

No. 748,242.

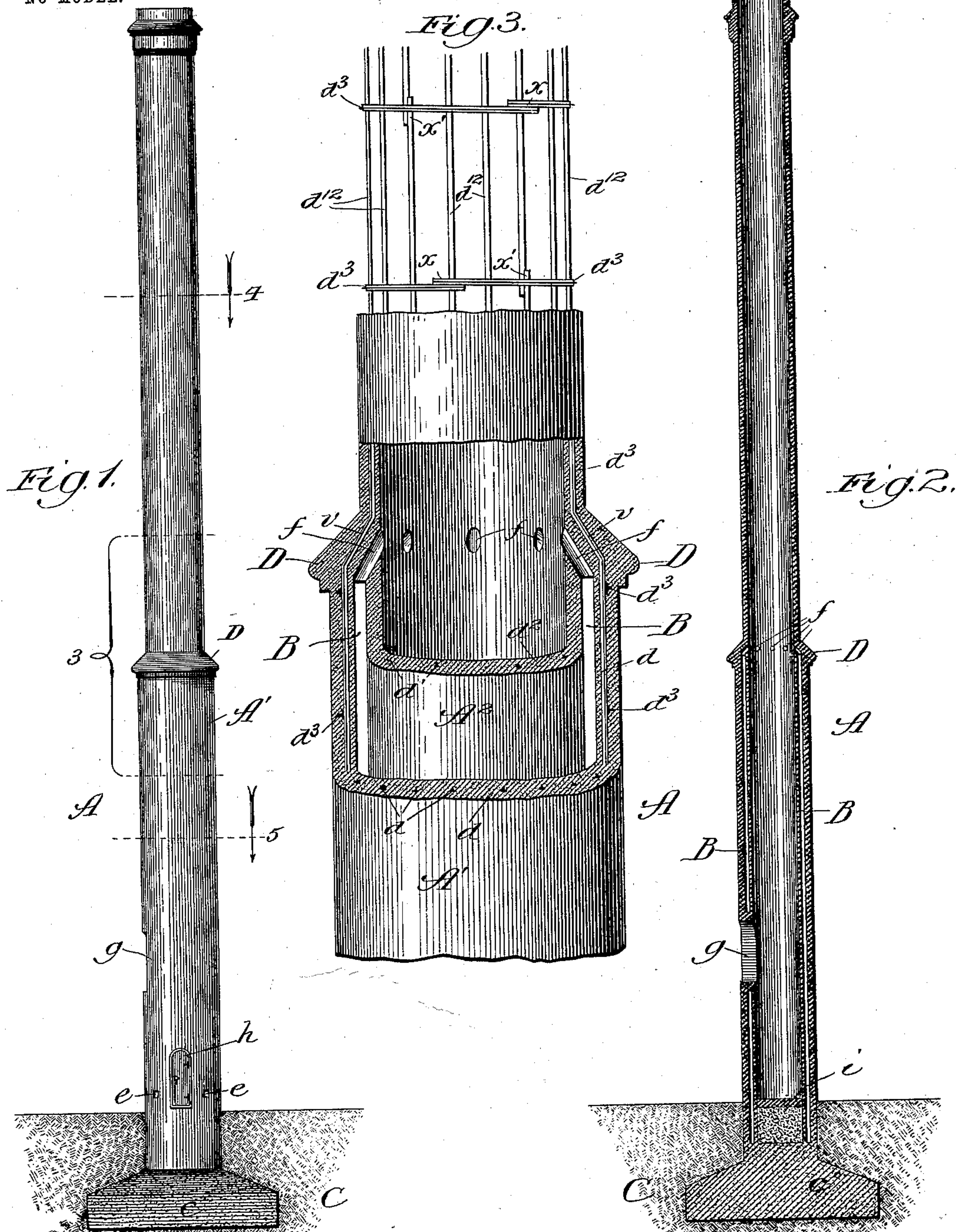
PATENTED DEC. 29, 1903.

