

W. H. MERRITT.
Kiln for Boiling or Calcining Gypsum.
No. 221,689. Patented Nov. 18, 1879.

Fig. 1.

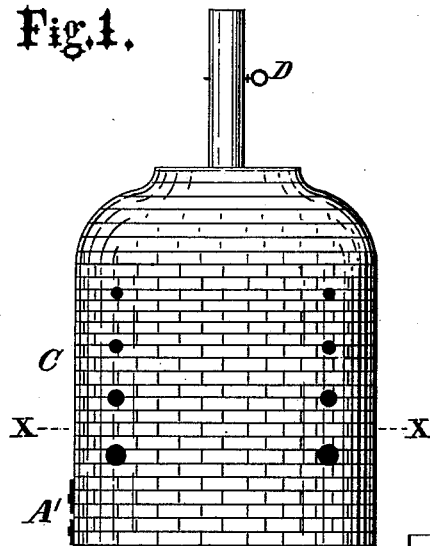


Fig. 2.

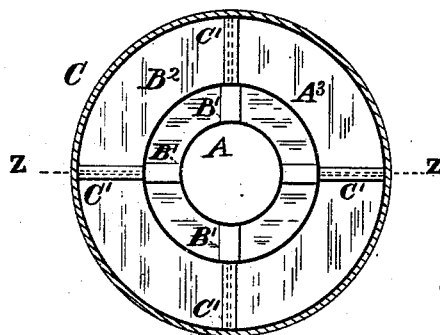


Fig. 4.



Fig. 3.

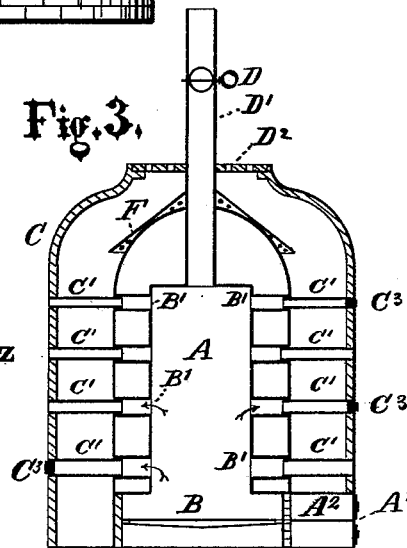


Fig. 5.



Witnesses.

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IMPROVEMENT IN KILNS FOR BOILING OR CALCINING GYPSUM.

Specification forming part of Letters Patent No. **221,689**, dated November 18, 1879; application filed May 23, 1879.

To all whom it may concern:

Be it known that I, WILLIAM HAMILTON MERRITT, of Rodman Hall, St. Catharines, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Kilns for Boiling or Calcining Gypsum, which improvements are fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a horizontal section through line X X, Fig. 1. Fig. 3 is a vertical section through line Z Z, Fig. 2; and Figs. 4 and 5 represent a view of the under sides of the tubes which extend from the boiler into the outer wall of the gypsum-chamber, showing the perforations or openings in said tubes.

The object of this invention is to combine in one apparatus the means for boiling or calcining gypsum previous to grinding, and a steam-generator for supplying the heat for the gypsum-kiln and the steam-power for driving the machinery connected therewith; and it consists of a steam-boiler provided with a series of horizontal tubes radiating from the combustion or fire chamber, so as to permit a free passage through the inner and outer shells, in combination with a gypsum boiling or calcining apparatus, of brick or other suitable material, arranged so as to form an annular space between it and the steam-boiler, to receive the gypsum to be calcined, and provided with a series of tubes radiating from the boiler-tubes, having a row of perforations or a narrow longitudinal opening through their lower sides, thereby providing a passage from the combustion-chamber in the boiler to the gypsum-chamber, so that the gypsum is calcined by the escape-heat from the steam-boiler, as will be more clearly hereinafter shown.

In the drawings, A represents the combustion-chamber in the steam-generator A³; A², the doors and passage leading to the furnace or fire chamber; B, the fire-grate; B', a series of tubes or flues, of which there may be more or less than the number shown.

They are made to increase in diameter from the top of the boiler and kiln downward, as shown, so as to equalize the heat in the gypsum-chamber B².

The greatest part of the heat in the combustion-chamber rises to the top, and a large portion of it would pass through the upper tubes and very little through the lower ones were they all of one size or diameter; hence the necessity of graduating the size or diameter.

C represents the outer side or wall of the gypsum-kiln. It is made of brick, boiler-iron, or other suitable material.

C' represents the tubes arranged within the gypsum-chamber. Their ends slip into the boiler-tubes, as shown, and the opposite ends are fastened to the outer wall of the kiln C, so as to allow a passage through, which is stopped outside by a plug or brick, or its equivalent, C³. The lower sides of these tubes have a narrow opening, C², or a row of perforations, as shown in Figs. 4 and 5, which allows the hot air to pass through from the boiler into the gypsum-chamber. The position of these openings on the lower sides prevents the gypsum or dust from getting in.

The heat entering into the annular space to calcine the gypsum is regulated by a damper, D, or its equivalent. The draft is also regulated by it.

An external chimney may be connected with the lower part of the kiln, to draw the heat downward, and may be used either with or without a fan, according to the height of the chimney.

If required, a perforated cover may be made so as to be fitted, as shown; but in practice it may not be necessary.

F represents a screen, which separates the dust from the lumps of gypsum, thus preventing the choking of the mass, and allowing the heat to pass through freely, also in some degree protecting the boiler from charges of gypsum thrown in. The screen F may be perforated, if required, or without perforations or openings.

I claim as my invention—

1. A steam-generator, A³, provided with tubes B', in combination with a gypsum kiln, C, having tubes C', open or perforated on the lower side, as and for the purposes described.
2. The within-described process of calcining gypsum by the escape-heat of a steam-generator passing through the tubes B' in the boiler from the combustion-chamber, and from thence into the tubes C', and out from the openings C² into the kiln, as described.

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Witnesses:

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