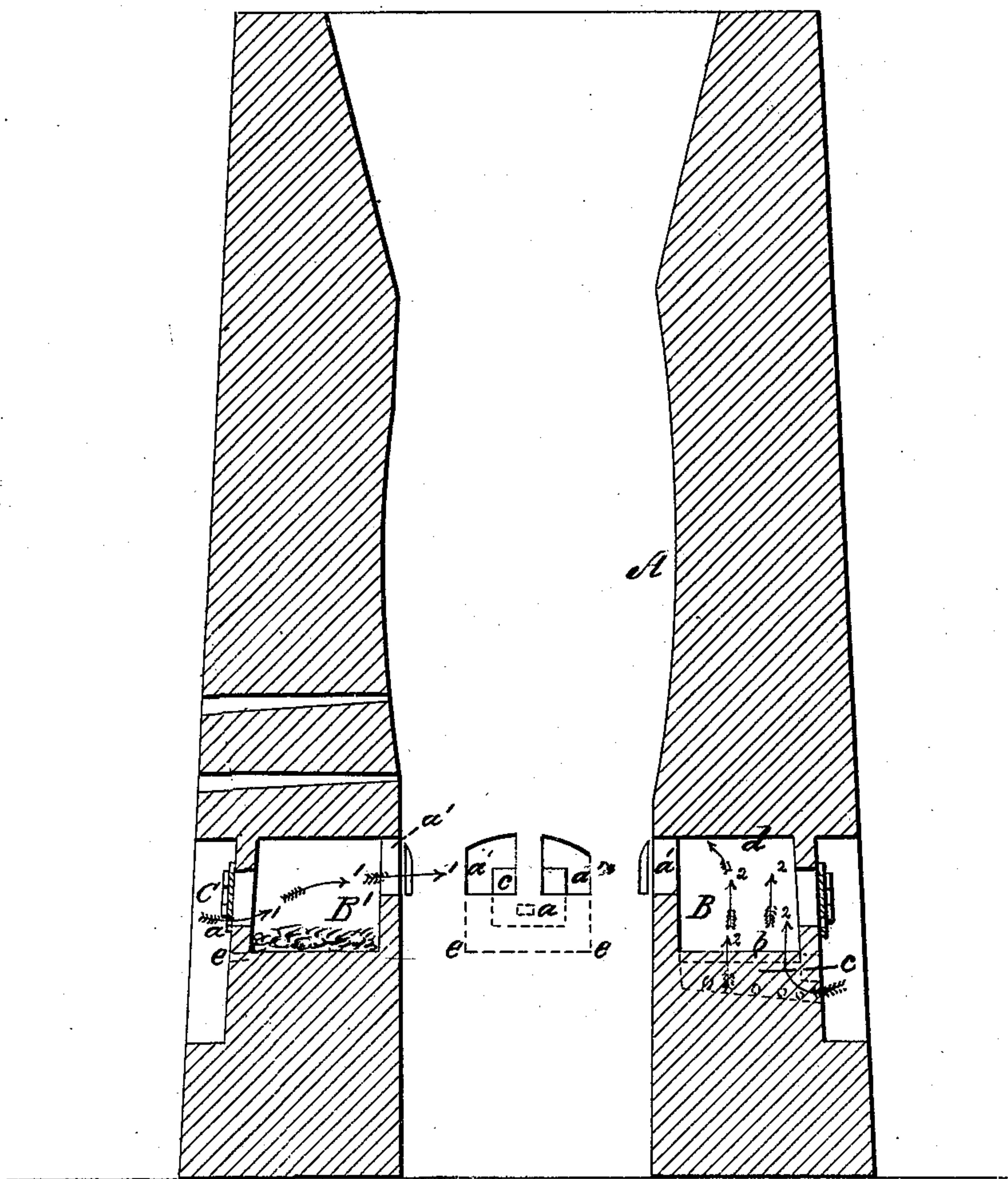


J. SANDS.

Lime Kiln.

No. 14,411.

Patented March 11, 1856.





# UNITED STATES PATENT OFFICE.

JOB SANDS, OF SANDS MILLS, NEW YORK.

## LIMEKILN.

Specification of Letters Patent No. 14,411, dated March 11, 1856.

*To all whom it may concern:*

Be it known that I, JOB SANDS, of Sands Mills, in the county of Westchester and State of New York, have invented a new and useful Improvement in Limekilns; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification, said drawing being a vertical section of a limekiln and showing my improvement.

My invention consists in a peculiar arrangement of the fire chambers, and the manner of admitting the air to the fires, as will be presently shown and described.

A, represents the kiln constructed in the usual manner, and B, B', represents the fire chambers which are in the sides or masonry of the kiln, and at the usual height from the surface of the ground.

B', represents my improved fire chamber, and B, represents the kind usually employed. The fire chamber B', has no grate, and the air is admitted to the fire through an aperture (a) in the door C, a short distance above the bottom of the fire chamber. By this arrangement the heat from the fire is driven directly into the kiln through the opening (a') as shown by arrows 1, and no heat is lost.

In the usual fire chambers B, grate bars (b) are fitted an ash pit (c) being below them. The air is admitted into the fire chamber underneath the bars as shown by the arrows 2, and the heat is consequently driven upward against the arches (d) and considerable heat escapes through or around the door, a great quantity of heat is therefore lost in consequence of its not being forced directly through the openings (a') into the kiln. Another disadvantage of the usual fire chamber is, that the coals pass down between the bars (b) and are wasted, whereas my fire chambers having no grates the coals are retained with the body of the fuel and it is all consumed, the ashes being drawn out from time to time as it accumulates through openings (e) at the bottom of the fire chamber.

The fire chambers as above described are intended for wood, but coal may be burned equally as well by inserting a grate within the chamber, so that the air that feeds the fire will act upon it in the same direction as described when wood is used.

The class of lime kilns upon which my improvement is made, are built of stone and brick mason work, about sixteen feet

square on the ground and about twenty eight feet in height, the interior cavity being somewhat egg shaped from six to eight feet in diameter in the largest part, having a fire brick lining some eight inches in thickness, with a space of a few inches filled with ashes between the lining and the mason work or walls of the kiln, the burnt lime is drawn out through a door on one side in the bottom of the kiln, drawing about thirty casks of lime every eight hours, without disturbing the fires and may be kept going constantly for months if necessary.

I do not claim any improvement on the interior cavity of the kiln, neither do I claim any thing as regards the peculiar manner of laying the lime stone in order to form conducting passages or channels for the diffusion of the heat, but what I do claim is an improvement in the construction of the fire chamber and the arrangement of the air draft. The fire chambers are one on each side of the kiln built of fire brick in the walls or mason work of the kiln about four feet long four feet in depth and three feet wide, the top being arched. The fire enters the interior cavity of the kiln by two passages at the farther end and at the top of the fire chambers about seven feet from the bottom of the kiln. The draft is through the door in front or through the space immediately under the door. The fire chambers are to be kept filled with ashes to the depth of two feet or nearly up to the draft hole. The fire chambers in which coal is used for fuel must be much smaller than those in which wood is used, a grate must be inserted in which the coal is burned in the fire chambers immediately under the passages where the fire enters the interior cavity of the kiln, the draft being in front the same as in the chambers where wood is used.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is,

Having the fire chambers B', of the kiln so constructed that its bottom will be but a short distance below the door C, no grate bars being employed, and having an aperture (a) made through the door, so that the air that feeds the fire will act horizontally upon it, and nearly in line with the openings (a') for the purpose specified.

JOB SANDS.

Witnesses:

JOHN MASON,  
J. W. COOMBS.