T. A. KIRK.

Lime Kiln.

No. 112,468. Patented March 7, 1871.

Fig. 1.

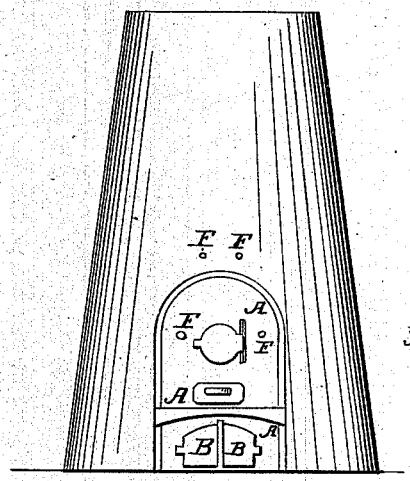


Fig. 2.

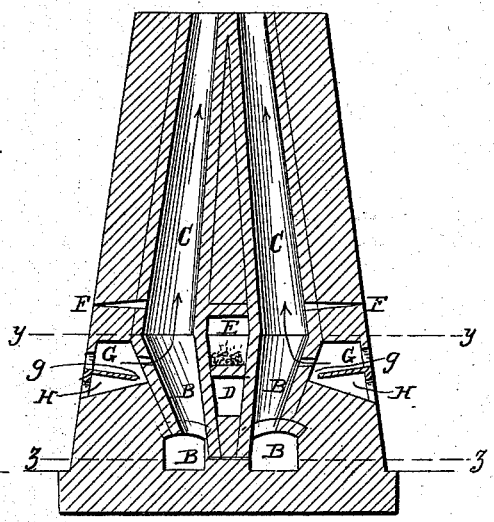


Fig. 3.

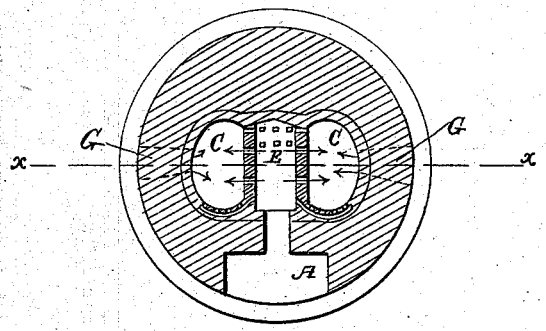
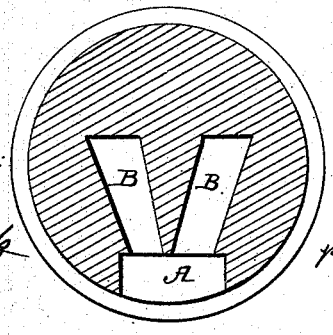


Fig. 4.



Witnesses:

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THOMAS A. KIRK, OF KANSAS CITY, MISSOURI.

Letters Patent No. 112,468, dated March 7, 1871.

IMPROVEMENT IN LIME-KILNS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, THOMAS A. KIRK, of Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Improvement in Lime-Kilns; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a front view of my improved lime-kiln.

Figure 2 is a vertical section of the same taken through the line *x x*, fig. 3.

Figure 3 is a horizontal section of the same taken through the line *y y*, fig. 2.

Figure 4 is a horizontal section of the same taken through the line *z z*, fig. 2.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved lime-kiln, which shall be so constructed as to enable the kiln to be worked from the front in firing and in drawing the lime and ashes, which will not allow cold or unburnt rock to pass through, and which will consume its own smoke.

This invention pertains to an improved arrangement of an inclined plate in the side furnaces of a kiln, whereby certain advantages are attained, as hereinafter specified.

When possible, I prefer to build the kiln in a bank, with its top a few feet below the lime-stone quarry, and with the arches A projecting. The front wall should be about five feet thick at the bottom and three feet thick at the top. The other parts of the wall should be about two feet thick.

The outer door-ways or arches A should be about seven feet wide upon the outside and four or five feet wide upon the inside.

The bottoms of the draws B should be made of iron or other suitable hard and smooth substance. The front ends of the two draws B should come within about four inches of each other, their back ends being about three feet apart.

The lower parts of the draws should be arched over in front, so as to be about twenty inches in diameter.

The upper parts of the draws B should be about three feet wide, six feet long, and six feet high.

The upper ends of the draws B should be of the same shape and size as the lower ends of the cupolas C. The cupolas C, as they extend upward, become round and are contracted, so as to be about three-fourths as wide at the top as at the bottom.

The masonry between the draws B serves as a foundation for the ash-pit D and furnace E. The ash-pit D should be not less than eighteen inches wide at the top, thirteen inches wide at the bottom, and about six feet long, and should be built with thirteen-inch walls.

In building the walls of the furnace the bricks should be laid with their ends to the fire, and from two to four inches apart. When the walls have been carried up two, three, or four courses, a stretcher should be placed upon the bricks, binding them together and forming the fire-holes. Another set of fire-holes is then formed above the stretchers, and so on for about two feet in height.

The walls of the furnace are then finished without fire-holes, to form a space in the upper part of the furnace for burning the smoke, thus increasing the heat, economizing fuel, and preventing the lime from being discolored by the smoke.

The furnace should be about six feet long, two feet wide, and four feet high, and should be arched from front to rear.

The bottom of the furnace may be formed of grates, or, if desired, the top of the ash-pit may be arched over, and the bottom of the furnace made inclined, with openings at the sides about six inches in width, to allow the coals and ashes to fall against the lining of the cupolas. The port-holes may all be in front, if desired.

When only one side or part of the kiln is to be used, the port-holes upon the other side may all be closed.

The lining of the kiln should be of fire-brick laid in fire-mortar, or of other fire-proof substance.

The outer walls may be of stone or common brick laid in brick-clay mortar, except the parts exposed to the weather, which should be laid with lime-and-sand mortar.

The sides of the draws B next to the furnace should be straight, or inclined somewhat inward, so that the lower parts of the said draws will be partially beneath the furnace.

This arrangement of the draws B B enables them to be discharged of their contents at nearly the same point, and into the same receptacle, when desired; and the arrangement of the plates in furnaces G G causes the live coals to pass into the pits H H in contact with the lining of the draws or cupolas.

The furnace E effects a similar result on the opposite side, besides allowing the flame to come in actual contact with the rock; thus no unburnt rock will escape.

The furnace should be provided with draught-holes F, in the ordinary manner.

G are wedge furnaces, built in the sides of the kiln. They are one foot in diameter in front, inclined inward to the cupolas; the inside end is two feet high, twenty inches wide, with a small ash-pit H, ten or

twelve inches in diameter, with a hole, *g'*, at their back end, for the ashes and coals to pass through, thereby making them suitable for burning coal. The furnaces G are built of fire-brick or any suitable fire-proof material.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

The plates of the side furnaces G G, inclined as specified, and arranged to leave a space, *g'*, adjacent to the lining of the kiln, substantially as shown and described, for the purpose set forth.

THOMAS A. KIRK.

Witnesses:

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