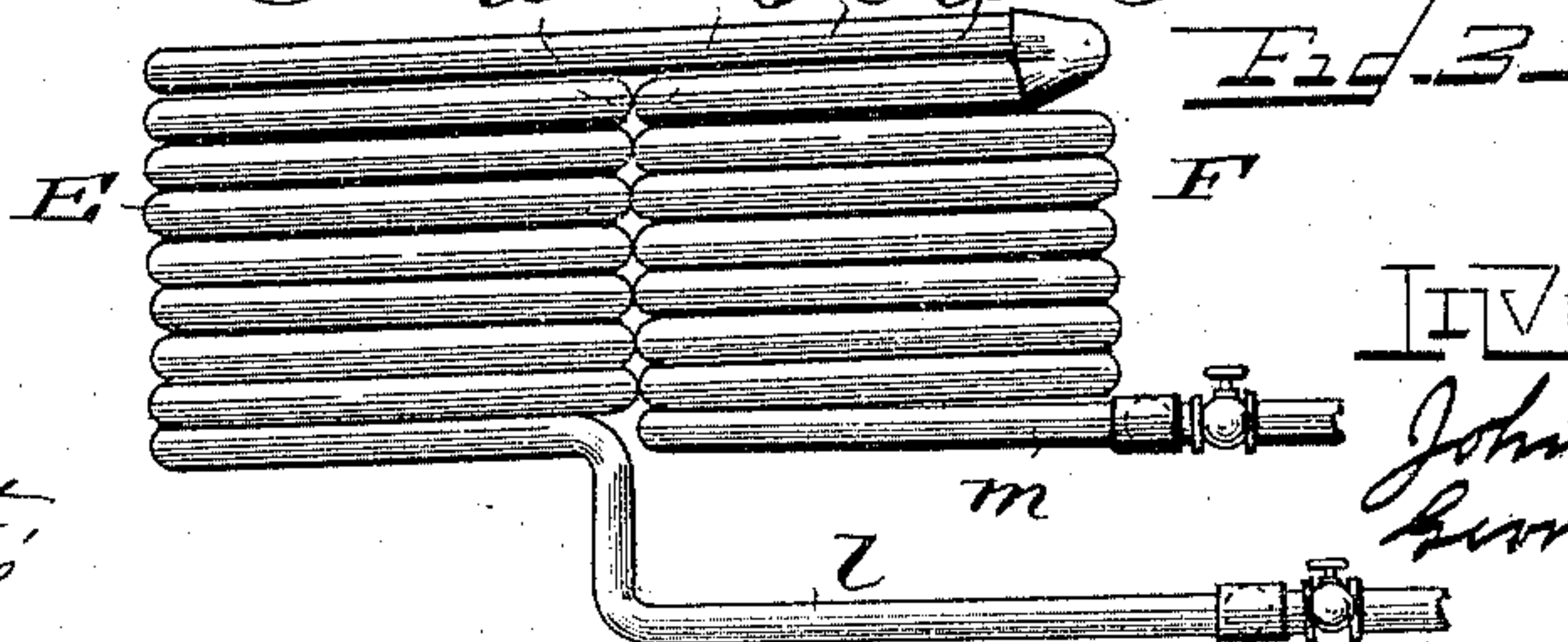
