

No. 667,671.

Patented Feb. 12, 1901.

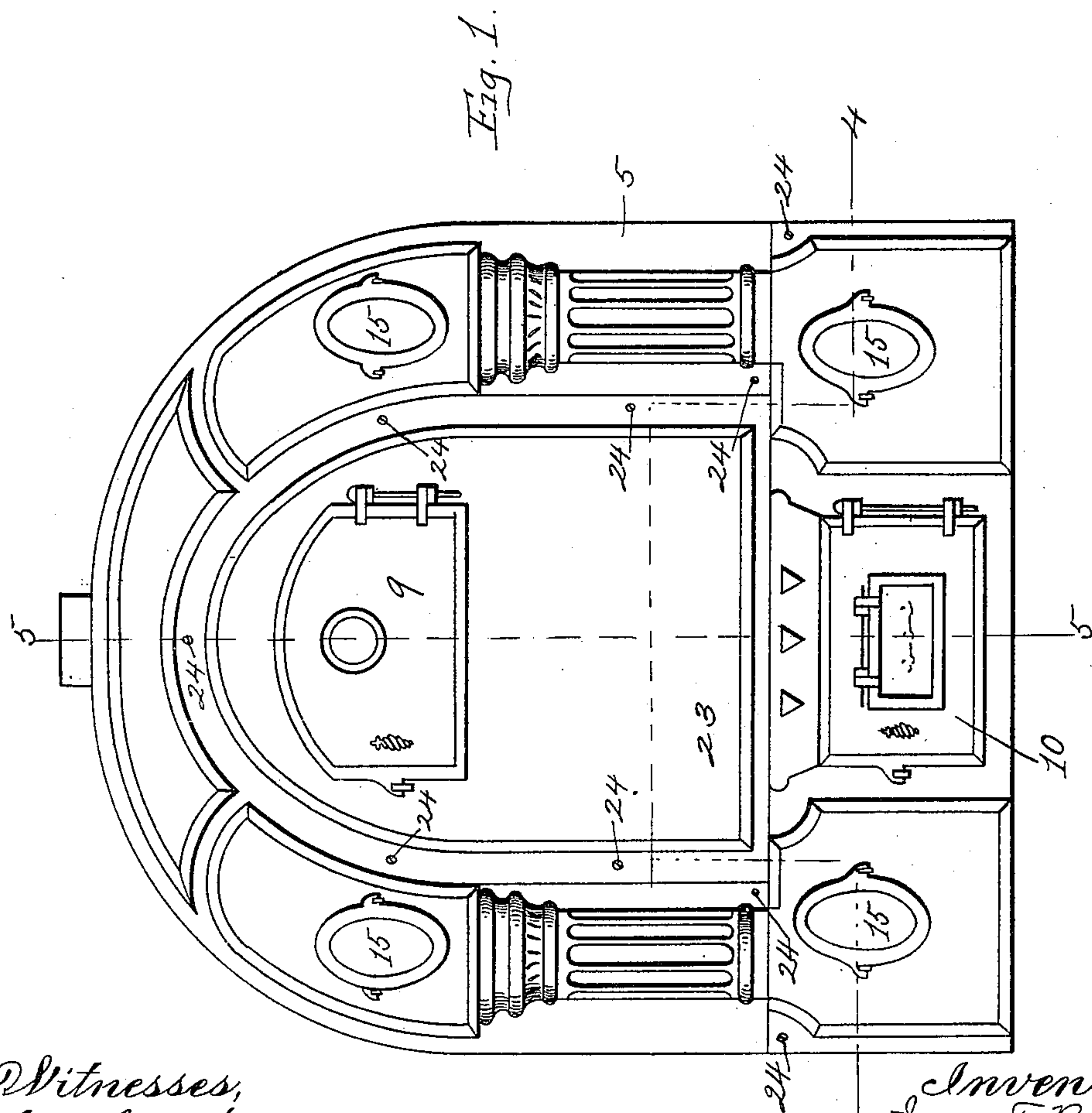
J. T. & T. R. BRIEN.

HOT AIR FURNACE.

(Application filed July 1, 1899.)

(No Model.)

