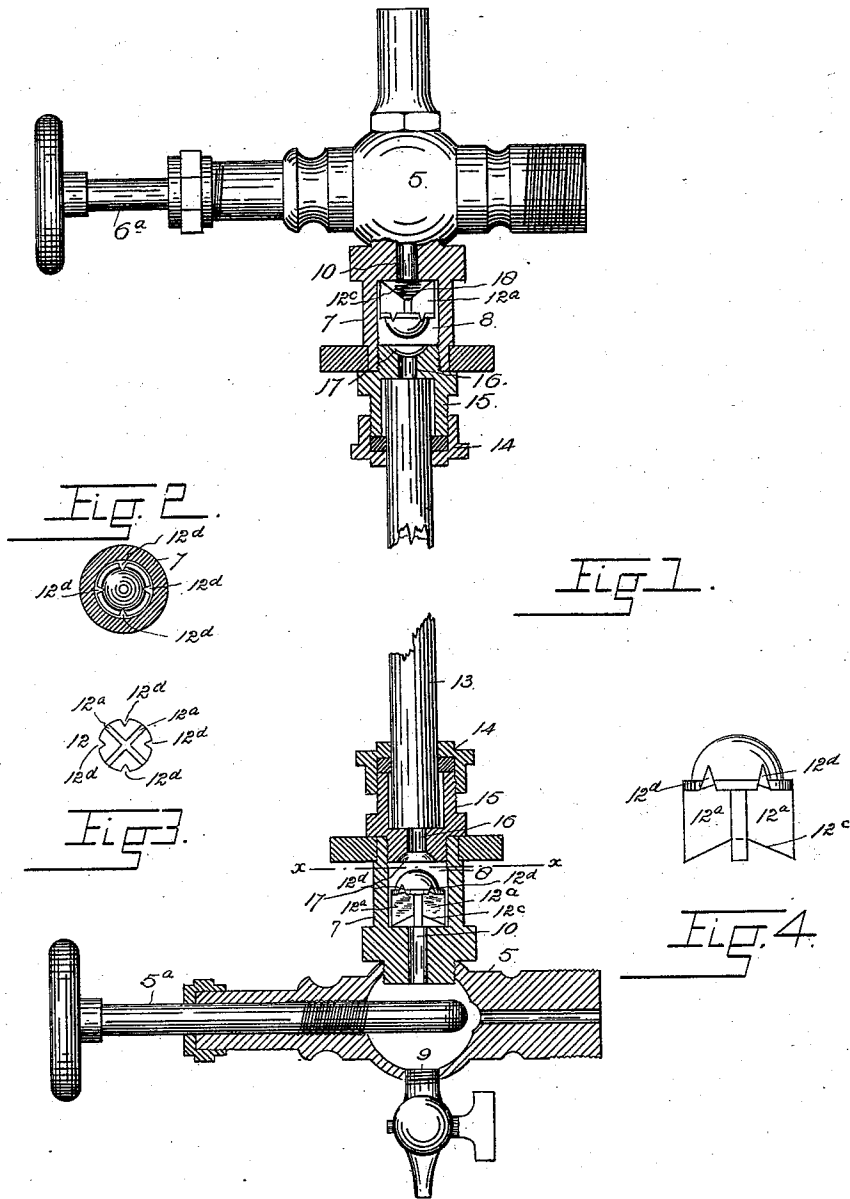


(No Model.)

J. RUDDY.
WATER GAGE SAFETY VALVE.

No. 531,387.

Patented Dec. 25, 1894.



WITNESSES:
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JOHN RUDDY, OF DENVER, COLORADO.

WATER-GAGE SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 531,387, dated December 25, 1894.

Application filed March 16, 1894. Serial No. 503,966. (No model.)

To all whom it may concern:

Be it known that I, JOHN RUDDY, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Safety Water-Gage 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 figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in water gage valves for boilers, and consists of the features hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is an elevation of the device partly in section. Fig. 2 is a horizontal section taken on the line $x-x$, Fig. 1. Fig. 3 is an underneath view of the valve in detail. Fig. 4 is a side elevation of the valve, in detail.

