

No. 756,351.

PATENTED APR. 5, 1904.

C. GARLICK.  
HEATING APPARATUS.  
APPLICATION FILED JULY 6, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

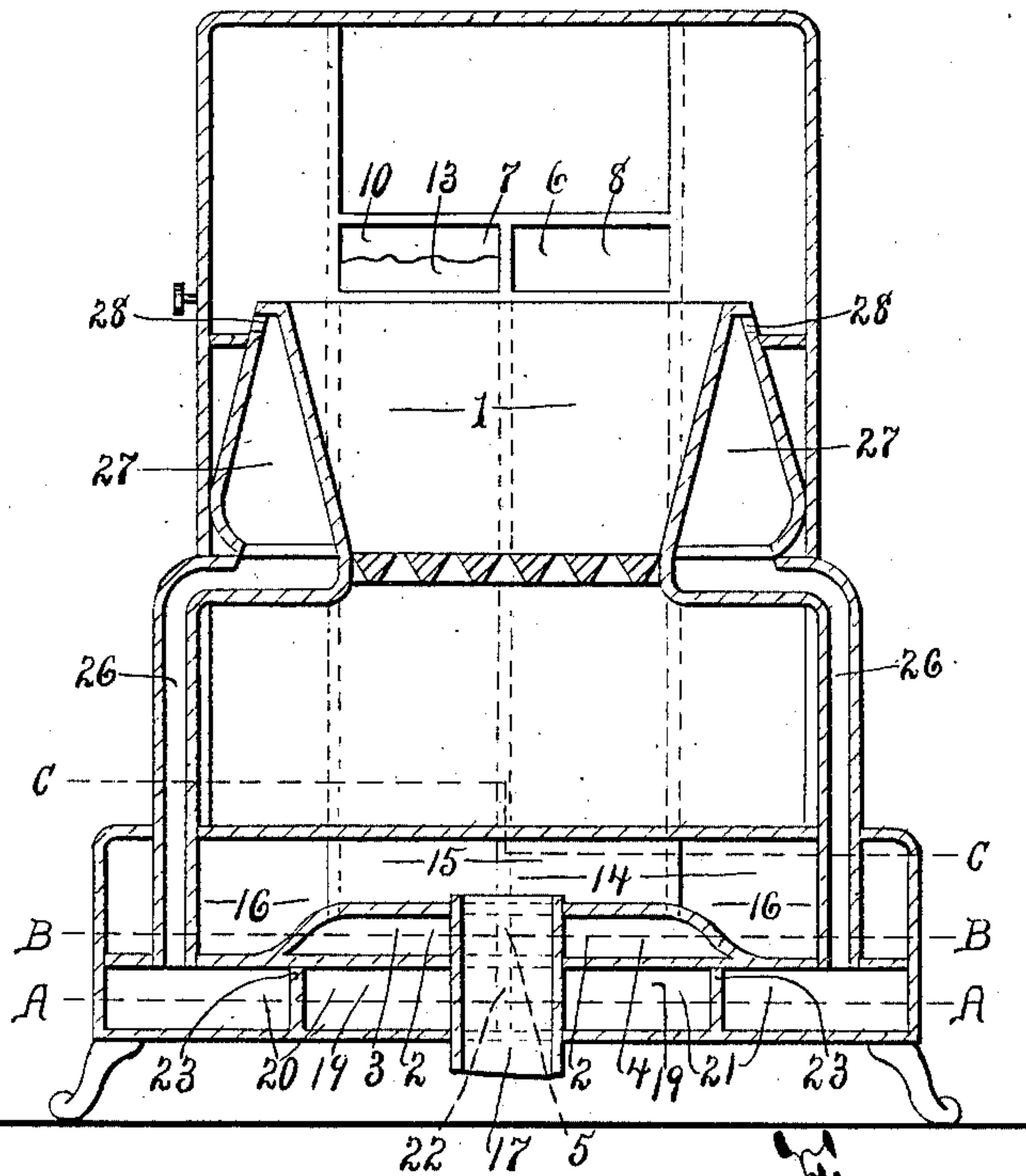


Fig. 2.

