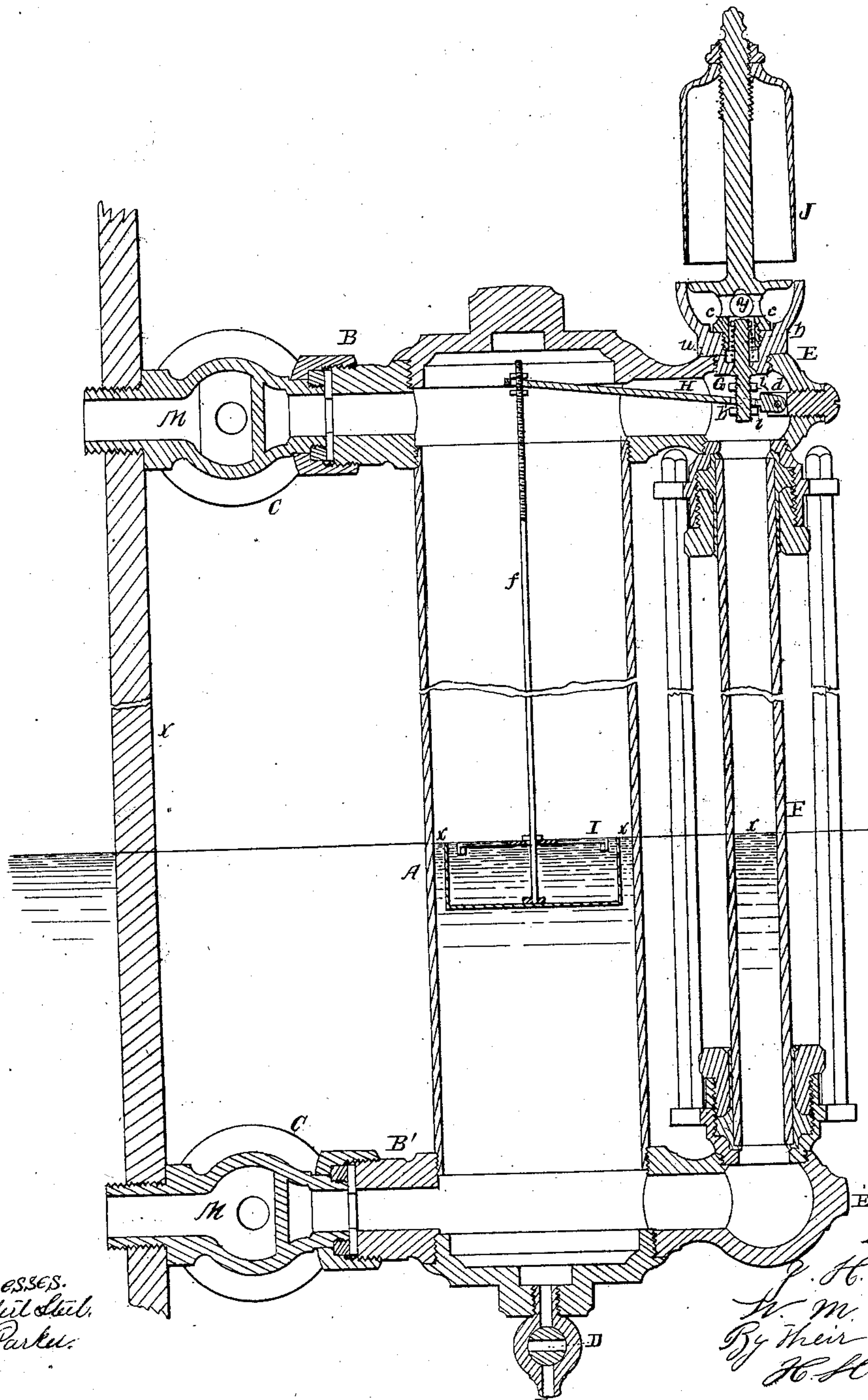


Springer & Bartram,

Steam-Boiler Indicator.

N^o 55,732.

Patented June 19, 1866.



Witnesses.
Wm. Albert Smith.
John Parker.

Inventors.
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UNITED STATES PATENT OFFICE.

