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L. J. TRECY.

SMOKE CONSUMING FURNACE AND VENTILATOR.

No. 441,605. Patented Nov. 25, 1890.

Fig. I.

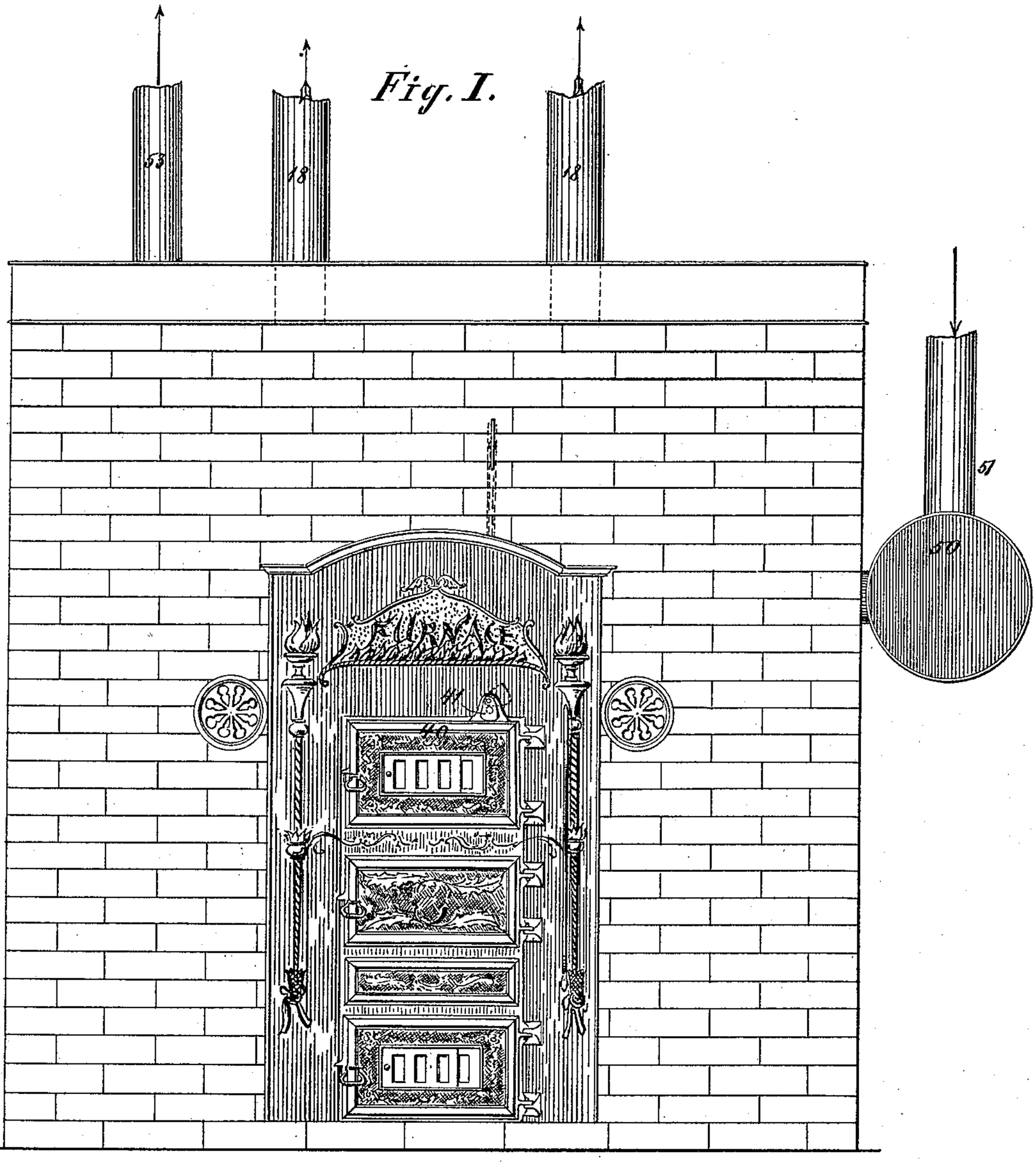


Fig. II.

