(No Model.)

F. J. BORT & J. ALLEN.

WATER COLUMN INDICATOR.

No. 306,129. Patented Oct. 7, 1884.

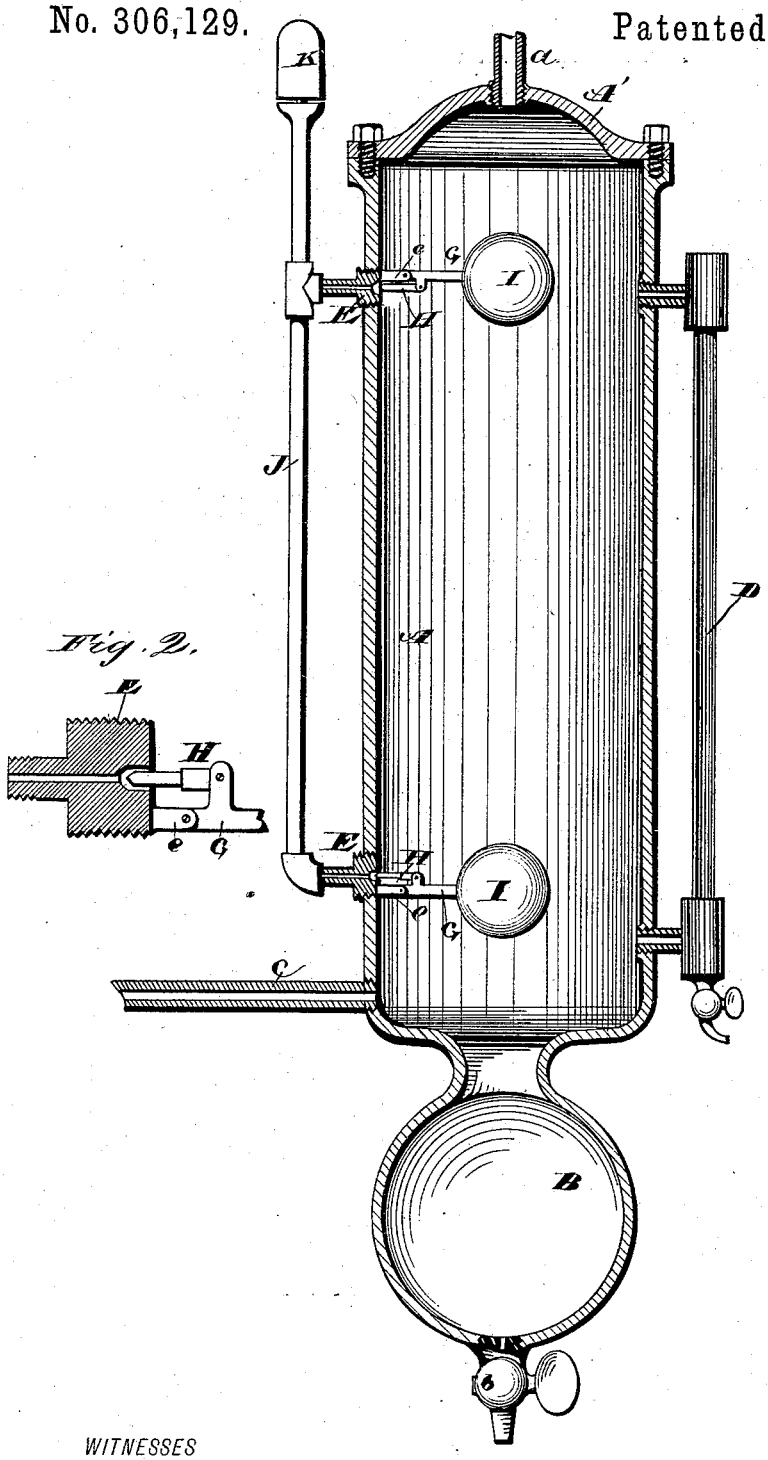

Fig. 1.

Fig. 2.

WITNESSES

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FRANK J. BORT AND JACKSON ALLEN, OF CLEVELAND, OHIO.

