

No. 754,963.

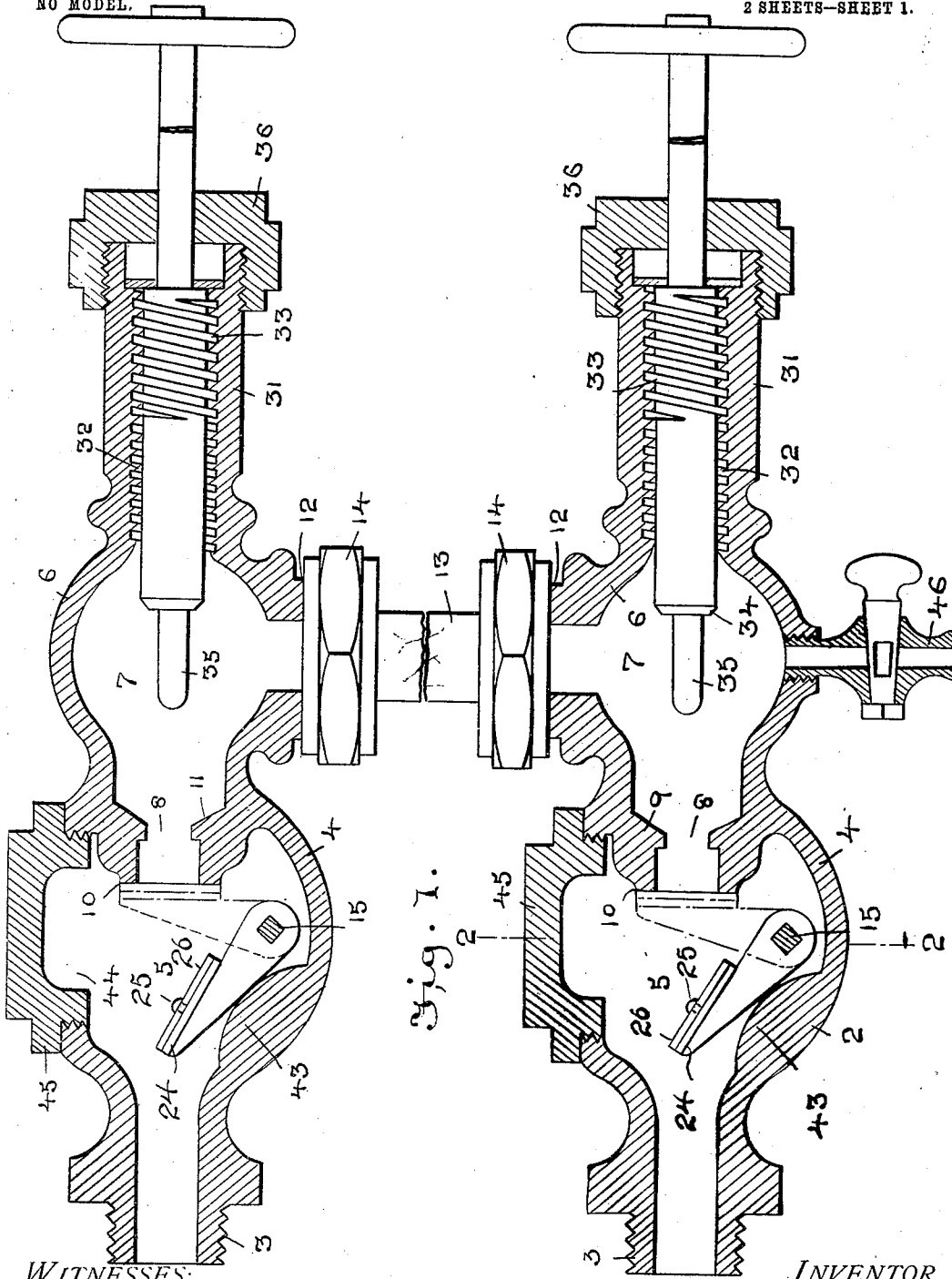
PATENTED MAR. 22, 1904.

