

No. 673,081.

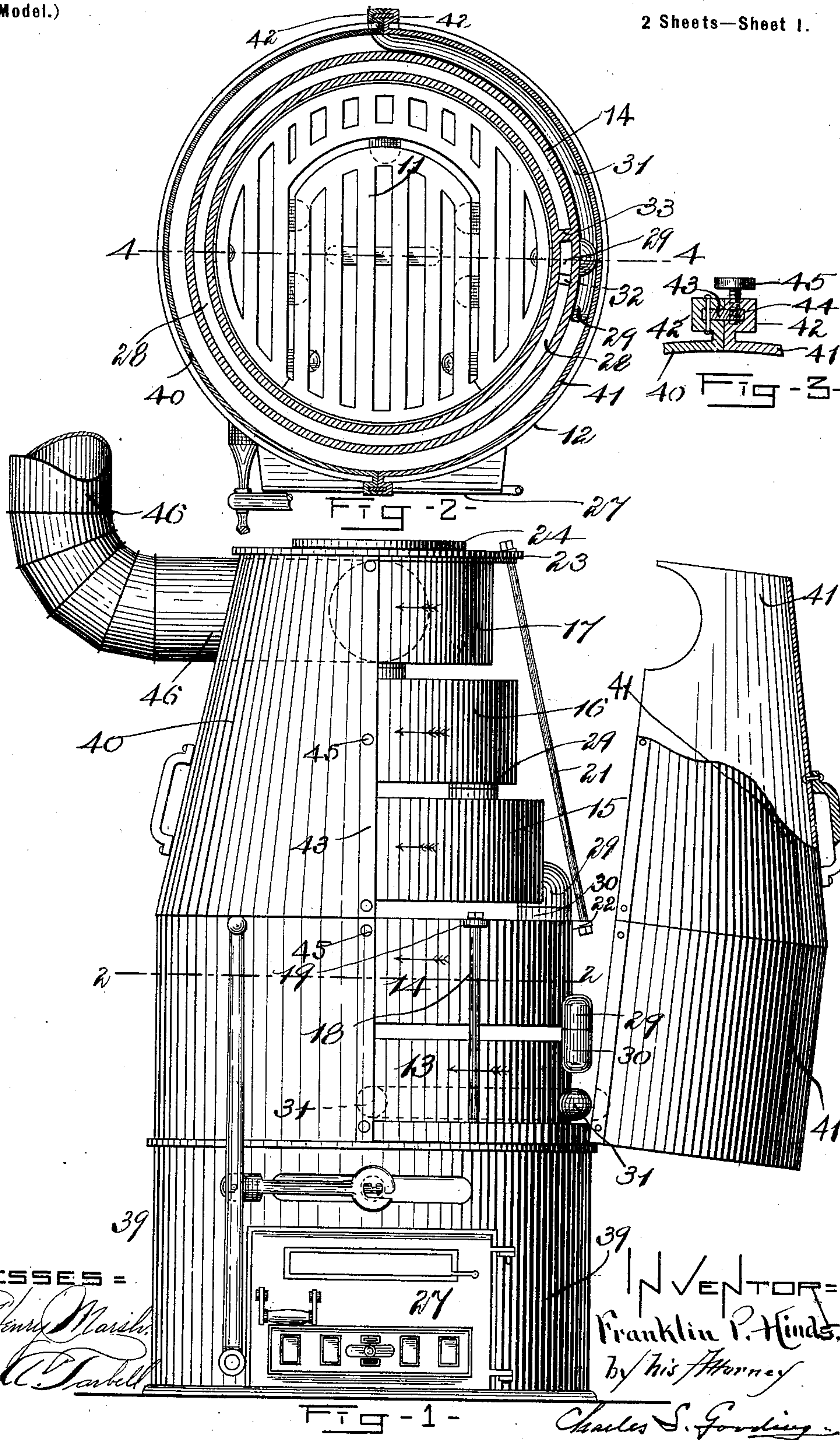
Patented Apr. 30, 1901.

F. P. HINDS.
HOT WATER HEATER.

(Application filed Feb. 20, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES =

D. Henry Marsh.

George C. Dabell.

