

J. CLARKSON & G. W. DECKER.

Limekiln.

No. 102,496.

Patented May 3, 1870.

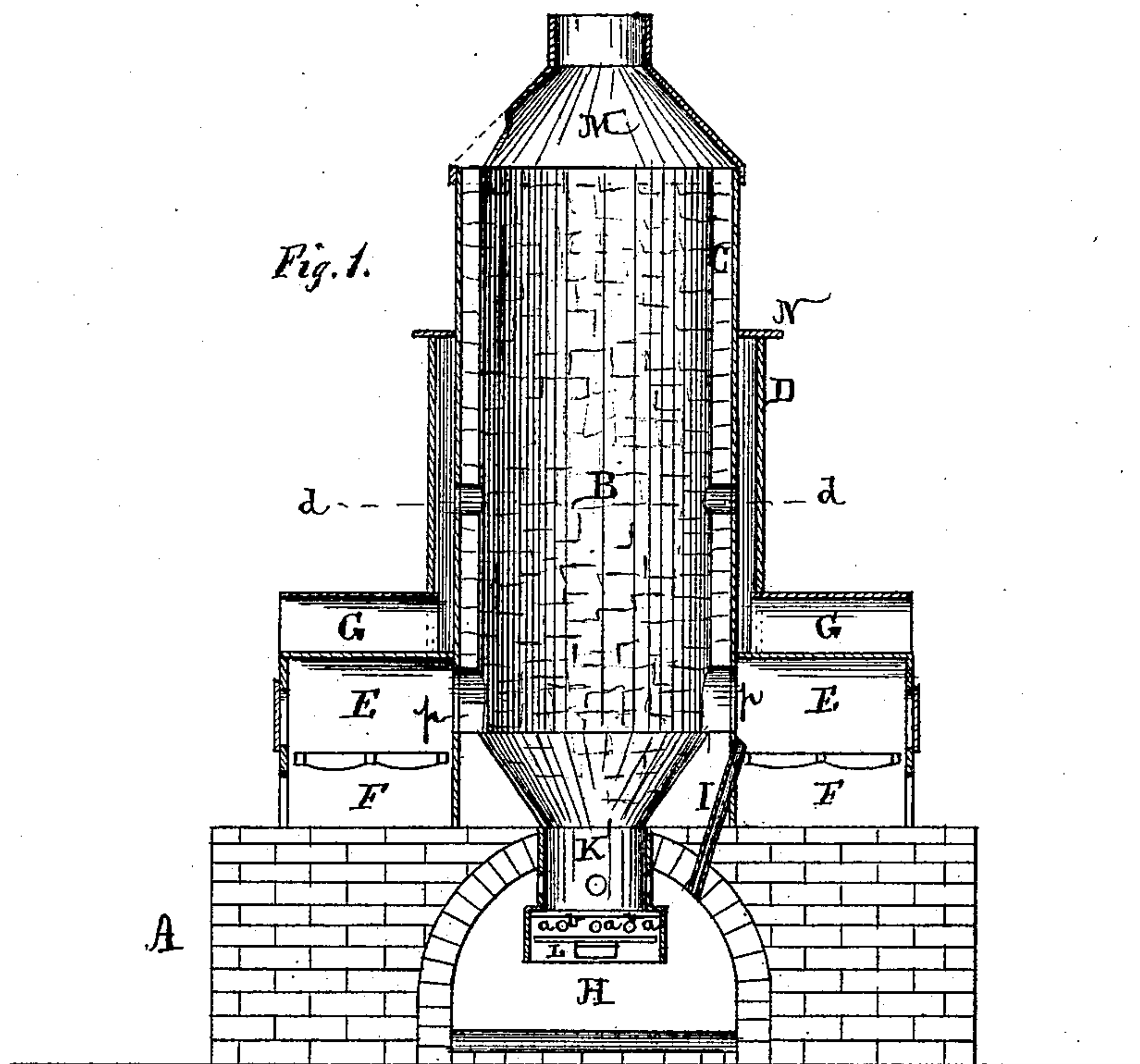
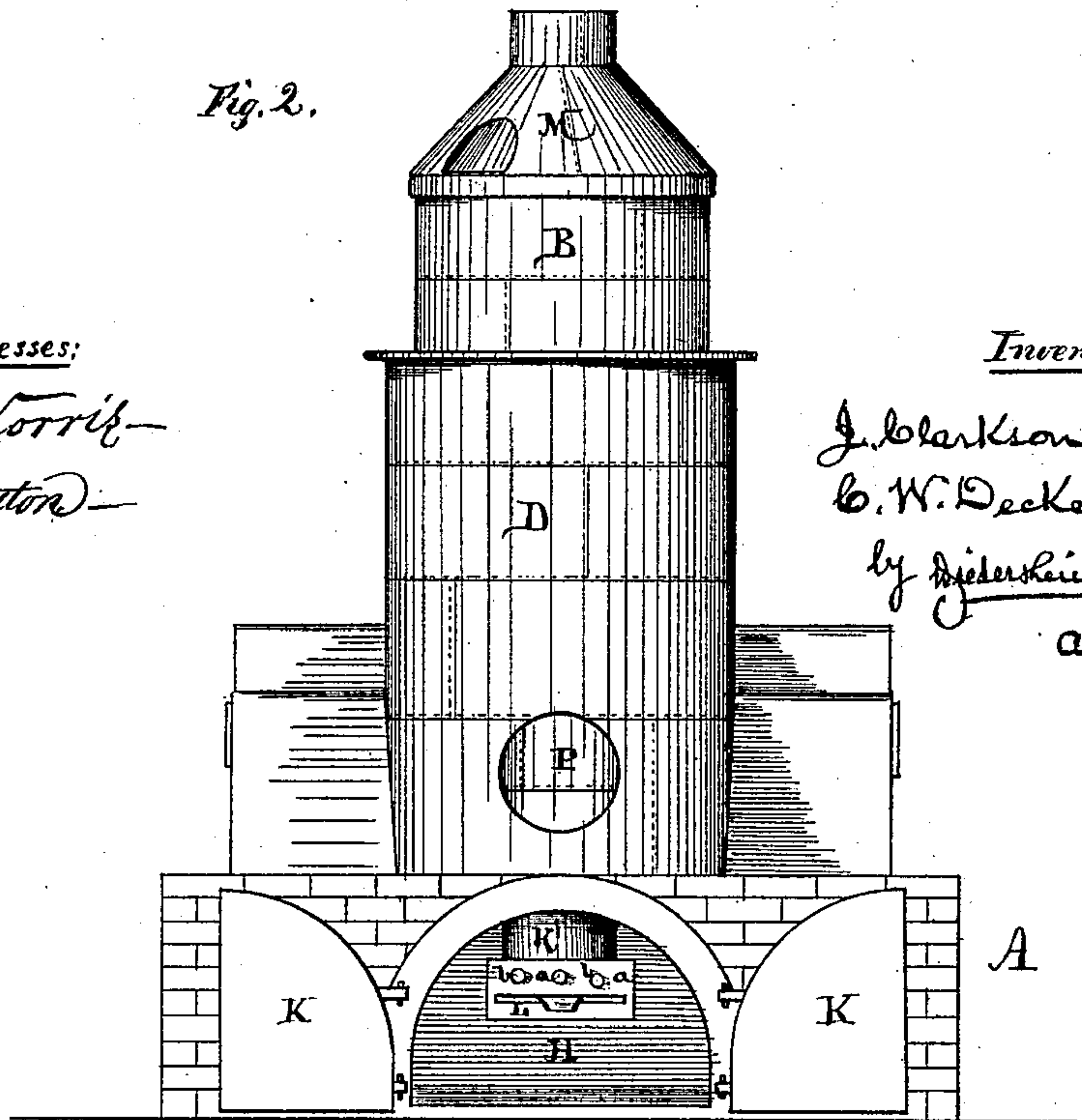