L. A. BERTRAM.
WATER GAGE.

APPLICATION FILED MAY 9, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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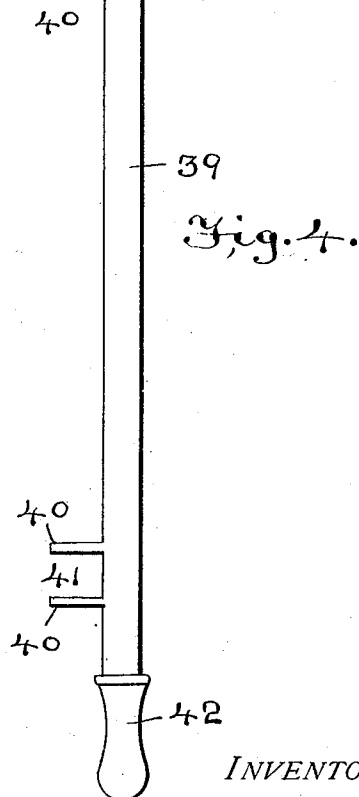
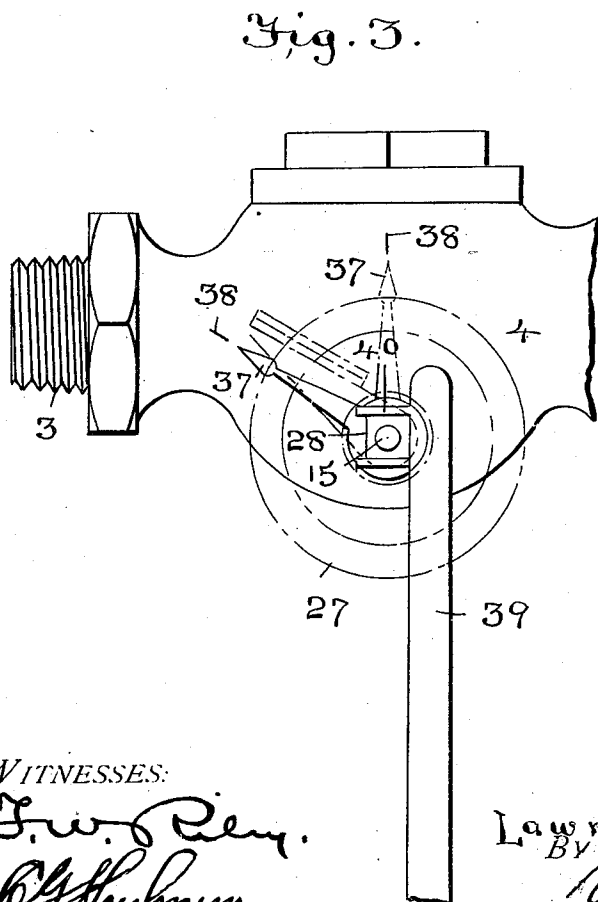
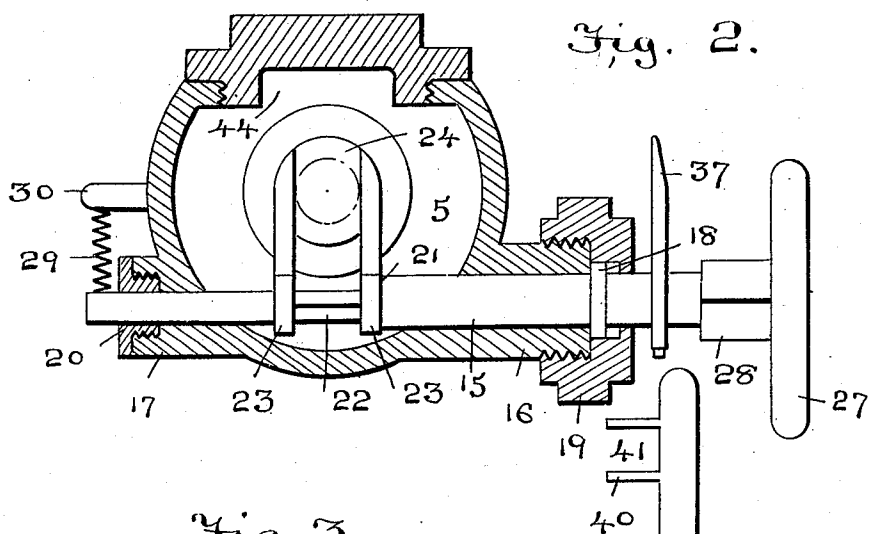
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WITNESSES:

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UNITED STATES PATENT OFFICE.

LAWRENCE A. BERTRAM, OF ALLEGHENY, PENNSYLVANIA.

WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 754,963, dated March 22, 1904.

Application filed May 9, 1903. Serial No. 156,423. (No model.)

To all whom it may concern:

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

My invention has relation to new and useful improvements in water gages or indicators for steam-boilers, &c.; and the objects of the invention are to provide a device of the character above mentioned which is simple in construction and the parts of which are interchangeable and removable in order to permit easy access for the purpose of cleaning or repair.

