

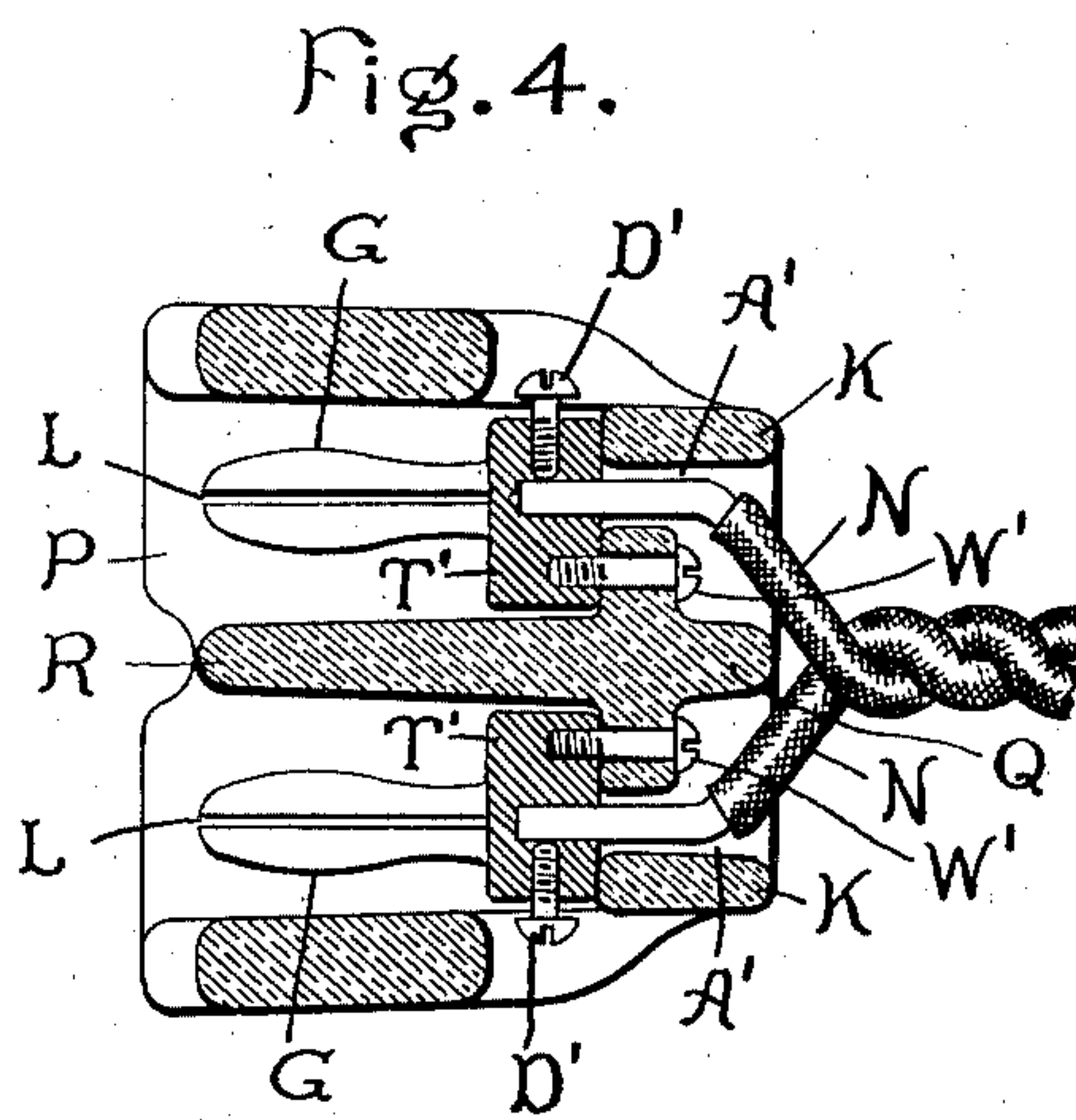
