

No. 770,054.

PATENTED SEPT. 13, 1904.

P. H. FIELDING.
ELECTRICAL CONNECTOR.
APPLICATION FILED JULY 31, 1903.

NO MODEL.

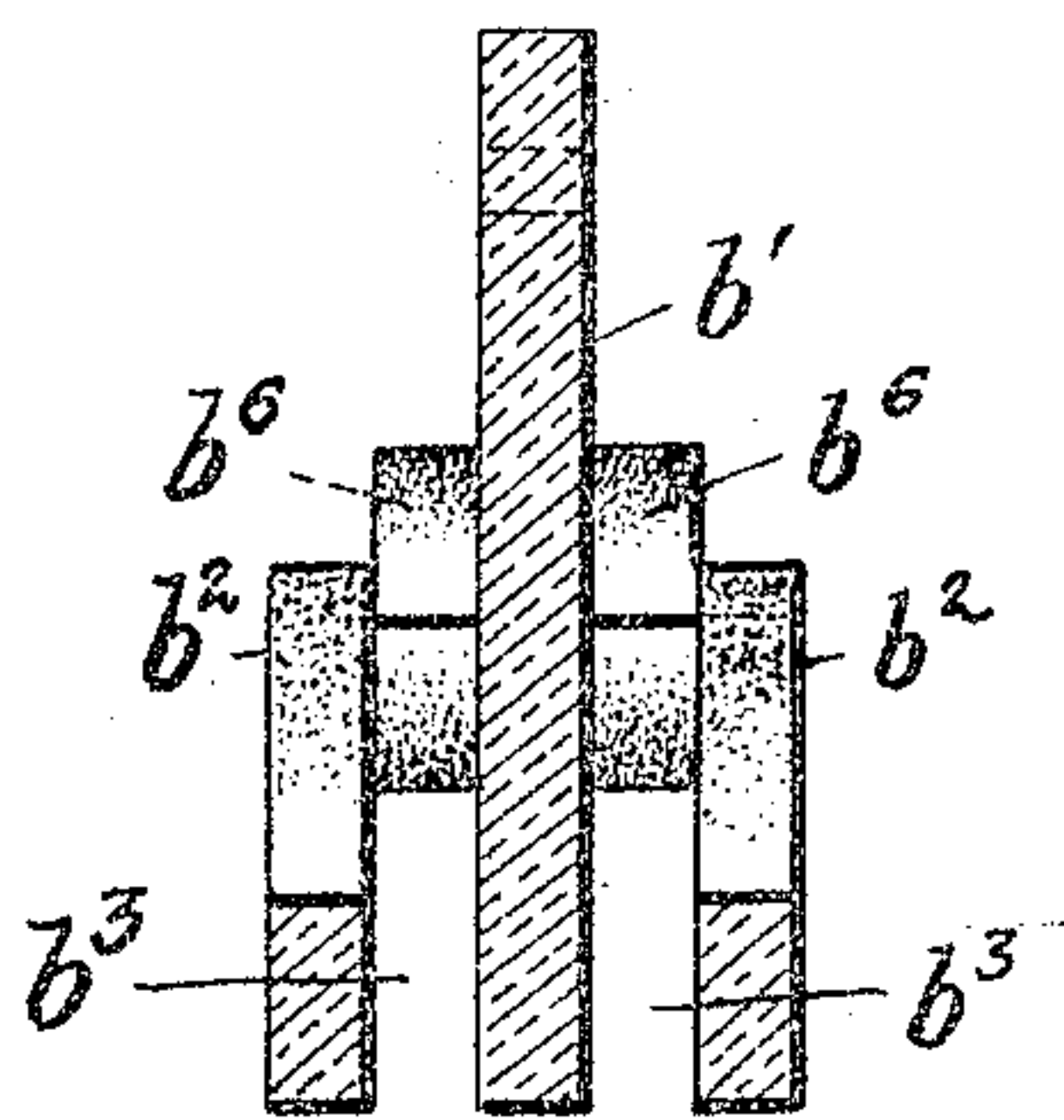
