

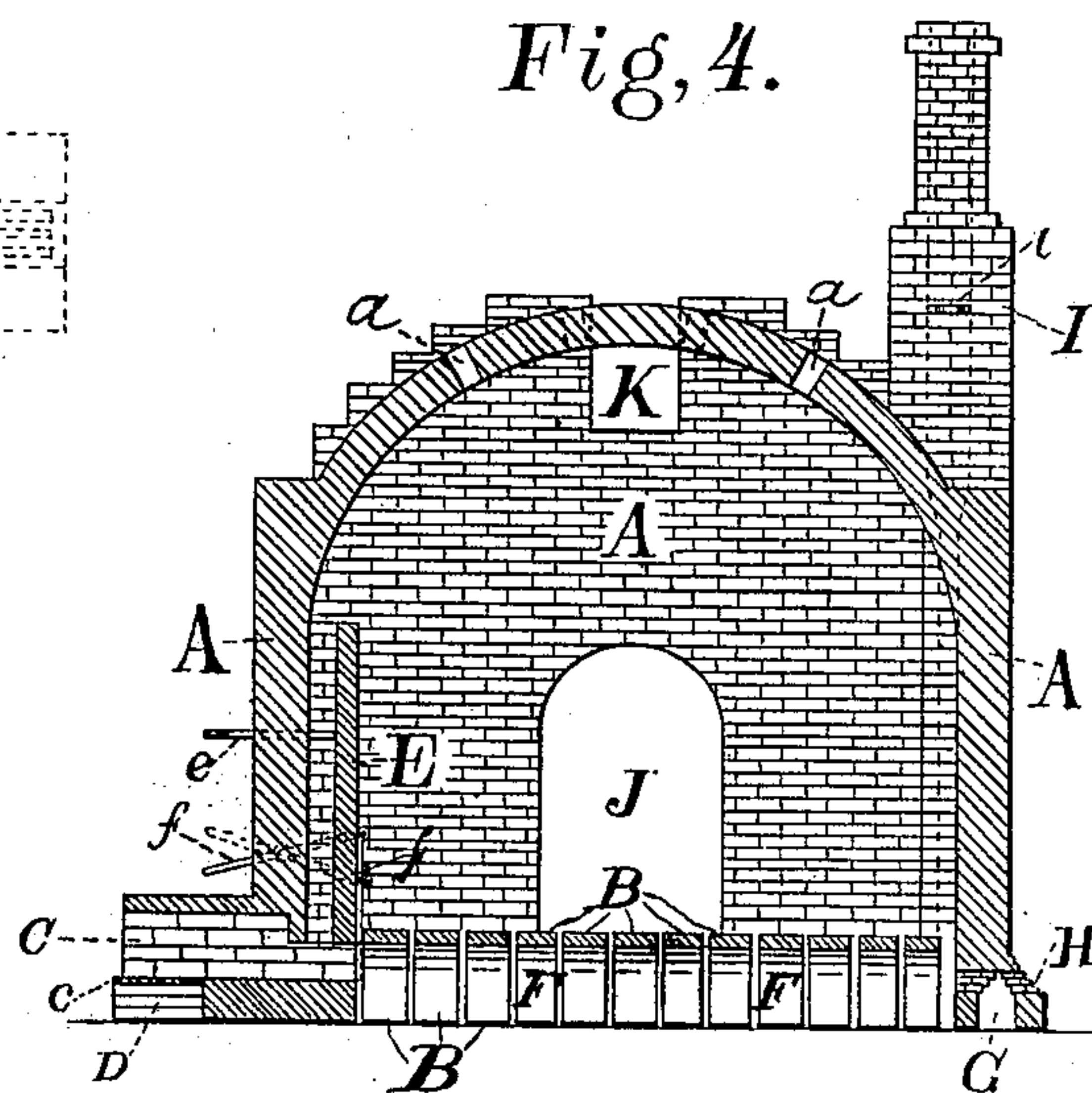
