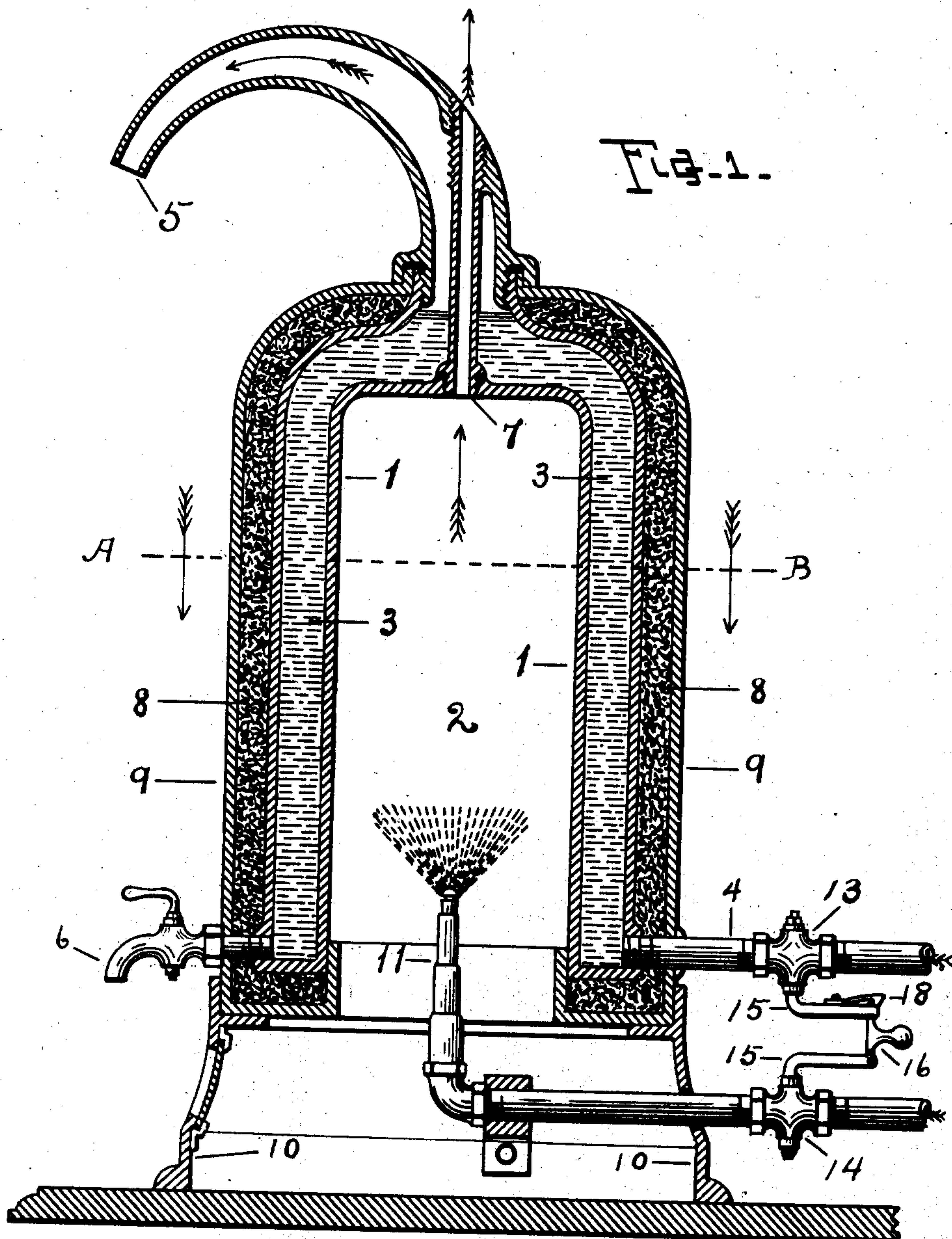


E. R. WATERMAN.
LIQUID HEATER.
APPLICATION FILED JUNE 3, 1907.

991,765.

Patented May 9, 1911.

