

No. 635,935.

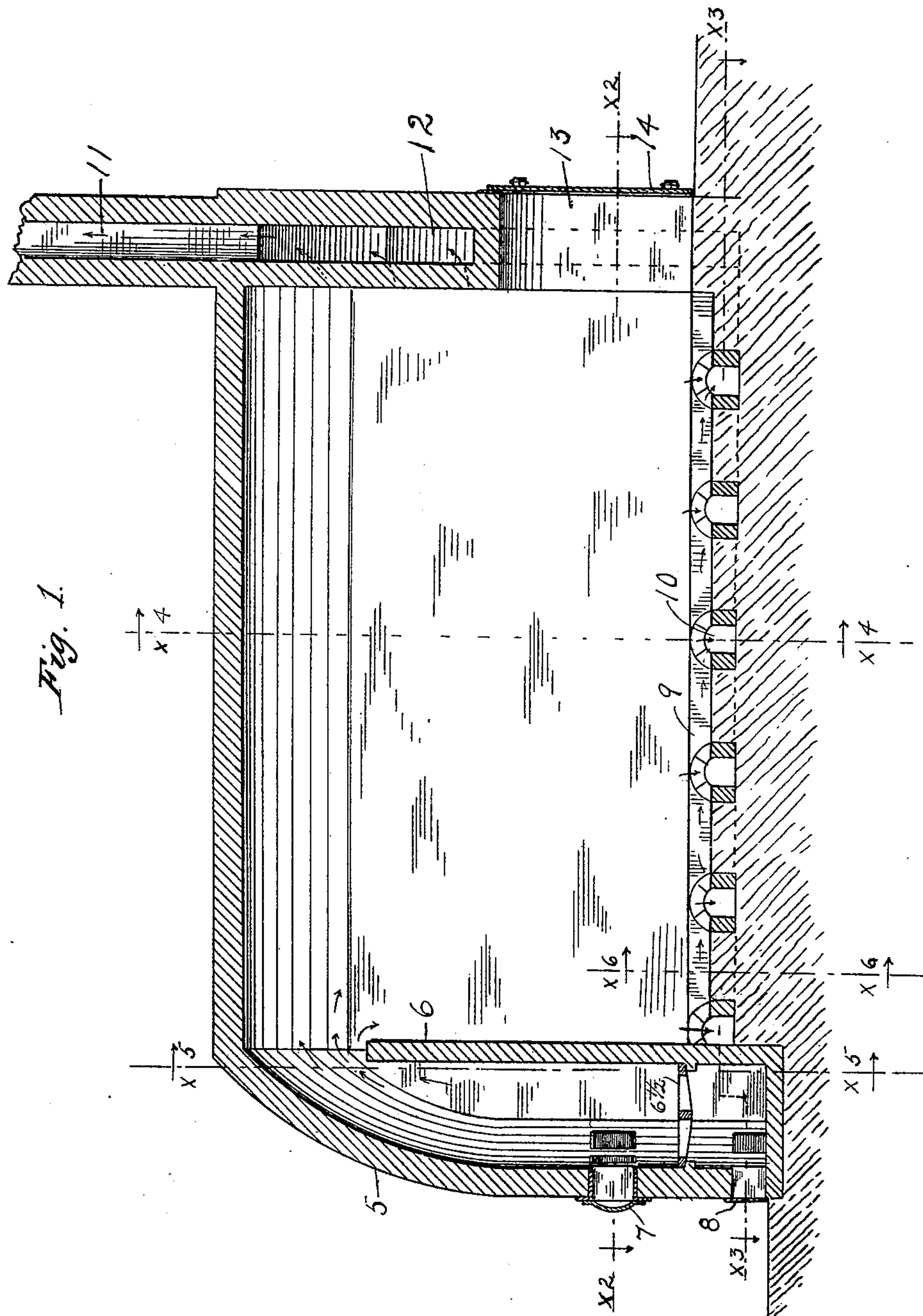
Patented Oct. 31, 1899.

