March 5, 1929. C. BURTON 1,704,280

OVEN

Filed Oct. 30, 1926 2 Sheets-Sheet 1

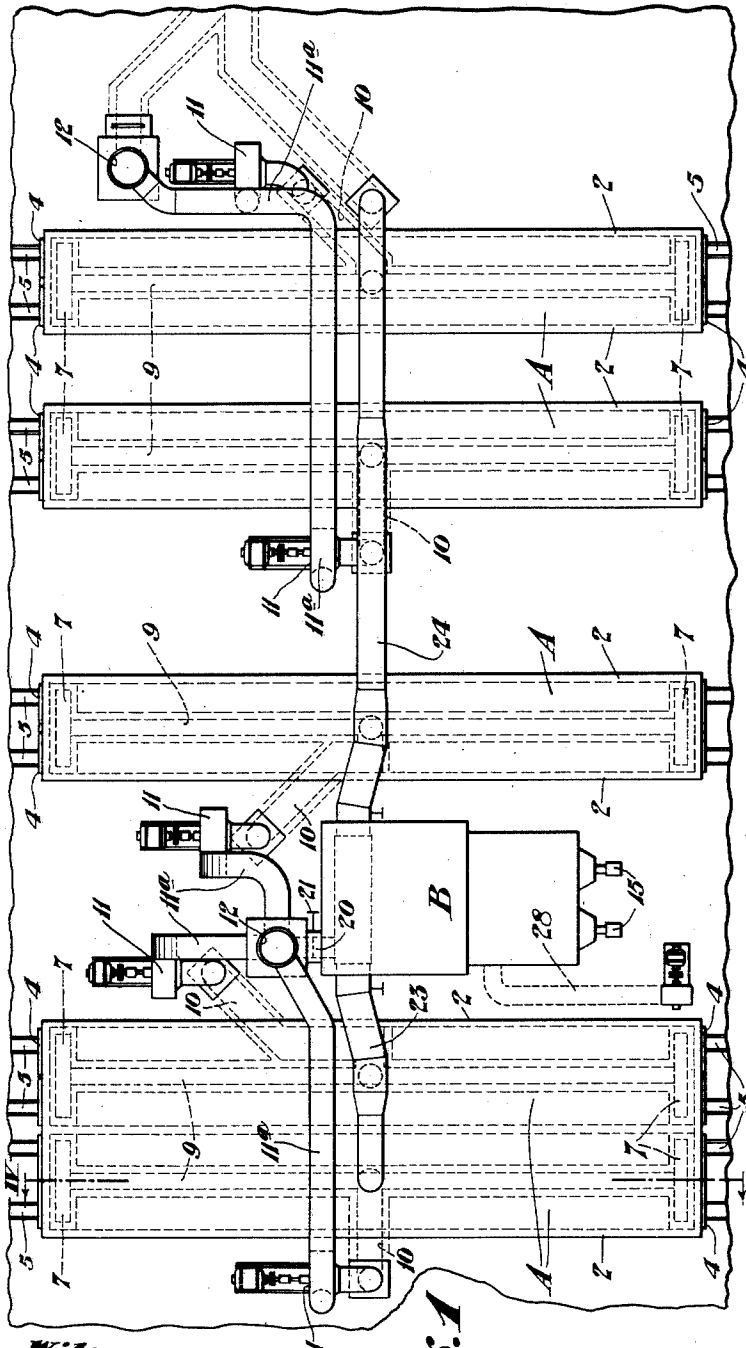


Fig. 1

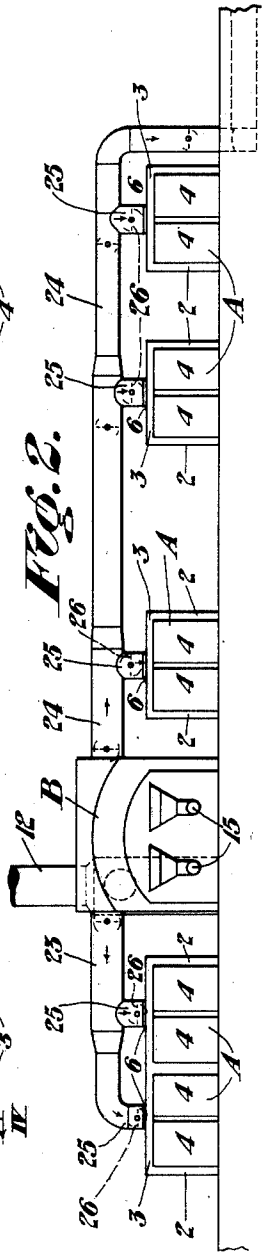


Fig. 2.