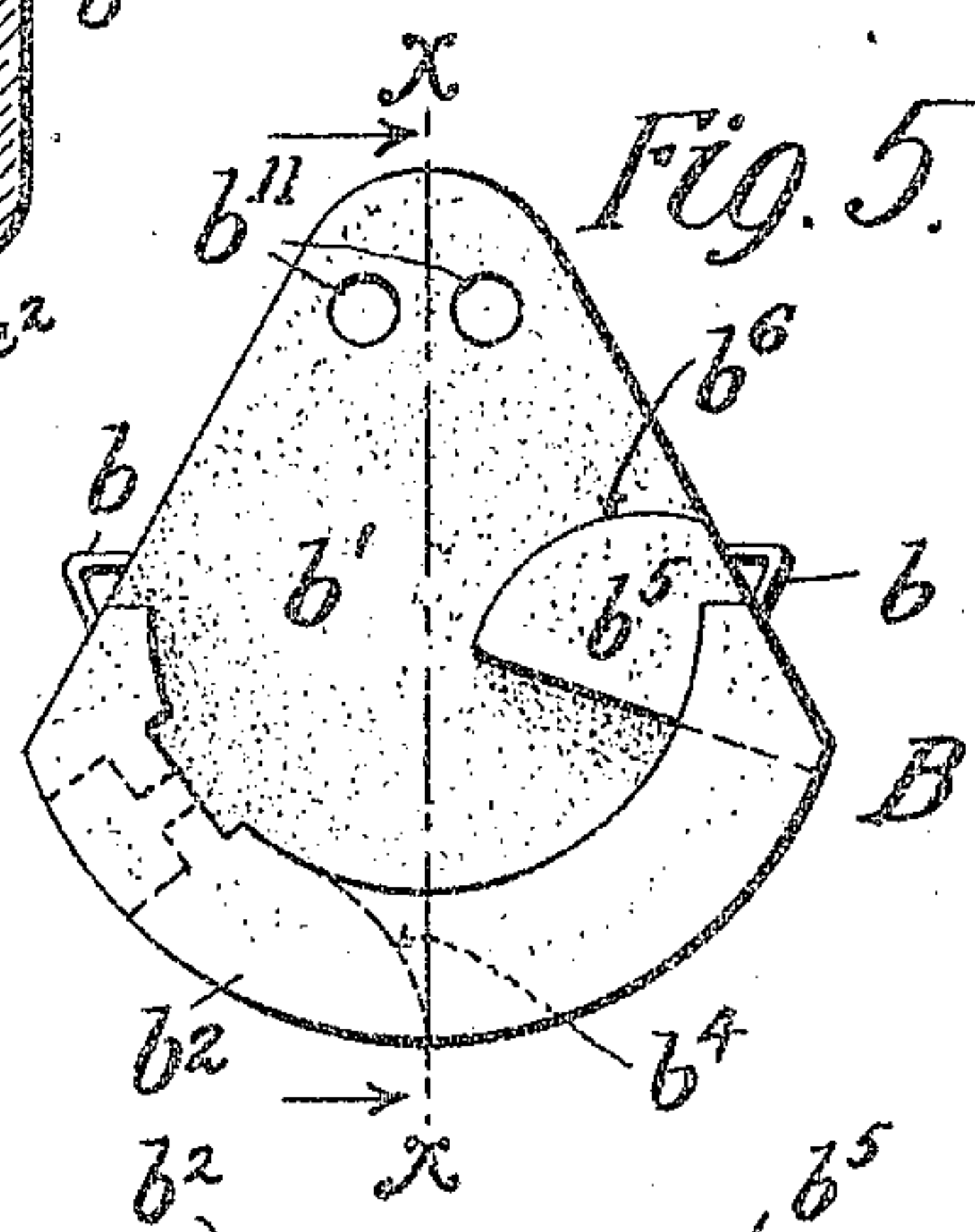
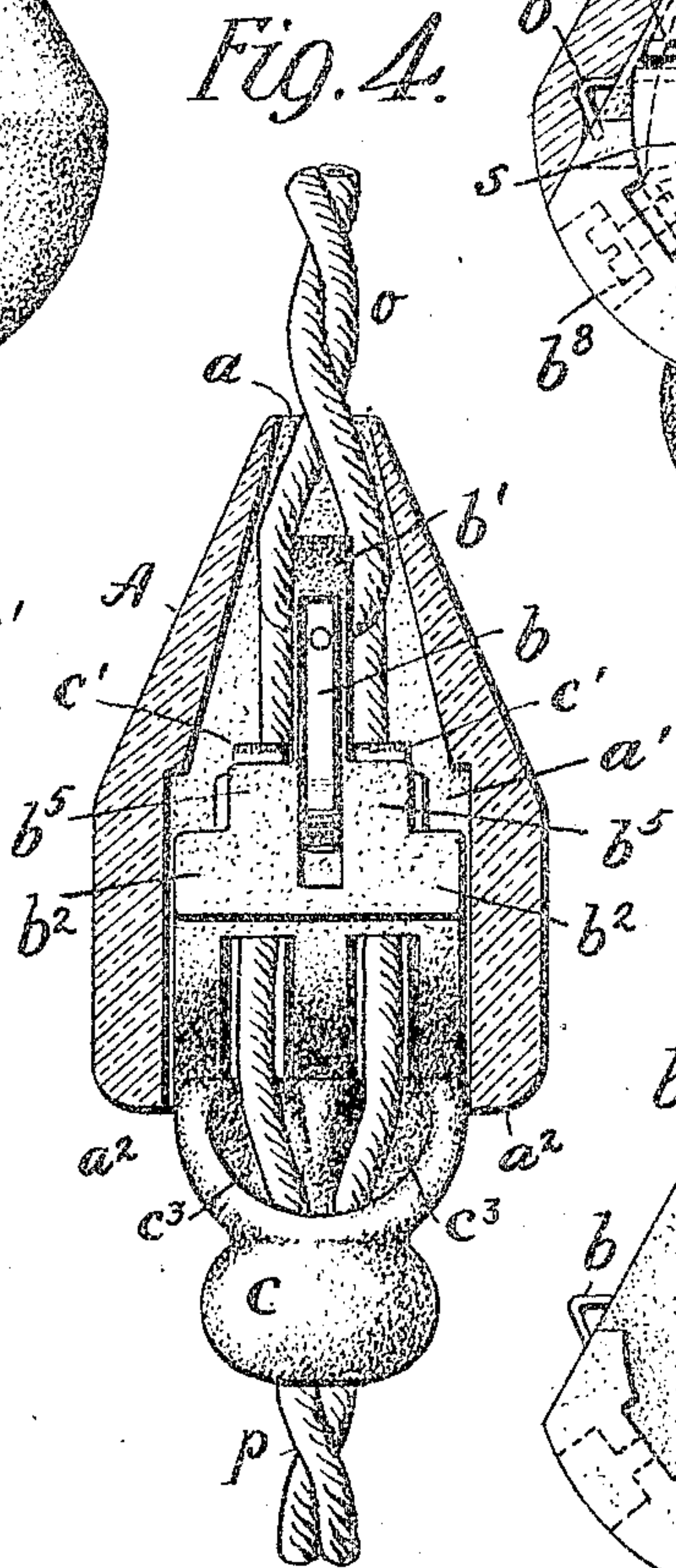
