

No. 638,144.

Patented Nov. 28, 1899.

I. E. REIS.
WATER HEATER.

(Application filed Mar. 20, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. I.

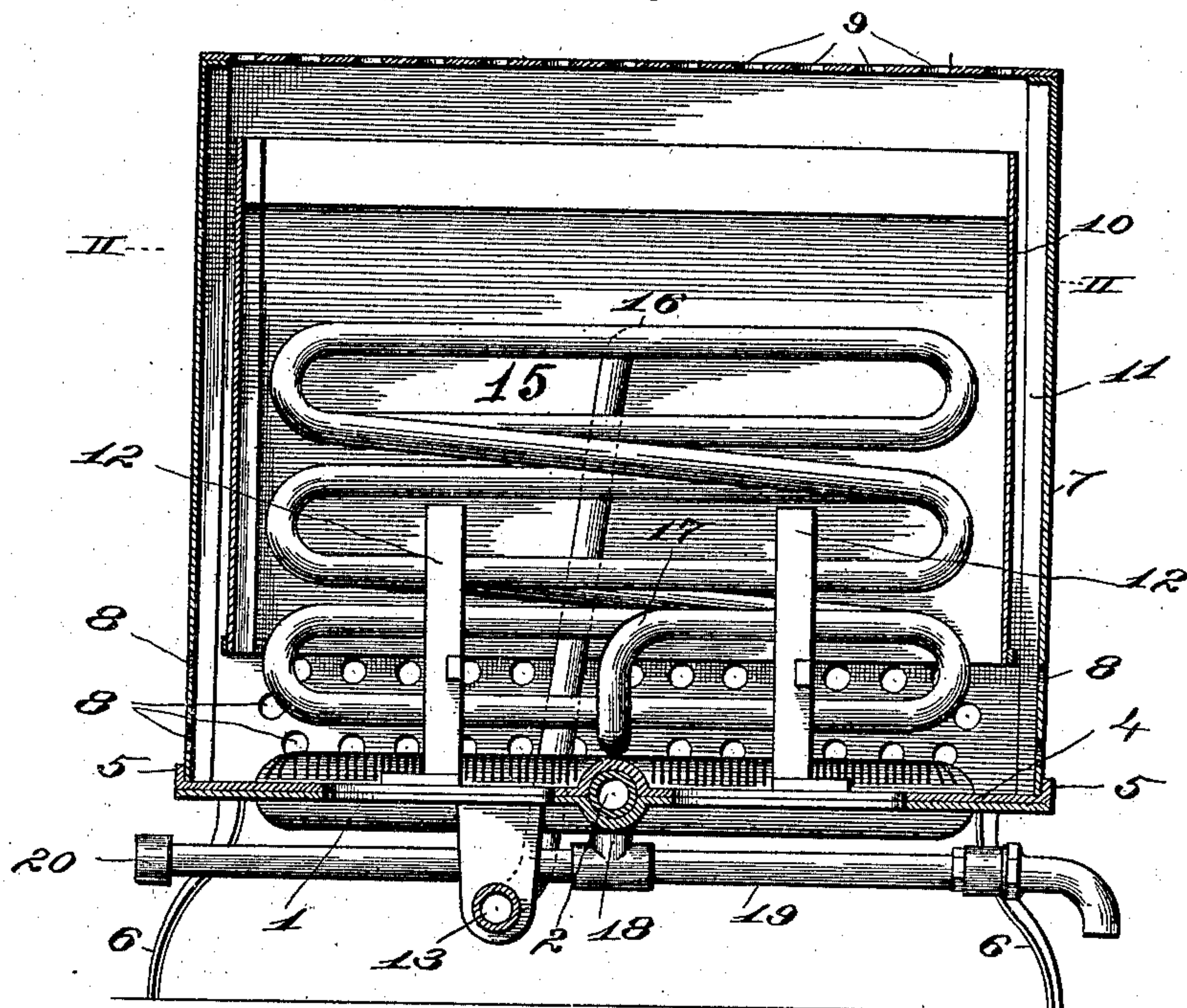
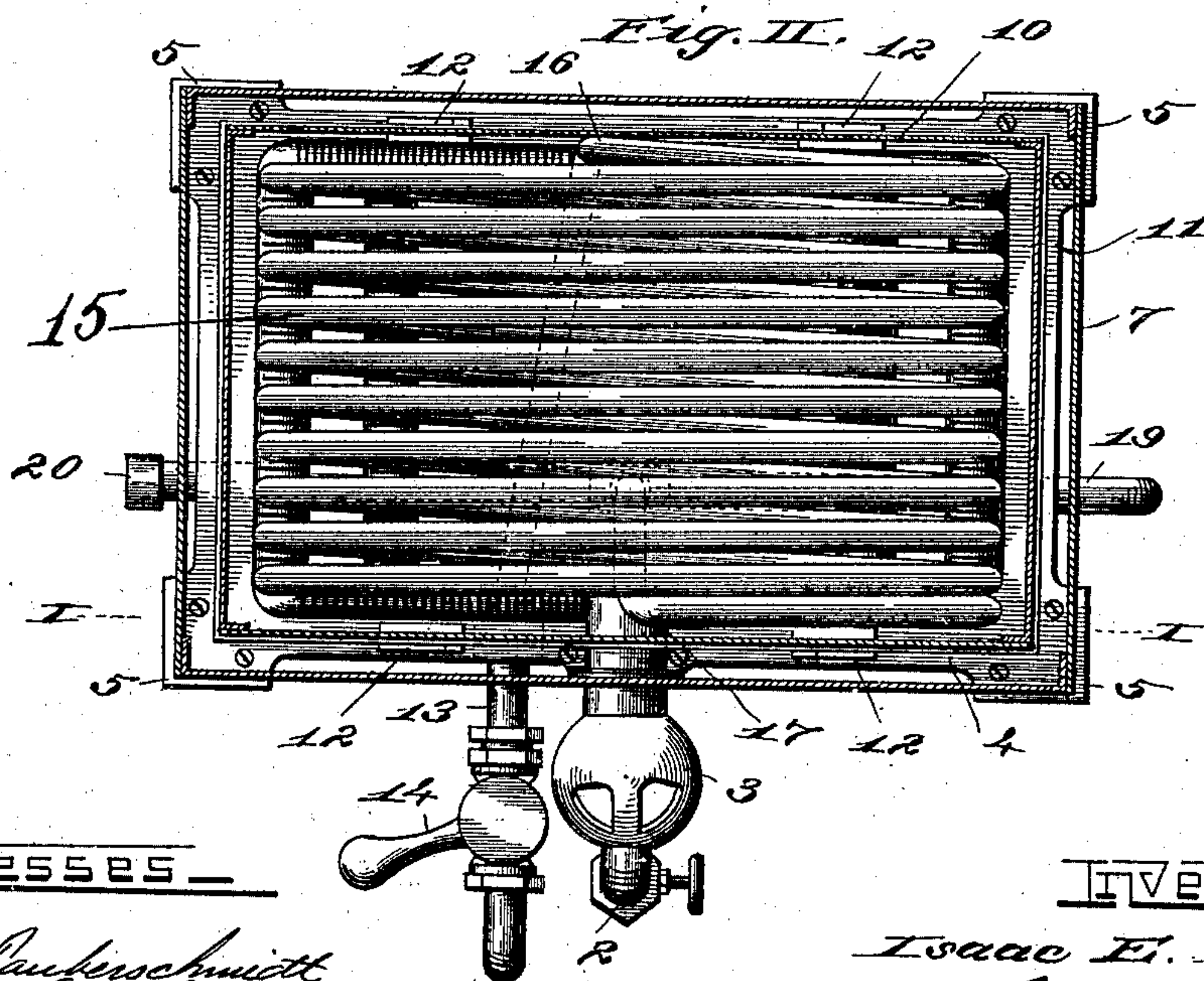


Fig. II.



