

No. 865,483.

PATENTED SEPT. 10, 1907.

G. F. DREHER.
INSULATING COUPLING.
APPLICATION FILED APR. 9, 1906.

2 SHEETS—SHEET 1.

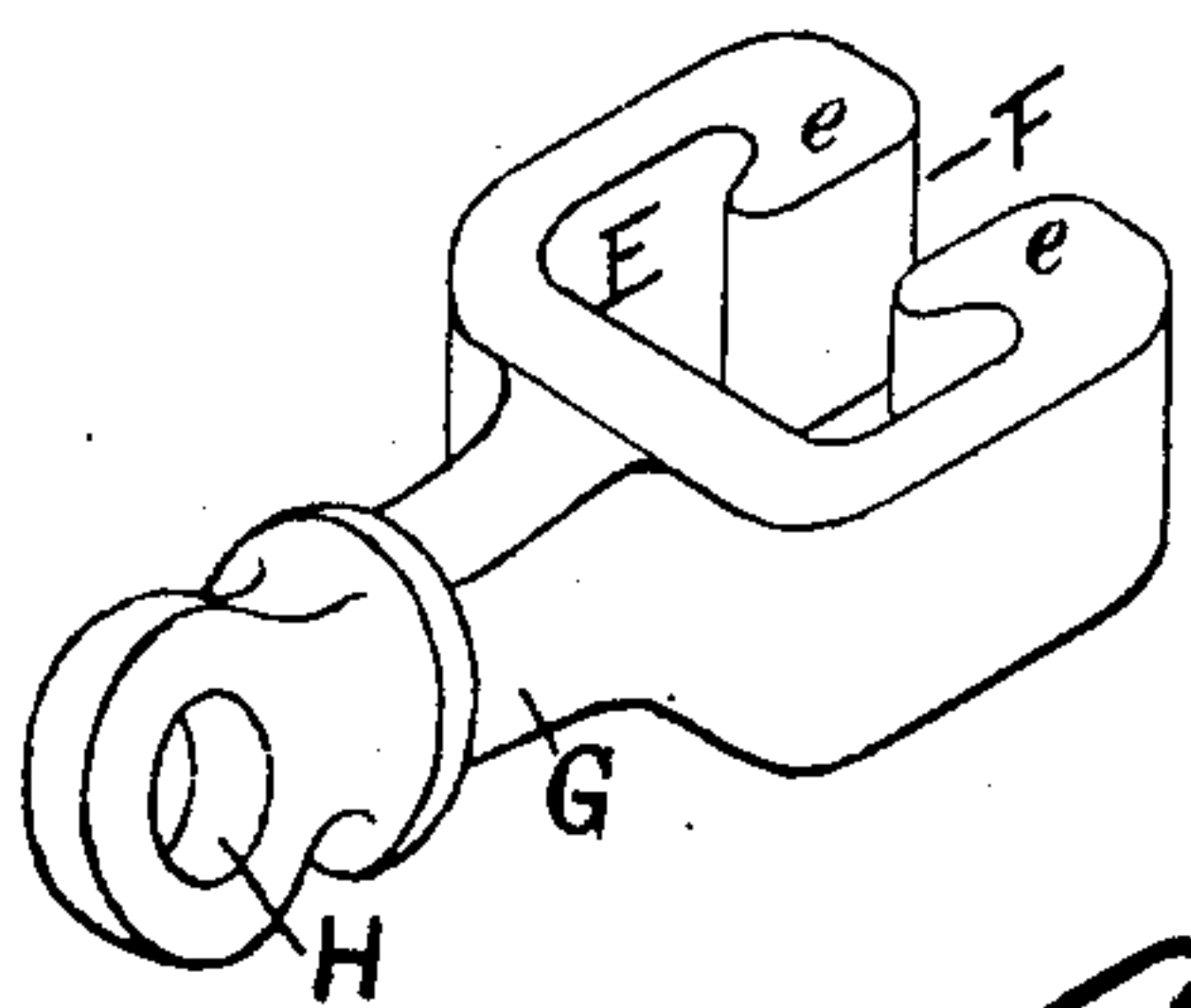


Fig. 1.

