

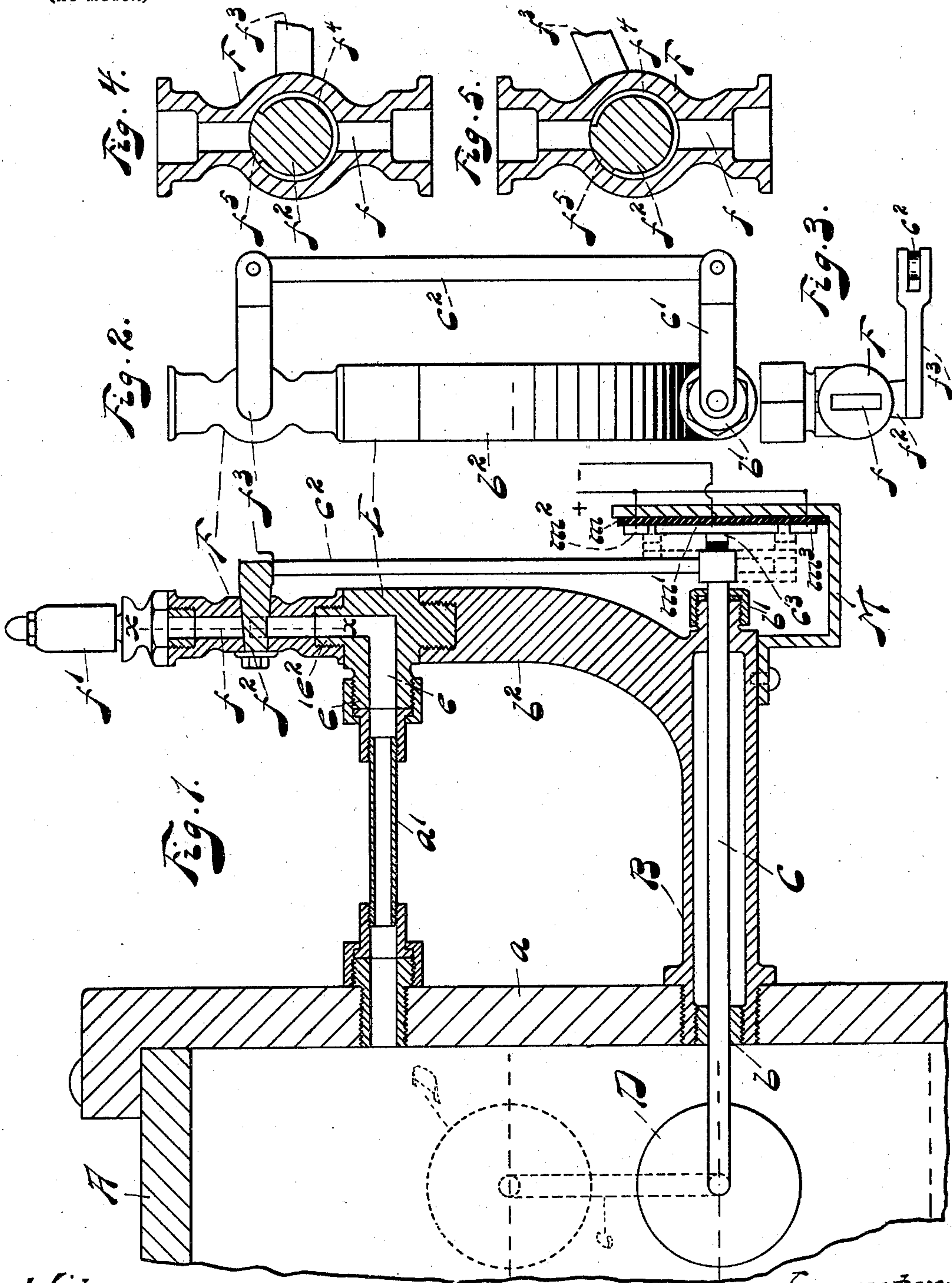
No. 686,383.

Patented Nov. 12, 1901.

R. C. BLAKE.
LOW OR HIGH WATER ALARM.

(Application filed Dec. 20, 1900.)

(No Model.)



Witnesses:
Emil Rapp
Emma Lyford

Inventor:
Richard C. Blake
By *Murray & Murray*
Attys.

UNITED STATES PATENT OFFICE.

RICHARD C. BLAKE, OF CINCINNATI, OHIO.

LOW OR HIGH WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 686,383, dated November 12, 1901.

Application filed December 20, 1900. Serial No. 40,533. (No model.)

To all whom it may concern:

Be it known that I, RICHARD C. BLAKE, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Low or High Water Alarms, of which the following is a specification.

The object of my invention is an alarm to be sounded by the water in a boiler when it reaches a predetermined upper or lower limit, in which the moving parts are actuated by the water within the boiler, in which steam for sounding the alarm is taken from the upper part of the boiler, in which there are no fusible plugs, and in which the parts are few and simple in construction. This object is attained by the means described in the annexed specification and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical central longitudinal sectional view of an alarm embodying my invention attached to the end of a boiler, only as much of the boiler being shown as is necessary to show the mode of attaching my device thereto and to show the high, the true, and the low water marks, which are shown in dotted lines. Fig. 2 is a detail end view of my attachment removed from the boiler, the electrical switch and the whistle having been removed therefrom. Fig. 3 is a top plan view of the same, the horizontal extensions being broken off. Fig. 4 is a detail central sectional view of the plug-valve upon an enlarged scale, taken upon line $x x$ of Fig. 1 looking toward the right. Fig. 5 is a similar view of the same, but showing the plug-valve in the position it assumes when the float is at high-water line, as shown in dotted lines, Fig. 1, to admit steam to the whistle.

