

No. 776,605.

PATENTED DEC. 6, 1904.

J. LINDSAY & R. J. CUNNINGHAM.

FURNACE FOR THE REDUCTION OF GARBAGE OR OTHER REFUSE MATTER.

APPLICATION FILED JULY 19, 1904.

NO MODEL.

SHEETS—SHEET 1.

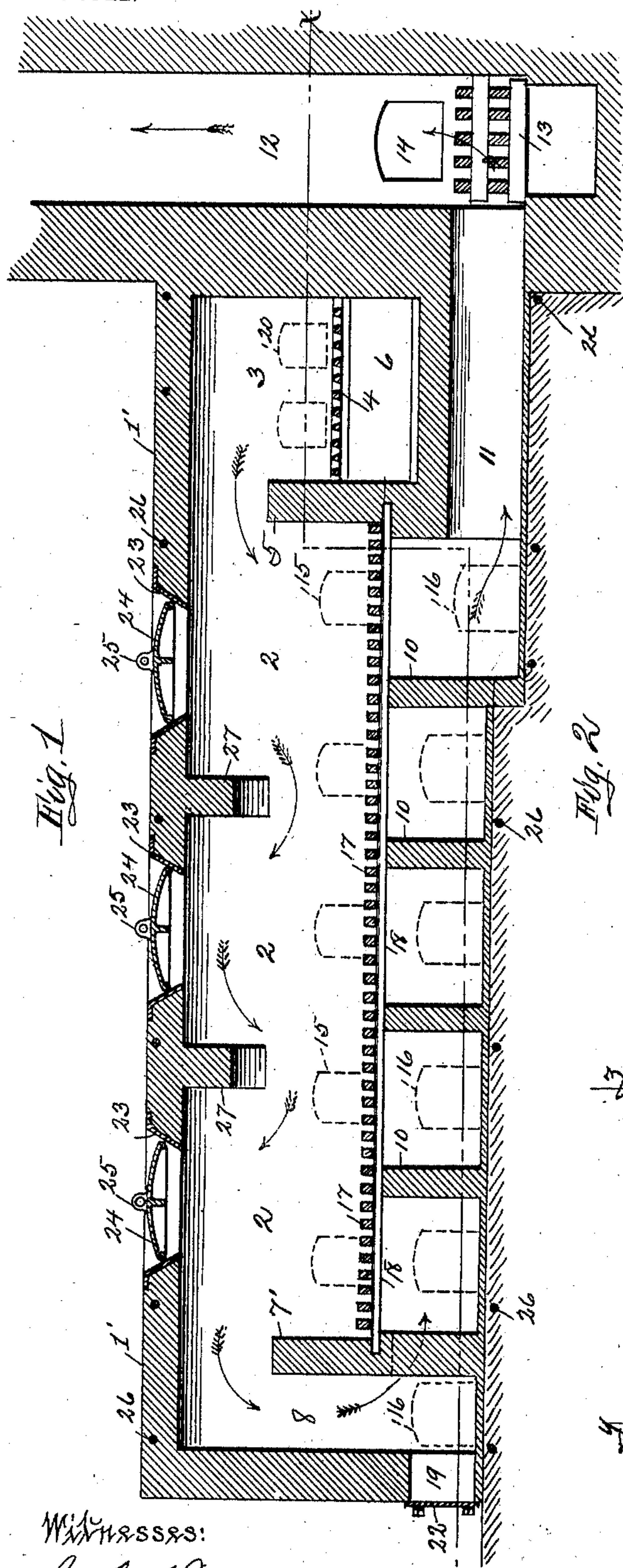
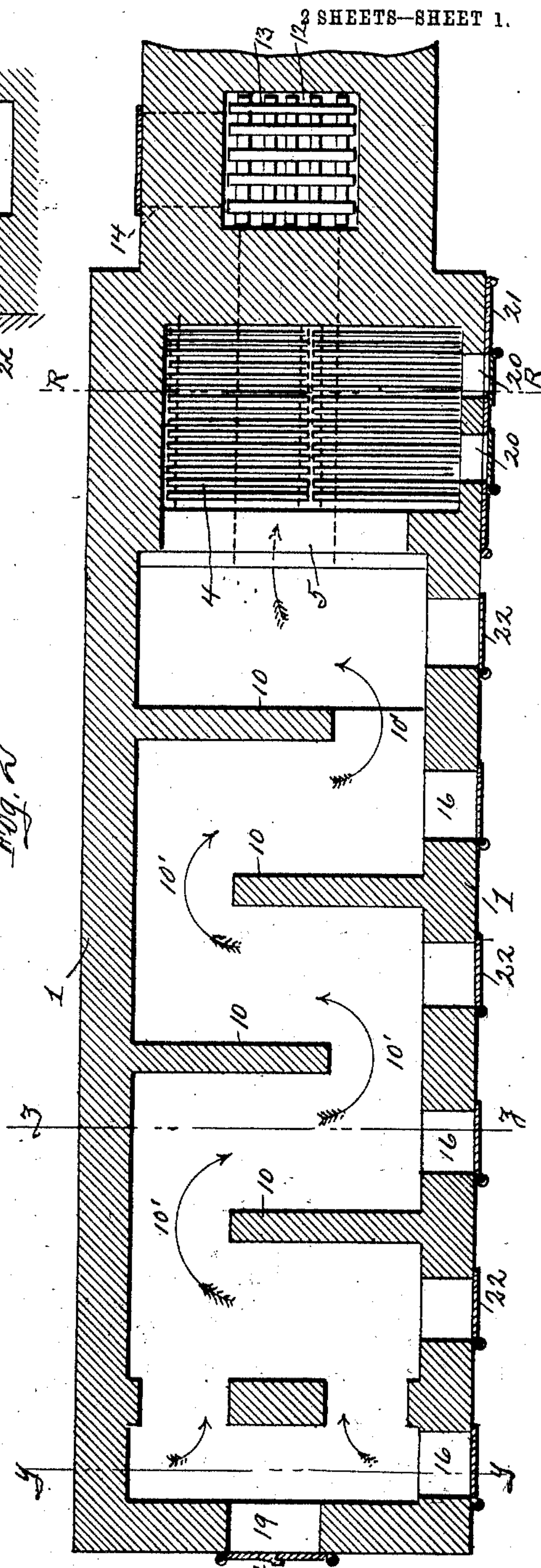


