W. F. PETERSEN.

BAKER'S OVEN.

APPLICATION FILED FEB. 24, 1908.

975,889.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 1.

Fig. 1.

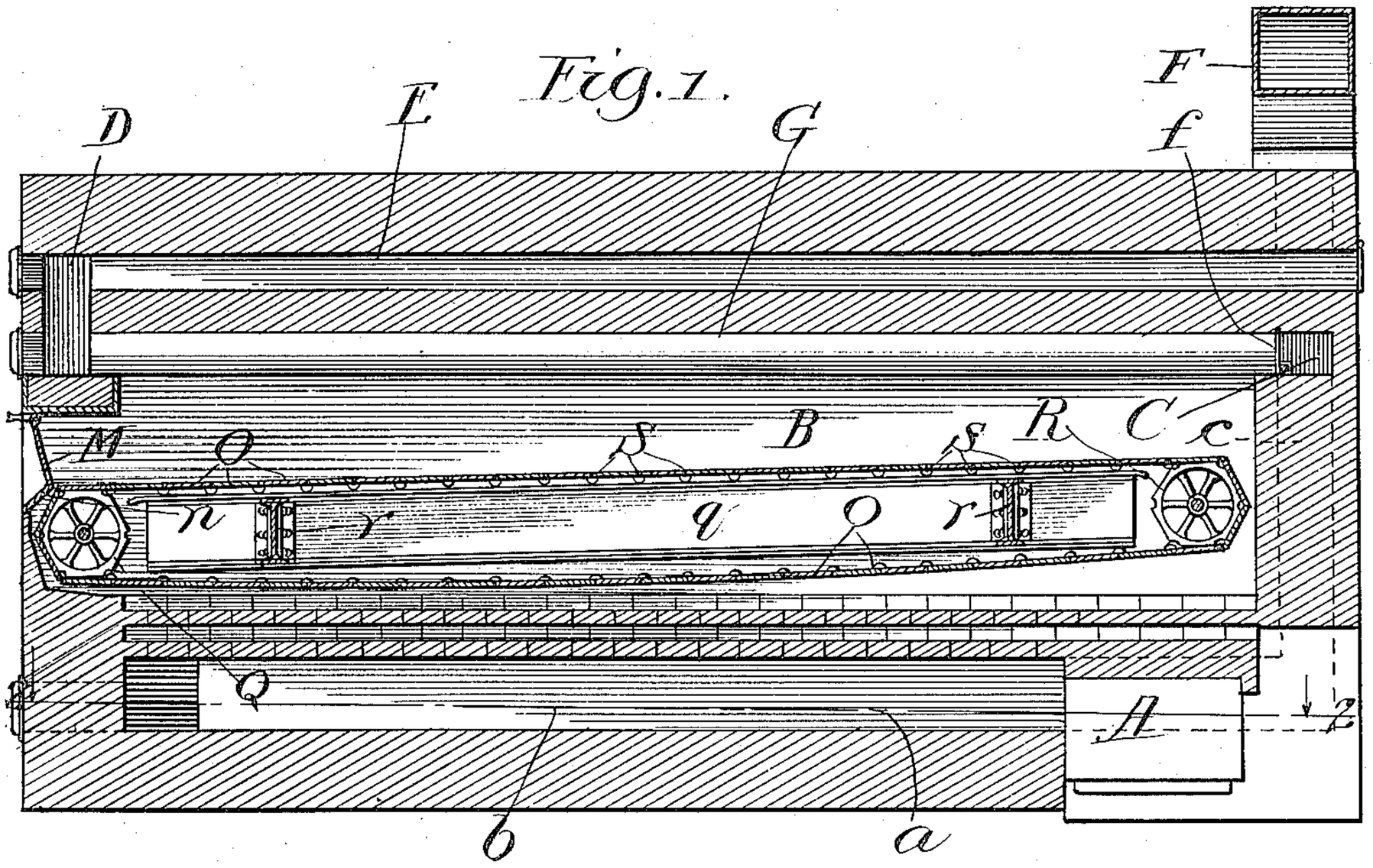
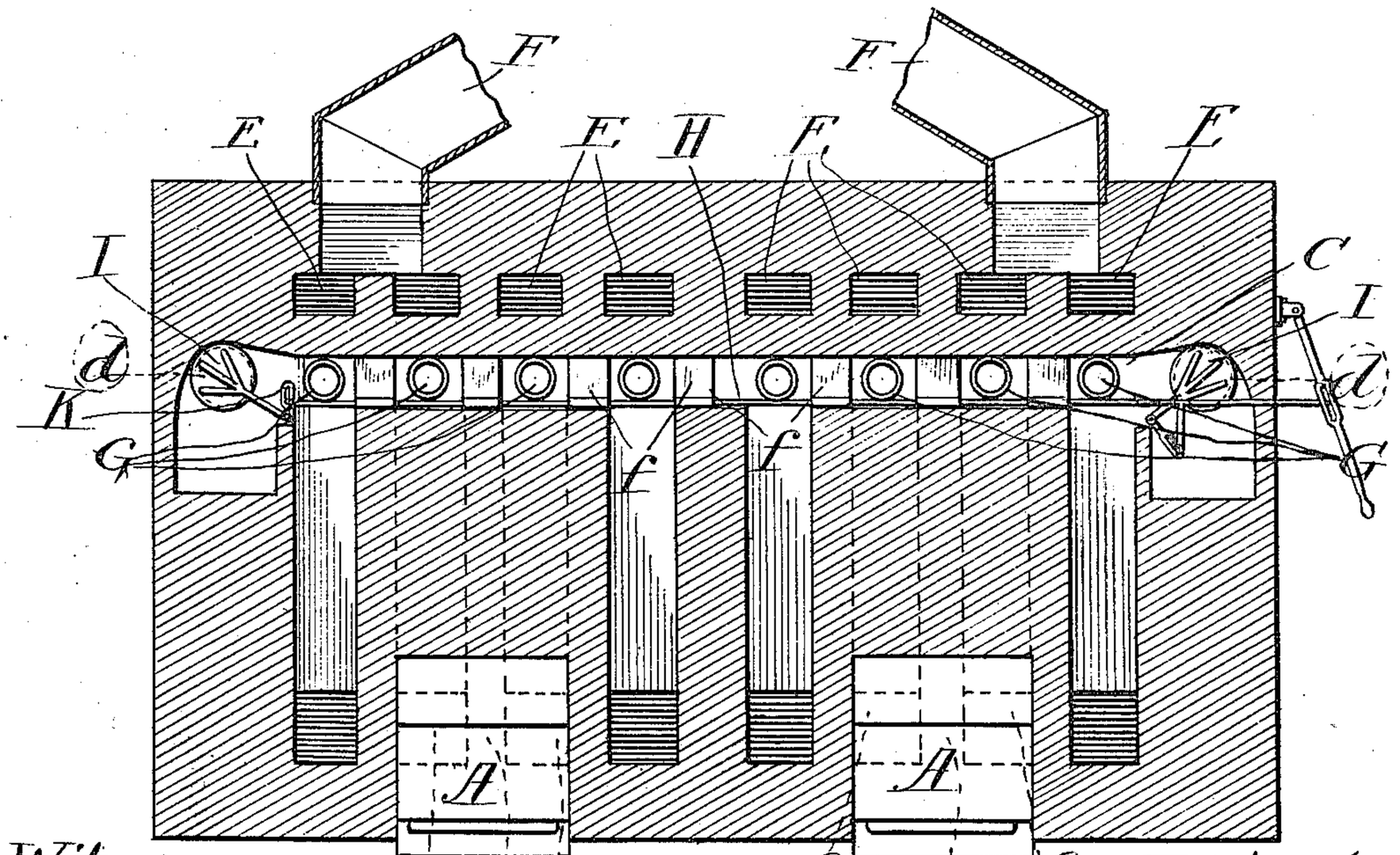


