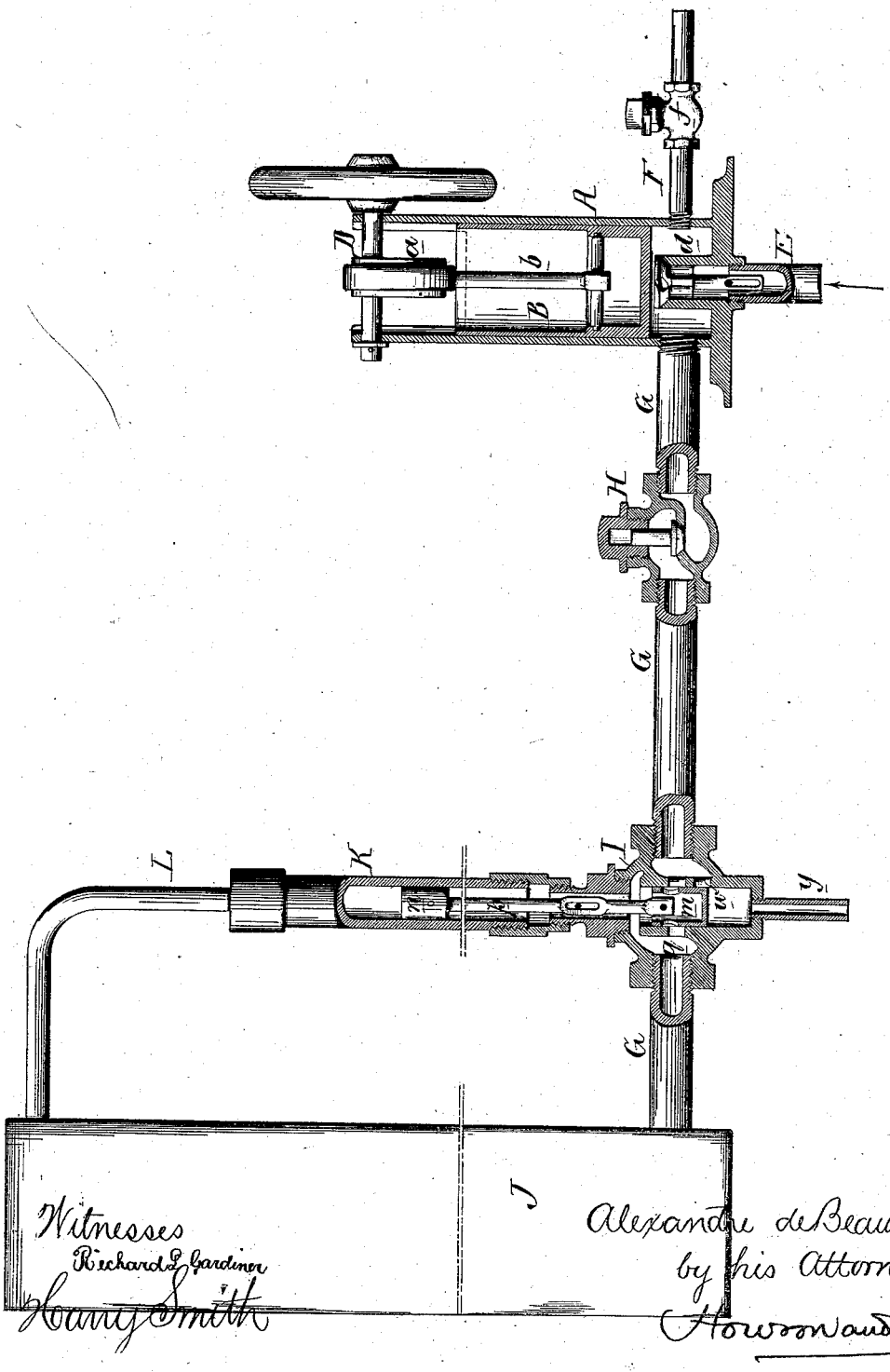
A. de BEAUMONT.

HEATERS AND FEEDERS FOR STEAM BOILERS.

No. 187,825. Patented Feb. 27, 1877.



Witnesses
Richard L. Gardiner
Henry Smith

Alexandre de Beaumont
by his Attorneys
Howson & Sons

UNITED STATES PATENT OFFICE.

ALEXANDRE DE BEAUMONT, OF PHILADELPHIA, PA., ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM H. PALMER, OF SAME PLACE.

IMPROVEMENT IN HEATER AND FEEDER FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **187,825**, dated February 27, 1877; application filed January 8, 1877.

To all whom it may concern:

Be it known that I, ALEXANDRE DE BEAUMONT, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Heater and Feeder for Steam-Boiler, of which the following is a specification:

The main object of my invention is to utilize the whole or a portion of the exhaust steam of a steam-engine, by forcing it into a boiler with a supply of water, in the manner described hereafter.

The figure in the drawing is a vertical section of apparatus for carrying my invention into effect.

A is the cylinder, to which is adapted a plunger, B, the latter being reciprocated in the present instance from a shaft, D, through the medium of an eccentric, *a*, and rod *b*, and the shaft being driven by the engine.

At the bottom of the cylinder is a tubular projection, *d*, the upper end of which forms the seat for a valve, *e*, which rises, when the plunger is moved upward, and permits exhaust steam to enter the cylinder from the pipe E, which communicates with the exhaust-pipe of a steam-engine.

Water is also admitted in the form of a jet to the cylinder, beneath the plunger, through the pipe F, which communicates with a hydrant or reservoir, a check-valve, *f*, in the pipe F, opening on the ascent of the pump-plunger, and closing on its descent.

G is the discharge-pipe, through which and through the chest H, containing a check-valve, the exhaust steam may be forced directly into the boiler.

As the pump operates continuously, however, I use, in connection with the pipe G, a device for automatically regulating the amount of water which passes into the boiler, so that it will accord with the requirements of the latter.

This device I will now proceed to describe: The force-pipe G communicates with the chest I, and the latter, through a pipe, G′, with the boiler J. Within this chest is a regulating-valve, *m*, which is connected by a rod, *p*, to a piston, *n*, in a cylinder, K, the latter communicating at the top through the pipe L with the steam-space of the boiler, and having a direct communication below at all times with the outlet-passage *q* of the chest I, and consequently with the water-space of the boiler.

The position of the piston *n* in the cylinder K is governed by the height of the water in the boiler, and when the water is at its proper level the lateral openings in the regulating-valve coincide with openings in that part of the chest in which the valve operates, so that the exhaust steam, combined with water, will pass freely through the chest into the boiler. Should the water in the boiler, however, rise above its proper level, the piston *n* and valve *m* will also rise and open the lower port *w* in the chest I, through which port as much of the combined exhaust steam and water will pass and be discharged through the pipe *y* as will be the means of restoring the water in the boiler to its proper level, when the valve will descend and close the port *w*.

I claim as my invention—

1. The combination of the pump A, the pipe E communicating with the exhaust-pipe of the engine, valve *e*, water-pipe F, and force-pipe G, communicating with the boiler.

2. The combination of the boiler J, pipe G, cylinder K, and its float *n*, carrying a valve, *m*, with the chest I, its two sets of ports, and its waste-pipe *y*, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALEXANDRE DE BEAUMONT.

Witnesses:

HERMANN MOESSNER,

HARRY SMITH.