

No. 700,449.

Patented May 20, 1902.

C. M. SPENCER.  
FEED WATER REGULATOR.

(Application filed July 1, 1901.)

(No Model.)

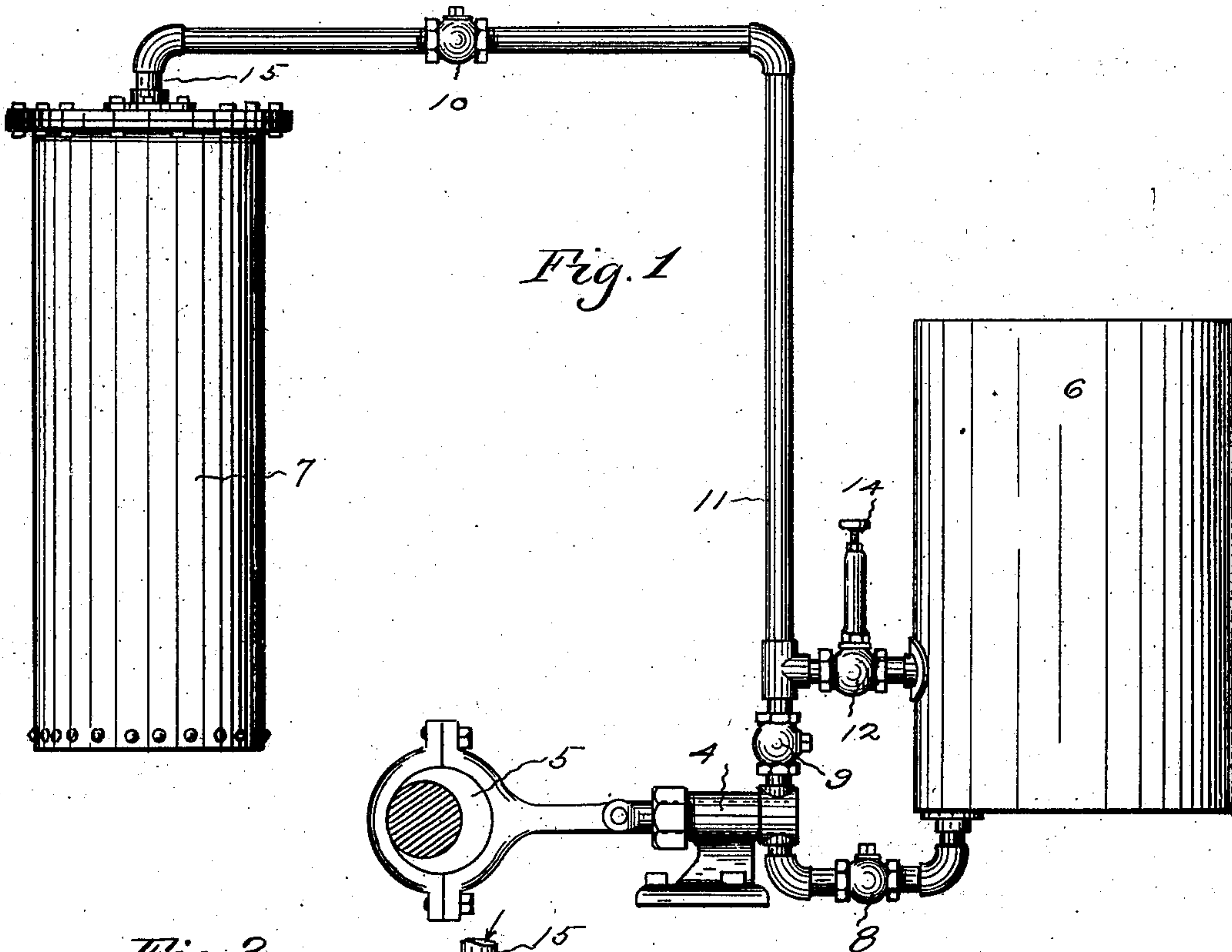


Fig. 2

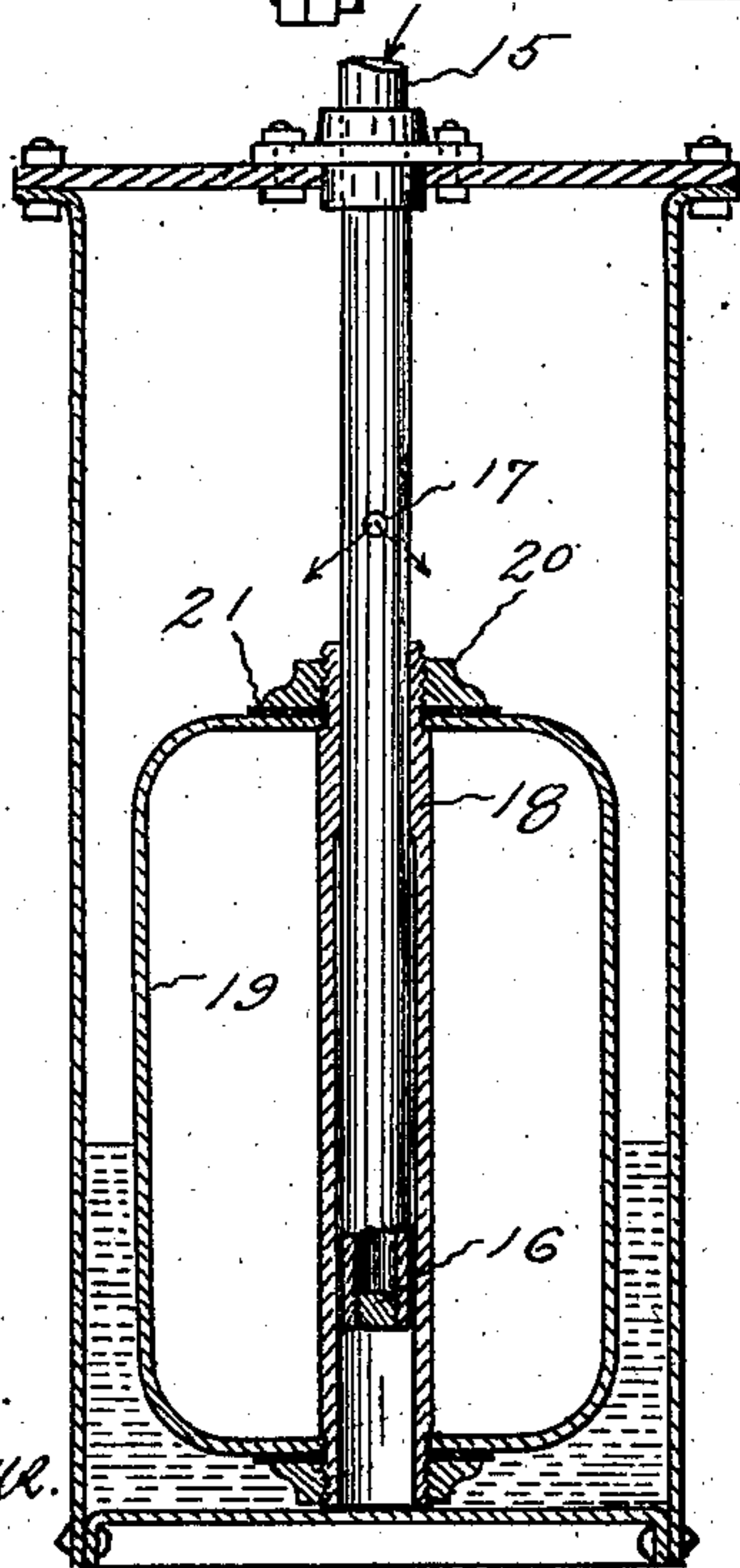
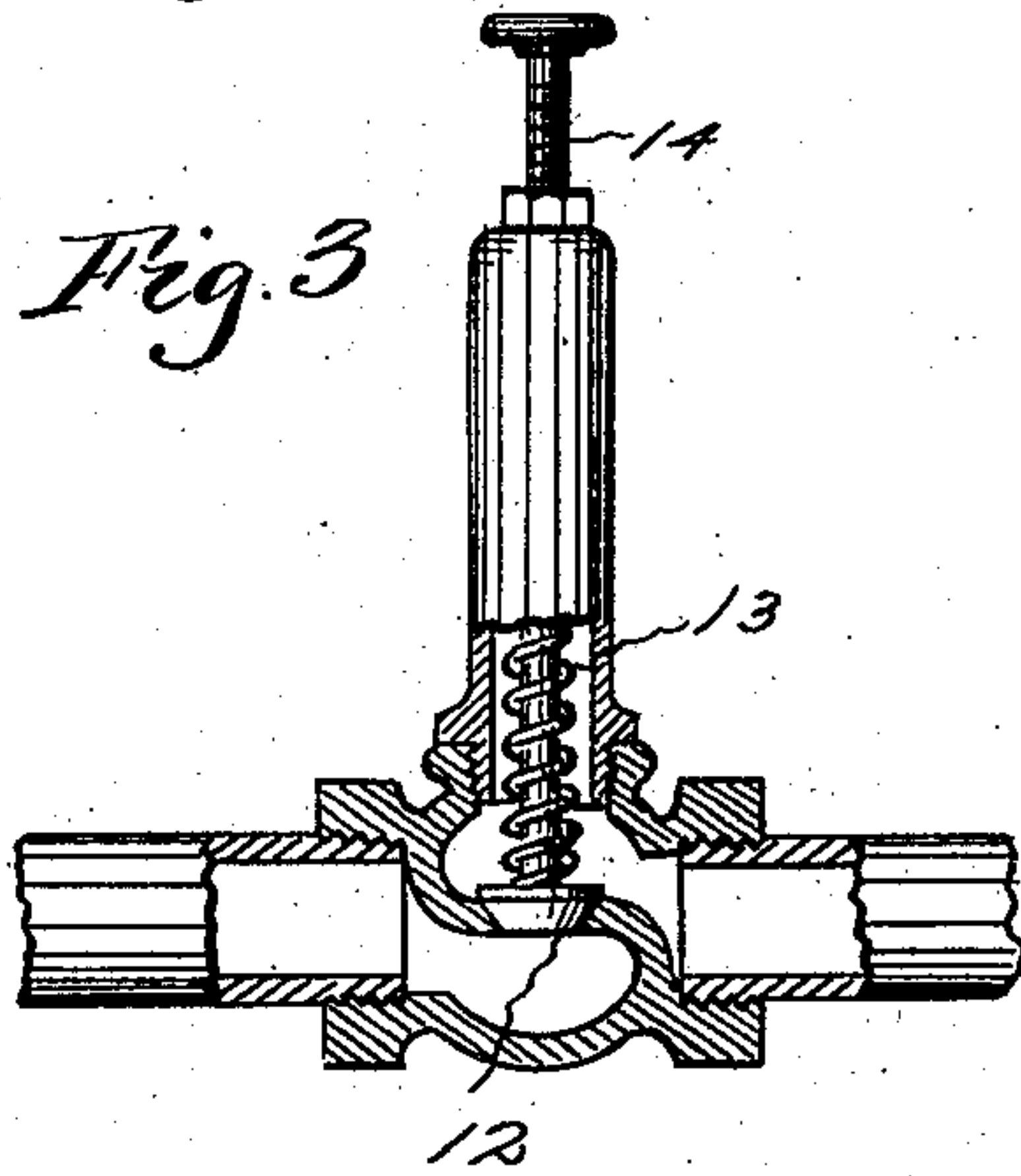


