No. 675,884.

Patented June 11, 1901.

L. A. DEAN.

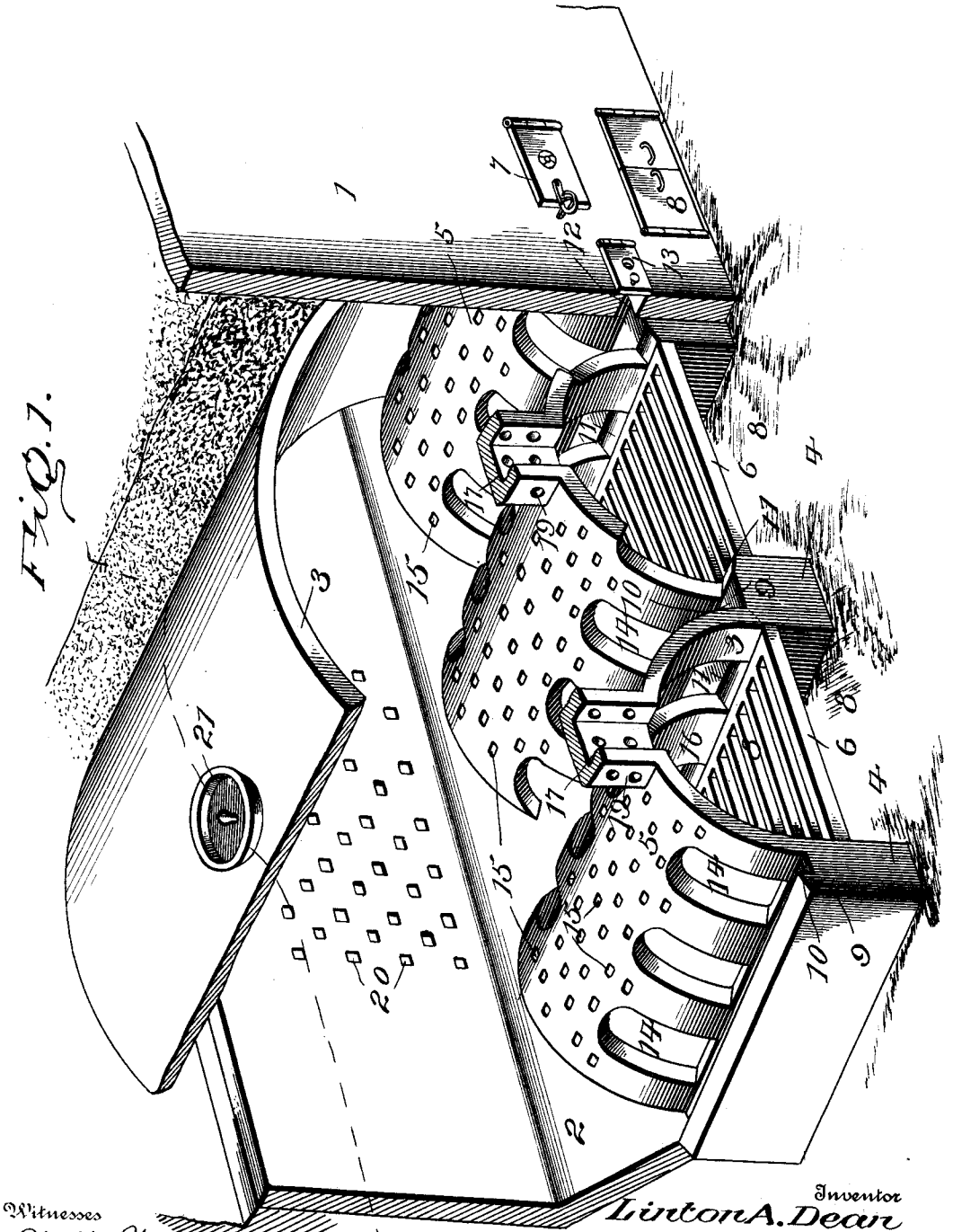
REFUSE BURNER.

