

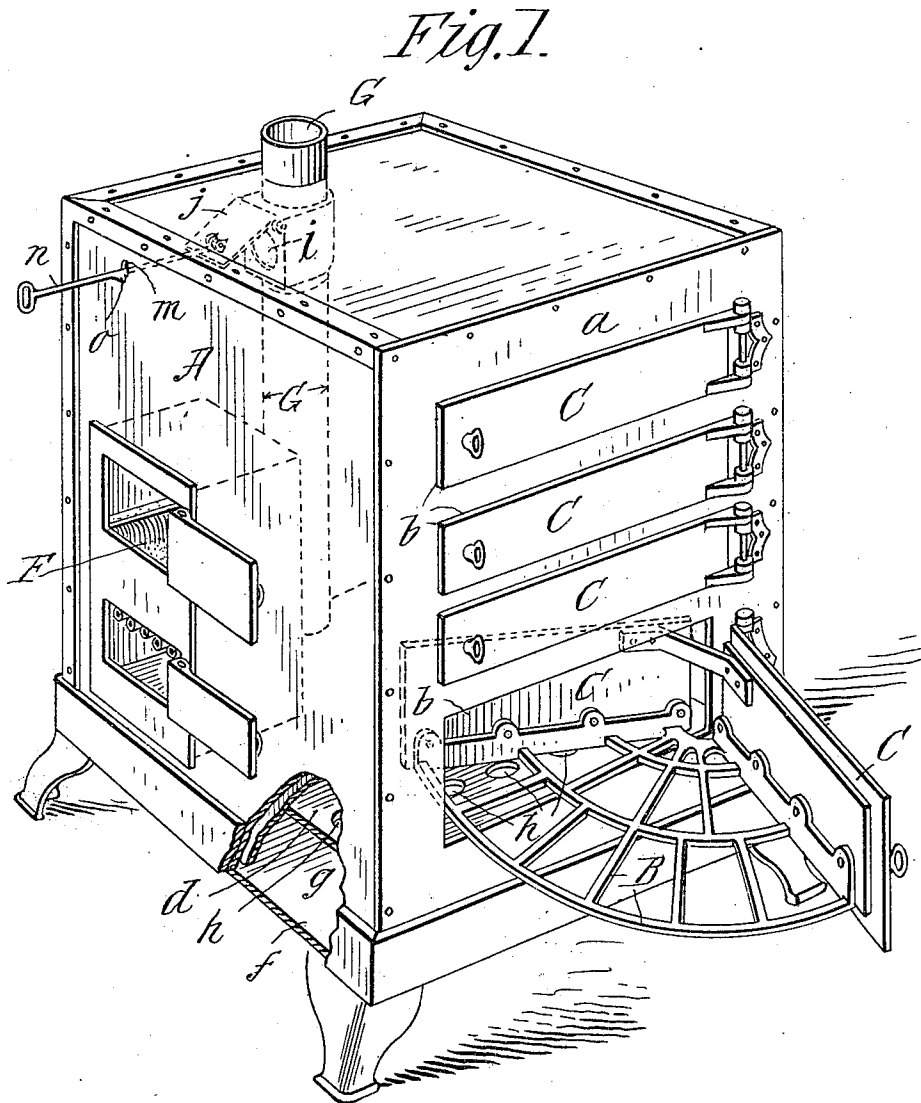
No. 839,581.

PATENTED DEC. 25, 1906.

G. HARMAN.
OVEN FOR BAKING SAND CORES.

APPLICATION FILED JULY 2, 1906.

2 SHEETS—SHEET 1.



Witnesses:

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Fig. 2.

