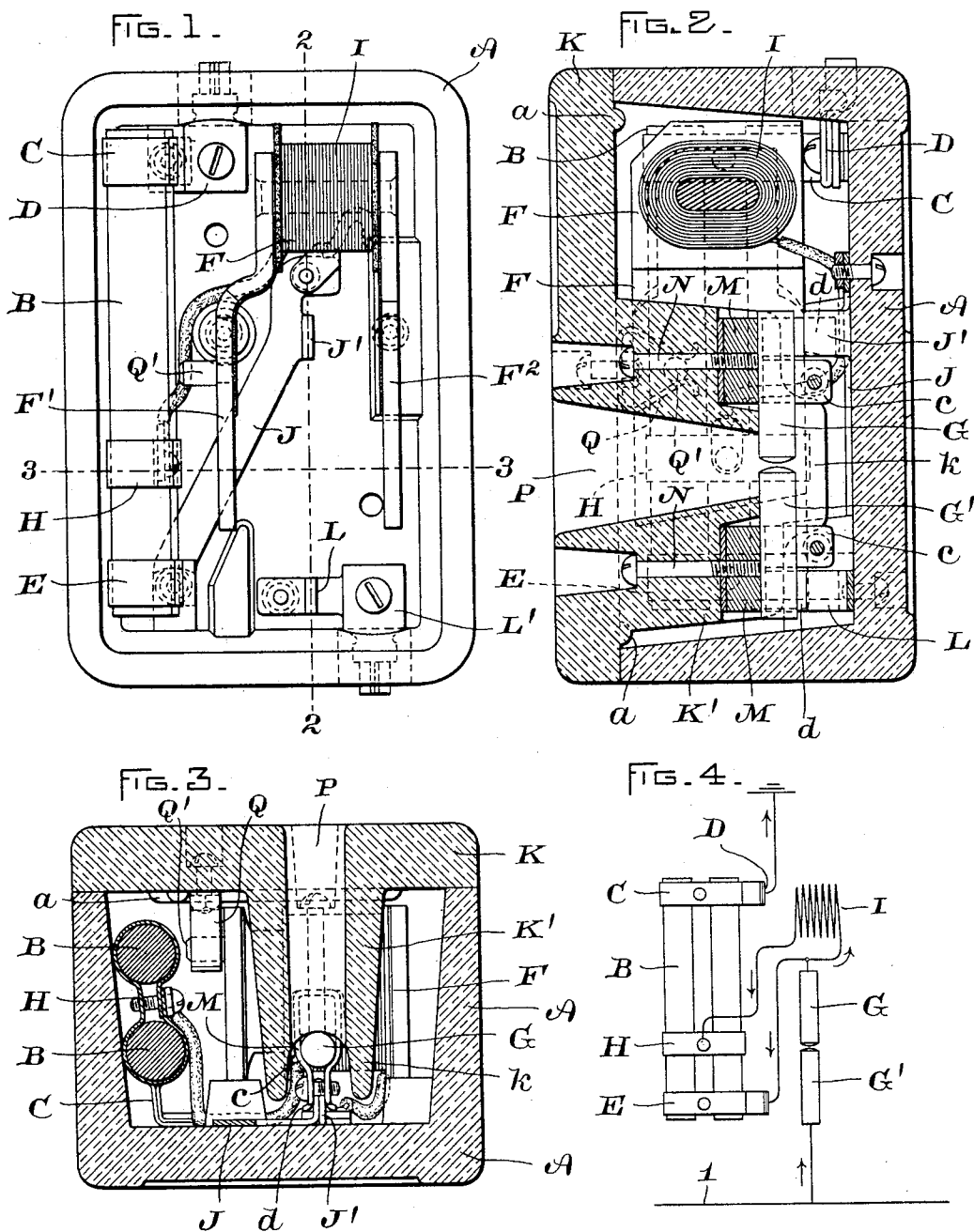


(No Model.)

E. M. HEWLETT.
LIGHTNING ARRESTER.

No. 587,818.

Patented Aug. 10, 1897.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD M. HEWLETT, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE
GENERAL ELECTRIC COMPANY, OF NEW YORK.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 587,818, dated August 10, 1897.

Application filed March 16, 1897. Serial No. 627,824. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. HEWLETT, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Lightning-Arresters, (Case No. 545,) of which the following is a specification.

The present invention relates to lightning-arresters which are employed for protecting electric apparatus from lightning discharges, and has for its object to provide a cheap, compact, and reliable arrester so arranged that the electrodes over which the lightning discharges pass may be readily inspected and removed.

In the accompanying drawings, attached to and made a part of this specification, Figure 1 is a plan view of the arrester with the cover removed. Fig. 2 is a longitudinal section taken on the line 2 2 of Fig. 1. Fig. 3 is a transverse section taken on the line 3 3 of Fig. 1, and Fig. 4 is a diagram of the circuit connections.

