

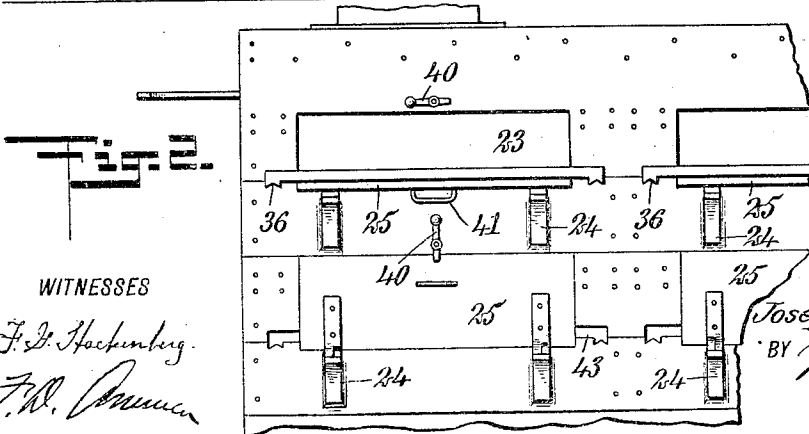
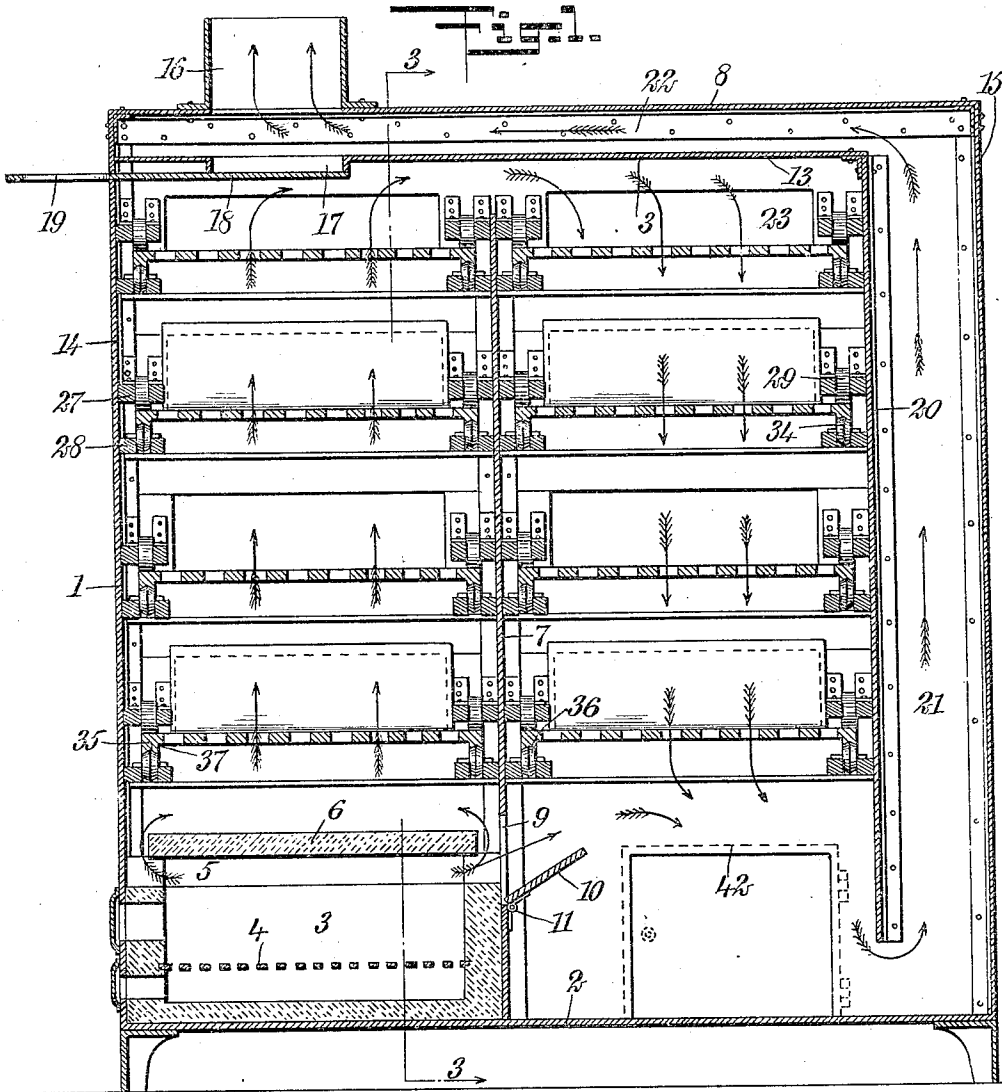
J. J. JOHNSON.
CORE OVEN.

