

O. A. MARQUARDT.  
WATER HEATER.  
APPLICATION FILED AUG. 16, 1909.

951,444.

Patented Mar. 8, 1910.

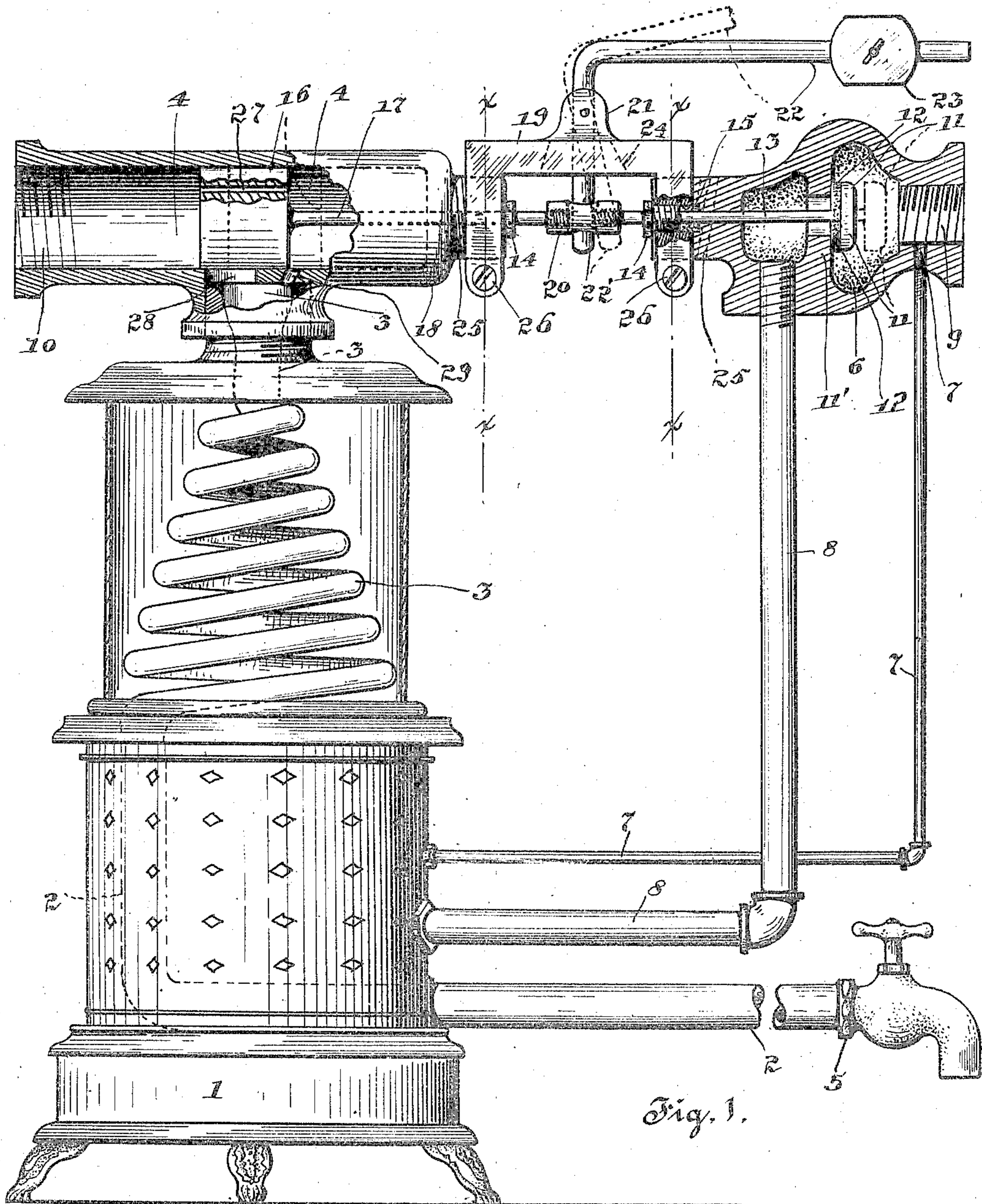


Fig. 1.

