L. MONTGOMERY.

LIMEKILN.

No. 67,667. Patented Aug. 13, 1867.

Fig: 3

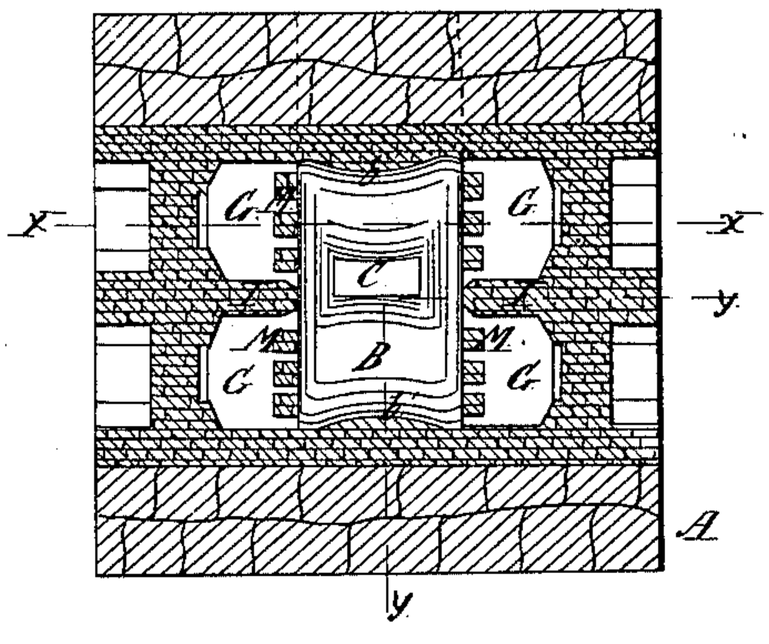


Fig: 1.

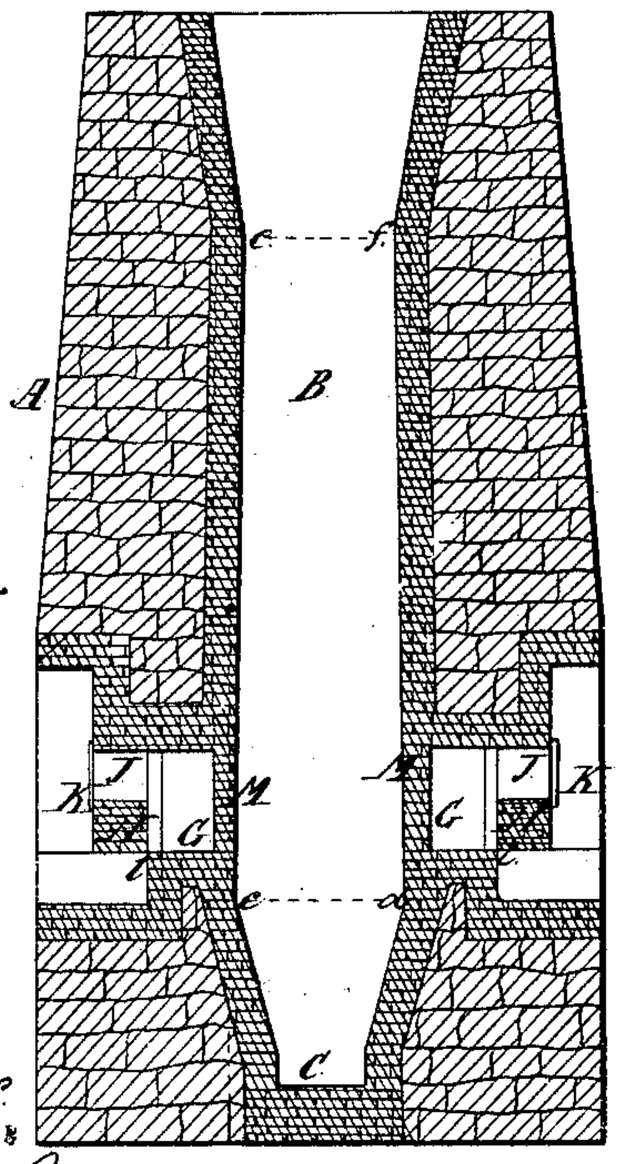
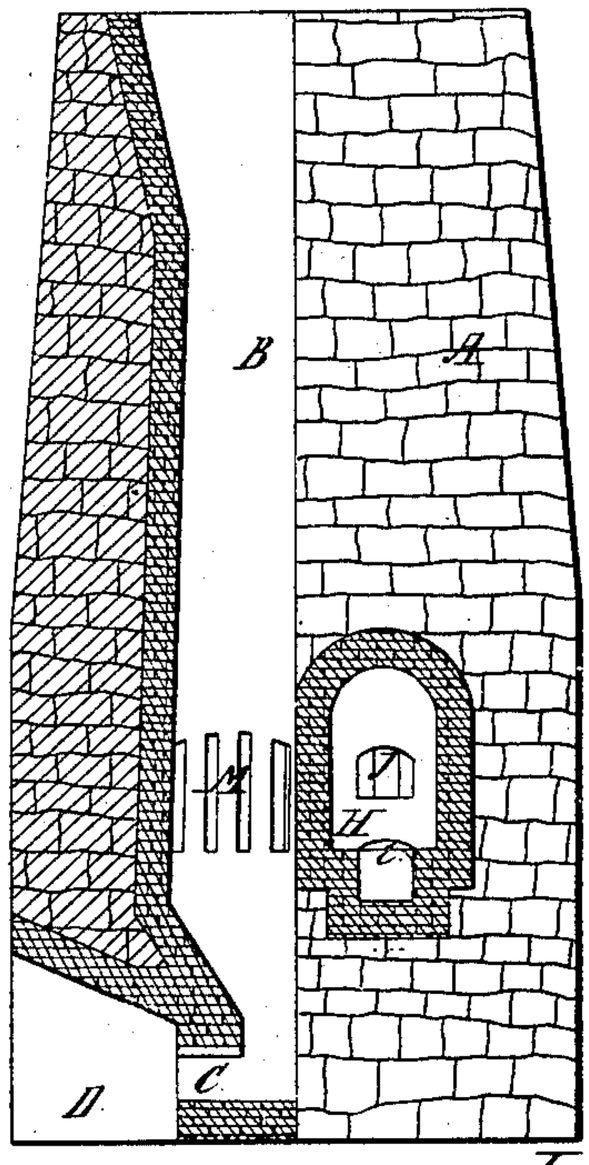


