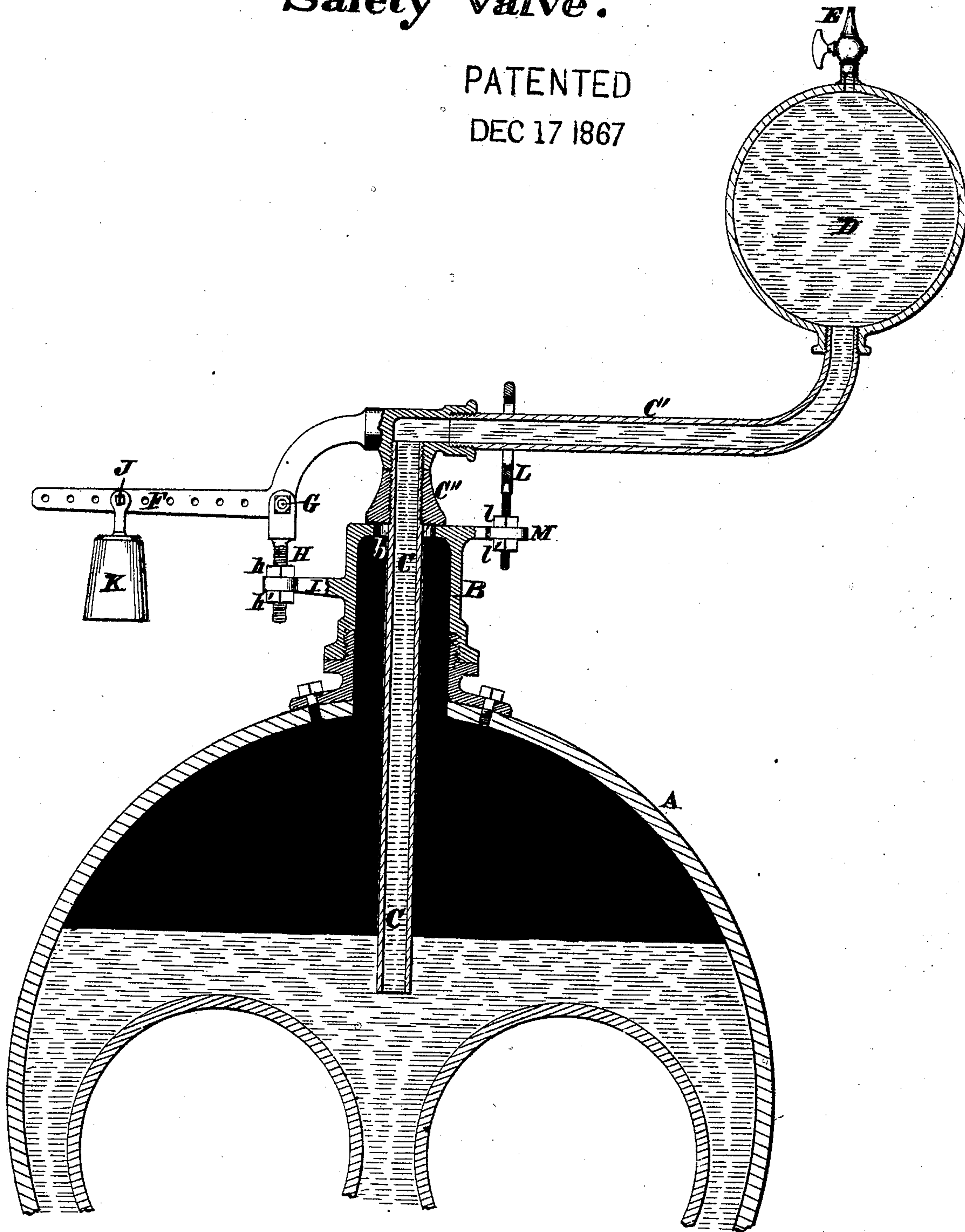


Charles Burley.

**Low-water Indicator and
Safety Valve.**

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PATENTED
DEC 17 1867



Attest.

Jas. A. Leayman,
 C. H. Finkle

Inventor.

C. Burley
 By L. H. L. Bros.
 Atty.

United States Patent Office.

CHARLES BURLEY, OF CINCINNATI, OHIO.

Letters Patent No. 72,361, dated December 17, 1867.

IMPROVEMENT IN COMBINED LOW-WATER INDICATOR AND SAFETY-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

TO WHOM IT MAY CONCERN:

Be it known that I, CHARLES BURLEY, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Low-Water Indicator and Safety-Valve; and do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making part of this specification.

This invention relates to an attachment to an ordinary steam-boiler, for the purpose of giving warning whether of excessive pressure or of a deficiency of water in the boiler.

The accompanying drawing is an axial section through my indicator.

A represents a boiler or steam-generator. B is a dome or chamber, secured to the top of the boiler, and communicating with the steam-space thereof. The top of this dome has an orifice, *b*, to receive a tube, C, which depends perpendicularly into the boiler, with its lower end reaching below the top of the water when a proper supply of the latter is in the boiler. This tube, at its upper end, has a horizontal bend, C', whose upturned extremity enters a globe, D, furnished with a small snifting-cock, E. The tube C has a collar, C'', which, resting on the top of the dome, performs the function of a valve, and serves to close the steam-space. Projecting from the tube C C', in an opposite direction to the bend C', is a bar, F, hinged or fulcrumed by pivot-bolt G to a screw-shanked crotch H, which is attached to and adjustable in a lug, I, that projects horizontally from the outside of the dome B. The bar F has a series of holes to receive a bolt, J, by which a weight, K, is attached to the bar at such distance from the fulcrum as to partially neutralize the weight of the full globe and pipe, and enable steam to lift the valve C'' at any desired maximum pressure. The upward stroke of the tube C C' is restricted by a yoke, L, whose screw-threaded shank is secured to and adjustable vertically in a lug, M, which projects from the dome. The shanks of the crotch H and yoke L are secured to their proper vertical adjustment by means of nuts *h h' l l'*, and these nuts enable the accurate adjustment of the valve so as to sit squarely on its seat.

The operation is as follows: So long as the water rises above the lower end of the tube C C', the entire tube and globe are necessarily full of water, and, in this condition, are of sufficient weight to hold the valve C'' down firmly on its seat, but the moment that the water gets below the bottom of the tube, the latter is relieved of its liquid contents, and, flying upward by the combined agency of the steam-pressure and the counterbalance, permits the escape of steam in such volumes as, by both sight and sound, to give unmistakable warning of the depleted condition of the boiler. This indication is readily distinguished from the less protracted and copious discharges incident to excess of pressure.

I claim herein as new, and of my invention—

1. The safety-valve C'', affixed to a gravitating-pipe, C C', which communicates with the water-space, and is provided with a graduating-lever, F, in the manner and for the purpose set forth.
2. The arrangement of bent tube C C', and valve C'', globe D, bar F, and adjustable weights K, substantially as herein set forth.

In testimony of which invention, I hereunto set my hand.

CHARLES BURLEY.

Witnesses:

GEO. H. KNIGHT,
JAMES H. LAYMAN.