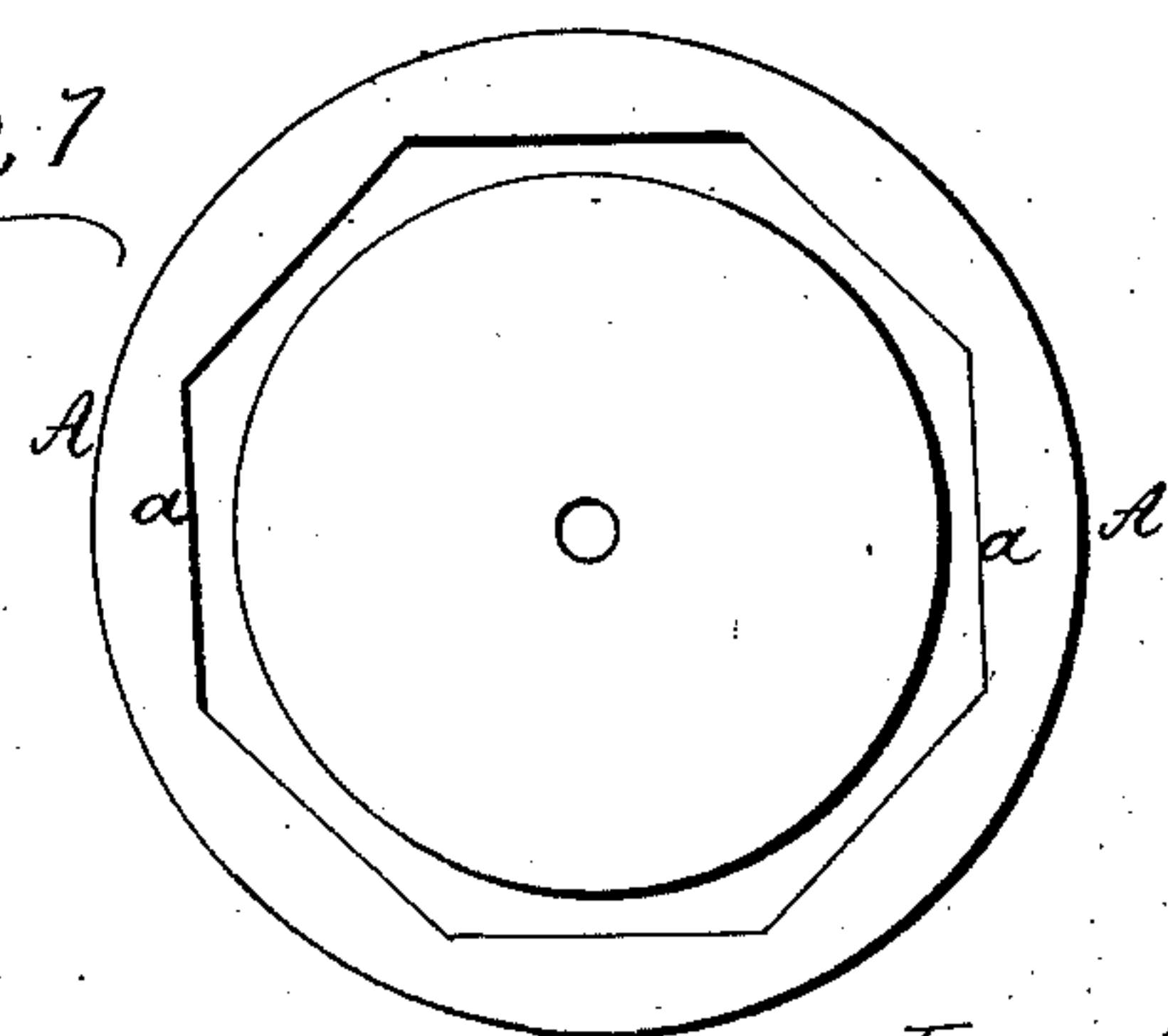
