

R. E. HEIM.
HEATER.

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929,946.

Patented Aug. 3, 1909.

Fig. 1.

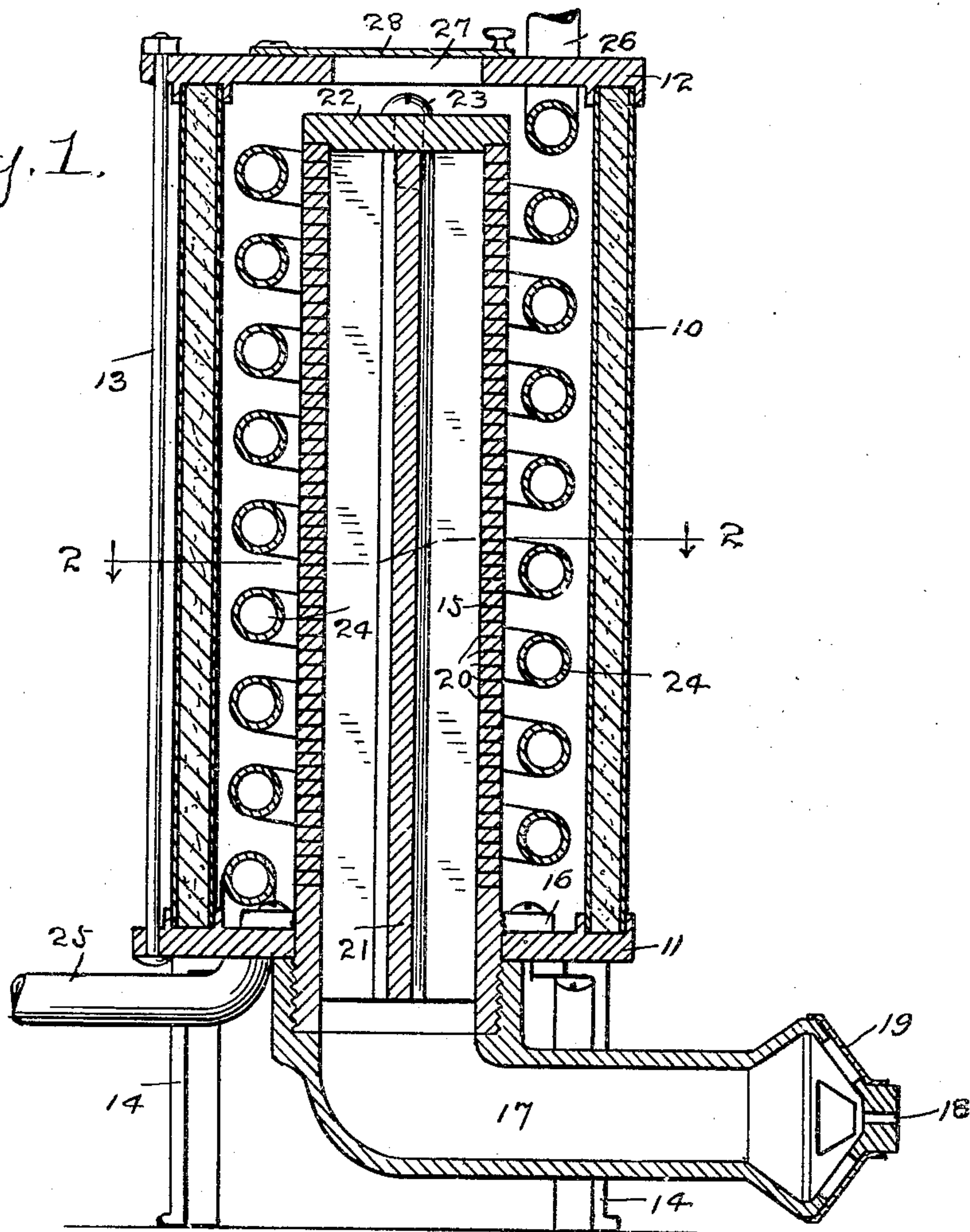
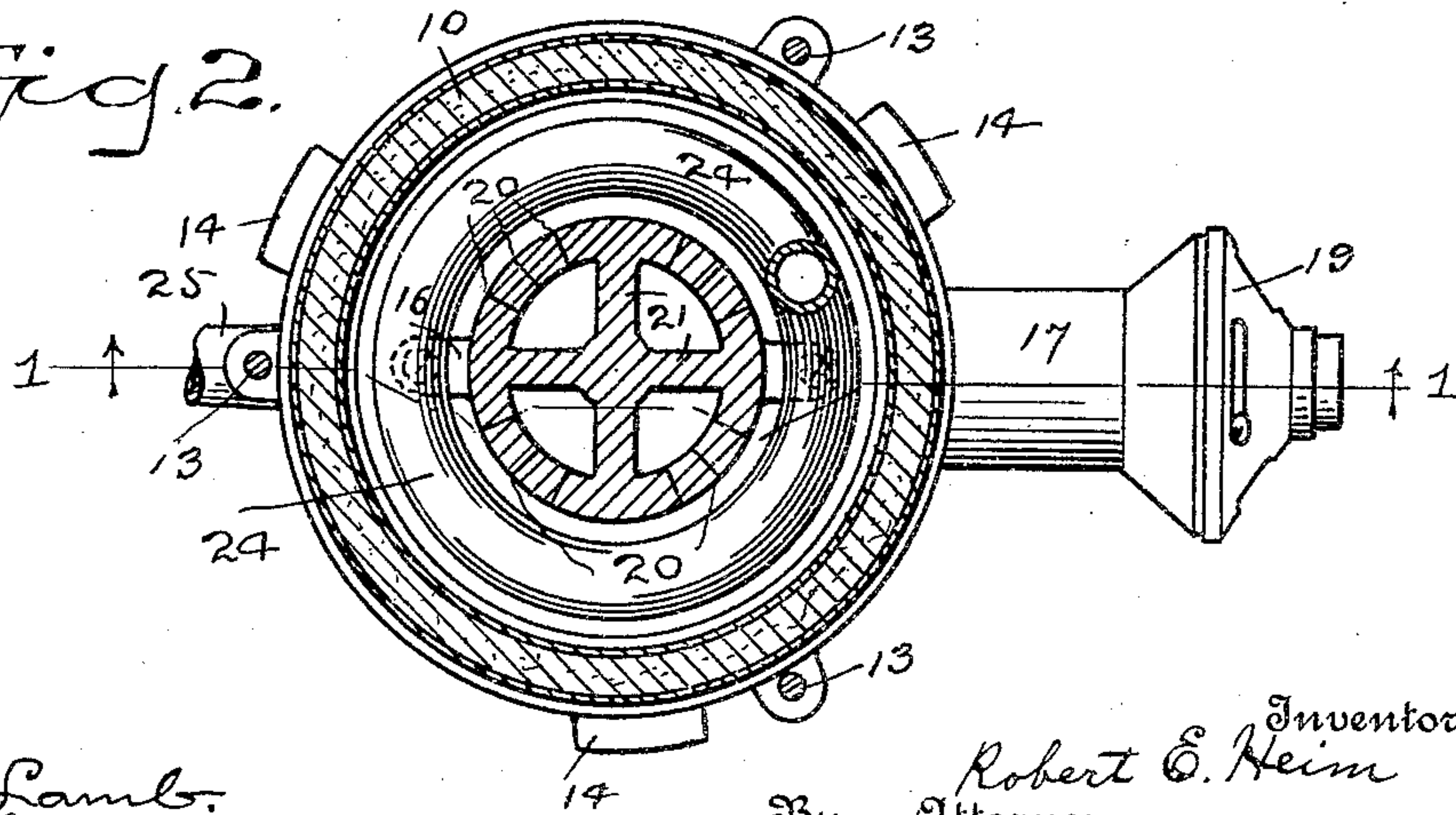