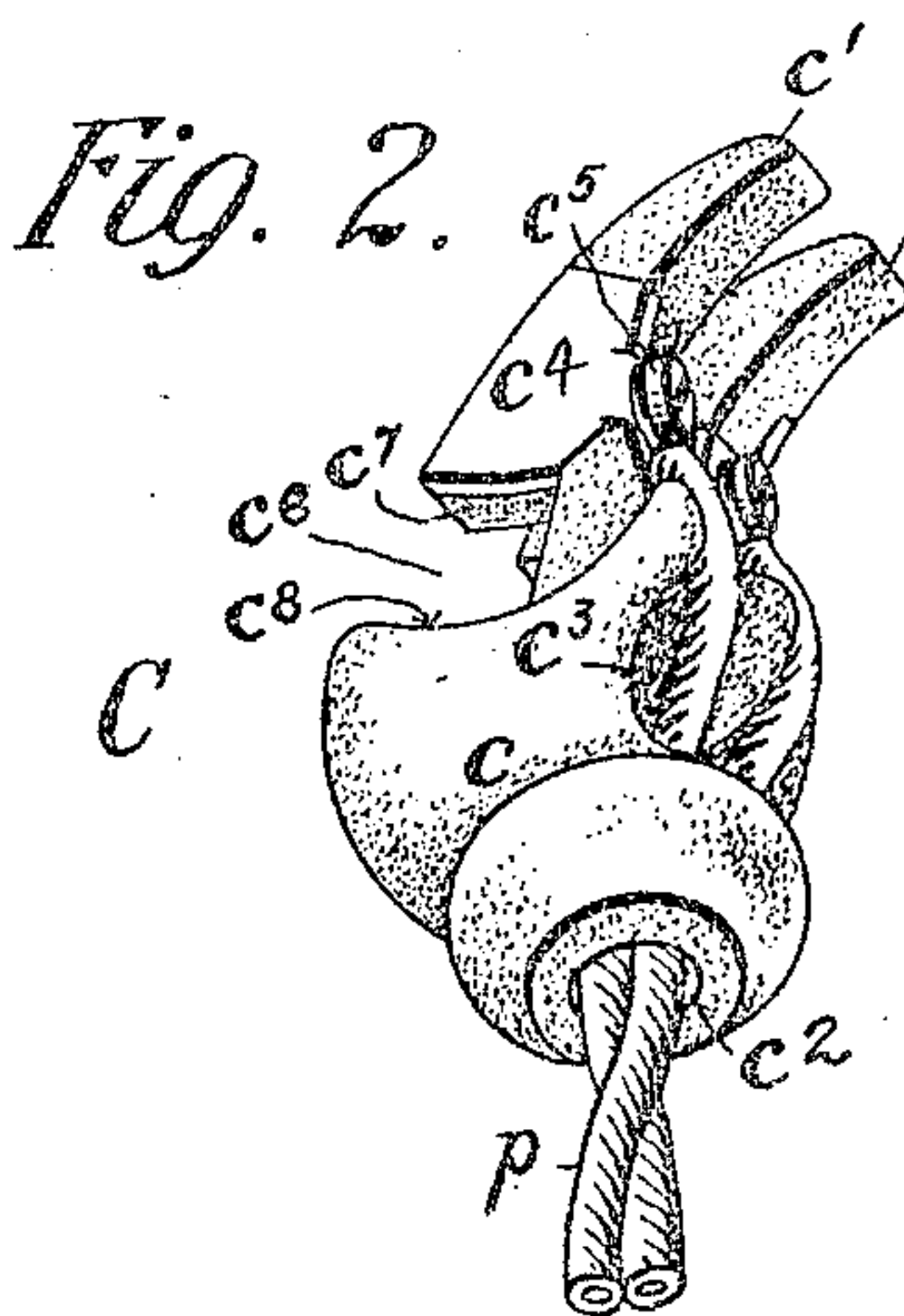
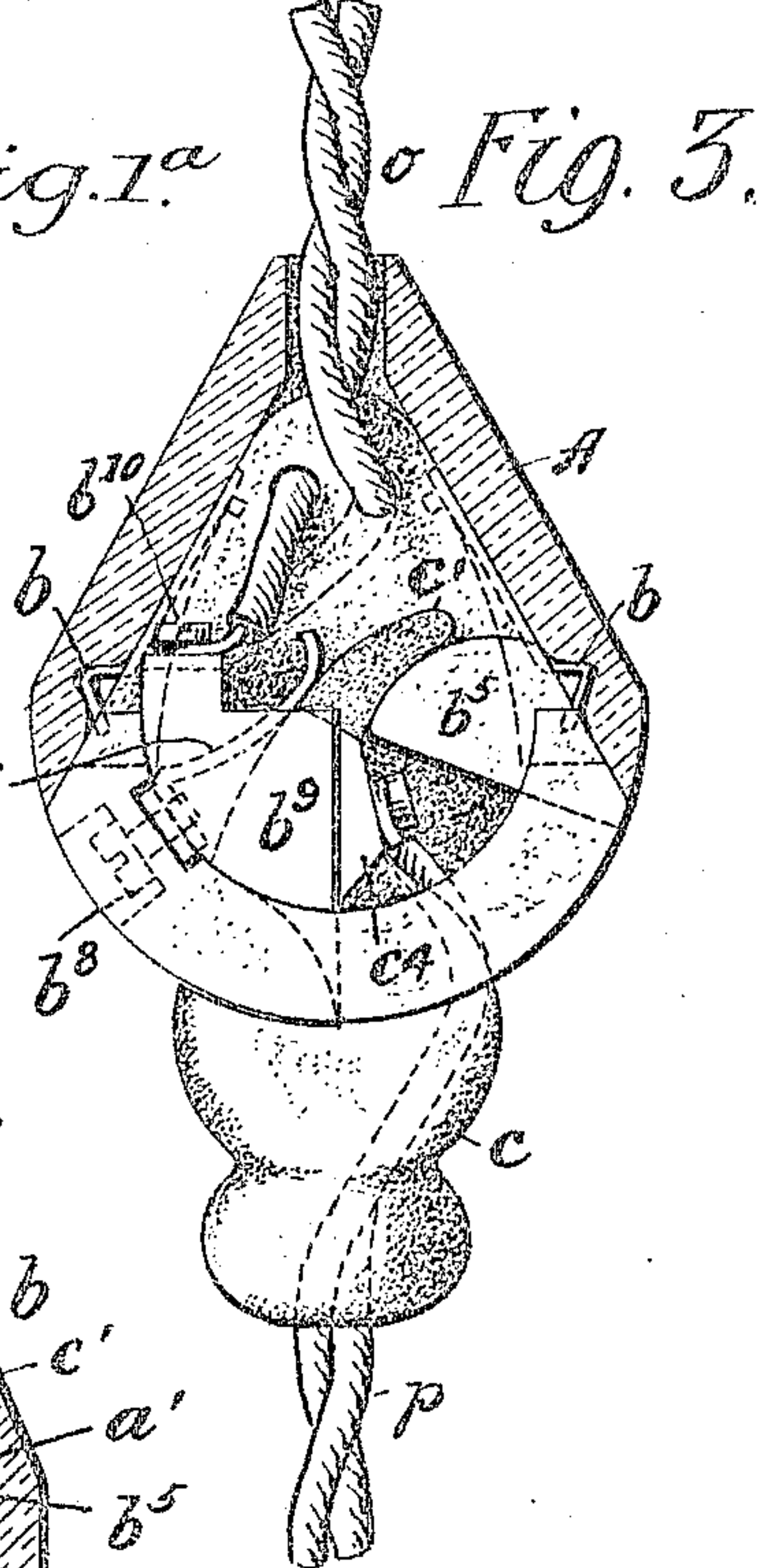
