

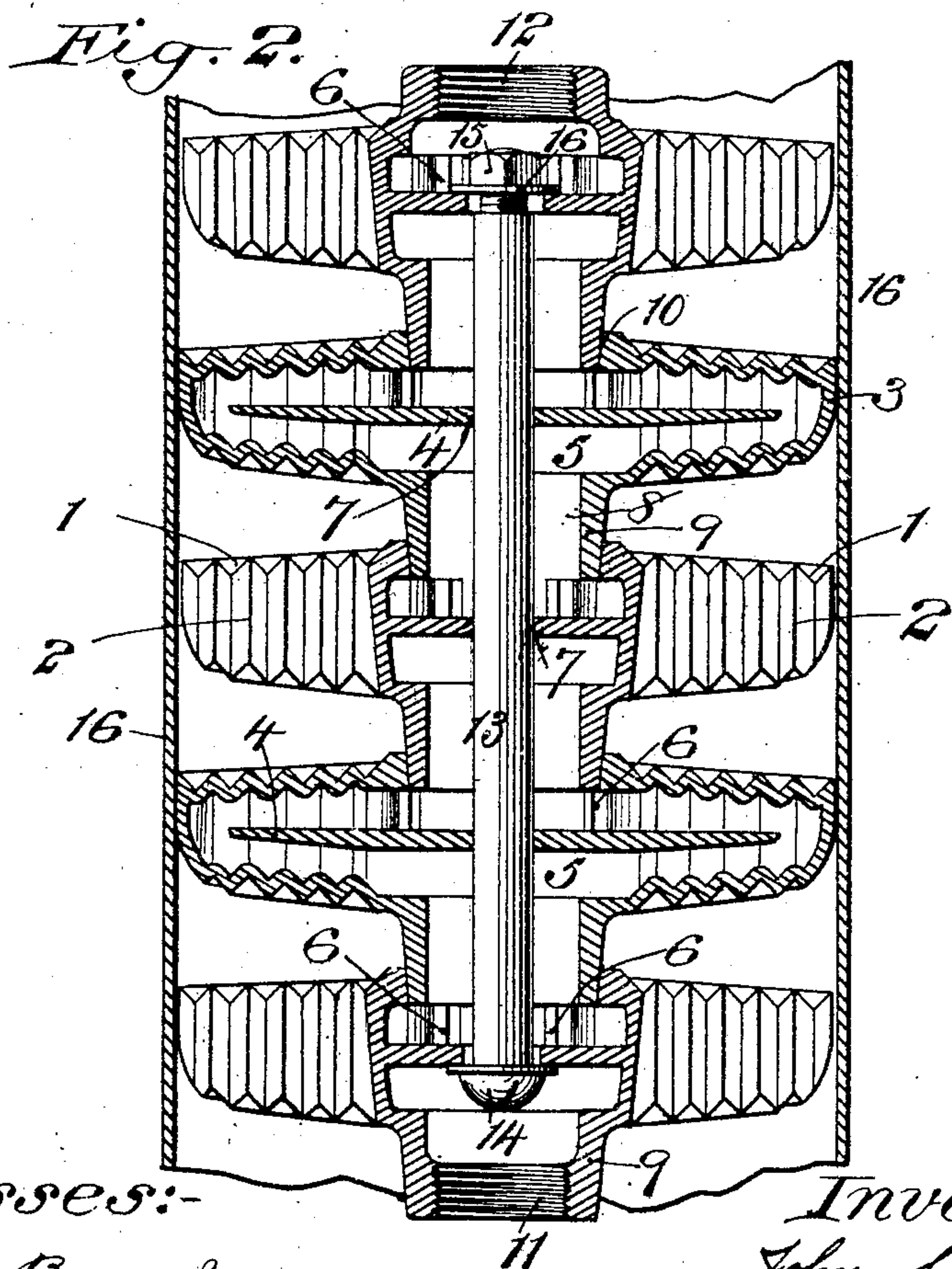
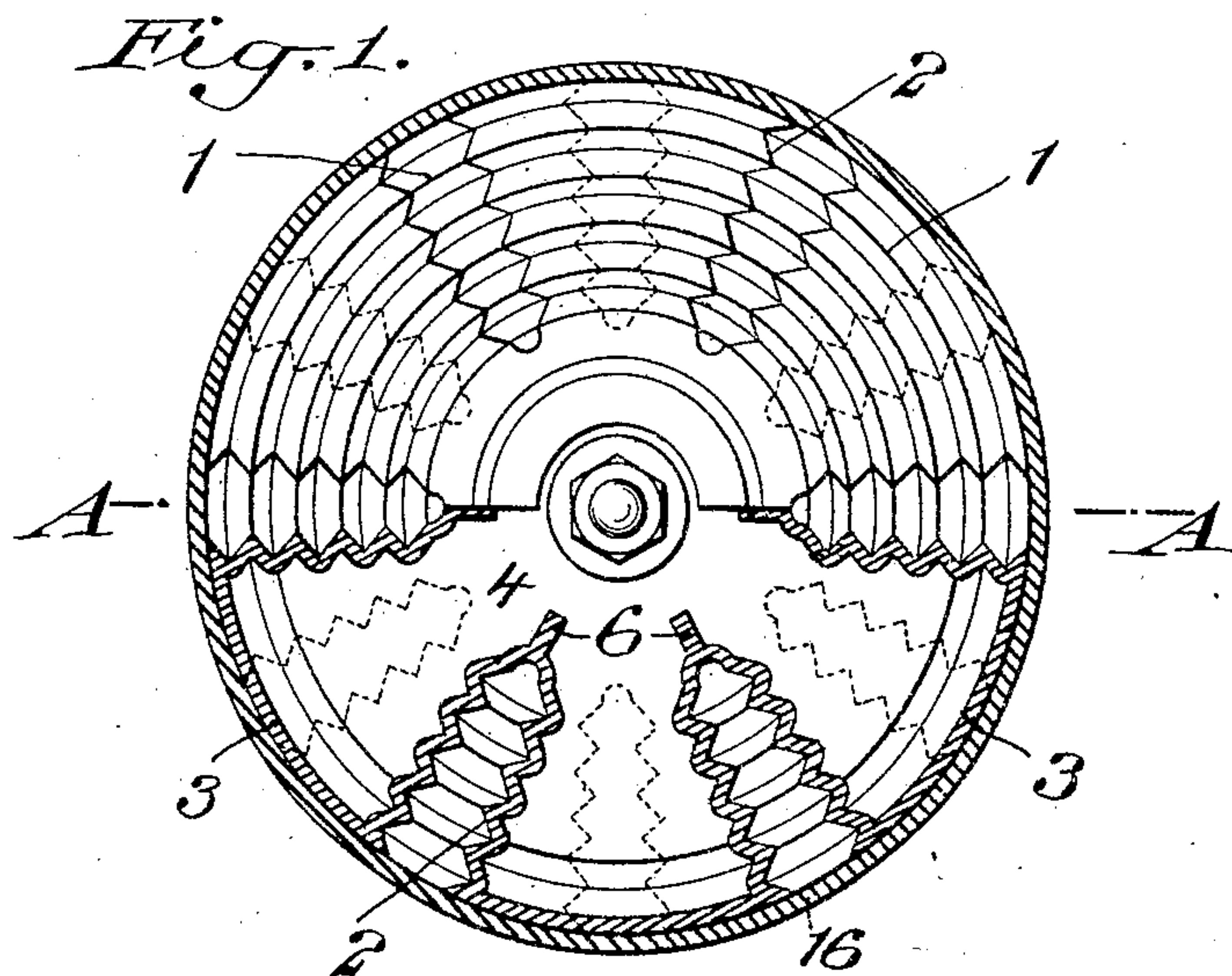
No. 777,841.

