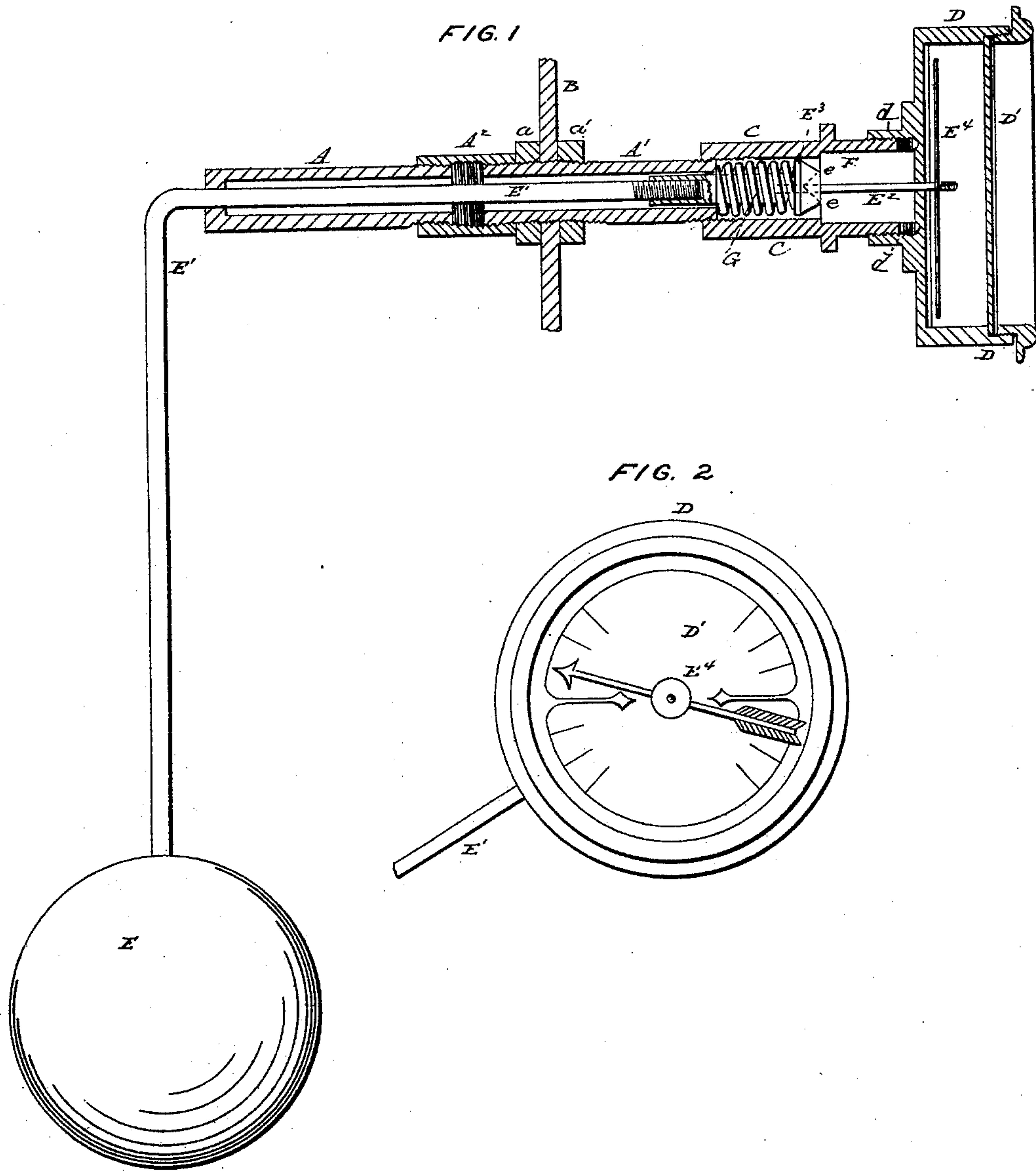


J. O. ALTER.  
Low-Water Indicator.

No. 67,702.

Patented Aug. 13, 1867.



WITNESSES:

C. D. Ratt  
Chas. H. Foyle,

INVENTOR:

James O. Alter,

# United States Patent Office.

JAMES O. ALTER, OF ST. LOUIS, MISSOURI.

*Letters Patent No. 67,702, dated August 13, 1867.*

## IMPROVEMENT IN LOW-WATER INDICATORS.

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, JAMES O. ALTER, of the city and county of St. Louis, and State of Missouri, have invented a new and useful Improvement in Low-Water Gauges for Steam-Boilers; and I hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Figure 1 of the drawings is a sectional elevation of the improved gauge.

Figure 2 is an elevation showing the face of the dial.

The nature of this invention consists in the arrangement of packing in the stem in such a manner as to prevent steam or dampness from passing through to the dial and there corroding the stem in such a manner as to prevent its proper action, and relates only to details of construction.

To enable those skilled in the art to make and use my improved gauge, I will proceed to describe its construction and operation.

The hollow stem  $A$   $A^1$  may be made in two pieces, coupled together by the nut  $A^2$ , and secured to the boiler-plate  $B$  by the two soft-metal nuts  $a$   $a'$ . The packing-box  $C$  is to be screwed to the outer end of the stem  $A^1$ , and a check-nut, not shown, may be used to render the joint between these parts perfectly tight. The dial-case  $D$ , having a glass face,  $D'$ , will be screwed on to the packing-case or box  $C$  in the usual manner at  $d$ . The float  $E$  will act, through the medium of its rods and couplings  $E^1$   $E^2$   $E^3$ , upon the finger  $E^4$ , in the usual manner of such gauges, to indicate the stage of the water in the boilers. The rod  $E^2$ , which has one of its ends securely attached to the coupling  $E^3$ , and its other end to the finger  $E^4$ , passes loosely through a hole made for it in the soft-metal packing  $F$ , which is thus formed into an annular packing within its case  $C$ . The coupling  $E^3$ , to which the float-rod  $E^1$  and the finger-rod  $E^2$  are attached, has on its outer end an annular packing-edge,  $e$ , the section of which, as seen in the drawings, is somewhat in the shape of the letter  $V$ , the apex of which rests upon the soft-metal packing  $F$ , and forms a perfect and cheap packing, and at the same time one which permits the free and easy rotation of the edge  $e$  on its packing  $F$ , thereby securing the certain action of the float upon the finger in front of the dial-plate. In some of the gauges now in use for this purpose, as, for instance, the "Firth gauge," the action of the gauge indicator is not always reliable, because the pressure of steam from the boiler pressing against a packing of India rubber, resting against a square shoulder, produces such an amount of friction as to prevent the float from turning the finger of the indicator. In others the steam passes through so as to corrode the rod  $E^2$ , where it passes through the case  $D$ , and in this manner in a short time seriously impairs or wholly prevents the action of the gauge. To prevent this escape of steam when the pressure in the boiler is low, I place a spiral spring,  $G$ , behind it, so as to throw it off from the stem  $A^1$ .

I do not claim as any part of my invention "the arrangement of the float and needle mounted on the opposite ends of a single bent rod," well knowing that a claim so worded was allowed to Thomas Firth, November 13, 1866.

Having described my invention, what I claim, is—

The sharp annular packing-edge  $e$ , in combination with a soft-metal packing,  $F$ , substantially in the manner and for the purpose herein described and set forth.

I also claim the coupling  $E^3$ , the spring  $G$ , and the stem  $A^1$ , combined and operated in the manner herein described and set forth.

JAMES O. ALTER.

Witnesses:

C. R. PRATT,

CHAS. H. BOYLE.