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BAKE OVEN.

APPLICATION FILED MAY 15, 1902.

NO MODEL.

Fig. 1.

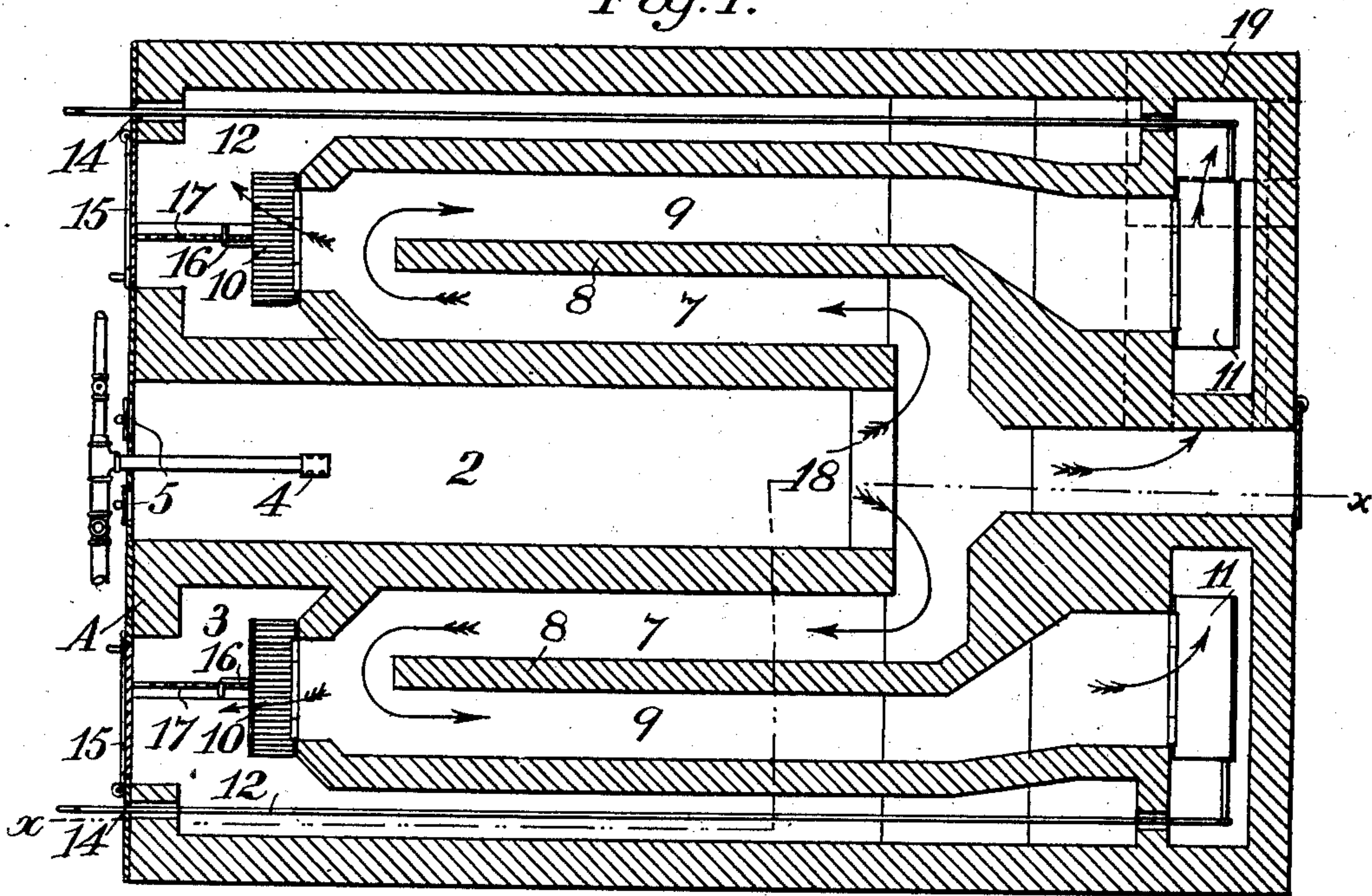
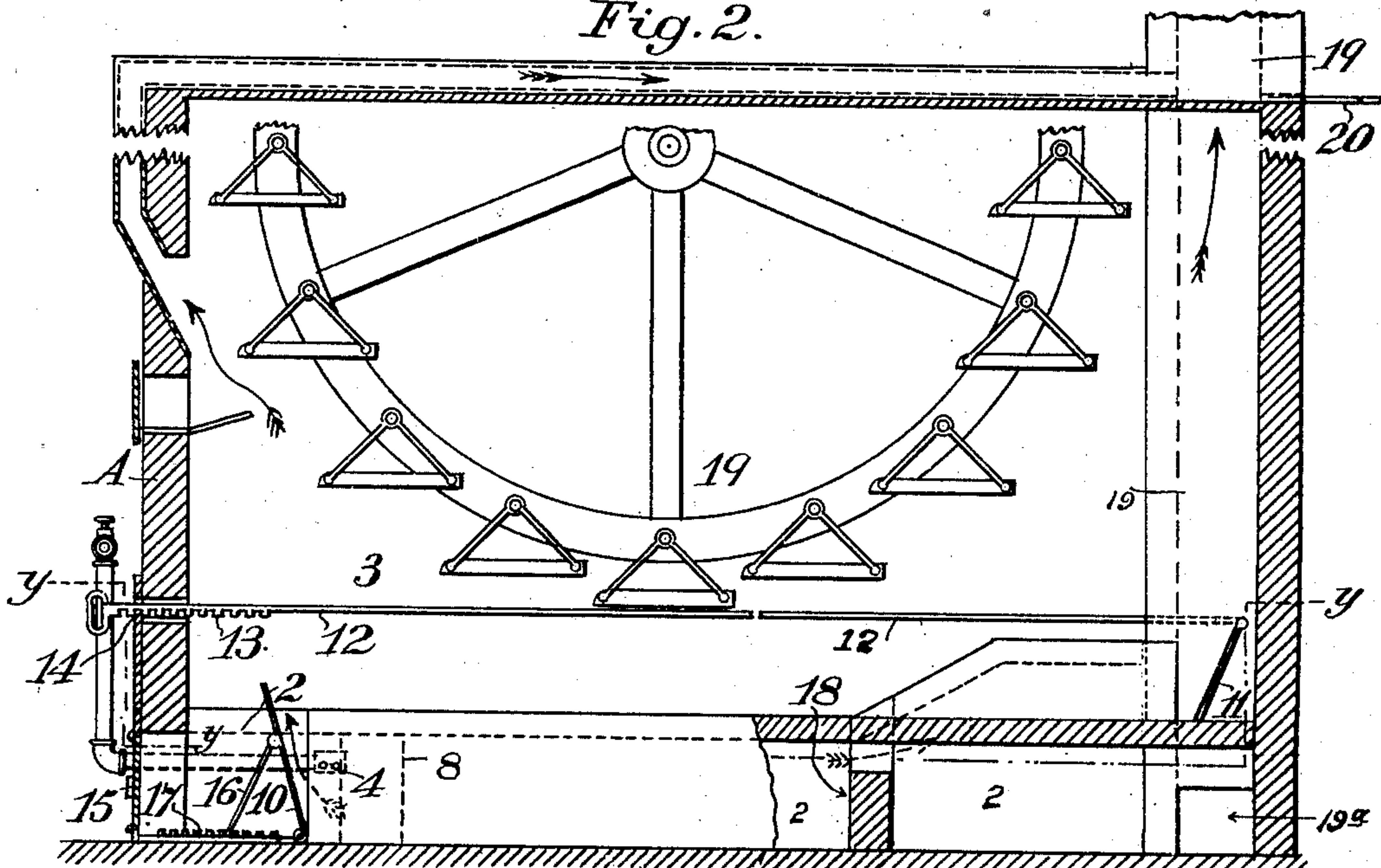