APPLICATION FILED FEB. 26, 1909.

935,990.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 1.



WITNESSES

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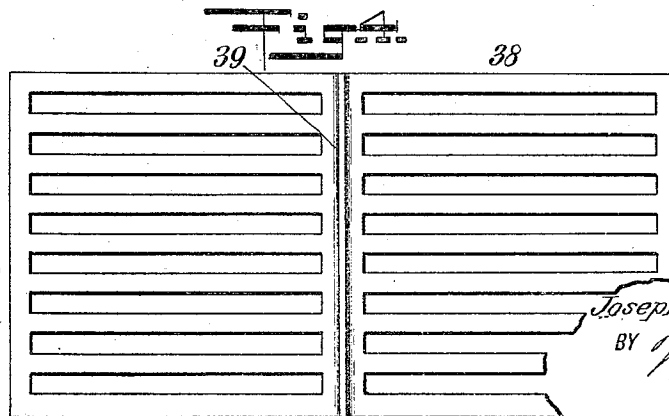
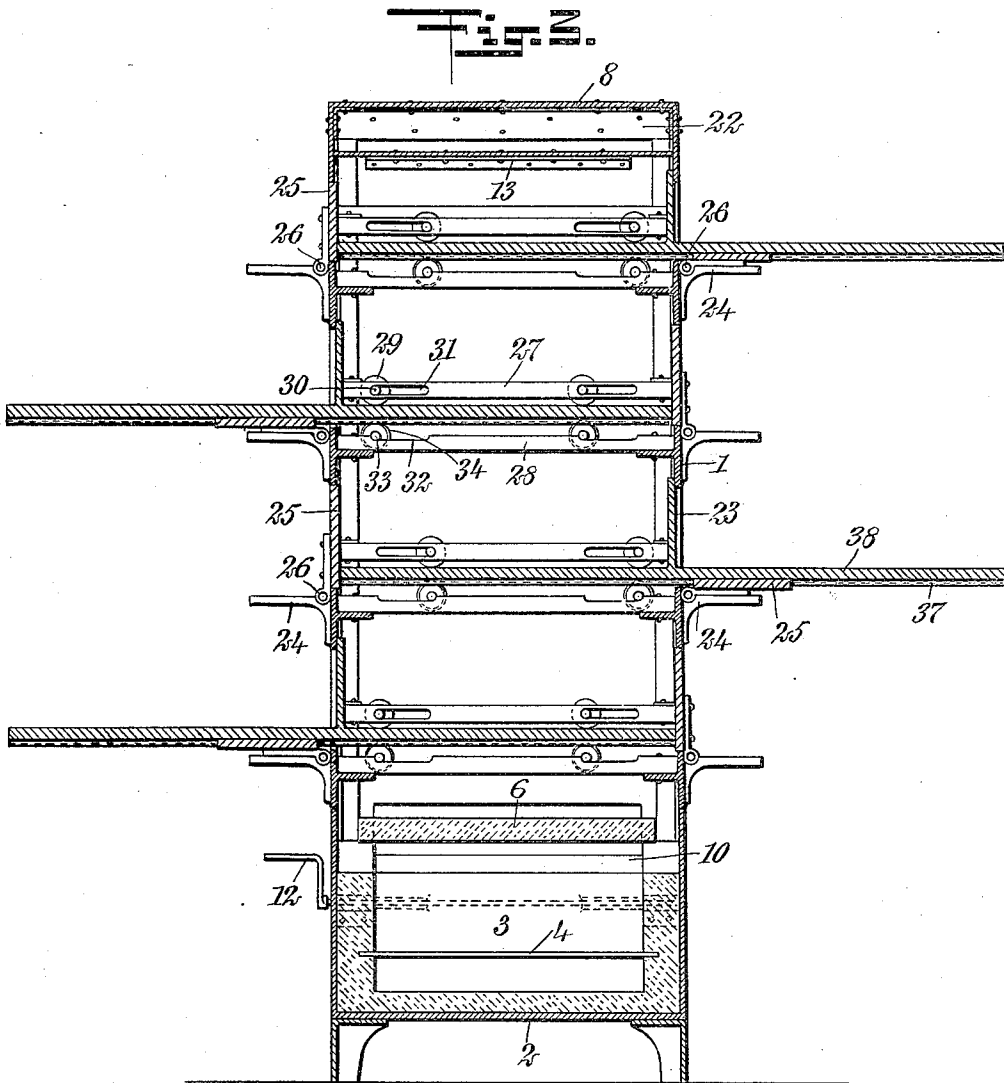
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2 SHEETS—SHEET 2.



