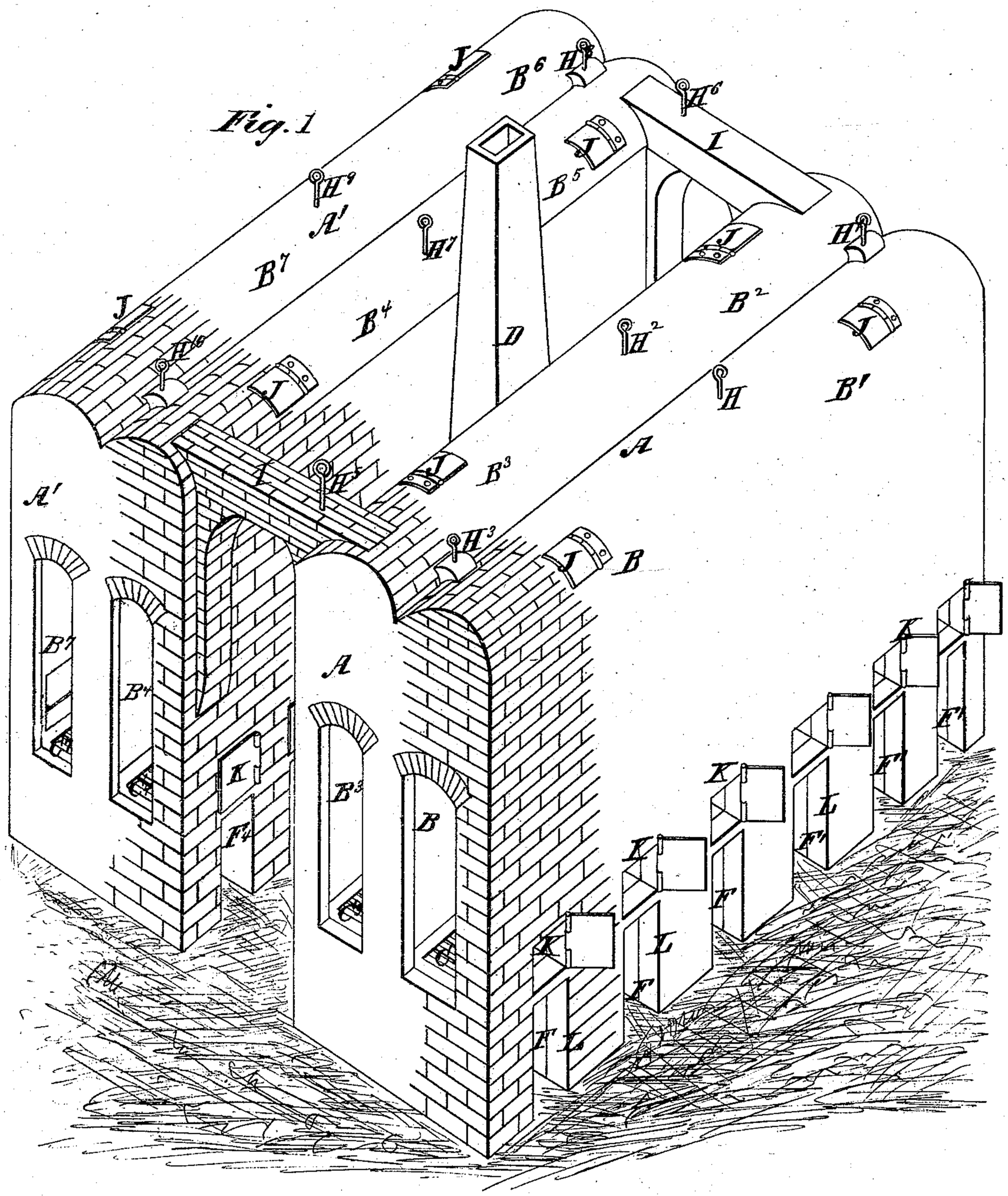
2 Sheets--Sheet 1.

J. G. EBERHART.

Brick-Kilns.

No. 152,901. Patented July 14, 1874.

Fig. 1



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Attys

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

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Fig. 2.