JOSEPH H. SPRINGER AND WILLIAM M. BARTRAM, OF PHILADELPHIA, PA.

IMPROVEMENT IN INDICATORS FOR STEAM-GENERATORS.

Specification forming part of Letters Patent No. 55,732, dated June 19, 1866.

To all whom it may concern:

Be it known that we, JOSEPH H. SPRINGER and W. M. BARTRAM, of Philadelphia, Pennsylvania, have Invented a Low-Water Alarm and Indicator for Steam-Boilers; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

Our invention consists of certain mechanism, fully described hereinafter, to be connected to a steam-boiler, for the purpose of alarming the attendant when the water becomes low and a fresh supply of water is required.

In order to enable others skilled in the art to make and use our invention, we will now proceed to describe its construction and operation.

The figure in the accompanying drawing, which forms a part of this specification, represents a sectional elevation of our improved low-water alarm and indicator for steam-boilers.

A is a metal tube, communicating at the upper and lower ends, through pipes B and B', with the interior of a steam-boiler, of which X represents a plate, the pipe B being above and the pipe B' below the low-water line *x*. The pipes B B' are provided with ordinary stop valves or cocks M, and at the lower end of the tube A is a cock, D.

At the front of this tube A, near the ends of the same, are two hollow projections, E E', each of which communicates with the said tube and with a glass tube, F, which is secured at each end to one of the said projections in the same manner as similar glass tubes are secured in ordinary water-gages.

To an opening, *u*, in the projection E is fitted a valve, G, and around the stem *b* of the latter is coiled a spring, *c*, the tendency of which is to maintain the valve in contact with its seat.

The lower stem, *b'*, of the valve projects through an opening in a lever, H, which is jointed to a stud, *d*, on the inner side of the hollow projection E, and on this lower stem are two nuts, *i i'*, one of which is above and the other below the lever, the latter bearing on the lower nut.

To the end of the lever which projects into

the tube A is hung a rod, *f*, at the lower end of which is secured a cup, I, of thin metal, open at the top, the rod being of such a length that when the lever H is at the limit of its upward motion the upper edge of the cup will be a short distance above the level of the low-water line *x*.

To the projection E is fitted an ordinary steam-whistle, J, the inlet-opening *y* of the latter communicating with the opening *u*, to which the valve G is fitted.

The nut *e* is so adjusted on the valve-stem *b* that when the water in the boiler and in the tube is above the line *x*, and consequently above the top of the cup I, the spring will cause the valve G to bear against its seat, and will retain the lever H in the elevated position shown in Fig. 1.

The several parts being in the position illustrated in the drawing, the stop-valves M are so manipulated as to open the communication between the tube A and the boiler, the water consequently flowing into the said tube and into the glass tube F until its surface in each is level with the surface of that in the boiler.

So long as the water is above the line *x* the weight on the end of the lever H will not be sufficient to compress the spring *c*, and the valve will consequently be maintained against its seat. When, however, the water is below the line *x* and below the edge of the cup I the latter remains full of water, which cannot escape. The weight increases as the water in the boiler and tube decreases, and is soon sufficiently great to overcome the resistance of the spring *c*, depress the lever H and valve G, and admit the steam to the whistle, the sound from which indicates to the attendant the necessity of replenishing the boiler with water.

By suspending the cup I in a tube outside of the boiler access may be had to all the parts for the purpose of adjusting the same. It will be apparent, however, that the cup will act in the manner described when suspended within the boiler itself. Although the glass tube F may be dispensed with, we prefer to retain it as a useful adjunct to the instrument.

We claim as our invention and desire to secure by Letters Patent—

1. A cup, I, open at the top and suspended

within a steam-generator, or in a tube communicating with the said generator, in combination with devices constructed and arranged substantially as herein described, whereby the said cup is caused to discharge a volume of steam when the water becomes low, as set forth.

2. The combination of the tube A, its cup I, steam-whistle J, spring-valve G, and lever H, the whole being arranged substantially as and for the purpose described.

3. The combination, with the above, of the glass tube F.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOSEPH H. SPRINGER.

WILLIAM M. BARTRAM.

Witnesses:

CHARLES E. FOSTER,

JOHN WHITE.