Fig. 3.



Witnesses:
Chas. Kennedy
E. K. Lundy

Inventor
William Ferdinand Petersen
by Frank D. Thomson
Atty

W. F. PETERSEN.

BAKER'S OVEN.

APPLICATION FILED FEB. 24, 1908.

975,889.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 2.

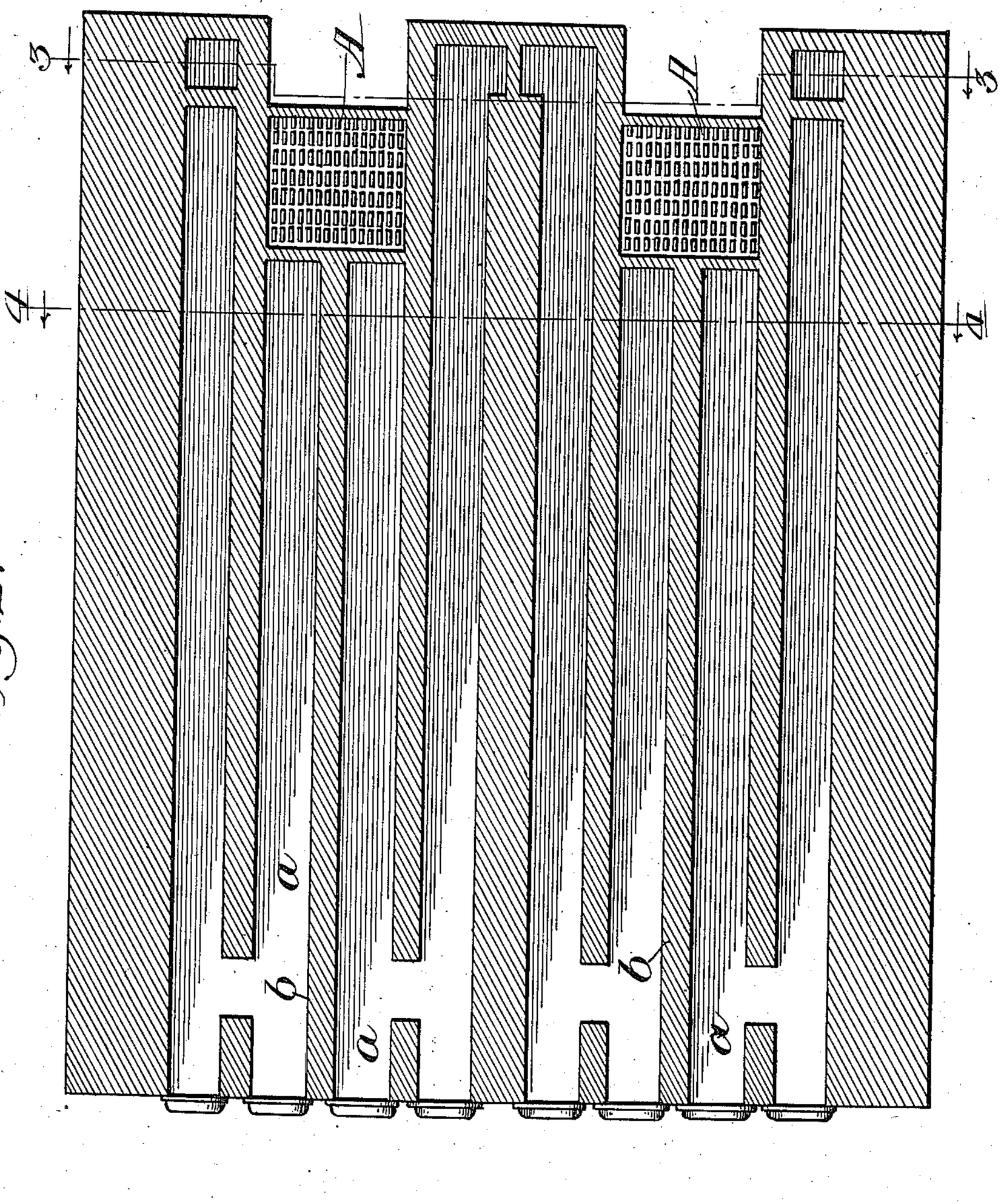


Fig. 2.

Witnesses:
Oscar Krumick
E. M. Lundy

Inventor
William Ferdinand Petersen
by Frank D. Thomson
Atty

W. F. PETERSEN.

BAKER'S OVEN.

APPLICATION FILED FEB. 24, 1908.

975,889.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 3.

Fig. 4.