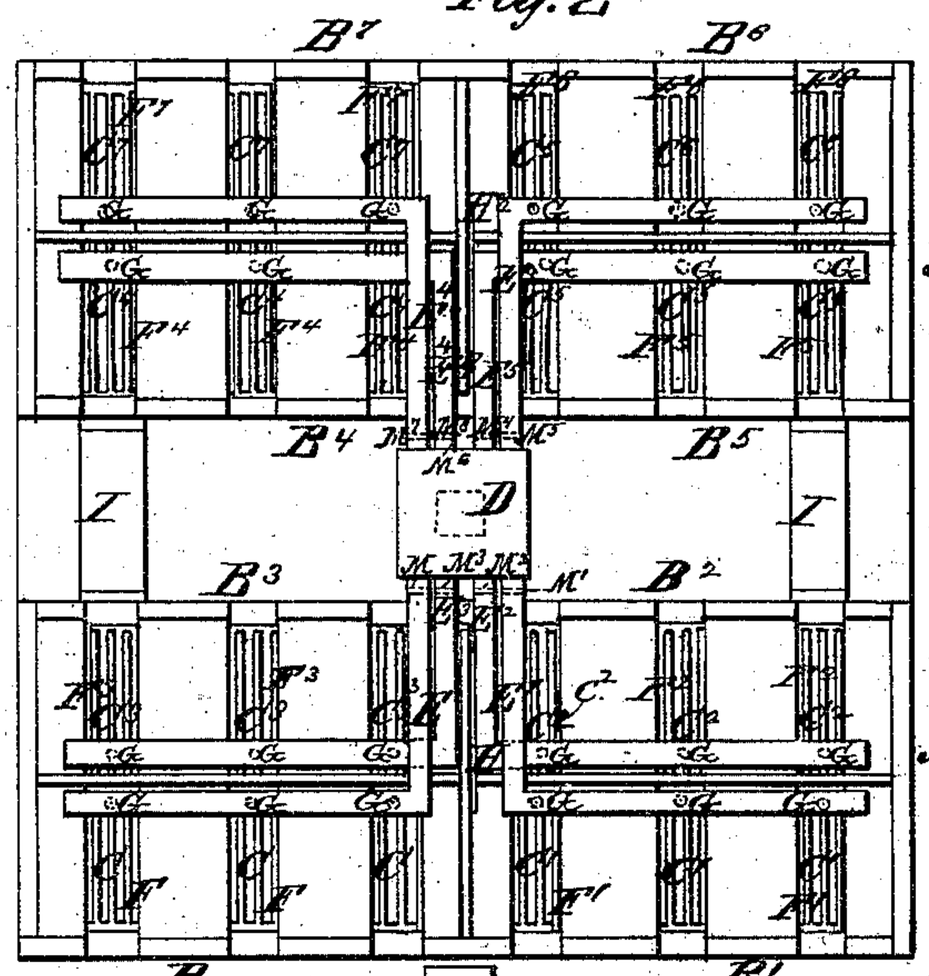


Fig. 5

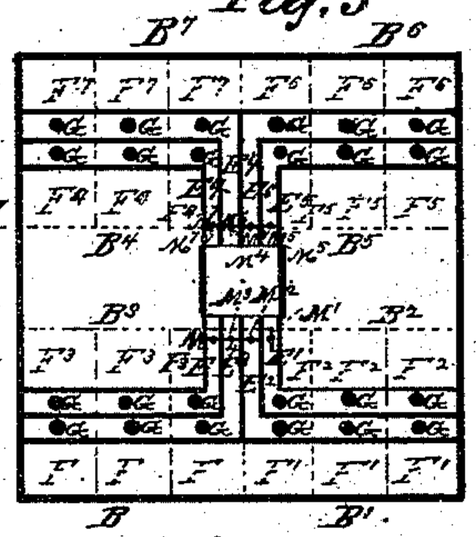


Fig. 3

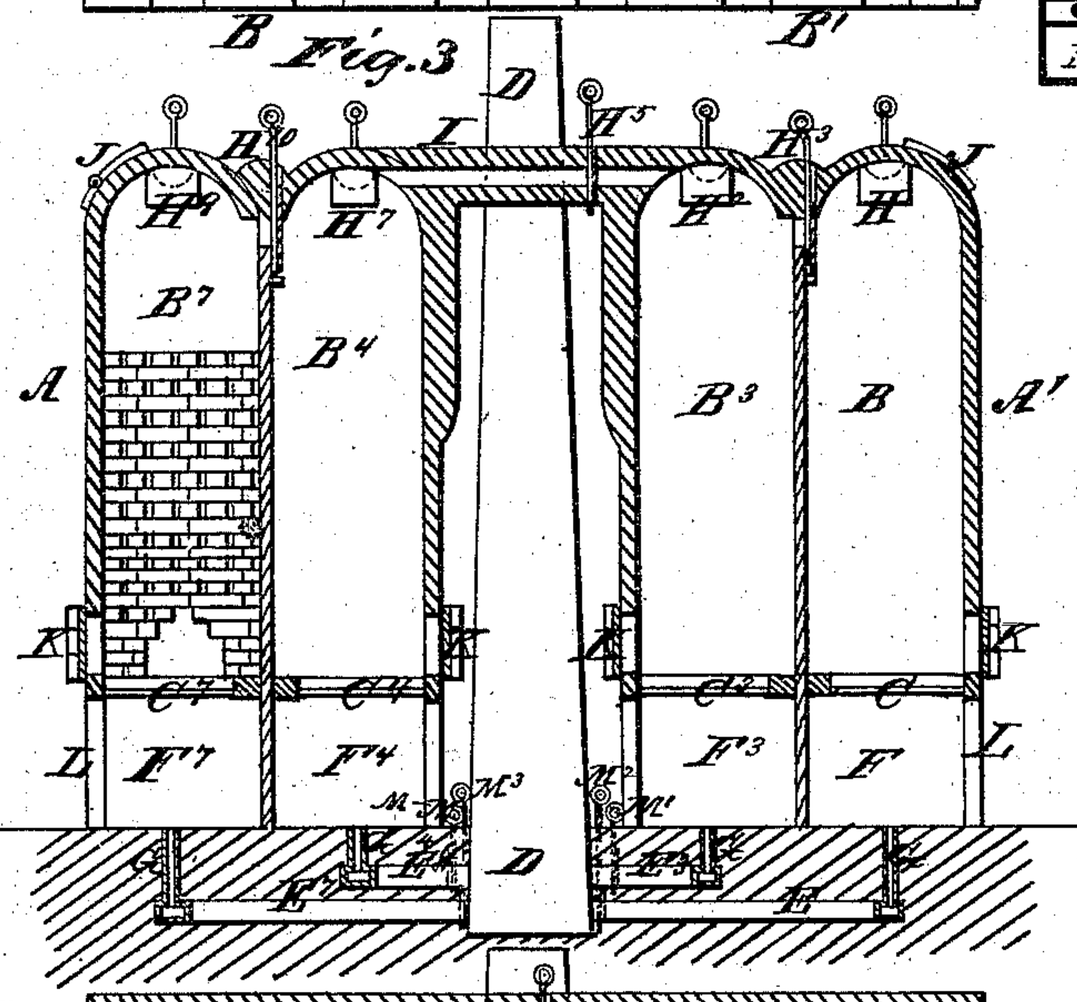


Fig. 6

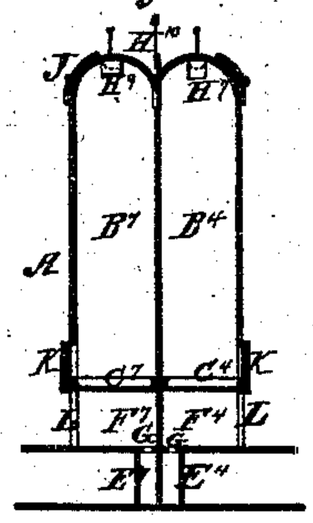
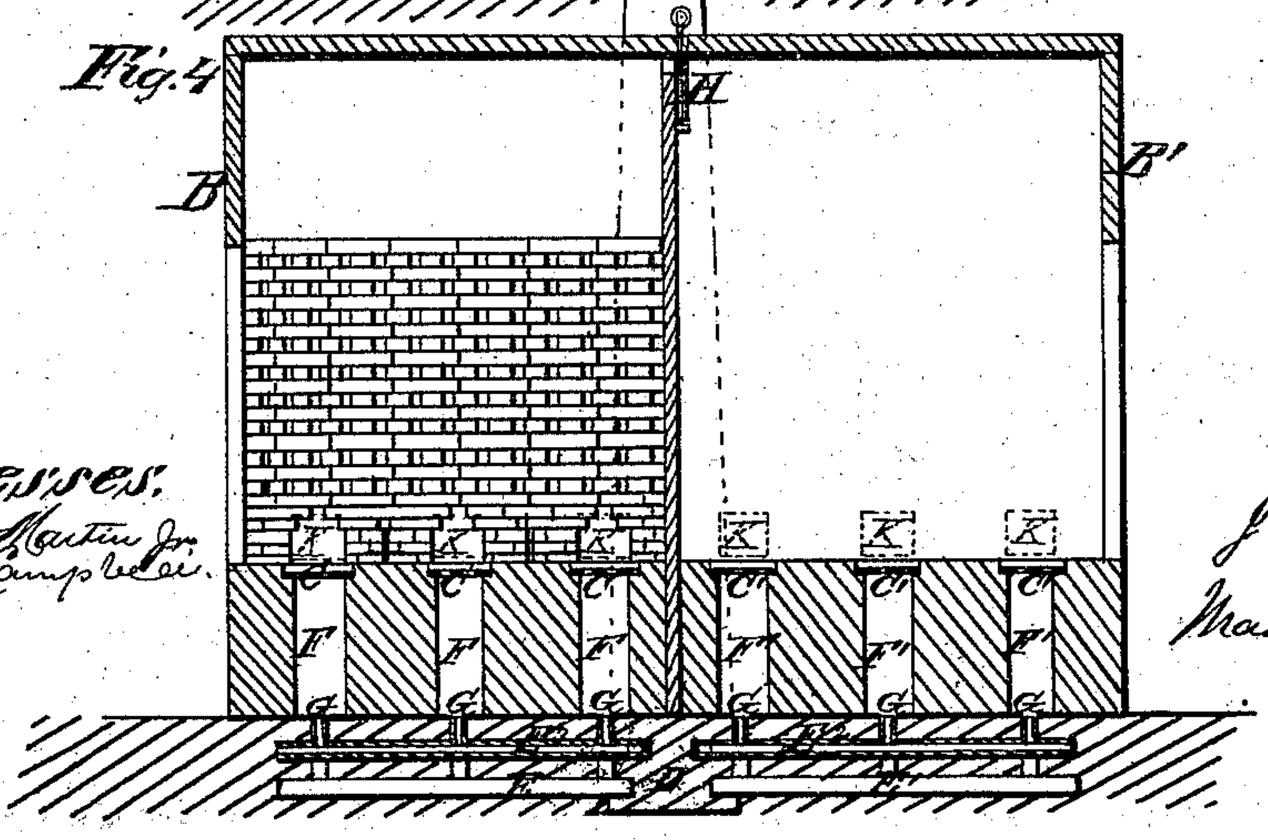


Fig. 4



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UNITED STATES PATENT OFFICE.

JOHN G. EBERHART, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN BRICK-KILNS.

Specification forming part of Letters Patent No. **152,901**, dated July 14, 1874; application filed May 19, 1874.

To all whom it may concern:

Be it known that I, JOHN G. EBERHART, of Baltimore, county of Baltimore and State of Maryland, have invented a new and Improved Brick-Kiln; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a perspective view, Fig. 2 an inverted plan, Fig. 3 a transverse section, and Fig. 4 a longitudinal section, of my improved brick-kiln. Fig. 5 is a plan, and Fig. 6 a cross-section, of the draft-flues as they are made in practice.

My invention relates to kilns wherein the fire is built under the bricks which are to be burned. The nature of my invention consists, first, in the combination of two or more chambers, in which the bricks are burned, with flues and a draft-stack or chimney, in such a manner that the fire on one hearth is caused to ascend through the bricks above said hearth, pass from the chamber containing the bricks thus acted upon directly by the fire into an adjoining chamber, and down through the bricks in this second chamber, and through the grate below said bricks into the draft-stack or chimney; it consists, secondly, in a combination of two or more kilns, consisting each of several chambers, with one another, and with flues and a draft-stack or chimney, common to all the chambers, whereby the operation of burning one chamber of bricks to a finished condition, and burning of another chamber of bricks to a partially-finished condition, by a fire in a single chamber is carried on on opposite sides of the same chimney, as will be hereinafter described.

