

(No Model.)

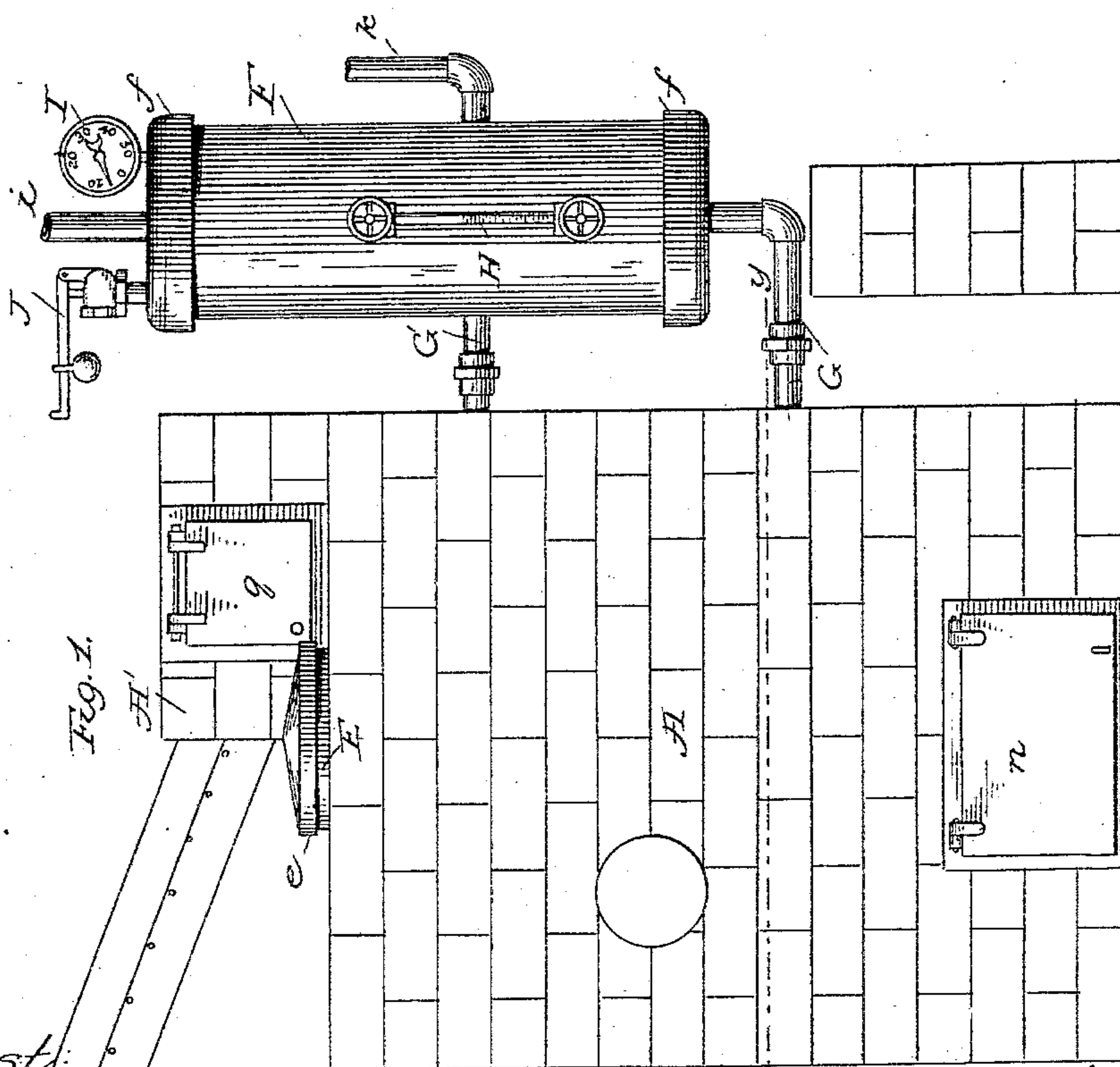