Fig. 2.



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BAKE-OVEN.

SPECIFICATION forming part of Letters Patent No. 719,651, dated February 3, 1903.

Application filed May 15, 1902. Serial No. 107,401. (No model.)

To all whom it may concern:

Be it known that we, CHARLES P. DOWD and JOHN H. COLEMAN, citizens of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Bake-Ovens; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to improvements in bakers' ovens of the type commonly known as "cracker-ovens," in which the heated products of combustion are discharged directly into the oven-chamber and in which chamber is a revoluble reel or wheel with pendent trays carrying the articles to be baked.

The object of our invention is to adapt these ovens to the use of oil fuel and to secure better means of heat distribution and control than has heretofore been possible.

It has been customary to build these ovens, which may be from fifteen to twenty feet in diameter, with two or more fire-boxes, using coke or hard coal as a fuel. The difficulty has been to distribute the heat to best advantage in the oven-chamber. With a coke or coal fire oftentimes but a small proportion of the heat given off by one of the grates will be utilized in baking. We have found that by a certain arrangement of flues and dampers and by using crude oil as fuel we can at all times regulate the fuel feed to the amount of heat necessary in the oven-chamber and can distribute the heat therein according to the nature of the articles to be baked.

The invention consists of the parts and the constructions and combinations of parts which we will hereinafter describe and claim.

Figure 1 is a horizontal section on the line *yy*, Fig. 2. Fig. 2 is a longitudinal section on the line *xx*, Fig. 1.

A represents an oven of any suitable size, shape, or material.

2 is a longitudinal fire-box extending centrally through the bottom of the oven-chamber 3.

Any suitable hydrocarbon-burner 4 is disposed in the front of the fire-box, and suitable draft-regulators 5 may be provided in the front to admit air to effect perfect combustion.

