



# UNITED STATES PATENT OFFICE.

GEORGE FLEMING, OF CHICAGO, ILLINOIS.

FEED-WATER CONTROLLER.

983,356.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, GEORGE FLEMING, a citizen of the United States, residing in the city of Chicago, county of Cook, and State of Illinois, have invented a certain new and useful Improvement in Feed-Water Controllers, of which the following is a specification.

This invention relates to feed water controllers. Its principal objects are to provide simple and inexpensive apparatus for automatic control of the feed water supply to boilers where a water supply under pressure is available.

The drawing represents a diagrammatical outline, in elevation, partly sectional, of my invention as applied to an ordinary steam boiler.

Referring to the drawing, boiler 9 is provided with safety valve 10, pressure gage 11, and water-gage 12.

Water is admitted to boiler 9, and other parts of my apparatus, from water main 13 by riser 14, terminating in T fixture 15, from which pipe 16 leads into boiler 9, while the opposite opening connects, by means of pipe 17, elbow 18, and pipe 19, with piston pump 20. A short distance below fixture 15, riser 14 is provided with checkvalve 21, arranged to permit free passage of water upward, but to prevent passage of water in the opposite direction. Below checkvalve 21 pipe 22 branches off from riser 14, and connects with pump 20. From the top of boiler 9 steampipe 23, controlled by valve 42, leads to radiators, engines etc. (not shown in drawing), with branch 38, controlled by valve 40, leading to pump 20. From gas main 25 riser 26, provided with shut-off valve 27, leads to burner 28, located close to the bottom of boiler 9. By means of pipe 29, the exhaust steam from pump 20 is led to pipe 31 which surrounds riser 14, thence finding vent through pipes 32 and 33 to sewer 34 and the open air. Riser 14, below pipe 22, is provided with shut-off valve 35, and the boiler end of pipe 16 is inside of boiler 9, provided with automatic shut-off valve 36, controlled by float 37 which is designed to close valve 36 whenever the water in boiler 9 rises to a certain level,

and to open valve 36 whenever said water falls below said level. Pump 20 is so arranged that the piston on which the steam from boiler 9 operates, is enough larger than the piston of the pump, to enable the pump to readily inject water into boiler 9 against the pressure of the steam therein.

The operation of my apparatus is as follows:—Valve 35 is opened, admitting water to boiler 9, until valve 36 is closed by the rise of float 37; incidentally riser 14, pipe 22, pipe 16, T 15, pipes 17 and 19, and elbow 18 are filled with water. Valve 27 is then opened, and burner 28 lighted. As soon as by the generation of steam the water level in boiler 9 is lowered, more water will be automatically admitted by the opening of valve 36 though the mere fall of float 37, as long as the pressure in main 13 is greater than that of the steam in boiler 9. As soon as the pressure in boiler 9 exceeds the pressure in main 13, checkvalve 21 will not open, when valve 36 is opened, but the steam pressure on the steam piston of pump 20 will be so great as to automatically start pump 20, and thereby pump water into boiler 9 until valve 36 again is closed and thereby further accession of water shut off, incidentally stopping pump 20 because there is no outlet for the water pumped, when valve 36 is closed.

What I claim, and intend to protect by Letters Patent, is:—

In steam generating apparatus the combination of a boiler; a waterfeed pipe entering said boiler; an automatic float-regulated valve, inside of said boiler, on said waterfeed pipe; a pipe connecting said waterfeed pipe with a watermain; a checkvalve on said connecting pipe; and a pump having steam connection with the boiler, and arranged and connected so as to discharge water into said waterfeed pipe whenever said float-regulated valve is open, and the pressure in the boiler is higher than the pressure in the watermain; substantially as and for the purpose set forth.

GEORGE FLEMING.

Witnesses:

EDWARD I. BUCKLIN,  
CARL STROVER.