M. N. Lynn,

Indicator.

No. 107,934. Patented Oct. 4. 1870.

Fig. 1

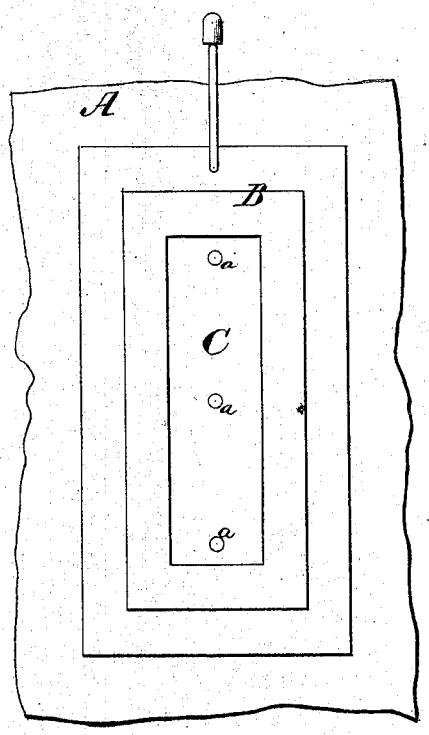



Fig. 2

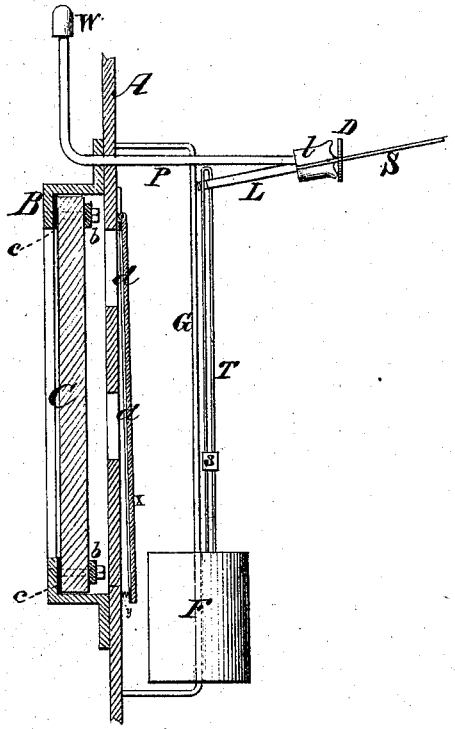



Fig. 3

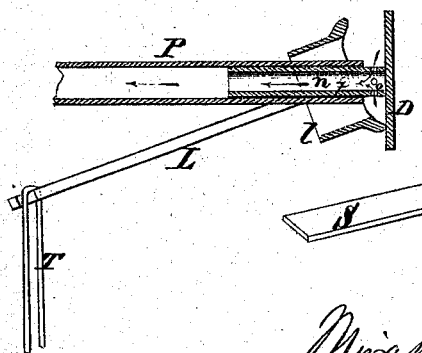
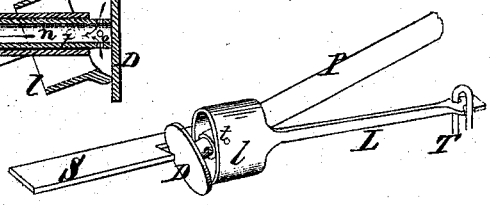



Fig. 4




Witnesses.
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Inventor
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# United States Patent Office.

MIRABEAU N. LYNN, OF NEW ALBANY, INDIANA.

Letters Patent No. 107,934, dated October 4, 1870.

## IMPROVEMENT IN WATER-INDICATORS AND ALARMS.

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, MIRABEAU N. LYNN, of New Albany, in the county of Floyd and State of Indiana, have invented certain new and useful Improvements for Indicating the Height of Water in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a front view of a portion of a boiler-head having the transparent indicator applied to it.

