

No. 686,326.

Patented Nov. 12, 1901.

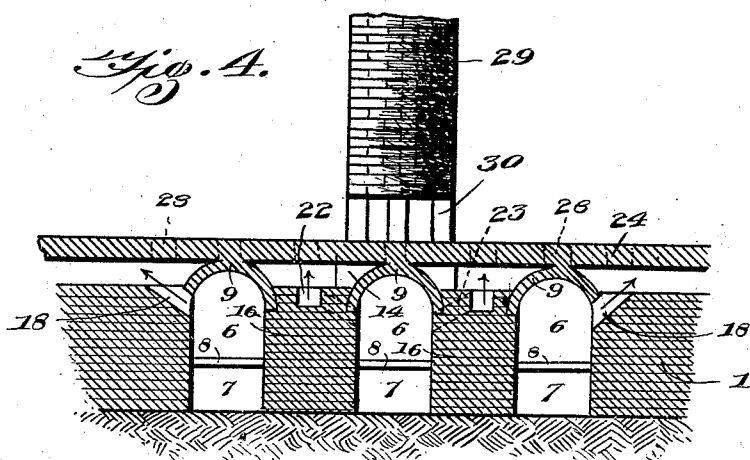
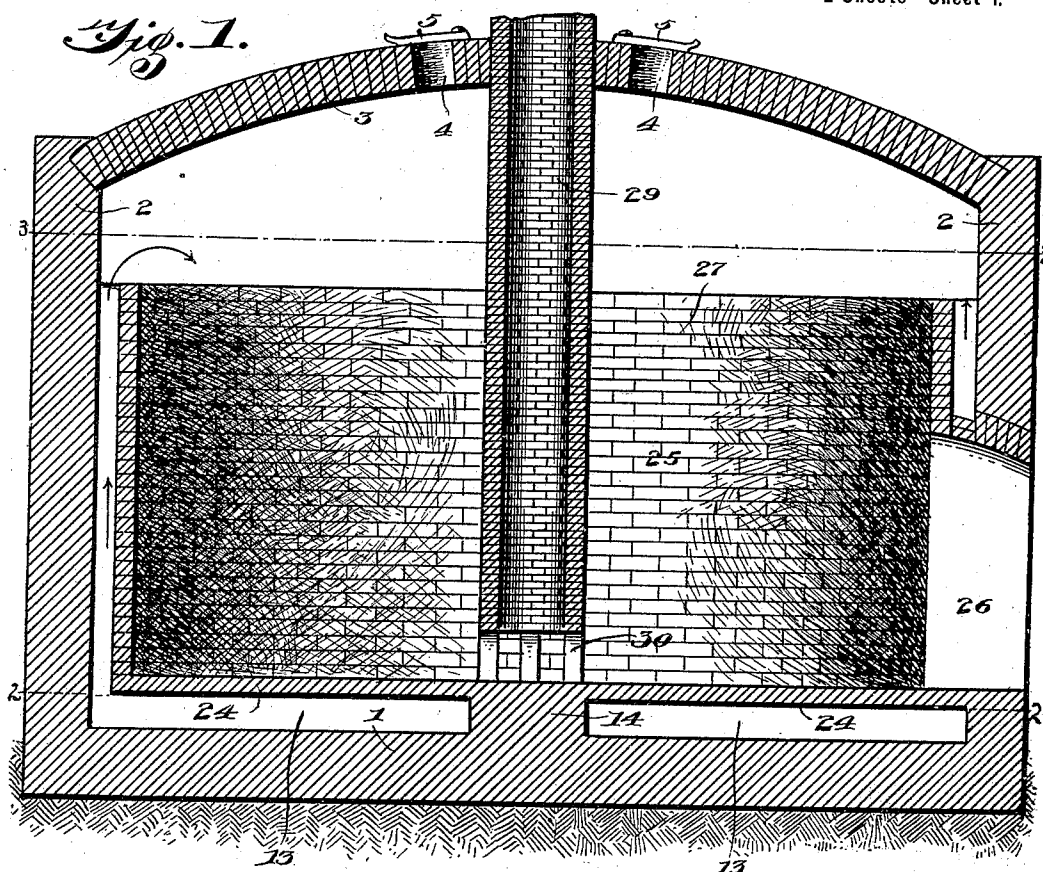
W. H. PATTON.

BRICK KILN.

(Application filed May 8, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
Leif Donders
Chas. D. Hyer.

W.H. Patton, Inventor
by Chas. D. Hyer.
 Attorneys

No. 686,326.

