

No. 736,492.

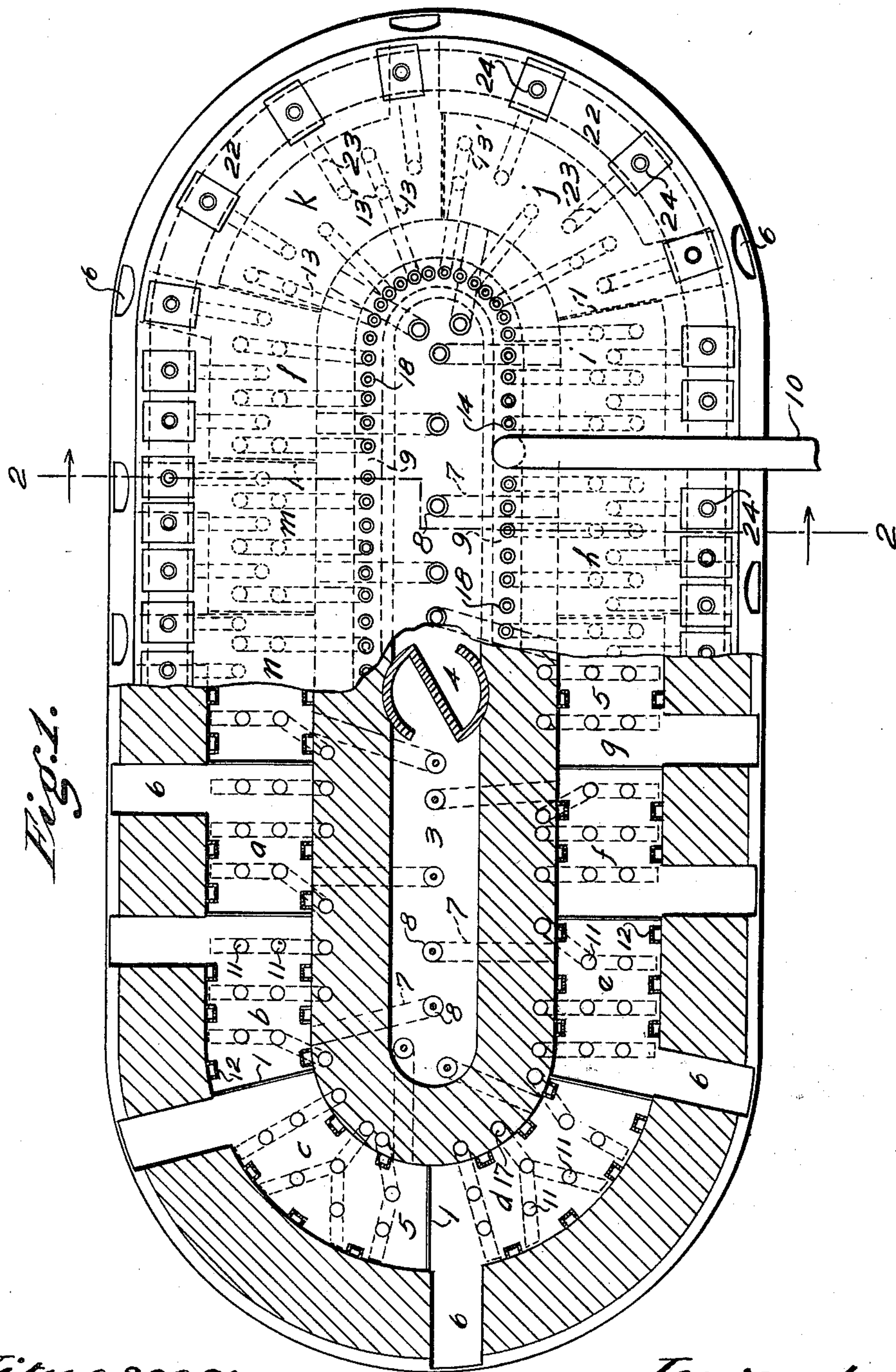
PATENTED AUG. 18, 1903.

C. CEBULLA.
BRICK KILN.

APPLICATION FILED DEC. 12, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

Rudow Rummel
Blanche Michael,

Inventor,

Carl Cebulla
by Rummel & Rummel
his Attorneys.