WITNESSES—

G. A. Pankerschmitt,
E. S. Krigh

INVENTOR—

Isaac E. Reis

By *Wright 1898*
H

Attorneys

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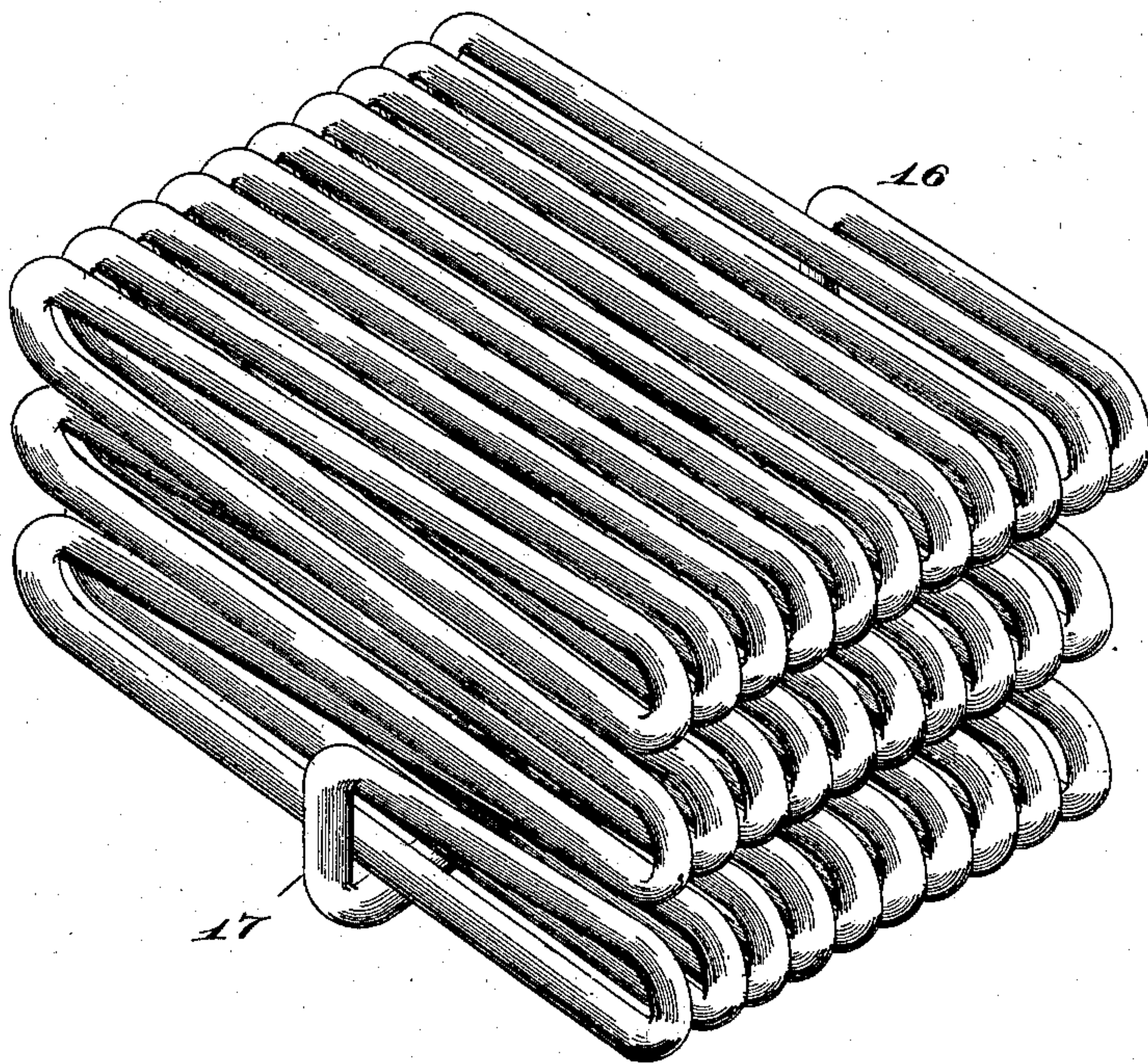
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Fig. III.



WITNESSES.

