

(No Model.)

J. S. DU BOIS.

BOILER FEEDER.

No. 280,364.

Patented July 3, 1883.

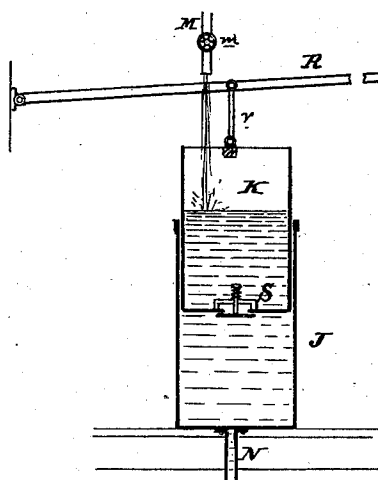


Fig. 2

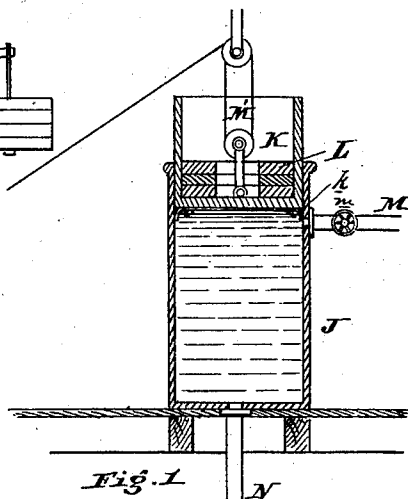
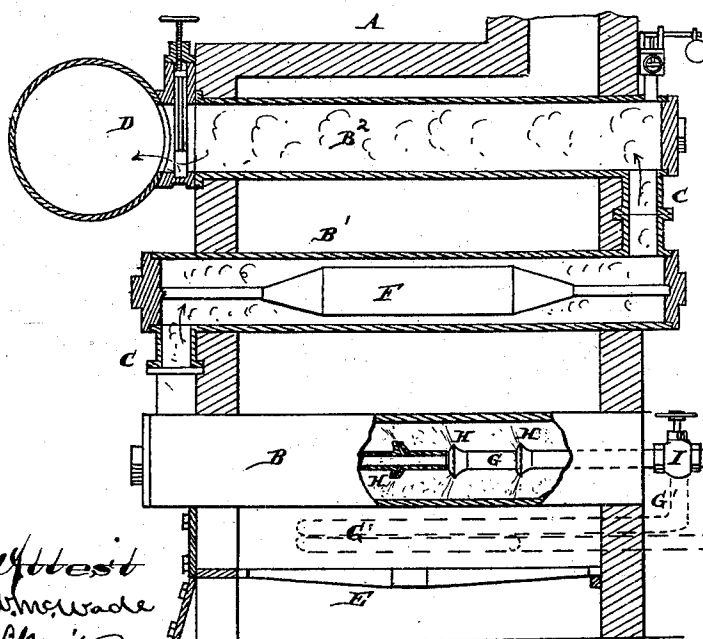


Fig. 1



Attest
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By his atty.

[Signature]

UNITED STATES PATENT OFFICE.

JOSIAH S. DU BOIS, OF CAMDEN, NEW JERSEY.

BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 280,364, dated July 3, 1883.

Application filed September 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH S. DU BOIS, of the city and county of Camden, and State of New Jersey, have invented an Improvement in Boiler-Feeders, of which the following is a specification.

My invention has reference to steam-generators, but more particularly to the apparatus patented to me May 3, 1881, and No. 240,978; and it consists in an improvement thereon in the means of supplying the water to the generator, as will be more fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

The object of this invention is to supply a constant stream of water to the generator under a practically uniform pressure and make the same self-feeding, thereby dispensing with a pump and the mechanism necessary to run it.

In the drawings, Figure 1 is a sectional elevation of my steam-generator with my improved means of supplying the feed-water thereto, and Fig. 2 is a modification of the supply-tank.

A is the brick-work of the generator.

B is the generating-cylinder, B' the superheating and filming cylinder, and B² the superheating-cylinder.

