

(No Model.)

A. KERR.

LOW WATER ALARM FOR STEAM BOILERS.

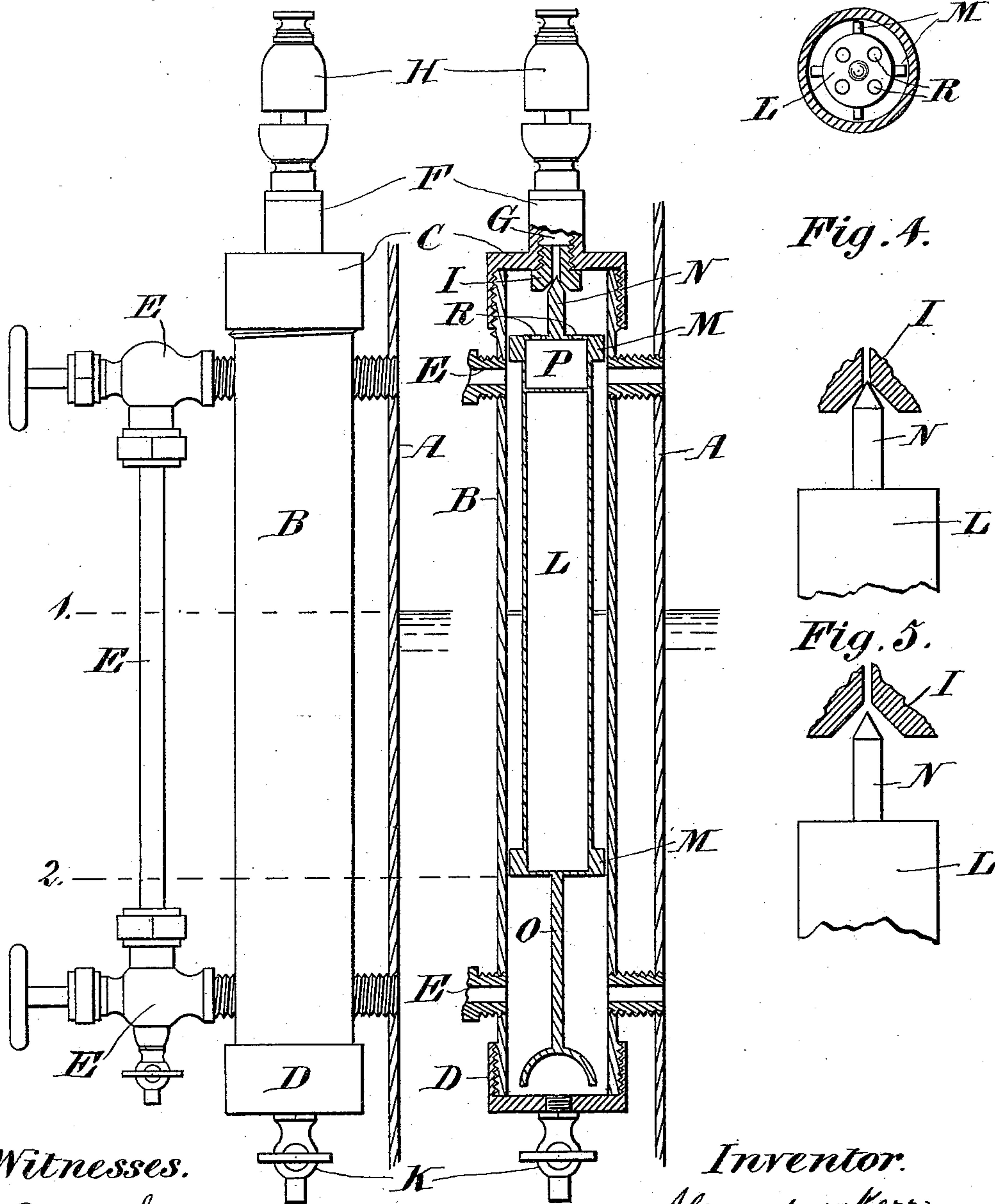
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Fig. 1.

Fig. 2.

Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

ALEXANDER KERR, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR OF TWO-THIRDS TO RICHARD COSTIGAN AND WILLIAM KEYS, BOTH OF SAME PLACE.

LOW-WATER ALARM FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 333,231, dated December 29, 1885.