F. KOCH.
BRICK KILN.

(Application filed Jan. 30, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses
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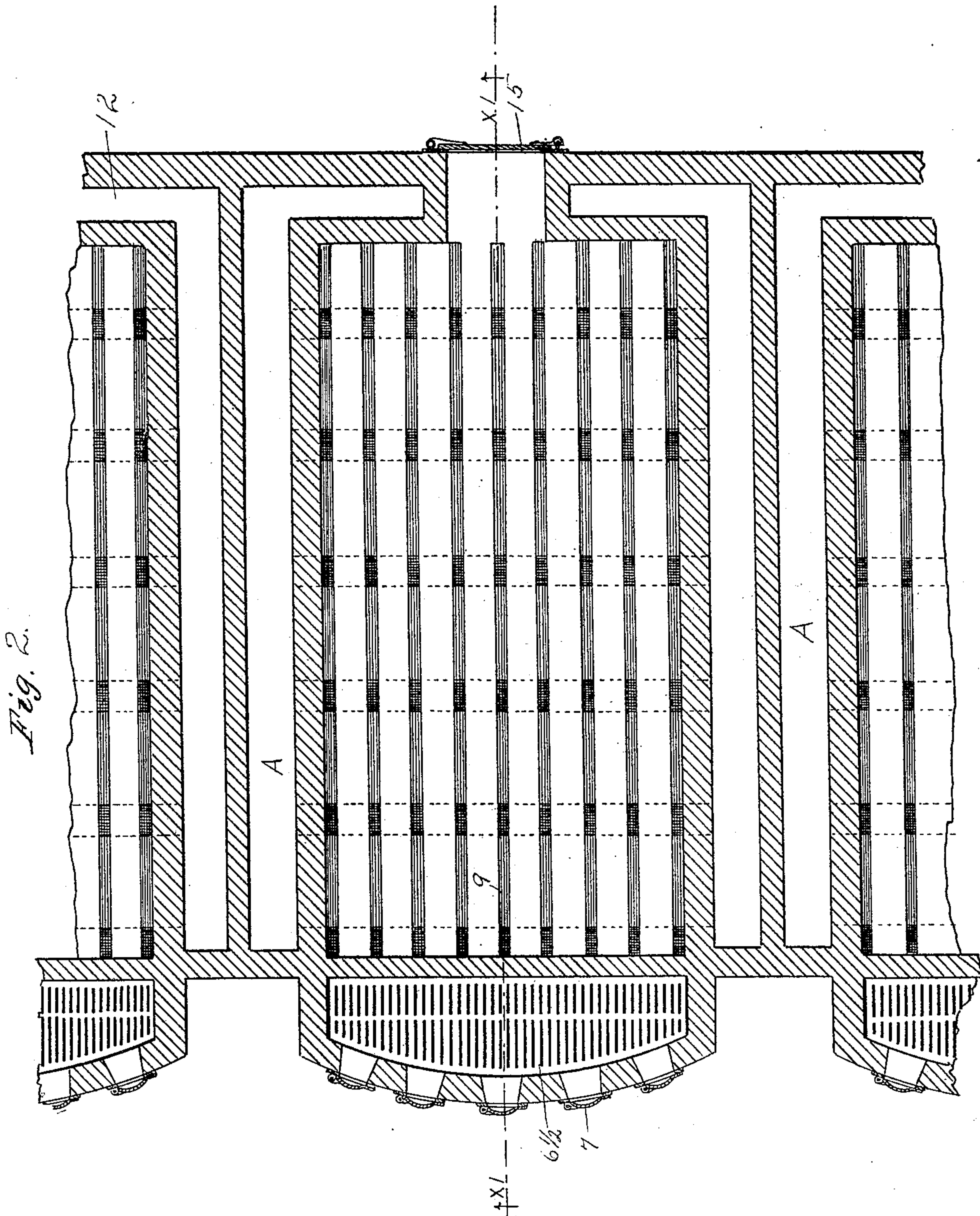