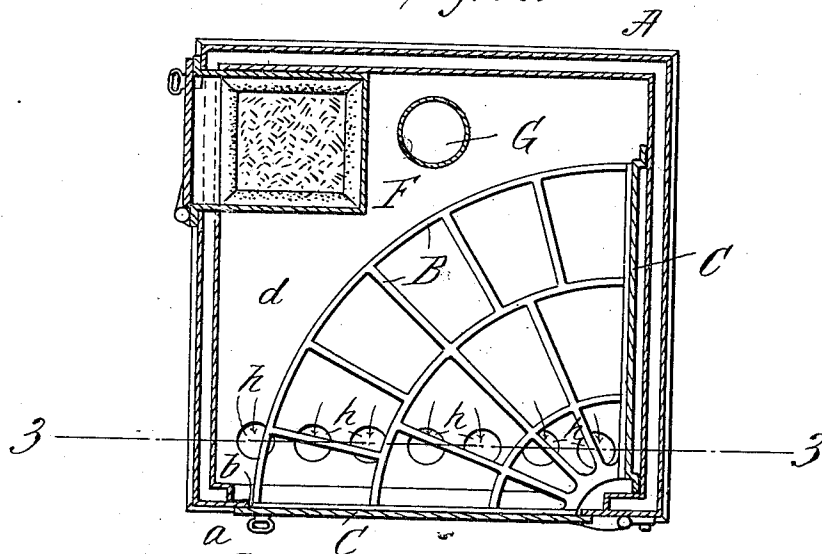
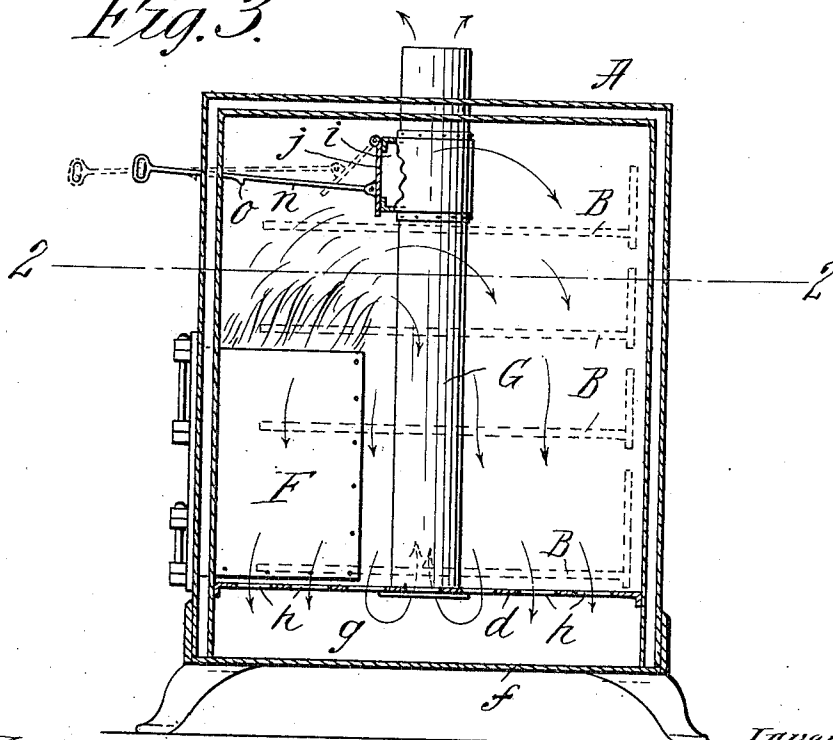


Fig. 3.



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UNITED STATES PATENT OFFICE.

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OVEN FOR BAKING SAND CORES.

No. 839,581.

Specification of Letters Patent.

Patented Dec. 25, 1906.

Application filed July 2, 1906. Serial No. 324,358.

To all whom it may concern:

Be it known that I, GUSTAV HARMAN, a citizen of the United States of America, and a resident of Holyoke, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Ovens for Baking Sand Cores, of which the following is a full, clear, and exact description.

This invention relates to improvements in an oven for baking sand cores employed in foundries, which oven, of a somewhat well-known description, is particularly characterized by the provision of a plurality of openings in its front wall, a plurality of apertured or open-work sand-core-supporting shelves hinged on the furnace and to swing into and out from the oven-chamber, such shelves being sector-shaped and provided at their angularly-arranged edges with doors either of which may close one of the openings into the oven whether the shelf is positioned within the oven-chamber while the cores are being baked or swung outwardly from the oven-chamber to permit the baked cores to be removed or new cores to be placed thereon, and the oven-chamber, moreover, has the furnace therein so arranged that the products of combustion thereof may circulate within the oven among the sand cores and through the apertures of the shelves and passed away through a discharge-flue.