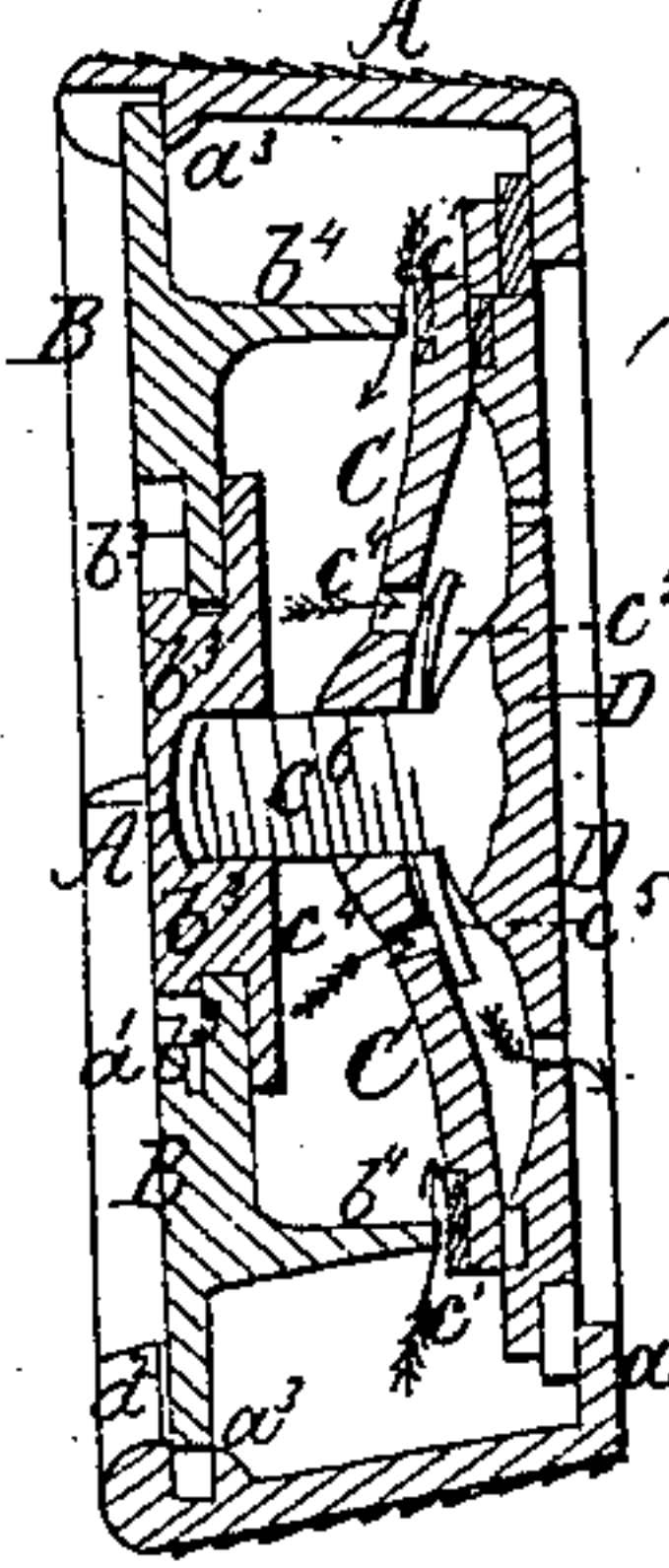
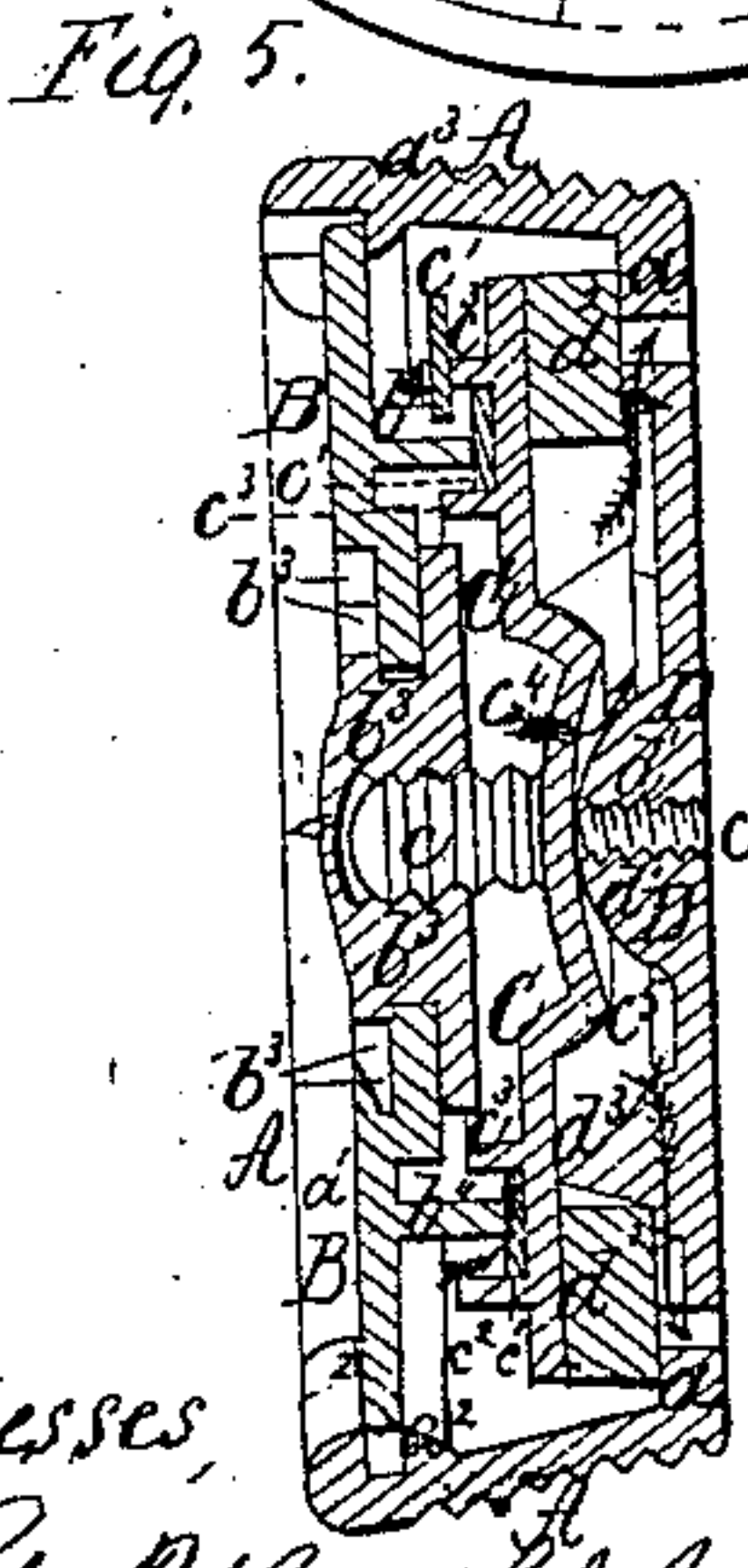