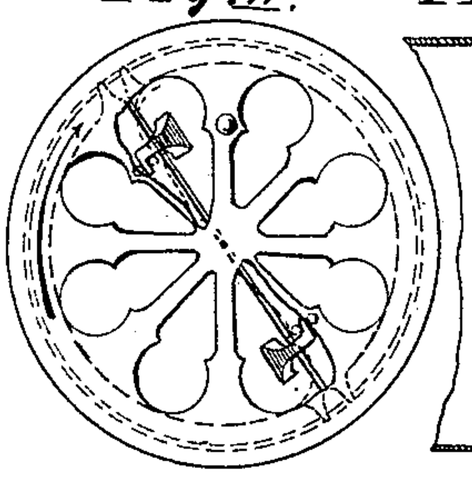


Fig. III. *Fig. IV*

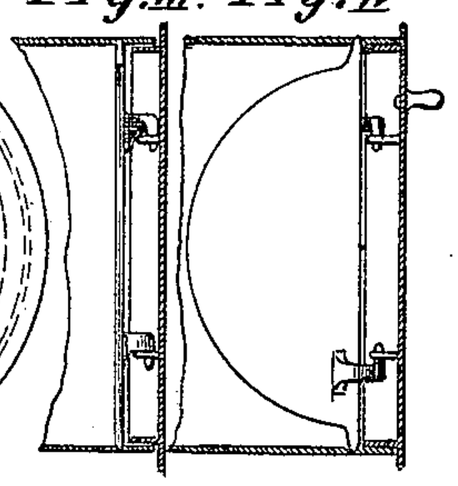
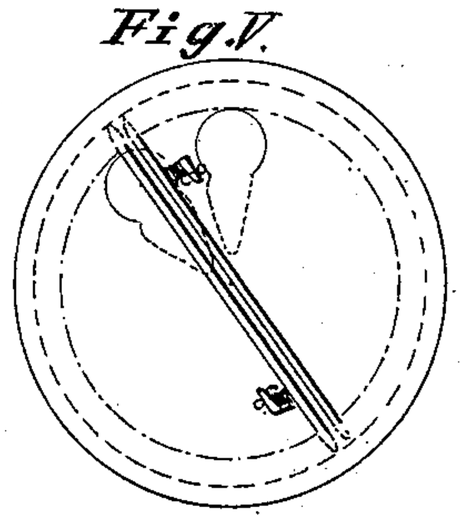


Fig. V.



Attest:
E. Arthur.
Geo. E. Bruce.

Inventor:
Lawrence J. Trecy.
By Knight Bro's. Attys

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L. J. TRECY.

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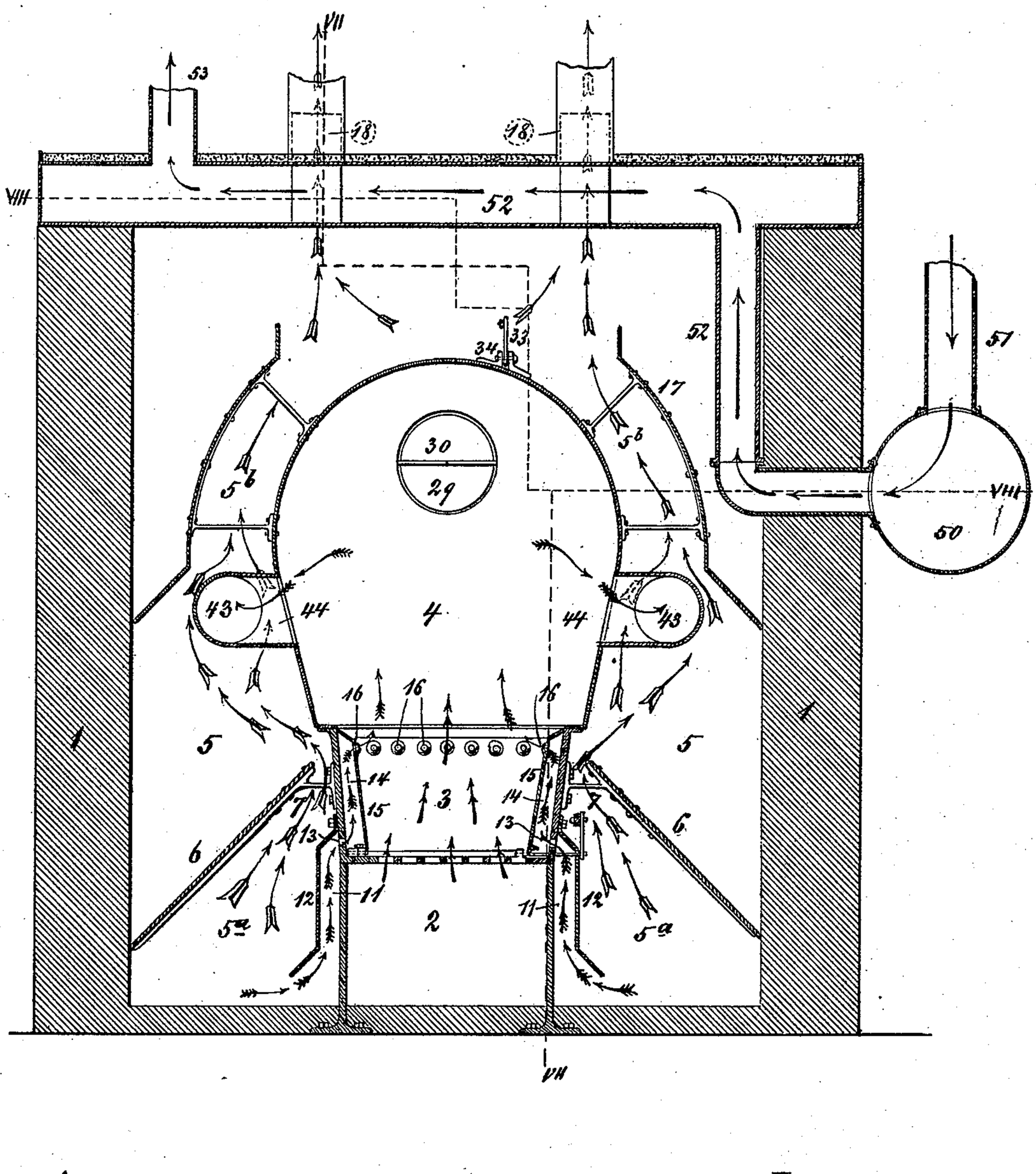
Fig. VI.



