

No. 709,946.

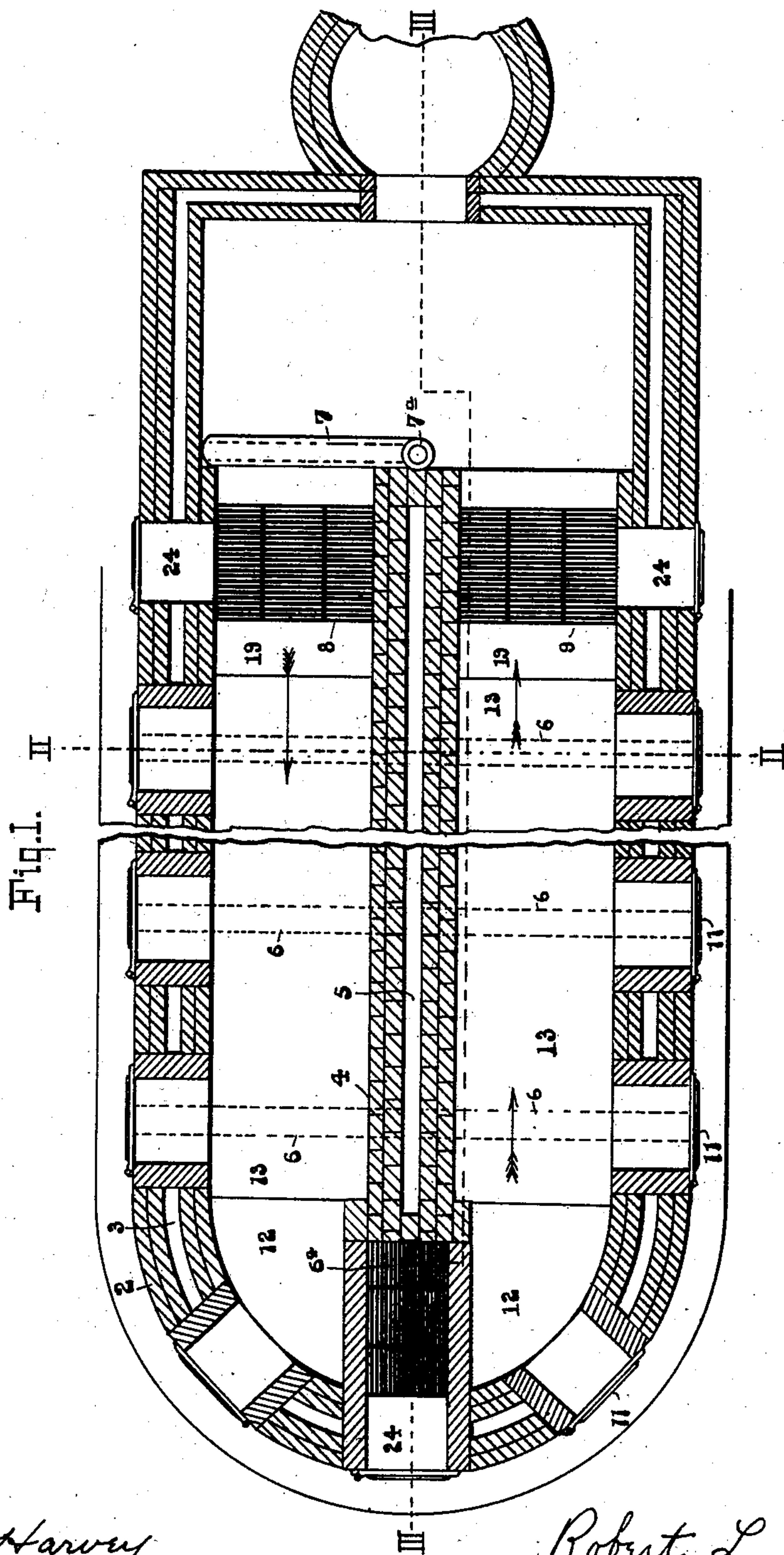
Patented Sept. 30, 1902.

R. L. WALKER.
GARBAGE FURNACE.

(Application filed Apr. 19, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

Geo. H. Harvey
M. W. Caskey,

Inventor

Robert L. Walker,
by Wm. L. Pierce,
his Attorney.

No. 709,946.