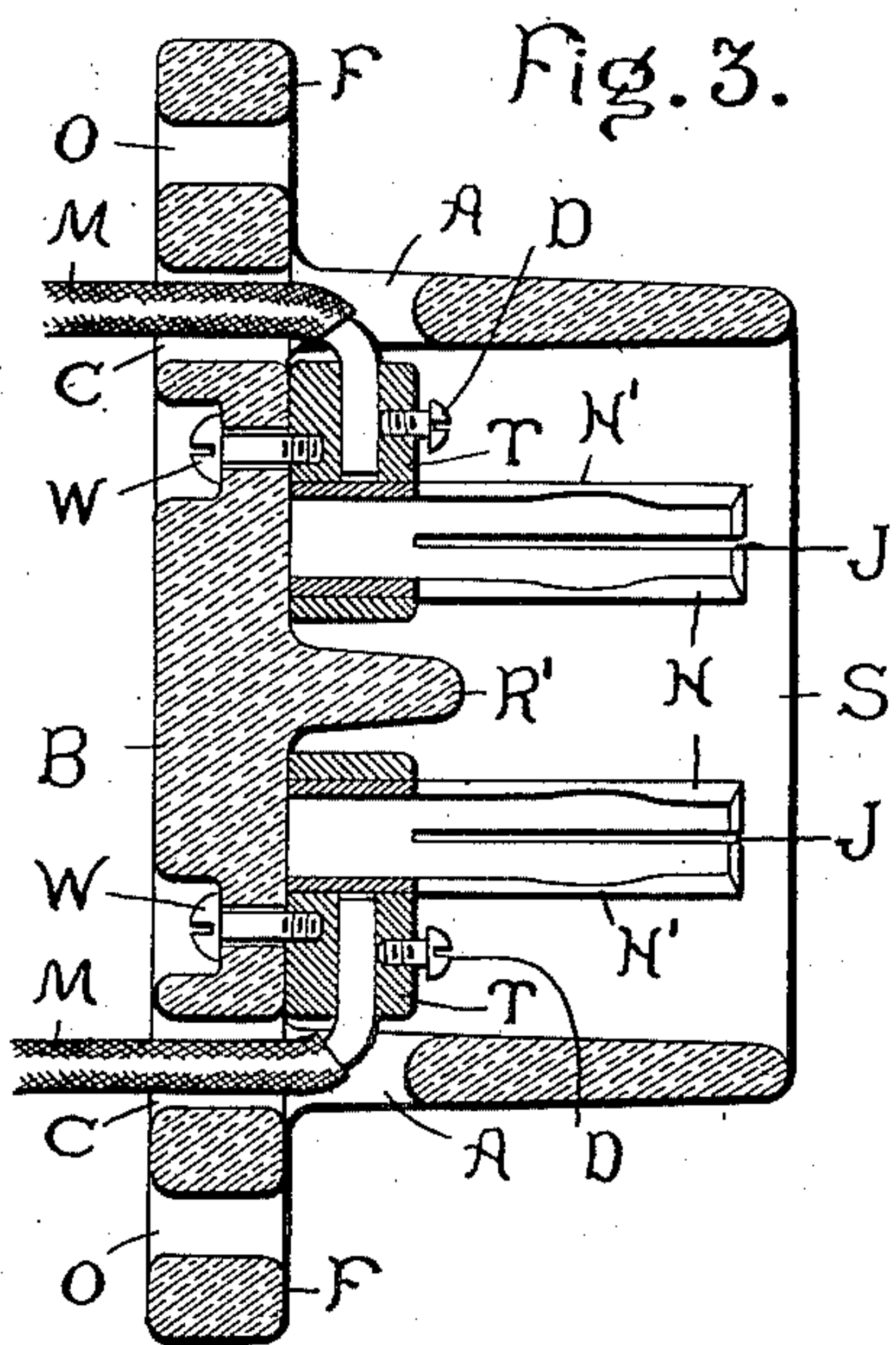
