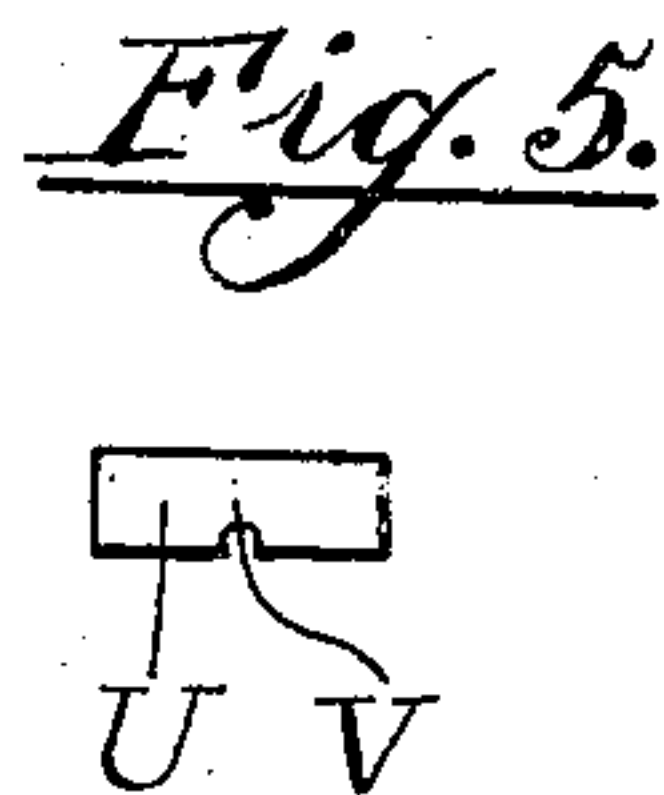
