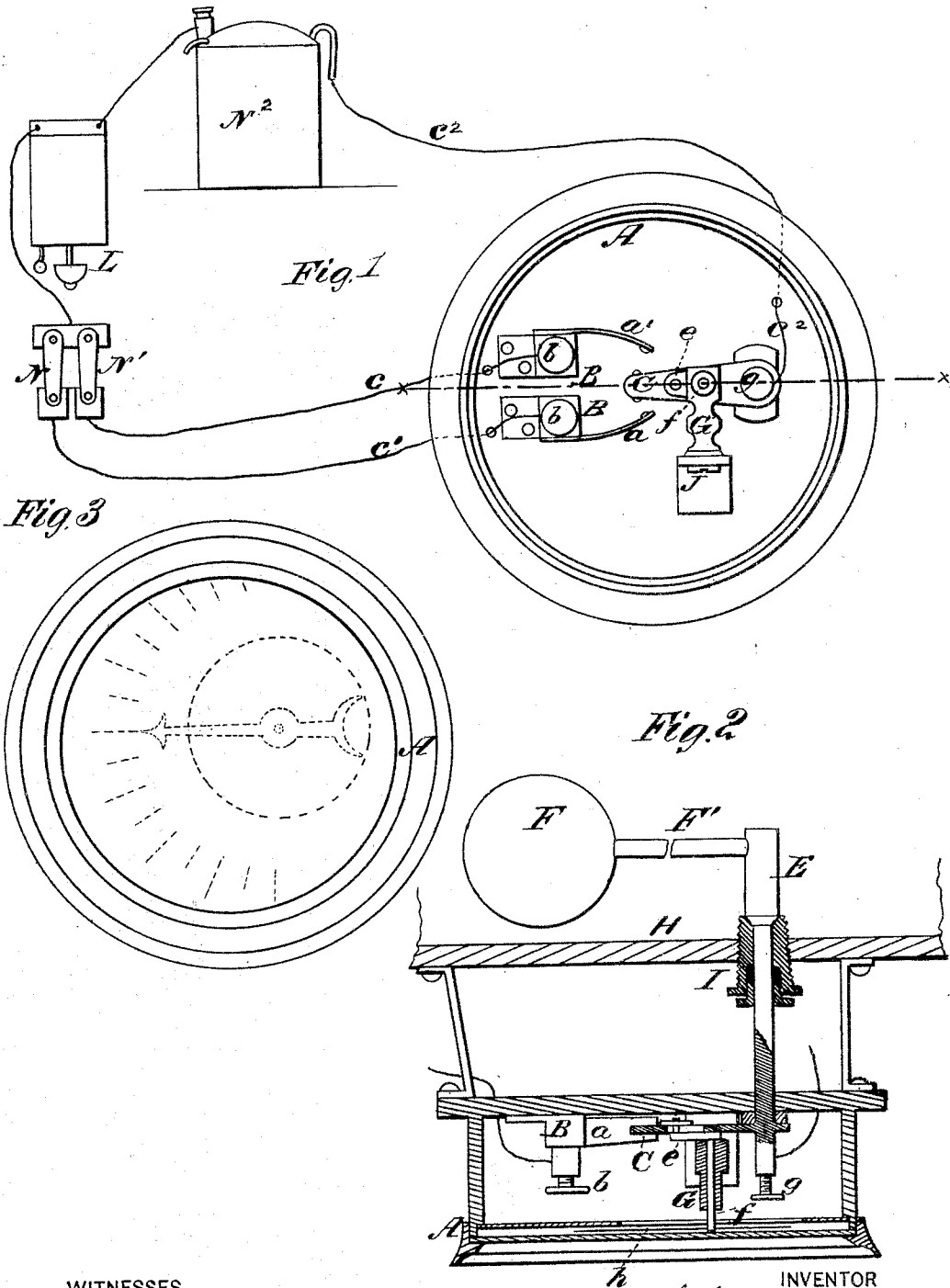


J. E. WATSON.

Electric High and Low Water Alarms.

No. 157,708.

Patented Dec. 15, 1874.



WITNESSES
C. H. Bates
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UNITED STATES PATENT OFFICE.