Attest:
E. Arthur.
Geo. E. Bruse.

Inventor:
Lawrence J. Trecy.
By Knight Bro's.
Atty's.

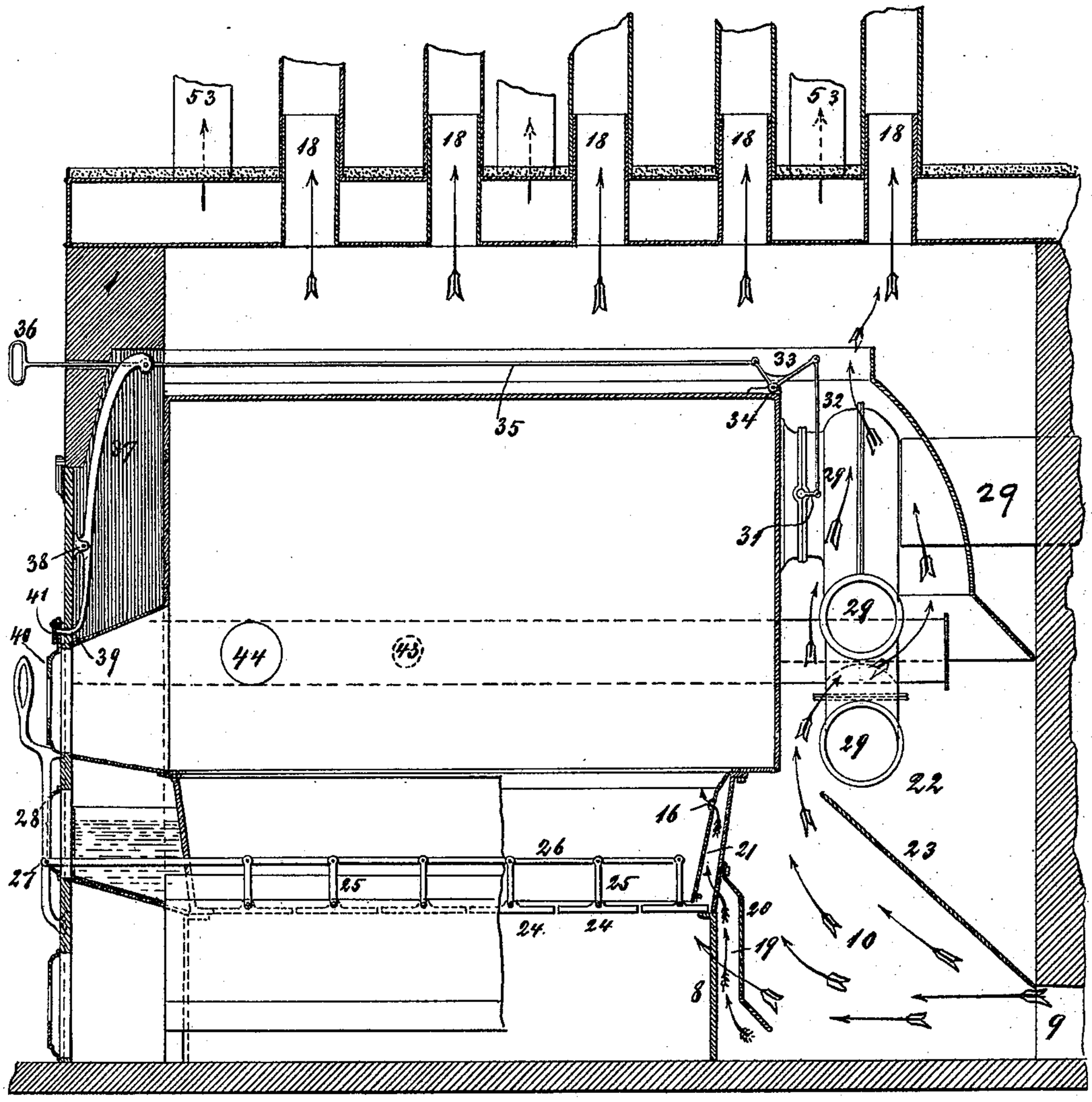
(No Model.) 4 Sheets—Sheet 3.

