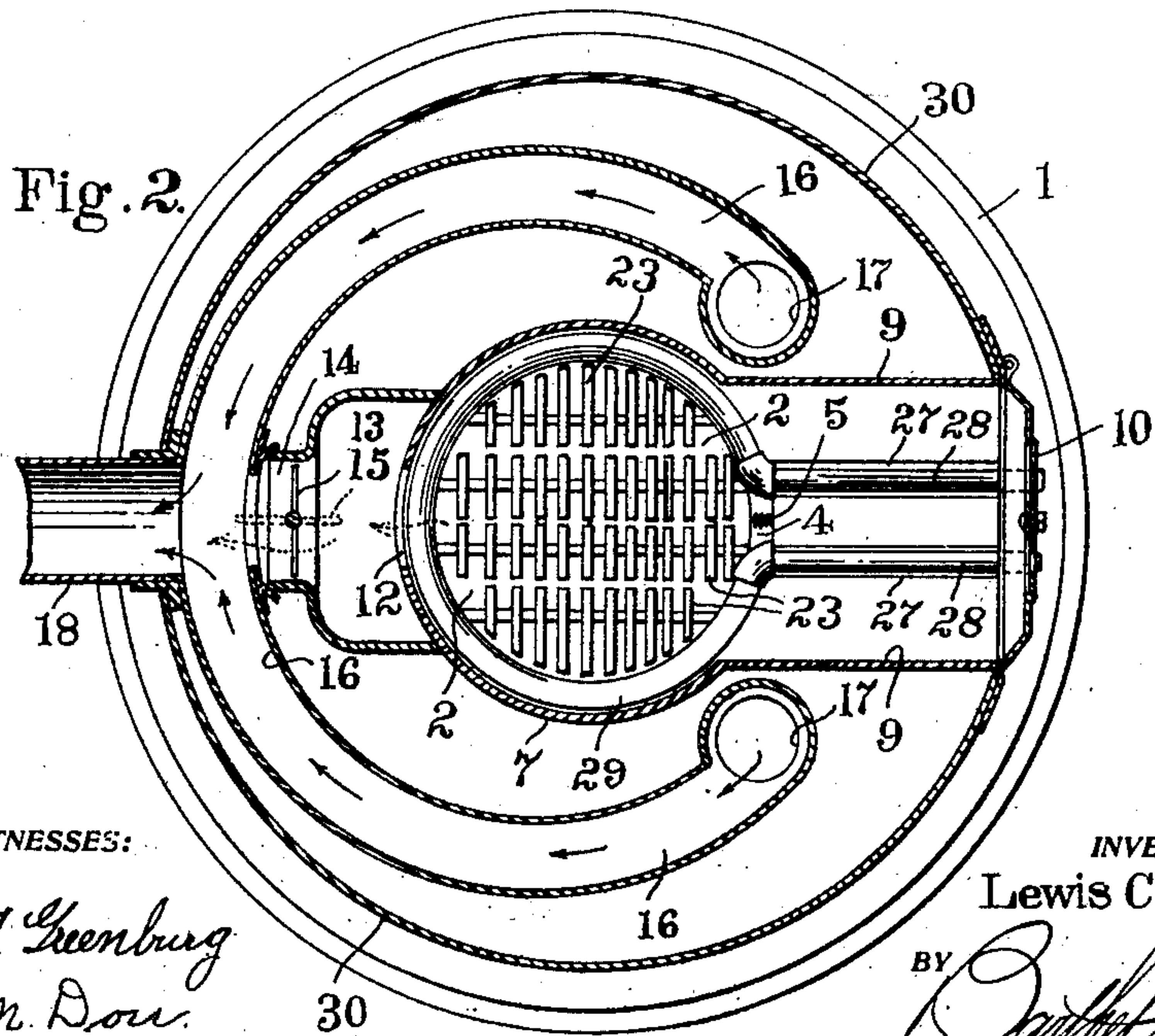
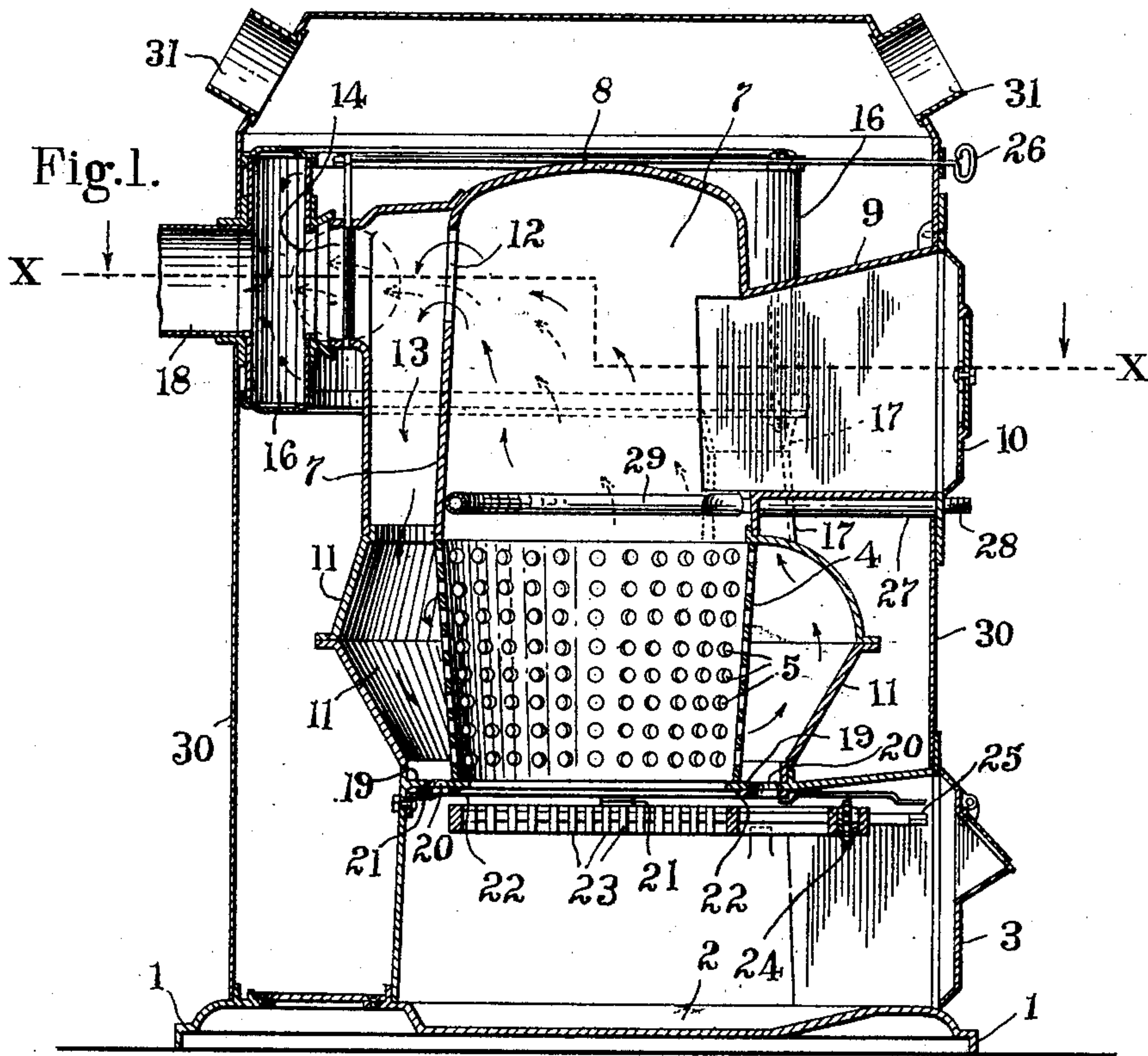