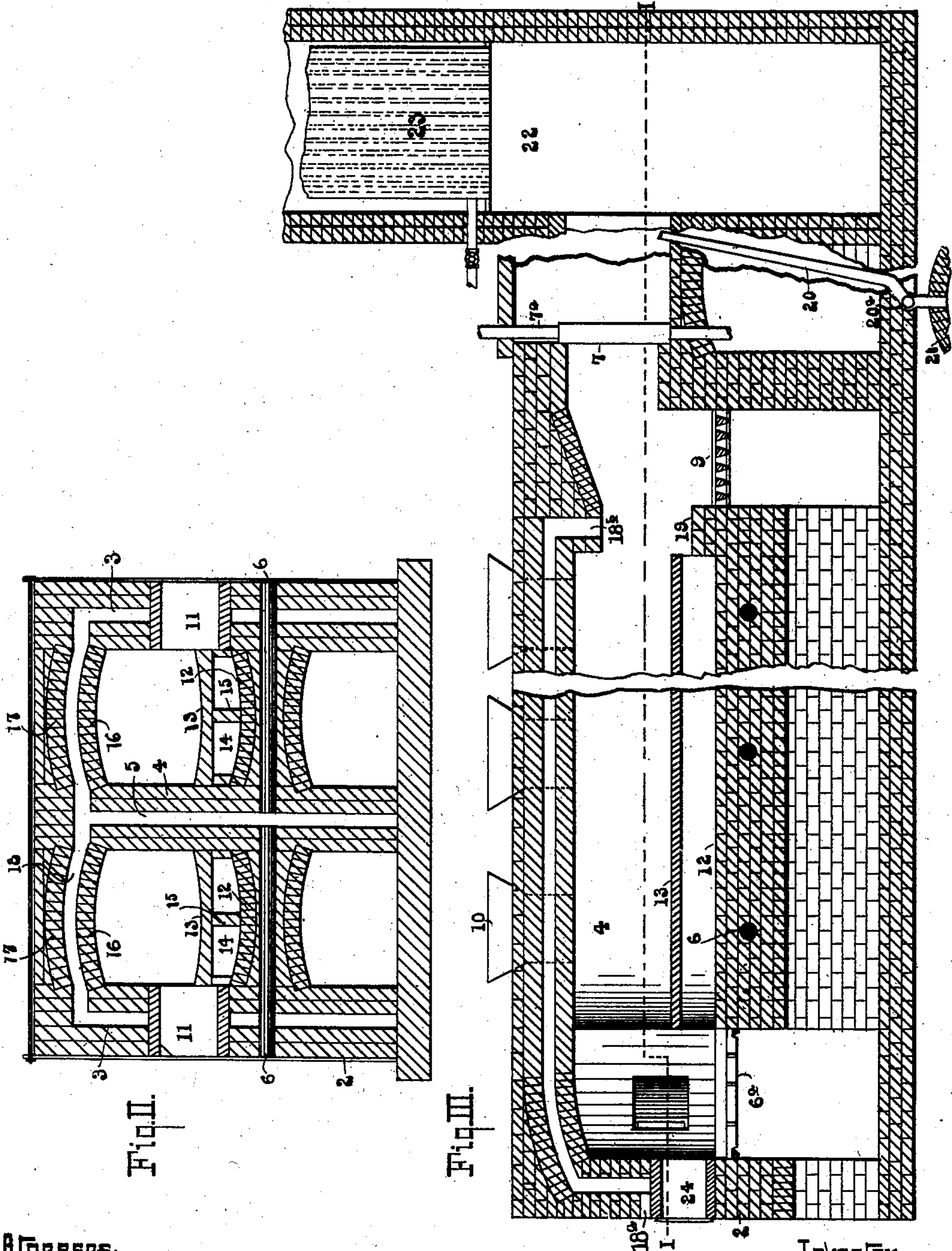
Patented Sept. 30, 1902.

R. L. WALKER.
GARBAGE FURNACE.

(Application filed Apr. 19, 1900.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:

Geo. H. Harvey
W. H. Caskey

Inventor.

Robert L. Walker,
by Wm. L. Pierce,
his Attorney.

UNITED STATES PATENT OFFICE.

ROBERT L. WALKER, OF NEW YORK, N. Y.

GARBAGE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 709,946, dated September 30, 1902.

Application filed April 19, 1900. Serial No. 13,474. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. WALKER, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented or discovered new and useful Improvements in Garbage-Furnaces, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure I is a horizontal section on line I I of Fig. III. Fig. II is a vertical cross-section on line II II of Fig. I, and Fig. III is a vertical longitudinal section on line III III of Fig. I.

My invention, generally stated, relates to certain improvements and modifications in the furnace for burning garbage on which I received Letters Patent of the United States No. 584,434, June 15, 1897. The result of these improvements is to greatly increase the capacity of the furnace in destroying garbage with a given amount of fuel, to prolong the life of the furnace, and to conserve and utilize at least a portion of the heat generated for the production of steam. Provision is also made for carrying off noxious gases to the sewer instead of allowing the same to escape into the open atmosphere.

In the several figures, 2 is the external wall of the furnace, provided with an air space or channel 3.

The furnace is divided vertically and in a longitudinal direction by the wall 4, provided with the air-space 5, supplied by the cross air-flues 6 6. This wall does not extend clear to the front wall of the furnace, but leaves space there for a grate 6^a. At the stack or rear end of the wall is a swinging damper 7, turning on spindle 7^a. On each side of said wall 4 and in proximity to the damper 7 are two more grates 8 and 9.