L. J. TRECY.

SMOKE CONSUMING FURNACE AND VENTILATOR.

No. 441,605. Patented Nov. 25, 1890.

Fig. VII.



Attest:
C. Arthur.
Geo. E. Bruce,

Inventor:
Lawrence J. Trecy.
By Knight Bro's.
Atty's.

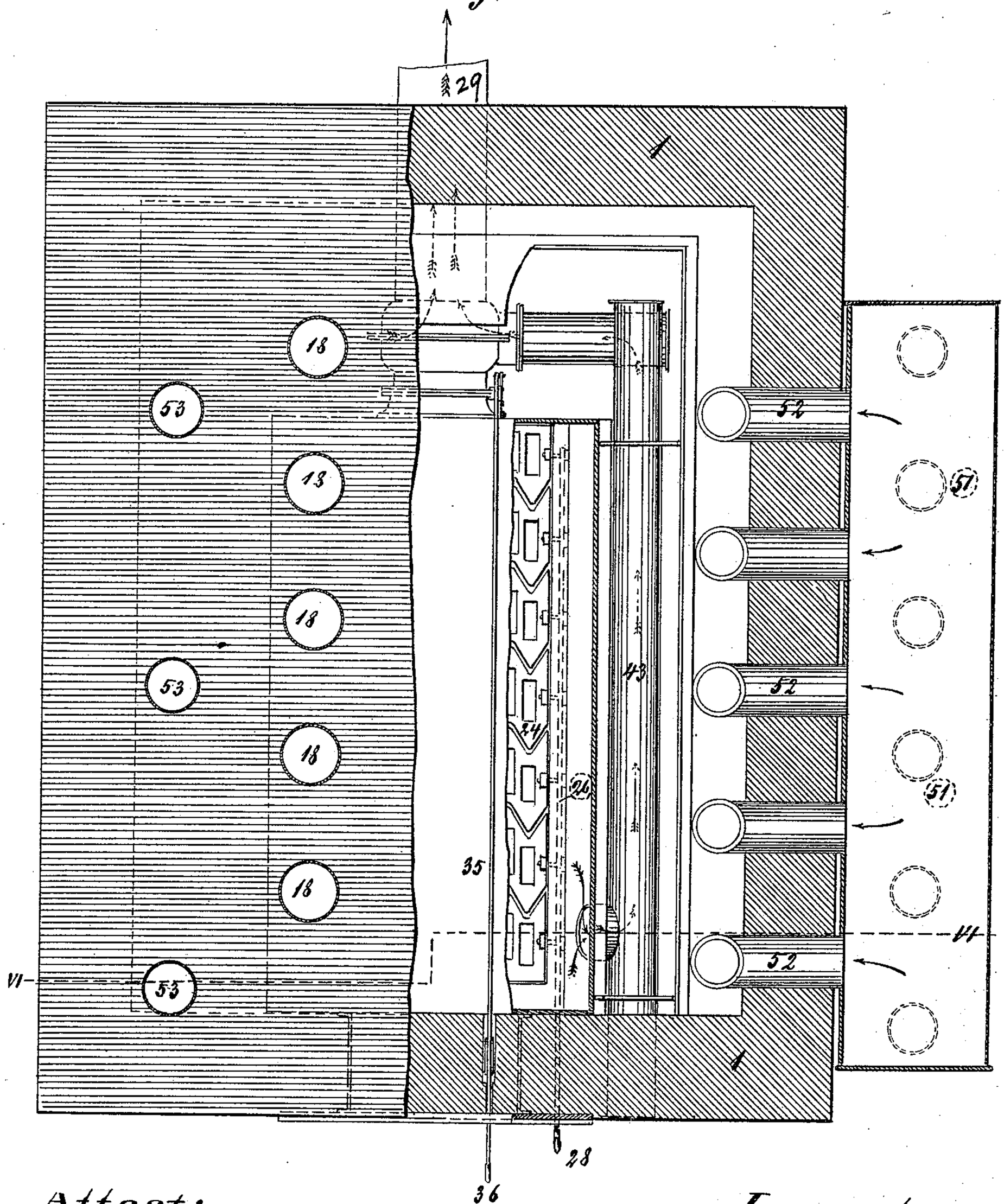
(No Model.) 4 Sheets—Sheet 4.

