

No. 886,854.

PATENTED MAY 5, 1908.

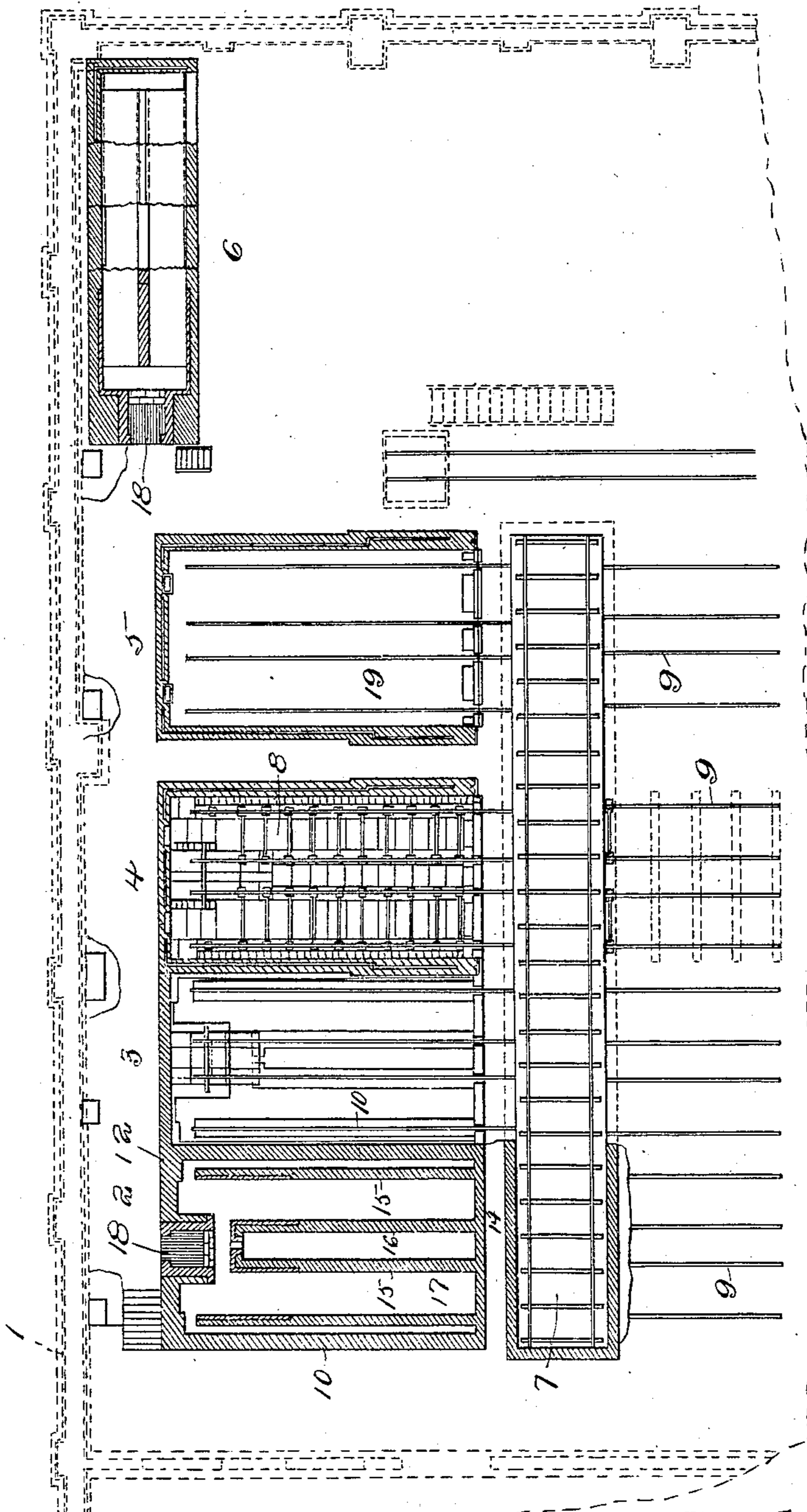
B. H. PRACK.

CORE OVEN.

