

(No Model.)

J. DUNNACHIE.
BRICK KILN.

No. 462,036.

Patented Oct. 27, 1891.

FIG. 1.

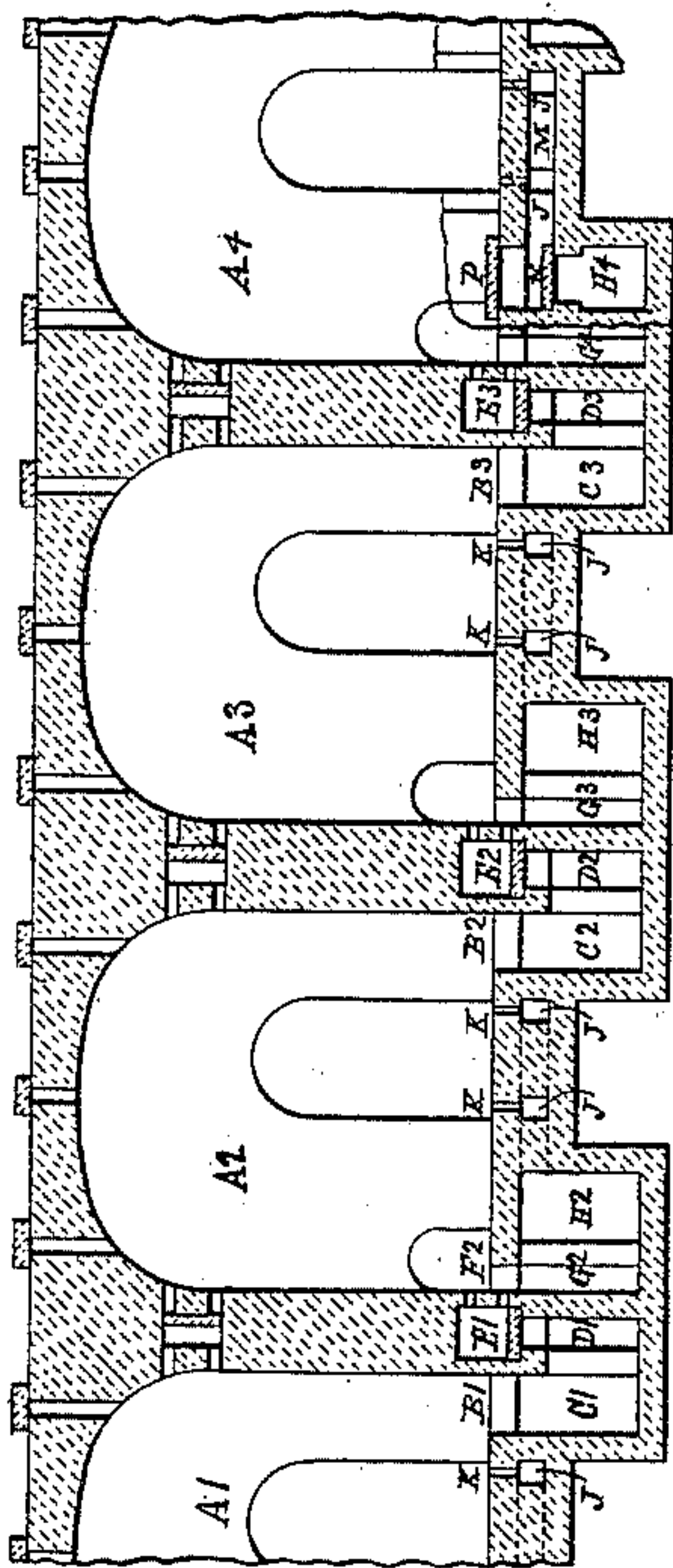
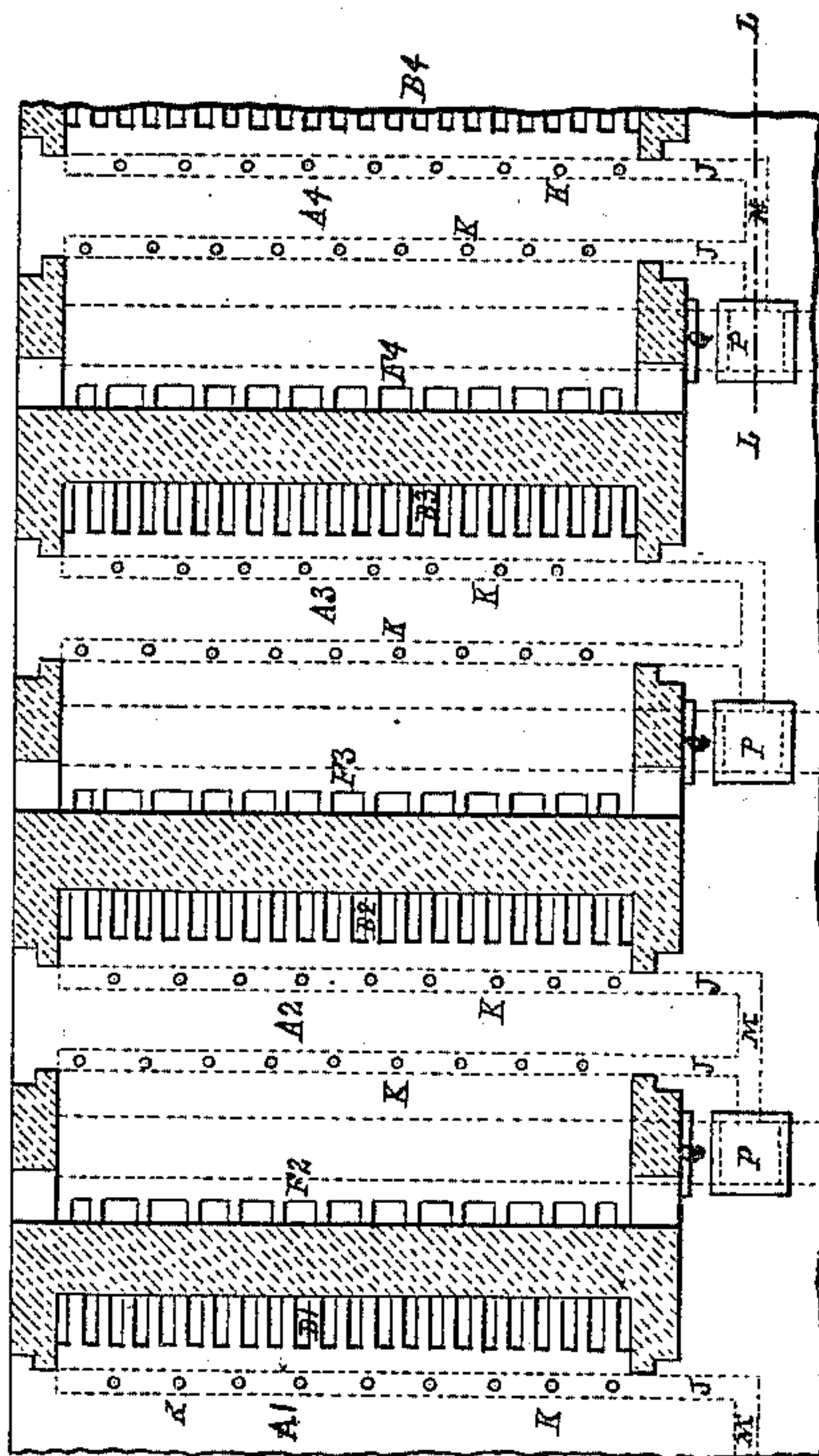


