

A. G. McKEE.
BLAST FURNACE STOVE.
APPLICATION FILED APR. 12, 1910.

983,633.

Patented Feb. 7, 1911.

4 SHEETS—SHEET 1.

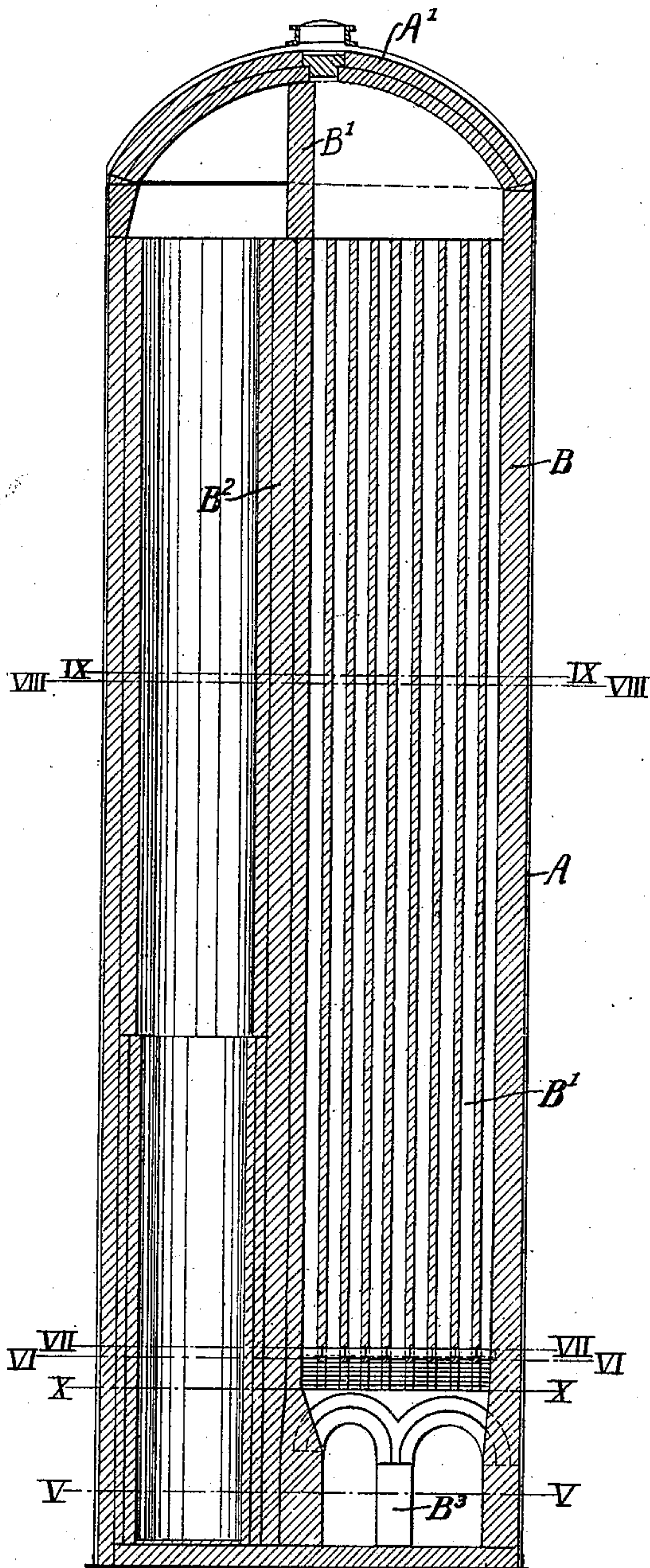


Fig. 1.

