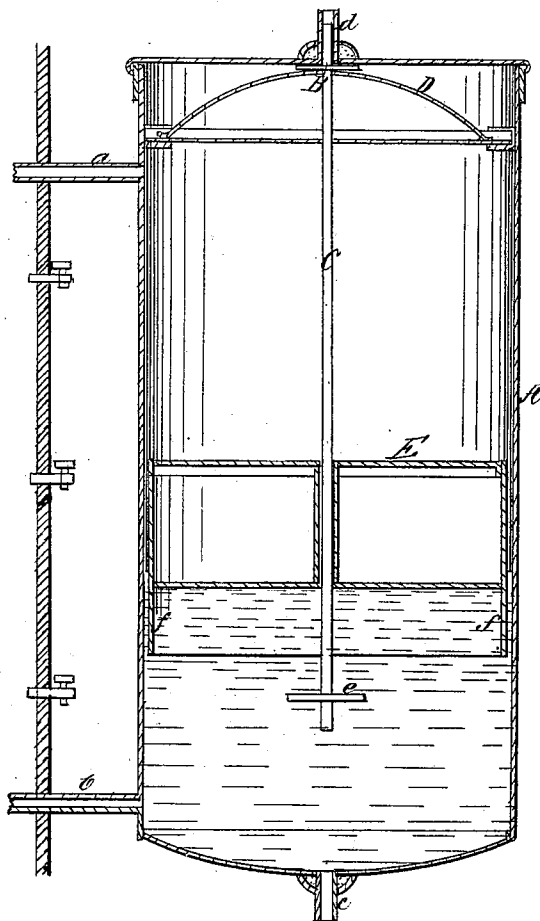


C. T. Pangborn,
Steam-Boiler Indicator.
No 29,308. Patented July 24, 1860.



Witnesses:
R. S. Spurr
Wm. Luch

Inventor.
Charles T. Pangborn

UNITED STATES PATENT OFFICE.

CHARLES T. PANGBORN, OF BROOKLYN, NEW YORK.

ALARM WATER-GAGE FOR STEAM-BOILERS.

Specification of Letters Patent No. 29,308, dated July 24, 1860.

To all whom it may concern:

Be it known that I, CHARLES T. PANGBORN, of Brooklyn, E. D., in the county of Kings and State of New York, have invented a new and Improved Alarm Water-Gage for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, said drawing representing a vertical central section of this invention as applied to the front of a steam-boiler.

To enable those skilled in the art to make and use my invention I will proceed to describe its construction and operation with reference to the drawing.

A, represents a hollow case of sheet or cast metal and strong enough to resist the pressure of the steam, which will act on the same. This case communicates by a tube *a*, leading from its top with the steam space of a boiler and by a tube *b*, leading from its bottom. It communicates with the water space of the same in such a manner that the water in the interior of the case will always rise to the same height as in the boiler.

An opening *c*, in the bottom of the case A, allows of blowing off the contents of the same so that it can be cleaned out, and an opening *d*, in the top communicates by a suitable pipe with a steam whistle of the ordinary construction. The opening *d*, is closed by a valve B, which is attached to a rod C, and which together with the rod is forced up by a spring D. The power of this spring is just sufficient to keep the valve up, and the pressure of the steam on its under surface assists to press it up tight on its seat and to close the opening *d*.

The rod C, extends down through the center of the case A, and it forms the guide for a float E, which slides up and down, on said rod with perfect freedom, so that it rises and falls with the water in the boiler. The rod C, is provided with a collar *e*, near to its lower end and opposite to the low water mark in the boiler so that, when the water

sinks below this collar, the float by resting on the same with its full weight depresses the rod and opens the valve B, thereby admitting steam to the whistle.

The float E, is furnished with a projecting flange *f*, at its underside, the object of which is to prevent the steam to act on the under surface of said float. Without this flange, and if the water sinks below the collar *e*, on the rods the steam surrounds the float from all sides, and the weight of the float alone has to overcome the force of the spring D, and the pressure of the steam acting on its under surface for the purpose of opening the valve. But with the flange the steam from above cannot get under the float even if the water sinks below the under surface of the same, and the weight of the columns of water sustained under the float assist in opening the valve. By these means the valve is thrown open as soon as the water sinks below the low water mark and the whistle is blown.

It is obvious that this projecting flange can be attached to a float of any form and to every float, whether the same be rigidly attached to the valve rod or made to slide on the same as herein described. By making the float to slide on the rod I gain the great advantage, that the position of the valve is not affected by the oscillation of the water in the boiler as the float is thereby allowed to move up and down independent from and without influence on the valve.

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

The arrangement of the flange at the bottom of the float E, which slides up and down on the stationary valve rod C, and which operates in combination with the valve B, spring D, and disk *e*, substantially as and for the purpose set forth.

CHARLES T. PANGBORN.

Witnesses:

B. GIROUXE,
M. M. LIVINGSTON.