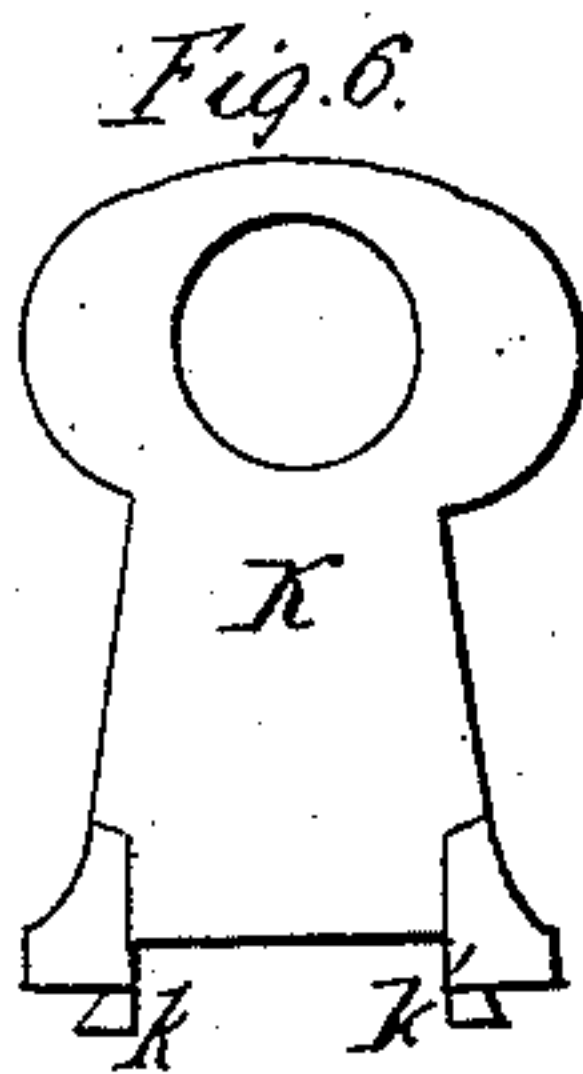