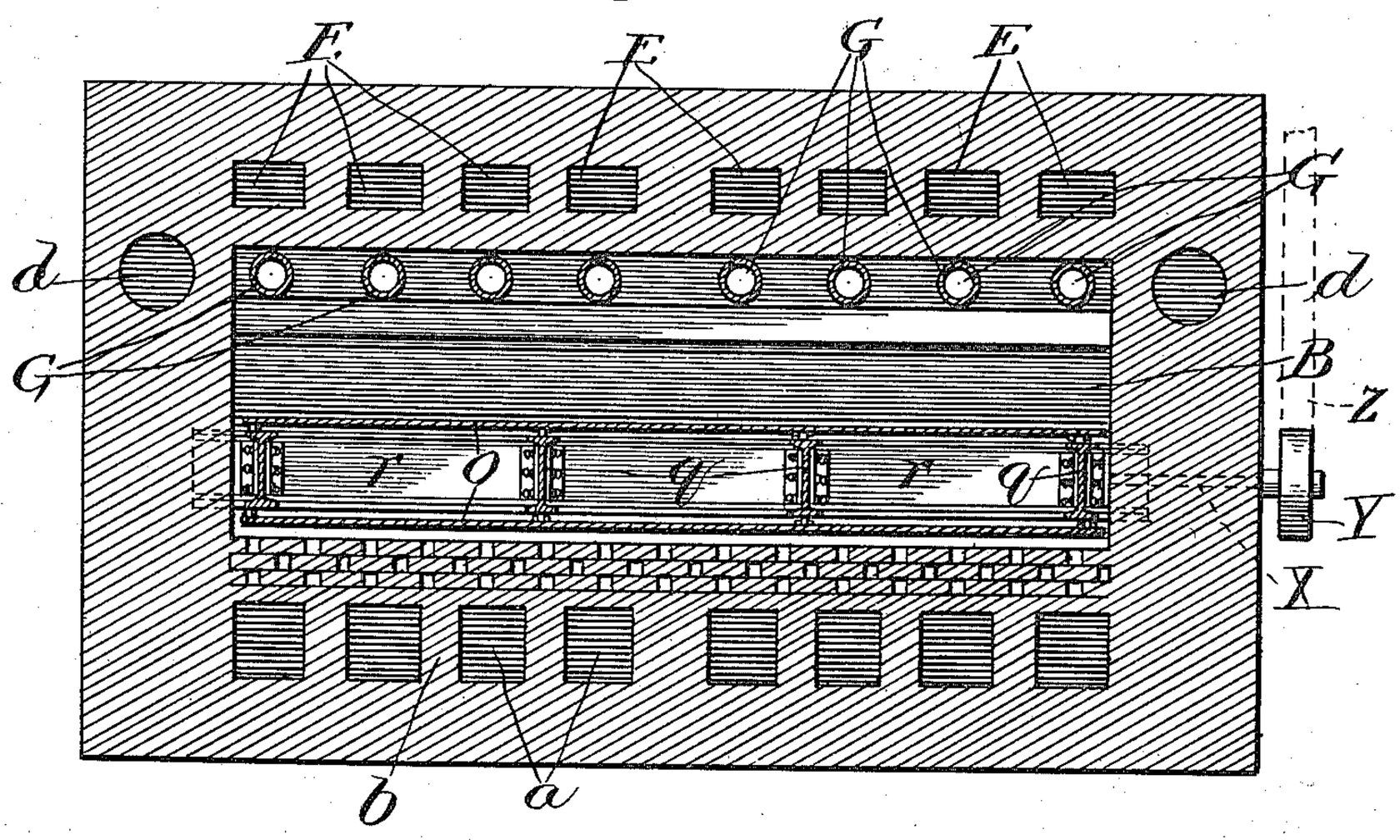


Fig. 5.

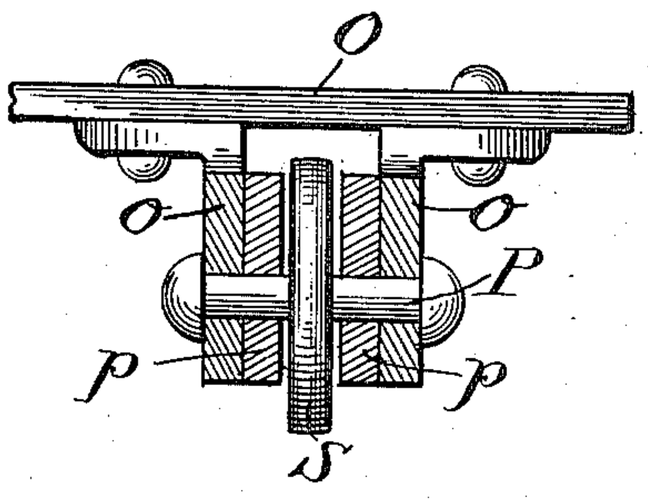
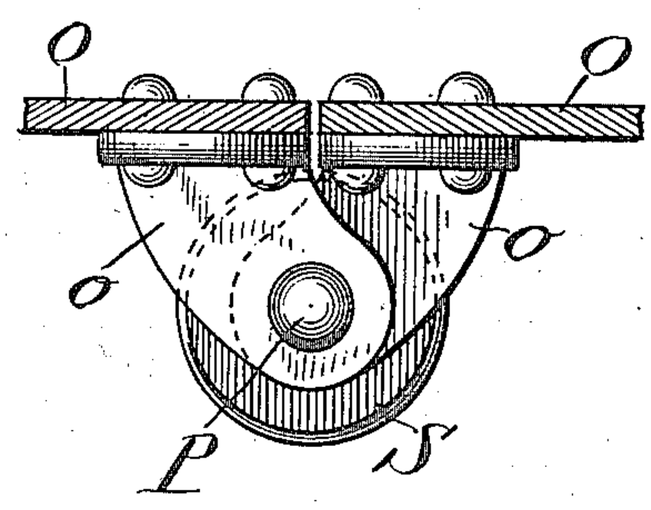


Fig. 6.



