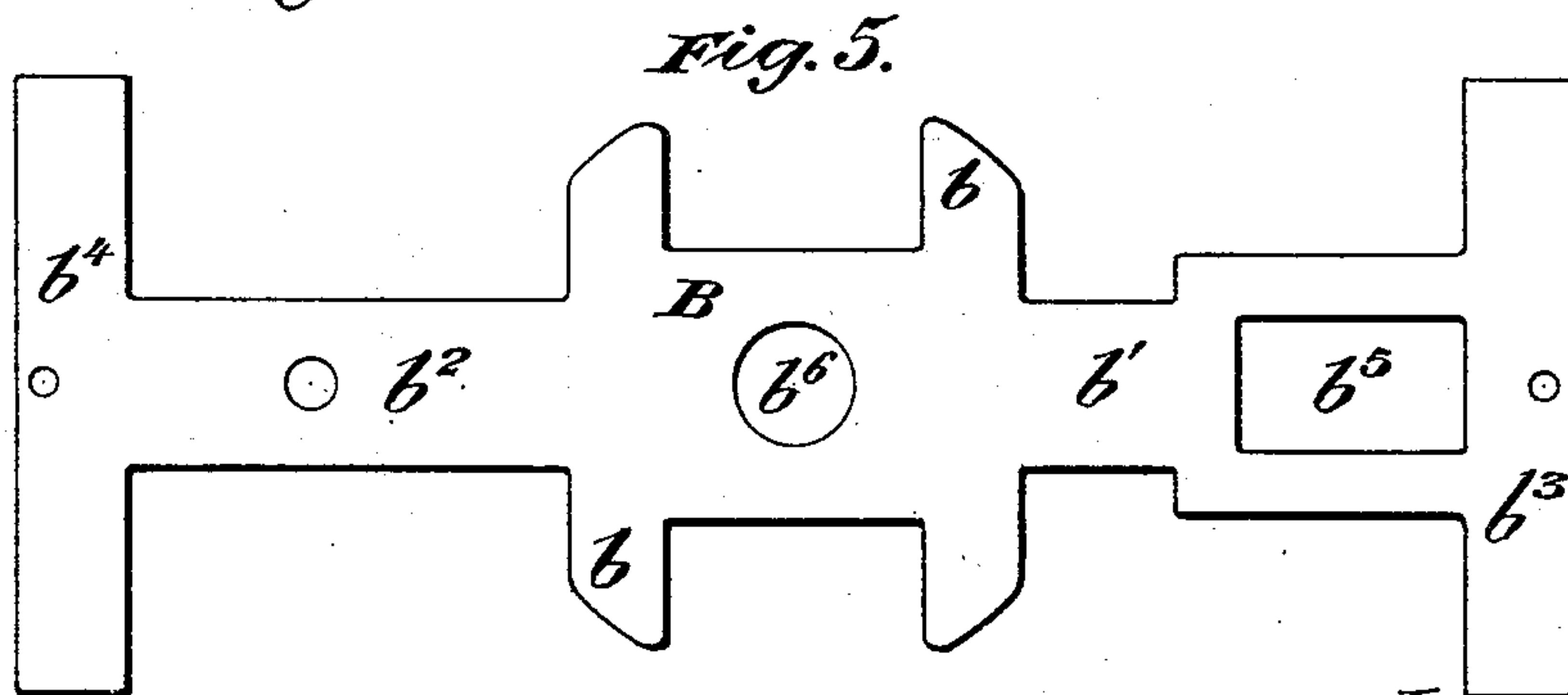