3 Sheets—Sheet 1.



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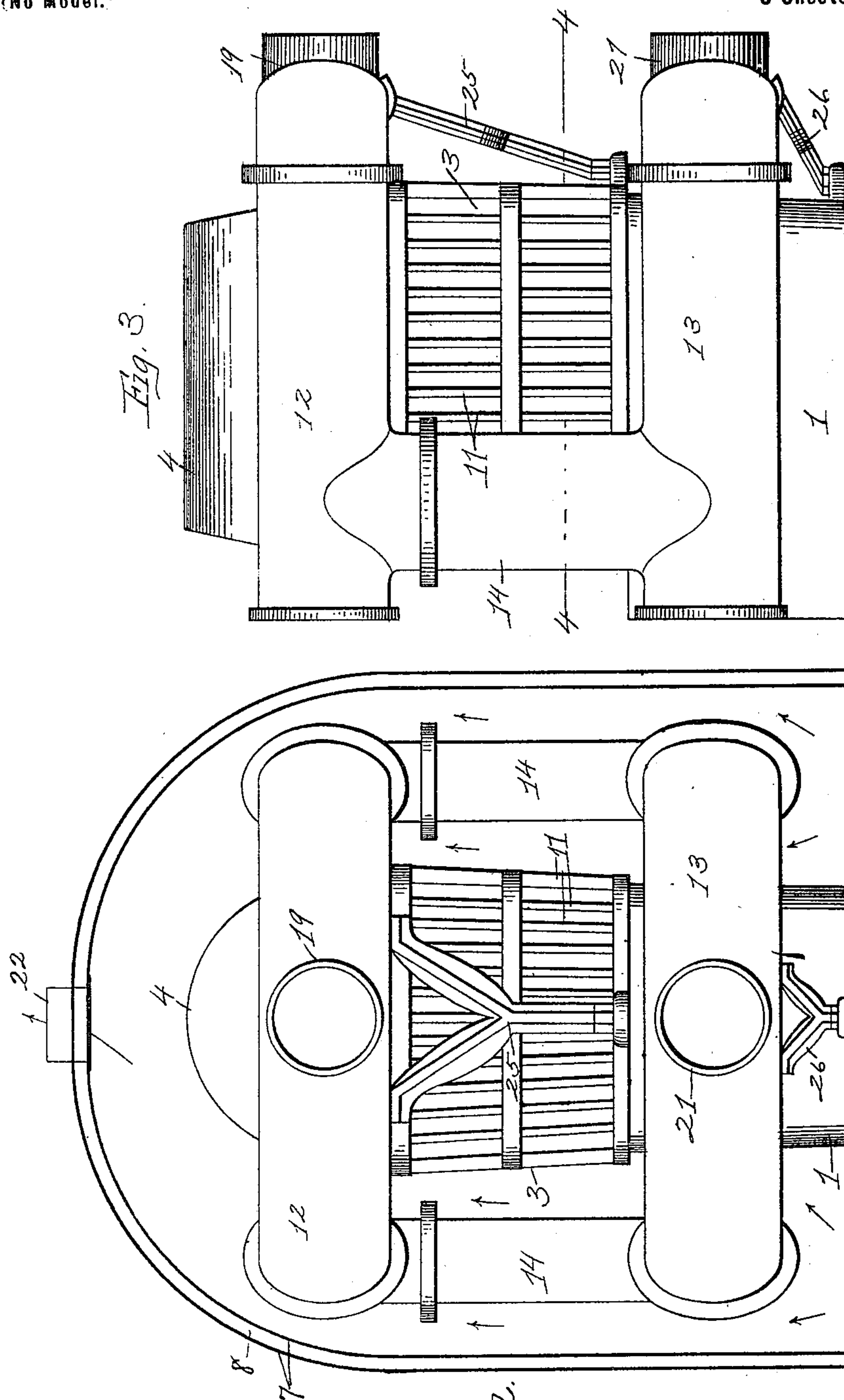
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Fig. 2.

