

(No Model.)

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B. B. VAN DERVEER.

BAKING OVEN

No. 366,138.

Patented July 5, 1887.

Fig. 2.

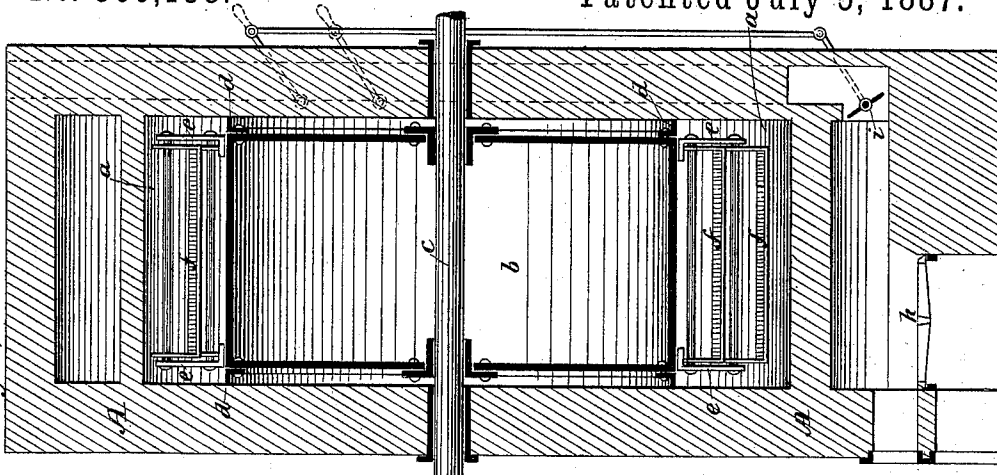
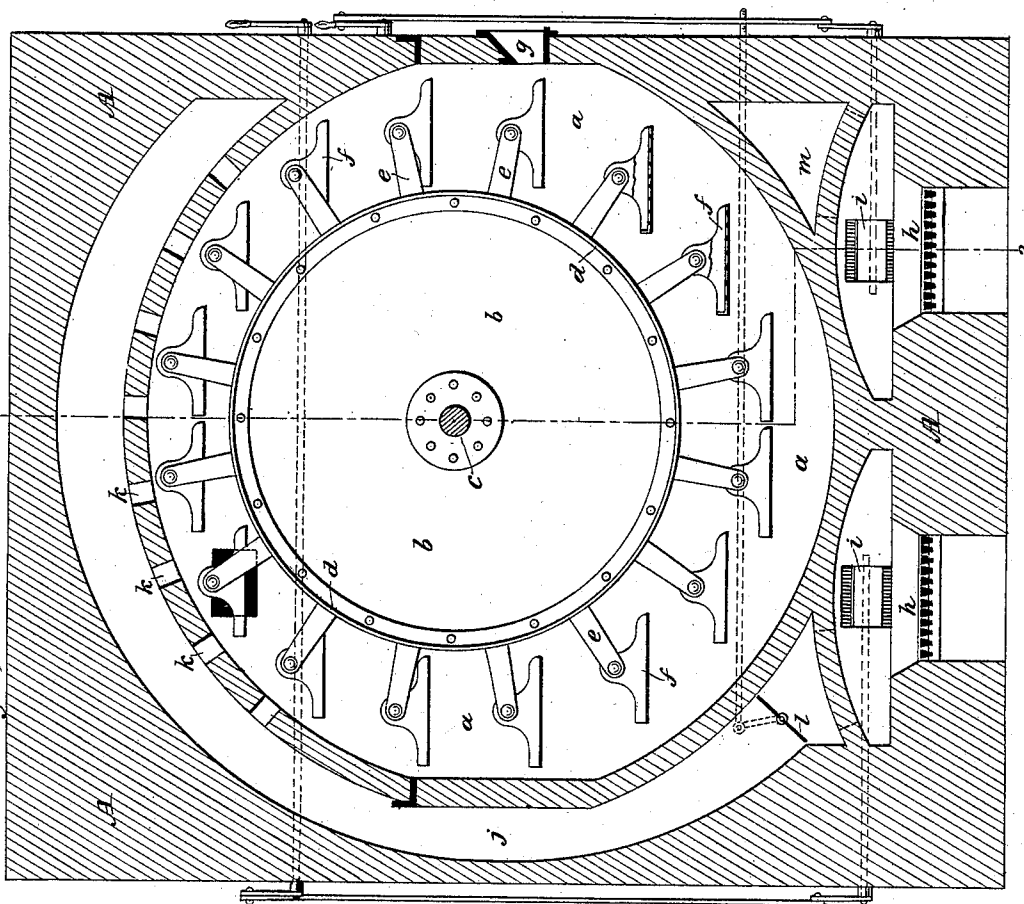


Fig. 1.



