(No Model.) 2 Sheets—Sheet 1.

J. GEARHARD.

TILE KILN.

No. 345,964. Patented July 20, 1886.

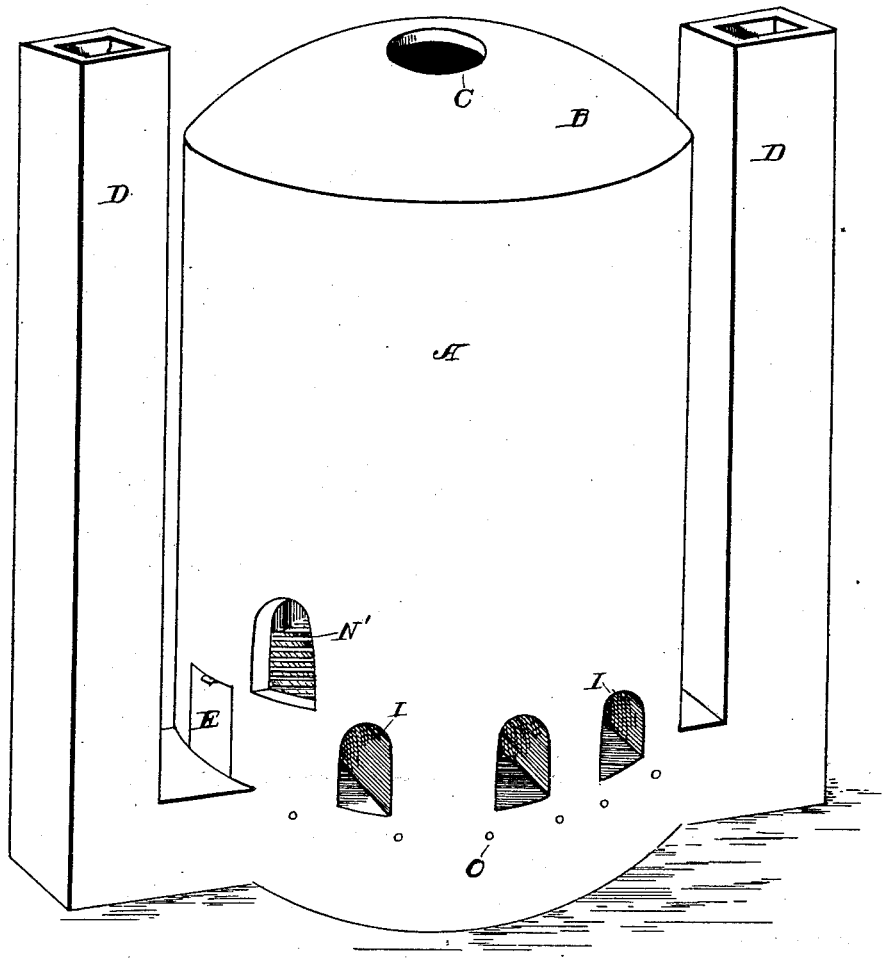

Fig. 1.

WITNESSES:
Robert Kirk
Wm. McKillop

INVENTOR:
Jacob Gearhard
By J. S. Zeller
Attorney.

(No Model.) 2 Sheets—Sheet 2.

J. GEARHARD.

TILE KILN.

No. 345,964. Patented July 20, 1886.

