

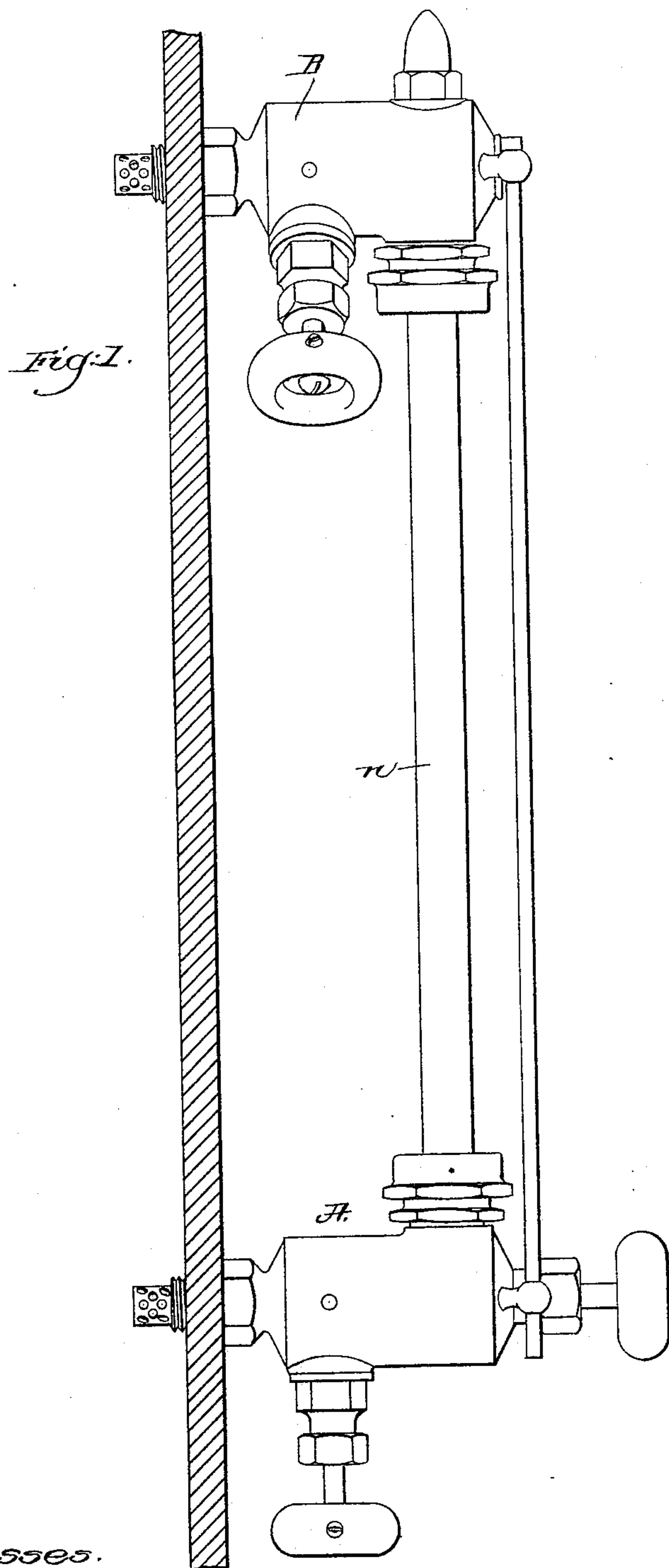
(No Model.)

2 Sheets—Sheet 1.

J. G. BLOUNT.
SAFETY WATER GAGE.

No. 391,012.

Patented Oct. 16, 1888.



Witnesses.
Fred. S. Crane & Co.
Fred. L. Emery,

Inventor.
John G. Blount,
by Lemby & Gregory,
attys.

