

(No Model.)

2 Sheets—Sheet 1.

J. H. BLESSING.
ART OF MAKING DRY SAND CORES.

No. 379,672.

Patented Mar. 20, 1888.

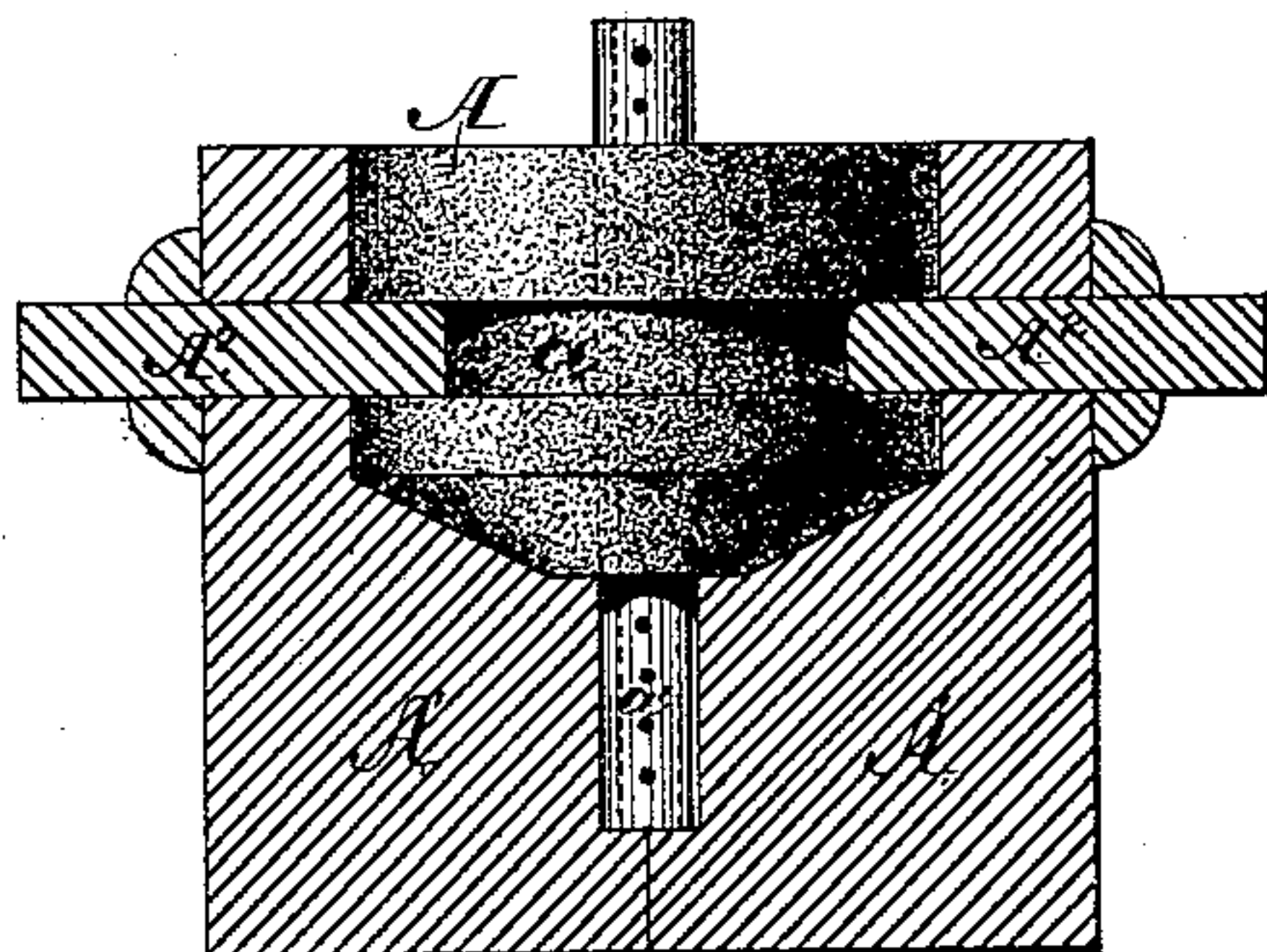


Fig. 1.

