

No. 664,673.

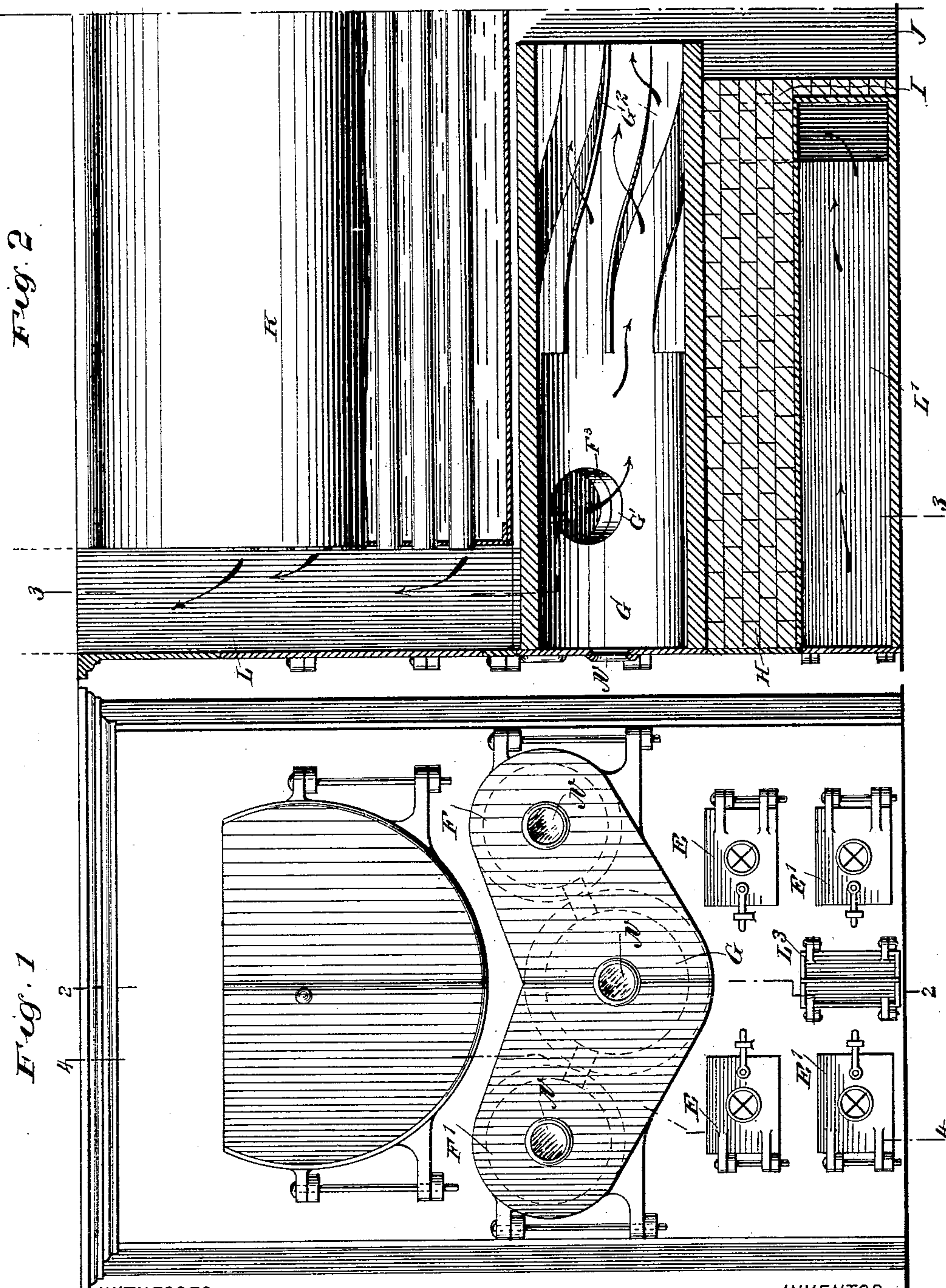
Patented Dec. 25, 1900.