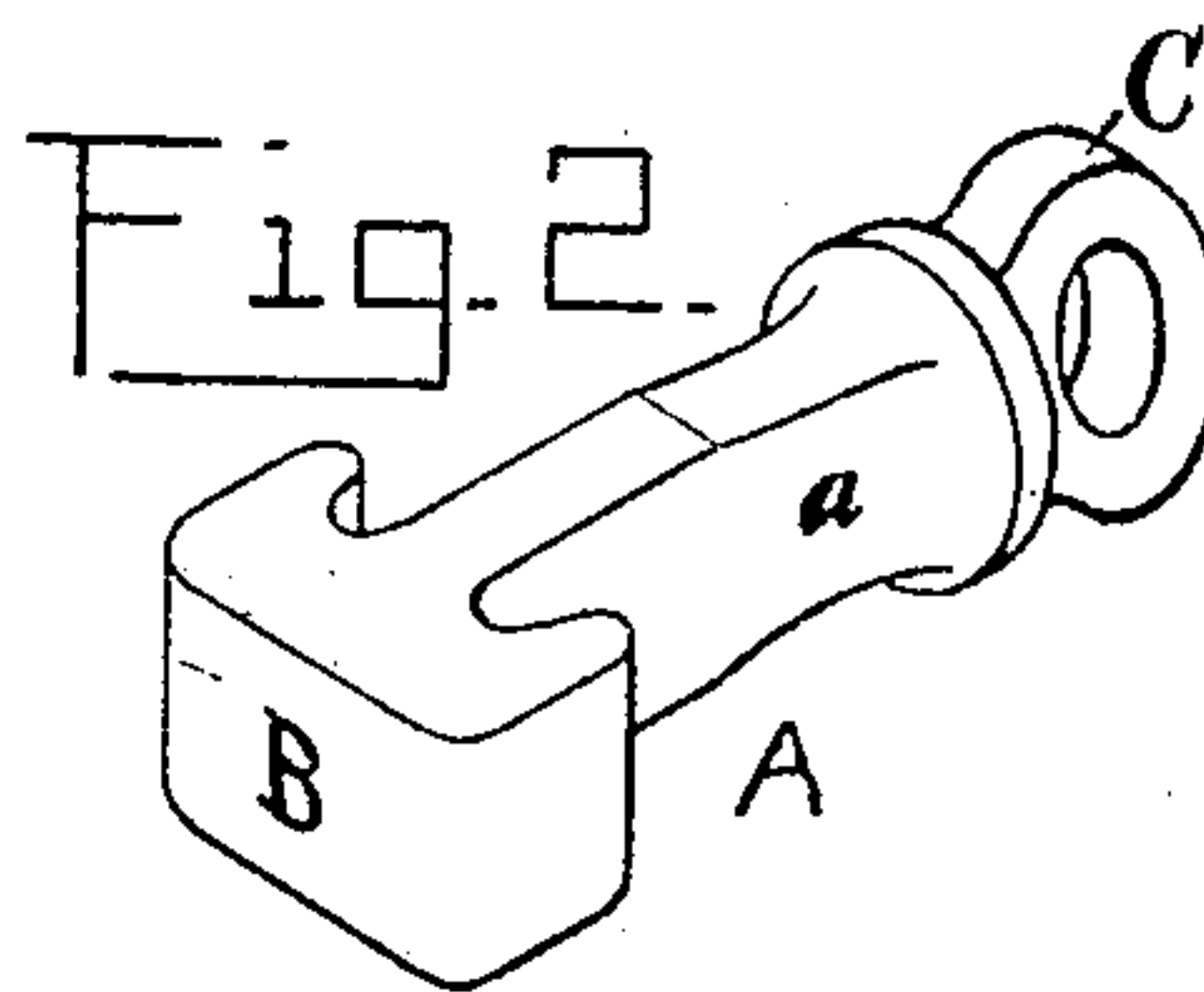


Fig. 2.

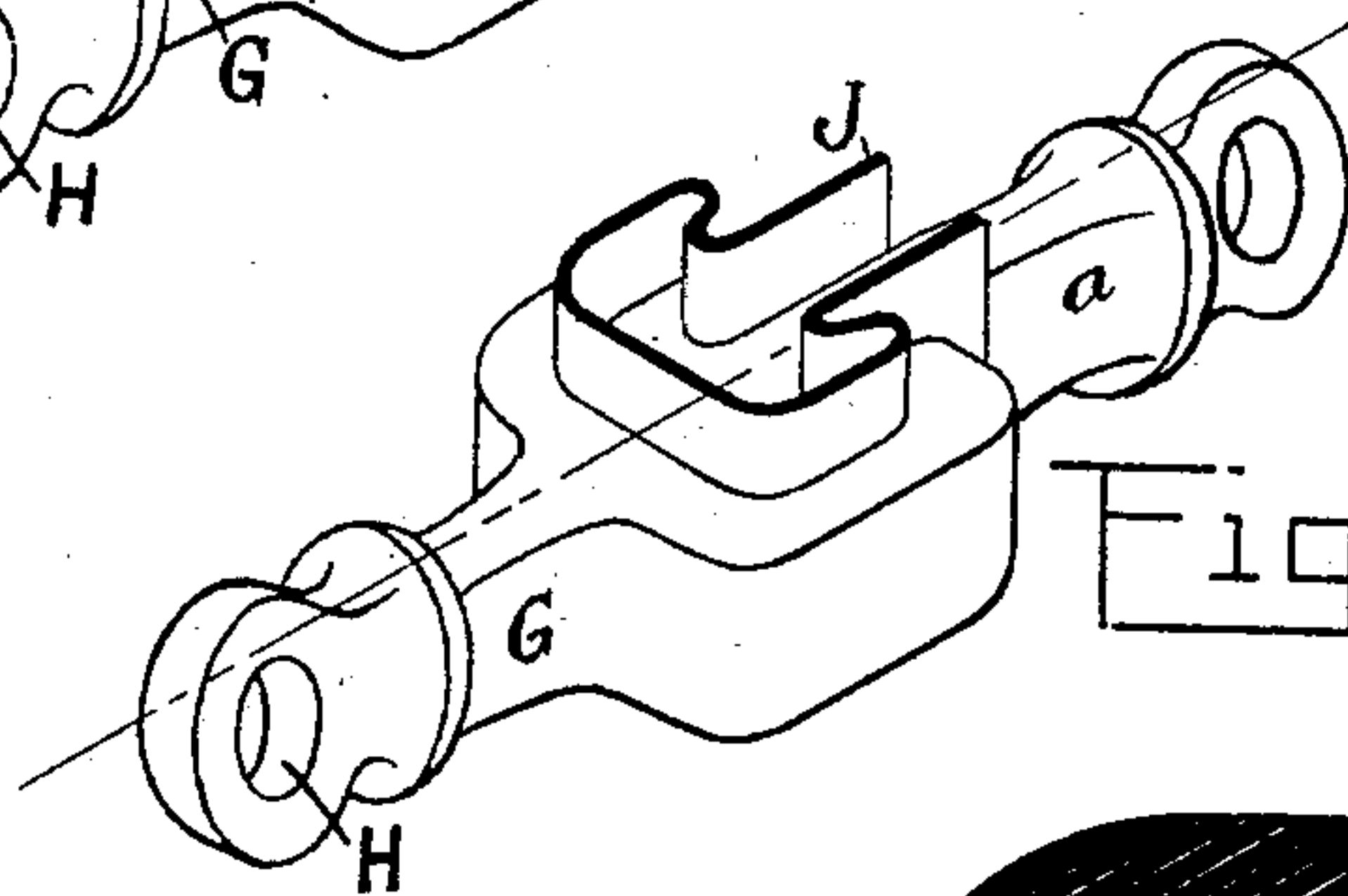


Fig. 3.