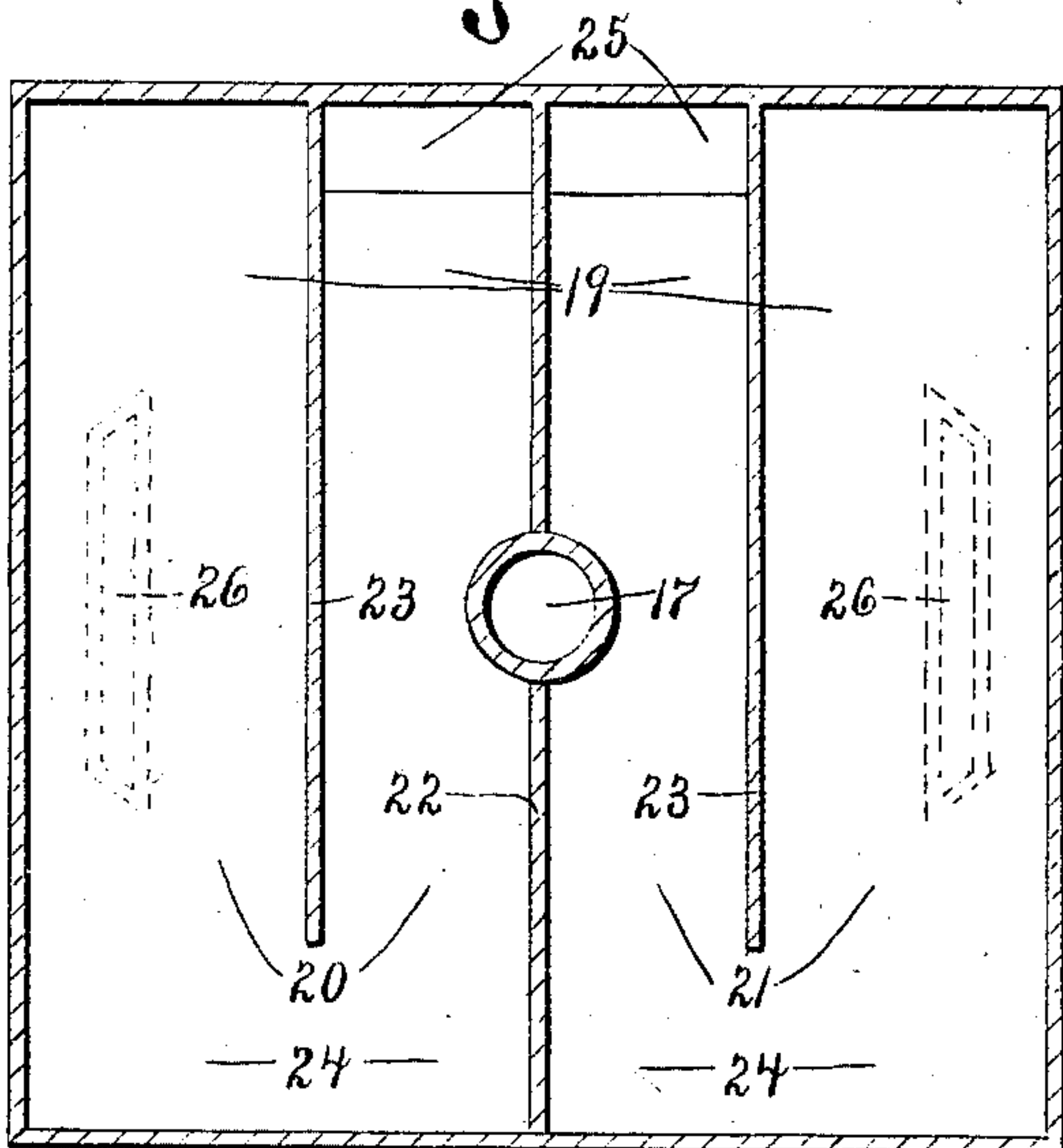
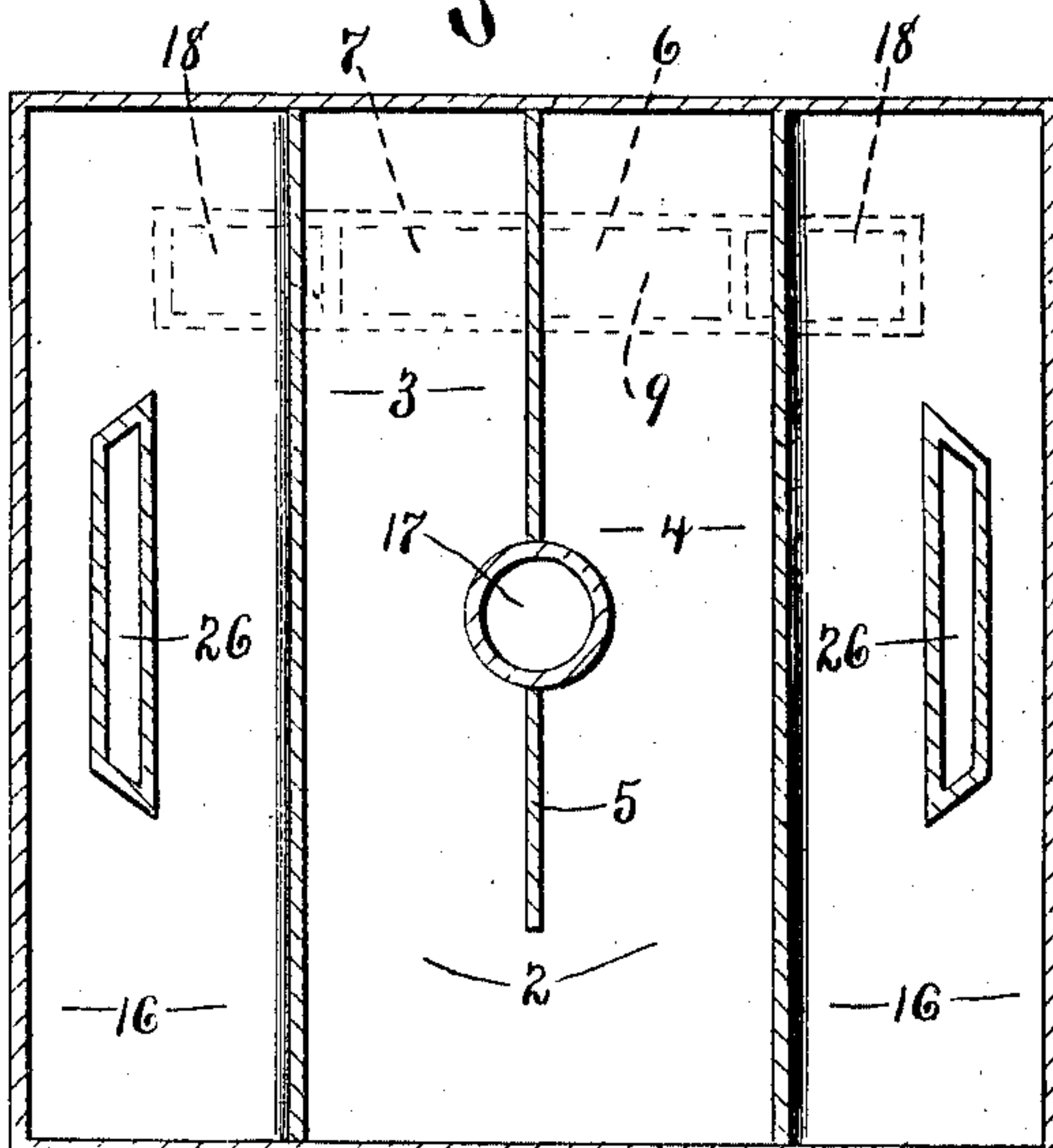


Fig. 3.



WITNESSES:

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Chas. Young.