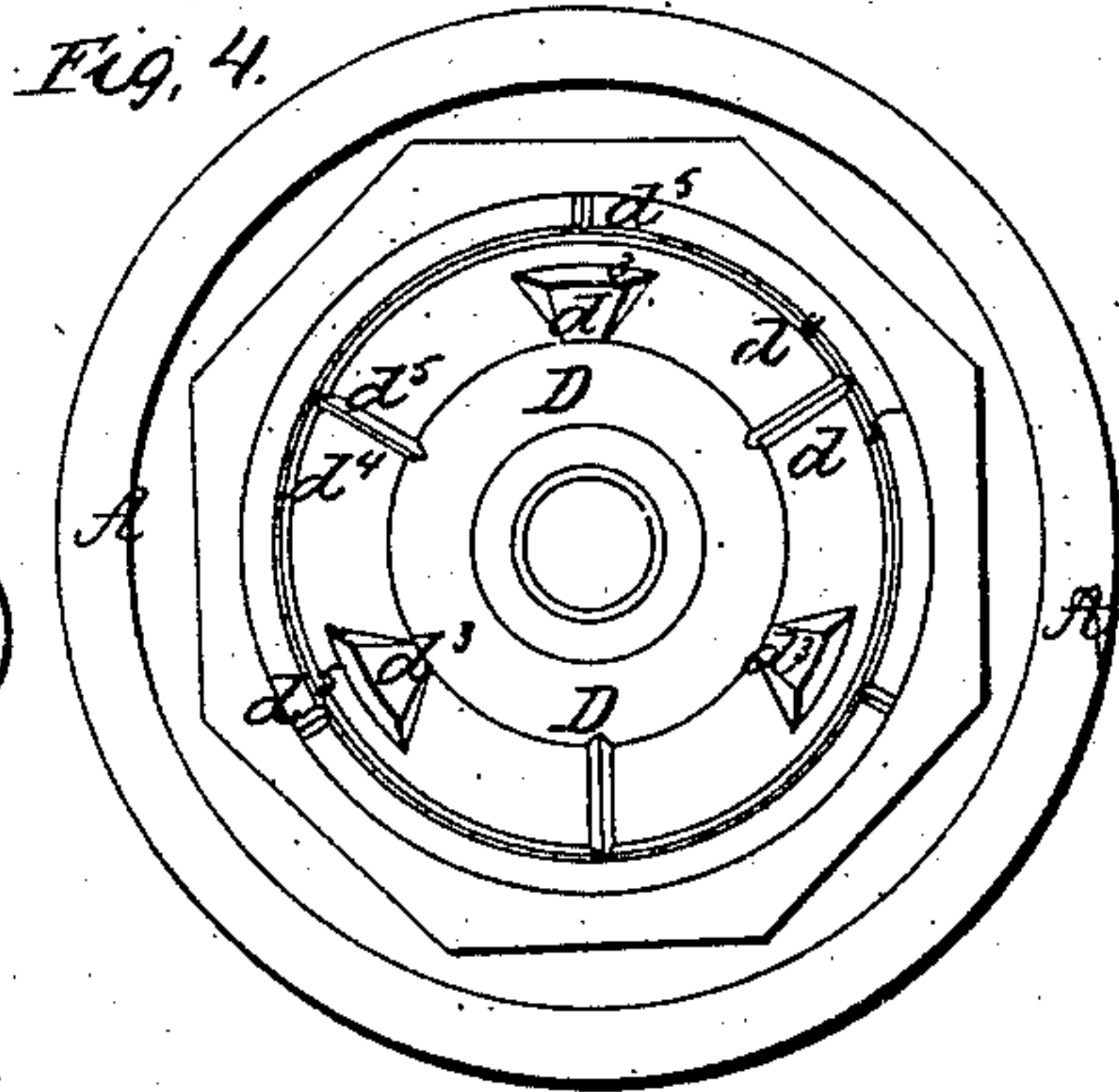
