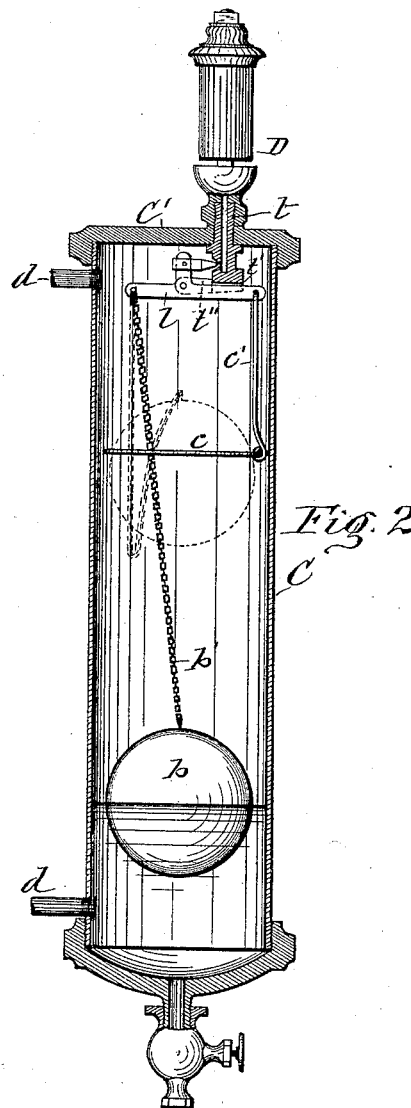
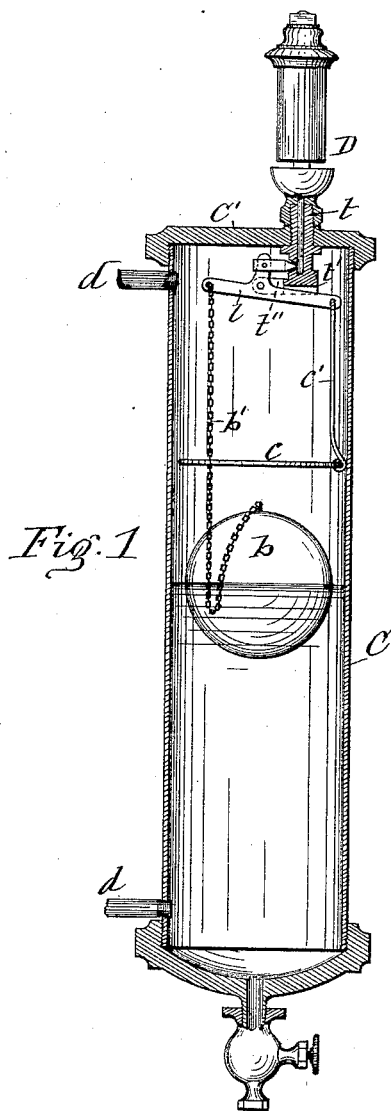


(No Model.)

C. A. HATCH.
HIGH AND LOW WATER ALARM.

No. 458,787.

Patented Sept. 1, 1891.



WITNESSES:

J. J. Loasz.

Mark W. Dewey

INVENTOR:

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his ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES A. HATCH, OF ONEIDA, NEW YORK, ASSIGNOR OF TWO-THIRDS TO
EDWARD F. HASKELL AND HARRISON W. COLEY, OF SAME PLACE.

HIGH AND LOW WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 458,787, dated September 1, 1891.

Application filed July 16, 1891. Serial No. 399,691. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. HATCH, of Oneida, in the county of Madison, in the State of New York, have invented new and useful
5 Improvements in High and Low Water Alarm for Steam-Boilers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

10 This invention pertains to the class of high and low water alarms in which a cylindrical case is connected in an upright position to the exterior of the boiler at the steam and water spaces thereof by tubes affording free
15 communication between the interior of said case and interior of the boiler, and a float and levers in said case control the valve of the alarm-whistle connected to the case.

The object of my present invention is to
20 provide a high and low water alarm which shall be simpler and cheaper in construction and more efficient and reliable in its operation; and to that end the invention consists in the improved construction and combination of parts hereinafter described, and specifically set forth in the claims.