G. A. Bauberschmidt,
E. S. Krimm

INVENTOR.

Isaac E. Reis

By Wright, Bros

Attorneys

UNITED STATES PATENT OFFICE.

ISAAC E. REIS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE ADVANCE
WATER HEATER COMPANY, OF SAME PLACE.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 638,144, dated November 28, 1899.

Original application filed December 22, 1898, Serial No. 700,020. Divided and this application filed March 20, 1899. Serial No. 709,708. (No model.)

To all whom it may concern:

Be it known that I, ISAAC E. REIS, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Water-Heaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improvement in an apparatus for heating water by the use of gas or other vapor, the device belonging to that class of heaters in which the water is heated as it flows continuously through the apparatus, such as described in my application filed December 22, 1898, Serial No. 700,020, of which this application is a division.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a vertical sectional view of my improved heater, taken on line I I, Fig. II. Fig. II is a horizontal sectional view taken on line II II, Fig. I. Fig. III is a perspective view of the coil separated from the heater.

1 designates the burner of the heater, having slits in its surface for the escape of gas or vapor, which enters through a supply-pipe 2 and a mixing-chamber 3, within which the gas or vapor to be consumed is mixed with oxygen. The burner is formed with a flange-rim 4, provided with an upturned edge 5; the said flange forming the base of the heater and being supported on legs 6.

7 designates an outer casing or jacket mounted on the flange-rim 4 and confined within the upturned edge 5 of said rim. The casing or jacket 7 is of box-like form and is provided at its lower portion with perforations 8, through which fresh air may be constantly admitted to the interior of the heater to provide for perfect combustion of the gas or vapor on its escape from the burner. In the top of the casing or jacket 7 are perforations 9, through which surplus heat is permitted to escape.

10 designates an inner casing situated within the outer casing, but separated therefrom to provide an air-space 11 between the two

casings. The inner casing 10 is open at top and bottom, and its lower end occupies a position some distance above the burner 1, the casing being preferably supported upon standards 12, fixed to the base or flange rim of the burner. The perforations 8 in the outer casing or jacket occupy a position beneath the bottom line of the inner casing, so that the air entering through said perforations passes into the interior of both casings.

13 designates a water-supply pipe provided with a faucet-valve 14, by which the flow of water through said pipe may be regulated to a nicety on opening the valve more or less. The supply-pipe 13 communicates with a coil 15, arranged in a vertical series of horizontal spirals within the casing 10, the said coil being suitably supported above the burner 1. The pipe of the coil 15 extends from the supply-pipe 13 upwardly into the casing 10 to a point 16 (see Fig. I) and is then bent back and forth in spiral form into a vertical series of horizontal spirals, as shown, and, descending, as shown at 17, Fig. I, joins at 18 with a discharge-pipe 19, either end of which may be used as the outlet from said pipe, while the other end is closed by a cap 20.

In the practical use of the apparatus the heat from the burner rises within the casing and comes in contact with the coil, which being wound in spiral form, as clearly shown in Fig. II, and being arranged in a vertical series of horizontal spirals, as shown in Fig. I, presents a very compact and large amount of heating-surface, so that the water flowing continuously through the said coil becomes thoroughly heated, the surplus heat finding egress through the perforated top of the outer casing or jacket 7, and thereby permitting a continuous circulation of air through the heater and a consequent inflow of fresh air through the perforations 8 to supply the necessary amount of oxygen for the perfect consumption of the vapor.

By thus constructing a water-heater provision is made for an inexpensive and effective apparatus for heating water as it flows continuously from a source of supply to the point where it is discharged for use.

I claim as my invention—

1. In a water-heater, the combination of a source of heat, and a water-pipe formed into a vertical series of horizontal spirals, substantially as and for the purpose set forth.
- 5 2. In a water-heater, a water-tube formed into a vertical series of horizontally-disposed spirals, the adjacent convolutions in each spiral being connected spirally and the spirals being connected at their ends; substantially as and for the purposes set forth.

ISAAC E. REIS.

In presence of—

E. S. KNIGHT,

G. A. TAUBERSCHMIDT.