J. LEEDS.

Draft Regulator for Lime Kilns.

No. 11,230. Patented July 4. 1854.

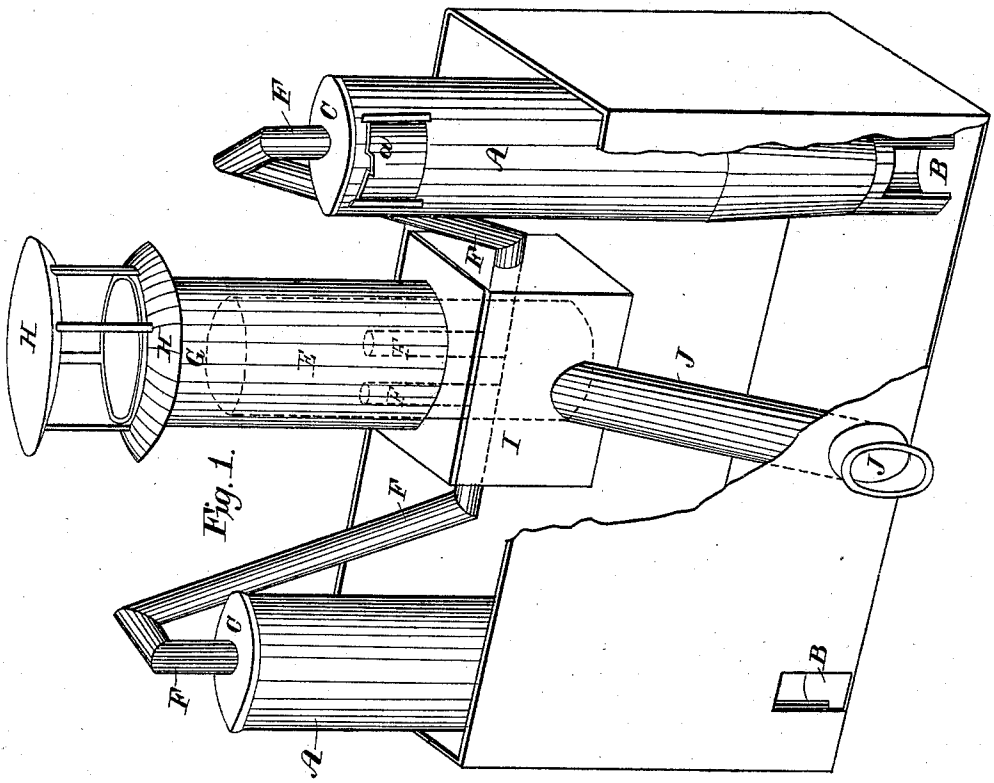

Fig. 1.

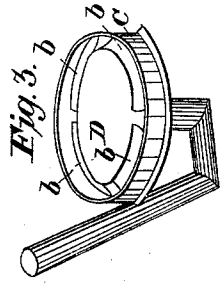

Fig. 3.

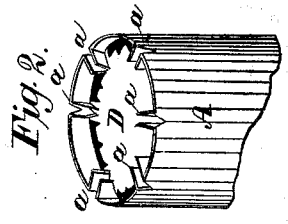

Fig. 2.

UNITED STATES PATENT OFFICE.

JOSEPH LEEDS, OF PHILADELPHIA, PENNSYLVANIA.

CONTROLLING THE DRAFT IN BRICK AND LIME KILNS.

Specification of Letters Patent No. 11,230, dated July 4, 1854.

To all whom it may concern:

Be it known that I, JOSEPH LEEDS, of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Regulating or Controlling the Draft in Stacks or Kilns for Burning Lime, Brick, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1, represents a perspective view of a double kiln for burning lime, and Fig. 2, a similar view of one of the tops of the stack, and Fig. 3, one of the double domes removed and turned over to show its under side.

Similar letters in the three several figures denote like parts.

The nature of my invention relates to the covering of stacks or kilns, where great heat is employed with double domes which are made to spread the fire through the body of the stack, the under dome having its openings around its outer edge or perimeter, and the upper one at its center. And also in augmenting the draft, or adding for that which may be taken away by covering the top of the stack, by the use of an auxiliary draft chimney, such as represented.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

I have herein represented a kiln for burning lime which may be for convenience built into or against a side hill or bank of earth.

A, A, represent two stacks, the charges being put in at top, and drawn from the bottom at B, B, in the usual manner.

C, C, are the domes for covering the stacks or kilns, which are intended to be made of cast iron or any other material capable of withstanding the high heat they will be subject to, and when very heavy may be removed or replaced by a crane, or by ways running from kiln to kiln so that they may be used elsewhere when cooling or drawing a kiln.

In Fig. 2, one of the domes is represented as being attached to the stack, and is represented by D, the dark margin representing the openings from the stack through said dome. The openings *a*, *a*, &c., in the top of the stack above the dome D, is for admitting cold air to protect the metal or other material from the intense heat. This may be done by openings as represented at *a*, or by registers as at *a*, Fig. 1. Where one of the domes is fixed as in Fig. 2, there would be one (the top one) to remove, as the charge may be put into the stack below the domes, and in this case both might be fixed, but not so economically in brick and lime kilns, which are not always burning.

In Fig. 3, D, represents the under dome, and *b*, *b*, the openings, and C, C, Fig. 1, the top domes. Where stacks are open at top, it has been found almost impossible to get the fire to burn with regularity through the body of the stack, the draft, and the greatest heat is right through the center; causing a too intense heat at the center and not sufficient at the sides. By causing the draft and heat to pass from under the first dome to the outside of the stack I bring the draft and heat in that direction from below and make more regularity in the burning. After the gases pass through the under dome, they go off, through a pipe F into an inner chimney E, as represented in red lines in Fig. 1. The chimney E, is closed at its bottom, open at top, and placed inside of an outer chimney G, which rises up above the top of the inner chimney, and is topped off two sections of cones H, H, with their apexes toward each other, to draw a current across the top of the chimney. There is also an open space *c* between the outer chimney and the lower cone H, to allow any ascending current to pass up. The outer chimney G, terminates in a box I, into which air is conducted by a pipe J. The current of air passing through the pipe J, into the box I, and in contact with the inner chimney E, becomes highly heated, and ascends with rapidity, drawing up as it were the draft from the inner chimney with it, and thus returning to the stacks all the draft which may have been impeded by covering them with domes. In burning lime and brick by this method I save from 25 to 33 per cent of wood over the old plan—besides the uniformity of burning.

This invention though thus far only tested with regard to the burning of lime and bricks, it is believed, may be advantageously used in smelting iron, or for any kind of stacks or furnaces, and I so contemplate applying it.

Having thus fully described the nature of my invention, what I claim therein as new and desire to secure by Letters Patent, is—

1. Controlling or regulating the draft of

lime, brick or other kilns, by means of a double dome, in the under one of which the openings are at its outer edge, and in the center of the upper one, so as to force the draft from the center to the outside of the kiln substantially as described.

2. I also claim in combination with kilns controlled by the double domes, the main or auxiliary chimney for increasing the draft in the kilns, substantially as described.

JOSEPH LEEDS.

Witnesses:
A. B. STOUGHTON,
SAML. GRUBB.