

A. TOMKINS.
FURNACE.

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Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.

944,299.

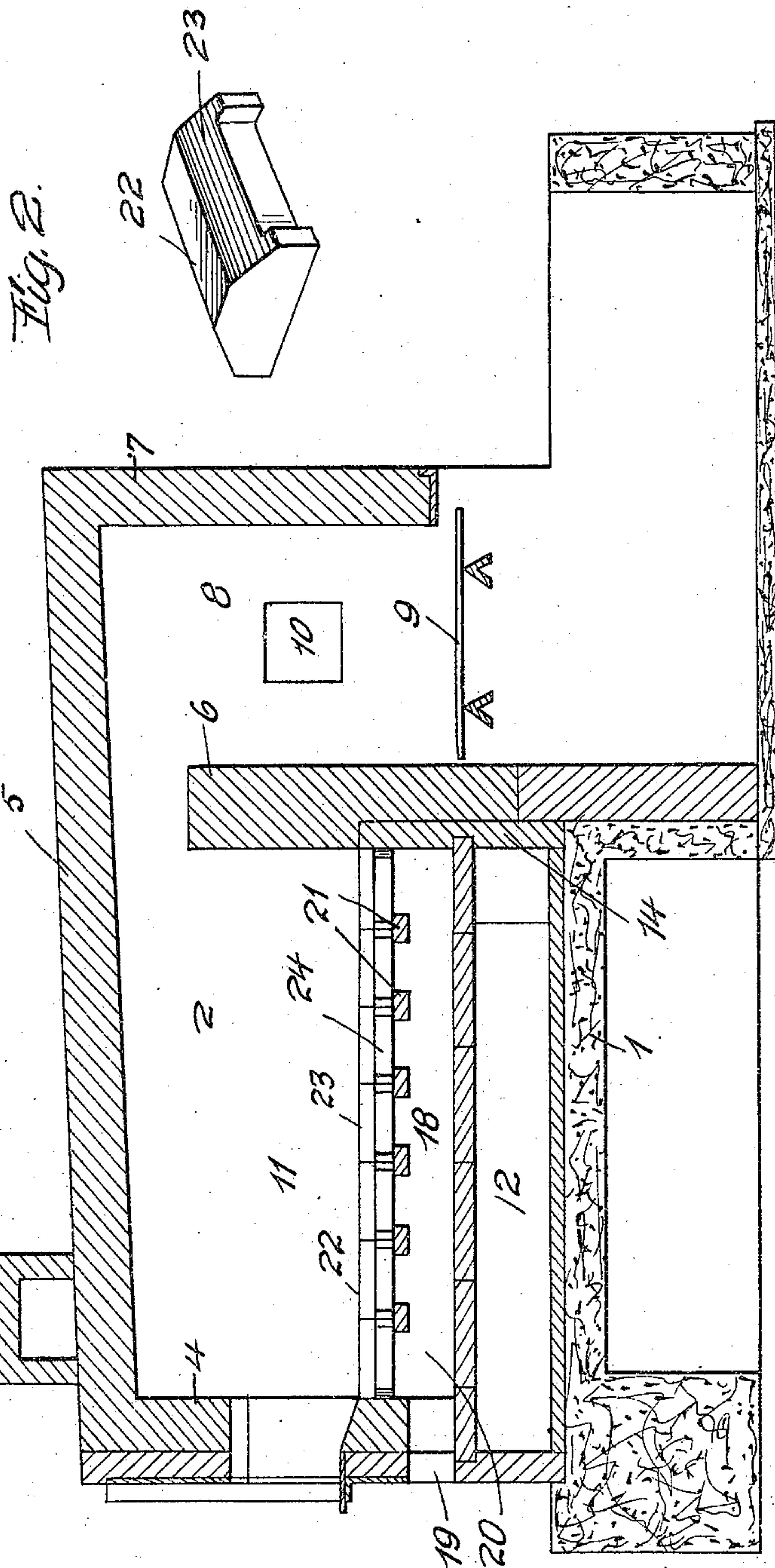


Fig. 2.

Fig. 1.