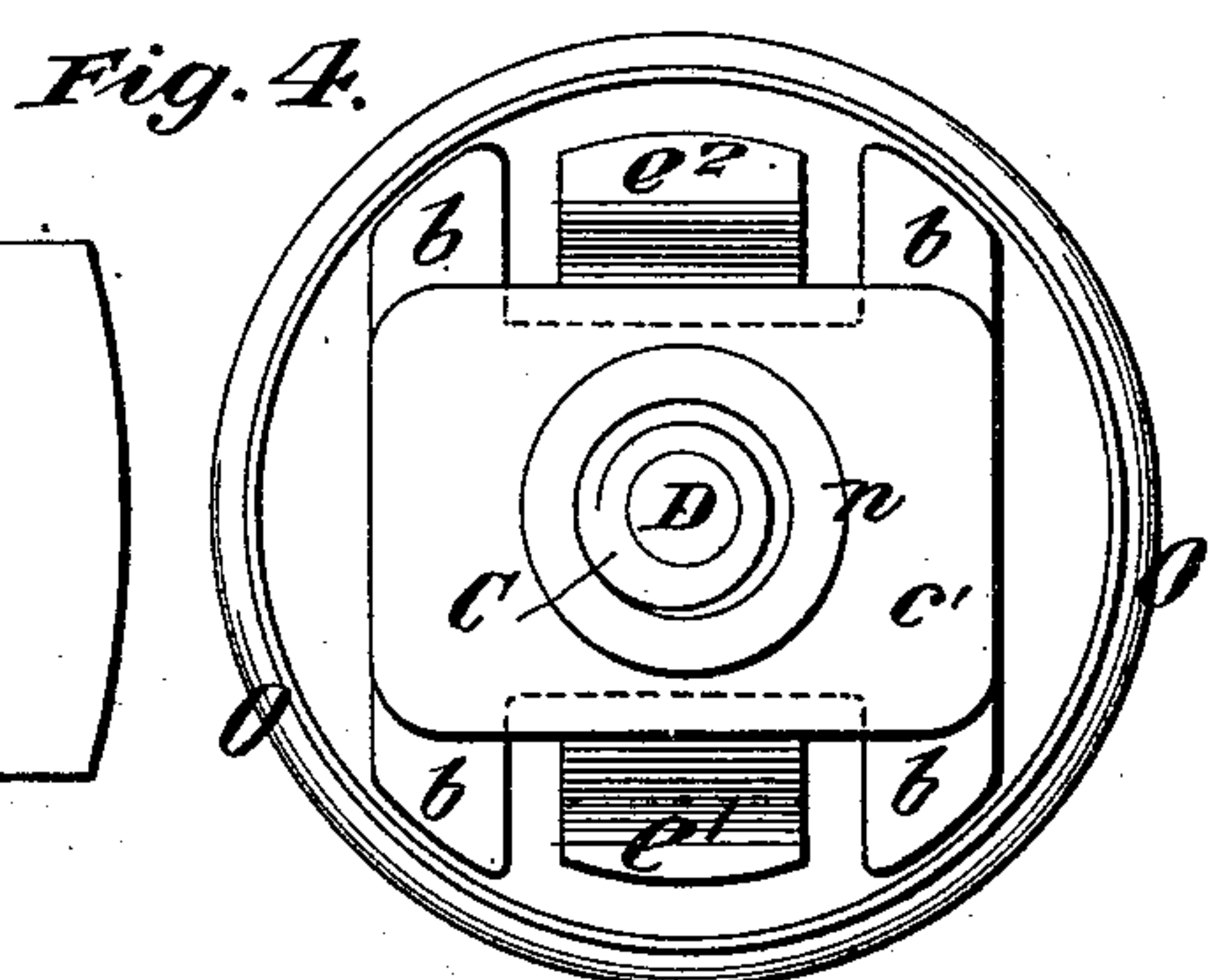