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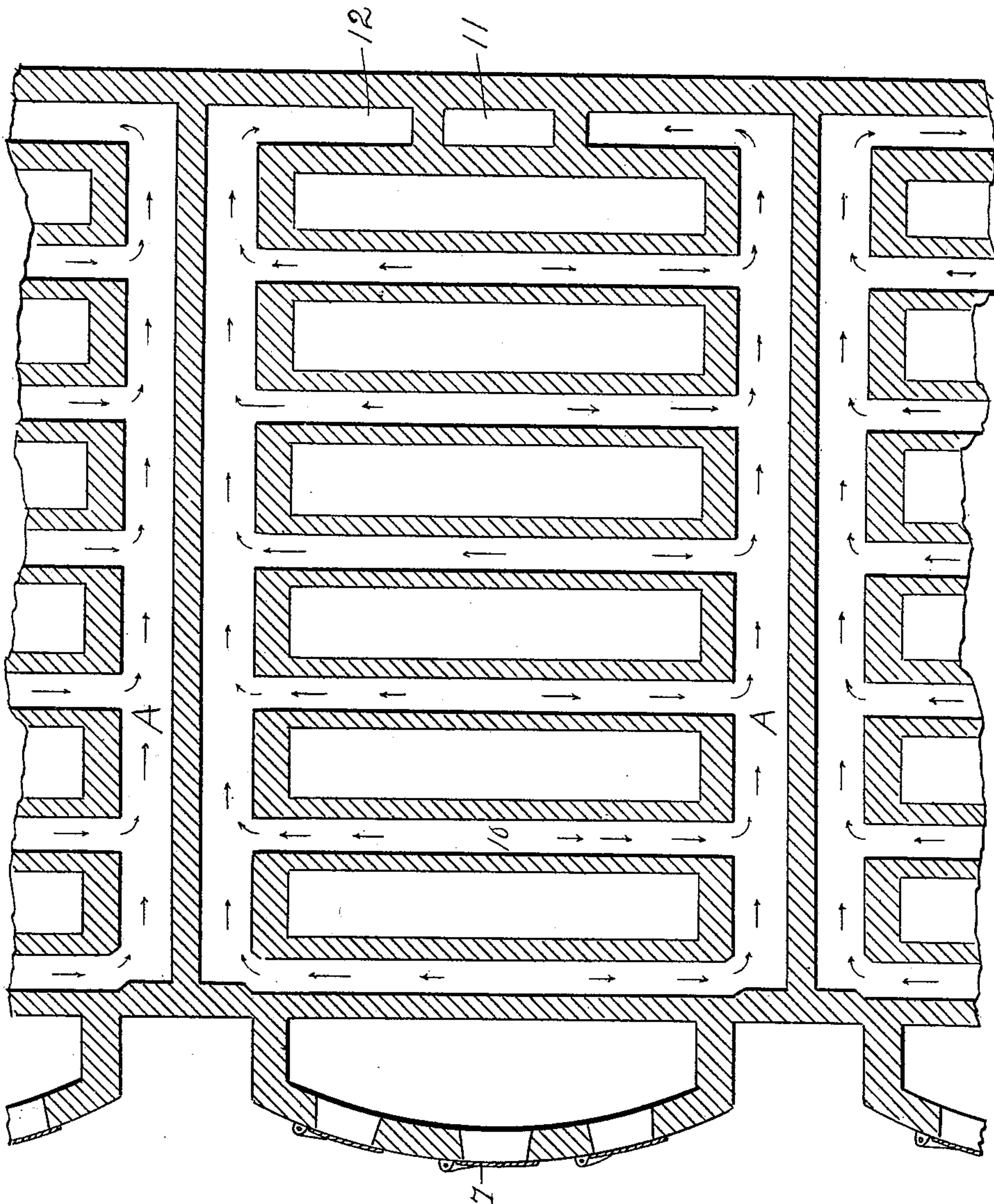
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Fig. 3.