L. C. HANMER.
HEATING FURNACE.
APPLICATION FILED AUG. 17, 1908.

924,774.

Patented June 15, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

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Anna M. Dow.

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Lewis C. Hanmer

BY

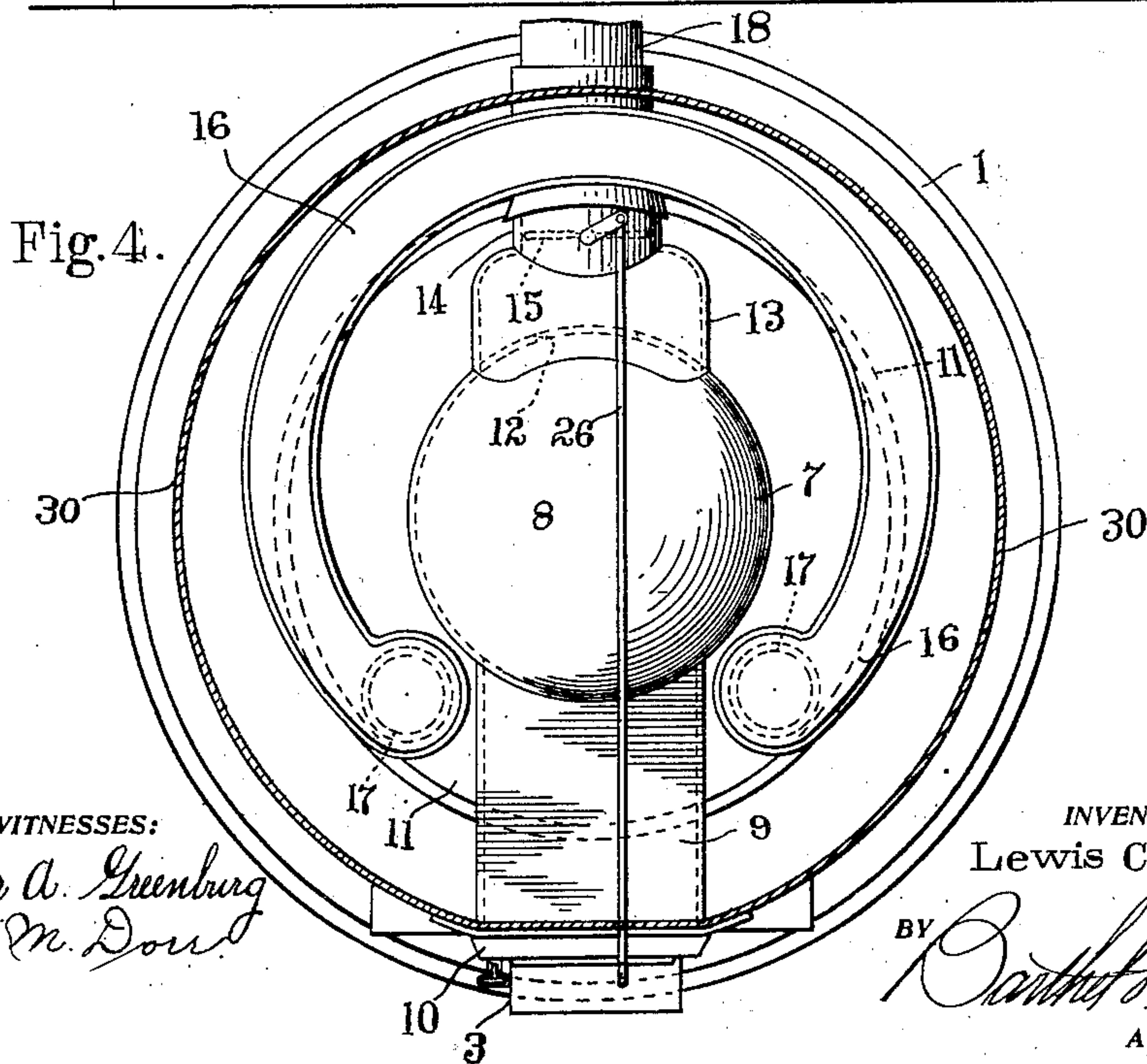
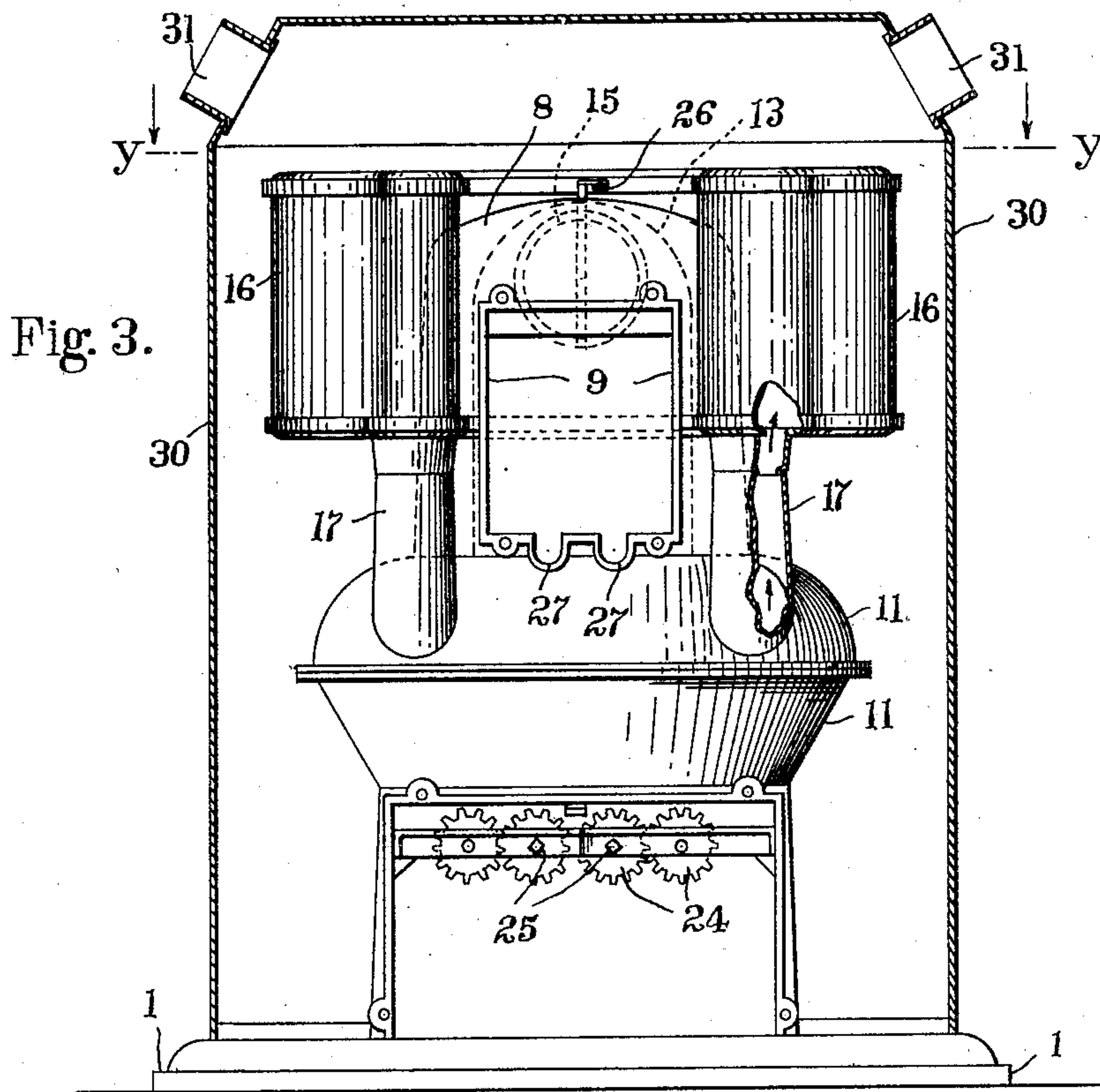
[Signature]
ATTORNEYS

