

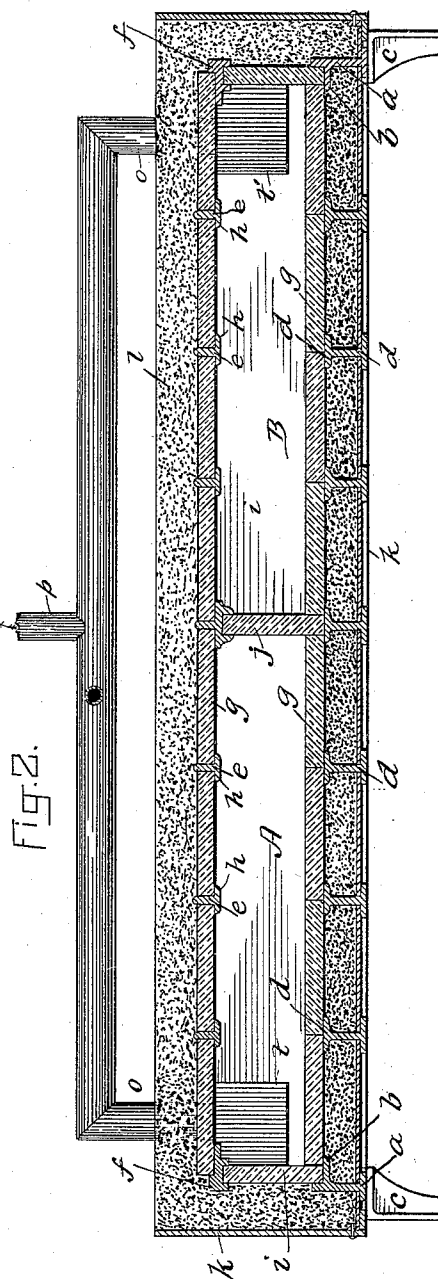
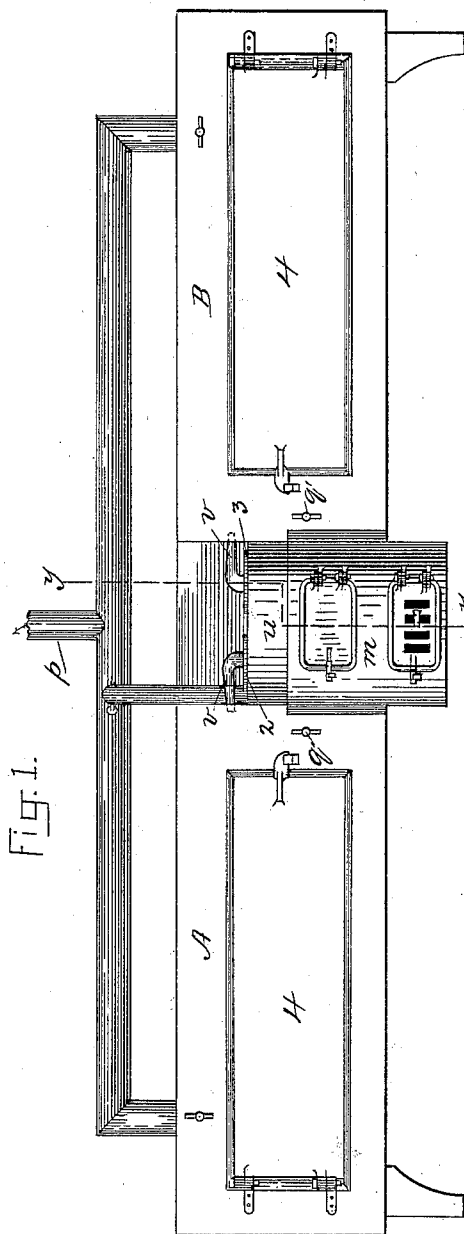
(No Model.)

3 Sheets—Sheet 1.

J. MIDDLEBY.  
PORTABLE OVEN.

No. 401,573.