In the annexed drawings, Figures 1 and 2 represents vertical longitudinal sections of a high and low water alarm embodying my invention and showing its condition at different
30 stages of its operation.

C denotes the cylindrical case, which is secured vertically to the exterior of the boiler by pipes or thimbles *d d*, connected to the upper and lower ends of the case in the usual
35 manner.

D represents a steam-whistle of any well-known form, attached to the top of the case C by means of a vertical screw-threaded tube
40 *t*, which extends above and below the top plate or cap *C'* of the case and has screwed onto its upper end the aforesaid whistle.

The lower or inner end of the tube *t* terminates with a head or stop *t'* and horizontal
45 limb *t''*, to the free end of which is pivoted the three-armed or inverted-T-shaped lever *l*, the pivot being at the junction of the arms of said lever, and to the free end of the upwardly-extending central arm of said lever is connected the valve *a* of the whistle. Said
50 valve may be of any suitable and well-known

form, but preferably of the form of a plain stem having a tapering or conical end entering a similar conical port in the side of the tube *t*, through which port passes the steam
55 from the case C to the whistle to sound the same when said valve is opened. The other two arms or main portion of the lever *l* extends across the case C and has one end under the stop *t'* to come in contact therewith,
60 and thereby arrest the farther movement of the lever after the valve *a* has been opened sufficiently to sound the alarm-whistle, as illustrated in Fig. 2 of the drawings. To said
65 end of the lever *l* is secured a pendent stiff wire *c'*, to the lower end of which is attached in a horizontal position a ring *c* or other suitable open-work diaphragm. From the opposite end of the main portion of the lever *l* is
70 suspended the float *b* by means of a light chain or other suitable flexible connection *b'*. The float *b* is heavier than the ring *c* and wire *c'*, and the wire *c'* and flexible connection *b'* are of such lengths as to cause the lever
75 *l* to be tilted to open the valve *a* by the weight of the float *b* drawing down the chain or cord *b'* when the float has descended in the case to a point on a level with the low-water line of the boiler, and in rising with the water to the high-water line the float *b* comes
80 in contact with the ring *c* and pushes the same upward together with its wire connection *c'* to the lever *l*. The float and ring being connected to opposite ends of the aforesaid lever causes the latter to be tilted in one
85 and the same direction by the aforesaid rising and falling of the float to the extreme water-lines in the case C, and thus the valve *a*, which is connected to said lever, is opened and the alarm-whistle sounded by means of
90 the single lever, as represented in Fig. 2 of the drawings. The ring *c* and its connection *c'*, with one end of the lever *l*, are of sufficient weight to draw down said end of the lever and hold the valve *a* closed when the float
95 *b* is between the two extreme water-levels of the case, as illustrated in Fig. 1 of the drawings.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a high and low water alarm for steam-

boilers, the combination, with the case C and whistle D, connected thereto, of the inverted-T-shaped lever *l*, the valve *a*, connected to the central arm of said lever, the ring or diaphragm *c*, suspended from the other arm of said lever by the stiff wire *c'*, and the float *b*, suspended from the third arm of the lever by a flexible connection and outweighing the aforesaid ring, as set forth.

2. In combination with the case C, the tube *t*, secured vertically in the top plate of said case and extending above and below said plate and terminating at its lower end with the stop *t'* and horizontal limb *t''*, the whistle D, secured to the outer end of said tube, the inverted-T-shaped lever *l*, pivoted at the junction of its arms to the free end of the afore-

said limb and extending with its main portion across the case and under the stop *t'*, the valve *a*, connected to the upwardly-extending central arm of said lever, the stiff wire *c'*, suspended from one end of the main portion of the lever, the ring *c*, secured horizontally to the lower end of said wire, and the float *b*, suspended by a flexible connection from the opposite end of the main portion of the lever and outweighing the aforesaid ring and wire, substantially as described and shown.

In testimony whereof I have hereunto signed my name this 23d day of June, 1891.

CHARLES A. HATCH. [L. S.]

Witnesses:

FREDK. BUSH,

WALTER C. FAXON.