The inclosing box A is made of porcelain or other insulating material and is preferably formed in one piece. Extending parallel with and adjacent to one side of the box are two graphite rods B, mounted in a metallic support C at one end and in a metal support E at the other end. The support C is electrically connected to the ground-terminal D. The graphite rods form a non-inductive resistance on the ground side of the arrester and prevent the dynamo-current following the lightning discharge.

Secured to the bottom of the box by screws is a blow-out magnet F, having rectangular pole-pieces F' F², which are located on opposite sides of the cover extension K' and the arcing electrodes G G'. Located on the graphite rods, between the supports C and E, is a clamp H, and to the support E and the clamp H are connected the terminals of the energizing-coil I of the blow-out magnet. The coil I is provided with a suitable core and is insulated from the core and the pole-pieces by mica or other insulating material. The coil is energized when the dynamo-current follows a lightning discharge to ground, and the current therein depends upon the relative re-

sistances of the coil and that portion of the graphite rods between the support E and the clamp H.

Extending diagonally along the base of the box is a metal strip J, connected at one end to support E and provided at the other end with a contact J', extending at right angles thereto and engaging with a spring-contact d, carried on the cover K. Mounted in line with the contact J' is a similar contact L in electrical connection with the line-terminal L'. The contact L also engages with a contact on the cover K.

The cover K is preferably made of porcelain, and formed integral therewith on its under side is an extension K'. Binding-posts M are secured in sockets in the ends of the extension by screws N. Each binding-post consists of a pair of arms c, adapted to clamp the copper electrodes G in position, and a pair of spring contact-arms d, adapted to engage with the stationary contacts on the base of the box. The electrodes G G' are separated by a slight air-space over which the lightning passes to ground. Extending below the electrodes and on both sides are projections k, which protect the pole-pieces F' F² from arcing. A slightly-tapered chute P carries off the vapor formed between the arcing electrodes and at the same time restrains the arc to a direction transverse to the magnetic lines of force.

By reference to Fig. 3 it will be seen that the electrodes are in close proximity to the chute and that the ends of the chute protect the binding-posts M from arcing.

On the cover is a spring-clip Q, secured thereto by a screw and adapted to engage with the pin Q' on the pole-piece F' to hold the cover in place. Beads a a are provided on the under side of the cover to prevent it from slipping endwise on the box.

The arcing electrodes and binding-posts, which are most readily injured, are so arranged that they may readily be inspected or replaced, and if the insulation between the electrodes and the pole-pieces is destroyed a new cover can be substituted at small expense.

In Fig. 4 I have shown a diagram of the circuit connections, in which 1 represents the circuit to be protected, and connected thereto is

the terminal L'. Terminal D is in circuit with the graphite rods B and also with ground, and the coil of the blow-out magnet is connected to support E and clamp H. When a lightning discharge takes place, it passes over the electrodes G G' through the rods B to ground. At the same time a certain amount of current from the line passes through the coil I, the resistance being less than that of the rods between the clamp and support. The dynamo-current is prevented, except momentarily, from following the lightning discharge by the non-inductive resistance of the rods B, and any arc formed between the electrodes is immediately disrupted by the blow-out magnet.

I have shown the non-inductive resistance connected to the ground side; but it is within the scope of my invention to reverse the connections and put it on the line side of the arrester.

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

1. In a lightning-arrester, the combination of arcing electrodes, a non-inductive resistance in circuit with one of the electrodes, and a blow-out magnet having the ends of its coil or coils connected to the non-inductive resistance at points between which there is a difference in potential due to the dynamo-current following a lightning discharge.

2. In a lightning-arrester, the combination of an inclosing box, a cover formed with an extension on its under side, binding-posts secured to the extension, arcing electrodes mounted in the binding-posts, and an opening or chute through which the vapor formed at the time a lightning discharge takes place can pass to the outside of the box.

3. In a lightning-arrester, the combination

of an inclosing box, an extension formed on the under side of the cover, binding-posts secured to the extension, arcing electrodes mounted in the binding-posts, a chute formed in the cover and its extension communicating with the external air, and a blow-out magnet arranged to blow the arc formed at the electrodes outward through the chute.

4. In a lightning-arrester, the combination of an inclosing box of insulating material, a cover therefor, provided with an extension on its under surface, binding-posts secured to the extension, arcing electrodes separated by an air-space mounted in the binding-posts, spring contact-arms forming a part of the binding-posts, ground and line terminals making electrical connection with the spring contact-arms, and means for securing the cover to the box.

5. In a lightning-arrester, the combination of an inclosing box, a cover therefor provided with an extension on its under side, binding-posts secured to the extension, contacts on the binding-posts engaging with fixed contacts on the box, arcing electrodes, a non-inductive resistance, an opening in the box communicating with the outside, and a spring-clip engaging with a fixed part of the box to hold the cover in place.

6. As an article of manufacture, a cover for a lightning-arrester, provided with an extension on its under side in which is formed a chute, projections on the extension, and sockets in which the binding-posts are mounted.

In witness whereof I have hereunto set my hand this 12th day of March, 1897.

EDWARD M. HEWLETT.

Witnesses:

B. B. HULL,

M. H. EMERSON.