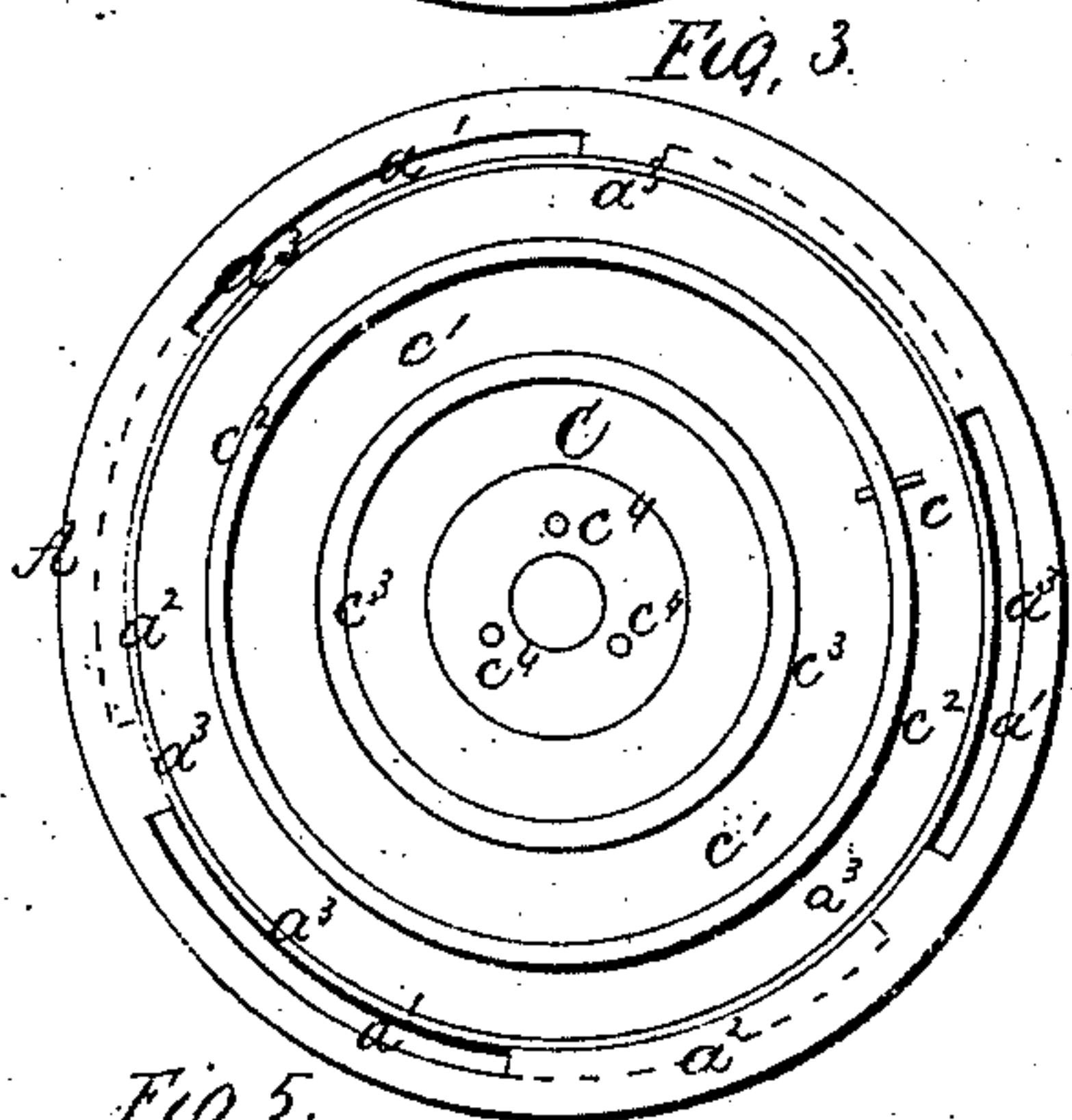
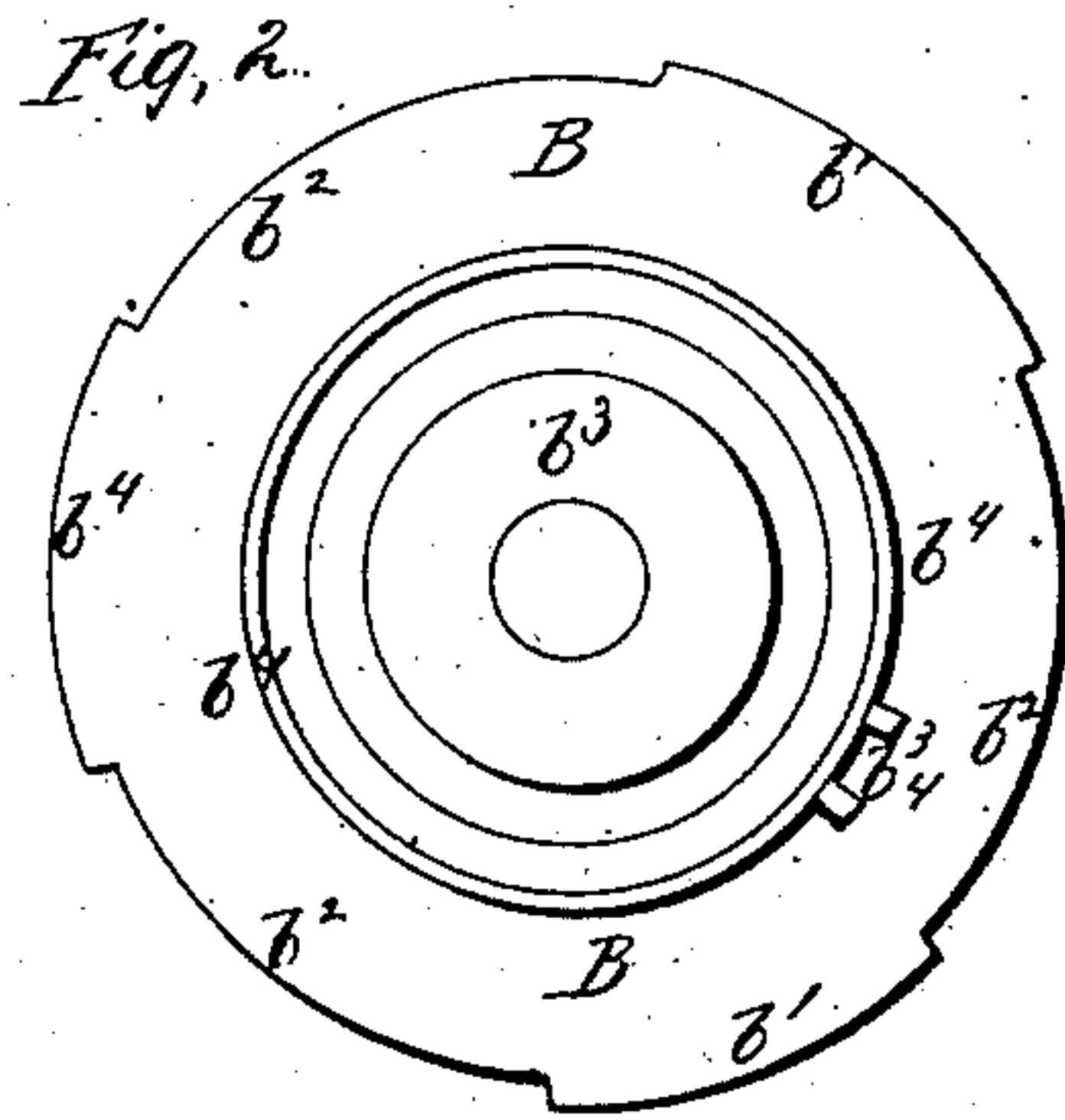
