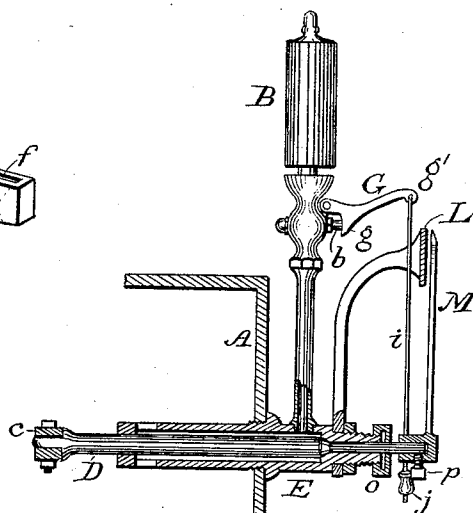
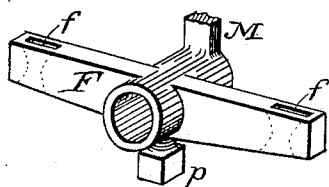
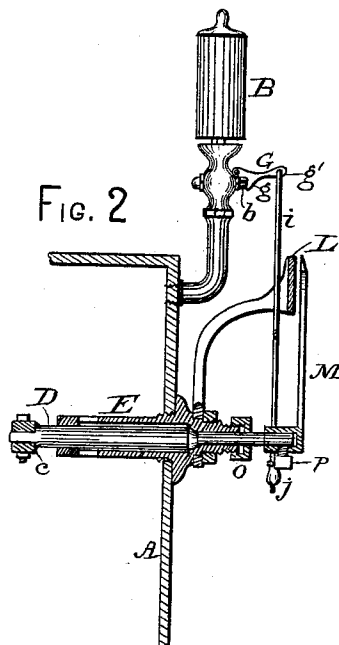
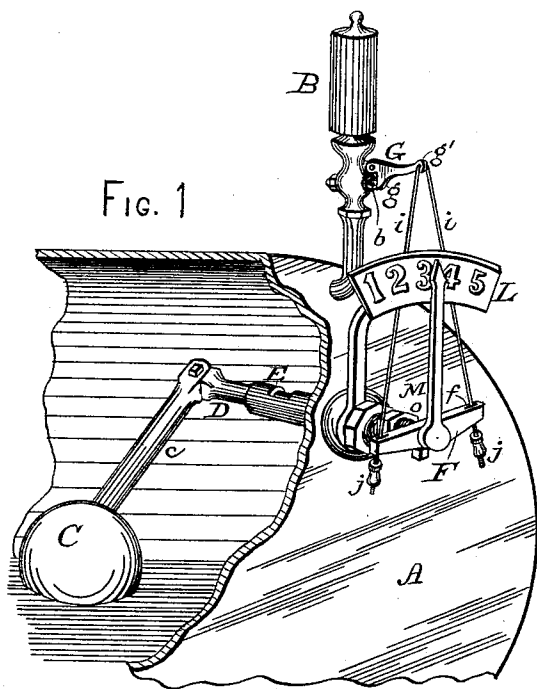


(No Model.)

A. J. WRIGHT.
HIGH AND LOW WATER ALARM.

No. 479,482.

Patented July 26, 1892.



WITNESSES

U. S. A. Johnston
Sole Printers

INVENTOR

Allen J. Wright
by E. M. Morse

ATTORNEY

UNITED STATES PATENT OFFICE.

ALLEN J. WRIGHT, OF CLEVELAND, OHIO.

HIGH AND LOW WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 479,482, dated July 26, 1892.

Application filed September 12, 1891. Serial No. 405,562. (No model.)

To all whom it may concern:

Be it known that I, ALLEN J. WRIGHT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in High and Low Water Alarms for Boilers; 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 use the same.

My invention relates to improvements in automatic high and low water alarms for steam-boilers; and it consists in the improved construction and arrangement of the parts, as hereinafter described, and specifically set forth in the claims, to secure ease and accuracy of adjustability.

In the drawings, Figure 1 is a perspective view of an alarm embodying my invention shown as attached to the front of a steam-boiler. Fig. 2 is a side view of the same, partly in section. Fig. 3 is a view similar to Fig. 2, exhibiting a modification of construction. Fig. 4 is a detached view in perspective of the transverse arms of the rock-shaft.

A represents the boiler; B, the alarm-whistle, having steam connection with the boiler; C, a float whose stem *c* is rigidly connected transversely to the inner end of a shaft D, supported in a sleeve E, which extends through the shell of the boiler above the water-line. F is a transverse arm rigidly secured to the shaft D outside the sleeve and with the shaft D constitutes a rock-shaft by means of which the whistle is sounded whenever the float rises or falls beyond a predetermined limit. Each end of the arm F has a slot *f* extending vertically through the arm and preferably widening each way from the center, so as to avoid wearing the thread on the rods passing through these slots. The whistle is constructed with the stem *b* of its valve protruding, and a lever G is pivoted so that its short arm *g* will press in the stem *b* when the long arm *g'* of the lever G is drawn down, and will thus open the valve and allow the whistle to sound. The long arm *g'* of the whistle-actuating lever G is connected adjustably with the arm F, preferably by rods *i i*, which pass through the slots *f f* and are at their lower ends threaded and provided

with nuts *j j*, as seen in Fig. 1. As the float C rises or falls with the change of level of the water in the boiler the arm F rocks and one end or the other will bear on one of the nuts *j* and draw down the lever G, thus sounding the whistle whichever way the float moves.

