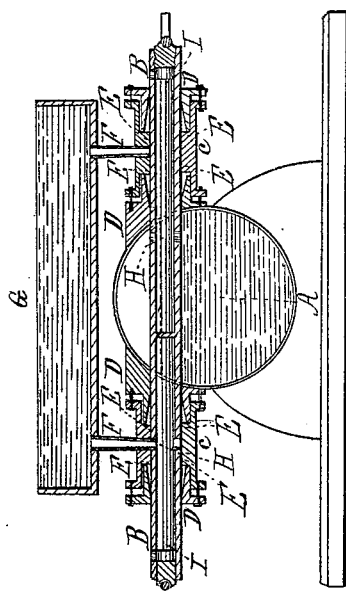


W. D. Allen,
Steam-Boiler Water-Feeder,
No 7,817, Patented Dec. 10, 1850.



UNITED STATES PATENT OFFICE.

WM. D. ALLEN, OF DURHAMVILLE, NEW YORK,

BALANCED BOILER-FEEDER.

Specification of Letters Patent No. 7,817, dated December 10, 1850.

To all whom it may concern:

Be it known that I, WILLIAM D. ALLEN, of Durhamville, in the county of Oneida and State of New York, have invented a new and useful Improvement in Regulating and Supplying Water to Steam Boilers and Generators, denominated "Self-Supplying Water-Gage;" and I do hereby declare that the following is a full, clear, and exact description of the nature, construction, and operation thereof, reference being had to the accompanying drawings and letters marked thereon, forming a part of this specification.

The accompanying drawing represents a transverse section of a boiler, with my invention attached.

A is the boiler, having packing boxes on each side D' D' to which short cylinders c, c, are secured by bolts passing through the flanges; another set of packing boxes are fitted in the same manner to the outer ends of the cylinders at D D. I have in each of these packing boxes, conical metallic packings, nicely ground to fit them steam tight, shown at E, E, E, E. These rest against the shoulders on the inside of the cylinders, so that by screwing up the packing boxes, the contact between them and the piston will be made more perfect. Metallic packings are preferable, as other packings would be liable to wear, separate, and obstruct the apertures H, H.

B, is the flange, or piston, reciprocating steam tight through the packing boxes; this is hollow and divided in the center by a partition into two chambers, in which are apertures H H—one in each chamber—passing transversely through them. These apertures alternately communicate with a water cistern G, and the boiler, and while one chamber is in communication with the water cistern, it is shut off from the boiler, and the other chamber, at the same time, cut off from the cistern, while in communication with the boiler.

G, is the cistern or reservoir, for containing water, which may be made saddle shaped, to fit the top of the boiler; it may, in fact, be called a second boiler, as the condensed steam can flow in and keep the whole water therein, at the temperature of boiling water;

these are pipes, or openings, F, F, leading from the bottom of it into the cylinders, (through which the water flows, at the end of each stroke, from it into the respective chambers in the piston).

The water chambers in the piston are made larger than is necessary to hold the quantity of water the boiler requires at each stroke, so that there will always be a surplus of water in them, and only sufficient water will escape through the apertures H, H, at each stroke, (when they are brought in communication with the water and steam in the boiler,) to produce an equilibrium between the water in the boiler and that in the piston chambers. Foaming of the boiler, which renders all registers heretofore used, useless, does not interfere or prevent a regular and certain discharge of water in the boiler. My invention will keep the water in the boiler always, and under all circumstances, (as far as I have been able to test it,) at a given water line irrespective of the variation of speed, or other contingencies.

I, I, represent plugs in each end of the piston, which cover small holes or vents, which are for the purpose of blowing off, should the apertures H, H, by chance, become stopped up; and also for filling the boiler when cold, which is done in the following manner: The piston is disconnected from the machinery, and the plug, or piston, turned, opening the vent-hole in one end and it is slid in so as to bring the vent-hole I opposite to one of the openings F, and the water will descend and fill the boiler.

The operation of my self-supplying water gage is as follows: We will suppose the piston, at one end of its stroke. The water is now flowing into one chamber and taking the place of the steam or vacuum, whilst the other chamber is in communication with the boiler; and the communication of this chamber is completely cut off from the water supply; therefore the water contained in the chamber, will form a part of the water in the boiler, and produce an equilibrium between the two. In this manner the chambers in the piston alternately communicate with the boiler and the cistern, and when in communication with one, shall be shut off from the other.

Having thus fully described the nature, construction, and operation of my improved self supplying water gage for steam boilers, what I claim therein as new and desire to secure by Letters Patent is:

Having the piston B, with compartments and apertures as described, passing completely through the boiler and working in double packing boxes in short cylinders *c c*

placed on opposite sides of the boiler substantially as herein set forth. 10

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

WM. D. ALLEN.

Witnesses:

T. DONOHO,
GEO. R. WEST.