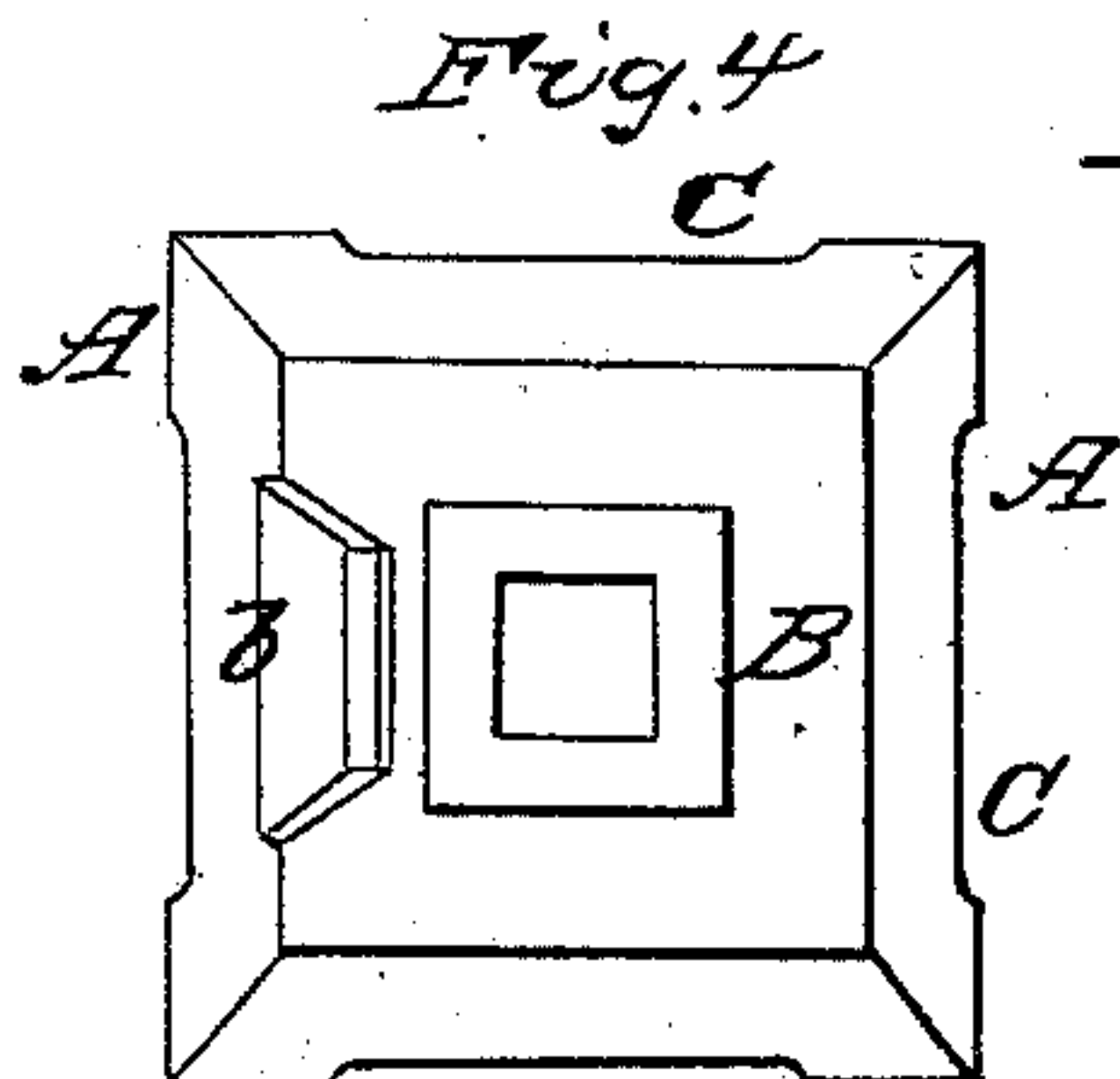