Witnesses:
Charles Eisele
Winifred Waltz

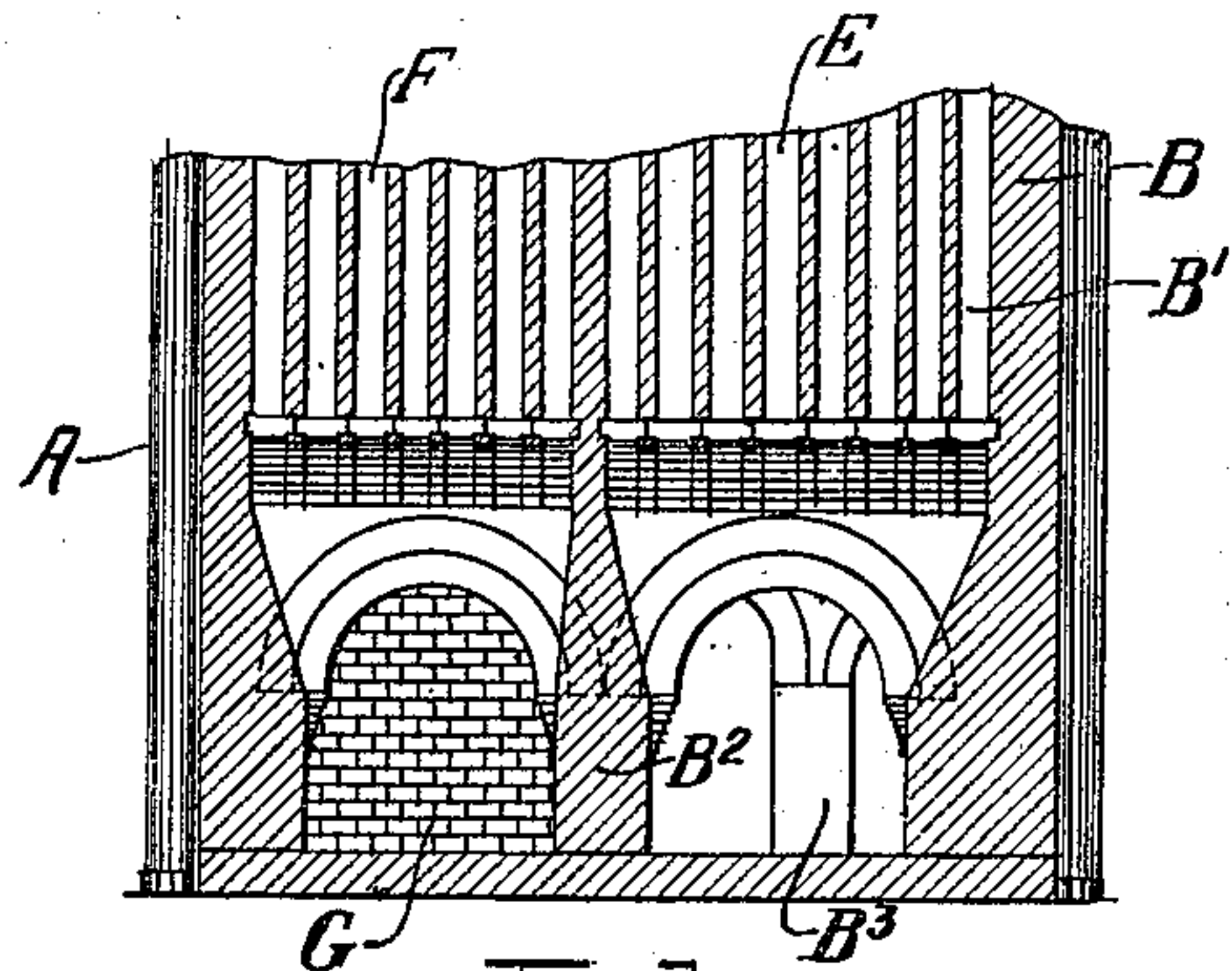


Fig. 2.

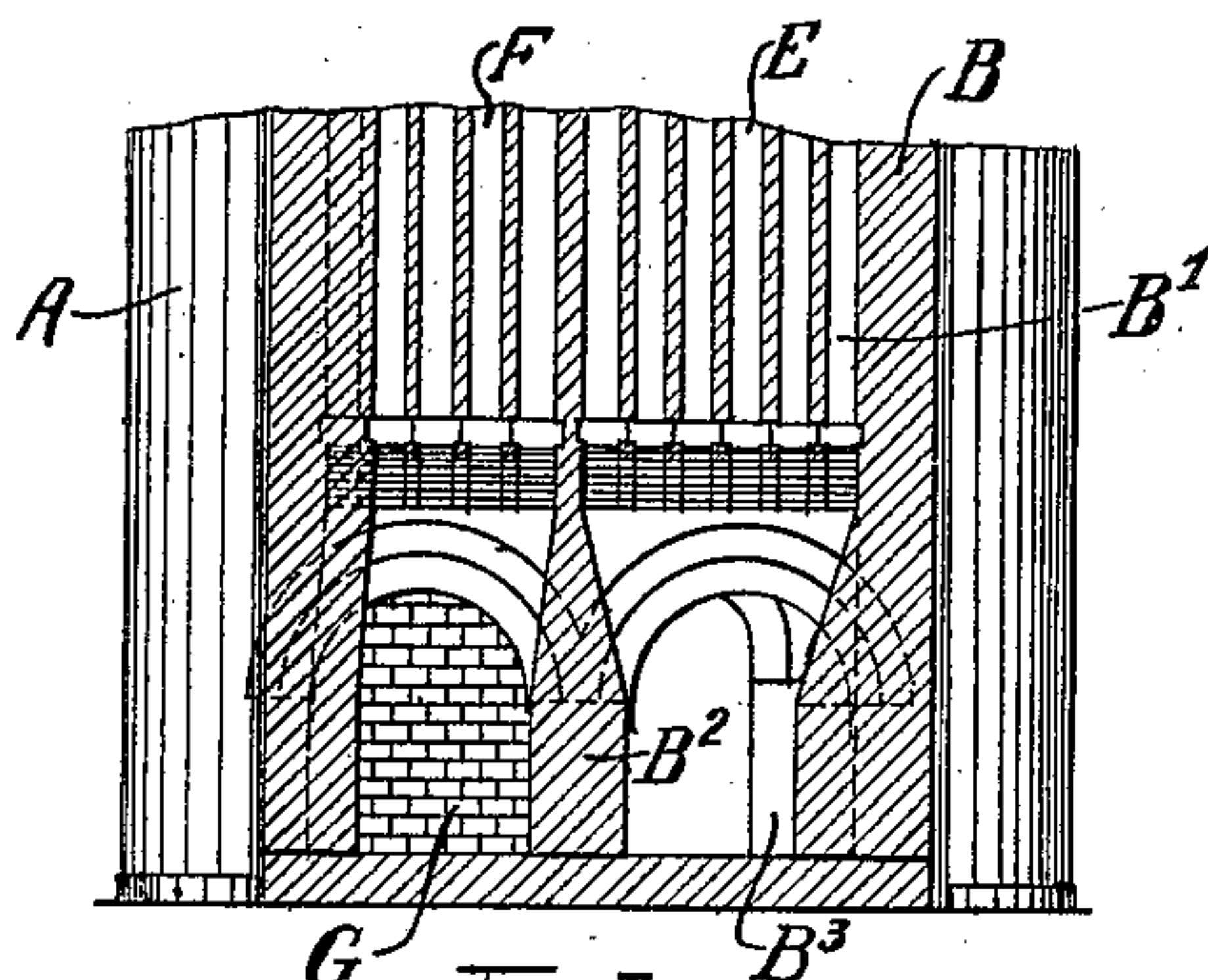


Fig. 3.