The combustion-chamber 2 extends approxi-

mately two-thirds of the length of the chamber 3 and opens at the back into the lateral flues 7, disposed one on either side of the wall of the fire-box, which flues extend nearly to the front of the oven-chamber, in which latter they are adapted to discharge. Parallel with the flues 7 and separated therefrom by the partition-walls 8 are the return-flues 9, which have their front ends opening into the oven-chamber coincidently with the flues 7 and their rear ends slightly inclined upwardly and opening into the said chamber. Dampers 10 are adapted to close up the front ends of the flues 7 and 9 when it is desired to divert all the heat to the back of the oven, whereupon the rear dampers 11 will be opened. Each of the latter is operated by means of the rod 12, extending through the oven-chamber and the front wall of the oven and having notches 13 engaging a plate 14, whereby the damper-opening may be varied as desired. The dampers 10 may be similarly operated from the outside, or where furnaces already exist with doors, as 15, the latter may be opened to allow the operator to reach the rod 16, pivoted to each damper, and set it in one or the other of the notches 17 in a plate secured in the bottom of the oven-chamber.

The flues 7 and 9 extend to within a short distance of the walls of the oven-chamber, as shown, and the dampers 10 and 11 are at the ends of said flues, for the reason that with an oil-burner where there is an intense draft continually in the combustion-chamber the heat may be deflected against the walls of the oven-chamber to distribute it equally in the latter. When the heat-blast issuing from either of these dampers strikes the walls of the chamber, it is deflected equally upon all sides and circulates through the chamber and finally issues from the front of the oven-chamber just above the openings where the goods are inserted and removed.

In the rear of the fire-box there may be disposed a baffle-wall or pigeonhole structure 18 to assist in the retardation of the fuel products to effect complete combustion before entering the flues and the oven-chamber.

Issuing from either of the openings controlled by the dampers 10 and 11, the heat passes upwardly into the oven-chamber, in

which the intermittently-revoluble reel or carrier 19 is contained.

20 is a damper to regulate the direct draft from the fire-box to the chimney 19', which, as shown, is situated at one corner of the oven.

Heretofore these ovens have not been suited for baking certain classes of articles owing to the fact that the heat was deliverable only at one end of the oven-chamber and that its distribution could not be as readily controlled as desirable—that is, it has been customary to use flue-passages analogous to our lateral flues 7, whereby the heat was deliverable only into the front of the oven, which rendered the oven unsuited for baking "sweet stuffs," which require "browning" on the top. By adding the return-flues 9 and interposing the dampers 10 and 11 at front or back of the oven the heat can be so equally distributed in the oven-chamber and to any part thereof that it is possible to readily adapt the oven to any particular requirement.

The use of oil fuel allows the oven temperature to be raised or lowered almost instantaneously—a matter of the utmost importance.

With our furnace arrangement the use of oil is preferable to coal or coke, as there is an entire absence of soot or unconsumed gases in the oven-chamber.

When the burner is first started, both sets of dampers 10 and 11 are closed and the draft is directly through the flue 18 in the rear wall of the furnace into the chimney 19'. The flue 18 is connected with the chimney by a flue 19^a, which may be built along the bottom of the back end of the oven. As soon as a proper draft is induced the damper 20 in the flue is closed and one or the other of the dampers 10 and 11 opened, whereupon the heat products pass through the flues 7 or 7 and 9 into the oven-chamber, and thence into the passage 21, connecting with the chimney.

The flues 9 are inclined upwardly for a portion of their length, as shown at 22, so that the point of discharge at the rear end of the flues is above the discharge-point of the flues 7, as better draft is induced through the return-flues when the dampers 10 are wholly closed, while it allows the latter to be left partly open and still cause a certain amount of heat to be delivered into the rear of the oven-chamber. This is often advantageous, as it permits both front and rear of the oven to be heated equally.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination in an oven, of a single fire-box disposed centrally in the bottom of the oven-chamber and terminating short of the rear end of said oven; partition-walls extending from the rear of the oven and terminating short of the front end and forming lateral and return flues, the fire-box opening at the rear into the lateral flues and the return-flues opening into the rear of the oven-chamber and having their front ends also opening into the oven-chamber coincidentally with the lateral flues; and dampers controlling the ends of the flues and serving to direct the heat against the walls of the oven-chamber.

2. An oven comprising a single fire-box disposed centrally in the bottom of the oven-chamber and terminating short of the rear end thereof; partition-walls on each side of the fire-box, extending from the rear of the oven parallel with and separated from the walls of the fire-box and terminating short of the front end of the chamber, and forming lateral and return flues, said fire-box opening at the rear into the lateral flues and said return-flues opening into the rear of the oven-chamber and having their front ends also opening into the front of the oven-chamber coincidentally with the lateral flues, and said return-flues having their rear ends in a higher plane than the front ends; and dampers controlling the ends of said flue-openings and directing the heat into either end of the oven-chamber and against the walls thereof.

3. The combination in an oven of a fire-box disposed centrally in the bottom of the oven-chamber and terminating short of the rear of the oven, lateral flues into which the rear end of the fire-box opens, said lateral flues terminating short of the front wall of the oven and adapted to discharge its heat against said front wall to diffuse the heat within the oven-chamber, return-flues having their front ends opening into the oven-chamber coincidentally with said lateral flues, and having their rear ends terminating short of the rear wall of the oven-chamber, said return-flues choked at their rear ends and opening into the oven-chamber to discharge their products against said rear wall to diffuse the heat within the oven-chamber, and dampers controlling the open ends of said flues.

In witness whereof we have hereunto set our hands.

CHARLES P. DOWD.
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Witnesses:

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