Referring to the parts, in boiler A the top-most horizontal dotted line indicates high-water line, the lowest dotted line the low-water line, and the line midway between them the true water-line. At true water-line a pipe B is screwed into the head a of the boiler. Within pipe B is journaled a horizontal rod C, a journal-box b being screwed into the inner end of the pipe to steady the rotation of the rod therein. Upon its outer end pipe B has a packing-gland b' , surrounding the rod. Rod C extends a short distance into the boiler

and at its inner end is bent at substantially a right angle, forming an arm c , upon the end of which is secured a float D. Upon the outer end of rod C is secured a lever c' . Pipe B has an upwardly-projecting arm b^2 , the end of which is screw-tapped to receive a coupling E, through which is a steam-passage e , and which has a lateral exteriorly-screw-threaded extension e' and an upward exteriorly-screw-threaded extension e^2 . Extension e' is coupled to a pipe a' , which leads into the upper part of the boiler and puts passage e in direct communication with the steam therein. Upon extension e^2 is secured a valve-case F, which has a steam-passage f registering with passage e and leading to a whistle f' . Across passage e is a conical plug-valve f^2 , upon the end of which is secured a lever f^3 , which is connected by a link c^2 to lever c' , so that levers f^3 and c' are always parallel to one another. Plug f^2 has a groove f^4 cut in it registering with passage e and extending around the plug, leaving a ground portion f^5 of an extent such that when the alarm stands in a normal position—that is, when the water in the boiler is at the true line and arm c of the float is horizontal, as shown in full line, Fig. 1—ground portion f^5 covers passage e and extends upon each side of it a distance such that when the float has been raised to the high-water line, as shown in dotted line, Fig. 1, passage e will be opened by the rotation of the plug in one direction, as shown in Fig. 5, and steam will be admitted to the whistle to sound the alarm, and that when the float descends to low-water line by the rotation of the plug in the opposite direction passage e will again be opened to admit steam to the whistle to sound the alarm. The size of the ground portion f^5 is determined by making the lap on each side of passage e when the plug stands in the normal position of an arc containing substantially the same number of degrees as the arc of the travel of the float from true to either high or to low water line. Passage e is made rectangular, and its longitudinal dimension is large as compared to its transverse, so that the width of the opening for admitting sufficient steam to the whistle is small, as shown in Fig. 5. Rod C may also operate an electrical alarm. Attached to pipe B is a bracket

M, which supports a vertical electrical switch consisting of insulation m , a central conductor m' , and of an upper and a lower conductor m^2 and m^3 . Plates m^2 and m^3 are connected to the positive wire of an electric circuit in which a signaling device is interposed, and plate m' is connected to the negative wire of the same. Upon the end of lever c' a conductor c^3 is secured to bear against the switch. The spaces between conductor m' and conductors m^2 and m^3 , respectively, are made at a distance such that when lever c' is carried to the position it occupies when the float is at high-water line conductor c^3 will connect conductors m' and m^2 , as shown in the upper dotted lines, Fig. 1, complete the circuit, and operate the signaling device, and that when the float is at low-water line conductor c' will connect conductors m' and m^3 , as shown in lower dotted lines, Fig. 1, again complete the circuit, and again operate the signal.

The whistle and the electrical signaling device may be used conjointly, the whistle to warn the engineer, the electrical signal, such as a bell, being placed at any desired point, as in the office of the superintendent, or either signal may be used without the other.

What I claim is—

1. In a high and low water alarm the combination of a boiler, a rod journaled in the walls of the boiler at true water-line so that one end projects into and the other end outside of the boiler, an arm at the inner end of

the rod at an angle to fit, a float upon the arm to rotate the rod when the level of the water in the boiler changes, a lever secured upon the outer end of the rod, a valve-case, a whistle in communication with it, a pipe connecting the valve-case with the steam in the boiler, a rotating valve in the case between the pipe and the whistle having a groove extending partially around it leaving a lap and a lead to the valve equal to the angles of rotation of the rod from normal to high and to low water line respectively, a lever secured upon the end of the rotating valve and a link connecting said lever with the lever upon the rod, substantially as shown and described.

2. In a high and low water alarm a boiler, a pipe tapped into the boiler at true water-line having an upwardly-projecting branch, a rod journaled in the pipe and terminating within the boiler in an angle-arm, a float secured upon the angle-arm, a lever upon the outer end of the rod, a valve-case supported upon the upwardly-projecting branch, a whistle upon the valve-case, a pipe connecting the case with the upper part of the boiler, a plug-valve in the case having a groove extending partially around it, a lever secured upon the end of the plug and a link connecting the two levers, substantially as shown and described.

RICHARD C. BLAKE.

Witnesses:

BEN. B. DALE,
W. F. MURRAY.