

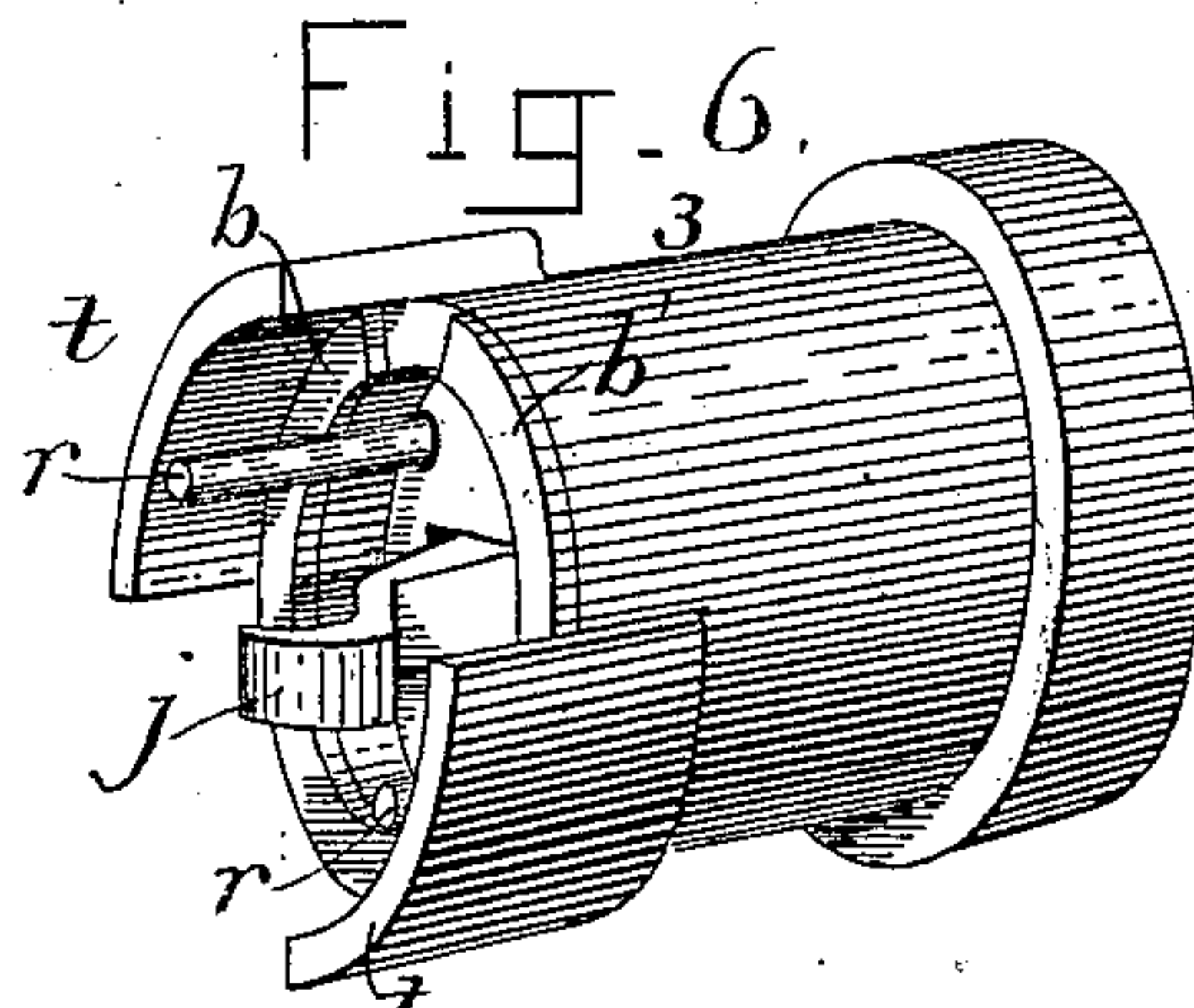
