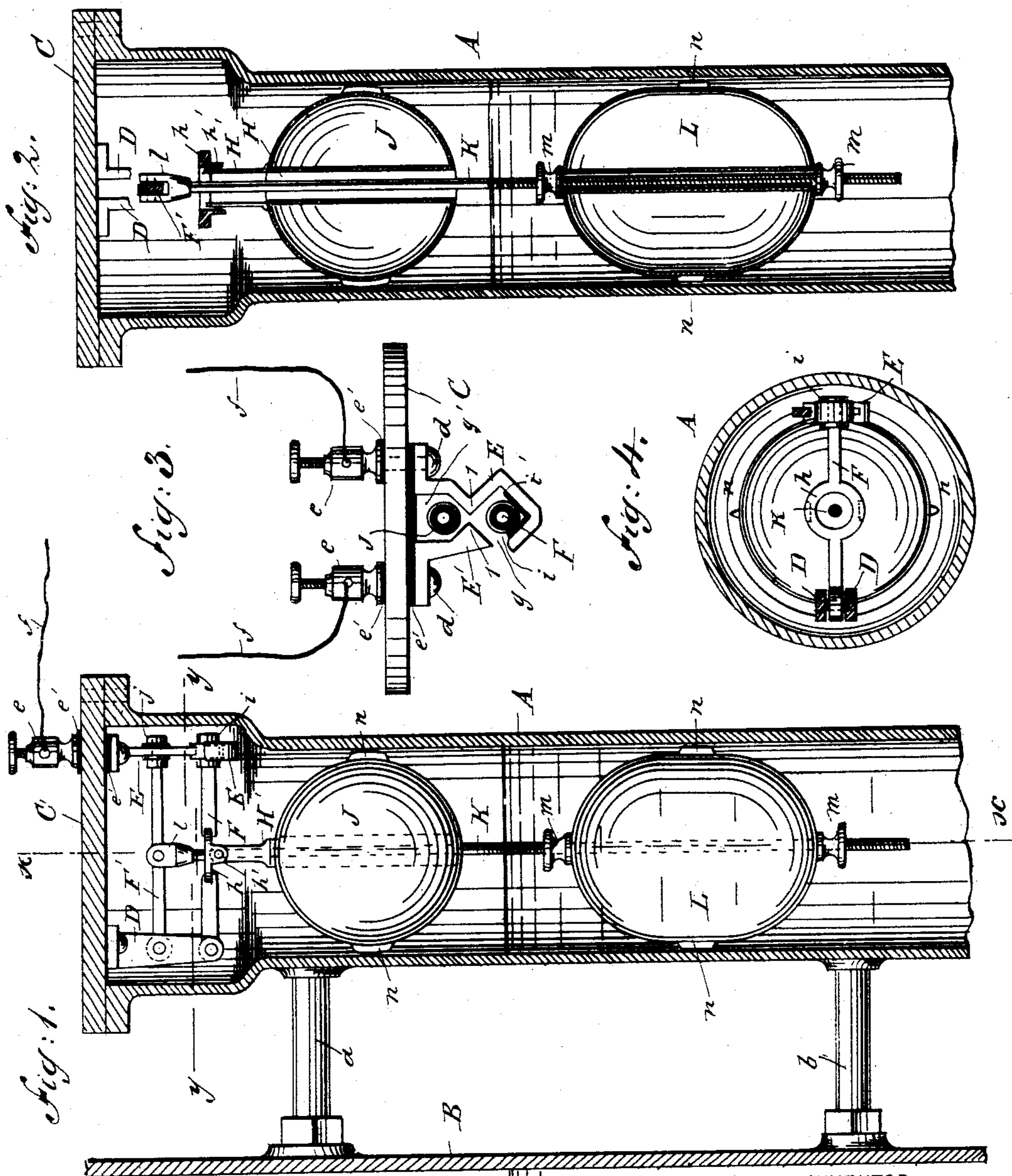


(No Model.)

F. M. ASHTON.  
ELECTRICAL WATER ALARM.

No. 438,598.