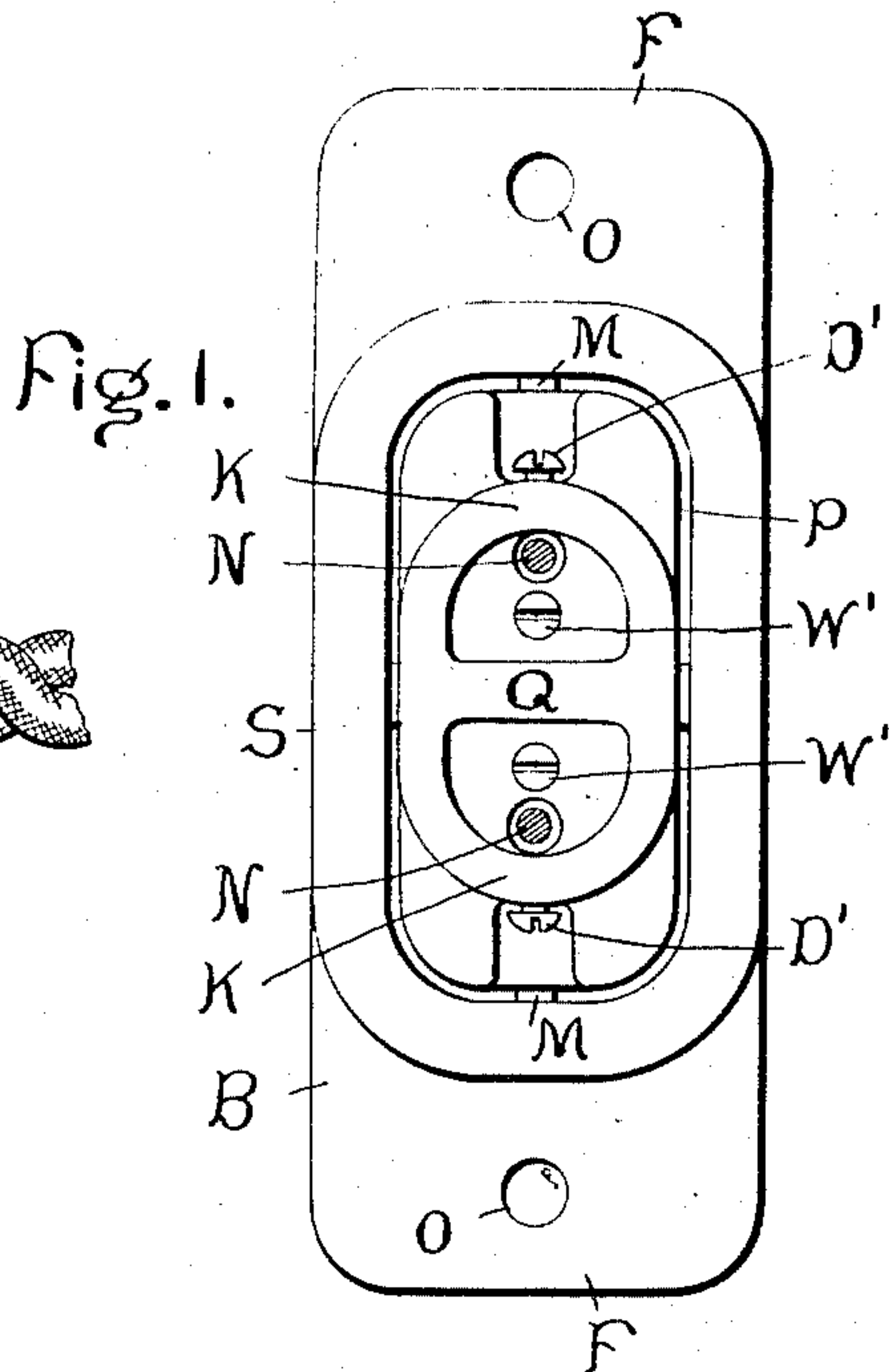