INVENTOR:

Charles Garlick  
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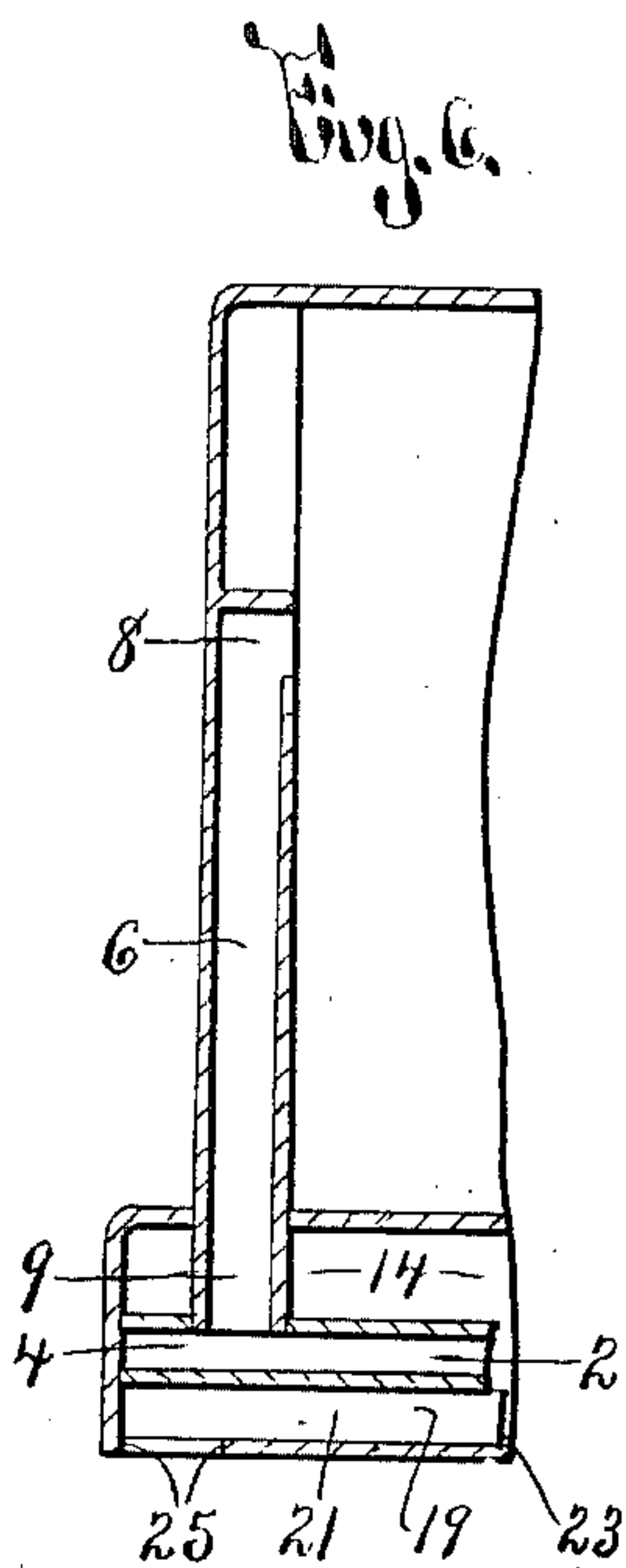
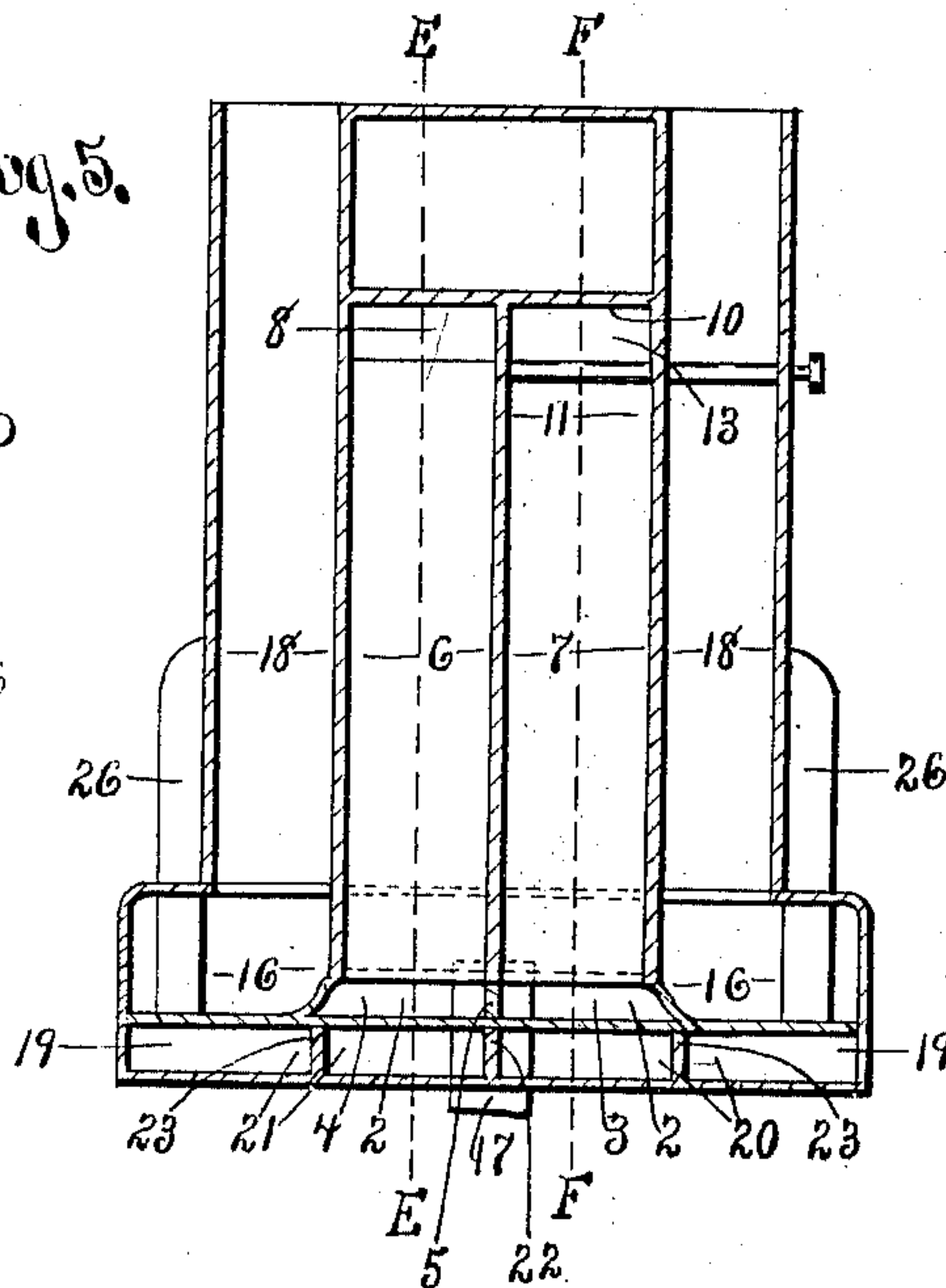