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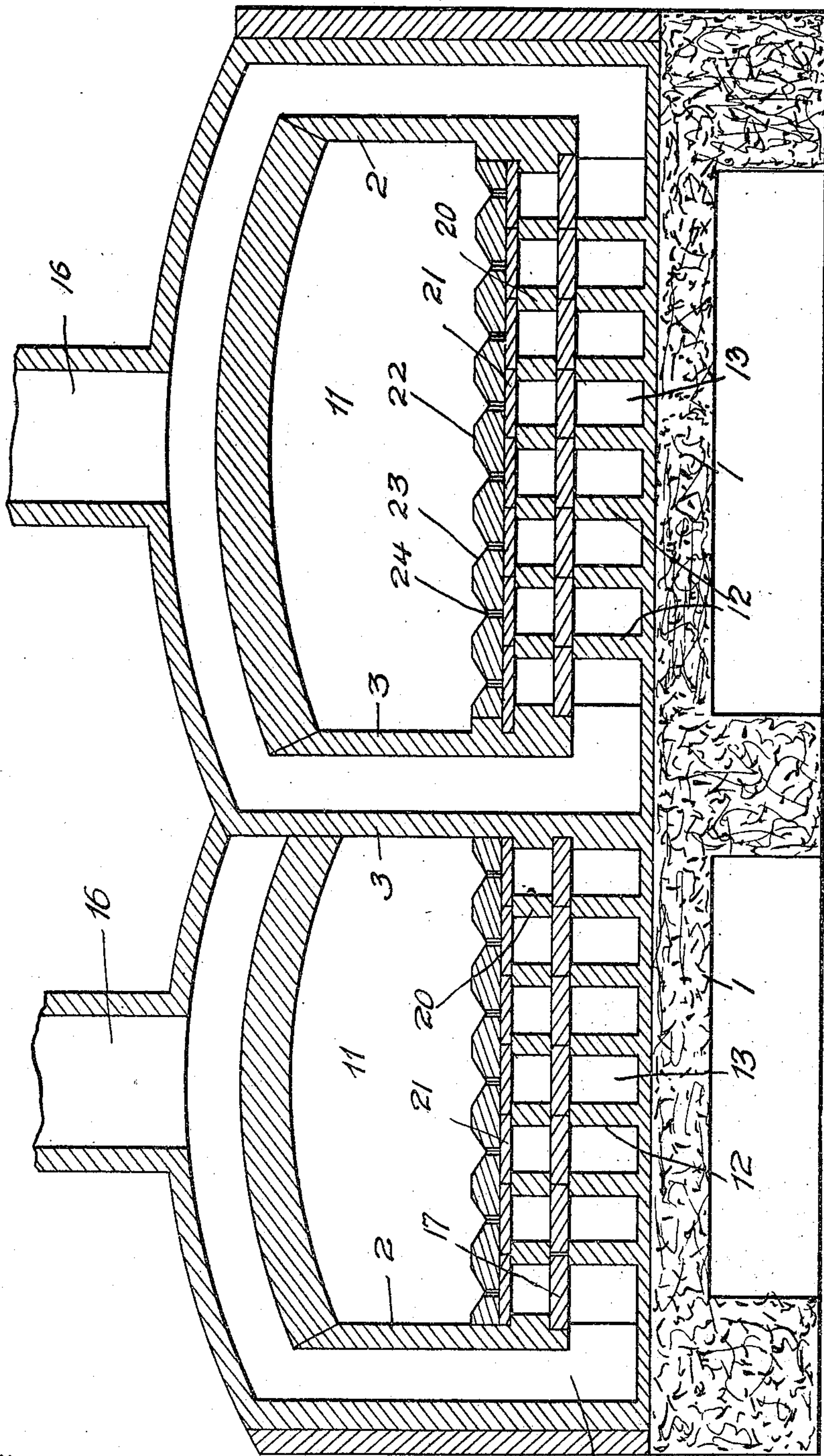
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Fig. 3.



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UNITED STATES PATENT OFFICE.

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FURNACE.

944,299.

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To all whom it may concern:

Be it known that I, ALFRED TOMKINS, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Furnaces, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to furnaces, and more particularly to that type of furnace used in connection with tin plate mills for heating sheets or thin plates of steel. These sheets or thin plates of steel are, during the
15 rolling operation made up in packs, consisting of four to eight sheets. It is the practice at present to heat these packs and sheets in furnaces having closed or solid bottoms, upon which the packs or sheets rest. Upon
20 this type of furnace bottoms there always accumulates what is known as "furnace dirt," composed of very small particles of brick, knocked off the brick forming the bottom by the edges of the packs or sheets,
25 scale which is iron oxid, carbon, etc., in very thin small pieces. This "furnace dirt" by the action of sliding the sheets or packs over the furnace bottom, has a tendency to lodge itself between the sheets and when the sheets
30 or pack is put through the rolls, this dirt is either embedded in the hot steel or makes a depression in same by reason of the pressure of the rolls. These defects not only cause trouble in the black or unfinished sheet, but
35 when the sheets are coated with metallic tin the defects caused by furnace dirt are more distinct and instead of the sheet being a first class sheet or a "prime" it is sold only as a second grade sheet or a "waster".