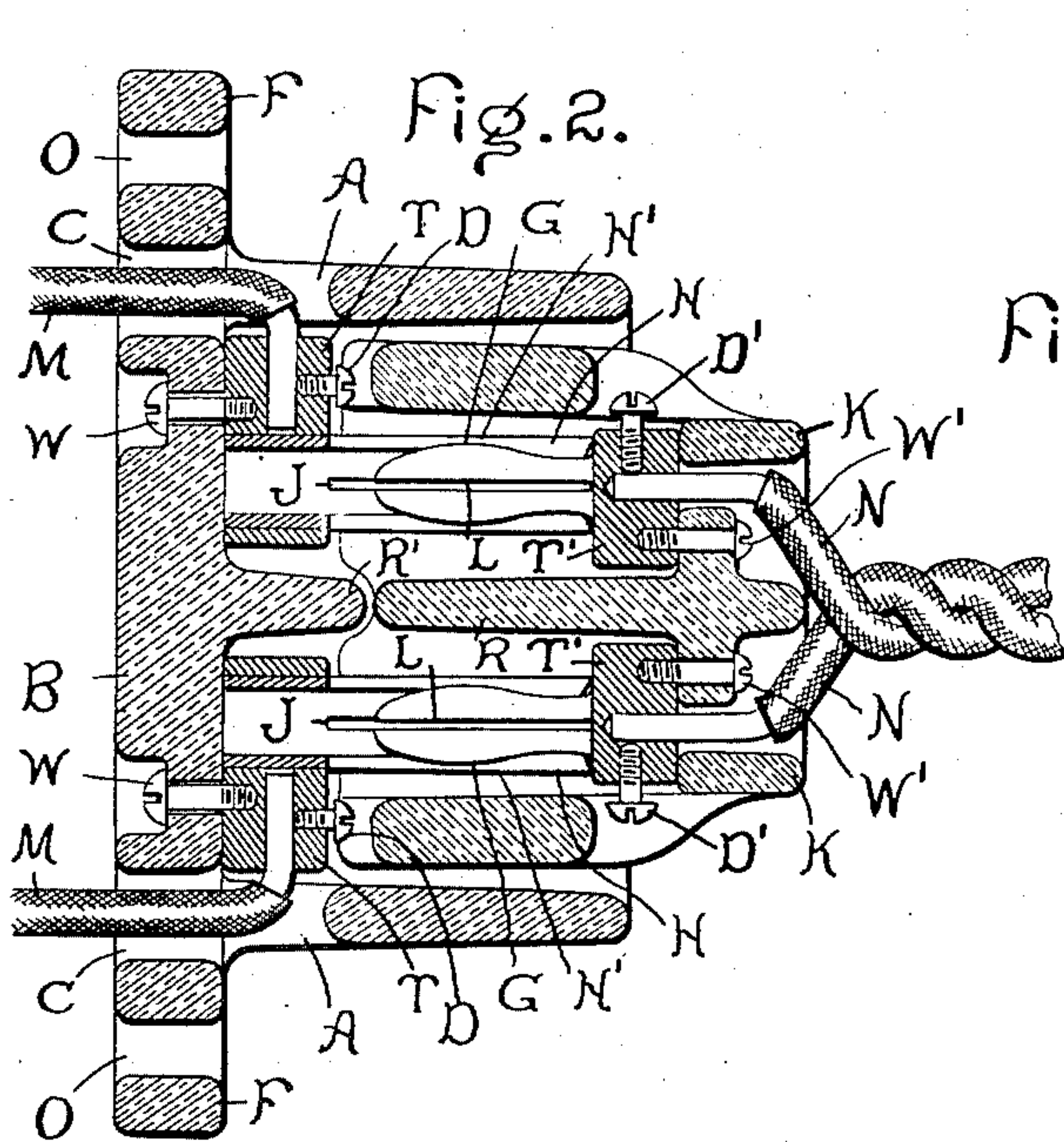
No. 714,869.

