(No Model.)

A. E. DETWILER.

GAS OVEN OR KILN.

No. 464,761. Patented Dec. 8, 1891.

Fig. 1.

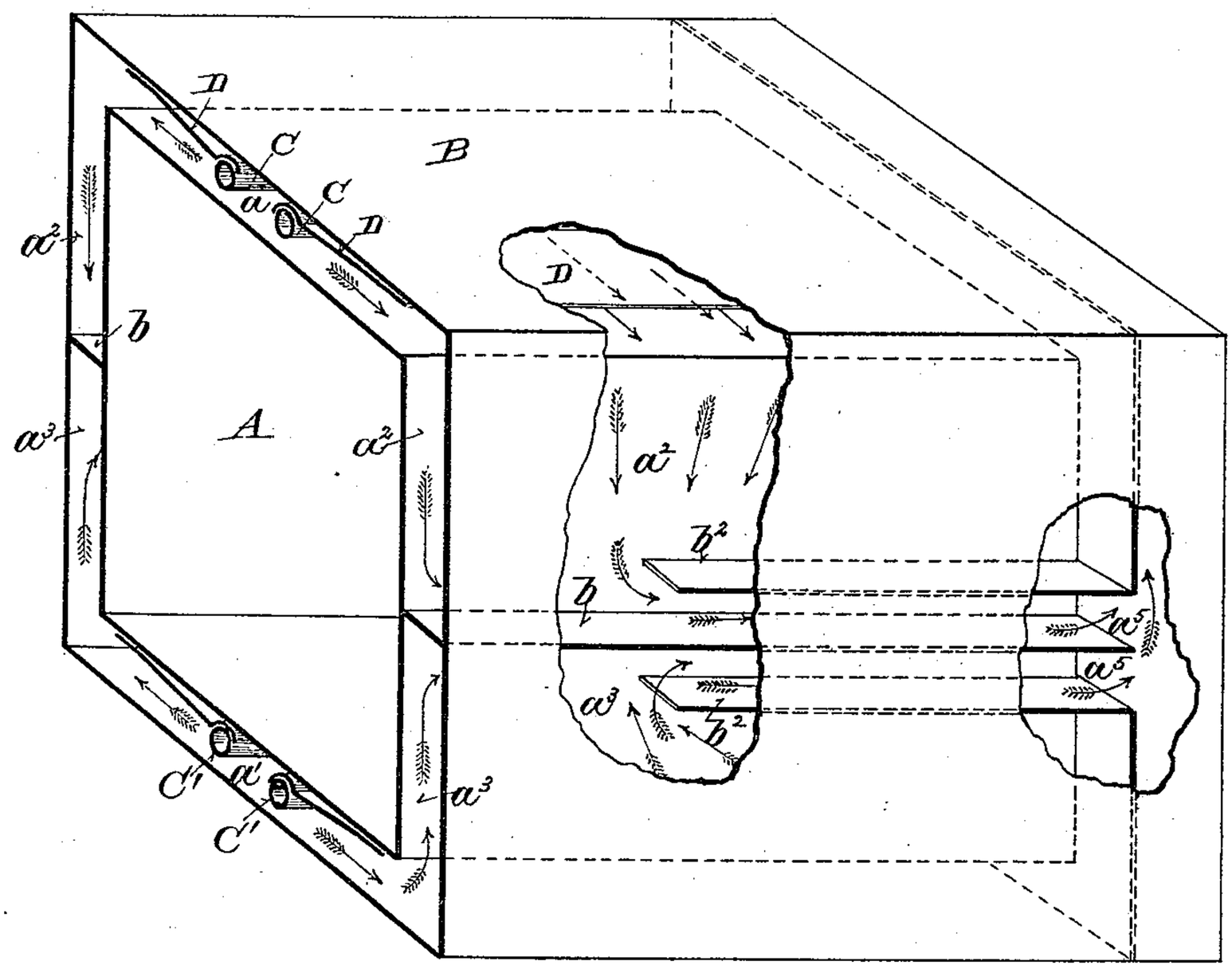
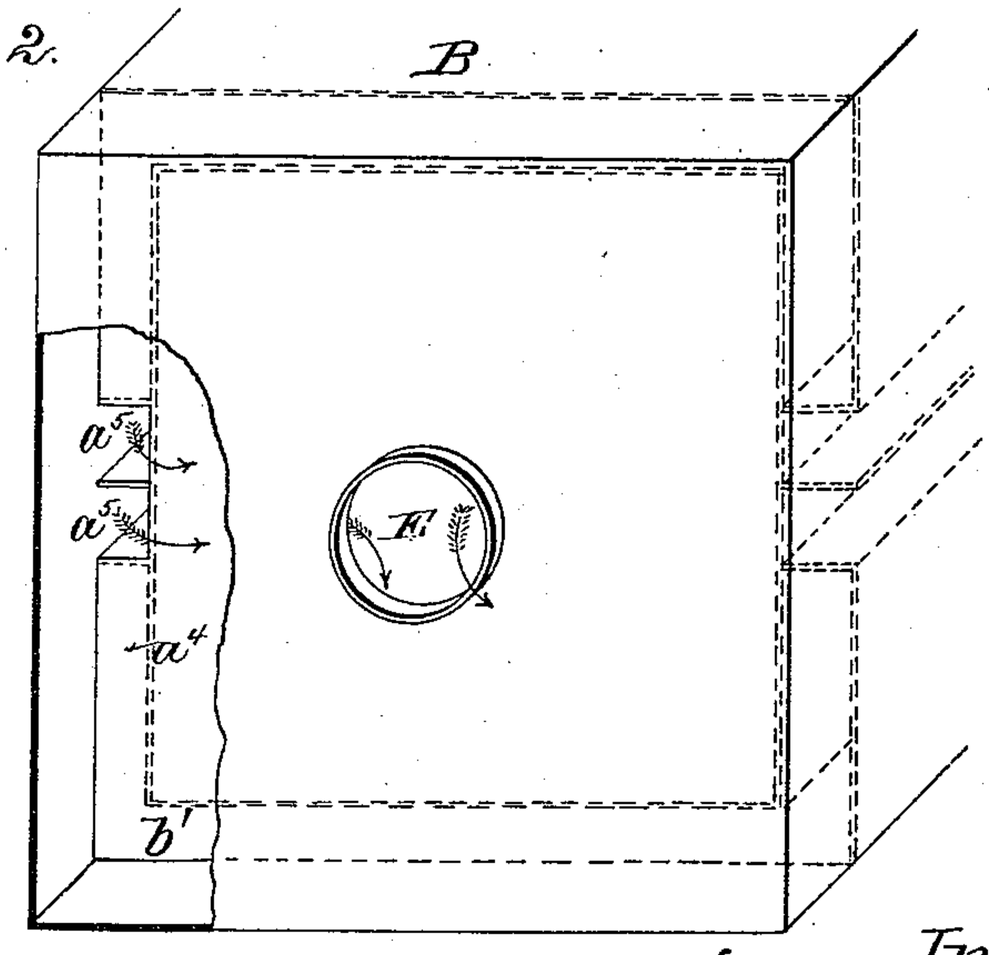


