(No Model.) 2 Sheets—Sheet 1.

C. L. HORN & W. M. IRWIN.

BRICK KILN.

No. 548,708. Patented Oct. 29, 1895.

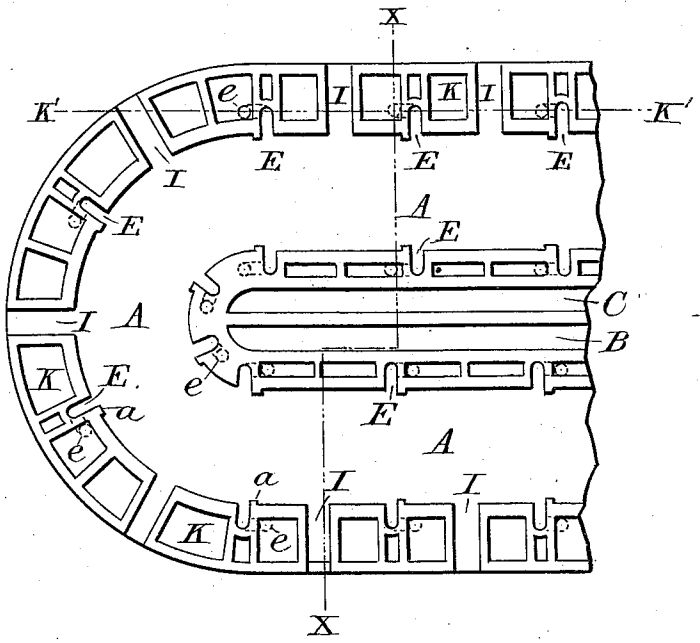

Fig. 1.

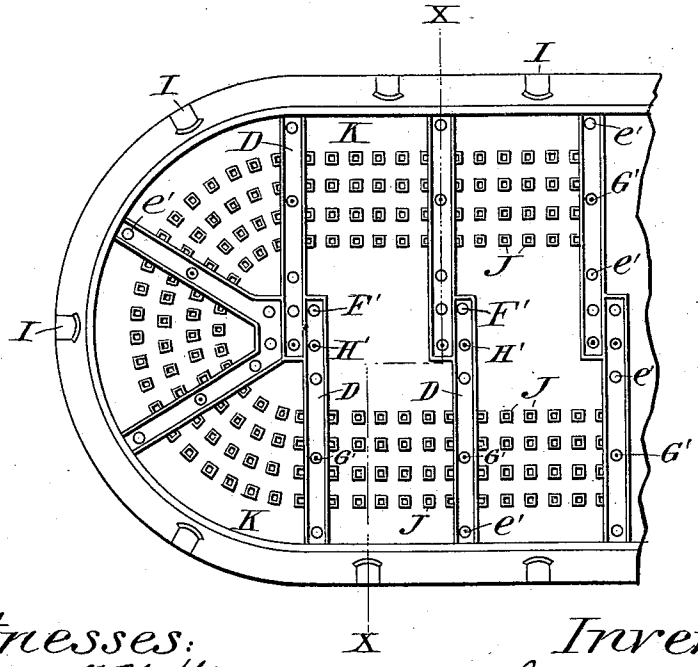

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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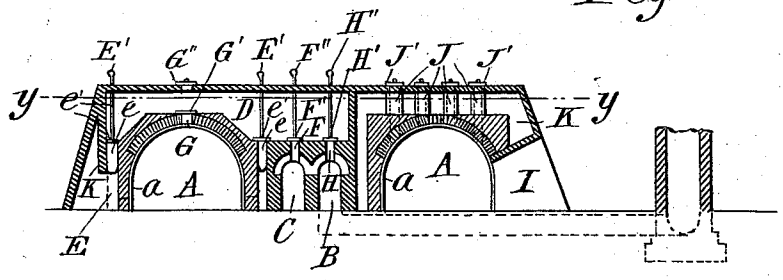
Fig. 3.