Witnesses:

*W. E. Smith*

*B. Y. Richards*

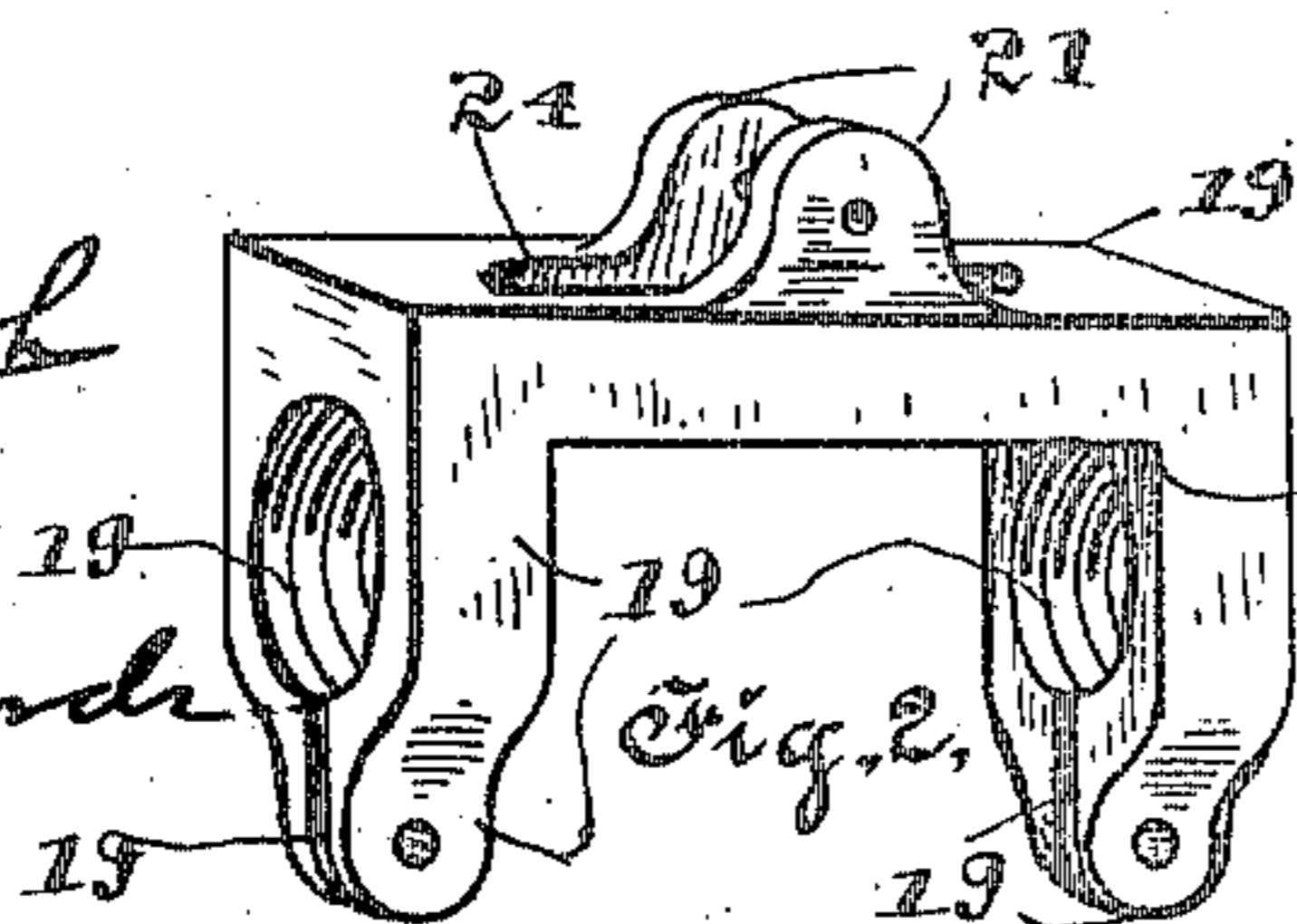


Fig. 2.

Inventor:

Otto A. Marquardt,

*By Joshua H. Potts*

his Attorney.

# UNITED STATES PATENT OFFICE.

OTTO A. MARQUARDT, OF DETROIT, MICHIGAN.

WATER-HEATER.

951,444.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed August 16, 1909. Serial No. 513,083.

*To all whom it may concern:*

Be it known that I, OTTO A. MARQUARDT, a citizen of the United States, residing at Detroit, county of Wayne, and State of Michigan, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification.

My invention relates to improvements in water heaters and more particularly to automatic means for opening a valve in a gas pipe leading to the burners of the heater whenever water is drawn from the pipes heated by such burners and for closing said valve when the water ceases to be drawn.

A further object of my invention is to provide such a construction in the device that the weight lever provided to automatically close the gas and water valves may be so adjusted as to move in a vertical plane whatever may be the position of the remaining portion of the device.

Other objects will appear hereinafter.

With these objects in view my invention consists in the novel construction and arrangement of parts which will be hereinafter fully described and more particularly pointed out in the appended claim.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a view showing a partial longitudinal section of my invention in its preferred form, and Fig. 2 is a detail perspective view showing the weight lever yoke.

