

No. 860,067.

PATENTED JULY 16, 1907.

A. E. SUYDAM.
BAKE OVEN.

APPLICATION FILED APR. 10, 1906. RENEWED APR. 20, 1907.

4 SHEETS—SHEET 1.

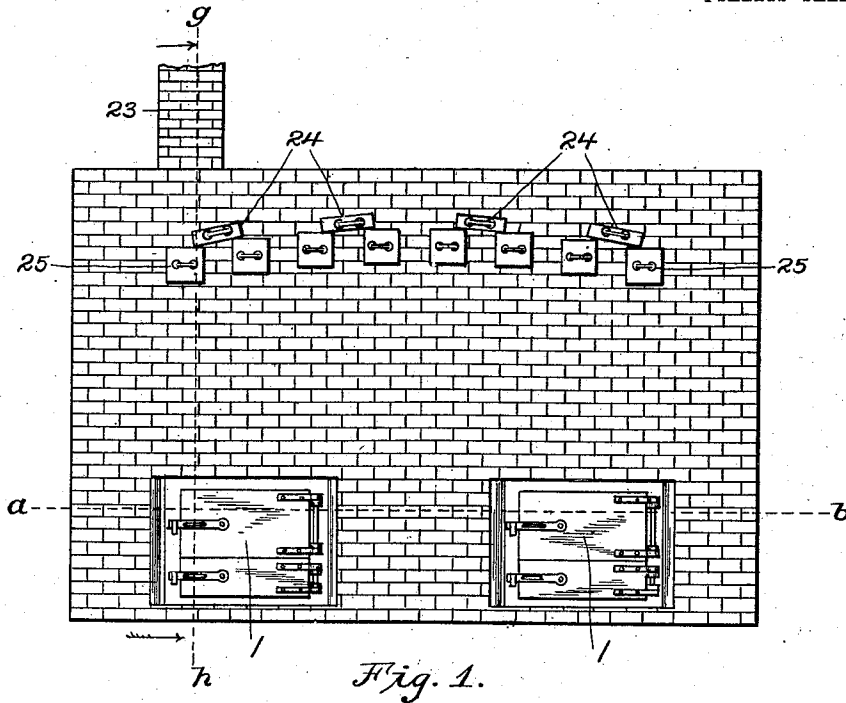


Fig. 1.

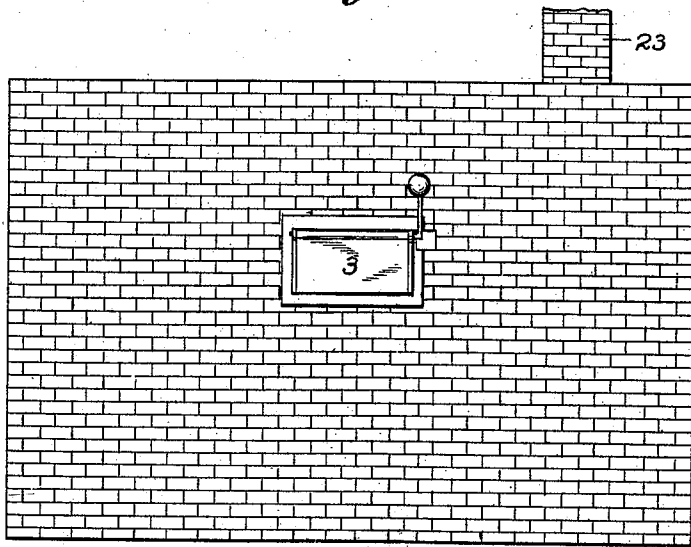


Fig. 2.

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4 SHEETS—SHEET 2.