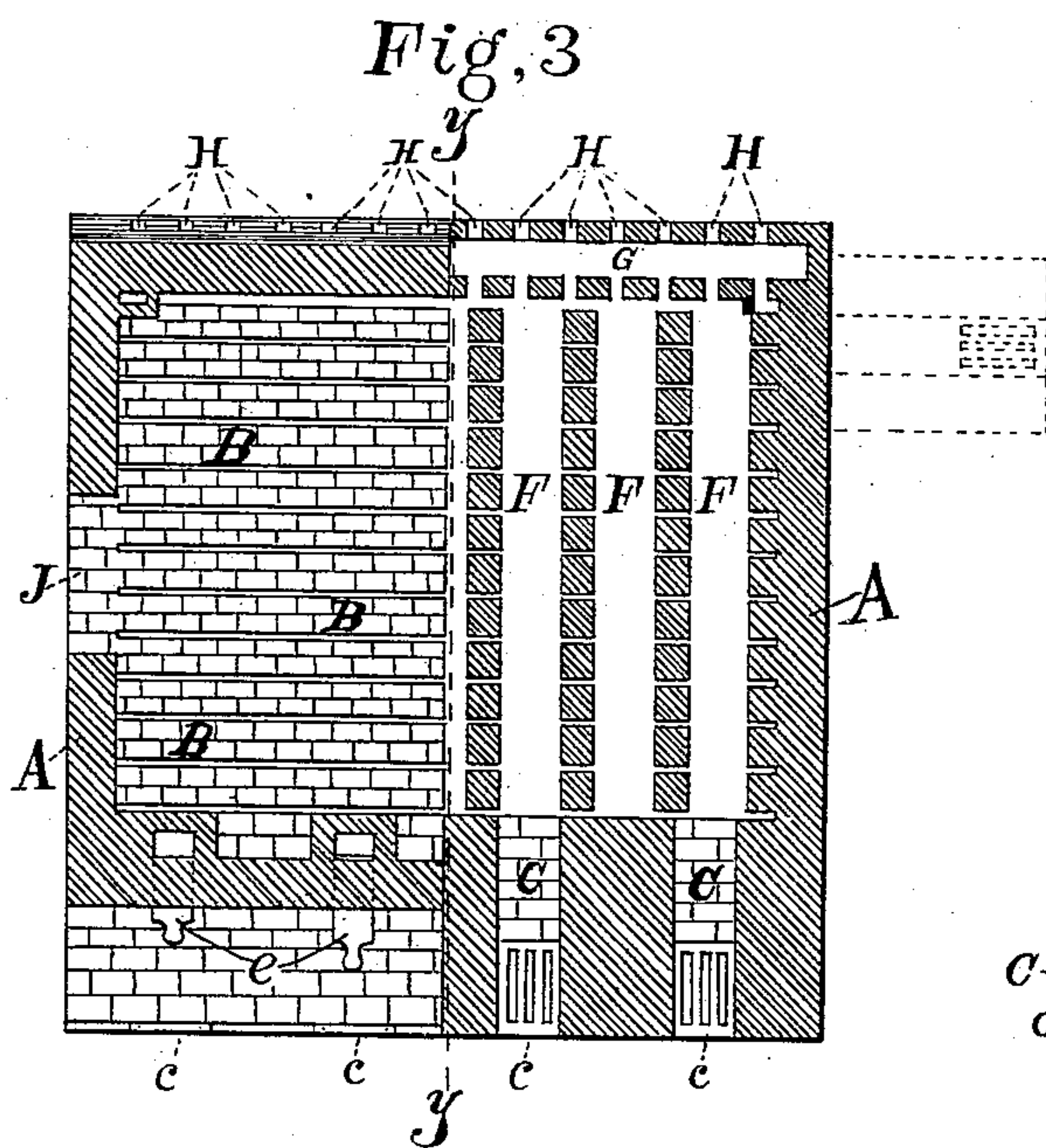
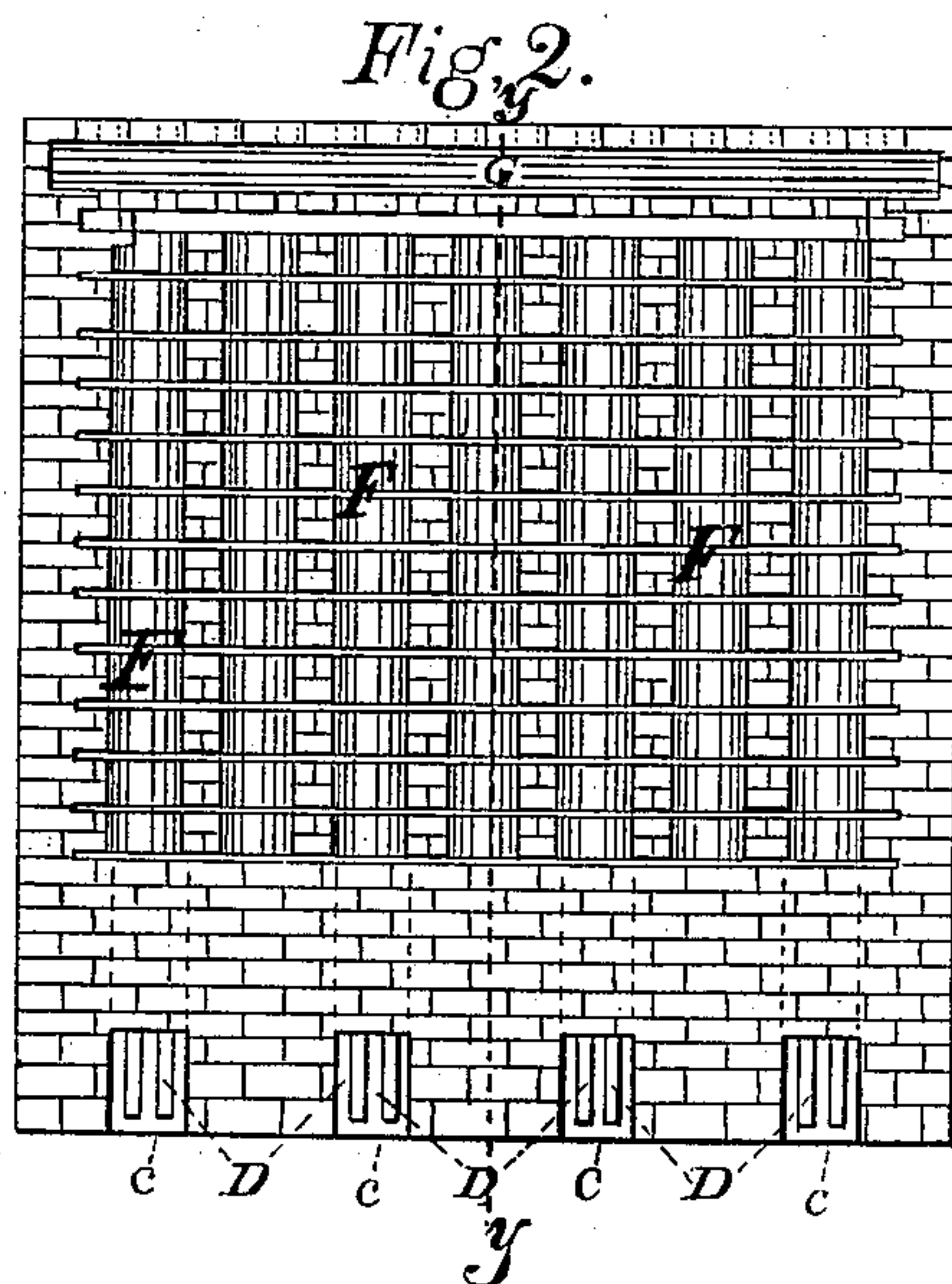
