

(No Model.)

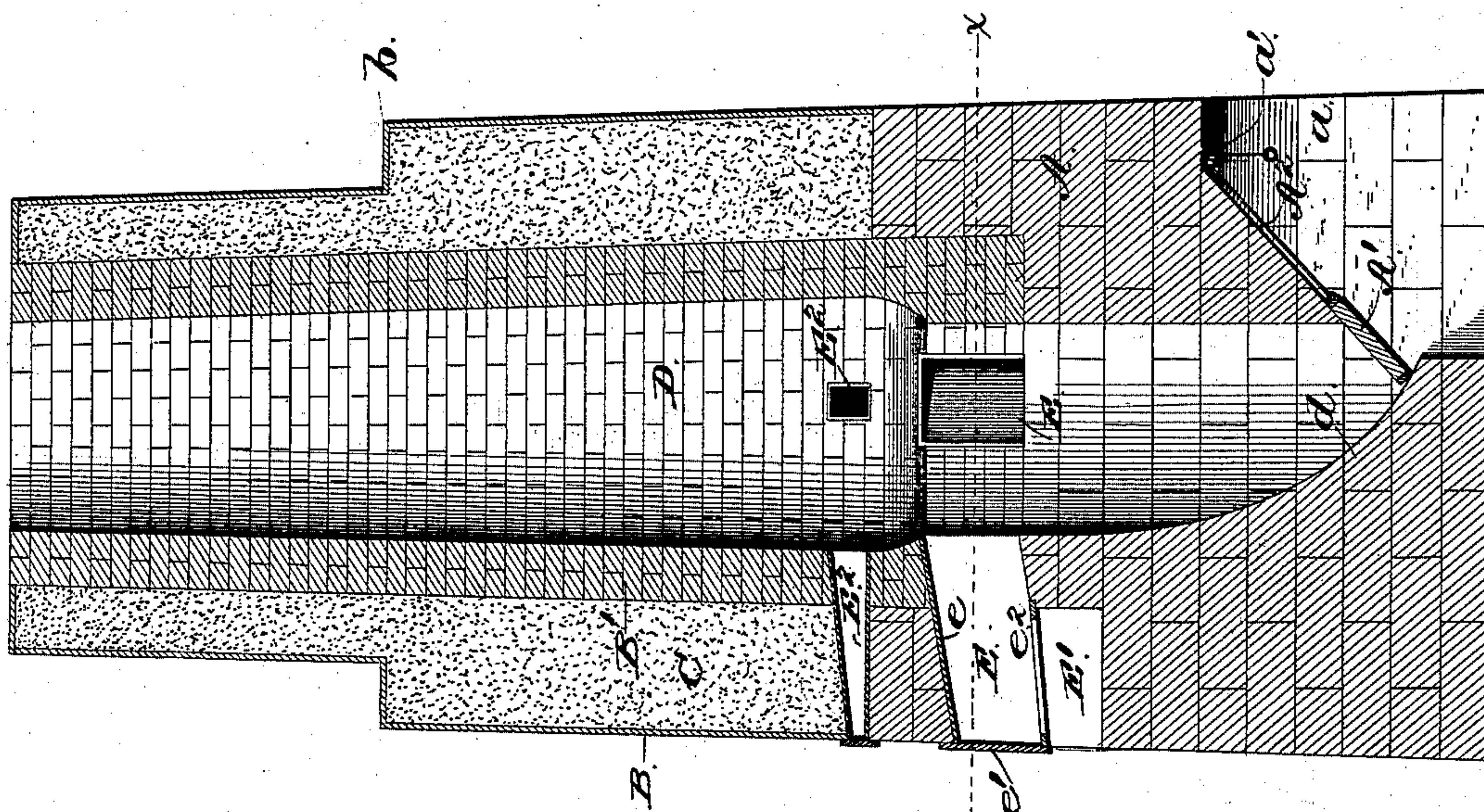