Patented Apr. 16, 1889.



WITNESSES.

H. Brown  
J. C. Smith

INVENTOR:

Joseph Middleby.

By Wm. H. Brown & Crossley,  
attys.

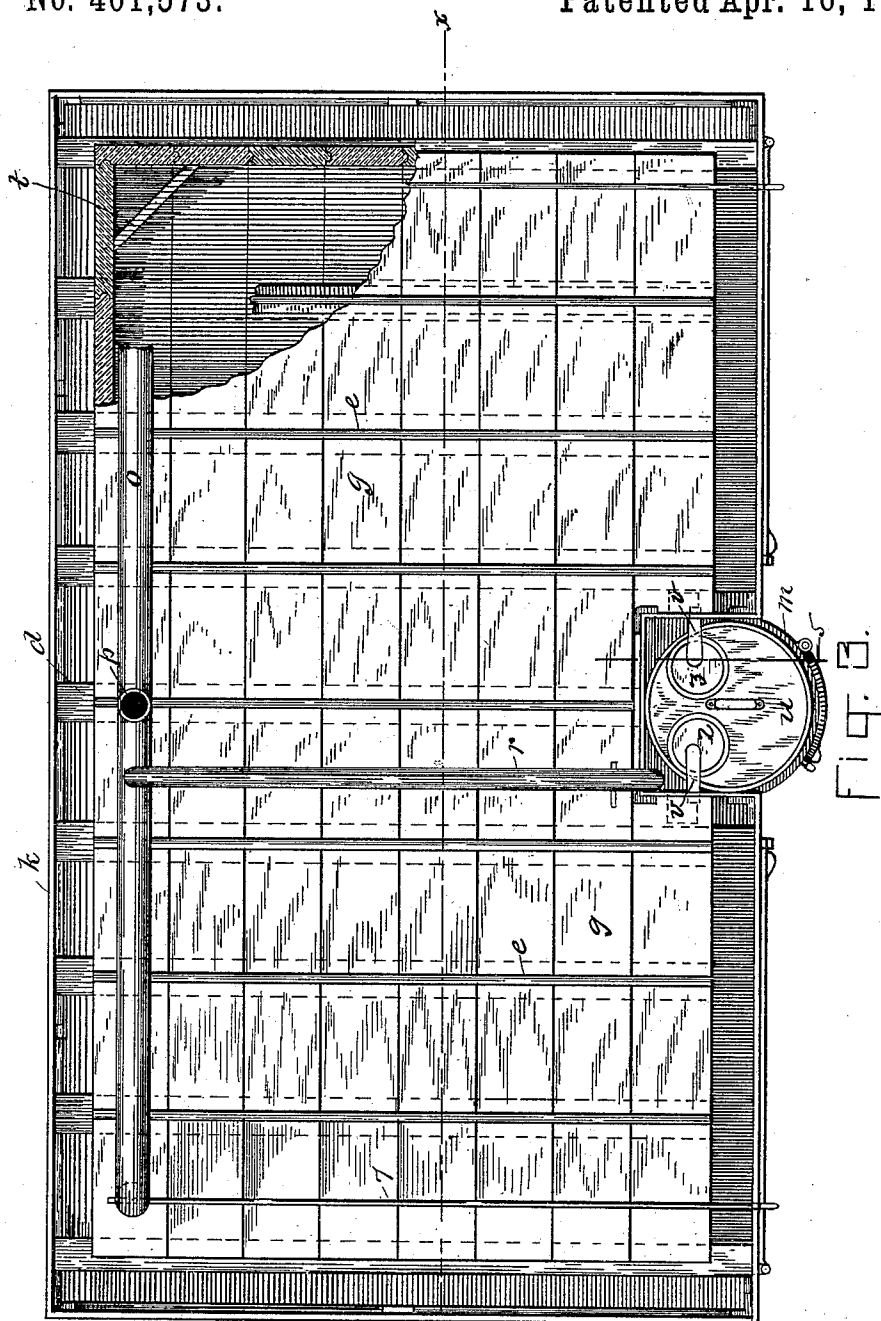
(No Model.)

