(No Model.)

C. M. DAKE.

FURNACE.

No. 462,396. Patented Nov. 3, 1891.

Fig.1

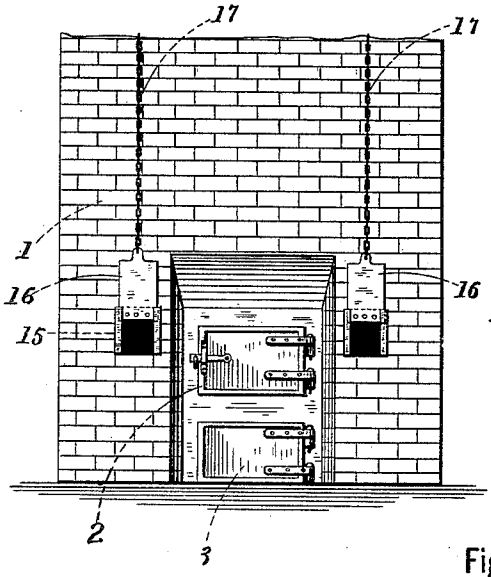


Fig.2

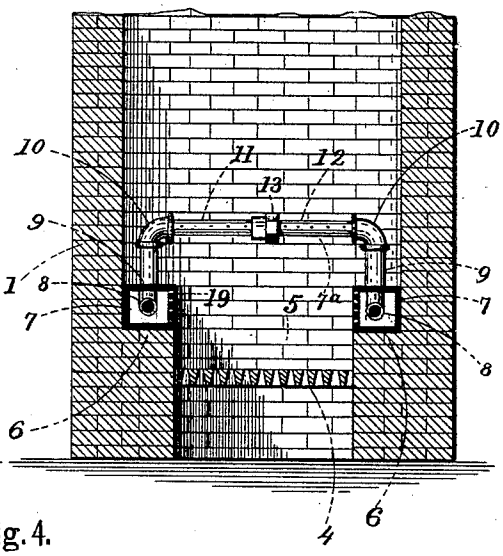


Fig.4.

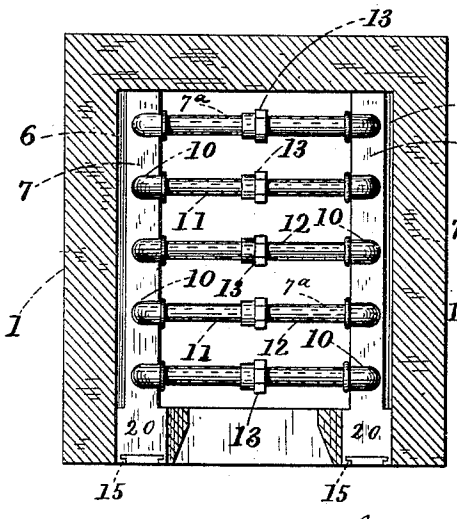


Fig.3.

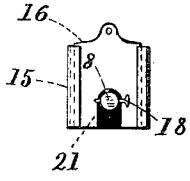
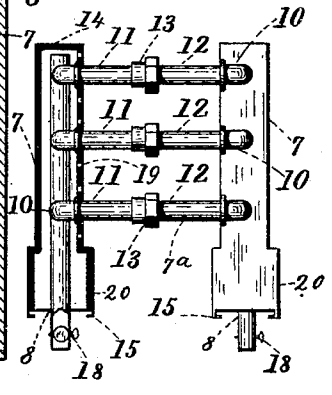


Fig.5.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES M. DAKE, OF BUFFALO, NEW YORK, ASSIGNOR TO HIMSELF AND CHARLES W. SPELLMAN, OF SAME PLACE.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 462,396, dated November 3, 1891.

Application filed February 4, 1891. Serial No. 380,216. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. DAKE, a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

My invention consists in certain improvements in furnaces for various purposes, but more particularly for bakers' ovens, the object being to provide the means whereby more heat may be obtained from a given quantity of fuel and by which the temperature of an oven may be conveniently and quickly adjusted.