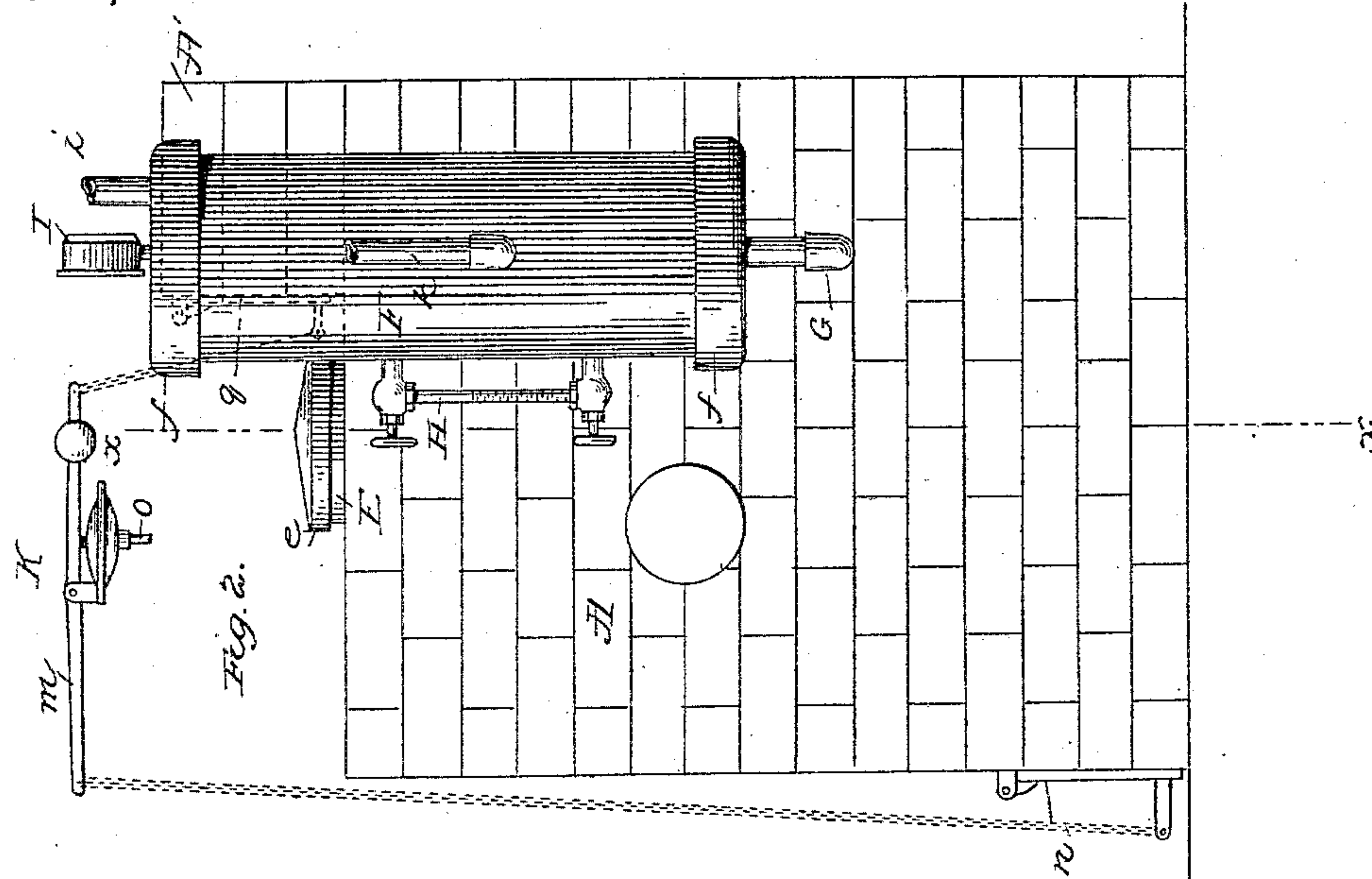
2 Sheets—Sheet 1.