PATENTED DEC. 20, 1904.

J. S. COE.
WATER HEATER.

APPLICATION FILED JUNE 13, 1903.

NO MODEL.



Witnesses:-

George Barry Jr
Henry Thieme

Inventor:-

John S. Coe
by attorneys
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UNITED STATES PATENT OFFICE.

JOHN S. COE, OF PATERSON, NEW JERSEY.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 777,841, dated December 20, 1904.

Application filed June 13, 1903. Serial No. 161,272.

To all whom it may concern:

Be it known that I, JOHN S. COE, a citizen of the United States, and a resident of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Water-Heaters, of which the following is a specification.

My invention relates to an improvement in water-heaters, and has for its object to provide an improved form of heater in which the heating medium may be passed in a tortuous direction on the exterior of the heater when the interior of the heater is used for containing the liquid to be heated or in which the heating medium may be caused to traverse a tortuous path within the heater where the liquid to be heated is located exterior to the heater.

A further object is to provide certain improvements in the construction, form, and arrangement of the several parts, whereby a very extended heating-surface is presented for producing superior results in water-heaters.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents the heater partially in top plan and partially in horizontal section; and Fig. 2 is a view of the heater in vertical central section, taken in the plane of the line A A of Fig. 1.

The heater comprises a vertical stack of heater-sections securely bolted together in a manner to be hereinafter described, the lower section having means for the attachment of the inlet and the upper section having means for the attachment of the outlet.

The heater-sections are all formed in the same manner except the top and bottom sections, as above noted.