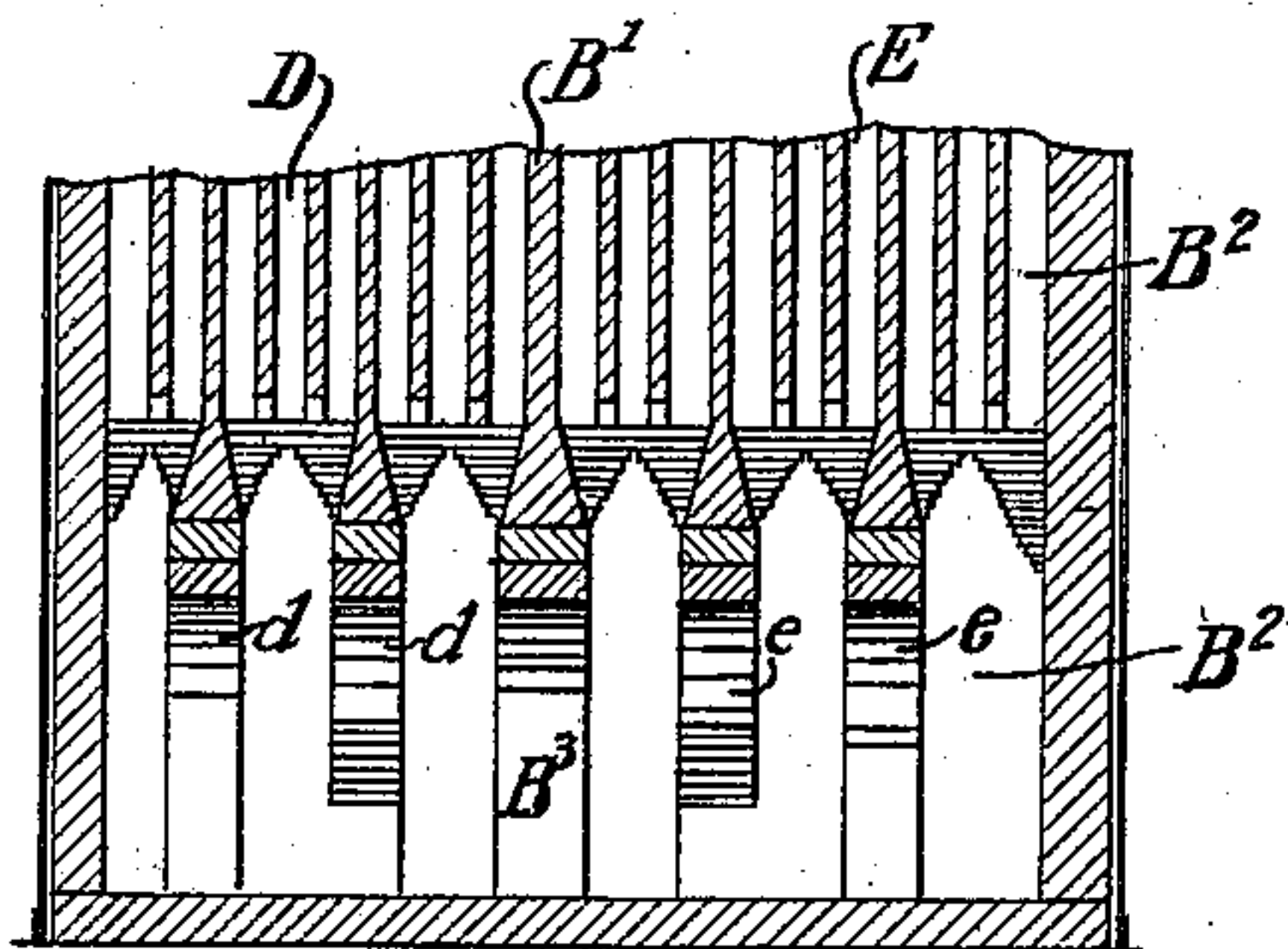


Fig. 4.