Fig. 1

Fig. 2



Witnesses:
J. A. Heron,
Wm. G. Walter

Inventors,
John Lindsay and
Robert J. Cunningham,
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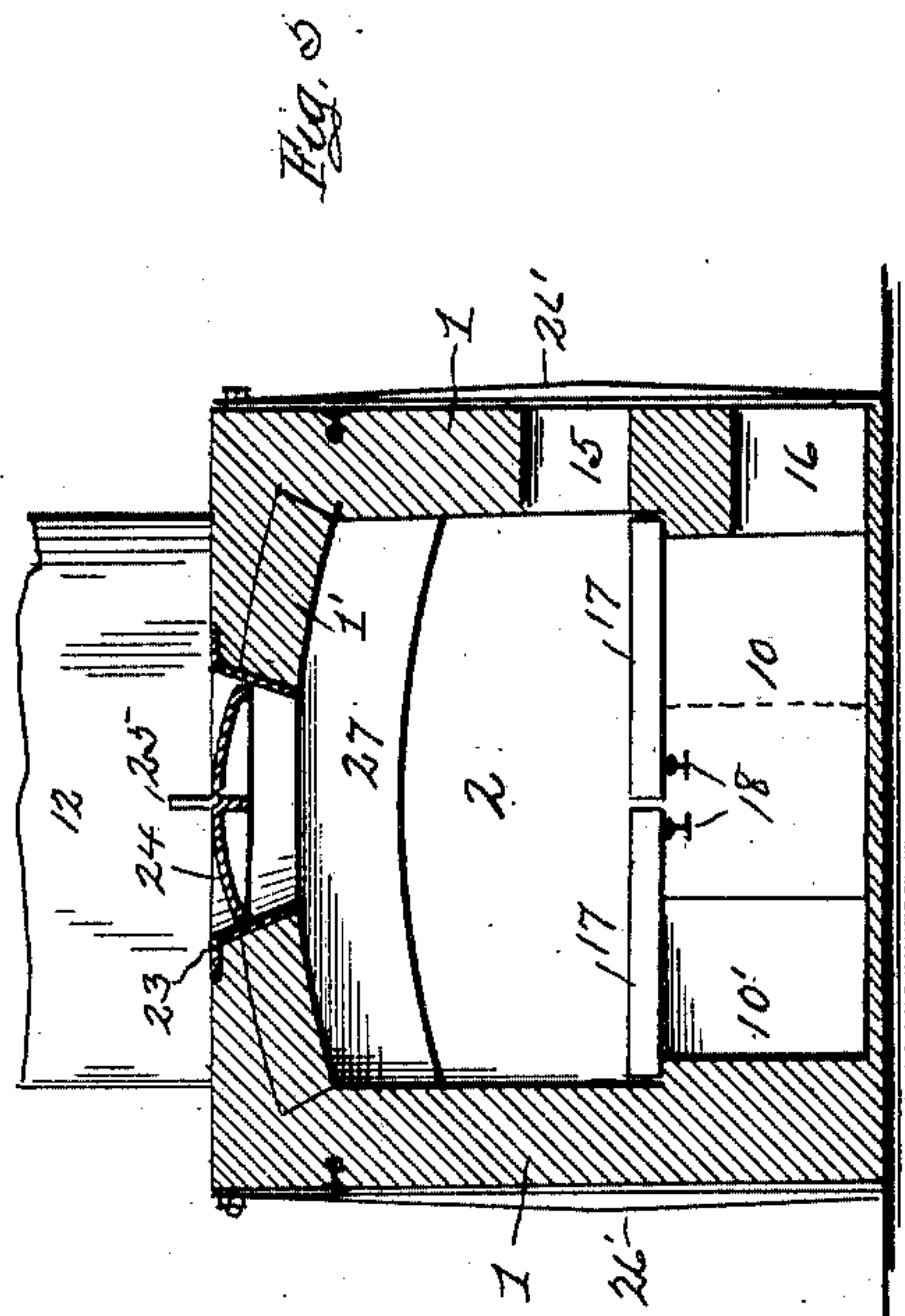
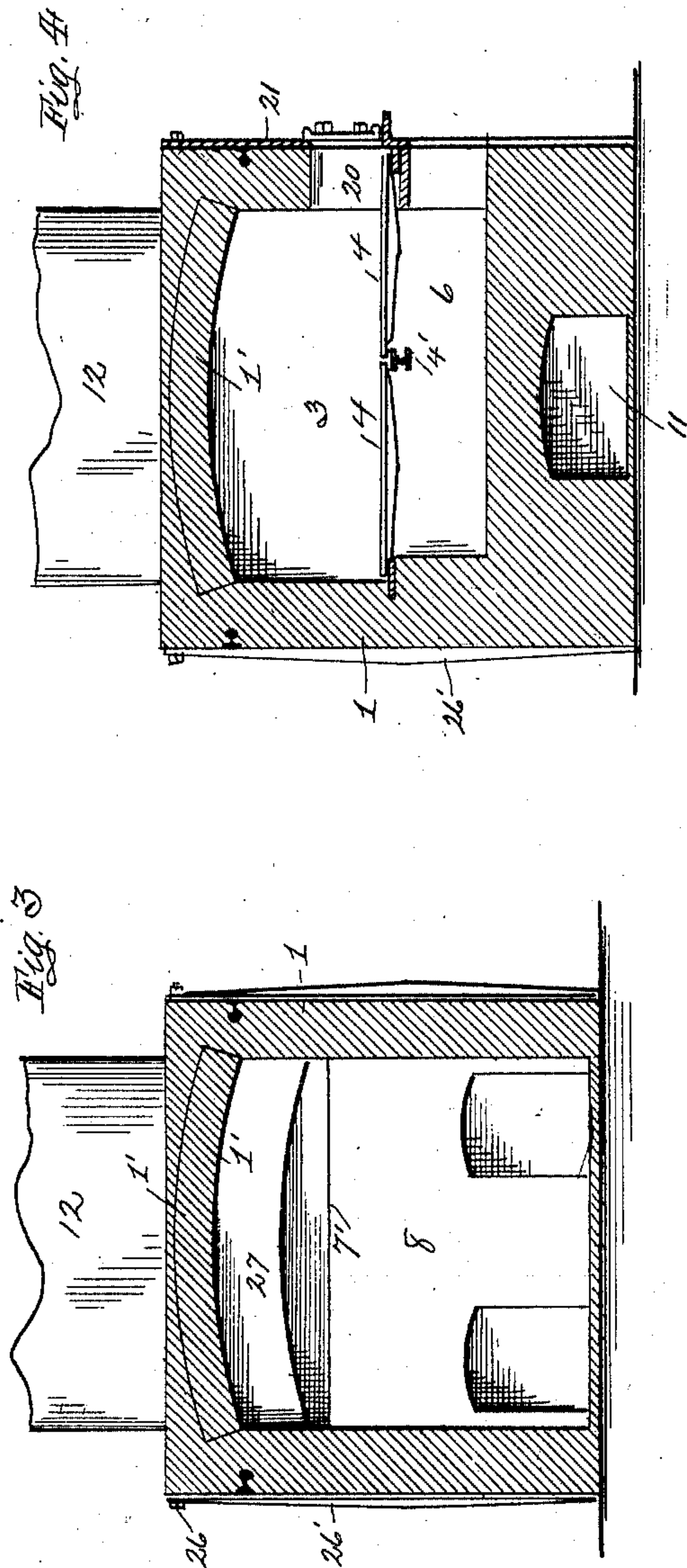
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JOHN LINDSAY, OF CRAFTON, AND ROBERT J. CUNNINGHAM, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS OF ONE-THIRD TO JOHN W. VEACH, OF PITTSBURG, PENNSYLVANIA.