(No Model.)

(Application filed Mar. 3, 1900.)

4 Sheets—Sheet 1.

FIG. 1.



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REFUSE BURNER.

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4 Sheets—Sheet 2.

FIG. 2.

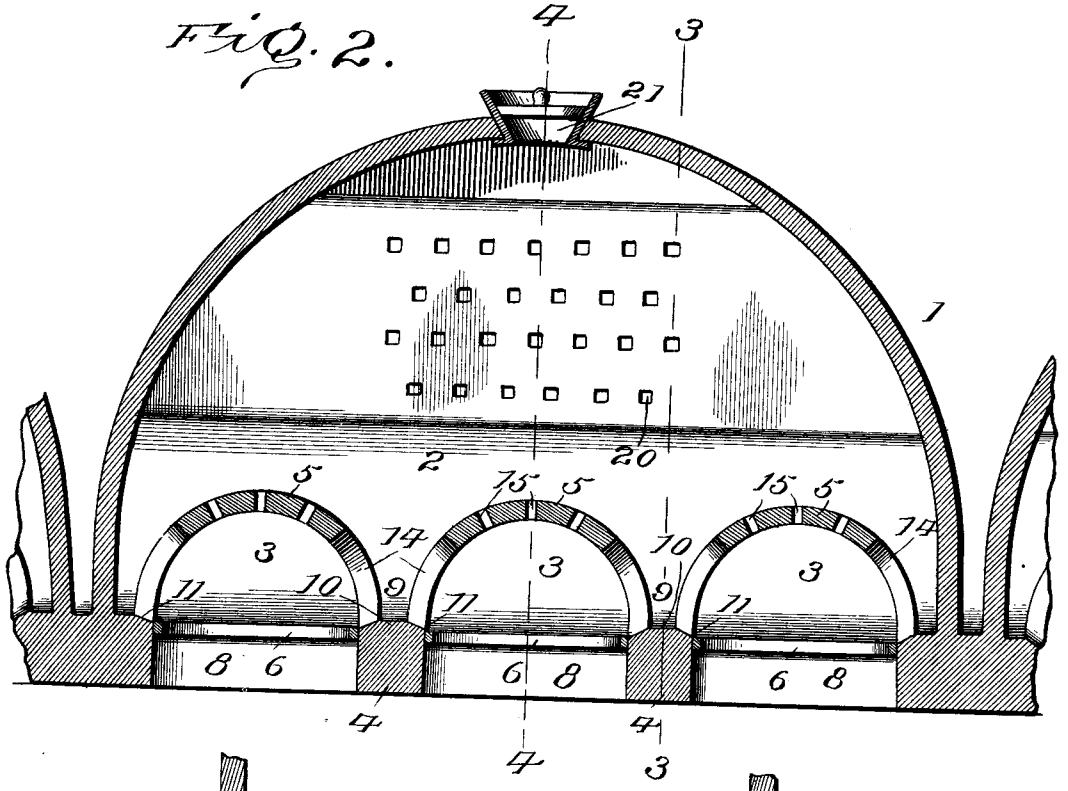
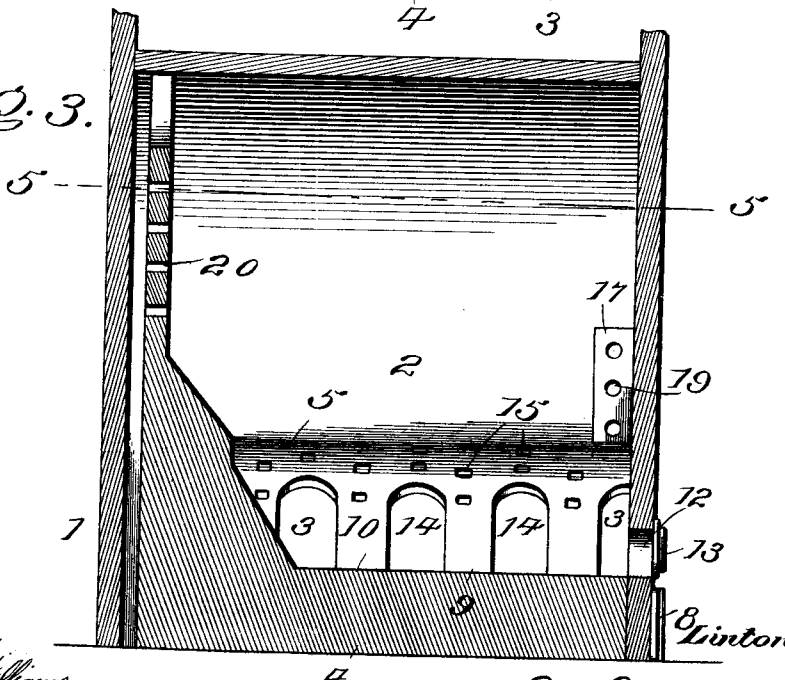


