

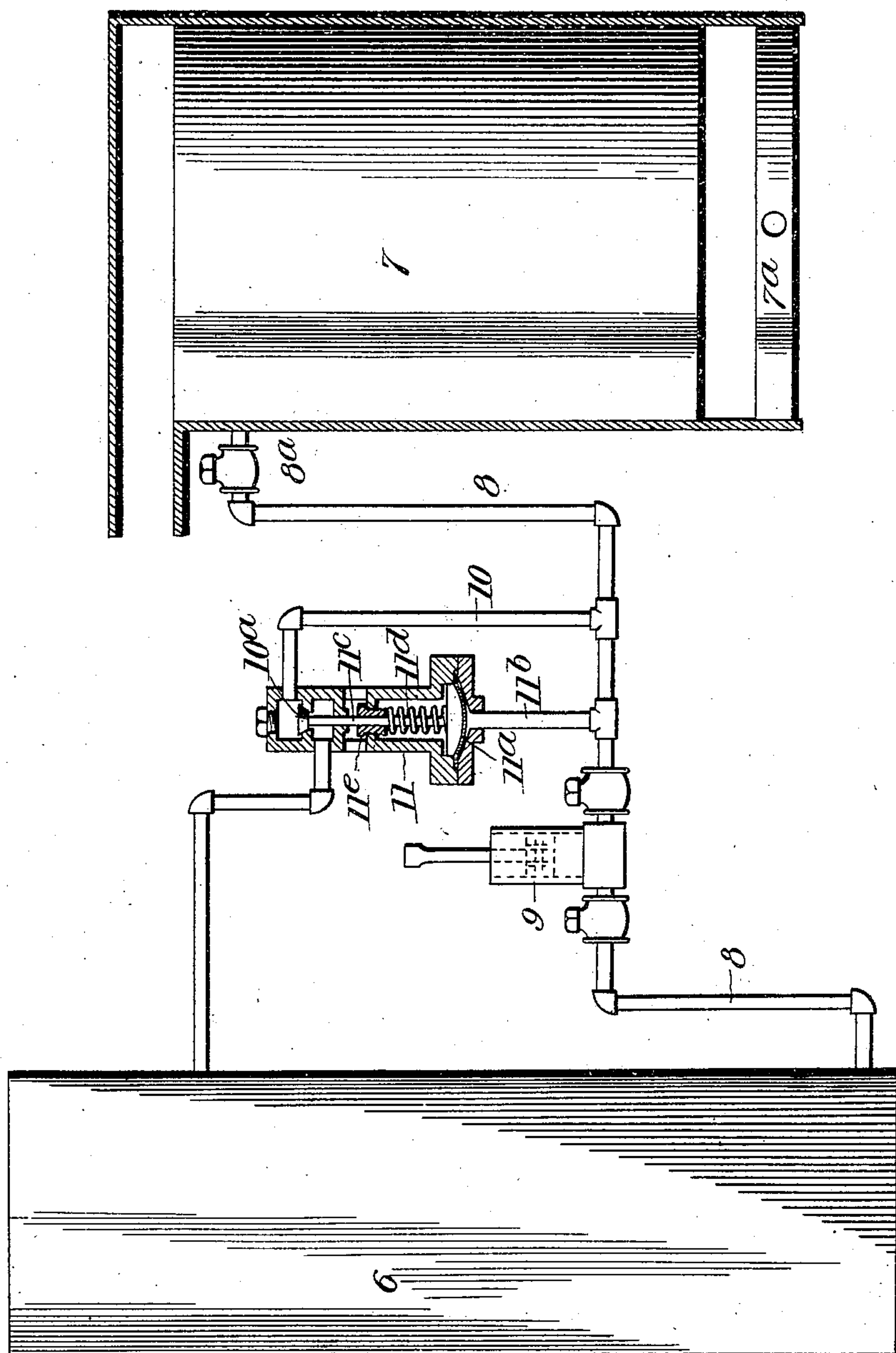
No. 725,707.

PATENTED APR. 21, 1903.

L. E. HOFFMAN.  
BOILER FEEDER.

APPLICATION FILED NOV. 15, 1902.

NO MODEL.



Inventor

Witnesses

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# UNITED STATES PATENT OFFICE.