Witnesses

Edwin Seger.  
Geo. W. Breck.

Inventor

Benjamin B. Van Derveer

By his Attorney

W. C. Witter.

(No Model.)

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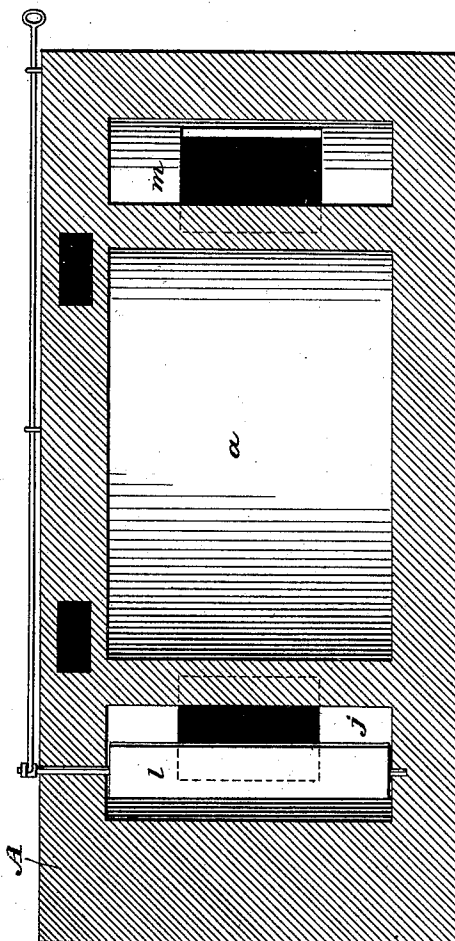
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Fig. 3.



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# UNITED STATES PATENT OFFICE.

BENJAMIN B. VAN DERVEER, OF NEW YORK, N. Y.

## BAKING-OVEN.

SPECIFICATION forming part of Letters Patent No. 366,138, dated July 5, 1887.

Application filed June 26, 1886. Serial No. 206,327. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN BEEKMAN VAN DERVEER, of New York city, in the county and State of New York, have invented a new and useful Improvement in Baking-Ovens; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and the letters and figures of reference marked thereon.

My invention relates to that form of baking-oven known as the "reel-oven;" and its object is to provide a more perfect circulation of the heat and to reduce to the minimum the amount of space to be heated, and thus to economise in the amount of heat required in such ovens.

My invention is shown in the accompanying drawings, in which Figure 1 is a vertical longitudinal section of my improved reel-oven, and Fig. 2 is a vertical cross section on the line 2 2 of Fig. 1. Fig. 3 is a horizontal sectional view on a line passing through the damper *l* in Fig. 1.

*A* is the wall of the oven and furnace, and is made of brick-work or any suitable material.

*a* is the oven-chamber, in which the goods are baked. In the middle of this chamber there is a hollow cylinder, *b*, which is almost as deep as the chamber itself, and whose diameter is preferably made as large as it can be made and yet leave room enough for the baking-pans to revolve in. The cylinder *b* is mounted upon the shaft *c*, passing through the middle of the oven, or some point near the middle. The shaft *c* turns in suitable bearings in the walls of the furnace, as shown in Fig. 2, and motion is imparted to this shaft outside of the oven in any well-known way. The cylinder *b* has a drum or head at each end, and is made substantially air-tight, so that the currents of heated air in the surrounding space cannot penetrate into the interior of the cylinder. As the drums or heads of the cylinder cannot be placed close against the walls of the furnace on either side on account of the friction that would result if they were so placed, a circular flange, *d d*, is attached to the circumferential edge of each of the drums, as shown in Fig. 2. These flanges serve to separate or cut off the space intervening between the cylinder-drums and the adjoining walls of the furnace from the open space of

the baking-chamber and to substantially prevent the currents of heated air from passing into the space between the heads of the cylinder and the adjoining walls.

The arms *e* for carrying the baking-pans are attached to the cylinder in any ordinary way, as shown in Fig. 2.

*f f* are the baking-pans, which are pivoted to the ends of the arms *e*, as shown. I prefer to make these pans in the form of skeleton pans—that is, perforated on the bottom and the sides—although any form of pan could be used.

*g* is the doorway of the oven.

Any suitable form of furnace and connecting pipes or flues could be used with my form of reel-oven; but I prefer the form of furnace and flues shown in Fig. 1, by means of which heat is introduced into both the top and the bottom of the oven.

