

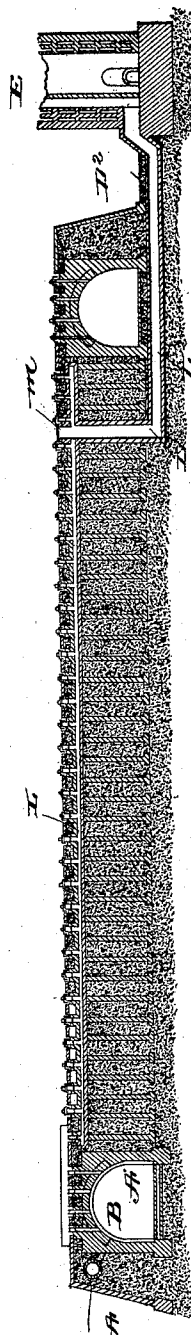
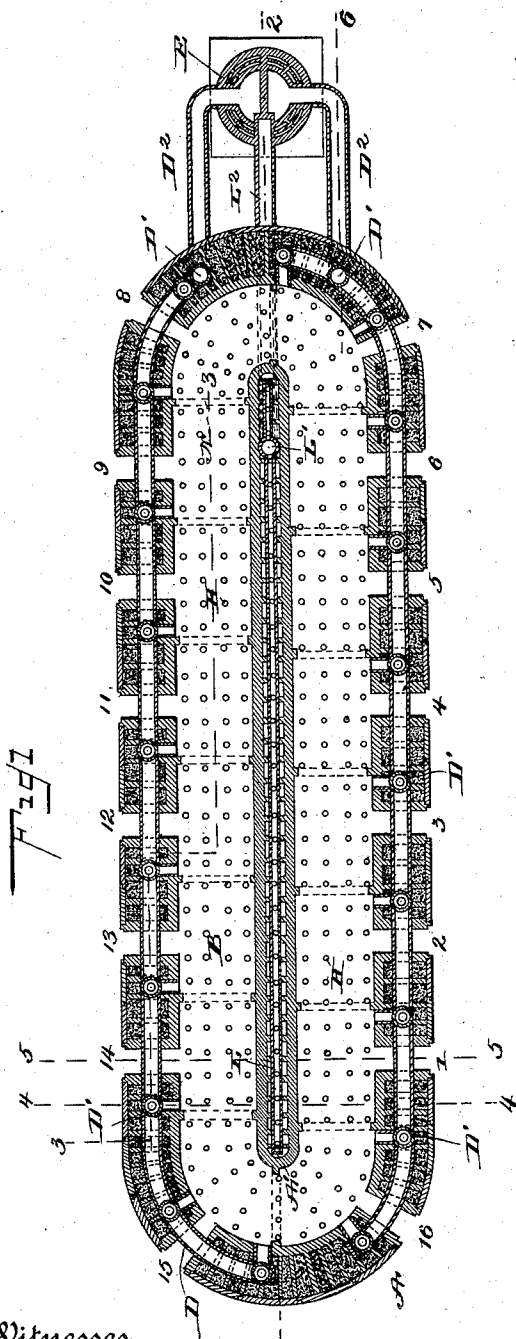
(No Model.)

6 Sheets—Sheet 1.

M. A. T. BOEHNCKE.
CONTINUOUS KILN.

No. 474,807.

Patented May 17, 1892.