LOUIS E. HOFFMAN, OF CLEVELAND, OHIO.

## BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 725,707, dated April 21, 1903.

Application filed November 15, 1902. Serial No. 131,553. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS E. HOFFMAN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Boiler-Feeders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the figures of reference marked thereon, which forms a part of this specification.

This invention relates to boiler-feeders, and is particularly designed for use in connection with flasher-boilers used on motor-vehicles.

The object of the invention is to produce an automatic feeder having advantages of simplicity and safety regulated by a pressure-governor controlling the delivery of water from the source of water-supply to the boiler.

Speaking generally, the invention comprises a tank and a boiler and a feed-water pipe connecting the same, said pipe having a pump, a by-pass around the pump and back to the tank, and a regulator actuated by the pressure to control the passage of water in the by-pass, and consequently into the boiler.

The accompanying drawing is a side elevation, partly in section, the parts being represented in the same plane for the sake of clearness.

Referring specifically to the drawing, 6 indicates a water-tank; 7, the boiler with the burner 7<sup>a</sup> thereunder; 8, the supply-pipe from the tank to the boiler, having a check-valve 8<sup>a</sup>.

9 is the pump, actuated by attachment to any moving part of the machine.

10 is the by-pass and 11 is the regulator controlling the same.

The regulator-casing contains a diaphragm 11<sup>a</sup>, receiving the pressure of the pump through a pipe 11<sup>b</sup>, which joins the feed-pipe 8 between the pump and the boiler check-valve 8<sup>a</sup>. The diaphragm actuates the valve 10<sup>a</sup> in the by-pass through a rod 11<sup>c</sup>, and the pump-pressure is opposed by a spring 11<sup>d</sup>, the pressure of which is adjustable by the screw-plug 11<sup>e</sup> in the head of the regulator-casing.

The by-pass 10 joins the main pipe 8 between the pipe 11<sup>b</sup> and the check-valve 8<sup>a</sup>. Consequently the by-pass connection and the regulator connection are outside the check-valve. This is important for the following reason: the diaphragm of the regulator does not receive the pressure in the boiler. This pressure varies constantly and sometimes reaches a high point, which, were it not for the check-valve, would strain the regulator and, perhaps, wreck the same. By the arrangement shown the check-valve remains closed until the steam-pressure in the boiler falls below that of the spring, when the valve opens and the water is fed into the boiler. When the steam-pressure is higher than that of the spring, the pressure in the feed-pipe created by the pump will at a predetermined point overcome the spring and lift the valve 10<sup>a</sup>, permitting the water to escape through the by-pass until the equilibrium is restored. It is unnecessary to stop the pump, and it will be seen that the diaphragm of the regulator never receives pressure more than slightly in excess of the spring-pressure. Stated in another way, the pressure is equal on the check-valve and the diaphragm, and when this pump-pressure reaches a predetermined amount equal to the pressure of the spring the diaphragm rises and lifts the valve 10<sup>a</sup> from its seat, thus relieving the pressure on the diaphragm by release of the water through the by-pass. A very even flow of water is effected, because the check-valve will not open until the steam-pressure falls below the pressure maintained in the feed-pipe. When it does so fall, the check-valve opens, and the water being flashed into steam the check-valve closes instantly, relieving the regulator and the feed-pipe of the boiler-pressure, which is often intense.

The invention produces an automatic feeder of great simplicity, the parts of which are maintained in substantial equilibrium and subjected to no great strain or sudden change of pressure.

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

1. The combination with a water-tank, boiler, and feed-pipe connecting the same, the pipe having a check-valve opening to the boiler, of a pump forcing water against the check-valve, a valved by-pass joining the



pipe between the pump and the check-valve and leading back to the tank, and a regulator actuated by the pump-pressure and governed by the boiler-pressure to open the valve of  
5 the by-pass when said pressure exceeds a predetermined point.

2. The combination with a water-tank, boiler, and feed-pipe connecting the same, the pipe having a check-valve opening to the  
10 boiler, of a pump in the pipe between the tank and check-valve, forcing water against

the latter, and a relief-valve between the pump and the check-valve, opening under the pump-pressure when the boiler-pressure exceeds a predetermined point.

In testimony whereof I affix my signature  
in presence of two witnesses.

LOUIS E. HOFFMAN.

Witnesses:

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