FIG. 3.



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FIG. 5.

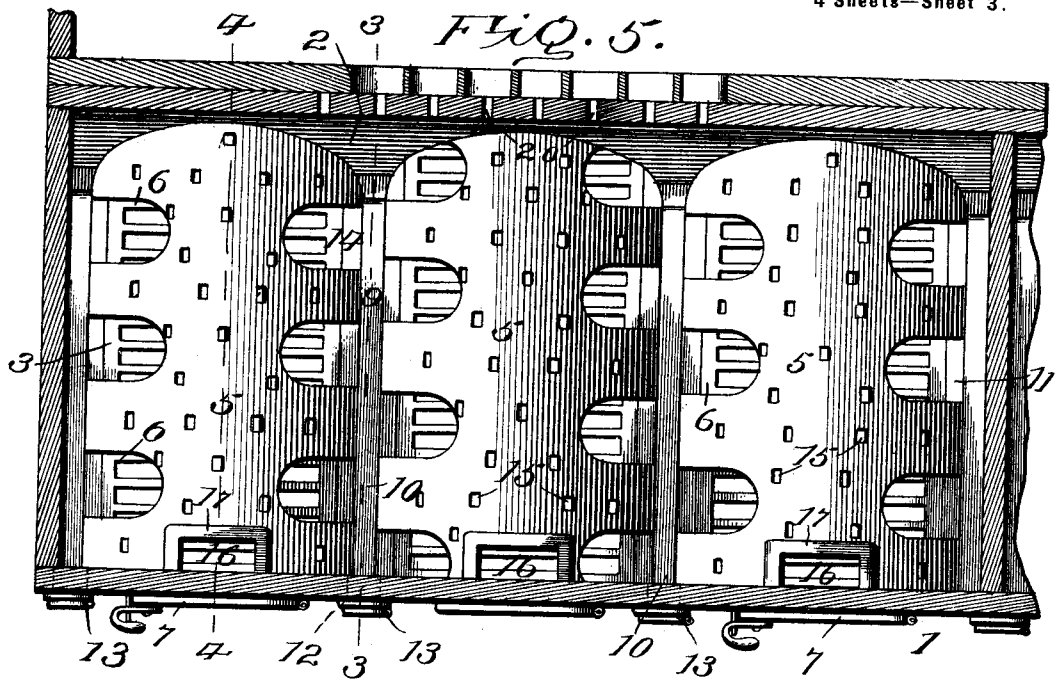
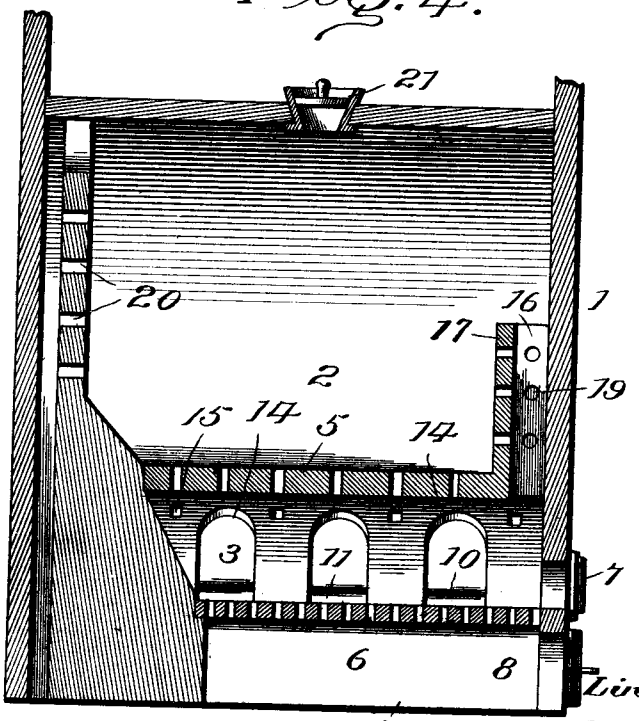