Witnesses:
O. M. Kennedy
E. K. Lundy

Inventor
William Ferdinand Petersen
by Frank D. Thomson
atty

975,889.

W. F. PETERSEN.

BAKER'S OVEN.

APPLICATION FILED FEB. 24, 1908.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 4.

Fig. 8.

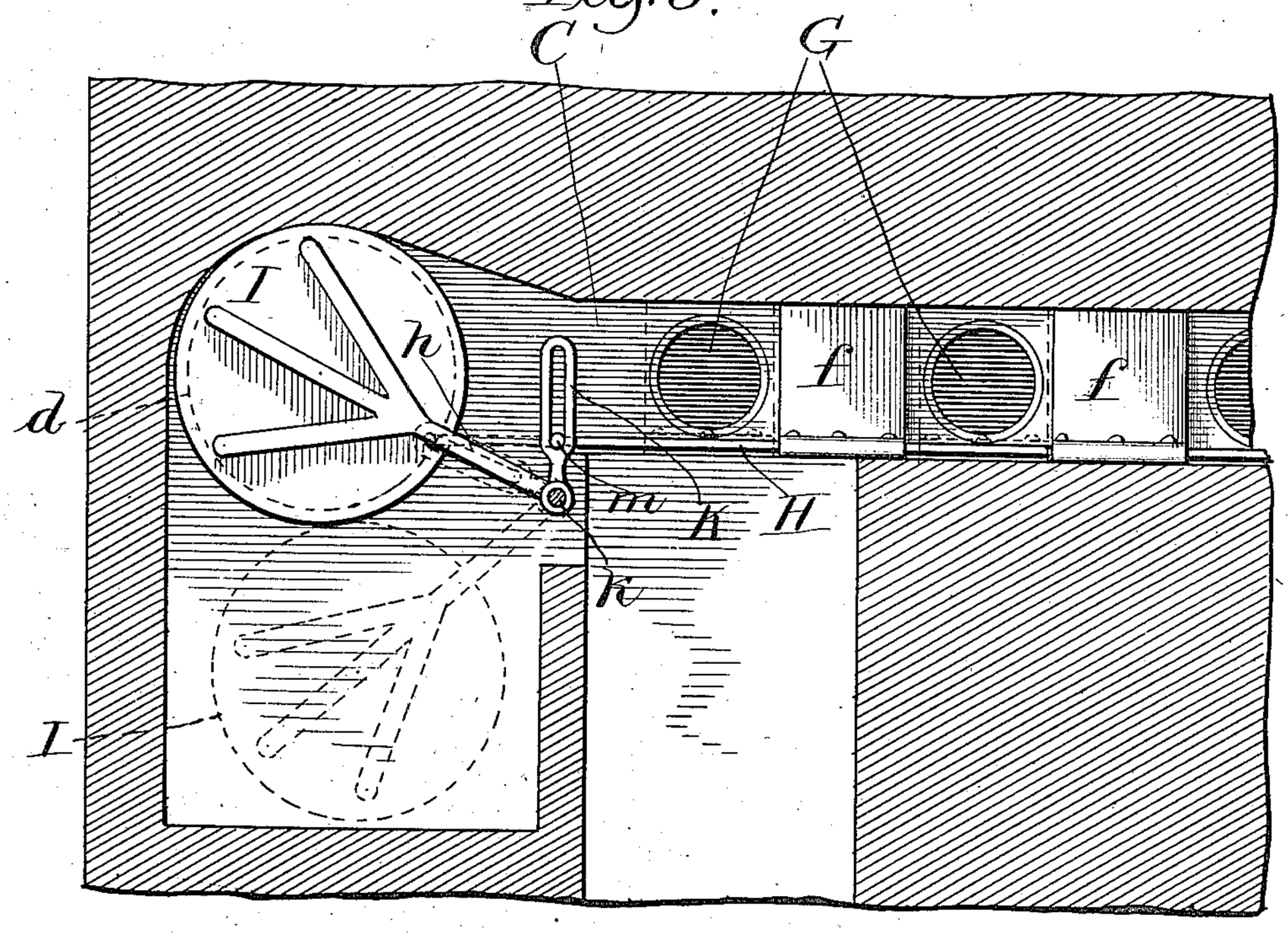
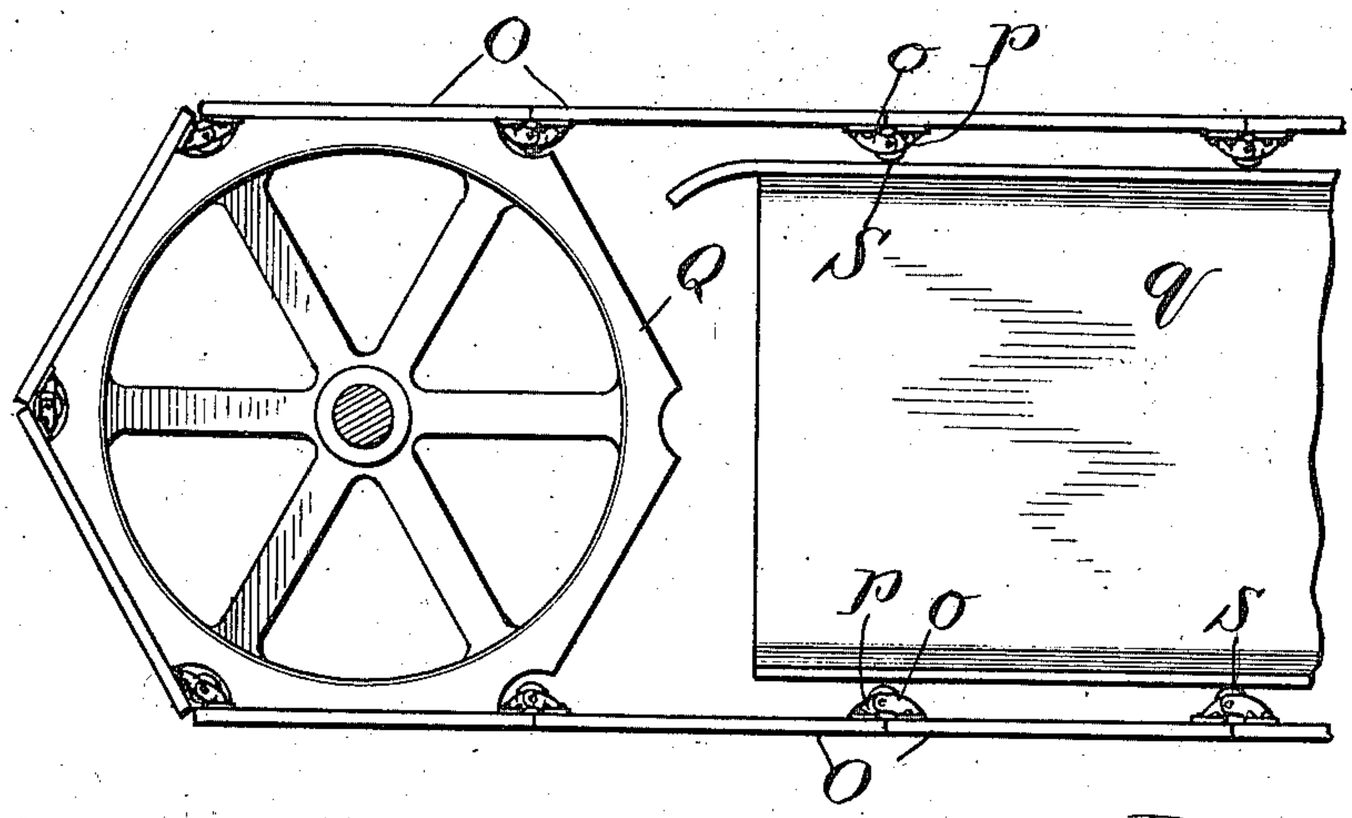