4 SHEETS—SHEET 1.



Witnesses

Grace E. Waterman
J. R. Boy

Inventor

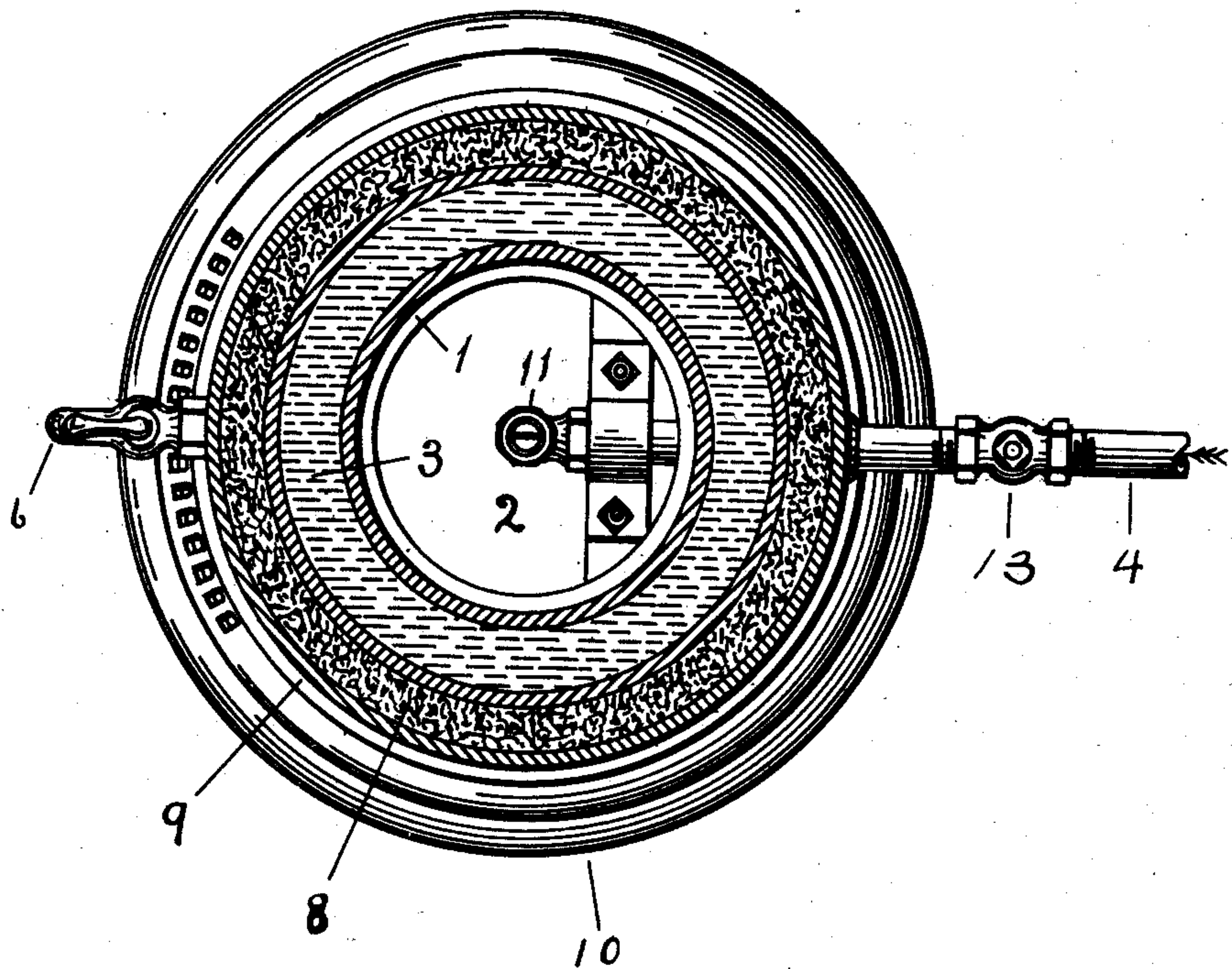
Edwin R. Waterman
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Fig. 2.