W. J. LANE.

STEAM HEATER.

No. 300,376.

Patented June 17, 1884.



Attest

Waller Malason
J. L. Middleton

Inventor

7^m J. Lane
by Joseph Mear

Phys.

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2 Sheets—Sheet 2.

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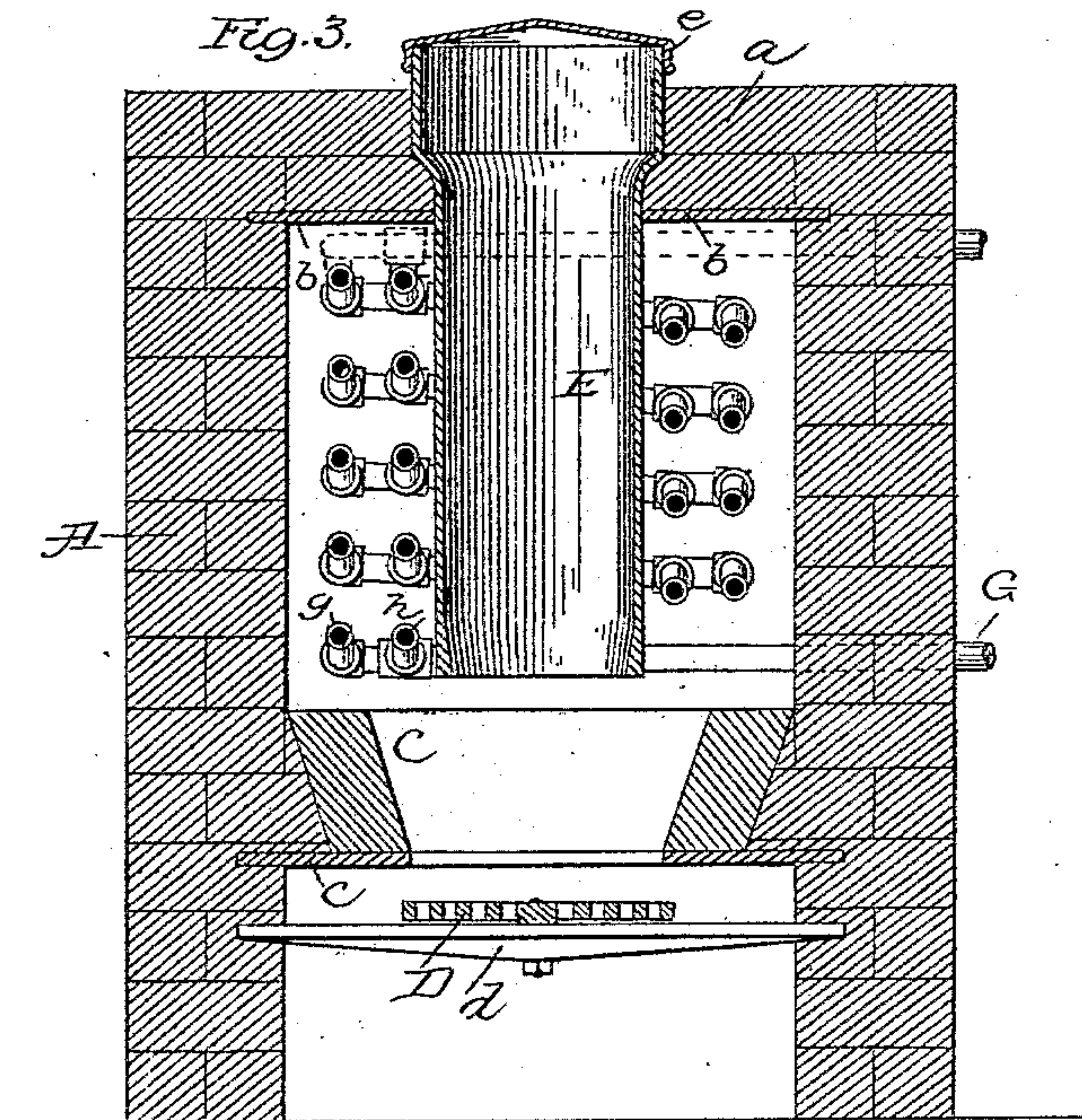


Fig. 5.