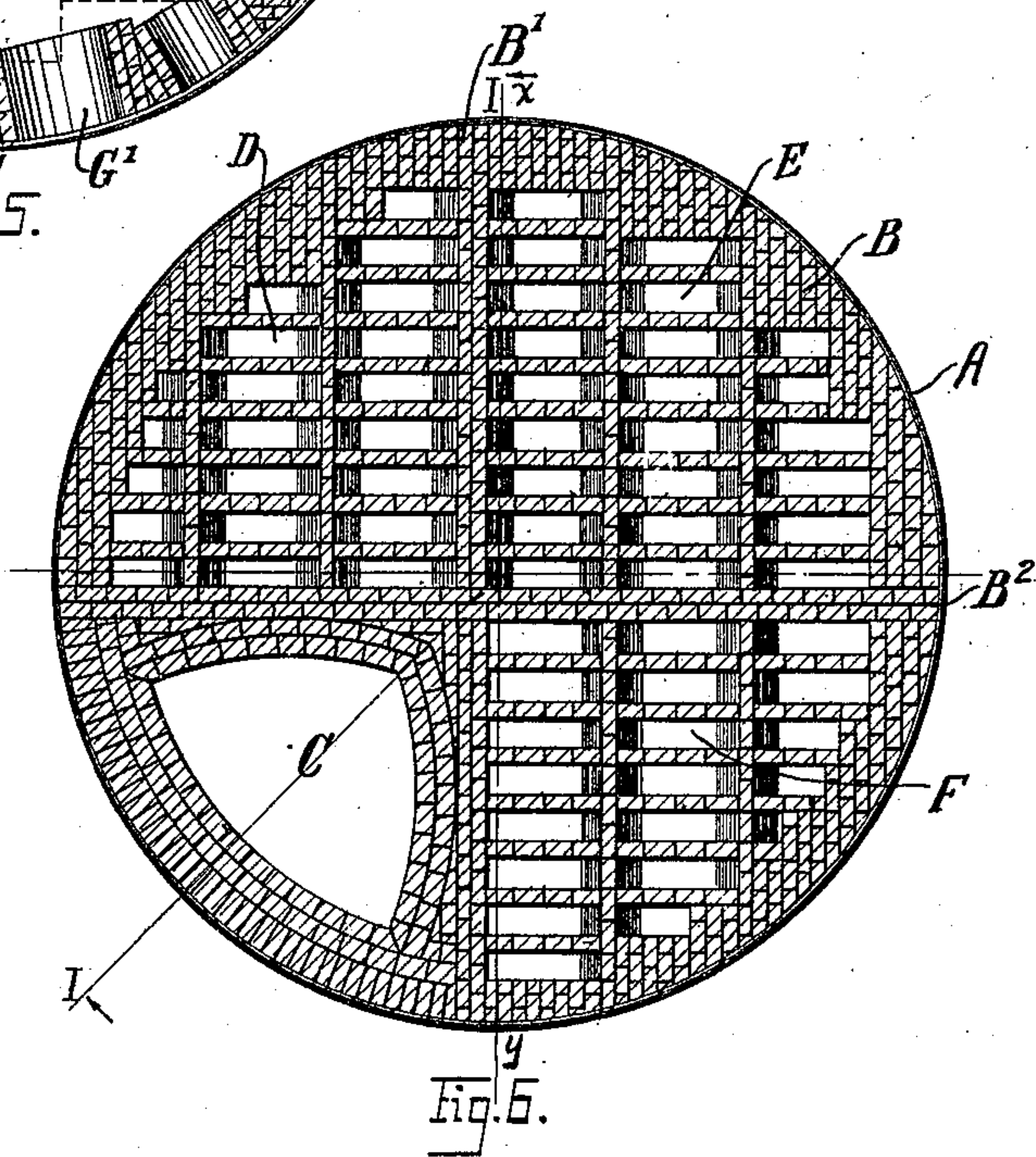
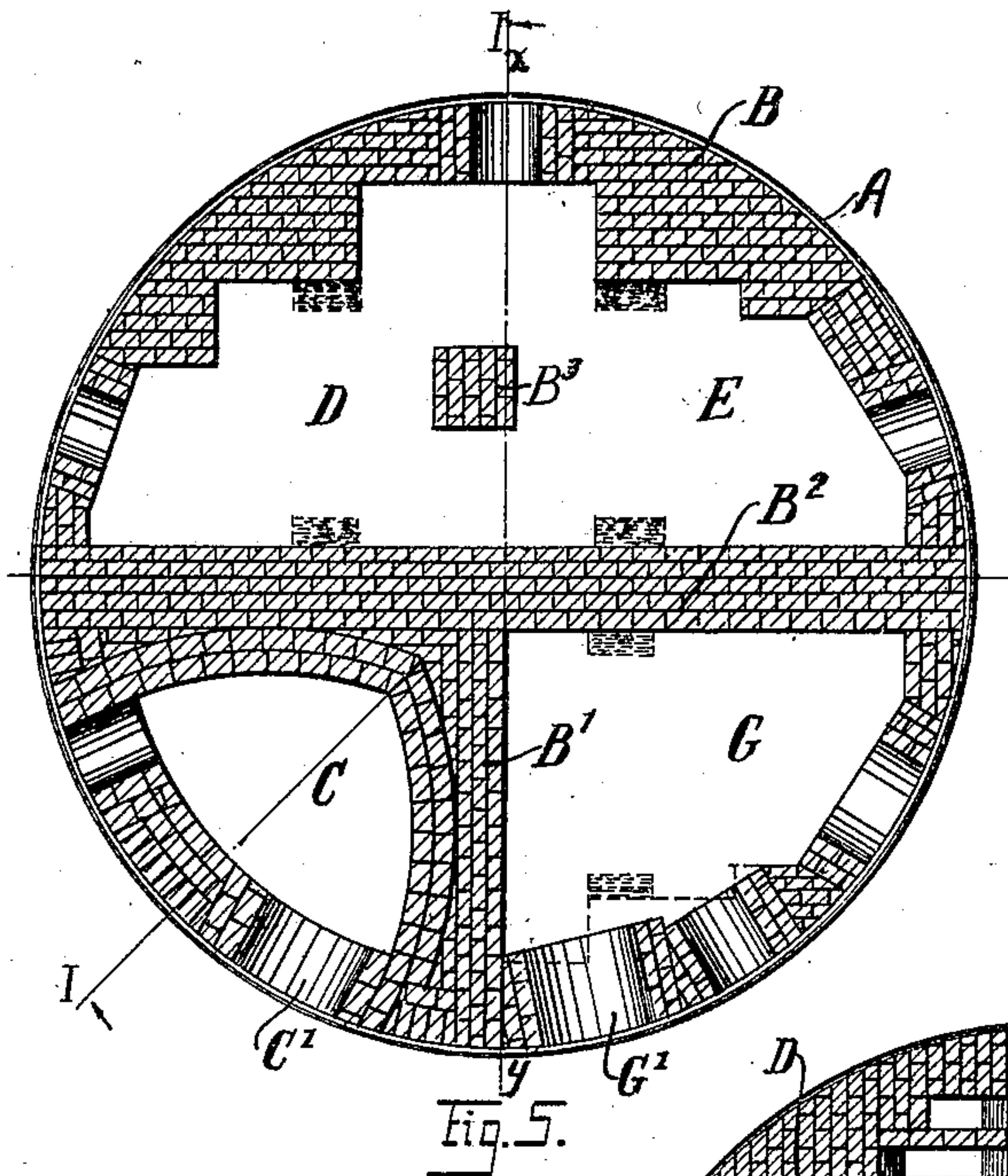
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A. G. McKee,
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