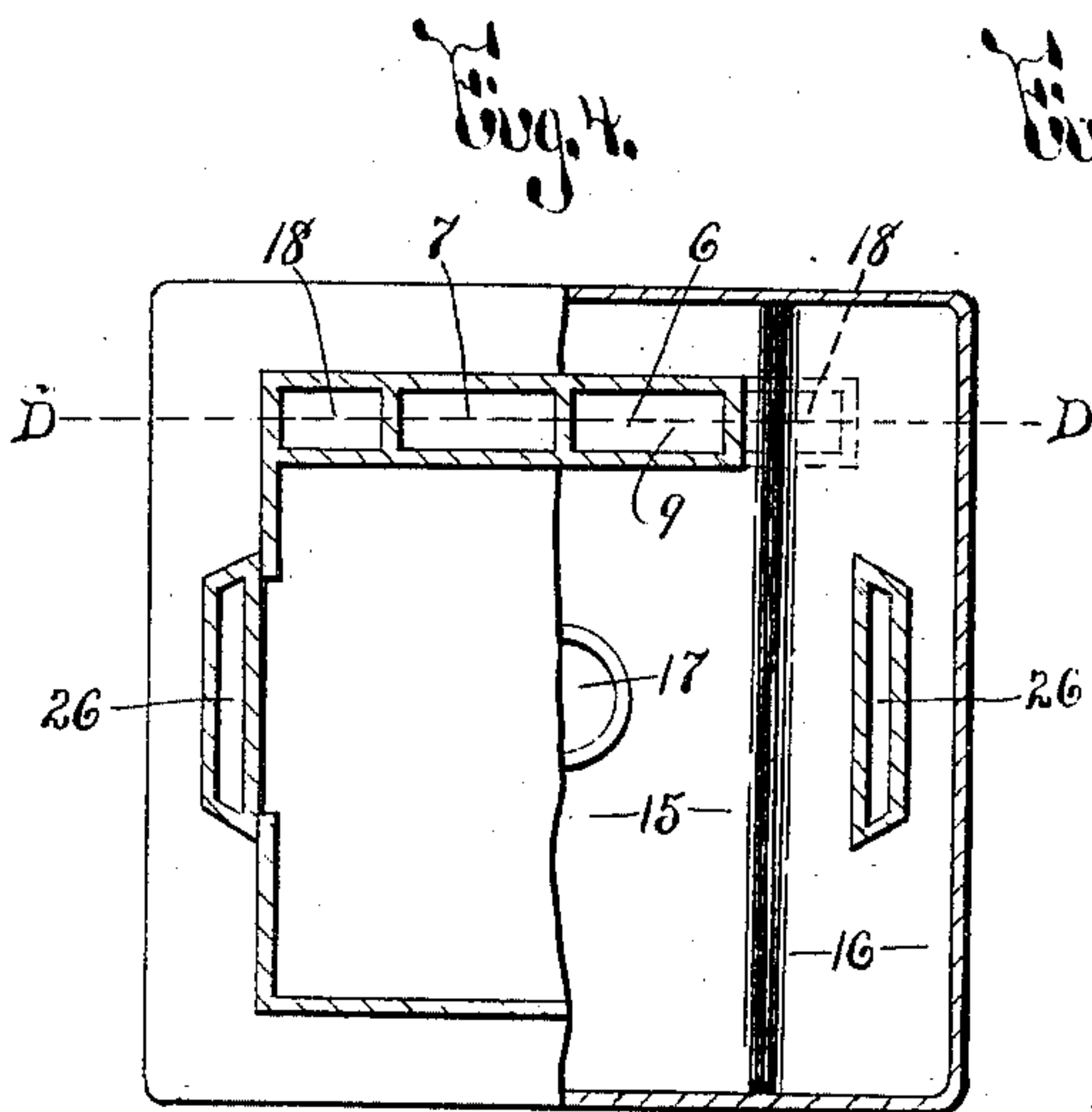
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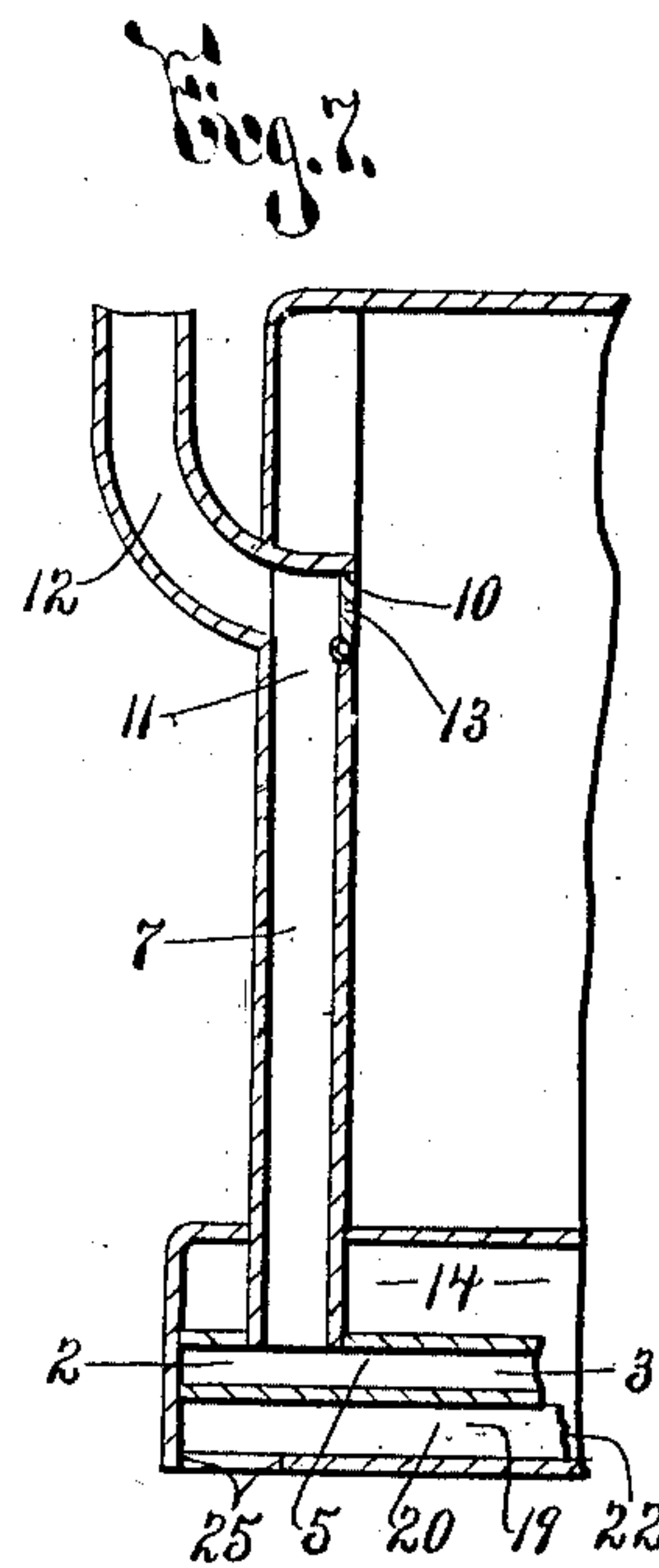
NO MODEL.