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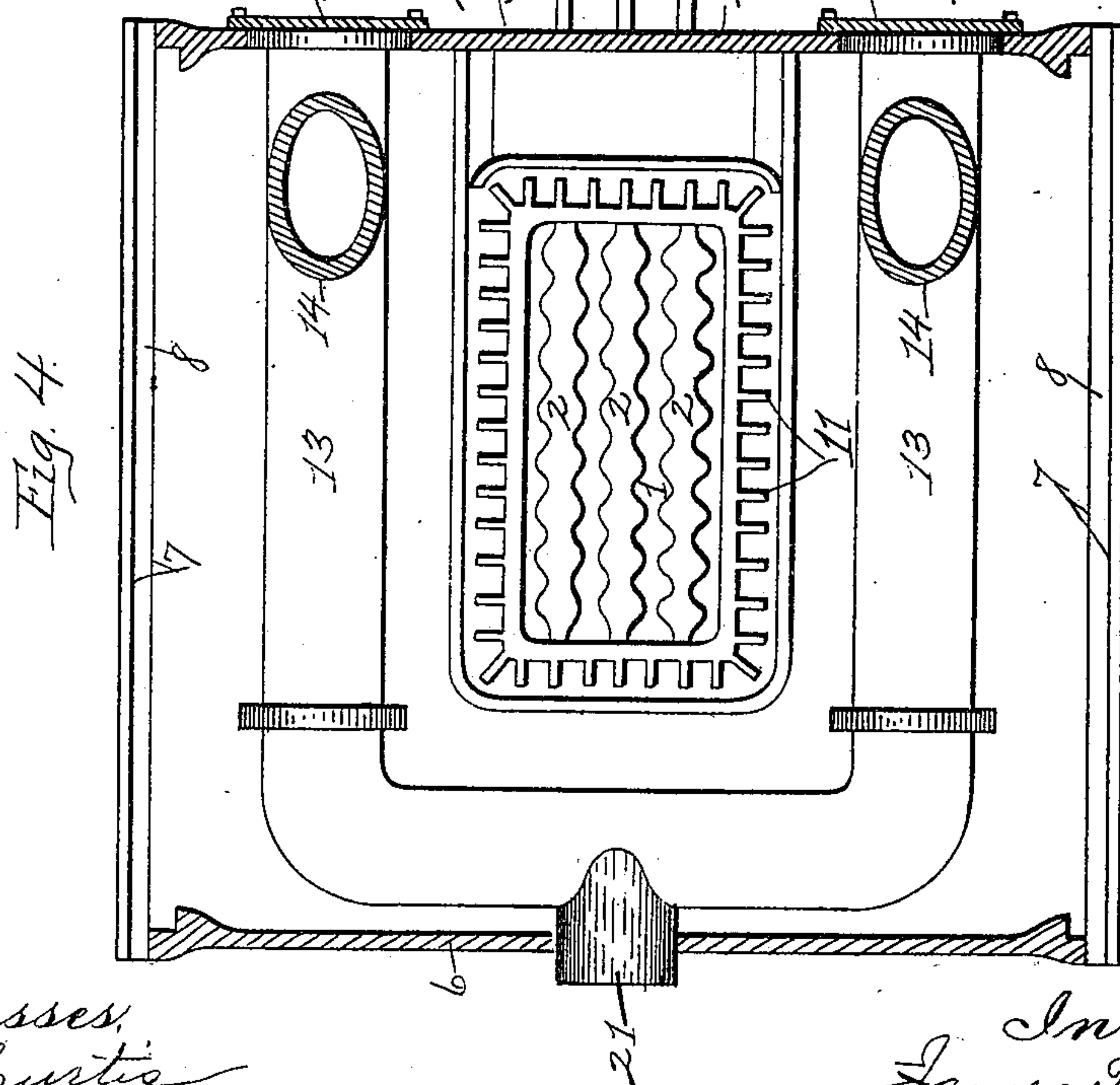
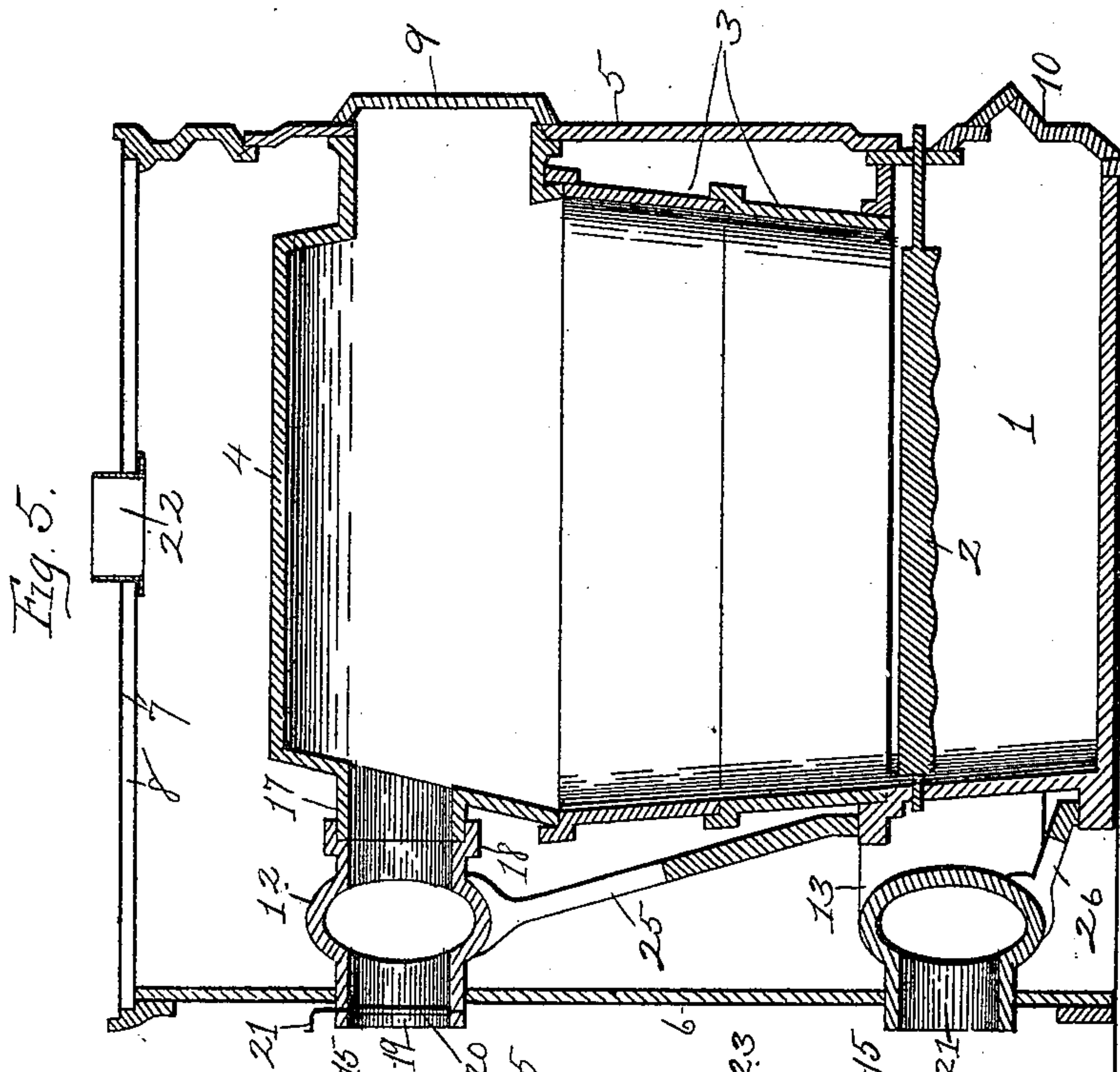
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UNITED STATES PATENT OFFICE.