C. WEBER.
CHIMNEY.

APPLICATION FILED MAY 8, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
Ed. Gaylord.
John Enders Jr.

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3 SHEETS—SHEET 2.

Fig. 4.

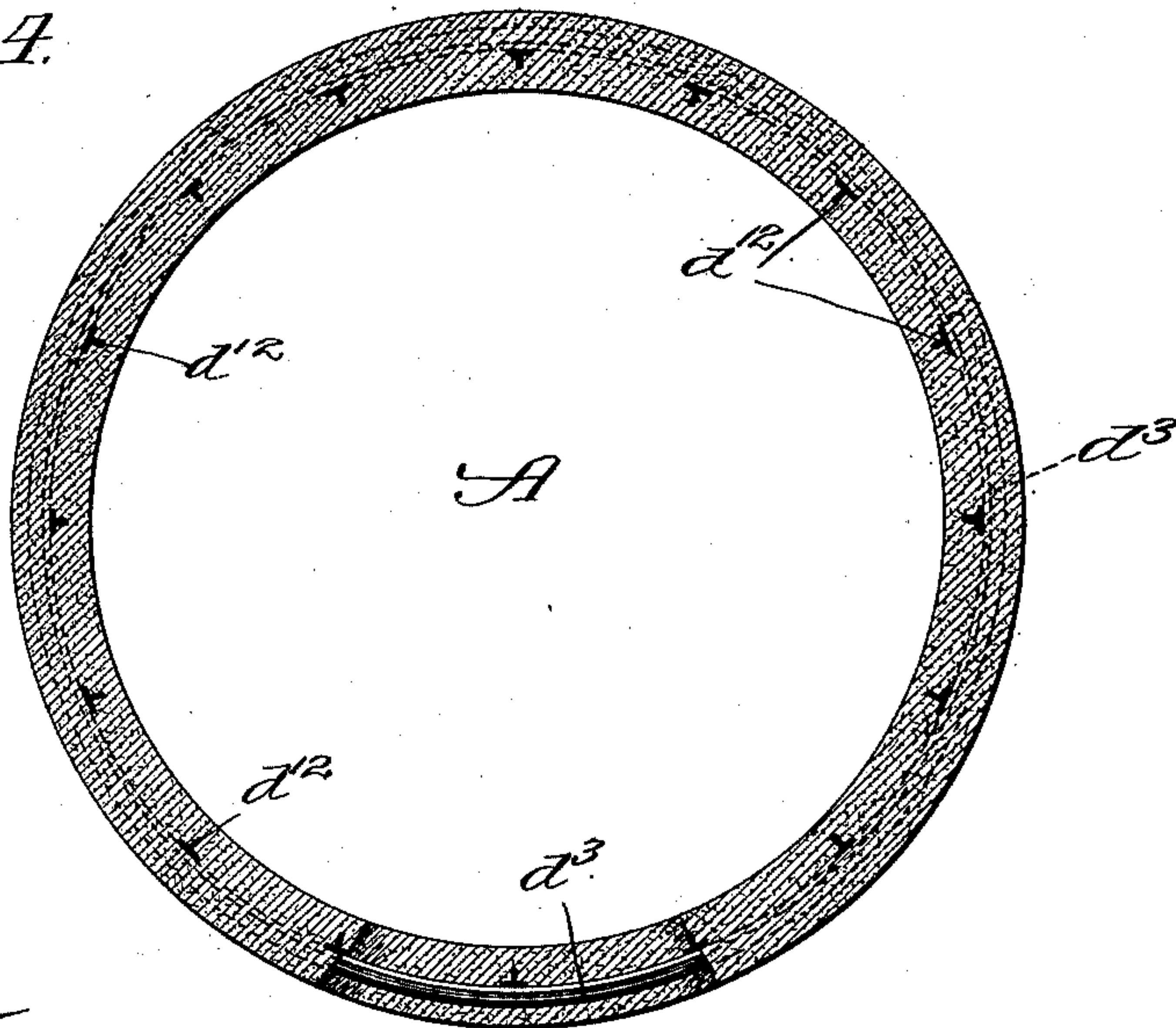
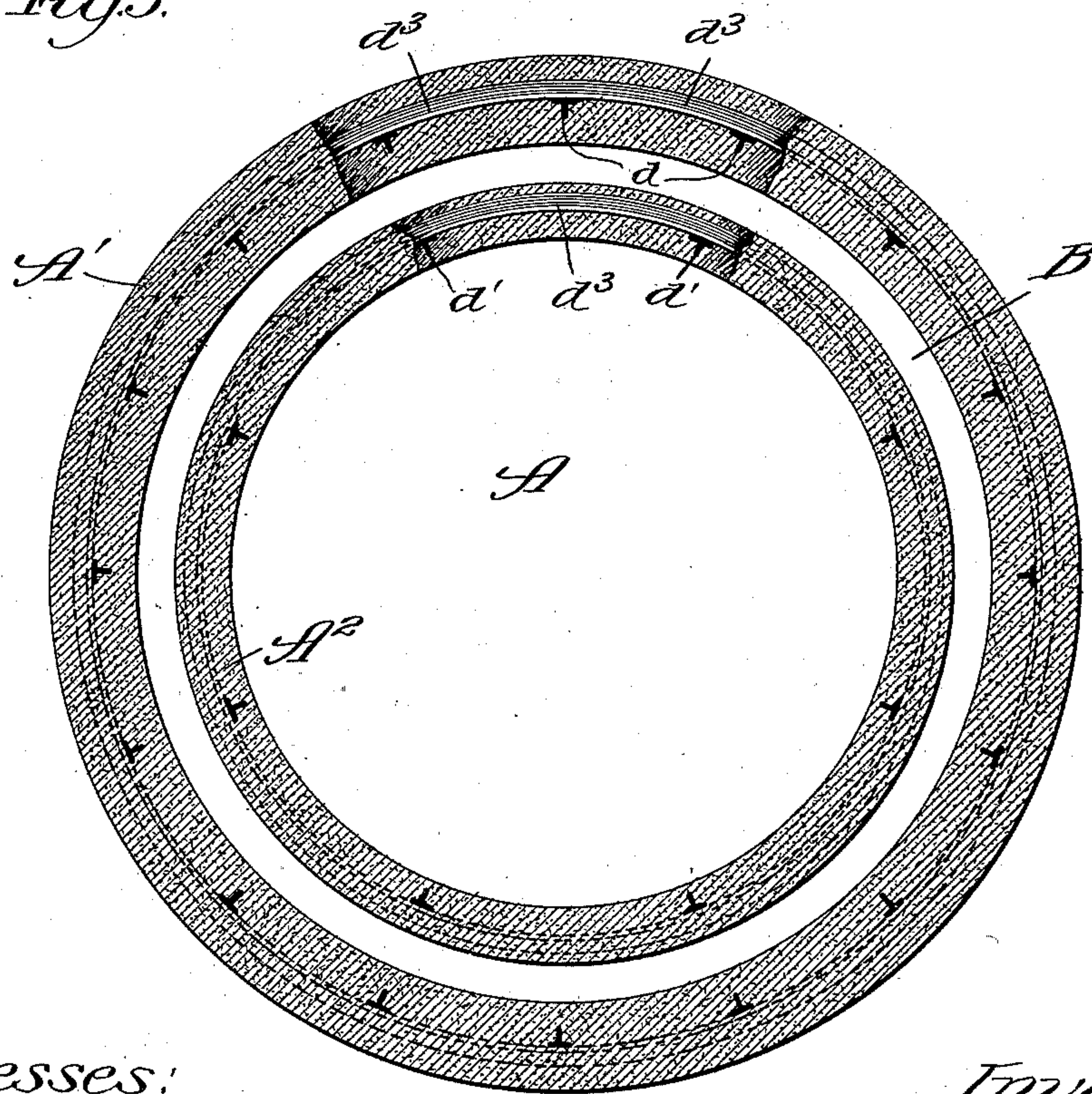


Fig. 5.



