

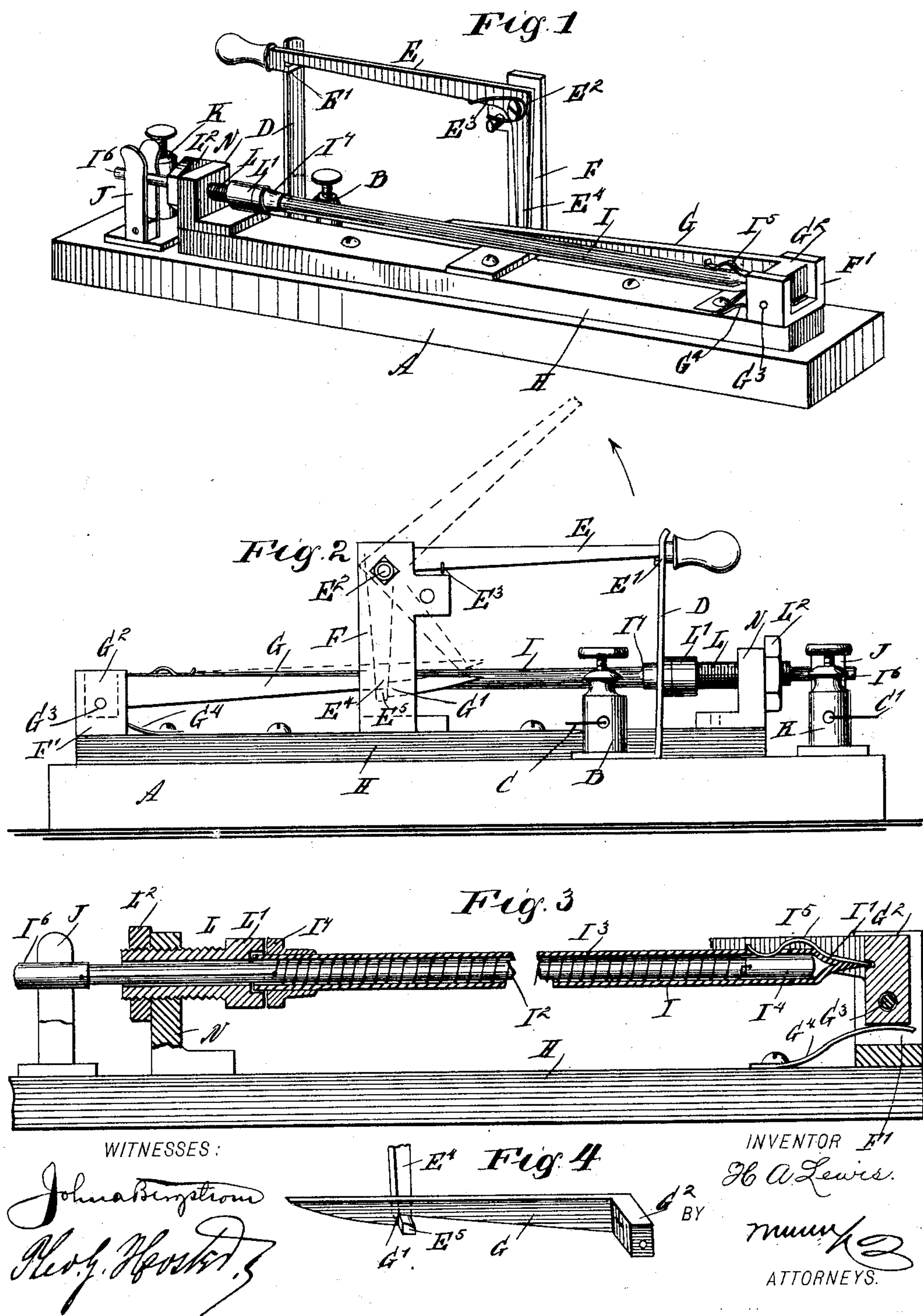
No. 607,250.

Patented July 12, 1898.