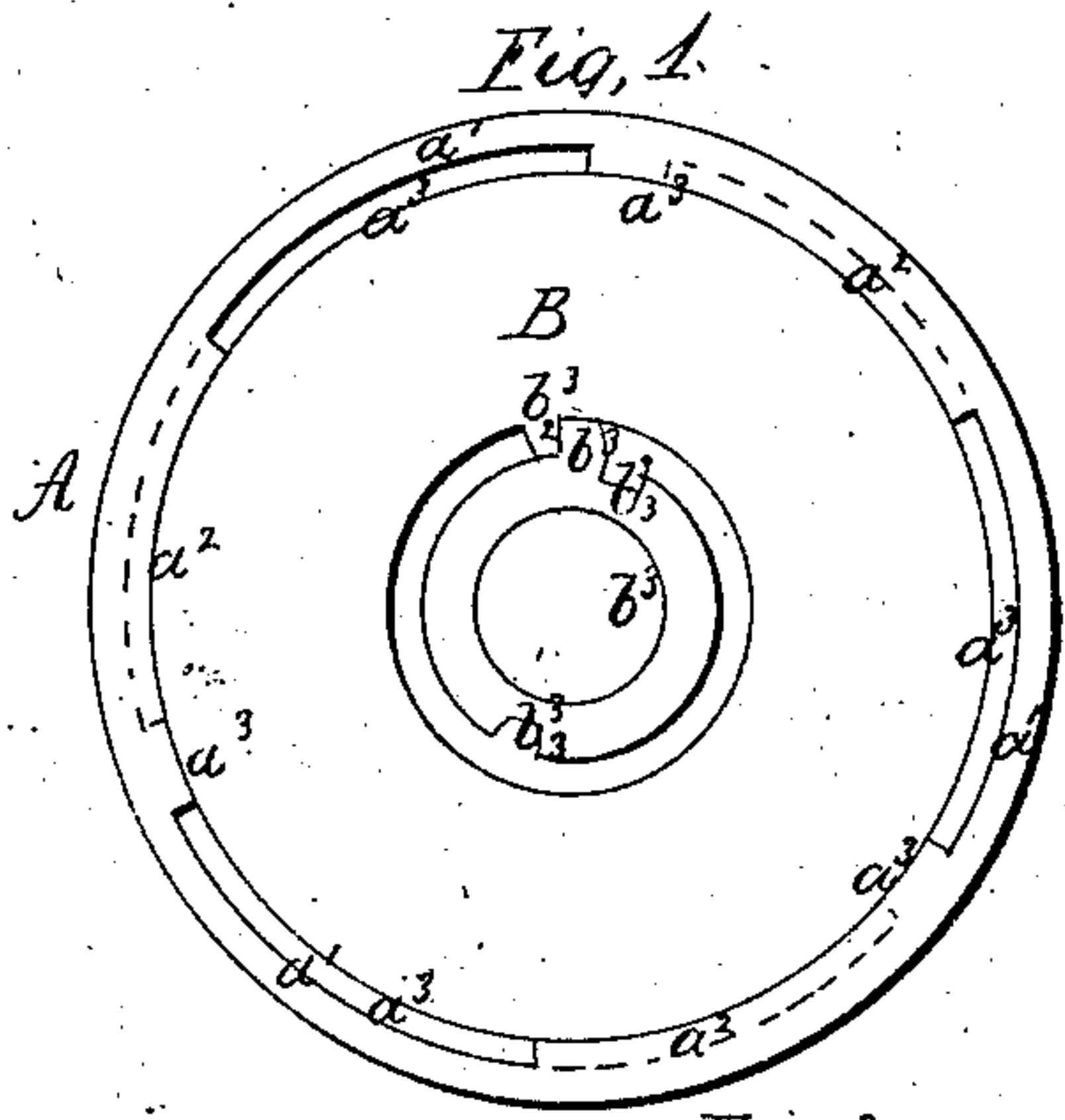