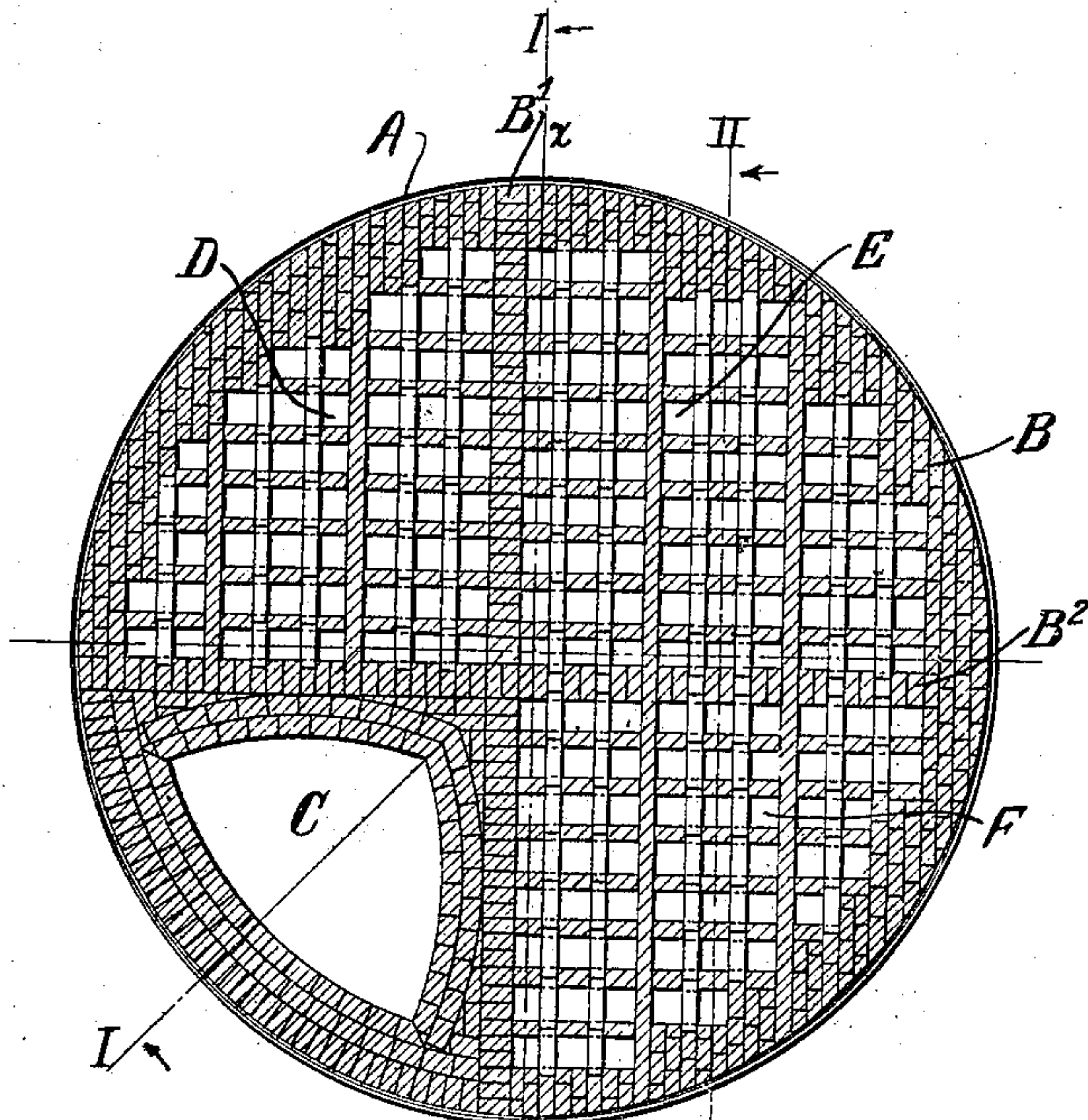


Fig. 7.

