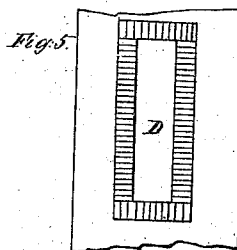
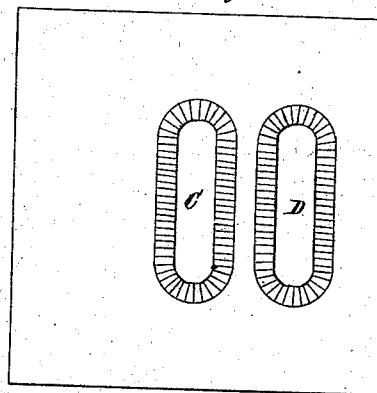
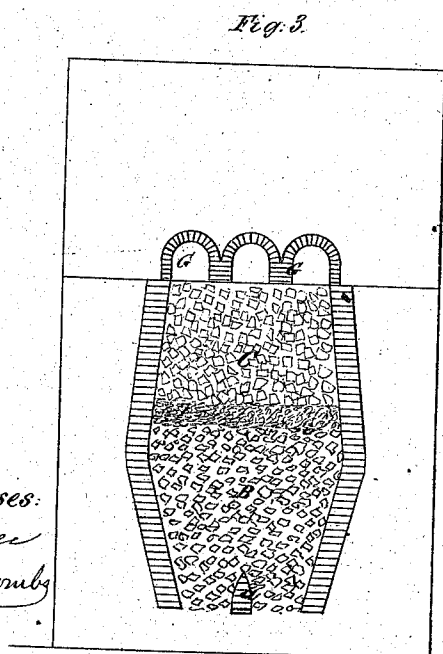
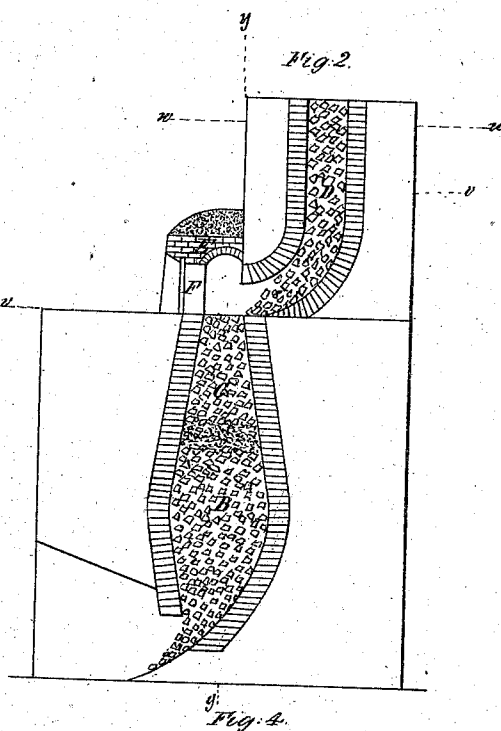
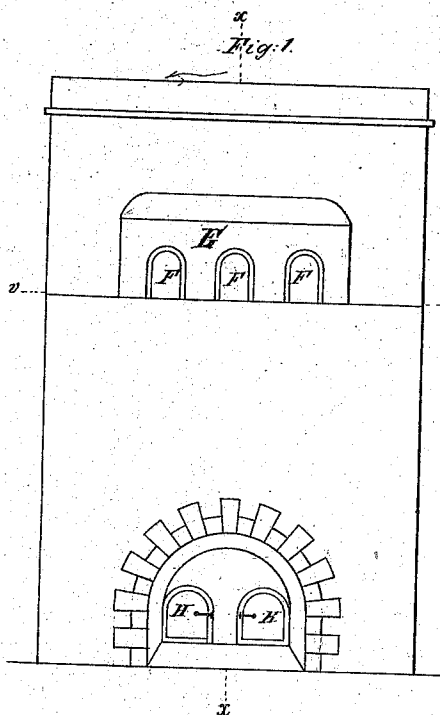


P. J. GERBAULT-GUICHARD.

Lime Kiln.

No. 106,054.

Patented Aug. 2, 1870.



Witnesses:
J. Haynes
J. M. Cornaby

Pierre Jacques Gerbault-Guichard
per Brown Cornaby & Murray

United States Patent Office.

PIERRE JACQUES GERBAULT-GUICHARD, OF ST. BERTHEVIN-LE-LAVAL,
FRANCE.

