

(No Model.)

J. BLUM.  
Brick Kiln.

No. 231,893.

Patented Sept. 7, 1880.

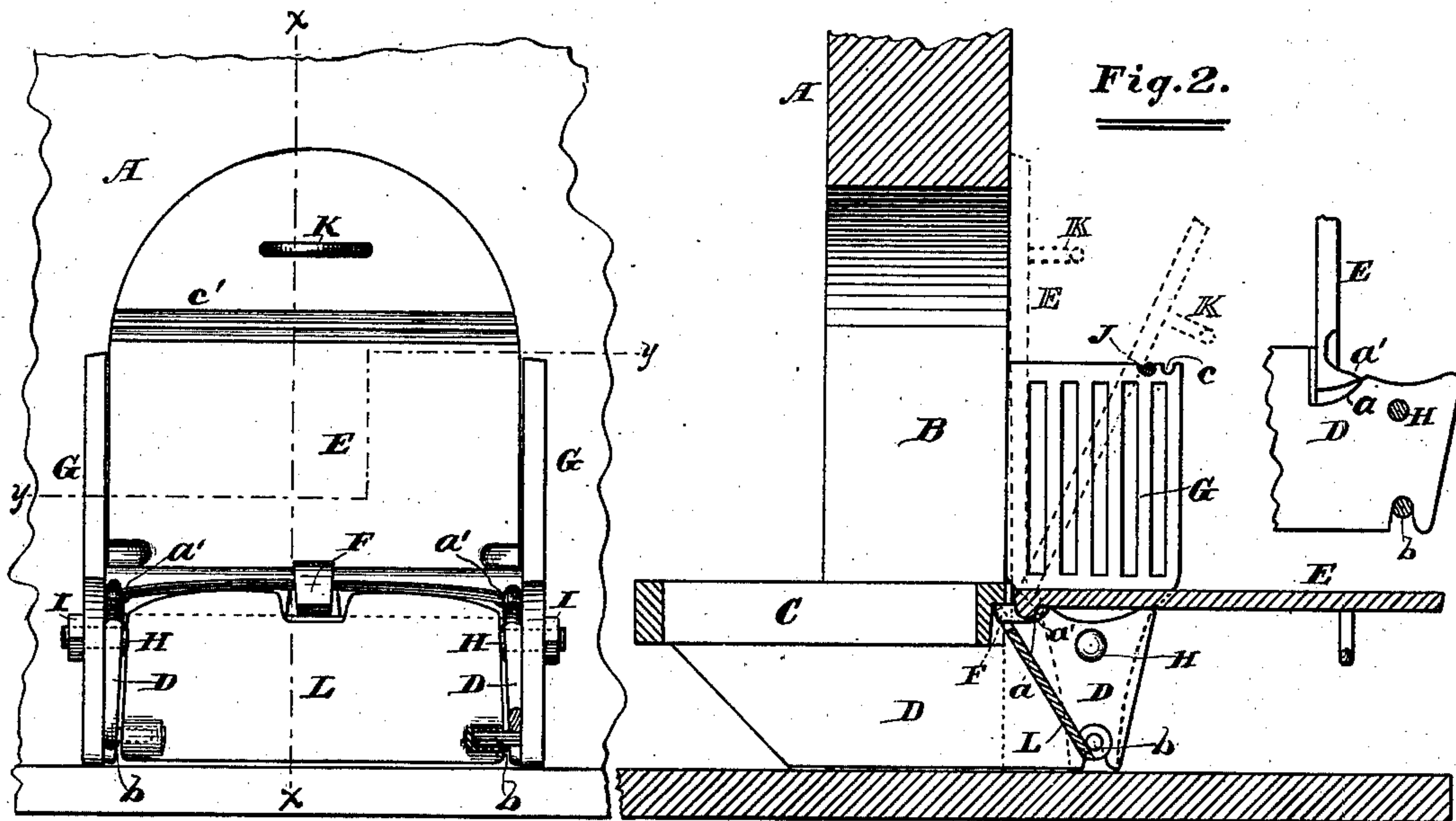


Fig. 1.