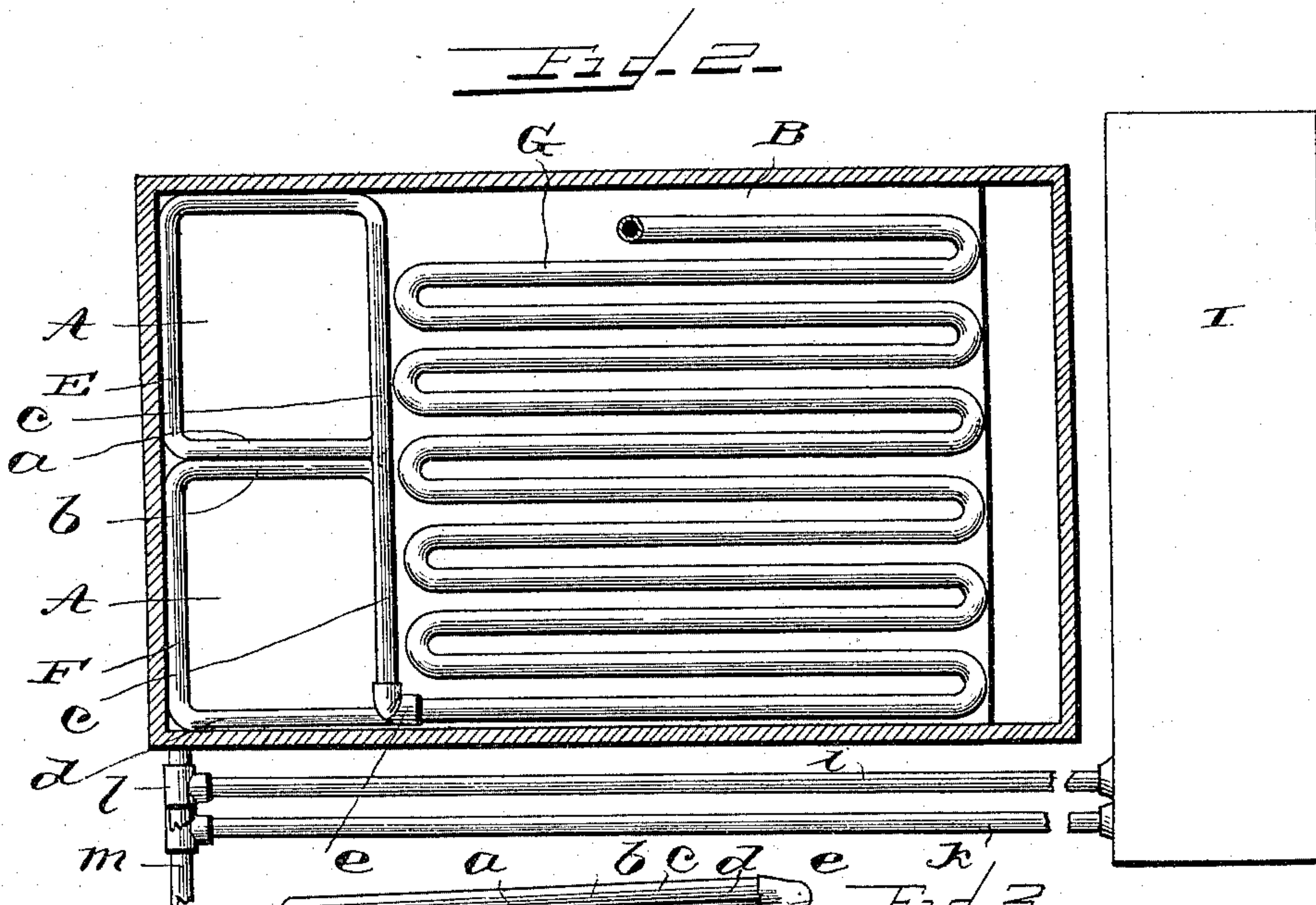
