

No. 822,245.

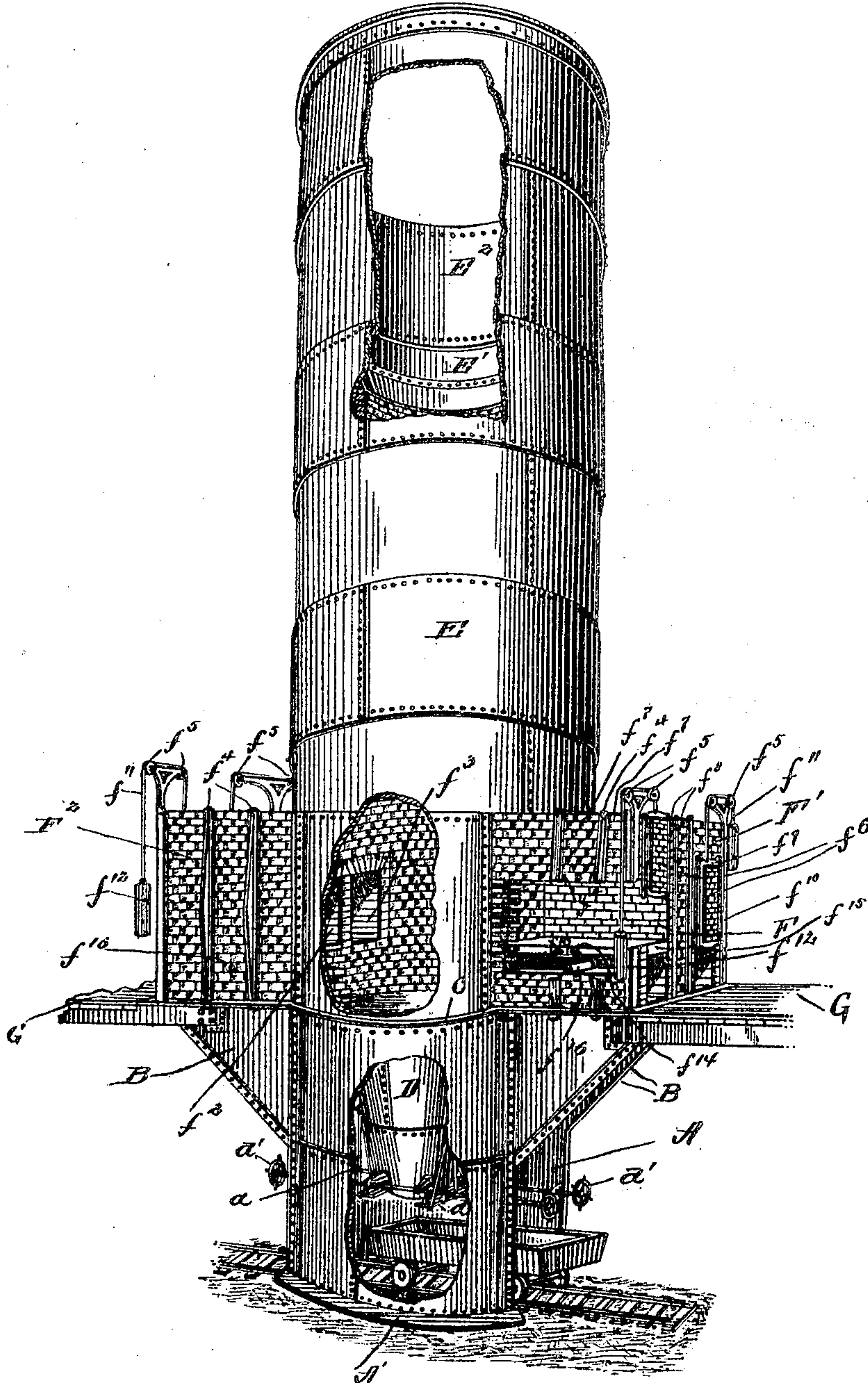
PATENTED JUNE 5, 1906.