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

ROBERT E. HEIM, OF DANBURY, CONNECTICUT.

HEATER.

No. 929,946.

Specification of Letters Patent.

Patented Aug. 3, 1909.

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To all whom it may concern:

Be it known that I, ROBERT E. HEIM, a citizen of the United States, residing at Danbury, county of Fairfield, State of Connecticut, have invented a new and useful Heater, of which the following is a specification.

This invention relates to apparatus for heating fluids either liquid or gaseous, and relates particularly to such apparatus so constructed and formed that the fluid is heated during continuous passage through a conduit.

My improved heater or burner is capable of being used for furnishing either hot water, steam, superheated steam, or dry heat, for such uses as blocking hats, shrinking fabric, cleaning, drying and curling feathers, or for general drying purposes where an intensely heated fluid is needed.

The object of the invention is to provide a simple heater and one of low cost, and which will enable an exceedingly high temperature to be imparted to fluid passing through a conduit, by means of a combustible mixture or fluid supplied so as to be burned in close proximity to said conduit.

To these ends the invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

Of the accompanying drawings:—Figure 1 is a vertical sectional view of an apparatus embodying my invention, said figure being drawn on a line of section indicated by the line 1—1 in Fig. 2. Fig. 2 represents a section on line 2—2 of Fig. 1.

Similar reference characters indicate the same or similar parts in both views.

A suitable casing for the heater is indicated at 10 and may consist of inner and outer sheet metal walls with an asbestos or other suitable filling. A base 11 and a top or cap 12 are provided with suitable flanges which engage the ends of the casing 10, bolts 13 being employed to hold these parts together. Any suitable form of support for the base 11 may be provided, such as legs 14.

The burner comprises a tube 15 which passes through the base 11 and is threaded at its lower end and held from downward movement through the opening in said base by means of suitable locking lugs 16. A supply pipe 17 for the combustible fluid or mixture is screwed to the lower end of the burner

tube and is provided with a gas entrance 18 and a suitable air valve 19 which may be of any suitable construction to regulate the amount of air in proportion to the gas supplied to the burner.

The burner tube 15 is formed with a multiplicity of exceedingly fine perforations 20 forming jet orifices, said tube being preferably formed with vertical partitions 21 to subdivide the tube into a plurality of passages. In the drawings I have shown the outer wall of each quadrant-shaped passage as provided with three vertical rows of jet orifices 20. The upper end of the tube 15 is closed by a cap 22 secured by a screw 23 passing into the center of the subdividing webs.

The conduit for the fluid which may be water or other liquid, or air or other gases, is shown as a coil of pipe 24 having an inlet 25 and an outlet 26. Said coil is in such close proximity to the exterior of the burner tube that the convolutions will be completely surrounded by the mantle of flame resulting from the ignited jets from the orifices 20.

An opening 27 in the cap 12 gives access to the interior for igniting purposes or for the escape of products of combustion. I have shown said opening as provided with a lightly fitting damper or closure 28.

It will now be understood that when a combustible mixture is supplied through the pipe 17 so as to issue in small jets through the orifices 20 of the burner tube and ignited, a mantle of flame will envelop the coil 24 so that any fluid passed therethrough will be intensely heated. I do not illustrate any particular apparatus for using the heated fluid because such fluid, as above stated, may be either liquid or gaseous and may be utilized for a great variety of purposes.

Having now described my invention, what I claim is:—

1. A heater comprising a burner tube having fine perforations, means for supplying a mixture of combustible fluid and air to said tube, a coiled conduit for liquid to be heated, said conduit inclosing said tube in close proximity to the exterior thereof whereby it will be enveloped in a mantle of flame, and a casing surrounding the conduit and constructed to exclude any current of air between its inner wall and the burner tube.

2. A heater comprising a burner tube having fine perforations and having longitudinal

partitions dividing it into a plurality of passages, means for supplying a mixture of combustible fluid and air to all of the passages of said tube, a coiled conduit for liquid to be
5 heated, said conduit inclosing said tube in close proximity to the exterior thereof whereby it will be enveloped in a mantle of flame, and a casing surrounding the conduit and

constructed to exclude any current of air between its inner wall and the burner tube. 10

In testimony whereof I affix my signature, in presence of two witnesses.

ROBERT E. HEIM.

Witnesses:

FRANK L. LATHROP,
EBEN A. HODGE