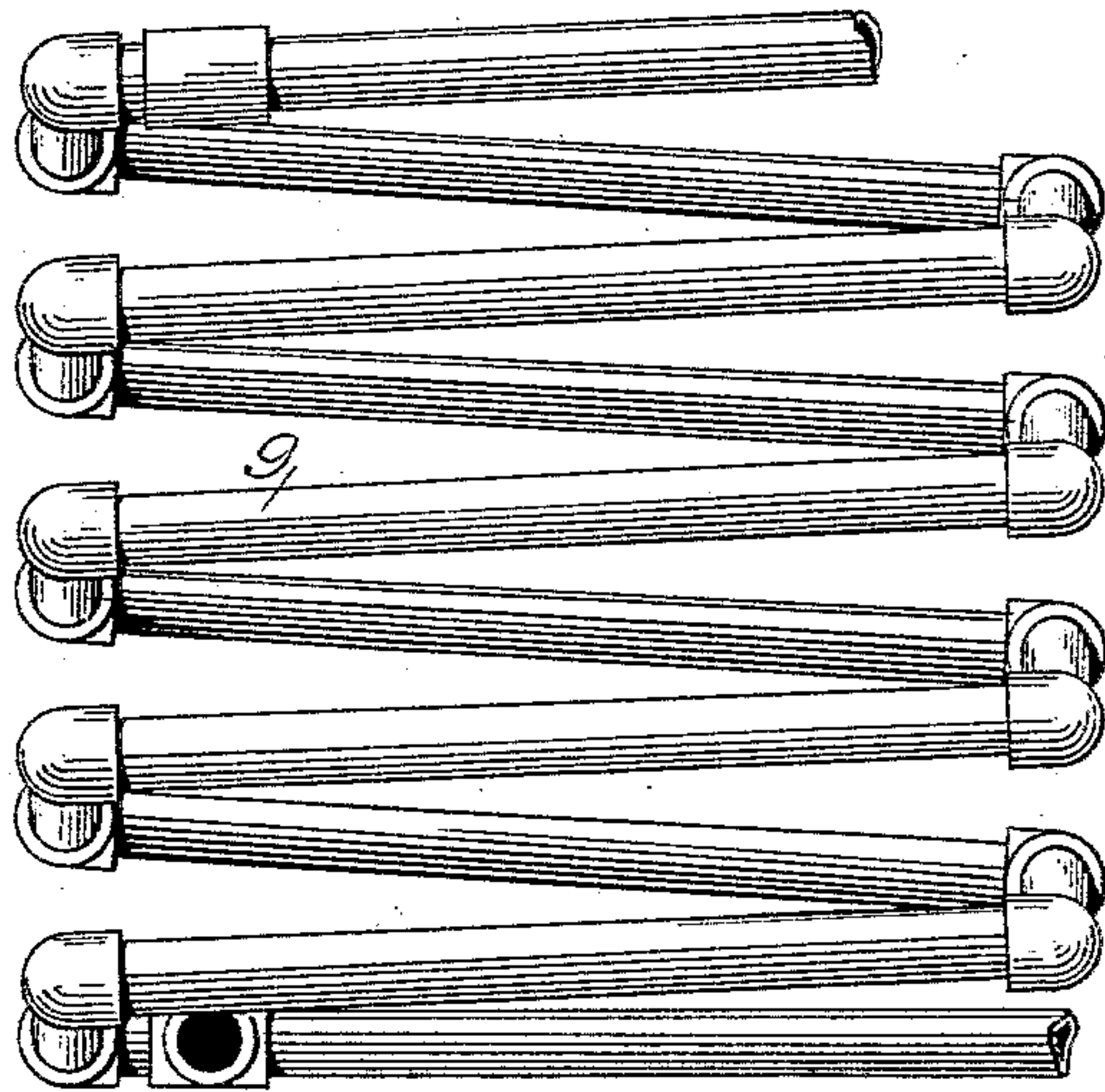
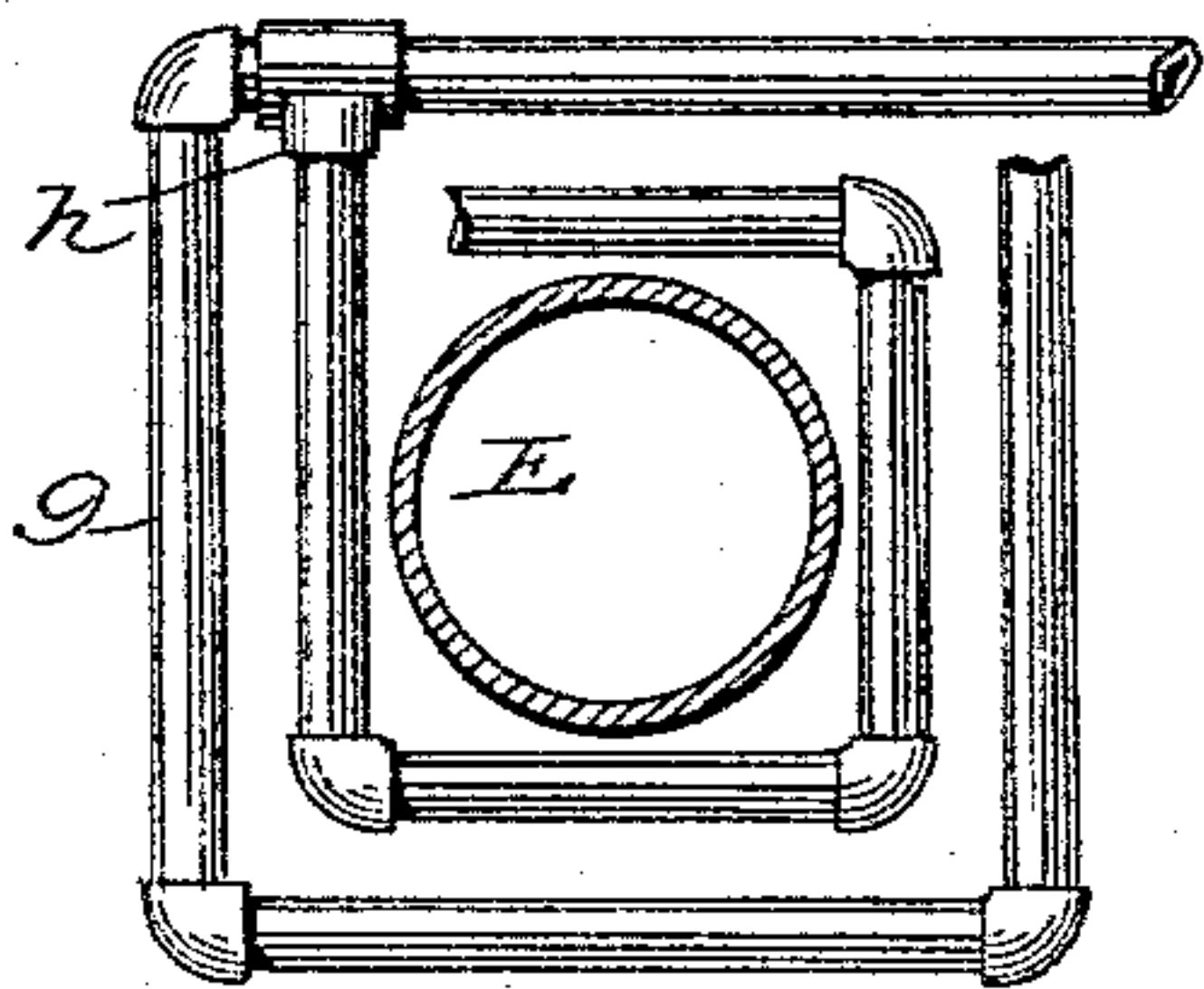


