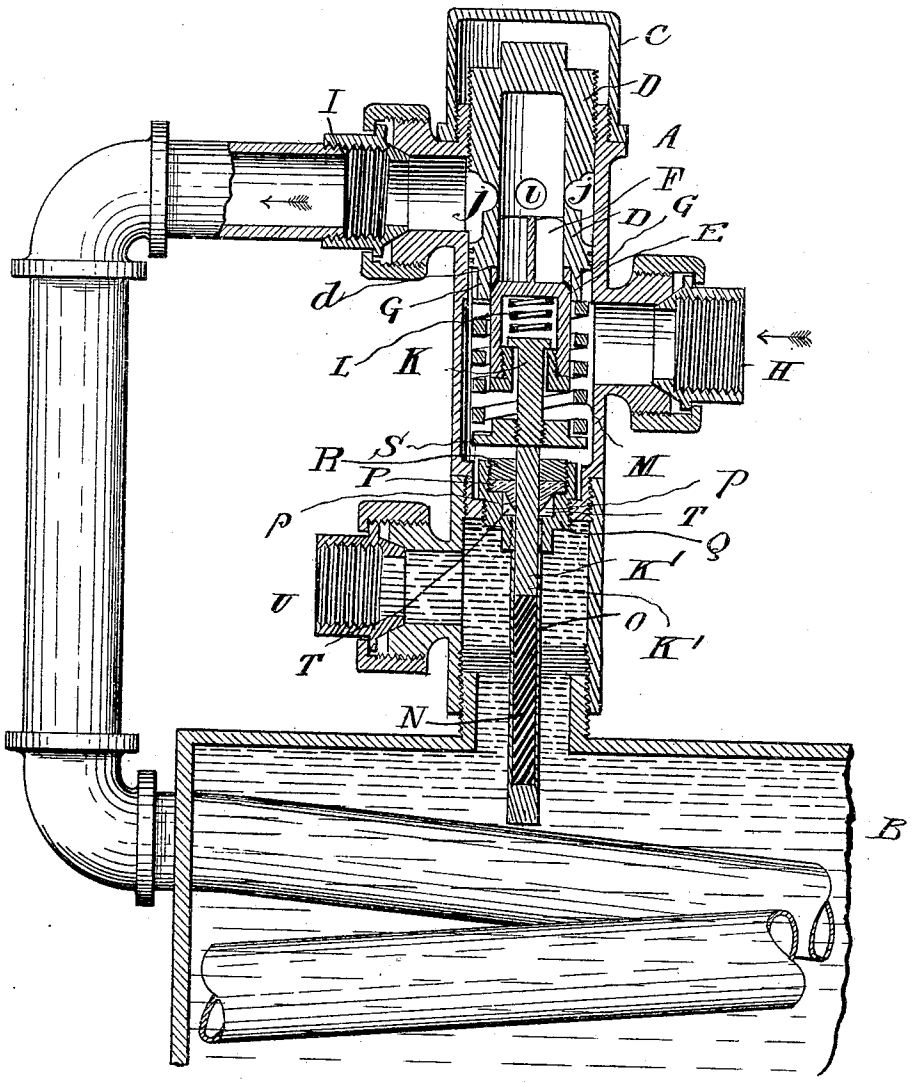
A. D. HORNE.

THERMOSTATIC VALVE.

APPLICATION FILED DEC. 14, 1908.

940,155. Patented Nov. 16, 1909.



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ALEXANDER DEWAR HORNE, OF GLASGOW, SCOTLAND.

THERMOSTATIC VALVE.

940,155. Specification of Letters Patent. **Patented Nov. 16, 1909.**

Application filed December 14, 1908. Serial No. 467,431.

To all whom it may concern:

Be it known that I, ALEXANDER DEWAR HORNE, of 145 Bath street, in the city of Glasgow, Scotland, engineer, have invented certain new and useful Improvements in and Connected with Thermostatic Valves, of which the following is a specification.

This invention relates to improvements in and connected with thermostatic valves, and has for its object the control of steam, hot air, or the like.