Witnesses:
Edwin Trueb

Inventor:
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OVEN

Filed Oct. 30, 1926 2 Sheets-Sheet 2

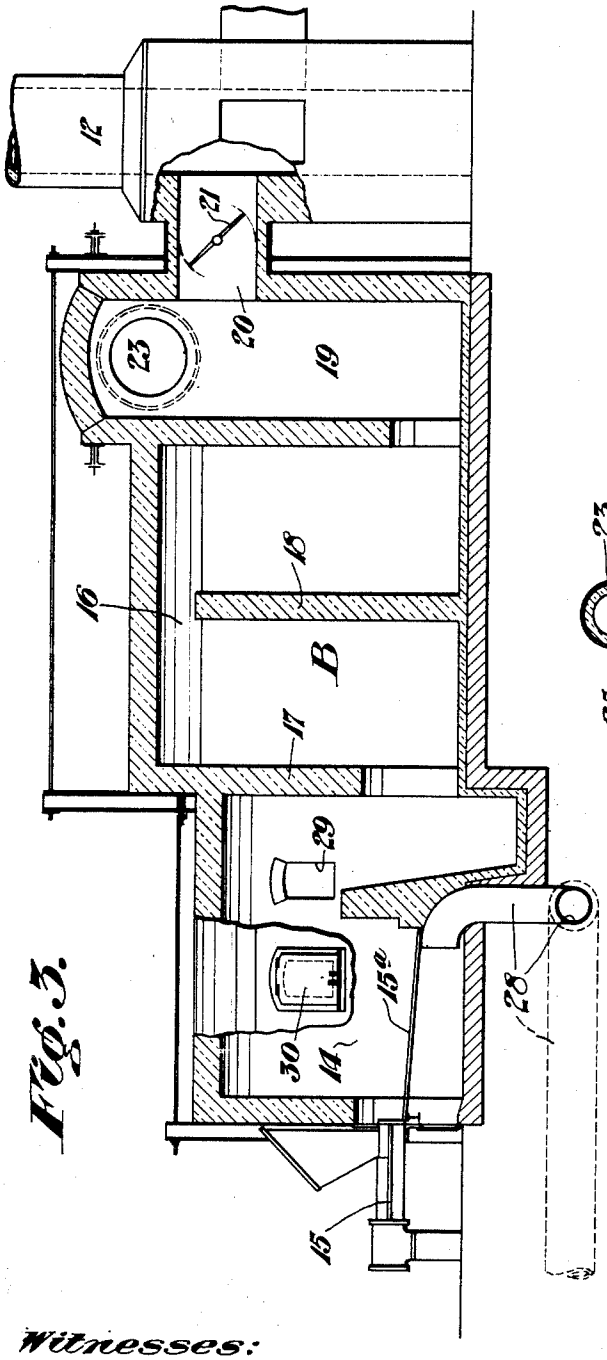


Fig. 5.