Hufendeck & Spangenberg,

Bungs.

N^o 60,011.

Patented Nov 27, 1866.



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IMPROVED BUNG.

H. HUFENDICK AND E. SPANGENBERG, OF ST. LOUIS, MISSOURI.

Letters Patent No. 60,011, dated November 27, 1866.

SPECIFICATION.

TO WHOM IT MAY CONCERN:

Be it known that we, HENRY HUFENDICK and EUGENE SPANGENBERG, both of the city and county of St. Louis, State of Missouri, have invented a new and Improved Bung; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and the letters of reference marked thereon. Of which said drawings—

Figure 1 is a top plan.

Figure 2 is a bottom plan of the cover.

Figure 3 is a top plan of the parts exposed on removing the cover B.

Figure 4 is a top plan of the parts exposed on removing the plate C.

Figure 5 is a central sectional elevation.

Figure 6 is an elevation of the key used in connection with our improved bung.

The nature of our invention is in the application; firstly, of a seat or socket, secured permanently for the time of use in the stave of a cask or barrel, into which the bung is placed and secured, and from which the bung can be expeditiously removed without injury to the cask or barrel, or any part thereof; secondly, in the application of a key for the purpose of securing or releasing said bung, and otherwise operating the same; so long, therefore, as said key remains in the possession of the proper and authorized persons, there being a security against loss or damage to the contents of said cask or barrel; thirdly, in the operation of the parts in such manner that when the bung is secured in place, atmospheric air can force its way through and into the cask or barrel, and when said bung is taken out of said position its parts will be so joined as to be fluid and air tight; and lastly, in the arrangement of the lower and inner parts in such wise that air may pass them, when the bung is in position, but fluid cannot, and that when the bung is taken out of position all said parts may be exteriorly cleansed, without permitting moisture to penetrate and corrode the interior.

In order that those skilled in the art may be able to construct and use our improved bung, we will now describe its detail, construction, and operation.

We make the cylindrical socket or seat, A; this being slightly conical on its outer ring surface, and having screw threads cut thereon, may be firmly screwed into the bung stave of the cask or barrel. To facilitate this, the lower inner surface, a , is arranged angularly (either square, hexagonal, or octagonal, &c.,) so that a billet of wood fitted therein may be used as a lever to screw the socket home in the stave. Usually the socket A will be cast of brass or iron. The inner edge of its upper face will be arranged with recesses and projections, (as at a^1 and a^2 ;) corresponding to certain projections, b^1 , and recesses, b^2 , of the cover B. When the cover B is placed into the seat A, it rests on the shelving projection a^3 ; and the projections a^2 are so arranged that, by turning the cover B towards the left, the projections b^1 pass under the projections a^2 until the forward edge of b^1 strikes the stop, a^4 . This lid B, and the entire bung secured to it, can then no further be turned to the left. The lid B has in its centre the turning screw-nut, b_1^3 ; this screw-nut turns freely in its bearing in B, until the projection b_1^3 on said nut strikes the projection b_2^3 of B, when, if the force continue in the same direction, the lid and nut will be turned together. In order to turn said nut b^3 , we use the key K, the prongs k whereof fit into the recesses b_3^3 of the nut b^3 . Of said prongs, the one, k^1 , is cut wedge-faced; and in turning the nut b^3 , with said key, it is intended when by said turning the projections b_1^3 and b_2^3 touch, so that B being also turned, the entire lid and bung may lift clear of the projections a^2 on A, that then said prong k^1 , passing underneath the projection b_2^3 , will, by drawing the key upward, carry upwardly and out of position the entire bung, thus disengaging the same. The screw-nut b^3 receives on its lower side the screw c , secured in the centre of the circular plate C. When said screw-nut is turned, the plates B and C being held in their relative horizontal position by the pin e , on C, in the groove b_4^3 on B, they are brought closer or forced apart more. In order to make a tight joint between said plates, we arrange upon the lower face of B the circular ring b^4 ; when, then, B is brought close to C, as afore-said, this ring presses upon the rubber ring c^1 , lying on the upper surface of C, between the ring ridges c^2 and c^3 . Now, when the cover B is turned home in A, the recess b^2 will permit air to pass between itself and the shelving a^3 of A; thus air passes between B and C; and when B is not screwed down firmly on C, so that the ring b^4 presses upon the rubber c^1 , air passes into the chamber around the nut c , and through proper holes c^4 to the lower surface of C; here it raises the rubber or leather valve c^5 , and passes into a chamber formed by C and the lowest plate D. The plate D contains the nut securing it to the screw c^6 of C; said nut, d^1 , is raised in such manner as to press the rubber or leather of the valve c^5 to a conoid bearing, thereby aiding its efficiency.

