

H. BROCKMAN & H. STUEVE.

LIME-KILN.

No. 171,468.

Patented Dec. 28, 1875.

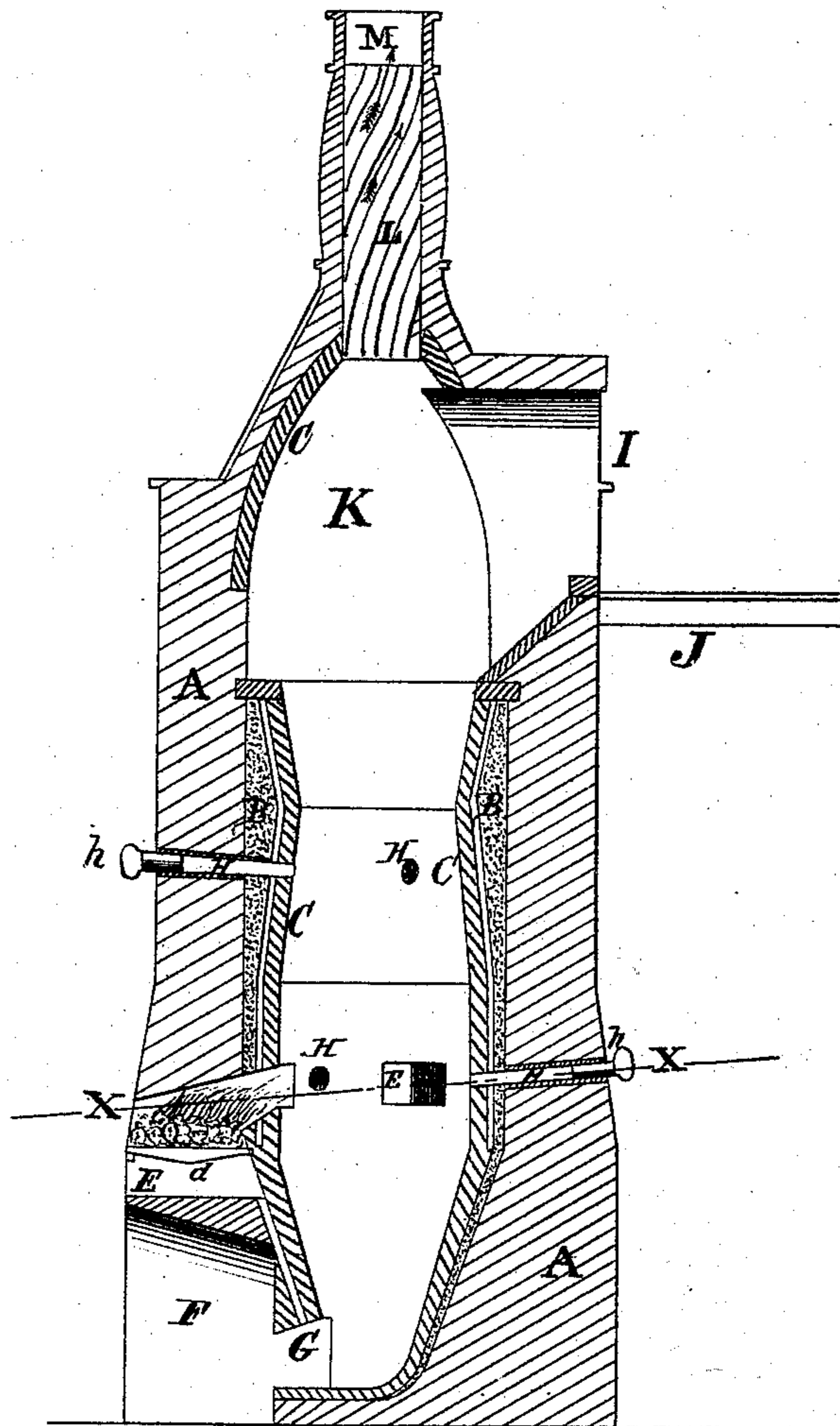


Fig. 1

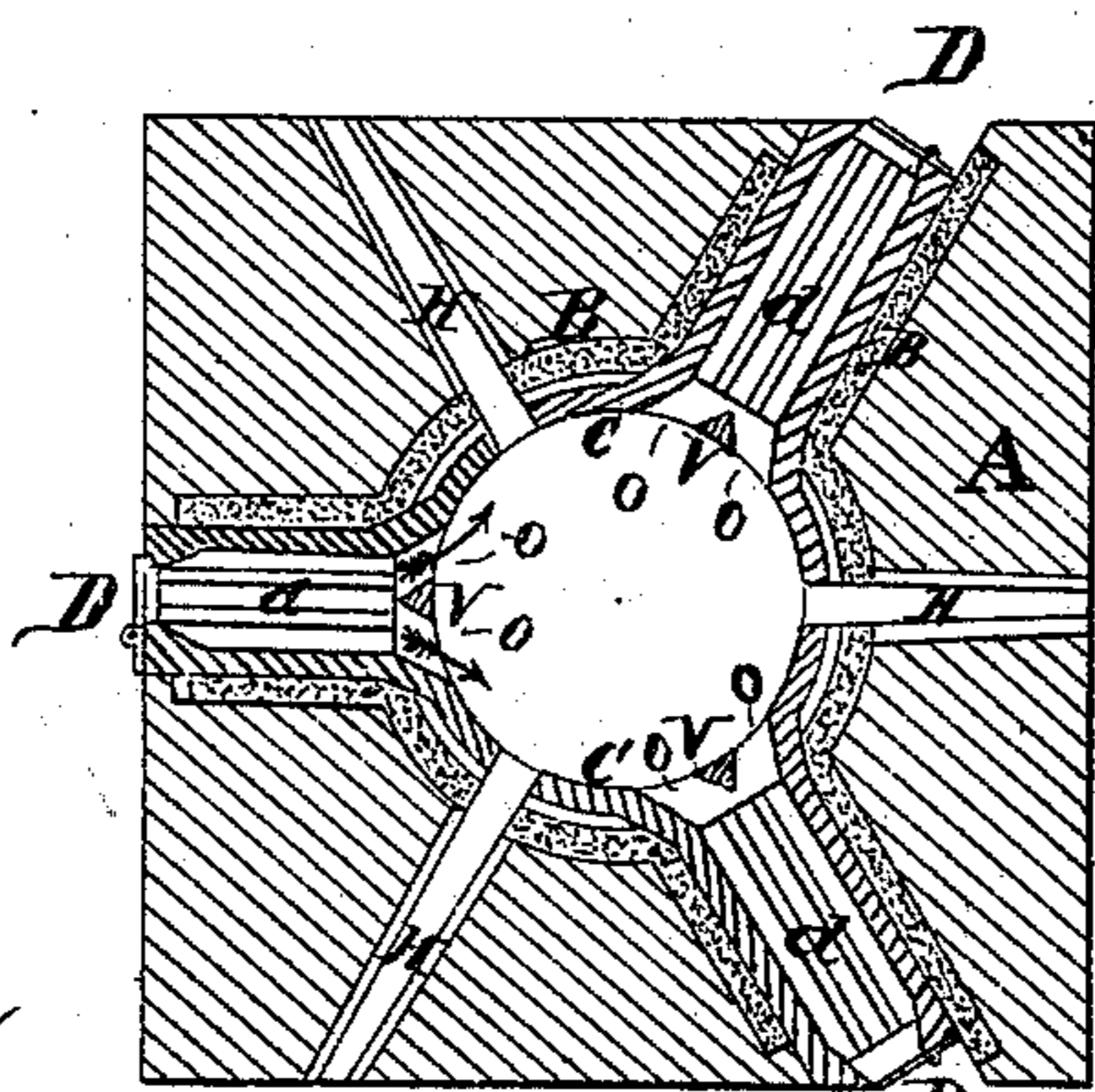


Fig. 2

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UNITED STATES PATENT OFFICE.

HENRY BROCKMAN AND HENRY STUEVE, OF CINCINNATI, OHIO.

IMPROVEMENT IN LIMEKILNS.

Specification forming part of Letters Patent No. **171,468**, dated December 28, 1875; application filed August 13, 1875.

To all whom it may concern:

Be it known that we, HENRY BROCKMAN and HENRY STUEVE, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Limekilns, of which the following is a specification:

Our invention relates to an improved lime-kiln, the object of which is to so construct the furnace and kiln, that bituminous coal may be employed as fuel to calcine the stone; and the invention consists of a novel construction and arrangement of parts, which will be fully hereinafter described, and specifically pointed out in the claims.

In the annexed drawings, Figure 1 is a vertical section through the center of the kiln, and Fig. 2 is a plan view on line *x x*, Fig. 1.

A represents the outer wall of the kiln, which may be made of stone or brick. B B represents a lining of common clay between the outer wall and the fire-brick C C, which are used to make the interior wall of the kiln. D D represent furnaces, which are preferably placed so as not to be opposite each other. *d d* represent the grate-bars of the furnace-chamber; E, ash-pits. F represents a cove or draw-pit extending from one side of the kiln inward a sufficient distance to form a discharging-chute, G, through which the lime is removed as fast as it becomes calcined. H H represent peep-holes for examining the condition of the kiln, and for stirring the stone to prevent their arching over. *h h* represent keys for stopping up the vents when they are not in use. I represents a door in the cupola, near the top of the kiln, for introducing the stone. K represents the dome of the kiln, which is of sufficient size at the base to receive a charge of stone, and arched at the top to increase the draft by properly directing the currents