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CORE-OVEN.

935,990.

Specification of Letters Patent.

Patented Oct. 5, 1909.

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To all whom it may concern:

Be it known that I, JOSEPH J. JOHNSON, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Core-Oven, of which the following is a full, clear, and exact description.

This invention relates to ovens, and particularly to core ovens which are used for drying or baking cores used in molding.

The object of the invention is to produce an oven of this class which will be simple in construction, the temperature of which can be nicely regulated, and which will have a construction which will enable the oven to be kept constantly filled.

More specifically the invention contemplates the use of a plurality of shelves which extend across the interior of the oven so as to support cores which are drying, and these shelves project at the sides of the oven so as to receive green cores which are to be dried or baked. When the cores on the interior are completely dried or baked, the shelves are advanced so that the green cores pass into the interior of the oven, while the baked cores pass out of the oven at the other side. In this way cores can be quickly removed without the loss of a substantial amount of heat, and the output of an oven of certain capacity is greatly increased.

A further object of the invention is to construct the oven in such a way as to control the circulation of the gases of combustion, and to provide a more direct outlet for the gases, which is to be used to give an increased draft when the fire is being started. The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical longitudinal section through an oven constructed according to my invention; Fig. 2 is a side elevation of a portion of the interior of the oven, and further illustrating its construction; Fig. 3 is a vertical cross section through the oven taken substantially on the line 3—3 of Fig. 1; and Fig. 4 is a plan showing one of the shelves, one corner being broken away.

Referring more particularly to the parts,

1 represents the body or case of the oven, which is of box form and constructed of iron. This body is elongated so that it is rectangular in plan, and in one end on the bottom 2 of the oven, there is provided a fire pot 3 having a grate 4 upon which a fire may be built. This fire pot is built of fire brick, or similar material, and is provided with corner posts 5 which support a cover 6. The gases of combustion escape from the fire pot between the posts and around the edges of the cover 6, as will be readily understood. Near the middle point of the body it is provided with a transverse main baffle or baffle wall 7. This wall extends from the bottom 2 to a point near the cover 8 of the body. Near the upper edge of the fire pot, the baffle 7 is provided with a draft opening 9 which is closed by a damper door 10 attached by a hinge connection 11, and operated by means of a crank 12 on the exterior of the body, as indicated in Fig. 3. The cover 8 is an outer cover, and beneath this cover 8 there is an inner or under cover 13 which consists of a horizontal plate extending completely across the interior of the body, and extending from the end wall 14 adjacent to the fire pot toward the end wall 15 remote from the fire pot. The cover 8 is provided with an opening near the wall 14, at which a stack 16 is attached. Under this stack 16 an opening 17 is formed in the inner cover 13, and this opening 17 is adapted to be closed or partially closed by a sliding damper 18, the handle 19 of which projects out through the end wall 14 of the body. The inner cover 13 does not reach to the end wall 15, and at its extremity it is connected to a downwardly extending end baffle or baffle wall 20 which lies near the wall 15. The wall 20 extends to a point near the bottom 2. In this way a vertical duct 21 is formed for the gases of combustion near the end wall 15 remote from the fire pot, and the upper extremity of this duct 21 communicates with a duct 22 which is formed between the inner cover 13 and the outer cover 8. This duct leads the gases to the stack or stove pipe 16. The sides of the oven are provided with a plurality of rectangular openings 23, and these openings are preferably arranged in pairs so that there are two openings on each side at the same level. In the illustration I have shown four of these pairs of openings on each side. Near the lower edges of these openings, angle brackets 24 are at-