3 Sheets—Sheet 2.

J. MIDDLEBY.  
PORTABLE OVEN.

No. 401,573.

Patented Apr. 16, 1889.



WITNESSES

H. Brown  
J. C. Smith

INVENTOR:

Joseph Middleby.  
By *Wight, Brown & Crossley,*  
attys.

(No Model.)

3 Sheets—Sheet 3.

J. MIDDLEBY.  
PORTABLE OVEN.

No. 401,573.

Patented Apr. 16, 1889.

Fig. 4.

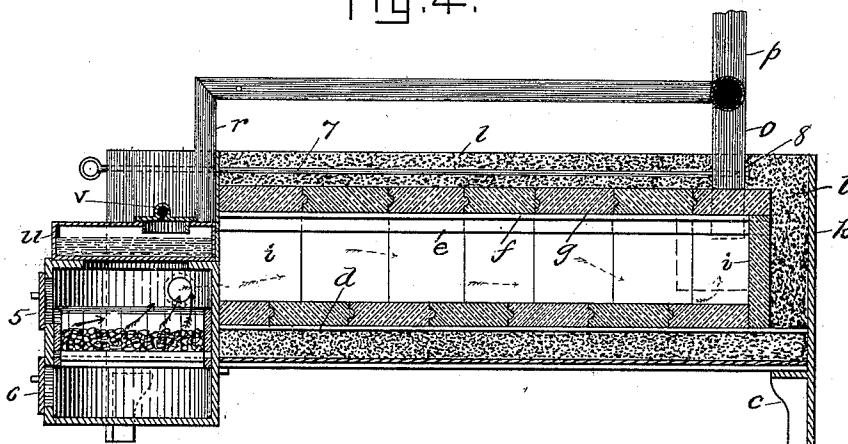


Fig. 5.

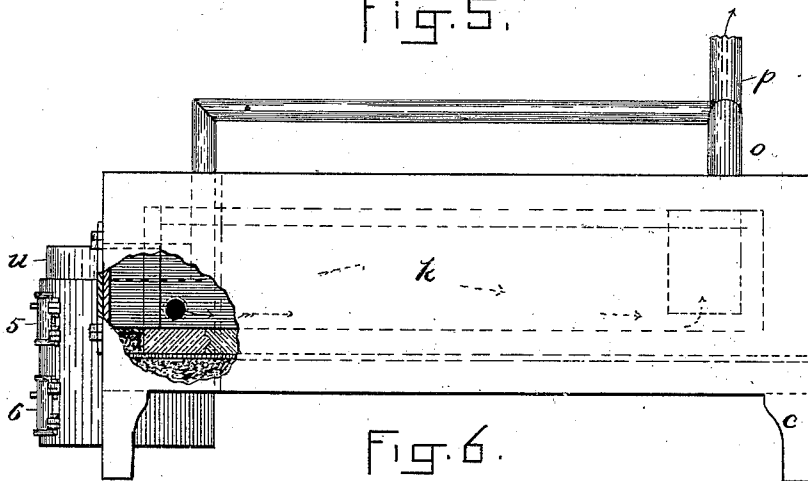
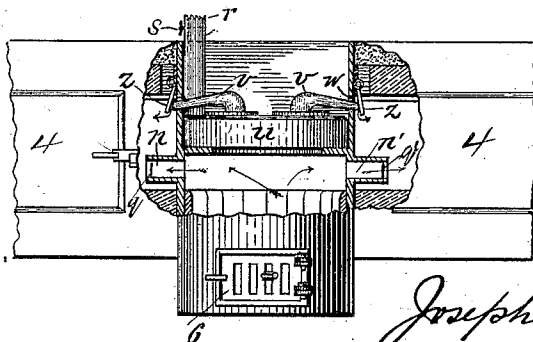


Fig. 6.