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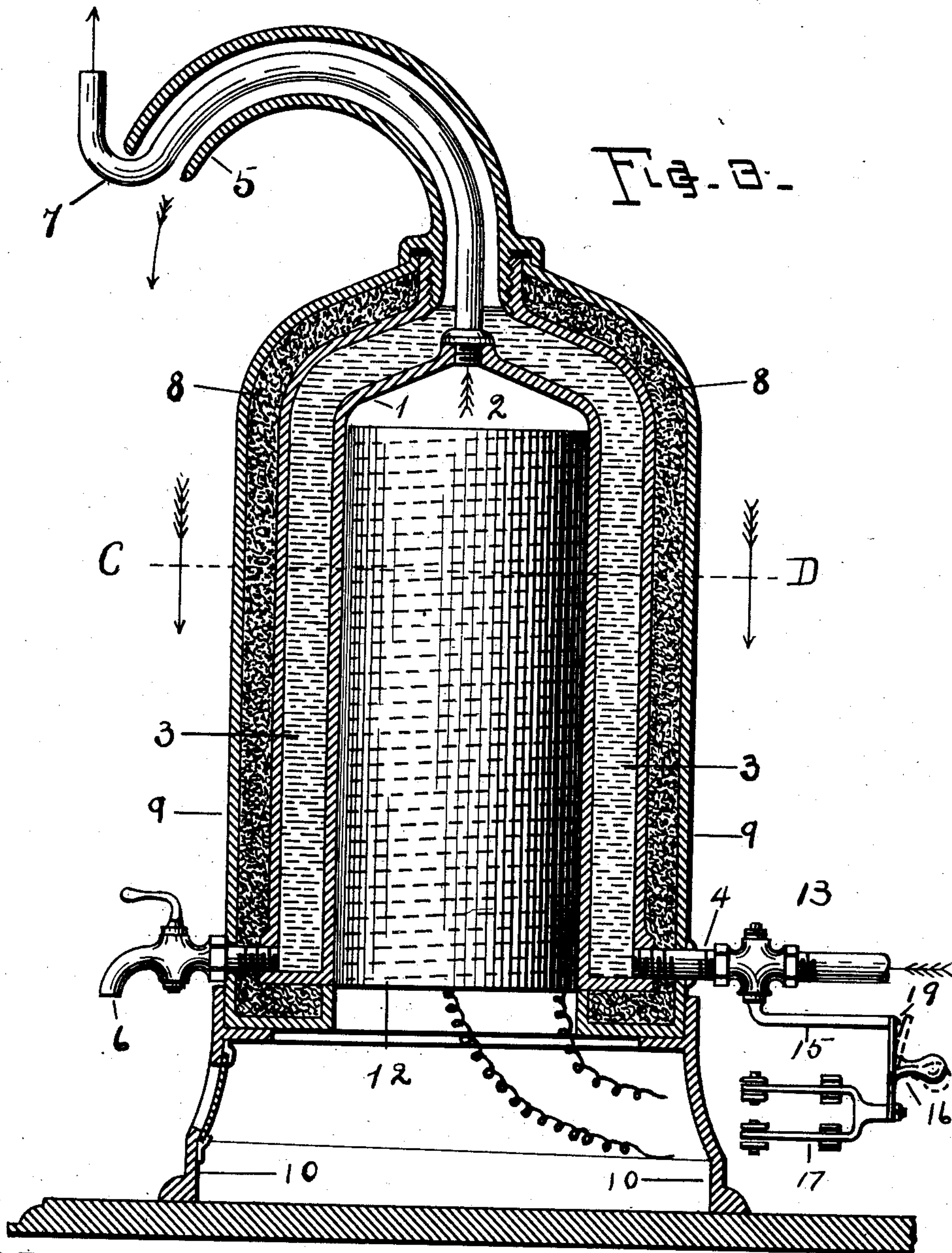
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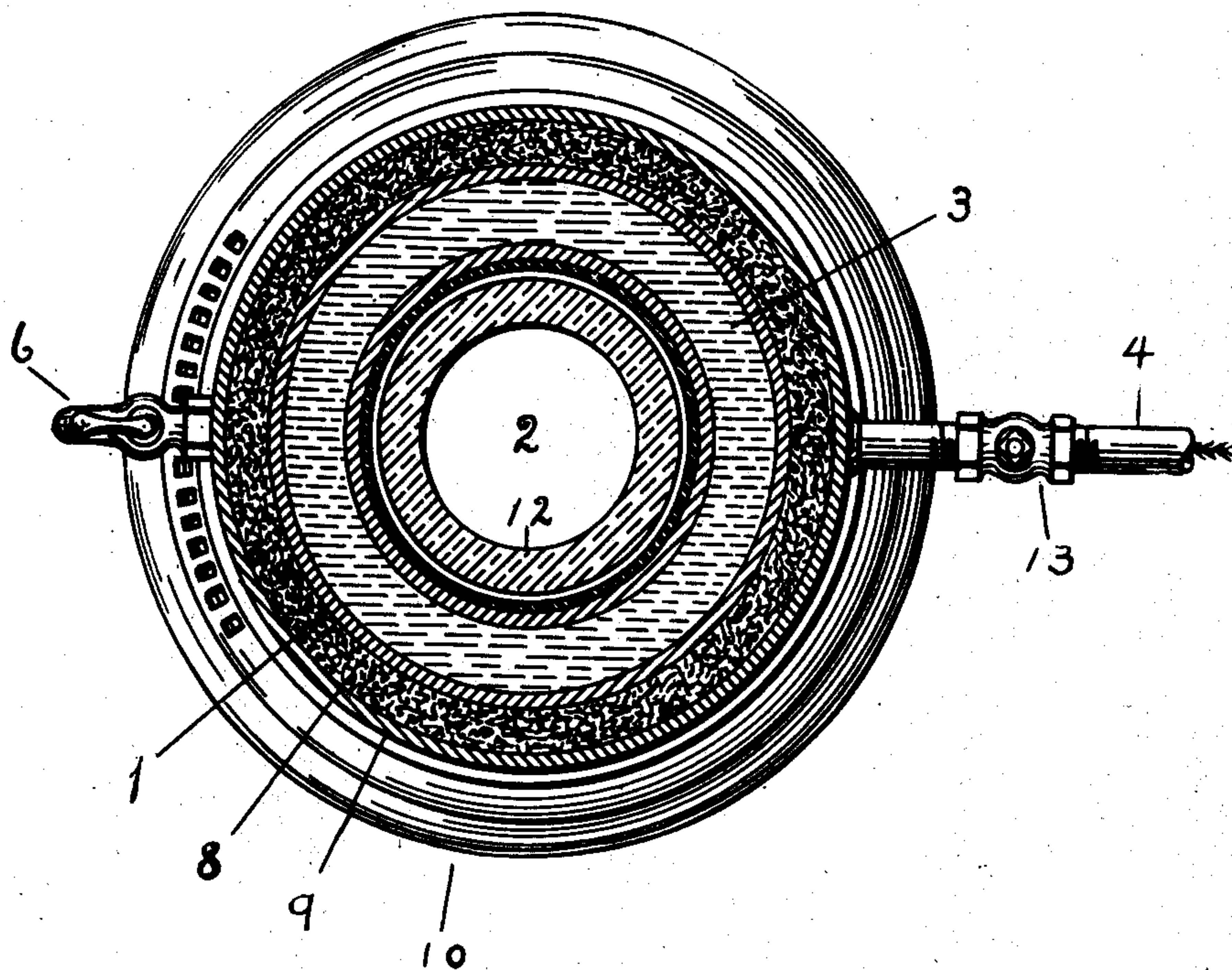
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4 SHEETS—SHEET 4.

Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWIN R. WATERMAN, OF BERKELEY, CALIFORNIA.

LIQUID-HEATER.

991,765.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed June 3, 1907. Serial No. 377,108.

To all whom it may concern:

Be it known that I, EDWIN R. WATERMAN, a citizen of the United States, and resident of Berkeley, in the county of Alameda and State of California, have invented certain new and useful Improvements in Liquid-Heaters; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to liquid-heaters in general, but more particularly those operated by either gas or electric means, and consists in the novel construction and arrangement of certain parts, as will be fully described in the following specifications and more particularly pointed out in the claims at the end thereof.

The object of my invention is to improve the construction and operation of such devices, and thereby increase their effectiveness while in practice.

Referring to the drawings herewith annexed consisting of four sheets which form a part of this specification, in which,

Figure 1 represents a central vertical section of my improved liquid-heaters, operated by gas, and showing all its features arranged and combined in the manner and for the purpose hereinafter specified. Fig. 2 is a cross section of Fig. 1 taken from dotted line A to B, looking in the direction of the arrows. Fig. 3, is a central vertical section similar to Fig. 1 showing my heater operated by electricity. Fig. 4 is a cross section of Fig. 3 taken from dotted line C to D, and looking in the direction of the arrows.

Like letters of reference made use of in the drawings denote like parts wherever employed.

1 designates an interior hollow shell constituting a plurality of cylinders arranged in such a manner as to form a central hot-air chamber 2 in which the heat generating means which may be employed therewith, is adjusted, and a liquid-containing chamber 3 surrounding the latter.

The liquid chamber just mentioned, is provided preferably at its bottom, with an inlet 4 connected to the source of liquid-supply and an outward projecting outlet 5 secured centrally at its top and bent downward to facilitate the drawing of the liquid therefrom.

For the purpose of cleaning or draining

the contents of the liquid chamber just mentioned, I provide same with faucet 6 which can be used for other purposes as will be further mentioned hereinafter.

The central-chamber is open at its bottom for the adjustment therein of the heating means as above mentioned, and its top is provided with a hot-air pipe or vent 7 projecting upwardly and formed to pass preferably through the outlet 5 either entirely or a portion thereof as shown in Figs. 1 and 3.