Fig. 3



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHRISTOPHER M. SPENCER, OF WINDSOR, CONNECTICUT.

## FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 700,449, dated May 20, 1902.

Application filed July 1, 1901. Serial No. 66,625. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTOPHER M. SPENCER, a citizen of the United States, residing at Windsor, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Feed-Water Regulators, of which the following is a specification.

This invention relates to those devices which are provided for automatically controlling the feed of water to a boiler.

The object of this invention is the production of a simple, cheap, and sure apparatus which is particularly applicable for regulating the feed of water to the boiler of an automobile.

The embodiment of the invention that is illustrated by the accompanying drawings has a pump for forcing water from the supply-tank to the boiler, with the necessary check and relief valves to control the flow and prevent undue pressure, and a float-valve arranged to admit water when the supply in the boiler becomes reduced and to stop the feed after a sufficient quantity has been supplied.

Figure 1 of the views shows a side elevation of the regulator. Fig. 2 shows on larger scale a section of a boiler-tube containing the float-valve, and Fig. 3 shows a sectional view of the relief-valve.

The pump 4, which is driven by the eccentric 5, is connected with the supply-tank 6 and the boiler-tube 7. In the connection between the pump and the supply-tank is a clapper check-valve 8, and in the connection between the pump and the boiler-tube are the clapper check-valves 9 and 10. The pipe 11 beyond the check-valve 9 is connected with the supply-tank, and in this connection is a relief-valve 12. This relief-valve is provided with a spring 13, the tension of which is adjusted by the screw-spindle 14, so that when the pressure in the pipe 11 becomes greater than desired this valve will be forced open and allow the water being pumped to return to the supply-tank. The inlet-pipe 15 extends from the top nearly to the bottom of the boiler-tube 7. The lower end of this pipe is closed by a cap 16 in any suitable manner, and through the side of the pipe is an opening 17. Movable up and down on the pipe 15, so as to cover and uncover the opening, is a tube 18, that extends through the shell 19. Each end of the tube 18 is threaded and provided with a nut 20 and packing 21 for keep-

ing water out of the float-valve, which is formed by the tube and shell. As the water is used for generating steam and the level in the tube becomes lower the float drops until the opening 17 is uncovered. Then water will be pumped in until the float rises enough to close the opening and cut off the feed. When the opening is closed and the pump is in operation, the water returns through the relief-valve to the supply-tank.

The apparatus is very simple in construction, and it is effective in operation. The float moves easily down and up the boiler-tube upon the inlet-pipe as the level of the water varies and opens and closes the inlet-opening, as necessary to keep the level of the water constant. The float-tube fits loosely upon the inlet-pipe, so that it moves freely, and a small quantity of water will leak from the inlet-opening when it is closed by the upper end of the float-tube; but not enough will enter to flood the boiler. The float is guided in its movement by the inlet-tube, and any jarring of the vehicle upon which the apparatus is mounted does not affect the operation of the feed.

Any kind of a pump having suitable capacity may be used with this regulator, which is adapted for supplying water to the ordinary types of boiler.

I claim as my invention—

A feed-water system consisting of a vertically-arranged tubular shell, a feed-water pipe with one end closed and an opening through its side, extending vertically into the shell, a float with a central opening, the walls of which opening fit the exterior of the feed-water pipe, that is adapted to move up and down the feed-water pipe so that the walls of its central opening will close and open the opening through the side of the feed-water pipe, a pump connected with the feed-water pipe, a connection from the feed-water pipe to a supply-tank each side of the pump, a check-valve in the feed-water pipe each side of the pump, and an adjustable relief-valve located in the connection from the feed-water pipe to the supply-tank that is between the pump and the float-valve shell, substantially as specified.

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Witnesses:

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