FURNACE FOR THE REDUCTION OF GARBAGE OR OTHER REFUSE MATTER.

SPECIFICATION forming part of Letters Patent No. 776,605, dated December 6, 1904.

Application filed July 19, 1904. Serial No. 217,161. (No model.)

To all whom it may concern:

Be it known that we, JOHN LINDSAY, a citizen of the United States, residing at Crafton, and ROBERT J. CUNNINGHAM, a subject of the King of Great Britain, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Furnaces for the Reduction of Garbage or other Refuse Matter; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to an improved furnace for the reduction of garbage and other refuse matter; and it consists in the certain details of construction and combination of parts, as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a central side sectional elevation of our improved furnace for the reduction of garbage and other refuse matter, the same being constructed and arranged in accordance with our invention. Fig. 2 is a sectional plan view, the said section being taken on the line *xx* of Fig. 1. Fig. 3 is an end sectional elevation of the furnace, taken on the line *yy* of Fig. 2. Fig. 4 is a similar view taken on the line *RR* of said Fig. 2. Fig. 5 is a sectional end elevation on the line *zz*.

To construct a furnace in accordance with our invention, and thereby provide a means for burning garbage and other refuse matter, we form from brick a rectangular-shaped furnace consisting of the end and side walls 1, covered by a suitable arch 1', having a fire-chamber 3 at one end thereof, the said chamber being fitted with grate-bars 4, arranged above an ash-pit 6 and separated from the chamber 2 for the reduction of the garbage by a bridge-wall 5. This reduction-chamber 2 is located at one side of the fire-chamber 3 and extends almost the entire length of the furnace, terminating at a cross or bridge wall