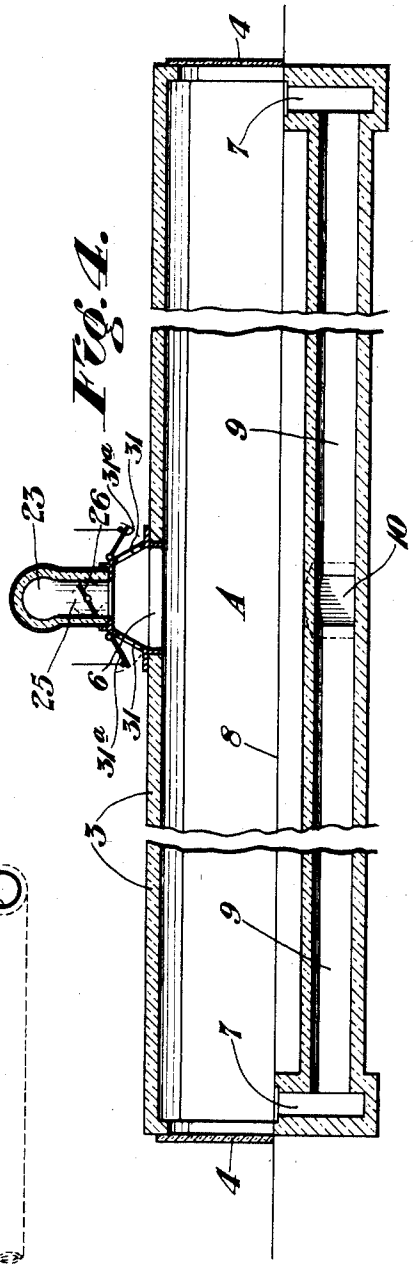


Fig. 4.

Witnesses:
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Patented Mar. 5, 1929. 1,704,280

UNITED STATES PATENT OFFICE.

CARROLL BURTON, OF JOHNSTOWN, PENNSYLVANIA.

OVEN.

Application filed October 30, 1926. Serial No. 145,294.

This invention relates to ovens and while not limited thereto, more particularly relates to core ovens, annealing ovens and similar structures, and has for its object the provision of a novel oven arrangement in combination with a novel form of heat supply.

Heretofore ovens of this class have been generally provided with individual sources of heat which heat was delivered at spaced points along the oven so that hot and cool zones were formed in the ovens and, therefore, some zones were overheated while others were cool. This irregular heating of the ovens caused damage to buggies and cores due to overheating and caused other cores to be underdried.

The present invention provides a central heating furnace for supplying heat to a plurality or battery of ovens and provides means for causing an even distribution of the heat throughout the ovens.

In the drawings:

Figure 1 is a plan of a battery of ovens and central heating furnace constructed and combined in accordance with this invention.

Figure 2 is a front elevation of a battery of ovens.

Figure 3 is a vertical section through the heating furnace.

Figure 4 is a sectional elevation through one of the ovens on the line IV—IV of Figure 1.

Referring more particularly to the drawings, the letter A designates the individual ovens, and the letter B designates the central heating furnace for supplying heat to all the ovens A.

Each of the ovens A is composed of side and top walls 2 and 3, respectively, and hinged doors 4 at each end adapted to close the ends after the ovens are stocked or loaded. Tracks 5 run through the ovens on which buggies loaded with cores or other articles to be heated travel.

The ovens A are provided with an inlet port 6 in their top walls 3 at a point midway between the ends of the furnace through which heated gases and products of combustion from the furnace B are delivered, and discharge ports 7 are provided in the floors 8 at each end of the ovens and communicate with discharge flues 9 extending longitudinally of the ovens beneath the floors 8. The flues 9 are connected at a point intermediate their ends with conduits or flues 10 which are connected to a suction fan 11 so as to create a suction in the ovens and draw the products of combustion and heated gases into the ovens through the ports 6 and through the ovens toward each end thereof and then through the discharge ports 7 and flues 9 and 10 to the fans 11.

The fans 11 have their discharge ports connected by flues or conduits 11ª to a stack 12.

In the present arrangement, which is a practical embodiment of my invention and adapted to existing ovens and stacks of a foundry, I have shown two stacks 12, one of which serves three ovens and the other of which serves two ovens. It will be understood, however, that a separate stack may be provided for each oven or, if desired, a single stack may be provided having capacity for all the ovens.

The heating furnace B may be of any desired design or construction. However, in the present embodiment of my invention, I have shown a more or less standard construction of furnace having a fire chamber 14 to which coal or other fuel is supplied onto grates 15ª by stokers 15. A combustion chamber 16 is provided in the rear of the fire chamber 15 and separated therefrom by a fire wall 17. The combustion chamber is provided with a baffle wall 18 to delay the passage of the products of combustion through the chamber until combustion is complete. A flue chamber 19 is located to the rear of the combustion chamber 16 and is in communication with the chamber 16. A flue 20 connects the chamber 19 directly with one of the stacks 12, so that the products of combustion may pass directly from the chamber 19 of the furnace B to the stack. A damper 21 is mounted in the flue 20 so as to cut off or regulate the flow of the products of combustion through said flue.

