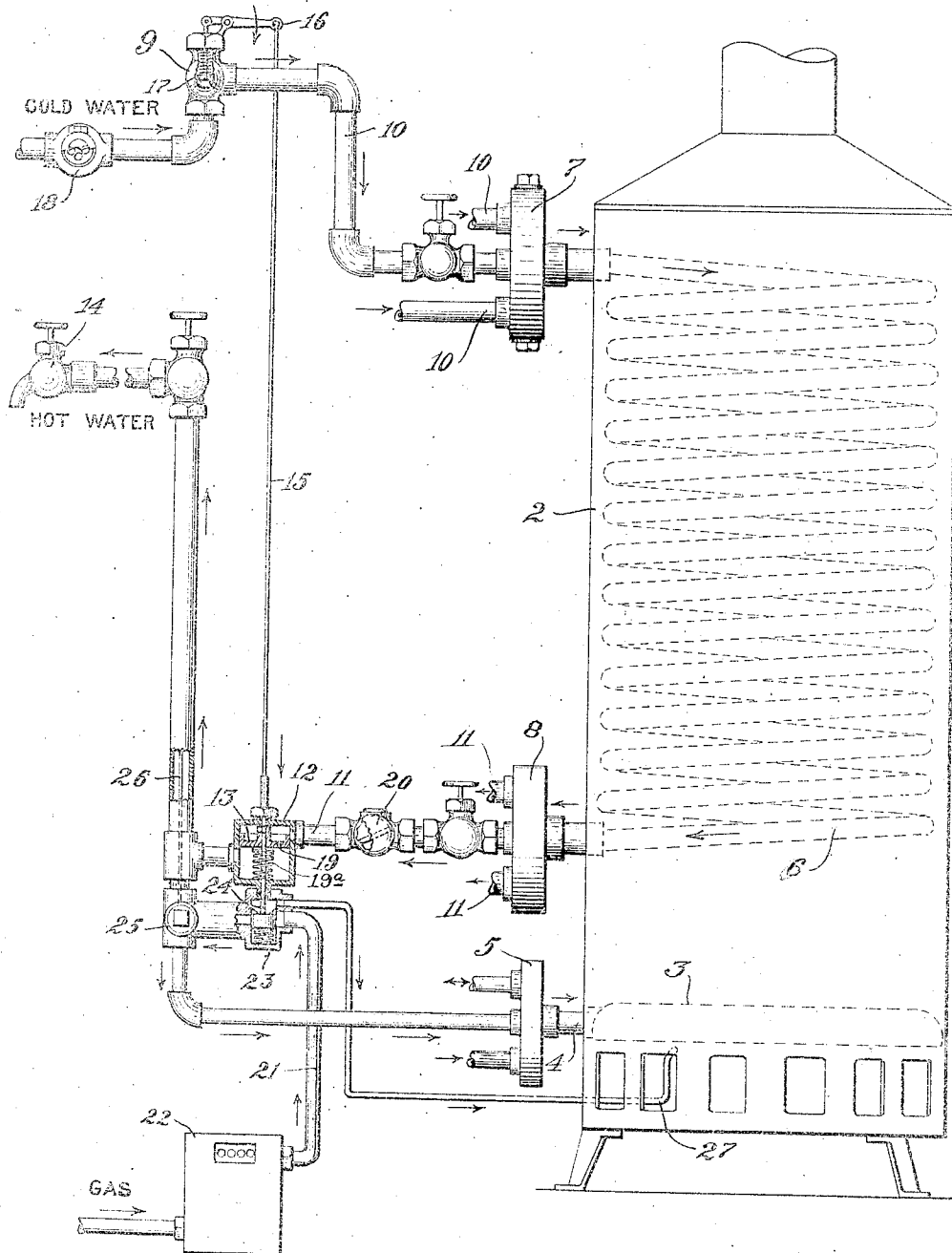


B. B. KINKADE.
WATER HEATER.
APPLICATION FILED JAN. 28, 1909.

941,882.

Patented Nov. 30, 1909.



WITNESSES:

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BRYANT B. KINKADE, OF BERKELEY, CALIFORNIA.

WATER-HEATER.

941,882.

Specification of Letters Patent. Patented Nov. 30, 1909.

Application filed January 28, 1909. Serial No. 474,784.

To all whom it may concern:

Be it known that I, BRYANT B. KINKADE, citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented new and useful Improvements in Water-Heaters, of which the following is a specification:

My invention relates to water-heaters, and pertains more particularly to instantaneous, automatically controlled gas water-heaters.

It is an object of this invention to provide a means whereby a single heater of this class may be employed to supply heated water to several independent points of distribution, in combination with means for properly registering the amount of water drawn and gas consumed by the independent party service, or at point of distribution, so that the correct charges may be made against each individual consumer.

The invention consists of the elements, the construction and combination of elements, or their equivalents, and will be clearly set forth in the following specification, and accompanying drawings, in which—the figure is a side elevation of the device.

In this class of apparatus, a heater of suitable construction is employed having an inlet for cold water, circulating coils and a hot water outlet; a suitable burner is supplied with fuel from a source of supply, the fuel being usually automatically controlled, and which is ignited by the customary pilot-light.

In the embodiment of my invention as actually reduced to practice, I use a heater 2 of any desirable construction, in the lower part of which is mounted a gas or other burner 3, supplied with fuel through a connection 4 with the manifold 5. A series of coils 6 are interposed above the burner 3, and cold water is led in from the upper manifold 7, and passes out heated near the bottom of the heater into a head 8.