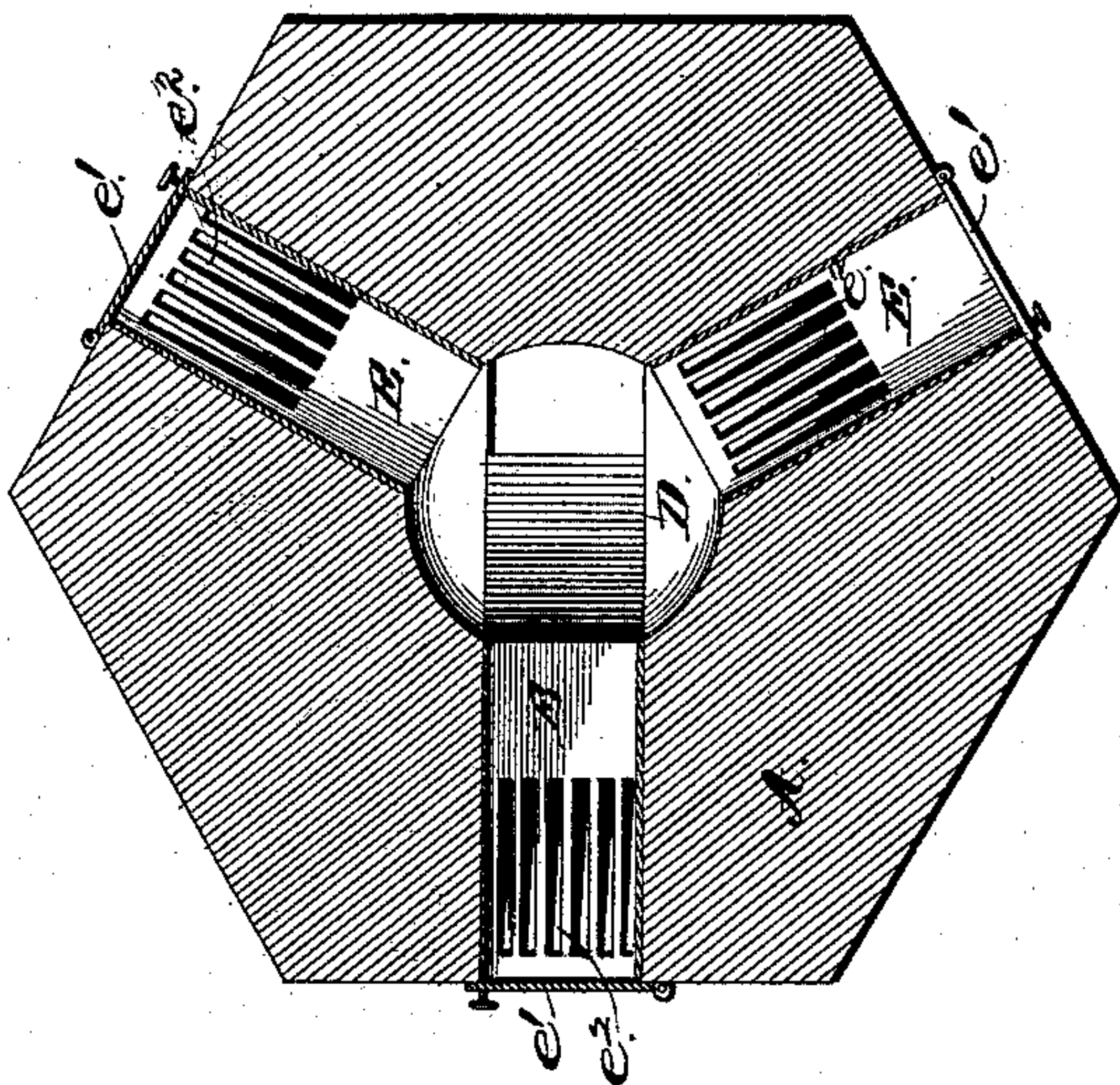
J. W. DEVLING.