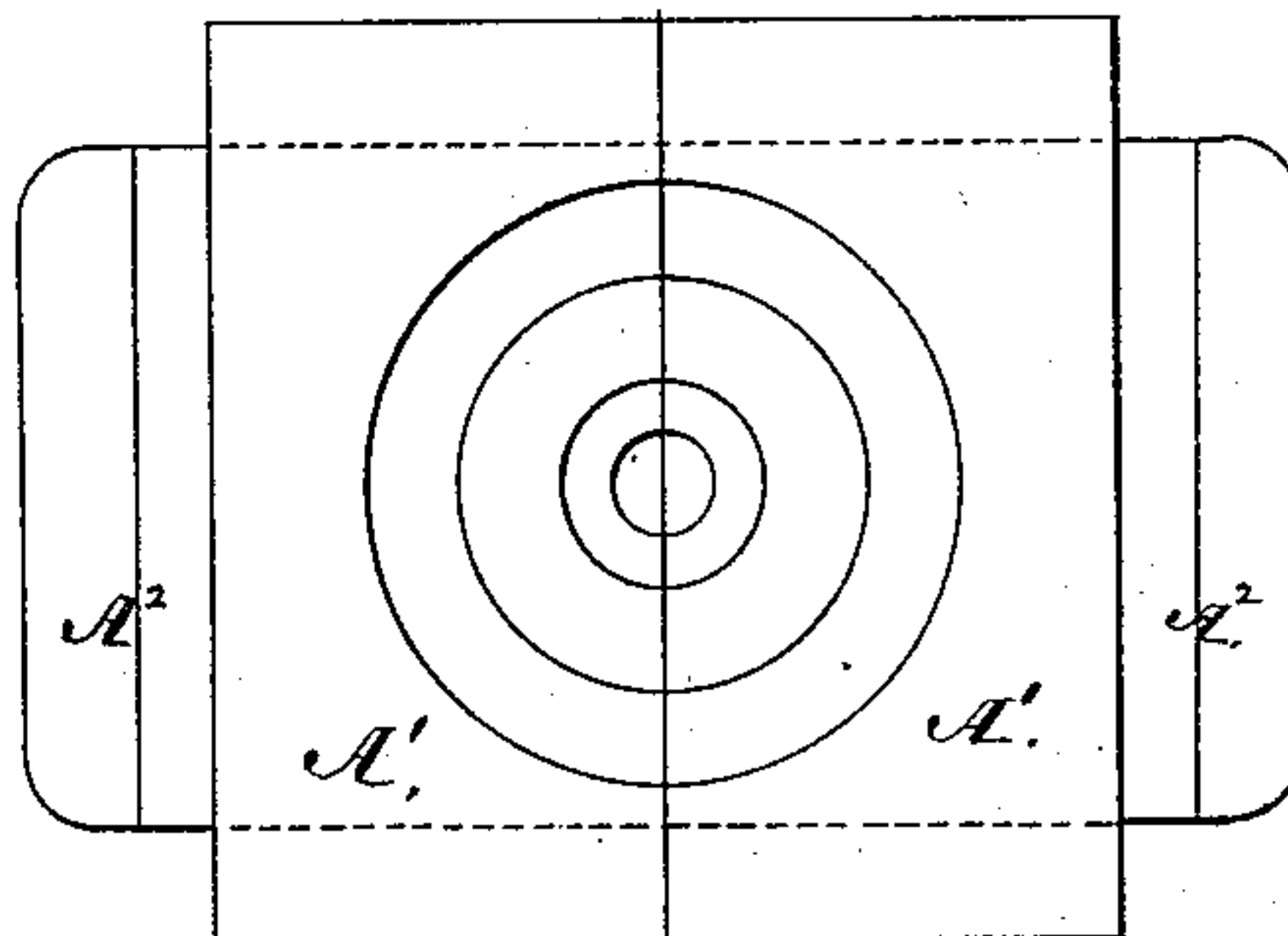


Fig. 2.

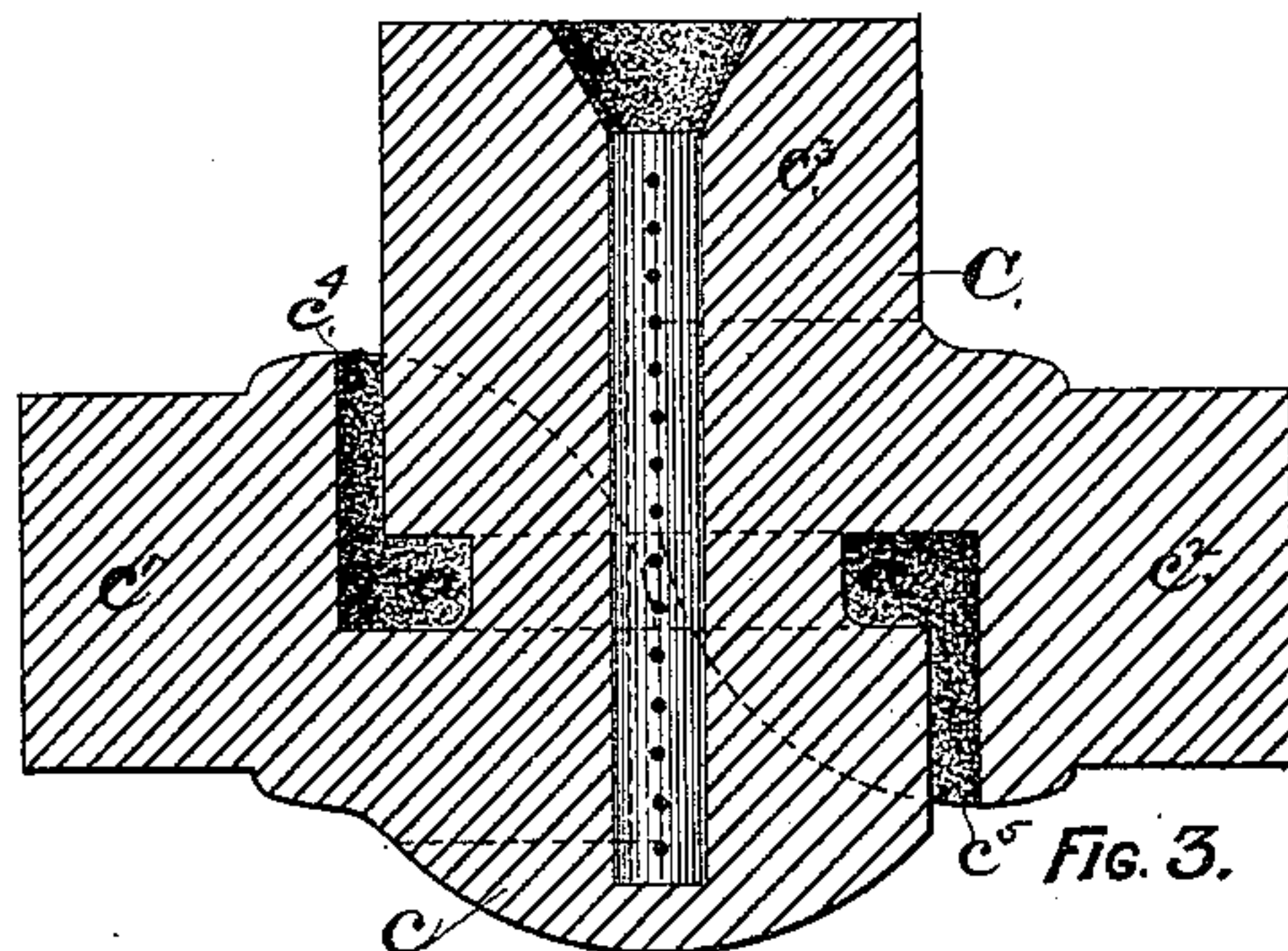


Fig. 3.