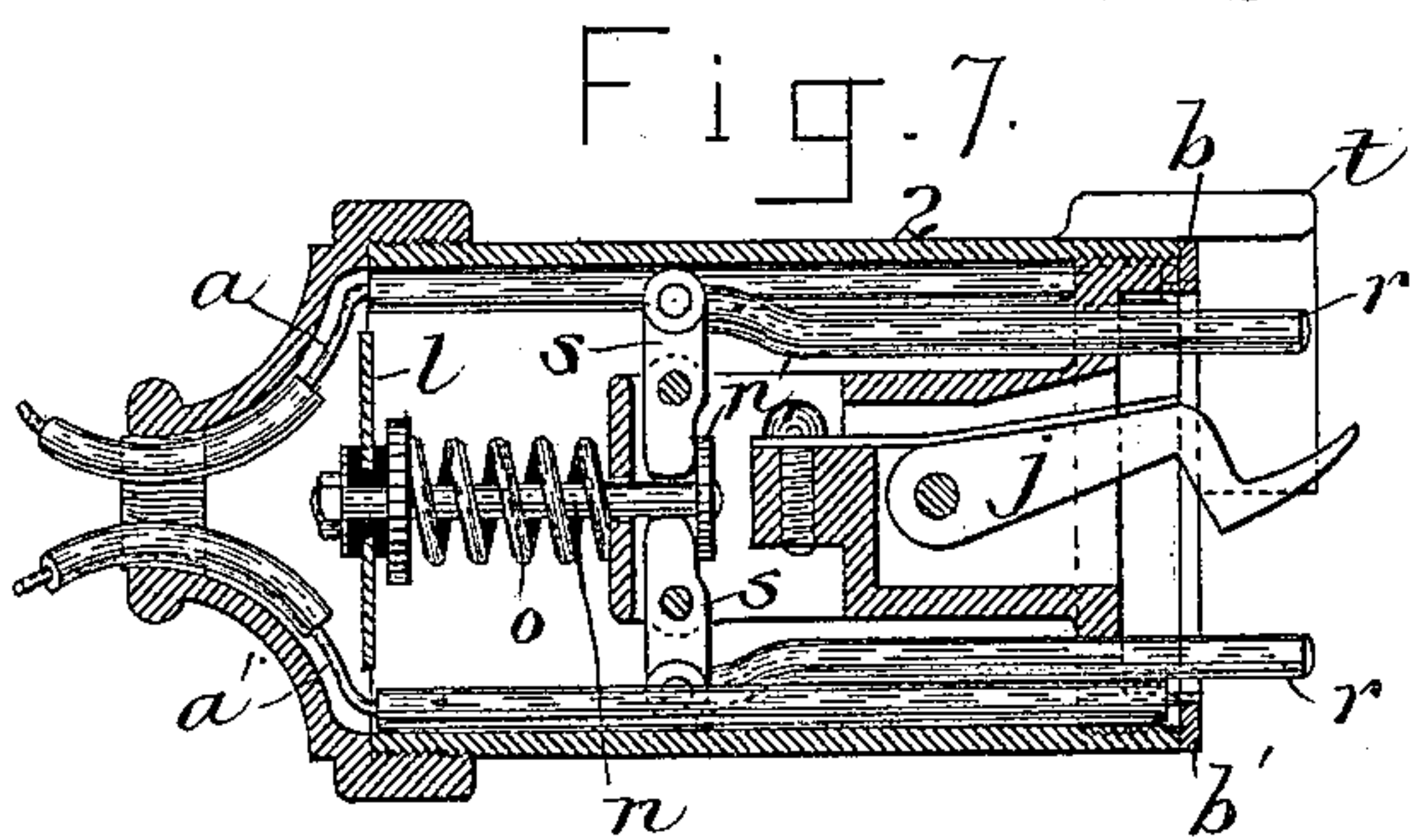