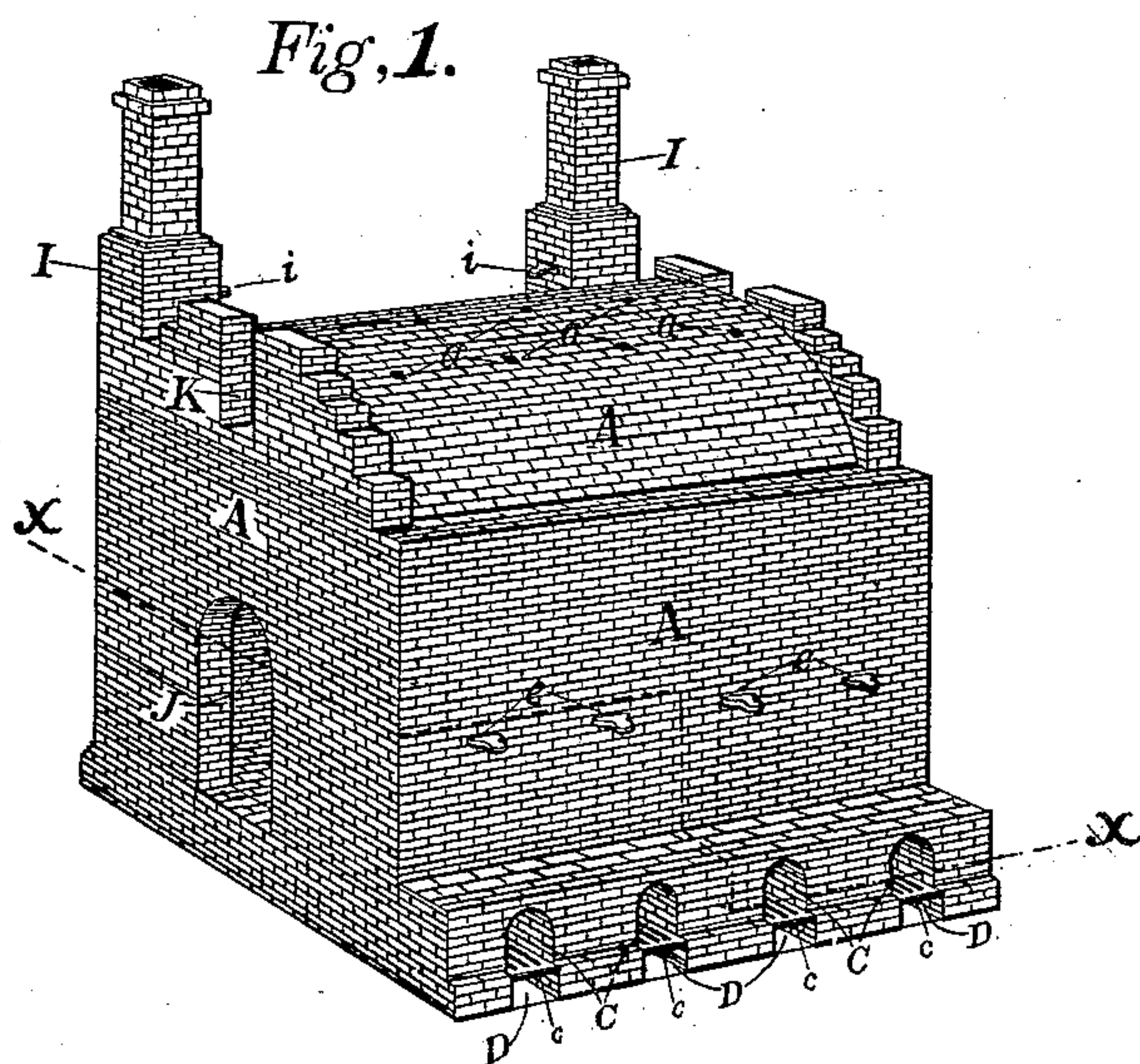
(No Model.)