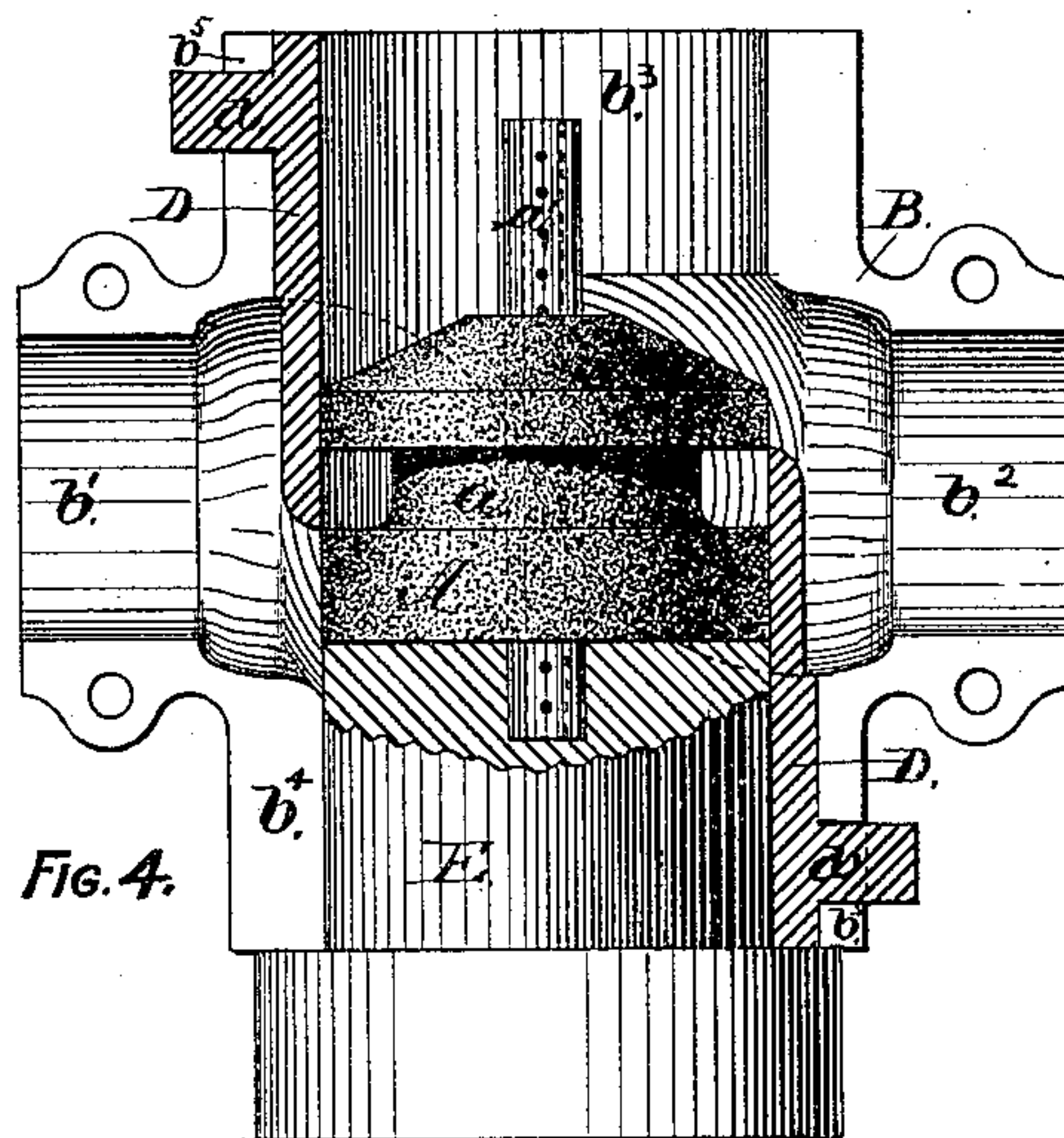


Fig. 4.