Fig: 2.



Witnesses.
Fletcher Montgomery
B. H. Muehle

Inventor.
Lucius Montgomery

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

United States Patent Office.

LUCIUS MONTGOMERY, OF NEWSTEAD, NEW YORK.

Letters Patent No. 67,667, *dated August* 13, 1867.

IMPROVED LIME-KILN.

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, LUCIUS MONTGOMERY, of Newstead, in the county of Erie, and State of New York, have invented a certain new and useful improvement in Lime-Kiln; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is a vertical section on line *x x*, Fig. III.

Figure II is a transverse vertical section on line *y y*, Fig. III, one-half being shown in elevation.,

Figure III is a horizontal section.

The nature of this invention consists in making a fire-chamber within the inner half of the walls of the kiln, recessed below the mouth through which the fuel enters, having a solid bottom without grates for burning short wood, so that the combustion will be complete and the heat passed directly into the cupola without waste.

Letters of like name and kind refer to like parts in each of the figures.

The walls of the kiln are represented at A, and are built of stone and mortar in a common manner. The base of the kiln is about eighteen feet square. The cupola is shown at B. This is in size about nine feet by five feet four inches on the line *c d*, and seven feet by five on the line *e f*, twenty feet up. From the line *e f* up it is flaring or hopper-shaped. On the narrow sides it is swelled out a little in the centre, as shown at *b'*. The bottom of the cupola is made tapering or hopper-shaped to the draw-flue in a common manner. The draw-flue is shown at C, and the lime-pit at D. These are of common construction. The cupola being made tapering, and larger in the lower part, the lime and stone will follow down easily without clogging. The fire-box, which is the subject-matter of my improvement, is shown at G. This is entirely within the inner half of the walls of the kiln, near the cupola, and is offset or recessed below the front bridge or wall H. There are two fire-boxes or chambers on opposite sides of the kiln, as shown in Fig. III. The wall H fronts both fire-chambers, and the wall I forms a partition between the two. J is the mouth or doorway leading through the wall into the fire-chamber, through which the fuel is fed to the fire. K is the fire or furnace door. The bottom of the fire-chamber is solid, having no grates. An opening is made under the bridge or wall II, and into the outer bottom side of the fire-box, for the entrance of air to supply the fire, as shown at *l*. There are flue-bars or walls M placed between the fire-chamber and the cupola. These are placed upon the same slant or incline as the sides of the cupola, so that they will offer no impediment to the easy descent of the lime, and so that the fuel cannot pass into the cupola. The object of rounding out the wall, as shown at *b'*, is to prevent the stone and lime from lodging or wedging in the corners of the cupola. In kilns of other construction the fire is liable to make most progress through the centre of the cupola, and the stone is liable to settle or follow down the course of the fire in the centre, leaving the corners of the cupola wedged or clogged up with stone only partly burned, and often raw stones from the top of the kiln will run down through the centre into the lime-pit. This is a serious difficulty, which the swell *b'* remedies. This swell or rounding out is continued, from the line *c d*, up twenty feet, to the line *e f*. It causes the stone to lie more loosely in the cupola, clogging and packing is prevented, and the draught through the kiln is thereby kept perfect, and the fire quick and effective.

A great saving of fuel is consequent upon the construction of the fire-chamber as herein described. The combustion of the fuel is complete, and all the heat is applied without waste, as I have perfect control of the fire. The yield of lime is greater, and the reduction is quick and economical.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A fire-chamber, G, constructed within the inner half of the walls of a lime-kiln, having a solid bottom without grate-bars, and having a front bridge or wall, H, with air-flue below, for the purposes and substantially as described.

2. The swell or rounding out of the inner wall, as shown at *b'*, continued from the line *c d* up to the line *e f*, for the purposes and substantially as set forth.

LUCIUS MONTGOMERY.

Witnesses:

FLETCHER MONTGOMERY,

B. H. MUEHLE.