

No. 878,280.

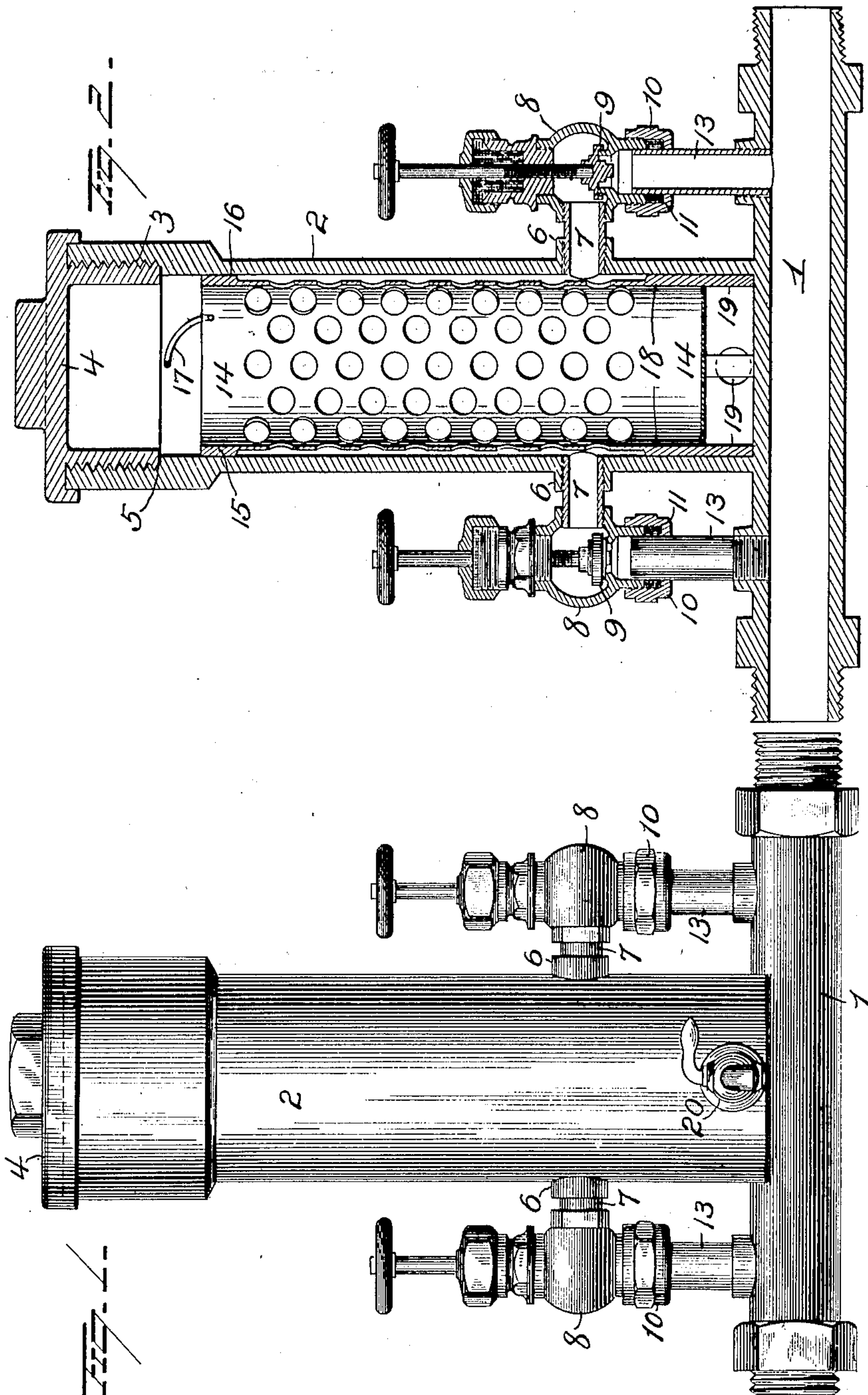
PATENTED FEB. 4, 1908.