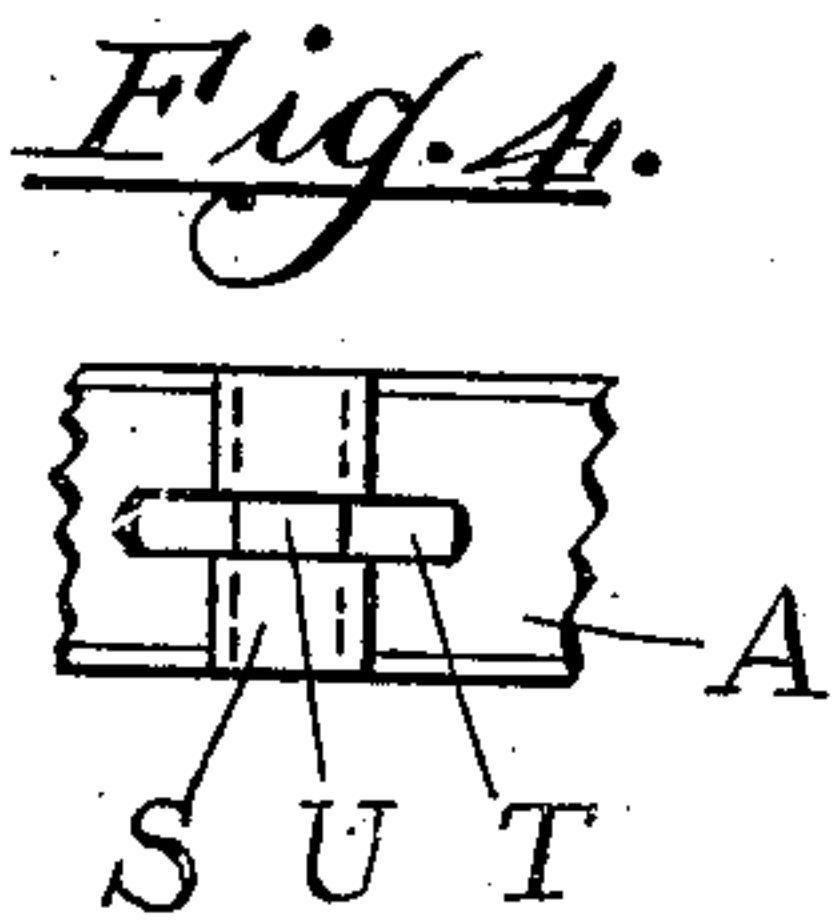
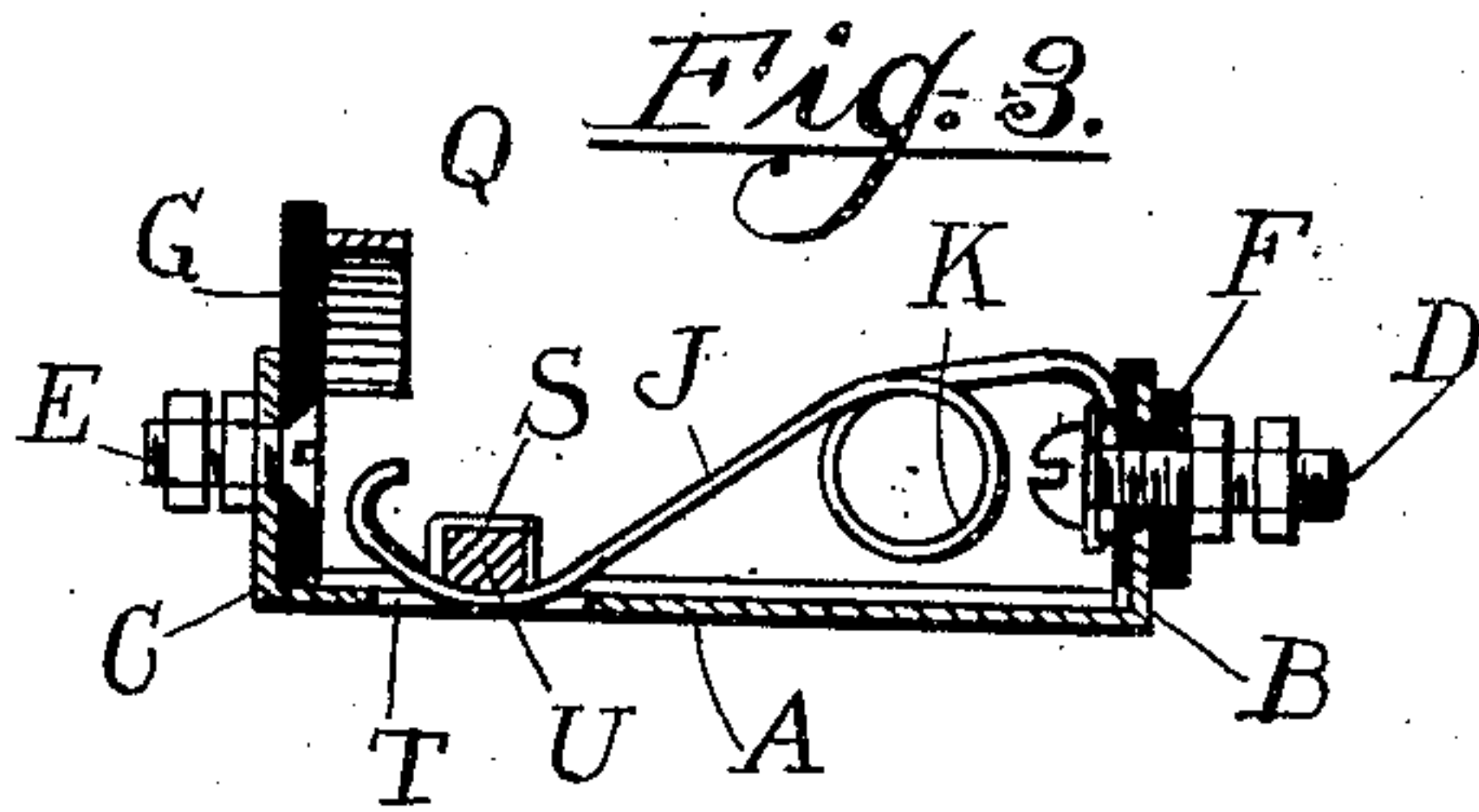