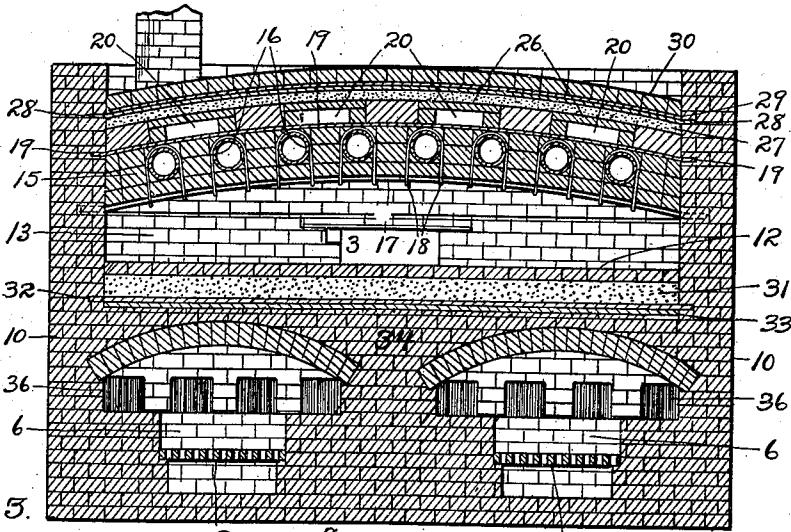


Fig. 5.

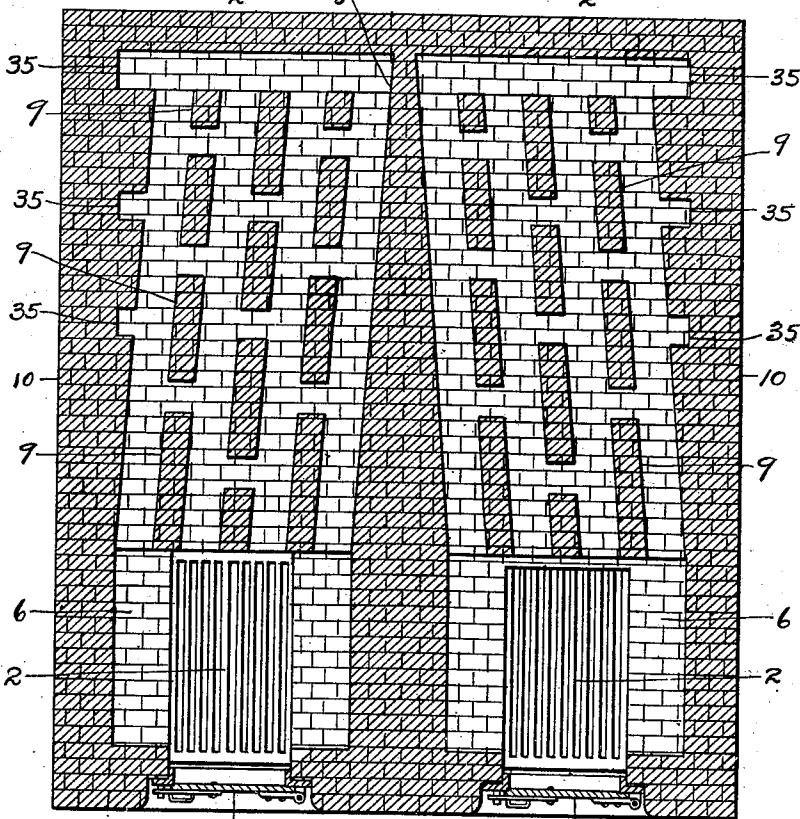


Fig. 4

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4 SHEETS—SHEET 3.

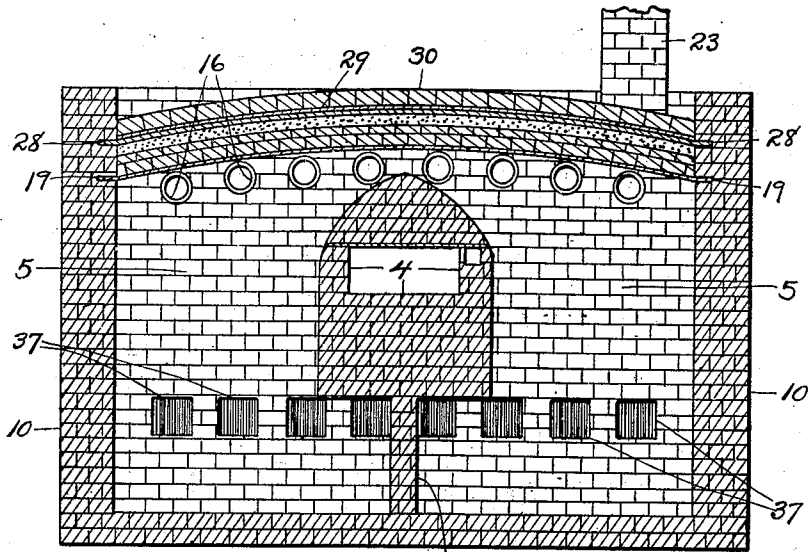


Fig. 6.