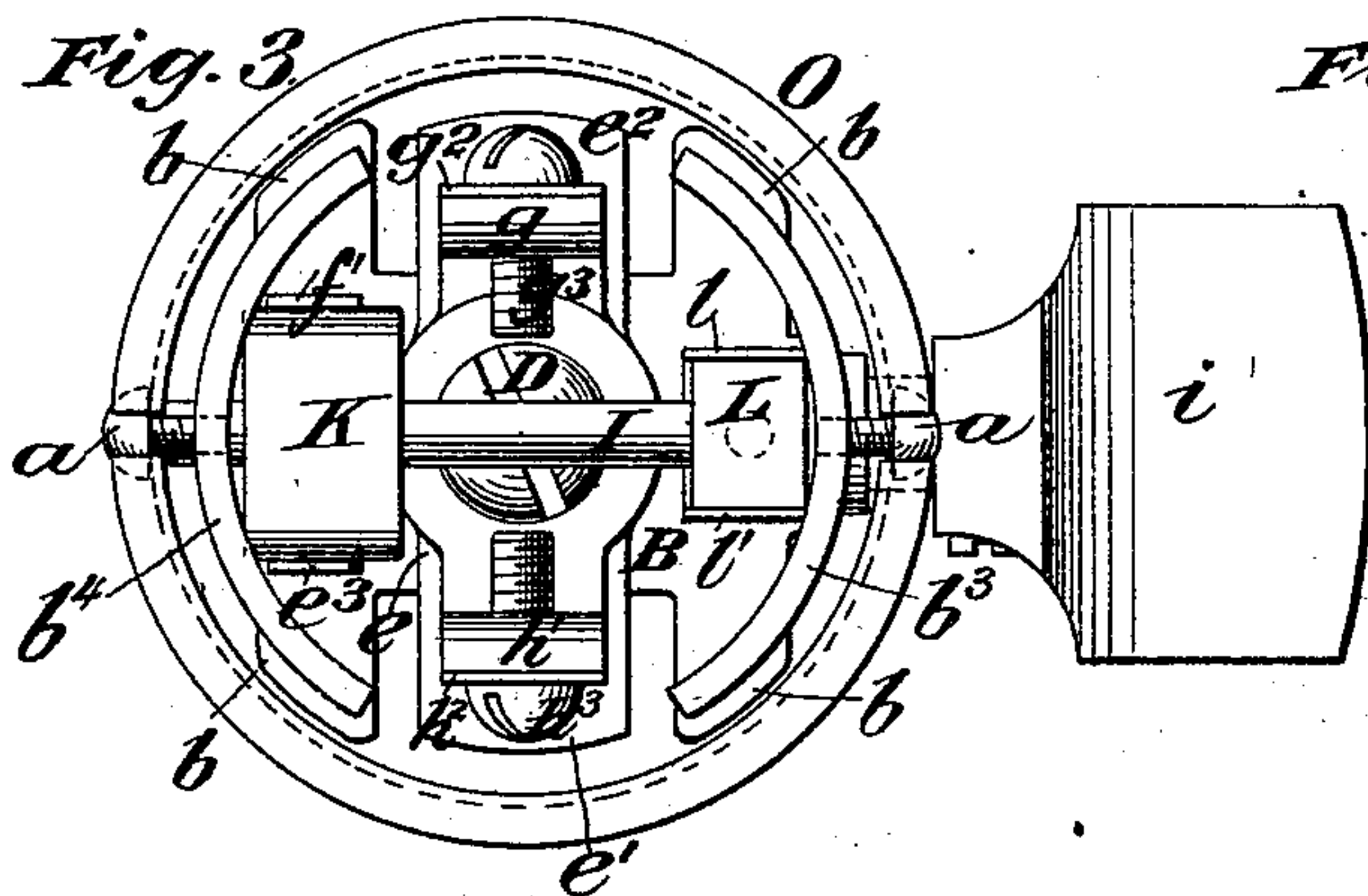
