

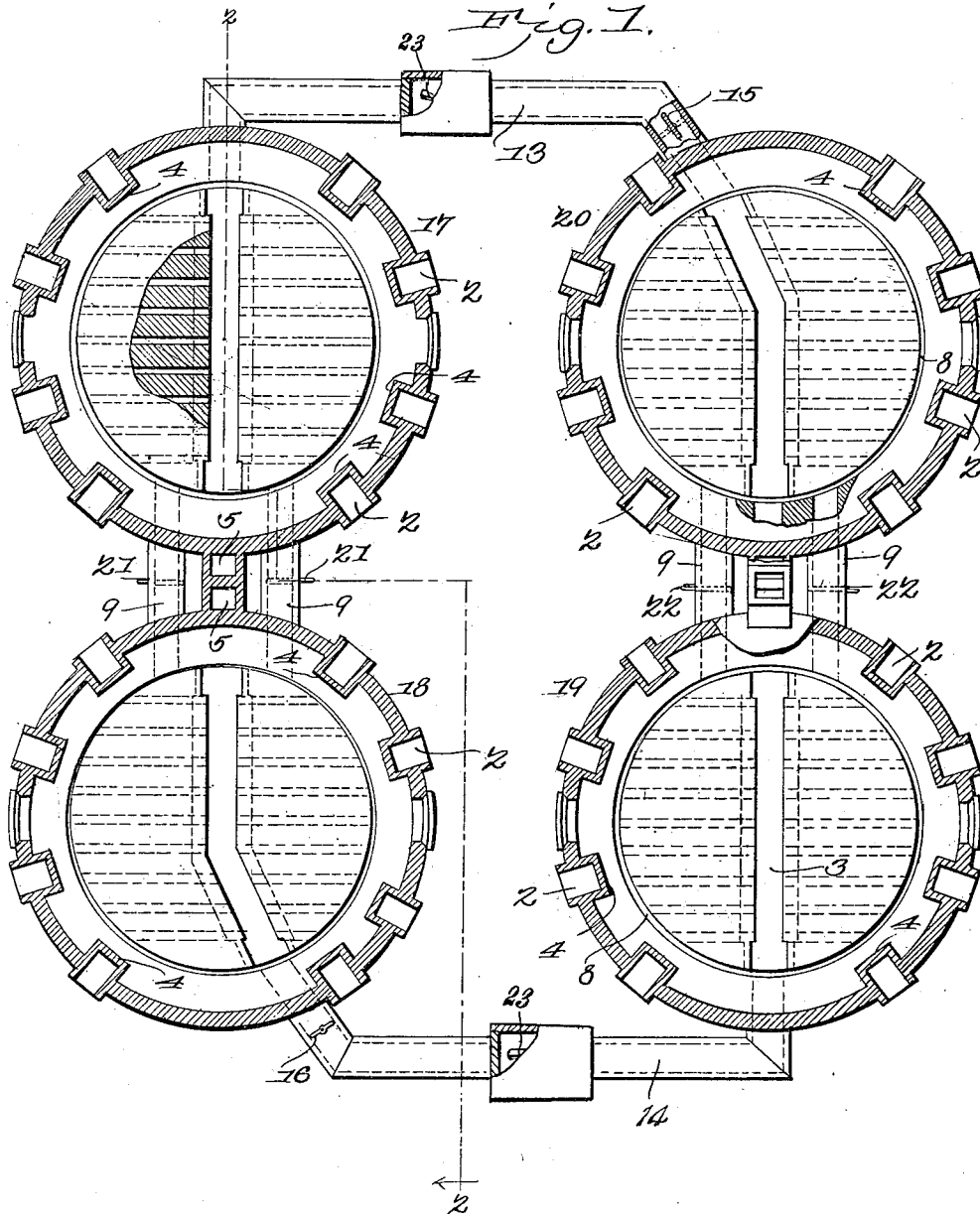
No. 824,919.

PATENTED JULY 3, 1906.

J. ELCOCK.
BRICK KILN.

APPLICATION FILED SEPT. 23, 1905.

2 SHEETS—SHEET 1.



Witnesses:

E. J. Stewart
R. M. Elliott

John Elcock,
Inventor,

by *C. A. Snow & Co.*
Attorneys.