3 SHEETS—SHEET 2.



WITNESSES:

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INVENTOR

*Charles Garlick.*

BY

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No. 756,351.

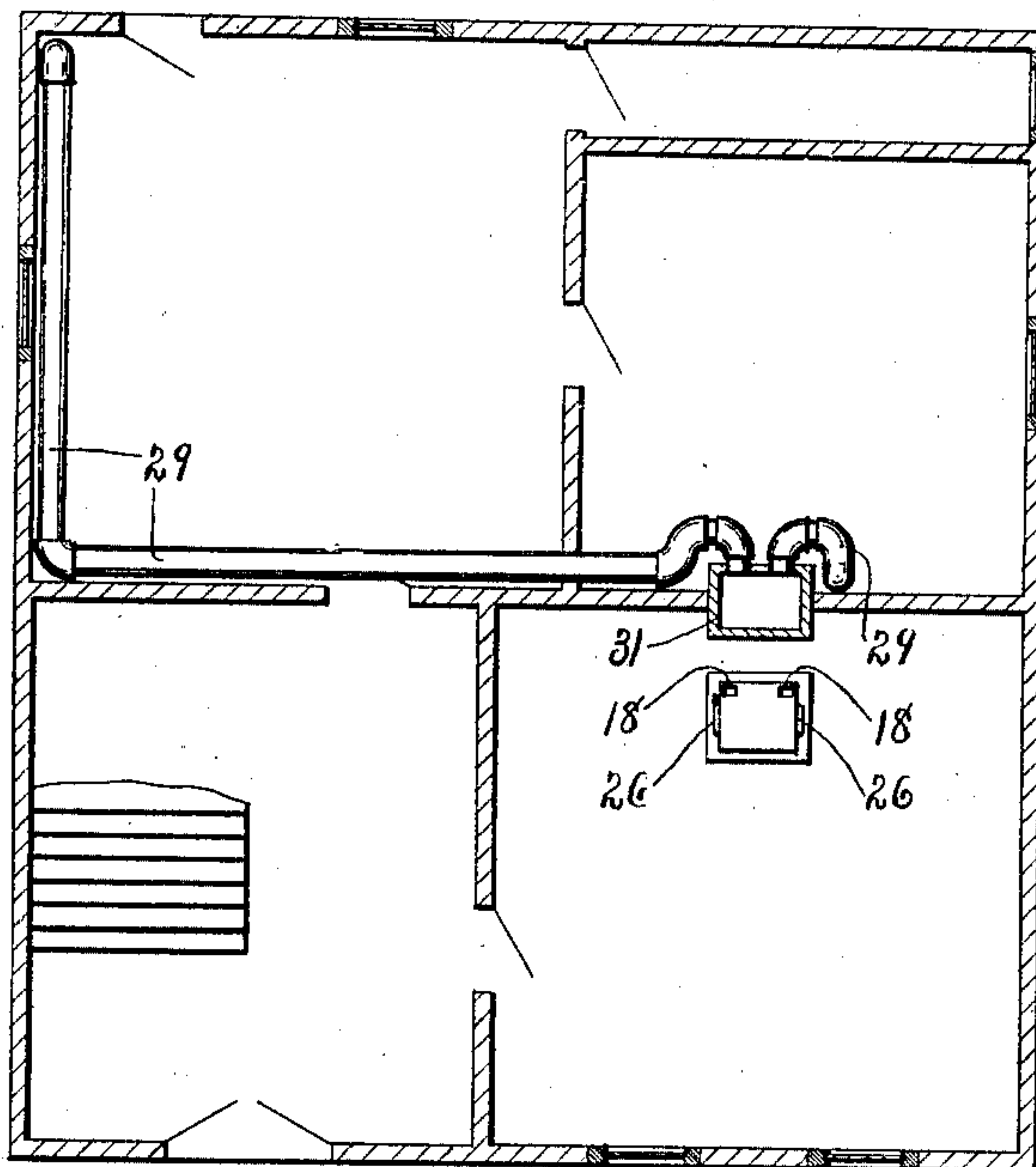
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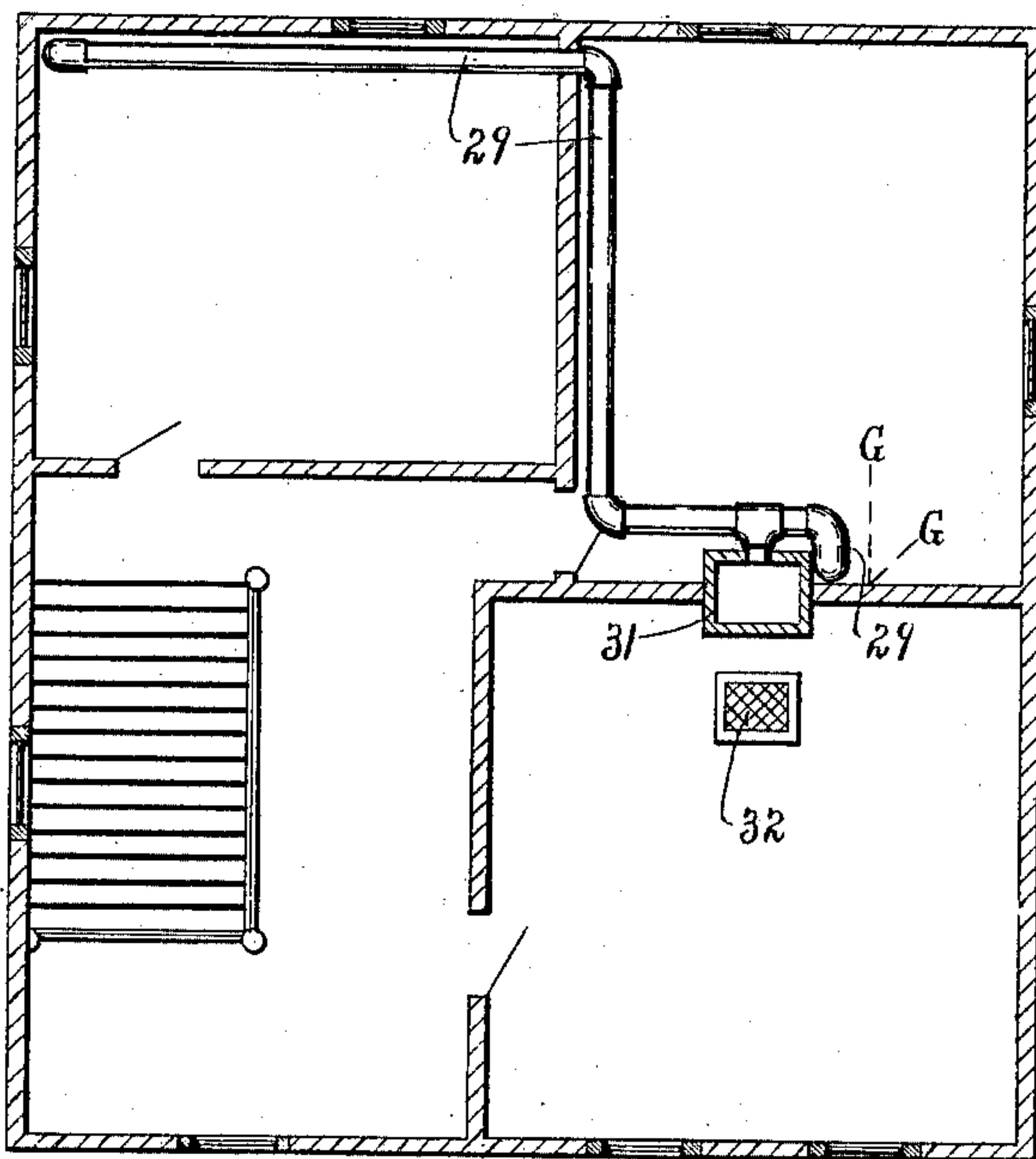