The exterior face of the hollow shell 1 is entirely surrounded with heavy packing 8 of a warm nature, the object of which is to keep away from the exterior wall of the liquid-chamber 3 the contact of cold atmosphere and retain within the heat generated in the central chamber 2.

The packing is secured in position around the hollow shell by means of an exterior casing 9 which may be ornamentally designed and mounted upon the base 10 shown in Figs. 1 and 3.

As it appears in the drawings the hollow shell 1 and the casing 9 are constructed each of one piece of material but can be made of a plurality of detachable parts if desired, to facilitate the construction and arrangement of my invention.

In the drawings, Fig. 1, I have shown my device in connection with a gas-burner 11 to generate the heat, and the hot-air pipe or vent 7 secured through a portion of the outlet 5, while in Fig. 3 the central chamber 2 is provided with electric heating coils 12 instead of the gas-burner as above mentioned, which may be of any ordinary construction and the hot-air pipe or vent 7 passes through the entire length of the outlet 5 and may be bent upwardly as shown. The particular object of this construction is to keep the wall of the outlet warm.

The liquid supply inlet pipe 4 and the heat generating means are provided with a combined controlling device which consists in the gas heater as shown particularly in Fig. 1, to secure stop-cock 13 of the liquid supply pipe and stop-cock 14 of the gas pipe opposite each other or in a line thereon and to provide the plug of the stop-cocks with handle 15 and 15 projecting parallel in the same direction and bound together by a cross head 16 so that both stop-cocks must be operated simultaneously in one operation.

The cross head 16 as shown, is detachable so that either one of the stop-cocks can be operated independently when desired.

In case of an electric generating means 5 connected to the heater the stop-cock 13 of the liquid supply is connected in the same manner to the usual switch 17 as shown in Fig. 3, thus operating both the switch and the stop-cock together.

10 As shown in Fig. 1 the cross head 16 is pivoted to one of the plug handles while the other handle is provided with a spring catch 18, which secures the cross head in position.

15 In Fig. 3 as shown in dotted line, the cross head is formed into a spring, one end of which is pivoted to one handle while the other end is secured in position by pin 19 on the other handle.

20 Constructed in the manner above described, if desired to obtain a continuous stream of heated liquid, the heat generating means is preferably applied first, thus warming the inner walls of the liquid chamber 25 3 and then the liquid turned into the chamber where it is heated while gradually rising therein and passes through the outlet 5 thus obtaining a continuous stream of heated liquid of a comparative uniform degree of 30 temperature, and if desired to increase the temperature of the liquid the same can be obtained by closing the inlet and heating the liquid within the chamber to the degree of temperature wanted. In this case, faucet 35 6 of the chamber can be used as an outlet to draw the contents thereof and likewise cold liquid can be obtained therewith directly from its source of supply by stopping the operation of the heat generating means.

40 It will be readily seen that my apparatus can be easily and quickly connected to any of the heat generating means above mentioned or to the source of liquid-supply and likewise detached therefrom whenever de- 45 sired.

Believing I have made novel and useful improvements in that class of devices and produced a simple and convenient means whereby a continuous stream of heated liquid or otherwise can be obtained, and having 50 fully described the same, what I claim and desire to secure by Letters Patent of the United States, is,—

1. A device of the character described, comprising an inner liquid-chamber, a heat- 55 ing chamber arranged interiorly of said liquid-chamber, an outlet or discharging member communicating with said liquid-chamber at its top, and a hot-air tube communicating with said heating chamber and 60 arranged to extend within said outlet or discharging member.

2. A device of the character described, including an inner liquid-chamber, a heating 65 chamber interior of said liquid-chamber, a heat-generating medium for said heating chamber, liquid supplying means for said liquid-chamber valves for controlling the liquid supply and the supply of the heat- 70 generating medium, said valves having right-angled stems, a cross-head pivoted at one end to one of said stems, and means to effect the detachability of the other end of said cross-head from the other valve-stem.

3. A device of the character described, 75 comprising an inner liquid-chamber, a heating chamber interior of said liquid-chamber, an outlet or discharging member communicating with said liquid-chamber, and a tube communicating with said heating 80 chamber and extending interiorly of and throughout said outlet or discharge member.

In witness whereof I have hereunto set my hand and seal this 2d day of April 1907. 85

EDWIN R. WATERMAN. [L. s.]

In the presence of—

GRACE E. WATERMAN,
A. M. MULGREW.