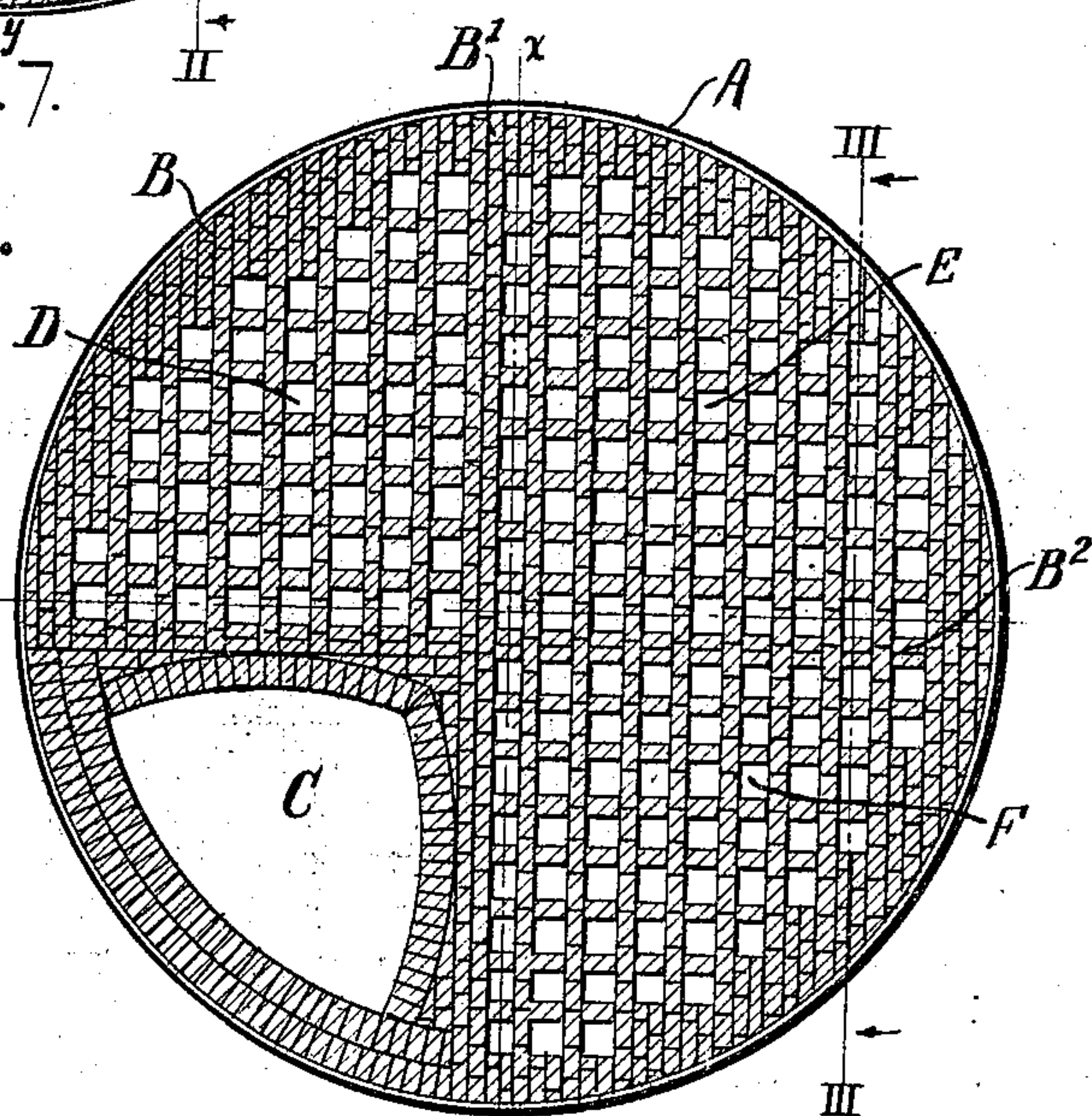


Fig. 8.

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4 SHEETS—SHEET 4.

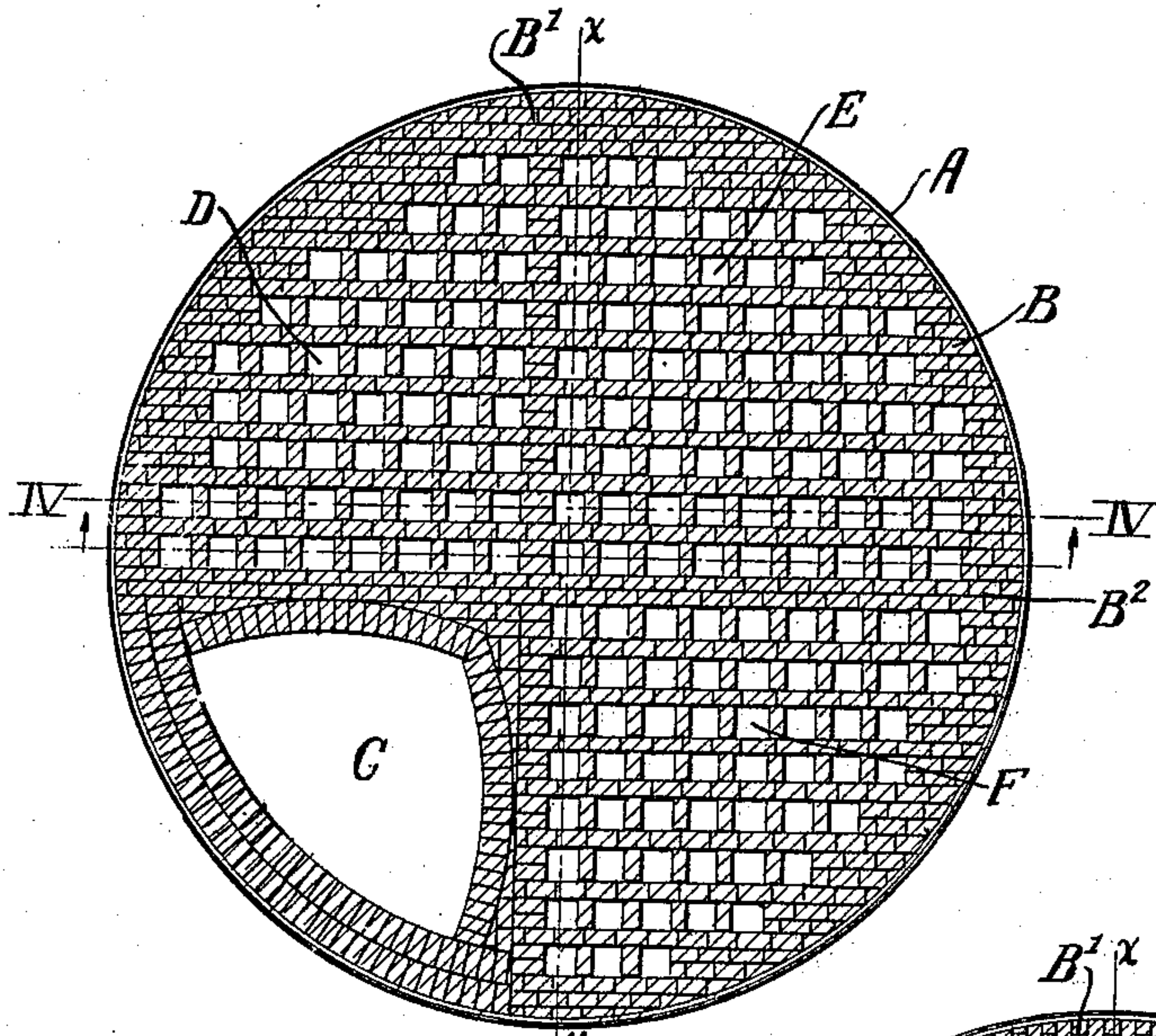


Fig. 9.