A further and important object of the invention is to provide an improved means whereby the escape of steam or water from the boiler will be prevented in the event the glass gage-tube should be broken or necessity requires its removal and to hold such means against action when the contents of the gage-tube are drained therefrom.

The invention consists in socket or head pieces of simplified construction supporting and communicating with a gage-tube, the said heads or sockets having mounted therein check-valves adapted to be seated upon the breaking of the tube temporarily to prevent the escape of steam and reciprocating valves adapted to close permanently the opening through the head to the gage while repairs are being made, said valves having means for forcing the check-valves from their seats.

The invention further consists in providing an improved means for indicating the position of the check-valves within the head and a means for holding said valves off their seats when the gage is drained or blown off.

I have fully and clearly illustrated my invention in the accompanying drawings, wherein—

Figure 1 is a vertical section through the device extending longitudinally of the head-pieces or sockets and showing the gage-glass broken away. Fig. 2 is a transverse vertical section through the head on the line 2 2 of Fig. 1, showing the check-valve indicator in side elevation and also showing the means for

holding the check-valve open when the gage is being drained. Fig. 3 is a detail view of the means for holding the check-valve away from its seat.

Referring to the drawings, 1 1 designate the upper and lower heads which carry the gage-glass and which are secured in place in the shell of a boiler by means of threaded nipples 3 3, substantially as shown in the drawings. Each of these heads comprises a body portion 4, within which is a chamber 5 and an extension 6, having a chamber 7 therein which communicates with the chamber 5 by way of a contracted part 8 through a wall 9, which separates the two chambers. This wall about the part 8 is formed with a neck or extension which projects into the chamber 5 and forms an annular valve-seat 10, substantially as shown. Within the chamber 7 the wall 9 is cored out to form a conical valve-seat 11, the purpose of which will be more particularly described hereinafter.

Extending laterally from each of the heads and communicating with the chambers 7 are vertically-threaded extensions 12 12, within which the gage-glass 13 is secured by means of coupling-nuts 14 14 in a well-known manner.

Extending transversely of the chamber 5 is a rotatable valve rod or spindle 15, which has its bearing in tubular projections 16 17, formed on opposite sides of the exterior of the shell constituting the heads. This spindle 15 is inserted through the projection 16 and is of sufficient length to project beyond the outer end of the projection 17, substantially as shown. At its inner end portion the spindle is formed with an annular flange 18, which is arranged to abut the end of the projection 15 and limit the longitudinal movement of the spindle. At its inner end the spindle is secured in position by a cap-nut 19, threaded into the projection 16, and at its outer end is suitably packed by means of a packing-nut 20.

Intermediate of its ends and within the chamber 5 the spindle is formed with a shoulder 21 and adjacent to said shoulder is squared, as at 22, substantially as shown. Upon this squared portion are mounted the ends of arms 23 23, which carry the disk 24, constituting

the check-valve. The ends of the arms 23 23 are squared to fit the square portion of the spindle in order that any rotary movement of the valve therein will be prevented and a positive swing of said valve insured when the spindle is rotated. Upon the disk 24 projects a centrally - arranged headed pin 25, upon which is loosely and rotatably mounted a disk 26, which is adapted to bear against the seat in the chamber 5 and form a steam and water tight joint.

Exterior to the head each of the spindles are provided at one end with a hand-wheel 27, by which they may be rotated to swing the valve toward or away from its seat, and adjacent to the hand - wheel the spindle is squared, as at 28, for a purpose to be hereinafter more particularly described. At the end opposite to that carrying the hand-wheel the spindles are connected to one end of a contractile spring 29, the other end of which is connected to a part 30 on the outer side of the shell of the head. The purpose of this spring is normally to hold the spindles against rotation, and thereby prevent the valves from closing onto their seats under ordinary conditions when a circulation is established through the gage and in line with the chambers 5 and 7.

Projecting from each of the heads is formed a longitudinally-extending hollow neck or extension 31, having interior screw-threads 32, substantially as shown. In this extension and enjoying the screw-threads is a threaded valve-stem 33, adapted to have a reciprocatory movement through the said extension. This stem is formed at a point intermediate its ends with an inclined annular shoulder 34, constituting a valve-face adapted to cooperate with the conical seat 11 to close the part 8, connecting the chambers 5 and 7. At its inner end the valve-stem is reduced to form an extension 35, which when the stem is operated to seat the valve will be projected through the part 8 and engage the face of the check-valve to force the same from its seat. The stem is secured in the extension 31 by means of a cap-nut 36, which is threaded on the exterior of the extension. The valve-stems are provided with the usual hand-wheels, by which they are conveniently operated.