APPLICATION FILED MAY 2, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



witnesses

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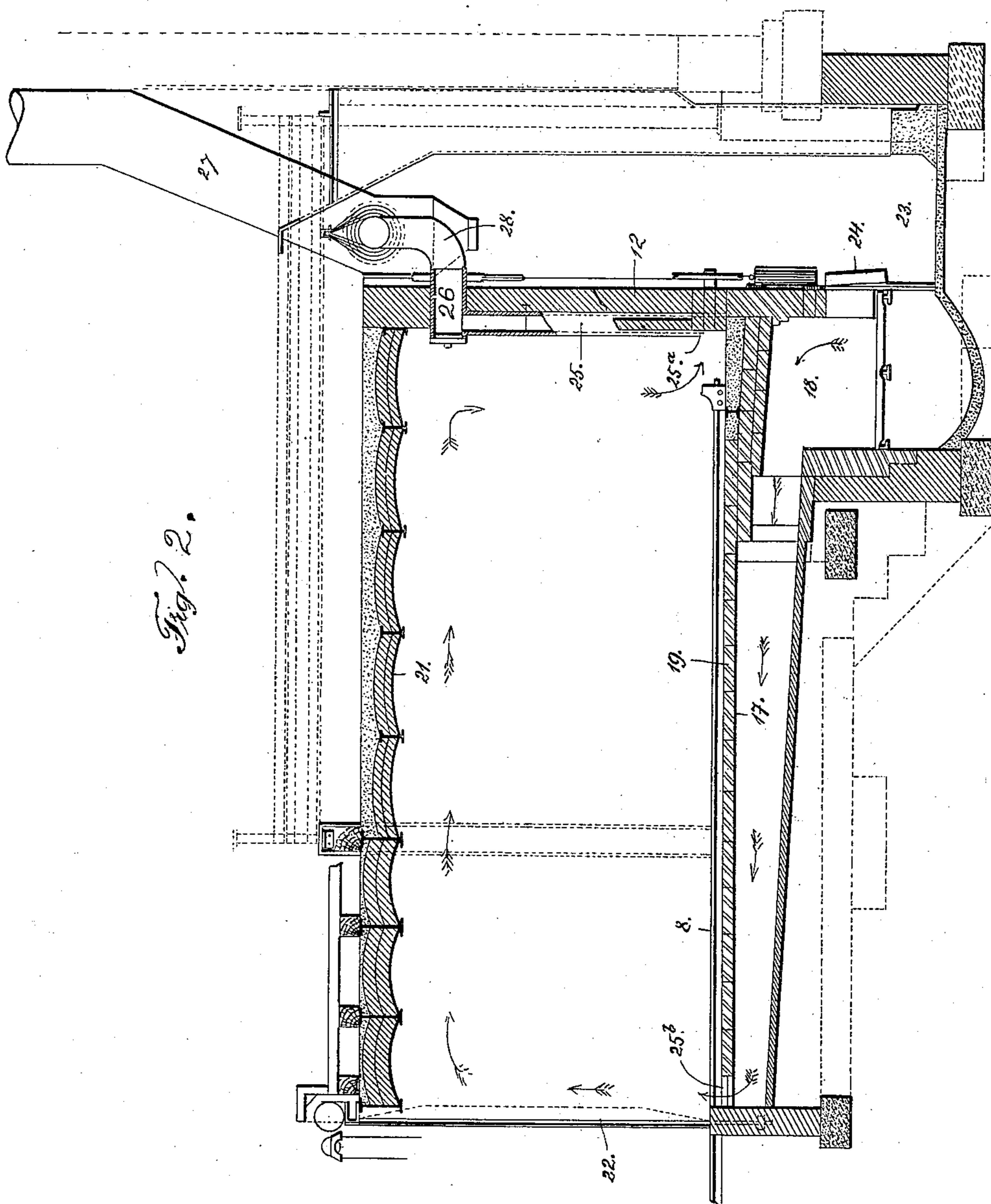
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3 SHEETS—SHEET 2.