J. DAWSON.

KILN FOR BURNING ARTICLES MANUFACTURED FROM CLAY.

No. 253,517.

Patented Feb. 14, 1882.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

JOHN DAWSON, OF COLFAX, INDIANA.

## KILN FOR BURNING ARTICLES MANUFACTURED FROM CLAY.

SPECIFICATION forming part of Letters Patent No. 253,517, dated February 14, 1882.

Application filed January 3, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN DAWSON, of the town of Colfax, county of Clinton, and State of Indiana, have invented certain new and useful  
5 Improvements in Kilns for Burning Articles Manufactured from Clay, of which the following is a specification.

My said invention principally consists in so constructing a kiln and the fire-spaces and  
10 flues thereto that the products of combustion can be made to travel either up or down through the tiles or other articles which are being burned therein at pleasure without changing the fire from one set of fire-places to another.

15 It further consists in some details of construction whereby the kiln is generally improved, all as will hereinafter be more fully set forth.

Referring to the accompanying drawings,  
20 which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a perspective view of my improved kiln; Fig. 2, an under side plan of the same; Fig. 3, a horizontal section and inside  
25 plan, looking downwardly from the dotted line *x x*; and Fig. 4, a transverse vertical section on the dotted line *y y*.

In said drawings, the portions marked A represent the walls of my improved kiln; B, the floor or grating thereto; C, the fire-spaces;  
30 D, the ash-pits; E, bag-flues on the back side of the front wall above the fire-spaces; F, transverse flues under the grating B, terminating in a single longitudinal flue, G, along the back  
35 side of the kiln; H, openings from the flue G to the outside of the kiln; I, the chimneys; J, door-opening for ordinary use in filling the kiln with tile or other articles to be burned, and K man-holes for use in finishing said filling.

