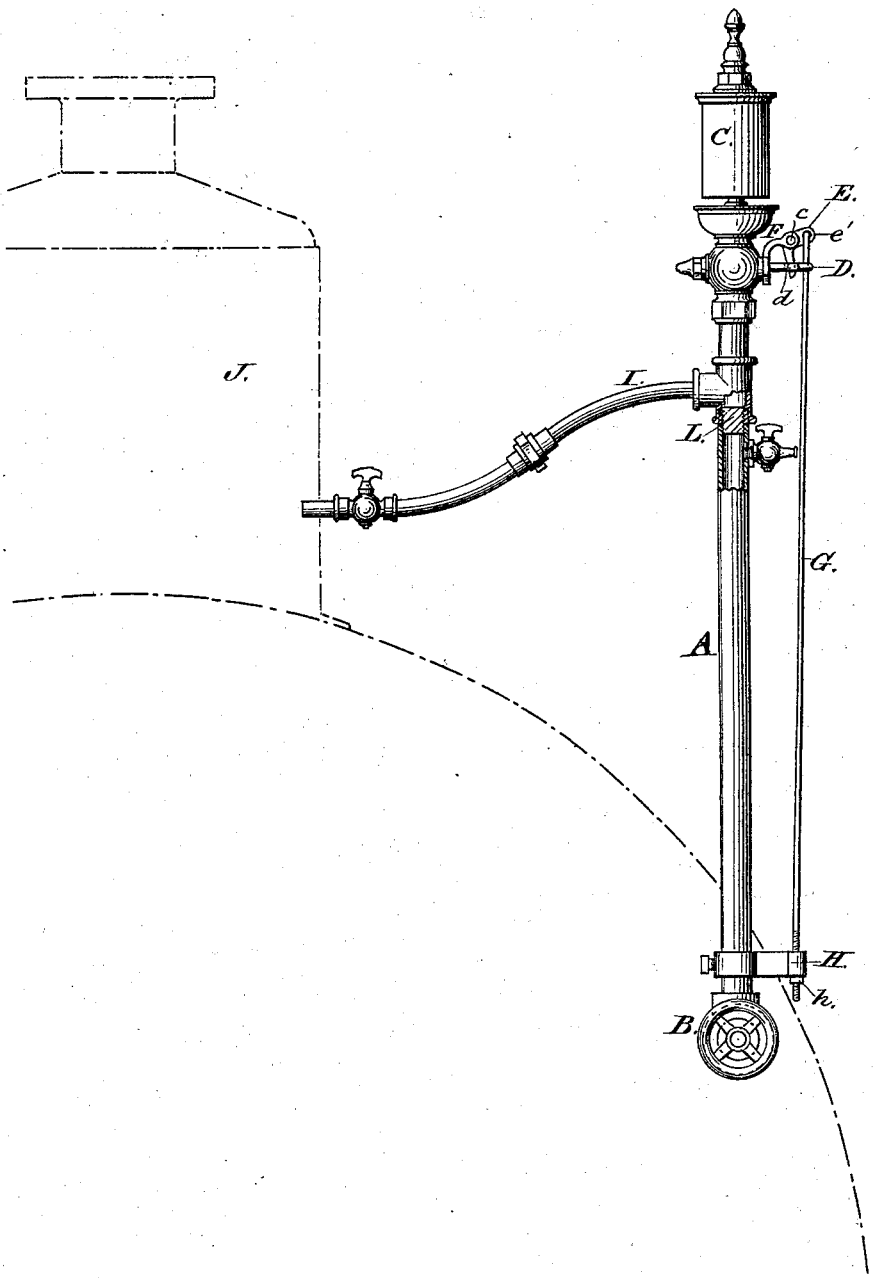
A. HAUN.

Low-Water Indicator and Alarm.

No. 209,259. **Patented Oct. 22, 1878.**



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ALFRED HAUN, OF PICKWICK, PENNSYLVANIA.

IMPROVEMENT IN LOW-WATER INDICATORS AND ALARMS.