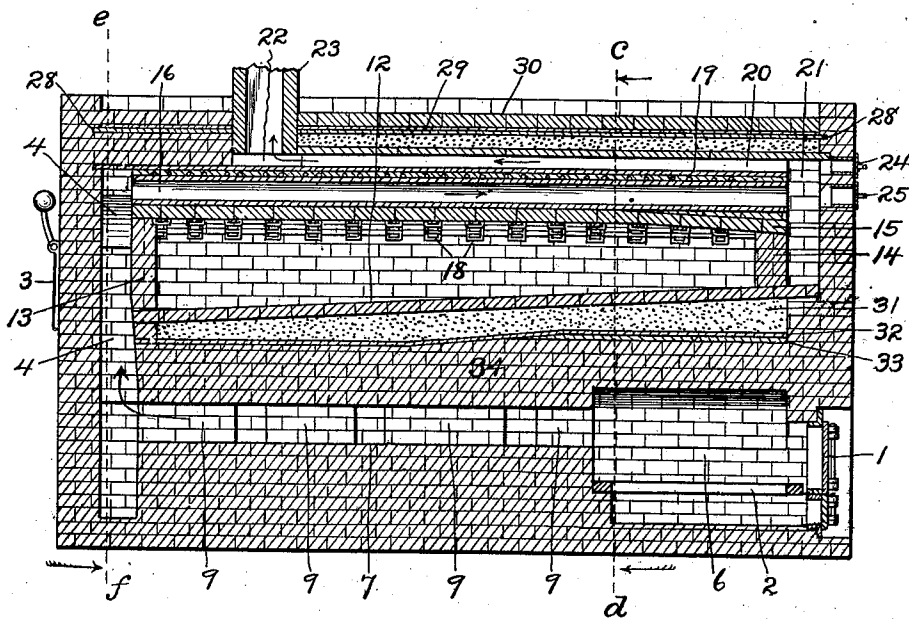


Fig. 5.

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4 SHEETS—SHEET 4.

Fig. 7.

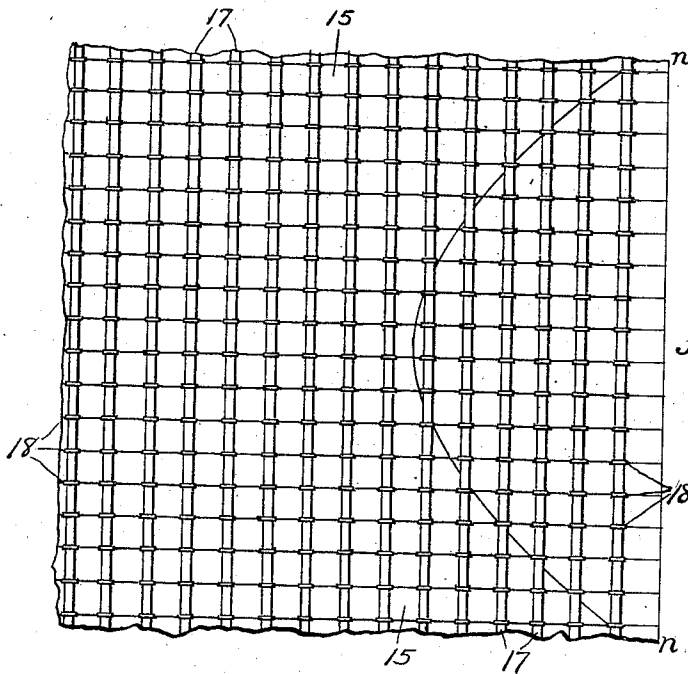
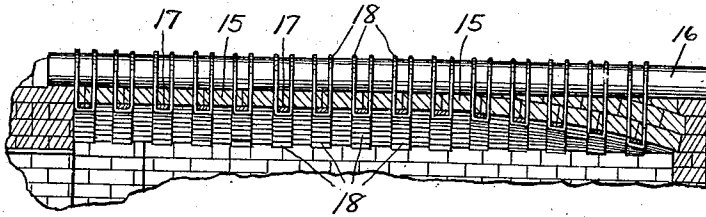


Fig. 8.