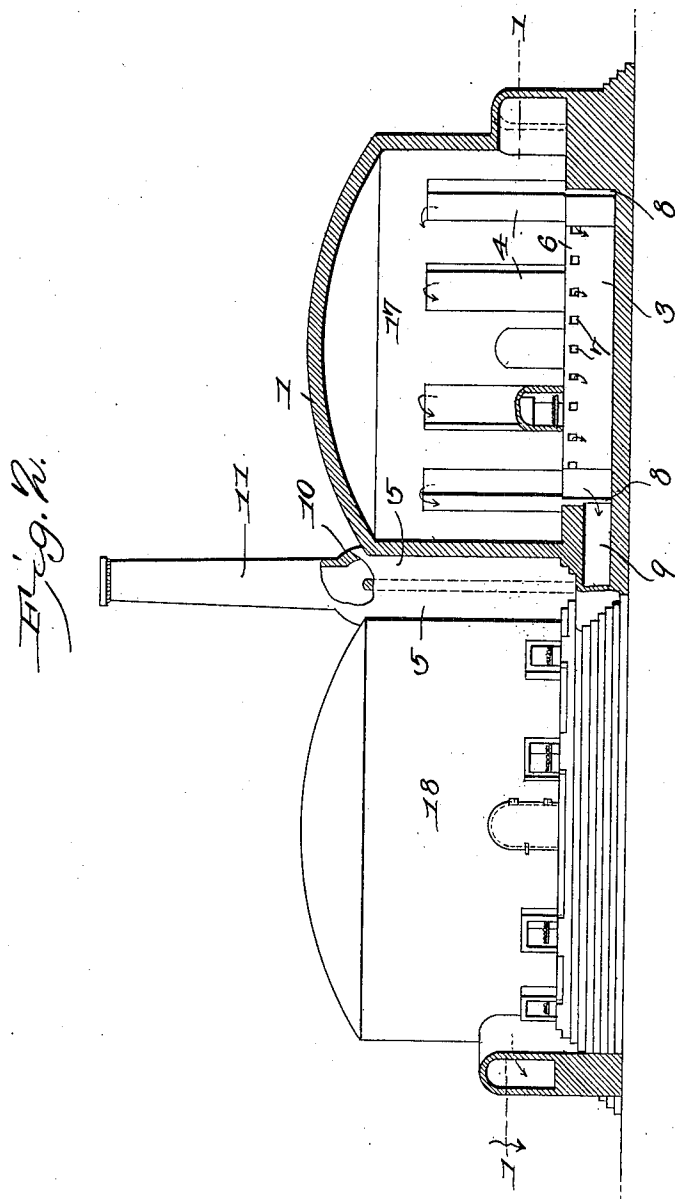
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UNITED STATES PATENT OFFICE.

JOHN ELCOCK, OF AUGUSTA, GEORGIA.

BRICK-KILN.

No. 824,919.

Specification of Letters Patent.

Patented July 3, 1906.

Application filed September 23, 1905. Serial No. 279,816.

To all whom it may concern:

Be it known that I, JOHN ELCOCK, a citizen of the United States, residing at Augusta, in the county of Richmond and State of Georgia, have invented a new and useful Brick-Kiln, of which the following is a specification.

This invention relates to brick-kilns, and particularly to certain improvements used in conjunction with a brick-kiln for which Letters Patent in the United States were granted me August 16, 1904, No. 767,637.

The object of the present invention is in a ready, practical, and continuous manner to conserve fuel and to secure effective work from heat that would otherwise be wasted.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists, generally stated, in combining in a novel manner a plurality of kilns such as referred to and in conducting the heat from one kiln to another in such manner that by the time it finally escapes it will have been utilized in drying or burning bricks in a number of kilns, whereby with a given amount of fuel a greater output of stock can be secured than by the employment of brick-kilns commonly in use.

The invention consists, further, in the various novel details of construction of multiple brick-kilns, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, Figure 1 is a horizontal sectional view taken on the line 1 1, Fig. 2. Fig. 2 is a view in vertical longitudinal section taken on the line 2 2, Fig. 1.

In the present invention four kilns are shown as combined, although it is to be understood that a greater or less number may be employed without departing from the scope of the invention, and as this will be apparent detailed description of any modification is deemed unnecessary.

As each kiln is a counterpart of the other and is constructed, preferably, in accordance with that shown in the patent referred to, a description of one will serve for all.

Referring to the drawings, 1 designates the superstructure or kiln proper, which is by preference circular in plan and is provided in its side walls with a plurality of furnaces 2 of the usual or any preferred construction, eight of the furnaces being in this instance com-

bined with each kiln. The base of the superstructure is formed with a transverse channel 3, which constitutes a moisture-trap, as will presently appear. Disposed adjacent to each furnace on the interior of the kiln is a bag or flash-wall 4, which operates to conduct the highly-heated products of combustion from the furnace, whence they circulate around and through the contents of the kiln, thence pass up the channels 3, and thence to the chimney 5, whence they escape.

Arranged within the floor 6 of the kiln is a series of ducts 7, which may be disposed at any desired depth beneath the upper surface of the floor, preferably about the thickness of two bricks, the outer ends of the ducts being in communication with a vent-ring 8 and their inner ends in communication with the trap 3. The vent-ring is disposed adjacent to the bag-walls and serves to catch any moisture on the floor and convey it to the ducts 7, whence it is discharged into the trap 3. By disposing the ducts in the manner described there is no break in the surface of the floor, so that the bricks to be burned will have an even and smooth surface to rest upon. As the highly-heated products of combustion escape from the furnaces into the chamber they circulate therethrough, and the bulk thereof escapes through flues 9 to the adjacent kiln, while the part passing through the vent-ring sets up a suction therein which will operate to draw the moisture into the vent-ducts, whence it escapes to the trap. By the employment of the vent-ring and the ducts the floor of the kiln is always kept perfectly dry, and any presence of moisture is positively obviated, so that perfect burning of the bricks is facilitated and spoilage is reduced to a minimum. As shown in Fig. 1, each pair of kilns has a chimney 5, and these merge into an arch 10, with which communicates a stack 11, by which arrangement it will be seen that one stack will be made to carry off the spent products of combustion from two of the kilns, or, if preferred, one large stack may be used with the entire battery of kilns. In addition the stack exerts requisite downdraft upon the kilns to cause the apparatus to perform its function.