LIMEKILN.

No. 384,895.

Patented June 19, 1888.

F 2 9 21



James W. Devling.

WITNESSES,

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UNITED STATES PATENT OFFICE.

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LIMEKILN.

SPECIFICATION forming part of Letters Patent No. 384,895, dated June 19, 1888.

Application filed October 14, 1887. Serial No. 252,327. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. DEVLING, a citizen of the United States of America, residing at Flemington, in the county of Clinton and State of Pennsylvania, have invented certain new and useful Improvements in Limekilns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in limekilns; and it consists in the construction and arrangement of the parts thereof, which will be more fully hereinafter described, and pointed out in the claim.

The object of my invention is to quicken the process of burning lime and to make the kiln convenient and accessible at all points, and thereby quicken the process and obtain more thorough burning and a better quality of lime. I attain this object by the construction illustrated in the accompanying drawings, wherein like letters of reference indicate similar parts in the several views, and in which—

Figure 1 is a vertical section of my improved kiln. Fig. 2 is a horizontal section thereof on the line *x x* of Fig. 1.

A indicates the base, which is preferably constructed of stone, and has a recess, *a*, in one side thereof for access to the bottom slide-door, *A'*, having a draw chain or cable, *A²*, connected thereto, which passes through an eye, *a'*, secured to the top overhanging wall of the recess *a*. The wall of the recess *a* adjacent to the door *A'* is constructed at an angular inclination, and when the said door *A'* is elevated to clear the lower opening it slides upward on guides arranged parallel with said inclination.

On the top of the base *A* the cupola is mounted, and consists of an outer metallic shell, *B*, and an inner fire-brick wall, *B'*, the lower end of which is built into an offset formed in the base near its top, a space or compartment being formed between said wall *B'* and the metallic shell *B*. In the compartment thus formed ashes *C* are packed to prevent the radiation of heat. The fire-brick wall *B'* incloses the burn-

ing-chamber *D*, which is projected downward through the base *A* to form a cooling-chamber, and has one side of the extreme lower portion thereof curved and reduced, as at *d*, and converges into the lower opening covered by the door *A'*, and thereby forms a chute at this point. By this means the burned stone is directed toward the lower opening, when the door *A'* is opened to release the same.

Through the upper portion of the base *A* and lower portion of the fire-brick wall *B'* ovens or furnaces *E* are formed, which have a metallic top lining, *e*, hinged doors *e'*, and grate-plates *e²*. Below the grate-plates *e²* ash-pits *E'* are formed. The ovens or furnaces *E* are radially mounted in the furnace, as shown in Fig. 2, entering the burning-chamber at three points.

Immediately above the ovens or furnaces *E* gas-escape ports *E²* are constructed, which are lined with metal and have outer doors. These ports enter the burning-chamber above the three furnaces and carry off the gas therefrom, which would otherwise pass up through and injure the burning stone in the chamber *D*.

I preferably construct my kiln hexagonal shape, as shown, as said formation is better adapted to receive my peculiarly-arranged furnaces and produce better results in the burning process.

The stone is filled into the burning-chamber *D* and the fires started in the furnaces, and as the said stone becomes sufficiently burned it is released at the lower end of the furnace. The gas generated by the burning fuel escapes through the gas-egress ports *E²*, and is thereby prevented from passing through and attacking the burning stone. The lower portion of the burning-chamber below the furnaces forms a cooling-chamber for the stone after it is burned.

It will be observed that the outer metallic shell, *B*, is constructed with a shoulder, *b*, some distance above the base *A*, which forms a wider space between the lower parts of the fire-brick wall *B'* and shell *B* than is formed between said parts above the shoulder *b*. This increased space is formed adjacent to the greatest point of heat, and consequently of radiation, and provides a wall of ashes of increased thickness to overcome and counteract an exterior perceptibility of the radiated heat.

It is a well-known fact that brick and stone

absorb moisture very freely, and especially when subjected to the action of heat, and for this reason I sheathe the upper part of my kiln with a light sheet of metal, as the structure is exposed to the elements, and any absorption of moisture would tend to lower the temperature of the walls of the burning-chamber, and hence of the chamber itself. Moreover, the use of ashes as a non-conducting filling between the walls renders expedient the use of an impervious or non-absorbent outer wall or shell, as the non-conducting qualities of the ashes would deteriorate if not kept dry.

I am aware that it has been proposed to interpose between the inner and outer masonry walls of a kiln a filling of sand to act as a non-conductor, and also that it has been proposed to sheathe the walls of the combustion-chamber of a hydrocarbon-furnace with asbestos, and these I do not claim. My invention differs from these in that the fire-brick lining is surrounded by a thin or light shell of metal, and the intervening space between the lining and shell is filled by ashes—a material having the properties of a non-conductor, extreme lightness relatively, and nominal cost, being a waste product.

Having thus described my invention, what I claim as new is—

A limekiln comprising a stone base formed with a lower cooling-chamber, one side of which is gradually curved toward a lower exit-opening, and the opposite wall straight and having radially-arranged burning-chambers in the upper part thereof, and gas-ports over said burning-chambers, a cupola consisting of an inner fire-brick wall built into the upper part of the stone base, the inner opening of which aligns with and forms an upward continuation of the lower cooling-chamber, an outer metallic shell surrounding the inner fire-brick wall to form a compartment therewith, and having a shoulder formed therein to increase the extent of said space between the inner fire-brick wall and outer shell adjacent to the greatest point of heat radiation, and a packing of ashes between said inner fire-brick wall and outer metallic shell, and of increased thickness adjacent to the stone base, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES W. DEVLING.

Witnesses:

ABM. S. HALLMAN,
GEORGE PETERS.