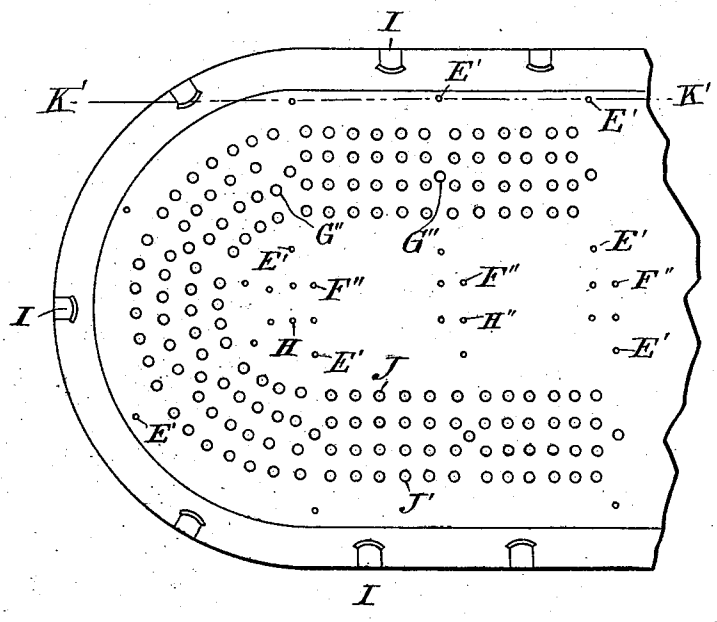
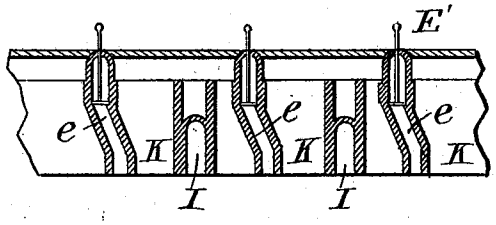


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES L. HORN AND WILLIAM M. IRWIN, OF ST. JOSEPH, MISSOURI.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 548,708, dated October 29, 1895.

Application filed February 23, 1895. Serial No. 539,432. (No model.)

To all whom it may concern:

Be it known that we, CHARLES L. HORN and WILLIAM M. IRWIN, citizens of the United States, residing at 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 specification.

Our invention relates to that class of kilns known as "continuous kilns," wherein the bricks to be burned are stacked in a continuous arched burning-chamber and the fire passes through them horizontally; and the objects of our invention are, first, to provide a continuous kiln wherein the water-smoke and products of combustion may be allowed to escape from the top or the bottom of the burning-chamber as the conditions may require; second, to provide a continuous kiln wherein the escaping heat of the cooling brick may be utilized better than heretofore in the drying of the green brick, or bricks recently placed in the kiln preparatory to burning; third, to equalize the heat in the burning-chamber, so that all the bricks stacked therein may be burned to uniform color and equal hardness. We attain these objects by the method of construction illustrated in the accompanying drawings, in which—

Figure 1 is a ground plan of one end of a kiln embodying our invention. Fig. 2 is a sectional plan of the same, taken on the dotted line *y y* of Fig. 3. Fig. 3 is a vertical section taken on the dotted line *x x* of Figs. 1 and 2. Fig. 4 is a top plan view. Fig. 5 is a broken vertical section taken on the dotted line K′ K′ of Figs. 1 and 4.

Similar letters refer to similar parts throughout the several views.

The burning-chamber A consists of two parallel arched passages separated throughout their entire length by a heavy central partition-wall and connected at their ends by semicircular arched passages of like sectional area, so as to form an endless arched passage in which the bricks are stacked to be burned. This burning-chamber A is divided into a number of sub-chambers or compartments by means of removable partitions attached to the interior projecting shoulders or pilasters *a*. Each compartment of the burning-chamber A communicates with the external air by means of an arched doorway I, which doorway is closed by a brick wall while the burning process is going on in that compartment.

Constructed within the heavy central partition-wall hereinbefore mentioned and extending nearly the full length thereof is the longitudinal smoke-chamber B, which communicates through an underground flue with a suitable chimney located outside the kiln. Smoke-chamber B has in its top a number of draft-openings, which communicate by means of short vertical flues H with horizontal transverse flues D, referred to hereinafter.