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2 SHEETS—SHEET 2.

924,774.



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UNITED STATES PATENT OFFICE.

LEWIS C. HANMER, OF DETROIT, MICHIGAN, ASSIGNOR TO DIMPSEY-HANMER COMPANY,
OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

HEATING-FURNACE.

No. 924,774.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed August 17, 1908. Serial No. 448,911.

To all whom it may concern:

Be it known that I, LEWIS C. HANMER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Heating-Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in hot air furnaces in which the products of combustion and hot gases are caused to circulate around a perforated fire-pot where they are ignited and burned, the hot residue being circulated to give off its heat and become cooled before entering the smoke-pipe.

The object of the invention is to provide a simple, cheap and efficient construction in which such circulation is provided for and which embodies certain other new and useful features as hereinafter more fully described, reference being had to the accompanying drawings in which—

Figure 1 is a vertical section of a furnace embodying the invention; Fig. 2 is a transverse section substantially on the line $x-x$ of Fig. 1; Fig. 3 is a front elevation showing the casing in section and parts broken away to show the construction; and Fig. 4 is a transverse section upon the line $y-y$ of Fig. 3.

As shown in the drawings 1 is a circular base portion forming an ash-pit 2 having a clean-out door 3. Resting upon the base portion is a circular fire-pot 4 provided with perforations 5 in its sides throughout its height and it is preferably made somewhat larger in diameter at the top than at the bottom. Resting upon the top of the fire-pot is a dome 7 having an upper closed end forming a radiating surface 8 and at its front side having cast integral therewith a fuel-chute 9 provided at its outer end with a fuel-door 10 through which fuel is shoveled into the furnace.