The joint between D and C is made by the rubber ring d^2 . In order that this rubber may not be unduly pressed against C, the plate D has the projections d^3 , limiting its upward movement. Upon the upper face of D are cut the circular and radial grooves d^4 and d^5 ; when D is forced against C, the rubber packing d^2 is made to partially fill said grooves, so that they will be in a manner capillary vessels. Now, as the interior chamber around d^1 is filled with air from above, as before explained, this air passes through the inner radial grooves d^5 to the circular groove d^4 , and then through the outer radial grooves d^5 into the inside of the cask or barrel. It will therefore be seen that whenever the distance between the plates B and C is such that the ring b^4 does not press on the rubber packing c^1 , air can pass from the exterior into the interior of the cask or barrel. But owing to the capillary nature, diminutive size, and counter air pressure, the inner fluid cannot pass the grooves d^5 and d^4 , and hence fluid cannot reach the valve c^3 , to corrode it; moreover, that even if fluid could reach said valve, owing to the very pressure thereof this valve would firmly close and prevent its further egress. Suppose the key K to be secured to the bung by its prong, k^1 , passing underneath b_2^3 ; place the bung vertical into its bearing on the socket A, turn the key and bung inversely as the hands of a clock, till the stops a_1^3 end the motion of B; it is then still possible to turn the nut b^3 of B by said key (turning in the same direction) until the projection b_1^3 (of b^3) is on the right side of b_2^3 , (of B), viewed with the centre of the bung between the observer and said projections. But by said last-describe turning motion, the screw c has been moved out of the nut b_1^3 , thereby causing the plates B and C to separate, and permitting, as before described, the passage of the air between b^4 and c^1 , and into the interior of the cask. Thus, therefore, when our said bung is secured in position, the access of air to the interior of the cask being permitted, the same may be tapped and fluid withdrawn without any additional air openings being made in the cask. We especially claim that herein we have achieved a marked improvement, inasmuch as by boring or punching air holes into casks or barrels, when tapping the same, said casks or barrels are materially damaged. Moreover, it will be seen that in disengaging the bung from its seat, the just-described operations are reversed, thus bringing the plates B and C in air-tight contact. When, therefore, by said operations, the bung is disengaged and raised out of the seat, it may be washed and cleansed from fluid which stains its lower surface and might sour the fluids used to refill the cask; and during said washing the inner parts of our said bung remain well protected from moisture. Lastly, we arrange the rubber packing, d^2 , so as to form (not only the tight joint between C and D) a joint between the bung and the socket A; to effect this, the said packing, d^2 , rests upon the lower angular broken face a . Now, as was described above, by turning the bung home in its socket the parts B and C were forced apart, but B cannot rise owing to the projections a^2 on A; hence C is pressed downwardly, thereby forcing the rubber packing d^2 upon said face a , making this joint secure and tight. Moreover, it is here the intent, that as the cover B has been first turned home, and subsequently by turning the key K, the parts B and C are forced apart, to bring no rubbing or sliding friction upon said packing d^2 , and we claim that by our said arrangement such friction and the consequent wear of said packing are avoided, whereby we insure great durability to the said packing.

As a variation of form, from the one just described, we refer to fig. 7. Here one screw, $c c^6$, answers the purpose of the two screws; c and c^6 are before shown; the screw $c c^6$ is part of the lowest plate D; the plate C is arranged inside of the other parts, and the air passes through D, as shown by arrows; otherwise the arrangement is in its operation the exact equivalent of the one above fully described.

We are aware that other slight variations of the arrangement first described may be made, but we hereby distinctly state that such variations have no claim to originality, being deduced from the nature of our invention, and being, as equivalents, covered by this our specification.

Having thus fully described our invention, what we claim, is—

1. The application of a valve or valves and capillary passages, or any equivalent devices, to permit the passage of air into a barrel, but prevent the passage of liquor out of the barrel through the bung, substantially as set forth.
2. The combination of the top plate B, its projections b^1 and recesses b^2 , and bottom parts C and D, and rubber or leather packing d^2 , respectively, with the upper parts of the socket A, its recesses a^1 and projections a^2 , shelving a^3 , stops a_1^3 , and the lower parts of said socket a , or their equivalents, as and for the purposes set forth.
3. The application of the screw c , and nut b^3 , or their equivalents, when operating on the parts described in our second claim, as and for the purposes set forth.
4. The combination of the ridge b^4 on B, and the packing c^1 on C, operated in connection with the pin c_1 in the groove b_4^3 , and the screw c , and nut b^3 , to either permit or prevent the passage of air; &c., between the plates A and C, as set forth.
5. The combination of the plate C, holes c^4 , valve c^5 , nut d^1 , plate D, and rubber or other packing d^2 , as and for the purpose set forth.
6. The application of the packing d^2 , to produce, with the grooves d^4 and d^5 on D, capillary passages which permit the passage of air, but prevent the passage of fluid, as set forth.
7. The application of a key to the parts of our said bung, when operating as and for the purposes set forth.

Witnesses:

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