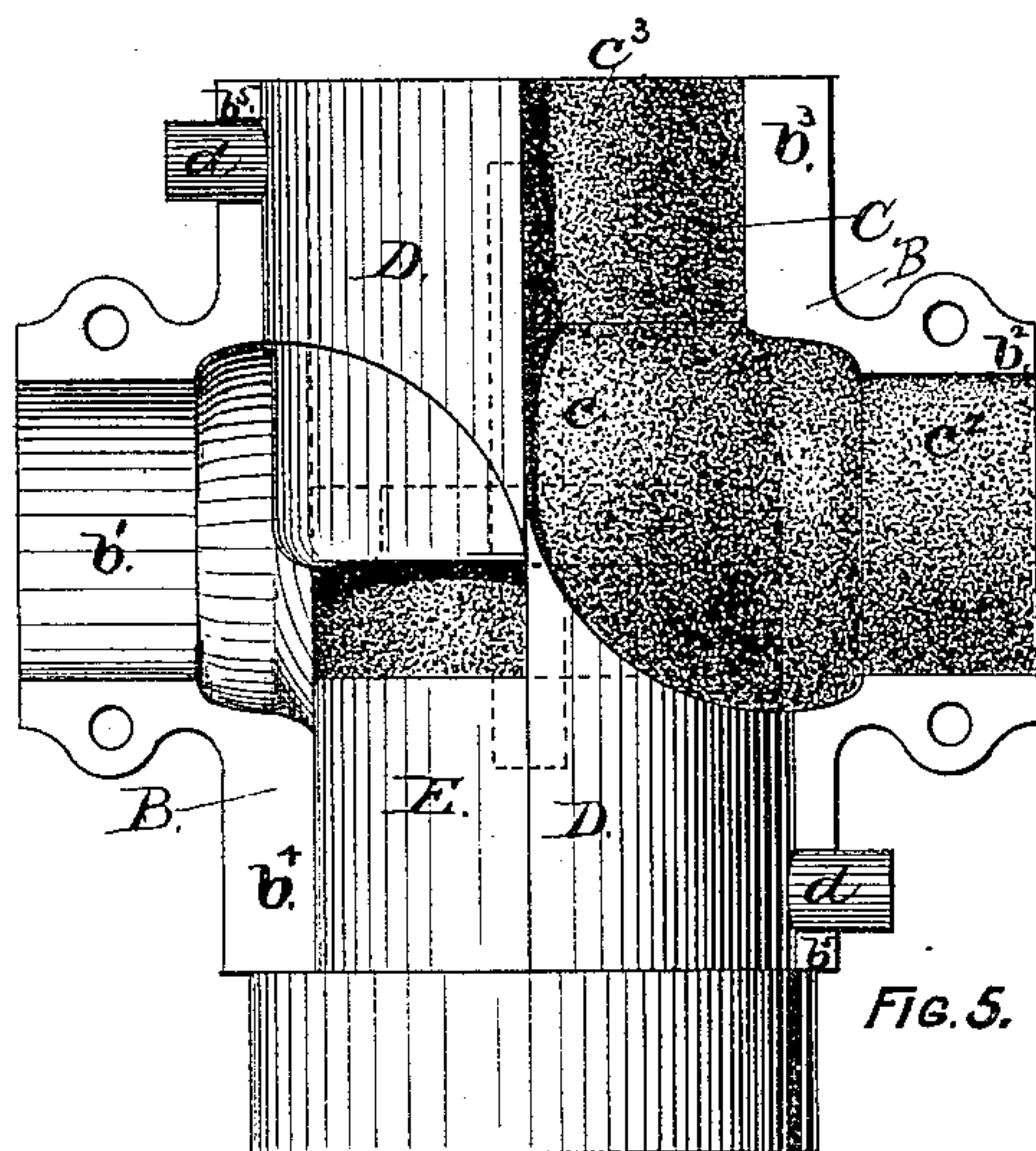


Fig. 5.

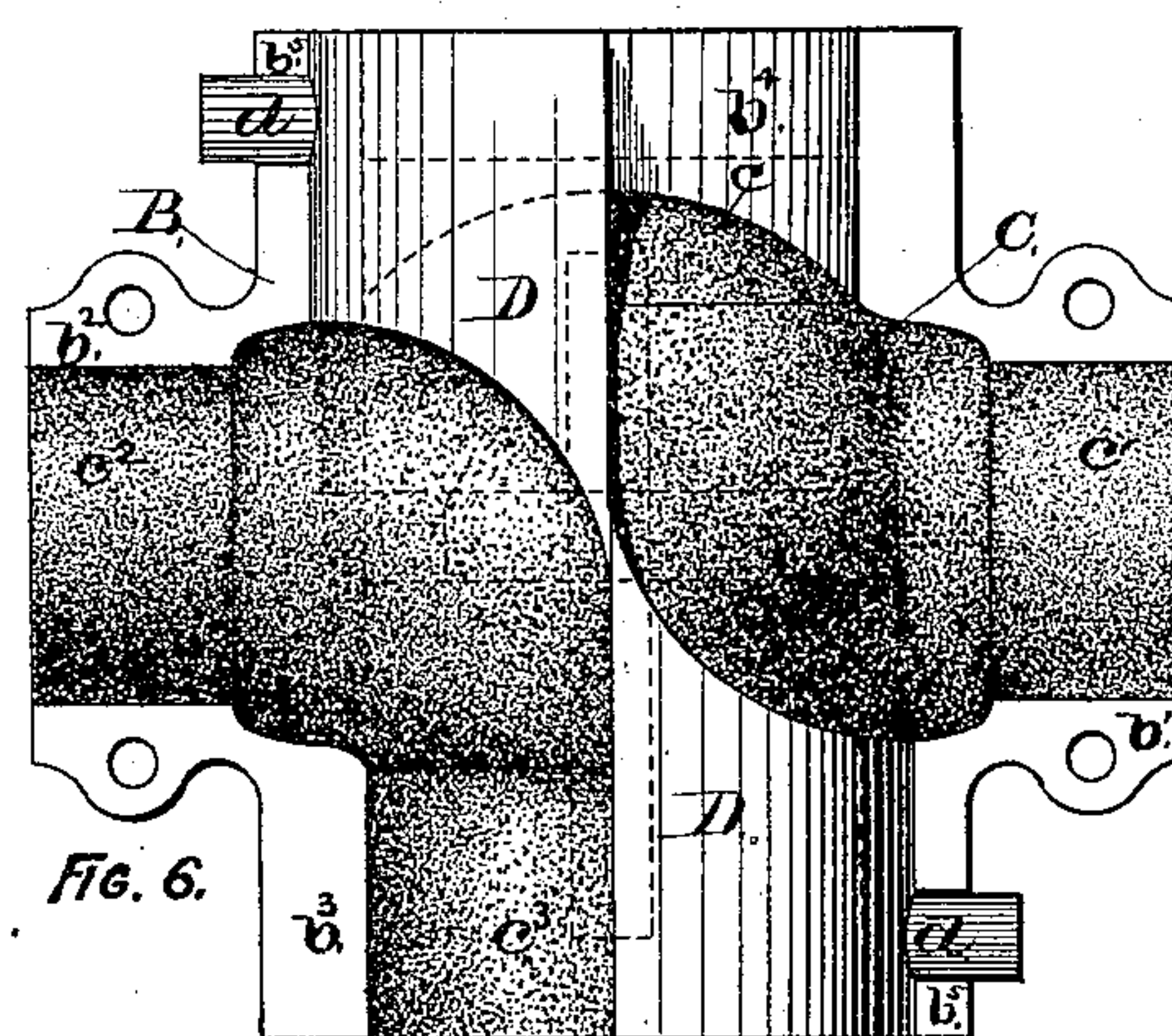


Fig. 6.

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(No Model.)