JAMES T. BRIEN AND THEODORE R. BRIEN, OF HOOSICK FALLS, NEW YORK.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 667,671, dated February 12, 1901.

Application filed July 1, 1899. Serial No. 722,509. (No model.)

To all whom it may concern:

Be it known that we, JAMES T. BRIEN and THEODORE R. BRIEN, citizens of the United States, residing at Hoosick Falls, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Hot-Air Furnaces, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification.

Similar characters refer to similar parts in the several figures.

Figure 1 of the drawings is a front elevation of our improved furnace. Fig. 2 is a rear elevation of the same with the rear wall of the inclosing case removed. Fig. 3 is a side elevation of the same with the case removed. Fig. 4 is a horizontal section taken on the broken line 4 4 in Figs. 1 and 3. Fig. 5 is a vertical central section taken on the broken line 5 5 in Fig. 1.

1 is the ash-pit, provided with grate-bars 2 and a seat for the fire-box 3. The upper part of the fire-box is flanged to form a seat for the superposed dome 4. These parts are all inclosed by a front wall 5 and rear wall 6 and on the top and sides by a case 7, comprising a double wall of sheet metal with a thin air-space 8 between, each thickness of sheet metal being represented by a single line. The front wall is provided with a door 9, opening into the dome, and a door 10, opening into the ash-pit.

The fire-box is provided with radiating vertical flanges 11, adapted to present a comparatively large radiating-surface.

Inclosing the fire-box on three sides is a pair of horizontal smoke-flues 12 and 13, arranged one above the other and connected with each other by the vertical flues 14 14, one on each of the opposite sides of the fire-box and near the front wall. The ends of the horizontal flues connect with openings in the front wall of the furnace, which are provided with doors 15 for opening and closing the same. These openings afford a convenient

means for cleaning the horizontal flues and remain closed when the furnace is in operation. The dome is connected with the upper horizontal flue by means of a detachable connection comprising the part 17 on the dome telescoping into the flanged projection 18 on the horizontal flue. The upper flue is also provided with a flue connection 19, adapted to connect with the smoke-stack, (not shown,) the latter connection being provided with a valve or damper 20, having an exterior operating-handle 21. The lower horizontal flue is also provided with a flue connection 21, adapted to connect with the smoke-stack.