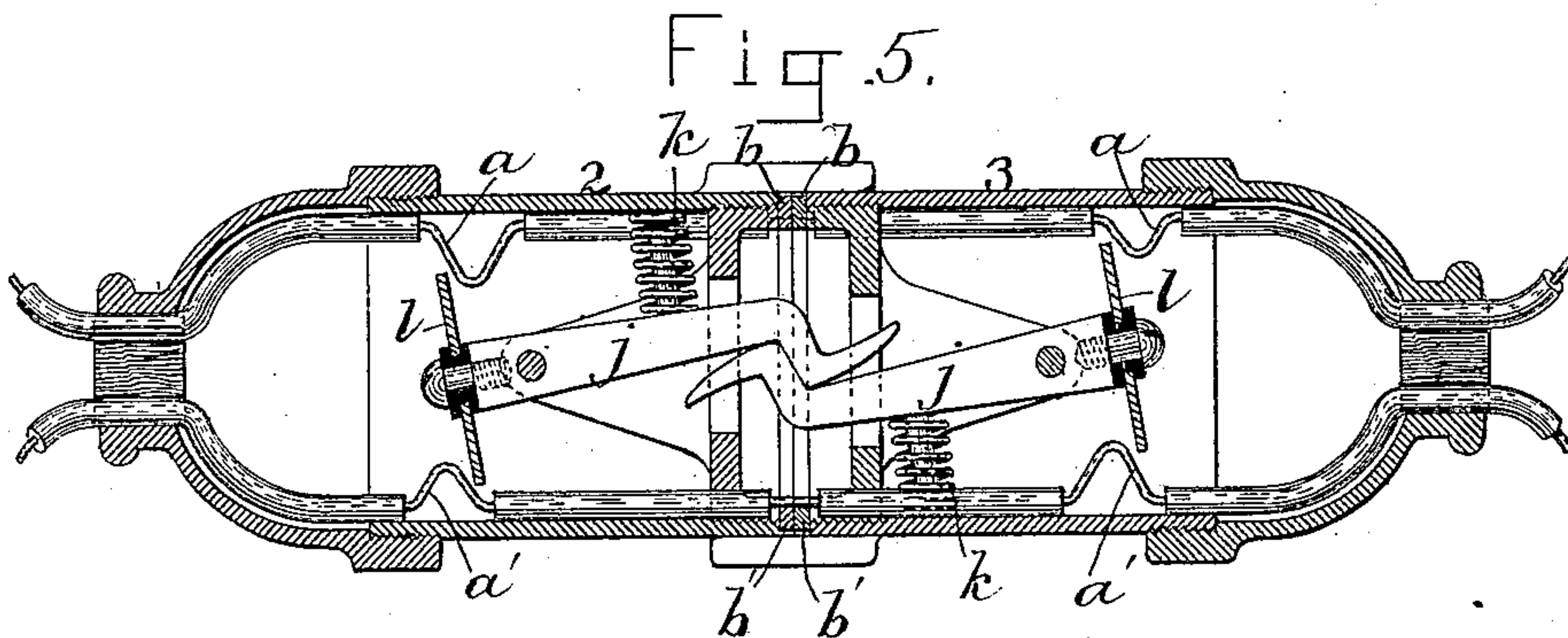
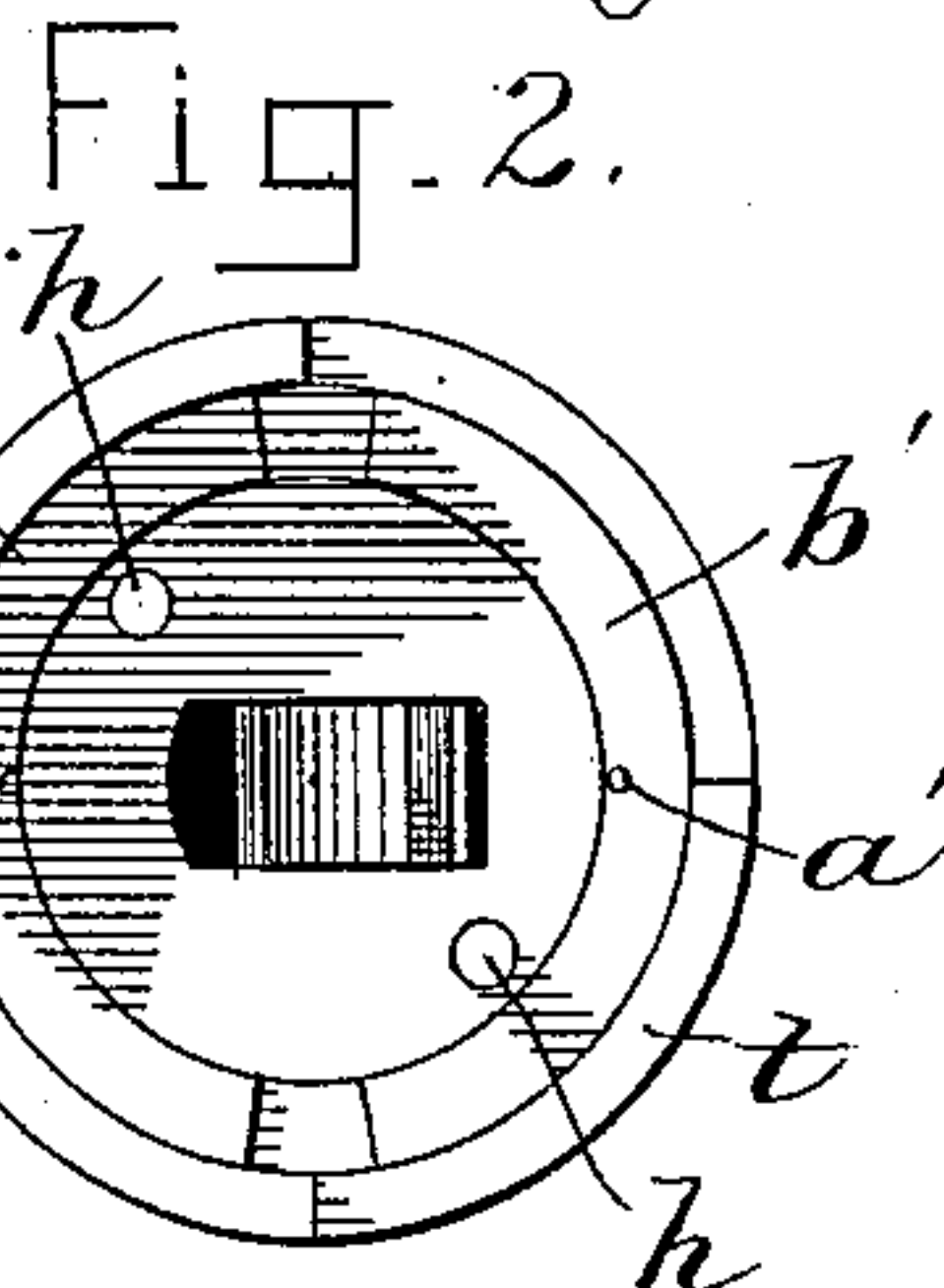
