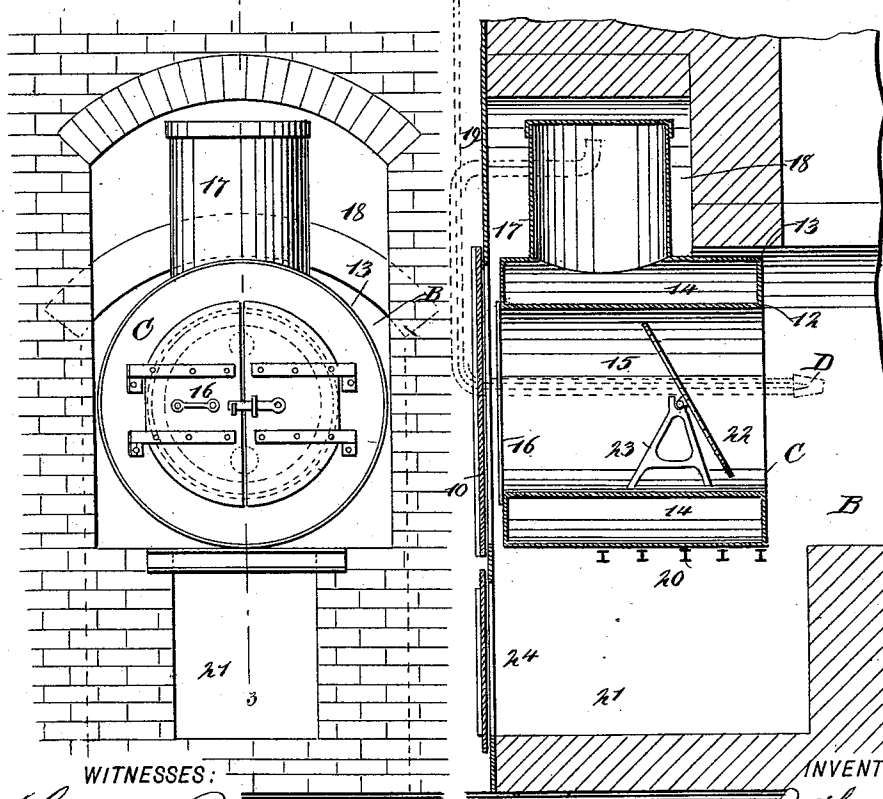
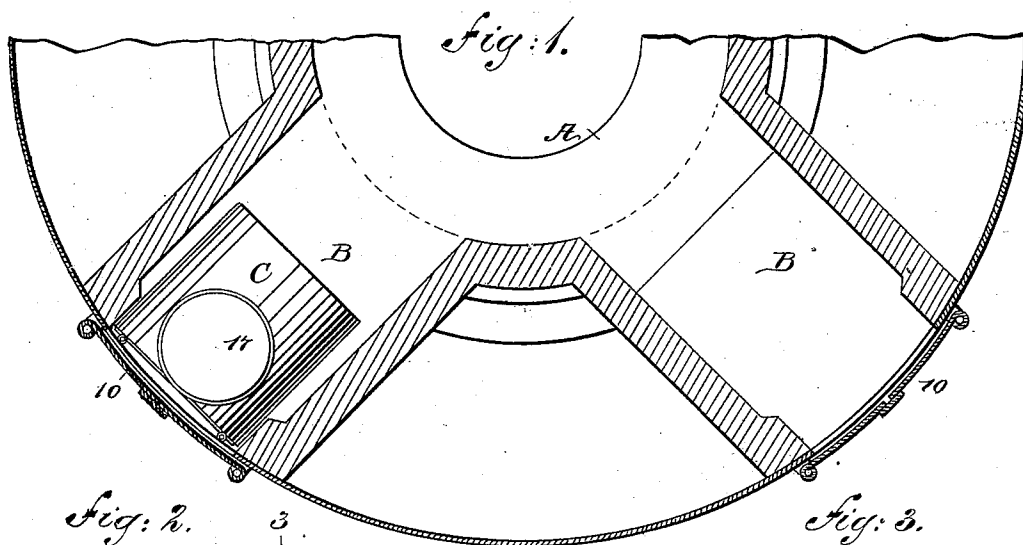


(No Model.)

J. O'CONNELL & G. SNIFFIN.
LIMEKILN.

No. 521,295.

Patented June 12, 1894.



WITNESSES:

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JAMES O'CONNELL, OF NEW YORK, AND GEORGE SNIFFIN, OF TUCKAHOE,
NEW YORK.

LIMEKILN.

SPECIFICATION forming part of Letters Patent No. 521,295, dated June 12, 1894.

Application filed May 9, 1893. Serial No. 473,591. (No model.)

To all whom it may concern:

Be it known that we, JAMES O'CONNELL, of New York city, in the county and State of New York, and GEORGE SNIFFIN, of Tuckahoe, in the county of Westchester and State of New York, have invented a new and useful Improvement in Limekilns, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in lime kilns, and it has for its object to provide a means whereby the boiler usually employed for generating steam to supply the burners within the kiln may be located within the arch of the kiln, or whereby a boiler may be located within each arch of the kiln if it is desired, the boiler being so constructed that a damper may be used in connection with it to regulate the quantity of heat supplied to the boiler.

