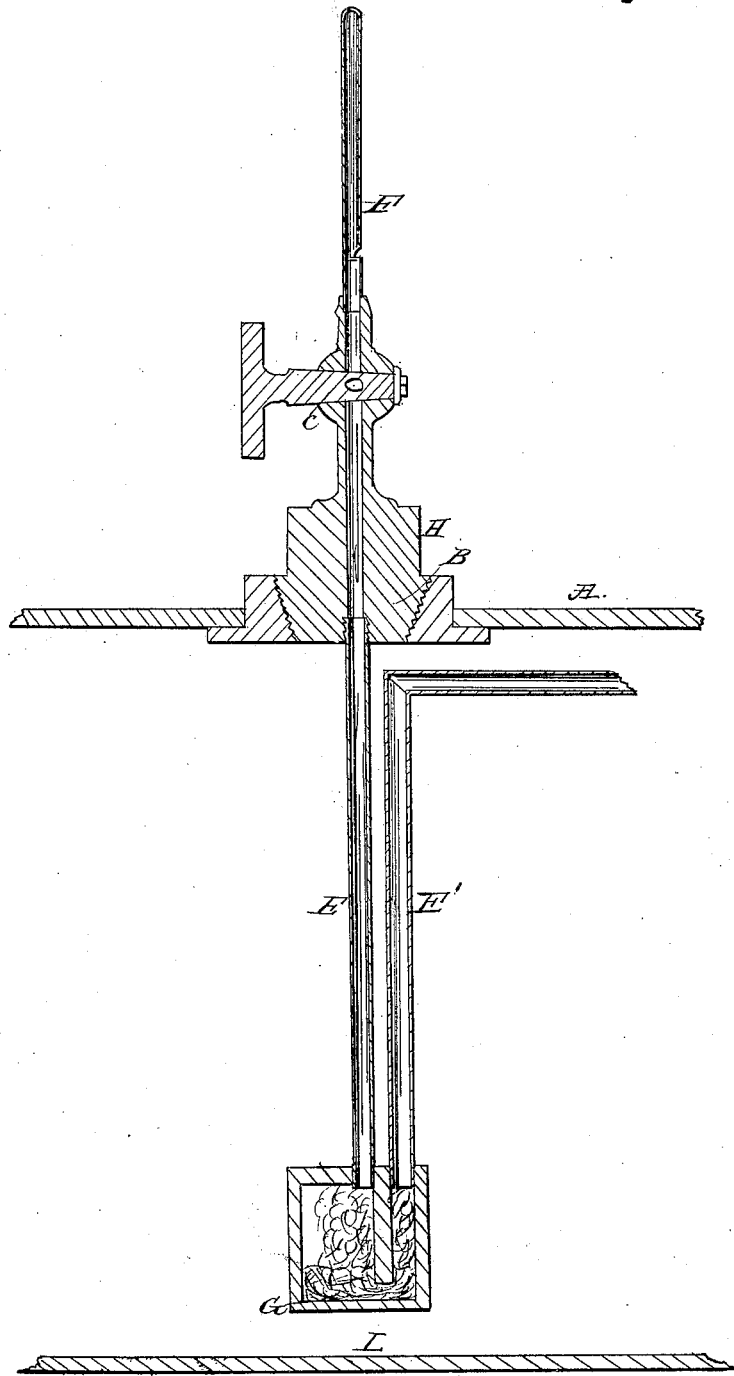


*W. H. Hale,*  
*Steam-Boiler Indicator.*  
*N<sup>o</sup> 1,324. Patented Sep. 14, 1839.*



# UNITED STATES PATENT OFFICE.

W. H. HALE, OF BROOKLYN, NEW YORK.

## MODE OF PREVENTING EXPLOSIONS IN STEAM-BOILERS.

Specification of Letters Patent No. 1,324, dated September 14, 1839.

*To all whom it may concern:*

Be it known that I, WM. H. HALE, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful apparatus for detecting and making known any dangerous deficiency of water in steam-boilers when in operation in time to have such dangerous deficiency remedied before an explosion can take place in consequence of any part of the boiler becoming red hot.

The following is a full and exact description of the principles of operation and construction of said apparatus or machine, which is fully represented by the accompanying sectional drawing.

The apparatus or machine, which I call a "safety tell-tale for steam boilers," consists of two tubes, marked E E', in the drawing, one open to the steam near the top of the boiler at D, to prevent the sediment of the water from injuring its operation, and running down to near the surface of the flue, or other part of the boiler exposed to the direct action of the fire, that would be soonest uncovered with water, L, and become red hot, where it (the tube) enters a small chamber containing fusible metal, G, which prevents the steam from passing farther in the apparatus while the fusible metal remains solid. The other tube E, connects the chamber G, at the flue L, permanently with a conical plug B, screwed into the top of the outer shell of the boiler A, by means of a wrench applied to the square H, and which plug is provided with a cock C, and a powerful and shrill whistle F, on the outside of the boiler. Now, if the flue, or part of the boiler near the chamber G, becomes uncovered of water in a small and no wise dan-

gerous degree, the accumulating heat there will melt the fusible metal, and the steam will force it (the metal) all into the largest division of the chamber G, giving the steam a free passage through both tubes E E', through the open cock C, and through the whistle F, alarming everybody in the neighborhood of the boiler, when the fire must be put out immediately, the cock turned to stop the noise, and also to let the fusible metal run back to place and again chill, and then refill the boiler, and ascertain and remedy the cause of deficiency.

I think tin, which melts at 440 degrees of Fahrenheit's thermometer, to be as good a fusible metal as need be, as it can be obtained almost everywhere, that degree being much higher than is ever required in making steam (as it will produce steam of nearly 500 pounds to the square inch) and six or eight hundred degrees lower than red heat.

The drawing is of the full size required in use, except that the tubes must be graduated in length to fit each boiler.

I claim as my invention and desire to secure by Letters Patent—

1. The pipes E, E', in combination with box G, containing the fusible metal, constructed and operating in the manner and for the purpose herein specified.

2. And I further claim in combination with the above, the stop-cock C, constructed and operating in the manner and for the purpose herein set forth.

WM. H. HALE.

Witnesses:

M. C. HALE,  
GEORGE ATWATER.