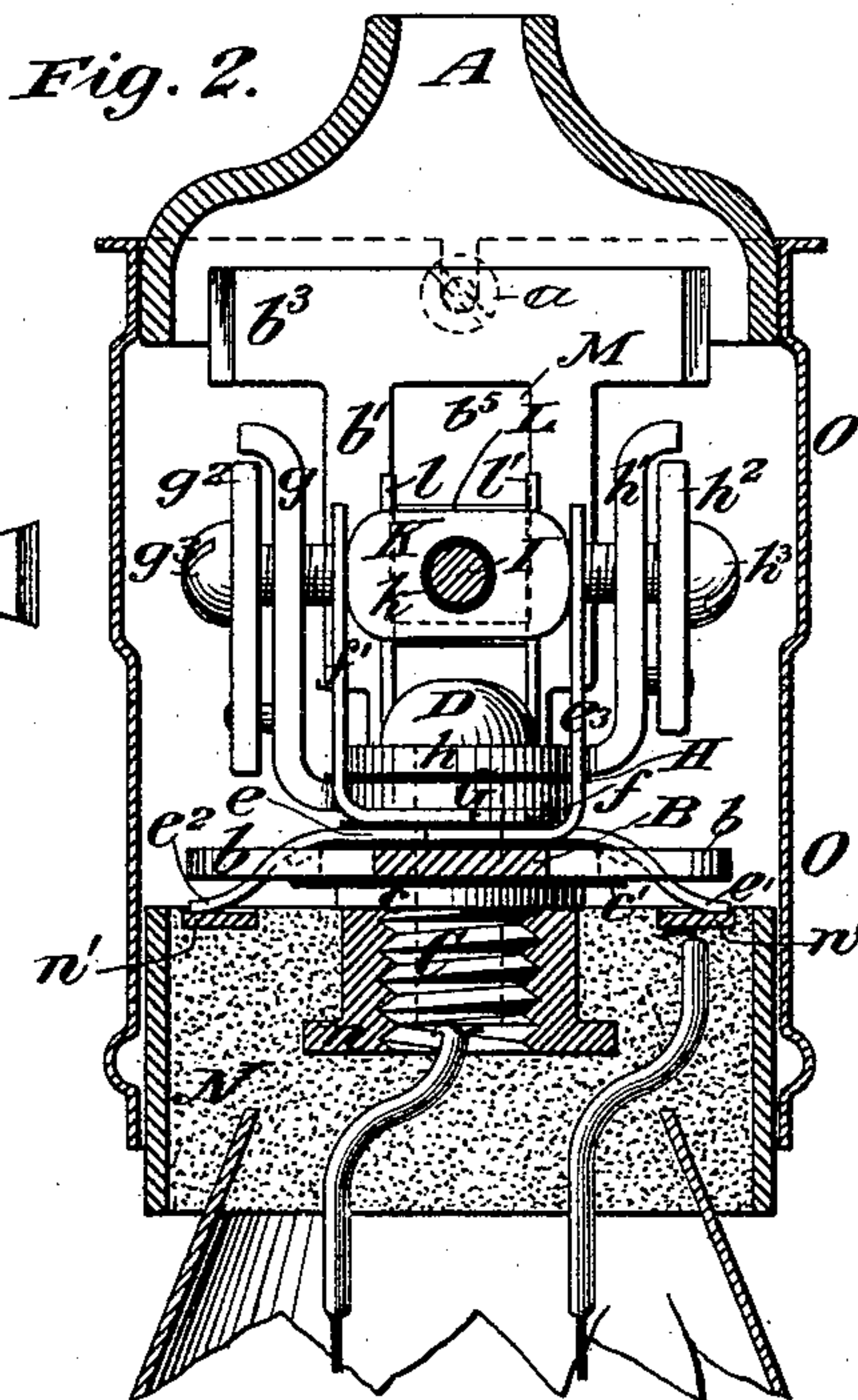
