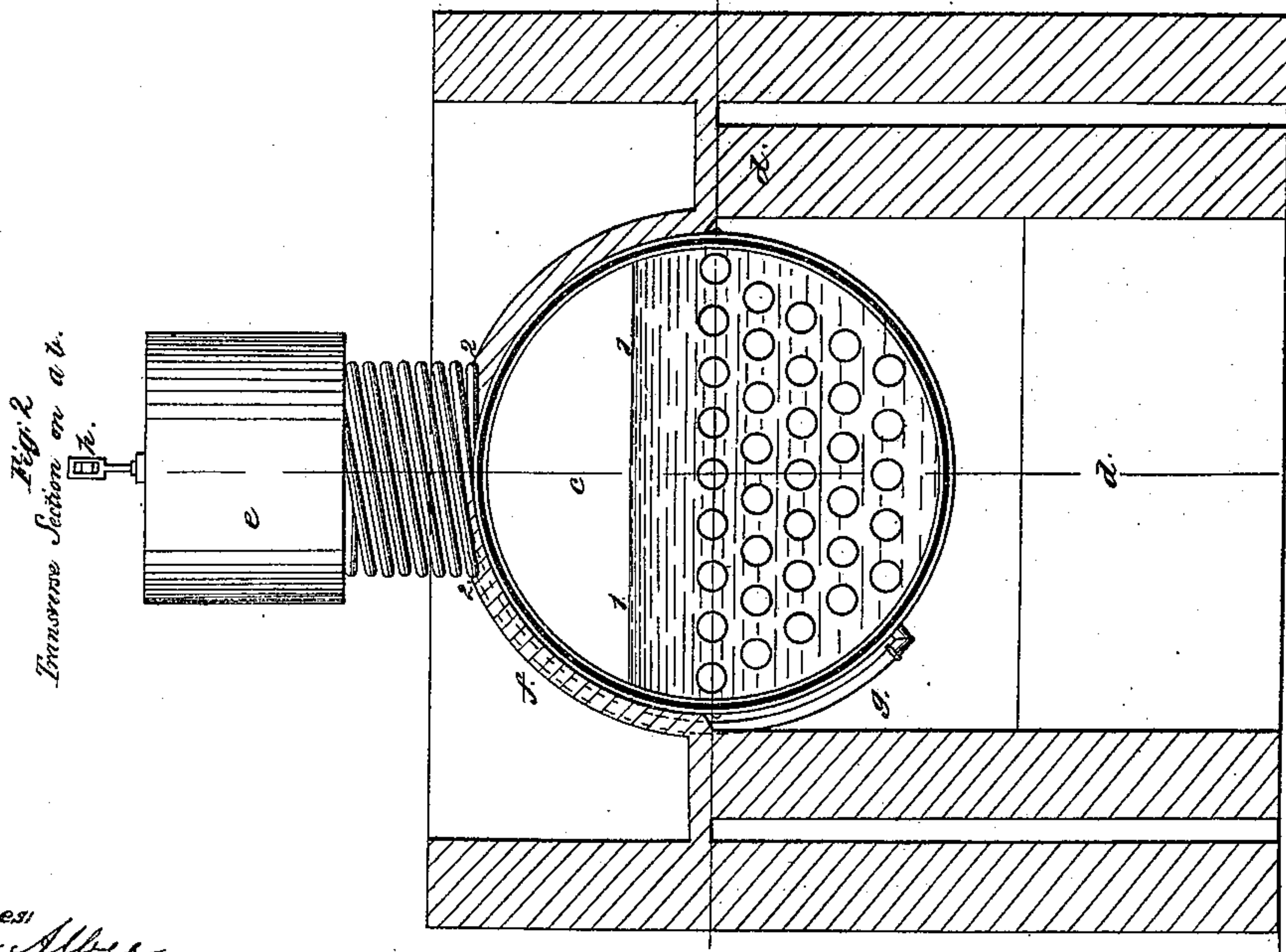
