

Feb. 17, 1931.

L. E. PETERS

1,792,509

CHECK VALVE FOR HEATING APPARATUS

Filed July 27, 1929

Fig. 1.

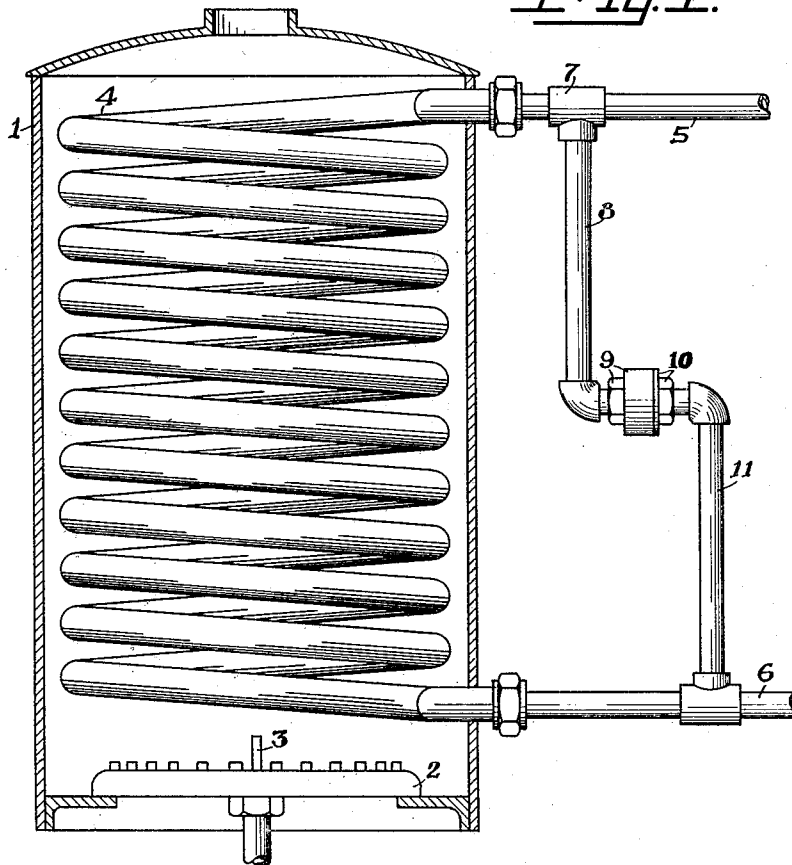


Fig. 2.

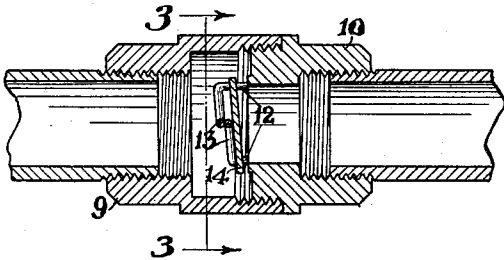
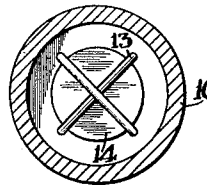


Fig. 3.



INVENTOR.
Leslie E. Peters

BY

J. E. Tralucco
ATTORNEY.

UNITED STATES PATENT OFFICE

LESLIE E. PETERS, OF SAN FRANCISCO, CALIFORNIA

CHECK VALVE FOR HEATING APPARATUS

Application filed July 27, 1929. Serial No. 381,545.

This invention relates to improvements in check valves of the kind adapted for use in controlling the movement of fluids through apparatus such as water heaters.

An object of my invention is to provide a check valve wherein is embodied means for automatically controlling the circulation of fluids through water heaters or other apparatus.

Another object of my invention is to provide a check valve having automatically controlled means embodied therein for regulating the direction of flow of fluids through apparatus such as water heaters.

A further object of my invention is to provide a check valve embodying automatically controlled means for allowing fluids to circulate through apparatus such as water heaters after the pressure on the said means has been removed.

Other objects more or less apparent will present themselves or will be specifically pointed out in the description to follow.

In the accompanying drawings:

Fig. 1 illustrates a water heater having a check valve embodying my invention suitably connected thereto;

Fig. 2 is a vertical longitudinal sectional view of my improved check valve; and

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

Referring to the drawings the numeral 1 represents a water heater casing having a burner 2 positioned at its lower end which is adapted to burn oil, gas or other suitable fuel. The burner is provided with a pilot light 3 which serves to ignite the fuel reaching the burner 2 and at the same time assist in keeping the water in the coiled pipe 4 in a heated state.

