

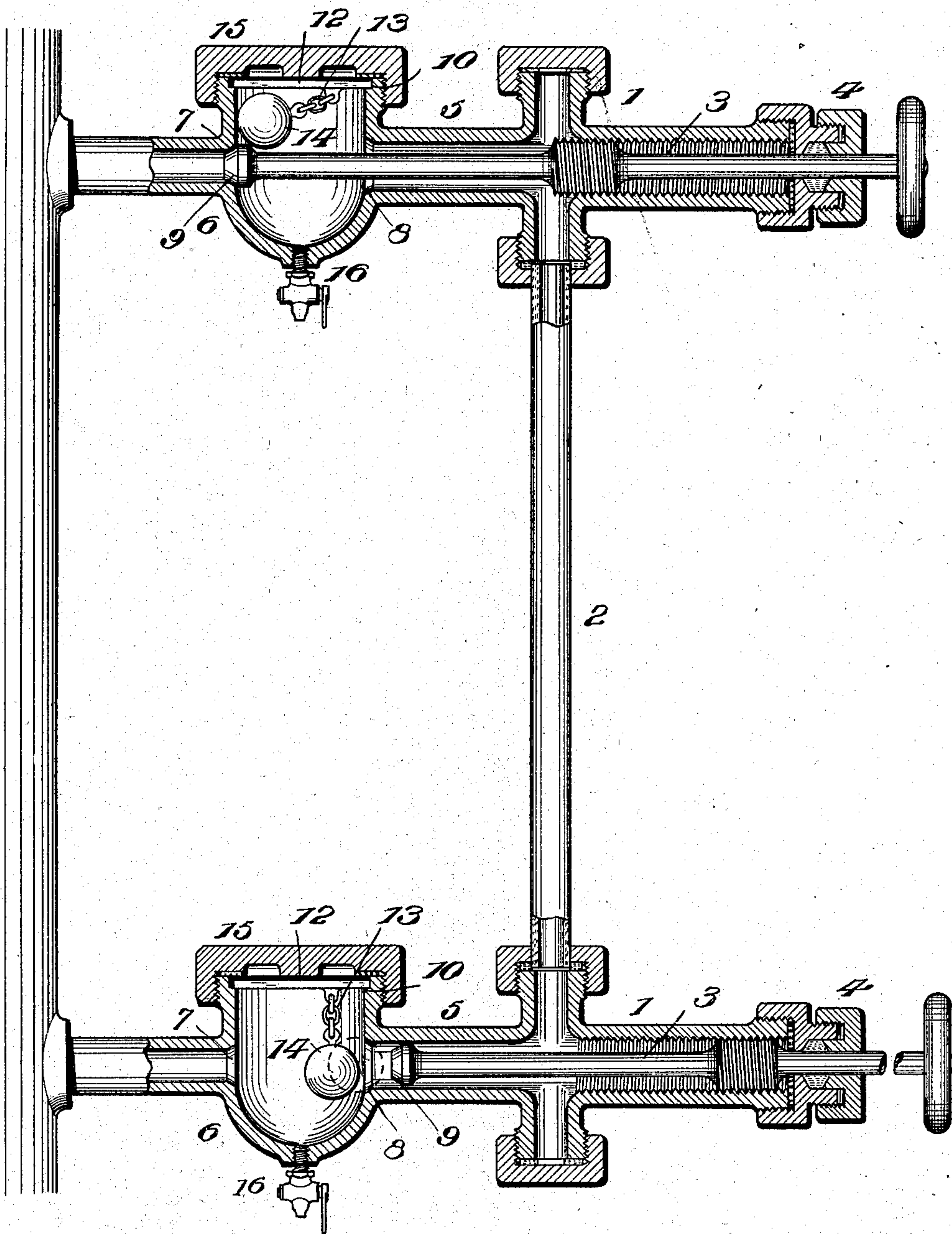
No. 719,842.

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J. McCORMICK.
WATER GAGE.

APPLICATION FILED MAY 15, 1902.

NO MODEL.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN McCORMICK, OF WILMERDING, PENNSYLVANIA.

WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 719,842, dated February 3, 1903.

Application filed May 15, 1902. Serial No. 107,493. (No model.)

To all whom it may concern:

Be it known that I, JOHN McCORMICK, of Wilmerding, in the county of Allegheny and State of Pennsylvania, have invented certain
5 new and useful Improvements in Water-Gages; and I do hereby 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
10 use the same.

This invention relates to that class of water-gages employing safety ball-valves automatically actuated upon the breaking of the glass gage-tube to prevent escape of steam and
15 water from the boiler.