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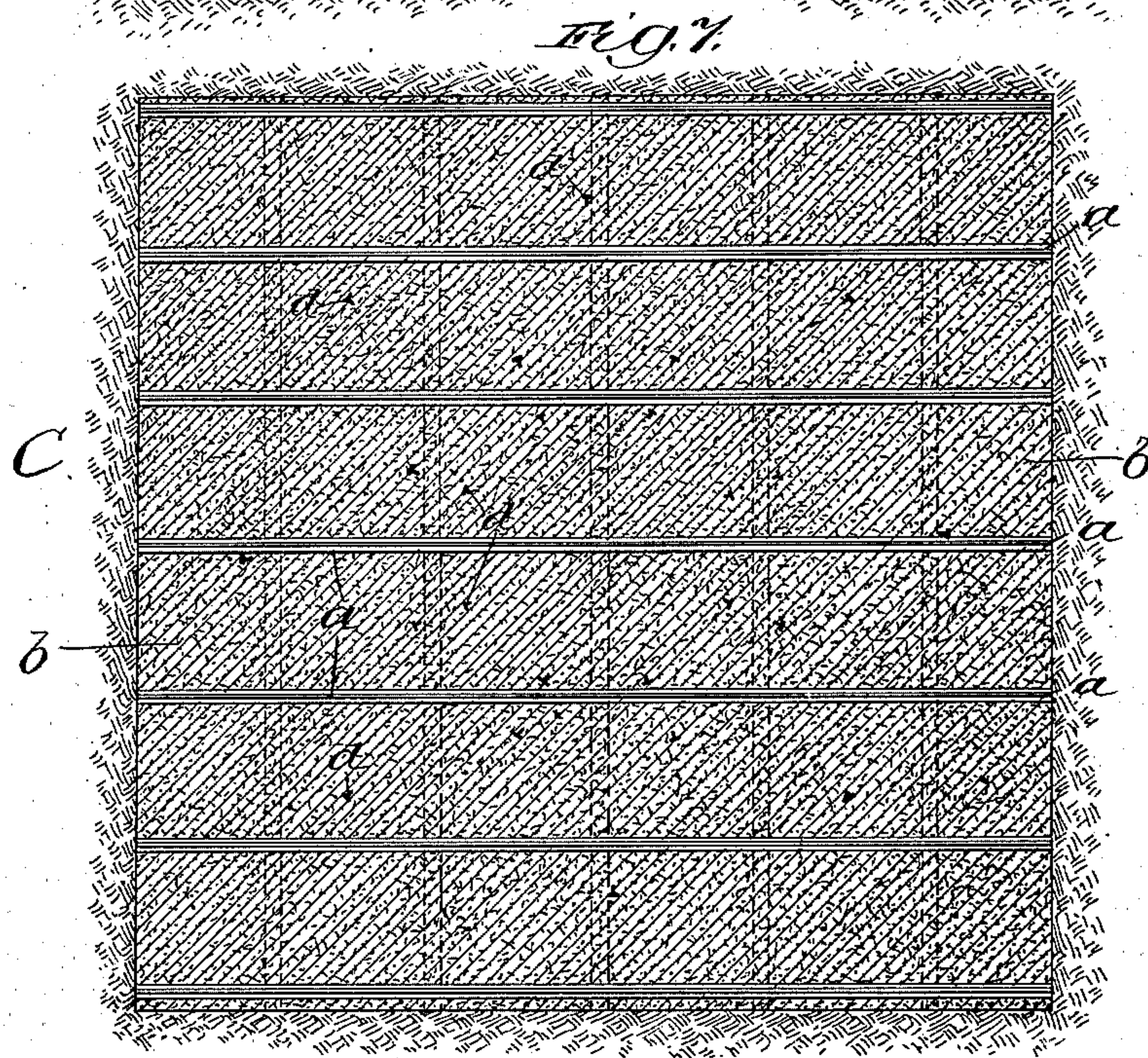
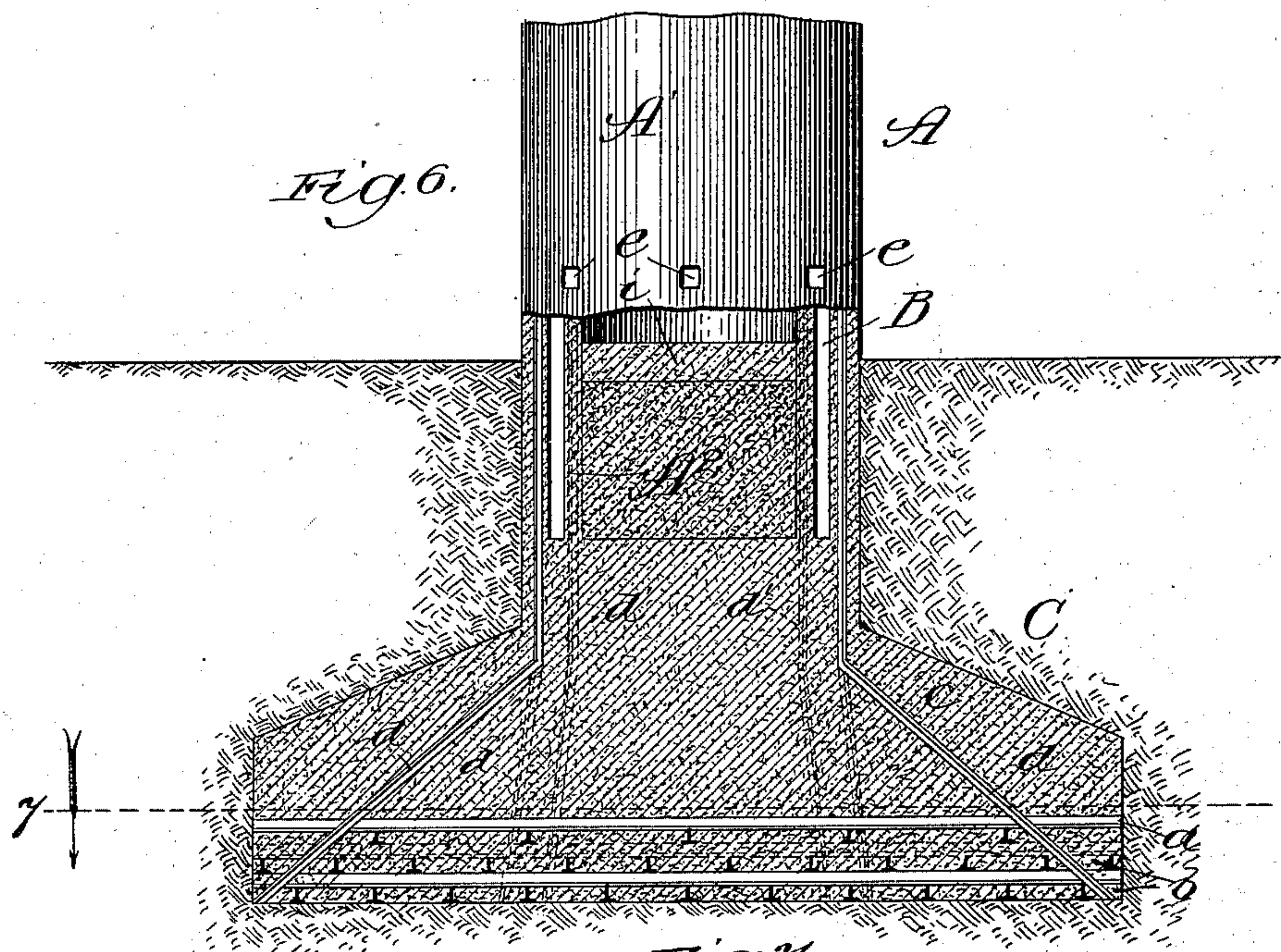
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3 SHEETS—SHEET 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