40 The wall A is constructed, as usual, of brick, with the usual vent or smoke holes, *a*, in the top for the escape of steam or smoke during one stage of the process of burning the tile, but which are stopped up at another stage.

45 The grating B is also of an ordinary construction, except that it is cut away entirely across underneath to form the transverse flues F, which terminate in or communicate with the longitudinal flue G.

50 The fire-spaces C are of common form, having the grating *c* and the ash-pits D below them.

They communicate both with the bag-flues E and with the transverse flues F, and are capable of being cut off from either. When the bag-flues are cut off, which may be done either  
55 by means of the dampers *e* or by placing some articles (as bricks) over their tops, the products of combustion go under the grating B, through the flues F, and up through said grating and the tiles thereon to the holes *a* in the crown of  
60 the kiln, thus burning said tile by an upward course from the fire-places to said holes, as is most common in kilns of this character; the dampers *i* in the chimneys being closed. When  
55 the back ends of the fire-spaces are stopped by means of the dampers *f* or otherwise, thus cutting off direct communication between them and the transverse flues F, the bag-flues E are brought into use by withdrawing the dampers  
70 *e* or removing the other stopping devices. The products of combustion then pass from the fire-spaces up said flues, down through the tiles in the kiln, under the grating, into the flues F, from them into the flue G, and thence up the  
75 chimneys I, the dampers of which are also withdrawn. During the very earliest stages of the burning, in order to give the freest possible vent to the "water-smoke," both the chimneys and the openings H are kept open. These latter  
80 are particularly valuable for this purpose, as they permit a large amount of dampness, which escapes in this form from the lower tiles, to escape directly into the open air without passing up through the upper ones, and thus impregnating them with still more moisture be-  
85 fore they are hot enough to expel it.

This method of burning tiles, brick, &c., is much better than the old way, where the products of combustion traveled in only one direction through the articles to be burned, as in  
90 that case the lower ones, nearest the fire, would be burned too hard, while those farthest away would not be burned enough. By alternating the application of the heat, as may readily be done with my improved kiln, the articles may  
95 be burned perfectly even and without additional expense.

I am aware that both an up and down direction of the products of combustion has been secured by means of two separate sets of fire-  
100 spaces, one of which was adapted for use in the one case and the other in the other. This



involves the trouble and expense of attending to two sets of fires, only one of which can be profitably burning at the same time. It is obvious, therefore, that my invention is a great improvement upon that mentioned. Additional fire spaces, however, can be applied to my kiln upon the ends, if desired, as shown by the dotted lines in Fig. 3; but as these are intended to operate in a similar manner to those hereinbefore described as forming part of my invention, they do not change its general character.

In the use of this kiln I have found it better to have the products of combustion pass down through the tile during the earliest stages of the burning by means of bringing the bag-flues E into use first, as this course expels the water from the lower tile (which are likely to be wetter than the upper ones) directly into the chimneys or through the openings H without allowing it to pass up into the upper ones. The reason for this is that by the time the kiln is filled the lower tile have usually absorbed some moisture, and are therefore wetter than the upper ones, and too much dampness in the form of steam or water-smoke is likely to injure the driest ones and cause them to crack. When the tile are pretty well dried the holes *a* and dampers *f* should be opened, the openings H and flues E closed up, and the burning proceed in the regular manner.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a kiln, of the fire-spaces and two sets of flues, one set of which runs underneath the articles to be burned in the kiln and the other to a point at or near their top, each being capable of being cut off from the fire-space, so that the products of combustion will necessarily pass through the other, whereby both an up and a down passage thereof may be secured from the same set of fires, substantially as set forth.

2. The combination, in a kiln, of the fire-spaces C, flues F, having dampers *f*, and flues E, having dampers *e*, all substantially as shown and described, and for the purpose specified.

3. The combination of the fire-spaces C, flues F, flue G, and openings H, all substantially as shown and described, and for the purposes specified.

In witness whereof I have hereunto set my hand and seal at Indianapolis, Indiana, this 30th day of December, A. D. 1881.

JOHN DAWSON. [L. S.]

In presence of—

C. BRADFORD,

JACOB W. LOEPER.