Letters Patent No. 106,054, dated August 2, 1870.

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, PIERRE JACQUES GERBAULT-GUICHARD, of St. Berthevin-le-Laval, in the Empire of France, 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 of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a front elevation of a lime-kiln, constructed in accordance with my invention;

Figure 2 is a vertical section of the same, as indicated by the dotted line *x x*, in fig. 1;

Figure 3 is a vertical section, taken on the line *y y*;

Figure 4 is a horizontal section, taken on the line *v v*, and

Figure 5, a similar section, on the line *w w*.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in a novel form and construction of a continuous lime-kiln, whereby the operation of feeding can be carried on with more ease and accuracy, and a more perfect combustion of the fuel, and more uniform calcination of the lime are obtained than in lime-kilns as ordinarily constructed.

To enable others to construct lime-kilns in accordance with my invention, I will proceed to describe the same with reference to the drawing.

The kiln is built in two parts, of which the upper, D, equal to about one-third of the whole height, and forming a heating-chamber, is set back a certain distance from the lower part, which comprises the laboratory C and receiver B.

These two parts are connected by a vault, E, which is situated on top of the laboratory C, and provided with iron doors F.

Openings, G, are formed in the lower end of the heating-chamber D, opposite the doors F, through which the limestone that is contained in the heating-chamber D is fed to the laboratory C.

Doors, H, are provided at the bottom of the receiver B.

Both the heating-chamber D and that portion of the kiln comprising the receiver B and the laboratory C are made of the form of a parallelogram in their horizontal section, whereby the operation of feeding is greatly facilitated, the operator being thus enabled to better reach across the furnace.

That portion of the kiln which comprises the receiver B and the laboratory C is widened somewhat toward the middle, leaving the upper and lower openings narrower, thus allowing the fuel to settle down easier and mix somewhat with the limestone.

The receiver B is provided at its lower mouth with

a division, *a*, which provides two outlets to said receiver.

The doors H, arranged to said outlets, serve also to regulate the admission of air necessary for the combustion of fuel, more or less being admitted to produce faster or slower combustion, and so carry on the operation of calcination faster or slower, as the demand requires.

To prevent a too free passage of the air through the limestone in the receiver, the latter has its corners rounded, allowing the pieces of stone to fill out the space in the receiver closer.

The operation of this lime-kiln is as follows:

A proper quantity of fuel is deposited on the limestone contained in the receiver B, through the doors F, when the operator, by means of a proper tool, rakes the hot limestone contained in the heating-chamber D onto said fuel, filling up the space of the laboratory and igniting said fuel. The doors F are then securely closed, to allow the process of calcination to go on slowly.

When the operator judges the process complete, a quantity of lime, equal to the amount contained in the laboratory, is withdrawn from the receiver through the openings H, allowing the contents of the laboratory to be discharged into the receiver, and leaving the laboratory ready for a new charge.

Lime-kilns thus constructed not only retain all the desirable properties of the ordinarily-constructed kilns, but they possess additional advantages.

The principal properties common to all are—

First, the utilization of the heat contained in the calcined limestone for heating the air used for combustion.

Second, using the bulk of limestone contained in the receiver as a natural grate for the fuel employed.

Third, the utilization of the hot gases emanating from the laboratory, for preheating the limestone contained in the upper part of the furnace.

The additional advantages obtained by this construction are—

First, a more perfect combustion of the fuel, by using the same at the most favorable time and place, and preventing the formation of carbonic oxide, which burns uselessly on the surface in lime-kilns of ordinary construction.

Second, enabling the admission of air to be regulated for the proper combustion of fuel, without raising the temperature in the furnace above 1,200 centigrades.

Third, preventing the bad effects of a too high temperature in one place of the furnace and a too low one in another place.

Fourth, the construction of the furnace of the

form of a parallelogram, whereby the operator is enabled to better reach across the furnace for the purpose of renewing the charges.

Fifth, enabling the operator to watch the progress of calcination, and the most favorable time for renewing the charges, by means of the peep-holes in the doors F of the vault E.

What is here claimed, and desired to be secured by Letters Patent, is—

The combination of the heating-chamber D, vault E, and door F with the laboratory C and doors H, when constructed and arranged substantially as shown and described, for the purposes set forth.

GERBAULT-GUICHARD.

Witnesses:

J. GESLOT, *ainé*,

PIERRE FOUQUET.