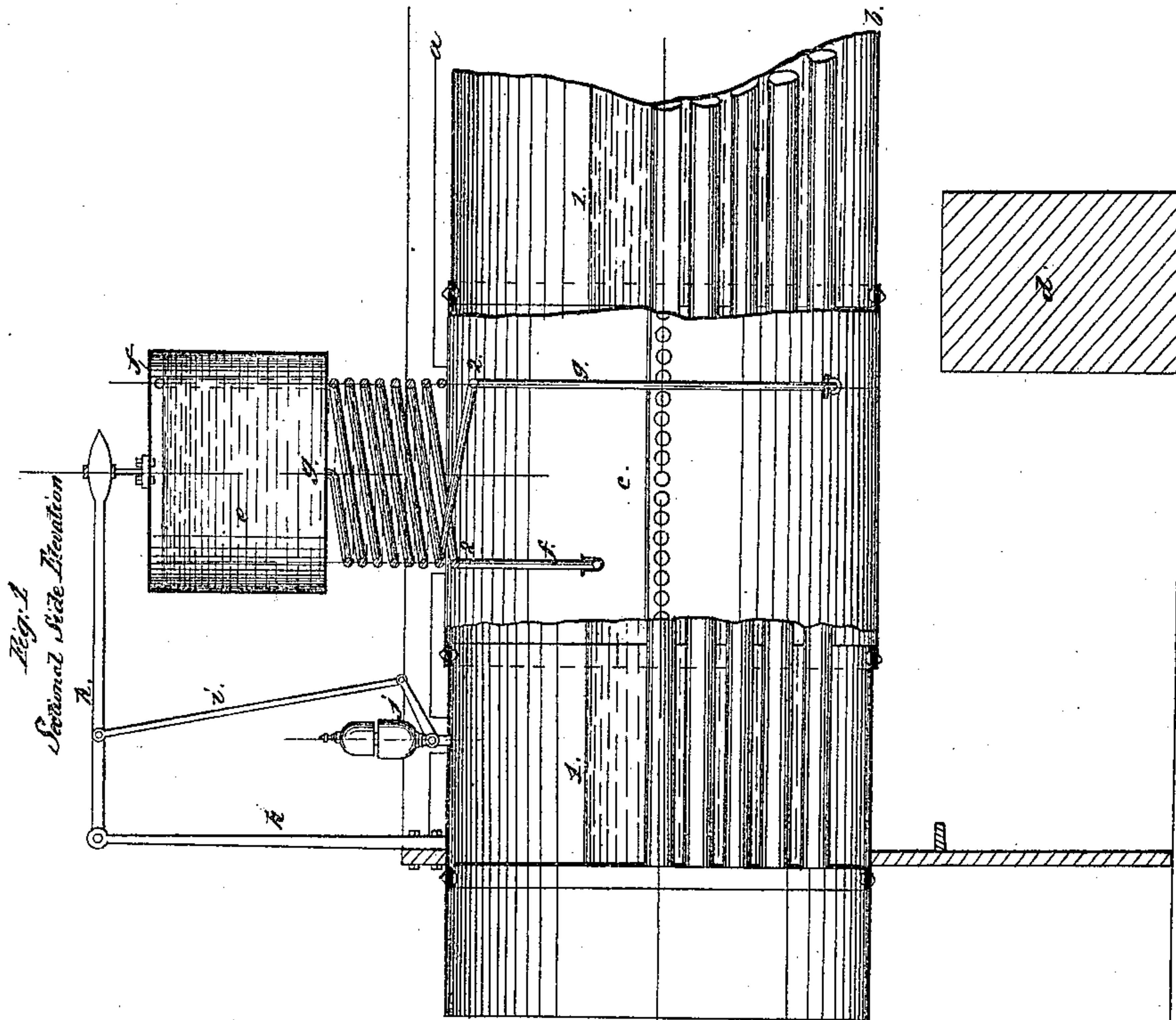


