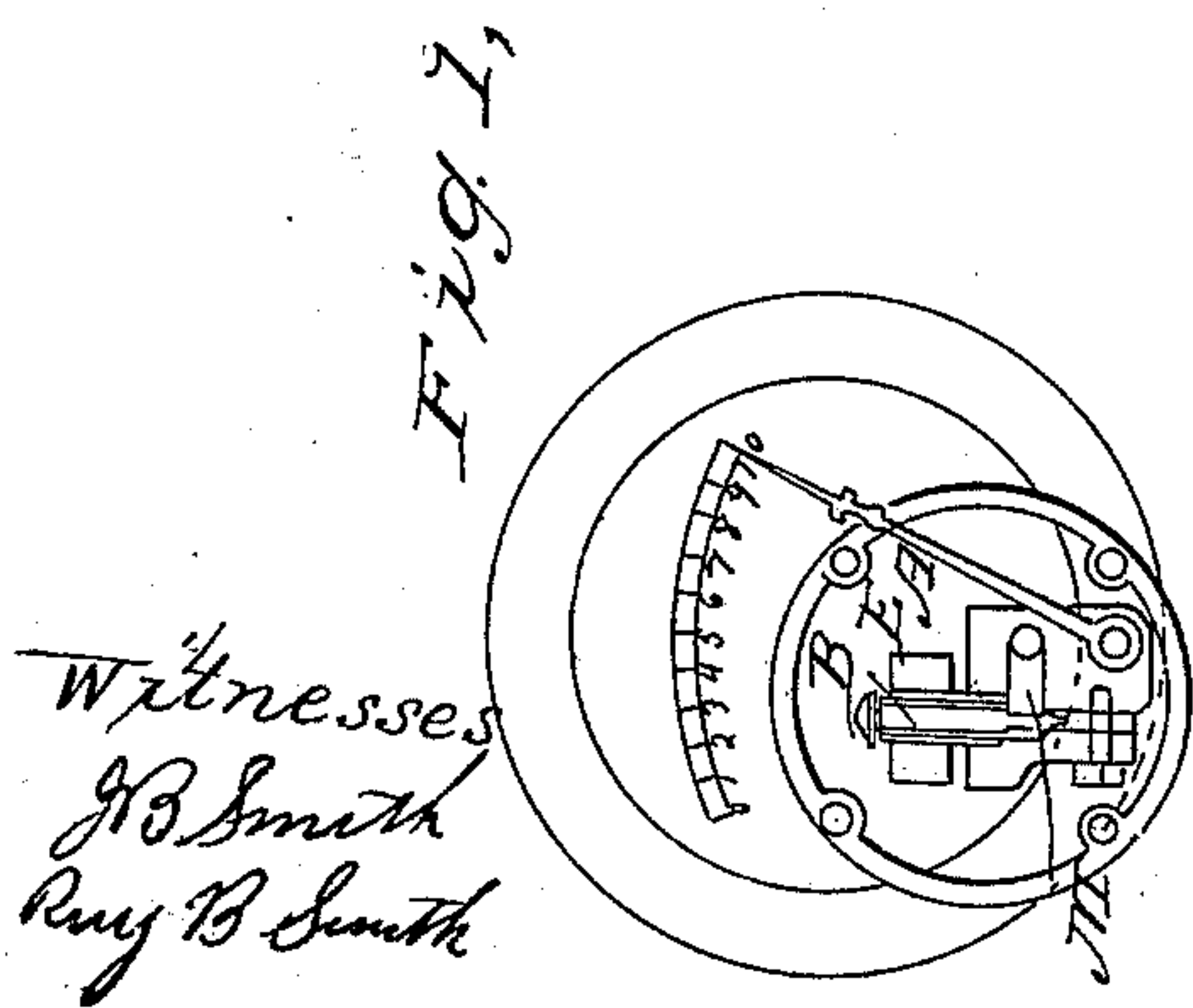