L. J. TRECY.

SMOKE CONSUMING FURNACE AND VENTILATOR.

No. 441,605. Patented Nov. 25, 1890.

Fig. VIII.



Attest:
E. Arthur
Geo. E. Crosse.

Inventor:
Lawrence J. Trecy.
By Knight Bro's.
Att'ys.

UNITED STATES PATENT OFFICE.

LAURENCE J. TRECY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE SMOKE CONSUMING FURNACE COMPANY, OF SAME PLACE.

SMOKE-CONSUMING FURNACE AND VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 441,605, dated November 25, 1890.

Application filed August 20, 1889. Serial No. 321,392. (No model.)

To all whom it may concern:

Be it known that I, LAURENCE J. TRECY, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Smoke-Consuming Furnaces and Ventilators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in a combined smoke-consuming furnace and room-ventilator, and, so far as the smoke-consumer feature of the invention is concerned, it relates to an improvement on Patent No. 371,108, dated October 4, 1887, on a previous invention of mine.

My present invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a front elevation of my improved furnace. Figs. II to V, inclusive, represent a damper placed in a back flue communicating with the chimney and which is designed to cut off the draft through the furnace. Fig. VI is a vertical transverse section taken on line VI VI, Fig. VIII. Fig. VII is a longitudinal section through the furnace, taken on line VII VII, Fig. VI. Fig. VIII is a horizontal longitudinal section taken on line VIII VIII, Fig. VI.

1 represents the "setting" of a furnace.

2 represents the ash-pit; 3, the fire-box, and 4 the combustion-chamber.

5 represents spaces or chambers between the setting 1 and the ash-pit, fire-box, and combustion-chamber. In these spaces longitudinal partitions 6 are placed, which are secured to the outer walls of the fire-box by means of brackets 7. (Shown best in Fig. VI.) The partitions 6 extend from end to end of the fire-box and ash-pit.

8, Fig. VII, represents the back of the ash-pit.

9 represents an opening in the setting of the furnace at the rear, through which air enters a chamber 10 behind the fire-box and ash-pit. A portion of this air passes into the chambers or spaces 5^a beneath the partition 6, and the air thus entering the chambers 5^a is divided, a portion of it circulating upward between the upper ends of the partition 6 and the fire-box, as shown by the arrows in Fig. VI, and a portion of it circulating upward through a space 11 between the ash-pit and a plate 12, and, passing through perforations 13 in the outer wall of the fire-box, it enters a chamber 14 between the outer wall of the fire-box and a lining 15. From the chamber 14 the air escapes through perforations 16 into the upper part of the fire-box and into the combustion-chamber. I have referred to these parts in the singular number; but the duplicate of them exists in the other side of the furnace, as will be plainly seen in Fig. VI. The air that passes up through the spaces 11 and 14 is heated to a high temperature when it enters the upper part of the fire-box and greatly assists combustion.

The portion of air from the chambers 5^a that escapes between the upper ends of the partitions 6 and the fire-box passes upward through the chambers or spaces 5, and still upward through extensions 5^b of the chambers 5, formed by the crown of the combustion-chamber and partitions or plates 17. From here the air passes through hot-air flues 18, that convey it to the different rooms of the building.

