

No. 641,655.

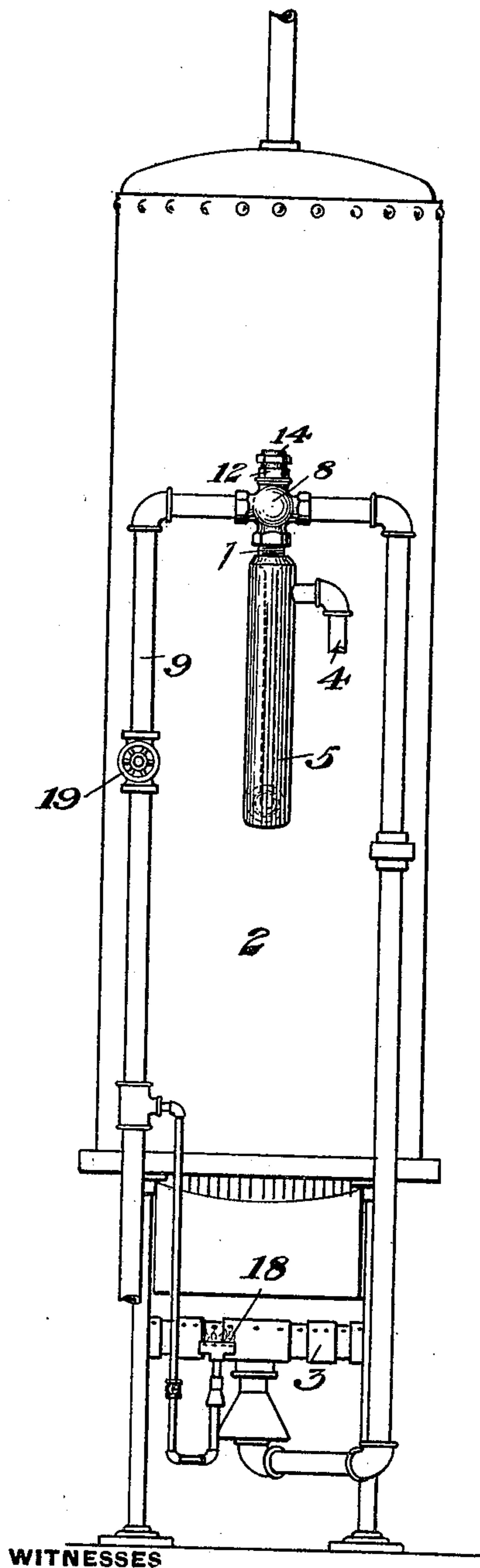
Patented Jan. 16, 1900.

W. G. TAYLOR.  
THERMOSTATIC REGULATOR.

(Application filed May 5, 1899.)

(No Model.)