Witnesses

John Inman
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Inventor

Max A. T. Boehncke,
By his Attorney,
J. R. Little

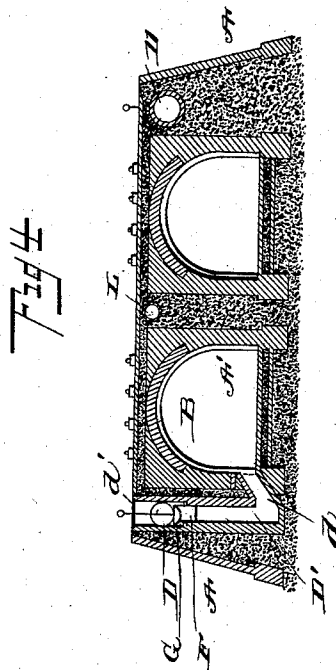
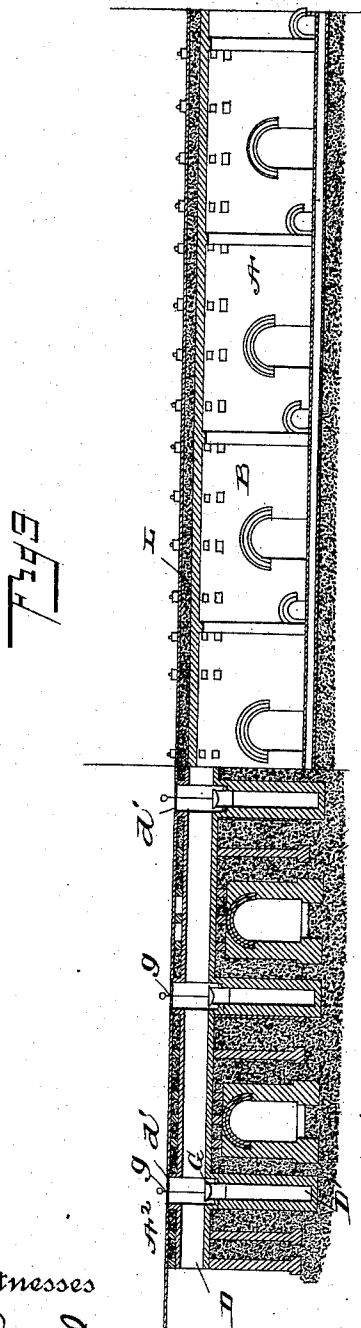
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M. A. T. BOEHNCKE.
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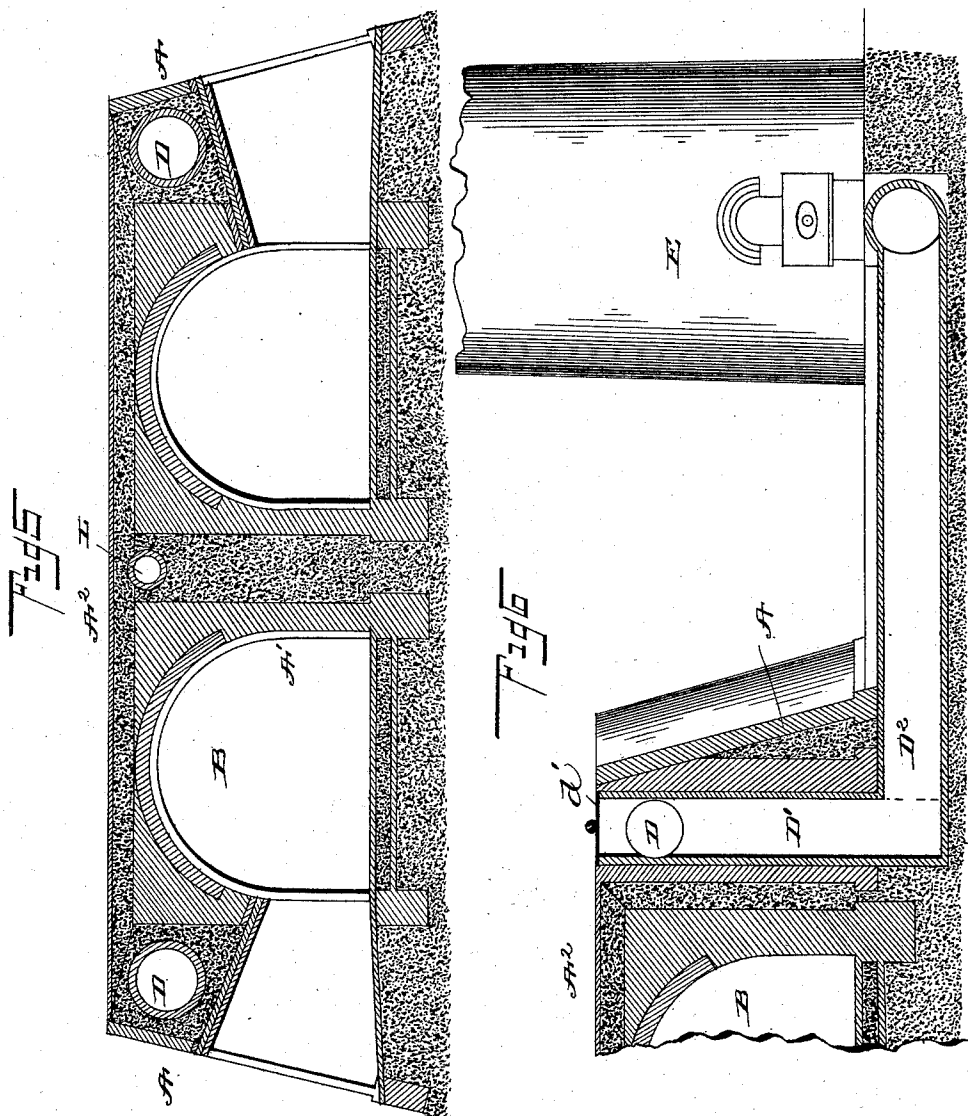
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M. A. T. BOEHNCKE.
CONTINUOUS KILN.

