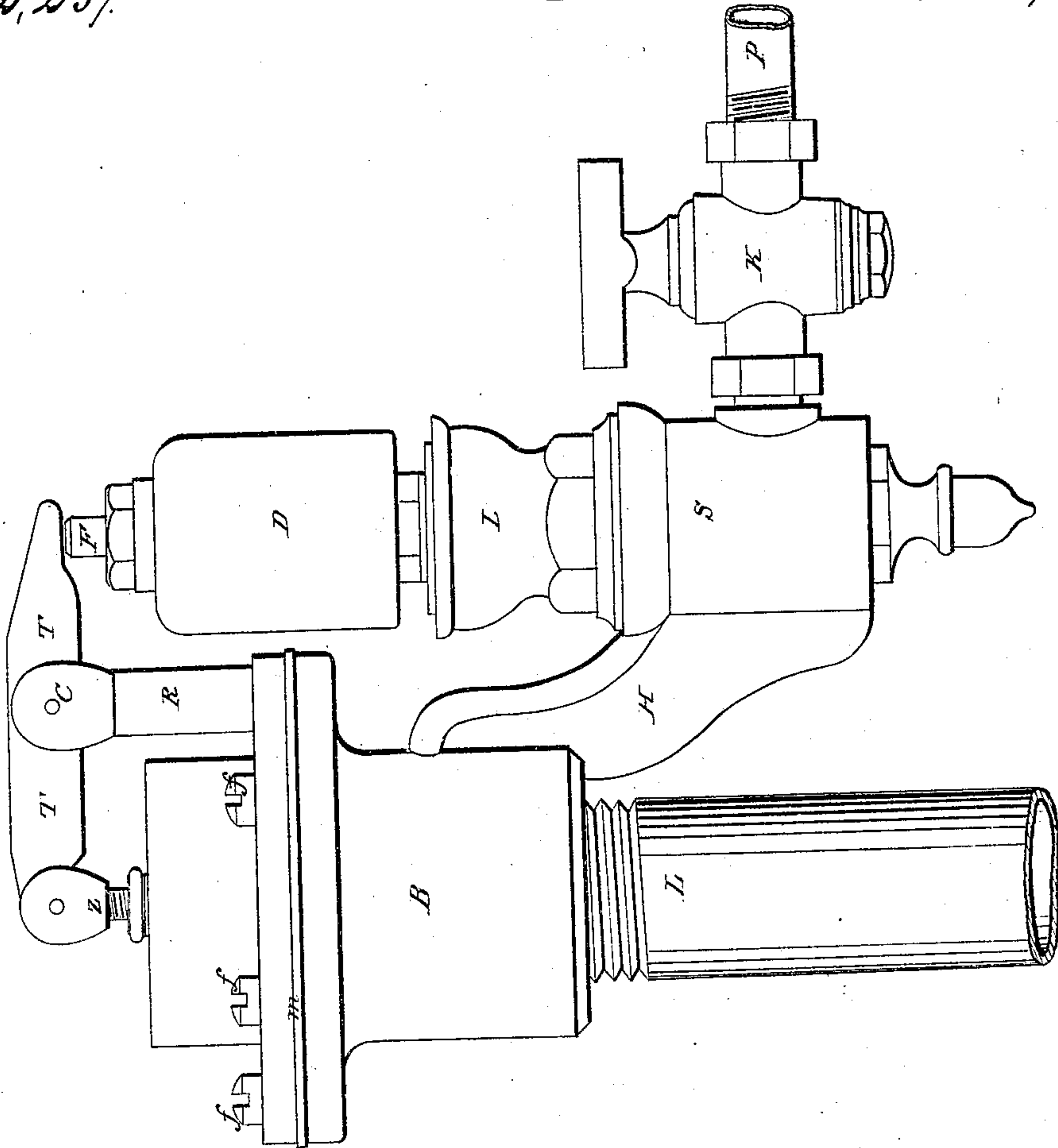


*P. D. Nesson.*  
*Low-Water Indicator*

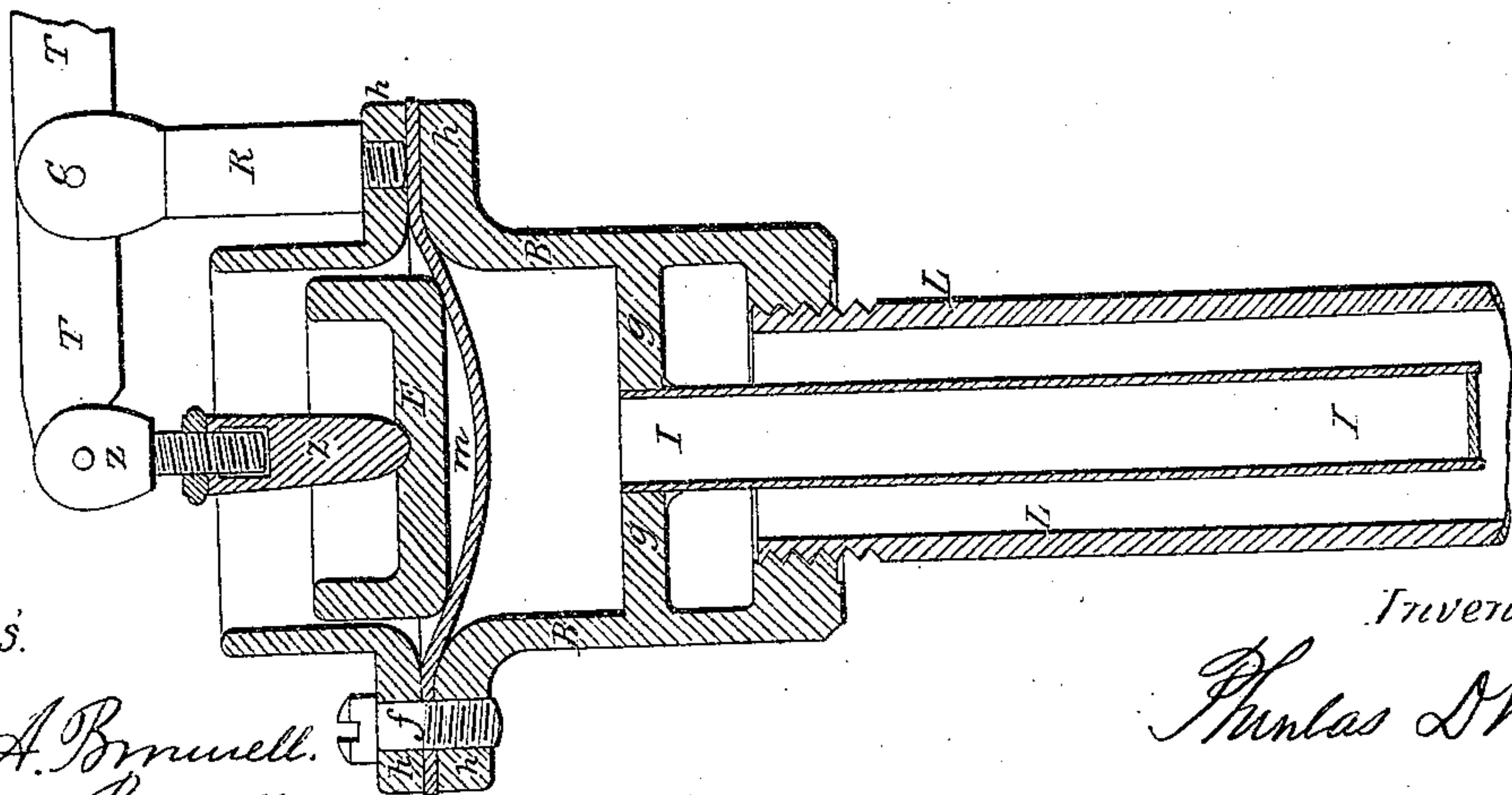
*No. 92,237.*

*Patented Jul 6, 1869.*

*Fig. 1.*



*Fig. 2.*



*Witnesses:*

*Isaac A. Brunell.*  
*William Brunell.*

*Inventor.*

*Phineas D. Nesson.*

# United States Patent Office.

PHINEAS D. WESSON, OF PROVIDENCE, ASSIGNOR TO HIMSELF AND JAMES PHILIPS, OF CENTRAL FALLS, RHODE ISLAND.

Letters Patent No. 92,237, dated July 6, 1869.

## IMPROVEMENT IN LOW-WATER INDICATORS FOR BOILERS.

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, PHINEAS D. WESSON, of the city and county of Providence, and State of Rhode Island, have invented a new and improved Low-Water Reporter for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of my improved apparatus; and

Figure 2 is a cross-section of that portion to which my improvement more particularly refers.

Similar letters indicate corresponding parts in both the figures.

My invention consists in the arrangement of the steam-whistle D, expansible diaphragm *m*, tube I, shell B, follower E, stem Z, and lever T, whereby to sound an alarm to indicate a lack of water at the water-line in the boiler.

To enable others skilled in the art to make and use my said invention, I will proceed to describe the same.

In the said drawings—

D is the steam-whistle, constructed in the usual manner, and screwed into the cup S, supported by the arm H, extending from the exterior of the metallic shell B.