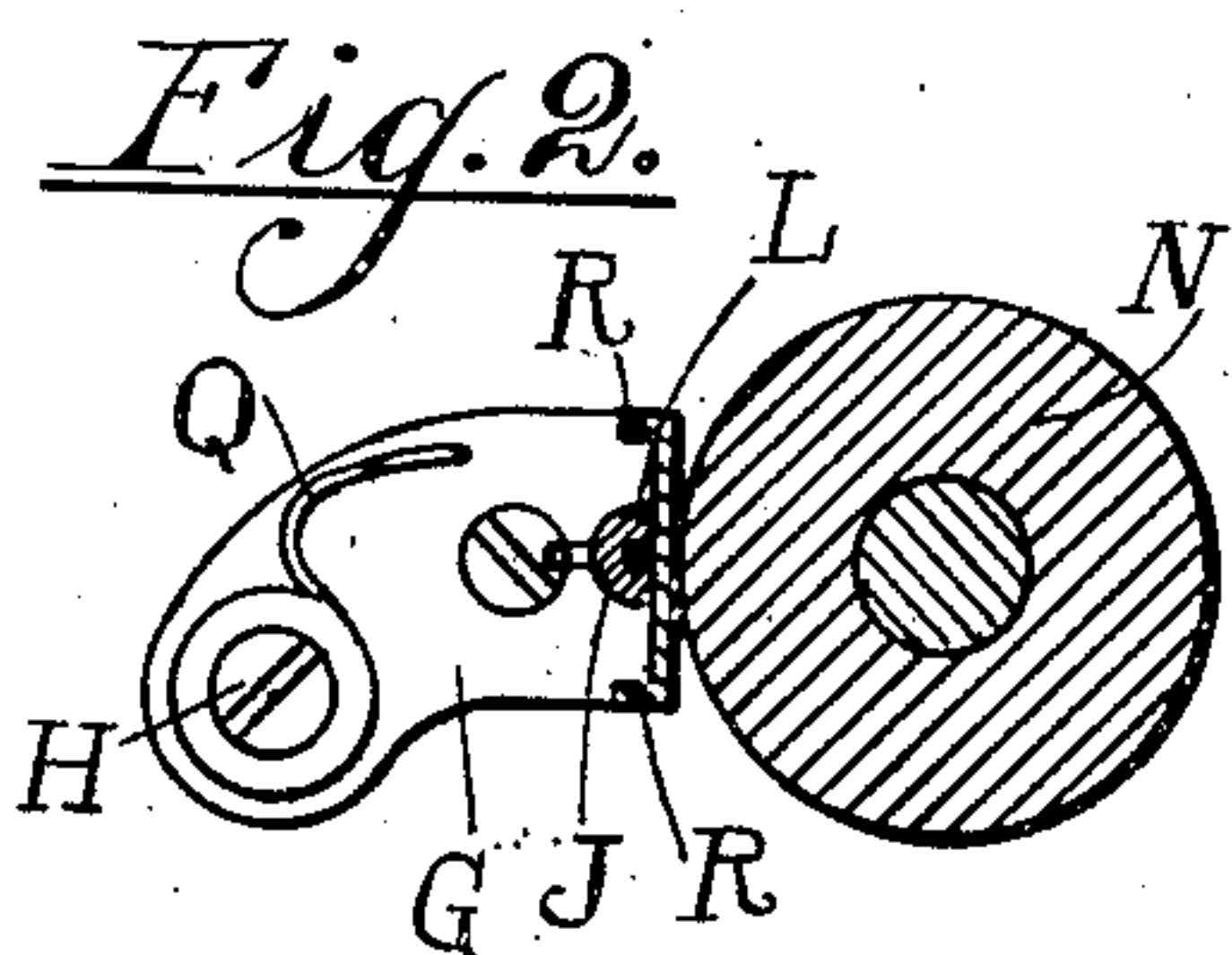