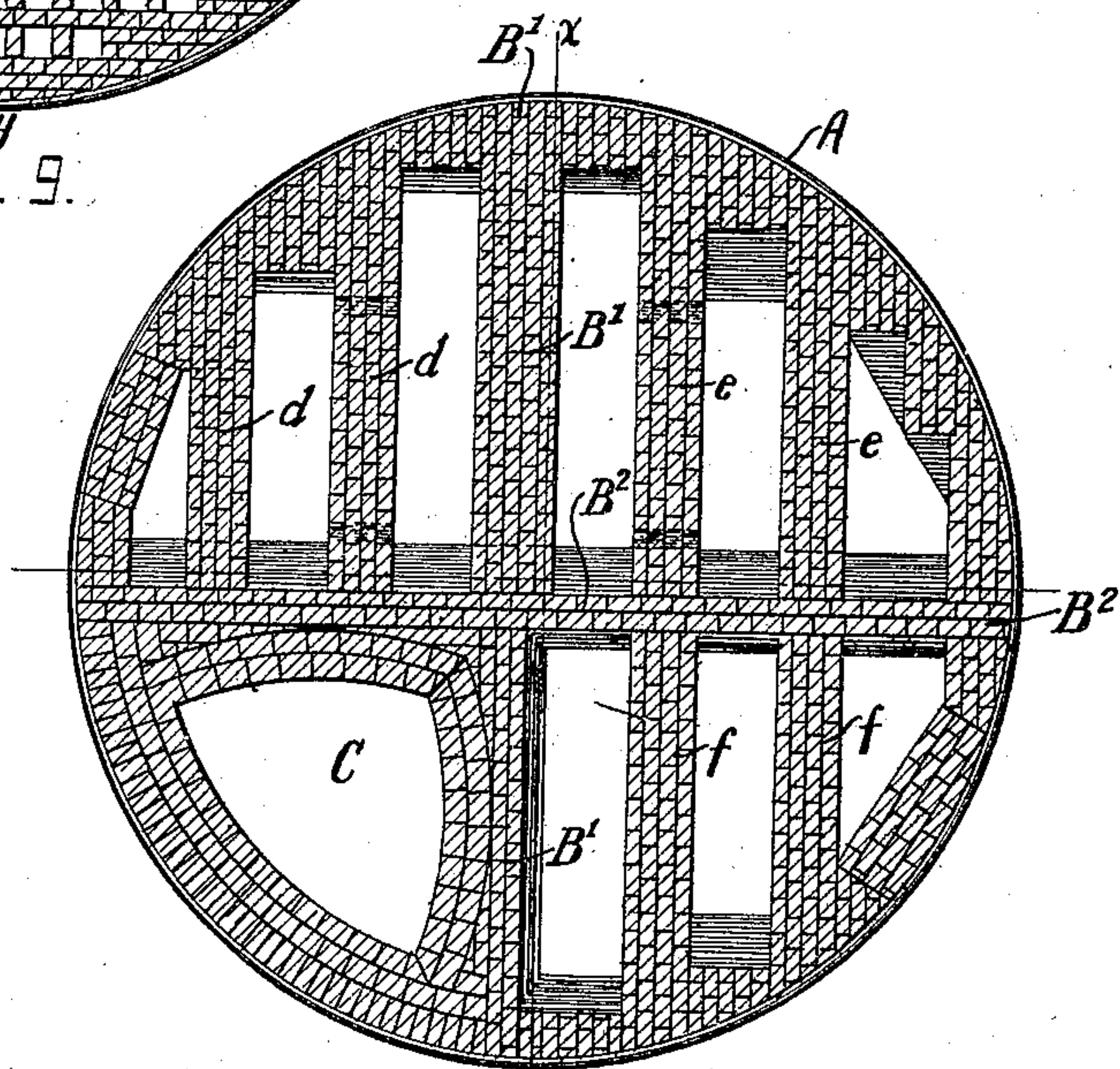


Fig. 10.

WITNESSES:
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UNITED STATES PATENT OFFICE.

ARTHUR G. McKEE, OF CLEVELAND, OHIO.

BLAST-FURNACE STOVE.

983,633.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed April 12, 1910. Serial No. 554,988.

To all whom it may concern:

Be it known that I, ARTHUR G. McKEE, a citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Blast-Furnace Stoves, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to hot-blast stoves, its object being to provide a construction which is economical in its structure and efficient in its operation.

The said invention consists of means hereinafter fully described and particularly set forth in the claims.

The annexed drawings and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of various mechanical forms in which the principle of the invention may be applied.

In said annexed drawings: Figure 1 is an axial section of a stove embodying my invention, taken upon the plane indicated by line I—I, in Fig. 5. Fig. 2 is a fragmentary vertical detail section of the lower portion of the stove, taken upon the plane indicated by line II—II in Fig. 7. Fig. 3 is a fragmentary vertical section of the lower portion of the stove, taken upon the plane indicated by line III—III in Fig. 8. Fig. 4 is a fragmentary vertical section of the lower portion of the stove, taken upon the plane indicated by line IV—IV in Fig. 9. Figs. 5, 6, 7, 8, 9 and 10 are horizontal sections on an enlarged scale, taken upon the planes indicated respectively by lines V—V, VI—VI, VII—VII, VIII—VIII, IX—IX and X—X, in Fig. 1.

The form of stove embodying my invention, and as illustrated by the drawings, is of general cylindrical form, and its outer lateral surface is constructed of steel plates forming the shell A, in the usual manner. This steel shell incloses the brickwork B forming the interior structure of the stove. The outer inclosing cylindrical lateral walls of the structure are built of brick laid in a manner hereinafter described, and the interior chamber formed thereby is divided by vertical intersecting walls B' and B², in the structure illustrated by the drawing, thereby forming four vertical passes, C, D,

E and F, one such pass being completely included between each two adjacent radial sections of such walls, as shown in Figs. 6, 7, 8 and 9. The cross-sectional area of each such pass is therefore included within an angle formed by two intersecting planes, and each pass as a whole is included within such angle. The wall B² extends from the bottom of the stove upwardly and terminates some distance from the dome A' of the stove, and one-half the wall B' extends to the bottom of the stove and the other half terminates some distance above such bottom, the whole wall extending up to and joining the dome, as shown in Fig. 1. That part of wall B' which extends to the bottom is adjacent to the lower end of pass C, thus cutting off communication between such lower end and pass F. The pass C therefore communicates at the top with the upper end of pass D, the latter communicates at the bottom with the lower end of pass E, the latter communicates at the top with the upper end of pass F, and the lower portion of the latter communicates with the chamber G, Fig. 5, which is provided with the outlet opening G', from which the gases passing through the stove are discharged or drawn.

