(No Model.) 2 Sheets—Sheet 1.

Z. D. JOHNS.

HEATER.

No. 568,852. Patented Oct. 6, 1896.

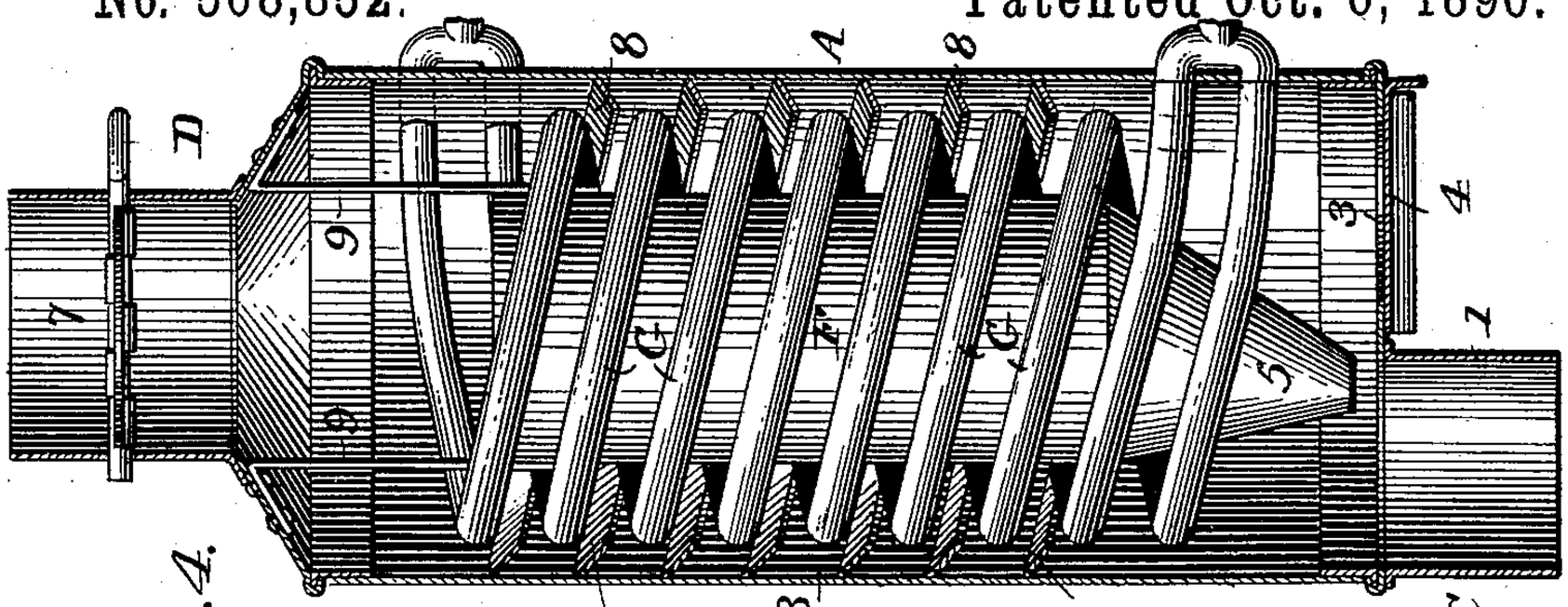

Fig. 4.

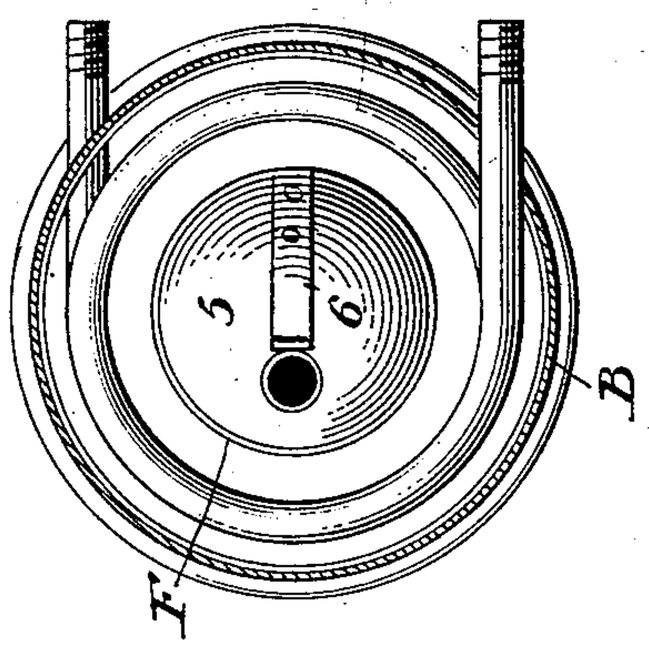

Fig. 2.