Figure 2 is a vertical central section through fig. 1, showing the transparent indicator and the alarm.

Figures 3 and 4 are different views of the alarm-valve and the lever which operates upon it.

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

This invention is designed to indicate the height of water in a steam-boiler by exposing to view, through a transparent plate, the interior of the boiler; and also, to indicate high and low water by means of an alarm device, which is operated by a rising and descending float, as will be hereinafter explained.

To enable others skilled in the art to understand my invention I will describe its construction and operation.

In the accompanying drawing—

A represents the head of a steam-boiler, through which a number of holes, *d d*, is made, that is covered externally by a plate, C, of glass, or other suitable transparent substance, of proper thickness to afford the necessary strength.

This transparent plate may be marked, as indicated at *a a a*, fig. 1, to indicate the height of the water in the boiler, and it is confined steam-tight within a frame, B, by means of packing, *c*, cross-bars, *b*, and bolts, as shown in fig. 2.

The frame B is firmly bolted to the boiler-head A, steam-tight.

It will be seen from the above description that I apply a plate of glass to the shell of a steam-boiler in such a manner as to expose to view, externally, the interior of the boiler, without materially weakening the latter or allowing the escape of steam.

This plate C is oblong, and is so arranged with relation to the high and low-water marks that the engineer can at a glance see the height of the water in the boiler.

In conjunction with this window or transparent plate I employ an alarm, which will not be impaired by accumulations of calcareous deposits.

W is a steam-whistle applied on the upper end of a pipe, P, which extends into the boiler, as shown in fig. 2.

On that end of pipe P which terminates within the boiler, is a valve, D, which is applied on one end of a tube, *n*.

This tube extends into the pipe P, a short distance, and has holes, *o*, made laterally through it near the valve D.

This valve D is a circular disk adapted to tightly close the inner end of pipe P, when held to its seat by the pressure of steam in the boiler.

G is a guide-rod, which is arranged vertically and secured at its ends to the inner side of the boiler-head A, and on this rod plays freely up and down a float, F.

To this float a long loop, T, is secured, which receives the end of a lever, L, that is pivoted at *t* to the pipe P.

The shorter arm *l* of the lever is constructed somewhat in the form of an ellipse, and receives through it the pipe P.

When the water-line becomes too low, the weight of the float F will draw down the long arm L of the lever, and cause the lower edge of the elliptical short arm to press the valve D away from its seat far enough to expose the apertures *o* through tube *n*, as shown in figs. 2, 3, and 4, thus allowing steam to pass to the whistle W and sound an alarm.

When the water becomes too high in the boiler during the operation of feeding it, the float F will rise until a stop, *s*, on the loop T strikes the long arm L of the lever and causes the upper edge of the short arm *l* to open the valve D and sound an alarm.

The plate S, which is fixed to one side of the valve-lever, is notched to receive the valve D and prevent this valve and its tube *n* becoming detached from pipe P.

I thus secure additional safety by providing the boiler with an alarm, which, in the absence of the engineer, will surely sound an alarm, should the water become too low or too high in the boiler.

In fig. 2 I have represented a valve, X, hinged inside of the boiler-head A, at its upper end, and held off therefrom by a light spring, *y*, at its lower end. This valve has packing applied around its margin.

Should the glass plate C be broken, from any cause, the pressure in the boiler will force the valve X tightly to its seat and prevent the escape of water and steam through openings *d d*.

Having described my invention,

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

1. The glass or transparent plate C, in combination with a valve, *d*, which will close the opening covered by said plate in the event of the latter becoming broken, substantially as described.

2. The valve D, and its perforated tube *n*, applied to the steam-whistle pipe P, in combination with a lever, L *l*, and a tripping float, substantially as described.

3. The combination of the valve-stop S, with the valve-lever L, substantially as described.

MIRABEAU N. LYNN.

Witnesses:

JOHN H. STOTSENBURG,

THOMAS M. BROWN.