5 attached, the bodies of which project horizon-
 tally from the sides, as indicated in Fig. 3.
 Adjacent to these angle brackets, doors 25
 are provided which are attached by hinge
 10 connections 26. On the adjacent faces of
 the baffle walls, and on the inner face of the
 end wall 14, guide cleats 27 and 28 are pro-
 vided. These guide cleats are arranged in
 pairs. The guide cleats 27 are provided
 15 with anti-friction rollers 29, having gudgeons
 30 which run in longitudinal grooves 31
 formed in the cleats, as shown. The cleats
 28 are provided with depressed faces or
 recesses 32 which receive gudgeons 33 of
 20 similar anti-friction rollers 34. These anti-
 friction rollers 34 have V-shaped faces 35
 which receive the V-shaped grooves 36
 which are formed in edge rails 37 formed on
 shelves 38. These shelves are adapted to
 25 receive the cores, and they are formed of
 gratings, as indicated in Fig. 4. Each shelf
 is of rectangular form and of a length sub-
 stantially twice the width of the oven. Each
 shelf is provided with a vertically extend-
 30 ing web 39 which has substantially the same
 dimensions as the openings 23 in the sides
 of the oven. The side edges of the shelves
 are received between the rollers 29 and 34,
 as indicated in Fig. 1, the shelves being in-
 35 serted at the doors 25. The shelves nor-
 mally have an alternate arrangement, as in-
 dicated in Fig. 3, so that adjacent shelves
 project at opposite sides of the oven. On
 the side where the shelf projects from the
 40 oven, the door 25 is let down so that it rests
 upon adjacent angle brackets 24. At this
 time the vertical web 39 of the bracket is
 disposed at the opening 23 in the wall which
 is produced by opening the door, so that the
 shelf itself forms a closure at this point.

In operating the oven, the molders stand
 on opposite sides and operate the shelves.
 When the cores on a certain shelf have been
 baked, the shelf is slid longitudinally on
 45 the rollers so that the part of the shelf
 which has been within the oven projects
 from the oven, and the part which has been
 projecting from the oven moves into the in-
 terior of the oven. In this way the baked
 50 cores are carried out of the oven into reach
 of the attendant, who removes the baked
 cores and places green cores on the project-
 ing part of the shelf. On the side of the
 oven opposite to the projecting shelf, the
 55 doors 25 are held closed by suitable catches
 40. The outer sides of the doors are pro-
 vided with suitable handles 41 for raising
 and lowering them. With this arrangement
 it should be understood that the webs of the
 60 shelves effectually close the opening when
 the door is let down for a shelf to project.
 The movement of removing the baked cores
 also advances the unbaked cores into the
 oven, so that there is no opportunity for a
 65 substantial loss of heat from the oven in

this operation. Indeed, it should appear
 that the oven is in continuous operation up
 to its full capacity at every moment.

Referring to Fig. 1, the normal course of
 the gases of combustion is indicated by the 70
 arrows. These gases pass up through the
 slots in the shelves, the principal portion
 of the gases passing up directly over the fire
 pot so as to pass over the upper edge of the
 main baffle 7, descending on the right side 75
 of this baffle so as to pass under the lower
 edge of the baffle 20. The gases then pass
 up through the duct 21, through the duct
 22, and to the stack 16.

