

(No Model.)

J. A. S. GRAY.
PETROLEUM FURNACE.

No. 409,576.

Patented Aug. 20, 1889.

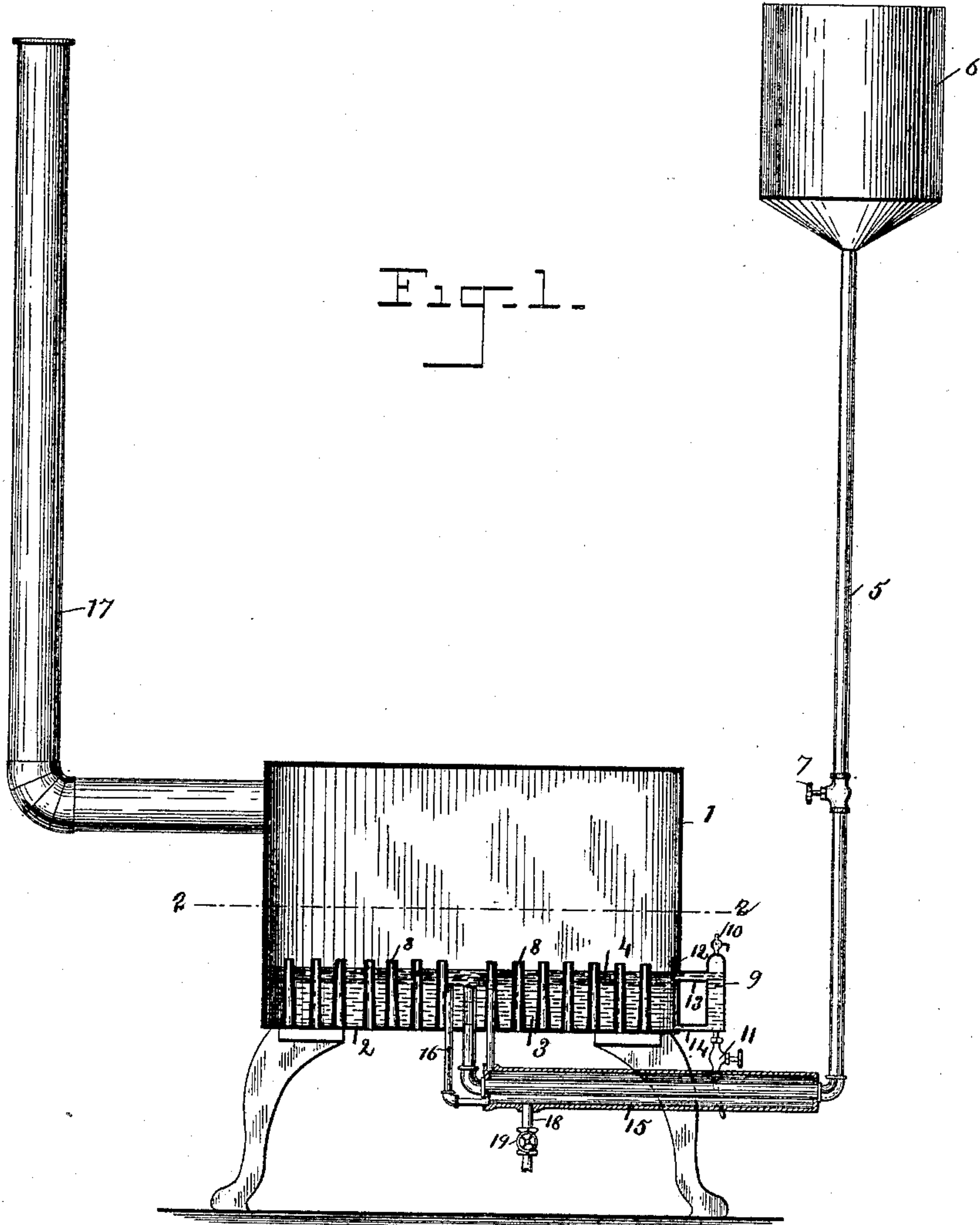
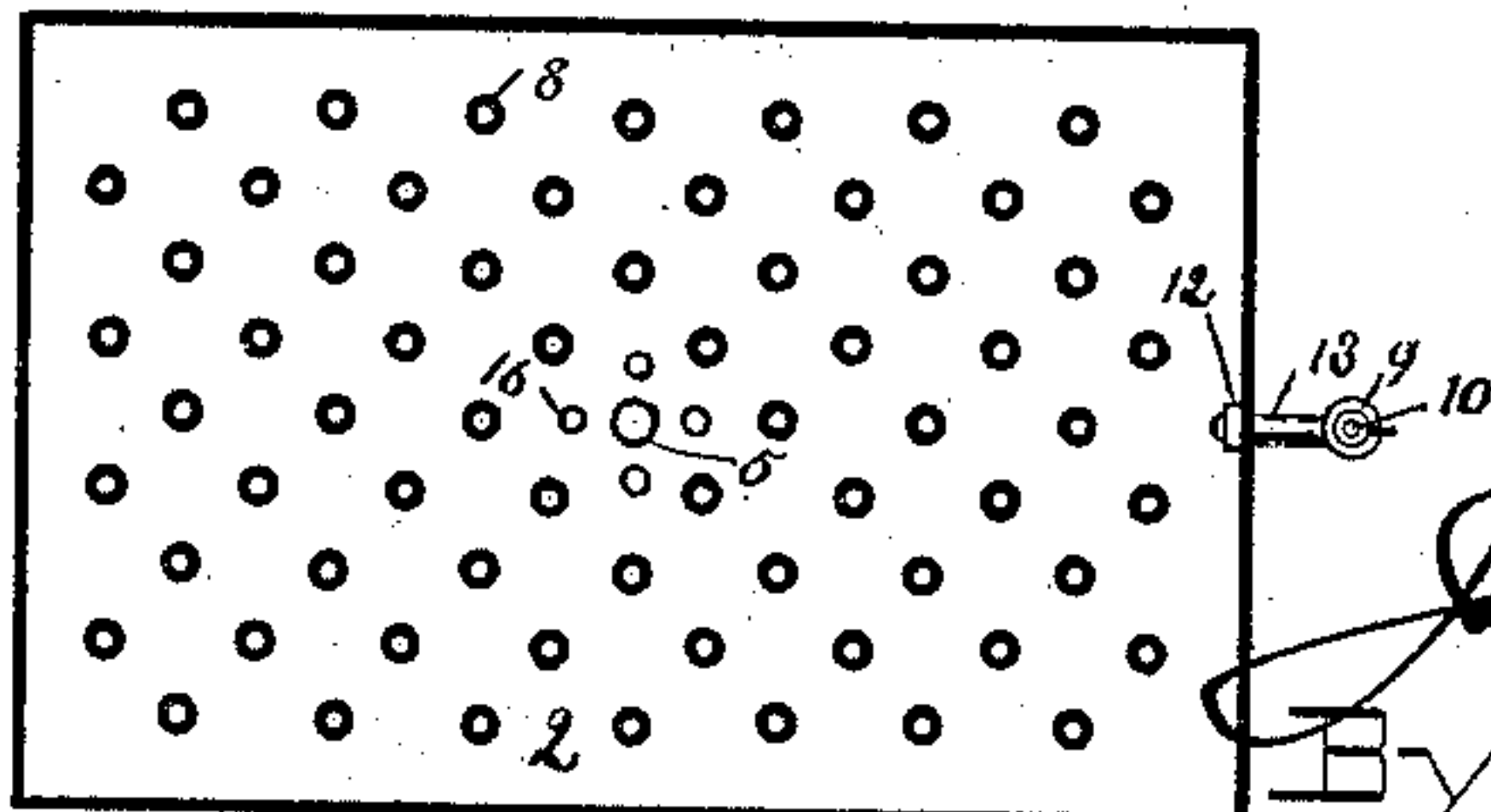


Fig. 2.