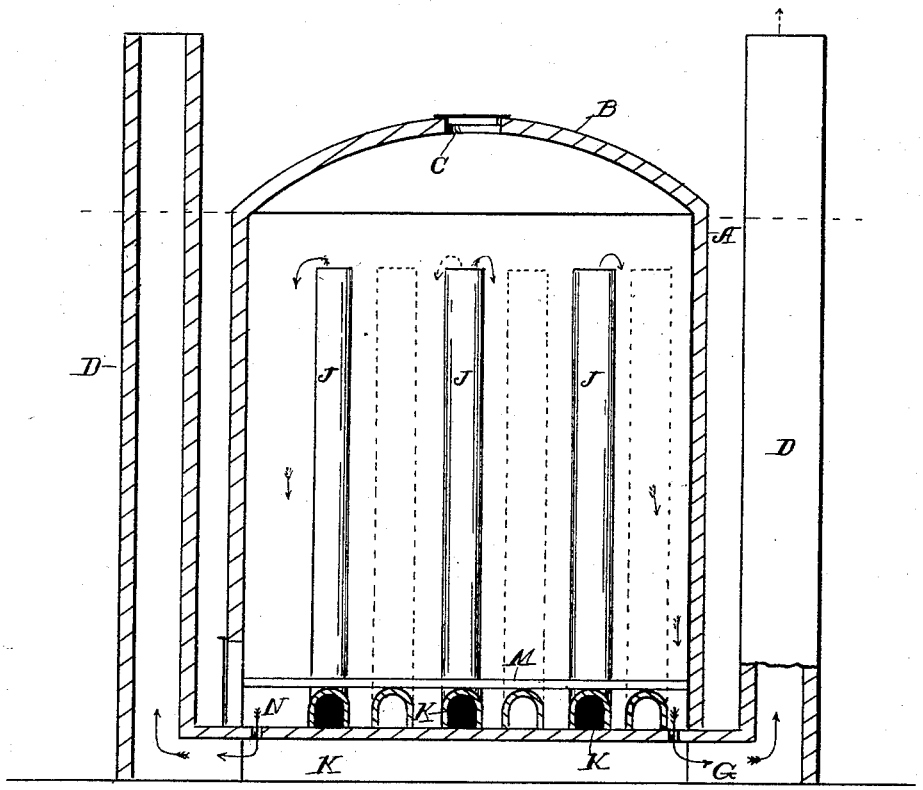

Fig. 2.

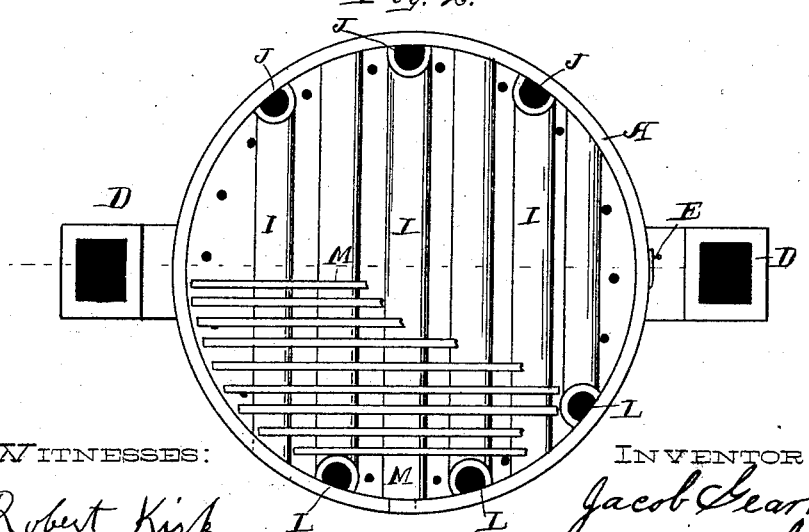

Fig. 3.

WITNESSES:

Robert Kirk

Aug. McKillop

INVENTOR:

Jacob Gearhard

By J. S. Zerbe

Attorney.

UNITED STATES PATENT OFFICE.

JACOB GEARHARD, OF NEW SALEM, INDIANA.

TILE-KILN.

SPECIFICATION forming part of Letters Patent No. 345,964, dated July 20, 1886.

Application filed January 4, 1886. Serial No. 187,513. (No model.)

To all whom it may concern:

Be it known that I, JACOB GEARHARD, of New Salem, in the county of Rush and State of Indiana, have invented a new and useful Improvement in Tile-Kilns, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a perspective view of my improved tile-kiln; Fig. 2, a transverse central section of the same, and Fig. 3 a plan view in section.

The present invention relates to an improvement in tile-kilns, wherein I provide three furnaces through one side of the kiln at the bottom and three at the opposite side, with flues on the inner side of the kiln extending nearly to the top, so that the heat and smoke will disseminate downward through the tile, and pass out through holes in the bottom of the kiln into a sub or base arch underneath the base. Laterally at the side of the kiln at right angles from the cross-furnaces, smoke-stacks are provided connecting with this sub-base and having suitable dampers for regulating the escape of the smoke and heat into the said smoke stacks. Provision is also made in the upper part of this sub base for the escape of the steam from the brick by means of a series of small openings outwardly. Grate-bars are placed over the furnaces and the tile set in the kiln in the ordinary way, all of which will now be set forth in detail.

In the accompanying drawings, A represents the outer wall of an ordinary circular tile-kiln, provided at its upper part with an ordinary segmental head or arch, B, having centrally a man-hole, C, provided with a suitable cover. Laterally on opposite sides of the kiln I provide smoke-stacks D, connecting with the base, and having suitable dampers, E, next to the kiln, so as to regulate the escape of the heat therefrom.