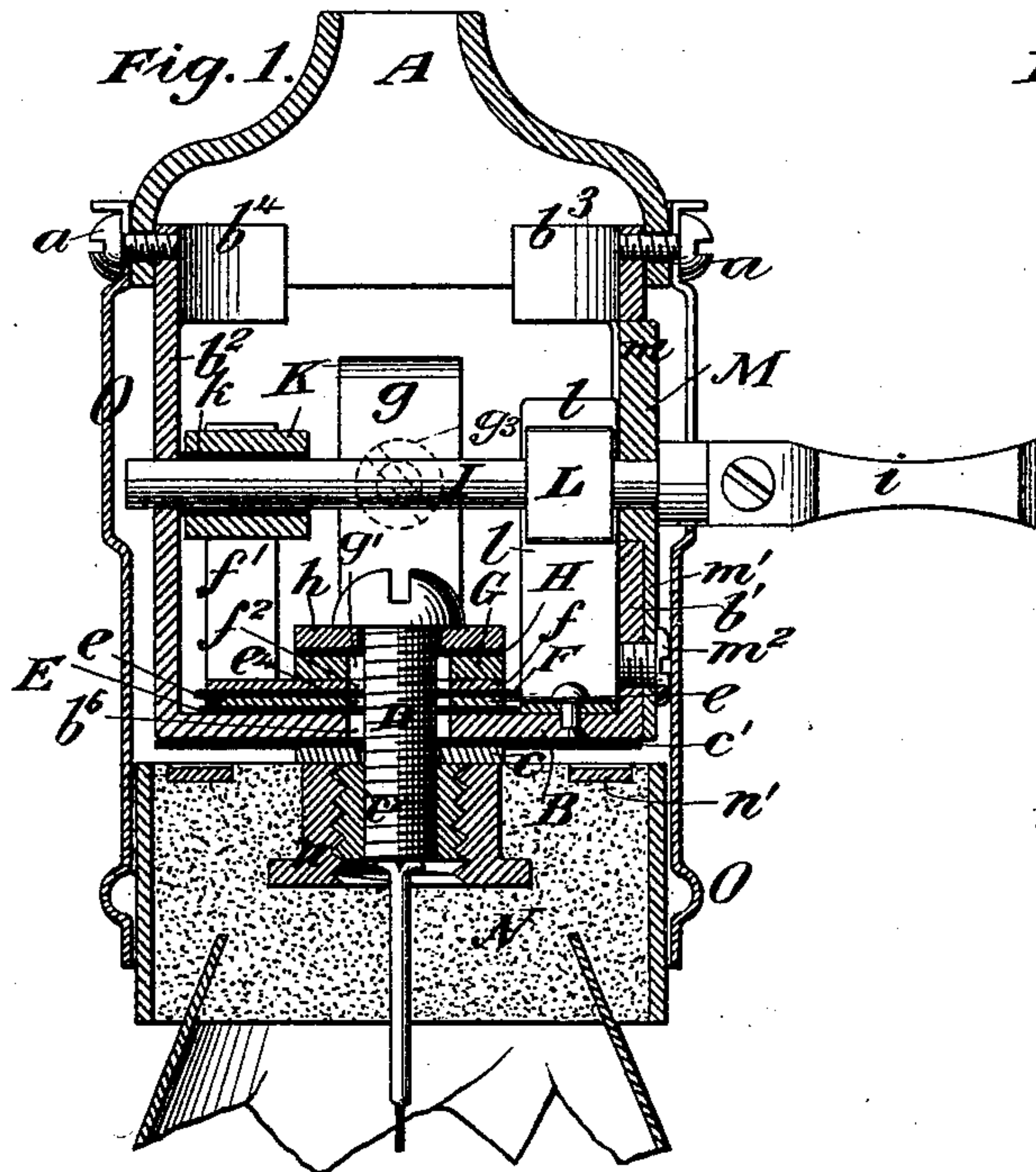