The compartment which is formed in the 80
 body by the baffle 7, directly over the fire pot
 may be considered as the first compartment
 where the heat will tend to be greatest,
 while the compartment at the right of the
 baffle 7 may be considered as the second com- 85
 partment. If the temperature in the second
 compartment should tend to be low, it may
 be raised by opening or partially opening
 the damper door 10 so that some of the gases
 of combustion will pass into it directly from 90
 the fire pot. It should be understood that
 the damper 18 is normally closed. In start-
 ing up the fire in order to give a more direct
 route for the gases of combustion, and to
 obviate the necessity of the circuitous path 95
 described through the oven, the damper 18
 should be opened and the damper 10 closed;
 the gases will then pass from the fire pot 3
 directly vertically through the opening 17
 to the stack 16. 100

The lower portion of the second compart- 100
 ment on the bottom 2, may be utilized to
 bake cores which require a longer time than
 usual, and access may be had to this com-
 partment through a side door 42, as shown 105
 in Fig. 1. In order to give increased width
 to the shelves, their edges extend beyond the
 edges of the openings 23, as indicated in
 Fig. 2, so that when the shelves are with-
 110 drawn into the interior, short slots 43 are
 formed in the sides near the closed doors
 25, but these slots, it will be observed, are
 substantially closed by the ends of the shelves
 which lie adjacent to them, as will appear
 from an inspection of Fig. 3. 115

Having thus described my invention, I
 claim as new and desire to secure by Letters
 Patent,—

1. In an oven of the class described, in
 combination, a body having oppositely dis- 120
 posed openings on the sides thereof, shelves
 mounted to slide in said body having webs
 on the interior of said body adapted to close
 said openings, brackets attached to said body
 on the outer side thereof adjacent the lower 125
 edges of said openings, and swinging doors
 normally closing said openings and adapted
 to swing down to a horizontal position rest-
 ing on said brackets, said doors being adapt-
 ed in their horizontal position to support the 130

projecting parts of said shelves, said shelves being of substantially twice the width of said body.

2. In a core drying oven of the class described, in combination, a body having a fire pot therein, a main baffle wall mounted in said body and dividing the interior thereof into compartments, said baffle wall having an opening therethrough through which gases of combustion may pass directly over said fire pot through the compartment remote therefrom, and a plurality of shelves mounted in said body and adapted to receive the cores.

3. In an oven of the class described, in combination, a body having a fire pot therein, a substantially vertical baffle wall adjacent to said fire pot and dividing the interior of said body into a first compartment over said fire pot and a second compartment beyond said fire pot, said baffle affording means for normally guiding the gases of combustion from the fire pot, through said first compartment and then through said second compartment, said baffle wall having an opening therethrough adjacent to said fire pot which may admit gases of combustion directly from said fire pot through said second compartment, and a damper for regulating the flow of gases through said opening.

4. In an oven of the class described, in combination, an elongated body of substantially rectangular form, a fire pot mounted in said body near one end thereof, a vertically extending main baffle adjacent to said fire pot and dividing said body into a first compartment over said fire pot and a second compartment beyond said fire pot, a second baffle extending downwardly from the upper

portion of said body, said baffle being arranged so that the gases of combustion pass over the edge of said first baffle and under the edge of said second baffle, and a plurality of shelves secured in said body and adapted to receive cores.

5. An oven of the class described, having an elongated substantially rectangular body, a fire pot mounted in said body at one end thereof, a main baffle extending upwardly adjacent to said fire pot and dividing the interior of said body into a first compartment over said fire pot and a second compartment beyond said fire pot, said main baffle being arranged so that the gases of combustion passing up through said first compartment will pass over the upper edge thereof and downwardly through said second compartment, and a second baffle extending downwardly from the upper portion of said body to a point near the bottom thereof and adapted to have the gases pass under the lower edge thereof, said second baffle forming a duct with an end wall of said body remote from said fire pot to conduct the gases upwardly, said body having a second duct formed near the cover thereof communicating with said first duct and having an exit opening communicating with said second duct.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH J. JOHNSON.

Witnesses:

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EVERARD B. MARSHALL.