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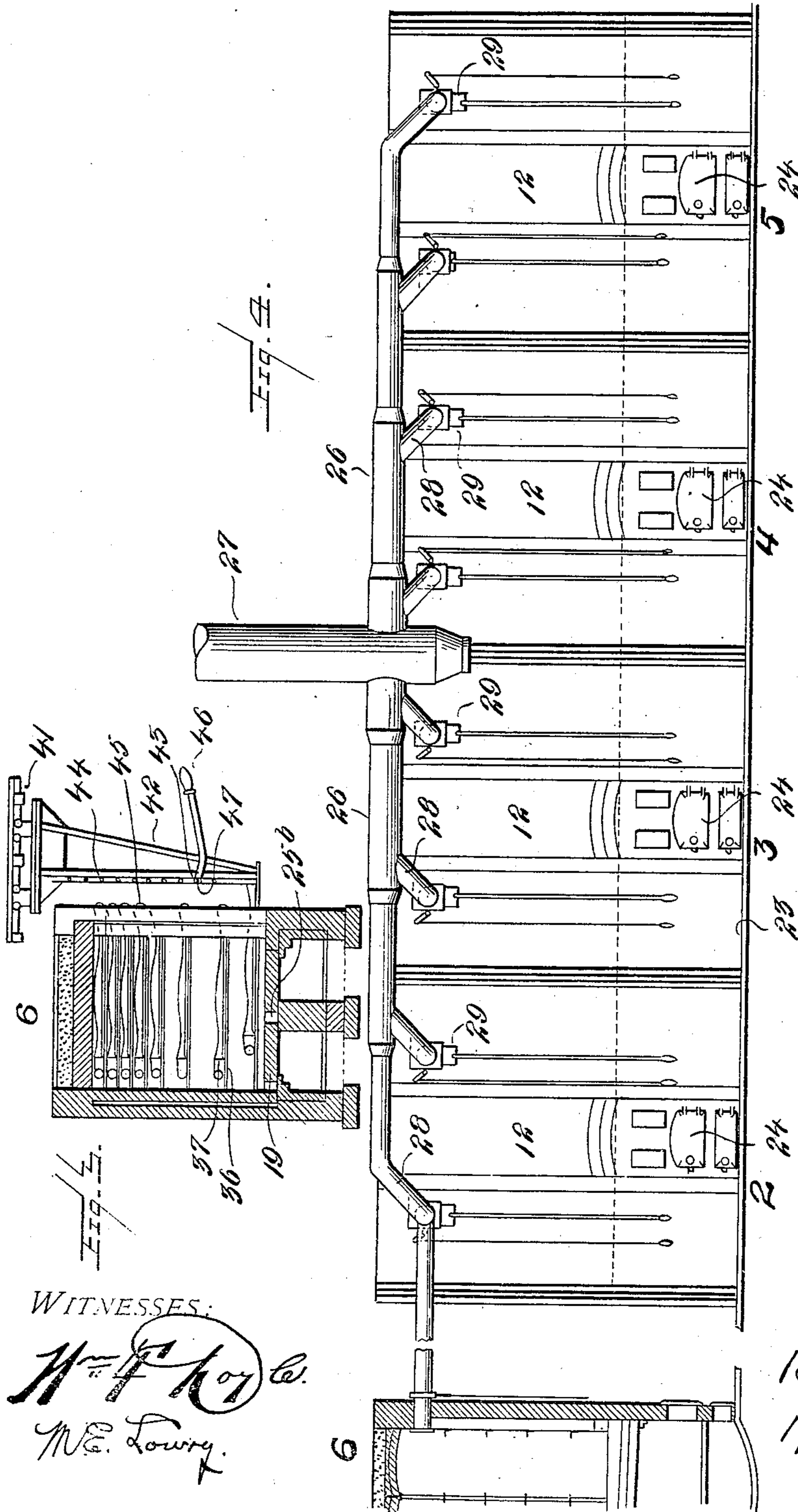
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3 SHEETS—SHEET 3.



WITNESSES:

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BERNHARD H. PRACK, OF CRAFTON, PENNSYLVANIA.

CORE-OVEN.

No. 886,854.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed May 2, 1906. Serial No. 314,811.

To all whom it may concern:

Be it known that I, BERNHARD H. PRACK, a citizen of the United States of America, residing at Crafton, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Core-Ovens, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to drying apparatus for drying or "curing" cores employed in metal casting.

The primary object of the invention is to provide a core oven, the heating flues of which are so constructed and relatively arranged as to insure a thorough and even heating and drying of the cores.

A further object of this invention is to provide a heating or "curing" plant for cores, adapted for the treatment of cores of varying sizes, and in which a plurality of ovens are so constructed as to permit of the heating of a large number of cores at the same time within a compact space of comparatively small area.

The invention also includes improved means for firing the ovens, for feeding fuel to the oven furnaces, and for inserting and removing the cores, into and from the ovens.

The construction of the apparatus will be fully described hereinafter in connection with the accompanying drawings, which form part of this specification, and its novel features will be defined in the appended claims.

In the drawings, like numerals of reference designate corresponding parts throughout the several views.