Internally the kiln is formed with a sub or base arch, F, the opening beneath this said arch communicating with the smoke-stacks D of the short horizontal flue G. Above this base-arch I provide a series of horizontal parallel furnaces, preferably six in number, at right angles with the short horizontal flues G, opening into the smoke-stacks. Three of these furnaces I are designed to extend inwardly from one side of the kiln, and thence upwardly, J, on the inner side of the kiln oppositely from their entrance into the kiln. The other three parallel furnaces K of the series are designed to alternate with the furnaces I, opening inwardly on the opposite side of the kiln from the entrances of the furnaces I, and also provided with vertical flues L on the inner side of the kiln, corresponding with the vertical flues J oppositely. These vertical flues J and L are designed to extend to within a short distance of the base of the segmental head or arch of the kiln. Over this furnace I provide a series of transverse grate-bars, M, to receive thereon the tile to be burned, set as in the ordinary kilns. Around the outer part of the sub-base I provide a series of vertical openings, N, forming a communication between the upper part of the kiln and the recess beneath the sub-base. This part beneath the sub-base in turn (as before described) communicates with the horizontal flues G, opening into the smoke-stack D. Above the furnace and the grate-bars, and through one side of the walls of the kiln, I provide an opening, N′, of sufficient size, which serves as an entrance into the kiln, which opening may be closed by a suitable door. The smoke and heat from the furnaces I and K pass into the kiln through the opposite vertical flues, J and L, above the tile set within the kiln downwardly into the tile, and pass into the apartment below the sub-base through the opening N, thence outwardly through the horizontal flues G into the smoke-stacks D. Near the upper part of the opening, beneath the sub-arch, I provide a series of openings, O, whereby the steam and moisture from the tile within the kiln may escape while the body of the smoke passes outwardly through the smoke-stacks.

As will be noticed, in constructing the kiln, as shown, I utilize the heat in two distinct forms, by radiation on the tiles from the furnace and vertical flues, and directly by actual contact from the flues disseminating downwardly through the tiles, and thence passing into the apartment beneath the base and escaping outwardly into the open air through the smoke-stacks. The heat within the fur-

nace is graduated by dampers so as to prevent the escape of the heat through the stacks, and also the openings of the furnace can be closed up by means of doors so that long periods may intervene between the stoking. By this process tile can be burned with great economy both of time and fuel.

What I claim as new is—

1. In a tile-kiln, a series of parallel furnaces resting on a sub-base, a part of them having openings outwardly at one side of the kiln, with the flues therefrom passing upward oppositely within the walls of the kiln near the top, the remaining alternating furnaces having openings on the opposite sides of the kiln with corresponding flues oppositely on the inner side within the walls of the kiln, the sub-base of the kiln provided with openings connected with the smoke-stacks, so that the heat from the furnaces after passing through the flues will disseminate itself downwardly through the tile outwardly, substantially as herein set forth.

2. In a tile-kiln, a series of furnaces and flues, the alternating furnaces formed with openings outwardly at one side of the kiln, and each connecting-flue disposed oppositely within the kiln, the other furnace formed with openings outwardly on the opposite side of the kiln and the flues on the inner side of the kiln oppositely from the entrances of the furnaces, so that the heat from the furnaces may operate on the tile by radiation and by direct contact in its downward passage through the tile, thence escaping into the space beneath the arch of the kiln, and thence outwardly through the smoke-stacks laterally from the furnaces, substantially as herein set forth.

3. In a tile-kiln formed with a sub base or arch so as to form a space beneath the furnaces and flues, so that the steam and gases from the tile may be received therein through vertical openings from the body of the kiln, and thence pass off through a series of openings through the wall of the kiln, while the smoke may be regulated in its passage through the horizontal space into the smoke-stacks by means of dampers, so as to prevent the tile from being cracked in burning, substantially as herein set forth.

4. The combination of a series of parallel furnaces and flues, each alternate furnace having an opening outwardly at one side of the kiln, with a vertical flue oppositely on the inner side of the kiln, and the other flue having an opening outwardly at the opposite side of the kiln, and a vertical flue on the inner side oppositely, with a series of transverse grate-bars resting upon the said furnaces, the whole resting upon a sub-base, substantially as herein set forth.

5. The combination of a series of furnaces and corresponding flues, each alternate furnace and flue oppositely disposed, as shown, and a series of transverse grate-bars resting upon the furnaces, with the sub-base formed with a series of openings therein, forming communication with the apartment beneath, substantially as herein set forth.

6. The combination of a series of parallel furnaces and vertical flues oppositely disposed, as shown, the transverse grate-bars, and the sub base having vertical openings therein, with the apartment beneath the sub-base having lateral flues communicating with the smoke-stack, substantially as herein set forth.

7. The combination of a series of parallel furnaces, I and K, the vertical flues J and L, the grate-bars M, the sub base F, the vertical openings N through the base, the horizontal flues G, and the smoke stacks laterally, the whole arranged as and for the purpose substantially as herein set forth and described.

In testimony that I claim the foregoing I have hereunto set my hand, this 4th day of May, 1885, in the presence of witnesses.

JACOB GEARHARD.

Witnesses:

EMMETT L. KENNEDY,

BENJAMIN F. MILLER.