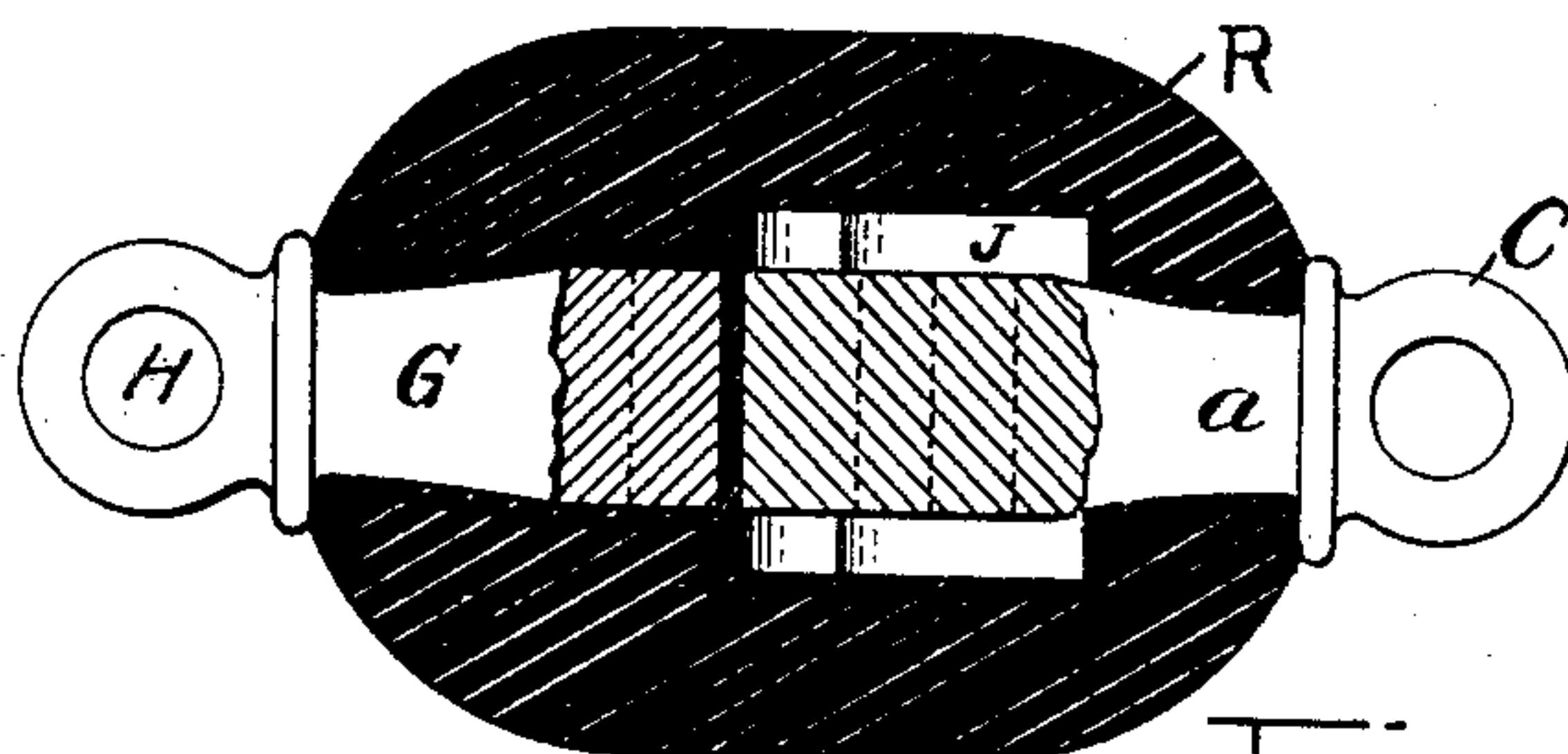


Fig. 4.

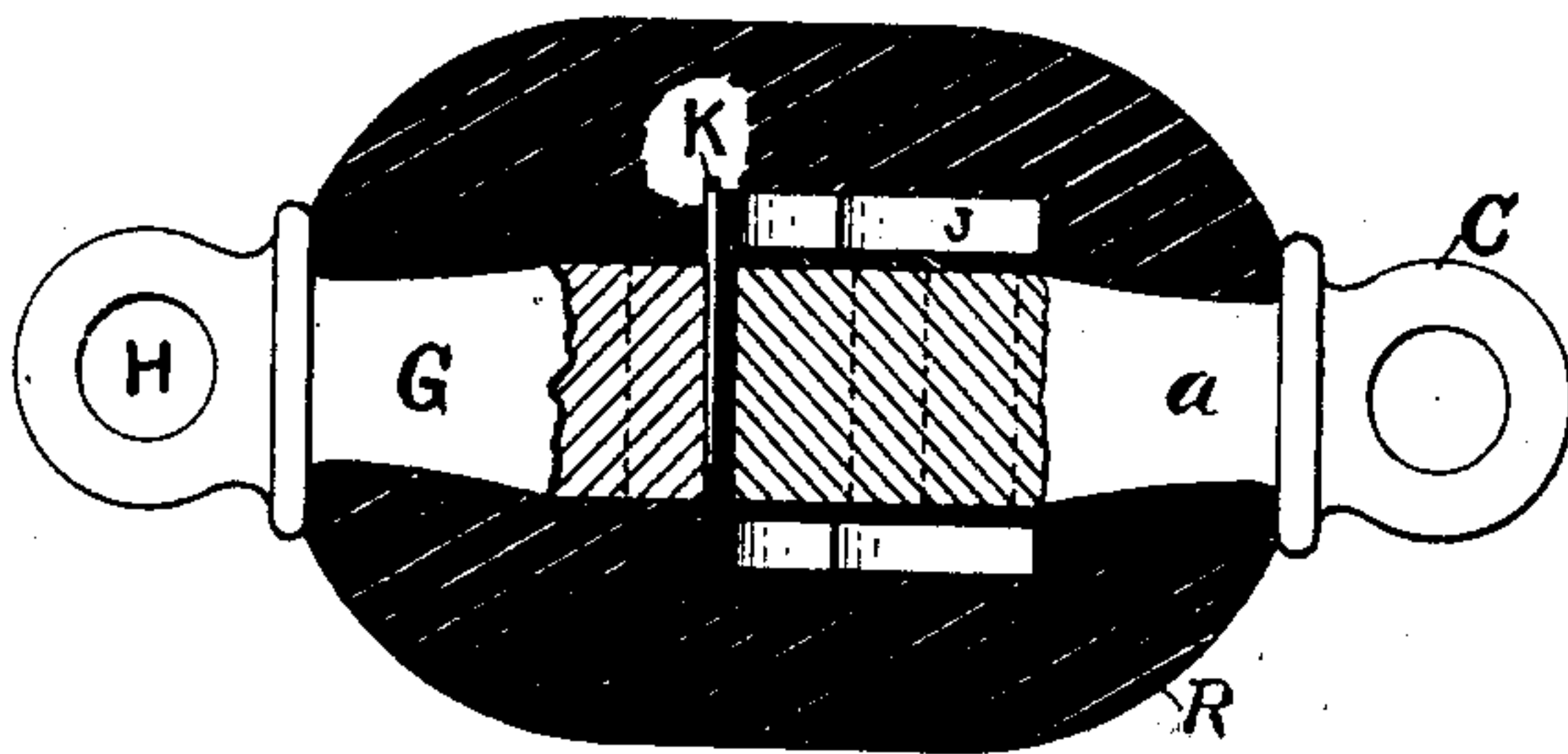


Fig. 5.