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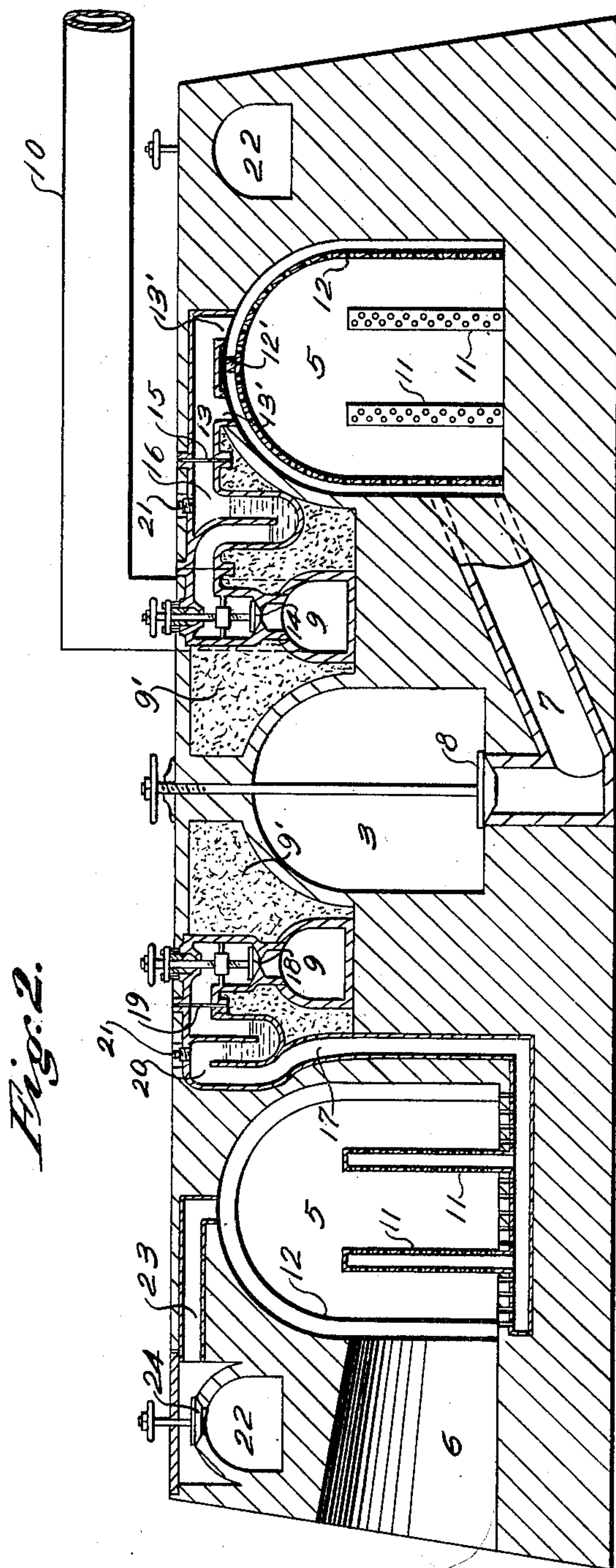
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UNITED STATES PATENT OFFICE.

CARL CEBULLA, OF CHICAGO HEIGHTS, ILLINOIS.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 736,492, dated August 18, 1903.

Application filed December 12, 1902. Serial No. 134,916. (No model.)

To all whom it may concern:

Be it known that I, CARL CEBULLA, a subject of the Emperor of Germany, and a resident of Chicago Heights, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Brick-Kilns, of which the following is a specification.

The main objects of my invention are to provide a form of gas-heated brick-kiln which is so constructed that gas supplied by a producer is maintained at a high temperature during its passage to the burners, and thus avoiding the possibility of explosion; to provide an improved arrangement of gas-admission flues whereby the bricks are uniformly burned; to provide an improved arrangement of air-passages whereby the heat given off by cooling bricks in one part of the kiln may be utilized for drying fresh bricks in another part of the kiln. I accomplish these objects by the device shown in the accompanying drawings, in which—

Figure 1 is a top plan, partly in section, of a brick-kiln constructed according to my invention. Fig. 2 is a vertical transverse section along the line 2 2 of Fig. 1.

In general arrangement the device shown consists of a central smoke-chamber 3, having in the middle of same a chimney or blower 4, the smoke-chamber 3 being surrounded by an endless or annuloidal chamber 5, within which the bricks or other articles which are to be burned are stored. The chamber 5 is subdivided into a plurality of smaller chambers *a* to *n* by means of removable paper partitions 1. Each of the subdivisions *a* to *n* communicates with the exterior of the kiln by means of a passage 6, which is closed by a wall of brick in the usual way while articles in its respective compartment are being burned. Each of the compartments *a* to *n* also communicates, by means of a passage 7, with the smoke-chamber 3. Each of the passages 7 is controlled by means of a valve 8.

