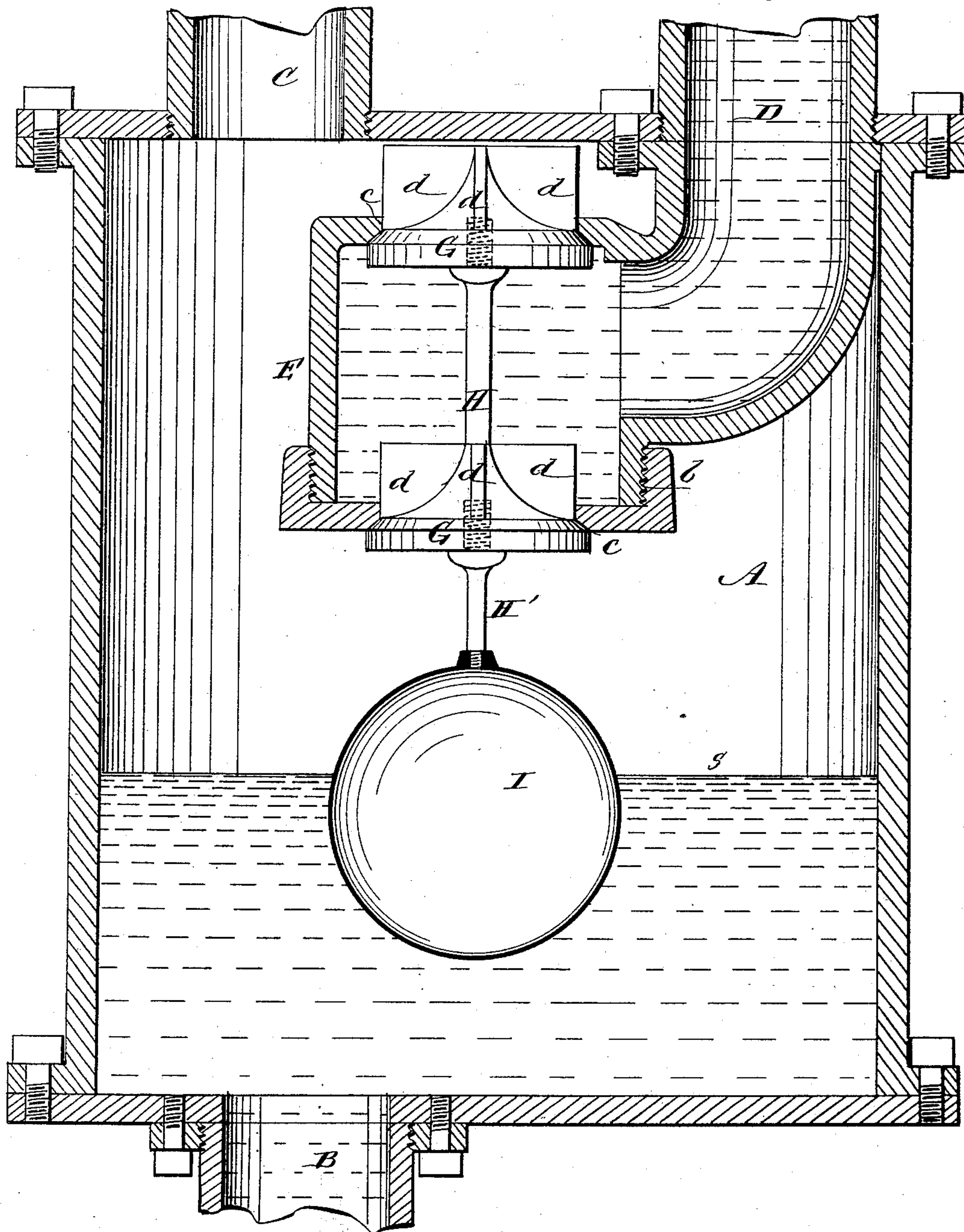


(No Model.)

A. J. ADERHOLD.
FEED WATER REGULATOR.

No. 341,203.

Patented May 4, 1886.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALEXANDER J. ADERHOLD, OF BIRMINGHAM, ALABAMA.

FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 341,203, dated May 4, 1886.

Application filed May 23, 1885. Serial No. 166,461. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER J. ADERHOLD, of Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Feed-Water Regulators for Steam-Boilers, of which the following is a full, clear, and exact description.

This invention consists in a balance-valve feed-water regulator of novel construction, and in which the entire valve, stem and all, is inclosed within the steam and water chamber within which it acts, and which requires no stuffing-box for its stem, to impair or interfere with its freedom of action, and is otherwise simple and exceedingly perfect in its operation, substantially as hereinafter described.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which the figure represents a vertical section of a feed-water regulator embodying my invention.

A indicates a feed-water close vessel or chamber, arranged to connect from below, as by a pipe, B, with the steam-boiler, and which chamber virtually forms a part of the boiler, it being so situated that the water in it stands at the same level as the water in the body of the boiler. Said vessel or chamber, too, is of sufficient height to always have a steam-space in it above the level of the water therein, which space is connected by a pipe, C, with the steam-space of the boiler.

D is the pump or other connection by which the water is supplied to the boiler. Said connection or pipe D connects at its delivery end with a valve-box, E, in the upper or steam space of the vessel or chamber A. This valve-box is made in two sections—an upper and lower one—screwing together, as at *b*, and it is fitted with two disk or puppet valves, G G, the one arranged to close an opening *c* in the top of the box, and the other to close an opening *c* in the bottom thereof. These valves and the openings in their seats are of like area, and are connected by a common valve-stem, H, so that they virtually form but one balance-valve, which opens downward when discharging water into the chamber A through the openings *c c* in the valve-seats. By constructing said double valve in two parts, screwing the valve-stem into the upper valve, and the valve-box

also in two parts, the upper part having the one valve-seat in it, and the other part the other valve-seat, every facility is afforded for fitting and adjusting the valves, each one, G G, of which has wings or guides *d* on it, arranged to fit the openings *c c*, for the purpose of directing and steadying the double valve in its movement. The lower single valve G is connected, as by a central rod, H', which virtually forms a lower extension of the valve-stem, with a copper or other float, I. The valves and valve-seats may be made of brass, gun or other metal, or any suitable material which is durable and not liable to corrode. Supposing the water to stand at its high and proper level, as indicated by the letter S, then the double and balanced valve G G is closed as against any ingress or feed to the boiler, and any water raised by the pump is passed off otherwise or run to waste, as usual; but on the water in the boiler and chamber A falling below this level, and with it the float I, the balanced or double valve G G is opened and a fresh supply admitted to the boiler till the same level be again reached. In this way the valve is automatic, and in case of any sudden leak in the boiler or pipes connected therewith unnoticed by the engineer or person in charge the valve will open to admit of the pump supplying more water; and it may, if desired, be made to blow a whistle or give an alarm in case of the pump failing to supply water by connecting the valve through the supply-connection D with any suitable devices for the purpose.

The connection of the float I with the double valve G G being direct, and there being no stuffing-box, or even guides, other than the wings *d*, friction of parts and liability to stick will be avoided, and the valve will be perfectly balanced, both as regards the pressure of the supply-water on its interior faces and the pressure of the steam on its exterior ones. In this way a very perfect and reliable action is secured.

Either a close or open float may be used.

With the arrangement of the valve-box within the steam-space of the float-chamber, it will be seen that the water therein contained will be heated previous to its admission to the float-chamber, while both valves open and close the valve-box, the upper valve admitting steam to the valve-box, still further heating the water,

or heating it while the lower valve permits the flow to take place from the valve-box into the float-chambers.

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

In a feed-water regulator for steam-boilers, the combination, with the float-chamber A, having upper separate water and steam inlets or connections and a lower water-discharge aperture or connection, of the valve-box E, arranged within the steam-space of said float-chamber,

and connected with the water-inlet within said chamber, the balanced double valve G G, fitted to open and close water-discharge apertures in said box, and the float I, connected by a single stem or rod directly and fixedly to the valve G, for controlling said valve, all under cover of the chamber A, substantially as specified. 15

ALEXANDER J. ADERHOLD.

Witnesses:

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