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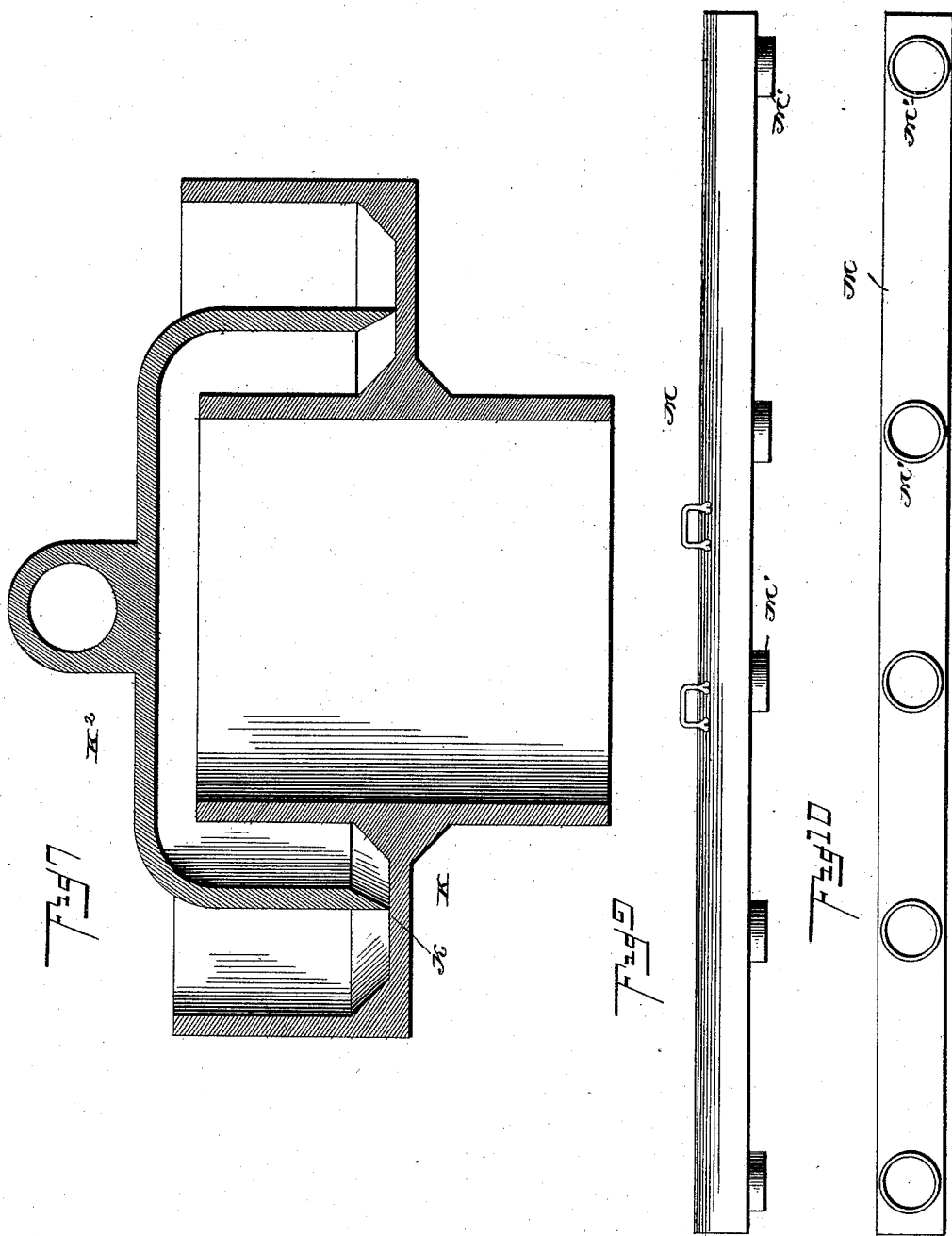
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M. A. T. BOEHNCKE.
CONTINUOUS KILN.