Fig. 4.



Attest:

W. J. Lane
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UNITED STATES PATENT OFFICE.

WILLIAM J. LANE, OF POUGHKEEPSIE, NEW YORK.

STEAM-HEATER.

SPECIFICATION forming part of Letters Patent No. 300,376, dated June 17, 1884.

Application filed January 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. LANE, of Poughkeepsie, in the county of Dutchess and State of New York, have invented a new and useful Improvement in Steam-Heaters; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to steam-heaters, and is principally designed for the heating of houses.

The object of the invention is to provide an efficient durable apparatus with less cost than the ordinary expense.

My invention consists of certain details of construction fully explained hereinafter, and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation; Fig. 2, a side elevation. Fig. 3 is a vertical section taken through line *x x* of Fig. 2. Fig. 4 is a horizontal section showing the coils and magazine, on line *y y* of Fig. 1. Fig. 5 is a side view of the outside coil of pipe.

I aim, first, to provide a steam-heater with a brick inclosure and a magazine or fuel-reservoir combined with pipes for the generation of steam. The magazine must necessarily be of metal; but the sheet-metal casing ordinarily used lacks durability by reason of rapid rusting when out of use, and also radiates heat rapidly, and is on these accounts objectionable. To avoid this I use brick walls *A*, with a top of brick, *a*. The bricks which form the top rest upon suitable bars or plates, *b*. In this top is suspended the reservoir *E*, made of cast-iron, and of ordinary cylindrical form, excepting that it is enlarged at the upper end, in order that it may be properly suspended in the brick covering. Its lower end terminates in suitable relation to the fire-pot *C*, which is formed, preferably, of fire-brick, and supported upon a metal plate, *e*, which prevents any communication between the ash-pit and the fire-chamber, excepting through the fire-pot. A grate, *D*, is supported upon a bar, *d*, set in the brick-work and extending across the ash-pit. A suitable place is left around the magazine for the reception of the pipes and for the circulation of the products of combustion. The brick-work may be rectangular in form, and this is the preferred form, since with it the pipes may be made of straight