*h h* are the fire-places, below which are the grates and ash-pits, as shown. Above each fire-place is an open chamber. From the back of each of these chambers a flue passes up through the back wall of the furnace and connects with the chimney. The mouths of these flues are opened and closed by the dampers *i i*, as shown. From one of the furnaces a flue, *j*, passes up and around to the baking-chamber, and connects with the baking-chamber at the top through the openings *k k*. This flue is also opened or closed by a damper, *l*. From the other furnace the flue passes into the air-chamber *m*. I prefer not to connect the air-chamber *m* with the baking-chamber; but the heat from the air-chamber *m* and the furnace immediately under it is communicated to the baking-chamber by a radiation of the heat from the surface of the wall of the baking-chamber immediately above this furnace. The baking-chamber is connected with the chimney by means of a flue opening into the baking-chamber, preferably at its upper part, as shown, and this flue is opened or closed by a damper. This damper is not shown in the drawings, in order not to confuse the drawings. Any form of damper can of course be used. During the operation of baking this flue is generally closed. The hot-air chamber *m*, as shown, is not connected with the chimney by any flue, though it may be so connected if desired. When it is desirable to allow the

products of combustion to escape from the chamber *m* or the furnace *h* below it, this can be done by opening the damper *i* connected with that furnace. When this damper *i* is closed, the products of combustion are confined to the furnace-chamber and the chamber *m*, except so far as they escape from the furnace-door. This tends to prevent the loss of heat. In practical operation, therefore, it is not found necessary to connect the chamber *m* with the chimney by a flue. I do not, however, claim the construction and arrangement of the furnaces, the flues, and the hot-air chamber *m* as a part of my invention.

My invention operates in the following manner: After the fires have been properly started, the flue connecting with the oven is opened and the heated products of combustion pass into the top of the oven. The heat from the furnace also passes into the bottom of the oven at the same time. These heated currents are confined by the cylinder, which is substantially air-tight, to the part of the oven between the exterior of the cylinder and the oven-wall, and are caused to circulate in that space around the cylinder. In this way less time and heat are required to raise the baking-chamber to a proper temperature than is necessary when the heat is admitted to the entire space within the oven-walls, as has been the case hitherto. Besides being made air-tight, so as to exclude the currents of heat, the cylinder is also made of such a thickness as to prevent the transmission of any appreciable degree of heat through the material of the cylinder itself. The rotary motion of the cylinder also tends to prevent the transmission of heat through its walls. It will be seen that I accomplish my purpose by preventing the heated currents from passing into the space within the cylinder and by keeping the metal of the cylinder at as low a point of heat as possible, so that but little or no heat will be transmitted into the space within the cylinder. The goods that are to be baked are introduced through the doorway *g* and placed in the baking-pans. The cylinder *b*, with its projecting arms and the pans pivoted to them, is set in motion around the shaft *c*, and the goods are thus brought into contact with the heated currents within the confined space between the cylinder and the walls of the oven.

In my invention it is necessary to heat only that part in which the baking is to be done,

the heat being substantially excluded from the central part of the oven, and thus a great economy of heat and fuel is secured. To entirely prevent the passage of heat from the open space of the baking-chamber into the interior of the cylinder, the walls of the cylinder may be coated with asbestos or any suitable non-conducting material, the object being to prevent the loss of any heat by its escaping from the open space of the baking-chamber through the walls of the cylinder. I prefer the form of doorway shown at *g*, though I do not claim this as part of my invention.

The size and shape of the cylinder and the oven and the other various parts may be changed without departing from my invention.

One great advantage arising from the use of my invention is that the steam which arises from the goods when they are first introduced into the oven, being confined to the narrow space of the baking-chamber *a*, is brought into repeated contact with the goods and gives them a superior finish. In ordinary baking-ovens it is common to introduce steam for the express purpose of giving this finish to the goods; but steam thus introduced tends to draw out the sweetness from the goods, whereas by utilizing the steam which arises from the goods themselves, and which is therefore sweet itself, the flavor of the goods is retained. The use of the steam from the goods themselves can only be made where the baking-chamber is reduced in size, as in my invention, and the steam is made to circulate around the goods. In the ordinary oven the steam from the goods is lost.

What I claim as new, and desire to secure by Letters Patent, is—

In a baking-oven, in combination with baking-pans and a revolving frame for supporting them, a tightly-closed cylinder at the center of the oven, supported by and revolving with the reel-frame, and flanges projecting from the ends of the cylinder and fitting snugly against the wall, whereby the heat is substantially excluded from the interior of the cylinder and from the space between the head of the cylinder and the side wall, substantially as and for the purposes set forth.

BENJAMIN B. VAN DERVEER.

Witnesses:

ROBERT N. KENYON,  
EDWIN SEGER.