

No. 613,664.

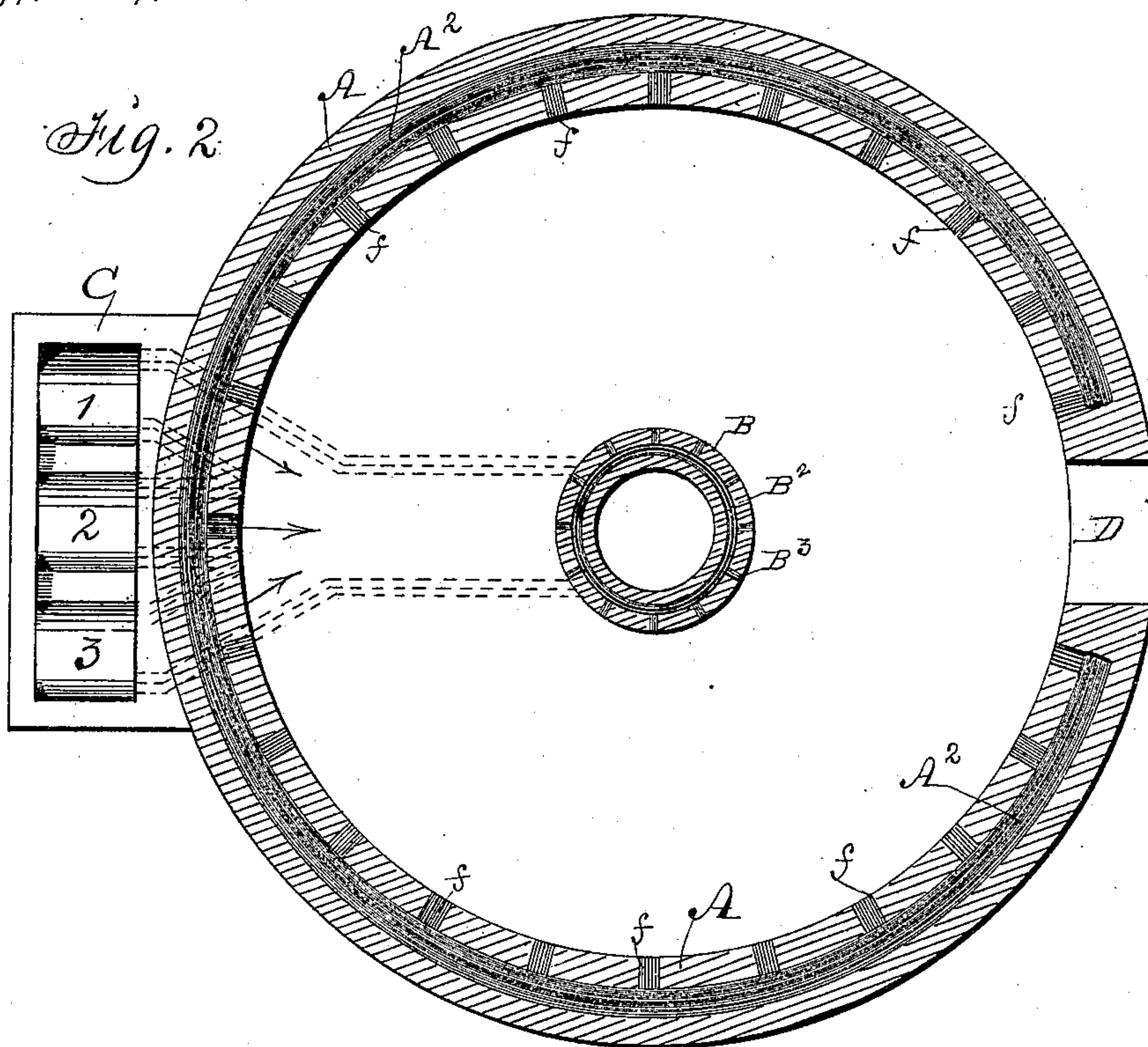