In carrying out my invention, I provide a suitable body having steam inlet, outlet, and hot water delivery. Inside the body I provide a valve controlled by the expansion of gutta-percha contained in a tube having one end solid with a piston fitting on the other end, and also a suitable packing to prevent loss of the gutta-percha. This tube is in direct communication with the water so that on expansion taking place the valve is closed. A weak spring is provided to support the valve and carry it toward its seat, and a strong spring is provided to open valve when contraction takes place in the tube. A suitable adjusting arrangement is provided for the regulation of the valve. To prevent the water getting into the steam part of the valve or vice versa a steam-tight gland is provided thus separating the water from the steam. A cap is provided to prevent leakage from adjusting screw at top of valve.

In order that my invention may be properly understood and readily carried into effect I have hereunto appended one sheet of drawings, of which—

The thermostatic valve A illustrated in the drawing is of a cylindrical shape or configuration, and is designed to be mounted on the hot water tank B, as shown, or in some cases be fitted on to steam coil. The apparatus is surrounded by a cap C, which prevents any leakage which may possibly occur from the fluid getting past the threads of the screw at the top of the apparatus and the valve casing D. The valve E is composed of four wings or prongs F disposed equidistantly, which not only form guides in the upward movement but allow of the fluid or steam to get into the interior of the apparatus. The casing D surrounding the valve is also formed with wings or prongs G, which also serve as a guide for the rise and fall of the said valve E and form spaces or passages for the flow of steam which has entered the apparatus by the steam inlet H.

d is the seat for the valve E the shoulders of which coming into contact with the seat *d* constitute a check or bar for the inflow of the steam.

i and *j* are the steam ports of the outlet or discharge port I leading to the coil.

K and K^1 are the piston.

L is a weak spring interposed between the top of piston K, and below the valve E, to support the valve and carry it toward its seat when expansion takes place in the tube O.

M is a strong spring mounted between the lower end of casing D and the collar S screwed on to the piston K aforesaid, designed to assist in opening valve E when any contraction takes place in the tube or passage.

N is an expansive material inserted in the tube O. At or near the upper part of the tube O is inserted the packing piece P having a conical extension *p* formed on its underside. This packing piece P is contained in the hollow formed by the tubular section Q, and is held in position by a cap or cover R. An excess of expansive material composed of gutta percha which has forced its way between the lower piston K^1 and the sides of the tube O is collected in the space T beneath the conical extension *p* of the packing piece P, which prevents it from getting into the interior of the apparatus.

U is the outlet for the hot water.

The mode of action is as follows:—The steam coming in by inlet H will pass through valve E and out by steam to coil connection I and into the coil, heating up the water supply. As the water becomes heated, the material N inside the tube O expands, and in so doing closes the valve E by means of the pistons K, K^1 rising. A space is provided in the body of valve E to allow any excessive expansion which takes place after the valve is closed. On hot water being drawn off, the temperature in the tank would be reduced, consequently causing the material N in the tube O to contract, thus allowing the valve E to open and admit steam as before. When the steam supply is shut off, the strong spring M will keep the valve E back from its seat.

To adjust the valve remove cap C and by means of the square head on valve casing D, should less heat be required screw valve casing D down thus bringing valve seat nearer

to the valve consequently shutting off supply of steam sooner. Should, however, more heat be required withdraw valve casing D by square head thus carrying valve seat away from the valve and consequently allowing a longer supply of steam into the coil.

Claims.

1. A thermostatic controlling device comprising in combination with a hot water tank, of a valve casing communicating with said tank and provided with a water outlet and a steam inlet and outlet, a valve member provided with a seat anchored in said casing between said steam inlet and outlet, a valve closure for said seat controlling communication between said steam inlet and outlet, a spring acting to unseat said valve closure, means closing communication between the water and steam portions of said casing, a tube depending from said means into the tank water containing gutta-percha, and an element interposed between the gutta-percha and said valve closure for seating the latter upon expansion of the former.

2. A thermostatic controlling device comprising in combination with a hot water tank, of a valve casing communicating with said tank and provided with a water outlet and a steam inlet and outlet, a valve member provided with a seat and anchored in said casing between said steam inlet and outlet, a two part valve closure for said seat controlling communication between said steam inlet and outlet and comprising a seat portion and a stem portion, a spring interposed between said seat portion and stem portion, a spring acting on said stem portion for normally unseating said valve, means closing communication between the water and steam portions of said casing, a tube depending from said means into the tank water and containing gutta-percha, and an element interposed between the stem portion of said closure member and the gutta-percha for seating said valve closure upon expansion of the gutta-percha.

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

ALEXANDER DEWAR HORNE.

Witnesses:
JOHN LIDDLE,
JOHN TRAIN LIDDLE.