NO MODEL.

3 SHEETS—SHEET 3.

*Fig. 8.*



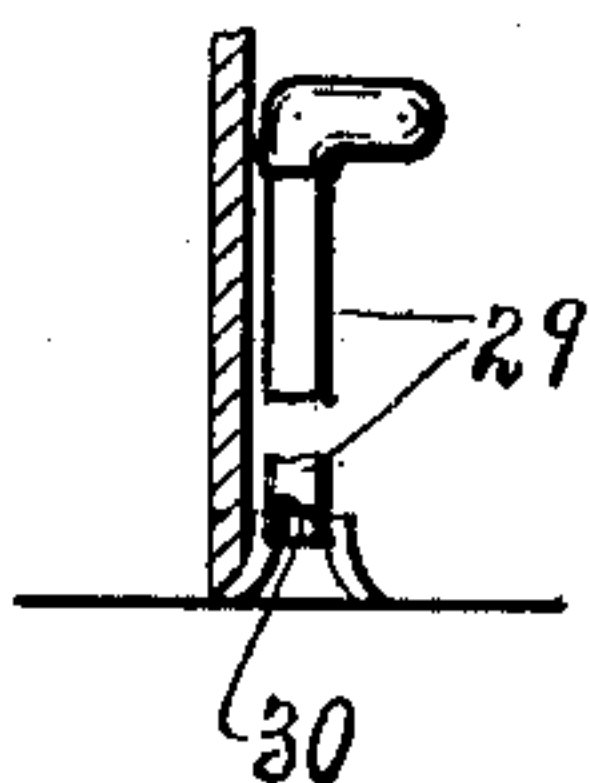
*Fig. 9.*



WITNESSES:

*Chas. J. Jones.*  
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*Fig. 10.*



INVENTOR

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# UNITED STATES PATENT OFFICE.