A. P. BROOMELL.
KILN.

APPLICATION FILED JUNE 7, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



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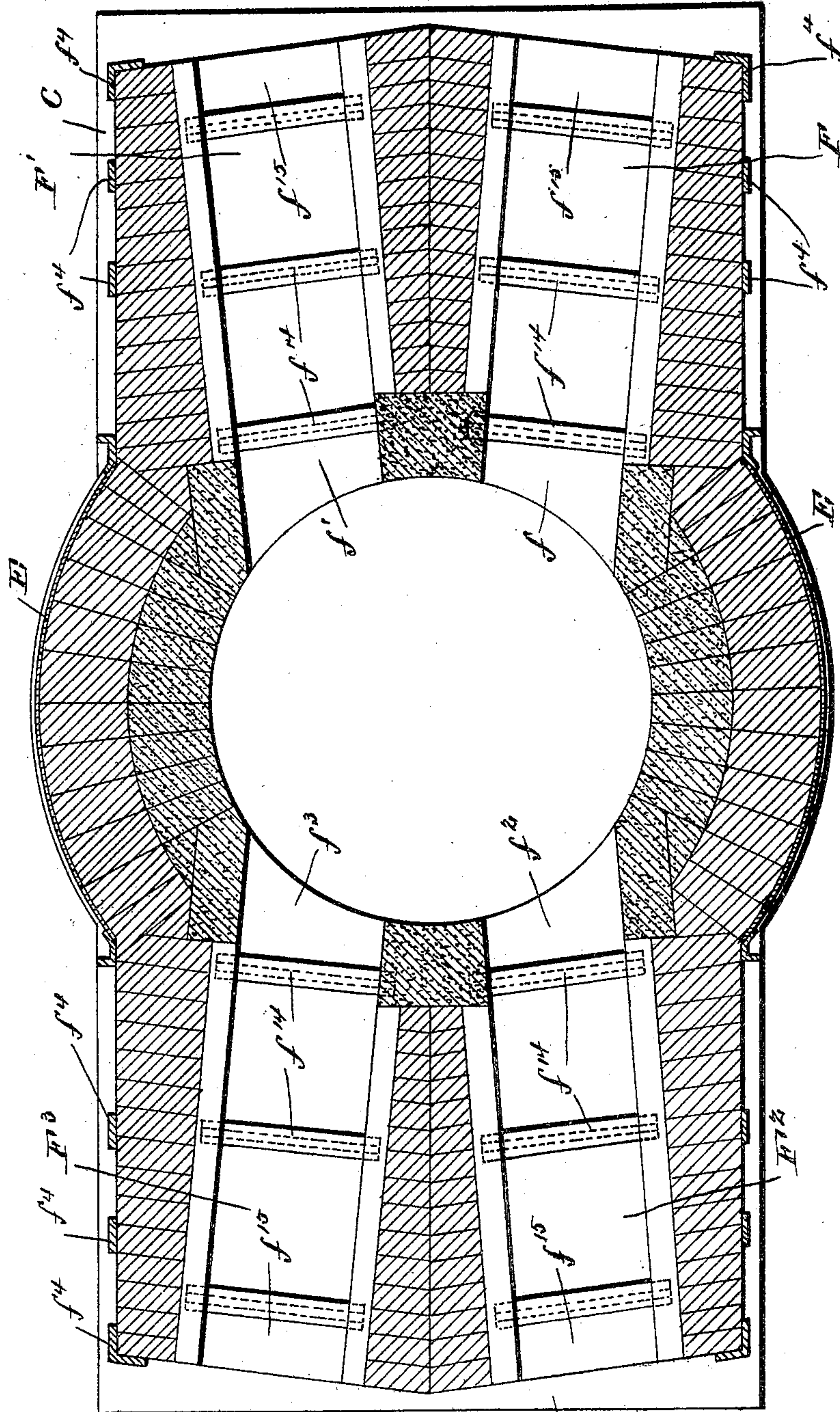
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2 SHEETS—SHEET 2.

Fig. 2



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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBERT P. BROOMELL, a citizen of the United States, and a resident of York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Kilns, of which the following is a specification.

My invention is an improvement in kilns; and it consists in certain novel constructions and combinations of parts hereinafter described and claimed.

Referring to the drawings, forming a part hereof, Figure 1 is a perspective view of my invention with parts broken away to show the interior construction, and Fig. 2 is a cross-section on the line of the grate-bars.

In the practical application of my invention I provide a supporting-base A, preferably constructed of heavy steel plates, resting upon a substantial cast-iron base A' of suitable width and thickness, the supporting-base being reinforced on the inside by vertical posts a, formed from double angle-irons and bolted securely to the base.

Oppositely-disposed brackets B extend from the base, and resting upon the brackets and the upper edge of the supporting-base is a bed-plate C, preferably constructed of heavy cast-iron. A cooling-cone D is bolted to the under face of the bed-plate and depends therebeneath, being provided with draw-gates d, operated by wheels d', extending beyond the base. The draw-gates form no part of my present invention and are clearly shown and described in my former patent, No. 712,251, of October 28, 1902.