10 10 are garbage hoppers or chutes through which the garbage is fed into the furnace. These may be located as found desirable.

11 11 are cleaning-out doors in the sides of the furnace and also can be used as poking-doors to stir up the matted garbage.

12 is the floor of the furnace, but I above this build a false or upper floor 13. This upper floor, upon which the garbage falls, is formed of fire-brick tile dovetailed into each

other, so as to make a water-tight joint to prevent the fluid garbage from leaking down through. Between this floor and the bottom proper is a flue 14. The false floor is preferably supported on a nine-inch pier 15, extending the whole length of the furnace-chamber. The false floor is preferably dished toward the center, so that the fluids will flow to that portion of the floor.

The roof of the furnace has between its double arches 16 and 17 an air-space 18, fed by inlet 18^a and discharging at 18^b over the bridge-wall 19.

20 is a connection to the sewer 21, with trap 20^a.

22 is the stack, in which I have located a boiler 23, where steam may be raised by the heat of the escaping gases and utilized as required.

24 24 are the charging-doors for the grates 6, 8, and 9.

The operation of the apparatus is thus: Suitable fires are made on each of the three grates and when the furnace is intensely heated garbage is dumped into both chambers lying on either side of the wall 4 and falls upon the false floor 13. If the damper 7 is in the position shown in Fig. I, the direction of the draft will be as indicated by the arrows there from grate 8 to grate 6^a and out by grate 9 to the stack. This is practically the same route that the draft followed in my original patent, but there no opportunity was given to the flame to dry and consume by immediate contact the lowest layer of garbage, but the fire passed solely over the top of the piles of garbage. In the present construction by means of the false bottom 13 and flue 14 beneath the same I cause the flame to divide, part passing beneath the false floor and part over the garbage lying upon the same. The false floor is thus heated to an intense heat, so that the action will be to burn from below as well as on top, where the larger portion of the heat will naturally go. The garbage lying between grates 6 and 9 being exposed both above and below to the action of two fires will be rapidly reduced. I believe that by this underheating of the garbage I am able to reduce three times as much garbage as in a similar furnace without the false floor.

When the fire at 9 shows signs of sinking, the damper is reversed and the garbage cremated between grates 6 and 8.

By the air-flue 18 I not only preserve the life of the roof of the furnace, but also pre-heat the air introduced into the furnace. The steam in the boiler 23 is generated at no additional expense to the ordinary operation of the garbage-furnace. As explained in my previous patent, whatever odors or gases escape from either pile of garbage must pass over one bright fire before going to the stack. Some of the heavy gases can be drawn off at the sewer connection. The garbage itself assists in its own destruction, as it contains from ten to twenty per cent. of carbon. The remaining ingredients are about seventy to eighty per cent. of water and ten per cent. of debris, such as stones, cans, and general debris. When the garbage on either side of the furnace is consumed, the same is recharged and the work goes on uninterruptedly. It will be thus seen that two fires at least are always at work consuming the solid and liquid garbage, while the remaining fire is obliterating the odors.

The reversing-damper serves two purposes. First, it insures an incandescent fire, which the odors must traverse before reaching the stack, and it saves the gases from a green coal fire on its companion grate from going up the stack and being lost and compels them to make a double traverse of the furnace. A fixed damper would secure some of the benefits of my invention, but would be greatly inferior to the reversing-damper. If the furnace is large, intermediate additional grates may be spaced along at desired intervals; but the number should never be cut down altogether to less than three.

Having described my invention, I claim—

1. In a garbage-furnace, the combination of a pair of fires, a wall separating said fires; a third fire and an imperforate false garbage-floor between said third fire and each of said first two fires, the said false floor being concave and being exposed both below and above to the action of the heat and flame. 45

2. In a garbage-furnace, the combination of three fires and an imperforate false garbage-floor, the said floor being concave and exposed both above and below to the action of the heat and flame and located between said fires so that two fires are consuming solid and liquid garbage and the third fire gases from said garbage. 50 55

3. In a garbage-furnace, the combination of three fires; an imperforate false garbage-floor; the said garbage-floor being concave and exposed both above and below to the action of the heat and flame and located between said fires so that two fires are consuming solid and liquid garbage and the third fire the gases from said garbage and means for reversing the draft over said fires. 60 65

4. In a garbage-furnace, the combination of a pair of fires located near the stack end of the furnace; a third fire located near the forward end of the furnace; an imperforate false garbage-floor, said floor being concave and exposed both above and below to the action of the heat and flame and located between said third fire and each of the pair of fires; a wall separating said garbage-floors and a swinging damper adapted to reverse the draft over said fires. 70 75

Signed at Pittsburg, Pennsylvania, this 9th day of April, 1900.

ROBERT L. WALKER.

Witnesses:

WM. L. PIERCE,
M. W. CASKEY.