WATER-COLUMN INDICATOR.

SPECIFICATION forming part of Letters Patent No. 306,129, dated October 7, 1884.

Application filed March 29, 1884. (No model.)

To all whom it may concern:

Be it known that we, FRANK J. BORT and JACKSON ALLEN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Water-Column Indicators; and we 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 pertains to make and use the same.

Our invention relates to improvements in water-column indicators for steam-boilers, the object being to provide a high and low water alarm attached to the water-column indicator, with the parts more accessible and convenient for repairs or cleaning than those heretofore in use. A further object is to provide a sediment-chamber in such relative position to the water-pipe that it will receive the sediment, and of such construction that the sediment may be blown off without roiling the water in the column above.

With these objects in view our invention consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of our improved water-column indicator with some of the details in elevation. Fig. 2 is an enlarged section of the valve-seat with the valve and lever in elevation.

A represents the body of the device known as a "water-column indicator," and may be of any form in cross-section that may be preferred.

B is the sediment-chamber, located just below the water-pipe C, and with the narrow neck and opening connecting it with the body of the part A and integral therewith, and provided with the blow-off cock *b*. The water in entering through the pipe C passes directly over the opening of the sediment-chamber, and the sediment gravitates to this chamber, and, owing to the narrow opening and curved lines at this part, it is found that the sediment may be blown from the cock *b* without disturbing or roiling the water in the column above, and hence the glass indicator-tube D will remain clear and clean for a long time. A removable cover, A′, to which the steam-pipe *a* is attached, renders the inside of the device accessible.

E are hollow plugs, screwed into the side of the water column, and contain the valve-seats and have an arm, *e*, to which are respectively pivoted the levers G of the bell-crank variety. To the short arm of the levers are pivotally attached the plug-valves H, and to the long arms the floats I. The plugs E are connected with the pipe J, leading to the alarm-whistle K. It will be observed that the lower plug, E, is turned so that the arm *e* is on the lower side, and the attached float keeps the valve closed, except when the water becomes so low as not to support the float, when, by the gravity of the float, the valve H is opened and the alarm is sounded. The plug E above is turned with the arm *e* above, so that the gravity of the upper float holds this valve closed, except when the water raises the float and thereby opens the valve. By this arrangement the same pieces may be used for either the high or low water alarm, making a considerable saving in the initial cost.

In coupling up the pipe J, that is usually located farther from the part A than is shown in the drawings, a right-and-left coupling or nipple may be used, either at the top or bottom connection, so that the pipes may be easily removed and the plugs E taken out for inspection, repairs, or cleaning. If preferred, the lower plug may be inserted farther up the column and the float suspended by a wire, so as to be in the position required to sound the alarm for low water.

The water-alarms heretofore in use usually had the valves and other mechanism located inside of the boiler, where they were not accessible except when the water was out of the boiler, and hence were seldom inspected, and were liable to become corroded and inoperative, and were not easily attached after the boiler was set. Our improved device remedies these difficulties and defects, and may be attached to all kinds of boilers and without disturbing the setting and at any time when steam is down.

What we claim is—

1. The combination, with a water column, an indicator-tube connected thereto, a pipe connected at two points with said water col-

umn, and a whistle or other alarm connected to said pipe, of valves for closing communication between the water column and pipe and floats for operating the valves.

2. The combination, with a water column, an indicator-tube connected thereto, the plugs E, the pipe connected to said plugs, and the whistle connected to the upper end of the pipe, of the valves H, the levers G, and floats I, substantially as set forth.

3. The combination, with a water column, a sediment-chamber located below said water column and having a restricted neck and a discharge-valve, and an indicator-tube in communication with said water column, of an alarm-pipe connected to the water column, an alarm secured to said pipe, and a valve and float for opening communication between the water column and alarm-pipe, substantially as set forth.

In testimony whereof we sign this specification, in the presence of two witnesses, this 24th day of March, 1884.

FRANK J. BORT.
JACKSON ALLEN.

Witnesses:
ALBERT E. LYNCH,
CHAS. H. DORER.