JOHN E. WATSON, OF LOUISVILLE, KY., ASSIGNOR OF TWO-THIRDS HIS RIGHT TO JOHN WATSON AND GEORGE S. ALLISON, OF SAME PLACE.

IMPROVEMENT IN ELECTRIC HIGH AND LOW WATER ALARMS.

Specification forming part of Letters Patent No. **157,708**, dated December 15, 1874; application filed September 19, 1874.

To all whom it may concern:

Be it known that I, JOHN E. WATSON, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and valuable Improvement in Electric High and Low Water Alarm-Gage; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a front view of my electric high and low water alarm and gage. Fig. 2 is a sectional view, and Fig. 3 is a detail view, of the same.

This invention has relation to means for ascertaining the height of water in steam-boilers, and for sounding an alarm when the water is too high or too low; and it consists in the construction and novel arrangement, in connection with a rock-shaft actuated by a float in the boiler, and provided with a conducting-arm and an indicating-needle, of an index-plate or reading device, scaled according to the number of vertical inches of capacity of the boiler, and two flexible arms or springs, connected by electric wires with an alarm, and provided with platinum-tipped ends, between which the conducting-arm of the rock-shaft vibrates; also, in connection with the wires leading to the alarm, of switches or cut-off devices having separate wires leading, respectively, to the upper and lower spring-arms above referred to, all as hereinafter more fully shown and described.

In the annexed drawings, A designates a case of suitable size and shape, in the face of which is a glass plate, a dial-plate suitably marked off according to the number of vertical inches of capacity of the boiler, and a pointer, *h*. B B designate two blocks, which are secured to the back plate of the case A, having springs *a a'* secured to them, which springs are tipped with platinum. Between the ends of the springs is an arm, C, which is also tipped with platinum, and which is secured to a rock-shaft, E. This shaft E passes through a stuffing-box, I, into the boiler, and

has an arm, F, secured to it at right angles, on which arm is applied a float, F'. When the water in the boiler rises to a given height—"high-water mark"—the float F' will cause the arm C to touch the spring *a'*, and when the water falls to "low-water mark" arm C will touch the spring *a*, either spring yielding to allow the float to move freely with the water, and thus offering no obstruction to the movement of the indicating-needle on the end of the rock-shaft, while at the same time the continuity of the circuit is preserved. The arm C is slotted, and in the slot plays the wrist-pin of a crank, *e*, which crank is fixed on one end of a needle-rod, *f*, on which is fixed the needle *h*. The bar *f*, needle *h*, and arm C vibrate with the float-arm F'. A binding-screw, *g*, holds a battery-wire, *c*², and also keeps lever C in its place on the rod E. Binding-screws *b b* are used for holding two wires, *c c*¹, which communicate with two switches, N N¹, which switches communicate with the magnet of an alarm-bell, L, and this bell is connected, by means of a wire, to the battery N².

It will thus be seen that an alarm will be sounded when arm C touches spring *a*, and also when it touches spring *a'*.

The switches N N¹ are not used when the alarm is near the steam-boiler. These switches are used, when the gage is not in sight, for the purpose of indicating, when the alarm is sounded, whether the sound is for high or low water; for instance, if the alarm is given for low water and switch N is disconnected from its bearing, the circuit will be broken and the alarm will cease. If the high-water alarm is given, the fact can be ascertained by disconnecting the switch N¹, which will break the circuit and cause the alarm to cease.

If the alarm-bell is located near the boiler and in sight of the gage, this latter will, of course, indicate the condition of the water.

I am aware that circuit-closers have been operated by a float within a boiler, such consisting of rigid segments fastened to a base, over which passes an arm operated by the float; and, further, that an indicator having an index-scale and pointer has been used with such; hence I do not claim such devices, nor,

broadly, the combination of a float with a circuit-closer and alarm.

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

1. The combination, with a float, *F'*, its rock-shaft *E* and indicator *h*, and the conducting-arm *C*, of the flexible circuit-making arms *a a'*, substantially as and for the purposes specified.

2. The combination of the float, the rock-shaft, and the conducting-arm with the flexi-

ble circuit-closers, alarm, and switches, substantially as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN E. WATSON.

Witnesses:

L. S. BARTLETT,

E. C. NOLD.