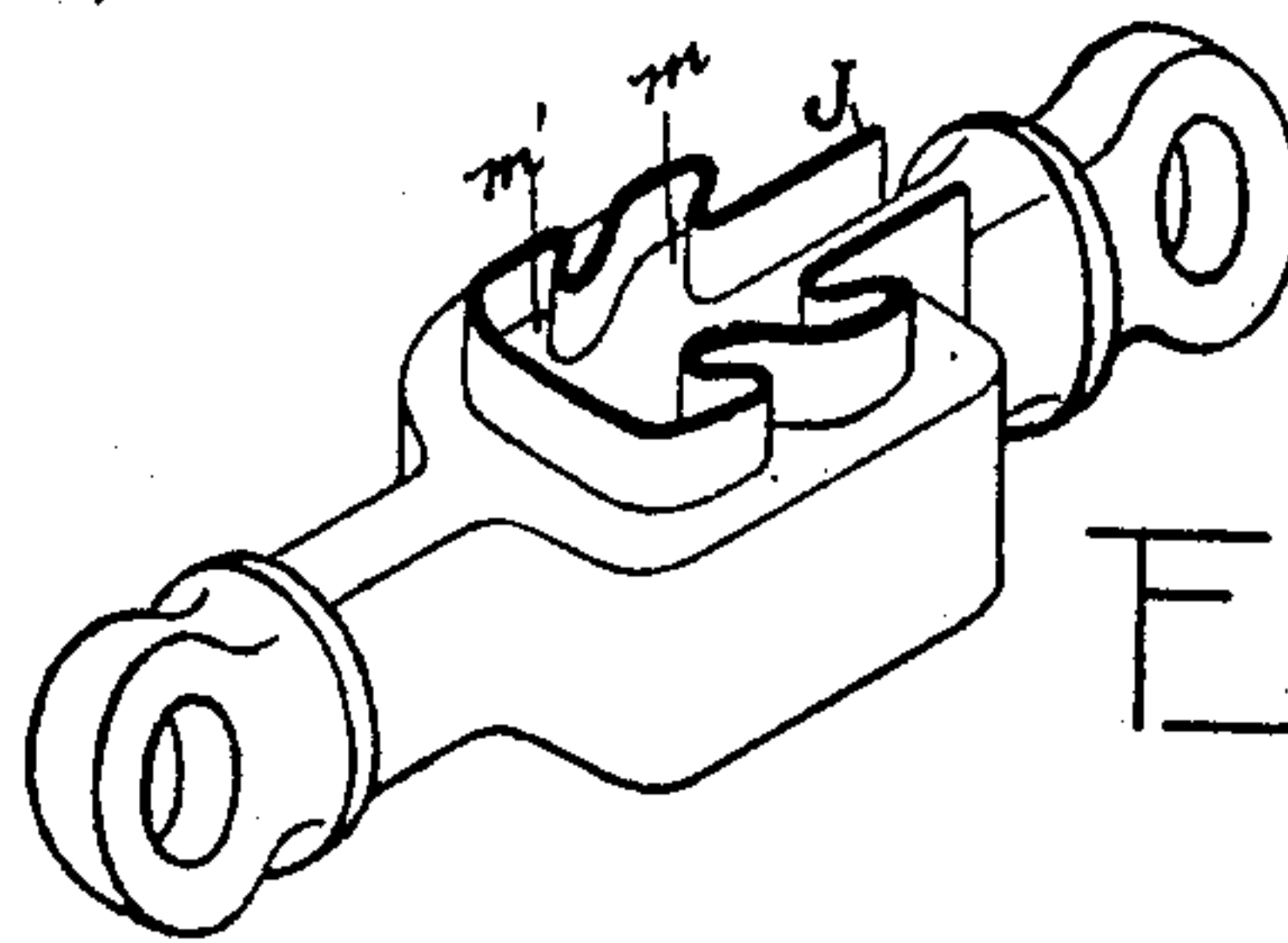


Fig. 6.

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2 SHEETS—SHEET 2.

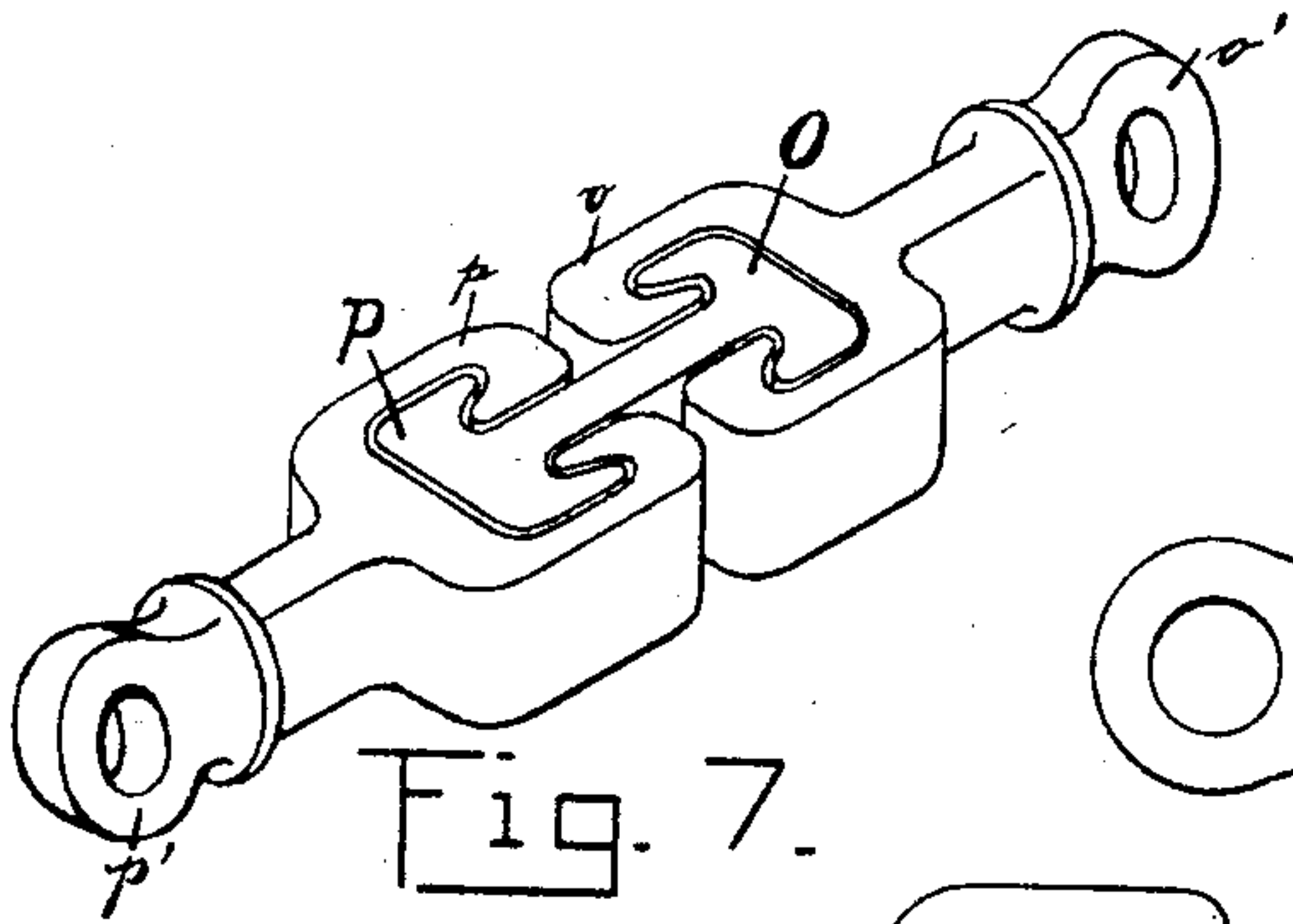


Fig. 7.