Patented Dec. 2, 1902.

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CONNECTOR.

Application filed May 1, 1901.

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## CONNECTOR.

SPECIFICATION forming part of Letters Patent No. 714,869, dated December 2, 1902.

Application filed May 1, 1901. Serial No. 58,263. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. CRAVENS, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Connectors, of which the following is a specification.

This invention relates to improvements in apparatus by which portable translating devices can be readily connected in circuit at predetermined places.

The invention consists in such an apparatus which comprises a member which is adapted to be secured in the position where it is desired to operate the portable translating device and another member which is carried with the translating device and connected to the terminals thereof by long flexible leads. The stationary member is adapted to have the leads of the generator-circuit secured to it, and each member is provided with contacts which are connected with the main generator and branch circuits, respectively. The contacts of the respective members are adapted to engage each other, so as to make a good connection between the main and the branch circuits and so as to hold the two members securely in their operative positions.

The invention is especially adapted for power-circuits where large currents are used, and hence may be usefully employed in connection with electric motors combined with portable machinery; but the structure of the device is such that it may be employed for other purposes, such as lighting-circuits.

Of the drawings, Figure 1 is an elevation of a device constructed in accordance with the invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a longitudinal section of one member, and Fig. 4 is a longitudinal section of the other member.

The member S is the shape of a hollow cup-shaped receptacle, which is formed with a base B, having projecting flanges F, provided with perforations O, by which the member is secured in the position where it is desired to operate the translating device. One such member may be placed at each point where

it is desired to operate the portable translating device. This member has the leads M of the generator-circuit secured within it. The member P also is in the form of a hollow cup-shaped receptacle and is adapted to be received within the cup-shaped portion of the hollow socket S. Within the plug member P are secured the leads N of the branch circuit. Both members P and S are composed of a suitable moldable insulating material, such as porcelain, and it may be noted that their structure is such that they may be readily formed in a mold and withdrawn therefrom. The socket S is provided with perforations A and C in the walls and base, respectively, both of these perforations communicating with the interior of the cup-shaped portion. As shown in the drawings, the generator-leads M are carried through the perforation C into the interior of the receptacle, and this is done in any case where the wires are led in between the walls of the room; but in cases where the wires extend along the walls or in any other way, as may be the case in mines or other similar locations, the generator-leads may be carried through the lateral perforations A in the side walls of the cup-shaped receptacle.

Metal terminal blocks T are secured to the base B of the socket S by screws W, which pass from the outside of the base. Their heads are located in exterior countersunk holes, which may be filled up with an insulating compound, if desired, and these metal terminal blocks are constructed with cavities to receive the ends of the generator-leads and are provided with binding-screws D, which secure the ends of the leads in position.

As shown in Figs. 2 and 3, the terminal blocks T are constructed to receive the ends of hollow terminals H. As shown, the ends of these terminals or contacts are fitted and soldered in perforations in the terminal blocks T; but the terminals H may, obviously, be secured in any other manner. They might be integral with the blocks. It will be noted that this general manner of securing the ends of the terminals H permits the major portion of the terminals to project freely within the interior of the



cup-shaped socket S, so that no parts lie adjacent to the terminals and so that the latter, which are preferably of brass tubing split to give a spring action, can be expanded, as described hereinafter. Formed integral with the socket S is an insulating-barrier R', which is located between the terminal blocks T to prevent the generator from being short-circuited.

As best shown in Fig. 4, the hollow insulating-plug P is provided with perforations A' for the reception of the branch leads N.

A projecting rim K is formed at the right-hand end of the plug to form a cup-shaped depression, in which depression are located screws W', which pass through the wall of the plug and engage in the bases T' of plug-terminals G, which bases are adapted to receive the ends of the branch leads N and binding-screws D', which hold the ends of these leads in place. In the case shown the plugs G are formed integral with the bases T', which bases are the equivalents of the terminal blocks T of the socket S. By this construction the entire terminal and block

can be turned out of a brass rod; but it is obvious that the device might be made in two parts secured together, as shown with respect to the tube-terminals H in Fig. 3. By this means of securing the plug-terminals in position within the hollow plug it is obvious that they are supported therein so as to project freely without coming in contact with any portion of the plug P or other parts of the device. An insulating-barrier R is also formed integral with the plug P, as is also an insulating-barrier Q. The barrier R and the barrier R' divide the plug and socket, respectively, into compartments, in each of which a single terminal is located.