A portion of the air entering through the opening 9, and which does not pass into the chambers 5^a, passes into the rear of the fire-box through a space 19, formed by the back plates of the ash-pit and a partition 20, and from thence passes into a space 21, formed by the lining 15 and the outer wall of the fire-box. From here this air passes through perforations 16 into the upper part of the fire-box and combustion-chamber. Still another portion of the air that enters through the opening 9 passes upward through a rear air chamber or space 22, provided with a partition 23, which throws the air into close contact with the fire-box and combustion-chamber, and from this chamber 22 the air passes through the hot-air flues 18, as shown by the arrows in Fig. VII.

The grate of the fire-box is composed of a number of bars 24, properly supported and provided with arms or cranks 25, connected to a bar 26, that extends beyond the front

wall of the furnace and is pivoted at 27 to an operating-lever 28, by which the grate may be shaken.

29 represents the smoke pipe or flue of the furnace, which is provided with a valve 30, (see Fig. VI,) provided with a crank 31, (see Fig. VII,) which is connected to the lower end of a rod 32. The upper end of the rod 32 is connected to one end of a bell-crank lever 33, pivoted at 34 to the crown of the furnace. To the other arm of the bell-crank lever is connected the inner end of a rod 35, which protrudes through the front wall of the furnace, and is provided with a suitable hand-hold 36.

37 represents a lever secured to the rod 35 and pivoted at 38 to the front plate of the furnace. The lower end 39 of the lever 37 protrudes through a perforation in the front wall of the furnace and through a perforation in the door 40 of the fire-box. It impinges against a button 41, pivoted to the door. It will thus be seen that as long as the door remains closed the damper 30 will be held closed, but that as soon as the door 40 is opened the weighted upper end of the lever 37 will open the valve 30 by operating the rod 35, lever 33, and rod 32, thus opening off the draft. On closing the door again it will come against the end 39 of the lever 37 and close the damper. To afford means for opening the damper without opening the door, I provide the button 41, so that by turning this button into the position shown by dotted lines, Fig. I, the end 39 of the lever 37 can protrude through the perforation in the door and permit of the opening of the damper 30.

The flue 29 is provided with a suitable register—such, for instance, as that shown in Figs II to V, inclusive—but as to the construction of which I make no claim as inventor in this application. By opening the register in the flue 29, the draft through the furnace may be entirely shut off.

The sides of the combustion-chamber communicate with side flues 43, through openings 44. (See Fig. VI.) These flues 43 communicate with the main smoke-flue 29, as shown in Fig. VIII. The air circulating through the chambers 5 comes in contact with these flues 43 and is heated thereby.

50 represents an air drum or cylinder located at one side of the furnace, and with which communicates a number of pipes leading from the various rooms of the building to the cylinder 50 for the purpose of ventilation.

52 represents a number of flues, also communicating with the cylinder 50 and passing up one side of the furnace and over the top of the furnace, as shown in Fig. VI. They are provided with extensions 53, which may lead to a suitable exit-flue. The air in the flue 52, being heated by the furnace, causes a circulation downward through the pipes 51, as shown by the arrows in Fig. VI, thus producing an effective ventilation.

By the use of the partitions 6 the upward draft of the air is checked in the chamber 5^a, thus compelling a circulation through the spaces 11 and 14.

I claim as my invention—

1. In a smoke-consumer, in combination with a furnace having air-chambers 5 5^a, the partitions 12, the fire-box having-air-spaces 14, the partitions 6, secured to the fire-box of the furnace by means of brackets 7, and providing a space between their upper ends and the walls of the fire-box for the escape of the air, substantially as and for the purpose set forth.

2. In combination with a furnace, the partitions 6, forming air-chambers 5 5^a, partitions 12, forming air-spaces 11, and a fire-box having a lining 15, forming spaces 14, the walls of the fire-box and the lining being perforated, substantially as and for the purpose set forth.

3. In combination with a furnace, the partitions 6 and 23, plates 12 and 20, and a perforated fire-box and lining, all substantially as and for the purpose set forth.

4. In combination with a furnace, a smoke-flue provided with a damper, a pivoted lever, and connection between the damper and the lever, a perforated door, and a button secured to the door, against which the lower end of said lever bears, substantially as set forth.

LAURENCE J. TRECY.

In presence of—
BENJN. A. KNIGHT,
E. S. KNIGHT.