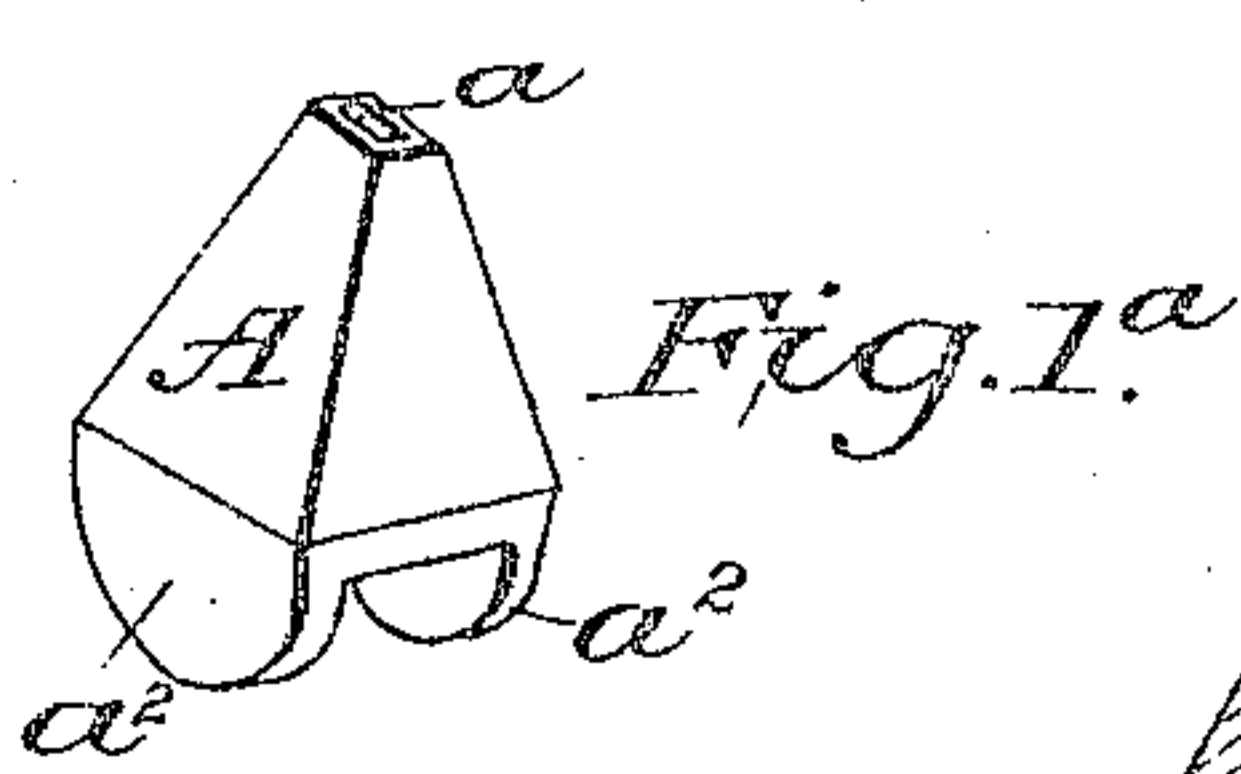
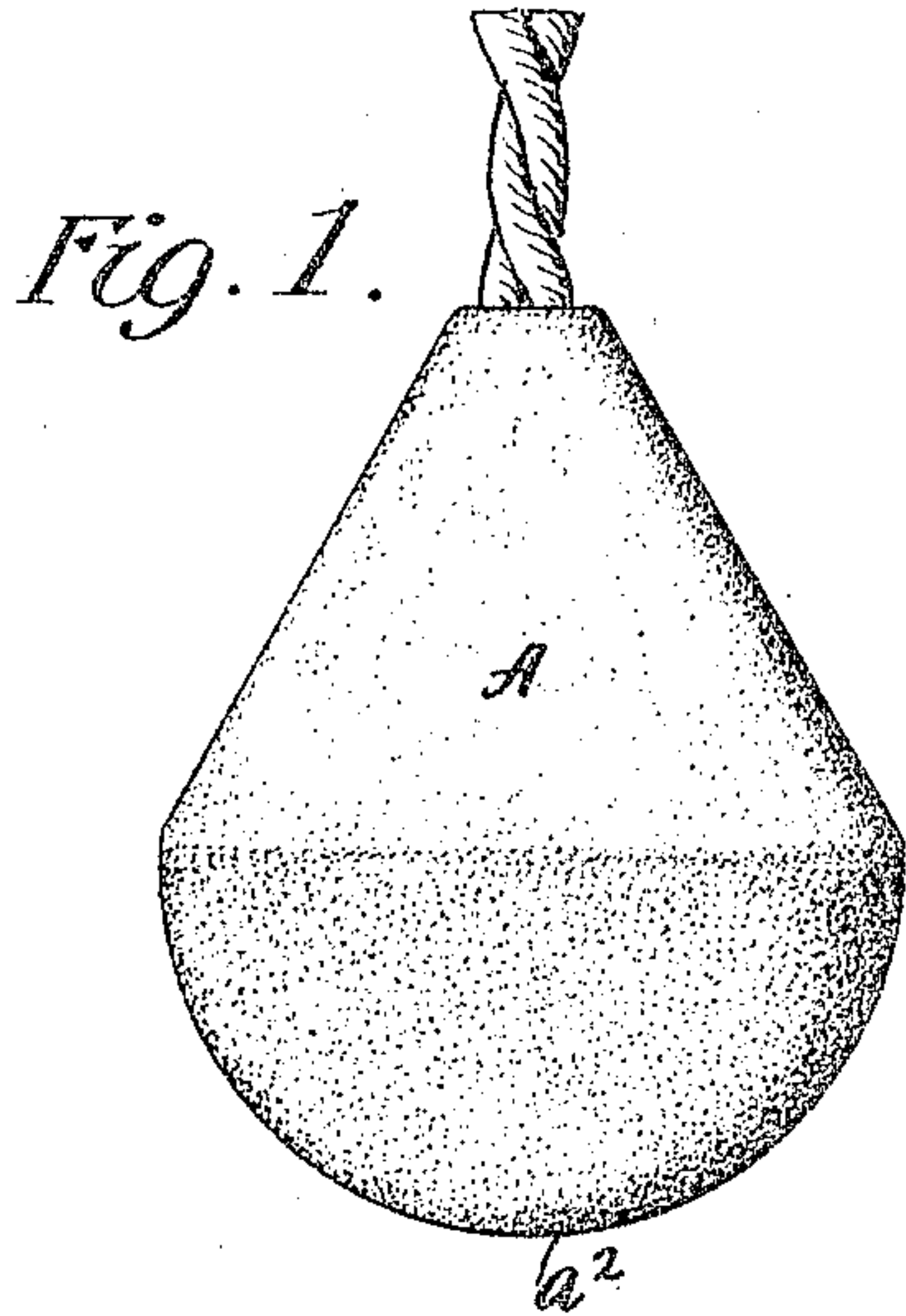