FIG. 4.



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(No Model.)

(Application filed Mar. 3, 1900.)

4 Sheets—Sheet 4.

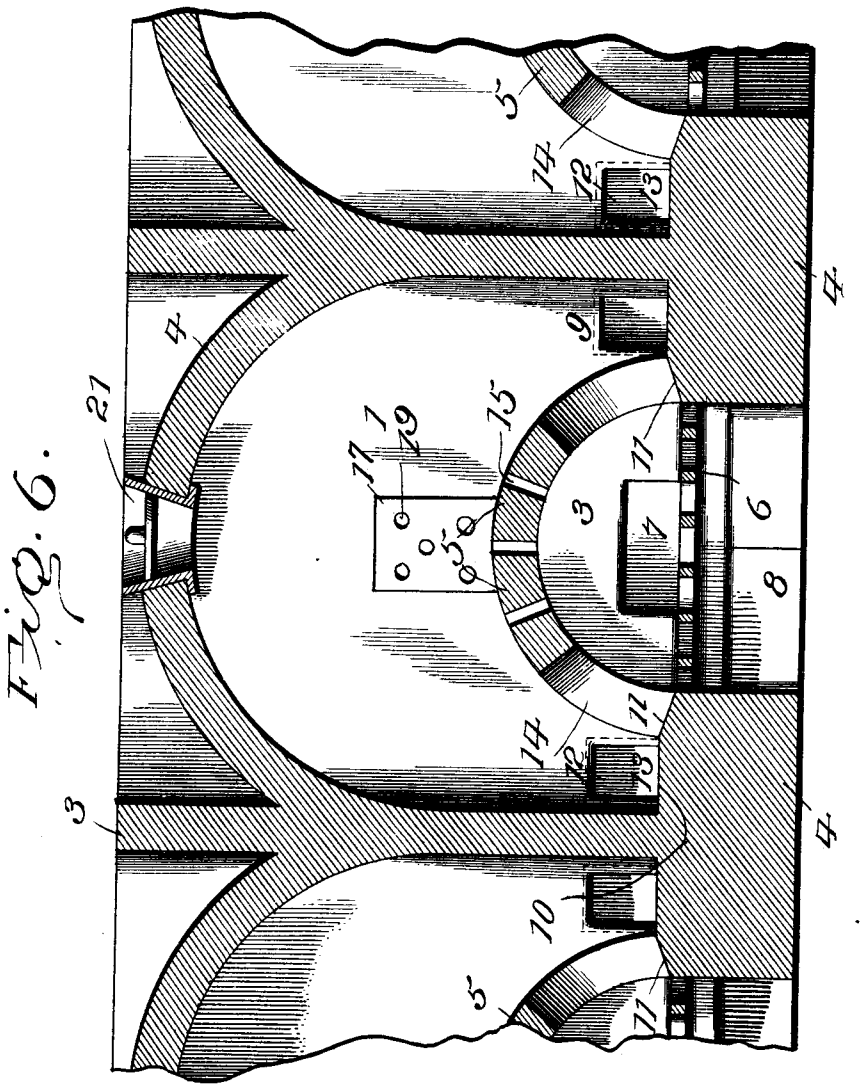


FIG. 6.