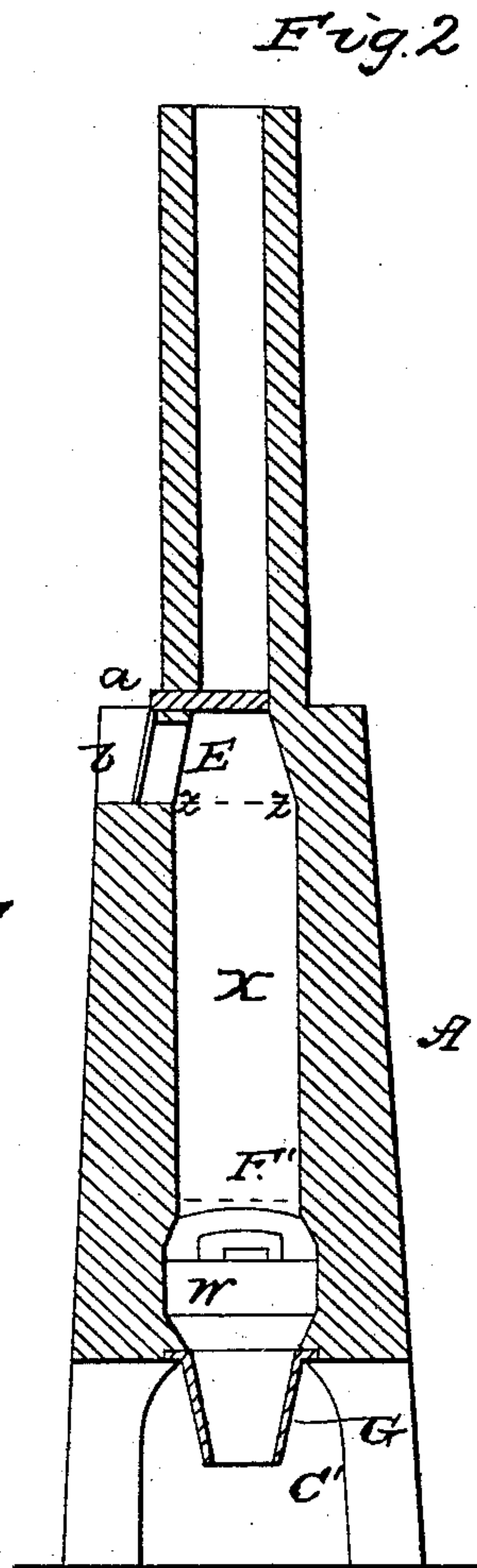
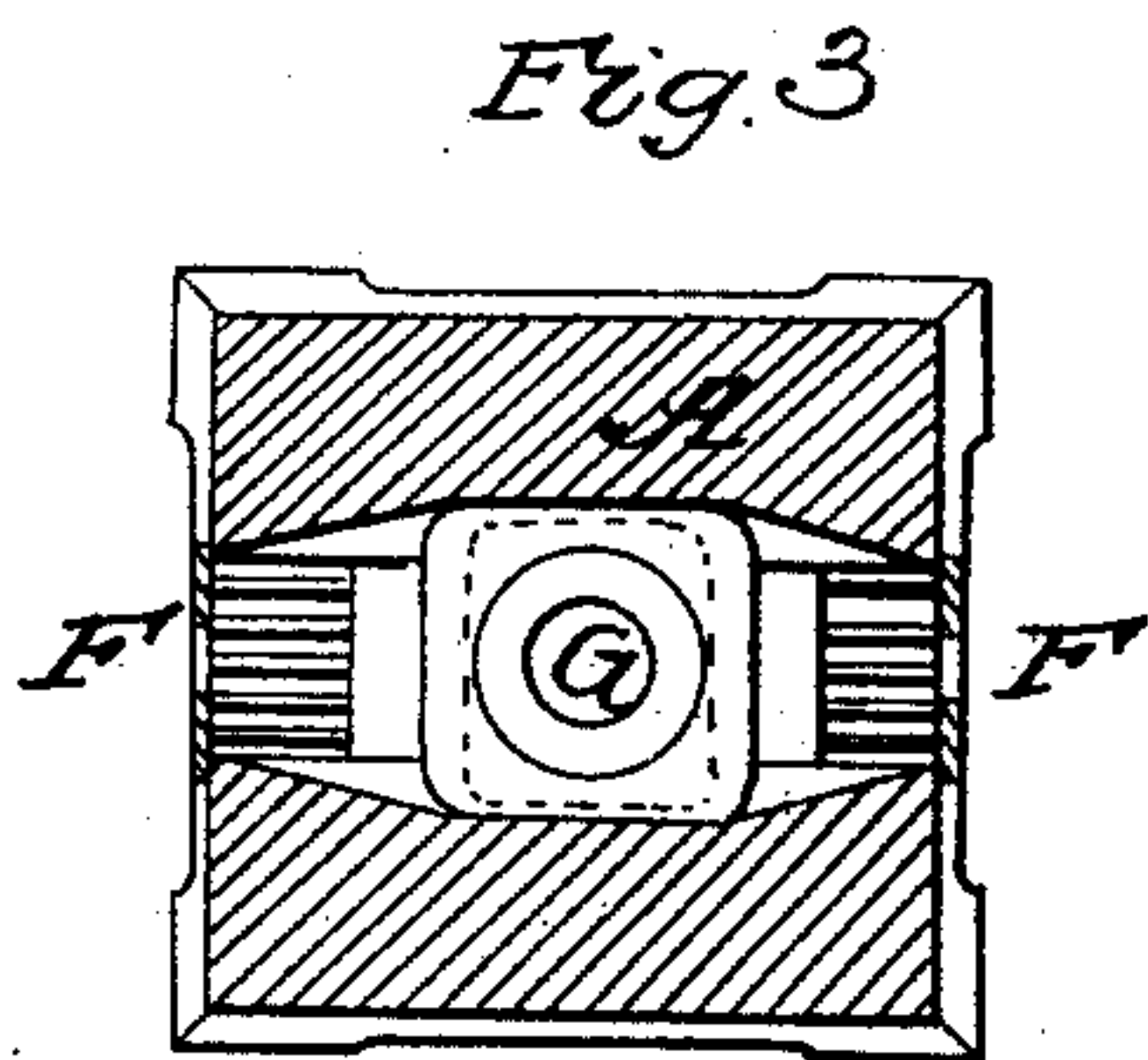