Specification forming part of Letters Patent No. **209,259**, dated October 22, 1878; application filed September 14, 1878.

To all whom it may concern:

Be it known that I, ALFRED HAUN, of Pickwick, in the county of Clarion and State of Pennsylvania, have invented certain new and useful Improvements in Low-Water Indicators and Alarms; and I do hereby declare the following is a full, clear, and exact description of the same, reference being made to the accompanying drawing, forming a part of this specification, and in which the figure represents a side view, partly in section, of my improved indicator and alarm as applied to a steam-boiler.

This invention relates to improvements in the class of low-water indicators and alarms in which a single expansion-tube is used; and the invention consists in the combination and arrangement of parts, as will be hereinafter fully described.

To enable others skilled in the art to make and use my invention, I will proceed to describe the exact manner in which it is carried out.

In the drawing, A represents the expansion-tube, having its lower end provided with an outer screw-thread, by which it is adapted to be connected with the gage-cock B of a steam-boiler, said gage-cock serving as a stay or support to the expansion-tube, and thus rendering it secure in case it is desired to remove the boiler. To the upper end of said tube A is secured the customary alarm-valve and whistle C.

D represents a laterally-projecting valve-stem, provided in its outer end with a slot, *d*, for receiving the lower end of the right-angled or bell-crank lever E. The upper end of said lever is pivoted or fulcrumed at *c* to the upper end of the plate F, which projects a short distance above the valve-stem.

A vertical rod, G, is connected to the portion *e'* of the lever E, said rod G extending downward through the outer end of a laterally-projecting arm, H, adjustably secured to the pipe A.

The lower end of the rod G is provided with a screw-thread and screw-nut, *h*, by means of which the lever E and valve-stem can be adjusted so that the valve will blow off at any desired point.

The adjustable rod G, being connected to the lever E, exerts no action upon the valve-stem; consequently the parts of the apparatus are thus relieved of the excessive strain which must necessarily result where the said rod is connected directly with the valve-stem. The valve is kept against the seat when the water in the boiler is at the proper height by means of the usual coiled spring surrounding the valve-stem.

By having the lever-power or the lever fulcrumed above the valve-stem less expansion-tube is required in obtaining the desired result, and by means of which the indicator is adapted to be applied to boilers on all kinds of portable as well as stationary engines.

I represents a tube connecting the dome J of a boiler to the whistle, by means of which steam is conveyed from said dome to the whistle. L represents a plug securely screwed in the upper end of the expansion-tube, for the purpose of preventing the water from the boiler coming in contact with the whistle-valve, thereby obviating the greatest objections to low-water alarms that work by expansion, in which the water from the boiler, coming in contact with the whistle-valve, causes it to corrode and leak or stick, rendering the whistle invariable as an alarm.

The operation of the indicator and alarm is essentially the same as other alarms of this class. The water in the boiler having sunk below the water-line in the boiler gives place to steam, the greater heat of which expands the tube longitudinally, which opens the valve and allows the steam passing through the pipe or tube leading from the dome of boiler to blow the whistle, and thus give the alarm.

I claim as my invention—

1. The combination, with the expansion-tube, provided with an alarm valve and whistle, of the laterally-projecting valve-stem and right-angled or bell-crank lever E, pivoted or fulcrumed above said valve-stem, substantially as and for the purpose herein shown and described.

2. The combination, with the expansion-tube, having an alarm valve and whistle, of the valve-stem D, right-angled lever E, pivoted or fulcrumed above said valve-stem, and adjustable rod G, substantially as and for the purpose herein shown and described.

3. The combination, with the expansion-tube, provided with the usual alarm valve and whistle, of the plug L, secured in the upper end of said expansion-tube, substantially as and for the purpose specified.

4. In a low-water indicator and alarm, the combination of the expansion-tube, having an alarm valve and whistle, and adapted to be secured to the gage-cock of a steam-boiler, and the connecting pipe or tube I, leading from the steam-dome of a boiler to the whistle, substantially as and for the purpose herein shown and described.

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