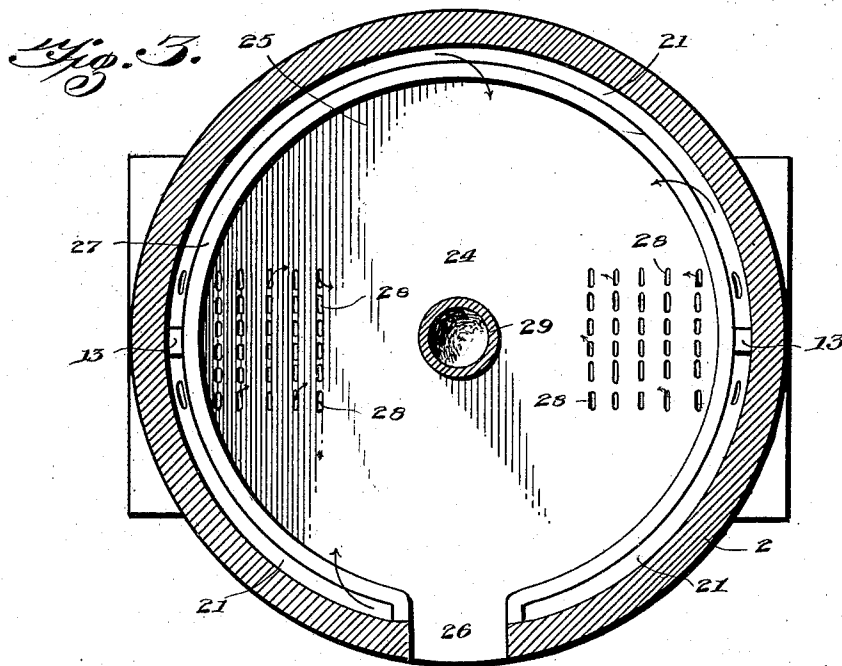
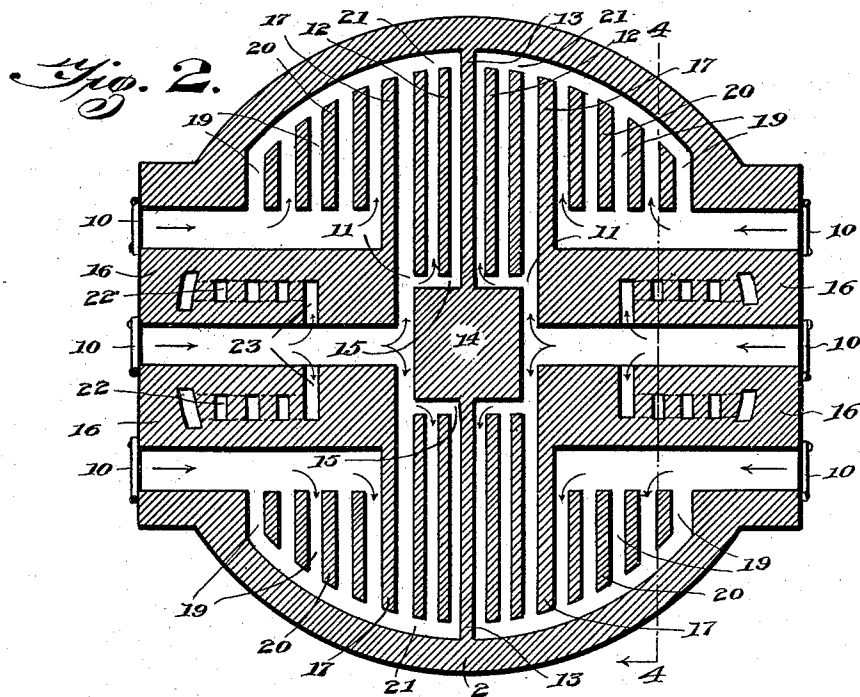
Patented Nov. 12, 1901.

W. H. PATTON.
BRICK KILN.

(Application filed May 8, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
Geo. S. Sander
Chas. D. Hyer

W. H. Patton, Inventor
by C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM H. PATTON, OF PAYNE, OHIO, ASSIGNOR OF ONE-HALF TO
WILLIAM H. KNOKE, OF BELMORE, OHIO.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 686,326, dated November 12, 1901.

Application filed May 8, 1901. Serial No. 59,312. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. PATTON, a citizen of the United States, residing at Payne, in the county of Paulding and State of Ohio, have invented a new and useful Brick-Kiln, of which the following is a specification.

This invention relates to brick or tile kilns; and the object of the same is to so construct the several parts, including the heat and fire flues, that the requisite amount of heat within the burning-chamber will be obtained with the use of a minimum amount of fuel and to interiorly locate the stack, with the escape flues or openings at the bottom thereof, approximately on a level with the floor of the burning-chamber, so that a thorough circulation of the heat will be set up in a downwardly direction and permeate the whole charge of bricks or tiles within the chamber to regularly treat all of the same, and thus utilize the full calorific of the fuel.

The invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a transverse vertical section of a kiln embodying the features of the invention. Fig. 2 is a horizontal section of the same on the plane of the line 2 2, Fig. 1, on a smaller scale. Fig. 3 is a horizontal section of the kiln on the plane of the line 3 3, Fig. 1, on a smaller scale. Fig. 4 is a transverse vertical section taken in the plane of the line 4 4, Fig. 2, showing the burning-chamber floor and part of the stack and the vertical walls omitted.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a base of suitable thickness or vertical extent and from which rises an outer vertical wall 2, supporting a crown or top 3 of arched form and provided near the center with tempering or cooling openings 4, controlled by doors, slides, or the like, as at 5. The base 1 has in the present instance diametrically-disposed furnaces 6, three being located on each side and individually comprising an ash-pit 7, grate-bars 8, and a crown-arch 9, access being had to the outer or entrance ends of said furnaces by

suitable doors 10. The central furnaces run inwardly and open into flues 11, extending in planes at right angles to the direction of the furnaces and which are subdivided by pairs of walls 12 on opposite sides of the center and which have a direction parallel with the said flues to thereby form a plurality of smaller flues. The pairs of walls 12 are also disposed on opposite sides of partition-walls 13, one on each side of the center of the kiln, which extend from the inner portion of the outer wall 2 inward a distance greater than the said walls 12, the inner portions of the walls 13 merging into a central pedestal or support 14, cross-flues 15 being between said walls 13 and the flues 11, to thereby set up an intercommunication of all the flues which are centrally separated by the said partition-walls 13 and insure an equalization of circulation throughout all the flues and avoid having different degrees of temperature at different parts of the flue system. The furnaces are separated by intervening walls 16, running inward to the flues 11, and from the outer portions of the inner ends of the same division-walls 17 extend and form part of the means for producing the flues 11, which serve as the main circulatory mediums for the center furnaces. The outer sides or portions of the outer furnaces at the rear have direct communication by means of upwardly-inclined openings 18, Fig. 4, with a plurality of flues 19 of different lengths and produced by intervening walls 20 and the walls 17, the latter walls being the closing means for the rear terminals of the said outer furnaces. All the walls at right angles to the direction of the furnaces, except the partition-walls 13, terminate at their outer ends at a distance inwardly from the inner surface of the outer wall 2 to form outer curved flues 21, running to the said partition-walls and communicating with all the other flues which open thereinto, as shown by Fig. 2. In the walls 16 of the furnaces a series of short vertically-extending flues 22 are formed and arranged longitudinally in relation to the said walls, the said flues having communication with each other at the bottom, as shown by dotted lines in Fig. 2, the rearmost of said flues 22 having communication with the central furnaces by

means of outwardly-extending upwardly-inclined ducts 23.

To complete the flues that have just been described, a floor-wall 24 of a burning-chamber 25 is laid thereover and on the walls 12, 13, 16, 17, and 20 and the pedestal or support 14 and terminates mainly with the outer ends of the walls 12, 17, and 20. The said floor-wall also continues to form a base for a door-opening 26, which gives access to the said chamber and leads through the outer side wall 2 and a vertical wall 27 of the chamber and is adapted to be closed by a suitable door or like device. (Not shown.) The vertical wall 27 is concentric with relation to the outer wall 2, but is of less vertical extent than the latter, so that a large open space will be provided above the upper terminal of the said chamber. The curved flues 21 are continued vertically between the walls 2 and 27, and the partition-walls 13 are likewise run upwardly flush with the upper terminal of the chamber. At diametrically opposite points in the floor-wall and communicating with the furnaces 6 and flues 22 are a plurality of flue-slots 28, which permit the fire and heat to pass up into the burning-chamber for a purpose which will presently appear. Rising centrally from the burning-chamber and built over the pedestal or support is a stack 29, which passes out through the center of the crown or top 3 to any desired or suitable distance above the latter, and at the bottom of the stack are a plurality of intake-openings 30, extending completely down to the floor-wall of the burning-chamber and forming the sole means of exit to the stack from the kiln.

In many kilns now in use a great difficulty is experienced in maintaining a uniform heat or burning temperature, so that all the charge of tile or brick will be similarly burned or colored, and, moreover, it has been almost impossible to obtain the full effect of the fuel used, and these disadvantages have been mainly due to an irregular circulation of the heat and an escape thereof into the outer atmosphere before the full burning effect thereof has been obtained. By arranging the flues and the several walls to produce the same as set forth, as well as the furnaces, the heat from the latter is caused to fully circulate under the entire burning-chamber floor and around the vertical wall of said chamber in a regular manner and uniformly temper the same without the least fluctuation at any point or the production of cool spots at intervals. Moreover, by having the outlet to the stack at the bottom of the latter and close to the floor of the burning-chamber the heat will be drawn down over the upper end of the wall 27 into the said chamber to the bottom of the latter regularly through the charge of tile or brick and by the time the heat reaches the stack-outlet it will have exhausted its beneficial caloric influence, and thus utilize the full effect of the fuel. To induce a downward circulation, the flue-slots 28 are provided; and through