In the drawings I have represented a double kiln, A A′, each kiln having four chambers, B B^1 B^2 B^3 and B^4 B^5 B^6 B^7, in each of which bricks are burned by fire upon grates C C^1 C^2 C^3 and C^4 C^5 C^6 C^7. Between the kilns A A′ a stack or chimney, D, is erected, so that the lower end of its flue is below the plane of the grates C, as shown. E E^1 E^2 E^3 E^4 E^5 E^6 E^7 are draft-flues, leading from the chimney to the ash-pits F F^1 F^2 F^3 F^4 F^5 F^6 F^7 below the grates, and G are branches to these flues, leading directly into the ash-pit below the grates. H is a valve separating the first pair of chambers B B^1. H^1 is a valve separating the chambers B^1 B^2. H^2 is a valve separating the chambers B^2 B^3, and H^3 is a valve separating the chambers B^3 B. The valves named answer for opening and closing the communications between the chambers of the kiln A. I I are end flues connecting the kiln A with the kiln A′. Each of these flues is provided with a valve, H^5 and H^6. The kiln A′ has valves H^7 H^8 H^9 H^{10} for the very same purpose as the valves of the kiln A, and these valves are arranged in exactly the same order. J represents inspection-doors at the top of the chambers of the kiln, through which to inspect the operation of the fire upon the bricks; L, the draft-entrances to the ash-pits; K K, fuel-doors to the chambers. M M^1 M^2 M^3 M^4 M^5 M^6 M^7 are slides for cutting off the draft from one chamber, or a finished chamber, and reversing the draft in the adjoining chamber, and turning it on so as to draw down through this last chamber, and so on throughout the kiln.

The chambers of the kiln being filled in with bricks piled in the ordinary manner, a fire is started in the first chamber B and the valve H opened, the damper M closed, and the damper M^1 opened. The fire circulates up through the chamber B, burns the brick to a finished state therein, passes through the valve H into chamber B^1, down through the bricks therein, and through the grate into the chimney. The passage through B^1 of the fire partially burns the bricks therein. A fire is started in chamber B^1. Damper M^1 is closed, and damper M^2 opened; valve H is closed, and valve H^1 opened. This operation burns the bricks to a finished condition in B^1, and the fire, passing through valve H^1 into chamber B^2, partially burns the bricks therein before escaping into the chimney. The next operation is to build a fire in B^2, close dampers and valves of B^2, and open dampers and valves of B^3, and thus the operation is continued until the circuit is continued in one kiln or in the double kiln; and the operation repeated by beginning with the kiln B, as described.

This invention saves a large amount of fuel, enabling me to use the heat in the most natural manner—viz, by having it ascend, in the direct and finished burning, through the bricks.

The combination is such that the operation of burning is facilitated, as two chambers can be operated upon at one time, and after the starting of the kiln one chamber of bricks is always about half burned when the first is fully burned, and thus but half the time, or little more, is required to finish succeeding chambers of bricks.

I may, in practice, make only two chambers for each of the kilns A A′, and in that case each of the chambers will include the space occupied by any two laterally-adjoining chambers. Under such construction the valves H^1 H^3 will not be necessary, and only two dampers will be used for each single kiln; or, in other words, I may make a kiln with four large chambers, and open and shut the communication between these chambers by valves H H^2 and H^5 H^6, and regulate the draft for these chambers by four dampers, arranged in the order that they are arranged for the four chambers B B^1 and B^4 B^5.

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

1. Two or more chambers, B B^1, constructed with the valved passage H between them, and with passages down through the grates or partitions, upon which the grates of these chambers are supported, in combination with the chimney D and the flues E and dampers M, by which the fire is caused to burn upward in chamber B, and downward through chamber B^1, substantially as and for the purposes set forth.

2. The combination of the kiln A, constructed and operating as described, the kiln A′, constructed and operating as described, the valved passages between the kilns and the chimney, having communication with said kilns by means of the valved passages between the kilns and the passages down through the grate or its support, and by flues provided with dampers, in the manner and order substantially as and for the purpose described.

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Witnesses:

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