Patented Oct. 21, 1890.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

FRANCIS M. ASHTON, OF LIMA, OHIO.

## ELECTRICAL WATER-ALARM.

SPECIFICATION forming part of Letters Patent No. 438,598, dated October 21, 1890.

Application filed January 15, 1890. Serial No. 337,002. (No model.)

### *To all whom it may concern:*

Be it known that I, FRANCIS M. ASHTON, of Lima, in the county of Allen and State of Ohio, have invented a new and useful Electrical Water-Alarm, of which the following is a full, clear, and exact description.

My invention relates to improvements in electrical water-alarms, and is especially intended to be applied to steam-boilers, although it may be used for other purposes.

The object of my invention is to provide a device that will invariably sound an alarm when the water in a boiler or other receptacle to which it is applied rises or falls above or below certain limits, and also to provide a device in which the points at which it becomes operative may be easily changed.

To this end my invention consists in a hollow vessel communicating with the boiler, so that the height of the water in one will correspond to the height of water in the other, two floats arranged one above the other within said vessel upon independent rods, the rod to which the lower float is attached passing through the upper float, and suitable levers connected with said float-rods and adapted to make and break an electrical circuit and sound an alarm by the movements of the floats. This construction will be hereinafter fully described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the device as applied to a boiler, the boiler and case of the device being in section; Fig. 2, a vertical section on the line *xx* of Fig. 1; Fig. 3, a side elevation of the cover of the float-containing vessel, showing means of electrical connection therewith; and Fig. 4, a horizontal section of the device on the line *yy* of Fig. 1.

The containing-vessel A is attached to a convenient part of the boiler B, and it should be high enough to extend from a point opposite the top of the boiler-flues to a point a little above the top of the boiler, so that the operating-levers in the top of the vessel will always be out of the water and not liable to cake or corrode. The vessel A communicates

with the boiler B by pipes *a* and *b*, arranged near the upper and lower parts thereof, so that the water and steam pressure will be equal in the vessel and in the boiler, and the height of water the same in each. The vessel A may be of any suitable form, but is preferably cylindrical. A suitable cover C is firmly bolted to the vessel A, and to the under side of the cover near one side of the vessel A are attached depending brackets D, and to the opposite lower side is attached the depending separable frame E E'. The two parts of the frame E E' are attached to the lower side of the cover C by screws *d*, which connect with the binding-posts *e* upon the upper side of the cover, and which are insulated thereon by the rubber washers *e'* at top and bottom thereof. Each of the binding-posts *e* is connected in an electrical circuit by the wires *f* in the usual manner, and, as the binding-posts communicate with the frame E E', when these parts of the frame are connected by a conductor the circuit will be completed and a current transmitted. The wires *f* connect with a suitable battery and with a gong or steam-whistle in any of the usual well-known ways. The parts of the frame E E' are attached to the cover C, as described, and extend toward each other in such a manner that they nearly touch at the points 1. The part E then extends downwardly below the part E', and its end is bent upwardly toward said part, so that there will be spaces *g* *g'* in the upper and lower parts of the frame.

Between the lower ends of the brackets D is pivoted a lever F, which extends across the vessel A, is formed near the center into a ring *h*, having depending lugs *h'*, and is provided at the end with a contact-piece *i*, which is suitably insulated thereon, and which rests normally in the lower part of the frame E, in the space *g* thereof, the lower extremity of the part E being provided with a piece of insulating material *i'*, upon which the contact-piece *i* rests, and which prevents any possible transmission of electricity through the lever F and its connections. Attached to the depending lugs *h'* of the ring *h* are connecting-plates H', the lower ends of which are suitably attached to the pipe H, which passes downwardly through the upper float J, which is attached thereto and suspended thereby in



the upper portion of the vessel A. Above the lever F is a lever F', which is likewise pivoted between the brackets D, and extends across the vessel A in line with the lever F, and at its end is provided with a contact-piece j, which is properly insulated thereon, and which moves in the space g' of the frame E E', and may rest upon the inwardly-extending parts of said frame.