the latter the heat and flame pass to not only facilitate the burning of the brick and contribute to the maintenance of an equal circulation, but, being close to the floor of the chamber and the outlet to the stack also being near said floor, said heat will pass directly into the stack after performing its function at a low level and set up a suction that will draw the heat from over the upper end of the vertical wall 27 downwardly through the chamber into the stack. The construction set forth will hasten the operation of burning brick, tile, or the like and minimize the use of fuel, and at any time desired during the burning operation or to regulate the heat for a particular burning the cooling-openings 4 will be opened, as will be readily understood.

The several walls and other parts of the kiln, as set forth, may be constructed of any suitable material—such as brick, tile, or the like, or in some instances a concrete substance may be used. It is proposed to thicken the walls where desired and proportionately reduce others and also to change the dimensions of the entire structure, as well as the number of furnaces as may be necessary and desired to accommodate kilns wherein variations in the size and capacity are demanded. If the heat after reaching the stack has any burning virtue remaining therein, it will be transferred to the stack-wall, and as the charge is disposed around the stack said heat will not pass off without effect.

The improved kiln will be found very advantageous and is comparatively inexpensive in the cost of building.

Having thus described the invention, what is claimed as new is—

1. A kiln consisting of the structure having a base with opposite furnaces therein which are separated from each other, said base being provided with a plurality of flues in communication with the furnaces, an outer wall rising from the base and connected to a crown or top arch, an inner wall concentric with the outer wall and having a flue between the same and the latter, the said inner wall forming a burning-chamber and rising only partially the extent of the outer wall and having a floor-wall with opposite flue-slots, the said burning-chamber occupying the full interior portion of the kiln, and a stack rising from the center of the said floor-wall of the burning-chamber and extending upwardly through the crown or top arch and provided with outlet-openings solely at the lower end thereof above the plane of the said floor-wall, whereby the heat will be caused to pass upwardly over the inner wall in part and downwardly through the burning-chamber and exit at the bottom of the stack.

2. A kiln consisting of the structure having a base with opposite furnaces therein, the said furnaces being divided and rendered distinct by a central partition-wall extending fully across the base, a plurality of flues being formed on opposite sides of said partition-

wall and in communication with the separate
 sets of furnaces, an outer wall rising from
 the base and connected to a crown or top
 arch, an interiorly-located burning-chamber
 5 fully occupying the inner portion of the kiln
 and provided by a vertical wall concentric
 with the outer wall and of less height than
 the latter, the burning-chamber having a flat
 bottom with flue-slots therein communicating
 10 with the flues in the base, curved flues being
 provided between the inner and outer walls
 which are separated by upwardly-extending
 portions of the said partition-wall which di-
 vides the flues in the base, and a stack rising
 15 centrally from the floor-wall and the burning-
 chamber upwardly through the crown or top
 arch and having openings solely in the lower
 extremity thereof.

3. A kiln consisting of the structure having
 20 a base with diametrically-opposed sets of fur-
 naces therein, a diametrically-extending cen-
 trally-positioned partition-wall to completely
 separate the sets of furnaces, flues between
 the rear portions of the furnaces and the said
 25 partition-wall, an outer wall rising from the
 base-wall and connected to a top arch or
 crown, an inner burning-chamber having a
 surrounding side wall of less height than said
 outer wall and at a distance inwardly from
 30 the latter to form a flue-space, the said burn-
 ing-chamber having a floor-wall with flue-
 slots therein located inside of the wall of the

burning-chamber and communicating with
 the flues in the base, and a stack rising cen-
 trally from the floor-wall of the burning- 35
 chamber and extending upwardly through
 the crown or top arch, the lower extremity
 only of the said stack having openings therein
 close to said floor-wall of the burning-cham- 40
 ber, the articles to be burned being placed in
 the burning-chamber around the said stack.

4. A brick-kiln having an outer wall struc-
 ture and an inner burning-chamber, the said
 burning-chamber wholly occupying the inner
 portion of the kiln and having a floor-wall 45
 with a stack rising centrally therefrom and
 extending upwardly through the top of the
 kiln, the stack having outlets solely at the
 lower portion thereof adjacent to the floor-
 wall of the burning-chamber, the articles to 50
 be burned being placed in the said burning-
 chamber around the stack and the latter
 forming the sole means of escape for the heat-
 currents during the burning operation, and
 means for supplying and directing the heat- 55
 currents through the said burning-chamber.

In testimony that I claim the foregoing as
 my own I have hereto affixed my signature in
 the presence of two witnesses.

WILLIAM H. PATTON.

Witnesses:

F. A. MEEKER,
 A. C. MEEKER.