(No Model.)

W. H. FRANCIS & L. F. GERDING.

BRICK KILN.

No. 506,906. Patented Oct. 17, 1893.

Fig. 1

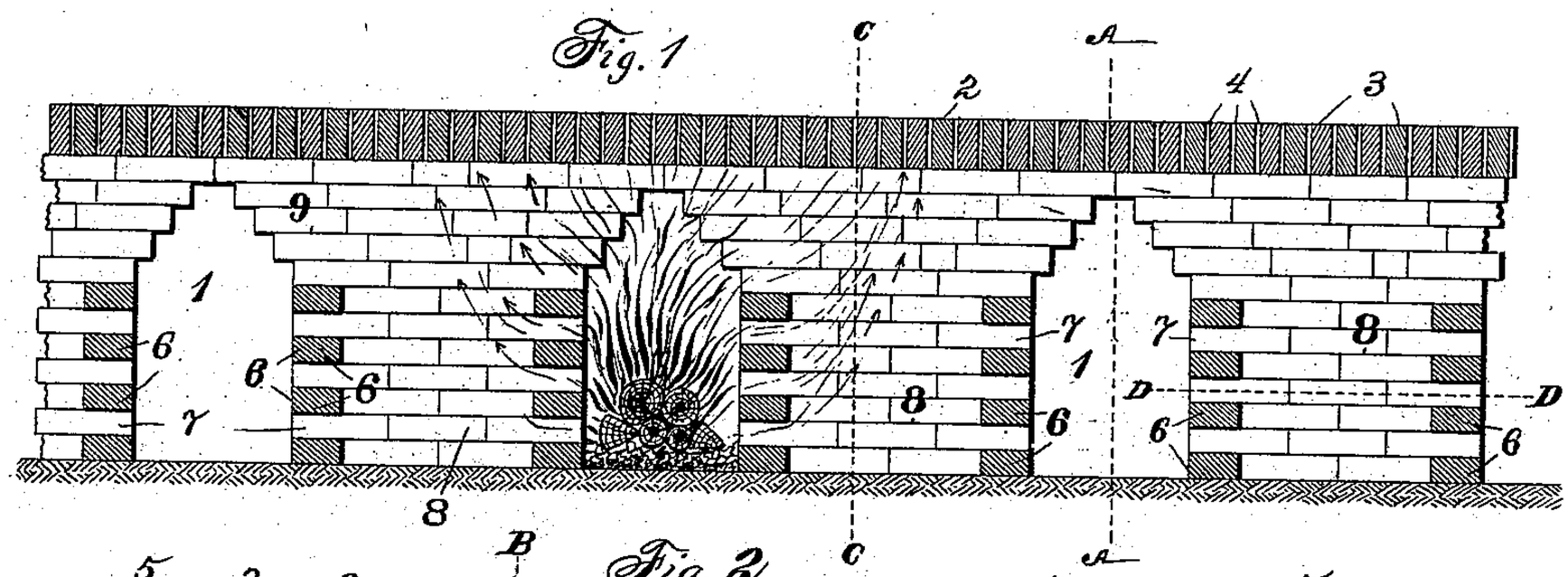


Fig. 2

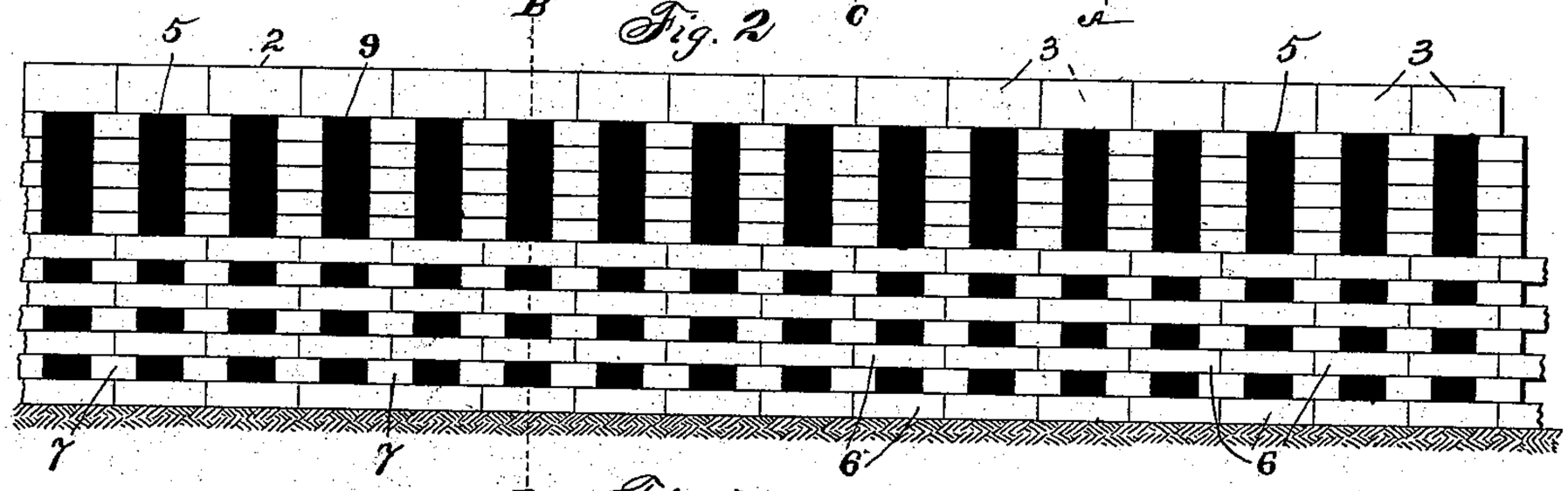


Fig. 3

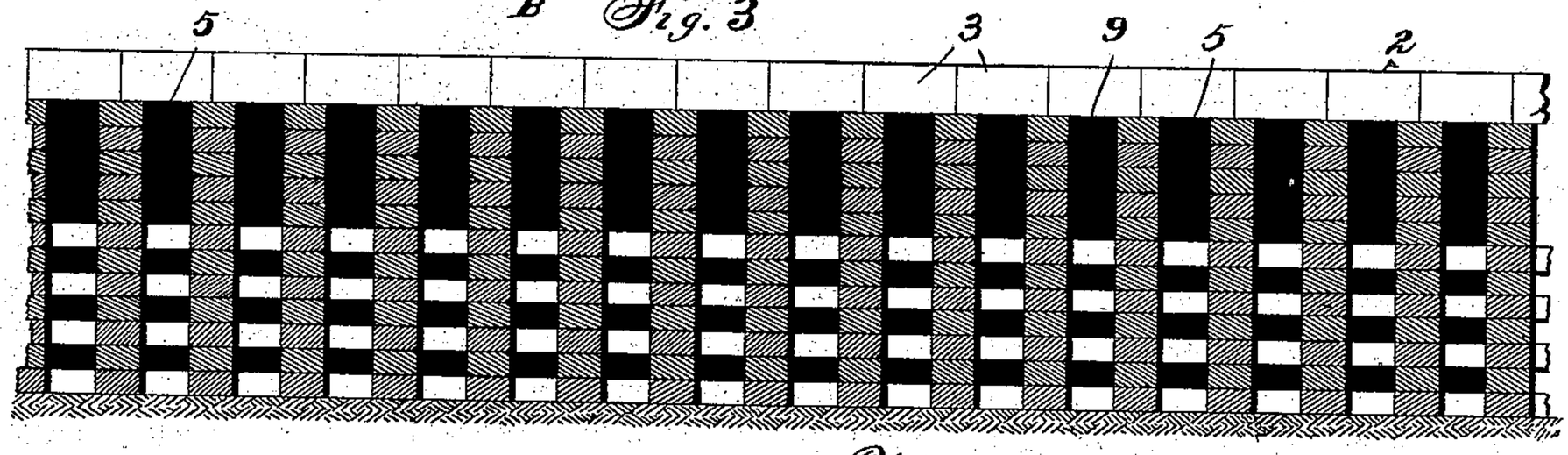


Fig. 4

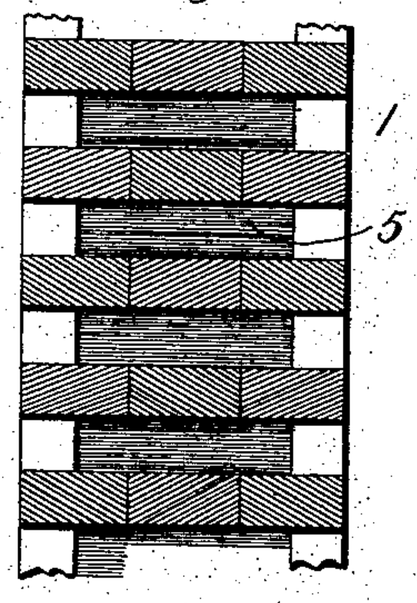
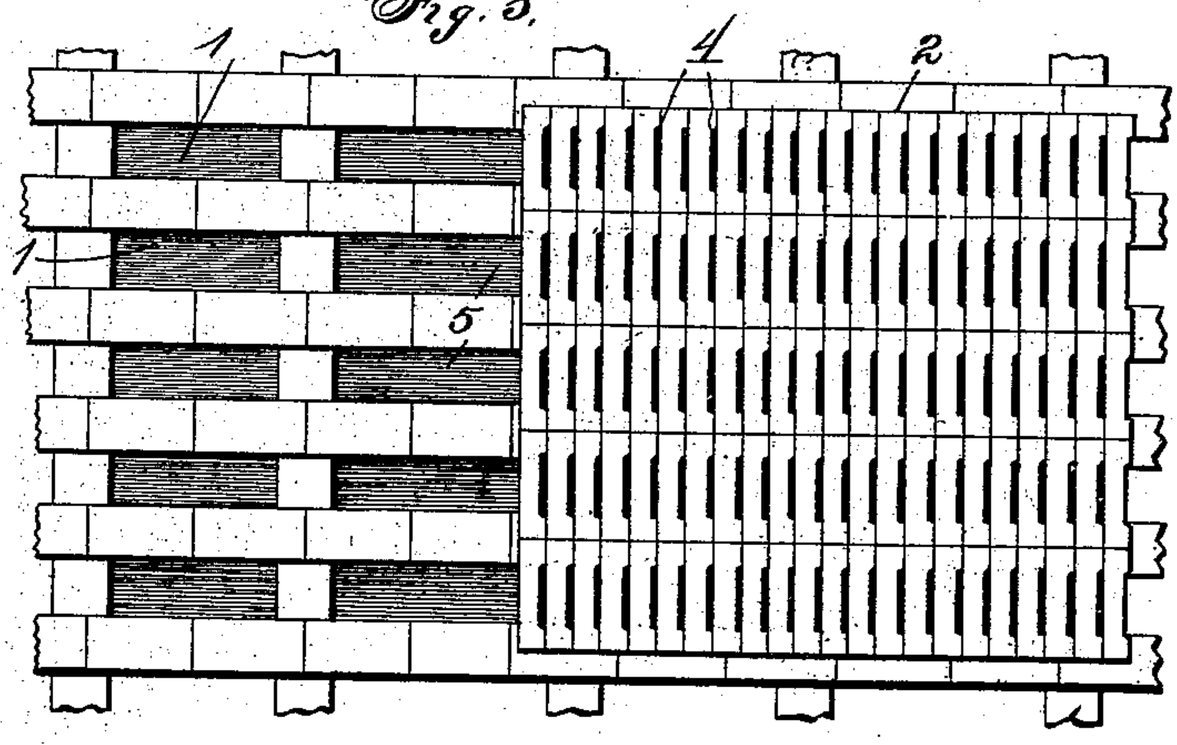


Fig. 5.



Witnesses.
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By Higdon & Higdon & Longan Atty's.

UNITED STATES PATENT OFFICE.

WILLIAM H. FRANCIS AND LOUIS F. GERDING, OF ST. JOSEPH, MISSOURI.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 506,906, dated October 17, 1893.

Application filed June 5, 1893. Serial No. 476,562. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. FRANCIS and LOUIS F. GERDING, of St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Brick-Kilns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to the class of "brick kilns" which have a series of fire flues located below a perforated floor upon which the brick to be burned are stacked in courses, whether such kilns be of the style known as direct or down-draft, and our invention consists in the novel construction, combination and arrangement of parts hereinafter described and designated in the claims.

The object of our invention is to provide an improved kiln in which the heat will be equally distributed throughout the body of brick stacked upon the perforated floor, to the end that few if any crooked, stretched or broken brick will be produced by the kiln.

In the drawings: Figure 1 is a sectional elevation of a portion of a kiln constructed in accordance with our invention, the section being taken on the line B—B of Fig. 2. Fig. 2 is a sectional elevation through one of the fire flues, taken on the line A—A of Fig. 1. Fig. 3 is a sectional elevation similar to Fig. 2 taken on the line C—C of Fig. 1. Fig. 4 is a sectional plan view taken on the line D—D of Fig. 1. Fig. 5 is a top plan view, showing a portion of the perforated floor of the kiln, and showing a portion of said floor removed.

Our improved kiln is to be constructed with the usual permanent inclosing wall, and as this wall forms no part of our invention we have deemed it unnecessary to show the same complete.