Fig. 2.



Witnesses:
E. E. Lemmon
Chas. L. Goes.

Inventor:
Alfred E. Detwiler
By Wurtler Flonderen Smith & Dittmar
Attorneys.

UNITED STATES PATENT OFFICE.

ALFRED E. DETWILER, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE MILWAUKEE GAS STOVE COMPANY, OF SAME PLACE.

GAS OVEN OR KILN.

SPECIFICATION forming part of Letters Patent No. 464,761, dated December 8, 1891.

Application filed July 27, 1891. Serial No. 400,789. (No model.)

To all whom it may concern:

Be it known that I, ALFRED E. DETWILER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Gas Ovens or Kilns; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main object of my invention is to provide a separately regulated and controlled source of heat for the tops and bottoms of comparatively high ovens or kilns.

It consists, essentially, of one or more top and bottom burners or heaters communicating with flue-spaces above and below the oven, and flue-spaces at the side or sides of the oven communicating with the spaces above and below the same, the flue space or spaces at the side of the oven being separated from each other at an intermediate point and provided with escape openings or connections constructed and arranged to direct and distribute the heated currents from the burners or heaters over the walls of the oven, as desired, and of certain peculiarities of construction and arrangement, hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in both figures.

Figure 1 is a sectional perspective view of a single-compartment oven embodying my improvements, certain parts being broken away to disclose the interior arrangement of flues, &c.; and Fig. 2 is a similar view looking toward the back side of the oven, showing the escape-flue connection.

A represents an interior chamber constituting the oven or muffle of a cooking-range or kiln, constructed in the usual manner of any desired shape and dimensions and of any suitable material, such as cast-iron plates, which may be assembled and joined together in the usual or any suitable manner.

B represents a casing conforming, generally, to the contour of the oven or muffle A and inclosing a flue-space above, below, and at the sides and back thereof. In the horizontal spaces a a' above and below the oven or communicating therewith are provided suitable heaters—such, for instance, as the tubular gas-burners C C'. These burners are located at intermediate points between the sides of the oven and extend horizontally through the spaces a a' from front to rear, being provided with laterally-opening slots or series of perforations adapted to produce a broad flame extending, approximately, the entire length of the oven. Between the burners C C' and the top plate of the flue-space, in which they are placed, are interposed deflecting and spreading plates D D, which rest upon the upper sides of the burners and prevent the flames from curling up over the tops of the burners and causing them to spread out laterally toward the sides of the oven. They also serve to prevent the bottom of the oven from being overheated by the bottom burners and to direct the heat of the overhead burners nearer the top of the oven. The spaces at the sides of the oven are each divided by a horizontal plate or partition b into two flues a^2 and a^3, the first communicating with the horizontal flue-space a above the oven and the second with the corresponding flue-space a' below the oven. The flue-spaces at the top, bottom, and sides of the oven are separated from the chamber or space a^4 at the back of the oven by a vertical partition b', which may be produced by extending the back plate of the oven A to meet the walls of the casing B. The flue-spaces a^2 and a^3 at the sides of the oven communicate with the chamber a^4 at the back of the oven through openings a^5 a^5 just above and below the partition-plates b. To prevent the heat from passing in a direct course from the burners to and through the openings a^5, horizontal deflecting-plates b^2 b^2 are provided above and below the partition-plates b, and extending parallel therewith from the partition a^4 toward the front of the oven and terminating a short distance therefrom, as seen in Fig. 1. By means of these plates the heat from the burners is compelled to pass over the front portions of the sides of the oven before it can escape, and the overheating of the rear por-

tions of the sides is prevented. An escape-opening and flue connection E is provided, preferably, at the center of the back or casing B opening out of the chamber a^4, as seen in Fig. 2.

It is obvious that in the construction of ranges any desired number of compartments may be assembled with the arrangement of flues hereinbefore described to afford the desired capacity, and that for various purposes—such as firing china, cooking, &c.—different forms of burners may be employed.

It will be understood that the top and bottom burners are provided with separate gas-supply connections and regulating-cocks in the manner shown in my application, Serial No. 375,926, filed December 27, 1890.

By the arrangement of flues in connection with top and bottom burners hereinbefore described the temperature of comparatively high ovens or kilns can be readily and accurately regulated and controlled at the top and bottom. In ovens of corresponding height provided with either bottom or top burners, or both, with escape connections either at the top or at the bottom of the oven, the heat from the burners farthest from the escape connection finds its way with difficulty to the more distant portions of the oven, and the operation of the burners and oven is consequently unsatisfactory.

The construction and arrangement of the flues and their connections may be variously modified within the intent of my invention, any arrangement of flues in connection with top and bottom burners whereby the heat of the top burner or burners is conducted downwardly over a portion of the sides of the oven and the heat of the bottom burner or burners is conducted upwardly over a portion of the sides of the oven being within the intended scope of my invention.