G. J. DEHN.

APPARATUS FOR CLEANING WATER HEATERS.

APPLICATION FILED MAR. 28, 1907.

2 SHEETS—SHEET 1.



WITNESSES

E. J. Nottingham
G. J. Downing

INVENTOR

G. J. Dehn
By H. A. Seymour
Attorney

No. 878,280.

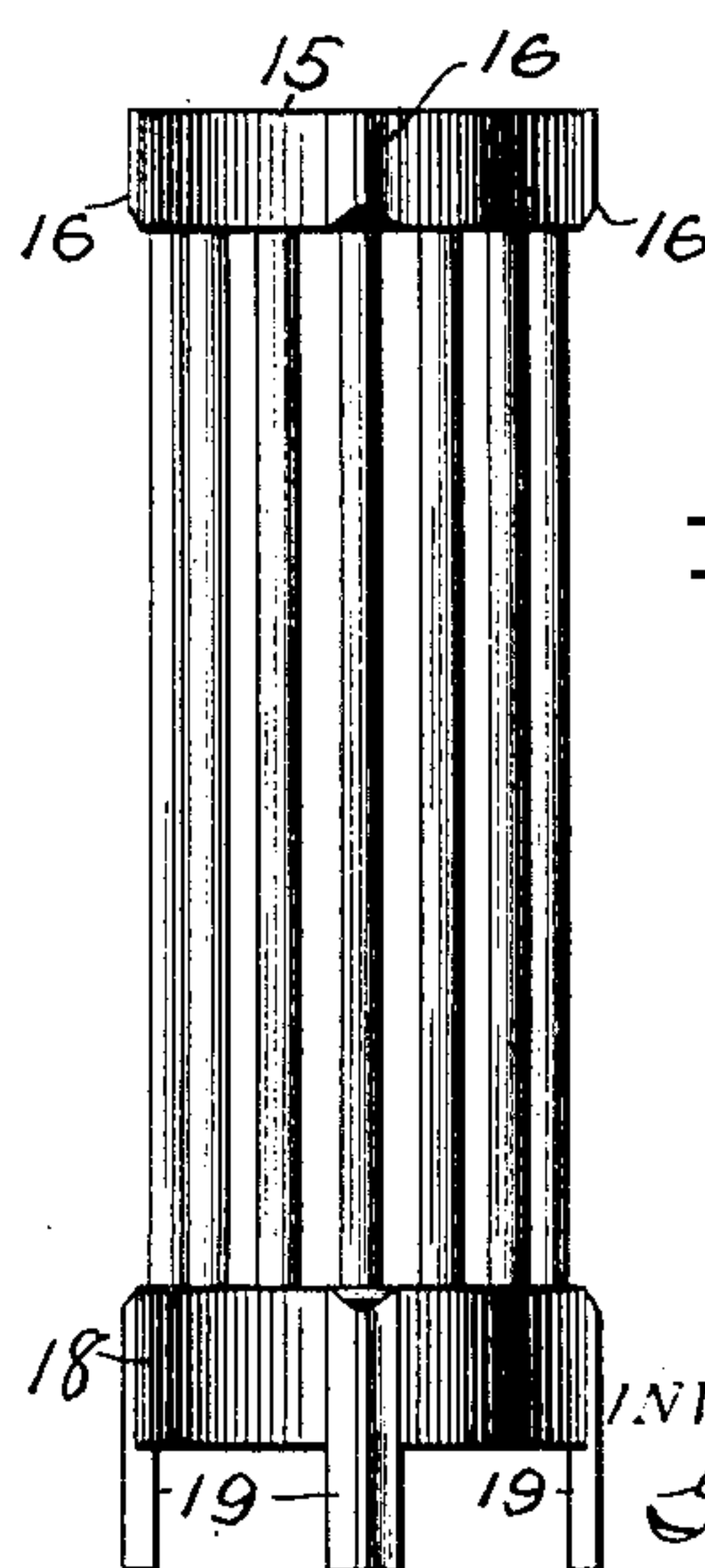