The kiln is constructed with a series of horizontal fire flues 1 extending parallel at the bottom of the kiln and opening on either side thereof, in which the fire for burning brick is to be located, in case the kiln is constructed as an up-draft kiln. The walls of the flues 1, as well as a perforated floor 2 located above them, are constructed permanently of fire brick, so as to remain undisturbed throughout a season or a number of seasons. The perforated floor 2 is composed of fire brick 3 set on edge with their sides in close contact, but each of said brick has a recess or depression 4 formed in one side thereof so that vertical passages are formed between said brick for the passage of the heat therebetween, or any other known style of perforated floor may be substituted for the floor which we here show. The opposite walls of the flues 1 are provided with opposite horizontal ports 5 which extend throughout the height and length of said walls. Said ports are arranged in vertical and horizontal aligned rows. They are preferably formed by laying a number of courses of brick with their edges a sufficient distance apart to form said ports, in vertical rows, with the ends of said brick forming the opposite walls of said flues, and then laying an additional course of brick 7 intermediate of the courses of brick 6, so that said brick 7 will have their ends closely adjacent in each course, and so the outer edge of said brick will form a portion of the wall of said flues. The opposite vertical walls of said flues, when thus constructed, are, it may be said completely checkered with rectangular horizontal fire ports throughout their length and height. This construction forms a series of horizontal ports 5 which extend from one fire flue to the next adjacent one continuously, with the ends of each opening into said flues, and forming a series of vertical passages 8 which communicate with each other and with the space above the perforated floor 2 in the manner now to be described.

The top of the flues 1 is preferably arched, and a series of transverse fire ports 9 is formed in this arched top directly above the vertical rows of fire ports 5, by stacking fire brick 10 in vertical rows with their sides in a horizontal position, one upon the other so that adjacent ends of said brick will form a portion of said arched top of said flues upon each side of each port 9. The ports 5, vertical passages 8 and the ports 9 communicate with each other in adjoining flues, and communicate with the space above the perforated floor 2, and this construction is continued throughout the length of each flue.

The operation is as follows: In an up-draft kiln, the brick or articles to be burned are

stacked upon the fixed perforated floor 2, in the well-known manner, and fires are made in each of the fire flues 1 and the heat passes out of said flues laterally through the ports 5 into the vertical passages 8, and also passes out laterally and upward through the arch ports 9 and passes upward by way of the vertical passages 4 between the brick 3 of which said floor is composed, and upward through the brick or articles on said floor. In the case of a down-draft kiln, the heat passes downward through the brick 10 or other articles through the vertical spaces of the perforated floor, into the arch-ports 9, vertical passages 8 and horizontal ports 5, and is carried then to a suitable flue or chimney.

Flues or chimneys and horizontal flues connected therewith in down-draft brick-kilns, being common, we do not deem it necessary to show such, as the same forms no part of our invention. The heat passing thus through the checkered walls of the fire flues and perforated floor, is equally distributed throughout the body of brick stacked upon said perforated floor, with the result that very few if any crooked, stretched or broken brick will be produced by our improved kiln.

What we claim is—

1. The improved brick-kiln constructed with a fixed perforated floor 2 composed of brick 3 set on edge with depressions 4 in their sides, horizontal flues 1 extending parallel at the bottom of the kiln and open at either side thereof, the opposite walls of said flues having horizontal ports 5 arranged in vertical and horizontal aligned rows throughout the height and length of said flues, said ports each communicating with the space above the said perforated floor, and a top for each flue, substantially as herein specified.

2. The improved brick kiln, constructed with a fixed perforated floor, horizontal flues 1 extending parallel at the bottom of the kiln and opening on opposite sides thereof, the opposite walls of said flues having opposite horizontal ports 5 located in vertical and horizontal rows, formed by laying a number of courses of fire-brick with their edges a distance apart to form said ports in vertical rows with the ends of said brick forming a portion of the opposite walls of said flues, an additional course of brick 7 laid intermediate of the courses of brick just mentioned so that said brick 7 will have their ends closely adjacent in each course and so the outer edge of said brick will form a portion of the walls of said flues, said ports extending from one fire flue to the next adjacent one, and forming a series of vertical passages 8 which communicate with each other, and with the space above the perforated floor of the kiln, and a top for each flue, substantially as herein specified.

3. The improved brick kiln, constructed with a fixed perforated floor 2, horizontal flues 1 extending parallel through the kiln and opening on opposite sides thereof, said flues having horizontal fire ports 5 formed in their vertical walls communicating with vertical passages 8 formed in the kiln intermediate of said flues, an arched top for each flue having a series of transverse fire ports 9, one of said transverse fire ports being located directly above each vertical row of fire ports 5, and said fire ports 9, vertical passages 8 and fire ports 5 communicating with each other in vertical rows and with the space above said perforated floor, substantially as herein specified.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM H. FRANCIS.
LOUIS F. GERDING.

Witnesses:
C. W. BROWN,
G. M. BROWN.