Fig. 7.



Witnesses:
O. M. Kennick
E. K. Lundy

Inventor
William Ferdinand Petersen
by Frank D. Thomson
Atty

UNITED STATES PATENT OFFICE.

WILLIAM FERDINAND PETERSEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE PETERSEN OVEN COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BAKER'S OVEN.

975,889. Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed February 24, 1908. Serial No. 417,433.

To all whom it may concern:

Be it known that I, WILLIAM FERDINAND PETERSEN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bakers' Ovens, of which the following is a full, clear, and exact description.

My invention relates to bakers' ovens, and one of its objects is to provide a movable hearth by means of which the bread, or other products of a similar character, can be fed to or withdrawn from the oven quickly and conveniently, or shifted longitudinally to any position within the length of the oven desired.

Another of its objects is to control the heat, by partially or wholly closing the heat-flues extending lengthwise through the upper part of the oven, and partially or wholly opening enlarged smoke passages in the side-walls of the housing of the oven and thus shunt the heated products of combustion from the oven out through said side-walls; substantially as hereinafter fully described, and as particularly pointed out in the claims.

In the drawings:—Figure 1 is a longitudinal section of a baker's oven having my improvements applied thereto. Fig. 2 is a horizontal section thereof taken on dotted line 2, 2, Fig. 1. Fig. 3 is a vertical transverse section of the same taken on dotted line 3, 3, Fig. 2. Fig. 4 is a similar view taken on dotted line 4, 4, Fig. 2. Figs. 5, 6 and 7 are detail views of the moving hearth. Fig. 8 is a detail view of the damper or valve closure controlling mechanism for the heat flues of the oven.

My invention relates to a baker's oven in which the products of combustion are, preferably, generated in two corresponding fire-chambers A, which are situated in the rear of the structure next the foundation, and from each of which said products of combustion pass horizontally to the front through parallel longitudinal twin passages *a*, that are separated by a vertical partition *b* extending from the front wall of the housing back to the fire-chamber, in the vertical plane of the center of width of the latter. At the front these twin passages *a* extend laterally in opposite directions and then extend longitudinally in the same horizontal plane back past the sides of the fire-chamber to the rear wall of said housing where they communicate with the lower end of vertical shafts *c*. Near the plane of the top of the baking chamber B, which latter is located between the front and rear walls of the housing thereof, a transverse horizontal chamber C is made in said rear wall into which the products of combustion are discharged from the upper ends of the shafts *c*, *c*, and in the side-walls of the housing two longitudinal auxiliary flues *d*, *d*, are made, with the rear ends of which the ends of the transverse chamber C communicate. The forward ends of these flues *d* discharge into a lateral chamber D in the front wall, from whence the products of combustion flow back to the rear of the structure again through a series of longitudinal passages E, E, in the arch of the oven, to chimney F. The heated chamber constituting the over proper is heated by the passage of the products of combustion therethrough in any suitable manner, but I prefer to heat the same by passing said products of combustion through a series of pipes G, which extend longitudinally through the upper portion of the oven, and have their rear ends communicate with and receive the products of combustion from chamber C and their forward ends communicate with and discharge into chamber D. My improvements are designed to regulate the current of heat flowing through this series of pipes G by means of a series of dampers or valves *f*, *f*, consisting of suitable metal plates, whose lower edges are secured to a transversely reciprocal bar H, which is so placed in the chamber C, that the valves contact with the side of said chamber from which the pipes G extend. Pipes G are, preferably, equi-distant and so said valves *f* are placed at such a distance apart that by moving bar H longitudinally in the proper direction, they will pass in front of the mouths of the pipes G, to open or close the same, to the extent desired. Bar H extends out through the side-walls of the housing and is provided with means for reciprocating it, consisting of a lever of the third class, whose upper end is fulcrumed to suitable lugs secured to and projecting from the outer surface of said side-wall, and to which the adjacent end of the bar is pivotally secured at a suitable point just below the fulcrum.

The intake ends of auxiliary flues *d* com-

municating with chamber C, are closed by means of dampers I, which are, preferably, circular, and are secured in any suitable manner to the end of an arm *h*, projecting from a rock-shaft *k*, which latter is journaled in suitable bearings in the side-walls of the structure preferably in about the plane of the lowest segment of said flues. These rock-shafts *k* are each provided with a slotted arm K extending upward at an angle to the arm *h*, which are connected to the bar H by means of lateral fingers *m* projecting from said bar, through the slots in said arms K. Dampers I are correspondingly arranged with relation to bar H, and also with relation to valves *f*, so that when said valves are in position to open pipes G, dampers I will close the auxiliary flues *d*, *d*, and thus any surplus heat or products of combustion will be shunted into said auxiliary flues.

The front end of the oven B is provided with a door M, which is hinged to the arch of the door-opening, and is adapted to swing inward and upward to permit access to the oven, or swing downward until its lower edge contacts with the inner horizontal edge of a sill-plate *n* to close the same. The bread introduced into this oven is supported upon a movable hearth, which consists of a series of transverse metal plates O, the width of which correspond practically to the width of the oven, and the length of which is comparatively short, say not more than ten to twelve inches. The transverse edges of these plates are hinged to each other by means of lugs *o*, secured to and projecting from the edge of one plate, and lugs *p* projecting from the adjacent edge of the other plate. Lugs *p* are placed nearer together than the lugs *o*, and said lugs are inclined toward each other so that the lugs *p* will come between the lugs *o* and are connected thereto by a pintle P, the axis of which is in the plane struck midway between the edges of the two plates. There are a sufficient number of these hearth-plates, connected to each other in the manner just described, to extend from the front of the oven, where they pass around a polygonal drum Q and to the rear end of the oven where the hearth passes around a corresponding drum R. Drum Q is mounted upon a suitable shaft having bearings in the side-walls of the front of the oven, and drum R is mounted upon a shaft that is journaled in bearings in the side-walls of the rear end of the oven, preferably in a plane slightly above the horizontal plane of the shaft of drum Q. The flat faces of the sides of the drums Q and R correspond in width to the distance between the front and rear edges of the hearth-plates, and when said drums are revolved, the said plates break joints at the angles of said polygonal drums, and said angles are recessed to accommodate the passage of the hinges of said plates.

