

E. A. SMITH.
Lime Kiln.

No. 42,413.

Patented April 19, 1864.

Fig. 2,

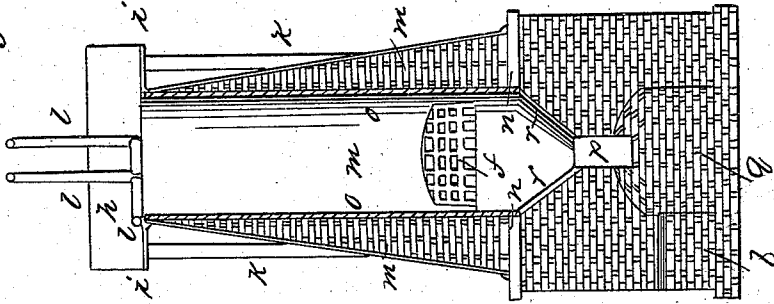


Fig. 3,

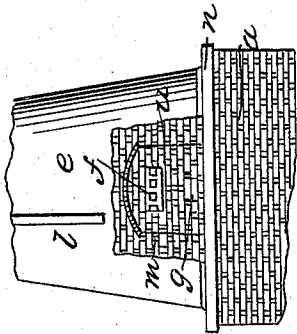
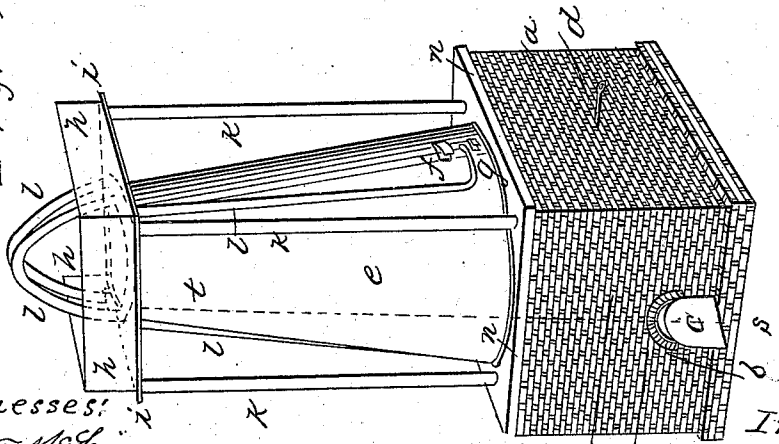


Fig. 5,



Fig. 1,



Witnesses:
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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.

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Witnesses:

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