The pass C has its outer and interior walls formed of radial brick, as shown in Figs. 5 to 10 inclusive, and the interior vertical space formed thereby is entirely unobstructed. The lower end of this pass is connected with the inlet C', and the pass itself forms the combustion chamber of the stove. The remaining passes are all intersected by checkerwork, and the outer circular walls of such passes are formed of brick laid in courses parallel with and at right angles to a given plane $x-y$, which is parallel with the dividing wall B'.

Immediately below the checkerwork in the passes D, E and F, are formed supporting arches d , e and f , upon which such checkerwork rests. These arches are parallel with each other, and also parallel with the plane $x-y$, the checkerwork being laid in courses parallel with and at right angles to this plane, and therefore parallel with the intersecting walls B' B² respectively, and parallel with the courses of brick in the outer walls of the passes. That part of the wall B' separating the passes D and E is supported by a double arch, shown in Figs. 2 and 3, whose juncture is supported by a

pillar B³, Figs. 1 and 5. The lower extremities of the walls B' and B² are suitably enlarged in cross-section as shown, so as to form a proper foundation for the main supported portion thereof. In this manner, a stove construction is provided in which a maximum heating surface is obtained by the use of a minimum number of special brick, such as the radial brick used in connection with the structure of the walls of the pass C, the far greater portion of the brick used being of standard rectangular size. In this way, brick of most economical and cheap form are permitted to be used, without impairing the economical structure of the stove, and efficient operation thereof.

What I claim and desire to secure by Letters Patent is:

1. A hot blast stove of circular cross section and provided with intersecting vertical walls forming a vertical pass included wholly within the angle formed by said walls; said pass being intersected by checkerwork formed of courses of brick laid at right angles with respect to each other; the outer circular wall of such pass and said intersecting walls being formed of brick laid in courses parallel with the courses of checkerwork brick.

2. A hot-blast stove of circular cross-section and having a plurality of vertical passes connected in series, each having its cross-sectional area wholly included within an angle formed by two intersecting planes.

3. A hot-blast stove of circular cross-section, and having a plurality of vertical passes connected in series, each included wholly within the angle formed by two intersecting vertical planes, said passes being intersected by checkerwork.

4. A hot-blast stove of circular cross-section having a plurality of vertical passes each included wholly within the angle formed by two intersecting vertical planes, one of said passes being unobstructed to form the combustion chamber; and the others being intersected by checkerwork.

5. A hot-blast stove of circular cross-section, having a plurality of vertical walls whose planes intersect, said walls forming a plurality of passes connected in series.

6. A hot-blast stove of circular cross-section having a plurality of vertical intersecting walls forming a plurality of passes connected in series.

7. A hot-blast stove of circular cross-section having a plurality of vertical intersecting walls forming a plurality of passes connected in series; and checkerwork intersecting such passes.

8. A hot-blast stove of circular cross-section having a plurality of walls whose planes intersect, said walls forming a plurality of passes connected in series; and checkerwork intersecting such passes.

9. A hot-blast stove of circular cross-section having a plurality of vertical intersecting walls forming a plurality of passes connected in series; one of said passes being unobstructed to form the combustion chamber, and the other of said passes being intersected by checkerwork.

10. A hot-blast stove of circular cross-section, having two intersecting vertical walls placed at right angles with each other, and forming a plurality of vertical passes, connected in series; one such pass being included between each two adjacent radial sections of such walls.

11. A hot-blast stove of circular cross-section having two intersecting walls placed at right angles with each other, forming a plurality of vertical passes; one such pass being included between each two adjacent radial sections of such walls; one of said passes being unobstructed to form a combustion chamber, and the remainder of said passes being intersected by checkerwork.

12. A hot-blast stove of circular cross-section having two intersecting walls placed at right angles with each other, forming a plurality of vertical passes connected in series; one such pass being included between each two adjacent radial sections of such walls; one of said passes being unobstructed to form a combustion chamber, and the others being intersected by said checkerwork.

13. A hot-blast stove of circular cross-section having two intersecting walls placed at right angles with each other, forming a plurality of vertical passes, connected in series, one such pass being included between each two adjacent radial sections of such walls; said passes being intersected by checkerwork formed of courses of brick laid at right angles with each other.

14. A hot-blast stove of circular cross-section having two intersecting walls placed at right angles with each other, forming a plurality of vertical passes connected in series, one such pass being included between each two adjacent radial sections of such walls; said passes being intersected by checkerwork formed of courses of brick laid at right angles with each other, and respectively parallel with said walls.

15. A hot-blast stove of circular cross-section having two intersecting walls forming a plurality of vertical passes, connected in series; and checkerwork intersecting such passes and formed of courses of brick laid at right angles with each other, the outer circular portion of each of said passes being formed of brick laid parallel with such series of checkerwork courses respectively.

16. A hot blast stove having a plurality of parallel arches forming the supports for checkerwork; vertical intersecting walls dividing such checkerwork into three passes communicating with each other laterally at

opposite ends so as to be connected in series; said walls forming a combustion chamber connected with one of said three passes at the top, whereby said chamber is connected in series with said passes.

17. A hot-blast stove of circular cross-section, and having its outer walls provided with two intersecting interior walls; one such wall extending to the dome of the stove, and the other of said walls extending to the floor, whereby a plurality of vertical passes is formed connected in series; one of said passes being unobstructed to form a combustion chamber, and the others of said passes being intersected by checkerwork; the outer circular walls of the passes so intersected being formed by a brickwork structure in which the bricks are laid in courses laid at right

angles with each other; said checkerwork being formed of courses of brick laid at right angles with each other, and parallel respectively with the courses of brick in said outer wall structure; and parallel arches supporting such checkerwork.

18. A hot blast stove having more than two passes containing checkerwork, including in its structure, walls whose planes intersect; the bricks of the checkerwork and surrounding walls being laid parallel with and at right angles to a given vertical plane.

Signed by me, this 11th day of April, 1910.

ARTHUR G. McKEE.

Attested by—

WINIFRED WALTZ,
CURT B. MUELLER.