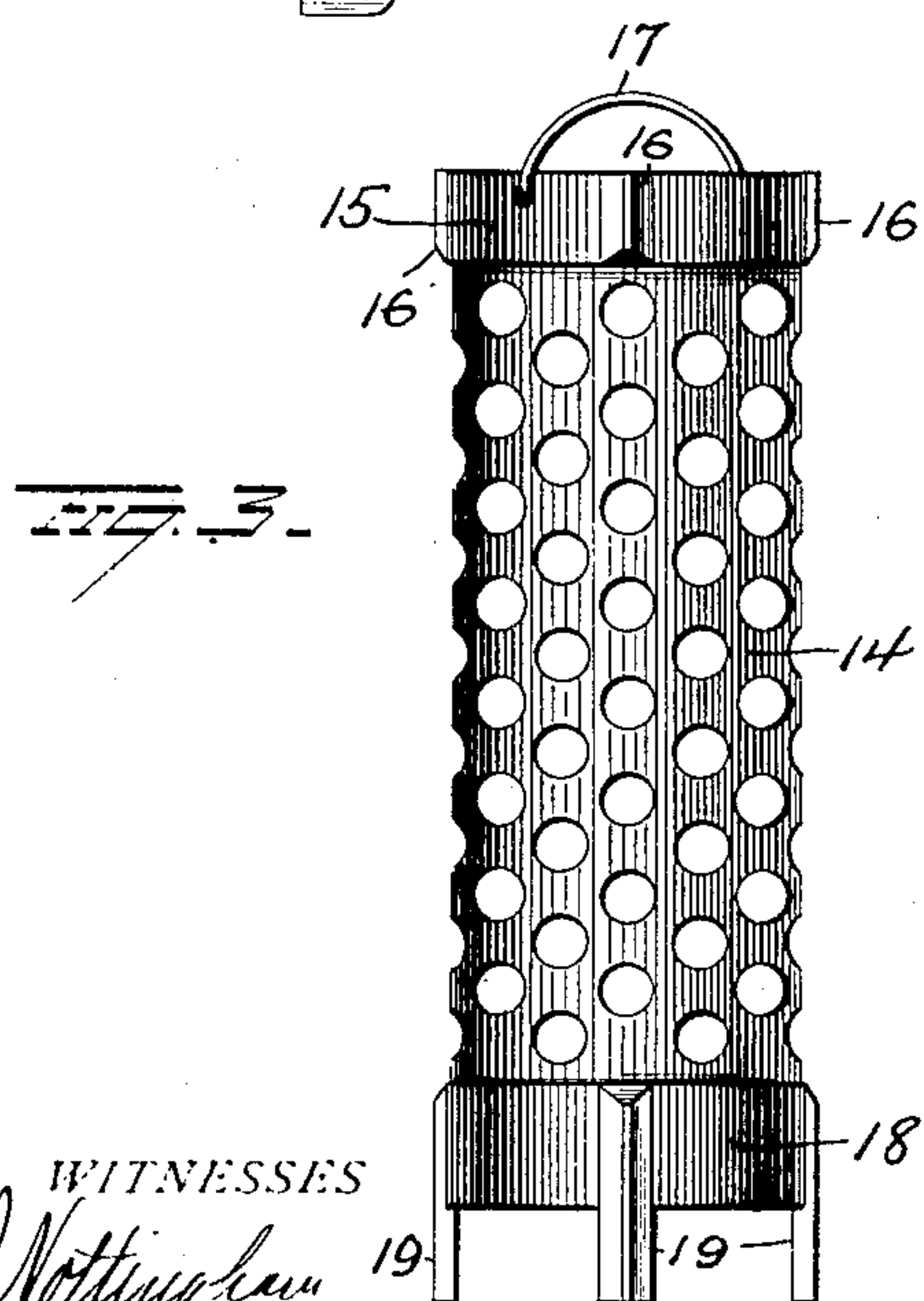
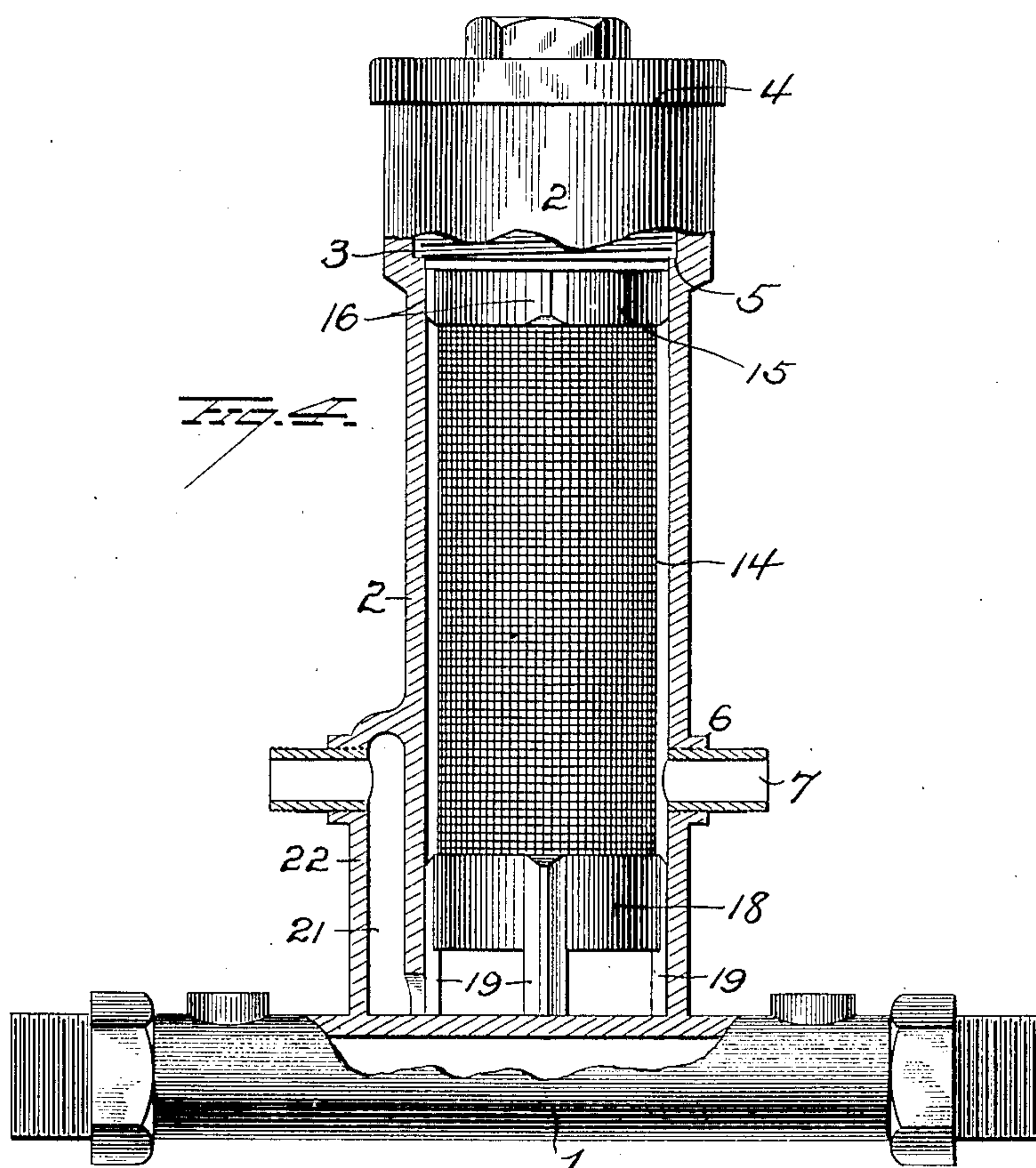
PATENTED FEB. 4, 1908.