WITNESSES.  
H. Brown  
J. C. Smith

INVENTOR.  
Joseph Middleby.  
By Messrs. Brown & Crossley.  
attys.

# UNITED STATES PATENT OFFICE.

JOSEPH MIDDLEBY, OF GIBSON, KANSAS.

## PORTABLE OVEN.

SPECIFICATION forming part of Letters Patent No. 401,573, dated April 16, 1889.

Application filed February 8, 1888. Serial No. 263,349. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH MIDDLEBY, of Gibson, in the county of Trego and State of Kansas, have invented certain new and useful Improvements in Portable Ovens, of which the following is a specification.

It is the object of my invention to provide a portable brick or tile oven for baker's use which shall be at once thoroughly efficient for the purposes intended, durable, and economic of construction.

It is also the object of my invention to provide improvements in portable brick or tile ovens which will permit of the oven being quickly set up and taken down, and in the transportation of which from place to place but a minimum amount of the constituent parts need be carried.

It is also the object of my invention to provide such improvements in portable ovens as will provide for the complete utilization of the heat from the heater and enable steam to be employed with the heat in the baking process.

It is also the object of my invention to provide other improvements incidental to the foregoing, all of which are hereinafter fully explained, and pointed out with particularity in the appended claims.

Reference is to be had to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification, the same letters indicating the same parts, in which drawings—

Figure 1 is a front elevation of a portable oven constructed in accordance with my invention. Fig. 2 is a vertical sectional view taken on the line *x x* of Fig. 3. Fig. 3 is a top plan view of the invention, the sand or earth packing being removed and a part being pictured as broken out, in order to show the interior of the oven. Fig. 4 is a vertical sectional view taken on the line *y y* of Fig. 1. Fig. 5 is a side or end view, a part being pictured as broken out. Fig. 6 is a front view of the heater or furnace, its equipments, and parts of the oven immediately adjacent thereto, parts being pictured as broken away.

In carrying out my invention I construct a skeleton frame, preferably of metal, (here shown as composed of end or side beams, *a*),

having angle or flange portions *b*, which beams *a* may rest on suitable legs or supports, *c*, I-beams *d*, extending from front to rear, resting at their ends on suitable supports and constituting the lower part of the frame, and inverted T-beams *e*, supported in a manner similar to I-beams *d*, extending from front to rear of the oven and constituting the upper portion of the frame. The upper end or side beams, *f*, are different in form from the beams *e*, in order that they may the better conform to and support the tiles or bricks *g*, which are made to form the interior walls of the oven, said tiles or bricks being laid upon the I-beams *d* and flanges *b* of the angle-beams *a* to form the bottom of the oven, and supported on the flanges *h* of the inverted T-beams *e* and upon the side beams, *f*, to constitute the roof of the oven, the sides and front and rear being formed by the tiles or bricks *g*, extending between the side beams and between the supports, front and rear, for the beams *d* and *e*.

The tiles or bricks are preferably tongued and grooved on their longitudinal edges, so as to constitute a tongue-and-groove connection where said edges meet, as shown in Fig. 4, this construction being for the purpose of securing tight joints and the greatest possible strength of the parts.

*j* designates a partition composed of brick or tile running through the oven from front to rear, and thus dividing it into two parts, or making the structure constitute a dual or double oven, and that is the only construction here shown, though it will be obvious that my improvements will apply as well to a single as to a double oven.

*k* designates an outer casing, of metal or other suitable material, arranged, as shown, some distance from the bricks or tiles constituting the inner wall of the oven, so as to leave a space between said inner wall and casing, which space is adapted to be filled or packed with sand, earth, or other suitable heat-retaining substance, *l*.