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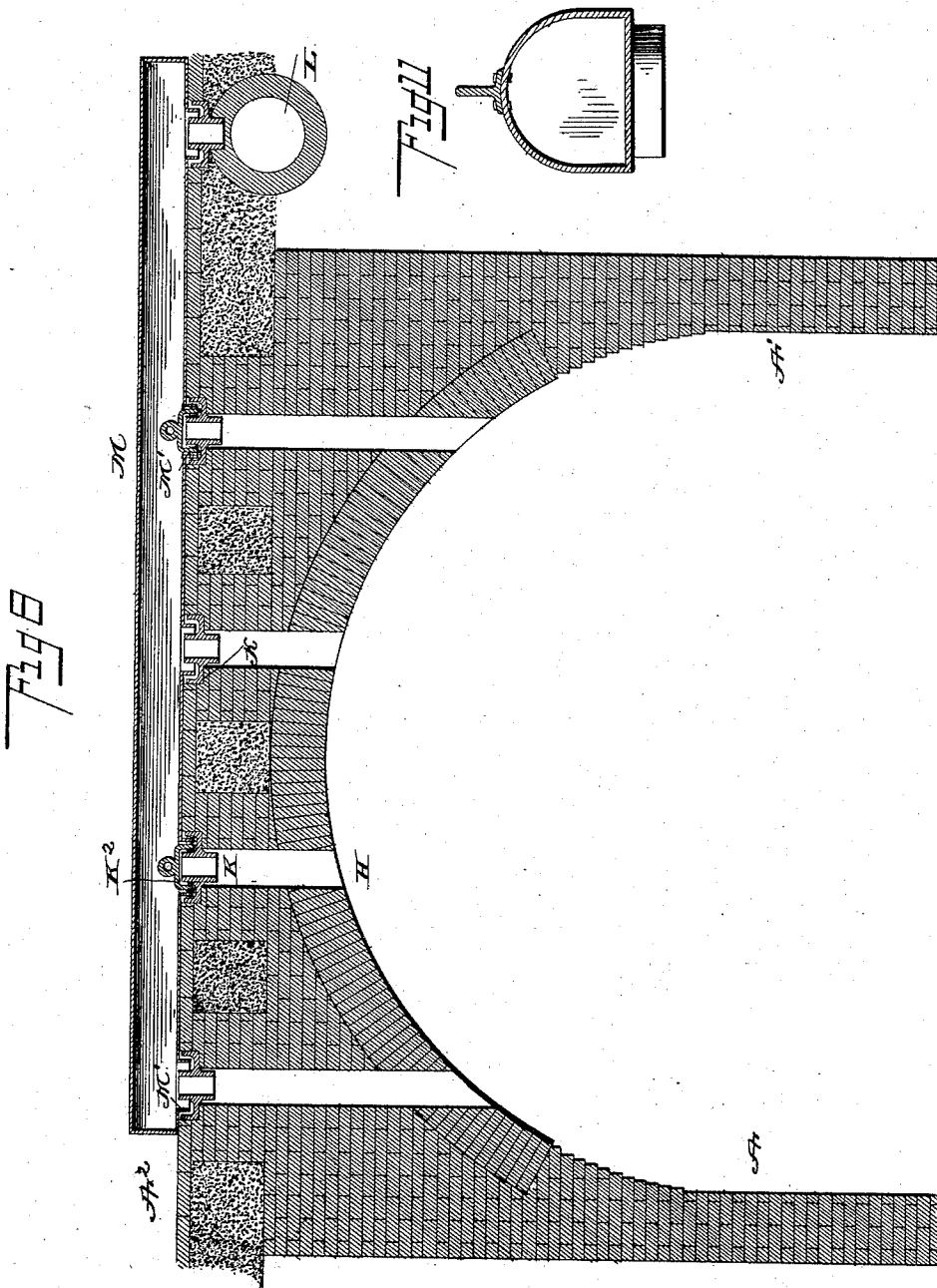
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M. A. T. BOEHNCKE.
CONTINUOUS KILN.