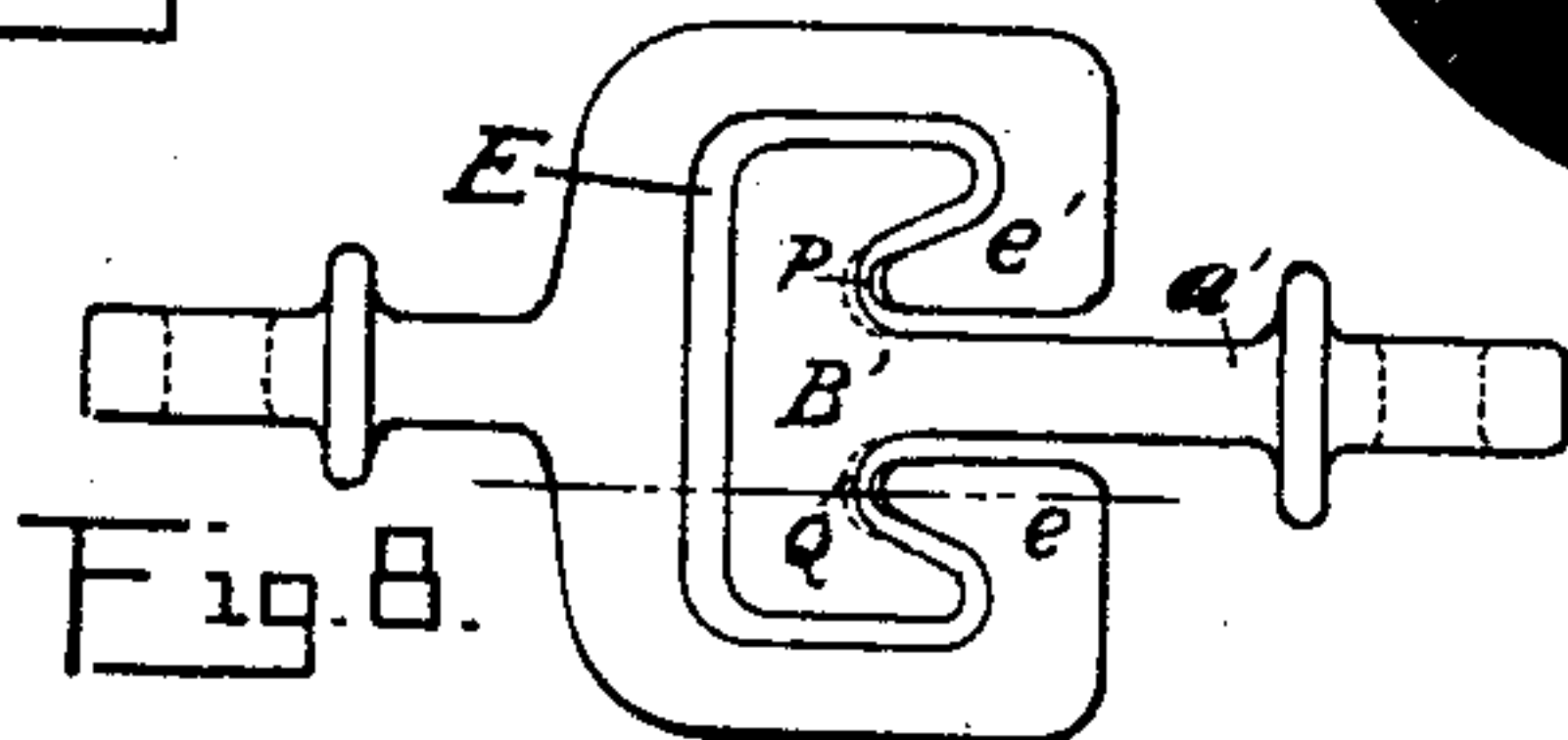
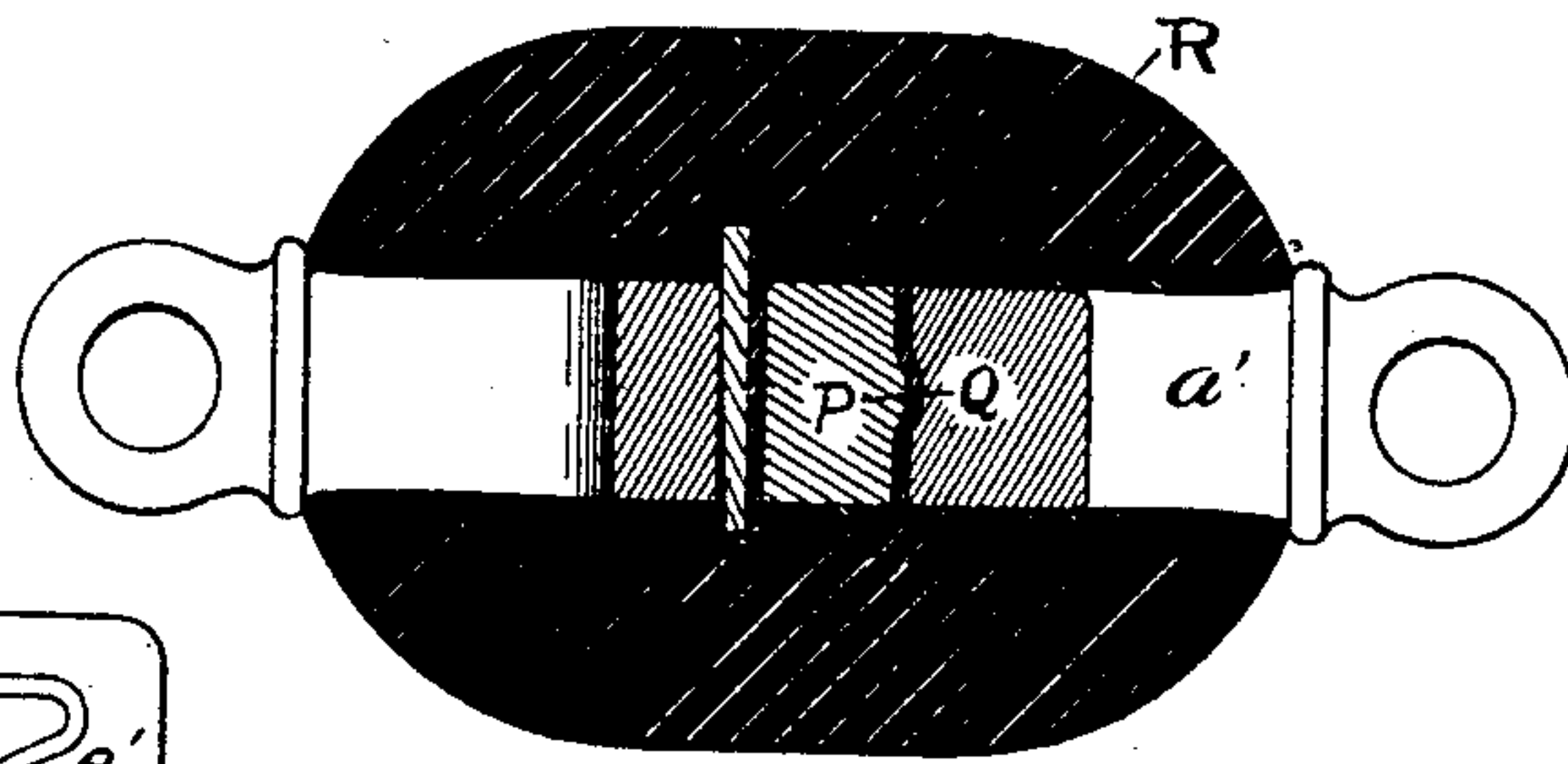


