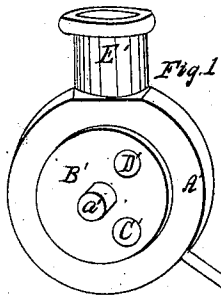
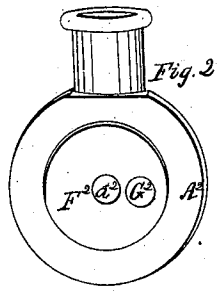
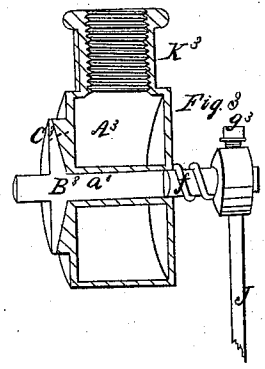
J. P. Hillard,

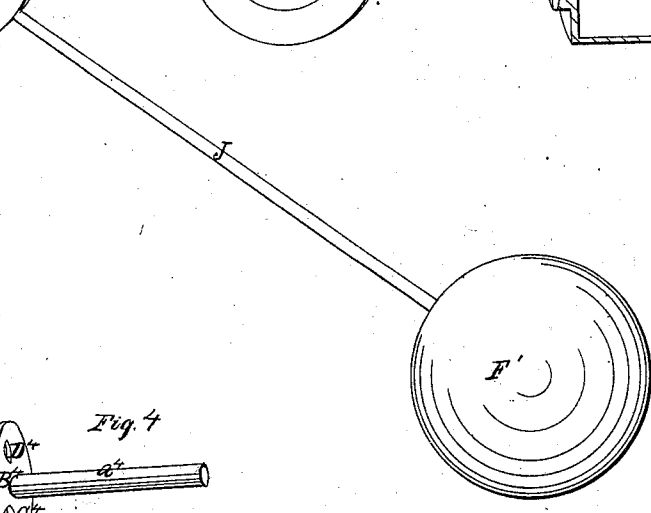
Steam-Boiler Indicator.

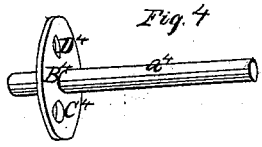
No. 34,575. Patented Mar. 4, 1862.

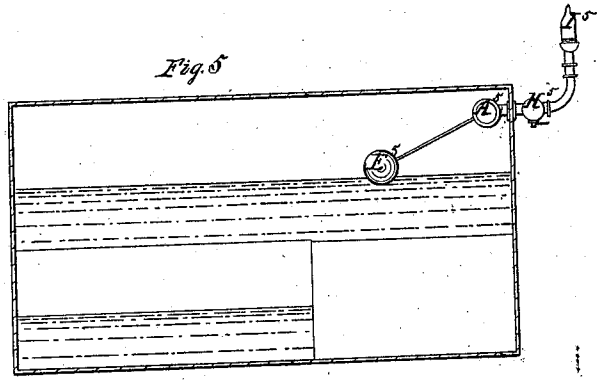


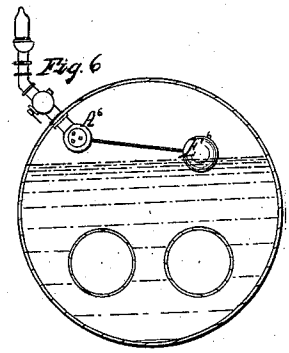












Witnesses.
James Lovel
William D Bush

Inventor
James P. Hillard

UNITED STATES PATENT OFFICE.

JAMES P. HILLARD, OF FALL RIVER, MASSACHUSETTS.

IMPROVED HIGH AND LOW WATER DETECTOR FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **34,575**, dated March 4, 1862.

To all whom it may concern:

Be it known that I, JAMES P. HILLARD, of Fall River, in the county of Bristol and State of Massachusetts, have invented a new and Improved Low and High Water Detector for the Safety of Steam-Boilers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in a valve with two ports, to which is attached an adjusting-arm and float. I permanently secure a tube in the end, top, or side of a steam-boiler and secure my invention to it on the inside of the boiler, and arrange it so that when the water falls to a certain line the float, resting on the water and attached to the valve by the adjusting-arm, will open one port and allow the steam to escape and give alarm, and when the water rises to a certain line the float will also rise and open the other port and give alarm.

My invention may be applied to steam-boilers constructed in any of the known forms, with gage-cocks, safety-valves, and other appendages for the safety of boilers.

The object of my invention is to give alarm by the escape of steam when the water evaporates too low and by the escape of water when it rises too high.

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

Figure 1 is a perspective view of my invention detached from the boiler. Fig. 2 is a perspective view of my invention with the valve removed. Fig. 3 is a vertical section. Fig. 4 is a perspective view of the valve removed from the detector. Figs. 5 and 6 are sections of steam-boilers, showing the manner of attaching my invention to them.

A′ is the detector, cast hollow, except the center, through which the stem of the valve a' passes.

B′ is the valve.

C′ D′ are ports through B′.

J′ is a rod secured to the opposite end of the valve-stem a'. (See Fig. 3.)

F′ is a float secured to J′.

A^2 is the detector with the valve removed; F^2, the front of the detector, made concave.

G^2 is a port through the front.

a^2 is a hole through which the stem of the valve is put, (see a^3, Fig. 3.)

A^2 is the inside of the detector; B^3, the valve; C^3, the front of detector; K′, a screw to screw it to the tube in the boiler, (see E′, Fig. 1.)

f^3 is a spring around the valve-stem a^3, and springs the valve B^3 against the seat of the detector C^3.

g^3 is a set-screw and secures J^3 to a^3.

a^4 is the stem of the valve; B^4, the valve with its two ports C^4 D^4, (shown by C′ D′ in Fig. 1;) A^5, the detector; E^5, the float; H^5, stop-cock; I^5, steam-whistle; A^6, detector; E^6, float resting on the water.

Operation: The above invention being constructed as herein specified, and attached to a steam-boiler, as herein set forth, its operation and novelty may be noted. When the water evaporates in the boiler to a certain line, the arm attached to the float and resting on the water, the weight of the float will roll the valve till port C′ (see Fig. 1) comes opposite G^2, (see Fig. 2,) when the steam will escape through E′ (see Fig. 1) and sound the whistle I^5, (see Fig. 5,) and when the water rises to a certain height the float will also rise till port C′ (see Fig. 1) comes opposite G^2, (see Fig. 2,) when the water will escape and give alarm.

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

The combination of valve B′ with two ports, and detector A′ with one port, and adjusting-arm J′, attached to B′, and float F′, constructed and arranged substantially as and for the purposes set forth and described.

JAMES P. HILLARD.

Witnesses:

JAMES FORD,

WILLIAM D. BUSH.