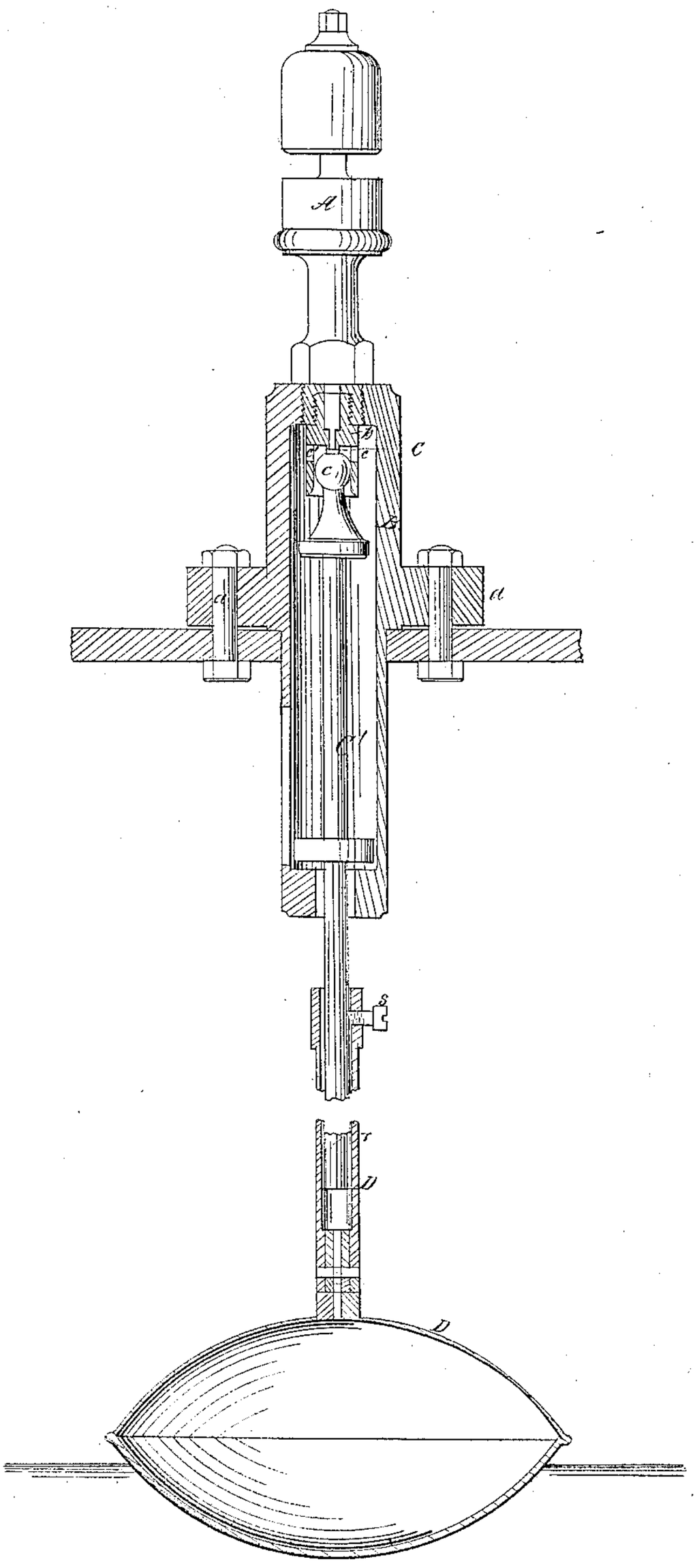
B. Schaffer,

Steam-Boiler Indicator.

No. 45,207. Patented Nov. 22, 1864.



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UNITED STATES PATENT OFFICE.

BERNHARD SCHÄFFER, OF BUCKAU-MAGDEBURG, PRUSSIA, ASSIGNOR TO HIMSELF AND CHRISTIAN BUDENBERG, OF NEW YORK, N. Y.

IMPROVEMENT IN LOW-WATER DETECTORS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **45,207**, dated November 22, 1864.

To all whom it may concern:

Be it known that I, BERNHARD SCHÄFFER, of Buckau-Magdeburg, in the Kingdom of Prussia, have invented a new and Improved Alarm Water-Gage for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, said drawing representing a vertical central section of this invention.

This invention consists in the employment or use of a spherical valve, in combination with a float and steam-whistle, in such a manner that the valve is free to accommodate itself to the motions of the float, and by said motions the valve is prevented from sticking. The socket in which the valve works is perforated with holes, and the valve is so arranged that it is perfectly balanced and the pressure of the steam has no tendency to press the same up in its seat, and consequently said valve will open at the moment the water sinks below the desired point and close when the water rises. The float may be provided with a hollow shank, whereby steam is admitted to its interior to prevent it from collapsing, and, furthermore, the float can be readily adjusted up or down to suit boilers of different size.

A represents a steam-whistle of the ordinary construction, which is supported by the flanged tubular case B, and this case is secured to the top plate of a steam-boiler by means of screw-bolts *a*, as clearly shown in the drawing. Secured in the lower end of the whistle A by means of a suitable screw-thread is the socket *b*, the inner surface of which forms the seat of the valve C. This seat is concave to correspond to the spherical face of the valve, and a projection, *c*, close under the valve, forms the guide for the same, and equalizes the pressure of the steam on said valve in either direction.

In order to give to the steam free access to the surface of the globe *c*, the socket *b* is perforated with a number of holes, *c'*, and the diameter of the valve is as near as possible equal to that of the stem close under the globe *c*, so that the pressure of the steam on said globe is perfectly balanced.

The valve-stem C' extends down through the case B, and it is adjusted in the tubular shank D' of the float D. The hole in the shank D' is somewhat larger than the stem, so that the steam has free access to the interior of the float, and the danger of a collapse of said float is obviated. One or more set-screws, *s*, retain the shank D' in the desired relation to the stem C'. The valve, having a spherical face, is enabled to accommodate itself to the motions of the float without admitting steam to the whistle, and by these motions said valve is prevented from sticking to its seat, so that it is always in good working order.

The tubular case B forms a guide for the valve-stem and limits the motions of the float in either direction. Furthermore, the valve, being perfectly balanced, will open at the moment the water sinks below the desired point, and as soon as the water rises it will close, and the engineer or person having charge of the boiler will be apprised without fail when he has to start or to stop his feed-pump.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The employment or use of the ball-shaped valve C, in combination with the adjustable float D and whistle A, as described, leaving the valve free to accommodate itself to the motions of the float, and preventing the valve from sticking by the motions of the float.

2. The arrangement of the tube *r* and set-screws *s s*, in combination with the float D and valve-stem C', as specified, whereby the float can be adjusted to the desired position and a free communication between the interior of the float and the steam-space of the boiler is effected.

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Witnesses:

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