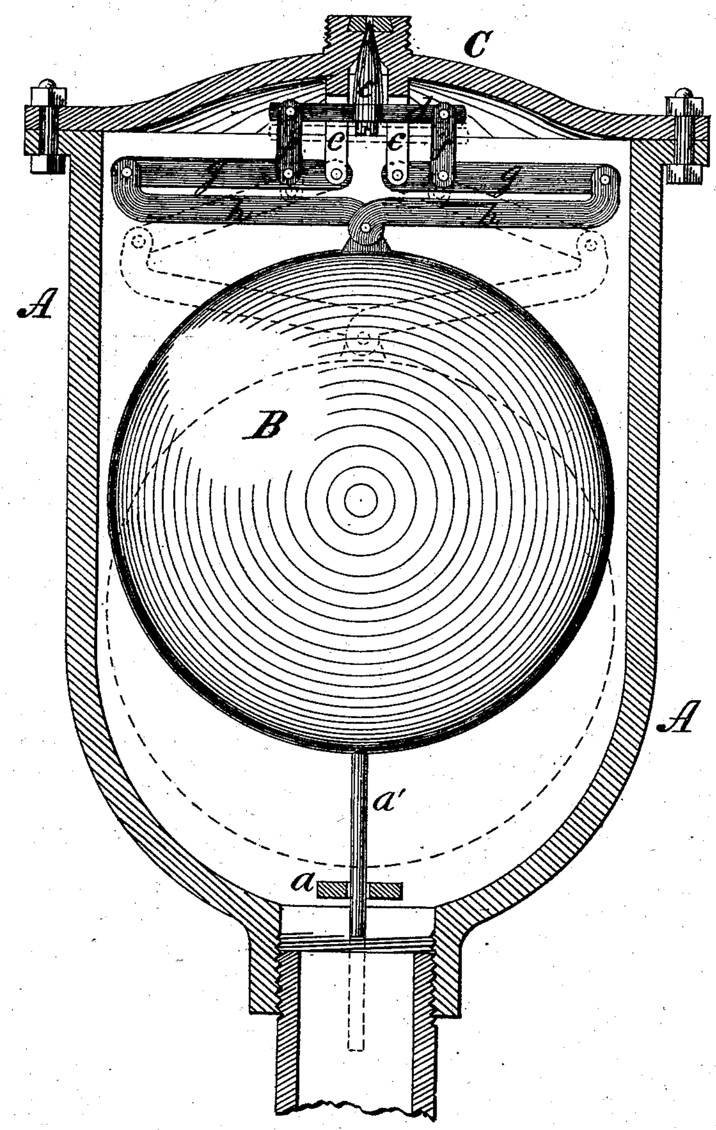
T. BINGHAM & T. J. McTIGHE.

LOW WATER ALARM.

No. 190,116. Patented May 1, 1877.

Fig. 1.



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UNITED STATES PATENT OFFICE.

THOMAS BINGHAM AND THOMAS J. McTIGHE, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS OF FIVE-EIGHTHS THEIR RIGHT TO JOHN L. LEWIS AND WILLIAM J. LEWIS, OF SAME PLACE.

IMPROVEMENT IN LOW-WATER ALARMS.

Specification forming part of Letters Patent No. **190,116**, dated May 1, 1877; application filed December 18, 1876.

To all whom it may concern:

Be it known that we, THOMAS BINGHAM and THOMAS J. McTIGHE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Low-Water Alarms; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a section, showing the device in closed position, the float being held up by the water, the open position being shown in dotted lines.

This invention relates to improvements in low-water alarms of that class in which a float is made, by means of a lever, to open and close the steam-whistle valve; and consists in fitting the float to a duplicate system of levers attached to the valve, whereby perfect ease and certainty of operation are secured, and in the construction and combination of parts, substantially as hereinafter more fully described and claimed.

In the drawings, A designates the casing, which is cylindrical, with a spherical bottom, across which inside stands a bridge or guide, *a*, for the stem *a'* of the float B, which may be of any form, but preferably spherical. The top or cover C of the casing is made nearly flat, so as to give easy access to the parts in constructing or repairing. Depending from the inside of top C are two slotted guide-posts, *c*, up and down in the slots of which plays a cross-bar, *d*, to which is attached the valve *e*, as shown. The valve-stem is rounded, to pass through bar *d*, and underneath is slotted for the reception of a screw-driver, or similar tool, the object of which is to provide a means of readily grinding the valve or seat without disturbing the other parts. Pivoted to the ends of cross-bar *d* are two short links or rods, *f*, connecting, respectively, by pivot-joints with two levers, *g*, which fulcrum in the slotted guide-posts *c*, and extend out laterally almost to the sides of casing A, so as to have as long a leverage as possible. To connect their ends centrally to the top of the float at one point, so as to insure ease of motion, and afford a check against swaying, we insert the two connecting-bars *h*, pivoted at their respective junctions with levers *g* and float B. By bending the outer ends of bars *h* we reduce space, and effect compactness.

By the described construction of top C all the parts may be fitted first to it, which is easy on account of its flat shape, and after that it is only necessary to insert them into the casing, and bolt down the cap.

A whistle of the usual form is applied above the small perforation leading from the valve-seat.

Of course, this precise disposition of the levers and rods may be modified, as, for instance, by lengthening the levers *g*, and exchanging their fulcra; but this complicates the fitting, and renders the levers liable to friction upon each other at the crossing. The special forms also of the levers and arms may be greatly modified, though for simplicity and security we prefer the form shown. The great point is to obtain inside a small casing sufficient power with an even and perfect motion. The latter is accomplished by the duplication of the system of leverage, causing a straight pull and motion of the valve, and this is the important feature in our invention. The space required is small, economizing the material and labor.

The casing, having no offsets or other irregularities for levers or other devices, can be made full strength with but little weight.

The device is applied to the boiler either on top or at the side; or may be screwed to the barrel of a gage-cock.

When the water is up to the given standard, the float remains up, and keeps the valve shut; but when the water falls the float falls with it, and opens the valve, and the whistle sounds.

We claim—

1. In a low-water alarm, the combination of the following elements, to wit: a longitudinally-reciprocating valve, a float, and a duplicate system of independent levers, independently connecting the valve and float together,

arranged and operating substantially as shown and described.

2. The combination of the valve, the cross-bar carrying the same, and the combined pivot-bearings, and slotted guides depending from the cap, and constructed substantially as shown, so as to form fulcra for the levers, as set forth.

3. The combination, with the float B, of the cross-bar *d*, carrying the valve *e*, the independent levers *g*, and the links *f*, respectively and independently pivoted to the cross-bar and levers, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 12th day of December, 1876.

THOMAS BINGHAM.
THOMAS J. McTIGHE.

Witnesses:
J. P. GRANT,
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