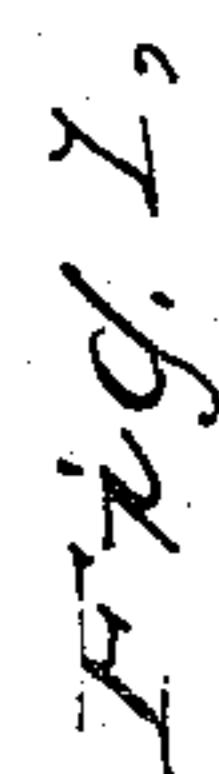


Lime Kiln.

Patented April 19, 1864.



Witnesses:  
R. F. McGinn  
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# UNITED STATES PATENT OFFICE.

EDWARD A. SMITH, OF ST. ALBANS, VERMONT.

## BURNING LIME.

Specification forming part of Letters Patent No. 42,113, dated April 19, 1864.

*To all whom it may concern:*

Be it known that I, EDWARD A. SMITH, of St. Albans, in the county of Franklin and State of Vermont, have invented a new and useful improvement in the manner and mode of burning lime in a kiln of my own peculiar construction; and I do hereby declare that the following is a full and exact description thereof, reference being had to the drawings accompanying, and to the letters of reference marked thereon, of which—

Figure 1 is a perspective view, Fig. 2 a half-section, and Figs. 3 and 4 sections, of fire chamber and grates.

The nature of my invention consists in providing a way to burn lime more rapidly and economically than by any other by the application of heated blast to anthracite-coal fires in a kiln constructed for the easy and correspondingly quick delivery of the lime.

The kiln-stack *a a*, Fig. 1, to be constructed of stone and brick fourteen feet square and ten feet deep, in which is the lime-pit *Q*, Fig. 2, in the center of the bottom of the stack, six feet in diameter and six feet in height, with an arched top terminating in the throat of the boshes *P*, Fig. 2, opening into it, which throat consists of a cast-iron frame eighteen inches square and two feet deep, to close which a sliding door of cast-iron across its base is operated from the outside, as seen at *D*, Fig. 1, by a rod attached, the entrance to the lime pit to be through a door, *C*, Fig. 1, four feet in height and eighteen inches wide, and an arched passage of the same dimensions as at *B*, Fig. 2, the depth of the boshes *R R*, Fig. 2, to be three feet, and to be constructed with fire-brick, spreading from the throat to the base of the lining of the cupola, where they are six feet across. Ten feet from the bottom of the lime-pit cast-iron plates in sections, as at *N N*, Fig. 2, surmount the structure, forming a foundation for the cupola *E*, Fig. 1, which is constructed of boiler-plate and lined with common brick, as *M M*, Fig. 2, and with fire-brick, as seen at *O O*, Fig. 2, and is twelve feet in diameter at the base and seven feet in diameter at the top and fourteen feet high. Within

the enlargement of the cupola at its base I construct two circular fire-chambers three feet in height and two feet wide and four feet long, with ash-pits one foot deep, two feet wide, and three feet long, as seen at *E* and *G*, Fig. 1. The fire chambers connect with the chambers of the cupola by flues, as at *F*, Fig. 2, through its lining just above the boshes, the cupola to be surmounted by cast-iron plates, as at *I I*, Fig. 1, thirteen feet across, bearing upon four columns, *K K*, Fig. 1, which stand upon the kiln-stack, and upon which raised side plates, *h h*, Fig. 1, forming a hopper for the stone. Cast-iron pipes in form as seen at *I I*, Fig. 1, receive the blast, taking it over the escape heat down to the ash-pit *G*, Fig. 1, from which it enters the fire-chamber through the grates *R R*, Fig. 4, thus applying a heated blast to ignited coal and forcing the intense heat thereby evolved upon a descending column of lime stone in the shaft *M*, Fig. 2, by which it rapidly parts with its carbonic-acid gas and at regular intervals is drawn into the lime-pit *O*, Fig. 2, by the opening of the sliding door at *D*, Fig. 1, and, if necessary, poking through the flues *F*, Fig. 2, after which, this door being shut, the firing goes on, while the lime is being removed at leisure by means of a long-handled shovel operated through the passage *B*, Fig. 2.

I claim—

1. The application of the heated blast to ignited anthracite coal in a kiln having a cylindrical cone shaped cupola, combined with a boiler-plate, providing room in the base for the fire-chambers, all constructed and arranged as herewith described.

2. The lime-pit and door in the throat of the boshes, providing for the more rapid delivery of the lime, and forming a gage or measure by which to ascertain the amount drawn and to be drawn in the practical working of the kiln, all constructed as herewith described.

EDWARD A. SMITH.

Witnesses:

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