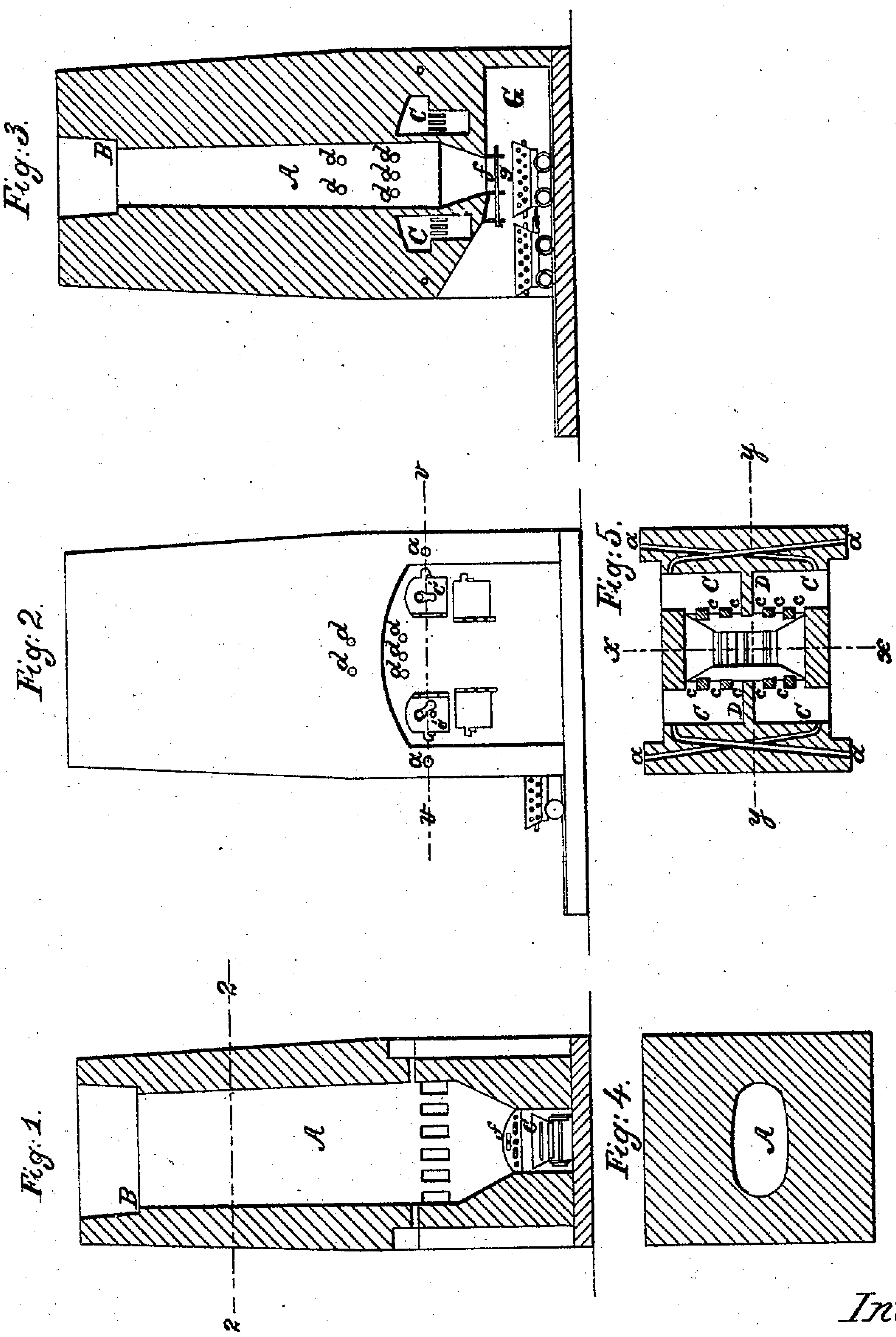
J. L. LIVINGSTON.

Lime Kiln.

No. 70,234.

Patented Oct. 29, 1867.



Witnesses;

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JOHN L. LIVINGSTON, OF MOUNT CARROLL, ILLINOIS.

Letters Patent No. 70,234, *dated October* 29, 1867.

IMPROVEMENT IN LIME-KILNS.

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, JOHN L. LIVINGSTON, of Mount Carroll, in the county of Carroll, and State of Illinois, have invented a new and useful Improvement in Lime-Kilns; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and improved method of constructing lime-kilns, and to the method of removing the lime from the kiln; and the invention consists in the peculiar formation and arrangement of parts of the kiln, whereby the process of burning and removing the lime from the kiln is greatly improved, and the labor much lessened, as I will proceed to describe.

Figure 1 represents a sectional elevation of the kiln through the line *x x* of fig. 5.

Figure 2 is an outside view.

Figure 3 is a sectional elevation through the line *y y* of fig. 5.

Figure 4 is a cross-section of fig. 1, through the line *z z*.

Figure 5 is a cross or horizontal section through the line *v v* of fig. 2.

Similar letters of reference indicate like parts.

A represents the interior of the kiln. The base of the interior portion is in the form of an inverted truncated cone, which portion or base extends below the fire-grates, the mouth or lower end of which is sufficiently elevated to allow cars, constructed for the purpose, to receive the burned lime. The interior portion or cupola is oval in form, as indicated by the cross or horizontal section, fig. 4. This portion extends upward to an offset, marked B, from whence it is gradually enlarged to the upper end or top, as seen in the drawing. Fig. 1 shows the larger, and fig. 3 the smaller diameter of the interior. The furnaces C are upon the two opposite sides, as indicated by the position of two of the furnace-doors, seen in fig. 2. C′ indicates the doors upon one side. The furnaces are separated by a partition, marked D, seen in fig. 5. There are draught-holes of suitable size, in the wall, near each of the doors, which are designated by *a*. These holes pass through the wall, as represented in fig. 5, where they are seen to cross each other. These holes are for the purpose of equalizing the draught in the furnace, and to counteract the effect of the winds at certain times. There are also draught-holes of suitable size through each of the doors, where the draught is regulated by sliding covers. The flame from the furnaces passes laterally through fire-proof grating, as seen at *c*, fig. 5. There are holes which pass directly through the wall, marked *d*, which are for the purpose of giving access to the burning limestone to prevent its lodging, by punching or otherwise. The burned lime is taken from the kiln at *f*. The lime is held up by rods or bars of iron, one of which is seen in fig. 3, marked *g*. Five of these bars are represented in figs. 1 and 5. These bars may be of any size or shape, and any desired number may be used. They are supported in any suitable manner, and are withdrawn, or as many as may be necessary, when lime is to be discharged into the cars beneath. G represents an arched way under the kiln, as represented in the drawing. A railroad track is laid in this arched way, and cars are run in to receive the lime, as seen in the drawing.

The particular manner in which the materials used in the construction of this kiln are combined, or their precise arrangement or proportions, it is not deemed necessary to describe, as variations may be made without materially interfering with my method. This kiln may be called perpetual in its operation, as the limestone is fed in at the top as the lime is taken out of the bottom, and the operation can be continued as long as may be desired.

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

1. The draught-holes *a*, upon each side of the furnace C, crossing each other, and entering said furnaces upon each side of the partition D, whereby the effect of the winds is counteracted, and the draught in the furnaces regulated, as herein set forth for the purpose specified.

2. The arrangement of the furnaces C C, upon each side of the interior opening A, whereby the products of combustion are enabled to pass from such furnaces toward each other, at the same time the lime is kept from the furnace, as herein set forth for the purpose specified.

JOHN L. LIVINGSTON.

Witnesses:

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