Other flues 23 and 24 extend from the opposite sides of the chamber 19 and in opposite directions over the ovens A. That is, the flue 23 extends over the ovens on one side of the furnace B, while the flue 24 extends over the ovens A on the other side of the furnace B. The flues 23 and 24 are provided with downcomer pipes or conduits 25 connecting with the inlet ports 6 of the ovens over which they pass.

The downcomers 25 are provided with dampers 26, so that individual ovens may be cut out of the system as desired. Air ports 31 having hinged closures 31ª are provided

in the downcomers 25 to permit the inflow of air to dilute or cool down the heated gases or to cool the ovens as desired.

The fans 11 are individually controlled. Therefore, the suction to individual ovens may be individually controlled. However, it will be understood that I do not wish to be limited to the use of separate fans for the different ovens since one or more fans having individual suction conduits leading to the several ovens may be employed if desired.

The air to support combustion is admitted to the furnace B in the usual manner by a blast pipe 28 entering under the stoker grates 15ª. However, due to the quantity of heated air that will be necessary to heat all the ovens A the quantity entering through the pipe 28 may at times be insufficient. Therefore, I have provided ports 29 in the side walls of the furnace B which are normally closed by doors 30 which may be opened to admit a supply of atmospheric air to be heated and drawn through the ovens.

Suitable dampers may be used at various points in the flues, as desired, to secure better control of the ovens.

In operation, the damper 21 in the flue 20 is opened and the fans 11 are all rendered inoperative and the furnace is fired until a hot fire is obtained. During this preliminary firing of the furnace all the products of combustion will pass directly to the stack 12 through the flue 20.

After the fire in the furnace B has become hot, the damper 21 is closed and the fans 11 connected with the ovens it is desired to heat, are placed in operation so as to draw the products of combustion through the centrally arranged inlet ports 6 in the top walls of the ovens and through the ovens toward each end where it is discharged through the ports 7 and flues 9 and 10, fans 11, flues 11ª, to stacks 12.

If the products of combustion are not sufficient to supply the number of ovens in operation, the doors 30 on the furnace B may be opened to admit an excess of air through the ports 29 which will be heated and drawn into the ovens.

In case the heated products of combustion should be too hot for the ovens and raise the temperature thereof beyond that desired, the air inlets 31 in ports 6 at the top of ovens A may be opened to admit atmospheric air to cool down the gases passing to the ovens.

While one specific embodiment of this invention is shown and described, it will be understood that I do not wish to be limited thereto since various modifications may be made without departing from the scope of my invention as defined in the appended claims.

I claim:

1. The combination with an oven, of a source of heat, means for conducting heated gases from said source of heat and discharging them through the top of said oven at a point approximately midway between the ends thereof, a discharge flue communicating with said oven at each end thereof, a stack, and a suction fan connected with said discharge flue and said stack, and adapted to draw the heated gases from the center toward each end of said oven and into said flue and discharge said gases into said stack.

2. An oven having a heat supply conduit communicating with the interior of said oven through and adjacent the center of the top wall thereof, outlet ports in the bottom wall of said oven adjacent each end thereof, a flue below the bottom wall of said oven and extending longitudinally thereof, said flue being connected at its opposite ends to said outlet ports, an exhaust conduit communicating with said flue intermediate the ends thereof, and an exhaust fan connected with said exhaust conduit.

3. The combination with an oven, of a source of heat, means for conducting heated gases from said source of heat and discharging them through the top of said oven at a point approximately midway between the ends thereof, a discharge flue communicating with said oven at each end thereof, and means connected with said discharge flue for drawing the heated gases from the point of entry of said gases simultaneously toward each end of said oven and into said flue.

4. An oven having a heat supply conduit communicating with the interior of said oven through and adjacent the center of the top wall thereof, outlet ports in the bottom wall of said oven adjacent each end thereof, a flue below the bottom wall of said oven and extending longitudinally thereof, said flue being connected at its opposite ends to said outlet ports, an exhaust conduit communicating with said flue intermediate the ends thereof, and means for creating a suction in said exhaust conduit for drawing the heated gases delivered to said oven from said heat supply conduit downwardly and simultaneously toward each end of said oven through said outlet ports.

In testimony whereof, I have hereunto signed my name.

CARROLL BURTON.