to the flue. J represents a platform on which the charges are dumped before feeding into the kiln. L represents a spiral passage or flue for the exit of the currents. This spiral form of flue tends to increase the draft, and prevents currents of air from descending the flue into the kiln or cupola. A straight flue may be used with the furnace

and cupola here shown, and very good results obtained; but the third feature of my invention—the spiral flue—is important, as this form compels the flame and currents of heat to break against the sides of the flue, heating the brick, and thereby heating the cold-air currents, which tend to enter the chimney, increasing the draft. The flue leading from the fire-chamber to the kiln is made to enter the kiln at an angle to the radii, so as to give the current a spiral form and secure a complete commingling of the currents entering from the different furnaces, and to compel these currents to permeate and circulate in all parts of the kiln opposite and over the furnace-chambers.

These furnace-flues are here shown with a V-shaped division at the rear of the furnace-chamber, whereby the currents pass into the kiln, the outer wall of the flue being sloped so as to give the proper directions to the currents.

By making the flues of each furnace double, and using the division-wall *v*, six flues are secured, which is more economical than the use of six furnaces and flues would be, and which would weaken the structure, while sufficient rotary circulation of the currents is secured to effect the desired result.

By this form of construction of furnace we are enabled to employ bituminous coal for burning common lime—a result not hitherto accomplished in other forms of kilns.

We claim—

1. In combination with the furnace, the cupola K, and spiral flues L, for carrying the products of combustion spirally out of the kiln, substantially as described.

2. The combination of the furnace *d*, flues *o o*, kiln C, the cupola K, and spiral flues L, arranged to operate substantially as described.

In testimony whereof we have hereunto set our hands.

HENRY BROCKMAN.
HENRY STUEVE.

Witnesses:

JOHN O'GARA,
HERMAN MERRELL.