Beneath the whistle, in the said cup, there is a valve of the usual construction, that is held against its seat by a spring, and having a stem, F, projecting through the top of the whistle.

The steam is admitted beneath the whistle's valve, through the pipe P and cock K, so that when the said valve is depressed from its seat, the steam from the boiler escapes through the whistle and sounds an alarm.

A lever, T, pivoted at O to a stand, R, has one end resting on the stem F of the whistle-valve, while the other end is pivoted to a stem, Z, extending down into the centre of a metallic weight or follower, E, that rests upon the expansible diaphragm *m*, consisting of a disk of vulcanized India-rubber packing that is secured at its edges, between the flanges *h h* of the shell B, by screws *f*, as shown. This shell, as shown in fig.

2, has a partition, *g*, extending across it, in the centre of which is permanently secured a copper pipe or tube, I, extending downward, and closed at the end. This pipe or tube, and the space in the shell beneath the diaphragm *m*, are filled with water.

In the bottom of the shell B, a pipe, L, is screwed, which surrounds and encloses the copper tube I, and has its lower end screwed into the steam-boiler below the intended "water-line," so that the pipe L, and the space in the shell B, beneath the partition *g*, are filled with boiling water from the boiler so long as the intended water-level is maintained, and by reason of the sensitiveness of the copper tube I, the temperature of the surrounding boiling water is transmitted to the water in said tube I, and also to that within the space beneath the diaphragm, and it is thus preserved at about an even degree with that directly communicating with the steam-boiler in the pipe L, by which means the diaphragm is inflated to a certain extent, but not sufficiently to lift the end of the lever T above it, which is held by the superior pressure of the steam operating against the valve at the opposite end thereof.

If, however, through neglect or from any other cause, the water in the steam-boiler falls below the intended level, and, as a consequence, steam is admitted to the pipe L, and around the copper tube I, the superior temperature of the steam will raise the temperature of and expand the water in the tube and beneath the diaphragm *m* so materially as to expand the diaphragm and lift its end of the lever T, and depress the opposite end and the whistle-valve, and cause the alarm to be sounded, thus reporting low water in the boiler.

Claim.

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

The arrangement of the shell B, the expansible tube I, and the diaphragm *m*, follower E, stem Z, lever T, and the whistle D, substantially as specified.

PHINEAS D. WESSON.

Witnesses:

ISAAC A. BROWNELL,  
WILLIAM BROWNELL.