Fig. 8.

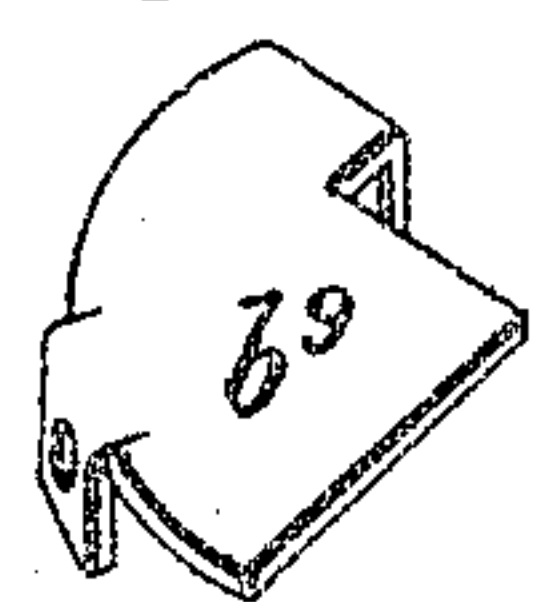
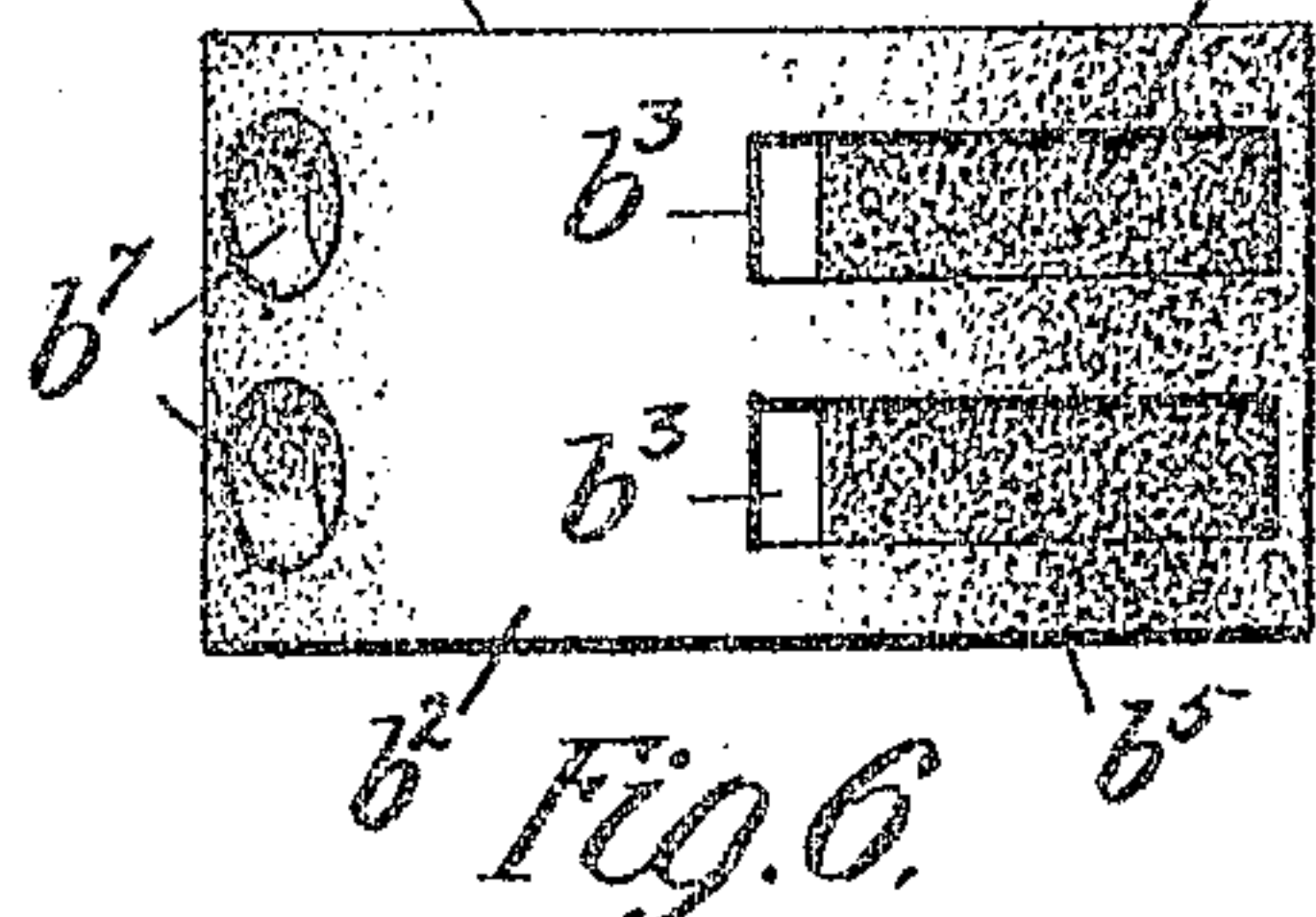
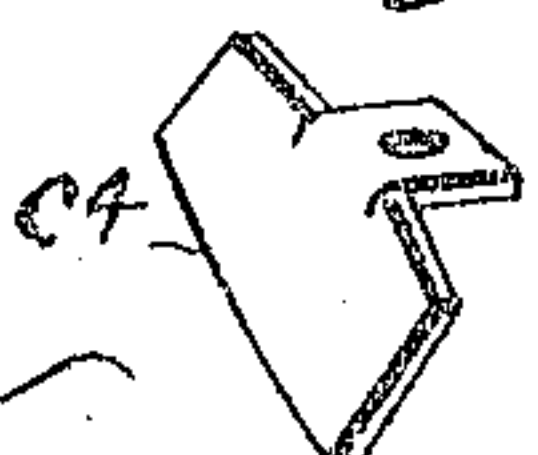