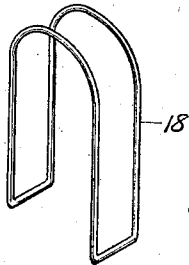


Fig. 9.

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UNITED STATES PATENT OFFICE.

ALFRED E. SUYDAM, OF KANSAS CITY, MISSOURI.

BAKE-OVEN.

No. 860,067.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed April 10, 1905. Renewed April 20, 1907. Serial No. 369,404.

To all whom it may concern:

Be it known that I, ALFRED E. SUYDAM, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Bake-Oven, of which the following is a specification.

My invention relates to bake ovens, and the general object of my invention is to produce an oven that will bake a superior loaf of bread.

A secondary object of my invention is to provide means for insuring an equal distribution of heat under the hearth of the oven, and to improve the form of the crown or top of the baking chamber.

With these objects my invention consists in the novel construction, combination and arrangement of parts, as hereinafter claimed, and shown in the accompanying drawings, in which—

Figure 1 is a rear elevation, and Fig. 2 is a front elevation, of a bake oven embodying my invention; Fig. 3 is a section taken on line *c-d* of Fig. 5; Fig. 4 is a sectional plan taken on line *a-b* of Fig. 1; Fig. 5 is a longitudinal sectional view showing the interior of the oven. Fig. 6 is a section taken on line *e-f* of Fig. 5; Fig. 7 is a detail view of one of the supporting tubes in the crown, with the hangers, and arch-bars supported thereby; Fig. 8 is a bottom plan view of the crown; Fig. 9 is an enlarged detail view of one of the crown-hangers.

1 and 1 are the fire-doors.

2 and 2 are the grates.

3 is the door of the oven.

Referring to Fig. 6, 4 is a brick arch wall through which extends the opening from the door 3 into the baking chamber. The thickness of this wall 4 is shown in Fig. 5. At each side thereof is a narrow transverse open space 5. The combustion chambers 6 and 6 are connected to said spaces 5 by two horizontally-disposed spaces 7 and 7. (Figs. 4 and 5).

The dividing wall 8 is tapered, as shown, from the rear of the combustion chambers to the front wall of the oven. The outside walls 10 and 10 are also tapered, in the opposite direction, as shown, being thicker at the front of the oven.

An important feature of my invention consists in building a number of piers 9 through each passage 7. I am aware that it is not new to divide up these passages by means of longitudinal partitions, forming separate straight flues from combustion chamber to the opposite end of the oven. But it is new to construct piers, as shown in Fig. 4, for example. The piers are not necessarily arranged in straight rows, for equally good results may be obtained by "dodging" or "staggering" them. The advantages arising from the use of piers are, that the heat of the fire is evenly distributed under the hearth 12, and less fuel is required to operate the oven. With the old arrangement of separate flues,

the heat shows up in streaks toward the last of the baking.

The baking chamber is separated from the aforesaid spaces 5 by a wall 13. (Fig. 5). At the rear end of the hearth is a low wall 14. (Fig. 5). These two walls support the crown of the oven, which I construct preferably as follows: An arch 15 of brick, three bricks deep (more or less) extends from side to side of the oven. This arch is supported by a series of embedded pipes 16, the front ends of which are supported by the wall 13, their rear ends being supported by wall 14. More correctly speaking, the pipes do not rest directly upon said walls, for the lower layer of brick of the crown 15 lies between the pipes and said walls 13 and 14. This lower layer of brick of the crown 15 is supported by transverse arched iron bars 17, which are supported by hangers 18, which are supported by the pipes 16. One of said hangers is shown detached in Fig. 9. As shown, it is in the shape of an endless loop. The manner in which these hangers engage the pipes and the arch-bars is clearly shown in Fig. 7. As indicated in Figs. 3 and 6, the ends of said arch-bars are embedded in the side walls 10. The rear and central portion of the crown 15 is depressed or "turtle backed" as shown in Figs. 5 and 7. The parabolic line in Fig. 8 indicates where this depression of the crown connects with the normal arched portion. The extreme rear end of the crown on line *n-n* of Fig. 8, is not arched, but is approximately straight. The advantage of this combined arched and "turtle back" construction is, that it permits steam to be used with the best results. These results are that the crust of the loaves of bread is made glossy, and the flavor and texture of the bread is improved. In regard to flat-topped ovens, it is a fact within my personal knowledge that when steam is used in such ovens, the steam seems to prevent the crust from expanding, the loaves do not rise properly, and the crust will appear dead and rough. I do not understand why the arched and "turtle back" form of crown improves the bread as above stated, but such is the case.