CHARLES GARLICK, OF GENEVA, NEW YORK.

## HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 756,351, dated April 5, 1904.

Application filed July 6, 1903. Serial No. 164,277. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES GARLICK, of Geneva, in the county of Ontario and State of New York, have invented a certain new and useful Heating Apparatus, of which the following is a specification.

My invention has for its object the production of a heating apparatus which readily circulates and heats the air of the building containing the same and produces a maximum amount of heat with a minimum quantity of fuel; and to this end it consists in the combinations and constructions hereinafter set forth, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, in which like characters refer to corresponding parts in all the views.

Figure 1 is a vertical sectional view of the greater portion of a heater embodying a preferred construction of my invention. Figs. 2, 3, and 4 are sectional views taken, respectively, on lines A A, B B, and C C, Fig. 1. Fig. 5 is a sectional view taken on line D D, Fig. 4. Figs. 6 and 7 are sectional views taken, respectively, on lines E E and F F, Fig. 5. Figs. 8 and 9 are plan views of lower and upper floors of a house provided with the preferred construction of my invention. Fig. 10 is a sectional view taken on line G G, Fig. 9.

The illustrated heater comprises a combustion-chamber, means for conducting and heating the fresh air and discharging the same into the room containing the heater, and means for conducting and heating the foul air and discharging the same into the combustion-chamber.

1 is the combustion-chamber, which may be of any desirable form, size, and construction.

2 is a heating-chamber arranged beneath the combustion-chamber 1 and usually extending from front to rear of the base of my heater. This chamber 2 is provided with two lengthwise compartments 3 4, having corresponding ends separated by a lengthwise partition 5, Fig. 3, and their other ends connected together between the front wall of said chamber and the front edge of the partition 5, said compartments thus forming a substantially U-shaped passage.

6 7, Fig. 5, are substantially upright passages, one, 6, having its upper end 8 opening from the combustion-chamber 1 and its lower end 9 discharging into one of said separated ends of the compartments 3 4 and the other passage, 7, having its lower end opening from the other of said separated ends of the compartments 3 4 and its upper end provided with openings 10 11, communicating, respectively, with the combustion-chamber 1 and a draft-conduit 12. A suitable damper 13, Fig. 7, is provided at the upper end of the conduit 7 for controlling the flow of the products of combustion to the draft-conduit 12. The damper 13 normally closes the opening 10 in order to permit the flow of the products of combustion from the passage 7 through the opening 11 into the draft-conduit 12; but said damper may serve to close the opening 11, in which event the products of combustion escape directly from the chamber 1 through the opening 10 and the upper end of the passage 7 above the closed opening 11 into the draft-conduit 12.

14, Fig. 1, is a fresh-air chamber beneath the chamber 1, having its intermediate portion 15 arranged above the heating-chamber 2 and its side portions 16 extended laterally beyond the sides of the chamber 2 and downwardly at the opposite sides of said chamber, the lower walls of said side portions being shown as disposed in substantially the same plane as the lower wall of the chamber 2. Fresh air is admitted to the chamber 14 by a conduit 17 discharging through the bottom wall of the intermediate portion of said chamber, and the heated fresh air is conducted from the chamber 14 by substantially upright passages 18, Fig. 5, which open from the top wall of the chamber 14, are arranged at opposite sides of the passages 6 7, and discharge into the room containing the heater.

19, Fig. 1, is a foul-air chamber having its intermediate portion arranged beneath the chamber 2 and its side portions extended laterally beyond the sides of the chamber 2 and beneath the side portions of the chamber 14. Said chamber 19 is divided into two compartments 20 21 by a lengthwise partition 22, and each of these compartments is provided



with a partition 23, extending from one wall, as the back wall thereof, and formed of less length than the partition 22, thus providing a passage 24 between the opposite wall of the 5 compartment and the contiguous end of the partition 23. Each of the compartments 20 21 is also provided with an inlet 25, opening through its bottom wall at one side of the partition 23, for permitting the entrance of 10 the foul air and is connected to an upright passage 26, opening from the top wall of the compartment at the opposite side of said partition 23. The passages 26 discharge into a heating-chamber 27, preferably surrounding 15 the combustion-chamber 1 and provided with exits 28, which communicate with said combustion-chamber and discharge the heated foul air thereinto.

When my heater is used in an inclosure, as 20 a house containing a number of rooms, I provide a plurality of the rooms with upright pipes 29, Figs. 8, 9, and 10, having their lower ends formed with inlets 30 in close proximity to the floors of the rooms for receiving 25 the cold air from above the floors and having their upper ends suitably connected to a chimney 31 or to any other desirable air-shaft. If preferred, two of the rooms, one directly above the other, may be connected by a reg- 30 ister or conduit 32, opening through the floor of the upper room and the ceiling of the lower room. Said pipes 29 and register 32 greatly facilitate the operation of my heater in cir- 35 culating and heating the air in the house; but it will be understood that the same are not an essential of my invention.

In the operation of my heater the cold air from the room passes into the foul-air cham- 40 ber, is more or less heated in said chamber, and then ascends through the passages 26 to the heating-chamber 27, where said air is heated to substantially the temperature of the gases and other products produced or dis- 45 tilled in the combustion-chamber 1. The heated foul air escapes through the exits 28 into the combustion-chamber and greatly facilitates the combustion of the heated products therein and reduces to a minimum the waste of the fuel. The heated products of combus- 50 tion and the foul air united therewith flow through the passage 6, the heating-chamber 2, and the passage 7 to the draft-conduit and during their passage heat said chamber 2 and cause the same to heat the fresh and foul air 55 chambers. The fresh air entering the chamber 14 is heated by the chamber 2, ascends naturally through the passages 18, and is discharged thereby into the room containing my heater. A positive circulation of the air in 60 said room is thus effected, and consequently heating and ventilating of the room is greatly facilitated.