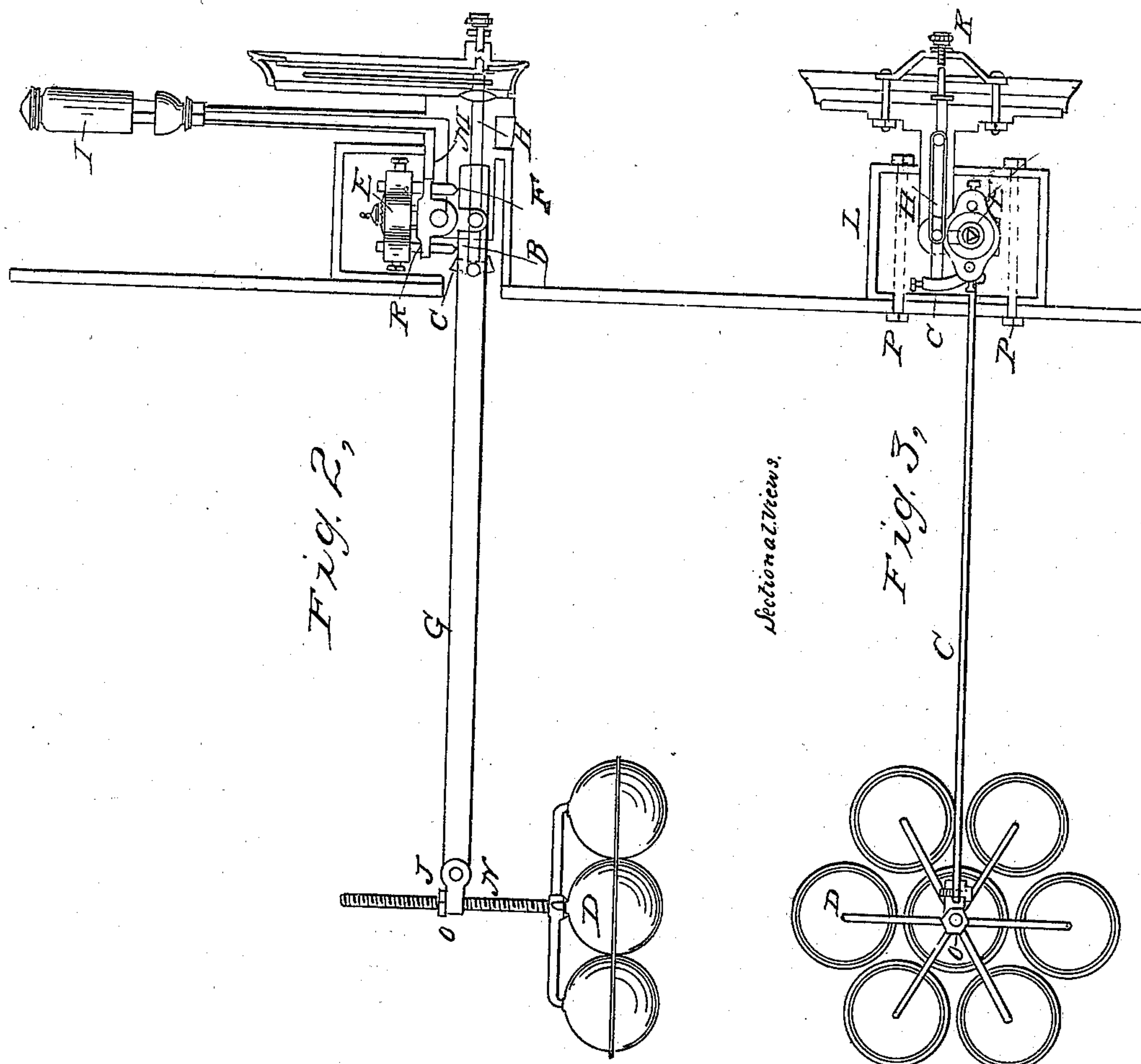


