

(No Model.)

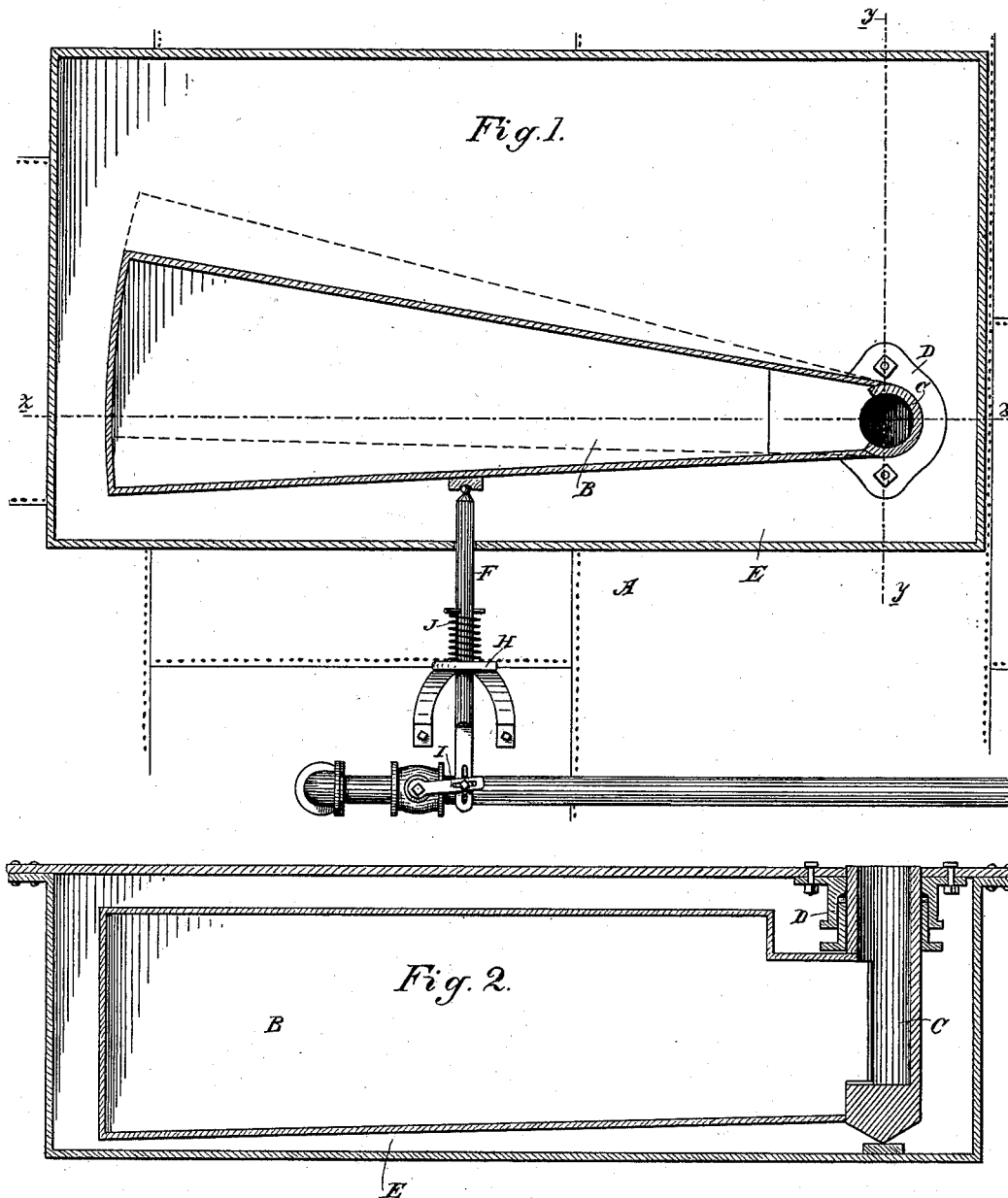
2 Sheets—Sheet 1.

A. BLATCHLEY.

BOILER FEEDER.

No. 384,119.

Patented June 5, 1888.



Witnesses,  
J. H. House.  
H. C. Lee.

Inventor,  
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By Devereux  
attor

(No Model.)