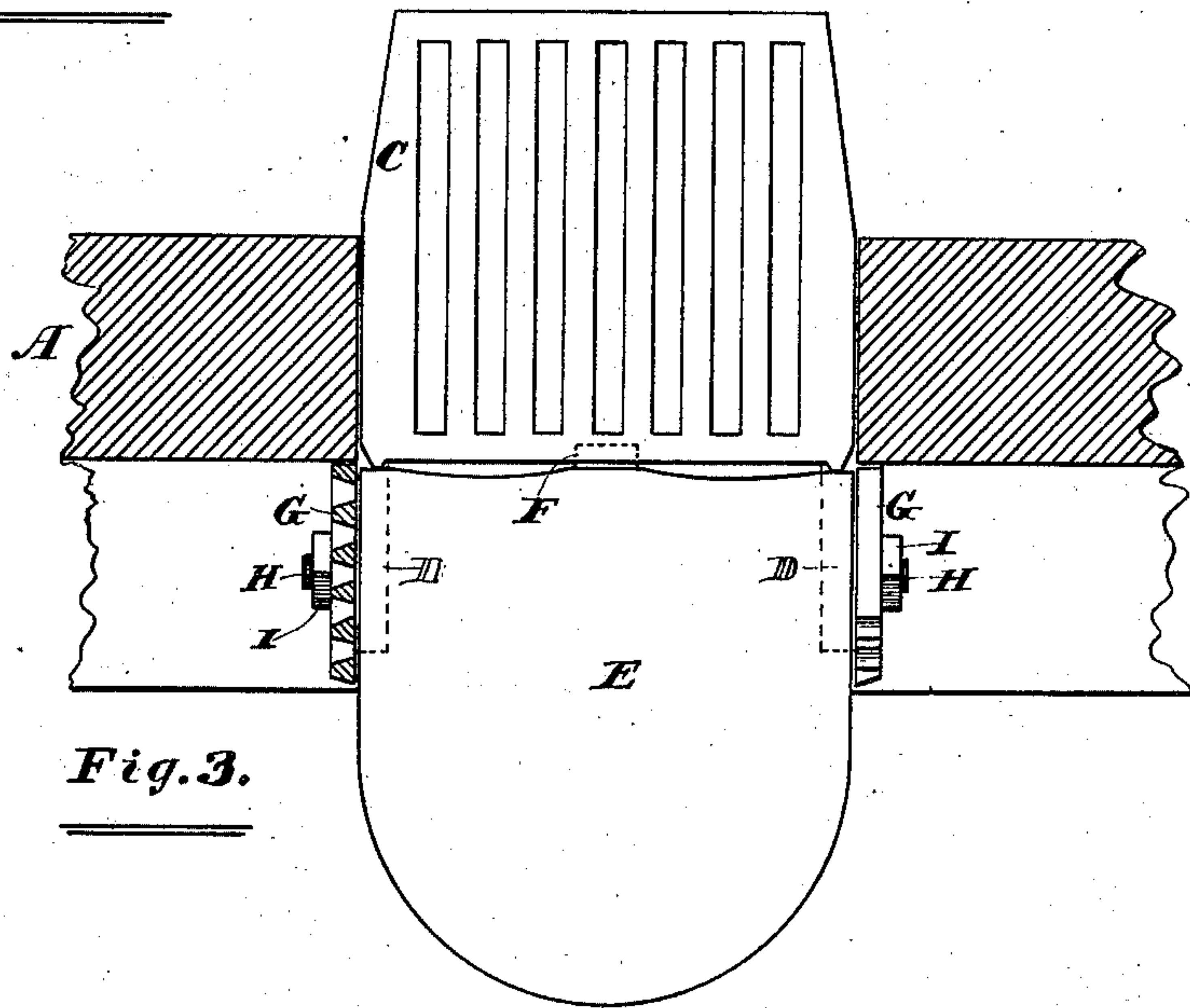


Fig. 3.

Attest:

R. T. Morse  
R. T. Morse

Inventor:

Joseph Blum-  
F. F. Warner-  
his Attorney.



# UNITED STATES PATENT OFFICE.

JOSEPH BLUM, OF CHICAGO, ILLINOIS.

## BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 231,893, dated September 7, 1880.

Application filed June 3, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH BLUM, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful  
5 Improvements in Brick-Kilns, of which the following, in connection with the accompanying drawings, is a specification.

In the drawings, Figure 1 is a front view of a brick-kiln containing my improvements.  
10 Fig. 2 is a section in the plane of the line  $x x$  of Fig. 1, and Fig. 3 is a section in the plane of the line  $y y$  of Fig. 1.

Like letters of reference indicate like parts.

My invention has for its object the improvement of the construction and operation of the means employed for improving the combustion and producing heat in brick-kilns of the class in which grates are employed in connection with other parts co-operating therewith  
15 for receiving or containing the fuel.

In the drawings, A represents the wall of a brick-kiln, and B is an opening therein for admitting the fuel.

C is a grate arranged horizontally, by preference, and extending through the opening B from the face of the wall A and considerably back from the opening B or back into the kiln, as shown.

D D are vertical flanges or supports extending downward from the sides of the grate C, and also forward or outward therefrom considerably beyond the outer face of the wall A. These parts or flanges I cast, by preference, with the grate proper, or with the part containing or constituting the bars on which the fuel is to be placed.  
25 30 35

In the example shown the flanges D D are formed to support the grate horizontally above the floor of the kiln; but the rear end of the grate may be lower than the forward end if deemed best, the principal object of the flanges D D being to support the grate sufficiently above the floor of the kiln to form a good draft-passage under the grate.