A steel shell E, constructed of steel plates bolted together, is secured to the upper face of the bed-plate in alinement with the supporting-base, and arranged upon either side of the shell are furnaces F, F', F², and F³, supported by the extended ends of the bed-plate and communicating with the interior of the shell by means of the flues f, f', f², and f³.

The furnaces are constructed of fire-brick and are arranged in pairs, the members of the pairs converging slightly toward their junction with the stack, and the diagonally-opposite furnaces being arranged on lines parallel with each other—that is, a line drawn through the longitudinal center of the furnace F would be parallel with a line drawn through the longitudinal center of the furnace F³.

The furnaces are approximately twenty-four inches wide, thirty inches high, and of

sufficient length to take in four-foot cord-wood and are supported by buckstays f⁴, the buckstays at the front being extended at the top above the furnace and provided with pulleys f⁵ for supporting the firing-doors f⁶. The side buckstays are connected by tie-rods f⁷ across the furnace, and the front and central stays are connected by tie-rods f⁸ with the shell. The firing-door f⁶ comprises a frame f⁹, filled with fire-brick, and slides directly upon the fire-brick of the furnace, being attached to a rope f¹¹, passing over the pulleys f⁵, and having attached to the free end thereof a weight f¹². The grates f¹³ are made in two sections in order that renewals may be made at small expense. A cross-bar f¹⁴ supports the sections at the center and the rear end, and at the front they are supported by a dead plate f¹⁵. A steam-pipe f¹⁶ is arranged beneath the grates and is connected with a suitable source of supply for providing a forced draft.

The shell E is lined with brick over a part of its extent, and a heavy steel cone E' is arranged above the brick lining to prevent damage thereof by the falling rock. Above the cone is a storage-place E² for rock. The kiln is of a height sufficient to prevent injury to the steel plates at the top by the heat from the furnace, while at the same time the rock in the storage-place absorbs a large amount of heat, the moisture being driven off, so that when the rock goes down to the burning-point it is just ready for conversion into lime. A firing-platform G is arranged upon angle-irons projecting from the brackets on the supporting-base and is constructed ordinarily of stringers, having a flooring laid thereon for supporting a paving of brick or concrete, as may be desired, the stringers being extended a sufficient distance to either side of the kiln and supported by posts or other suitable means. By arranging the furnaces in the manner described I am able to cover a very large portion of the rock with the direct flames from the fuel, thus preventing the leaving of an unburned core of rock and increasing the output of lime. Each furnace being entirely separate can be fired without interfering with the others, thus admitting less cool air to the kiln and at the same time making it possible to supply the kiln with arches that will not come down under the heaviest firing.

By arranging the firing-door to slide directly against the fire-brick no iron is ex-

posed to the flames that may creep out around the door, thus enabling the door to be renewed at a very small cost by simply inserting a new set of fire-brick.

5 It will be evident from the description that the peculiar arrangement of the furnaces with respect to the stack provides for the efficient utilization of all the heat and for the application thereof evenly throughout the
10 extent of the interior of the stack, thus securing a uniform burning of the rock and as a consequence a superior quality in the product.

Each of the furnaces being arranged upon
15 a secant of the stack permits the application of heat to the rock near the outer part thereof, while the arrangement of the corresponding furnaces of the pairs symmetrically with respect to each other prevents the direct ap-
20 plication of the heat from all the furnaces on the rock in the center of the stack, thus avoiding overburning of the central portion of the rock. At the same time, however, enough heat is directed upon the center to prevent
25 the formation of an unburned core.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A kiln comprising a base, a bed-plate

supported on the base, and extending there- 30
beyond, brackets secured to the base for supporting the extended ends of the bed-plate, a stack supported by the bed-plate in alignment with the base, a series of pairs of fur-
naces radiating therefrom, and discharging 35
thereinto, the furnaces of each pair converging toward the stack and the diagonally opposite furnaces being arranged on lines approximately parallel with each other.

2. A kiln comprising a stack and pairs of 40
furnaces arranged on opposite sides of the stack, the furnaces of each pair diverging toward their outer ends, and the said ends of the furnaces terminating between parallel
planes tangent to the sides of the stack at ap- 45
proximately a right angle to those from which the furnaces project, whereby the said stacks may be arranged in rows side by side and in close proximity, and the furnaces projecting from the opposite sides of the said 50
stacks will not interfere with such arrangement of the stacks, all substantially as and for the purposes set forth.

ALBERT P. BROOMELL.

Witnesses:

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N. R. CROSS.