2 Sheets—Sheet 2.

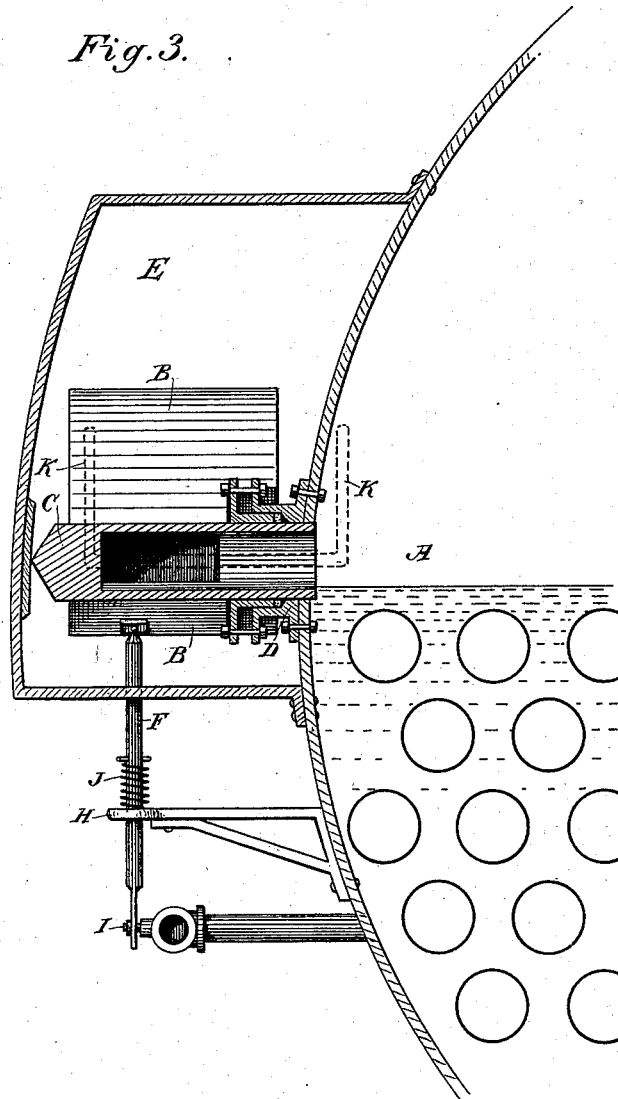
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*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

AMBROSE BLATCHLEY, OF SAN FRANCISCO, CALIFORNIA.

## BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 384,119, dated June 5, 1888.

Application filed September 6, 1887. Serial No. 248,974. (No model.)

*To all whom it may concern:*

Be it known that I, AMBROSE BLATCHLEY, of the city and county of San Francisco, State of California, have invented an Improvement in Automatic Boiler-Feeders; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device for supplying steam-boilers with water, and keeping up the supply by aid of an automatic mechanism, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section taken through the casing within which the automatic operating device is contained, showing also its connection with the boiler and the device by which the inlet-valve is opened and closed. Fig. 2 is a horizontal section taken through Z Z, Fig. 1. Fig. 3 is a transverse section taken through Y Y of Fig. 1.

A is a steam-boiler, of any suitable or ordinary construction, having an opening in one side at about the ordinary water-line.

B is an elongated wedge-shaped tank or reservoir, made water and steam tight and of sufficient strength to resist any pressure which may be brought upon it equal to that within the boiler. From the narrowest end of this tank and at right angles with it extends a tubular pipe, C, which passes through a stuffing-box or gland, D, and enters the opening in the side of the boiler, the exterior of this pipe fitting so as to turn within the gland and allow the outer and wider end of the tank B to rise and fall as required by the water-supply. This tank B is, for convenience, inclosed in an outer casing, E, which is secured to the side of the boiler, and is covered with packing to prevent loss of heat by radiation. In the bottom of this casing a hole is made, through which a vertical stem, F, passes, and its upper end connects with the lower part of the tank B. The lower end of this stem passes through a suitable guide or bracket, H, bolted to the side of the boiler, and is connected with a lever, I, which controls the valve by which water is admitted to the boiler either from an injector-pump or other well-known device, which it is not necessary to show in this case.