G. J. DEHN.

APPARATUS FOR CLEANING WATER HEATERS.

APPLICATION FILED MAR. 28, 1907.

2 SHEETS—SHEET 2.



WITNESSES
E. Nottingham
G. J. Downing

INVENTOR
G. J. Dehn
By *H. A. Seymour*
Attorney

UNITED STATES PATENT OFFICE.

GEORGE JOHN DEHN, OF FREEPORT, ILLINOIS.

APPARATUS FOR CLEANING WATER-HEATERS.

No. 878,280.

Specification of Letters Patent.

Patented Feb. 4, 1908.

Application filed March 28, 1907. Serial No. 365,129.

To all whom it may concern:

Be it known that I, GEORGE JOHN DEHN, of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Apparatus for Cleaning Water-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in apparatus for automatically cleaning water heaters, and more particularly to an apparatus adapted for attachment to the leading-in pipe of a boiler, water back or front in ranges, and containing a preparation which when dissolved and passed through such water heater operates to prevent the accumulation therein of deposits of lime or other foreign matter.

My invention consists in certain details of construction and in the parts and combination of parts as will be more fully explained and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of my improved apparatus. Fig. 2 is a view in vertical section of same. Fig. 3 is a view of the cage detached. Fig. 4 is a view in vertical section of a modification, and Fig. 5 is a view of a modified form of cage.

1 represents a pipe section adapted to be secured to and form a section of supply pipe leading from the boiler or other source of supply to the water heater, the latter being usually the water back of a stove. This section 1 is preferably threaded at its ends for attachment to said pipe and integral with said section, intermediate its ends, is the receptacle or cylinder 2 having an upper open end 3, normally closed by the screw plug 4, the lower end of which latter seats on the shoulder 5, while the upper flange thereof rests on the top of the receptacle thus forming a water tight closure at the top. The receptacle or cylinder 2 is provided on opposite sides and in the plane of pipe section 1, but a considerable distance above the latter, with the perforated and threaded bosses 6 to which short section of pipe 7 are secured, the opposite ends of said pipe section 7 being screwed to the valve casings 8. Each valve casing 8 carries a valve 9 and has screwed to its lower end a gland 10 carrying a packing 11, which gland, packing and lower end of valve forms an expansion or slip joint with

the pipe section 13 connected at its lower end to pipe section 1.

With the construction thus far described it will be seen that with both valves closed, the water will pass freely through pipe section 1. If however both valves be opened water will rise in one pipe and enter the receptacle or cylinder and after rising therein up to the opposite opening will flow out through the other pipe section 7 and 13.

Located within the cylinder 2 is the cylindrical cage or basket 14. This cage is of less diameter than the cylinder 2, and consists of a body and top and bottom rings. The body is preferably composed of perforated sheet metal, secured at its upper end to the top ring 15 the latter having spacing blocks 16 on its outer face for holding the perforated cage out of contact with the inner wall of the cylinder, and a bail 17 by which the cage may be handled. The body is secured at its lower end to the ring 18 closed at its bottom, and provided with combined spacing blocks and legs 19 which hold the lower closed end of the cage above the bottom of the cylinder, thus forming a chamber within the cylinder below the cage from which the sediment may be drawn through the drain cock 20, the cylinder 2 being provided with perforated nipples on its opposite side so as to permit the cock to be secured to either side of the cylinder. The perforated cage 14 is designed to hold a chemical compound preferably in the form of a stick, which latter is dissolved and distributed with the feed water to all parts of the boiler or heater, the sediment and foreign matter settling in the bottom ring 18 of the cage.

