

J. FERGUSON.
Pottery-Kilns.

No. 153,553.

Patented July 28, 1874.

Fig. 1.

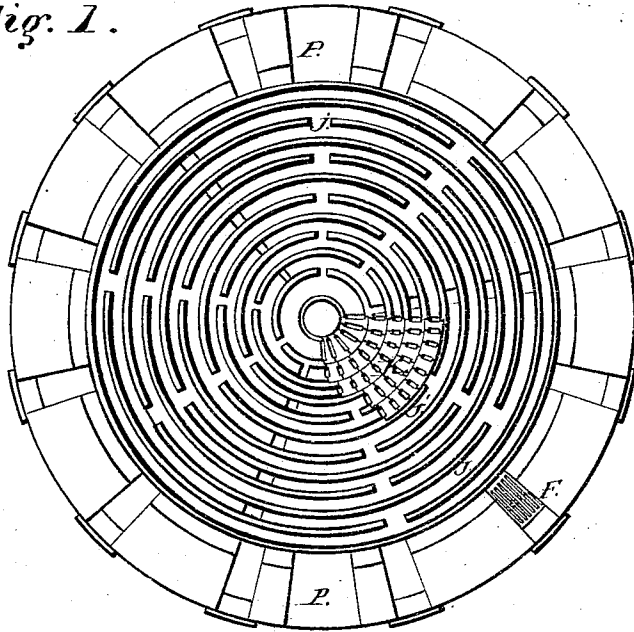
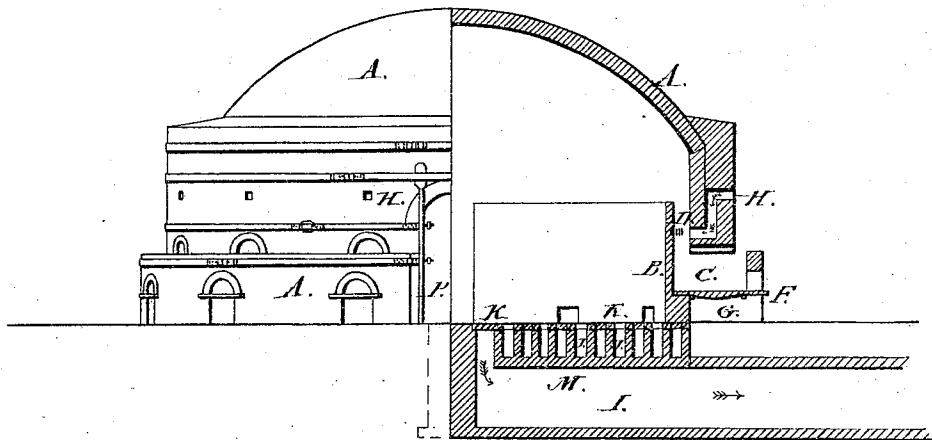


Fig. 2.



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UNITED STATES PATENT OFFICE

JOHN FERGUSON, OF CLEARFIELD, PENNSYLVANIA.

IMPROVEMENT IN POTTERY-KILNS.

Specification forming part of Letters Patent No. **153,553**, dated July 28, 1874; application filed February 11, 1874.

To all whom it may concern:

Be it known that I, JOHN FERGUSON, of Clearfield, in the county of Clearfield and State of Pennsylvania, have invented certain Improvements in Kilns for Pottery and Brick, of which the following is a specification:

The nature of my invention relates to that class of kilns used for the manufacture of pottery, brick, or other similar articles; and consists, first, in such an arrangement of furnaces and such a distribution of outlet-passages as will insure an equal temperature in the kiln, and at the same time provide for sufficient draft; second, in the construction and arrangement of the flues, whereby an equal strength of draft is given to the entire chamber or kiln; third, in the air-passages arranged above the furnaces, for the purpose of supplying oxygen to the flames and allowing complete combustion, preventing smoke, economizing fuel, and regulating the temperature of the kiln.