The stem F is slotted, and the pin from the

lever I enters this slot, so that there is considerable lost motion, and the reservoir will have started with considerable force in either direction before the lever and valve are affected, thus securing a perfect opening and closing of the valve.

The operation of the apparatus will then be as follows: When the water within the boiler stands at a certain height, it will flow through the pipe or passage C and into the wedge-shaped receptacle or tank B, and as it rises the weight in the outer or free end of the tank is sufficient to force the rod F down, to operate, through the lever I, to close the valve through which water is admitted to the boiler.

J is a spring surrounding the stem F, and acting to raise it up when the pressure is sufficiently relieved by the water flowing into the boiler. The tension of this spring is such that the weight of the water within the tank B compresses it, as shown in Fig. 1, and it remains in this position until by the process of evaporation the water is reduced so that but a small quantity remains in the tank B. The tension of the spring J then becomes sufficient to raise the tank until the bottom (which has hitherto been inclined so that the outer end is lower than the passage C, through which water is admitted) has been raised to a level with that passage, when the water will flow out rapidly from the tank B into the boiler, and the tank, being so much lightened, will be moved up rapidly by the action of the spring J, and the valve controlled by the lever will be opened suddenly, when the end of the slot in the stem F strikes the pin in the lever I, so as to again admit water to the boiler. As the boiler is gradually filled, the water will again flow in through the passage C into the receptacle or tank B until there is sufficient weight within it to again depress the rod F and compress the spring J, thus closing the valve suddenly again and shutting off the supply to the boiler. By reason of the wedge shape of the reservoir, it will (as soon as the outer end is depressed below the inlet) fill rapidly, so that the increase of weight will be sudden, and the action upon the supply-valve will also take place quickly. This peculiar shape of the reservoir thus causes it to empty or fill rapidly whenever the bottom assumes an angle either

below or above the horizontal plane. It will be manifest that this reservoir can be made conical, or of other similar or convenient shape, to promote a rapid filling or emptying whenever it assumes an angle below or above a horizontal plane.

In some cases it may be found necessary to introduce a small pipe, K, which passes through the pipe C, and has one end turned up to a point above the water-level within the boiler and the other end turned up to a similar point within the chamber B. This serves to allow any steam which may accumulate within the reservoir when the water in the boiler is above the level of the connecting passage to escape and thus relieve the chamber of undue pressure, and allows the water to occupy its place in the reservoir.

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

1. A boiler-feeder consisting of a rising and falling tank or reservoir, having a single passage by which it is connected with the boiler, so that water from the boiler may flow out of or into said reservoir and cause it to rise or fall, in combination with a stem or rod connected with the reservoir and with a lever by which the inlet supply valve for the boiler is actuated, substantially as herein described.

2. A boiler-feeder consisting of a tank or reservoir having one end connected by a rotary joint with the boiler, so that the opposite end may rise and fall about said joint as the water within the reservoir is decreased or increased, and a vertical spring-actuated stem, the upper end of which is connected with the ris-

ing and falling end of the reservoir and the lower end with a lever by which the boiler-supply valve is opened or closed, substantially as herein described.

3. A boiler-feeder consisting of a reservoir made wedge-shaped, conical, or enlarged at one end, and having the opposite smaller end connected by a rotary joint with the boiler, so that water will flow to or from the reservoir whenever its bottom line falls below or rises above a horizontal plane, in combination with a supply-valve and an intermediate connection between it and the movable reservoir, substantially as herein described.

4. The reservoir connected at one end with the boiler by a rotary joint and having the other end movable vertically, so that the bottom will rise above or fall below a horizontal plane, in combination with a valve controlling the boiler-feed, a lever, and connecting-rod between the valve and the reservoir, having a lost motion, so that the valve will be opened or closed suddenly by the accelerated motion of the reservoir, substantially as herein described.

5. In combination with a steam-boiler, the rising and falling reservoir connected at one end with said boiler by a rotary joint, the water-supply valve and intermediate connecting mechanism, and the exterior casing, E, inclosing said reservoir, substantially as described.

In witness whereof I have hereunto set my hand.

AMBROSE BLATCHLEY.

Witnesses:

S. H. NOURSE,  
H. C. LEE.