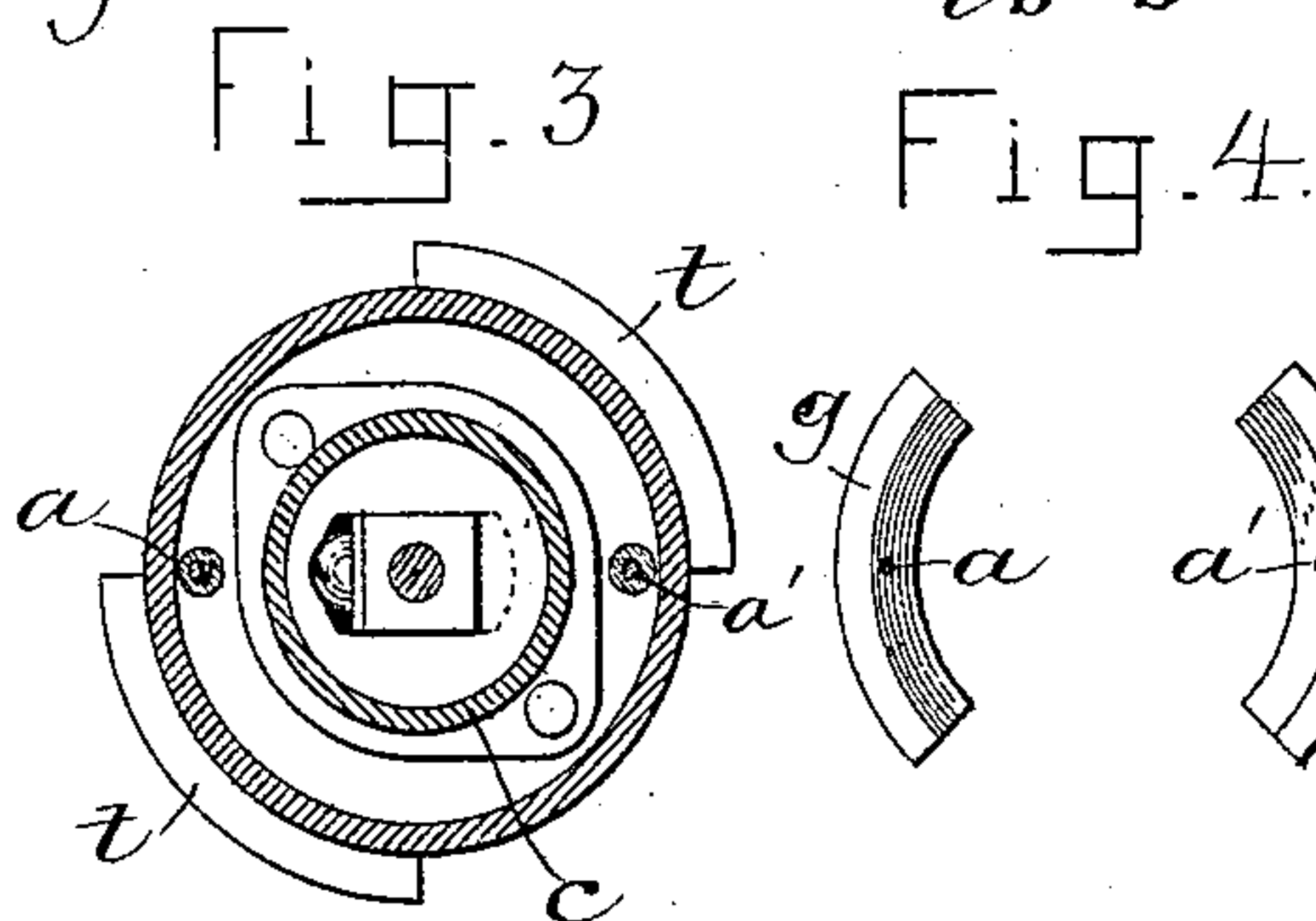