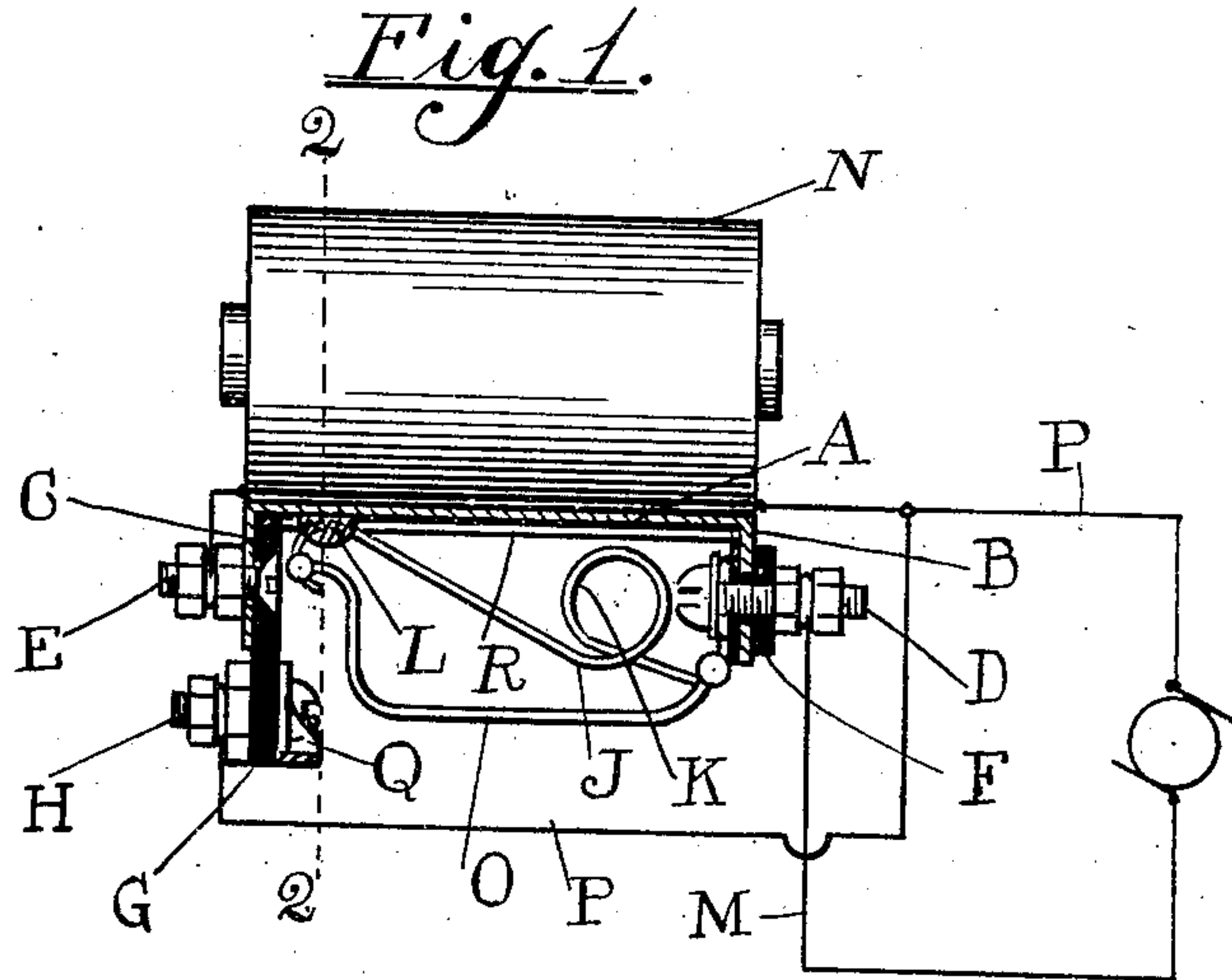