6 Sheets—Sheet 5.

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Patented May 17, 1892.



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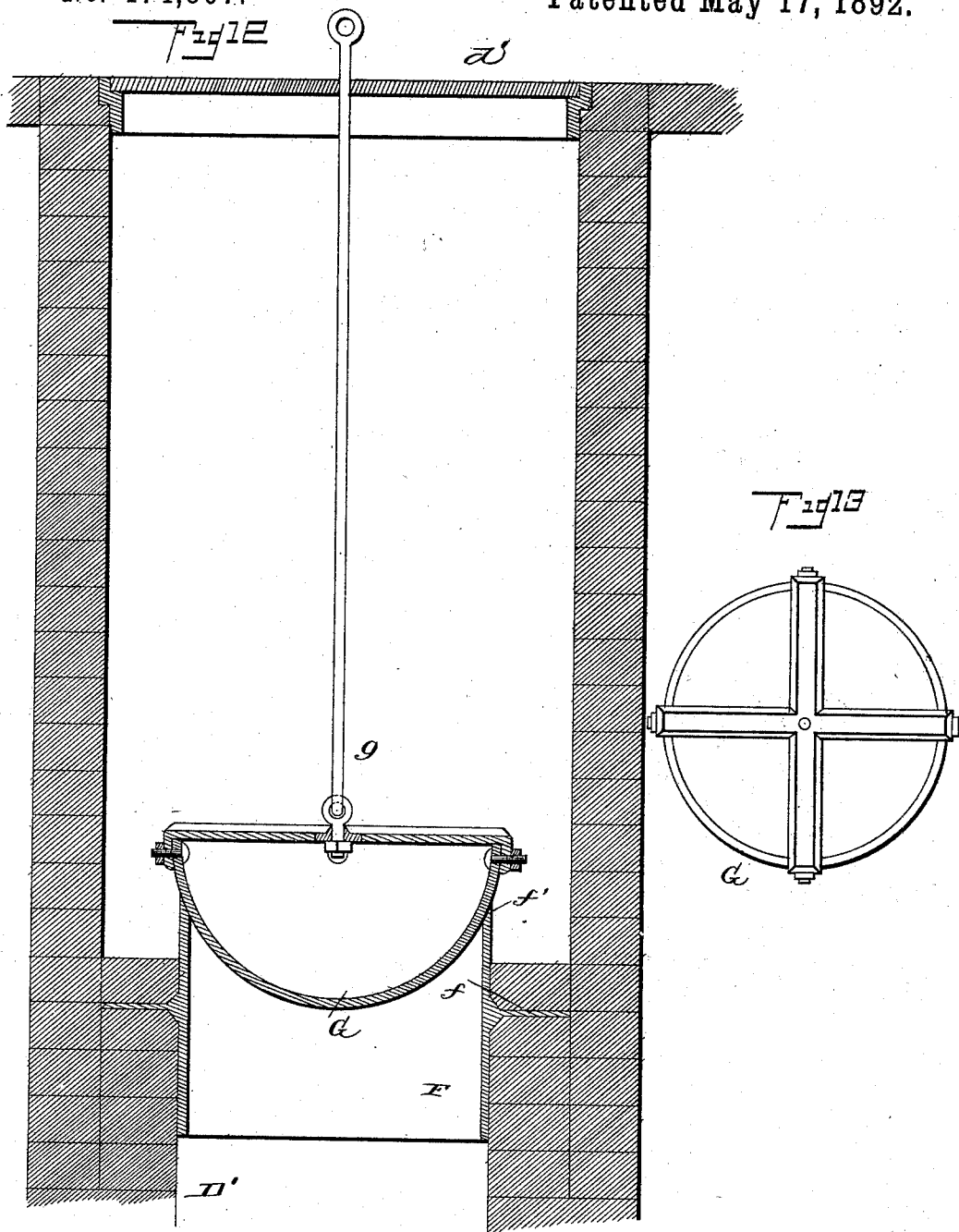
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6 Sheets—Sheet 6.