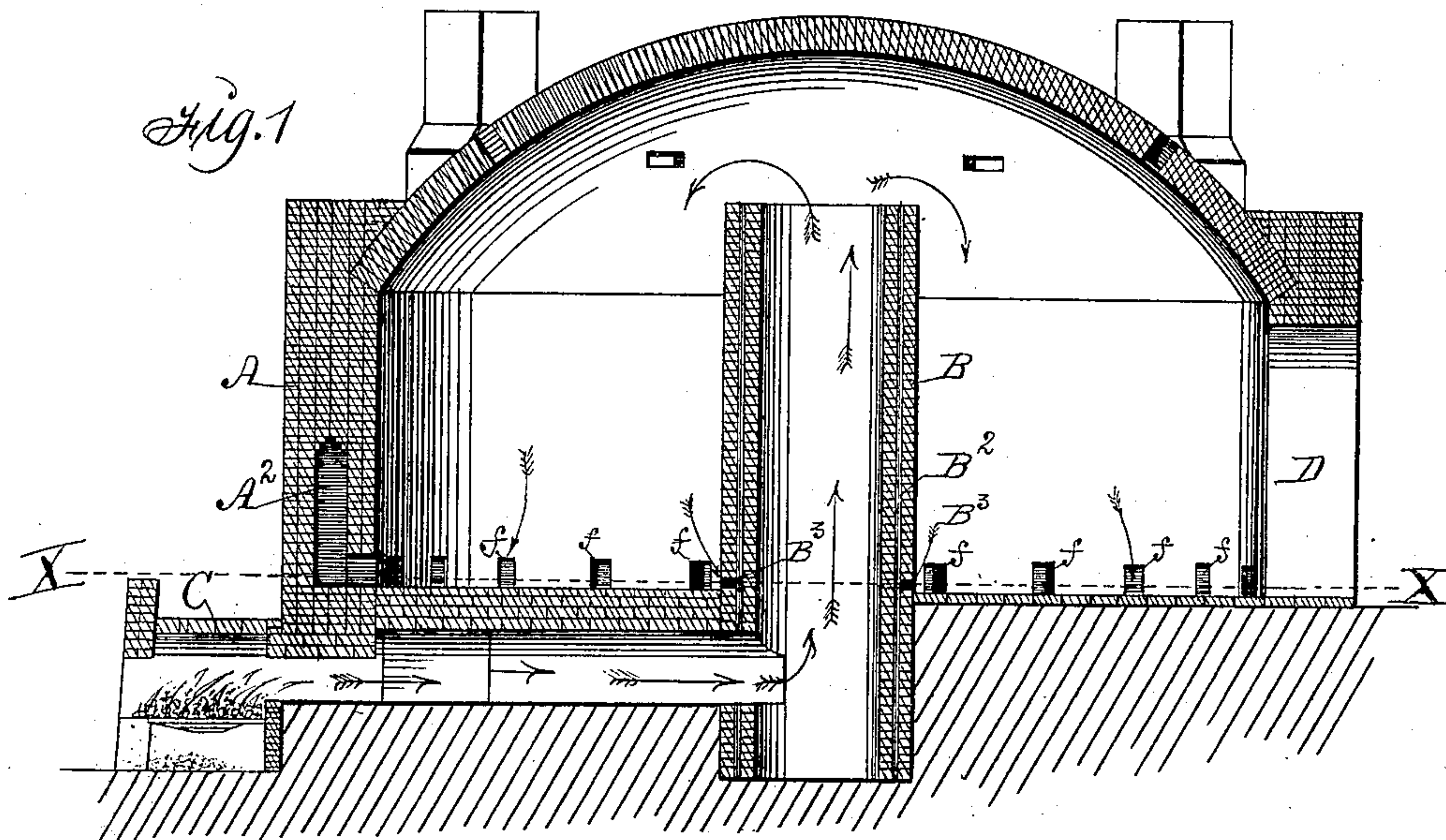
Patented Nov. 8, 1898.

