(No Model.) 2 Sheets—Sheet 1.

E. DEL VALLE.

BOILER FEEDER.

No. 285,585. Patented Sept. 25, 1883.

Fig. 1.

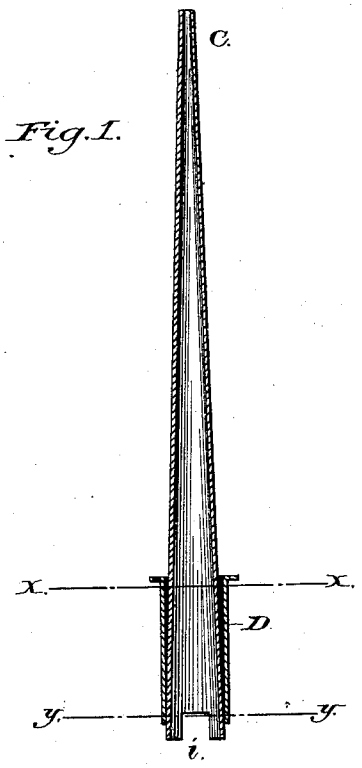


Fig. 2.



Fig. 3.

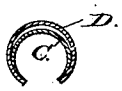
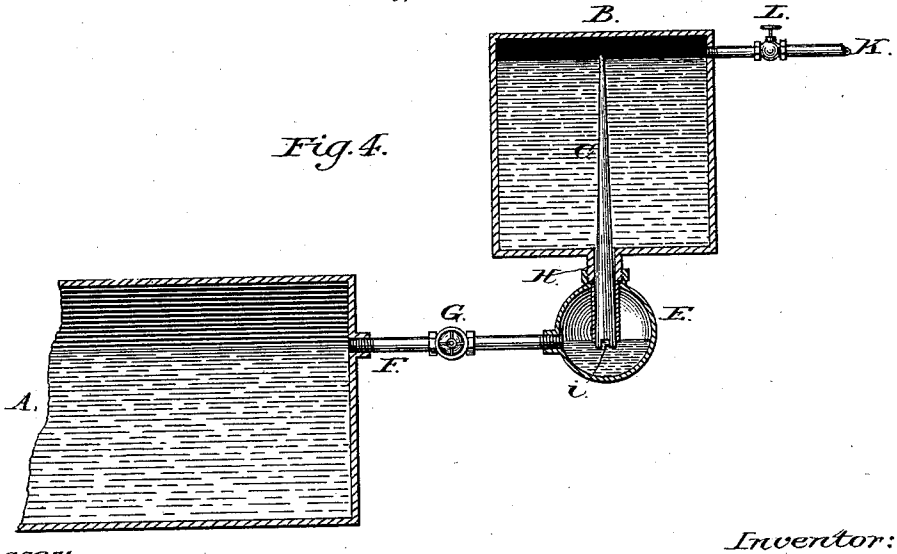


Fig. 4.



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N. PETERS. Photo-Lithographer. Washington, D. C.

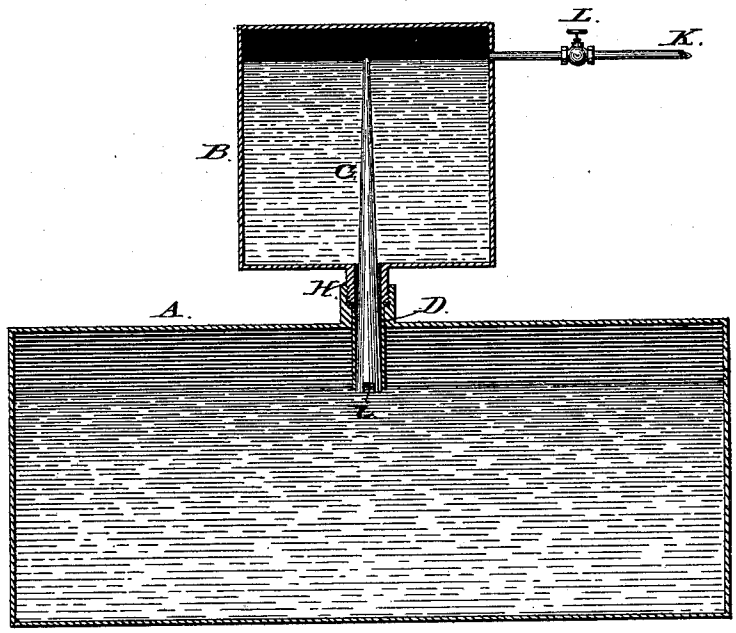
(No Model.) 2 Sheets—Sheet 2.

E. DEL VALLE.

BOILER FEEDER.

No. 285,585. Patented Sept. 25, 1883.

Fig. 5.



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UNITED STATES PATENT OFFICE.

ELISEO DEL VALLE, OF PONCE, PORTO RICO.

BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 285,585, dated September 25, 1883.