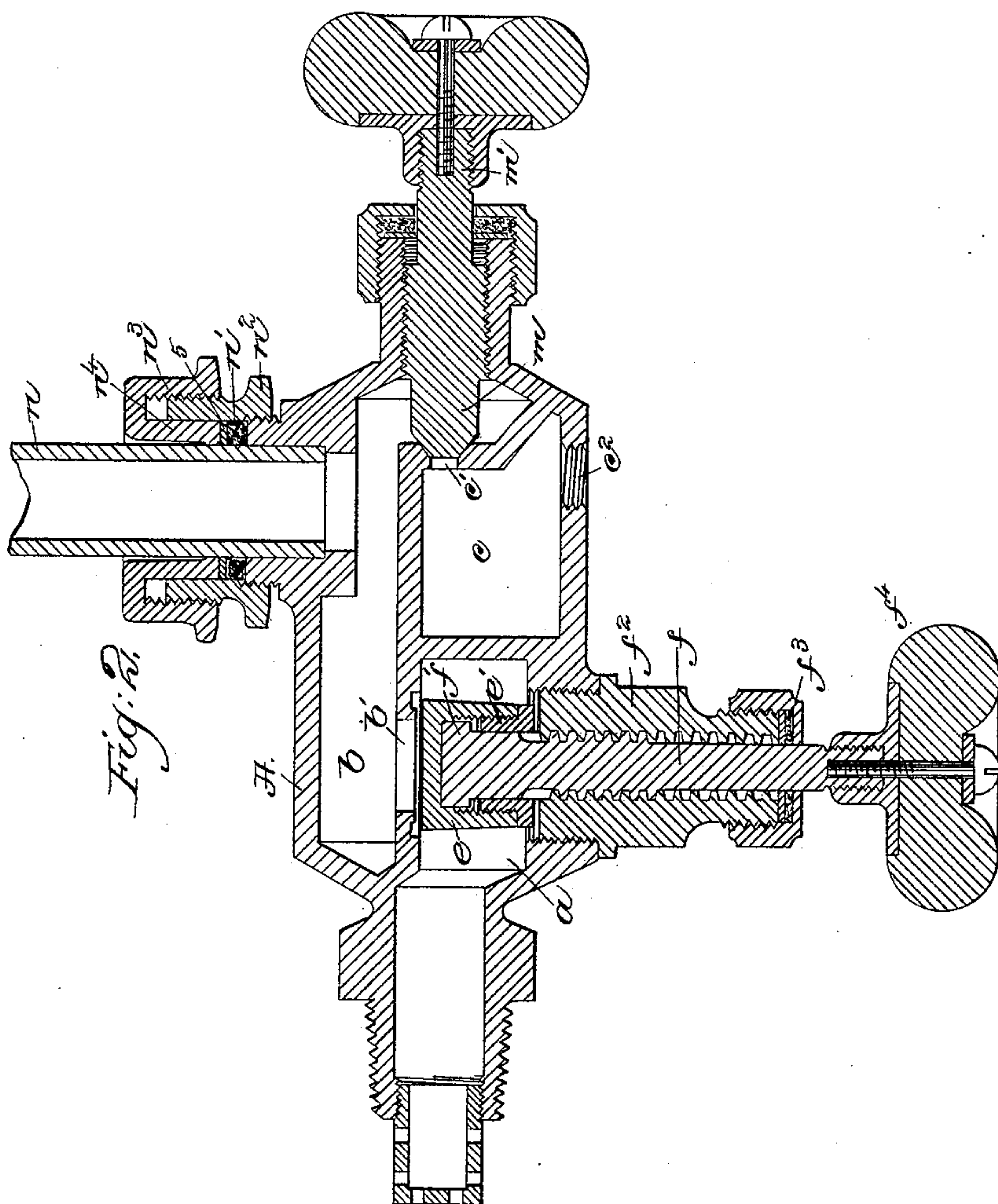
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UNITED STATES PATENT OFFICE.

JOHN G. BLOUNT, OF BOSTON, MASSACHUSETTS.

SAFETY WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 391,012, dated October 16, 1888.

Application filed January 18, 1888. Serial No. 261,988. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. BLOUNT, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Water-Gages, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to construct a water indicator or gage for boilers employing suitable valves which automatically close upon breakage of the indicating-tube to prevent escape of the contents of the boiler, and which may be positively held closed while a new tube is being applied, the indicator being adapted to be properly tested and blown out when desired.

In accordance with this invention both the upper and lower valve-cases of the indicator contain a valve mounted loosely to move freely on a valve-stem in the direction of its length, the valve serving as a check-valve when the said valve-stem occupies what I herein term its "intermediate position;" but the said valve may be moved positively by the valve-stem toward or from its seat to be thereby held in either position—namely, opened or closed. The lower valve-case also contains a second valve, which is to be used both as a blow-off and a testing valve. The indicating-tube connecting the two valve-cases is fitted at each end in a stuffing-box containing a rubber or flexible washer, which is pressed against the tube by an annularly-flanged cap, such compression of the washer forming a steam and water tight joint.

Figure 1 shows in side elevation a water indicator or gage embodying this invention, and Fig. 2 a vertical section of the lower valve-case of the indicator enlarged.

The lower valve-case, A, has three chambers, *a b c*, within it, communicating with each other by suitable ports or openings. The opening *b'* between the chambers *a b* is controlled by a valve, *e*, herein shown as an internally-screw-threaded cap screwed to a flanged collar, *e'*. The valve *e* is mounted loosely upon the end of a valve-stem, *f*, having an enlarged head, *f'*, which is inclosed within the valve *e*, the said head *f'* being smaller than the chamber within the said valve, thereby permitting

the valve to move freely on the valve-stem a limited distance in the direction of its length. The valve-stem *f* is screw-threaded and turns in a nut, *f²*, screwed into the valve-case A, a suitable stuffing-box, *f³*, being applied to the nut. A hand-wheel, *f⁴*, is attached to the valve stem to rotate it.