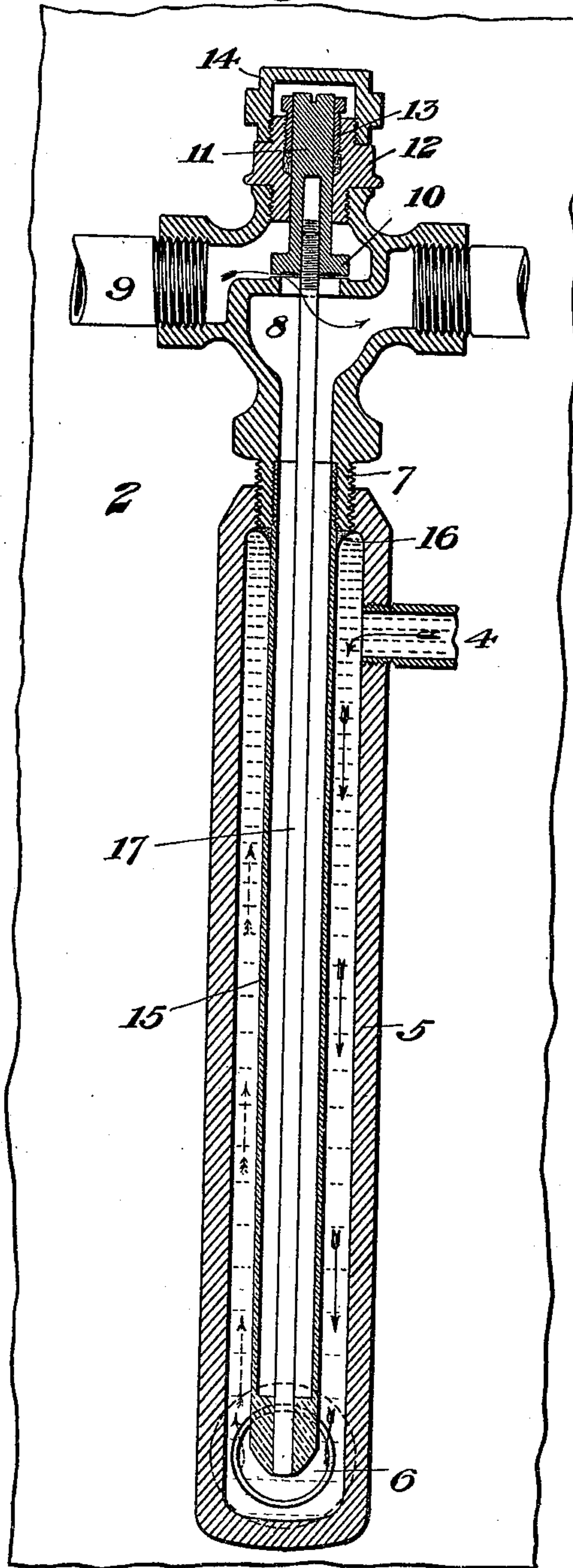
Fig. 1.



WITNESSES

*L. A. Connerly*  
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Fig. 2.



INVENTOR

*W. G. Taylor*  
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# UNITED STATES PATENT OFFICE.

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PLACE.

## THERMOSTATIC REGULATOR.

SPECIFICATION forming part of Letters Patent No. 641,655, dated January 16, 1900.

Application filed May 5, 1899. Serial No. 715,705. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM G. TAYLOR, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Thermostatic Regulators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a front elevation showing my improved regulator as applied to an ordinary domestic boiler, and Fig. 2 is an enlarged vertical section of the regulator itself.

Heretofore in the use of thermostats for 15 regulating the gas-supply to water-heaters it has been found extremely difficult to obtain sufficient elongation of the rod or thermostatic device to give the requisite motion to the valve, and different complicated systems of 20 multiplying levers and similar devices have been devised for this purpose. My invention does away with these difficulties and provides a thermostat which may be directly connected to the gas-valve and which by reason of its 25 peculiar location and construction will give the valve its necessary movement and will, moreover, act quickly, when the cold water enters the heater, to open the gas-valve and more slowly and gradually, as the tempera- 30 ture of the water rises, to close the gas-valve.

To that end it consists in placing a thermostat in a water barrel or chamber to which the water-supply pipe leads, the water-barrel having an outlet-pipe leading into the heater 35 at a point remote from the burner or source of heat.

It also consists in locating such thermostat vertically in connecting the gas-valve to its upper end, and, further, in the construction 40 and arrangement of the parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, 2 represents a domestic boiler, which may be of an ordinary type, 45 with the usual gas-burner 3 below its lower end. The water-supply pipe 4 for the heater leads into the upper portion of the water-barrel or vertical chamber 5, which is preferably formed of a heavy bronze casting. An 50 inlet-pipe 6 leads from the lower end of this barrel into the boiler or heater. The water-

barrel is screwed upon the lower screw-threaded portion 7 of a valve-chamber 8, containing the horizontal bridge. This valve-chamber is interposed in the upper horizontal 55 portion of the gas-supply pipe 9, and within the chamber a vertically-moving valve 10 is arranged to seat upon the bridge and close the hole leading therethrough. The stem 11 of this valve fits tightly within a screw-plug 60 12, which is provided with a small stuffing-box 13, surrounding the outer end of the stem, and the ends of the stuffing-box and the valve-stem are covered by a cap-nut 14.