Surrounding the fire-pot 4 and also resting upon the base 1 is a smoke-consuming chamber 11 made in two parts which are flanged and bolted together at their meeting edges. In the rear wall of the dome near its upper end is a smoke-hole 12 which opens into a vertical smoke-flue 13 extending downward the length of the dome and opening at its lower end into the top of the smoke-chamber 11 at the rear side of the

fire-pot. In the rear side of the passage 13 opposite the smoke-hole in the dome is a short rearwardly extending circular pipe or passage 14 in which is pivoted a damper 15 to close the same, said damper being operated by means of a rod 26 extending forwardly over the dome.

Partially surrounding the upper end of the dome and smoke-passage 13 is a radiating chamber 16 which, in plan view, is in the form of a horse-shoe with its ends adjacent to each side of the fuel-chute 9. Vertical passages or pipes 17 extend upward from the top of the smoke-consuming chamber at each side of the said chute and open into the bottom of the radiating chamber at its ends, said chamber being supported at its front ends by said pipes and at its rear side by the short smoke-pipe 14 which is secured thereto and opens through the wall of the radiating chamber. Leading from the radiating chamber directly opposite the end of the pipe 14 is the smoke-pipe 18 for conducting the products of combustion to the chimney.

A bottom is formed for the smoke-consuming chamber by a wall 19 on the base portion extending inward toward the fire-pot and provided with a series of openings 20 to permit any ash which may fall through the perforations of the fire-pot to pass down through the openings into the ash-pit. Beneath the wall 19 is supported upon brackets 21 a movable ring 22 which is also provided with openings to correspond with the openings in the wall and by turning this ring the openings may be opened or closed.

Grate-bars 23 are supported within the base 1 beneath the fire-pot and each is provided with a forwardly projecting stem, upon which stems are secured gears 24 meshing with each other in pairs and actuated by a suitable lever to engage the squared end 25 of one of the stems of each pair.

The fuel-chute 9 is cast with parallel longitudinally extending channels 27 in its bottom to receive the water pipes 28 which are connected to the ends of a semi-circular or ring-pipe 29 within the dome, one of the pipes 28 is connected to the water supply and the water flows through said pipe and ring where it is heated and through the other pipe into the hot water system. By providing channels for the water pipes in the bottom of the chute, they do not interfere with the door or with putting the fuel into the furnace.

An outer casing or jacket 30 formed of sheet metal in the usual manner incloses the whole structure and leading from the top of this casing are the hot air pipes 31 to conduct
5 the heated air to the parts of the building to be heated.

When the damper 15 is turned by its operating rod 26 to open position, as shown in dotted lines in Fig. 1, the products of combustion pass upward from the fire-pot into the dome and out through the smoke-hole therein, past the damper, across the radiating chamber and out through the smoke-pipe, making a direct draft. When the damper is
15 in closed position, as shown in full lines, the smoke and products of combustion passing out through the smoke-hole in the dome are forced to pass downward through the vertical smoke-passage 13 into the smoke-consuming chamber where the hot gases come in contact with jet flames issuing from the perforations in the fire-pot and are ignited and burned in said chamber. The residue
20 of combustion passes around the fire-pot and up through the vertical pipes 17 into the forward ends of the radiating chamber and thence around at each side of the dome in said chamber to the smoke-pipe at the back. The capacity of the radiating chamber is
25 greater than that of the vertical pipes and upon entering said chamber, the products of combustion are quickly cooled by coming in contact with the extended surface of the chamber which is heated thereby and, in
30 turn, heats the air passing upward around it and between it and the dome 7, a considerable space being provided between said chamber and dome.

While I have shown my invention as applied to furnaces it is obvious it may be used
40 as well on stoves or any other form of heaters.

Having thus fully described my invention what I claim is:—

1. In a heater, the combination of a fire-
45 pot having openings in its sides, a chamber surrounding said fire-pot, a dome extending upward from said fire-pot, means for conducting the products of combustion from the upper end of the dome into the chamber
50 around the fire-pot, a radiating chamber adjacent to the upper portion of the dome and communicating with said chamber and a smoke-pipe communicating with said radiating chamber.