Instead of making the cage of perforated sheet metal it may be made of wire gauze as shown in Fig. 4 or simply vertical wires placed sufficiently close to hold the chemical compound out of contact with the interior of the cylinder, as shown in Fig. 5. Again if desired the inlet of the cylinder may be located in a plane considerably above the bottom thereof, the outlet may be at the bottom and communicate with a port 21 formed in an enlargement 22 at the side of the cylinder, the port 21 having its discharge opening approximately in the plane of the inlet. By this arrangement, which is shown in Fig. 4, the water is compelled to traverse in the direction of the length of the cylinder and cage containing the compound and thus create a flow lengthwise the latter and cause the water

passing through the cylinder to be regularly and evenly impregnated with the chemical. In this modification I have shown the case made of wire gauze as previously described.

5 The chemical will be dissolved more rapidly in the path of the current, or flow of water, and as it dissolves, the stick or block will settle down in the bottom of the cage, thus eventually bringing the entire mass into the
10 path of the current or flow.

In using the apparatus valves 9 should be closed thus cutting off communication between the feed pipe and cylinder. The screw plug 4 is then removed and the cage
15 withdrawn, cleaned if necessary, and the compound placed therein. The cage should be then replaced, the plug screwed home and the valves 9 opened. As soon as both valves have been opened, a portion of the water
20 passing through the feed pipe will pass through inlet pipe 13 into the cylinder, partly filling the latter, the upper closed end of the cylinder forming an air chamber which prevents the water from rising to the top of the
25 cage. The water thus admitted to the cylinder becomes more or less impregnated with the chemical compound and passes through the outlet back to the feed pipe and from thence to the heater.

30 It is evident that many slight changes might be resorted to in the relative arrangement of parts herein shown and described without departing from the spirit and scope of my invention hence I would have it understood that I do not wish to confine myself
35 to the exact construction shown and described, but,

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—
40

1. The combination with a pipe section, a receptacle, and inlet and outlet pipes connecting said pipe section and receptacle, of
15 a removable cage for holding a compound or chemical, located within said receptacle and a closure for the top of the receptacle.

2. The combination with a pipe section, a receptacle and inlet or outlet pipes connecting said pipe section and receptacle the
50 said inlet and outlet pipes being connected to the receptacle at points above the base of the latter, of a removable cage for holding a compound or chemical, located within said

receptacle, and a closure for the top of the receptacle. 55

3. The combination with a pipe section, a receptacle thereon, inlet and outlet pipes connecting said pipe section and receptacle, the said pipes being connected to the receptacle at points above the base of the latter,
60 and a drain cock connected to said receptacle below the inlet and outlet pipe connections, of a removable cage for holding a compound or chemical, located within said receptacle and a closure for the top of the
65 receptacle.

4. The combination with a pipe section and a receptacle and inlet and outlet pipes connecting said pipe section and receptacle, of a cage located within said receptacle and
70 constructed to permit of the free passage of water through same, the said cage resting with its bottom in a plane above the bottom of the receptacle, and a closure for the receptacle. 75

5. The combination with a pipe section, a receptacle, and inlet and outlet pipes connecting said pipe section and receptacle, of a removable cage located within said receptacle, and having open sides, a closed bottom
80 and supporting legs, and a closure for receptacle.

6. The combination with a pipe section, a receptacle and inlet and outlet pipes connecting said pipe section and receptacles, of
85 a removable cage located within the receptacle, the bottom of said cage resting above the bottom of the receptacle, spacing blocks for holding said cage out of contact with the sides of the receptacle and a closure for the
90 receptacle.

7. The combination with a pipe section, a receptacle, and inlet and outlet pipes connecting said pipe section and receptacle, of
95 a removable cage located within said receptacle, the said cage consisting of upper and lower rings the lower ring having a closed bottom, and a perforated body connecting said rings, and a closure for said receptacle.

In testimony whereof, I have signed this
100 specification in the presence of two subscribing witnesses.

GEORGE JOHN DEHN.

Witnesses:

GEORGE F. DOWNING,
W. CLARENCE DUVALL.