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UNITED STATES PATENT OFFICE.

LINTON A. DEAN, OF ROME, GEORGIA.

REFUSE-BURNER.

SPECIFICATION forming part of Letters Patent No. 675,884, dated June 11, 1901.

Application filed March 3, 1900. Serial No. 7,227. (No model.)

To all whom it may concern:

Be it known that I, LINTON A. DEAN, a citizen of the United States, residing at Rome, in the county of Floyd and State of Georgia, have invented new and useful Improvements in Refuse-Burners, of which the following is a specification.

My invention relates to improvements in refuse-burners, and more especially to that class known as "garbage-furnaces," where the refuse to be consumed is delivered to a preliminary combustion-chamber and dried and thence drawn into a fire below. In the practical construction and operation of furnaces of this type it has been the custom to make the floor of the combustion-chamber flat. Furthermore, the hole for drawing the material from the chamber to the fires below has been placed central, or approximately so, to the grates. I have found this construction is not the most advantageous for burning garbage which has not been separated before it is dumped into the combustion-chamber.

It is the purpose of my invention to provide a structure by means of which the refuse can be delivered promiscuously to the receiving-chamber and at the same time enable the operator to equally distribute the material to the fires below.

A further object of this invention is to provide a means for preventing the refuse from becoming packed between the arches forming the furnaces and at the same time providing a structure which will permit of a free distribution of the refuse, so as to cause it to be spread upon the whole floor of the combustion-chamber.

A further object of this invention is to provide a separate auxiliary means for each furnace for preventing the smothering of the respective fires should the delivery-openings become clogged.

A further object of the invention is to afford ready access to the preliminary combustion-chamber, so that the operator can readily withdraw the ashes which naturally tend to accumulate between the arches.

Many other objects and advantages will be hereinafter referred to and be particularly pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a broken perspective view of my improved refuse-burner to clearly disclose my invention. Fig. 2 is a longitudinal section on line 2 2 of Fig. 1. Fig. 3 is a transverse section on line 3 3 of Fig. 2. Fig. 4 is a similar view on line 4 4 of Fig. 2. Fig. 5 is a horizontal section on line 5 5 of Fig. 3. Fig. 6 is a sectional view illustrating a single arch under a combustion-chamber.

In the drawings the same numerals refer to like parts in all the figures.

As the general outline of the furnace and exit-flues forms no part of the present invention, I do not deem it necessary to illustrate all the details in connection therewith.

Referring to the drawings, the numeral 1 indicates the furnace as a whole, divided into separate receiving or preliminary combustion chambers 2, under each of which is a series of furnaces 3. The furnaces comprise vertical base-walls 4, connected together by arches 5, the usual grate-bars 6, fire-doors 7, and ash-pit and door 8. The walls 4 form the base-supports for each arch and are projected laterally, so that each of the walls will support two arches, the outer walls forming the supports for the side walls of the preliminary combustion-chamber.

As the arrangement of the arches constitutes an important feature of my invention, I will proceed to describe them in detail. It must be first understood, however, that these arches form the floor of the receiving or preliminary combustion chamber 2, and, further, the material to be consumed is delivered directly onto this floor. A sufficient space 9 is formed between the opposed sides of the arches 5 and also between the side arches and adjacent side walls to enable an operator to freely draw a rake back and forth on the upper side 10 of the base-walls 4, the latter being tapered on each side from the top, as clearly shown at 11. In the front wall 1 of the furnace structure and in alinement with the spaces 9 I arrange an opening 12, having a door 13, affording ready access to the spaces between the arches. The arches have extending upwardly a suitable distance from the top 10 of the base-walls a series of slots 14, and between the upper ends of the slots on opposite sides of the respective arch are perforations 15, designed more especially to permit the gases to escape and dry the un-

der layer of refuse. The slots 14 are closed at their lower ends by the tapered portions 11 of the walls 4.