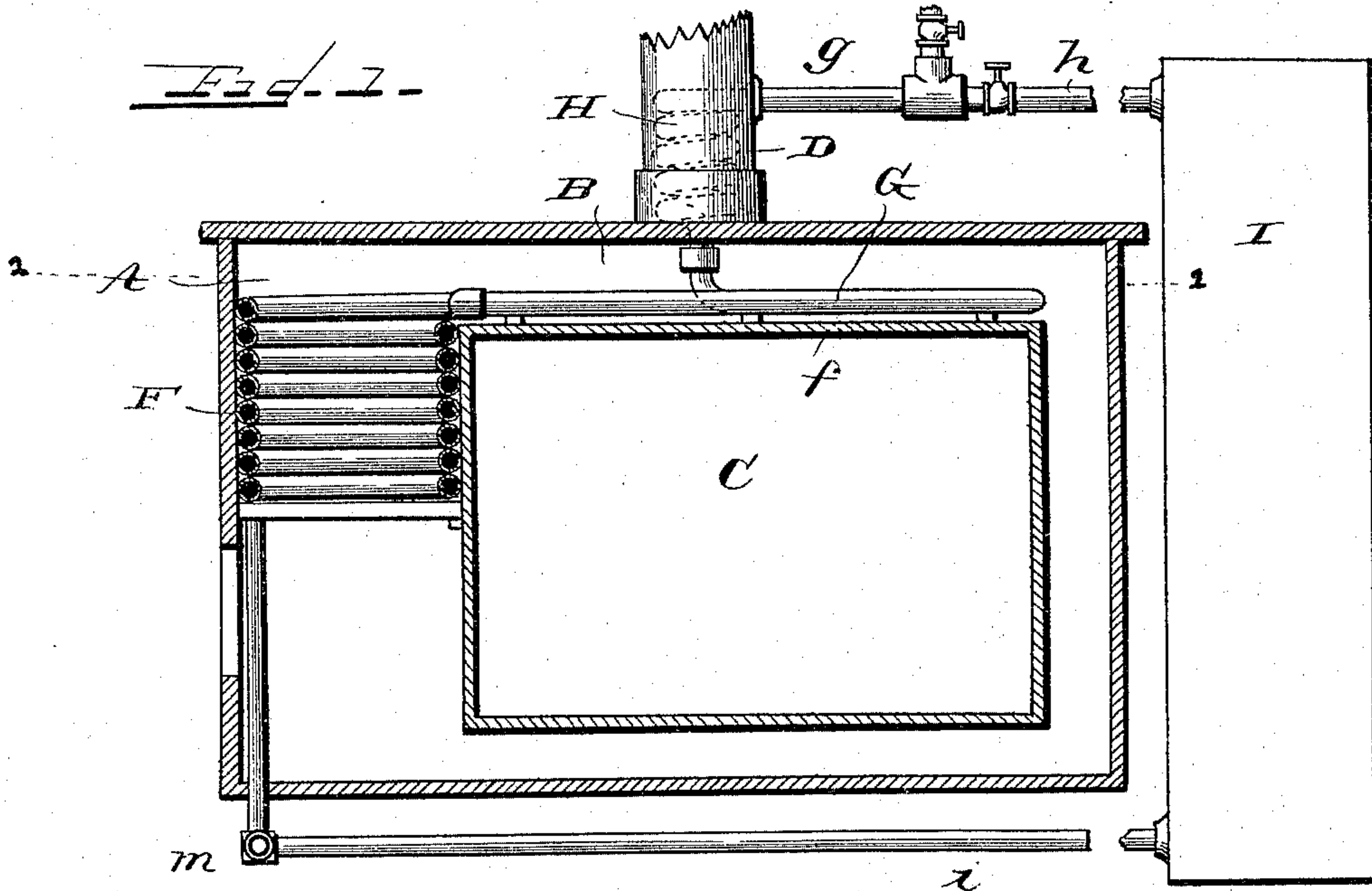