H. A. LEWIS.
ELECTRIC CUT-OUT.

(Application filed July 14, 1897.)

(No Model.)



UNITED STATES PATENT OFFICE.

HARRY A. LEWIS, OF NORRISTOWN, PENNSYLVANIA, ASSIGNOR OF
THREE-FIFTHS TO JOHN T. DYER, OF SAME PLACE.

ELECTRIC CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 607,250, dated July 12, 1898.

Application filed July 14, 1897. Serial No. 644,531. (No model.)

To all whom it may concern:

Be it known that I, HARRY A. LEWIS, of Norristown, in the county of Montgomery and State of Pennsylvania, have invented a new and Improved Electric Cut-Out, of which the following is a full, clear, and exact description.

The invention relates to fuse-holders and electric cut-outs such as shown and described in the application filed by me January 11, 1897, Serial No. 618,759.

The object of the present invention is to provide a new and improved electric cut-out designed for use in a line-wire to relieve a building into which leads the wire from danger of a strong or excessively-charged current produced by lightning or other causes, the apparatus breaking such current automatically and diverting the electric fluid from the building.

My invention consists of a circuit-breaker combined with a thermostat of a particular type, one example of which is described hereinafter and whose novel features are defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improvement. Fig. 2 is a rear side elevation of the same. Fig. 3 is an enlarged side elevation of the thermostat and adjacent parts, and Fig. 4 is an enlarged perspective view of part of the circuit-breaker.

The improved device is mounted on a suitably-constructed base A, of wood or other non-conducting material, and on the said base is arranged a binding-post B, in which terminates one end of a line-wire C. The binding-post B is connected with a spring-plate D, adapted to make contact at its free end with a transversely-extending arm E', projecting from a lever E, fulcrumed at E² on a bracket F, and pressed on by a spring E³, as is plainly indicated in Fig. 1. The lever E is provided with a downwardly-extending arm E⁴, having a foot-piece E⁵, adapted to engage a shoulder G', formed on the forward end of a lever G, provided at its fulcrum end with a block G², pivoted at G³ on a bracket F', se-

cured to a bar H, attached to the base A. A spring G⁴ presses on the under side of the block G² to hold the lever G in a lowermost position—that is, with its shoulder G' in engagement with the foot-piece E⁵—to lock the lever E in place against the tension of a spring E³ and at the time the arm E' is in contact with the spring-plate D.

The block G² is engaged above its fulcrum by the reduced end I' of a tube I, forming part of an electric thermostat, the said tube being of the same metal as the bar H, so that both expand and contract uniformly according to the ordinary atmospheric temperature. The tube I is adapted to receive a rod I², of wood or other non-conducting material, and on this rod is coiled a wire I³, insulated with cotton or silk, as usual, the insulating-covering being in contact with the inner surface of the tube I, to heat the latter, as hereinafter more fully described.

The main object of the rod I² is to press the insulated wire I³ evenly against the inner surface of the tube I in its entire length, so that the heat will be better communicated to the outside tube I. The rod I² also prevents inward radiation and consequent loss of heat. The rod, furthermore, by affording a firm support for the coil of wire I³, (which is very fine and delicate wire,) facilitates the handling of the said coil and particularly its introduction into the tube I.

One end of the wire I³ is connected with a metallic cap I⁴, held on the inner end of the rod I², and engaged by a contact-spring I⁵, held on the tube I and extending through a recess thereof, as is plainly indicated in Fig. 3, the spring also engaging the block G². The other end of the rod I² is likewise provided with a metal cap I⁶, connected with the other end of the wire I³, and this metal cap is adapted to pass between two spring contact-plates J, connected with a binding-post K, connected with the line-wire C', leading to a house or other building.