In the front of each arch and next to the front wall of the furnace structure is an auxiliary flue-opening 16, having a surrounding flange 17, extending up toward the top of the arched roof 18 of the combustion-chamber. The flange 17 is provided with a number of perforations 19 to more readily permit the escape of the gases. In many instances the slots 14 in the opposed faces of the adjoining arches may be out of alinement with each other, as shown in Fig. 5. This has a tendency to further mix the gases.

While I do not claim especially in this application the arrangement of the perforations 20 in the rear wall of the combustion-chamber, I prefer this arrangement for the exit of the products, and claim this feature in combination with the specific construction of the furnaces.

The operation of the apparatus is as follows: Refuse material, irrespective of classification, is dumped into the receiving or preliminary combustion chamber 2 through the opening 21 in the top, and a fire is started on the grates and is continued until a portion of the refuse in the chamber is dried sufficiently to draw it into the fresh-made fire below. When the burning has reached this stage, the operator opens the door 12, inserts a rake or other implement, and draws the dried garbage onto the grates of the two adjoining furnaces. It must be remembered at this time that the refuse is piled up in between the arches and over the openings 15 and that the products of combustion on their way to the exit-flues consume the outer layers first. It not infrequently happens that the attendant introduces too much material to the combustion-chamber, causing it to pack between the arches and necessarily preventing the exit of any of the products through the slots 14 and perforations 15. It therefore follows, unless otherwise provided for, that the fires below would smolder and the purpose of the invention would be defeated. It is on such an occasion as this the opening 16 and perforations 19 perform their mission. The position of the opening and its flange 17 renders it entirely impracticable for the refuse to pile up, so as to shut off the draft through the opening. It is apparent though the slots and perforations may be clogged to prevent the exit of the products such escape to the flues is had through the openings 16 until the operator ascertains the condition of affairs and inserts a rake through the rake-hole and stirs up the mass of refuse sufficient to permit the products to escape and consume the gases in the combustion-chamber. By reason of the supports for the arches projecting laterally therefrom a flat surface is formed whereby an implement inserted in the hole in the front wall of the chamber can be drawn back and forth, which permits all the mass of material between the arches being agitated and eventually forced into the furnaces. The refuse being delivered to the chamber in a promiscuous manner, the pile becomes irregular in shape and as a rule higher under the inlet-opening in the top. It therefore follows that the flames will be drawn over the outer surface of the pile and that the irregularities cannot escape the flame for the reason that the slots are so distributed as to cover practically any outline of the material placed in the chamber. The openings in the rear wall are so arranged in proportion to the slots and perforations in the arches as to cause the gases to lag in the chamber, which lagging renders the mixing action of the gases and causes them to ignite.

It is evident I may only use a single arch and a single furnace, and in such case the space for the accommodation of ashes would be formed between the sides of the arches and the side walls of the combustion-chamber. the rake-openings being formed in alinement with the space, as clearly illustrated in Fig. 6 of the drawings. From the foregoing description, taken in connection with the drawings, it will be seen I have provided an exceedingly simple and practical apparatus for the destruction of refuse material.

Having thus fully described my invention, what I claim is—

1. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces in the lower part of said chamber, each furnace having an arched roof, the furnaces being arranged apart to form spaces at the bases of adjoining arches between the opposed faces of the latter, and means of communication between the furnaces and the preliminary combustion-chamber for the passage of the refuse into the furnaces, substantially as described.

2. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces within said chamber in the lower part thereof, each furnace having an arched roof, the furnaces being arranged apart to form spaces at the bases of adjoining arches between the opposed faces of the latter, said arches being provided with a series of slots in said opposed faces.

3. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces within said chamber, each furnace having an arched roof, the furnaces being arranged apart to form spaces at the bases of adjoining arches between the opposed faces of the latter, said arches being provided with a series of slots in said opposed faces, and each slot being beveled at its bottom toward the center of its respective furnace, substantially as described.

4. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces within the lower part of said chamber, each furnace having an arched roof, the furnaces being arranged apart to form

spaces at the bases of adjoining arches between the opposed faces of the latter, said arches being provided with a series of openings in said opposed faces for the passage of refuse into the furnaces at their sides, rake-openings being formed in the front wall of the furnace structure in alinement with the spaces formed between the adjoining arches, substantially as described.

5. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces within the lower part of said chamber, each furnace having an arched roof, the furnaces being arranged apart to form spaces at the bases of adjoining arches between the opposed faces of the latter, said arches being provided with a series of openings in said opposed faces for the passage of refuse into the furnaces at their sides, rake-openings being formed in the furnace structure in alinement with the spaces formed between the adjoining arches, substantially as described.

6. In an apparatus of the class described, a preliminary combustion-chamber having holes in one of its walls, a series of furnaces within the lower part of said chamber, each furnace having an arched roof, the furnaces being arranged apart to form spaces at the bases of adjoining arches between the opposed faces of the latter, slots being formed in said opposed faces, said holes in the wall of the preliminary combustion-chamber being in alinement with the spaces formed between the adjoining arches, substantially as described.

7. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces within said chamber, each furnace having an arched roof, the furnaces being arranged apart to form spaces between the opposed faces of the adjoining arches, slots being formed in said opposed faces, the lower portions of each slot being beveled toward its respective furnace, and rake-openings being formed in the furnace structure in alinement with the spaces between the adjoining arches, substantially as described.

8. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces within the lower part of said chamber, each furnace having an arched roof the furnaces being arranged apart to form spaces at the bases of adjoining arches between the opposed faces of the latter slots being formed in said opposed faces, and perforations being formed in each arched roof above said slots, substantially as described.

9. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces within the lower part of said chamber, each furnace having an arched roof the furnaces being arranged apart to form spaces at the bases of adjoining arches between the opposed faces of the latter, each of said roofs being formed with slots in its side faces and a series of perforations above said slots, and a wall in the rear of the combustion-chamber, having a series of perforations, substantially as described.

10. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces within the lower part of said chamber, each furnace having an arched roof, the furnaces being arranged apart to form spaces at the bases of adjoining arches between the opposed faces of the latter, each roof being formed with slots in its side faces, the slots in the roofs of adjacent furnaces being out of alinement with each other, rake-holes being formed in the wall of the structure in alinement with the spaces between the roofs, substantially as described.

11. In an apparatus of the class described, a preliminary combustion-chamber, a series of furnaces in the lower part of said chamber each furnace having an arched roof, the furnaces being arranged apart to form spaces at the bases of adjoining arches between the opposed faces of the latter, each of said roofs having slots in its side faces and a series of minor perforations above said slots, an auxiliary exit-opening formed in the arched roof adjacent the front wall of the preliminary combustion-chamber, substantially as described.

12. A refuse-burner having a preliminary combustion-chamber, a furnace within said chamber having an arched roof, and supports for said roof forming the base of, and projecting laterally beyond, each side thereof, said roof having openings in its sides for the introduction of refuse into the furnace.

13. A refuse-burner having its casing formed with openings in its front wall, a preliminary combustion-chamber, a furnace within said chamber having an arched roof, and supports for said roof forming the base of, and projecting laterally beyond, each side thereof, said openings being in alinement and positioned above said supports, and said roof having openings in its sides for the introduction of refuse into the furnace, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LINTON A. DEAN.

Witnesses:
GEO. E. FRECH,
WM. J. JACOBI.