

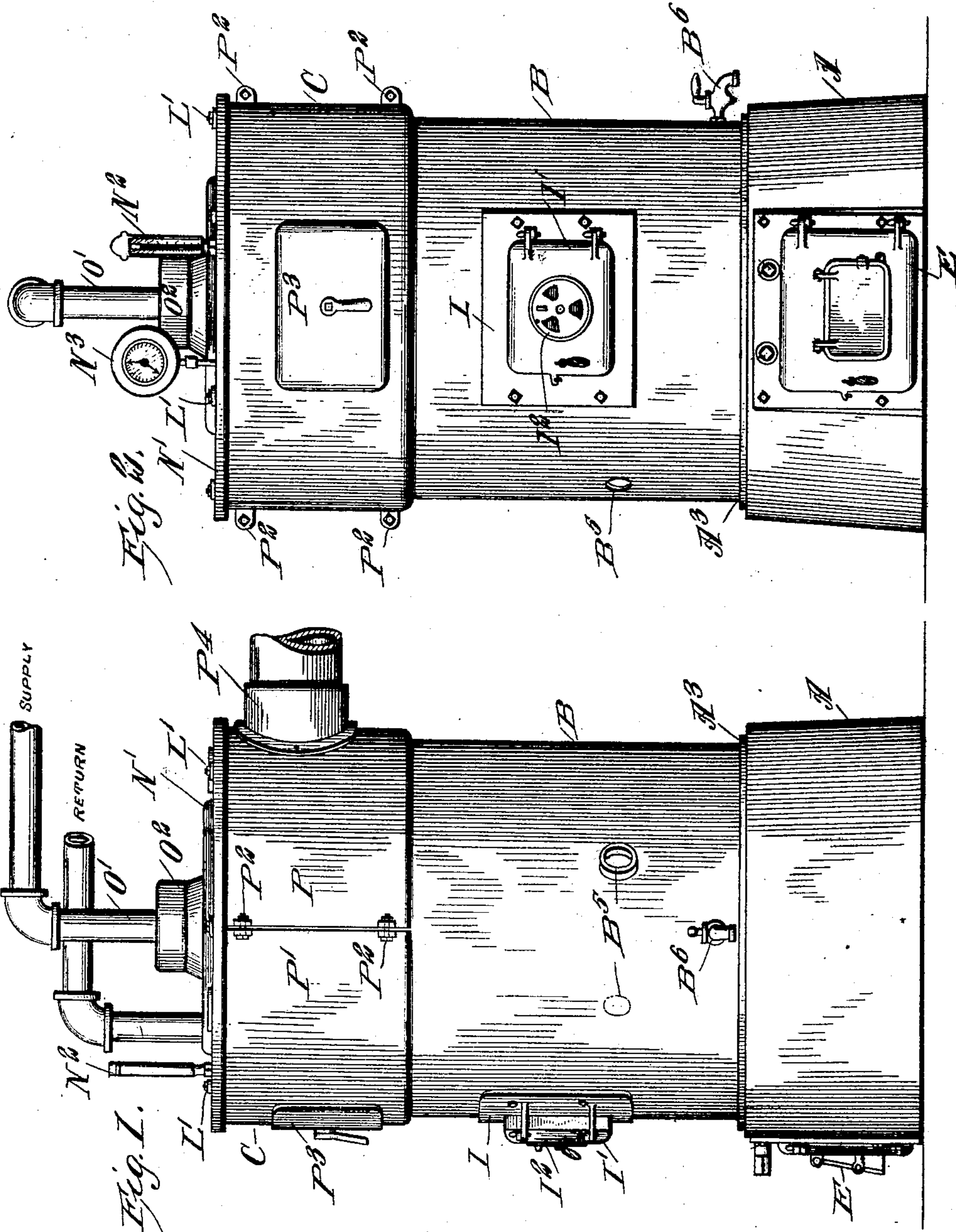
E. B. SADTLER.  
HOT WATER HEATER.

APPLICATION FILED NOV. 30, 1908.

932,908.

Patented Aug. 31, 1909.

2 SHEETS—SHEET 1.



WITNESSES  
W. M. Callaghan  
Perry B. Turpin.