CARL WEBER, OF CHICAGO, ILLINOIS.

CHIMNEY.

SPECIFICATION forming part of Letters Patent No. 748,242, dated December 29, 1903.

Application filed May 8, 1903. Serial No. 156,148. (No model.)

To all whom it may concern:

Be it known that I, CARL WEBER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
 5 invented a new and useful Improvement in Chimneys, of which the following is a specification.

My invention relates to the improvement of the construction of large chimneys of the character employed in connection with manufacturing plants; and it consists in the general construction of the chimney whereby it is provided about its lower section with a circumferential air-space open at its base to the
 15 outer air and leading at its upper end into the chimney-flue at the base of the upper single chimney-section; and it also consists in the means I employ for the structure, involving concrete reinforced by structural metal beams
 20 embedded in it.

Referring to the accompanying drawings, Figure 1 shows my improved chimney by a view in side elevation. Fig. 2 is a vertical section; Fig. 3, an enlarged, broken, and
 25 partly-sectional view, diagrammatic in its nature, of that portion of the chimney contained between the ends of the bracket 3 on Fig. 1; Fig. 4, a section taken at the line 4 on Fig. 1 viewed in the direction of the arrow and enlarged; Fig. 5, a section taken at the line 5
 30 on Fig. 1 viewed in the direction of the arrow and enlarged; Fig. 6, a broken enlarged view showing the base or foundation of the chimney in sectional elevation; and Fig. 7 a diagrammatic plan view of the chimney base or foundation, taken at the line 7 on Fig. 6 and viewed in the direction of the arrow.

The primary feature of my improvement, whatever the detailed construction may be
 40 of the chimney, consists in a circumferential air-space B about the portion of a chimney A extending from its base to about one-third, more or less, of its height, open near its lower end to the atmosphere and opening at or near
 45 its upper end into the flue portion of the upper section of the chimney. The provision of such an air-space enables the circulation through it about the lower section of the chimney, which is subjected to the products
 50 of combustion in their hottest condition, of air to protect it against injury from the heat and to be heated and discharged in a heated

condition into the chimney-flue, with the effect of enhancing the draft through the latter, owing to the heated condition of the air
 55 and the whirling motion which its discharge into the flue imparts therein to the products of combustion.

To construct a chimney provided with the aforesaid air-space, I prefer to employ as the
 60 materials structural-metal beams embedded in molded concrete, and the preferred details of the construction employing these materials are the following: A foundation or base C is laid, composed of intersetting layers of
 65 horizontal metal T-beams a at intervals, embedded in concrete b and surmounted by a bed of concrete c , molded into desired form, such as that represented, with the beams in staggered relation from one layer to another.
 70 Metal T-beams d , to form a circumferential series thereof for the outer wall A' of the lower section of the chimney, are embedded in the base C along their lower end portions, which are bent to extend obliquely outward,
 75 as represented in Figs. 6 and 7, the better to anchor them, and between beams a , and from the embedded portions of these beams they extend vertically upward, preferably to varying heights. To form the inner wall A'' for
 80 producing the air-space B, metal T-beams d' are embedded at their lower ends in circumferential series within the circumference described by the beams d in the concrete of the base C to extend vertically upward, preferably to varying heights. About each series
 85 of beams d and d' is molded concrete d^2 to a convenient height in each molding operation, and at intervals of, say, about three and one-half feet, more or less, I encircle the outer
 90 series of beams d with similar beams d^3 , reduced to annular form, with the ends of each preferably overlapping, as represented at x in Fig. 3. These annular beams are applied successively as the concrete is built up by
 95 molding to extend to the different points at which the annular beams are to be placed, so that each in being placed finds bearing on the top of the unfinished portion of the wall below it. As the originally-placed
 100 beams d and d' become nearly thus embedded, another vertical beam is applied to each, preferably in the lap-joint relation represented of beams d^{12} at x' in Fig. 3, and the