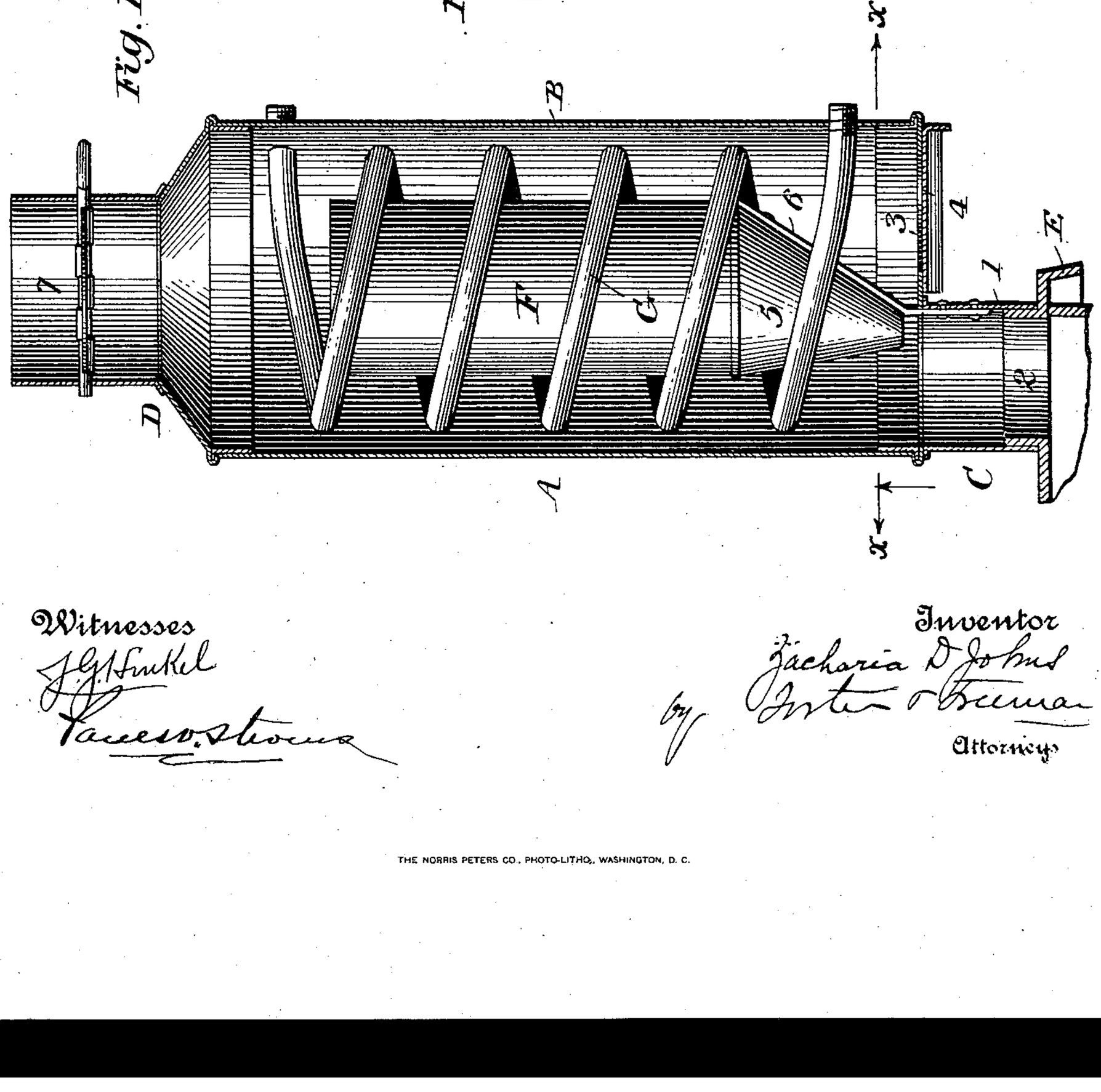

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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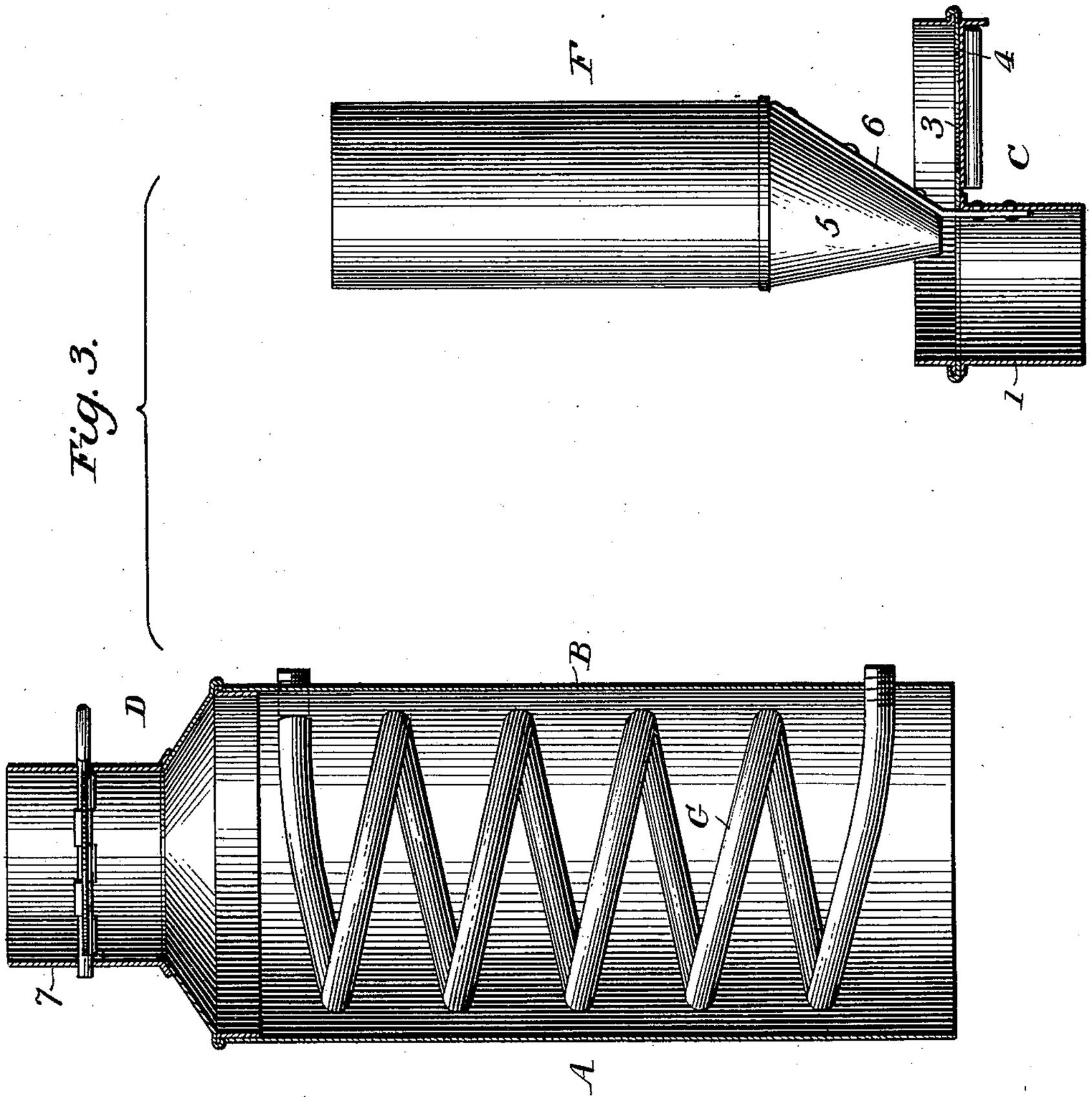
Fig. 3.



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UNITED STATES PATENT OFFICE.

ZACHARIA DAVID JOHNS, OF VISALIA, CALIFORNIA, ASSIGNOR OF ONE-HALF TO GEORGE X. WENDLING, OF HANFORD, CALIFORNIA.

HEATER.

SPECIFICATION forming part of Letters Patent No. 568,852, dated October 6, 1896.

Application filed May 5, 1896. Serial No. 590,321. (No model.)

To all whom it may concern:

Be it known that I, ZACHARIA DAVID JOHNS, a citizen of the United States, residing at Visalia, Tulare county, State of California, have invented certain new and useful Improvements in Heaters, of which the following is a specification.

This invention relates to certain new and useful improvements in water-heaters; and it consists in the combination, arrangement, and construction of the parts hereinafter more particularly referred to.

In the accompanying drawings, forming a part of this specification, and in which like letters and numerals of reference indicate corresponding parts, Figure 1 is a vertical longitudinal sectional view of the heater. Fig. 2 is a horizontal sectional view on the line $x\ x$ of Fig. 1. Fig. 3 is a view showing the parts separated, and Fig. 4 is a vertical longitudinal sectional view of a modification of the invention.