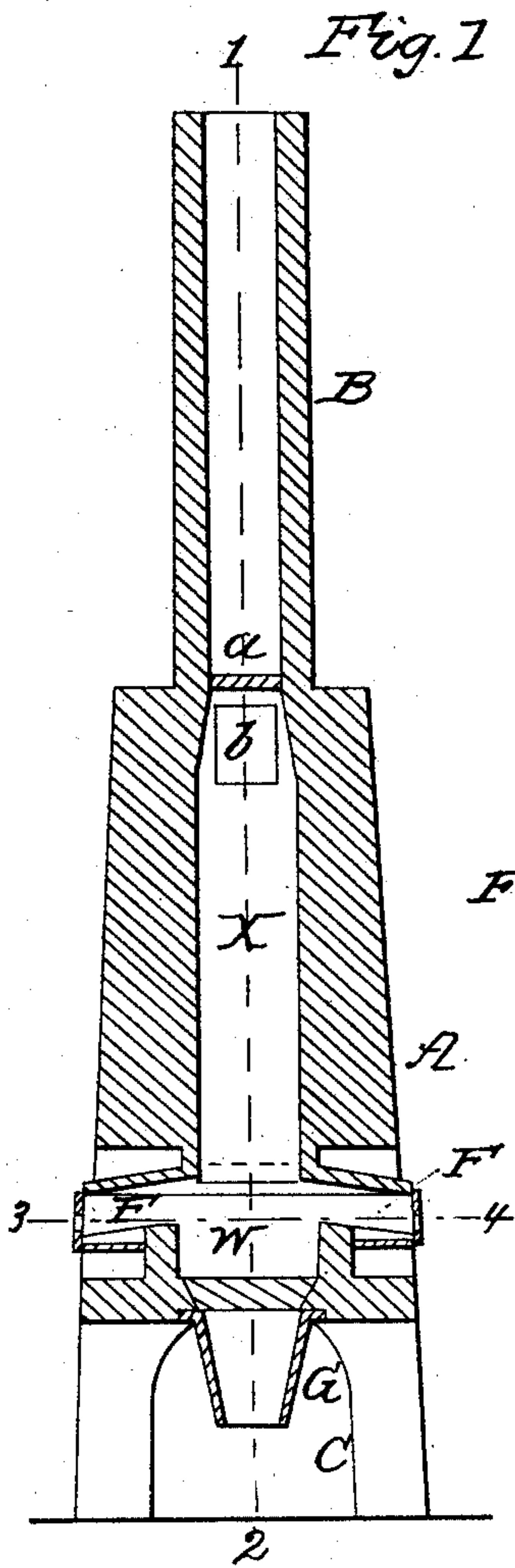