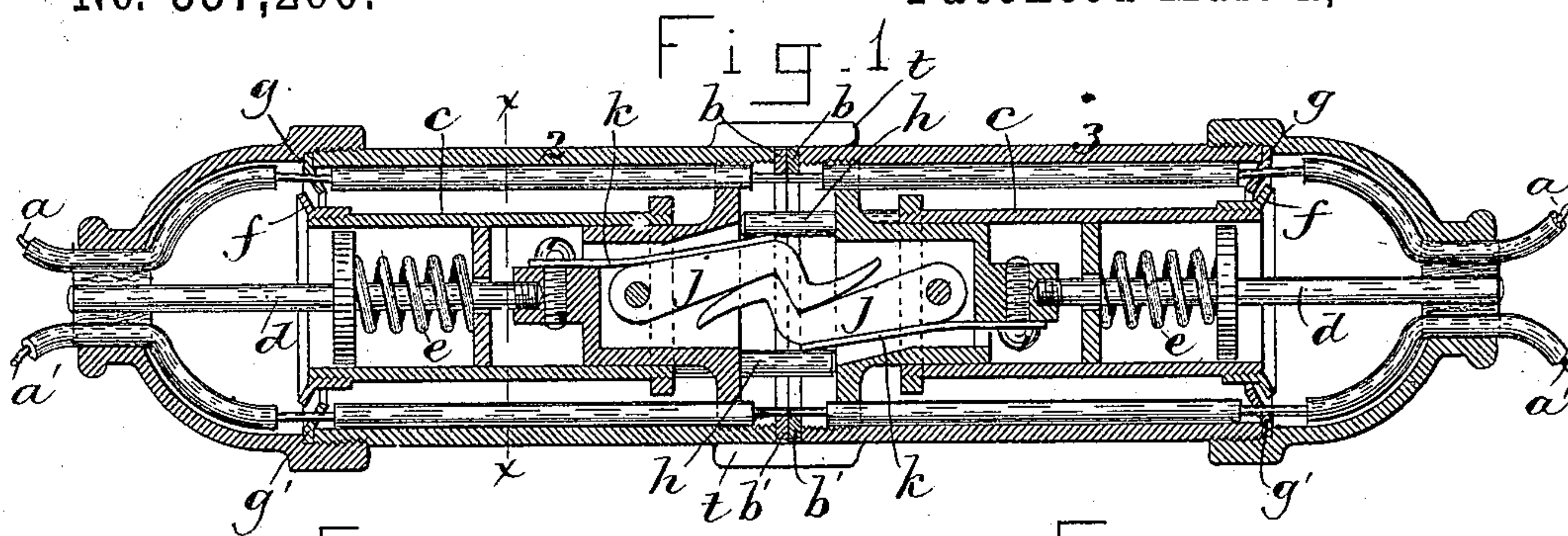
(No Model.)