pieces connected by screw-joints of ordinary gas-fittings. The magazine is filled in the top, and is provided with a cover, *e*, fitted as tightly as possible, and preferably made of brass or some non-corrodible metal. This combination of the iron magazine and the brick-work constitutes a cheap magazine-heater with an effective non-conducting case. Within the fire-chamber surrounding the magazine I locate pipes *g h*. These pipes may be sections of ordinary gas or water pipes united by malleable-iron or other connections, *l*. As shown in Fig. 4, pipe *G* is carried through the brick wall and communicates with the water-reservoir outside. Pipe *g* connects with the end of this pipe, and the pipe *h* is located just within the pipe *g*, and connected to the pipe *G* by a *T*. These pipes are carried around the magazine in coils or turns, rising one above the other, as shown in Fig. 3. The uppermost of the series are connected to the pipe *G'* in the manner shown in Fig. 4, which pipe is carried through the wall of the reservoir. Each completed turn in the form shown is composed of four pieces, all of which are inclined upward at a uniform grade or angle, so as to terminate just above the first of its series. More or less than two sets of pipes may be used, and the coils may be of any convenient number to suit the size of the apparatus.

The reservoir or drum is shown in Figs. 2 and 3 at *F*. It consists of pipe of suitable diameter, with heads *f f* screwed on in the ordinary manner. The pipe *G* is attached to it at the bottom of the reservoir or drum. The upper pipe, *G'*, is connected with the drum near the center. The steam-pipe *i* from the upper part conducts the steam to the radiators, and the water of condensation is returned by pipe *k*, entering the drum, preferably on the line with the entrance of the pipe *G'*. When a sufficiently large steam-pipe is used, the return-pipe *k* may be omitted and a single pipe, *i*, perform the double office. The drum or reservoir *F* is supplied with the ordinary appliance, of which *H* is a water-gage, *I* a pressure-gage, and *J* a safety-valve. The smoke-passage is carried from the combustion-chamber into an extension of the brick-work *A'*, and in this extension a check-door, *q*, opens outward from the smoke-passage. Fig. 1

shows a smoke-pipe, *l*, leading from this passage to the chimney.

A damper-regulator is shown at K. It consists of a lever, *m*, having one end connected 5 to the draft-door *n* and the other to the check-door *q* by similar chains. A weight is set at the proper point, according to the amount of pressure desired, which pressure is applied to the lever by the pipe *o* of the regulator K, leading 10 from the water-space in the drum F, this mechanism being of ordinary construction, and serves to move the lever and open the check-door and close the draft-door when pressure rises above a certain point, and to reverse this 15 movement when the pressure falls below that point.

The steam-generating apparatus is filled with water to such a point that when at work the water-level will stand at or near the pipe 20 *G'*, in which position the coils are filled. As the boiling water has less specific gravity than that of the reservoir F, the water in the coils will move rapidly around its circuit from the lower part of the drum through the pipe *G* 25 and the coils, and through the pipe *G'* back into the drum, continuously. Rapid circulation of water washes the interior and frees it from all

deposit, and also removes the bubbles of steam as fast as they form in the pipes, and in this way makes a given amount of heating-surface 30 more effective than in ordinary boilers. Coal need not be filled in the reservoir more than once or twice in twenty-four hours.

For the purpose of examining the interior or cleaning all deposits from the outside of the 35 pipes, I have provided openings having metal caps *p p'*.

I claim as my invention—

1. In a steam-heating apparatus, a drum or reservoir, pipes *G G'*, and a series of coils composed of straight sections and curved connections around the magazine, substantially as described. 40

2. In a steam-heater, and in combination, a magazine, the pipes *G G'*, and the coils or 45 turns *g h*, said pipes being united above and below, as set forth.

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

WILLIAM J. LANE.

Witnesses:

F. W. DAVIS,
E. M. MEEKS.