Fitted upon the top layer of the crown 15 is a sheet of metal 19. This forms a smooth bottom for a plurality of flues 20, which extend from a rear space 21 (Fig. 5) forward to a transverse smoke-flue 22 indicated in Fig. 5.

The stack 23 connects to this transverse flue, as shown. I prefer to locate the stack at one side rather than at the middle for the reason that it is better to have the weight thereof away from the middle of the crown.

The products of combustion pass from the fire-boxes to the stack as indicated by arrows in Fig. 5.

The top flues 20 are covered by tiles 26, and overlying said tiles is a layer of sand, 27. Upon the sand is an arched sheet of metal, 28, and upon this is a layer

of asbestos or other good heat-insulator, 29. This insulator is covered by a layer of brick, 30.

Numeral 34, in Figs. 3 and 5, designates the layer of brickwork which overlies the two combustion chambers and extends forwardly therefrom. Upon the rearward portion of this brickwork I lay a sheet 33 of asbestos or similar heat-insulating material, extending from side wall to side wall. I then cover this heat-insulating material, as well as that portion of the brickwork 34 not covered thereby, with a sheet of metal, 32. Upon this metal sheet is laid a bed of sand, 31, upon which the hearth 12 is directly laid, the hearth being inclined downwardly and rearwardly, as shown.

24 are flue-stoppers for the topmost flues 20, and 25 are stoppers for the pipes 16, which serve the double purpose of supports for the crown 15 and flues there-through.

Recesses 35 may be built in the inner sides of the side walls 10, as shown in Fig. 4.

In Fig. 3, the openings 36 are the openings from the combustion chambers into the spaces between the piers 9. In Fig. 6, 37 are the openings from the passages 7 into the upright lateral spaces 5.

It will be obvious that the transverse openings between the piers 9 will permit a free circulation of the hot gases therethrough, and consequently the hearth 12 will be heated with almost perfect uniformity throughout its surface.

The utility of the sand layers 27 and 31 will be understood without any explanation.

Within the scope of the appended claims, I do not limit myself to any details of construction shown in the drawings.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a bake oven, the combination with outer walls and a dividing wall, forming a pair of combustion chambers, of a tapering continuation of said dividing wall, said continuation decreasing in thickness from the combustion chambers toward the opposite end of the oven, a plurality of rows of piers arranged in the horizontal flue-spaces between said tapering dividing wall and the lateral outer walls, said rows of piers being spaced apart and staggered, and forming a plurality of flues whose direction is substantially parallel to that of the adjacent side of the dividing wall, a layer of brick-work above said piers, forming the tops of said flues and a support for a hearth, a bed of sand laid upon said brick-work and separated therefrom by sheet metal, and a hearth laid upon said bed of sand.

2. In a bake oven, a layer of brickwork 34, a sheet of heat-insulating material upon that portion of said brickwork which overlies the combustion chamber, a sheet of metal covering said brickwork and said insulating material, a layer of sand upon said metal, and a hearth laid upon said layer of sand; substantially as described.

3. In a bake oven, a crown consisting of spaced longitudinal tubular flues, arranged in an arched formation and embedded in a brick-work arch, hangers depending from said tubular flues, transverse arch-bars supported by said hangers and underlying said brick arch, longitudinal flues built upon said arch, a layer of sand upon said flues, a sheet of metal upon said sand layer, a layer of heat-insulating material upon said metal, and a top layer of brick covering said heat-insulating material.

4. In a bake oven, a crown comprising longitudinal tubular flues, spaced apart, hangers depending from said flues, transverse arch-bars supported by said hangers, an arch of brickwork supported by said arch-bars, longitudinal flues built upon said crown, a layer of sand upon said flues, a sheet of metal upon said layer of sand, a layer of heat-insulating material upon said metal, and a top layer of brick over all; substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

ALFRED E. SUYDAM.

Witnesses:

K. M. IMBODEN,
R. E. HAMILTON.