The thermostat proper consists of a tube 15, 65 of a suitable alloy, which is screwed into the inner portion of the boss 7 and is further secured by hard solder, as shown at 16. A steel rod 17 is secured to the lower closed end of the tube 15 and extends up through the tube, 70 having screw-threaded engagement at its upper end with the stem of the valve 10. The end of the valve-stem is slotted, as shown, so that a screw-driver may be applied to adjust it upon the steel rod, and the screw connection 75 between the valve and rod is made with an accurate low-pitch thread, so that a very fine adjustment may be obtained. The valve is arranged so that a small endwise movement of the rod will be sufficient to give a 80 requisite amount of gas.

18 is the usual pilot-light burner, which is connected to the pipe 9 back of the valve-chamber 8, so that it will receive a constant supply of gas, and 19 is a regulating-valve in 85 the pipe 9.

The operation of my improved device is as follows: The water in the boiler being heated causes an upward circulation in the water-barrel, and the tube elongating draws down 90 the gas-valve and shuts this valve when the temperature exceeds a certain limit. When hot water is drawn from the heater, the cold water entering the upper end of the water-barrel will pass downwardly, as shown by the 95 arrows in full lines in Fig. 2. This cold water contacting with the thermostat will shorten it, and thus at once lift the gas-valve and allow gas to pass to the heater. As soon as the house-spigot is shut off the cold water 100 will cease to flow down through the water-barrel, and an upward circulation will then



begin to take place from the heater into the water-barrel, as indicated by the arrows in dotted lines in Fig. 2. The thermostat will thus gradually be elongated and draw down  
 5 the gas-valve and shut this valve when the temperature of the water in the barrel reaches the desired limit.

The advantages of my invention will be obvious to those skilled in the art since a very  
 10 simple, cheap, and compact device is obtained which will regulate the gas-valve in the desired manner. The gas-valve will be quickly opened when cold water flows into the heater and will then be slowly and gradually closed  
 15 as the water becomes heated. The device may be applied to existing boilers and does away with the delicate and costly lever systems heretofore used.

By the expression "a single connection between the chamber and the heater" in the  
 20 claims I mean that the chamber is not in a continuous circuit of which the heater forms a part, and of course two or more pipes may be used within the scope of my invention if  
 25 they lead from the lower portion of the chamber to the heater.

Many variations may be made in the form and arrangement of the regulator without departing from my invention.

30 I claim—

1. The combination with a water-heater, of a water barrel or chamber external to the heater and having a single connection therewith at a point remote from the burner, said  
 35 barrel having a cold-water inlet arranged to be connected to the branch main and located above the connection to the heater, the arrangement of the barrel relatively to the heater being such as to allow hot water to diffuse in the barrel when water is not being  
 40 drawn from the heater; a thermostatic device

in the barrel arranged to be exposed to the entering cold water, and a gas-valve connected to said thermostatic device; substantially as described. 45

2. The combination with a water-heater, of a vertically-extending water-barrel external thereto and having its lower portion only connected to the heater at a point remote from the burner, said barrel having a cold-water  
 50 inlet above the connections to the heater and arranged to be connected to the branch main, the arrangement of the barrel being such as to allow hot water to diffuse thereinto from the heater when water is not being drawn; a  
 55 thermostatic rod or bar within the barrel, and a gas-valve connected to said rod; substantially as described.

3. The combination with a water-heater, of a water barrel or chamber external to the  
 60 heater and having a single connection therewith at a point remote from the burner, said barrel having a cold-water inlet arranged to be connected to the branch main and located above the connection to the heater, the ar-  
 65 rangement of the barrel relatively to the heater being such as to allow hot water to diffuse in the barrel when water is not being drawn from the heater; a thermostatic device in the barrel arranged to be exposed to the  
 70 entering cold water; a gas-supply pipe extending over the barrel and containing a gas-valve, and a direct connection between the gas-valve and the thermostatic device; substantially as described. 75

In testimony whereof I have hereunto set my hand.

W. G. TAYLOR.

Witnesses:

F. E. GAITHER,  
 G. B. BLEMMING.