The tube I is held fixed at its outer end, and for this purpose I attach on this end of the tube a head I⁷, engaged by a head L', formed on a screw-rod L, screwing in a bracket N, secured to the bar H and locked in place by a lock-nut L², which, when unscrewed, per-

mits of screwing up the screw-rod L to properly abut the head L' against the head I' and hold this end of the tube against expansion toward the screw-rod L, but allow the rod to
 5 expand in the opposite direction and press on the block G² to swing the lever G upward out of engagement with the foot-piece E⁵. By the arrangement described the tube I can be readily adjusted at its outer end, so as to
 10 give any desired pressure against the block G² and render the apparatus as sensitive as possible.

Now it will be seen that by the arrangement described the electric current passing through
 15 the line-wire C to the binding-post B passes from the latter by the plate D, levers E and G to the spring I⁵, the cap I⁴, the wire I³, the cap I⁶, the binding-plates J, and the binding-post K to the wire C', leading to the house or
 20 other building. When a strong or excessively-charged current passes through the wire C and the parts referred to, then the wire I² becomes heated and heats the tube I, so that the same is expanded against the block G²,
 25 and in doing so presses the latter with sufficient force to swing the lever G upward to disengage the shoulder G' from the foot-piece E⁵. The lever E is thus released and its
 30 spring E³ causes the said lever to swing upward out of contact by its arm E' with the plate D, so that the circuit is broken, and consequently a strong or excessively-charged current cannot enter the line-wire C', leading to the house.

35 It is understood that the wire I³ forms a resistance-coil held in close contact with the tube I by the rod I² to insure a heating of the said tube on application of an excessive charge.

40 The rod I², with its wire I³, can be readily drawn out of the tube I and the hollow screw-rod L for repairs or the insertion of a new one when the old one is burned out.

The binding-post B may be connected with
 45 a fuse-holder, such as shown and described in the application above referred to, to prevent both a highly-charged and a sneaking current from passing by the wire C' to the building. It is understood that owing to the
 50 mounting of the tube I and the brackets F F' on the bar II the ordinary changes in the atmospheric temperature will not change the position of the tube relatively to the circuit-breaker, and consequently the circuit is not
 55 broken by atmospheric heat in the said tube I.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. An electric cut-out provided with a cir-

cuit-breaker interposed in the line-wire, a 60 thermostat comprising a tube fixed at one end, a wire coil in the tube, a rod held in the said tube to press the coil against the said tube to heat the latter, and intermediate mechanism for connecting the tube with the said circuit-breaker, substantially as shown and described. 65

2. An electric cut-out provided with a circuit-breaker and an electric thermostat comprising a tube fixed at one end and connected 70 at its other end with said circuit-breaker, a rod held in the said tube, and a line-wire coiled on the said rod, and contacting with the said tube to heat the same, substantially as shown and described. 75

3. An electric cut-out provided with a circuit-breaker and an electric thermostat comprising a tube fixed at one end and connected at its other end with said circuit-breaker, a non-conducting rod held in the said tube, a 80 line-wire coiled on the said rod, and contacting with the said tube to heat the same, and metallic caps on the end of the rod for making electric contact, the ends of the said wire terminating in the said caps, substantially as 85 shown and described.

4. An electric cut-out provided with a circuit-breaker and an electric thermostat comprising a tube for connection at one end with said circuit-breaker, a head on the said tube, 90 a hollow screw-rod engaging the said head, to cause the tube to expand in one direction only, and a rod carrying a wire and held in the said tube and screw-rod, substantially as shown and described. 95

5. An electric cut-out provided with a circuit-breaker and an electric thermostat having an expansion-tube, and connected at one end with said circuit-breaker, a bar for supporting the said thermostat and the circuit-breaker and of the same material as the said 100 tube, to hold the latter in the same position under ordinary temperature and means for heating the expansion-tube independently of the supporting-bar, substantially as shown 105 and described.

6. An electric cut-out provided with a tube, a non-conducting rod held removably in the said tube, a wire coiled on the said rod, caps 110 held in the ends of the said rod, spring contact-plates engaging the said caps, and a circuit-breaker operated by the expansion of said tube, substantially as shown and described.

HARRY A. LEWIS.

Witnesses:

HENRY I. FOX,
 W. MCGEATHERY.