My invention also consists in certain details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of the furnace of a baker's oven having my invention connected therewith, one set of the air-draft regulators being omitted. Fig. 2 is a vertical cross-section through the furnace. Fig. 3 is a detached front view of two of the air-regulating dampers. Fig. 4 is a horizontal section through a baker's oven, showing a top plan view of the greater portion of the apparatus below it. Fig. 5 is a detached sectional plan view of the apparatus.

In said drawings, 1 represents the brick oven-walls. 2 is the door to the combustion-chamber, and 3 the ash-pit door. (See Fig. 1.) 4 is the grate, (shown in Fig. 2,) all of the ordinary construction.

5 represents the fire or combustion chamber. (See Fig. 2.) On each side of the fire-chamber is a flat level projecting portion 6 (see Figs. 2 and 4) or a horizontal table, upon which rests the square tubes 7, one at each side of the furnace. The inner sides of the tubes 7 next to the fire are provided with a series of perforations 19. (See Figs. 2 and 5.)

Within each of the tubes 7 is a horizontal tube 8, (these tubes 8 are omitted in Fig. 1,) to which is connected in any well-known way a series of vertical tubes 9, (shown in Fig. 2,) which pass up through the top plates of the tubes 7 and connect by the usual elbow 10 with horizontal pipes 11 and 12, being divided at the center, so that their ends do not touch, and they are provided with a slip-joint coupling 13 to allow for expansion and contraction. The inner ends of the tubes 7, as shown at 14 in Fig. 5, are closed.

At the outer ends of the tubes 7 is a vertical slideway 15, into which the vertical valves or dampers 16 slide up or down and are controlled by the chains 17.

At the front end of the pipes 8 is a damper or valve 18, so that the air may be shut off or let on when required, and each of the pipes 11 and 12 are provided with a series of fine perforations 7^a, placed at opposite sides of the pipes. The pipes 11 and 12 may be placed across the furnace, as shown, or they may be arranged lengthwise, the pipes 7 and 8 being located so as to receive them. If desired, the pipe 7 may be in the form of a circle to answer for a circular fire-chamber and the pipes 11 and 12 made to connect with opposite sides. The object of this construction is to provide a suitable means for admitting air either over the fire through the pipes 11 and 12 or shut it off therefrom and admit air through the perforations 19, or to admit air into the furnace through one or both, or both may be shut off and air admitted through the door 2, either of which should be done to answer the different conditions required in a baker's oven.

By admitting cold air over too hot a fire the heat can be quickly brought down to the desired temperature, and by the use of the several dampers in the hands of an operator skilled in the art of baking different materials all the different conditions required to properly bake different materials may be readily obtained.

Another object in admitting air through either of the perforations 19 or 7^a is to render more perfect the combustion within the furnace by mixing with the unconsumed gases.

The apparatus also provides the means for evenly distributing the heat in the oven or to any part of the oven that may be desired.

It will be noticed that the perforated pipes 7^a are provided with an enlarged portion 20,

which renders them more easy to remove and replace with new ones when required.

In some cases the pipe 8 may be dispensed with and the vertical pipes 9 connected directly to the tops of the pipes 7. In this case all the air would pass in at the openings shown in Fig. 1, and the dampers 15 would not be required to be cut out, as at 21, (shown in Fig. 3,) to allow the damper to pass over the pipe 8. In this case the means of adjustment would be reduced, but in baking some materials it would answer a good purpose.

The pipes 7 are usually made of cast-iron, but clay tile may be used, if desired. The pipes 8 and other pipes connected with it may be constructed of ordinary wrought-iron gas-pipe, but any other suitable material may be used.

I claim as my invention—

In a furnace, the combination, with the furnace, of two pipes perforated at their inner sides and located at opposite sides of the furnace, dampers for controlling the admission of air thereto, a pipe located longitudinally within each perforated pipe and provided with dampers for admitting air thereto, and vertical pipes and elbows connecting said interior pipes with perforated pipes extending over and across the fire-chamber, substantially as described.

CHARLES M. DAKE.

Witnesses:
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