INVENTOR  
EDWIN B. SADTLER  
BY *Munn & Co.*  
ATTORNEYS

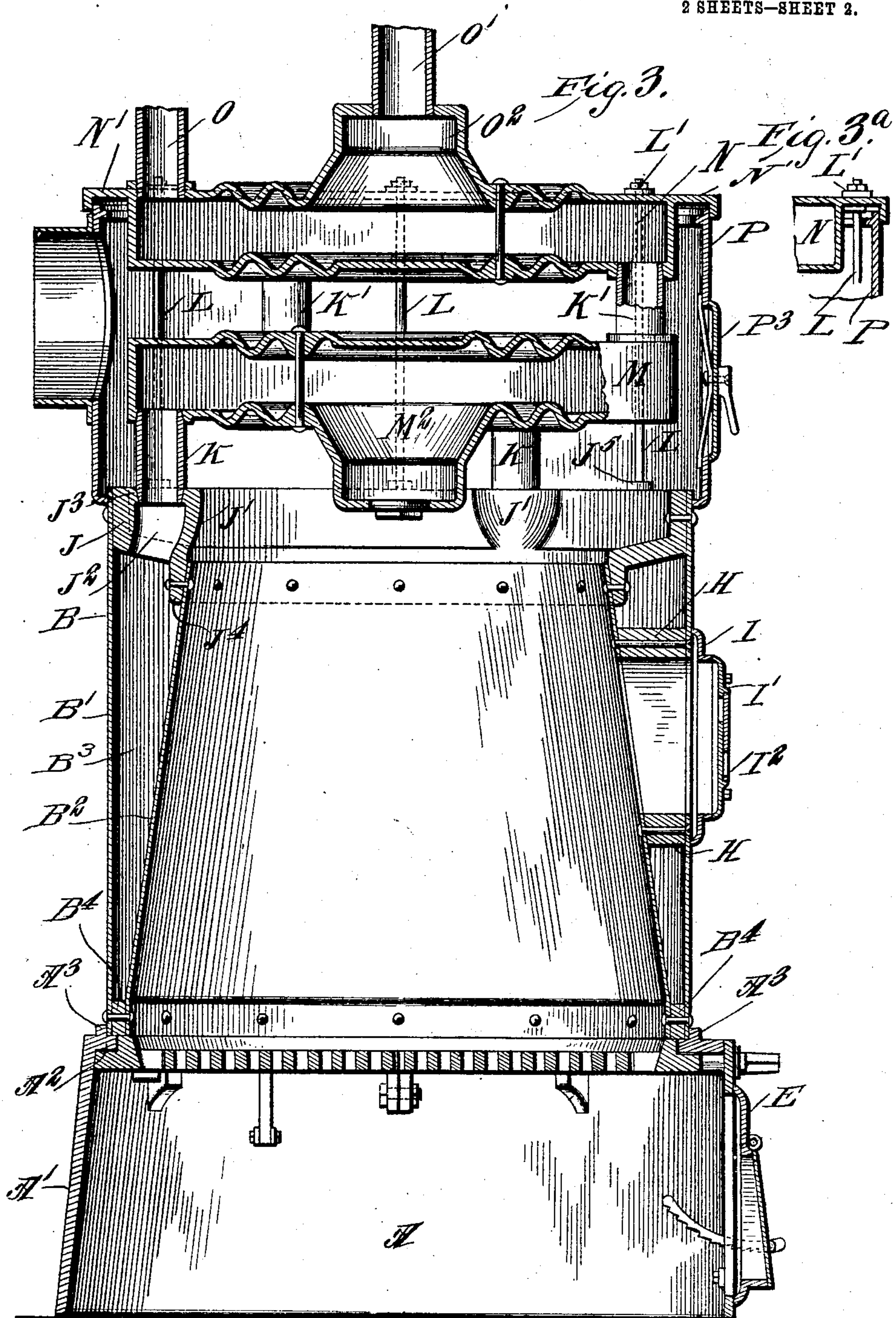
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# UNITED STATES PATENT OFFICE.

EDWIN BEALE SADTLER, OF RICHMOND, VIRGINIA, ASSIGNOR TO COPPRIDGE HEATER CORPORATION, OF RICHMOND, VIRGINIA, A CORPORATION OF VIRGINIA.

## HOT-WATER HEATER.

932,908.

Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed November 30, 1908. Serial No. 465,143.

*To all whom it may concern:*

Be it known that I, EDWIN BEALE SADTLER, a citizen of the United States, and a resident of Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Hot-Water Heaters, of which the following is a specification.

This invention is an improvement in hot water heaters and has for an object to provide a simple effective structure which will be durable in operation, and which will not easily get out of order or leak and will produce a maximum heating effect in operation; and the invention consists in certain novel constructions, and combinations and arrangement of parts as will be hereinafter described and claimed.

In the drawings, Figure 1 is a side view. Fig. 2 is a front elevation, and Fig. 3 is a vertical longitudinal section taken from front to rear of a heater embodying my invention, and Fig. 3<sup>a</sup> is a detail sectional view of a portion of the upper part of the casing.

In carrying out my invention I form the heater in three sections A, B, and C, the first section A being a base portion, the second section B a middle or shell portion mounted on the base portion, and the third section C being a dome or superheating portion mounted on the intermediate shell portion. By making the heater in sections as described, and as illustrated in Figs. 1, 2 and 3 it will be noticed it can be conveniently taken apart and put together and thus can be easily transported and handled and passed through a small space to and from desired points.