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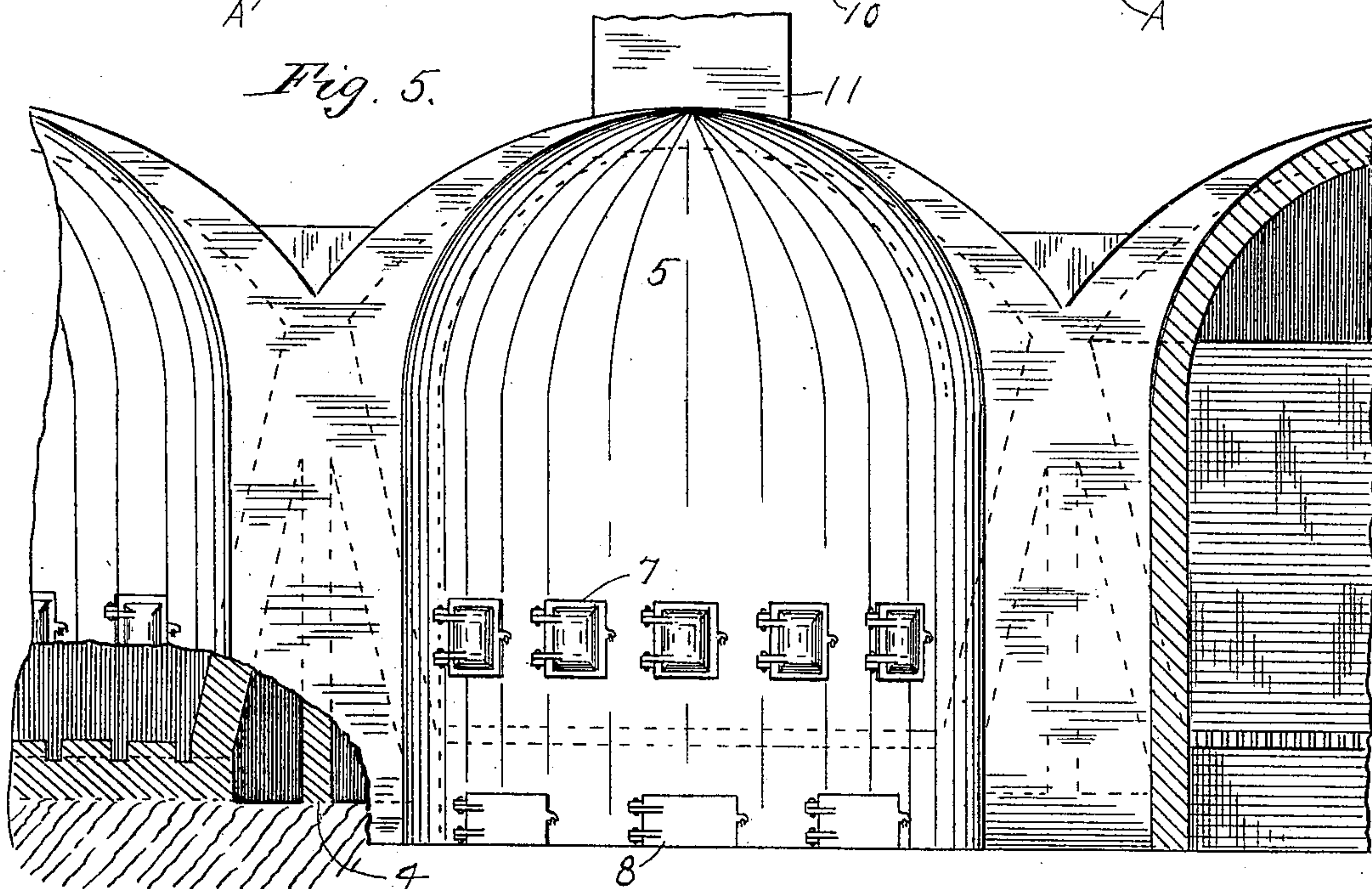