Fig. 9.



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UNITED STATES PATENT OFFICE.

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ELECTRICAL CONNECTOR.

SPECIFICATION forming part of Letters Patent No. 770,054, dated September 13, 1904.

Application filed July 31, 1903. Serial No. 167,659. (No model.)

To all whom it may concern:

Be it known that I, PHILIP H. FIELDING, a citizen of the United States, residing at the city of New York, in the borough of Manhattan and State of New York, have invented certain new and useful Improvements in Electrical Connectors, of which the following is a full, clear, and exact description.

This invention relates to electrical connectors, the object being to provide a two-part connector the members of which can be readily joined and disconnected at will and which is more particularly adapted for insertion in a suspended flexible conductor where the tension of the parts while in service is always along a straight line, due, for instance, to the weight of a lamp or other translating device supported by the flexible conductor.

The invention consists of the peculiar construction and combination of parts hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of the female member of the connector. Fig. 1^a is a perspective view, on a small scale, of said female member. Fig. 2 is a perspective view of the male member. Fig. 3 is a sectional view through the casing, showing the male and female parts connected together and in side elevation. Fig. 4 is a view taken at right angles to Fig. 3. Figs. 5 and 6 are respectively side and end views of the female member. Fig. 7 is a sectional view taken on line *x x* of Fig. 5. Figs. 8 and 9 are details of the contact parts.

The female portion of the connector consists, essentially, of two parts, A being the casing, and B the connecting member proper housed within the casing. The casing has a pyramidal upper part at the apex of which is an opening *a* to admit the flexible conductor *o*. This opening gradually enlarges into a substantially rectangular space *a'*, the lower end of which is open and bounded on two opposite sides by the semicircular lips *a''* of the casing. The female member B is housed within the chamber of the casing, the peculiar shape of the latter being made to agree with that of the female member, so that the member will fit in the casing, and to hold it in place there

are two springs *b*, carried by the member, which enter notches in the inner walls of the casing, as shown in Fig. 3. The member B consists of a central flat web *b'* of general triangular shape with one side rounded, as shown in Fig. 5. The rounded side is considerably thickened by the addition on each side of a flange *b''*. Each flange, however, is cut away to form slots *b'''*, one on each side of the central web *b'*. One of these slots terminates in a rounded shoulder *b⁴*, while near the opposite end and attached to the face of the web *b'* are lugs *b⁵*, having rounded shoulders *b⁶*. The slots *b'''* serve as entrance-openings for the male member of the connector, and the curved shoulders *b⁴* and *b⁶* facilitate the entrance and removal of said male member, all as will hereinafter appear. In the unslotted half of the circular surface of the part B are two countersunk holes *b⁷* to receive the heads of screws *b⁸*, which serve to hold two metallic contact-plates *b⁹* of the shape shown in Fig. 8, one being located on each side of the web *b'* and arranged parallel thereto, but with an intervening space to admit the male member of the connector. Each of these contact-plates carries a binding-screw *b¹⁰* for the conducting-wire *o*, which after passing laterally through the holes *b¹¹* in the web *b'* lead directly to the screws. It will be understood that the parts A and B are of suitable insulating material, such as porcelain or fiber.