In previous forms of high and low water alarms the mechanism has been adapted to operate at a determined limit of fluctuation, to which the apparatus had to be adjusted when attached to the boiler, and which limit remained unchangeable, except by a readjustment involving the separation of the apparatus from the boiler or the substitution of parts.

In my improved apparatus the change of adjustment is very simply effected by altering the length of the connection between the whistle-lever G and the bearing on which the arm F acts, which may be done in a moment by turning up or down the nuts *j j*. It is obvious that if the nuts *j* be turned up into contact with the arm F any vertical movement of the float will draw on the lever G and sound the whistle. In ordinary use, therefore, the nuts *j* are adjusted at a slight distance below the arm F, as seen in Fig. 1, so as to allow some play to the float without sounding the alarm, and this distance may be varied at will, so that the variations of water-level at which it is desired to have the alarm sound may be fixed or changed as often as desired.

A water-level indicator is preferably combined with the alarm to afford a visible measure of the extent of the fluctuation of the water-level in the boiler and to afford a guide in making or changing the adjustment, as described, and may consist of a scale L, suitably supported, and an index M, attached to the outer end of the shaft D.

o is a stuffing-box to render steam-tight the bearing of shaft D in the outer end of sleeve E.

p is a set-screw by which the arm F may be secured to shaft D and adjusted thereon. The index M may with advantage be formed integral with arm F, and the nuts *j j* are preferably rounded on their upper surfaces to reduce friction. The whistle B may, if preferred, be connected to the sleeve E, as shown in Fig. 3, or may be placed at any height above the sleeve E and arm F. If preferred, the parts of the rods *i i* above the arm F may

be replaced by chains, cords, or other equivalents for the rods; but I regard the rods as preferable. As a substitute for the nuts below the arm a turnbuckle in the rod above

5 the arm may be used.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a high and low water alarm, the combination, with the whistle having steam connection with the boiler, of a lever adapted to actuate the whistle-valve, a rock-shaft extending through the boiler-shell and actuated by a float within the boiler, a rigid transverse arm on the outer end of said shaft, rods or
10 their equivalent connected with the whistle-actuating lever and having their threaded lower ends passing through the ends of said transverse arm, and nuts on said rods below said arm, substantially as described.

2. The combination of the whistle having steam connection with the boiler and having a lever adapted to actuate the whistle-valve, a rock-shaft extending through the boiler-shell and having a float laterally attached
25 thereto within the boiler and a transverse arm rigidly attached thereto outside the boiler, threaded rods or their equivalent connecting the whistle-actuating lever with the transverse arm of the rock-shaft and having adjusting-nuts on their lower ends below said arm, an indicator-scale, and an index secured to said rock-shaft, substantially as described.

3. The combination of the rock-shaft having a transversely-attached float within the boiler and a transverse arm outside the boiler, the sleeve passing through the boiler-shell and having at each end bearings for said shaft, the whistle communicating through said sleeve with the interior of the boiler and having a lever to actuate the whistle-valve, the threaded rods or their equivalent connected at their upper ends to the whistle-actuating lever and passing through slots in the ends of said transverse arm of the rock-shaft, and
45 the adjusting-nuts threaded upon said rods

below the transverse arm, substantially as described, and for the purpose set forth.

4. The combination of the rock-shaft with float and transverse arm, the sleeve passing through the boiler-shell and having at each end bearings for said shaft, the whistle communicating through said sleeve with the interior of the boiler and having a lever to actuate the whistle-valve, the threaded rods or equivalent connected at their upper ends to the
55 whistle-actuating lever and passing through slots in the ends of the transverse arm of said rock-shaft and having adjusting-nuts below said arm, the indicator-scale, and the index secured to said rock-shaft, all combined and
60 operating substantially as described.

5. In a high and low water alarm, the combination, with the alarm-whistle, of the lever pivoted thereto and adapted to actuate the whistle-valve, the rods or their equivalent connecting said lever with the transverse arms of a rock-shaft extending through the boiler-shell and actuated by a float within the boiler, and the adjusting-nuts threaded on said rods below the transverse arms and adapted to operate the whistle-lever when the shaft rocks in either direction, substantially as described.

6. In a high and low water alarm, the combination, with the whistle having steam connection with the boiler, the lever adapted to actuate the whistle-valve, and a rock-shaft having laterally-attached float within the boiler and transverse arms outside the boiler, of the adjustable connection between the whistle-lever and each of the rock-shaft arms, whereby the amount of fluctuation in the water-level necessary to sound the alarm may be varied at will, substantially as described.

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

ALLEN J. WRIGHT.

Witnesses:

U. S. G. JOHNSTON,
LOREN PRENTISS.