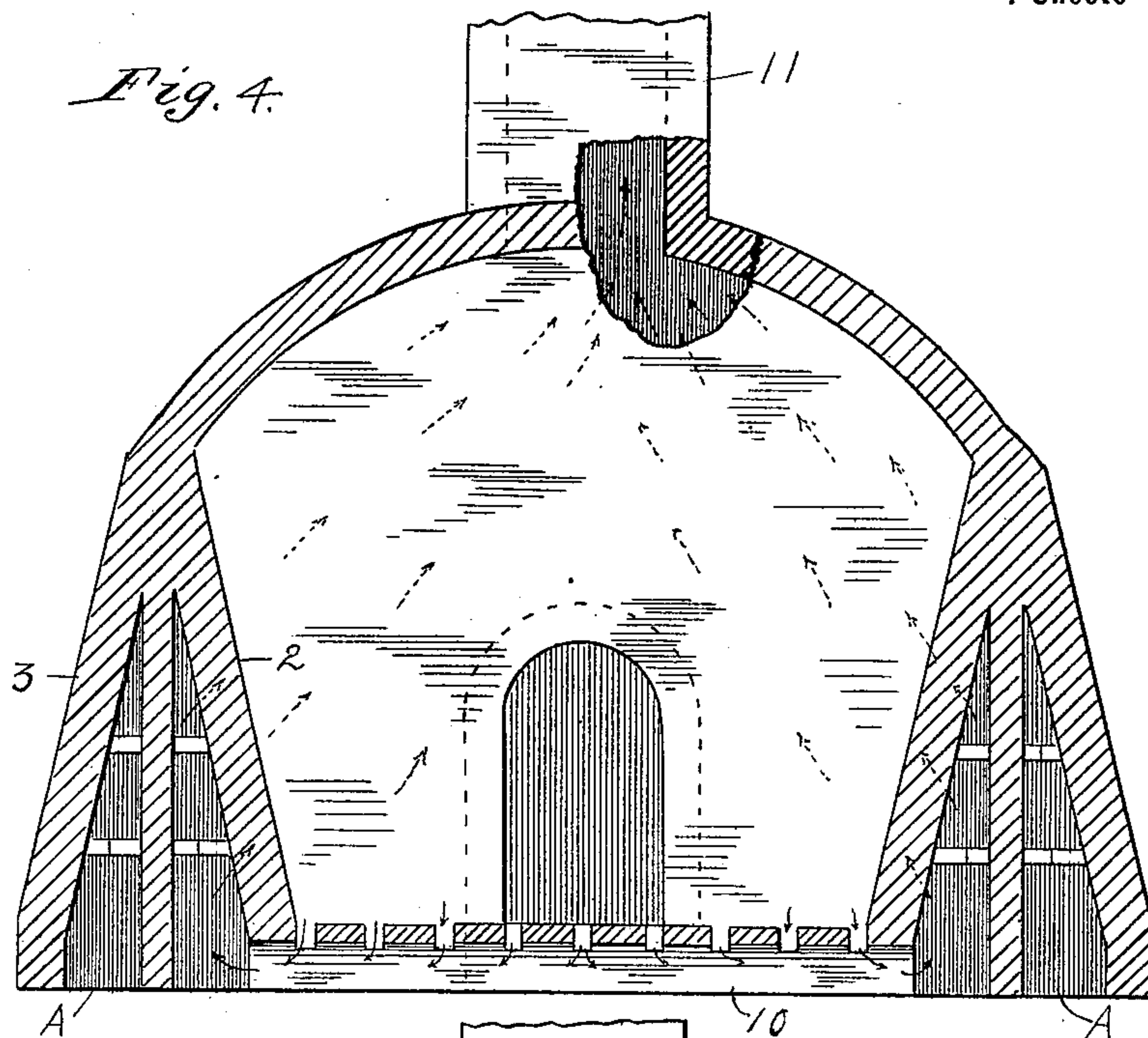
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UNITED STATES PATENT OFFICE.

