

S. J. Parker,

Steam Boiler Feeder,

No 101,762.

Patented Apr. 12, 1870.

Fig. 1.

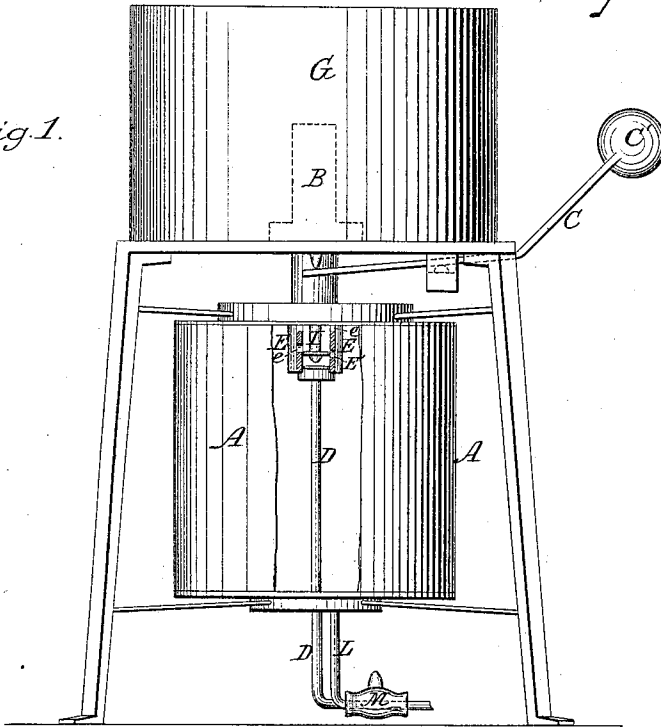
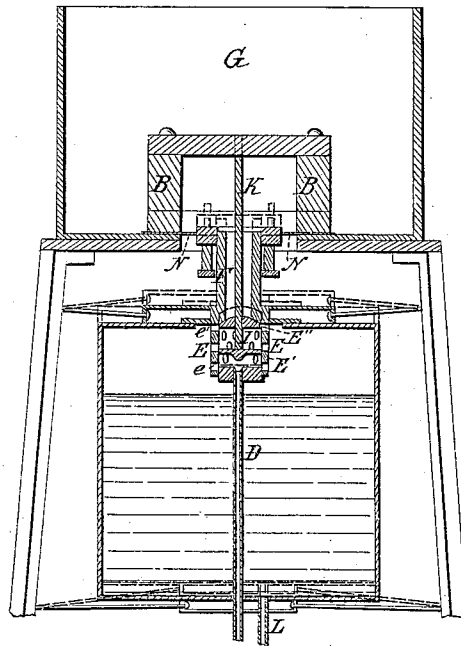


Fig. 2.



Witnesses.

A. Ruppert
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1870
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United States Patent Office.

SAMUEL J. PARKER, OF WILLIAMSPORT, PENNSYLVANIA.

Letters Patent No. 101,762, dated April 12, 1870.

IMPROVED BOILER-FEEDER.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, SAMUEL J. PARKER, of the city of Williamsport, in the county of Lycoming and the State of Pennsylvania, have invented certain new and useful Improvements in Boiler-Feeders; and I do hereby declare that the following is a full and exact description thereof.

The object of my invention is to maintain at all times the proper amount of water in a steam-boiler, and supply it from an elevated reservoir or through a pipe otherwise supplied, under slight pressure, and which is transmitted to the boiler at intervals through an intermediate vessel, which is alternately filled with water and steam, as hereinafter will be more perfectly described.

The accompanying drawing forms a part of this specification, and like letters denote like parts.

Figure 1 is an elevation of my improved apparatus; and

Figure 2 is a vertical section, with the chamber in its lowest position, so that it receives steam from the boiler in its upper portion, and discharges water into the boiler from its lower part.

The red dotted lines show the chamber in its most elevated position.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is a strong drum or movable vessel hung under the frame B, and sustained by a counter-balance lever, C.

D is a small pipe from the water line of a steam-boiler, terminating in the drum at the valve-seat E, which must not be over one-fourth the area of the valve-seat E, or the said drum would come to a balance.

The flanges E' E" on the valve are necessary, not only to catch the current of steam, to react the drum and close the valve, but they make a larger chamber, to allow the steam or water, as the case may be, to circulate through the holes e.

The pin K is stationary with the frame B.

The drum A must be of sufficient capacity to hold more than enough water to balance the weight C, and so as that when it descends it will pull the valve I open, according to the amount of pressure required on the boiler.

The two pipes leading to the boiler are of a length to allow the drum to rise and fall by their springing.

The drum, as shown in the drawing, is nearly filled with water, and is, in consequence, heavier than the weight C.

The steam passing through pipe D and valve I heats the water, and fills the drum equal to the pressure in the boiler, and the feeder standing higher than the boiler, the water, from its gravity, descends through the pipe L and check-valve M into the boiler.

Should the water in the boiler rise above the end of the pipe, the surplus would be forced back into

the drum, where it would remain until the water in the boiler shall have fallen below the mouth of the pipe D, when steam will again flow into the vessel, and the water will pass into the boiler.

When the device is operating regularly to feed the boiler, and a sufficient quantity of water has passed out of the drum A, to enable the weight C' to raise it, the lower valve-seat is brought in contact with the lower valve, and the communication between the boiler and the vessel A is cut off. At the same time the upper valve is carried away from its seat, thus permitting water to flow into this vessel through the apertures e', and refill the same, when it will be again carried down, and the communication with the boiler established, and thus the operation will be repeated so long as is desired.

The diaphragm N is to prevent leak and friction, which are two very important items in automatic feeders, for the following reasons, viz: Suppose the height of the feeder gives a gravity of five pounds to the square inch on the boiler, and the running pressure of the boiler is fifty pounds to the square inch, or ten pounds out to one pound in, the smallest leak will make a greater current out than into the boiler, and empty rather than feed it.

A small amount of friction, when soft water is used, is not very disadvantageous, but when hard water is used, considerable caution and watching is wanted to keep the feeder in operation.

In my feeder it will be seen that no friction or packing is used, and that no leak can occur in a perfect apparatus.

Having fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the vessels A G and the movable valve-seats E, substantially as shown and described.

2. The combination of the stationary valve I and movable valve-seats, the connecting-pipe, with the diaphragm N upon its upper end, and the weighted lever C, substantially as described.

3. The arrangement of the pin K for holding the valves in position, it being such that the upper one is opened by the upward movement of the vessel, and closed by its downward movement, while the lower one is closed by its upward and opened by its downward movement.

4. The arrangement of the pipes D and L for conducting the steam from the generator to the upper portion of the vessel A, and for conducting the water from the lower portion of such vessel to the generator.

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

Witnesses:

WM. C. DOANE,
W. C. DAVIS.

SAMUEL J. PARKER.