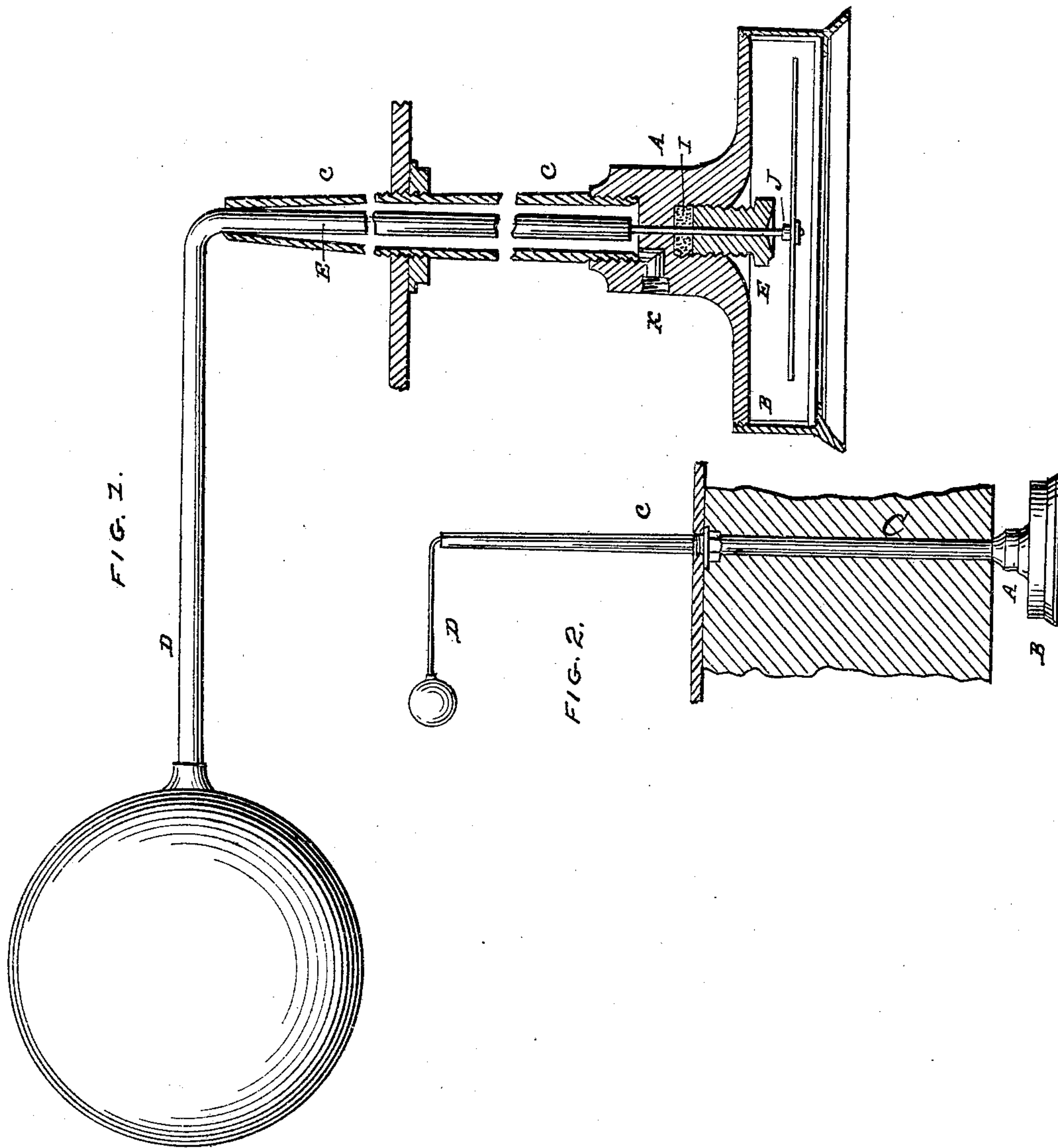


T. FIRTH.
Low Water Detector.

No. 59,574.

Patented Nov. 13, 1866.



WITNESSES:
W. H. Hallward
James H. Layman

INVENTOR.
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attys

UNITED STATES PATENT OFFICE.

THOMAS FIRTH, OF CINCINNATI, OHIO.

IMPROVEMENT IN LOW-WATER DETECTERS.

Specification forming part of Letters Patent No. 59,574, dated November 13, 1866.

To all whom it may concern:

Be it known that I, THOMAS FIRTH, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Water-Gages for Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My invention consists in a mode of securing a perfectly free motion of the pointer, without leakage of steam, by reducing that part of the rod which extends to the outside of the boiler and carries the pointer to such minute diameter as to practically eliminate the element of friction.

Figure 1 is an axial section of a gage embodying my invention. Fig. 2 is a side elevation on a smaller scale, for the purpose of showing the relative dimensions of the parts.

A is the hub and B the dial-chamber, of similar external form to those customarily in use. That part of the hub A which enters the boiler extends backward in form of a sleeve or case, C, to receive and firmly hold while permitting the free rotation of the horizontal portion E of the float-rod D E E'. The relative proportion of the case C to the other parts is seen more clearly in Fig. 2.

The float-rod proper consists of two members at right angles to each other—to wit, the member D, which carries the float, and the member E, supported and guided in the prolonged case C. The portion of the member E which traverses the stuffing-box I consists of a slender rod or pin, E', not exceeding one sixteenth of an inch in diameter, and consequently

less than one-fourth of the frictional area that would be opposed to the motion of the rod if carried through of full diameter in the usual way.

In order to practically relieve the pin E' from all side strain, I prolong the case C as far into the boiler as is consistent with free vibration of the float, so as sufficiently to support the rod, and to prevent any deflection thereof at the point of junction of the two portions E and E'. The rod being thus supported, the sole office of the portion E' is to carry the pointer; and in order that said portion may be packed perfectly steam-tight, and yet oppose no sensible resistance to the motion of the float, I give it, as before stated, a diameter not exceeding one-sixteenth of an inch.

The portion E' traverses a stuffing-box, I, closed by a plug, J, which plug, owing to the very small amount of frictional surface of the portion E', may be screwed home with any degree of pressure without materially affecting the sensitive action or delicacy of the gage.

K is a blow-off cock for the occasional discharge of sediment.

I claim herein as new and of my invention—

The combination and arrangement of the float and needle, mounted upon opposite ends of a single bent rod whose outer end is made of small diameter and inclosed in a stuffing-box, all as herein specified and represented.

In testimony of which invention I hereunto set my hand.

THOS. FIRTH.

Witnesses:

GEO. H. KNIGHT,
JAMES H. LAYMAN.