Application filed October 8, 1885. Serial No. 179,373. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER KERR, of the city of Montreal, in the District of Montreal, Province of Quebec, Canada, have invented new and useful Improvements in Steam-Boiler Low-Water Alarms; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention has reference to an improved construction and arrangement of an automatic alarm for steam-boilers, which, by the decreased height of level of the water in the boiler, will cause a whistle or other sounding instrument to sound, and thus call attention to the fact.

The particular construction which forms the subject-matter of the present invention will be hereinafter set forth, described, and claimed.

In the drawings hereunto annexed similar letters of reference indicate like parts, and Figure 1 is an elevation of a construction embodying my invention. Fig. 2 is a vertical central section (with portions in elevation) of the construction shown in Fig. 1. Fig. 3 is a horizontal section of the cylinder B at line 1, and plan of the upper end of the float L, shown in connection therewith. Figs. 4 and 5 show the relative position of the valve N with the valve-seat I at high and low water.

Letter A represents any ordinary boiler-plate forming any part of the shell of a steam-boiler upon which it is desired to attach the water gage and alarm.

B is a cylinder (commonly called a "water-column") similar to those at present in use, upon which are mounted the glass gage and gage-cocks. These columns are used to save the shell of the boiler from the weakening effects that would be caused to it by forming the number of holes in it that would be required for the glass-gage and each of the gage-cocks, and it is the forming of this cylinder into a steam-boiler low-water alarm, in connection with a particular construction of the float hereinafter described, which forms the present invention.

C is the top of the cylinder, and D the bottom. E is a glass gage, all constructed and arranged with a boiler as heretofore in use.

In the present invention I form the cap C with a projection, having a passage, G, screwed

to receive a whistle or other sounding instrument, H, at the top, as shown, and to receive a valve-seat, I, as shown. All the principal parts of the construction being circular or cylindrical, they are fully shown by the sectional and elevation views of them given in Fig. 2.

K is any ordinary blow-off cock, by which any sediment lodging in the cylinder B may be blown out.

L is a cylindrical float, placed within the cylinder B; provided with projections M, formed at the top and bottom of the cylinder to form guides, so that the float cannot be displaced, while it is free to move up and down with the varying height of the level of the water in the cylinder B. The float is also provided with a central upward-extending projection, N, the upper end of which is conical and fitted to form a steam-tight valve with the valve-seat I. The lower end of the float is provided with a projection, O, forked at its lower extremity, to prevent it from obstructing the blow-off cock K. Within the float L, by means of a diaphragm, as shown, is formed a small chamber, P, and this chamber is open to the pressure within the cylinder B by means of openings R, formed for that purpose. This chamber P causes the float to be much more sensitive to the changes of level of water than it would be without it, and is the most important feature of the present invention.

When the point or valve N comes to the position shown in Fig. 2, it closes the passage in the valve-seat I and prevents the whistle from sounding, and it will remain in that position after the level of the water has fallen a very considerable distance by the pressure of the steam. So much does this affect the float of the small size that can be placed within the cylinder B that it renders the same useless from improper action; but by actual test I have found that when the float is provided with the chamber P and openings R the float becomes sufficiently accurate.

With the float L (delineated in the drawings) we will suppose the line 1 to indicate the proper level of the water in the boiler, and the line 2 to be the level at which the alarm should sound to call attention that the boiler requires more water. It will be found that

the float provided with the chamber P will fall down as soon as the level of the water falls to the end of the cylinder forming the float L, or down to the line 2. The float will fall until
5 the forked end of the projection O rests upon the bottom D, thus bringing the valve N from the position shown in Figs. 2 and 4 to that shown in Fig. 5, where it will remain until the level of the water is raised in the boiler and
10 cylinder B, to cause the parts to again assume the position shown in Fig. 4.

What I claim, and wish to secure by Letters Patent, is as follows:

1. In alarms for steam-boilers, the float arranged as described, and provided with an
15 upper chamber open to the pressure that is in the space in which the float is situated, the

said float being also provided with a valve, in combination with a valve-seat, a sounding device, and a passage from said valve-seat to
20 said sounding device, the whole substantially as described.

2. The combination of the cylinder B, having valve-seat I and sounding device H connected therewith, as shown and described, in
25 connection with a steam-boiler with float L, having chamber P open to the pressure within the cylinder B, the whole substantially as described.

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Witnesses:

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