Figure 1 is a horizontal sectional view, illustrating diagrammatically a plant embodying the invention, Fig. 2 is a vertical sectional view, on an enlarged scale, of one of the large ovens, the direction of the products of combustion from the fire box being indicated by arrows, and the vertical flue being shown partly broken away, and partly in section, Fig. 3 is a transverse vertical section of a small oven or kiln embraced in the system of series of kilns, Fig. 4 is a diagrammatical view in elevation showing a series of kilns having a common exhaust pipe, each kiln having an independent cut-off or valve controlling the exhaust.

Reference will now be had particularly to Fig. 1 of the drawings, wherein the reference numeral 1 designates the outline of a suitable

building in which my improved ovens are located. The ovens designated by the numerals 2, 3, 4 and 5 are arranged in a group, while the oven 6 is located adjacent to said group and connected with the smoke flue thereof. The ovens 2 to 5 inclusive are constructed upon a large scale to adapt them for drying large cores, which are carried into the ovens upon suitable cars, while the oven 6 is constructed for small cores which are placed in trays arranged within the oven.

In order that the cores may be quickly and conveniently delivered to and withdrawn from the ovens, I arrange a depressed transfer track 7 in front of the ovens 2 to 5 inclusive, said track being sunk below the floor level of the ovens to permit of a car traveling thereon, to transfer cars from the tracks 8 of the oven to the leading-off tracks 9 of said oven.

The ovens are preferably constructed of brick, concrete, and structural steel, and referring particularly to the ovens 2 to 5 inclusive, I deem it only necessary to describe in detail one of said ovens, as they are of similar construction, but are arranged to cooperate with one another, as will be hereinafter more fully described. The oven 2, which I have selected, is constructed of side walls 10, and a rear wall 12. The foundation of the oven is formed with a front wall 14, and between the wall 14 and the foundation of the walls 10 and 12 are arranged longitudinally disposed walls 15 and 16, said walls forming flues 17 which extend from the front of the furnace to the rear thereof, all of said flues communicating with a fire box 18, formed centrally of the rear wall 12 of the furnace. The walls 15 and 16 support a fire brick floor 19 upon which the tracks 8 are laid. The walls 10 and 12 support a brick and structural steel roof 21, and carried by the forward edge of said roof is a conventional form of metallic rolling door 22 adapted to close the oven.

Access to the fire box 18 at the rear end of the oven is had through firing pits 23, and in connection with each fire box, a door 24 is used, together with vertically disposed flues 25. The vertical flues 25 are supported by the rear wall of the oven, and their lower ends 25^a are above the level of the floor so that the heat from the flues 17 passing into the oven through openings 25^b in the floor will find escape after circulating around the cores in the oven through the lower ends of the vertical flues 25. Thus the heat is con-

fined within the oven to insure a thorough heating of the cores, and escapes through the vertical flues only after it has been fully utilized in heating the space above the oven floor. The doors 24 are of a conventional form elevated through the medium of weights while the flues 25 communicate with a conduit 26 which extends along the ovens 2 to 5 inclusive and communicates with an exhaust stack 27. The flues of the ovens 3, 4 and 5 communicate with the conduit 26 through the medium of branch pipes 28. The ends of the branch pipes 28, together with the ends of the conduit 26 which communicate with the vertically disposed flues 25, are provided with pivoted shutter-dampers 29, these dampers controlling the exhaust of the flues 25 and being operated from the firing pits 23 of the oven. The ends of the branch pipes 28 of conduit 26 extend into the ovens and are provided with shutters 30 which are simultaneously operated, with the dampers 29, the ends of the branch pipes and conduit serving as vent openings for the ovens. Arranged above the rear ends of the ovens is a balcony 31, said balcony serving as a storage space for the cores after their removal from the ovens.

The oven 6 heretofore mentioned as an oven for small cores, is constructed somewhat similar to the ovens just described, with the exception that the tracks 8 are dispensed with and the longer side of the oven is used as the front thereof. The exhaust flue 25 of the oven 6 communicates with the conduit 26 of the ovens 2 to 5 inclusive, and the oven is supplied with coke through a chute as in the case of the large ovens 2 to 5 inclusive. In the oven 6 are a series of vertically disposed columns 35 and between said columns are arranged horizontally disposed supporting tracks 36, these tracks being employed to support a plurality of metallic trays 37, said trays being preferably constructed of cast iron and having wheels to travel on the tracks 36 and permit the trays to be easily and quickly removed from the oven.