Fig. 8B.

Fig. 8A.

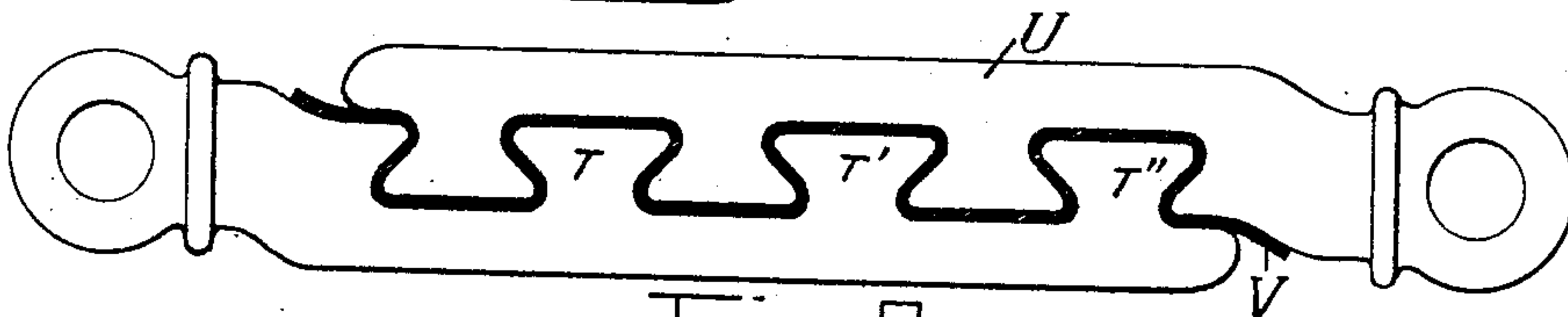


Fig. 9.

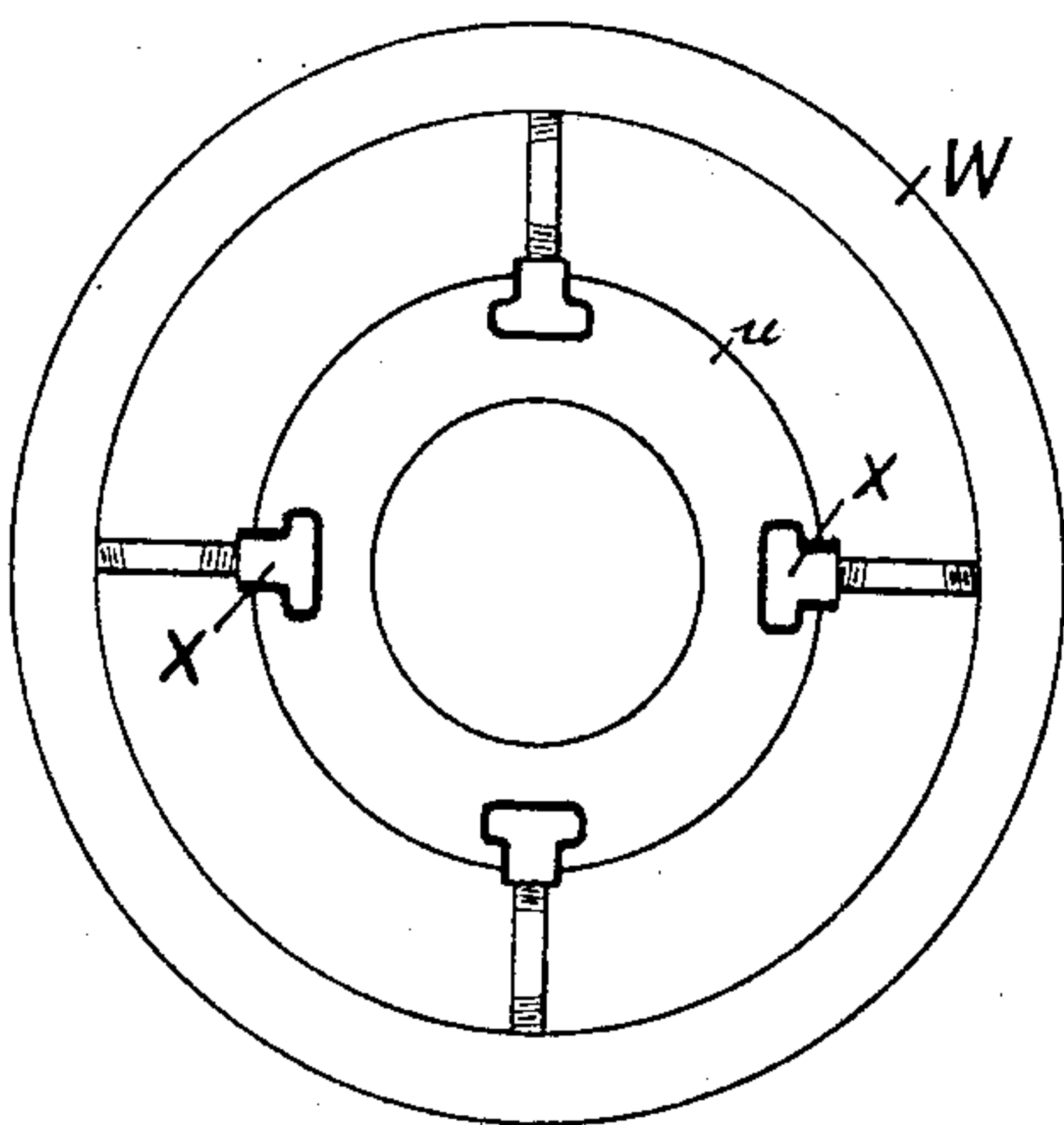


Fig. 10.

