G. H. CROSBY.

Low-Water Alarm for Steam-Boilers.

No. 208,962. Patented Oct. 15, 1878.

Fig. 1.

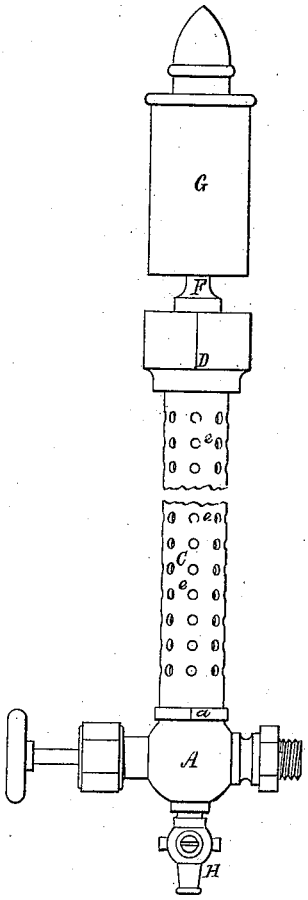
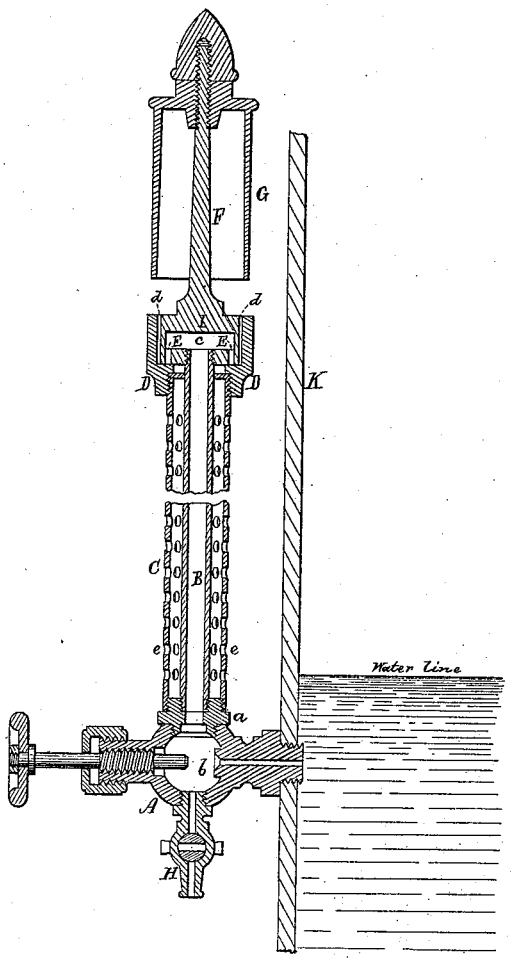


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE H. CROSBY, OF EAST SOMERVILLE, MASSACHUSETTS.

IMPROVEMENT IN LOW-WATER ALARMS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **208,962**, dated October 15, 1878; application filed March 8, 1878.

To all whom it may concern:

Be it known that I, GEORGE H. CROSBY, of East Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Automatic Low-Water Alarm for Steam-Boilers; and do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side elevation, and Fig. 2 a vertical and longitudinal section, of it, the latter figure showing its application to a steam generator or boiler.

The instrument, in the main, consists of a tube provided with a valve-seat at one end, and also of another tube arranged within the first-mentioned tube, and provided with a perforated valve to co-operate with the valve-seat, the said two tubes being conjoined or connected at their ends, which are opposite to those having the valve and seat. With the said tubes, valve-seat, and perforated valve I have combined a stop-cock and an alarm-whistle. Such stop-cock I provide with a petcock, for discharging water from it, or determining whether the water-level of the boiler may have fallen below the induct of the stop-cock.

In the drawings, A denotes an ordinary stop-cock, provided with a petcock, H, opening out of it, as shown. From a head, *a*, screwed into the side of the body of the stop-cock, a tube, B, extends, there being an opening through the said head for the bore of the pipe to communicate with the chamber *b* of the cock. At its upper end the tube B is provided with a chambered valve, I, having educts E E leading downward from its chamber *c*. The valve is to co-operate with a seat or bottom of a hollow cup, D, fixed to the upper end of a tube, C, which, fastened to the head *a*, encompasses and is concentric with the tube B. Between the periphery of the valve and the inner periphery of the cup D there is a narrow space, *d*, for the escape of steam. Directly over this space, and fastened to a stem or post, F, extending up from the valve, is a steam-whistle, G.

The tube C, I prefer to have provided with a series of slots or holes, *e*, arranged through it, as shown, such being to enable air to freely circulate into and through the tube, in order to retard or prevent its expansion by heat. With the alarm-whistle G, used with the tubes and valve and seat thereof, the valve-tube C should be closed at its upper end around the tube B, such being as represented in Fig. 2.

When the apparatus is applied to a steam-boiler, K, and arranged therewith in manner as shown in Fig. 2, the water from such boiler, while at a safety level therein, will stand in the tube B at the altitude which it may be in the boiler; but should such water fall below the induct of the stop-cock, steam will pass into the tube B, and being at a higher temperature than the water, such steam will suddenly heat and expand the tube B, so as to cause its valve to be moved upward off its seat in the cup D, whereby the steam will be discharged from the valve through the passage *d* and against the lower end of the whistle, thereby causing an alarm to be sounded.

The instrument thus described works automatically and certainly without the use of a fusible plug or a float crank or spring, as employed in various other low-water alarms or detecters. It is simple, reliable, cheap, and very durable.

I claim as my invention as follows:

1. The combination of the tube B and its perforated valve I with the encompassing tube C and its valve seat or cup D, the said tubes being connected at their lower ends, and all being arranged substantially as set forth.

2. The combination of the steam-whistle G with the tube B, its perforated valve I, and the tube C and its valve seat or cup D, all being arranged and applied essentially as shown and described.

3. The combination of the stop-cock A with the tubes B and C and their valve seat or cup D, and perforated valve I, all being arrranged and applied substantially as set forth.

4. The combination of the stop-cock A and the alarm-whistle G with the connected tubes B C, their valve seat or cup D, and perforated valve I, all being essentially as represented.

5. The combination of the petcock H, stop-cock A, steam-whistle G, tubes B C and their valve seat or cup D, and perforated valve I, all being arranged and applied essentially as shown and described.

GEO. H. CROSBY.

Witnesses:
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