In order that it may be seen exactly what position the valves are in within the chambers 5 5, I provide an indicator, which may be readily seen by the person in charge of the boiler. This indicator is extremely simple in construction and embodies a pointer or indicator-arm 37, which is rigidly mounted upon the stem 15 adjacent to the hand-wheel and is arranged to extend radially from said stem in a direction coincident with the direction of the check-valve within the chambers 5. Upon the outside of the shell of the heads 11 are made in any suitable manner indicator-marks 38, which coincide with the open and

closed positions of the valves and with which the indicator-arms cooperate to indicate the position of said valves.

In order that the valves may be held away from their seats when the gage is drained or blown off, I provide a locking member 39, which at points the same distance apart as the spindles 15 is provided with pairs of laterally-projecting arms 40, each pair of which are spaced apart sufficiently to provide a recess or seat 41, adapted to sit over the squared portion 28 of the valve-spindles, substantially as shown in Fig. 3, and prevent said spindles from rotating as long as it is in engagement therewith. It will be readily seen that said member 39 may also be utilized to hold the check-valves in place on their seats should it become necessary. The locking member, as will be seen, is detachable from the spindles and is removable therefrom by a lateral movement and may be provided with a suitable handle 42, by which it is manipulated.

In order that the check-valves may be in such position as to be in the path of the steam or water passing through the gage, the lower portion of each chamber 5 has formed therein a projection 43, against which the check-valve is adapted to seat when away from the seat and by means of which it is held up in the path of the fluid and is prevented from falling beneath the opening through which the fluid passes.

Each of the body portions of the heads is provided with an opening 44, adapted to be closed by a cap 45 and through which access is had to the interior of the chamber, and the lower head is provided with a drain-cock 46, by means of which the water in the gage-glass may be drawn off.

The position of the valves being as shown in full lines in the drawings, the operation of the gage upon the breaking of the glass and the function of the various elements are as follows: The glass 13 being broken, the valves 24, which are normally held away from their seats, will be forced against the said seats by the force of the fluid passing through the heads 11 and will form an efficient temporary means for preventing the escape of said fluid. The valve 34 may then be screwed down on its seat 11, the extension 35 serving to force the check-valve from its seat and effectually cut off the flow of the fluid through the heads while the necessary repairs are being made. If it is not desired to utilize the valves 34, the member 39 may be seated on the spindles, which will thereby be securely held in position on their seats 10. The gage-glass having been replaced, the valves 34 are removed from their seats, and the circulation through the gage having been established the check - valves will be held away from the valve-seats 10 by the means of the contractile springs 29, as above specified.

When it is desired or becomes necessary to

drain the gage, the check-valves are swung into position on their seats to stop the circulation through the gage by means of the hand-wheels on the valve-spindles, and said valves upon becoming seated are held rigidly in position by means of the locking member 39 and cannot be moved until said member is moved from engagement therewith, as above described. The valves being seated, the fluid in the gage is then drawn off through the drain-cock 46 in a well-known manner.

It will be readily seen that as the spindles of the check-valves are rotated the indicator-arms carried thereby will be swung to indicate the position of said check-valves within the chamber.

What I claim is—

1. In a gage of the class described, the combination of the upper and lower heads, having chambers therein and a port connecting said chambers, each head having a check-valve in one of the chambers adapted to close the port and means rigidly engaging and connecting the said valves to lock them in their opened or closed position as long as said means is in engagement therewith.

2. In a gage of the class described, the combination of the upper and lower heads having chambers therein, and a port connecting said chambers, a spindle rotatably mounted in one of the chambers of each head, a check-

valve mounted on the spindle and arranged to close the ports, and means detachably engaging and connecting the spindles to lock them against rotation, said means being movable from the spindles by lateral movement.

3. In a gage of the class described, the combination of the heads, having chambers therein and an extension, said chambers being connected by a port, a spindle rotatably mounted in one of the chambers of each head, a check-valve mounted on the spindle and arranged to close the ports, and a locking-bar provided with recesses engaging the spindles to hold them against rotation.

4. In a gage of the class described, the combination of the heads having chambers therein, and a port connecting the chambers, a spindle rotatably mounted in one of the chambers of each head, a check-valve on the spindle, and arranged to close the port, each spindle being extended exterior to the head and formed with a squared portion and a locking member connecting the spindles and formed with seats to engage the squared portions thereof.

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

LAWRENCE A. BERTRAM.

Witnesses:

WM. G. MANNING,

JUSTUS F. SCHROEDEL.