2 Sheets—Sheet 2.

J. H. BLESSING.
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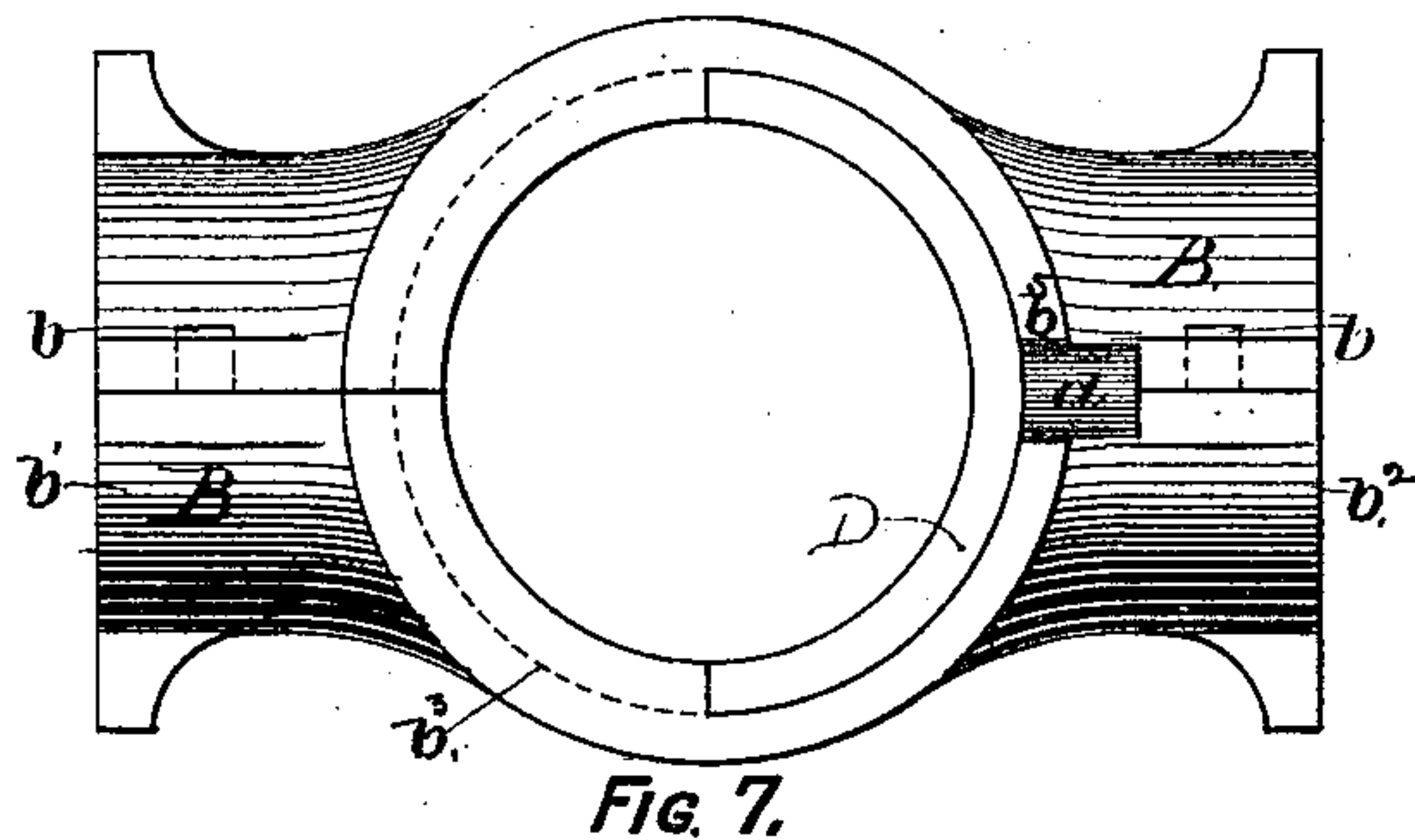


FIG. 7.

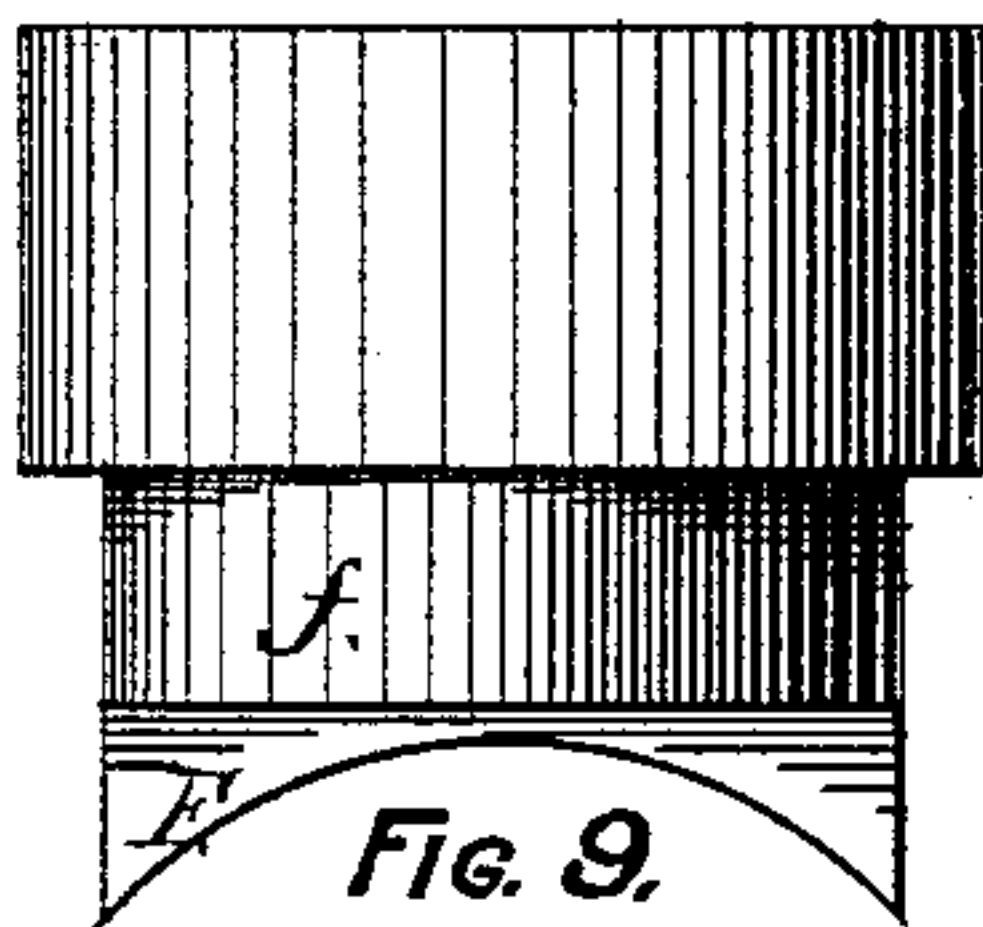


FIG. 9.