W. F. COOK.  
BRICK KILN.

(Application filed Aug. 13, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:  
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R. C. Orwig.

Inventor: William F. Cook,  
By Thomas G. Orwig, Attys.

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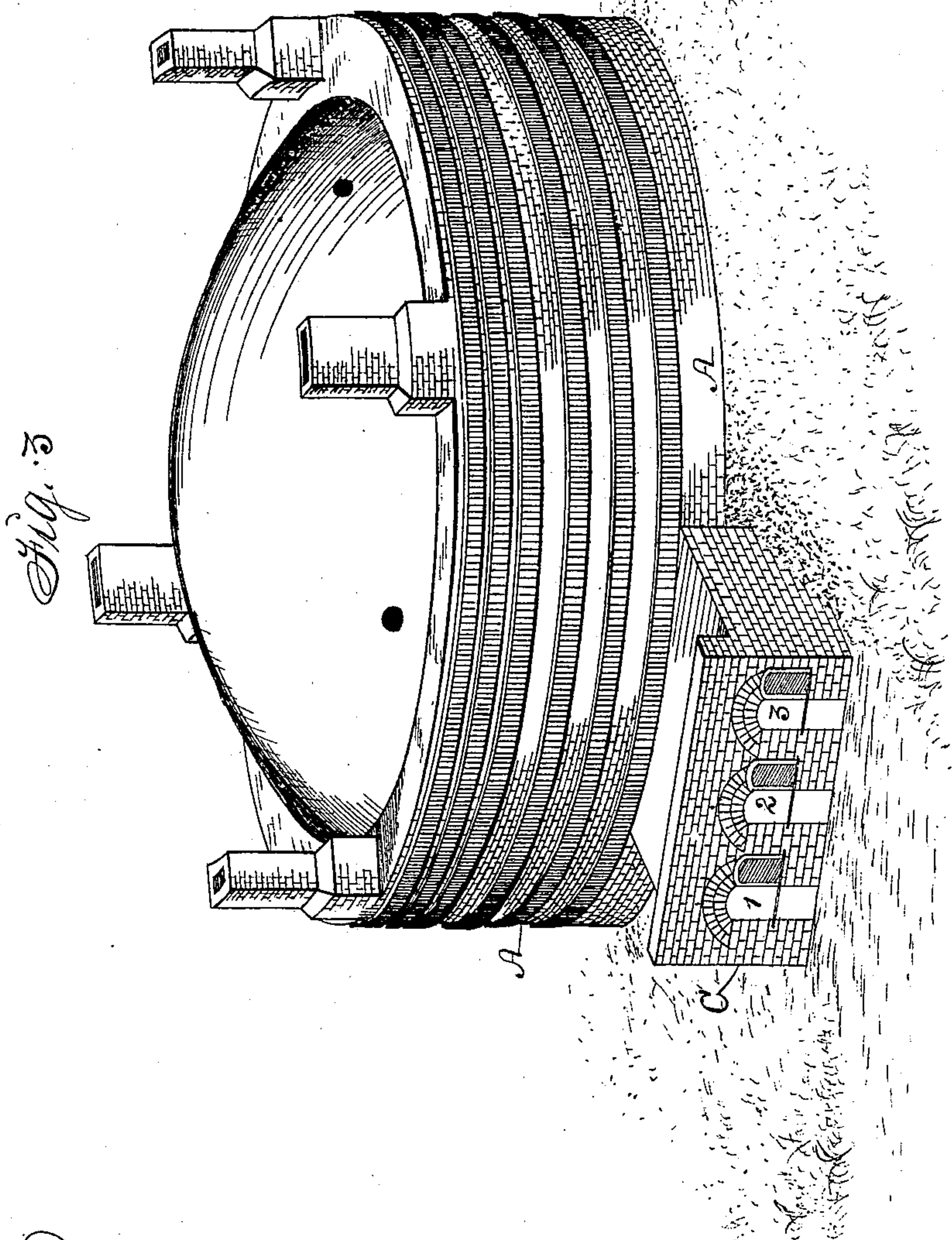
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

WILLIAM F. COOK, OF DES MOINES, IOWA.

## BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 613,664, dated November 8, 1898.

Application filed August 13, 1897. Serial No. 648,190. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. COOK, a citizen of the United States of America, residing at Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Brick-Kiln, of which the following is a specification.

My object is, first, to simplify the construction and reduce the cost of a circular brick-kiln; second, to reduce the cost of burning brick uniformly hard by reducing the minimum of the amount of fuel required for a given quantity of brick, and, third, to effect a circulation of the products of combustion in such a manner as to maintain an even heat in all parts of the kiln as required to burn all the brick stacked in a kiln uniformly hard; and I accomplish the results contemplated by my invention as hereinafter set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical central sectional view showing the construction, arrangement, and combination of the furnace with the wall and the central draft. Fig. 2 is a sectional view on the horizontal line  $xx$  in Fig. 1, showing the flue in the wall and the openings therein that communicate with the interior of the kiln at or near the floor. Fig. 3 is a perspective view of the kiln ready for practical use.

The letter A designates the circular wall, B the central flue, and C the furnace outside of the wall and in direct communication with the lower portion of the central flue. An arched roof is fixed on top of the circular wall.