55 2. In a heater, the combination of a fire-pot, a chamber surrounding said fire-pot, a dome extending upward from the fire-pot having a passage communicating with the upper portion of the dome and with the
60 chamber around the fire-pot, a radiating chamber around the upper portion of the dome and passage and communicating with the said chamber around the fire-pot, and having a short passage connecting the ra-
65 diating chamber and said passage, a damper

in said short passage and a smoke-pipe leading from the radiating chamber at a point opposite said short passage.

3. In a heater, the combination of a fire-pot, a chamber surrounding said fire-pot, a
70 dome extending upward from said fire-pot having a passage communicating with the upper portion of said dome at its rear side and opening into the top of the chamber around the fire-pot, a radiating chamber ex-
75 tending a portion of the way around the upper end of the dome and connected at its ends near the front of the dome to the chamber around the fire-pot and a smoke-pipe connected to the radiating chamber at its
80 rear side.

4. In a heater, the combination of a fire-pot having openings in its sides, a smoke-consuming chamber surrounding said fire-pot, a dome extending upward from the fire-pot
85 having a vertical passage at the back of the dome communicating with the upper end of the dome and with the top of the consuming chamber, a radiating chamber extending around the upper end of the dome and
90 passage and spaced therefrom, means connecting the front ends of said radiating chamber with the consuming chamber near its front side, a pipe extending across the space between the vertical passage and the ra-
95 diating chamber, means for closing said pipe and a smoke-pipe opening into the radiating chamber opposite the end of the pipe.

5. In a heater, the combination of a fire-pot, a chamber surrounding the fire-pot, a
100 dome extending upward from the fire-pot having a smoke-hole near its upper end and a vertical passage to receive the products of combustion from the smoke-hole and con-
105 duct them into the top of the chamber around the fire-pot, a radiating chamber of horse-shoe shape in plan view extending around the upper end of the dome and
110 passage, vertical pipes extending upward from the top of the chamber around the fire-pot and opening into the radiating chamber at its ends, and a smoke-pipe opening into the radiating chamber at its rear side op-
115 posite the vertical passage.

6. In a heater, the combination of a fire-
115 pot having openings in its sides, a consuming chamber surrounding the fire-pot, a dome extending upward from the fire-pot, a fuel-chute opening into the forward side of the dome above the fire-pot, said dome having a
120 vertical passage at the rear side of the dome communicating with the dome near its upper end and with the top of the consuming chamber, a radiating chamber extending partially around the dome and spaced therefrom with
125 its forward ends adjacent to the sides of the fuel-chute, vertical pipes extending upward from the consuming chamber and opening into the forward ends of the radiating chamber and supporting said chamber at the for-
130

ward side of the dome, a pipe connected to the radiating chamber and to the upper end of the vertical passage at its opposite ends, a damper in said pipe, and a smoke-pipe 5 connected to the radiating chamber opposite the end of the pipe.

7. In a heater, the combination of a base section forming an ash-pit, a fire-pot supported upon the base section and having 10 openings in its sides, a consuming chamber surrounding the fire-pot and supported upon the base section with a space between its lower end and the sides of the fire-pot, said consuming chamber being made in two parts 15 which are flanged and bolted together at their meeting edges, a wall on the base portion extending inward toward the fire-pot having a series of openings and forming the bottom of the consuming chamber, means 20 for opening and closing said openings in said wall, a dome extending upward from the top of the fire-pot and having a closed upper end forming a radiating surface, said dome having a vertical passage at the rear side of the 25 dome opening at its lower end into the consuming chamber and communicating at its upper end with the upper end of the dome

through a smoke-hole in the dome, a pipe leading rearwardly from the upper end of the vertical passage, a damper in said pipe, a 30 radiating chamber extending partially around the upper end of the dome and connected to and supported intermediate its ends by the pipe, vertical pipes on the consuming chamber near its forward side opening into the 35 bottom of the radiating chamber at its ends and supporting said ends, and a smoke-pipe opening into the radiating chamber opposite the pipe.

8. In a heater, the combination of a fire- 40 pot having openings in its sides, a chamber surrounding said fire-pot, a dome extending upward from said fire-pot, means for conducting the products of combustion from the dome into the chamber around the fire-pot, a 45 radiating chamber communicating with said fire-pot chamber and a smoke-pipe communicating with said radiating chamber.

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

LEWIS C. HANMER.

Witnesses:

C. R. STICKNEY,

OTTO F. BARTHEL.