Referring now to the drawings, 1 designates an instantaneous heater which may be of any well known construction and 2 a water pipe leading therefrom. The pipe 2 may be simply a continuation of the heating coil 3 which is located above the burners (not shown), the upper end of said coil being connected to the piston valve cylinder 4. A faucet 5 is provided on pipe 2 in order that water may be drawn therefrom when desired. A gas valve chamber 6 is provided, and leading therefrom are pipes 7 and 8, the former being connected to a pilot light (not shown) in the heater and the latter to the gas burners also not shown. The pilot light may be arranged in any well known manner so as to ignite the gas when it flows into the burner. The chamber 6 is screwed onto a gas pipe (not shown) as at 9, and the cylinder 4 is screwed onto a water pipe (not shown) as at 10, hence said cham-

ber will be normally filled with gas and said cylinder with water. The pilot light is supposed to be lighted continuously in order to be always in readiness to light the burner when the gas valve 11 is opened which allows gas to flow to the burner. The valve 11 is adapted to seat on the seat 11' and is cushioned with suitable soft material 12 to prevent leakage, and the valve stem 13 is packed where it projects from the chamber 6, said packing comprising a screw 14 and soft yieldable material 15 adapted to be compressed by said screw. The piston valve 16 is adapted to reciprocate freely in the piston valve cylinder 4, and the same is provided with a piston rod 17 which projects through the head 18 of the cylinder, similar packing being provided on the piston rod as has been described on the valve stem 13. The piston rod 17 is maintained in alinement with the valve stem 13 by means of the weight lever yoke 19 whatever may be the position of the latter relative to the piston valve cylinder 4 and the gas valve chamber 6, and said piston rod is rigidly connected to said valve stem by means of the short rod 20 which is tapped and screwed onto said rod and stem. Two perforated lugs 21 are provided on the yoke 19 in which the weight lever 22 provided with the adjustable weight 23 is fulcrumed, a slot 24 being provided in said yoke to make clearance for the short end 22' of said lever. The yoke ends are tapped to receive the threaded ends 25 of the cylinder 4 and the chamber 6, and said yoke ends are split and provided with screws 26 for holding said yoke in any adjustable position on said cylinder and chamber, it being clear that the yoke may be adjusted so that the weight lever 22 may swing in a vertical plane whatever may be the position of the cylinder and chamber.

The piston valve 16 is provided with a longitudinal perforation 27, and the cylinder 4 with ports 28 and 29, the latter being slightly greater in cross section than the perforation 27, and each of said ports leading into the coil 3.

The operation of the device is as follows: Normally the gas and water valves are closed as shown in full lines and water will be on each side of the piston valve 16 causing balance pressure on the same. When the faucet 5 is opened water will flow through the port 29 from the cylinder 4 and thence through the coil 3 and the pipe 2 thus

relieving the pressure on one side of the piston valve 16, it being evident that water cannot flow through the small perforation 27 as rapidly as it can through the relatively large port 29. The pressure being now unbalanced on the piston valve 16 the same will move into the dotted line position and allow water to flow freely through the large port 29 and thence through the automatic heater to the faucet 5. Simultaneous with the movement of the piston valve 16 the gas valve 11 is opened as indicated by dotted lines. Gas will flow to the burners and be immediately ignited by the pilot light, and the water as it flows through the coil 3 will be heated by said burner. On closing the faucet the weight 23 which has been in a raised position during the flow of water will drop and close the water and gas valves automatically, the provision for adjusting said weight on the lever 22 being necessary to render the device operative with varying water pressures.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not restrict myself to the precise details set forth but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claim.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

In a device of the class described, a cylinder having a water inlet at one end and a large and a small port in the walls thereof, a piston valve adapted to operate in said cylinder having a longitudinal perforation therein smaller than said small port, a head in said cylinder through which a piston rod provided on said piston valve projects, said

small port being located nearer the cylinder head than said large port and adapted to be uncovered by said piston valve when the large port is covered thereby, said large port being uncovered by said piston valve when said small port is covered thereby, said cylinder head being at the end of said cylinder opposite said water inlet, a conduit leading from said ports through a water heater to a faucet, a gas chamber having a gas inlet and outlet and a valve seat therein, a gas valve adapted to seat on said valve seat and provided with a stem projecting through the side of said chamber, said stem and said piston rod being in axial alinement and securely connected together, a yoke adjustably secured to said cylinder and said chamber having two perforated lugs in which a lever is fulcrumed, an adjustable weight on said lever, said lever and weight being connected with said stem and adapted to automatically seat said gas valve, and a pipe leading from said gas chamber to a pilot light provided in said heater, said gas outlet consisting of a pipe leading from said chamber to the burner of said heater, the admission of gas into said last-named pipe being controlled by said gas valve, and said pilot light being arranged to ignite the gas when supplied to the burner by said last-named pipe, and said piston valve being adapted to uncover said large port by water pressure against the resistance of said weighted lever when said faucet is opened, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OTTO A. MARQUARDT.

Witnesses:

CHARLES SEELBINDER,  
JOHN JETTKE.