(No Model.)

LE ROY S. WHITE.  
ELECTRIC LAMP SOCKET.

No. 453,455.

Patented June 2, 1891.



Witnesses:-  
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# UNITED STATES PATENT OFFICE.

LE ROY S. WHITE, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE ELECTRICAL APPLIANCE MANUFACTURING COMPANY, OF SAME PLACE.

## ELECTRIC-LAMP SOCKET.

SPECIFICATION forming part of Letters Patent No. 453,455, dated June 2, 1891.

Application filed April 1, 1891. Serial No. 387,229. (No model.)

*To all whom it may concern:*

Be it known that I, LE ROY S. WHITE, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Electric-Lamp Sockets, of which the following is a specification.

My invention relates to an improvement in electric-lamp sockets for the attachment of electric lamps to the wires, so that the current of electricity may be thrown into circuit with or cut off from the lamp at pleasure. Because of the influence of heat and moisture upon various parts of the sockets in common use, tending to warp them out of position and to render their frequent renewal necessary, it is found desirable to construct a socket in which the several parts shall be practically imperishable.

The object of my present invention is to provide a socket in which the parts shall be practically imperishable and in which the parts shall be so constructed and assembled as to render the cost of manufacture quite low and to leave ample space within the base portion of the socket for the knotting or twisting of the wires and for their convenient attachment to the binding-posts.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a view of the socket in longitudinal section in the plane lengthwise of the key or circuit-closer shaft. Fig. 2 is a similar view in a plane transverse to said shaft. Fig. 3 is an end view at the base or end attached to the support, the supporting-base being removed. Fig. 4 is an opposite end view, the lamp being removed; and Fig. 5 is a view of the blank to form the socket frame or casing as it is cut from a sheet of metal.

The socket comprises a skeleton frame or casing having the binding-post pieces for completing the circuit between the ends of the electric conductor leading within the lamp and the nipple for securing the socket to the base of the lamp secured to the end of the frame or casing adjacent to the lamp by a single binding-screw and so constructed and arranged that they may be formed of metal and be properly insulated from each other by

thin sheets of mica or other substantially-imperishable insulating material.

A represents a cup-shaped support, which may either form a closure and finish for the end of the socket to admit supporting-wires therethrough to connect with the binding-posts of the socket, as shown in Figs. 1 and 2, or it may have its neck threaded, as is common, for its attachment to a gas-fixture pipe or supporting-bracket.

The supporting frame or casing is of skeleton formation, its top B being provided upon opposite sides with projecting tongues or ears b, leaving spaces between them for the curved ends of a contact-piece to extend above the top of the plate into position to engage a contact-piece in the base of the lamp, as will be hereinafter more particularly referred to. The opposite sides b' and b<sup>2</sup> of the said skeleton frame extend at right angles to the top B and at their lower ends are provided with laterally-extended pieces b<sup>3</sup> and b<sup>4</sup>, which are curved as shown in Figs. 1 and 3, forming a broken annular base adapted to be received within the mouth of the support A and to be secured therein by means of screws a, extending through the walls of the support A near its edge and into suitable perforations formed in the curved portions b<sup>3</sup> and b<sup>4</sup> of the frame. One of the sides of the frame, in the present instance the side b', is provided with an opening b<sup>5</sup> of such size as to admit therethrough the circuit closing and breaking shaft with the parts carried thereby for making and breaking circuit and for holding the shaft in the desired adjustment.

It will be observed that the skeleton frame or casing of the socket is so formed that it may be cut from a sheet of metal or other suitable material at a single blow and then pressed or bent into the desired shape. Its appearance as a blank is clearly represented in Fig. 5.

An externally-screw-threaded nipple C, provided with a laterally-extending flange c at its base, is adapted to rest with its base upon the top B of the supporting-frame, being insulated therefrom by a thin piece of insulating material c'—mica, for example. The nipple C is provided with a bore c<sup>2</sup>, the wall of which is screw-threaded to register with the