J. L. PESLIN.
FURNACE.

(Application filed Aug. 15, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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(No Model.)

Fig. 4

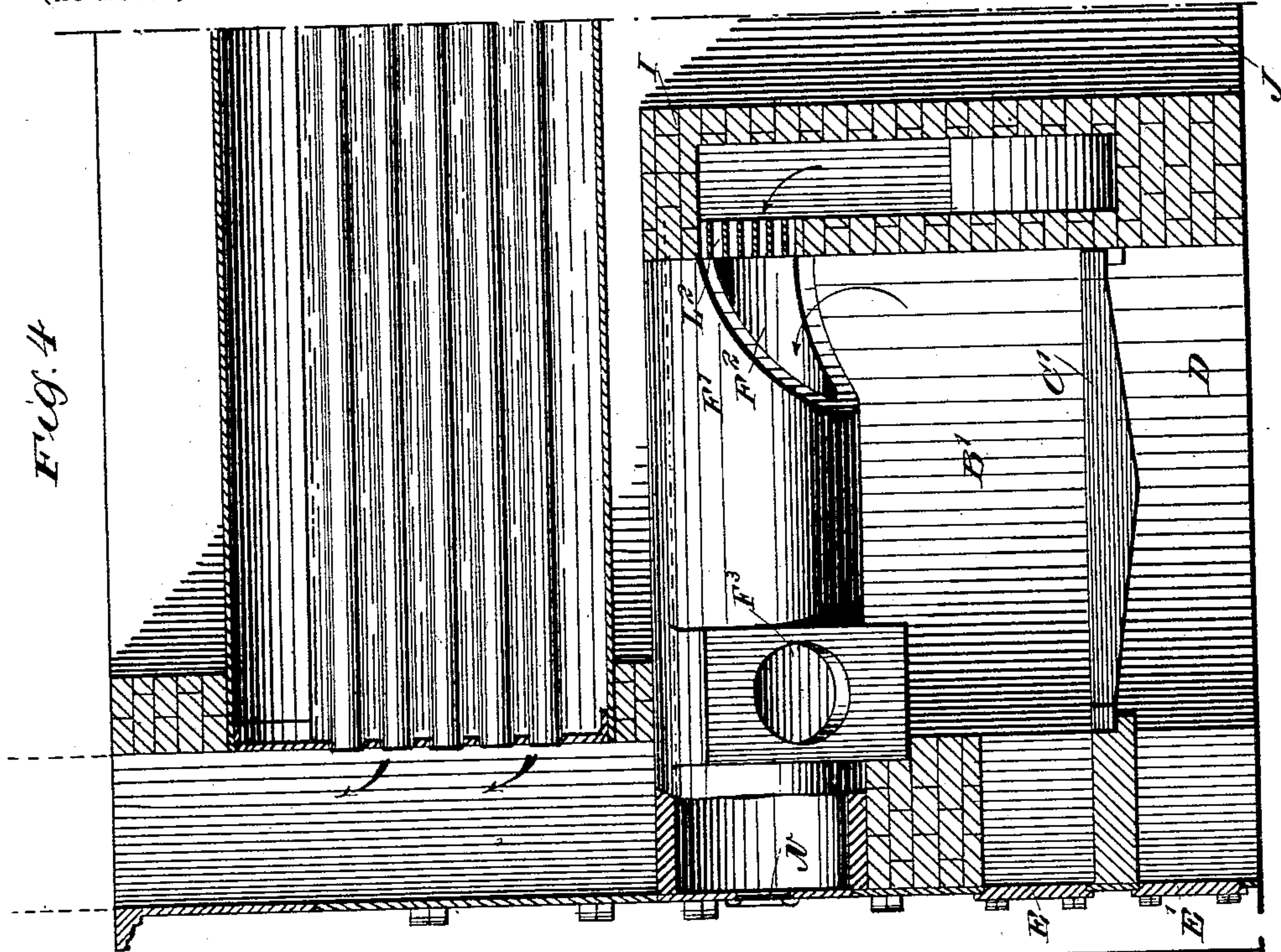
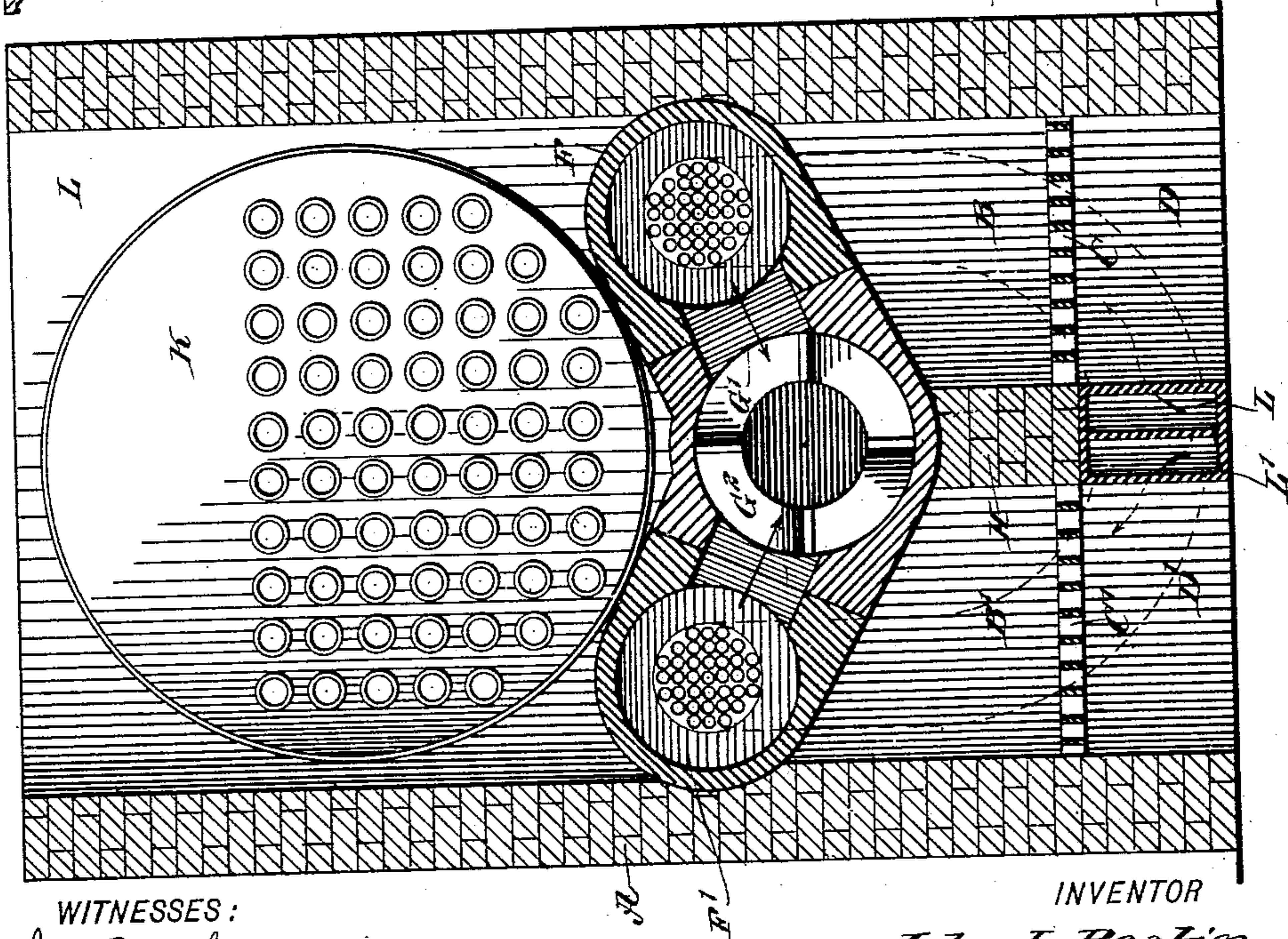


Fig. 3



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UNITED STATES PATENT OFFICE.