As core-ovens have heretofore been proposed or constructed the furnace has been located in one corner of the oven-chamber and the products of combustion have been carried away from the oven-chamber through a flue having a portion diagonally arranged in the bottom of the oven open at an end as far distant as possible from the furnace and continued in a vertical pipe leading upwardly through and above the furnace-chamber. In such core-oven the heat and products of combustion in passing upwardly from the furnace and around downwardly to the diagonally opposite open end of the flue for exit have not acquired the full measure of circulation or dissemination important or desirable for the most uniform and effective baking of the cores; and one object of my invention is to provide constructions and arrangements in the core-oven whereby the baking heat is uniformly and evenly distributed for the manifest advantageous effect.

Inasmuch as at the time of first starting the fire in the furnace, which is within and open

to the oven-chamber, using coal or fuel of ordinary character, there is until the fire is well under way considerable smoke necessarily in the oven, another object of this invention is to provide means whereby the smoke from the furnace will be caused to pass directly upwardly to and to be conveyed away by the flue or smoke-pipe without circulation about or among the cores supported on the shelves in the oven, together with provisions whereby the products of combustion when more or less nearly smokeless will be made to circulate throughout the oven most effectively about and among the baking cores.

To these ends the invention consists in an oven for baking sand cores comprising therein constructions, arrangements, and provisions all substantially as hereinafter fully described in connection with the accompanying drawings and set forth in the claims.

In the drawings, Figure 1 is a perspective view of a core-oven of a generally usual type, but including the features of improvement invented and put into use by me, a portion of the side wall of the furnace being indicated as broken away for clearer illustration. Fig. 2 is a horizontal sectional view, and Fig. 3 is a vertical sectional view, of the core-oven. The line 2 2 on Fig. 3 indicates the plane of section of Fig. 2, while the line 3 3 on Fig. 2 indicates the plane of section of Fig. 3.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the chambered casing of the oven, of which *a* is usually regarded as the front.

The front wall has a plurality of openings *b* arranged one above another, and a plurality of sector-shaped open-work or apertured shelves B B are hinged or pivotally mounted to swing into and out from said openings, such shelves having doors C C at their angularly-arranged edges for closing the openings *b*, whether the shelves are inwardly or outwardly swung, and all as heretofore common and well known.

The side and top walls of the oven may be single or double, my preference being to construct such walls double with an entirely inclosed and tight air-space, as shown.

It will now be particularly noted that I construct the bottom portion of the oven with a main wall or bottom proper, *d*, and with a secondary bottom *f* therebelow, creating an inclosed supplemental chamber *g* of

substantially the whole plan area of the furnace between the main and secondary bottoms.

A plurality of separated openings *h h* are formed through the bottom proper near the front of the oven, which constitutes a series of distributing-flues, which lead from the main oven-chamber into the forward portion of the subchamber *g*.

F represents the furnace, the same having its location at the bottom and in one corner of the oven-chamber, and the same is upwardly open, so that the products of combustion and heat therefrom may pass upwardly to circulate within and around the oven.

The furnace and the arrangement thereof are substantially as heretofore commonly employed in core-ovens.

G represents the outlet-flue or smoke-pipe, leading from a rear middle portion of the inclosed chamber *g* under the bottom of the oven proper, the same being disposed and extending vertically within the oven-chamber and through and beyond the top thereof. This vertical flue or smoke-pipe *G* has or may be provided with a draft-regulating damper therein, (not shown,) as is not uncommon in core-ovens. The said vertical flue *G* has, however, through its side, at a portion thereof which is within the upper part of the oven-chamber, a smoke-opening *i*, and a hinged cover *j* is provided for opening and closing said smoke-opening.

The oven side wall opposite said smoke-opening and the cover therefor is provided with a slot *m*, and an operating-rod *n*, which is pivoted to the hinged cover, extends outwardly through the said slot. Said rod is formed with a shoulder *o*, which is indicated in Fig. 1 and may be engaged with the lower boundary of the slot *n* to maintain the cover *j* in the open position, a simple manipulation of the rod, as apparent, permitting the cover to be closed gravitatively.