Each heater-section has a plurality of outwardly-projected corrugated hollow wings 1 of rectangular form in cross-section, the sides 2 of each of the wings being spaced a short distance from the sides of the adjacent wings to permit the passage between the wings of the heating medium or the liquid to be heated, according to the manner in which the heater is used. The outer wall 3 of each wing is

formed in the arc of a circle, with the center of the heater-section as its axis, so that each heater-section presents a circular form when viewed in top plan.

A horizontal partition 4 extends outwardly from the central portion 5 of the heater-section into each of the hollow wings 3 to a point in close proximity to the outer wall 3 of the wing. This partition 4 extends solidly from side to side within the wing, so as to cause the heating medium or the liquid to be heated, as the case may be, to pass first outwardly within the wings along the under side of the partition and thence inwardly along the upper side of the partition.

Short radial walls 6 are located within the central portion 5 of the heater-section and extend from the top of the partition to the top wall of the section at the intersection of each two sides of adjacent hollow wings.

The partition 4 is provided with a central hole 7 for the passage therethrough of the assembling-bolt to be hereinafter described.

The hole 8 through the bottom of the heater-section passes through an exteriorly-tapered depending lug 9, and the hole in the top of the said section is provided with a tapered seat 10.

The tapered seat 10 above referred to is fitted to snugly receive the exteriorly-tapered lug 9 of the next adjacent heater-section when the stack of sections is set up to form the heater.

The bore of the tapered depending lug 9 of the heater-section which is intended to be the bottom section of the stack is reduced in diameter to the required extent and is provided with a screw-threaded portion 11 for the attachment of the inlet for the heating medium or water, as the case may be, which inlet is not shown herein.

The top of the heater-section which is intended to be the upper section of the stack is provided with a hole of reduced diameter, which hole is screw-threaded, as shown at 12, for the attachment of the outlet (not shown herein) for the heating medium or water, as the case may be.

The heater may be composed of a stack of any number of heater-sections. In the ac-

companying drawings I have shown the heater as comprising five of these heater-sections. The sections are held in their assembled position with the wings of one section over the spaces between the wings of the next adjacent section, so that the heating medium or the water to be heated, as the case may be, which passes along the exterior of the heater will be caused to traverse a tortuous path between the top and bottom of the heater.

The means which I have shown for locking the heater-sections in their assembled position comprises a bolt 13, which is of substantially the same diameter as the central holes 7 through the partitions 4. The head 14 of the bolt overlaps the partition at one end of the stack, and a nut and washer 15 16 overlaps the partition at the other end of the stack, so that as the nut is screwed home the sections will be locked together. This method of locking the sections together is extremely simple and strong and leaves the exterior of the heater perfectly free from bolts or tie-rods.

In practice the heater is inserted within a jacket 16 of any suitable construction fitted to the outer walls 3 of the wings of the several heater-sections, so as to cause either the heating medium or the water to be heated, as the case may be, which engages the exterior of the heater-sections to pass in a tortuous path between the ends of the stack.

While I have shown the heater-sections in the accompanying drawings as being provided with six hollow wings spaced apart, it is to be understood that the number of wings may be varied to suit different requirements.

By corrugating the walls of the wings both exteriorly and interiorly I am enabled to procure a more extended heating-surface. Furthermore, the heater-sections are made interchangeable, except the ones used for the top and bottom of the stack, thus permitting the number of sections to be increased or diminished at pleasure to suit different requirements.

What I claim is—

1. A heater-section having a hollow central

portion with inlet and outlet, hollow wings projecting from the central portion and a horizontal partition extending across the hollow central portion and into the wings from side to side thereof to points near their outer ends.

2. A heater-section having a hollow central portion with inlet and outlet, hollow wings projecting from the central portion and a horizontal partition extending into the wings to points near their outer ends, the said section having a tapered hollow lug and a tapered seat.

3. A heater-section having a hollow central portion with inlet and outlet, hollow wings projecting from the central portion and having corrugated walls and a horizontal partition extending into the wings to points near their outer ends.

4. A heater-section having a hollow central portion and hollow wings projecting therefrom, an inlet formed by an exteriorly-tapered hollow depending lug and an outlet having a tapered seat fitted to receive the tapered lug of another heater-section.

5. A heater-section having a hollow central portion, hollow wings projecting therefrom, a horizontal partition extending into the wings to points near their outer ends and supporting-walls between the partition and the top of the hollow central portion of the heater-section.

6. A heater comprising a plurality of sections having hollow central portions, hollow wings projecting therefrom and horizontal partitions extending across the hollow central portions and into the wings, the wings of one section being arranged in staggered order with respect to the wings of the next succeeding section.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 10th day of June, 1903.

JOHN S. COE.

Witnesses:

FREDK. HAYNES,
HENRY THIEME.