A gas-conduit 9 extends around the smoke-chamber 3 and is surrounded by the masonry of the wall which separates the smoke-chamber 3 from the chamber 5. The gas-conduit 9 is built separately from the adjoining masonry and separately from the masonry upon which it rests, and the space at its sides and above same is filled with sand 9'. Said con-

duit is preferably constructed of a high grade of well-bound clinker-bricks. This gas-conduit 9 communicates with a gas-producer by means of the conduit 10, and the gas contained therein is prevented, on account of the heat of the smoke-chamber 3, from becoming cooled in its passage to the point at which said gas is to be burned.

Each of the compartments *a* to *n* is provided with a plurality of perforated burners 11, and its walls are provided with a plurality of burners 12, which extend vertically upward along the side walls of the compartment and arch over its roof. The burners 12 are also perforated and together with the burners 11 provide means for admitting gas to all sides of the brick, which is stored in the chamber 5. The arched burners 12 communicate with the gas-passage 9 by means of the pipes 13 above the chamber 5. Each of the pipes 13 is controlled by a valve 14, and the passage of flame through the pipe 13 to the gas-conduit 9 is prevented by means of the perforated metal diaphragm 15 and a trap 16, which contains a water seal. It is preferred to divide the burners 12 into two parts by a partition 12' near the top, each part communicating with the pipe 13 through the pipes 13'. Each of the pipes 13' may also be controlled by a valve, which for clearness has been omitted from the drawings. The burners 11 connect with the gas-conduit 9 by means of the passages 17, which are also controlled by valves 18 and provided with a perforated diaphragm 19 and water-trap 20. Water may be supplied to the traps 16 and 20 through the plugs 21.

The burning-chamber 5 is surrounded by an air-passage 22, which extends through the walls of the kiln and entirely around the chamber 5. Each of the compartments *a* to *n* communicates at the top by means of a plurality of pipes 23 with the air-passage 22, and communication between each of the pipes 23 with the air-passage 22 is controlled by means of a valve 24.

By subdividing the chamber 5 into a plurality of smaller compartments *a* to *n* the operation of the device shown is made continuous, as hereinafter described.

In starting the device a quantity of fresh brick is stored within several of the compartments *a* to *n* and a coal fire is main-

tained in one of same until the bricks in said compartment have been heated to a sufficiently high temperature to make the safe admission of gas to said compartment possible. Assume that several of the adjoining compartments have been previously filled with fresh brick and each of same has been separated from the adjoining compartments by means of paper partitions 1 and that the passages 6 connecting each of said compartments with the exterior of the kiln have been sealed by means of a brick wall. Assume that the operations are begun in the compartments *a*, *b*, *c*, *d*, and *e* and that a coal-fire has been started in the compartment *a* and that the paper partitions 1 separating said compartments have been removed, as by burning. During the combustion of the coal in the compartment *a* fresh air is admitted through the empty compartment *n* and the burned gases from the compartment *a* pass through the compartments *b*, *c*, *d*, and *e* and through the passage 7, connecting the chamber *e* with the smoke-chamber 3. The valves 8 of the passages 7, leading from the compartments *b* and *c*, remain closed during this time. During this operation fresh brick is being stored into the succeeding compartments. The passages 6, communicating with same, are closed and the paper partitions 1 are placed between them. As soon as the compartment *a* has become heated to a sufficiently high temperature to make the admission of gas to same safe the valves 14 and 18, which control the burners in the compartment *a*, are opened and the burning of bricks in said compartment is continued by means of the gas thus admitted. Similarly gas is successively admitted by the corresponding valves 14 and 18 to the succeeding compartments when the bricks contained therein have been heated to the proper temperature by the flames from the preceding compartments. At the proper time, in the judgment of the operator, the partition 1, connecting the compartments *e* and *f*, is ignited and burned away, the valve 8, controlling the escape of smoke from the compartment *e*, is closed, and the corresponding valve 8, connecting the compartment *f* with the smoke-chamber 3, is opened. The heated gases escaping from the compartment *a* pass through the compartments *b*, *c*, *d*, *e*, and *f* and escape into the smoke-chamber 3. In this way it will be seen that the burning of the brick continues in successive stages around the circuit of compartments of the chamber 5. Assume now that the brick in the compartment *a* has become burned to a sufficient extent and that the admission of fresh gas to said compartment is stopped. The bricks in the compartment *a* will now be cooled by fresh air passing through such compartment on its way toward the compartment *b*. Some of the heated air from the compartment *a* is drawn off by opening the corresponding valves 24 into the air-passage 22 and is ad-