The grate and its flanges, which, as stated, preferably constitute one part, are intended to be removable from the opening B, and to facilitate removal I make the rear part of the grate contracted or narrower than the forward part, as shown, so that if the rear part of the grate should be expanded by the action of the heat it will still be narrow enough to allow  
40 45 50

the grate to be drawn out of the opening B with ease.

E is the door. This door stands vertically in front of the opening B when that opening is to be closed, and the lower edge of the door rests on the upper edges of the flanges D D, the latter being slightly notched, as shown at  $a a$ , to receive the said edge and form a bearing therefor.  
55 60

In order to cause the door E when closed to stand closely against the outer wall of the kiln without the aid of special fastenings I set out slightly from the said wall those parts of the lower edge of the door which bear upon the flanges D D, as shown at  $a' a'$ , thus throwing the center of gravity of the door inward from its bearings, and causing it to remain closed automatically.  
65 70

F is a tongue projecting inwardly from the lower edge of the door E sufficiently to extend under the front part or edge of the grate C when the door is fully open or arranged horizontally, as shown, so as then to retain the door in that position.  
75

G G are side grates projecting vertically above the outer ends of the flanges D D, and  $b b$  are inwardly-extending pins on the lower portion of the said grates. The pins  $b b$  extend freely through and inwardly beyond the flanges D D.  
80

H H are bolts passing through the flanges D D and the grates G G, and I I are nuts on the outer ends of the said bolts, the said bolts and nuts being employed in connection with the pins  $b b$  for holding the side grates firmly in their vertical position.  
85

By employing the pins  $b b$  in the manner shown and described only one bolt and nut is required for each side grate.  
90

In the upper edges of the grates G G are small notches  $c c$ , and J is a cross-bar or rod lying therein. The purpose of the rod J and notches  $c c$  is to admit of the door E being supported in a partly-open position, as indicated by the dotted or broken lines in Fig. 2; but grooves  $c' c'$ , extending across the door, will serve the same purpose.  
95

K is a handle on the door E. L is a damper, the lower corners of which bear on the pins  $b b$ , so that it may be tilted or swung into either its open or closed position.  
100

To use my improvements as and for the pur-



poses for which they are intended I proceed as follows: After starting a fire, which may be done in the usual manner, the door E may be opened fully, as indicated in Figs. 2 and 3.

5 When it is in that position, the fuel, which consists of coal, may be thrown upon it, in feeding the fire and when only a moderate degree of heat is required. The grates G G not only serve to keep the fuel upon the open door E,  
10 but admit air to it, so that the fuel thrown will become ignited, it being understood that a portion of the incandescent fuel on the grate C will fall out upon the door E when the latter is fully open. The door C, however, may be  
15 only partly opened, as heretofore explained, and the extent to which it may be opened may be varied, thus varying the degree of heat and draft. When the door is wholly closed the heat and draft may be regulated by means of  
20 the damper L, which may also be either open or closed when the door is either partly or wholly open. By throwing the fuel on the wholly-open door, and then closing the door, the fuel on the door will necessarily be pushed  
25 upon the grate.

It will be perceived from the foregoing description and from reference to the drawings that the grate and its attachments are not only removable from the kiln, and that they may  
30 be applied and removed with facility, but that all the parts are simple in their construction and operation, and that the heat and draft may be greatly varied and easily regulated, and also that the operation of feeding the fuel to  
35 the kiln is facilitated.

I do not here intend to restrict myself to making the interior grate and its supporting-flanges all in one part, nor precisely to the herein-described mode of applying the outer  
40 or vertical grates; but,

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. The removable brick-kiln grate C, made contracted or narrowest at its inner end, to  
45 facilitate its removal after being expanded by excessive heat during use, substantially as specified.

2. The combination of the vertical external grates, G G, with a vertically-swinging fire-  
50 door and a horizontal raised brick-kiln grate, substantially as and for the purposes specified.

3. The combination of the horizontal grate C, provided with the downwardly-extending flanges or supports D D, extending outward  
55 or forward beyond the said grate, the vertical external grates, G G, applied to the external parts of the said flanges, the vertically-swinging fire-door E, and the adjustable rod J, substantially as and for the purposes specified. 60

4. The combination of the horizontal grate C, the supports D D, extending outward or forward from the said grate, the side grates,  
65 G G, having thereon the pins or studs b b, and the bolts H H and nuts I I, substantially as and for the purposes specified.

5. The combination, with a brick-kiln grate, of the fire-door C, having outward extensions,  
70 a' a', adapted and arranged substantially as shown and described, to throw the body of the door, when closed, between its bearings and the outer face of the brick-kiln walls, for the purpose of thereby causing the door to remain closed by gravitation.

6. The combination of the grate C, flanges  
75 or supports D D, grates G G, door C, and damper L, all constructed, arranged, and operating substantially as and for the purposes specified.

JOSEPH BLUM.

Witnesses:

F. F. WARNER,  
W. S. BAKER.