To facilitate the removal of the trays from the oven 6, I provide an elevated trackway 41 in front of the oven from which depends a traveler 42, having a bar 43 loosely supported thereon. This bar 43 is formed with equi-distant openings 44 registering with eyes 45 projecting from the front ends of the trays, and said bar is capable of a limited vertical movement upon the depending traveler through the medium of a lever 46 fulcrumed upon the traveler and connected at its front end to the bar 43. When it is desired to withdraw a tray from the oven, the projecting eye 45 thereof is connected to the bar 43 by means of a pin 47 passing through said eye and through the adjacent opening in the bar. The lever 46 is then operated to raise the front end of the tray so that the

weight of the tray is supported by the wheels, and the traveler is then drawn backward by hand to withdraw the tray.

It will be apparent that the arrangement of flues herein shown and described insures a thorough distribution and circulation of heat both above and below the cores within the oven, with the result that the cores are thoroughly and evenly heated, and the danger of possible explosion of the cores in use, which is incidental to improperly "cured" cores, is entirely avoided. The improved construction also greatly facilitates both the rapid heating of the ovens, and the delivery of the cores to and from the ovens.

While the specific construction of the apparatus as shown in the drawings is operative and practicable, I would have it understood that the invention is not restricted to the mechanical details shown and described, but includes all such modifications and variations as may be resorted to without departing from the scope and spirit of the invention as set forth in the following claims.

What I claim and desire to secure by Letters Patent, is:—

1. A drying apparatus for cores, comprising an oven having a floor, a longitudinally-extending flue disposed beneath said floor communicating at one end of the oven with a furnace and at the other end communicating through an opening in the floor with the oven chamber, a vertically-disposed exhaust-flue at the end of the oven above the furnace with its opening adjacent the oven floor whereby the products of combustion are caused to travel from the furnace through the longitudinal flue beneath the floor and into the oven at one end and be carried back through the oven chamber before entering the exhaust-flue, an exhaust-conduit, a branch pipe establishing communication between said exhaust-conduit and the exhaust-flue and in communication with the oven chamber, a damper-shutter controlling the communication between the exhaust-flue and the exhaust-conduit, and a damper controlling communication between the exhaust-conduit and oven chamber.

2. In a drying oven, an oven chamber, a flue extending longitudinally underneath the floor of said chamber from end to end thereof and communicating at one end with the oven chamber through an opening in the floor of said chamber, a furnace at the opposite end of said oven chamber with which the other end of said flue communicates, an exhaust-flue at the end of the oven chamber above the furnace having its opening adjacent the floor of the furnace whereby the products of combustion from the furnace are caused to travel through the flue underneath the oven floor into the oven chamber at one end and back through the oven chamber before en-

tering the exhaust-flue, an exhaust-conduit for said oven chamber, a branch pipe establishing communication between the exhaust conduit and the exhaust-flue and also establishing communication between the exhaust-conduit and the oven chamber, and means for closing communication between the exhaust-conduit and the oven chamber.

3. In a core drying oven, a plurality of oven chambers, a furnace for each oven chamber, a flue underneath the floor of each oven chamber communicating at one end with the furnace of the oven chamber and at its other end with the oven chamber, an exhaust-flue for each oven chamber located at the end of the chamber opposite to the inlet of the flues underneath the chamber, an exhaust-conduit common to each of said exhaust-flues, branch-pipes establishing communication between the exhaust-flue, and a damper in each branch pipe for controlling the communication between the exhaust-flues and the exhaust-conduit.

4. The combination with a core oven, of a plurality of horizontally disposed tracks, a series of trays provided with rollers adapted to said tracks, and means for elevating the outer ends of said trays and withdrawing them from the oven.

5. The combination with a core oven, of a plurality of horizontally disposed tracks, a series of trays provided with rollers adapted to said tracks, and means for elevating the outer ends of said trays and withdrawing them from the oven, comprising an elevated trackway, a traveler depending therefrom, a vertically movable bar supported on said traveler and adapted to be connected to the front ends of the trays, and a lever for moving said bar.

6. The combination with a core oven, of a plurality of horizontally disposed tracks, a series of trays provided with rollers adapted to said tracks, and means for elevating the outer ends of said trays and withdrawing them from the oven, comprising an elevated trackway, a traveler depending therefrom, a longitudinally movable bar supported by said traveler, means for detachably securing said bar to said trays, and a lever fulcrumed on said traveler and connected to said bar.

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

BERNHARD H. PRACK.

Witnesses:

F. O. McCLEARY,
E. E. POTTER.