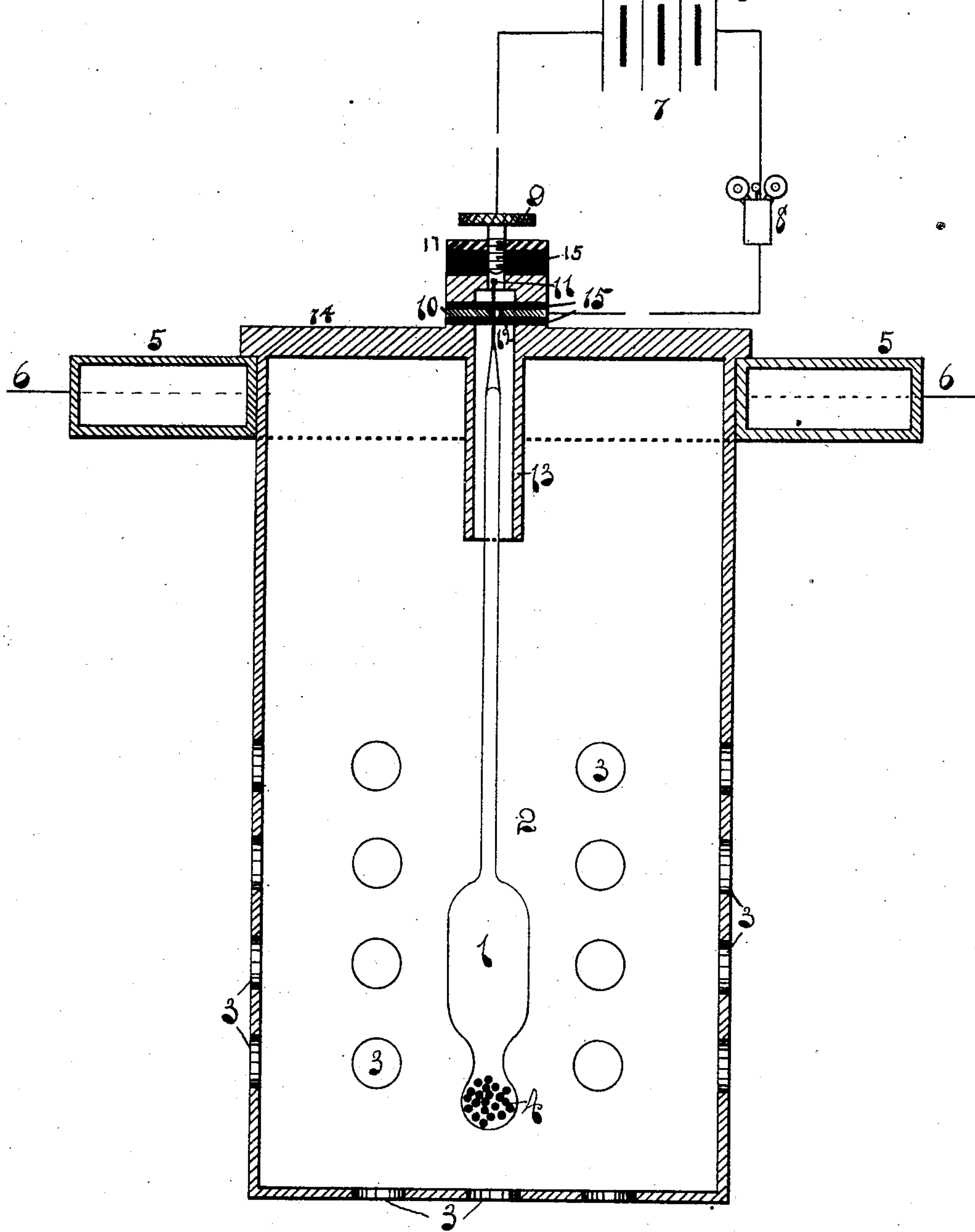


(No Model.)

T. P. WHITTIER.
HYDROMETER ALARM.

No. 360,980.

Patented Apr. 12, 1887.



Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS P. WHITTIER, OF EAST SAGINAW, MICHIGAN.

HYDROMETER-ALARM.

SPECIFICATION forming part of Letters Patent No. 360,980, dated April 12, 1887.

Application filed October 28, 1886. Serial No. 217,435. (No model.)

To all whom it may concern:

Be it known that I, THOMAS P. WHITTIER, of East Saginaw, in the county of Saginaw and State of Michigan, have invented a new and useful Improvement in Hydrometer-Alarms, of which the following is a specification.

My invention consists in a hydrometer-alarm, hereinafter fully described.

The drawing is a vertical section.

10 My invention is designed for use in a place where it is desirable to know the density of water or other fluids, and to be informed at once of any material change in its density.

I have devised my apparatus primarily for use in connection with steam salt-works, to show whether the water of condensation of the steam used in heating the brine is fit to be pumped back into a steam-boiler, or it is too salt for that purpose; but the device may be used in any place where it is necessary to keep track of changes in density in the fluid.

2 represents a vessel, of metal or any other suitable substance, perforated with holes 3, and provided at its upper end with a float, 5, so that when placed in a tank containing water or other liquid it will float therein, the water-level being indicated by the line 6.

14 represents the top of case 2, and from this I extend downward a tube, 13, to serve as a guide for the hydrometer in its movements and to hold it upright.

1 represents an ordinary hydrometer, the lower bulb and weights being indicated by 4, which is placed within the vessel 2, so that its upper end extends into the tube 13, and so that it will float freely in the liquid in which vessel 2 is immersed.

10 represents a metal plate having there-through a small hole, which I place over the opening at the upper end of tube 13, and which is preferably insulated (by insulating materials 15) from tube 14, though this is not absolutely necessary.

11 represents a metal rod whose lower end is secured to the upper end of the hydrometer, and which passes through hole 12 in plate 10, making sliding contact with said plate 10.

9 represents a binding-screw, the lower end of which is directly above the upper end of rod 11, tapped through a metal plate, 17, secured to the insulating material 15, so that

said binding-post 9 and plate 17 are insulated from all other parts of the apparatus.

7 represents an electrical generator, the poles of which are connected; respectively, with plate 10 and the binding-post 9, and 8 represents an electric bell in said circuit. The generator and bell are, of course, intended to be placed in a convenient place, and where the sound of the bell can be heard by the person whom it is intended to warn.

The operation of my invention is as follows: The vessel 2, with the hydrometer, being placed within a tank containing liquid, floats upon the surface of the liquid in the tank and follows the rise or fall of the liquid therein through the medium of float 5, and for this purpose those parts of the electrical circuits which connect with binding-plate 9 and post 10 should be of flexible wire. The hydrometer 1 floats in the liquid at a height corresponding to its density. As the density increases the hydrometer will rise, and as it decreases the hydrometer will fall. Binding-post 9 is screwed in or out, as the case may be, until the hydrometer at a given density of the liquid will rise, so that the upper end of rod 11 will strike the lower end of binding-post 9, and thus put plate 10 and binding-post 9 in electrical connection and cause the bell 8 to ring.

With this device in a water-tank an engineer can pump water from said tank into his boilers so long as the bell 8 is silent without fear of injuring the boilers by salt, and will receive immediate notice when the water in the tank becomes too salt for use.

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

A case adapted to contain a hydrometer and permit its free movement therein, a float secured to said case, an insulated plate on said case connected with one end of an electrical circuit with a rod on said hydrometer, and an insulated binding-post above the end of said metal rod connected with the other end of said electrical circuit, substantially as and for the purposes set forth.

THOMAS P. WHITTIER.

Witnesses:

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