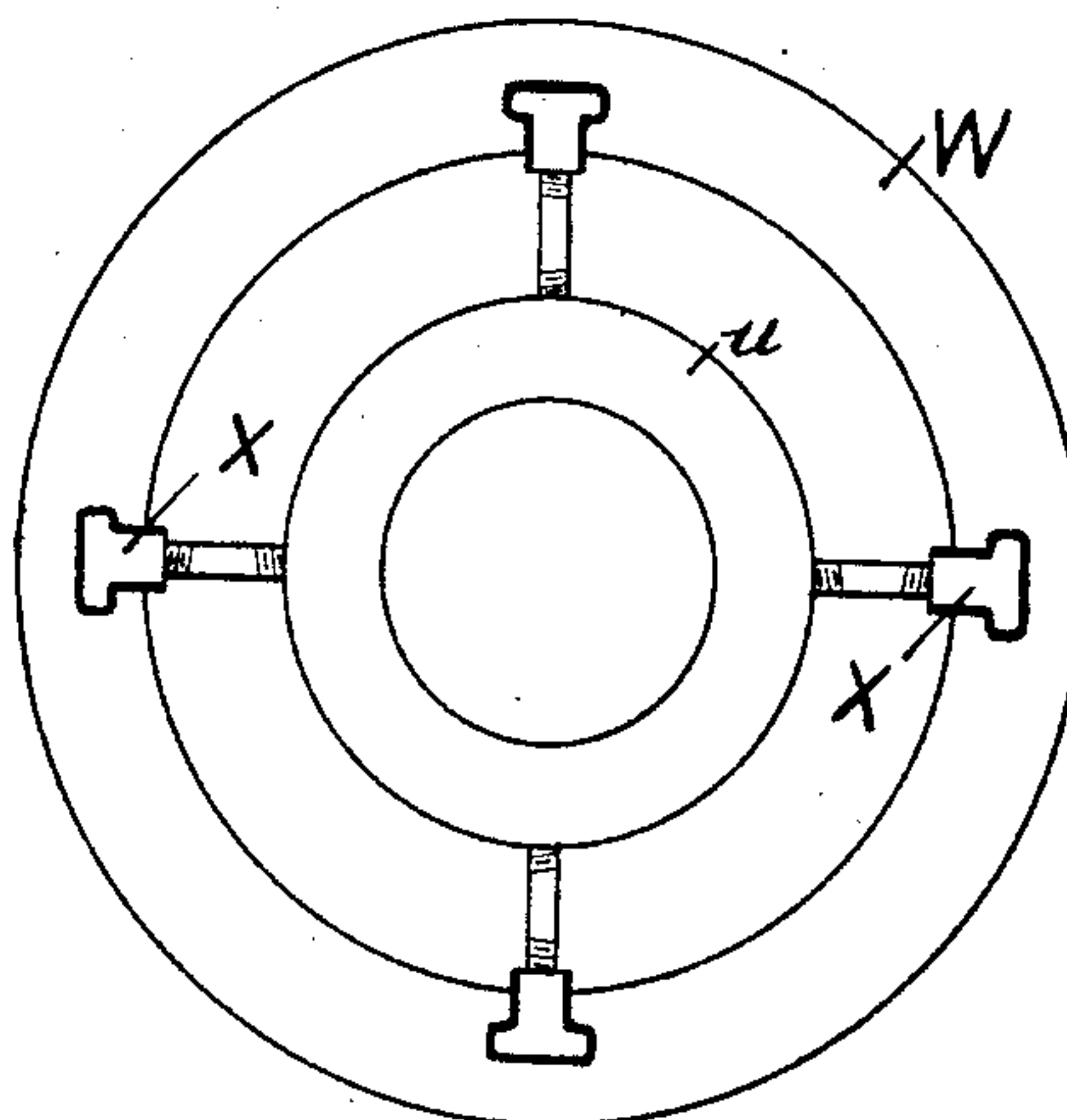


Fig. 11.

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UNITED STATES PATENT OFFICE.

GUSTAVE F. DREHER, OF SCHENECTADY, NEW YORK, ASSIGNOR OF ONE-HALF TO
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INSULATING-COUPLING.

No. 865,483.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed April 9, 1906. Serial No. 310,628.

To all whom it may concern:

Be it known that I, GUSTAVE F. DREHER, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have
5 invented certain new and useful Improvements in Insulating-Couplings, of which the following is a specification.

My invention relates to means for insulating two adjoining metallic members, and the objects of my invention are: 1st: To provide a means for insulating the adjoining members of a coupling, and preventing sparking across the air gap. 2nd: To provide for the contraction and expansion of the members without affecting the insulating composition surrounding them.
15 3rd: To arrange the members of the coupling in respect to each other so that in order to be brought in engagement their movement must be in a direction at, or substantially at, right angles to the pull upon them after their engagement is complete. Together with
20 such other combinations and elements hereinafter described and claimed. I attain these objects by the means illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of one member of the
25 coupling. Fig. 2 is a perspective view of the other member thereof. Fig. 3 is a perspective view of the two members after the coupling is made and the insulation placed in position. Fig. 4 is a horizontal section along the lines of the coupling after the insulating composition has been placed about it. Fig. 5
30 is a horizontal section along the lines of a coupling with the insulating composition placed about it, with parts broken away, showing a wedge engaging the insulation. Fig. 6 is a perspective view of a modified
35 form of my invention. Fig. 7 is a perspective view of another modified form of my invention. Fig. 8 is a plan view of a further modified form. Fig. 8^A is a horizontal section along the line Z—Z on Fig. 9, of a third modified form of my invention. Fig. 9 is an elevation
40 of a modified form of my invention. Fig. 10 is a plan illustrating my invention applied to a collector. Fig. 11 is a plan of my invention applied to a collector, being a modified form of the collector shown in Fig. 10.

Similar letters refer to similar parts throughout the
45 several views.

For the purpose of retaining in position trolley wires and current carrying cables, it is desirable to use wires extending from the trolley or cable poles, and to insulate the trolley or cable from the pole or other support
50 a cable block is commonly employed, which cable block is usually embedded in a composition of insulating substance. A considerable strain is exerted on this cable block, and at times a heavy voltage is transmitted thereto. For effective service there should be
55 perfect rigidity in the cable block, for if there is any give or opportunity for movement under the strain

the composition becomes cracked, fissures are formed and short circuiting ensues, and the apparatus becomes inoperative as an insulating device. It is furthermore desirable to provide for preventing any possibility of
60 arcing when an unusual current is carried by the wire. Being embedded in the composition, where it cannot be seen it is particularly desirable that the construction shall be such that no inspection is required to maintain its efficiency under all reasonable conditions. 65
When the insulating material placed between the adjoining members is made up of separate pieces there is very apt to be a leak, and a burning of the parts, which soon destroys all insulating properties of the coupling. In my improved coupling, I have provided a positively
70 rigid block, after the members are in position and the insulation between them is in place. I prevent any possibility of leakage between the adjoining members by making the insulation of a single continuous strip; I prevent sparking by extending the insulating strip
75 above and below and forward of the adjoining parts. In this way, I reduce to a minimum the danger of breaking the insulation surface surrounding the block and provide for a positive strain without rendering more
80 liable to break in proportion as the strain is increased.