The base A has a main casing or ring A', provided at its upper end with an inwardly projecting flange A<sup>2</sup> to underlie the water chamber and overlie the grate ring, and it also has an upwardly projecting flange A<sup>3</sup> which fits around the lower end of the water chamber as best shown in Fig. 3. The intermediate or middle portion of the heater is formed with the outer shell B' and the inner shell B<sup>2</sup> concentric within the outer shell and made conical and tapering inwardly toward its upper end providing the water space at B<sup>3</sup> which gradually enlarges toward its upper end. A mud ring B<sup>4</sup> is riveted to and between the shells B' and B<sup>2</sup> and rests, as best shown in Fig. 3, partly upon the base

A, and partly over the grate ring G. This wrought iron mud ring forms the base of the water chamber, and a connecting means between the inner and outer shells and simplifies and strengthens the structure at this point. The outer shell B' is provided with a number of openings B<sup>5</sup>, usually three, suitably reinforced and tapped to receive the return pipes and placed well down on the shell to pump the colder water in the bottom of the chamber. The water chamber also has an opening for the connection of the blow-off-cock B<sup>6</sup>, as shown in Figs. 1 and 2.

The door ring casting H is inserted between the inner and outer shells and riveted in place, see Fig. 3, and to this door ring casting is bolted on the door frame casing I, having a suitable door opening, and the hinge door I' having a damper I<sup>2</sup>.

Between the inner and outer shells B' and B<sup>2</sup>, at their upper ends I rivet the cap or head ring J. This ring is in the form of a heavy casting having on its inner side bosses J', and it is provided with ports J<sup>2</sup> leading upwardly through said bosses and having their upper ends tapered at J<sup>3</sup> forming beveled seats for the lower ends of the tubes K, the taper of the said tubes being less than that of the seats into which they fit, thus insuring an absolutely tight joint. The tubes K and K', the latter being presently described, are preferably seamless brass or copper tubes, and they are pressed firmly to their seats by the means presently described, in such manner as to form a tight joint which will not be injuriously affected by the varying temperatures in the use of the invention.

At its inner side, the ring J is provided with a dispensing flange J<sup>4</sup>, to which is riveted the upper end of the inner shell B<sup>2</sup>, the upper end of the outer shell B' being riveted to the outer side of the ring as shown in Fig. 3. The ring J is also provided on its upper side with bosses J<sup>5</sup> for the holding down bolts L, presently described.

Superheating domes M and N are arranged in the sections C, the dome M underlying the dome N, and the said domes being connected by tubes K', and the lower dome M being connected with the water chamber by the tubes K, before described.

It will be noticed that I provide three connecting tubes between the water chamber



and the dome and three between the lower dome and the upper one, and these tubes are not in alinement, so that the water can travel laterally within the dome M between the tubes K and K', and laterally within the dome N between the tubes K' and the pipes O, thus securing the fullest benefit from the heat circulated around the superheating domes. The upper superheating dome has at its upper side an outwardly projecting flange N', and at its upper side the dome is tapped for the pipes O, and for a central pipe O', the latter connecting with the central upwardly projecting tubular extension O<sup>2</sup> and the lower superheating dome M, being provided with a similar extension M<sup>2</sup>, which projects downwardly toward the fire pot. The upper dome N may also be suitably tapped for the thermometer N<sup>2</sup>, and the gage N<sup>3</sup>.

The holding down bolts L extend between the cap ring or head J and the dome N, preferably extending through the flange N', and receive nuts L' which may be turned down to draw the upper dome and the cap ring or head J together thus tightening the joints between the tubes and the parts which they connect.

The upper section C is provided with a cast iron fire casing, made in semicylindrical sections P and P', bolted together at P<sup>2</sup> surrounding the superheating domes. This cast iron fire casing is supplied at one side with a large cleaning out door P<sup>3</sup>, and at the other side with a smoke pipe connection at P<sup>4</sup>. By this construction the superheating domes and tubes may be conveniently cleaned through the cleaning out door, or if desirable or necessary the fire casing may be entirely removed for a thorough examination or cleaning up without disturbing the supply or return pipes.

In consequence of the fire casing being clamped to its position and not bolted to any part of the heater it is adjustable laterally in such manner as to enable the installer to lead the smoke pipe directly to the flue re-

gardless of the direction in which the heater faces.

I claim—

1. The hot water heater herein described comprising a base, a shell mounted on said base and having a water chamber provided at its lower end with a mud ring overlying the base, said water chamber having inner and outer walls, a cap ring or head at the upper end of the water chamber and having ports for the passage of water beveled at their upper ends to form seats for tubes, superheating domes above said cap ring, tubes between the domes and between the lower dome and the cap ring, a removable sectional fire casing encircling the domes above the water chamber, and bolts within said sectional casing and connected at their upper ends with the upper dome, and at their lower ends with the cap ring of the water chamber, all substantially as set forth.

2. In a hot water heater the combination of a water chamber having inner and outer shells, a cap or head ring riveted at its outer side within the outer shell and having at its inner side a depending flange riveted to the inner shell, the said ring being provided at its inner side with bosses projecting into the ring and with ports or passages extending through said bosses, a superheating dome above the said ring, and tubes between the said dome and ring and communicating with the ports or passages in the said ring, substantially as set forth.

3. The combination in a hot water heater with a heating chamber, and a superheating section above the same, of a fire casing encircling the superheating section and made in sections clamped together whereby it may be removed or may be adjusted laterally without disturbing any of the pipe connections, substantially as set forth.

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Witnesses:

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