The products of combustion pass from the fire-box up into the dome, thence into the upper horizontal flue, where they divide and pass to the ends of the flue, thence down the vertical flues into the lower horizontal flue, where they unite again as they pass thence out into the smoke-stack. By opening the valve 19 in the upper connection the products of combustion pass directly from the dome through the short connection into the stack. This valve is only opened when increased draft is required.

Cold air is admitted through the open bottom of the case, which circulates around all sides of the horizontal and vertical smoke-flues and the fire-box and passes out through an upper aperture 22 in the top of the case in a heated condition to the distributing-pipes. (Not shown.)

By having the horizontal and vertical flues exposed on all sides to the air-currents the heat is absorbed from the products of combustion more thoroughly and very little escapes into the stack.

The middle part 23 of the front is detachable, it only being necessary to remove the screws 24, whereupon the part 23 can be detached and leave an aperture large enough to permit the withdrawal of the dome and fire-box, whereby the same can be withdrawn and renewed or repaired without disturbing the other parts of the furnace.

The detachable connection between the dome and horizontal flue permits a ready separation of the parts.

When the dome and fire-box are made in separate sections, as shown, they can be easily separated by raising the dome above the seat-

ing-flanges on the fire-box and withdrawn separately, thus rendering the operation more easy of accomplishment. We have also shown the fire-box itself built up of two sections 5 which can be likewise separated and removed separately when desired.

When desired, the horizontal flues may be provided with supporting-braces 25 and 26.

The front ends of the flues are inserted in 10 and fit the respective openings in the front wall closed by doors 15, whereby the front ends of the flues are supported, while a similar support is provided for their rear ends by the nipples or connections 19 and 21, which 15 pass through and fit apertures in the rear wall. The flues are thus supported independently of the removable fire-pot and dome and have no connection therewith except at the rear and thereat by a detachable tele- 20 scoping connection of the parts 17 and 18. The construction is such that no part of the flues lies in front of the fire-pot and dome or in the path of removal of the fire-pot and dome through the openings in the front wall, 25 and said parts can be removed without interfering with or disturbing the flues, thereby greatly facilitating such removal for purposes of cleaning and repair.

What we claim as new, and desire to secure 30 by Letters Patent, is—

1. In a hot-air furnace, and in combination, an inclosing case having a removable front section closing a front opening; a fire-pot and dome located within the case, and adapted to 35 be removed therefrom through said front opening; a smoke-flue extending along the opposite sides and rear of the dome within the case, and supported independently of the dome and connected therewith only at the 40 rear thereof and thereat by a detachable connection whereby the dome can be withdrawn from the case through said front opening without disturbing said flue, substantially as described.

45 2. In a hot-air furnace, and in combination,

an inclosing case, having a removable front wall and a separately-removable section closing an opening in said removable front wall; a fire-pot and dome located within said case in line with said opening in the front wall 50 and removable therethrough; a pair of horizontal flues arranged one above the other within the case, extending along the rear and opposite sides of the fire-pot and dome and terminating in open ends, adapted to register 55 respectively with apertures found in the front wall, said flues having vertical connections with each other, and being supported independently of the fire-pot and dome and connected with the latter only at the rear there- 60 of and thereat by a detachable connection, whereby the dome and fire-pot can be removed from the case through said opening in the front wall and without disturbing said flues; and doors adapted to close said flue-apertures 65 in the front wall, substantially as described.

3. In a hot-air furnace the combination with an inclosing case having an opening in its front wall closed by a removable section; of a fire-pot and dome located within said 70 case and removable therefrom through said opening in the front wall; flues extending along the rear and opposite sides of said dome and having supporting connections directly with the case, said flues being connected with the dome only at the rear there- 75 of, and thereat by a detachable connection, whereby the flues are supported by the case independently of the dome and fire-pot and said dome and fire-pot can be removed through 80 the opening in the front wall without disturbing the flues, substantially as described.

In testimony whereof we have hereunto set our hands this 24th day of June, 1899.

JAMES T. BRIEN.
THEODORE R. BRIEN.

Witnesses:

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