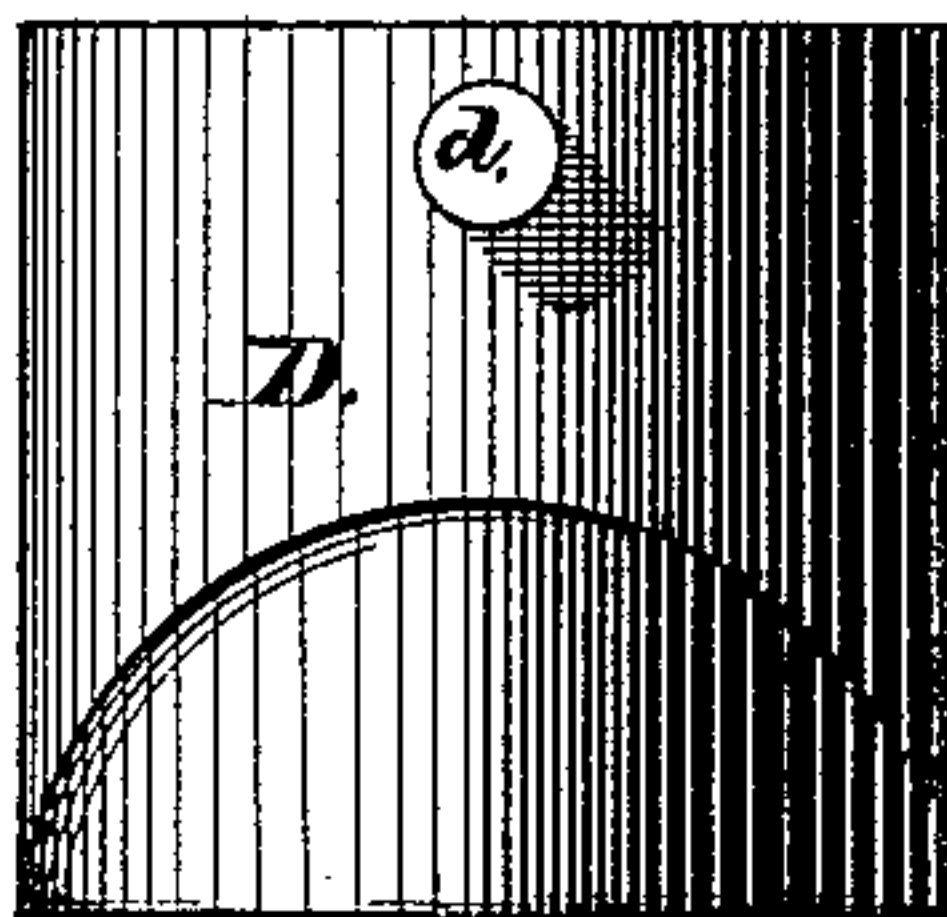


FIG. 8.

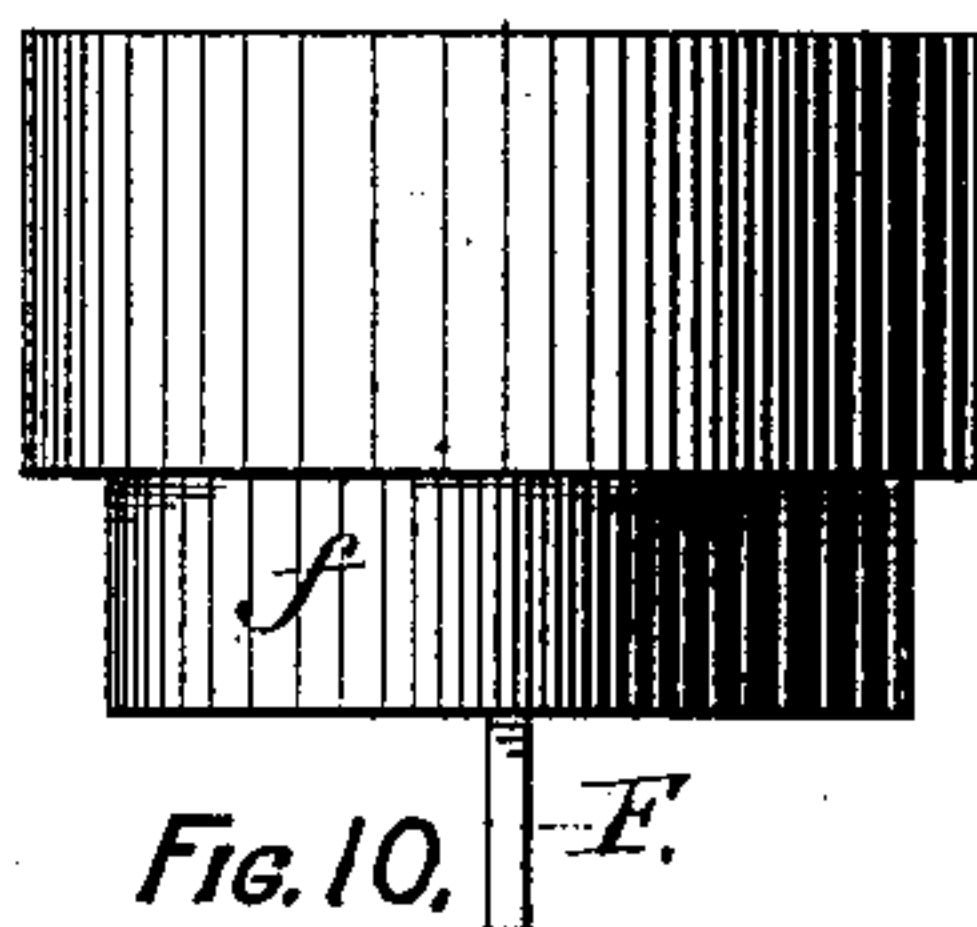


FIG. 10.