Similar reference characters indicating corresponding parts or elements in these views, let the numerals 5 and 6 designate the cocks which are screwed into the boiler, the one communicating with the water, and the other with the steam. The entrance to the cocks is controlled by the screw stems 5^a and 6^a. Into these cocks are screwed the casings 7 recessed to form the chambers 8 which are connected with the chambers 9 of the cocks by apertures 10. The chambers 8 are provided with valves 12 loosely placed therein. These valve chambers are so connected and the valves normally occupy such a position that the water and steam may pass freely through their chambers into the intermediate open-ended glass tube 13. The extremities of this tube pass through stuffing boxes 14, and are surrounded by casings 15 which connect the stuffing boxes with the valve chamber casings 7, and are provided with apertures 16 communicating with the chambers 8, and allowing the water and steam, after passing through the chambers 8, to enter the gage tube.

The casings 15 are concaved around the apertures 16 to form seats 17 for the valves 12,

when closed. These valves 12 are always open except when the tube is broken; and in the event of the breaking of the tube by accident or otherwise, their function is to close automatically, and stop the escape of water or steam.

The lower valve is maintained in the open position by gravity, since the pressure is the same both above and below it. When the gage tube is broken, however, the pressure above is reduced to one atmosphere. Hence, the boiler pressure being much greater, will raise the valve 12 to engagement with the seat 17, and cut off the escape of water from the boiler. The upper valve 12 is normally held up, or away from the seat 17 by a weak coil spring 18. The strength of this spring is just sufficient to normally support the valve or overcome its gravity. Hence, as soon as the tube 13 is broken, the boiler pressure will instantly force the valve downward against its seat, and cut off the escape of steam.

The body of the valve is provided with vertical radial wings 12^a beveled at their free extremities, as shown at 12^b to permit the free passage of steam or water from the apertures 10 to the valve chambers 8. The valves are also provided with notches 12^d leading from the spaces between the wings to facilitate the passage or flow of steam and water around the valves.

The special function of the wings 12^a of the valve 12 is to hold the valve away from the aperture 10 leading from the cock to the valve chamber, whereby the steam or water is allowed to pass freely from the cock to the chamber. These wings thus form a sort of seat or support for the valve when open.

The seating extremities of the valves are convex to engage the counterpart concave seats 17 when the valves are closed. This feature will insure the seating of the valves under all circumstances, and is an important feature since the valves are loose in the chambers 8, and may not move in a vertical line while passing to their seats.

My improved valve is more especially designed to cut off the escape of water from the boiler in case the gage tube breaks, but may also be used to stop the escape of steam, by employing the weak spring to maintain the valve normally open, as herein set forth.

Having thus described my invention, what I claim is—

5 The combination of the globe valve comprising the casing adapted to be screwed into the boiler, and the horizontal screw stem adapted to close the aperture leading from the boiler to the valve, the valve chamber 7
10 screwed into the top of the globe valve casing and provided with an aperture connecting the two valve chambers, the automatic valve located in the casing 7 and comprising a semi-spherical top and depending radial supporting wings beveled on their lower ends, the wings and top of the valve being as large as
15 will move easily in the valve chamber whereby the valve is accurately guided to its seat, and the edge of the top being notched between

the wings to afford a sufficient passage way for the liquid or vapor through the valve chamber, a stuffing box casing 15 screwed 20 into the top of the casing 7, the two chambers being connected by an aperture, and the casing 15 being concaved around the aperture to afford a perfect seat for the automatic valve, an interiorly threaded cap applied to the top 25 of the casing 15 and adapted to hold the packing in place, and a gage tube inserted in the stuffing box, substantially as described.

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

JOHN RUDDY.

Witnesses:

BRINTON GREGORY,
CHAS. E. DAWSON.