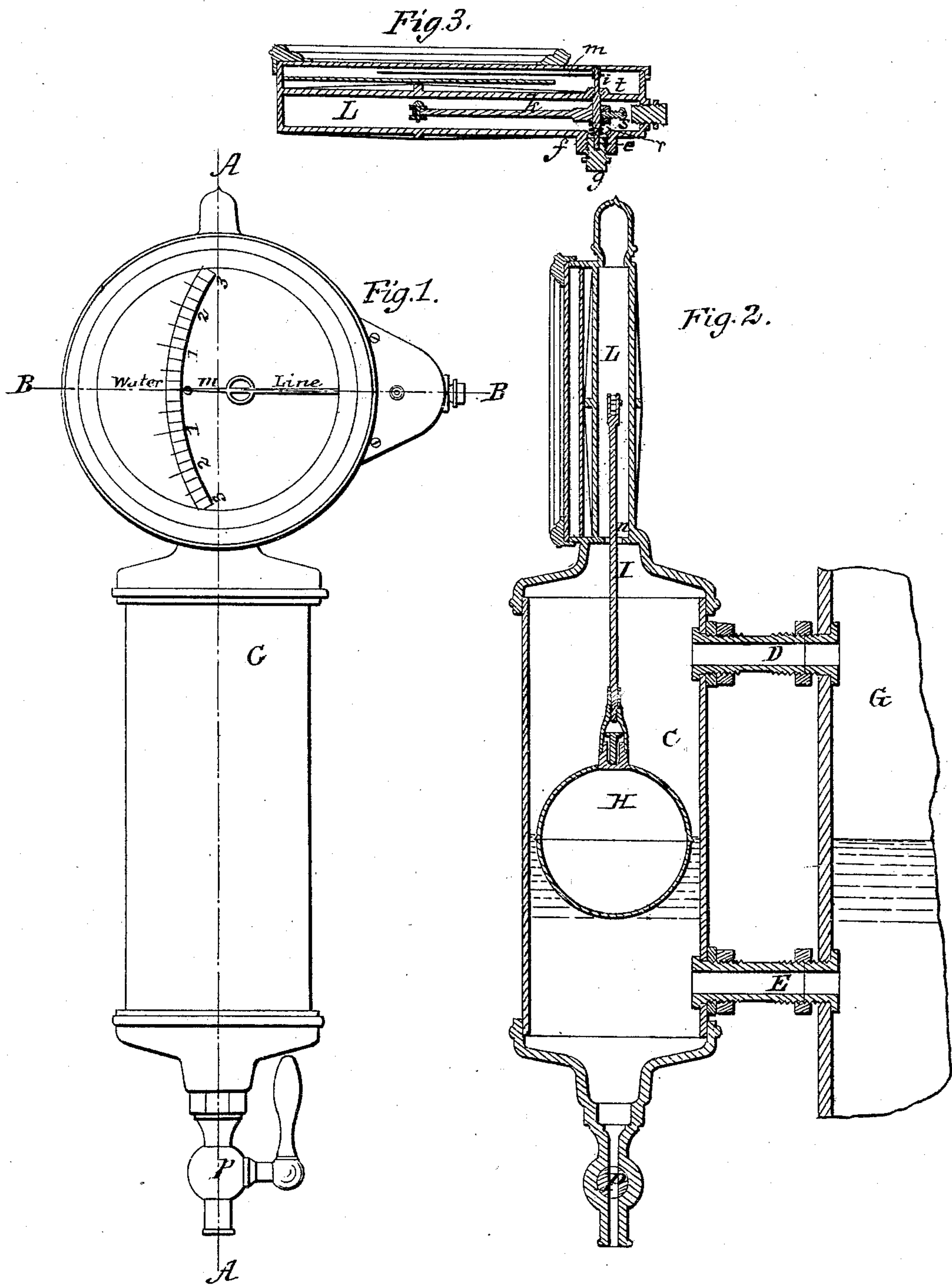


F. A. HOYT.

Water Gage.

No. 16,182.

Patented Dec. 9, 1856.



UNITED STATES PATENT OFFICE.

F. A. HOYT, OF BOSTON, MASSACHUSETTS.

WATER-GAGE FOR STEAM-BOILERS.

Specification of Letters Patent No. 16,182, dated December 9, 1856.

To all whom it may concern:

Be it known that I, F. A. HOYT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Water-Gages for Steam-Boilers, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, in which—

Figure 1 is a front view; Fig. 2 a vertical section upon the line A, A, of Fig. 1. Fig. 3 a horizontal section upon the line B, B, of Fig. 1.

Water gages as heretofore constructed, have been liable to various objections which it is the object of my present improvements to avoid. Those constructed of glass are objectionable on account of their liability to break and throw the water and broken glass upon those standing near. Others wherein a float was employed to indicate the height of the water in the boiler, have not been constructed so as to have a direct communication between the float and the indicating apparatus, or so that the moving parts of the latter were protected from the influence of sediment and foam.

To accomplish these desiderata is the object of my present invention which consists in placing the moving parts of the indicating apparatus within a separate dry steam chamber entirely above the level of the water and so arranged over a detached vessel outside the boiler, that no water is at any time admitted to it whereby the shaft which passes through to the outside is entirely removed from the influence of sediment grit and foam, and the motion of this shaft is not obstructed as would be the case were it passed through the boiler within the influence of the sediment and foam.

To enable others skilled in the art to understand my invention, I will proceed to describe the manner in which I have carried it out.

In the accompanying drawing, C, is the chamber which contains the float and which is connected with the boiler G, by the pipes D, and E, the former above and the latter below the water line F. Above the chamber C, which contains the float is another chamber L, which communicates with the former by a small opening *n*, as this chamber is placed entirely above the water line F, no water, sediment, or foam can at any time enter it, but only dry steam from the

chamber C. Through the wall of this dry steam chamber L, the shaft *f*, which gives motion to the index hand *m*, is passed as follows: The float H which may be filled with compressed air to counteract the pressure of the steam without, and prevent its penetration to the interior of the float, is connected by means of the rod I, with the arm K, upon the index shaft *f*, this shaft is pivoted at *e*, in a screw plug *g*, and at the opposite end passes through the wall of the chamber L. At this point there is a conical shoulder turned upon the shaft which rests upon a corresponding seat in the side of the case in the manner of an ordinary puppet valve upon its seat. The portion *i* of the shaft which passes through the case, fits loosely in its bearings, that the motion of the shaft may be entirely unobstructed. In lieu of being conical as represented in the drawing, the shoulder upon the shaft *f*, may be simply a flat collar which rests against the side of the case, and packs the opening through which the shaft passes, the pressure of the steam serving at all times to keep the collar down upon its seat; this is effected when the steam is down by the spring *r*. The arm K, is secured to the shaft *f*, by means of a screw *s*, which is loosened when the index hand is to be adjusted to a certain height of water within the boiler. The cock P, is for the purpose of blowing off the chamber C.

The screw plug *g*, in lieu of being arranged as seen in the drawings, may enter the chamber L, upon the opposite side, in which case the pivot *e*, will have its bearings in the case, and the screw plug will be furnished with a hole for the passage of the shaft and a seat for its collar or valve, this will afford facilities for the cleansing of the valve seat superior to those offered by the arrangement figured and described above.

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

The within described arrangement of the outside vessel C, the dry steam chamber L, and the float H, having a direct communication with the indicating hand and operating in the manner substantially as set forth.

F. A. HOYT,

Witnesses:

SAM. COOPER,

P. E. TESCHEMACHER.