C is the longitudinal air-chamber, also constructed in the heavy central partition-wall and extending nearly the full length thereof. This air-chamber C is erected on the same horizontal plane as the smoke-chamber B and has in its top draft-openings similar to and in alignment with the draft-openings in the top of the smoke-chamber B aforesaid and with draft-openings in the top of the burning-chamber A. Draft-openings in the top of the air-chamber C communicate by means of short vertical flues F with transverse horizontal flues D. Horizontal transverse flues D extend across the top of each compartment of the burning-chamber A and across the tops of the smoke-chamber B and of the air-chamber C. Short vertical flues H connect the flues D with the draft-openings in the top of the smoke-chamber B. Short vertical flues F likewise connect the flues D with the draft-openings in the top of the air-chamber C.

In the walls on both sides of each compartment of the burning-chamber A, near the end of the compartment and at the bottom thereof, are placed draft-openings E.

By means of the short vertical flues G each one of the flues D is connected with the draft-opening in the top of the compartment of the burning-chamber immediately beneath it, and by means of the inclined flues *e*, Fig. 5, each one of the flues D is connected with the draft-openings E in the bottom of the compartment next preceding it. The inclined flues *e* and the vertical flues G, F, and H where they enter the flues D are closed by suitable dampers *e′*, G′, F′, and H′, respectively. Dampers *e′*, F′, and H′ are manipulated by means of rods

E′, F″, and H″, respectively, which rods extend upward through the covering of flues D and through the top of the kiln. The dampers G′ are manipulated with a rod introduced after removing the removable cover G″ in the top of the flues D.

Suitable holes or openings J extend from the top of the kiln to the interior of the burning-chamber A to serve for the introduction of fuel. Said holes or openings are closed by suitable removable covers J′. Pockets K in the walls of the kiln are filled with sand, clay, or other suitable material.

In the operation of the kiln, if the dampers *e′* and H′ be opened over those compartments through which the products of combustion are circulating, these products of combustion with the accompanying moisture or water-smoke will pass from the bottom of the burning-chamber A through openings E, flues *e* and D into the smoke-chamber B, and thence to the chimney. If, instead, the dampers G′ and H′ be opened, the products of combustion and the water-smoke will pass from the top of the burning-chamber A to the chimney, as aforesaid.

If at the point where the bricks are burned and cooling down the dampers G′ and F′ be opened and at that point where the green bricks have been recently stacked in the kiln the dampers G′ and F′ be opened, the heated air from the cooling bricks will pass through flues G, D, and F into hot-air chamber C, through hot-air chamber C to the point opposite the green brick, and thence through flues F, D, and G, circulating through the green brick, drying the same thoroughly before they are exposed to the greater heat of the escaping products of combustion. The resultant water-vapor is allowed to escape by opening the dampers *e′* and H′ over the next adjoining compartment.

We are aware that prior to our invention continuous kilns have been constructed having hot-air chambers, central smoke-chambers, vertical flues, and horizontal transverse flues. We therefore do not claim such a combination broadly; but

What we do claim as our invention, and desire to secure by Letters Patent, is—

The combination, in a continuous kiln, with a centrally located longitudinal smoke chamber having in its top a series of draft openings, a centrally located longitudinal hot air chamber having in its top a series of draft openings similar to the draft openings in the top of the smoke chamber, and horizontal transverse flues extending over the tops of the burning chamber, smoke chamber, and hot air chamber, of vertical flues connecting the horizontal transverse flues and the draft openings in the top of the burning chamber, vertical flues connecting the horizontal transverse flues and the draft openings in the top of the smoke chamber, vertical flues connecting the horizontal transverse flues and the draft openings in the top of the hot air chamber, and inclined flues connecting the horizontal transverse flues and the draft openings at the bottom of the burning chamber, all substantially as herein described.

In testimony whereof we have hereunto affixed our signatures in the presence of two witnesses.

CHAS. L. HORN.
WM. M. IRWIN.

Witnesses:
IDA M. IRWIN,
HENRY DE BELL.