As heretofore constructed the steam and water cocks between which the glass tube is arranged have been connected to the boiler by hollow extensions or inducts within which
20 the balls have been placed and allowed to roll freely between their seats at the end of the extensions connected to the cock and a stop arranged at the end of the extension adjacent the boiler. The stems of the cocks have been
25 seated against the ends of the hollow extensions opening into the casings of the cocks—that is, beneath the glass—and the blow-off cock has been located at the bottom of such casing. Practice has demonstrated numer-
30 ous defects and inconveniences in water-gages as thus constructed. Sediment collects in the hollow extensions and retards the movement of the balls, frequently resulting in their becoming clogged at one end or the
35 other of the passage. It being a generally-recognized fact that when the boiler is in operation and the glass intact the balls will not interfere with the passage of the steam and water, attendants have been led to rely upon
40 the gage implicitly as indicating the exact level of the water in the boiler. It has been found that such indication is not always correct and serious results have followed, due to the fact that the sediment in the hollow ex-
45 tensions has clogged the balls against the outlet.

When it has been desired to employ the blow-off valve, the opening of the same has caused the balls to seat themselves just as
50 they are designed to do when the glass breaks, not only precluding the possibility of blow-

ing off sufficiently, but leaving the sediment around the balls as it was before.

The object of my invention is to overcome these difficulties, and this end I attain by the
55 construction and arrangement of parts hereinafter described, and particularly pointed out in the claims.

In the accompanying drawing the figure is a longitudinal section of a water-gage con-
60 structed in accordance with my invention.

Referring to the drawing, 1 designates two cocks connected by the usual glass gage 2. The cock-casings are interiorly threaded to receive the threaded portions of valve-stems
65 3, and on the outer ends of the latter are wheels or handles by which they are manipulated, suitable packing-glands 4 being fitted over the ends of the casings. Each of the cocks has a hollow extension 5 connected with
70 the boiler, thus establishing communication between the latter and the glass. In each extension 5, and preferably integral therewith, is a cup-shaped chamber 6, having a valve-seat 7 at its inlet—that is, the opening lead-
75 ing to the boiler—and a seat 8 of greater cross-sectional area at the outlet opening leading to the glass. Against seat 7 a valve 9 on the end of stem 3 is designed to be seated when it is desired to positively cut off com-
80 munication with the boiler. At its top the chamber is provided with shoulders or offsets 10, upon which rests a bar 12, from which is suspended a chain 13, having on its lower end a ball-valve 14. The chain is connected
85 to the bar at a point away from the center near one end, so that the ball will normally hang adjacent the valve-seat 8; but the length of the chain will not permit of the ball reach-
90 ing the valve-seat 7.

15 designates a cap covering the top of the chamber and holding the bar 12 in place.

16 is a blow-off valve in the bottom of the chamber.

The portion of the extension 5 between the
95 chamber and the glass is of sufficient internal diameter to admit steam and water to pass the valve 9 when the latter is unseated and drawn into the extension.

In practice with the boiler in use and the
100 glass intact the parts will be in the position shown at the lower or water cock. Upon the

breaking of the glass the boiler-pressure will force the ball to its seat 8, as shown in dotted lines. The upper or steam cock is shown with its valve 9 seated, the ball being forced out of the way by the valve and its stem, and because of the shortness of the chain and the manner in which the latter is hung relatively to the two openings the ball cannot interfere with the seating of the positively-operated valve. Likewise when this latter valve is retracted into the enlarged portion of extension 5 it is out of the way of the ball, which is free to be seated by any overpressure from the boiler side, as when the glass is broken. When the pressure is equal, the ball hangs near its seat 8.

The advantages of my invention are apparent. It is impossible for the ball-valves to close any port other than those for which they are intended. The collection of sediment in the chambers cannot affect the balls, and the blow-off may be readily and simply accomplished without hindrance from the balls.

I claim as my invention—

1. The combination with the sight-tube having upper and lower connections with a boiler, each connection having a chamber intermediate its ends, valve-stems extended through said connections and having valves for positively closing the passages between the chamber and boiler, a ball-valve in each chamber, means for suspending the same, said

ball-valves being designed to close the outlets between the chambers and the sight-tube, and free to be moved out of the way by the positively-operated valve, substantially as set forth. 35

2. In a water-gage, the combination with the steam and water cocks, a gage-glass connecting said cocks, hollow extensions connecting said glass to the boiler, and valves having their stems extending through said cocks and into said extensions, of chambers intermediate the ends of said extensions having inlet and outlet ports, said valves being designed to close said inlet-ports, and balls suspended within said chambers and designed to close said outlet-ports, substantially as set forth. 40 45

3. In a water-gage having a gage-glass, extensions connecting the glass with the boiler, chambers in said extensions having inlet and outlet ports, bars in said chambers, caps covering said chambers and holding said bars in place, balls suspended from said bars adjacent said outlet-ports but out of reach of said inlet-ports, and blow-off cocks in said chambers between said ports, as set forth. 50 55

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

JOHN McCORMICK.

Witnesses:

E. D. SPERRY,

RICHARD BOSTOCK.