*J. E. Gillespie,*  
*Steam-Boiler Indicator.*

*N<sup>o</sup> 62,837.*

*Patented Mar. 12, 1867.*



*Witnesses:*  
*Samuel Albee*  
*L. P. Craig*

*Inventor:*  
*James E. Gillespie*



# United States Patent Office.

JAMES E. GILLESPIE, OF BOSTON, MASSACHUSETTS.

*Letters Patent No. 62,837, dated March 12, 1867.*

## IMPROVEMENT IN LOW-WATER DETECTORS.

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 E. GILLESPIE, of Boston, in the county of Suffolk, and State of Massachusetts, have invented a new and useful Apparatus for Indicating the Height of Water in Steam Generators; 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 a sectional side elevation; and

Figure 2 is a transverse section.

Similar letters of reference are used to designate similar parts and features of the machine.

The drawing represents a steam generator with some of the shell broken away to show the interior, and 1 1 represents the true water level. *g f* are two steam and water pipes; the pipe *g* enters through the shell near the bottom of the boiler, and the pipe *f* enters exactly at the desired water level. Both pipes are extended above the boiler at 2 2, at which point they are carried around after the manner of a spiral spring, thus making a double coil which will, if constructed of suitable material, have a considerable degree of elasticity. Upon the top of this coil is placed a tank constructed of light but strong material, that shall have sufficient strength to sustain the full steam pressure of the boiler. This tank I propose to make of such size as will hold water enough to cause the coils 2 2 to be depressed by its weight; for instance, if the tank holds two gallons the weight of water will not be far from sixteen pounds upon the coil in addition to the weight of the tank. The pipe *g* enters the boiler below the water level, and its upper end enters the tank at the bottom *g*; the pipe *f*, which enters at the water level, is carried up and around the coil, and the upper end enters the tank very near or quite at the top. There is no necessity of a valve or cock in either pipe, but, when desired, any of the common appliances for stopping the passage of steam can be used. At the top of the tank *e*, a lever is shown which extends to the post *k*, and by the connecting-rod *i* is attached to the whistle *j*. These are all the parts of my apparatus, but I would state that under some circumstances it may be advisable to place the whistle upon the top of the tank *e*, in which case the mode of connecting the lever will readily suggest itself to any mechanic.

The operation of my detector is as follows, viz: The boiler being supplied with water up to the line 1 1, will cover the lower ends of both pipes. As soon as steam is raised and a perceptible pressure begins to be exerted in the steam space above the water, the water will begin to rise in both pipes, and thus the tank *e* will be filled, and the gravity of the water will cause the coil of pipes to be depressed, and so remain as long as the tank remains filled with water; but if the water in the boiler is allowed to get below the end of the pipe *f*, thereby allowing steam to enter the pipe, it is evident steam will find its way through the coil to the top of the tank *e*, and thereby cause the water in the tank to flow down the pipe *g*, thus relieving the coil of spring pipe of the weight of the water, and thereby allow it to spring up with a force equal to the weight of the water just passed out. Now the tank is full of steam; and if a whistle is placed upon the top of it, and so arranged that when the tank raises the whistle will sound, the steam will pass out until the water again covers the pipe *f*, when it will raise by the steam pressure and again fill the tank; but if there be no whistle used or if a lever be carried to an independent whistle, as in the drawing, then the steam that gets in the tank must be condensed before the water can raise so as to fill the tank. Thus it will be seen that I use no valve or packed joints, and my apparatus is always in readiness to repeat the alarm. By enlarging the capacity of the tank, I can obtain any requisite power. It will also be noticed that this coil can be placed in any convenient locality if the pipes *g f* are carried to it, so that it will be possible to have a detector at any convenient distance from the boiler, without impairing its action.

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

1. I claim the hollow springs *g f*, or their equivalents, in combination with the tank and boiler, as specified.
2. I claim the combination of the pipes and springs *g f*, and tank *e*, with the whistle of a boiler, whereby to raise an alarm in case of low water.

JAMES E. GILLESPIE.

Witnesses:

SUMNER ALBEE,

L. S. CRAGIN, Jr.