The construction and operation of my heating apparatus will now be readily understood 65 upon reference to the foregoing description

and the accompanying drawings, and it will be obvious to those skilled in the art that more or less change may be made in the construction and arrangement of the component parts thereof without departing from the 70 spirit of my invention.

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

1. A heater comprising a combustion-cham- 75 ber, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, a fresh-air chamber having portions thereof arranged above and other portions extending downwardly and 80 disposed at the side of the heating-chamber, and means for conducting the air to and from the fresh-air chamber, substantially as and for the purpose specified.

2. A heater comprising a combustion-cham- 85 ber, a heating-chamber beneath the combustion-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, a fresh-air chamber below the combustion-chamber having its interme- 90 diate portion arranged above the heating-chamber and its side portions extended laterally beyond the sides of the heating-chamber and downwardly at opposite sides of said heating-chamber, and means for conducting the 95 air to and from the fresh-air chamber, substantially as and for the purpose set forth.

3. A heater comprising a combustion-cham- ber, a heating-chamber, substantially upright 100 passages, one communicating with said chambers for conducting the products of combustion to the heating-chamber, and the other opening from the heating-chamber for con- ducting the products of combustion therefrom, 105 a fresh-air chamber adjacent to the heating-chamber, and passages arranged at opposite sides of the former passages and communicating with the fresh-air chamber for conducting the air therefrom, substantially as and for the 110 purpose specified.

4. A heater comprising a combustion-cham- ber, a heating-chamber formed with two com- partments having corresponding ends sepa- rated and their other ends connected together, 115 substantially upright passages, one having its upper end opening from the combustion-chamber and its lower end discharging into one of said separated ends of the compartments, and the other passage having its lower end open- 120 ing from the other of said separated ends of the compartments, a fresh-air chamber below the combustion-chamber having its interme- diate portion arranged above the heating- chamber and its opposite side portions ex- 125 tended laterally beyond the sides of the heating-chamber and downwardly at opposite sides of said heating-chamber, and passages arranged at opposite sides of the former pas- sages and communicating with the side por- tions of the fresh-air chamber for conducting 130



the air therefrom, substantially as and for the purpose set forth.

5 5. A heater comprising a combustion-chamber, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, a fresh-air chamber having portions thereof arranged above and at the side of the heating-chamber, a foul-air chamber beneath the heating-chamber and  
10 the portion of the fresh-air chamber at the side of the heating-chamber, and means for conducting the air to and from the fresh-air and foul-air chambers, substantially as and for the purpose specified.

15 6. A heater comprising a combustion-chamber, a heating-chamber beneath the combustion-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, a fresh-air chamber below  
20 the combustion-chamber having its intermediate portion arranged above the heating-chamber and its side portions extended laterally beyond the sides of the heating-chamber and downwardly at opposite sides of said heating-chamber, a foul-air chamber having its  
25 intermediate portion arranged beneath the heating-chamber and its opposite side portions extended laterally beyond the sides of the heating-chamber and beneath the side portions of the fresh-air chamber, and means for  
30 conducting the air to and from the fresh-air and foul-air chambers, substantially as and for the purpose set forth.

35 7. A heater comprising a combustion-chamber, a heating-chamber adjacent to the combustion-chamber having an exit communicating with said combustion-chamber, a second heating-chamber, means for conducting the heated  
40 gases from the combustion-chamber to the second heating-chamber, a fresh-air chamber adjacent to the second heating-chamber, means for conducting the air to and from the fresh-air chamber, a foul-air chamber adjacent to the  
45 second heating-chamber, and means for conducting the air from the foul-air chamber to the first heating-chamber, substantially as and for the purpose described.

50 8. A heater comprising a combustion-chamber, a heating-chamber adjacent to the combustion-chamber having an exit communicating with said combustion-chamber, a second heating-chamber, means for conducting the heated  
55 gases from the combustion-chamber to the second heating-chamber, a fresh-air chamber having its intermediate portion arranged above the second heating-chamber and its side portions extended laterally beyond the sides of the heating-chamber and downwardly at opposite sides of said second heating-chamber, means for  
60 conducting the air to and from the fresh-air chamber, a foul-air chamber having its intermediate portion arranged beneath the second heating-

chamber and its opposite side portions extended laterally beyond the sides of the second heating-chamber and beneath the side portions of  
65 the fresh-air chamber, and means for conducting the air from the side portions of the foul-air chamber to the first heating-chamber, substantially as and for the purpose specified.

70 9. A heater comprising a combustion-chamber, a heating-chamber at the side of the combustion-chamber, means for conducting the air to the combustion-chamber from the heating-chamber, a second heating-chamber, means for  
75 conducting the heated products from the combustion-chamber to the second heating-chamber, a fresh-air chamber above the second heating-chamber, and means for conducting the air to and from the fresh-air chamber, substantially as and for the purpose set forth. 80

10. A heater comprising a combustion-chamber, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, and fresh  
85 and foul air chambers inclosing the heating-chamber above, below and on opposite sides thereof, substantially as described.

11. A heater comprising a combustion-chamber, a fresh-air chamber arranged below the same, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, and a foul-air chamber including two divided compartments, one division of each compartment being  
90 arranged directly below the heating-chamber and having an inlet-opening in one end of the same and the other divisions of said compartments being arranged to one side of the heating-chamber and provided with exit-passages,  
95 substantially as described. 100

12. A heater comprising a combustion-chamber, a fresh-air chamber arranged below the same, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, and a foul-air chamber including two divided compartments, one division of each compartment being  
105 arranged directly below the heating-chamber and having an inlet-opening in one end of the same and the other divisions of said compartments being arranged to one side of the heating-chamber and provided with exit-passages  
110 leading to the combustion-chamber, substantially as described.

In testimony whereof I have hereunto signed  
115 my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 31st day of January, 1903.

CHARLES GARLICK.

Witnesses:

D. LAVINE,  
S. DAVIS.