FIG. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES DUNNACHIE, OF GLENBOIG, SCOTLAND.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 462,036, dated October 27, 1891.

Application filed November 4, 1890. Serial No. 370,308. (No model.)

To all whom it may concern:

Be it known that I, JAMES DUNNACHIE, a subject of the Queen of Great Britain and Ireland, and a resident of Glenboig, in the county of Lanark, Scotland, have invented certain new and useful Improvements in Kilns for Firing Fire-Bricks, Earthenware, and the Like, of which the following is a specification.

My said invention relates to kilns of the kind described in my patent specification, No. 268,771, dated December 5, 1882; and my present object is to improve the operation of such kilns by supplementing the supply of heat at a particular stage of the actions, so as to rapidly drive off moisture from the bricks or other articles prior to the application of the strongest heat.

In the arrangement of kilns to which my present improvements are to be applied a number of chambers or kilns are combined in such manner that the successive stages of heating, firing, and cooling are passed through by each in rotation. The firing is effected by the combustion of producer-gas, or other suitable gas, in one chamber, and the hot gases after acting in that chamber pass through ports or flues into the next chamber, and thence through one or more other chambers, so as to utilize their gradually-diminishing heat in heating to different degrees the articles in the several chambers. On the firing having continued long enough in one chamber the combustible gas is shut off from that chamber and admitted to the next one in order. Air is admitted into the chamber containing the already-fired articles, and while cooling them is itself thereby heated, and this heated air, being led through flues or ports into the next chamber, supplies what is required for the combustion of the gas, at the same time utilizing the heat it has taken up. The flues or passages communicating between the several chambers and those through which the gas is supplied are made with numerous small ports, so that the gases are equally distributed over the chambers and uniform action is thereby secured.

By my present invention I provide for introducing into each chamber during whatever stage of the operations may be thought best a number of comparatively small jets of gas

for rapidly driving off moisture from the bricks or other articles in the chamber, these jets issuing through orifices suitably distributed in the floor of the chamber and communicating with one or more special supply-flues beneath.

In order that my said invention and the manner of performing the same may be properly understood, I hereunto append a sheet of explanatory drawings, to be hereinafter referred to, and showing the application of my improvements.

Figures 1 and 2 of the drawings are respectively a vertical section and a horizontal section showing a portion of the series of chambers or kilns A' A^2 A^3 A^4 , composing a set or system of kilns for firing fire-bricks, earthenware, and the like. If we suppose a charge of bricks to have been just fired in chamber A' , air admitted into that chamber and taking up heat will pass through ports B' down into a flue C' , thence through ports into a flue D' , and up through ports the passage through which is controlled by damper-slabs into an upper flue E' . From the flue E' the heated air issues by numerous small ports into the chamber A^2 and mixes at once with combustible gas issuing upward through ports F^2 from a flue G^2 , receiving the gas through ports from a supply-flue H^2 . There are similar ports and flues in connection with each chamber, as indicated by like reference-letters distinguished by different numerals, and there are also communications between the chambers at the upper parts of the division-walls, as and for the purposes described in my earlier specification, hereinbefore referred to.

According to my present invention, there are formed under the floor of each chamber or kiln two small gas-supply flues J , which are indicated by dotted lines in Fig. 2 and which communicate with the chamber by a number of small jet-orifices K , which I term "steaming-holes," as the ignited jets from them cause the moisture from the bricks or other articles in the chamber to be driven off in steam. The lower part of the right-hand end of Fig. 1 is delineated in section, as at the line $L L$ in Fig. 2, and shows the connection of the small supplementary flues J by a cross-flue M with the larger gas-supply flue H^4 .

A damper-slab N is provided for closing the opening between the flues M and H⁴, and is got at through an opening above, to cover which a slab P is provided. When gas is to
5 be admitted to the supplementary flues J of any chamber, it is shut off by a damper or valve Q from the part of the flue H⁴ communicating with the flue G⁴ of that chamber.

I claim as my invention—

10 In kilns for firing fire-brick, earthenware, and the like, a series of firing-chambers having gas-supply flues and ports and dampers therefor, and flues connecting adjacent chambers near the gas-ports to conduct air heated

in one chamber into the next, in combination 15 with additional gas-flues J, and jet-orifices therefrom opening into the bottom of the chambers, said gas-flues J connecting with the aforesaid gas-supply flues and being provided with dampers, all substantially as de- 20 scribed.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES DUNNACHIE.

Witnesses:

DAVID FERGUSON,
RICHARD BAXTER.