binding-screw D. The axis of the bore  $c^2$  within the nipple is intended to rest in alignment with the larger bore or opening  $b^6$  in the top of the frame, so that when the binding-screw D is engaged with the nipple to hold it in contact with the end of the frame, with the insulating material between them, there will be a space between the exterior of the screw and the wall of the opening  $b^6$ . On the inner side of the end B of the frame there is placed a layer E of insulating material provided with a suitable opening for the passage there-through of the binding-screw D, and immediately in contact with the inner face of the insulating layer E there is placed a contact-piece  $e$ . The contact-piece  $e$  is preferably in the form of a flat plate of spring metal, two oppositely-extending tongues  $e'e^2$  of which curve outwardly between the tongues  $b$  on the end B of the frame and extend sufficiently far away from the outer face of the end B to be brought into engagement with a contact-piece in the base of the lamp. The plate  $e$  is also provided with an inwardly-extending tongue or arm  $e^3$ , which is adapted to operate in connection with the circuit-closing piece upon the key or shaft to complete circuit. The plate  $e$  is provided with a central opening  $e^4$  of greater diameter than the diameter of the binding-screw D, so as to leave a space between the screw D and the wall of the opening  $e^4$ . On the inner face of the plate  $e$  there is laid another insulating layer F, preferably of mica, with an opening through it for the passage of the binding-screw D, and in contact with the inner face of the insulating layer F there is placed a contact-plate  $f$ , having a spring-arm  $f'$ , which extends inwardly opposite the arm  $e^3$  and serves, in connection with the circuit-closing piece upon the key or shaft, to complete the circuit. There is an opening  $f^2$  through the plate  $f$  of greater diameter than the diameter of the screw D, so that there will be a space between the screw D and the wall of the opening  $f^2$ . Immediately in contact with the inner face of the plate  $f$  is a disk G, having at one side an inwardly-extended arm  $g$ , forming one of the binding-posts, to which the end of a line-wire is to be secured. The disk G is provided with an opening  $g'$  therethrough, having a greater diameter than the diameter of the screw D, so as to leave a space between the screw and the wall of the opening. Adjacent to the inner face of the disk G there is an insulating layer H, preferably of mica, having an opening, through which the screw D extends, and in proximity to the inner face of the insulating layer H there is a disk  $h$ , having at one side an inwardly-extending arm  $h'$ , forming a binding-post and preferably located diametrically opposite the binding-post  $g$ . The head of the screw D rests in engagement with the inner face of the disk  $h$ , so as to form electrical contact therewith. In connection with the binding-posts  $g$  and  $h'$  there are clamping-pieces  $g^2$  and  $h^2$ , through which clamp-

screws  $g^3$  and  $h^3$  extend into engagement with the posts  $g$  and  $h'$ . A very effective contact is made by this device, as the ends of the wires, being placed between the clamping-pieces and the posts, are firmly pressed between the two by means of the clamping-screws, and when consisting of bundles of small wires, as is common, the latter are spread out into close electrical contact with the posts and their clamps.

I represents the key or circuit closing and breaking shaft, provided at its outer end with a handle or thumb-piece  $i$ . The handle  $i$  is here shown as made separate from the shaft and is preferably secured thereto so as to allow the shaft a limited movement independent of the handle, as is common. The handle may be formed of metal or of other suitable material, metal being in the present instance preferred. The shaft I is provided near its end opposite the handle with a circuit closing and breaking piece K, secured to the shaft and insulated therefrom by an insulating layer  $k$ . The piece K is elongated, its opposite ends or corners being preferably slightly rounded, and is located upon the shaft in position between the spring-arms  $f'$  and  $e^3$ , so that when turned in position to present its longest diameter transversely between the arms it will crowd them apart and bring its ends into electrical contact therewith, but when turned to bring its shortest diameter transversely between the arms it will rest out of contact with them. The shaft I is also provided with a squared piece L, fixed thereon, which is intended to rest between a pair of spring-arms  $l$  and  $l'$ , the latter having a normal pressure against the piece, so as to hold it, and hence the shaft, in position when turned, so as to present the opposite flat sides of the piece L toward the spring-arms.

One end of the shaft I rests in suitable bearings in the side  $b^2$  of the skeleton frame and the opposite end rests in suitable bearings in a plate M, which is provided with a thickened portion  $m$ , adapted to fit within and fill the opening  $b^5$  in the side of the skeleton frame, and with a thinner portion  $m'$ , adapted to lap over the outside of the portion  $b'$  of the frame and receive therethrough a screw  $m^2$  for holding it in position.

The base N of the lamp is provided with an internally-screw-threaded socket-piece  $n$ , adapted to receive the nipple C of the socket, and also with the circular plate  $n'$ , adapted when the lamp is screwed onto the nipple C to engage the spring-arms  $e'$  and  $e^2$  of the contact-plate  $e$ .