mitted from such passage to such of the compartments into which fresh brick has been newly placed—say, for instance, the compartments *g* and *h*. This air escapes from such compartments into the smoke-chamber 3, having served to give the bricks in said compartments a preliminary drying previously to the admission of the burned gases from the adjoining compartments of the chamber 5. The bricks are thus more gradually dried than by older methods, and the result is a much more uniform burning. It will be seen that while the bricks in the compartments *c* and *d*, for example, are cooling the bricks in some of the preceding compartments are being removed, those in some of the succeeding compartments are being burned, others are being heated by the burned gases escaping from the burning compartments, still others are being dried by the admission of hot air from compartments which are cooling off, and, lastly, fresh bricks are at the same time being piled into the remaining compartments. It will thus be seen that the operation may be continued indefinitely. Heating by coal or wood is necessary only when the plant is first put into operation.

It will be seen that numerous details of the construction shown may be altered without departing from the spirit of my invention. I therefore do not confine myself to such details, except as hereinafter limited in the claims.

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

1. In a kiln of the class described, the combination of a central smoke-chamber; an annuloidal burning-chamber surrounding said smoke-chamber, said burning-chamber being subdivided into a plurality of compartments, each communicating with the exterior of the kiln by a suitable passage and each being connected with said smoke-chamber by means of a valve-controlled passage; a gas-conduit extending along the walls of said kiln between the smoke-chamber and the burning-chamber in suitable manner to have the temperature of the gas therein maintained through the heat of the smoke-chamber; each compartment of said burning-chamber having a plurality of gas-inlets suitably connected with said gas-conduit; and suitable valves for independently controlling the admission of gas to each of said compartments, substantially as described.

2. In a kiln of the class described, the combination of a central smoke-chamber; an annuloidal burning-chamber surrounding said smoke-chamber, said burning-chamber being subdivided into a plurality of compartments, each communicating with the exterior of the kiln by a suitable passage and each being connected with said smoke-chamber by means of a valve-controlled passage; a gas-conduit extending along the walls of said kiln between the smoke-chamber and the burning-chamber in suitable manner to have the tem-

perature of the gas therein maintained through the heat of the smoke-chamber; each compartment of said burning-chamber having a plurality of gas-inlets suitably connected with said gas-conduit; suitable valves for independently controlling the admission of gas to each of said compartments; an air-conduit extending along said burning-chamber; and suitable valve-controlled passages connecting said air-conduit with each compartment of said burning-chamber, substantially as and for the purpose specified.

3. In a kiln of the class described, the combination of a central smoke-chamber; an annuloidal burning-chamber surrounding said smoke-chamber, said burning-chamber being subdivided into a plurality of compartments, each communicating with the exterior of the kiln by a suitable passage and each being connected with said smoke-chamber by means of a valve-controlled passage; a gas-conduit extending along the walls of said kiln between the smoke-chamber and the burning-chamber in suitable manner to have the temperature of the gas therein maintained through the heat of the smoke-chamber; each compartment of said burning-chamber having a plurality of gas-inlets suitably connected with said gas-conduit; suitable valves for independently controlling the admission of gas to each of said compartments; said burning-chamber being provided with suitable removable partitions separating the various compartments; and an auxiliary air-conduit communicating with each of said compartments and adapted to connect said compartments with each other independently of said partitions, substantially as described.

4. In a kiln of the class described, the com-

bination of a central smoke-chamber; an annuloidal burning-chamber surrounding said smoke-chamber, said burning-chamber being subdivided into a plurality of compartments, each communicating with the exterior of the kiln by a suitable passage and each being connected with said smoke-chamber by means of a valve-controlled passage; suitable means for supplying fuel-gas to each of said compartments for the purpose of heating same; an air-conduit extending along said burning-chamber; and suitable valve-controlled passages connecting said air-conduit with each compartment of said burning-chamber, substantially as and for the purpose specified.

5. In a kiln of the class described, the combination of a central smoke-chamber; an annuloidal burning-chamber surrounding said smoke-chamber, said burning-chamber being subdivided into a plurality of compartments, each communicating with the interior of the kiln by a suitable passage and each being connected with said smoke-chamber by means of a valve-controlled passage; means for supplying fuel-gas to each of said compartments for the purpose of heating same; said burning-chamber being provided with suitable removable partitions separating the various compartments; and an auxiliary air-conduit communicating with each of said compartments and adapted to connect said compartments with each other independently of said partitions, substantially as described.

Signed at Chicago this 22d day of November, 1902.

CARL CEBULLA.

Witnesses:

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RUDOW RUMMLER.