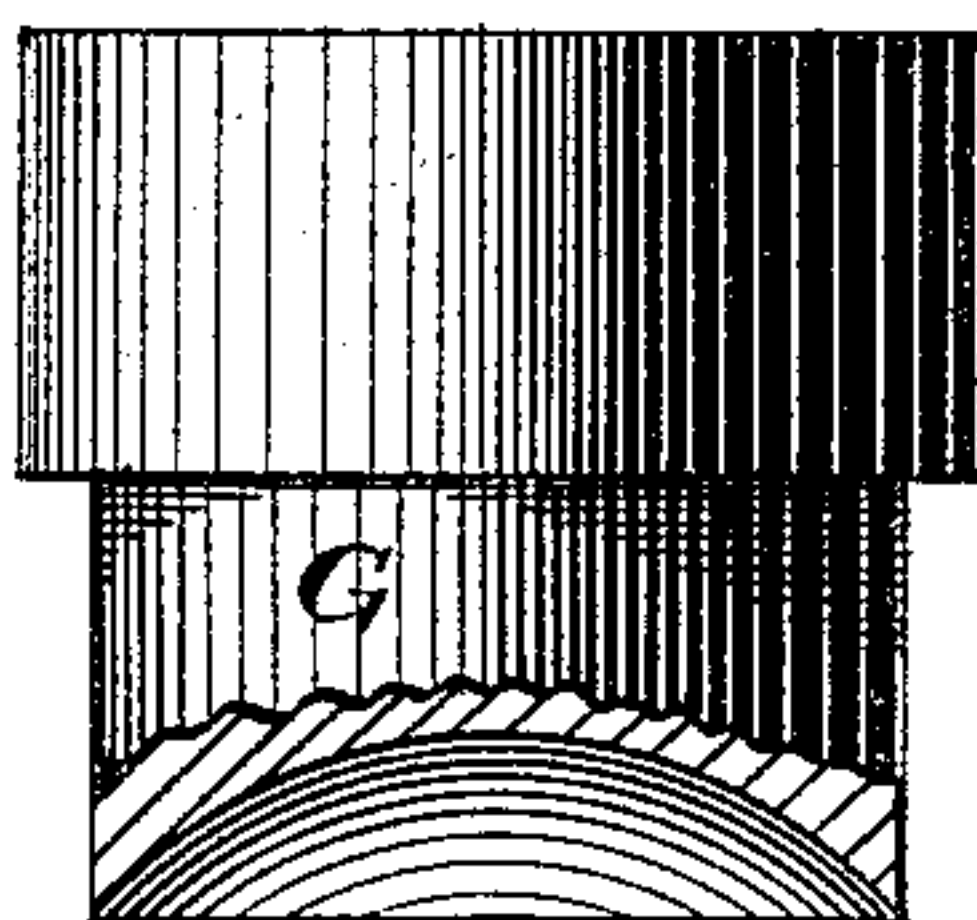


FIG. 11.

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UNITED STATES PATENT OFFICE.

JAMES H. BLESSING, OF ALBANY, NEW YORK.

ART OF MAKING DRY-SAND CORES.

SPECIFICATION forming part of Letters Patent No. 379,672, dated March 20, 1888.

Application filed January 21, 1885. Serial No. 153,477. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. BLESSING, of the city and county of Albany, in the State of New York, have invented certain new and useful Improvements in the Art of Making Dry-Sand Cores, of which the following is a specification.

My invention relates to improvements in the art of making dry-sand cores for the castings of globe-valves and other similar castings; and the object of my improvement is to produce this class of cores as entireties. This object I attain by means of the apparatus illustrated in the accompanying drawings, which, being herein referred to, forms part of this specification, and in which—

Figure 1 is a vertical section of a core-box for forming the seat-core, showing a side elevation of said core contained therein; Fig. 2, a plan view of said core-box; Fig. 3, a longitudinal section of a finished valve-casing core; Fig. 4, a side elevation of one half of the core-box for the complete valve-casing core, showing the preliminary or seat core in position as when ready to form the eduction-passage branch of the core; Fig. 5, a like view with the eduction branch completed; Fig. 6, a like view with the entire valve-casing core completed; Fig. 7, a plan view of the valve casing core-box complete; Fig. 8, a front elevation of one of the slides for forming the space for producing the semi cylindrical partitions in the valve-casing. Figs. 9 and 10 are respectively side and edge views of scraper for removing surplus material from the under part of the spherical body of the valve-casing core, and Fig. 11 a partial section and side elevation of the print-block for finishing the under part of the spherical body of the valve-casing core.

In making molds for casting globe-valve casings it is the general practice to make the core for forming the interior of the casing in two different pieces, which are set separately into the mold. This course has always been thought the best one to produce the circular flange which forms the valve-seat for the casing; but this practice, while it greatly increases the cost of making the cores, is also attended with very frequent loss of the castings from the imperfect setting of the separate cores and from their liability to become displaced

by the molten metal as it enters the mold in the operation of casting. The operation of setting such separate cores for this class of castings, even when performed by the most skillful workman, is largely dependent upon chance for being correct, and the result is a very large percentage of loss from imperfect casting. These defects are remedied by my invention, wherein the core is made ready for setting into the mold as an entirety, so that it can be readily set in place by a person having but little skill, and will remain in position against any tendency of the molten metal to displace it.