The water supplied to the heater enters the top end of the coil 4 through an inlet pipe 5, while an outlet pipe 6 connected to the lower end of the coil serves as a means for withdrawing the water after it has been heated by the burner 2.

Connected to the inlet pipe 5 as by a T 7 and extending downwardly in a vertical direction, is a pipe 8 which is connected to a female part 9 of my improved check valve.

The male part 10 of the check valve is connected to a vertically disposed pipe 11 which in turn is connected to the outlet pipe 6. Although the same is not shown, the pipe 6 is provided in the usual manner at its end with a faucet or other suitable means for shutting off the heated water passing through the said pipe.

The inwardly disposed end of the male part 10 is provided with suitable threads which permit its being screwed into the inwardly disposed end of the female part 9.

With their inwardly bent legs 12 secured within suitable holes provided in the end of the male part 10 for that purpose, are two cross members 13 which cross each other at right angles and at a point approximately in the center of the large opening through the valve.

The upper two legs 12 of the cross members 13 are longer in length than the two lower legs, thereby causing the said cross members to assume an inclined position.

Located between the cross members 13 and the end of the male part 10 with its lower edges resting on the two lower legs 12, is a circular disc 14 which is of such size as to completely cover the large opening at the end of the male part 10. The two lower legs 12 are bent slightly in an upward direction so as to cause the disc 14 to fall back against the cross members 13 into its normal position when no pressure is being exerted against its outside surface.

When the burner 2 is in operation and heated water is being withdrawn from the outlet pipe 6, a quantity of cold water passes into the coil 4 through the inlet pipe 5. At the same time, some of the water passing through the inlet pipe 5 proceeds downwardly through pipe 8 and exerts a pressure on the outside surface of the disc 14, thereby throwing it against the end of the male part 10 and closing the opening therethrough. This prevents any water from passing downwardly into the pipe 11, and the only water withdrawn through the outlet pipe 6 must first pass through the coil 4 and become heated. Upon the shutting off of the water passing through outlet pipe 6, the pressure

is taken away from the outside surface of the disc 14 and the same drops backwardly against cross members 13, thereby allowing water to proceed through the end of the male part 10.

Owing to the fact that the heated water at the lower end of the coil 4 tends to rise, the same is permitted to circulate upwardly through the said coil, the pipe 8, the check valve, the pipe 11 and back into the coil through the outlet pipe 6.

The circulation of the water through the coil when no water is being withdrawn from the heater is very desirable, for not only is the temperature in the coil reduced below the point of precipitation but the accumulation of lime or other harmful substances within the coil is greatly decreased.

My improved check valve is particularly adapted for use with many devices other than water heaters, and although I have shown the same as applied to a heater of common construction, it is to be understood that its use is not limited to that herein described. The invention may be embodied in other forms than the one shown herein, so for this and other apparent reasons I desire the appended claims to define the limits my invention may assume.

Having described my invention, what I claim is:

1. In a check valve, a casing comprising male and female tubular members, a pair of cross members having legs secured to the end of the male member, the two lower legs of the cross members being inclined upwardly, and a disc movably supported by the cross members adjacent the opening in the male member, which said disc may be actuated to close the opening in the male member by the pressure of a liquid directed against one of its faces, and to be moved away from the opening at the end of the male member by the inclined legs of the cross members upon the release of the pressure against its said face.

2. A device of the class described comprising a tubular casing made up of a male member and a female member joined together, a plurality of members having legs secured to the inside end of the male member, the lower of said legs being inclined upwardly, and a disc member movably supported by the members, which is adapted to be moved toward the male member by the pressure of water against it and is also adapted to be moved away from the male member by the inclined legs of the members upon the release of the water pressure against it.

3. A device of the class described comprising a tubular casing including a male member and a female member joined together, a plurality of members having legs secured to an end of the male member, the lower of the said legs being inclined in an upward di-

rection, and a disc movably supported by the inclined legs.

4. A device of the class described comprising a tubular casing including male and female members joined together, a plurality of cross members having legs secured to an end of the male member, certain of the legs being disposed in inclined directions, and a disc movably supported by the cross members.

LESLIE E. PETERS.