*m* designates a stove, furnace, or other suitable heating device arranged in front of the oven, in the present instance shown as situated in front of and between the two ovens *A*

B and having flues  $n n'$  communicating with said ovens, through which flues the heat and products of combustion may pass to said ovens, as indicated by the arrows in Fig. 6, the ovens themselves serving as a portion of the flue to the heating device, an exit-port being provided at the rear of the ovens, with which port a pipe,  $o$ , is connected, thus giving the heat and products of combustion passing through the oven opportunity to escape to the outside atmosphere. The pipes  $o$  of the two ovens A B, for the sake of convenience, are made, when the ovens are constructed as here shown, to converge in a single pipe,  $p$ .

$q q'$  designate dampers for closing the flues  $n n'$ , so that the heat and products of combustion from the furnace  $m$  cannot pass into the ovens, but may pass up and out through the pipe  $r$ , which connects with the pipe  $p$ , a damper,  $s$ , being placed in the pipe  $r$  for the purpose of closing the same when the flues  $n n'$  are open.

$t t'$  designate partition-plates extending down from the roof of the ovens to near the bottom thereof and connecting with the sides, so that the heat in the ovens passing to the exit-flues  $o$ , located behind said partition-plates, will be drawn from near the bottom of the ovens, thus keeping up a circulation and even distribution of the heat throughout the same, as shown by the dotted arrows in Fig. 5.

$u$  designates a boiler or vessel adapted to contain water arranged on or over the furnace or heater  $m$ , the top of which boiler is provided with rotary disks 2 3, each provided with an angular pipe,  $v$ , which may be so arranged as to extend through a port,  $w$ , leading into the oven, so that if water should be placed in the boiler  $u$  and steam generated therein said steam would escape through the pipe  $v$  into the oven. A valve,  $z$ , is pivoted to the casing over the port  $w$ , so that when the pipe  $v$  is withdrawn from said port, as it may be when it is desired to dispense with the use of steam in baking, the valve will operate by its own gravity to close said port, and the heat alone may be used; or the flues  $n n'$  may be closed by the dampers  $q q'$  and the steam alone used, or both steam and heat may be employed, as desired.

4 4 designate doors hinged to the front of the oven, by which access may be gained thereto; and 5 is a door admitting to the fire-box, and 6 a door to the ash-pit of the stove or heating device.

7 7 designate rods extending from the front of the oven to dampers 8 in the pipes  $o$ , whereby heat may be admitted to the oven

through flues  $n n'$ , but not allowed to escape through the pipes  $o$ . 60

It is obvious that changes may be made in the form and arrangement of parts comprising my improvements without departing from the nature or spirit thereof.

By my invention it will be seen that a thoroughly-efficient brick or tile oven for bakers' use is provided, and one that can readily be put up, taken down, and transported from place to place without carrying the most bulky and heaviest part, the heat-retaining packing  $l$ , composed of sand or other suitable heat-holding substance, which can be obtained anywhere. 65 70

What I claim is—

1. An oven combined with a heating device communicating with the oven and adapted to supply heat thereto, dampers for cutting off the supply of heat to the oven, a pipe or exit-port connected with the heater, and dampers connected with said pipe or exit-port to cut off direct communication between the heater and outside atmosphere, and a boiler or similar device for holding water connected with the heater and having means of communication with the oven independent of the heating device, and dampers or similar devices for shutting off communication between the boiler and the oven, substantially as described. 75 80 85

2. The combination, with the dual or double portable oven, of the heating apparatus intermediate of and communicating with both ovens, the boiler secured on said heating apparatus for holding water, the rotary disks 2 3, and the angular pipes secured to said disks and opening into said oven, substantially as described. 90 95

3. The combination, with the dual or double portable oven herein described, consisting of a skeleton metallic frame and brick or tiling supported by said frame, of the heating apparatus located in front of and communicating with both ovens, the side flues,  $n n'$ , extending from said heating apparatus into said ovens and having dampers, the rear exit-pipes secured to said ovens, and the dampers therefor, substantially as described. 100 105

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 6th day of February, A. D. 1888. 110

JOSEPH MIDDLEBY.

Witnesses:

ARTHUR W. CROSSLEY,  
W. C. RAMSAY.