In this invention a preliminary or seat core containing a groove for forming the circular flange for the valve-seat is first formed and fixed in the casing core-box, wherein the balance of the core is perfected to produce the entire core as a single inherent piece.

As represented in the drawings, A is the preliminary or seat core, provided with a circumferential groove, *a*, for forming the circular flange which constitutes the valve-seat of the casing-casting. Said preliminary core has in its central axis a perforated vent-tube, *a'*, which projects from the top and bottom of said core, and serves the double purpose of carrying off the fixed air and gases from the core and as a means for binding the complementary parts of the entire core to the preliminary one. The said preliminary core is formed in the core box shown in Figs. 1 and 2, and composed of the two counterpart side pieces *A'*, each of which contains a recess to form one-half of the exterior of the core, and is provided with a sliding piece, *A''*, fitted to slide in a mortise cut through its appropriate side piece, so as to produce the groove *a* in the core.

The core A, after being formed in the core-box above described, is partially baked, so as to acquire the strength required for the subsequent stages of making the completed casing-core.

The valve-casing core C consists of a spherical portion, *c*, (in the interior portion of which is incorporated, as an integral part thereof, the preliminary core A, containing the groove *a*,) and the cylindrical stems *c'*, *c''*, and *c'''*, the said stems producing, respectively, the induction, eduction, and bonneted openings of the valve-

casing. The said core also contains the spaces c^4 and c^5 , which are connected continuously by the groove a , and in which are respectively formed the upper and lower semi-cylindrical partitions that separate the eduction and induction openings from each other.

The core-box for forming the casing-core consists of two corresponding side pieces B, which are fitted to join together longitudinally and are held in position by means of dowel-pins b . Each of said side pieces has in its central part a hollow or globular depression for forming the spherical body c of the core, and from the said depression radiate the cylindrical barrels b^1 , b^2 , b^3 , and b^4 . In the first of said barrels is formed the stem c' of the core, in the second the stem c^2 , in the third the stem c^3 , and the fourth is provided for the purpose of facilitating the forming and finishing of the core. The cylindrical barrels b^3 and b^4 each have one side of their bore enlarged in diameter, as shown in Fig. 7, the enlargement of one barrel standing at the opposite side of the bore relatively to that of the other barrel; and the purpose of these enlargements is to receive the semi-cylindrical slides D, by which the spaces c^4 and c^5 are formed in the core C. The concave surface of the slides D conform to the smaller concavities of the barrels b^3 and b^4 and form complements thereto to produce a uniform size of their bores. The length of said slides are so proportioned as to come flush with the groove a in the preliminary core, as shown in Fig. 4—that is to say, so that the inner end of the slide for the barrel b^3 will come flush with the lower side of the circular flange formed in the groove a , and the inner end of the other slide will come flush with the opposite face of said flange. Each of said slides is fitted to slip freely into and out of its place in the core-box, and each is provided with a stud, d , which projects through a slotted opening, b^5 , so as to facilitate the removal of the slides from the core-box. The diameter of the opening formed by the conjoining ends of the slides D is just sufficient to encircle the cylindrical body of the core A. The plug E is fitted to slide in the barrel b^4 to a sufficient distance to support the core A in such manner that the groove a of said core will be held in a position to conform to the inner ends of the slides D, in the manner shown in Fig. 4. The upper end of the plug E is bored to receive one of the projecting ends of the vent-tube a' , as shown in Fig. 4. The scraper F is inserted in a stock, f , that is fitted to the bore of the barrel b^4 . The blade of said scraper is adapted to remove any excess of sand that may be rammed into the barrel b^4 and to leave the spherical portion c of the core in a nearly-finished condition. The print-block G is fitted to slide in the barrel b^4 , and has in its upper end a concavity that conforms to the surface of the spherical portion c of the core, and said print-block is of such length that when forced down to its place it will compress the sand to finish the spherical portion of the core to its required form.

The mode of making the casing-core C is as follows: The two side pieces, B, are clamped together, the slides D inserted in place, and the preliminary core A (partially baked, as before described) is fixed in place, as shown in Fig. 4, and is there supported by the plug E. The two ends of the core A may have a coating of paste or other adherent material applied to them for the purpose of producing a more perfect adhesion of the additional parts of the casing-core thereto. The core-sand is then rammed into the barrels b^2 and b^3 to form the upper part of the spherical portion c and the stems c^2 and c^3 , as shown in Fig. 5. The position of the core-box is then reversed, the plug E is withdrawn, and core-sand is rammed in to fill the barrel b^1 , so as to form the stem c' , and to partially fill the barrel b^4 , (to about the transverse dotted line shown across said barrel in Fig. 6.) The scraper F is then inserted in the barrel b^4 and turned around until the sand in excess of what is required for the under side of the spherical portion c is loosened sufficiently to fall out when the core-box is turned over. The print-block G is then inserted in the barrel b^4 and pressed down to compact the sand and finish that part of the spherical portion of the core. When this is accomplished, the core is in the complete form shown in Fig. 6. The slides D are next drawn out of the core-box and one of the side pieces B is removed to expose one side of the core C. The latter is then turned over onto a suitably-formed plate and the other side piece B is removed, after which the core C is placed in an oven and suitably baked, and when completed will be in one entire piece, having the required form and spaces to produce all the internal parts of a valve-casing casting.

It is obvious that by changing the form of the core-boxes in a suitable manner my invention can be applied to the formation of cores of valve-casings which have a different external form from the one herein shown and described, and I do not confine it to the formation of cores for globe-valve casings alone.

I claim as my invention—

1. That improvement in forming cores for valve-casing castings which consists in first forming and partially drying a preliminary core containing a circumferential groove for producing the circular flange which forms the valve-seat, and then, after placing the dried preliminary core in another core-box; forming thereon the several cylindrical stems, as herein described, so as to complete the casing-core as an entirety, in the manner herein specified.

2. A partially-dried preliminary core, A, provided with a circumferential groove, a , as a nucleus for and to be incorporated in the finished core, as herein specified.

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Witnesses:

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