M. A. T. BOEHNCKE.
CONTINUOUS KILN.

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UNITED STATES PATENT OFFICE.

MAX A. TH. BOEHNCKE, OF CENTINELA, CALIFORNIA.

CONTINUOUS KILN.

SPECIFICATION forming part of Letters Patent No. 474,807, dated May 17, 1892.

Application filed July 11, 1891. Serial No. 399,224. (No model.)

To all whom it may concern:

Be it known that I, MAX A. TH. BOEHNCKE, a citizen of the United States, residing at Centinela, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Continuous Brick-Kilns, of which the following is a specification.

This invention relates particularly to continuous brick-kilns; and it has for its object to provide a kiln of this character in which each arched compartment is not only provided with the usual downdraft-flues, but also with a series of updraft-flues, which flues communicate directly with the chimney and independent of each other, thereby dispensing with the expensive structure of a smoke-chamber.

A further object of the invention is to provide a novel form of covering for the feed-pipes, whereby they are rendered air-tight; and it is also the object of my invention to provide a portable air-conductor which is adapted to connect the feed-pipes with the main updraft-flue.

A further object of my invention is to provide a novel form of damper for the downdraft-flue and means for operating the same, and a still further object is to provide a kiln that shall be comparatively simple and cheap in construction and thoroughly efficient in operation.

With these various objects in view my invention consists in the peculiar construction of the various parts and their novel combination or arrangement, all of which will be more fully hereinafter described, and pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a horizontal section taken above the foundation and showing a continuous kiln embodying my invention. Fig. 2 is a vertical longitudinal section taken on the plane of the line 2 2 of Fig. 1. Fig. 3 is a vertical section taken on the line 3 3 of Fig. 1. Fig. 4 is a transverse vertical section taken on the plane of the line 4 4, Fig. 1. Fig. 5 is a view similar to Fig. 4 and taken on the plane of line 5 5, Fig. 1. Fig. 6 is a section taken on plane of line 6 6, Fig. 1. Fig. 7 is a detail sectional view of the improved feed-pipe and cover. Fig. 8 is a transverse section in detail of a part of the kiln, showing the up-

draft-flues, &c. Fig. 9 is a side view of the air-conductor. Fig. 10 is a bottom view of the same, and Fig. 11 is a transverse section of the same. Fig. 12 is a detail view of the damper and regulating mechanism. Fig. 13 is a top plan view of the same.

