G. B. Massey.

Low Water Dectector.

No. 87,181. Patented Feb. 23, 1869.

Fig. 1.

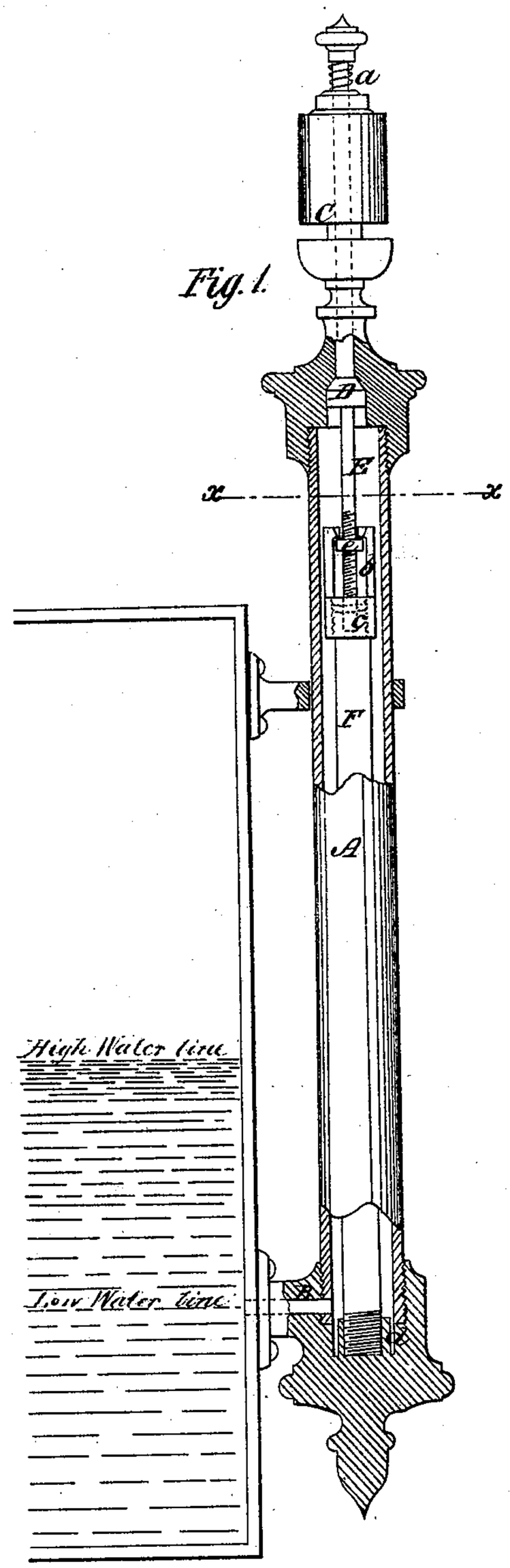
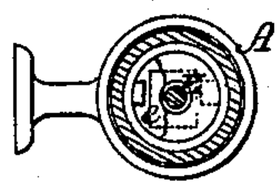


Fig. 2.



Witnesses,
Wm A Morgan
G C Sexton

Inventor:
G. B. Massey
per Munn & Co. attys

United States Patent Office.

G. B. MASSEY, OF NEW YORK, N. Y.

Letters Patent No. 87,181, *dated February* 23, 1869.

IMPROVEMENT IN LOW-WATER DETECTORS FOR STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, G. B. MASSEY, of the city, county, and State of New York, have invented a new and improved Low-Water Detector for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to a new and improved low-water detector for steam-boilers, and of that class in which the expansion of metals is rendered subservient in operating the valve of the whistle or alarm at the proper time.

The invention consists in a novel construction and arrangement of parts, as hereinafter fully shown and described, whereby a very simple and efficient device for the purpose specified is obtained.

In the accompanying sheet of drawings—

Figure 1 is an elevation of my invention, partly in section.

Figure 2, a horizontal section of the same, taken in the line *x x*, fig. 1.

Similar letters of reference indicate corresponding parts.

A represents a tube, of brass or other metal, which expands under the influence of heat, and is securely attached to the exterior of a steam-boiler, the lower part of the tube communicating with the boiler, by means of a pipe, B, at a point level with the low-water line. (See fig. 1.)

On the upper end of the tube A, there is secured a steam-whistle, C, and

D is a valve, the seat of which is in the upper end of tube A, the stem E of said valve extending up through the whistle, and having, if necessary, a spring, *a*, applied to keep the valve D closed.

The lower part of the valve-stem has a screw-thread cut upon it, and passes through a yoke, *b*, at the upper end of a ferrule, *c*, which is secured on top of a wooden rod, F, the latter being within the tube A, and having its lower end screwed into a socket, *d*, at the lower end of A, as shown in fig. 1.

On the lower part of the valve-stem E, within the yokes *b*, there is placed a nut, *e*.

The operation is as follows:

The steam-boiler is supplied with the requisite amount of water, the true or high-water line being some distance above the low-water line, where the pipe B communicates with the boiler, as shown in fig. 1.

When the steam in the boiler is raised, the tube A will, under the pressure of the steam, become filled with water, and will be kept filled under steam-pressure so long as the water-level is above pipe B.

The tube A, from the heat of the water within it, will expand to a certain degree, and, when thus expanded, if the valve D is not sufficiently high to close against its seat and prevent the passage of steam into the whistle, it is adjusted in a closed state by turning the valve-stem E, and the valve will remain closed so long as the tube is filled with water, the pressure of the latter, in connection with the spring *a*, effecting that result.

When the water in the boiler descends, so that its surface will reach the level of the pipe B, steam will rush up into A, and the water in A will descend to a level with the water in the boiler. The heat of the steam being much greater than that of the water which was previously in A, the latter will expand in a correspondingly greater degree, but the wooden rod F will not vary in length, as it does not expand under heat, and this greater expansion of tube A will cause the seat to be raised above the valve D, the latter being kept stationary, owing to its connection with the non-expansive rod F, and the steam will rush from A upward into the whistle, and the alarm will be sounded.

Having thus described my invention,

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

The construction of the low-water detector, consisting of the tube A, pipe B, rod F, ferrule C, yoke *b*, nut *e*, valve-rod E, and valve D, arranged, with reference to the boiler and whistle, substantially as described.

Witnesses: G. B. MASSEY.

FRANK BLOCKLEY,
ALEX. F. ROBERTS.