JOHN L. PESLIN, OF CHICAGO, ILLINOIS.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 664,673, dated December 25, 1900.

Application filed August 15, 1900. Serial No. 26,969. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. PESLIN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Furnace, of which the following is a full, clear, and exact description.

The invention relates to smokeless furnaces for boilers and other devices and apparatus requiring high temperature.

The object of the invention is to provide a new and improved furnace which is simple and durable in construction, very effective in operation, and arranged to permit the use of any kind of fuel or different fuels at the same time and to insure a complete combustion and full utilization of the heat units of the fuel, to prevent cold air from striking the boiler when the charge-doors are opened for the introduction of fuel, and also to allow a fireman to readily examine the working of the furnace without opening a door for the purpose.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front view of the improvement. Fig. 2 is a sectional side elevation of the same on the line 2 2 in Fig. 1. Fig. 3 is a cross-section of the same on the line 3 3 in Fig. 2, and Fig. 4 is a sectional side elevation of the same on the line 4 4 in Fig. 1.

The improved furnace is built of the usual brickwork A and is provided with fire-boxes B B', arranged one alongside the other and having grates C C' and ash-pits D D', with firing-doors E leading to the fire-boxes and doors E' leading to the ash-pits. On the tops of the fire-boxes B B' are arranged longitudinally-extending flues F F', respectively, between which is located a tubular combustion chamber G, resting on a division-wall H, separating the fire-boxes from each other and terminating at its rear end on a bridge-wall I, on which terminate the rear open ends F² of the gas-flues F F', as will be readily understood by reference to Fig. 4. The combus-

tion-chamber G extends through the bridge-wall I into a chamber J at the rear end of the furnace and extends, with the gas-flues F F' and said chamber J, under a boiler K of any approved construction and having the usual gas-flues for leading the products of combustion to the front smoke-box L, connected with the chimney.

The gas-flues F F' are provided at or near their ends with an elongated opening F³, registering with a corresponding opening G', arranged in the combustion-chamber G at opposite sides thereof, so that the products of combustion arising from the burning fuel in the fire-boxes B B' pass through the rear open ends F² of the gas-flues F F' to then travel forward and pass through the registering openings F³ and G' into the combustion-chamber G, in which the products of combustion from the two fire-boxes are mixed to then pass rearward into the chamber J for final combustion.

In order to insure a proper and thorough mixing of the products of combustion from the two fire-boxes, I provide the inside rear portion of the combustion-chamber G with spirally-arranged blades G², so as to give a whirling mixing motion to the products of combustion prior to their passage into the chamber J at the rear of the bridge-wall I.

In order to insure a complete combustion of the burning fuel, outside air is introduced into the gas-flues F F' at their rear open ends F² in the top portion of the fire-boxes B B', (see Fig. 4,) and for this purpose air-ducts L L' are arranged in the lower portion of a partition-wall H and lead to and extend up through the bridge-wall I to the rear open ends F² of said gas-flues F F'; the entrance ends of the ducts L L' being preferably perforated, as at L², to minutely divide the air before entering the gas-flues F F' at the rear ends thereof. It is evident that by the passage of the atmospheric air through the air-ducts L L' the air becomes heated and is thus in a fine condition to insure a complete combustion of the rising gases in the gas-flues F F', the combustion-chamber G, and the chamber J.

The forward closed ends of the gas-flues F F' and the combustion-chamber G are provided with windows N, of mica or other suit-

able transparent or translucent material, to allow a fireman to view at any time the interior workings of the furnace without being compelled to open a door for the purpose.

5 It will be seen that by the arrangement described the tops of the fire-boxes B B' are completely closed by the gas-flues F F' and the combustion-chamber G, and exit is only
10 had from the fire-boxes through the rear open ends F² of said gas-flues, and consequently when fuel is introduced into the fire-boxes the air entering at this time does not strike the boiler and cool the same, as is so frequently the case in furnaces heretofore constructed.

