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CHECK VALVE FOR HOT WATER SYSTEMS.
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Fig. 1.

Fig. 2.

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CHECK-VALVE FOR HOT-WATER SYSTEMS.


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To all whom it may concern:

Be it known that I, JAMES J. LAWLER, a citizen of the United States, residing at 314 South Third avenue, Mount Vernon, Westchester county, New York State, have invented a new and useful Improvement in Check-Valves for Hot-Water Systems, of which the following is a specification.

My invention relates to an improvement in 5 check-valves as applied to domestic hot-water systems, the object being to produce such check-valve adapted to be connected in the return-pipe of the system near the supply tank or boiler, which valve is always open to permit a free flow back from the service toward the tank or boiler, but will respond to the slightest influence of back pressure in the return-pipe—i.e., pressure from the tank or boiler toward the faucets by way of the return-pipe—so as to instantly check any supply of water from that direction.

In the system of supplying domestic hot water, known in the trade briefly as "return-circuit lines," the hot-water pipe rises from the top of the hot-water boiler or tank to the various plumbing-fixtures in the building, and then near the highest point a branch is taken from the same and carried back to the bottom of the hot-water boiler in order to cause the water to move by gravitation, so that the instant of opening a hot-water faucet connecting with the circuit the water will be found to be warm. In order that the water in the circuit may fall back to the boiler by gravitation alone—the difference in the specific weight between that water which rises from the top of the boiler and that returning to the bottom of the boiler—it is necessary to have the entire circuit free from any obstruction, for the reason that the power which causes the circulation is not sufficient to lift anything that sinks in water. Hence my improved valve is so constructed that it remains open when in a normal position, thus allowing the water to flow back to the boiler by gravitation. It is, therefore, necessary for the proper operation of such hot-water circuits to be provided with a valve or other device which will automatically close against any return of water from the bottom of the boiler in order that the cold water at that point will not flow back and mix with the warm water at the fixtures at times when warm water is drawn. My improved check-valve fully meets these requirements.

Referring to the accompanying drawings, Figure 1 is a vertical view, partly in central section, of my invention; and Fig. 2 shows my valve in position in a return-circuit system. 60 A indicates the body, provided at its upper end with an integral elbow 1 and adjacent its lower end in its side wall with an outwardly-extending integral coupling-sleeve 2. 65 Indicating an annular flange formed integral with the interior of the body at the base of the elbow 1, said flange having its lower face beveled, as at 3, to form a valve-seat. Below the said flange is arranged a sliding valve 4, having guide-fingers 5 to keep the 70 valve in a central position. 6

6 is a valve-stem. The lower end of the stem is reduced in diameter and has a sliding fit in the center of the plug 7, which is removable screwed into the bottom of the valve-body for the purpose of inserting the valve, cleaning, &c.

The valve I prefer to make of aluminum. The shoulder 8 on the valve-stem limits the downward movement of the valve. 80

Formed integral with the upper wall of the sleeve 2 and at its inner end is a downwardly-extending flange or deflector 9, which extends below the valve 4 when the same is in its unseated position. The said flange has its outer face beveled, for the purpose hereinafter explained in the operation.

Such being the construction of my improved check-valve, the operation is as follows, reference being had to Fig. 2: When 90 connected on return of a system, as described, the valve will be open, as shown in Fig. 1. When a number of faucets are opened simultaneously, the tendency of the water in the circuit is to back up through the return-pipe 95 to supply the extra drain. In such an event the water leaves the boiler 11 by way of the return-pipe 10 and enters the valve-body. The deflector 9 compels the water to enter the valve-chamber beneath the valve, which 100 rises to its seat, as shown by dotted lines, and holds the water until such time when the faucets are shut off. The water in the circuit will no longer be affected by the force of wa-
ter drawn from the pipes and the weight of the valve will fall to its normal position, leaving the passage open again for circulation by gravitation.

5 Such being the construction and operation of my improved check-valve, what I claim as new is—

1. A check-valve, comprising a body provided at its upper end with an integral outwardly-extending elbow, an oppositely-arranged sleeve formed integral with the side wall of the body and in communication therewith, a valve-seat arranged within the body, a movable valve, and a downwardly-extending flange formed integral with the inner end of the said sleeve, said flange extending below the plane of the said valve at all times, substantially as described.

2. A check-valve, comprising a body provided at its upper end with an integral outwardly-extending elbow, an oppositely-arranged sleeve formed integral with the side wall of the body and being in communication therewith, an inwardly-extending flange formed integral with the body at the base of the said elbow, said flange having its lower face beveled to form a valve-seat, a movable valve, said valve being unseated when in its normal position, and a downwardly-extending flange formed integral with the end of the said sleeve, substantially as described.

3. A check-valve, comprising a body provided with an inlet and an outlet, an inwardly-extending annular flange formed integral with the body at a point adjacent the valve-inlet, said flange having its lower face beveled, a plug having a longitudinal opening, a valve provided on its upper face with integral fingers arranged within the said flange, a valve-stem having its lower end reduced in diameter and arranged in the opening of the said plug, and a downwardly-extending flange arranged adjacent the said valve and extending therebelow, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 16th day of October, 1901.

JAMES J. LAWLER.

Witnesses:
GASTON E. CORDEAU,
ROBERT M. A. ARMSTRONG.