E. B. ENGLISH.

Lime Kiln.

No. 41,691.

Patented Feb. 23, 1864.



Witnesses
Charles C. Potter
W. Albert Steel.

Inventor
E. B. English

UNITED STATES PATENT OFFICE.

EDWARD B. ENGLISH, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN LIMEKILNS.

Specification forming part of Letters Patent No. 41,691, dated February 23, 1864.

To all whom it may concern:

Be it known that I, EDWARD B. ENGLISH, of Philadelphia, Pennsylvania, have invented an Improvement in Limekilns; 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, and to the letters of reference marked thereon.

My invention relates to improvements, fully described hereinafter, in the lime-kiln for which Letters Patent were granted to Richard Donaldson on the 19th day of February, 1860, said Letters Patent having been reissued on the 19th day of May, 1863.

In order to enable others familiar with the construction of limekilns to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a sectional elevation of my improved lime-kiln; Fig. 2, a vertical section on the line 1 2, Fig. 1; Fig. 3, a transverse section on the line 3 4, Fig. 1; and Fig. 4, a plan view.

Similar letters refer to similar parts throughout the several views.

A is the body of the kiln, on the top of which is the chimney B. Through the lower part of the body A passes the arched way c, at right angles to which is a similar arched way, c', these two arched ways permitting free access to the funnel-shaped cooler G, from which the burnt lime is discharged. In the interior of the kiln are two chambers, the lower chamber, W, being square, and the upper and narrower chamber, X, oblong, as shown in dotted lines, Fig. 3, the corners of both chambers being rounded, for a purpose described hereinafter.

At the upper part of the chamber X, which decreases above the line 2 2 until it corresponds in size with the interior of the chimney B, is a sliding damper, a, and below the damper is an opening, E, through which the limestone is thrown into the kiln, this opening being provided with a door, b.

The kiln is charged and started in the same manner as is described in the reissued patent of R. Donaldson, before referred to, the sliding damper a being open during the process of burning the lime, and until it is required

to withdraw a portion of the same from the cooler G, when the damper is moved forward so as to close the chimney and prevent the cool air from passing through the cooler G upward into the kiln. When the burnt limestone is withdrawn, the damper is again opened and the burning continued.

It will be seen that when the damper a is closed the heat in the kiln will be confined about the limestone, and its waste and dispersion to a great extent prevented. This waste of the heat occurs to a great extent when the burning is discontinued for several days, and when the damper is placed at the top of the chimney, as in Donaldson's patent kiln, in which the chimney is quickly cooled by the exterior air, and absorbs and gives off the greater portion of the heat in the kiln—an evil which this portion of my invention has been especially designed to obviate.

In kilns as generally constructed the angular corners of the chambers are not filled by the limestone, and consequently the heat escapes too rapidly at these points, and reaches the chimney without sufficiently penetrating the body of the limestone. By making the corners of the chambers round, as in the present instance, the limestone can be as close to the interior of the kiln at these points as against the sides, and the above-mentioned difficulty is obviated.

It will be seen that the chamber W, into which the products of combustion first pass, is much larger than the upper chamber, X, and will consequently contain so large a body of heat that it is not possible for the latter to pass upward without coming in intimate contact with every particle of limestone in the kiln.

By gradually increasing the width of the fire-places F from the doors until they equal that of the chamber W, a small quantity of fuel may be used, and at the same time a thorough dispersion of the heat through the limestone be effected. A great advantage is also gained by making the top of the fire-places of the arched form represented, thereby dispensing with the ordinary supporting-pillars, which so divide the products of combustion that much of the limestone is insufficiently burned.

I claim as my invention and desire to secure

by Letters Patent, as an improvement on the said patent of R. Donaldson—

1. The arrangement, at or near the base of the chimney, of the damper α or its equivalent, as and for the purpose set forth.

2. The chambers W and X, when formed and arranged in respect to each other as and for the purpose specified.

3. The fire-places F and F', with their di-

verging sides, when combined with the chamber W, as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDW. B. ENGLISH.

Witnesses:

HENRY HOWSON,

CHARLES E. FOSTER.