The hollow terminals H of the socket S are split, as shown at J, into four segmental parts, so that the resulting spring portions may be expanded, and each terminal is provided with a portion intermediate its ends, as shown at H', which is of greater inner diameter than the rest of the terminal. The plug-terminals G of the insulating-plug P are formed with longitudinal incisions L, whereby the four resulting segmental portions can be sprung toward each other, and each terminal is formed with a portion G of greater outside diameter than the rest of the terminal. When a translating device is moved into the vicinity of a stationary socket S, the plug P, which is carried with the translating device and attached thereto by leads of suitable length, is inserted within the shell of the socket S, so that the enlarged ends of the plug-terminals G will force the split portions of the hollow terminals H apart, thereby instantly closing the circuit of the translating device. The plug P is pushed continuously into the socket until the enlarged ends of the plug-terminals engage in the portions H' of larger diameter of the hollow terminals H, when the spring portions of the latter tend to contract to grip

the plug-terminals and the portions of the plug-terminals tend to expand against the spring portions of the hollow terminals. A good electrical connection is thus maintained between the main and branch circuits, and the insulating-plug P is held rigidly in its operative position with respect to the socket S, as shown in Fig. 2. It will be noted that the porcelain walls of the two plugs do not come in contact and that the plug P is entirely supported by the hollow terminals and the plug-contacts.

In the assembled position the insulating-barrier R of the plug P extends nearly to the insulating-barrier R' of the socket S, and thus a short circuit of the generator is prevented. Furthermore, when the plug P is removed, when it is desired to break the branch circuit leading to a translating device, the barrier R is interposed in the path between arcs which might extend across the air-gap between the hollow terminals H, and thus also prevents a short circuit of the generator.

As shown in Fig. 1, the plug P is preferably oblong, so that the hollow and the plug-terminals will be guided properly to cooperate with each other. If desired, the positive and negative terminals may be indicated by suitable markings on the parts in cases where it would be injurious to the translating device to have current flowing through it in an opposite direction.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a connecting device, the combination with a cup-shaped socket and a cup-shaped plug both of moldable insulating material, said socket and plug being constructed to be received one within the other and having formed therein insulating-barriers; of hollow contacts and plug-contacts supported within said members so as to project freely therein, said hollow contacts being constructed to hold the plug-contacts tightly within them, to close the circuit and retain the cup-shaped insulating socket and plug in their operative positions, said insulating-barriers being adapted to coact to prevent a short circuit of the generator-leads.

2. In a connecting device, the combination with a cup-shaped socket and a cup-shaped plug of insulating material; said socket and plug being constructed to be received one within the other and formed with integral insulating-barriers which divide said plug and socket into compartments; of split-spring tube-contacts supported within one member one in each compartment so as to project freely therein, and plug-contacts supported within the other member one in each compartment to project freely therein so as to engage in and expand the freely-projecting tube-contacts, whereby the circuit is closed and the cup-shaped insulating socket and plug are held in their operative positions.



3. In a connecting device, the combination with a cup-shaped socket and a cup-shaped plug of insulating material, said socket and plug being constructed to be received one within the other; of tube-contacts supported within one member to project freely therein, said tube-contacts being separated from each other by an insulating-barrier carried by said member, and split-spring plug-contacts supported within the other member to project freely therein, said plug-contacts being separated from each other by an insulating-barrier carried by said other member and adapted to engage in the tube-contacts and be contracted thereby, to close the circuit and hold the cup-shaped insulating socket and plug in their operative positions.