In carrying out my invention I construct my kiln essentially elliptical in shape, consisting of an elliptical outer wall A, an inner wall A', and an arched roof A², thus producing a continuous arched chamber B. The outer wall A is made much thicker than the inner wall and is provided with any suitable number of doors. In the drawings I have shown sixteen doors, thus dividing the continuous chamber B into sixteen sub-chambers, numbered 1 to 16, inclusive.

Main or horizontal downdraft-flues D are arranged in the wall A, near the top of the same, said flues D being arranged on opposite sides of the axial line of the kiln and extending from end to end of the kiln. Near one end of the kiln are arranged two vertical downdraft-flues D', with which the main draft-flues communicate, the downdraft-flues thus being kept independent of each other. The vertical flues D' each communicate with the horizontal flues D², which in turn communicate with the chimney E. Vertical downdraft-flues D' are also arranged in the wall A of each compartment, and said flues communicate with their respective compartments through the flue or passage *d*. Each vertical flue D' extends also above the main downdraft-flue D, and has an opening in the top of the wall A, which opening is normally closed by a manhole-cover *d'*.

Just below the junctures of the flues D and D' is arranged in each flue D' (except those which communicate with flue D²) a pipe F, having an annular flange *f*, upon which it rests within the flue. The upper edges of this pipe are cut away, as at *f'*, thus forming a seat adapted to receive the convex damper G, said damper having a vertical operating-rod *g* attached thereto, which extends through the cover *d'*, whereby the damper can be raised or lowered at will. Each arched compartment is constructed with a number of flues or feed-chutes H in the roof of the same, and in the drawings I have shown each compartment provided with twenty such flues or chutes ar-

ranged in five rows of four chutes each. At the top of each flue or chute H is arranged a feed-pipe K, said pipe being provided with an annular grooved collar K' upon its exterior and upon which the pipe rests on the top of roof to support itself in the feed-chutes. The annular grooved collar is also adapted to receive a suitable sealing medium—such as sand—so that when the cap K² of the feed-pipe is placed over the same and rests in and upon the collar K' the feed-pipe will be sealed completely.

Near the top of the inner wall A' is constructed the main updraft-flue L, said flue extending from end to end of the wall, and near the end adjacent to the chimney communicates with a vertical flue L', which in turn communicates with a horizontal flue L², leading also to the chimney, but independent of the flue D². Openings *m* are made in the top of the main updraft-flue L, said openings being arranged in alignment with the rows of feed-holes, and in each opening is arranged a pipe similar to the feed-pipes K. The object of the flue L is to create an upward draft through the feed-chutes when no fuel is being fed to the same, and this is done by connecting the said feed-chutes and updraft-flue L. This is done by means of air-conductor M, essentially tubular in form, closed at each end and provided at its bottom with a series of openings having pipes *m'* arranged therein, which pipes are adapted to fit over the ends of the feed-pipes in the same manner as the cover or caps K². By this construction the current or draft may pass up the feed-chutes through the air-conductor into the main updraft-flue and out into the air.

I will now suppose the kiln to be in operation and all the doors temporarily walled up, except those of compartments 8, 9, and 10. Upon inspection of compartment 8 it will be noticed that it is separated from chamber 7 by a paper partition N, attached to the inwardly-projecting shoulders *w*. This partition keeps the cold air from entering the compartment 7. Compartment 8 is being reset with green brick, and from compartment 10 the burned brick ready for use are being removed. All the downdraft-dampers are closed, except the one of compartment 6, and the air-conductor M connects but one row of feed-chutes of compartment 7 with the updraft-flue L. At regular intervals fuel is fed to the chutes of compartments 15 and 16, which are under full fire, and all the compartments back of 15 are cooling, and those in front of 16—that is, 1, 2, 3, &c., are heating and water-smoking. At intervals of several hours, according to the size of the kiln, the firing is advanced one row and one row is dropped from the rear, thus advancing in twenty-four hours one whole compartment, and by this time compartment 1 will be in full fire. Each time that the firing is advanced one row the air-conductor M is also advanced one row, and it will of course be understood that as soon as the conductor