J. P. A., J. F., & G. O. HANLON.

TRAIN SIGNALING APPARATUS.

No. 337,260.

Patented Mar. 2, 1886.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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BOSTON, MASSACHUSETTS.

## TRAIN-SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 337,260, dated March 2, 1886.

Application filed September 14, 1885. Serial No. 177,041. (No model.)

*To all whom it may concern:*

Be it known that we, JOSEPH P. A. HANLON, JOHN F. HANLON, and GEORGE O. HANLON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Train-Signaling Apparatus, of which the following is a specification.

This invention relates to that class of electric signaling apparatus for railroad trains in which conducting-wires are affixed to the engine and cars, and are connected between the cars by detachable couplings.

The invention has for its object to provide an improved contrivance whereby upon the separation of any of the members of any coupling a circuit will be closed and an alarm given in the engine-cab or at other suitable point, the engineer being thus informed of the accidental separation of any of the cars of the train.

It has also for its object to improve the means whereby the coupling members are connected, and to provide devices for protecting the instrumentalities immediately connected with the coupling members from injury by dust, rain, ice, &c.; and to these ends the invention consists in the improved coupling embracing the means for securing the two members together for rendering the circuit-closing device inoperative when the members are connected and making them to operate automatically when said members are disconnected, and in the means for protecting the parts from injury by rain, ice, &c.

Our invention also consists in the combination of parts, as hereinafter set forth and claimed.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal section of a coupling embodying our invention. Fig. 2 represents an end view of one member of the coupling shown in Fig. 1. Fig. 3 represents a section on line  $x$   $x$ , Fig. 1. Fig. 4 represents a side view of the fixed contact-plates shown in section in Fig. 1. Fig. 5 represents a longitudinal section of a modification. Fig. 6 represents a perspective view of one member of another modified form of our improved coupling. Fig. 7 rep-

resents a longitudinal section of the companion to the member shown in Fig. 6.

The same letters of reference indicate the same parts in all the figures.

In carrying out our invention we provide the engine-cab and each car with two conducting-wires,  $a$   $a'$ , those on the engine being connected with the positive and negative poles of a source of electricity, which may be of any suitable kind, such as a battery or generator. The two wires in each car are suitably insulated and affixed to the car, and when the wires of all the cars are connected by the coupling devices they constitute two conductors extending continuously through the train, each being independent of and insulated from the other.

Our improved coupling device is composed of two members, 2 3, each being composed of a (preferably) cylindrical body, which receives the wires  $a$   $a'$ , said wires passing through the outer end of the coupling member to segmental metallic terminals  $b$   $b'$  at the inner end of the member, the terminals of each member being arranged to make contact with the terminals of the other member when the two members are connected. The terminal  $b$  and wire  $a$  of each member are insulated from the terminal  $b'$  and wire  $a'$  when the members are connected, so that there is no electrical connection between the wires  $a$  and  $a'$  so long as the members remain connected; but when the members become disconnected by accident or otherwise a connection is automatically established between the wires  $a$  and the wire  $a'$  of each of the disconnected members, so that an electric circuit is completed through the conductors between the source of electricity and the coupling member remaining in electrical connection therewith, and an alarm included in said circuit and located in suitable proximity to the engineer is operated, thereby giving the engineer notice of the separation of the members of the coupling. The construction whereby this result is secured may be variously modified.