Referring more particularly to the drawings, A designates the casing of the heater, formed of any suitable material, such as sheet-iron, &c., and comprising a central cylindrical section B, a bottom section C, and a top section D, said sections being detachably connected. This casing is supported in any suitable manner upon a stove or furnace E and communicates with the fire-space thereof. The bottom section of the casing is provided with an inlet-opening located preferably at one side thereof, and around this opening is a collar 1, adapted to fit over a flange which surrounds an opening 2, through which the waste products of combustion escape from the stove to the stovepipe. This bottom section is also provided with a draft-opening 3, controlled by a suitable valve, consisting in the present instance of a slide 4, and by means of this opening the temperature of the heater may be regulated. The opening 3 also serves to permit the withdrawal of all soot and dust which may accumulate in the bottom of the heater.

Extending centrally throughout the length of the central section B is a heat absorbing and radiating cylinder F, formed of sheet-iron or of some suitable refractory material. This cylinder is provided at its lower end with a conical cap 5, the end of which extends to a plane at one side of the plane of the axis of the cylinder to bring it directly over the opening 2, and this end of the cap is provided with an opening through which communication may be had with the interior of the cylinder F, which in turn is open at its upper end to permit the free passage therethrough of the products of combustion. The cylinder F is of less diameter than the central section B, and is supported wholly upon either the top or bottom sections in any suitable manner, as shown in Figs. 1 to 3. Said cylinder is supported upon the bottom section by means of an arm 6, and in Fig. 4 it is shown supported wholly upon the top section.

Within the casing and supported preferably upon the central section B is a coil-pipe G, through which the water to be heated is circulated. The coils of this pipe surround the heat absorbing and radiating cylinder F and are in close proximity thereto, and the ends of the coil are connected to a suitable reservoir or to the circulating-pipes of a heating system.

The top section D of the casing is provided with a discharge-opening surrounded by a flange 7, to which is adapted to be fitted a section of the stovepipe, which conducts the products of combustion to the open air.

In addition to serving as a radiator and deflector the cylinder F also serves as a conveyer for the dirt and soot, and to this end the opening in the upper end of the cylinder is formed as large or larger than the discharge-opening and is in alinement therewith, in consequence of which the dirt or soot which drops from the stovepipe into the cylinder F is conveyed to the inlet-opening 2, through which it passes back into the stove.

Of course it will be understood that soot will collect within the casing upon the coil-pipe and upon the exterior of the cylinder F, and in order to remove this it is only necessary to detach the bottom section C from the central section B and remove the cylinder from within the coil-pipe, as shown in Fig. 3, thereby rendering the cylinder and the coil readily accessible for cleaning.

From the above it will be apparent that the products of combustion from the stove or furnace pass into the casing through the opening 2 and heat the coil G and cylinder F, a portion of the products of combustion pass-

ing through the cylinder, while that portion which comes into contact with the conical cap 5 is deflected to the coil G. It will thus be seen that the cap 5 serves not only to guide the soot from the cylinder F to the opening 2, but also acts as a deflector for the heat.

In the construction shown in Fig. 4 a double coil is employed instead of a single one, as in Figs. 1 to 3, and the interior of the central section B is provided with a series of projecting ribs or plates 8, which serves to deflect the heat into contact with the coil-pipe. In this form of heater the cylinder F is supported upon the top section D by means of arms 9.

What I claim is—

1. In a water-heater, the combination with the casing having inlet and discharge openings, of a circulating-pipe within the casing and an open-ended deflecting and conveying cylinder within the casing, the ends of which aline with the inlet and discharge openings of the casing, substantially as described.

2. In a water-heater, the combination with the casing having inlet and discharge openings, of an open-ended deflecting and conveying cylinder within the casing, formed conical at its lower end, the ends of the cylinder alining with the inlet and discharge openings of the casing, and a coiled circulating-pipe surrounding the said cylinder, substantially as described.

3. In a water-heater, the combination with a sectional casing formed with inlet and discharge openings, the sections of said casing being detachable, of a heat deflecting and radiating body within the casing supported wholly upon one of the sections thereof and a circulating-pipe also arranged within the casing and supportedwholly upon a section different from that which supports the said radiating and deflecting body, substantially as described.

4. In a water-heater, the combination with a closed casing comprising a central section, a top section provided with a discharge-opening and a bottom section having an inlet-opening, of a deflecting and radiating body provided with a conical end arranged to aline with the inlet-opening, said radiating body being supported wholly upon one of the sections of the casing, and a circulating-pipe coiled around the radiating body and supported wholly upon a section of the casing different from that which supports the radiating body, substantially as described.

5. In a water-heater, the combination with a closed casing provided at its top with a central discharge-opening and with an inlet-opening located at one side of its bottom, of an open-ended radiating and conveying cylinder alining with the discharge-opening at its upper end and at its bottom provided with a conical cap extending laterally into alinement with the inlet-opening, and a circulating-pipe coiled around the cylinder, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ZACHARIA DAVID JOHNS.

Witnesses:
G. X. WENDLING,
DAVID GAMBY.