is removed the feed-pipes are again sealed and remain so. When compartment 8 is filled with green brick, a paper partition is placed between it and compartment 9, and the partition between compartments 7 and 8 removed by means of strings arranged for that purpose. The downdraft-flue of compartment 6 is now closed and the damper of 7 opened, and the air-conductor has already been moved as the firing advanced from compartment 7 to 8. By advancing the air-conductor with the firing when a new compartment is taken the upper part of the previous one will be gradually and entirely water-smoked, and the lower part will be water-smoked through the downdraft-flues. Thus the work goes on from day to day—some compartments burning, some cooling, others being refilled, while others still are being unloaded. The cold air, entering compartments 8, 9, and 10, cools the bricks of 11 and 12, &c., and by this time has become heated and rushes into the compartments 15 and 16, and then into 1, where it heats the bricks before fuel is applied to said compartment. The heated air then goes on through the compartments 2, 3, &c., drying and water-smoking, and passing out through the downdrafts of 6 and updrafts of 7 into the chimney.

Having thus described my invention, what I claim as new, and desire to secure, is—

1. In a brick-kiln, the combination, with a continuous chamber divided into a series of sub-chambers, of horizontal downdraft-flues having communication with the chimney, vertical downdraft-flues communicating with the respective sub-chambers and with the exterior of the kiln, the exterior openings being normally closed, said vertical flues intersecting the horizontal flues, and dampers adapted to interrupt communication between the individual vertical flues, substantially as set forth.

2. In a brick-kiln, the combination, with a burning-chamber provided with vertical downdraft-flues, vertical updraft-flues, and with a chimney, of main horizontal downdraft-flues and a main horizontal updraft-flue, said horizontal flues each having independent communication with the chimney, substantially as and for the purpose set forth.

3. In a brick-kiln, the combination, with a chamber provided with combined feed-chutes and updraft-flues arranged in rows and provided at their exterior ends with a projecting annular flange adapted to be normally inclosed by sealing-caps, and a horizontal updraft flue communicating with the chimney and provided with flanged openings in alignment with the rows of feed-chutes and normally closed by caps, of a portable conductor provided at its lower side with pipes coinciding with and adapted to receive the flanges of the feed-chutes and the flange of the respective opening in the updraft-flue, substantially as set forth.

4. In a brick-kiln, the combination, with a chamber provided with combined feed-chutes

and updraft-flues arranged in rows and provided at their exterior openings with an annular flange surrounded by a recess adapted for the reception of a sealing medium, said
5 openings being provided with caps normally inclosing the flanges, and a horizontal updraft-flue communicating with the chimney and provided with flanged openings in alignment with the feed-chutes and having a recess surrounding the flange and adapted for the reception
10 of a sealing medium, said flanges being normally inclosed by sealing-caps, of a portable conductor closed upon all sides and provided at its under side with pipes coinciding with
15 the feed-chute and respective horizontal flue-openings and adapted to be seated in the recesses surrounding said openings, substantially as and for the purpose set forth.

5. In a brick-kiln, the combination, with a
20 continuous chamber divided into a series of sub-chambers, main horizontal downdraft-flues, and a main horizontal updraft-flue, all

of said flues having independent communication with a chimney, of vertical downdraft-flues extending from the exterior of the kiln
25 to the bottom of each sub-chamber and having its exterior end normally closed, said vertical flues intersecting the main downdraft-flue and being provided with a damper adapted to interrupt communication with the latter,
30 vertical updraft-flues arranged in rows in the top of each sub-chamber and in alignment with openings in the main updraft-flue, said flues being normally closed, and a portable
35 conductor for connecting the vertical updraft-flues with the respective opening in the main updraft-flue, substantially as and for the purpose set forth.

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

MAX A. TH. BOEHNCKE.

Witnesses:

CHARLES ELLERY,
ALFRED BECK.