INVENTOR =
Franklin P. Hinds.
by his Attorney
Charles S. Gooding.

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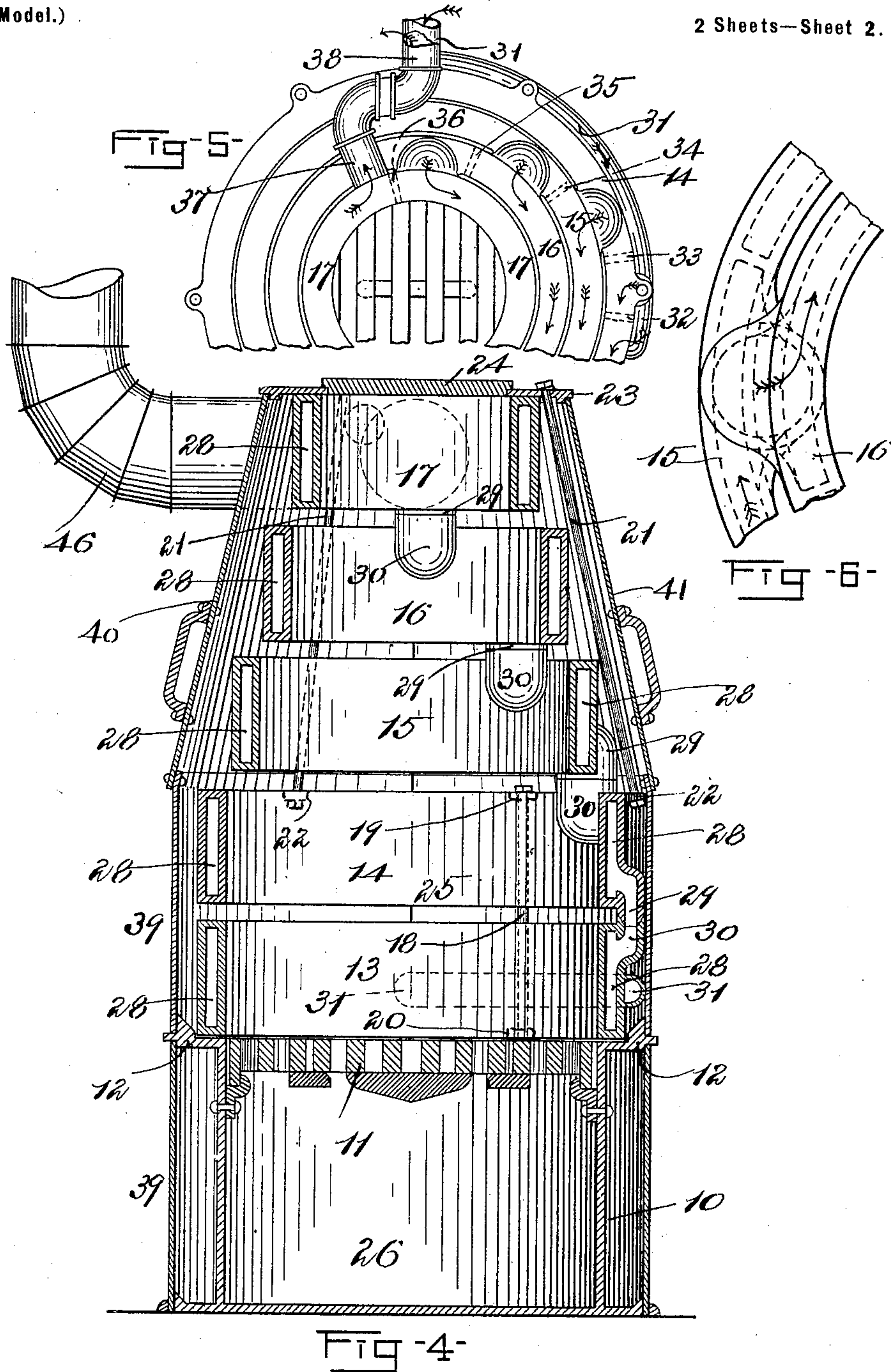
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J. Henry Marsh.
George A. Tarbell.