Witnesses

Lillie Hanna
Emma Arthur

Inventor.

Jas. A. S. Gray

By *Wm. H. Dwyer*
Attorney

UNITED STATES PATENT OFFICE.

JAMES A. S. GRAY, OF CINCINNATI, OHIO.

PETROLEUM-FURNACE.

SPECIFICATION forming part of Letters Patent No. 409,576, dated August 20, 1889.

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To all whom it may concern:

Be it known that I, JAMES A. S. GRAY, a citizen of the United States, residing at Cincinnati, county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Petroleum-Furnaces, of which the following is a specification.

This invention relates, primarily, to a stove which is adapted to receive a body of water and a superimposed body of oil, the two liquids being introduced into the stove or combustion-chamber through suitable pipes. The oil, being the lighter, will float on the surface of the water and can be supplied with air by suitable means, which I will describe as an essential part of my invention. A tank of petroleum is provided, which connects with the interior of the stove or combustion-chamber, and means are also provided for introducing water in the necessary quantities.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a longitudinal section of the stove. Fig. 2 is a plan view of the same on the line 2 2, Fig. 1.

In the drawings, a stove 1 is provided with a hearth or floor 2. This floor or hearth is so constructed as to receive and retain a volume of water 3 to any desired height, preferably the height shown in the drawings. A pipe 5, which connects with any suitable oil tank or reservoir 6, extends through the floor 2 to a height which discharges the oil some distance below the surface of the water, which surface the petroleum reaches in virtue of its comparative levity, and over which it spreads evenly in a thin film. A valve 7, located upon the pipe 5, serves to limit the flow of the petroleum. The amount of oil upon the surface of the water has such vertical thickness that the heat generated by the combustion of the oil is prevented by the non-conducting properties of the oil from penetrating to and thereby raising the temperature of the water. The surface of the water being, under the laws of hydrostatics, always precisely level, and the supernatant stratum of oil obeying the same laws, it follows that the depth of the oil will be uniform throughout. Supply of fresh air is obtained through the tuyeres 8, which, communicating from the exterior, extend upwardly from the floor or hearth of the combustion-chamber to

a sufficient height above the oil, also preventing the latter from flowing downwardly through the same. These tuyeres are shown in Fig. 1 and may be of any number and size, according to the construction of the furnace and the various requisites of the particular case. A gage is provided at 9, which will serve to indicate the height of the water and the height of the petroleum. Valves 10 and 11 are provided for obtaining access to the same. A shield 12 is provided to prevent the flame from flowing into the gage. The shield does not extend as far down as the water. The oil and water are forced into the gage through the passages 13 and 14, one located at the bottom and the other at the top of said gage. The tuyeres are shown in plan view in Fig. 2. I provide also in some instances a steam-jacket 15 around the lower part of the petroleum-supply pipe 5. The oil, being heated by the steam, will burn more readily; but this feature may be omitted in some instances. I also make connection between the steam-jacket and the interior of the furnace by means of small escape-pipes 16, which enter the furnace and which assist the combustion as well as the draft. There may be two, three, or four or more of these employed. In the drawings I have shown four. They are preferably located in proximity to the opening of the petroleum-supply pipe. The products of combustion escape through the pipe 17. A pipe 18 is also provided, connected with the steam-jacket for supplying steam thereto, the same being regulated by a valve 19.

The construction may be varied in various details without departing from the spirit of my invention.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

In a petroleum-stove, the combination of the water-tight hearth, the communicating tuyeres, the oil-supply pipe, the steam-jacket which surrounds the oil-supply pipe, and the steam-ducts that lead from said steam-jacket to said hearth, as and for the purposes explained.

JAMES A. S. GRAY.

Witnesses:

C. W. MAGILL,
GEO. S. GOODMAN.