A feature of the present invention resides in the arrangement of the series of flues whereby the heat can be thrown successively through the series of kilns, thereby to cause drying of the contents thereof. The means for accomplishing this result embodies the

flues 9, referred to, and two flues 13 and 14, each of which contains a damper 15 and 16, respectively. The flues 9 pass under the walls of a pair of kilns and communicate with the vent-rings thereof, so that as the heated products of combustion enter the vent-ring of one kiln they will pass to the vent-ring of the adjacent kiln contiguous to two of the furnaces therein and will discharge upward and circulate through the kiln, together with the products of combustion from the furnaces, and escape either to the next succeeding kiln or to the chimney, as the case may be. As shown in Fig. 1, the flues 13 and 14 communicate with the traps 3, so that it will be seen that there can be a continuous circulation established through the entire battery.

When the fire is lighted—say, in the kiln 17—the height of the chimney or chimneys produces the necessary difference in atmospheric pressure to cause the heat to pass out through it. The burning of the first kiln by itself with its own chimney circulation is continued for several days or until the heat inside approximates 700° or 800°. At the end of this time the chimney or chimneys of the kiln 17 are closed, or dampers to such chimneys, if the same are provided, and the dampers 21 in flues 9, leading to the kiln 18, are opened, and the height of the chimney in the second kiln causes a sufficient difference in the air-pressure to start the circulation through the new channel thus presented. The heat in the first kiln is then increased to about 1,500° or 2,000° Fahrenheit and produces a continued increase in the draft of the second kiln. At the end of the third or fourth day the first kiln is shut down and the dampers 21 are closed and the fires are lighted in the kiln 18, the kiln 19 not being thrown into circuit until the expiration of a like period. By this time the fires in the kiln 17 are stopped, and it is cut out of circulation, the fires being left burning in the furnaces of the second kiln. This single round of operations may be stopped at the fourth kiln, or by the connection shown in the drawings the first kiln can be filled up the second time and treated from the fourth kiln as though the latter were the first. By this arrangement with four or more kilns the fire would be continuous, going through as many kilns as may be properly located to receive heat. Of course it will be understood that when the kiln 19 is cut into circulation the damper 16 is opened, that when the kiln 20 is cut into circuit the dampers 22 are opened, and that when the kiln 20 is cut into circuit with the kiln 17 the damper 15 is opened.

In improving old yards it may be necessary to use a chimney on each kiln, as the chimneys may be built on the kilns and the kilns may be made too far apart to connect with a chimney, so that it is to be under-

stood that the invention is not to be limited to the use of one chimney for two or more kilns.

Where the improvements are used in connection with kilns that are already built and in which the stacks are not of sufficient width to produce the requisite draft, fans may be included between the kilns and the stack in any number to produce the desired result.

Having thus fully described the invention, what is claimed is—

1. In a brick-kiln the combination with a stack; of a plurality of kilns each provided in its base with a channel constituting a trap, and in its floor with a plurality of ducts opening at one end into the trap, said floor also provided with a vent-ring into which the ducts open, flues extending from the traps of the kilns into opposite portions of the stack, flues connecting the vent-rings of the kilns and disposed at opposite sides of the stack and out of communication therewith, and means for controlling circulation through the last-mentioned flues.

2. In a brick-kiln the combination with an arch and a stack extending therefrom; of kilns disposed at opposite sides of the arch and each having a central channel in the base thereof constituting a trap, a vent-ring in the floor of the kiln, and a plurality of parallel ducts connecting the ring with the trap, said trap opening into opposite portions of the arch, parallel flues connecting the vent-rings of the kilns and extending at opposite sides of the arch, and means within each of said flues for controlling circulation there-through.

3. The combination with arches, and stacks extending therefrom; of a pair of kilns disposed adjacent each arch, the kilns of each pair being disposed at opposite sides of their arch and each kiln having a channel in the base thereof constituting a trap, a vent-ring, and parallel ducts connecting the vent-ring and trap, the traps of each pair of kilns opening into opposite portions of the arch of said pair, flues connecting the vent-rings of each pair and extending at opposite sides of the arch, means within said flues for controlling circulation therethrough, flues connecting the traps of the pairs of kilns, means therein for controlling circulation therethrough, and means within said last-mentioned flues for forcing the circulation through the flues and kilns.

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

JOHN ELCOCK.

Witnesses:

JOHN S. PHELAN,
WM. E. JACKSON, Jr.