The valve *e* is located in the chamber *a* and is somewhat shorter than the width of the chamber to be moved therein toward and from its seat. When the valve-stem is in its intermediate position, the valve *e* rests by gravity upon the end of the stem away from its seat, but is free to be moved against its seat by pressure in the chamber *a* or by exhaust in the chamber *b*, thus serving as a check-valve. When the valve-stem *f* is rotated toward the right, the valve *e* may be positively moved against its seat, and when rotated toward the left the said valve may be positively moved from its seat until the lower end of the valve rests against the upper end of the nut *f²* and the enlarged head *f'* bears against the inner end of the flanged collar *e'* of the valve. It will thus be seen that the valve described is capable of being positively moved against its seat or from its seat and in either of such positions firmly held, and also may serve as a check-valve when the valve-stem is in its intermediate position.

The valve-case B at the upper end of the indicator contains a valve of substantially the construction above described and having the same capabilities and functions.

The indicating-tube *n* is fitted into stuffing-boxes applied to each valve-case, and each stuffing-box being alike, one only will be described. The indicating-tube *n* connects the chambers *b* of the two valve-cases, and is encircled by a rubber washer, *n'*, placed within a nut, *n²*, screwed to the valve-case. A metallic washer, 5, is placed above or upon the washer *n'*. A cap, *n³*, screw-threaded at its interior, is turned upon the nut *n²*, said cap having an internal annular flange, *n⁴*, which is received within the nut *n²* adjacent to the tube *n*, said flange *n⁴* bearing upon the metallic washer 5 as the cap *n³* is rotated thereby, compressing the washer *n'*, that it may firmly inclose the tube *n* and form a steam and water tight joint. By a stuffing box of this construc-

tion a yielding bearing is provided for the tube n , which may be compressed to tightly inclose the tube with little danger of breaking the same, as the portion n^4 turns upon the metallic washer without moving or turning around the tube, in contradistinction to the usual stuffing-boxes, which upon being tightened break the tube, as the rubber packing is moved or twisted around the tube.

10 In practice the valve-stems are normally placed at their intermediate positions, and if by accident or otherwise the tube n is broken the valves e automatically close, being drawn toward their seats by the exhaust of the chamber b , and the unbalanced pressure within the chambers a thereby prevents the escape of the contents of the boiler.

While a new tube is being supplied the valve-stems f may be rotated toward the right, and the valves e thereby held against their seats. A valve, m , formed as a part of a valve-stem, m' , or otherwise made, controls the opening c^2 between the chambers b and c of the valve-case A, such valve being employed both as a blow-off and testing valve.

When using the valve as a blow-off, the valve-stem f of both valve-cases is turned to the left to hold the valves e from their seats, so that they cannot act as check-valves, and the valve m being then opened, the water has free passage through the chambers $a b c$ of the valve-case A, passing through the outlet c^2 , and the steam has free passage through the valve-case B, indicating-tube n , and thence through the chambers of the valve-case A.

When the valve n is to be used for testing, the valves e are in their normal positions—namely, to act as check-valves—and by simply opening the valve m the valves e will operate automatically the same as if the tube n were broken.

I claim—

1. In a water-gage, the valve-cases A B and the connecting-tube n , combined with the valve-seat in each valve-case, the valve composed of a two-part shell or cap, $e e'$, and the valve-stem having the enlarged end f' , said end f' being contained within the said valve

and being smaller than the chamber formed within the valve, so that the valve may work loosely upon or have a limited movement upon the valve-stem in the direction of its length to co-operate with the seat, acting as a check when the valve stem is in its intermediate position and adapted to be moved positively toward and from its seat by the valve-stem, substantially as described.

2. In a water-gage, the valve-cases A B, each having the valve-seat, the valve composed of a two-part shell or cap, $e e'$, and a valve-stem having the flanged end f' , said end f' being contained within the said valve and being smaller than the chamber formed within the valve, so that it may be loosely connected with the valve-stem, to be automatically or positively moved to co-operate with the seat, combined with a second or auxiliary valve placed in the valve-case A to operate as a blow-off or testing valve, substantially as described.

3. In a water-gage, the lower valve-case, A, having chambers a and b , and the blow-out chamber c , and openings b' between the chambers $a b$, and an opening, c' , between the chambers b and c , and valves controlling the said openings, substantially as described.

4. In a water-gage, the valve-case and indicating-tube, combined with a stuffing-box for one or both ends of the indicating-tubes, said stuffing-box consisting of the nut n^2 , having for the main portion of its length a smooth interior surface, the packing-ring n' , placed within the nut n^2 and bearing exteriorly against the smooth interior portion of said nut, the metallic washer 5, placed upon the packing-ring, and the cap n^3 , screw-threaded to fit upon the nut n^2 and having the internal annular flange, n^4 , formed integral with it, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN G. BLOUNT.

Witnesses:

BERNICE J. NOYES,
J. C. SEARS.