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES CLARKSON AND GEORGE W. DECKER, OF WASHINGTON, D. C.

IMPROVEMENT IN LIMEKILNS.

Specification forming part of Letters Patent No. 102,496, dated May 3, 1870.

To all whom it may concern:

Be it known that we, JAMES CLARKSON and GEORGE W. DECKER, of the city and county of Washington and District of Columbia, have invented a new and useful Improvement in Limekilns; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a transverse central section of our improved limekiln. Fig. 2 is a front elevation, with the doors of the receiver or gage thrown open.

This invention relates to that class of devices known as limekilns; and consists in forming the pit or kiln in which the lime is prepared of metal, lined on the inside with fire-brick, and surrounding the same with an outer metal or brick cylinder, so as to obtain hot-air space between the two for the purpose of supplying the pit or kiln with heated air; also, the method of utilizing the arising heat contained in the lime drawn into the receiver or gage by conveying it back into the furnaces.

A represents the base or foundation of the kiln; B, the metallic pit or kiln; C, the fire-brick; D, the outer metal or brick cylinder; E, the furnace; F, ash boxes or receptacle; G, the cool-air chamber; H, the receiver or gage; and I, the tube or passage for conveying the heat arising from the lime in the receiver or gage back into the furnaces.

A A is the foundation, constructed of brick, stone, or other suitable material, and has formed with it an arched or other convenient-shaped receiver or gage, H, designed to measure the same quantity of lime on each drawing. This receiver or gage is provided with doors K K and an incline bottom to facilitate the removal of the lime when the doors are thrown open. The pit or limekiln, with its furnace and other appendages, is built or mounted upon this foundation or base A A. B is a pit or kiln, made of suitable metal, of any desired shape, preferably of a cylindrical form, and is lined on the inside with fire-brick or cement C. The lower end of this pit or kiln is funnel-shaped. Its throat K' extends down through the foundation into the receiver or gage H, and is pro-

vided with a movable damper, L, to close the throat of the pit or kiln, and a series of holes, *a a a*, into which stop or draw bars *b b* are inserted, designed, in connection with the damper, to retain the lime in the pit or kiln when in their proper position, and to allow the same to escape through the throat K into the receiver or gage H on being removed. M is the top, resembling somewhat an inverted funnel, and may be formed with or otherwise attached to the pit or kiln B. D is an outer metallic or brick cylinder surrounding the metallic pit or kiln B, of a size sufficient to produce a hot-air space between the two cylinders B and D, for the purpose of receiving from the furnaces and allowing the heated air to pass around and into the pit or kiln through the openings *d d*, formed in the sides of the same. This outer cylinder is provided with a hood or other suitable covering, N, fitting closely around the sides of the metallic pit or kiln and the top of the cylinder D, preventing the escape of the heated air. E E are the furnaces, attached or formed with the pit or kiln B, communicating with the interior of the same through the openings and passages *p p*, formed on the sides at or near the bottom of the pit or kiln. F F are ash receptacles or boxes, located below the furnaces E E, separated by grates, through which the furnaces receive their draft. G is an air-chamber, formed upon the top of the furnaces E E, communicating with the space between the inner and outer cylinders, designed, when the furnace is heated, to conduct hot air into the said space surrounding the pit or kiln, and from thence into the same through the openings. This air-passage also allows cool air to pass into the space, to facilitate the cooling of the inner cylinder and lime when all draft is shut off and the fire allowed to go out in the furnaces. Openings P may also be formed in the sides of the outer metallic or brick cylinder to further increase the rapidity of cooling the pit or kiln and the lime therein contained. I is a metallic tube or passage extending from the receiver or gage H up into the furnace or furnaces E E, for conveying into the furnaces and utilizing the heat arising from the heated lime withdrawn from the pit or kiln into the receiver or gage.

It will thus be readily seen that we have

produced a cheap, reliable, and durable lime-kiln, free from all danger of bursting or cracking, and readily constructed in any locality; also, saving, to a great extent, fuel, by consuming the gases and utilizing the heat, which in other kilns is allowed to escape.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The metallic cylinder B, lined with fire-brick or equivalent, surrounded with a jacket, D, in combination with the air-flue G and openings *d*, constructed as herein shown and described.

2. The combination of the gage or receiver H and tube I, extending into the fire-chamber

E above the grate, combined and constructed substantially as described.

3. The throat of the metal cylinder B, provided with removable draw-bars *b b* and damper L, combined and arranged with the gage or receiver H, as herein set forth.

4. The concentric metallic cylinders C D, combined and operating together substantially as and for the purpose described.

To the above we have signed our names this 21st day of March, 1870.

JAMES CLARKSON.
GEO. W. DECKER.

Witnesses:

JAMES L. NORRIS,
JOHN A. WIEDERSHEIM.