D is the steam-dome or main supply-cylinder.

The cylinders B, B', and B² are connected together and communicate together by pipes C. The filmer B' carries an inner contained closed cylinder, F, with conical or tapering ends, to strain or film the steam which enters the superheater. It is sustained in place by two rods or continuations from its ends, set respectively into the heads of the cylinders, as shown. Any other shape of filmer or strainer may be used, many different forms being shown in my patent referred to.

E is the grate.

G is the feed-pipe, and extends into the cylinder B, and is provided with a series of spraying-nozzles, H, the end of the pipe G being closed. This pipe G is provided with a valve, I, and communicates with the supply-pipe N, which opens into the water-tank J, preferably located at a considerable height. This tank J is supplied with water from the hydrant-main by pipe M, having valve m. If it is placed at a sufficient height, gravity alone is all which is

required to give the desired pressure; but as it is almost impossible to get the desired height in most buildings, I may provide the cylinder J with a weighted piston, K, having a packing, k, and weights L. Any suitable device, M', may be used to raise the piston or plunger. By this means, with a very small or no fall, the pressure may be made to be considerable. In place of the piston just described, that shown in Fig. 2 may be used. In this case the piston or plunger K is provided on the bottom with a valve, S, and is pivoted at the top by rod r to a lever, R, weighted on its end by weights L. The water-supply M discharges directly into the plunger K. As the plunger is descending it becomes full of water, and upon raising it up the water passes into the tank J through the valve S. By this means no time is lost in refilling the tank. By using a lever a greater pressure can be obtained by less weights, the lever acting to force the piston down. The end of the supply-pipe N is extended, as at O, and provided with a discharge-valve, P; and, if desired, the water may be first heated by passing from main N through coil G' in the fire-box before being sprayed in the cylinder B.

This device for feeding water to the generator is particularly adapted to this class of machines, as more particularly set out in the patent to me previously referred to, since it enables an open communication to be kept constantly between the supply-tank and generator, the pressure of the steam counterbalancing the pressure of the water and making the feed-water supply itself automatically. In practice the generator is made with a series of generating-cylinders, B, filming and superheating cylinder B', and superheating-cylinder B², and the filmer may be modified in construction.

In place of weights L, steam or air pressure may be used.

I am aware of the patent to Bixler, No. 32,348, of 1861, and claim nothing therein set forth or claimed.

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

1. In combination with a steam generating or superheating cylinder, an inner contained closed cylinder of smaller diameter, and a wa-

ter or steam supply pipe communicating or opening into the interior of said superheating-cylinder, as shown at B', whereby the fluid introduced into said superheating or generating cylinder can be rapidly heated while in a film or small volume as it passes through, with generating-cylinder B, a water-supply pipe, G, pipe N, tank J, and a weighted piston, substantially as described, to give a practically constant or uniform pressure to said feed-water without the use of a steam-pump, as and for the purpose specified.

2. In a steam-generator, the combination of cylinders B, B', and B'', film-cylinder F, nozzles H, feed-pipe G, valve I, heating-coil G', grate E, water-supply pipe N, tank J, tank-plunger K, with its valve S, water-pipe M, and means to raise or lower said plunger in its tank, substantially as and for the purpose specified.

3. In a steam-generator, the combination of generating-cylinder B with nozzles H, feed-

pipe G, valve I, supply-pipe N, with its extension O, valve P, tank J, hollow plunger K, with its valve S, water-pipe M, lever R, and weights L, substantially as and for the purpose specified.

4. The combination of a steam-generator in which the feed-water is sprayed, with means to spray said water, a feed-pipe, a valve in said feed-pipe, and a stand-pipe through which the feed-water is fed, and means, substantially as described, to increase the pressure of the water in said stand-pipe over the gravity-pressure, whereby the said feed-water is fed to the boiler or generator under a practically constant pressure, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

JOSIAH S. DU BOIS.

Witnesses:

R. M. HUNTER,
ANDREW ZANE, Jr.