INVENTOR=
Franklin P. Hinds.
by his Attorney, Charles S. Fording.

UNITED STATES PATENT OFFICE.

FRANKLIN P. HINDS, OF WALTHAM, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO JOHN H. SULLIVAN, OF BOSTON, MASSACHUSETTS.

HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 673,081, dated April 30, 1901.

Application filed February 20, 1901. Serial No. 48,132. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN P. HINDS, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Hot-Water Heaters, of which the following is a specification.

The object of this invention is to produce a simple, cheap, and economical hot-water heater.

The invention consists in a series of hollow annular sections, each of said sections having an inlet and an outlet opening and a vertical partition extending across the interior of each of said sections located between the inlet and outlet openings thereof, each of said sections decreasing in external diameter from the bottom to the top section thereof and joined together by bolts to form a conical structure.

The invention still further consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a front elevation of my improved hot-water heater, a portion of the casing thereof being shown removed and partly broken away. Fig. 2 is a plan section taken on line 2 2 of Fig. 1. Fig. 3 is a sectional detail illustrating the manner of detachably connecting the two halves of the casing. Fig. 4 is a central longitudinal section of my improved hot-water heater, viewed from the front of the same, taken on line 4 4, Fig. 2. Fig. 5 is a top plan partly broken away to save space in the drawings. Fig. 6 is a detail plan view of a portion of two of the hollow annular sections.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 10 is the base of the heater of any suitable construction and formed to support a grate 11 and having an annular rim 12 thereon to support the hollow annular sections 13, 14, 15, 16, and 17. The sections 13 and 14 are of the same interior diameter and are joined together by bolts 18, extending from ears 19 at the top of the section 14 to ears 20 at the bottom of the section 13.

The sections 15, 16, and 17 are joined together by bolts 21, which extend from the bot-

tom of the section 15 to the top of the section 17 and are secured to ears 22 at the top of the section 14 and pass through a plate 23 upon the top of the section 17. Said plate has a cover 24 thereon, through which the coal or other fuel is introduced into the interior of the annular sections and dropped upon the grate 11. The sections 13 and 14, being of the same interior diameter constitute a fire-box 25, the space below the grate forming an ash-pit 26, from which the ashes are removed through the usual ash-pit door 27, of any desirable construction. Each of said sections has an inlet 29 and an outlet-opening 30 and a partition extending entirely across a passage-way 28 and from the top to the bottom of the same, said passage-way being located between said inlet and outlet openings. The water enters through the passage-way or inlet-pipe 31, passes into the passage-way 28 in the section 13, at the right-hand side thereof, Fig. 5, thence flows around said section 13 in the passage-way 28 until it arrives at the partition 32, and thence passes out through the outlet-opening 30 of said section 13 and through the inlet-opening 29. The water flows in the direction of the arrow, Fig. 5, around the passage-way 28 in the section 14 until it comes to the partition 33, where it passes upwardly through the outlet-opening 30 of the ring 14, through the inlet-opening 29 of ring 15, and thence around said ring until it meets the partition 34 of the ring 15, thence through the outlet-opening 30 of the ring 15, through the inlet-opening 29 of the ring 16, around said ring until it meets the partition 35, thence through the outlet-opening 30 in the ring 16, through the inlet-opening 29 in the ring 17, and around said ring 17 until it meets the partition 36, whence it passes through the outlet-opening 37 to the outlet-pipe 38.

Both the outlet and inlet openings 30 and 29 are beveled at their meeting edges, as shown in Fig. 4, so that when the different sections are drawn together by the bolts 18 and 21 there will be a tight joint formed between the different openings of the respective sections.

It will be seen that the rings 15, 16, and 17 decrease in diameter, the ring 15 being less than 14, the ring 16 less than 15, and the ring

17 less than 16, so that when the different sections are joined together, as hereinbefore described, the general contour of the sections taken as a whole forms a conical structure.