The male member of the connector (indicated by C) consists of a porcelain body formed into a knob or handle *c* and two tongues *c'*, separated by an intervening space. The knob *c* has a central opening *c²*, admitting the flexible conductor *p*, said opening being continued in the form of two grooves *c³*, which lead the two wires of the conductor to the tongues *c' c'*, respectively. Each tongue is fitted on its outer side face with a metallic contact-plate *c⁴*, which is held in place by a screw *c⁵*, at the same time serving as the binding-screw. At the point where the tongues join the handle or body portion the latter is provided with a deep notch *c⁶*, and the tongues have overhanging shoulders *c⁷*, shaped to engage with the curved surface *b⁴* of the female member. The back side of each tongue is curved to fit against the

curved surface b^6 of the lugs b^5 , and the tongues are separated by a space equal to the thickness of the web b' . The handle portion is also provided with a curved surface c^8 of the same radius as the outer curved surface of the female member and from which the two tongues project.

To connect the two members together mechanically and electrically, the male member is adjusted to the female member so that the two tongues c' will respectively enter the two slots b^3 in the female member, straddling the web b' . To do this properly, the two members must be placed at an angle to each other and the male member thrust inward diagonally until the points of the tongues overlap the curved shoulders b^6 , whereupon the two parts are swung into line with each other, as shown in Fig. 3, and at the same time forced together, thus bringing the surfaces c^7 of the tongues into engagement with the shoulders b^4 and the backs of the tongues into engagement with the shoulders b^6 . These two sets of engaging surfaces are thus located on opposite sides of a vertical axial line, so that a direct pull or strain on the flexible conductor will be equally resisted by the engaging surfaces, and so long as such pulls or strains continue to be in a right line the members of the connector cannot be separated. When the parts are thus brought into engagement, it will be seen that the contact-plates c^4 on the tongues are brought into face-to-face contact with the plates b^9 , since the tongues enter the spaces behind the latter plates. Hence the electric circuit is completed between the two sets of plates and is therefore continued from the conductor o to the conductor p .

In order to separate the members of the conductor, it is essential to swing the knob of the male member to the right, as viewed in Fig. 3, during which motion the lower corners of the tongues will ride over the curved shoulders b^4 and allow the tongues to be withdrawn. It is now apparent that if the female member were rigidly supported upon a bracket or other fixture the male member could easily be detached therefrom in case the cord leading from it was swung to one side and pulled. Hence this connector is more especially adapted for suspension or in some position where both members will move laterally together when the cord is so moved.

To prevent rattling of the parts when connected together and also to prevent them from falling apart when the connector is handled, I insert a pair of springs s , securing one end of the same to each of the screws b^8 and arranging them in such a position that they will rest against the tongue and force its upper end against the shoulders b^6 . Without such

a provision the male member would fall out of the female member if the latter should be held horizontal with the slotted side downward. When the members are properly connected, the rounded exterior surface of the female member accurately fits the surface c^8 of the male member, which also insures stability and a close fit.

As an electrical device it will be seen that the contacts of the two sides of the circuit are entirely separated from each other by the web b' , and there can be no jumping or sparking between the two sides of the circuit inside of the connector. Furthermore, all metallic portions, binding-posts, contact-plates, &c., are entirely covered and protected by the outer casing A. These are important features of the connector.

Having described my invention, I claim—

1. In an electrical connector, the combination of male and female parts, one of which consists of a central flat web of insulating material, provided on opposite sides with contact-terminals offset from its face, while the other is provided with two tongues straddling said web and having contact-terminals corresponding with those on the other member and entered between the web and the respective contacts thereon, substantially as described.

2. In an electrical connector, the combination of male and female parts, one of which consists of a central web of insulating material, provided on opposite sides with contact-terminals offset from its face, while the other is provided with two tongues straddling said web, and having contact-terminals corresponding with those of the other member entered between the web and the respective contacts thereon, in combination with a casing covering all the contact-terminals.

3. An electrical connector consisting of a female member having a convex exterior surface containing two openings leading inward, an interior web separating said openings and contacts on each side of the web and exposed in said openings, in combination with a male member having a concave exterior fitting the said convex surface, and two tongues projecting from said concave surface and entering the openings, said tongues carrying contacts corresponding to those in the female member and means independent of the contacts whereby the two members can be locked together and released at will.

In witness whereof I subscribe my signature in presence of two witnesses.

PHILIP H. FIELDING

Witnesses:

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