The furnace consists of two or more distinct fireplaces, preferably three, Nos. 1, 2, and 3, and each fireplace or combustion-chamber has communication with a horizontal flue under the floor of the kiln leading to the central vertical flue, through which there is an upward central draft of all the products of combustion that pass inward from the fires in the outside furnace.

D represents an opening in the rear of the wall for the passage of persons as required for moving green brick in and burned brick out.

A<sup>2</sup> represents a flue that extends from the bottom of the wall upward, as shown, within the wall and from near one side of the open-

ing D to near the other side of the same opening. A series of openings  $f$  at the bottom of the wall extend inward from the flue A<sup>2</sup> to allow the products of combustion that escape from the top of the central flue B to then pass downward to enter the flue A<sup>2</sup> and to create a downward draft through the brick stacked in the kiln in the annular space between the flue B and the wall A and a reverse or upward draft through the flue A<sup>2</sup> in the wall A. At regular distances apart vertical chimney-flues A<sup>3</sup> communicate with the flue A<sup>2</sup> and extend up above the roof.

B<sup>2</sup> designates an annular space in the wall of the central vertical flue B, provided with outward openings B<sup>3</sup> near the floor that admit air and to produce an upward draft in the annular space, and thereby aid in maintaining a uniform temperature in the annular space around the flue B, within which space brick are to be burned uniformly hard. It is obvious that by means of this double-walled circular central flue B, having an annular space B<sup>2</sup> extending from the floor to the top and a plurality of openings B<sup>3</sup> in its outer wall intersecting the annular space, the hot air that passes up inside of the inner wall and descends around the outer wall will be to some extent governed by the annular flue or space B<sup>2</sup> and the openings B<sup>3</sup> and the distribution and circulation of heat throughout the kiln facilitated as required to burn brick therein uniformly hard.

In the practical operation of a brick-kiln thus constructed it is obvious after it is stacked full of green brick and fires started in each compartment of the outside furnace that a person can very conveniently place fuel on the separate grates at different times, and in order to prevent the escape of black smoke and soot it is only necessary to add fuel alternately at different times to the different distinct fires in the distinct chambers, so that the black smoke and soot liberated from fresh fuel will be mingled with all the products of combustion that enter the horizontal flue to produce an inflammable gas that will be burned therein. All the valuable products of combustion that pass rearward from any one of the fires are thus utilized in generating heat that will pass up through the central flue B to be distributed from be-



low the roof of the kiln downward and equally through all parts of the annular space surrounding the central upward flue to maintain an even temperature therein and to subject  
5 all the brick stacked in said space to a uniform heat as the heat descends, drawn downward by the flue  $A^2$  in the wall A and the ports  $f$  communicating with the said circular flue.

10 It is obvious that the flue  $A^2$  may be divided at different points by making the wall solid to strengthen the wall without preventing the upward draft. It is also obvious that a kiln thus constructed is adapted for advantageously burning brick, tiling, and all kinds of  
15 earthenware.

I claim as my invention—

1. In a brick-kiln the combination of a furnace with a wall, a horizontal flue leading  
20 from the furnace and wall to the center of the kiln, a perpendicular flue in the center of the kiln having an annular space from the bottom to the top and openings at its bottom intersecting said annular space, to operate in  
25 the manner set forth for the purposes stated.

2. In a brick-kiln, a circular wall having a horizontal flue and inward openings at the lower portion of the wall communicating with the interior kiln - space, a central vertical  
30 flue, open at its top and having an annular

space in its wall and outward openings therefrom near the floor of the kiln, and a furnace consisting of two or more fireplaces a flue communicating with the bottom of the central flue and said fireplaces at a point below  
35 the floor of the kiln, arranged and combined to operate in the manner set forth for the purposes stated.

3. The flue B having an annular space  $B^2$  in its wall and extending upward from the  
40 floor of a brick-kiln, in combination with a furnace consisting of two or more fireplaces each having a flue, and a main flue extending from the distinct fireplace-flues to the central vertical flue, all arranged and com-  
45 bined as shown and described.

4. A circular brick-kiln comprising a circular wall A having a flue  $A^2$ , and openings  $f$  at its bottom, a central flue B having an  
50 annular space  $B^2$ , a furnace C consisting of three distinct fireplaces, Nos. 1, 2, 3, each having a distinct flue and horizontal flue under the floor connected with said fireplace-flues and the central vertical flue, all arranged and combined in the manner set forth  
55 for the purposes stated.

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Witnesses:

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