15 The front or entrance ends of the ducts L L' are provided with suitable doors L³ for regulating the amount of air admitted to the gas-flues at the rear portions of the fire-boxes.

20 It is to be understood that the fire-boxes are to be alternately fired, and consequently when one has been fired, owing to the low temperature of the same caused by the fresh supply of fuel, combustion of the gases will not immediately take place, and the said gases will
25 pass through the flue F or F' without being ignited; but as soon as the gases enter the chamber G and meet the smokeless and incandescent fire from the other fire-box they
30 will be ignited, and owing to the gases being mixed in said chamber a thorough combustion takes place.

By the arrangement described any kind of fuel can be burned in the fire-boxes and, if
35 desired, different kinds of fuel can be burned in the two fire-boxes B B', and each of the latter can be used separately, as the combustion-chamber G constitutes a furnace for gas or liquid fuel, it being understood that the
40 products of combustion of the fuel from the two fire-boxes finally come together and are mixed in the combustion-chamber G, as above explained.

Having thus fully described my invention,
45 I claim as new and desire to secure by Letters Patent—

1. A furnace having a plurality of fire-boxes, a gas-flue for each fire-box, said flues being arranged above the said boxes, and a central
50 combustion-chamber into which open the said flues, substantially as described.

2. A furnace having a plurality of fire-boxes, a gas-flue for each fire-box, said flues being arranged above the fire-boxes and communicating therewith at their rear ends, and a combustion-chamber between the flues and communicating therewith at their front ends, substantially as described.

3. A furnace having a plurality of fire-boxes,
60 a gas-flue for each fire-box, said flues being arranged above the fire-boxes and communicating therewith at their rear ends, air-ducts leading into the rear ends of the flues, and a

combustion-chamber between the flues and communicating with the front ends of said
65 flues, substantially as described.

4. A furnace having a plurality of fire-boxes, a gas-flue for each box, said flues being arranged above the fire-boxes and communicating therewith at their rear ends, air-ducts
70 leading from below the fire-boxes to the rear ends of the flues, the ducts being perforated at the point of discharge into the flues, and a combustion-chamber between the flues and communicating therewith at its front end, substantially as described.

5. A furnace having two fire-boxes, a hollow bridge-wall communicating with the outer air, a flue arranged over each fire-box and communicating therewith at its rear end, said
80 flues being also in communication with the hollow bridge-wall, and a combustion-chamber arranged on the partition of the fire-boxes between the said flues, said chamber communicating with the flues at their front ends, substantially as described.

6. A furnace having two fire-boxes, the lower portion of the partition-wall of said fire-boxes being provided with air-ducts, a hollow
90 bridge-wall with which the air-ducts connect, a gas-flue arranged above each fire-box and communicating therewith at its rear end, said flues being in communication with the hollow bridge-wall, and a combustion-chamber supported upon the partition-wall of the fire-boxes between the gas-flues, said chamber communicating with the gas-flues at the front ends, substantially as described.

7. A furnace having a plurality of fire-boxes, gas-flues for carrying the products of combustion from the fire-boxes, and a central combustion-chamber into which open the said
100 flues, said combustion-chamber having spiral blades at its inside, to mix the products of combustion from said gas-flues, as set forth.

8. A furnace, comprising a combustion-chamber, gas-flues arranged on opposite sides of said chamber and in communication therewith at opposite sides, independent fire-boxes for said gas-flues and opening into the rear
110 open ends thereof, so that the products of combustion from said fire-boxes pass into said gas-flues at the rear ends, to then travel forward and pass into the combustion-chamber at or near the forward end thereof, and a mixing
115 device in the rear portion of the combustion-chamber, for mixing the products of combustion from said gas-flues, as set forth.

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

JOHN L. PESLIN.

Witnesses:

JOHN C. GOODWIN,
FRANK J. BELSKY.