7', beyond which is a downwardly-descending flue 8, which communicates with the ash-pit and fire-flue beneath the grate-bars 17 of the chamber 2. This last-mentioned ash-pit is provided with a series of transverse staggered partition-walls 10, extending from each side wall 1, leaving spaces 10', through which the products of combustion may pass on their way to a flue 11, arranged beneath the ash-pit 6, the said flue communicating with the draft-stack 12, arranged at the fire end of the furnace. These cross-walls 10 are staggered in such manner as to bring the spaces 10' out of line with each other to form a tortuous passage and to retard and retain the waste heat from the fire-chambers above as long as possible before permitting the same to enter the flue 11, thereby utilizing the heat for the purpose of drying and aiding in the combustion of the garbage placed upon the grate-bars 17 of the chamber 2. The grate-bars 17 above mentioned are supported on bars 18, the ends of which rest on the bridge-walls 5 and 7 and are supported at intervals by the cross-walls 10. Formed in the arch 1' over the refuse fire-chamber 2 are openings or hoppers 23, through which the garbage is thrown into the said chamber, and each hopper fitted with a removable lid or cover 24, having a means for connection with a suitable lifting device to remove and replace said covers.

Arranged between the hoppers 23 and beneath the main arch or roof 1' of the furnace are a series of deflecting-arches 27, which tend to deflect the flames from the fire-chamber 3 between the piles of refuse immediately beneath the hopper-openings 23, thereby bringing the flames in close contact with the uneven surface of said refuse. This chamber is provided with a number of small openings 15, fitted with air-tight doors, by means of which the refuse may be stirred or "poked" should the same become packed or lie in a solid mass.

Cleaning-doors 22, covering openings 16, are arranged at intervals in the front side wall 1, which are used to remove the ash descending from the chamber 2 above. Also a clean-

ing-door 14 is arranged in the draft-stack 12 and another, 19, fitted with a door 22, for cleaning the flue 8 at the end of the furnace.

Placed at a suitable position in the draft-
5 stack 12 is open brickwork formed of brick or tile 13, which when heated by the waste products of combustion will consume any obnoxious gases escaping from the chamber 2.

Various slight modifications and changes
10 may be made in the details of construction without departing from the spirit of the invention. Therefore we do not wish to confine ourselves to that shown and described, but wish to claim all such as may come within the
15 scope of the invention.

Having thus described our invention, what we claim, and desire to obtain by Letters Patent, is—

1. A furnace for burning refuse comprising
20 ing a refuse-burning chamber having a grate-surface and hopper-openings, a fire-chamber at one end thereof and a downwardly-descending flue at the other, a chamber beneath said grate-surface in communication with said flue,
25 a series of staggered partition-walls arranged in said chamber leaving spaces at the ends thereof, said spaces being out of line the one with the other and a flue leading to the draft-stack, as described.

30 2. A furnace for burning garbage comprising a refuse-burning chamber having a grate-surface and hopper-openings, intermediate deflecting-arches arranged between said open-

ings, a fire-chamber at one end and a downwardly-descending flue at the other end of said
35 refuse-chamber, a chamber beneath said grate-surface communicating with said flue, a series of staggered partition-walls arranged across said lower chamber leaving spaces at the ends thereof, said spaces being out of line
40 the one with the other to form a tortuous passage, and a flue leading from said passage to the draft-stack, as described.

3. A furnace for burning refuse comprising a fire-chamber 3, an adjacent refuse-burn-
45 ing chamber 2 separated by a bridge-wall 5, a grate-surface 17 in said refuse-chamber, hopper-openings 23 and intermediate deflecting-arches 27, a bridge-wall 7' at the end of the refuse-chamber opposite the fire-chamber 3, a
50 downwardly-descending flue 8 with openings 9, a chamber beneath the grate-surface 17, a series of transverse partition-walls 10 having spaces 10', said spaces being arranged out of line the one with the other, a flue 11 passing
55 beneath the fire-chamber 3, and leading from the chamber beneath the grate-surface to the draft-stack, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN LINDSAY.

ROBERT J. CUNNINGHAM.

Witnesses:

WM. G. WALTER,

J. A. HERRON.