Application filed January 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELISEO DEL VALLE, of Ponce, in the Island of Porto Rico, have invented a new and useful Improvement in Boiler-Feeders; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to that class of boiler-feeders in which a flow of water to the boiler is effected from an elevated supply-tank by transmitting the pressure in the boiler to the tank through a connecting steam-pipe which opens automatically when the water in the boiler falls below a given level.

The object of my invention is to provide a compact boiler-feeding device, which, so long as there remains a supply of water in the feed-tank, will operate automatically to maintain the proper water-level in the boiler without the opening and closing of a valve or valves or the intervention or use of a float or other mechanical device.

It consists in the combination, in a single device, of two nearly concentric tubes, of which the inner one shall open into the boiler, or into a chamber connected therewith, at the working water-level, and extend thence to the top of the closed supply-tank, and the outer one, opening at its lower end into the boiler or its connected chamber below its said water-level, shall communicate at its upper end with the bottom of the tank. This device admits of ready attachment to the boiler and tank, and will operate automatically to equalize the pressure in the two and admit of a flow of water from the one to the other whenever the water in the boiler falls below its proper level.

In the accompanying drawings, Figure 1 is a longitudinal section of my improved boiler-feeding device detached. Figs. 2 and 3 are respectively transverse sections in lines *x x* and *y y* of Fig. 1. Fig. 4 is a sectional view, illustrating the application of my device to a boiler and tank by means of an intermediate chamber; and Fig. 5 illustrates its direct application to the boiler without this intermediate chamber.

A represents a steam-boiler; B, a closed steam-tight tank, supported at such an elevation above the boiler as that its contents shall automatically flow by gravity into the boiler when the pressure in the boiler and tank is equalized. The tank B is filled with water, as required, by means of a supply-pipe, K, controlled by a valve, L.

C is a pipe or conduit opening at its upper end into the tank near to the top thereof, and which, extending thence, is carried into the boiler and terminates at the proper water-level therein.

D is a second pipe or conduit connecting the tank with the boiler, and which opens at at its upper end into the bottom of the tank and at its lower end into the boiler on a level below the mouth of the pipe C.

The pipes C and D are combined to form a single device by inserting the lower end of the longer pressure-pipe, C, within the shorter pipe, D, and uniting the two at one side, as shown in Figs. 1 and 2, the pipe D being made so much larger than C as to leave an open channel between them. A notch, *i*, cut out of the lower end of the device at the point where the pipes are joined (see Figs. 1 and 2) furnishes an opening into the lower end of the pipe C, at a point above the lower end of the outer pipe, D. The upper end of the outer pipe is flanged or threaded to admit of being readily fitted to the boiler, so as to project therein, and for connection, also, either directly or by means of an interposed nipple or joint-tube, H, Fig. 1, with the tank B.

Instead of opening directly into the boiler A, the feed-pipes C D are preferably connected with a small closed vessel, E, interposed between the boiler and tank, and so connected with the boiler by a pipe, F, as that the water shall remain at the same level in the one as in the other. A valve, G, is provided in said pipe to close the communication between the boiler A and the supply-tank B when the latter is to be refilled.

In the operation of my improved boiler-feeder the boiler and tank are filled with water to expel the air therefrom, and the water in the boiler is drawn off to its proper level, leaving a suitable steam-space above it. The communication between the boiler and tank through the pipes C and D is now left entirely open, the supply-pipe K to the tank being closed. With the lower end of the pipes cov-

ered by the water in the boiler a flow of water from the tank through the pipe D is prevented by atmospheric pressure until a steam-pressure is generated. So soon, however, as the end of the pipe C is uncovered sufficiently to admit of an escape of steam through said pipe, the equilibrium of pressure is so far disturbed in the tank B as to permit a descent of water therefrom into the boiler until the mouth of the tube C is again covered and closed and the balance of pressure restored. By this means a constant feed of water to the boiler is maintained, supplying continuously the waste by evaporation until the tank B is exhausted and filled with steam. When this occurs, the communication with the boiler may be cut off by the valve G, provided for the purpose, and the supply-pipe K opened, whereupon the condensation of the steam in the tank will create a vacuum therein, which will operate to draw in a fresh supply of water from the reservoir connected with said pipe K.

I am aware it is not new to supply water to a boiler from an elevated tank by means of an admission of steam-pressure from the boiler to said tank through communicating pipes.

I claim as my invention and desire to secure by Letters Patent—

A boiler-feeding device constructed of a tube, D, adapted to connect the bottom of an elevated tank with the top of the boiler, or of a chamber connected therewith, and to project into the same below its water-level, and a smaller tube, C, fitted within and joined to the tube D to extend from the lower end thereof upward into the elevated tank, and having independent communication with the boiler at its water-level, substantially in the manner and for the purpose herein set forth.

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

ELISEO DEL VALLE.

Witnesses:

CALEB BESOSA,

ADOLFO E. BESOSA.