40 To obviate and overcome the above defects, I provide a furnace with the bottom having a plurality of openings through which the furnace dirt is adapted to pass into channels or compartments remotely located relative
45 to the sheets or plates to be heated, consequently all danger of the furnace dirt contacting with the surfaces of the sheets or plates, particularly when they are in piles, is eliminated.

50 My invention will be hereinafter described in detail and then claimed, and reference will now be had to the drawings forming a part of this specification, wherein I have illustrated a practical embodiment of my
55 invention, but it is to be understood that the structural elements thereof can be va-

ried or changed without departing from the spirit of the invention.

In the drawings:—Figure 1 is a longitudinal sectional view of a furnace constructed
60 in accordance with my invention. Fig. 2 is a perspective view of one of the tiles or blocks forming the sheet or plate supporting bottom, and Fig. 3 is a cross sectional view
65 of the furnace.

In the accompanying drawings I have illustrated a double furnace, comprising a concrete base 1, outer walls 2, inner walls 3, front walls 4 and arched roofs 5. The side
70 walls 2 and 3 are connected by bridge walls 6 and these walls in connection with the rear walls 7 form combustion chambers 8 above grate bars 9 arranged transversely of the furnace at the lower edge of the rear
75 wall 7.

The outer walls 2 are provided with openings 10 whereby fuel can be placed in the combustion chamber 8 upon the grate bars 9, and the heat from the fuel is adapted to
80 pass over the bridge walls 6 into the heating chamber 11 formed by the side walls 2 and 3, bridge walls 6 and front walls 4.

The bottom of the heating chamber 11 is provided with longitudinal partitions 12 forming a plurality of longitudinal draft
85 channels 13 having the rear ends thereof closed by inserts 14 of the bridge walls 6, while the forward ends thereof communicate with exterior draft flues 15, these flues extending upwardly along the side walls of
90 the furnace and across the arched roofs 5 thereof, where the draft flues communicate with stacks 16. The channels 13 are covered by plates 17 forming the bottom of the furnace dirt chamber 18, and easy access is
95 had to this chamber through the medium of openings 19 provided therefor in the front wall of each furnace. The furnace dirt chamber 18 is subdivided by a plurality of longitudinal partitions 20 and the upper
100 edges of these partitions are connected by transverse supports 21, said supports in connection with the upper edges of the partitions 20 supporting a floor, composed of a plurality of tiles or blocks 22 adapted to
105 support the sheets or plates of steel in the heating chamber 11. The upper faces of the supports 21 are flush with the upper edges of the partitions 20 (see Fig. 1) in order that the floor may be laid thereon.
110

My invention particularly resides in those elements which form the furnace dirt cham-

ber 18 and the floor of the heating chamber 11. In order that the furnace dirt from the chamber 11 can readily pass into the chamber 18, the confronting longitudinal edges of the tiles or blocks 22 are beveled, as at 23 to deflect furnace dirt to the confronting edges of the tiles or blocks where the furnace dirt passes through openings 24 provided therefor by recessing the confronting edges of the tiles or blocks 22.

By virtue of the openings 19 it is not difficult to remove dirt from the furnace, and it is practically impossible for the furnace dirt to injure or mar the sheets or plates when stacked or arranged in piles.

Having now described my invention what I claim as new, is:—

1. A furnace bottom having partitions, plates supported on said partitions, said partitions and plates forming draft channels, partitions mounted on said plates, spaced supports mounted on said last-named partitions, and a flooring of tiles supported by said supports, said tiles having their adjacent edges recessed to provide openings communicating with the spaces between the last-named partitions.

2. The combination with a furnace hav-

ing a heating chamber, of partitions arranged at the bottom of said chamber, and tiles supported upon said partitions and adapted to form furnace dirt chambers between said partitions, said tiles having the longitudinal edges thereof beveled and provided with recesses adapted to form openings for discharging matter from said tiles into the furnace dirt chambers of said furnace.

3. The combination with a furnace having a heating chamber, of longitudinal partitions arranged at the bottom of said chamber, transverse supports connecting said partitions, tiles arranged upon said supports and the upper edges of said partitions and adapted to provide a floor for supporting matter in said heating chamber, said tiles having the longitudinal confronting edges thereof beveled and recessed to provide openings adapted to discharge matter between said partitions.

In testimony whereof I affix my signature in the presence of two witnesses.

ALFRED TOMKINS.

Witnesses:

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F. E. FIEGS.