4. In a connecting device, the combination with a cup-shaped socket and a cup-shaped plug of insulating material, of split-spring tube-contacts formed with portions of a greater diameter intermediate their ends, said contacts being supported within one member so as to project freely therein, and plug-contacts supported within the other member so that they project freely therein, said plug-contacts being formed with portions of greater diameter intermediate their ends, which portions are constructed to force the split portions in the tube-contacts apart and lodge in the portions of the tube-contacts which have greater diameter, whereby the circuit is closed and the cup-shaped insulating socket and plug are held tightly in their operative positions, said plug and socket having integrally-formed barriers which coact when said plug and socket are in their operative positions to prevent the generator-circuit from being short-circuited by arcing.

5. In a connecting device, the combination with a cup-shaped socket and a cup-shaped plug of insulating material, of split-spring tube-contacts formed with portions of greater diameter intermediate their ends, said contacts being supported within one member so as to project freely therein, and split-spring plug-contacts supported within the other member so that they project freely therein, said plug-contacts being provided with portions of greater diameter intermediate their ends, which portions are constructed to force the split portions of the tube-contacts apart and lodge in the portions of the tube-contacts which have greater diameter, whereby the split-plug portions tend to expand and the split-tube portions tend to contract, to complete the circuit and hold the cup-shaped insulating socket and plug tightly in their operative positions, said socket being formed with perforations in its base and side walls arranged to receive the circuit-wires with which said contacts are connected.

6. In a connecting device, the combination with a cup-shaped socket and a cup-shaped plug of insulating material, of metal terminal blocks secured to the inside of the socket

and plug, to receive the ends of the circuit-wires, means accessible from the exterior of said socket or plug for connecting said terminals to or disconnecting them from said circuit-wires, and hollow contacts and plug-contacts supported by the terminal blocks, so that they freely project in the insulating socket and plug and are electrically connected with the circuit-wires, said contacts being constructed to cooperate to close the circuit and retain the insulating socket and plug tightly in their operative positions.

7. In a connecting device, the combination with a cup-shaped socket and a cup-shaped plug of insulating material, of metal terminal blocks secured to the walls of the socket and plug and constructed to receive the ends of the circuit-wires, screws extending from the outside of the socket and plug into the terminal blocks, to secure the latter in position, and hollow contacts and plug-contacts supported by the terminal blocks, said contacts being constructed to cooperate to close the circuit and retain the insulating socket and plug tightly in their operative positions, said socket being constructed with perforations through its base and side walls, and arranged to receive the circuit-wires which lead to the terminal plugs.

8. In a connecting device, the combination with a cup-shaped socket constructed of insulating material with a flanged base which has perforations in the flanges for the reception of attaching-screws, of a cup-shaped plug of insulating material, said members being constructed to be received one within the other; and cooperating hollow and plug contacts supported within the socket and plug, so that they project freely therein, said socket being formed with perforations through its base and side walls, which communicate with the hollow interior and are arranged to receive the circuit-wires which lead to the contacts.

9. In a connecting device, the combination with a hollow cup-shaped socket and a hollow cup-shaped plug of insulating material, said members being constructed to be received one within the other; of hollow terminals and plug-terminals supported within said members so as to project freely therein, the hollow terminals being constructed to hold the plug portions tightly within them, to close the circuit and retain the socket and plug in their operative positions, and an integral insulating-barrier, which prevents the generator-circuit from being short-circuited by arcing.

10. In a connecting device, the combination of a hollow cup-shaped socket carrying terminals adapted to be connected to leads and an insulating-barrier separating said terminals, with a hollow cup-shaped plug carrying terminals adapted to be connected to other leads and an insulating-barrier separating said terminals, said plug and socket being constructed to be received one within the other, the ter-



minals of said plug being adapted to contact  
with the terminals of said socket and the in-  
sulating-barriers of said plug and socket be-  
ing adapted to coact when said plug and  
5 socket are in their operative positions to form  
means for preventing the generator-circuit  
from being short-circuited by arcing.

In witness whereof I have hereunto set my  
hand this 29th day of April, 1901.

GEORGE W. CRAVENS.

Witnesses:

BENJAMIN B. HULL,  
CHARLES STEINER.