W. S. COLWELL.

BRICK-KILN.

No. 187,515. Patented Feb. 20, 1877.

Fig. 1.

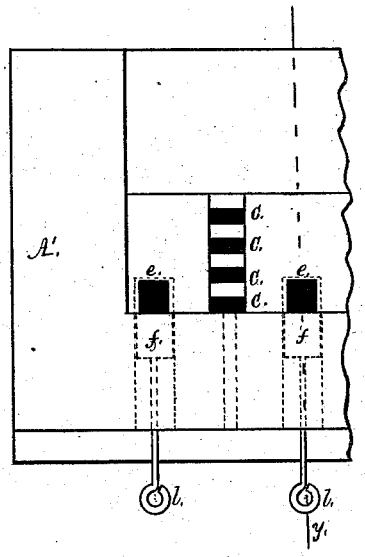


Fig. 3.

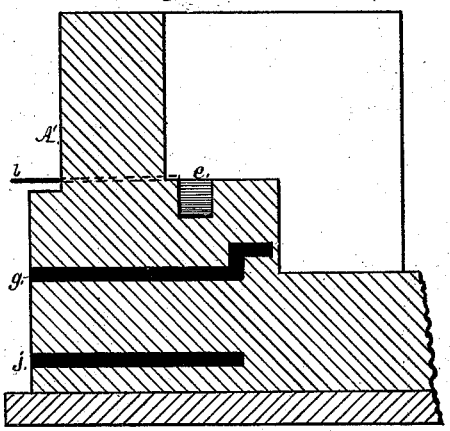


Fig. 2.

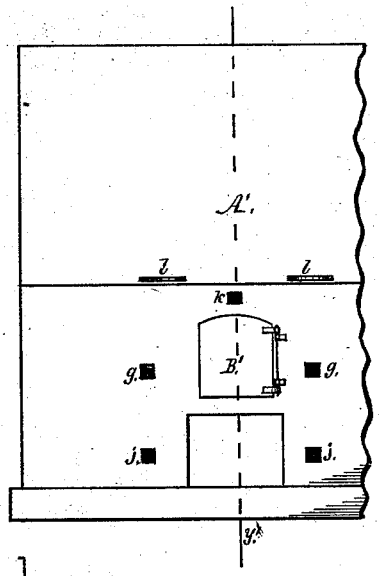
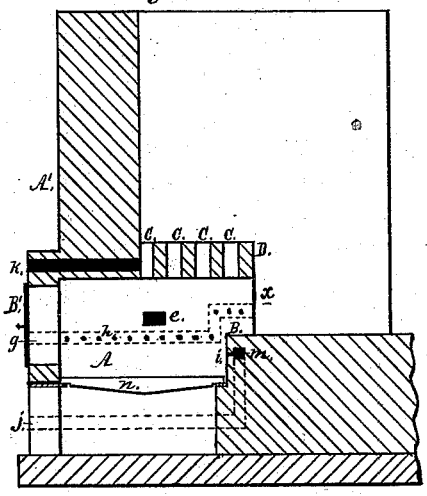


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN BRICK-KILNS.

Specification forming part of Letters Patent No. **187,515**, dated February 20, 1877; application filed November 27, 1876.

To all whom it may concern:

Be it known that I, WILLIAM S. COLWELL, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Furnaces for Brick-Kilns; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the combination of a series of air-flues with the fire-chamber of the furnace, the crown of which is provided with openings and flues for the escape of heat into the arches of the kiln, said furnace being constructed in and within the kiln-walls.

To enable others skilled in the art with which my invention is most nearly connected to make and use it, I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is a top view or plan of my improvement in furnaces. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical section of the same, at line *y* of Fig. 1. Fig. 4 is a vertical section of the same, at line *y'* of Fig. 2.

In the process of burning brick, experience has demonstrated the fact that brick constructed of some kinds of clay are much harder to burn than when made from other clay, and that this difference in clays is a source of great trouble, expense, labor, and loss of time, when the clay of which the brick is constructed is hard to burn.

The object of my invention is the furnishing of a furnace adapted to the burning of brick made from clay, which is "hard to burn," as brick-manufacturers term it.

To this end I construct the furnace in and within the walls of the kiln, said furnace having a series of openings in the crown of its fire-chamber A, and flues *e* leading upward from the fire-chamber, which flues are provided with valves *f*. At the rear end of the fire-chamber A is a bridge-wall, B, having an air-chamber, *m*, which communicates with the fire-chamber A by means of a series of small openings, *i*, air being conveyed into the chamber *m* through the medium of flues *j*. In the side walls of the fire-chamber A are flues *g*, which communicate with it (the fire-chamber) by means of small openings *h*. The fire-chamber A is furnished with a grate, *n*, and door B', which is of ordinary construction. The fire-chamber A opens directly into the kiln above the floor, and above the bridge-wall at *x*, and is surmounted by a crown, D, provided with a series of openings, C, at its center, which, in connection with the flues *e*, are for the purpose of subjecting the brick in the kiln next to the walls to vertical currents of heat having great penetrating power and velocity.

The flow of heat from the fire-chamber being upward, and its travel short and direct, the interstices between the brick next to the walls of the kiln will be rapidly filled with heat, the velocity and penetrating power of the heat being greatly increased by the commingling of air with the gases of the furnace.

When the operator desires to direct the heat toward the center of the furnace he closes the flues *e* by moving the valves over the flues by means of the valve-rods *l*. The condition of the furnace is observed by means of the peep-hole *k*.

The advantages of my improvement are simplicity of construction, and bringing the heat and gases of the furnace in close contact with the brick, in such way that it can be controlled at the will of the operator.

Having thus described my improvement, what I claim as of my invention is—

1. In a furnace for brick-kilns, the fire-chamber A, bridge-wall B, crown D, extending above the floor *x*, the bridge-wall, and provided with a series of central openings, C, all constructed and arranged, with relation to the interior of the kiln and its walls, substantially as herein described, and for the purpose set forth.

2. In a furnace for brick-kilns, the fire-chamber A, hollow perforated bridge-wall B, openings C in the crown D, and flues *e*, constructed and arranged, with relation to the interior of the kiln and its walls, substantially as herein described, and for the purpose set forth.

3. In a furnace for brick-kilns, the fire-chamber A, hollow perforated bridge-wall B, open-

ings C in the crown D, flues *e*, and valves *f*, constructed and arranged with relation to the interior of the kiln and its walls, substantially as herein described, and for the purpose set forth.

4. In a furnace for brick-kilns, the fire-chamber A, the hollow perforated bridge-wall B, openings C in the crown D, flues *e* and *g*, the latter communicating with the fire-chamber A by means of perforations *h*, the whole constructed and arranged, with relation to the interior of the kiln and its walls, substantially as herein described, and for the purpose set forth.

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