Another feature of the invention is to provide a means whereby when the outer openings of the arches are closed, air may be supplied in proper quantities to the burners.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a partial horizontal section through the lime kiln, illustrating the improvement therein. Fig. 2 is a partial side elevation of a kiln, illustrating a boiler in position in one of the arches; and Fig. 3 is a vertical section taken practically on the line 3—3 of Fig. 2.

In carrying out the invention the kiln A, may be of any suitable construction. That shown in the drawings is of a circular character, and is provided with a number of arches B, leading to the central chamber of the kiln in which the rock to be burned is located. Each of the arches is closed at its outer end ordinarily by doors 10, as illustrated in Figs. 1 and 3, two doors being usually employed at each arch. A boiler C, is located in one or in each of the arches of the kiln, the front of

the boiler being quite close to the mouth or outer end of the arch in which it is located.

The boiler may be of any approved pattern, but usually and preferably it is of a circular type, comprising an inner shell 12 and an outer shell 13, the shells being so located and connected as to form a circular water space 14 and an inner chamber 15, which extends through from front to rear of the boiler. The inner chamber 15, is open at its inner end, and at its outer end is closed preferably by means of doors 16, as illustrated in Fig. 2. A steam dome 17, is erected upon the top of the boiler, communicating with the water space 14, and a recess 18, is made in the arch in which the boiler is located to receive the dome. The recess in which the dome is located is closed by an outer plate 19, or in any other approved manner. In Fig. 2 this plate is omitted as is likewise the outer door 10. The boiler may be supported in the dome of the arch in any approved manner; in the drawings it is illustrated as resting upon a series of beams 20, and immediately beneath each beam, and likewise beneath the bottom plane of each arch, even if the boiler is not placed therein, an air supply duct 21, is formed in the kiln, which communicates with the arch beneath which it is placed at a point adjacent to where the burner D, is located. The burner is located beyond the inner end of the boiler, and in order that the heat supplied to the boiler for the purpose of generating steam may be effectually regulated, a damper or disk which serves as a heat-fender 22, is located in the central chamber 15 of the boiler, as shown in Fig. 3, which chamber is ordinarily supported by an easel-like structure 23. The damper is loosely fitted to the inner contour of the chamber 15, and is pivoted upon its support 23. Thus the damper may be inclined to any desired extent or it may be moved to any point in the length of the chamber by drawing the support 23 forward, or carrying or pushing it inward. By this means it is evident that the heat generated for burning the lime-stone is utilized for generating steam in the boiler or boilers employed. In the event that there is no heat from the burners, or not sufficient to gener-

ate steam properly, as for example when the burning is first started, a fire may be made within the chamber 15. It is likewise evident that the boiler or boilers may be utilized to supply steam to any desired point or for any purpose. Primarily, however, the boiler is used to generate steam to supply to the burner D, which burner burns commingled oil and steam or vapor, two pipes, one within the other, being led to the burner through the outer doors of the arches and likewise through the doors of the boiler, one of the pipes being connected with the oil supply, and the other pipe being connected with the steam dome of the boiler. By this arrangement a separate boiler independent of the kiln is not needed, and economy of fuel is obtained, since the heat in the kiln is utilized to generate the steam. I desire it to be understood that the outer end of the air duct 21, is preferably provided with a door 24, which door may contain draft openings if in practice it is found desirable.

We desire it to be understood that the boilers may be removed readily, and the kiln restored to the ordinary condition, and that wood may be burned in the kiln while the boilers are in position; and it may here be remarked that more lime can be made, in a kiln when the boilers are placed in it as has been above described, than it is possible to make in the old form of kiln, as the draft can be created through the center of the kiln by the steam from the boiler.

Having thus described our invention, we

claim as new and desire to secure by Letters Patent—

1. The combination, with a kiln and its arches, of a boiler permanently located within an arch of the kiln, and having a chamber, a damper located in said chamber, for regulating the supply of heat from the kiln to the boiler, as and for the purpose specified.

2. The combination, with a lime-kiln arch, of a boiler having a chamber whose inner end is open and communicates with the inner end of the arch, and a damper, or heat-fender, located in said chamber and adapted for adjustment for regulating the application of heat to the boiler, substantially as shown and described.

3. The combination, with a kiln and its arches, of a boiler located therein, the body of the boiler comprising a water jacket and an inner chamber extending through from front to rear of the boiler, and open at its inner end, a damper, or heat-fender located within the said boiler chamber, and an air duct located beneath the boiler, in communication with the outside atmosphere and with the arch back of the boiler, substantially as shown and described, whereby the heat of the kiln is regulated and utilized for generating steam for supplying the burners or for other purposes, as and for the purpose set forth.

JAMES O'CONNELL.
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Witnesses:

JOHN NUGENT,
PAT CAVANAUGH.