For the purpose of providing an apparatus that is adapted to furnish heated water to a plurality of independent systems, such as would be required in a large apartment-house, or to several distinct consumers, it is necessary that the water delivered into the manifold 7 shall be registered to each consumer using it, and that the amount he uses, and no more, be properly recorded. To accomplish this, suitable mechanical or other means must be employed whereby the opening of any draw-off faucet in a given service

pipe 11, leading from the head 8, will automatically operate to open a spring-actuated supply control valve, such as at 9, to admit cold water through its respective inlet pipe 10 into the common manifold 7. Therefore, each hot water service pipe 11, leading from the head 8, is provided with a valve 12 of suitable character, but here shown as a piston-valve, the water passing from the pipe 11 to the top of the piston 13, and when the faucet 14 is opened, the water-pressure drives the piston 13 down, and a chain or wire 15 connecting the piston 13, and a lever 16, serves to open supply valve 9 to which water passes after going through a meter 18. It is thus manifest that no water can pass through meter 18, or valve, unless the pressure below the piston 13 is relieved by opening a faucet 14 in the service pipe 11, thus allowing the piston 13 to descend and open the valve 9.

The valve 9 and piston 13 are each provided with a small by-pass 17 and 19, respectively, for the equalization of pressure, and in order to insure against accidental operation of valve 12, a check valve 20 is interposed between it and the heater 2.

While I have described the operation and construction of a single service system connected to the head 8, and manifold 7, a plurality of systems may be supplied, as shown by the inlet pipes 10, and outlet pipes 11.

Each system is individually connected to the manifold 5 by a gas supply pipe 21, leading from meter 22 to a valve 23, which may be opened on the downward stroke of piston 13 and rod 24. When the piston descends and opens valve 23, gas passes through a valve at 25, which is closable by a thermostat 26 interposed in the length of delivery pipe 11, and effective to close valve 25 when the water has reached a predetermined temperature. It will now be seen that no gas can flow to the manifold 5, and thence to the burner 3, and that no water will pass to the manifold 7 until some faucet, such as 14, is opened to permit the piston 13 to descend and open valve 9 against its spring, and also to open the gas valve 23.

The usual pilot light supply 27 leads from the upper part of the gas valve 28 and is secured adjacent the burner 3, there may be as many pilot lights as there are independent service systems.

This construction provides a perfectly au-

tomatic heater adapted to serve several distinct parties, and provides for the accurate and independent recording of material consumed by each.

5 This specification and the drawings set forth one simple arrangement for the accomplishment of the functions of the invention, and various detail modifications may be made without departing from the broad
10 principles involved.

The port 17 in the valve 9 allows a small amount of water to pass from the source of supply, to disturb the equilibrium when said source is opened, and as this port is slightly
15 larger than the port 19 in the piston 13, this result will follow: When the discharge cock is closed equilibrium within the apparatus is restored through the opening 19 in the piston, and the return of the piston and
20 its connected parts is insured by means of a spring 19^a.

It will be understood that a single pilot light might be used, but the present device contemplates such a light for each separate
25 service, so that although only using a very small quantity of gas, that amount will be properly divided among the consumers.

The thermostat may be of any suitable or well known form, and is not a part of
30 the present invention. It acts in the manner usual to this class of machines to regulate the temperature of the water. The flow of gas and hot water are properly proportioned at all times in this apparatus.

35 Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A water heating apparatus, said apparatus including a single heater and a burner
40 therefor, independent water inlet and co-acting outlet pipes connecting with said heater, fuel supply pipes corresponding with each water inlet and discharge pipe, and mechanism permitting a flow of fluid
45 through a particular one of the inlet pipes leading to the common heater when water is drawn from a particular one of the outlet pipes.

2. A water heating apparatus, said apparatus including a single heater and a burner
50 therefor, independent water inlet and co-acting outlet pipes connecting with the heater, fuel supply pipes corresponding with each water inlet and discharge pipe, and
55 mechanism controlled by the opening of any discharge pipe for causing a flow of fluid to a particular one of the inlet pipes leading to the common heater, said mechanism au-

tomatically opening the corresponding gas supply passage to the burner.

3. A water heating apparatus, said apparatus including a single heater and a burner
60 therefor, independent water inlet and co-acting outlet pipes, connecting with the heater, fuel supply pipes corresponding with
65 each water inlet and discharge pipe, mechanism controlled by the opening of any particular water discharge faucet for permitting a flow of fluid through a particular one of the inlet pipes leading to the common
70 heater, and connections actuated by the opening of said pipes, whereby fuel is admitted to the burner from the correlated fuel supply pipe.

4. In a water heating system the combination with a single heating coil and a burner
75 therefor, of an independent series of water inlet and outlet pipes, means through which either series may be connected with the coil, a valve controlling each inlet, a cylinder and
80 a plunger movable therein in the path of each discharge, connections between said inlet valves and co-acting plungers, gas supply pipes corresponding with each set of
85 water pipes, means for connecting either gas pipe with the burner, valves controlling the flow of gas in each pipe, connections between each water controlling valve and
90 plunger and its co-acting gas valve, thermostats subject to the action of the hot water flowing through either pipe when its faucet is opened, and connections therewith to a gas regulating valve.

5. In a water heating apparatus, a single heater and burner, a plurality of water supply and discharge pipes, chambers through
95 which either pair of pipes may be connected with the heating coil, gas supply pipes corresponding with each water pipe system, a thermostat in each system by which the
100 co-acting gas valve is opened or closed, a valve controlling the water inlet, a piston in the path of the hot water outlet and actuated by the opening or closing of its faucet connection between said piston and the co-
105 acting gas control, and connections between the water inlet and discharge valves, said valves having pressure balancing openings made in them.

In testimony whereof I have hereunto set
110 my hand in presence of two subscribing witnesses.

BRYANT B. KINKADE.

Witnesses:

GEO. H. STRONG,
CHARLES EDELMAN.