molding of both walls A' A² proceeds to the desired height—say about thirty-seven feet, more or less—from which point the outer beams *d* employed are bent inward to an angle, as shown at *v* in Fig. 3, to deflect them inwardly and bring the upper ends of the bent sections into coincidence with the planes of the vertical beams *d'* of the lower double-walled portion of the structure. From this point the outer beams extend vertically upward, as beams *d*¹², and have concrete molded about them to embed them, as already described, with annular beams *d*⁸ placed at intervals and more beams *d*¹² added until the upper single-walled portion of the chimney attains the desired height—say to about ninety feet, more or less—with an internal diameter of, say, about four to five feet, more or less. Where the beams *d* are deflected to the angle as at *v*, an oblique ledge D is molded, and at the ledge the air-space B, which communicates through openings *e* near its base with the outer air, communicates through a circumferential series of inclined tubular openings *f* with the interior of the upper single-walled section of the chimney at the base thereof.

An opening *g* is shown near the base of the chimney for connecting with it the smoke-flue of a furnace, and below the plane of the opening *g* another opening is formed through which to clean the flue, closed by a door *h*, and at the base of which is provided a stone slab *i* in the chimney-flue.

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

1. A chimney, having its lower section composed of double walls forming an interposed circumferential air-space open to the atmosphere and its upper section composed of a single wall with said air-space opening into the chimney-flue near the top of said lower section.

2. A chimney, having its lower section composed of double walls forming an interposed circumferential air-space open to the atmosphere and its upper section composed of a single wall with a ledge at the junction of said sections and a circumferential series of tubular openings in said ledge through which said air-space communicates with the chimney-flue near the base of said upper section.

3. A chimney comprising, in combination with a base, a flue-forming wall structure rising from said base and composed of upright lap-jointed metal beams encircled at in-

tervals by annular metal beams with their ends overlapping each other, and concrete in which said beams are embedded.

4. A chimney comprising, in combination, a base formed of layers of horizontal metal beams embedded in concrete and a flue-forming wall structure rising from said base and composed of upright metal beams having sections of the lower members thereof extended, for anchoring, obliquely into and embedded in said base between the beams therein, annular metal beams encircling said upright beams at intervals and concrete embedding said upright and annular beams.

5. A chimney comprising, in combination with a base, the lower section having double walls forming an interposed air-space open to the atmosphere and composed, as to the outer wall, of metal beams anchored in and rising from said base with annular metal beams encircling them at intervals and concrete embedding said beams, and as to the inner wall, of metal beams anchored in and rising from said base with concrete embedding them, and the upper section formed of a single wall composed of extensions of the upright beams of said outer wall with annular metal beams encircling them at intervals and concrete embedding said extensions and the beams encircling them, and openings leading from the upper portion of said air-space into the chimney-flue near the base of said upper section.

6. A chimney comprising, in combination, a base formed of horizontal layers of metal beams embedded in concrete and a flue-forming wall structure having a double walled lower section forming an interposed air-space open to the atmosphere and composed, as to the outer wall, of metal beams anchored in and rising from said base with annular metal beams encircling them at intervals and concrete embedding said beams, and as to the inner wall of metal beams anchored in and rising from said base with concrete embedding them, and a narrower single-walled upper section communicating from near its base with said air-space and composed of inwardly-deflected extensions of the upright beams of said outer wall with annular metal beams encircling them at intervals and concrete embedding said extensions and the beams encircling them.

CARL WEBER.

In presence of—

W. B. DAVIES,

WALTER N. WINBERG.