L. L. LEE.  
Alarm Steam Gage.

No. 42,384.

Patented April 19, 1864.



Witnesses  
J. B. Smith  
R. B. Smith

Inventor  
L. L. Lee

# UNITED STATES PATENT OFFICE.

L. L. LEE, OF MILWAUKEE, WISCONSIN.

## IMPROVEMENT IN ALARM STEAM-GAGES.

Specification forming part of Letters Patent No. 42,384, dated April 19, 1864.

*To all whom it may concern:*

Be it known that I, L. L. LEE, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful gage with steam-alarm to indicate high or low water in a steam-boiler; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is an end view of the gage pointing-hand and index-plate; Fig. 2, a side view; and Fig. 3, a top view, in all of which the interior works are shown.

Similar letters of reference in the several figures indicate corresponding parts.

The nature of my invention consists in a novel combination and arrangement of mechanism, so as to constitute a complete and correct gage to show the exact height of water in a steam-boiler, and also to blow a whistle when the water is either too high or too low in the same.

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

A is the index-point, indicating on the index-plate by the figures thereon the height of water. It is attached to the shaft H, which passes through a stuffing-box, and is operated by the segment G, geared into a corresponding segment on the lever C.

K is a set-screw against which the shaft H bears when pressed outwardly by the steam.

B is a valve fitted on an upper and under seat, so that when it is raised steam is admitted to the passage M, leading to the whistle. The lower end of the valve is a little smaller than the upper end, so that the pressure of the steam may hold the valve tight on both seats, and at the same time have the valve nearly balanced, the pressure of the steam acting downward on the upper end, pressing it onto the seat, and upward on the lower end, lifting it from the seat.

E is a collar fitted with an opening in its center, in which is the valve-chamber, and through which projects the upper end of the valve B, on which is a projecting jam-nut, so that when the collar E is raised high enough the valve B is raised from its seats.

F F are pins passing through the ends of

the collar E and held firmly by set-screws, which permit the pins to be lengthened or shortened at pleasure. The pins F F pass through the guide R, and come in contact with the lever C, which has its fulcrum midway between them, so that when the lever C is raised it strikes one of the pins and raises the collar and with it the valve, and when lowered it acts on the other, producing the same effect.

D is a cluster or group of floats for the purpose of operating the lever C. The floats are made in this way to obtain floating-power with a light draft of water, so that they may float over the flues in a boiler without requiring too great a quantity of water in the boiler, which enables me to operate my gage in a space where a single float would be impracticable.

I is a steam-whistle to give an alarm when the water is too high or too low.

J is a yoke by which the floats D are attached to the lever C, with a pin passing through it and the end of the lever forming a yielding joint, permitting the floats to sit level on the water whenever the lever is raised or depressed. Through this yoke passes the screw N from the floats, which is for the purpose of adjusting them, raising or lowering them as may be required.

O is a jam-nut to keep the floats from turning round by the motion of the water and disturbing the adjustment.

L is a transverse section of the chamber, attached to the end of a boiler, in which the operating machinery of the gage is placed, and is fastened by the bolts P P, a small vertical slot being made in the end of the boiler through which to operate the lever C.

Operation: The gage being adjusted so that when the water is at the requisite height in the boiler the index-hand A will point to the center figure on the index-plate, then when the water falls in the boiler the floats D on the water will depress the end of the lever C, when the segment G will turn the shaft H, and with it the index-pointer A, thus indicating to the eye of the engineer or fireman the exact quantity of water in the boiler. When the water falls to a dangerous point, the lever C at its outer end strikes the pin F nearest to the index-plate, raising the collar E, and with it the valve B, letting steam through the passage M to the whistle I, which



gives an alarm. When the water is increased in the boiler, the floats D by their buoyancy raise the end of the lever C, and the segment G turns the shaft H, and with it the index pointer A, in the same manner as when depressed. If the water rises too high in the boiler, the pin F nearest to the floats is raised by the lever C, raising the collar E, and with it the valve B, causing the whistle to sound the alarm in the same manner as when the water is too low.

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

1. A cluster or group of floats consisting of

three or more, in combination with the yoke J and lever G, substantially as and for the purpose described.

2. The yoke J, in combination with screw N, for the purpose of adjusting the floats, substantially as described.

3. The collar E, in combination with the adjusting pins F F and guide R, substantially as and for the purpose described.

L. L. LEF.

Witnesses:

J. B. SMITH,

PERCY B. SMITH.