I claim—

1. In a gas kiln or oven, the combination, with the oven, of a casing inclosing horizontal spaces above and below the oven, a vertical space at the side of the oven, a partition separating the vertical space at the side of the oven, escape-openings from the said vertical space adjacent to and above and below said partition, and top and bottom burners placed in or communicating with the horizontal spaces above and below the oven, substantially as and for the purposes set forth.

2. In a gas oven or kiln, the combination, with the oven, of a casing inclosing horizontal spaces above and below said oven, vertical spaces at the side and back of the oven, a vertical partition separating the space at the back of the oven from the horizontal and vertical spaces at the top, bottom, and side thereof, a horizontal partition dividing the vertical space at the side of the oven, openings from the vertical space at the side of the oven into the vertical space at the back adjacent to and above and below said horizontal partition, and top and bottom burners communicating with the horizontal spaces above and below the oven, substantially as and for the purposes set forth.

3. In a gas oven or kiln, the combination, with the oven proper, of a casing inclosing spaces above, below, at the sides, and back of the oven, top and bottom burners in the horizontal spaces above and below the oven, and horizontal partitions dividing the vertical spaces at the sides of the oven, said vertical spaces opening adjacent to said partition into the vertical space at the back of the oven, which is otherwise separated from the flue-spaces above, below, and at the sides, substantially as and for the purposes set forth.

4. In a gas oven or kiln, the combination, with the oven proper, of a casing inclosing flue-spaces above, below, and at the sides and back of the oven, horizontal partitions dividing the vertical flue-spaces at the sides of the oven into flues which communicate at the top and bottom with the horizontal spaces above and below the oven and with the vertical space at the back of the oven through openings adjacent to said partitions, deflecting-plates extending from said opening parallel with said partitions toward the front of the oven, and top and bottom burners placed in the horizontal spaces above and below the oven, substantially as and for the purposes set forth.

5. In a gas oven or kiln, the combination, with the oven proper, of a casing inclosing a horizontal space above or below the same, a tubular gas or vapor burner placed horizontally in said space, and a deflecting-plate interposed between said burner and the top of said space and resting on the upper side of said burner, substantially as and for the purposes set forth.

6. In a gas oven or kiln, the combination, with the oven proper, of a casing inclosing flue-spaces above, below, and at the sides of the oven, horizontal partitions dividing the vertical spaces at the sides of the oven, which communicate at the top and bottom with the horizontal spaces above and below the oven and have exit openings or connections adjacent to, above, and below said partitions, tubular burners placed horizontally in the spaces above and below the oven, and deflecting-plates interposed between said burners and the tops of the spaces in which they are placed, said plates resting on the upper sides of the burners, substantially as and for the purposes set forth.

7. In a gas oven or kiln, the combination, with the oven proper, of a casing inclosing flue-spaces above, below, at the sides, and back of the oven, partitions dividing the vertical spaces at the sides of the oven, which communicate at the top and bottom with the horizontal spaces above and below it and open adjacent to said partitions into the vertical space at the back of the oven, top and bottom burners placed in the horizontal spaces

above and below the oven, and an exit opening or connection leading out of the central portion of the vertical space at the back of the oven, substantially as and for the purposes set forth.

8. In a gas oven or kiln, the combination, with the oven or muffle, of spaces inclosed above and below the same and provided with suitable gas or vapor burners, descending and ascending flues at the sides of the oven communicating, respectively, with the upper and lower burner-spaces and having escape openings or connections at intermediate points between the top and bottom of the oven, substantially as and for the purposes set forth.

9. In a gas oven or kiln, the combination, with the oven or muffle, of spaces inclosed above and below the same and provided with suitable gas or vapor burners, descending and ascending flues at the sides of the oven communicating, respectively, with the upper and lower burner-spaces and having escape openings or connections at the end of the oven between the top and bottom thereof, and deflecting-plates arranged in said flues so as to prevent the heat from the burners from passing directly to said escape-openings, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ALFRED E. DETWILER.

Witnesses:
CLARA DETWILER,
CHAS. L. GOSS.