5 The sections 13 to 17 and the base 10 are surrounded by a casing 39, and all of said casing above the base 10 is made in two parts or sections 40 and 41. Each of these sections has a flange 42 thereon, one of said flanges
10 having a strip 43 riveted thereto, which forms a tongue fitted to engage a groove 44 in the adjacent flange 42. Set-screws 45 serve to hold the strip 43 in the groove 44 after the two casing-sections have been placed upon the
15 base 10 around the hot-water sections 13 to 17 and pushed together, as shown in Fig. 3.

It will be seen, Fig. 6, that the inlet-opening from the section 16 projects beyond the outside of said section about one-half of the
20 diameter of said opening, while the outlet-opening of the section 15 projects inwardly about one-half the diameter of said opening, the two centers coinciding at a point located between the outside of the ring 16 and the in-
25 side of the ring 15, and the same construction is used in the outlet-openings between any two rings of different diameters.

The smoke-pipe 46 is attached to the casing 39 of the upper end of the casings sections 40
30 and 41, one-half of the necessary opening for said smoke-pipe being taken out of each of said casing-sections.

The operation of the device as a whole is as follows: The fuel is introduced through an
35 opening in the top of the plate 23 (removing the cover 24) and falls upon the grate 11 inside the sections 13 and 14, said sections forming a fire-box. The gases and flames from the fire pass upwardly around the outside and in-
40 side of the sections 15, 16, and 17, forming a very effective means of heating the water contained in the passages 28 in said sections, as every portion of the different sections is exposed to the flames and heated gases. Said
45 gases finally pass out at the top through the smoke-pipe 46.

The construction of the rings gradually decreasing in diameter from the ring 14 to the ring 17 assists in the exposure of effective
50 heating-surface to the flames.

It is evident that any number of sections may be used, according to the number of radiators which it is desired to supply. The casing 39 being formed in two parts 40 and
55 41 provides a convenient and simple way by means of which all parts of the heater may be reached and cleaned or repaired.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—
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1. A hot-water heater comprising a series of hollow annular sections, each of said sections having an inlet and an outlet opening and a vertical partition between said inlet and out-
65 let openings extending entirely across the interior of each of said hollow annular sections, the outside diameter of each of said sections

decreasing from the lowermost to the uppermost section and forming a conical structure.

2. A hot-water heater comprising a series of
70 hollow annular sections, each of said sections having an inlet and an outlet opening and a vertical partition between said inlet and outlet openings extending entirely across the interior of each of said hollow annular sections,
75 the outside diameter of each of said sections decreasing from the lowermost to the uppermost section and forming a conical structure, and bolts joining said sections together.

3. A hot-water heater comprising two hol-
80 low annular sections, one of said sections being of larger outside diameter than the other, each of said sections having an inlet and an outlet opening and a vertical partition extending across the interior of each section between
85 the inlet and outlet openings thereof, the outlet-opening of the larger ring being fitted to form a water-tight joint with the inlet-opening of the smaller ring, substantially one-half of the inlet-opening of said smaller ring be-
90 ing located upon the outside of said ring and substantially one-half of the outlet-opening of said larger ring being located upon the inner side of said ring.

4. A hot-water heater comprising two hol-
95 low annular sections of the same external diameter, each of said sections having an inlet and an outlet opening and a vertical partition extending across the interior of each of said sections between the inlet and outlet openings
100 thereof, said sections being joined together by bolts and forming a fire-pot, a grate located beneath the lower of said sections, and a series of similar hollow annular sections, each
105 of said sections of a smaller outside diameter than the section below and adjacent thereto, said series of sections located above said fire-pot and forming a conical structure, substantially as described.

5. A hot-water heater comprising a series of
110 hollow annular sections, each of said sections having an inlet and an outlet opening and a vertical partition extending across the interior of each of said sections between the out-
115 let and inlet openings thereof, two of said sections being of the same outside diameter and joined together by bolts to form a fire-pot, the remainder of said series of sections decreasing in diameter from the bottom section to the top section, joined together by bolts and
120 forming a conical structure, located above said fire-pot, a grate located beneath the lowermost annular section, a plate located above the uppermost section, a hole in said plate fitted with a cover, and a casing surrounding
125 said annular sections.

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

FRANKLIN P. HINDS.

Witnesses:

CHARLES S. GOODING,
JOHN H. SULLIVAN.