(No Model.)

J. H. PHILLIPS & G. H. GERBER.  
WATER HEATING FIRE GRATE.

No. 582,023.

Patented May 4, 1897.



Witnesses—

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Inventors—

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Attorney



# UNITED STATES PATENT OFFICE.

JOHN H. PHILLIPS AND GEORGE H. GERBER, OF POTTSVILLE,  
PENNSYLVANIA.

## WATER-HEATING FIRE-GRATE.

SPECIFICATION forming part of Letters Patent No. 582,023, dated May 4, 1897.

Application filed August 26, 1896. Serial No. 603,989. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN H. PHILLIPS and GEORGE H. GERBER, citizens of the United States, residing at Pottsville, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Water-Heating Fire-Grates; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to furnaces or fire-boxes of heating devices, has for its object improvements on the patent to John H. Phillips, dated October 30, 1894, and numbered 528,388, and consists in certain improvements in construction, which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a vertical section, partly in elevation, of our invention; Fig. 2, a top plan view on the line 2 2, Fig. 1; and Fig. 3, a front elevation of the fire-pot detached.

For the purpose of illustrating we have shown our invention applied to the fire-box or fuel-chamber of a domestic stove, such as a kitchen range or cooking-stove, but it may be applied to other heating apparatus.

Reference being had to the drawings and the letters thereon, A indicates the furnace or fire-box for containing fuel; B, the combustion-chamber, which in the illustration of its use is above and directly over the oven C of a range or cooking-stove, and D the stack or stove-pipe.

In the fire-box or fuel-chamber A is placed the water-heating fire-pot, made in two separate sections or pockets E F, constructed of coiled pipe and made to fit the fuel-chamber, each section occupying one-half thereof and providing two adjacent ends *a b*, which cross the fuel-chamber transversely and are embedded in the fuel, while the spaces between said ends and between the coils afford ingress for air to supply oxygen to the fuel in the center and throughout the depth of the fuel in the fuel-chamber.

On the front, back, and outer ends of the

fuel-chamber the walls may be protected, if desired, by asbestos or other refractory material applied in a plastic state.

Each section or pocket E F may be provided with a tubular bottom, as shown in the patent numbered 528,388, or a bottom with solid bars, fixed or movable, may be used. The upper end of section E terminates in a pipe *c* and the upper end of section F terminates in a pipe *d*, the two engaging a bifurcated connection *e*, which joins the two sections to a section G in the combustion-chamber B, which section is supported above the bottom *f* of the combustion-chamber by any suitable means to allow the products of combustion to envelop the pipe of the section which traverses the combustion-chamber from end to end, as shown, or from side to side, if desired, but the former construction is preferred, as it enables the combustion-chamber to be cleaned readily by moving the ashes from between and under the coils of pipe toward the fuel-chamber.

The section G extends throughout the combustion-chamber and greatly augments the heating capacity of the fire-pot. From the section G a section H may be extended into the stack or pipe D to still further increase the heating capacity, and to the upper end of the section D a pipe *g* may be connected to conduct the hot water or steam to any desired place for use.

I indicates a tank designed to be placed outside the building, or in any preferred place, and is connected with the fire-pot by pipes *h*, communicating with the section H, and *i k*, communicating with the lower ends of the sections E F, respectively, and water is supplied to the fire-pot through pipes *i k*, with which the pipes *i k* also communicate to maintain circulation.

As constructed, either of the sections E F may be used separately or either may be removed for repairs or renewal without disturbing the other, or they may be used together.

The water-tank I may be provided with suitable pipes for conducting water to any desired place for use and with suitable pipes for drawing off the water and accumulated sediment,

all of which is within the skill of the artisan and requires no illustration or further elucidation.

Having thus fully described our invention,  
5 what we claim is—

1. A water-heating fire-pot having two independent and adjacent pockets, the said pockets being formed of coiled and continuous piping.

10 2. A water-heating fire-pot having two independent and adjacent pockets, the said pockets being formed of coiled and continuous piping and the pockets and the convolutions of the coils being spaced so as to permit the  
15 flow of air between them.

3. A water-heating fire-pot having two in-

dependent and adjacent pockets, the said pockets being formed of coiled and continuous piping and the pockets and the convolutions of the coils being spaced so as to permit the 20 flow of air between them, in combination with a section of pipe traversing the combustion-chamber and connected with the pipes of both pockets of the fire-pot.

In testimony whereof we affix our signatures in presence of two witnesses. 25

JOHN H. PHILLIPS.  
GEORGE H. GERBER.

Witnesses:

FRANK LITTLE,  
J. L. STAUFFER.