Attached to the lever F', near the central part thereof, by the lug l is a rod K, which extends downwardly through the ring h of the lever F, through the pipe H and float J, and through the lower float L, which is attached thereto and adjusted thereon by the thumb-nuts m at top and bottom thereof, the rod K being screw-threaded to receive them. It will thus be seen that the floats J and L will work independently of each other. The floats may be made of any suitable material, metal preferred. The float J is permanently fixed in the upper portion of the vessel A, near the highest desirable limit of the water, and the lower float L is adjusted upon the rod K so that it will be a little above the highest boiler-flues. The floats J and L are each provided with fins or guides n, arranged upon opposite sides thereof, which serve to hold the floats in proper position in the vessel A. The device operates as follows: When the water is flowing into the boiler and the boiler becomes nearly full, the water in the vessel A will raise the upper float J and the lower lever F, to which it is attached. This will throw the contact-piece i at the end of the lever upwardly into the narrow portion l of the frame E E'. The contact-piece will thus bear against both parts of the frame and complete the circuit, as the electric current will pass from the part E of the frame through the contact-piece i to the part E' and the alarm will be sounded, when the water may be shut off. The float L will float when there is sufficient water in the boiler, thus holding the lever F', to which it is attached, in a raised position. If, however, the water becomes too low, the float L will fall with the water, the lever F' will be depressed, and the contact-piece j upon the end thereof will drop into the lower portion of the space g' and touch both parts of the frame E E' at the points 1, thus completing the circuit and sounding the alarm.

I have not deemed it necessary to describe any particular alarm, as my invention may be connected with any of the many electrical alarms in use.

While I have shown my invention as applied to a steam-boiler, I do not confine myself to such use, as it is obvious that it may be applied to a water or oil tank or any other liquid-containing receptacle.

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

1. An electrical water-alarm consisting, essentially, of a hollow vessel connected near the top and bottom thereof with the main

tank or boiler, two levers pivoted one above the other in said hollow vessel, said levers being provided at one end with contact-pieces adapted to make electrical connections, an electrically-connected frame having spaces to receive the contact-pieces of the levers, and two floats arranged one above the other in said vessel and adapted to move independently therein, said floats being connected to the pivoted levers, so that as they are respectively raised or lowered they will actuate said levers, complete the electrical circuit, and sound an alarm, substantially as described.

2. The combination, with the hollow vessel connected with the main tank or boiler and the electrical connections therewith, of two independent levers pivoted in the upper part of said hollow vessel and provided with suitable contact-pieces to complete the electrical circuit, a float attached to the lower lever by a hollow pipe, so that when the float is raised the lever will be actuated, the circuit completed, and an alarm sounded, and a float retained in the lower part of said vessel by a rod passing through the upper float and lower lever, and connecting with the upper lever, so that when said lower float is depressed it will actuate the upper lever, complete the circuit, and sound an alarm, substantially as described.

3. The combination, with the vessel A, connected, as shown, with the main tank or boiler B, the frame E E', attached thereto and having its parts electrically connected, as shown, and the levers F F', pivoted in the upper part of the vessel A and provided at the ends with contact-pieces i and j, projecting into the spaces g and g' of the frame E E', the lever F having its central portion formed into a ring h, as shown, of the float J, connected with the lever F by the hollow pipe H and plates H', and adapted when raised to throw the contact-piece i against the parts of the frame E E', complete the circuit, and sound an alarm, and the float L, having means, as rod K, for connecting it with the lever F', and adapted when lowered to bring the contact-piece j against the parts of the frame E E', complete the circuit, and sound an alarm, substantially as described.

4. The combination, with the vessel A, the floats J and L therein, and the levers F F', pivoted in the upper part of said vessel, connected, as shown, with the floats, and provided with the contact-pieces i and j, of the separable frame E E', having its parts electrically connected and divided into two spaces adapted to receive the contact-pieces i and j, so that said pieces may touch both sides of the frame at its narrowest part, complete the circuit, and sound an alarm, substantially as described.

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Witnesses:

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