No. 826,910.

PATENTED JULY 24, 1906.

J. THULIN.
THERMOSTATIC MAGNET PROTECTOR.
APPLICATION FILED DEC. 12, 1904.



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UNITED STATES PATENT OFFICE.

JOHN THULIN, OF CHICAGO, ILLINOIS.

THERMOSTATIC MAGNET-PROTECTOR.

No. 826,910.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed December 12, 1904. Serial No. 236,604.

To all whom it may concern:

Be it known that I, JOHN THULIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Thermostatic Magnet-Protectors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the
10 art to which it appertains to make and use the same.

My invention relates to a novel construction in a thermostatic device for protecting the coils of electromagnets against burning
15 out, the object being to provide a device disposed in the circuit of the magnet for short-circuiting the latter when the coil of such magnet attains a high temperature and before the same burns; and it consists in the
20 features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a central longitudinal section of my device disposed in proper
25 relative position on the coil of an electromagnet and in the circuit of same. Fig. 2 is a vertical section on the line 2 2 of Fig. 1. Fig. 3 is a section similar to Fig. 1, showing a modified form of construction. Fig. 4 is a detail frag-
30 mentary plan view of the modified form of construction shown in Fig. 3. Fig. 5 is a side elevation of a block of fusible metal employed.

My said device comprehends the use of a spring or spring-actuated circuit-closer which
35 is disposed in the circuit on one side and is held to maintain the circuit closed through said magnet by means of a block of low-fusible metal which is adapted to be molten by radiated heat from the coil to release said cir-
40 cuit-closer, and thus short-circuit the magnet before the same can burn out.

My said device comprises a flat strip A of metal preferably of a nature which is an excellent conductor of heat as well as electricity,
45 such as copper. The said strip A is provided at its ends with flanges B and C, on which binding-posts D and E are mounted, said post D being insulated from said flange E by interposing suitable insulating material F in a well-known
50 manner. The binding-post E contacts with the flange C on one side of the latter and secures in place on the other side thereof a block G, of fiber or similar stiff insulating material, in the free end of which is a binding-post H,
55 which is entirely insulated from said strip A and said flanges.

Secured at one end between a part of the binding-post D and insulation F is a circuit-closer J, preferably consisting of suitable spring-wire, which is coiled between its ends, 60 as at K, to render it more elastic, the free end of said lever being secured to said strip A between the flanges thereof and adjacent the flange C by means of soft solder or similar low-fusible metal, as at L. 65

One of the line-wires M is connected with the coil N of the magnet through the binding-post D, circuit-closer J, plate A, and binding-post E, and as said circuit-closer J is disposed directly in the circuit, but by reason of its 70 requisite elasticity it must necessarily be made of relatively thin wire, and in the event that current of large volume is employed such circuit-closer may become heated and be thus released when no occasion for release 75 arises, and hence one or more soft-copper wires O may be interposed between the said binding-post D and the free end of said circuit-closer J to carry the current. The said binding-post H is connected with the other 80 line-wire P, and by means of said binding-post there is secured to said block G of fiber in the path of the free end of said circuit-closer J a contact-piece Q, through which the circuit is closed through the line-wires M and P and 85 opened to short-circuit said magnet when said circuit-closer J is released. The said strip A is preferably provided with flanges R on its side edges and is relatively thin, so that when mounted on the coil of the magnet and 90 in close contact therewith the heat from the coil will in the event of its becoming overheated readily penetrate to and melt said soft solder L, and thus release said circuit-closer J to short-circuit said coil before the 95 same shall have attained a temperature sufficiently high to burn out.

In the construction shown in Figs. 1 and 2 the free end of the circuit-closer J is virtually soldered to the plate A, and hence requires 100 the employment of a suitable low-fusible solder and is otherwise disadvantageous by reason of the fact that in order to return the circuit-closer J to its normal position soldering-tools are required, and as such magnets 105 are contained in the casings of arc-lamps and similar spaces it renders the work of returning such circuit-closer difficult. I have therefore provided the means shown in Figs. 3, 4, and 5 for obviating this difficulty. In 110 Fig. 3 it will be noted that the plate A is provided with a U-shaped bend S, interposed

between the flanges and providing a recess in the lower face of the plate A. A longitudinal slot T in said plate A extends through said U-shaped bend S and for a short distance on each side thereof, the said slot being adapted to receive the free end of said circuit-closer J, which is held therein by means of a key U, adapted to fit said recess and which is provided in its lower face with a groove V to receive said circuit-closer, which thereby holds said key against displacement.