Any cores which may be supported on the shelves within the oven to be baked will not in use of the present core-oven be subjected to the smoke from the furnace when the fire thereof is first started or at the times of fuel replenishment, and the more or less nearly smokeless products of combustion when the smoke-hole cover is closed will be distributed with a satisfactory uniformity throughout all of the oven-chamber and among all of the apertured core-supporting shelves therein, as assured by the regularly-spaced series of holes *h h*, leading through the oven-bottom proper, *d*, from the oven-chamber to the subchamber, there being no concentration or convergence of the products of combustion except at the rear middle portion of the subchamber after the cores have been effectively and uniformly subjected to the baking heat.

I claim—

1. In an oven for baking sand cores, an oven-chamber having a plurality of openings in its front, having a bottom proper extending throughout the entire cross-sectional area of the chamber and a secondary bottom therebelow, and having an inclosed supplemental chamber between such main and secondary bottoms, and the bottom proper having a plurality of separated openings leading therethrough from the oven-chamber to said supplemental chamber, a plurality of sector-shaped, open-work or apertured, shelves pivotally mounted to swing into and out from said openings, having doors at their angularly-arranged edges for closing said openings, both when the shelves are within, and when withdrawn from the oven, a furnace located wholly within and open to the oven-chamber, and a pipe or flue leading upwardly from the said supplemental chamber under the main bottom of the oven.

2. In an oven for baking sand cores, an oven-chamber having a plurality of openings in its front, having a bottom proper extending throughout the entire cross-sectional area of the chamber and a secondary bottom therebelow, and having an inclosed supplemental chamber between such main and secondary bottoms, and the bottom proper having near the front thereof a plurality of regularly-spaced openings leading therethrough from the oven-chamber to said supplemental chamber, a plurality of sectoral open-work or apertured shelves pivotally mounted to swing into and out from said openings, having doors at their angularly-arranged edges for closing said openings both when the shelves are within and when withdrawn from the oven, a furnace located wholly within a lower rear corner portion of the oven-chamber, and a pipe or flue leading upwardly from the supplemental chamber under the oven-bottom through and above the main oven-chamber.

3. In an oven for baking sand cores, an oven-chamber having a plurality of openings in its front, having a bottom proper extending throughout the entire cross-sectional area of the chamber and a secondary bottom therebelow, and having an inclosed supplemental chamber between such main and secondary bottoms, and the bottom proper having, near the front thereof, a plurality of separated openings leading therethrough from the oven-chamber to said supplemental chamber, a plurality of sector-shaped open-work or apertured shelves pivotally mounted to swing into and out from said openings, having doors at their angularly-arranged edges, a furnace located wholly within a lower rear portion of the oven, a pipe or flue leading upwardly from a rear portion of the supplemental chamber under the oven-bottom proper upwardly through and above the oven-chamber and having in its side, at a

portion within the oven-chamber a smoke-opening, a cover for opening and closing said opening, and means extending to the exterior of the oven for opening and closing said
5 pipe-opening cover.

4. In an oven for baking sand cores, an oven-chamber having a plurality of openings in its front, having a bottom proper extending throughout the entire cross-sectional area of
10 the chamber and a secondary bottom therebelow, and having an inclosed supplemental chamber between such main and secondary bottoms, and the bottom proper having, near the front thereof, a plurality of separated
15 openings leading therethrough from the oven-chamber to said supplemental chamber, a plurality of sector-shaped open-work or apertured shelves pivotally mounted to swing into and out from said openings, having doors
20 at their angularly-arranged edges, a fur-

nace located wholly within a lower rear portion of the oven, a pipe or flue leading upwardly from a rear portion of the supplemental chamber under the oven-bottom proper upwardly through and above the oven-
25 chamber and having in its side, at a portion within the oven-chamber a smoke-opening, a hinged cover for opening and closing said opening, the oven side wall, opposite said opening, being constructed with a slot, and a
30 rod pivoted to the said hinged cover, extending outwardly through said slot and having a shoulder for engaging the boundary of said slot.

Signed by me at Springfield, Massachusetts, 35
in presence of two subscribing witnesses.

GUSTAV HARMAN.

Witnesses:

WM. S. BELLOWS,
LAMBERT DERICKS.