FRITZ KOCH, OF ST. PAUL, MINNESOTA.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 635,935, dated October 31, 1899.

Application filed January 30, 1899. Serial No. 703,810. (No model.)

To all whom it may concern:

Be it known that I, FRITZ KOCH, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Brick-Kilns, of which
5 the following is a specification.

My invention relates to improvements in the construction of brick drying and burning kilns, its object being to utilize the waste heat of the furnace after it has been employed in
10 burning and drying the bricks to heat the walls of the kiln and to take up any cold air which may enter through cracks in the exterior wall and prevent the entrance of such cold air into the interior of the kiln.

15 My object is, further, to provide a cheaper construction of kiln than ordinarily used and to construct the same so that the use of supplementary braces for the wall may be dispensed with and so that a series of connected kilns
20 may be constructed at much less cost than independent kilns.

To this end my invention consists in the construction hereinafter particularly described and claimed.

25 In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal section through one of my improved kilns. Fig. 2 is a section on line $x^2 x^3$ of Fig. 1. Fig. 3 is a section on irregular line $x^3 x^3$
30 of Fig. 1. Fig. 4 is a cross-section, partly broken away, on line $x^4 x^4$ of Fig. 1, looking in direction of arrows; and Fig. 5 is a front elevation of a series of connected kilns, showing the kiln to the right in section on line $x^5 x^5$
35 of Fig. 1 and the kiln to the left broken away on line $x^6 x^6$ of Fig. 1.

As shown in Fig. 4, the kiln is formed with inner and outer side walls 2 and 3, respectively. The space between the inner and
40 outer walls constitute longitudinal canals separated by a partition 4. The inner walls 2 are inwardly inclined and the outer walls 3 inclined outwardly, so as to serve as braces for the kiln, as shown in Fig. 4, and also to
45 lessen the work and expense of constructing additional connecting-kilns. Against the front of the kiln is arranged a dome-wall 5, separated from the interior by a vertical fire-wall 6. The upper portion of the dome-wall
50 is inclined inwardly, restricting the depth of the space between it and the fire-wall. Arranged in the lower portion of the space be-

tween the dome-wall and fire-wall are grates 6½, a series of fire-doors 7 being formed in the dome-wall above the grate and suitable
55 ash-doors 8 below the grate.

The bottom of each kiln, as shown best in Figs. 1 and 4, is provided with a series of longitudinal flues 9 and transverse flues 10. The longitudinal flues open into the oven and
60 cut through the tops of the transverse flues, as shown in Fig. 1. The transverse flues open at their ends into the longitudinal canals A between the side walls of the kiln. As shown
in Figs. 4 and 5, the canals extend upwardly
65 a considerable distance between the walls and also extend from the front to the rear of the kiln, connecting at the rear ends with the chimney 11 by passages 12. Underneath the
chimney 11 of each oven is an opening 13,
70 through which the brick is carried into the kiln and is closed by a suitable door 14.

In use the bricks or other articles to be treated are placed within the kiln. The fire then being started, the products of combustion
75 will rise over the top of the fire-wall, passing downward through the brick or other articles and through the longitudinal flues into the transverse flues, passing from the transverse
flues into the canals between the walls of the
80 kiln, and from the canals to the chimney. By means of the canals between the walls of the kiln the heat that would be otherwise wasted is utilized to thoroughly heat the walls. These
canals thus reduce the difference in tempera-
85 ture between the inside and outside of the walls and prevent cracking and also serve to take up any cold air that may enter through small cracks in the outer wall and carry it,
with the products of combustion, to the
90 chimney.

The arrangement of the fire-dome wall outside of the front end of the kiln with the top inclined toward the fire-wall and the series of doors in the front wall of the dome are also
95 important features of my invention, as they combine to make perfect combustion, and thereby prevent discoloration or flashing of the brick or clay ware. The firing is done from alternate doors, so that in the fire-box
100 there will be a portion of fresh coal in front of each alternate door, separating the white burning coal that has previously been fed through the other doors. When the burning

coal has thrown off most of its volatile gases, more air than is necessary for its complete combustion will pass therethrough, which will mix with the surplus unburned gases of the fresher coal to cause perfect combustion.

I claim—

1. In a kiln of the class described, the combination with the fire-box and chimney and burning-chamber, of the inner and outer walls oppositely inclined, the canals between said walls extending the length of the kiln and connecting the interior thereof with the chimney.

2. In a kiln of the class described, the combination with the kiln and fire-box, of the longitudinal flues in the floor of the oven, the connected transverse flues, and the longitudinal canals upon the exterior of the oven-walls, said canals connecting the transverse flues and chimney.

3. In a kiln of the class described, the combination with the side walls and the top wall or roof supported by said side walls, of the dome-shaped wall arranged against the end of said side walls and top.

4. In combination with a kiln of the class described, the top of which is supported by the side walls, an arched or dome-shaped wall arranged against the end of the kiln with the inwardly-inclined top of said dome-wall abutting against the top wall of the kiln.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

FRITZ KOCH.

Witnesses:

H. S. JOHNSON,

ELGIE H. EVANS.