It will be obvious that when said key is fused the said circuit-closer will be released, and to return the same it is only necessary to replace the key, as will be obvious.

My said device is particularly adapted for electric-lighting systems, particularly for arc-lamps to prevent burning out of the electromagnets controlling the carbons.

For such systems in which the lamps are connected in series my device is particularly valuable, inasmuch as it will short-circuit one or more lamps of the series without opening the entire circuit and putting out all the lamps by reason of the burning out of one of same.

Unless disposed in a series of circuits, as above described, the binding-post H will obviously not be connected with either of the line-wires, and in that case the device will serve only as a circuit-opener in substantially the same manner as the ordinary fuse-plug.

I claim as my invention—

1. A device of the kind specified comprising a magnet-coil directly connected at one end to one side of the line, a metal plate disposed in surface contact with said magnet-coil and electrically connected therewith, a spring-actuated circuit-closer carried by and insulated from said plate and connected with the other side of the line, a body of low-fusible metal disposed on said plate and engaging the free end of said circuit-closer to maintain the same at one limit of its movement and normally maintain the circuit through said coil closed, an insulating-block carried by said plate, and a terminal mounted on said insulating-block in the path of said circuit-closer, said terminal being connected with said first-named side of said line and adapted, when said metal is fused and said circuit-closer released, to short-circuit said magnet-coil.

2. A device of the kind specified, comprising a magnet-coil directly connected at one end with one side of the line, a metal plate disposed in surface contact with said magnet-coil and electrically connected therewith at its other end, a spring-actuated circuit-closer connected at one end with the other side of the line and insulated from said plate, a body of low-fusible metal disposed on said plate

and adapted to engage and hold the free end of said circuit-closer against the action of its actuating-spring to maintain the circuit through said coil normally closed, and a terminal connected with said first-named side of the line out of conductive relation to said plate, and in the path of the free end of said circuit-closer to short-circuit said magnet-coil when said metal is fused.

3. A device of the kind specified, comprising a magnet-coil, a U-shaped metal plate disposed in surface contact therewith, a spring-actuated circuit-closer disposed out of conductive relation to said plate and carried by one arm thereof, a body of low-fusible metal disposed on said plate and engaging the free end of said circuit-closer to normally hold the same against the action of its actuating-spring and in conductive relation to said plate, said magnet-coil being disposed in an electric circuit normally closed on one side through said circuit-closer and said plate and directly connected at the other side with the source of energy, a body of insulating material disposed on the other arm of said plate, a terminal mounted on said insulating-body and connected with the last-named side of the line and disposed in the path of the free end of said circuit-closer and adapted when said circuit-closer is released to short-circuit said magnet-coil.

4. A device of the kind specified, comprising a magnet-coil, a U-shaped metal plate disposed in surface contact therewith, a spring-actuated circuit-closer disposed out of conductive relation to said plate and carried by one arm thereof, a body of low-fusible metal disposed on said plate and engaging the free end of said circuit-closer to normally hold the same against the action of its actuating-spring and in conductive relation to said plate, said magnet-coil being disposed in an electric circuit normally closed on one side through said circuit-closer and said plate and directly connected at the other side with the source of energy, a body of insulating material disposed on the other arm of said plate, a terminal mounted on said insulating-body and connected with the last-named side of the line and disposed in the path of the free end of said circuit-closer and adapted, when said circuit-closer is released, to short-circuit said magnet-coil, and a bridge-piece of metal carried by said circuit-closer to increase its conductive power.

In testimony whereof I have signed my name in presence of two subscribing witnesses.

JOHN THULIN.

Witnesses:

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F. SCHLOTFELD.