One of the wires which form the electric circuit through the lamp extends within the socket  $n$  into position to contact with the end of the binding-screw D, and the other is in electric contact with the circular ring  $n'$ .

An outside shell O is adapted at one end to receive the base of the lamp and at its opposite end to surround the mouth of the support A. The shell O is conveniently secured



to the support A by means of the screws  $a$ , which secure the socket thereto.

The parts are assembled as follows: The nipple, the several contact-plates, and binding-post disks, with the layers of insulating material between them, having been placed in position, the binding-screw D is inserted through them and screwed into the nipple, firmly binding all the parts to the end B of the skeleton frame. The shaft I, with the pieces K and L fixed thereon, is then inserted through the opening  $b^5$  in the frame into position. The plate M is then slipped over the end of the shaft into position and secured by the screw  $m^2$ . The handle  $i$  is then secured to the shaft, the wires attached to the binding-posts, the outer shell O placed in position, and the socket and shell secured to the support A by the screws  $a$ . The lamp may then be screwed onto the nipple C within the end of the outer casing O.

The electric circuit will be complete when the piece K is turned into engagement with the contact-arms  $f'$  and  $e^3$  by passing from the binding-post  $h'$  to the screw D, thence to the wire in the lamp in engagement with the end of the screw, thence to the circular plate  $n'$  in the base of the lamp, thence to either one or both of the branches  $e'$   $e^2$  of the plate  $e$ , thence to the arm  $e^3$ , thence through the piece K to the arm  $f'$ , thence to the plate  $f$ , thence to the disk G, and thence to the binding-post  $g$ . The circuit may be broken by turning the key or shaft to throw the piece K out of engagement with the arms  $f'$  and  $e^3$ .

It will be observed that the above arrangement admits of forming the several parts entirely of metal and mica; that the parts are assembled in close proximity to the end of the socket-frame toward the lamp, so as to leave the opposite end open for the convenient twisting and knotting of the line-wires before attaching them to the binding-posts, and that the several parts are so constructed that they may be readily struck up from sheets of metal without the expenditure of any considerable time and labor, while the screw depended upon for holding them in the proper relation to each other may be made large and powerful, so as to effectually prevent any liability of their displacement.

It is obvious that instead of the piece K being an electric conductor it might be formed wholly of insulating material and the arms  $f'$  and  $e^3$  be constructed to rest normally in

contact with each other when not held apart by the insulating-piece K. The circuit would then be broken by pressing the arms apart by the insulating-piece instead of by throwing the contact-piece K out of engagement with them and would be simply a reversal of what I have shown as my preferred form.

What I claim as my invention is—

1. A socket for electric lamps, comprising a frame or casing, contact-plates for closing and breaking the circuit, binding-posts for the attachment of the wires, a binding-screw, and a key, the said contact-plates and binding-posts being secured to the end of the socket frame or casing by the binding-screw, substantially as set forth.

2. In a lamp-socket, the combination, with the socket frame or casing, a hollow nipple located outside the end of the frame and insulated therefrom, and contact-plates located inside of the end of the frame and insulated therefrom and from each other, of a binding-screw extending through the contact-plates and end of the frame into the nipple for binding the several parts to the frame, and a key for making and breaking circuit, substantially as set forth.

3. In a lamp-socket, the combination, with a socket frame or casing provided with an opening in its side of greater dimensions than the circuit-closing shaft or key, of a shaft having fixed thereto a circuit closing and breaking piece and operating-pieces for holding the shaft in its adjustments, the said pieces upon the shaft being adapted to pass through the opening in the side of the frame, a plate adapted to surround the shaft and close the said opening in the side of the socket-frame, and contact-plates in position to be operated by the circuit making and breaking piece upon the shaft or key, substantially as set forth.

4. A blank for the skeleton frame or casing of a lamp-socket, comprising a central enlarged portion to form the end of the socket-frame, narrow portions extending in opposite directions from the central portion to form the sides of the socket-frame, and pieces projecting laterally at the extreme ends of the blank to form the broken annular base or open end of the socket, substantially as set forth.

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