In Fig. 1 we have shown two slides,  $c$   $c$ , adapted to move on guides  $d$   $d$  in the members 2 3, each frame having a spring,  $e$ , whereby it is normally forced forward so as to press



a continuous metallic ring, *f*, on its rear portion against two segmental metallic plates, *g g'*, in electrical contact, respectively, with the wires *a* and *a'*. (See Fig. 4.) Each slide is provided at its outer end with a projecting finger, *h*. The finger of each slide is arranged to strike the outer end of the other slide when the members 2 3 are brought together in coupling them, the slides *c c* being thus forced backwardly, so as to disconnect the rings *f f* from the contact-plates *g g' g'*.

When the members of the coupling are disconnected, the springs *e* force the slides *c c* forward, and by forcing the rings *f f* against the plates *g g'* establish a metallic connection between the wire *a* and the wire *a'* of each section, and thus close the circuit, as above described. The coupling members have pivoted hooks *j j*, which are provided with springs *k k*, whereby they are caused to interlock, as shown in Fig. 1, and thus detachably connect the members 2 3.

In the construction shown in Fig. 5 the rear end of each hook *j* is provided with a transverse metallic plate, *l*, insulated from the metallic portions of the hook, and arranged so that when the members are disconnected the plates *l* will be caused by the springs *k* of the hooks *j* to make contact with uncovered portions or loops of the wires *a a'*, and thus establish a metallic connection between said wires. When the members are connected, each hook is forced back by the other hook, the plates *l l* being thus displaced and separated from the wires *a a'*, as shown.

In Fig. 7 a metallic plate, *l*, is supported by but insulated from a rod, *n*, and is normally forced by a spring, *o*, on said rod into contact with the wires *a a'*, as shown. When the members are connected, the rod *n* and plate *l* of each member are displaced, so as to disconnect the latter from the wires *a a'* by two rods, *r r*, projecting outside of the outer end of the coupling member, and two levers, *s s*, pivoted to the rods *r r*, and to a support within the coupling member, and bearing against a collar, *n'*, on the rod *n*. When the members are brought together, the rods *r r* are pressed inwardly and turn the levers *s s* on their pivots, so as to cause said levers to move the rod *n* and plate *l* away from the wires *a a'*.

It is obvious that other modifications may be adopted without departing from the spirit of our invention.

Each coupling member has two segmental flanges, *t t*, at its forward end, said flanges being separated by spaces adapted to receive the flanges of the other member, so that they serve as guides in connecting the members.

We claim—

1. The improved coupling, composed of two members, each having two conducting-wires provided with segmental metallic terminals, a pivoted coupling-hook centrally located in each member, circuit-closing devices, substantially as described, which are made inoperative by the connection of said members and operative automatically when said members are disconnected, a casing entirely surrounding the mechanism in each member, said casings being provided with segmental flanges at their forward ends, said flanges of the casing of each member being supported by spaces adapted to receive the flanges of the other member, and thereby serving as guides connecting the members, as set forth.

2. The improved coupling, composed of two members, 2 3, each having two conducting-wires, *a a'*, provided with segmental metallic terminals *b b'*, a pivoted coupling-hook centrally located in each member, circuit-closing devices consisting of a spring-impelled slide provided with the metallic ring *f* on its rear portion, and the two metallic plates *g g'* in electrical contact, respectively, with the wires *a* and *a'*, which circuit-closing devices are made inoperative by the connection of said members and operative automatically when said members are disconnected, and a casing entirely surrounding the mechanism in each member, as set forth.

3. The combination, with the casings, of the two members provided with the wires *a a'*, having the metallic terminals *b b'*, the slides *c c*, rods *d d*, fingers *h h*, coupling-hooks *j j*, pivoted in the forward ends of said slides, the metallic rings *f f*, and metallic plates *g g'*, as set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 12th day of September, 1885.

JOSEPH P. A. HANLON.

JOHN F. HANLON.

GEORGE O. HANLON.

Witnesses:

C. F. BROWN,

H. BROWN.