Between the lugs *p*, *p*, of the hearth-plates, I journal upon the pintle P, small friction rollers, which are adapted to roll upon the upper edges of suitable I-beams *q*, that extend longitudinally between the upper and lower stretches of the endless hearth, and are supported by transverse I-beams *r* that bridge across the oven, and have their ends supported in the side-walls of the same. I prefer to have the top flanges of the ends of I-beams *q* extend beyond the extremities of the webs thereof, and bent downward, so that as the hearth revolves, friction rollers S can strike and ride upon the upper edges of said I-beams without meeting with opposition. The shaft X of one of the drums Q is, preferably, extended at one or both ends beyond its bearings to the outside of the oven where it is provided with a suitable pulley or sprocket wheel Y that is connected, through the medium of a belt or chain Z, with any suitable source of power. When the loaves are being placed on the hearth the latter is moved slowly toward the rear of the oven where it remains during the baking process, after which it is released and is permitted to gravitate forward as fast as the baked bread can be removed.

Because of the ability of the baker to move the bread to different points within the length of the oven, by means of my improved movable hearth, and control the heat therein, better results are obtained when baking because, as is well known to the bakers' trade, it is difficult to maintain an even heat in all parts of an oven, even under the most favorable conditions. Besides this, the introduction and removal of the bread from the oven is greatly facilitated and made both easier and more rapid.

What I claim as new is:—

1. A bake oven comprising a baking chamber, a series of flue-pipes extending through the upper portion of said chamber, a by-pass flue, a union mixing-chamber arranged transversely across one end of said baking chamber from which both said flue-pipes and said by-pass receive the products of combustion, a series of dampers movable with and mounted upon a reciprocal rod adapted to operate simultaneously to open or close said flue-pipes, and means connected to said rod adapted to regulate said by-pass.

2. A bake oven comprising a baking chamber, a movable hearth therefor, flue-pipes extending through the upper portion of said chamber, a by-pass flue, a union mixing chamber arranged transversely across one end of said baking chamber from which both said flue-pipes and said by-pass receive the products of combustion, a series of dampers movable with and mounted on a reciprocal rod adapted to operate simultaneously

to open or close said flue-pipes, and means connected to said rod and adapted to regulate said by-pass.

3. A bake oven comprising a baking chamber, a movable hearth therefor, a series of flue-pipes extending horizontally through the upper portion of said chamber, a by-pass, a union mixing chamber arranged transversely across one end of said oven above said baking chamber from which said flue-pipes receive the products of combustion, and a series of connected dampers adapted to operate simultaneously to open or close said flue-pipes and are connected with separate means adapted to regulate said by-pass.

4. A bake oven comprising a baking chamber, a movable hearth therefor, a series of flue-pipes extending through the upper portion of said chamber, a by-pass flue, a union mixing chamber arranged transversely across one end of said baking chamber from which said flue-pipes and said by-pass receive the products of combustion, a longitudinally reciprocal rod arranged in said mixing chamber, a series of dampers mounted upon said rod and adapted to operate simultaneously to open or close said flue-pipes, and separate means connected to said rod adapted to regulate said by-pass.

5. A bake oven comprising a baking chamber, a movable hearth therefor, a series of flue-pipes extending through the upper portion of said chamber, a by-pass flue, a union mixing chamber arranged transversely across one end of said baking chamber from which said flue-pipes and said by-pass receive the products of combustion, a longitudinally reciprocal rod arranged in said mixing chamber, a series of dampers mounted upon said rod and adapted to operate simultaneously to open or close said flue-pipes, and separate means connected to said rod adapted to close said by-pass when said flue-pipes are open, and vice versa.

In testimony whereof I have hereunto set my hand and seal this 4th day of February, A. D., 1908.

WILLIAM FERDINAND PETERSEN. [L. S.]

Witnesses:

FRANK D. THOMASON,

E. K. LUNDY.