Referring to the drawings, it will be seen that I construct the member, A, which is the male member, see Fig. 2, with an enlarged, T-shaped head, B, with a shank, *a*, and if desired a ring, C, at the end of the shank to engage the wire. The female member is provided
85 with an opening, E, for the head, B; the shoulders, *e, e*, engage the portions of the head, B, which extend beyond and on each side of the shank, *a*, there being an opening, F, between the shoulders, *e, e*, for the passage of the shank, *a*. On the female portion there is also
90 provided a shank, G, in the end of which may be secured the ring, H, to connect the wire. The T-shaped head has thus two hooked projections, one on each side of the shank, *a*, each hook being that part of the T-shaped end of the head which in the formation of the
95 T extends beyond the shank and is then projected at a short distance parallel to but separated slightly from the shank.

I place an insulating strip, J, which may be mica or other suitable substance, in one continuous strip between the head, B, and the walls of the opening, E, and passage way, F, in the female portion of the coupling, as shown in Fig. 3, preferably arranging the insulating material so that it will extend above the adjoining members on each side thereof. It will also extend
100 forward of the end of the female portion of the coupling adjacent to the shank, *a*, of the male portion thereof. The insulating material, J, fills tightly the space between the head, B, and the opening, E, in order that there shall be no possibility of action when the strain
110 is applied to the members of the coupling in opposite directions.

I may place a wedge, K, between the insulating material and the opening, E, as shown in Fig. 5, by the insertion of which any play that might exist would be taken up. It will be noticed that in order to make the coupling it is necessary that the two members shall be first placed in relation to each other, the one overlapping the other, so that the side of the head, B, shall come in engagement with the top of the walls of the opening, E, and then a movement exerted in a direction at right angles to that of the direction of the strain which will be upon the two members when they are in position, by which movement the head, B, will enter the opening, E, as shown in Fig. 3. The insulating strip may be placed within the opening, E, before the head, B, is inserted, if desired, or they may be placed therein simultaneously. I consider it an important part of my invention, this arrangement of the parts so that their engagement is made from the side of the coupling and in a direction at right angles to the direction of the strain, because when they are thus in position there is no give to the parts, as there would naturally be, if the parts were receiving a strain, after they were coupled, in the same direction as that in which they moved when they were brought into the coupled relation, in which last mentioned case they would be simply during their working period endeavoring to withstand the pull against a locking device which they broke or opened at the time of their engagement.

After the parts have been coupled I preferably coat them including the shanks, with japan, and while this japan is in a plastic state, before it is hardened, I place powdered mica thereon, and while it is in a semi-plastic condition place an insulating composition, R, about the parts as shown in Figs. 4 and 5. The reason for coating the parts with japan, and then placing powdered mica thereon, is to allow for the slight contraction and expansion of the parts of the coupling, without causing a breakage of the composition, R, which would be more likely to occur, providing the composition came in direct contact with the coupling.

I do not wish to limit myself to the use of japan, any suitable substance which will assume a plastic state, and in contact with which powdered mica or other similar material may be brought would answer the purpose, which is to allow for a movement of the parts without breaking the superimposed composition.

I have shown in Figs. 6 and 7 modified forms of my coupling; rather modified adaptations thereof. In Fig. 6 I construct the head, M, of the male portion with two projecting engaging shoulders, *m*, *m'*, which fit a correspondingly formed opening in the female portion of the coupling. The insulating strip extends about the male portion when in position between the adjacent parts of the two coupling members in one continuous strip.

Fig. 7 shows the same coupling as in Figs. 1, 2, 3, and 4, except that I arrange on the male portion two heads, O, P, each of which engages with a corresponding female portion, *o*, *p*, the wires being secured to the rings, *o'*, *p'* attached to the ends of the female portions, respectively.

I have shown in Figs. 8 and 8^A a means for locking the two parts of the coupling against lateral disengagement. This I accomplish by making a depression, O,

O, in the shoulders *e'*, *e'*, of the female portion within which the projections P, P, on each side of the shank, *a'*, engage when the head, B', is placed within the opening, E', as shown in Fig. 8^A. Instead of making the projections on the male portion I may reverse the order and place the shoulders on the female portion and depressions in the male portion.

It is understood that in both Figs. 7 and 8 and 8^A, the insulating material is placed in the same manner as that described in Figs. 1, 2, 3, and 4.

In Fig. 9 I arrange for two or more male portions, T, T', T'', which engage corresponding openings in the female portion U, insulating material, V, extending the whole length between the adjoining members as in the other figures.

In Figs. 10 and 11, I illustrate the application of my invention when applied to a collector, in which the collecting ring, W, in Fig. 11 and the shell or sleeve, *u*, in Fig. 10, is provided with an opening similar to that in each of the female parts of the coupling, within which a head, X, similar to that in the male part, above referred to, passes in connection with an insulating strip extending beyond the sides and end of the female portion as hereinbefore described.

While I have shown several modified forms of connecting my coupling, I do not limit myself to these constructions.

What I claim as my invention and desire to secure by Letters Patent is:—

1. An insulated coupling consisting of two members one provided with a head, two oppositely disposed hooks on said head; the other member provided with a corresponding opening adapted to receive said head; the hooks on said head adapted to engage with correspondingly hooked projections in the opposite member; said members brought together by a movement in a direction at right angles to the direction of the strain when they are coupled; a piece of continuous insulating material placed between adjacent parts of the two members; said insulating material extending beyond the face of the two members when coupled, substantially as described.

2. A coupling comprising two members; one provided with a head carrying a hooked projection on each side of a shank, the other member provided with an opening adapted to receive said head, inwardly extending hooked projections adapted to engage the hooked projections on said head; a continuous insulating strip extending between the adjacent portions of the two members; with an insulated composition placed about both members at and near their place of engagement.

3. Two members a continuous strip of insulating material, placed between their adjacent parts, a plastic substance placed about both members; powdered mica placed on said plastic substance a composition, superimposed on said powdered mica and on said plastic substance, substantially as described.

4. An insulated coupling comprising two parts, one provided with a head, the other with a corresponding opening adapted to receive said head; projections on said head adapted to engage projections in the opposite member; a means for locking the projections on said head with said projections in the opposite member; a continuous piece of insulating material placed between adjacent parts of the two members on the coupling; japan placed on said members; powdered mica placed on said japan; insulating composition placed on said mica, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

GUSTAVE F. DREHER.

Witnesses:

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LOTTIE PRIOR.