In the accompanying drawing, Figure 1 is a plan view, showing the concentric flues and outlet-passages. Fig. 2 is a vertical section illustrating my invention.

A is the main body or shell of the kiln, made of any size, round, oblong, square, octagonal, or other shape, but preferably round and oval, as shown. This body or shell is provided with one or more doors, P, arranged at any suitable place or places, and of any desired size. Concentric to this shell is a partition or flame-wall, B, arranged at a suitable distance from the inside of the shell, so as to allow the products of combustion from the furnaces to pass and ascend to the dome or inside of the kiln. This flame-wall may be provided with partitions upon its exterior circumference, reaching toward the shell, and extending so as to nearly or quite impinge upon its interior surface. The object and duty of these partitions are to separate, or partially separate, the issues of the furnaces from each other, and allow the flame and heated gases of each furnace to enter the dome separately, and not mix or intermingle in the flame-flue. At the base of the flame-wall B are port-holes *b*, to allow a uniform circulation, and assist the draft, if necessary. The flame-flue, or the space between the flame-wall and the shell or body, is represented in the drawings by the letter D. C C are furnaces

situated around the kiln; E E, the grates thereto, and G the space under the grate. These furnaces may be of any desired form or number, and may be arranged at any suitable distance apart. H H are cold-air tubes or channels, so situated that a current of air may be admitted to the furnace or flame-flue D. These tubes or channels are provided with a proper register, so as to graduate and govern the amount of air to be furnished at the will of the operator, and according to the demands of the articles being subjected to the heat. This air-current may either be admitted direct from the atmosphere or it may be made to pass through a tortuous or winding channel, so arranged that it will become more or less heated, as desired, prior to its introduction into the flue. By this arrangement the air is admitted in a thin sheet or row of minute streams or jets to the flame and heated gases after they have reached the flame-flue D. The narrowness of this flame-flue causes this air to be intimately mingled with the flame and heated gases, so as to produce a very perfect combustion, the smoke evolved by the furnaces being entirely consumed, and great economy in fuel resulting; besides, the articles being fired are burned with extreme nicety and uniformity. K is the floor of the chamber or kiln, and it is perforated to allow the escape of heat, and afford a sufficient draft for the furnaces. These perforations are so arranged, varied, and graduated from center to circumference that the escape of the products of the combustion will be uniform throughout the entire surface of the floor—a desideratum in this branch of manufacture; in other words, the same relative ratio exists between the size of the perforations and the amount of surface over each annular flue, whether the said flue is near to or remote from the center of the floor. Beneath this floor K, and upon which it rests, are concentric flues J. These flues are arranged in distinct ramifications, and the perforations are so graduated in size from center to circumference, and the alternate arrangement is such, as to allow all parts of the chamber or kiln to be subjected to an equal strength of draft—a point on which the equal burning of the charge very obviously depends. The arrangement of these apertures and perforations may be varied without affect-

ing my invention, the object being to allow and afford a uniform draft to all parts of the chamber or kiln. M is the bottom of the concentric flue-chamber, and on this bottom the thin partitions between the concentric flues, which partitions form the flues, rest. This part M is also perforated, the perforations corresponding to three large outlet-flues or chimneys, called outlet-flues I. These flues I converge at the center of the kiln, and, leading outward, form the main outlet-passages of the entire kiln.

The operation and advantages of my invention are obvious. The flame and heated gases evolved by the furnaces pass to the flame-flue D, where they come in contact with the air which has entered through the channels H, the combustion being materially assisted at this point. The products of this entire combustion then pass up this flame-flue in the form

of a thin sheet, and, breaking over the top of the flame-walls B, reverberate over the whole chamber area, and finally pass off through a perforated false bottom to the concentric flues, thence to the large outlet-flue, and thus escape.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

The kiln with closed dome, having floor K, perforated and graduated from center to circumference, as described, concentric flues J, and outlet-flues I, as shown and specified.

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of October, 1873.

JOHN FERGUSON.

In presence of—

J. G. HARTSWICK,
PETER FERGUSON.