N. E. NORSTROM.

CABLE BOX.

APPLICATION FILED MAR. 22, 1907. RENEWED JUNE 15, 1910.

980,885. Patented Jan. 3, 1911.

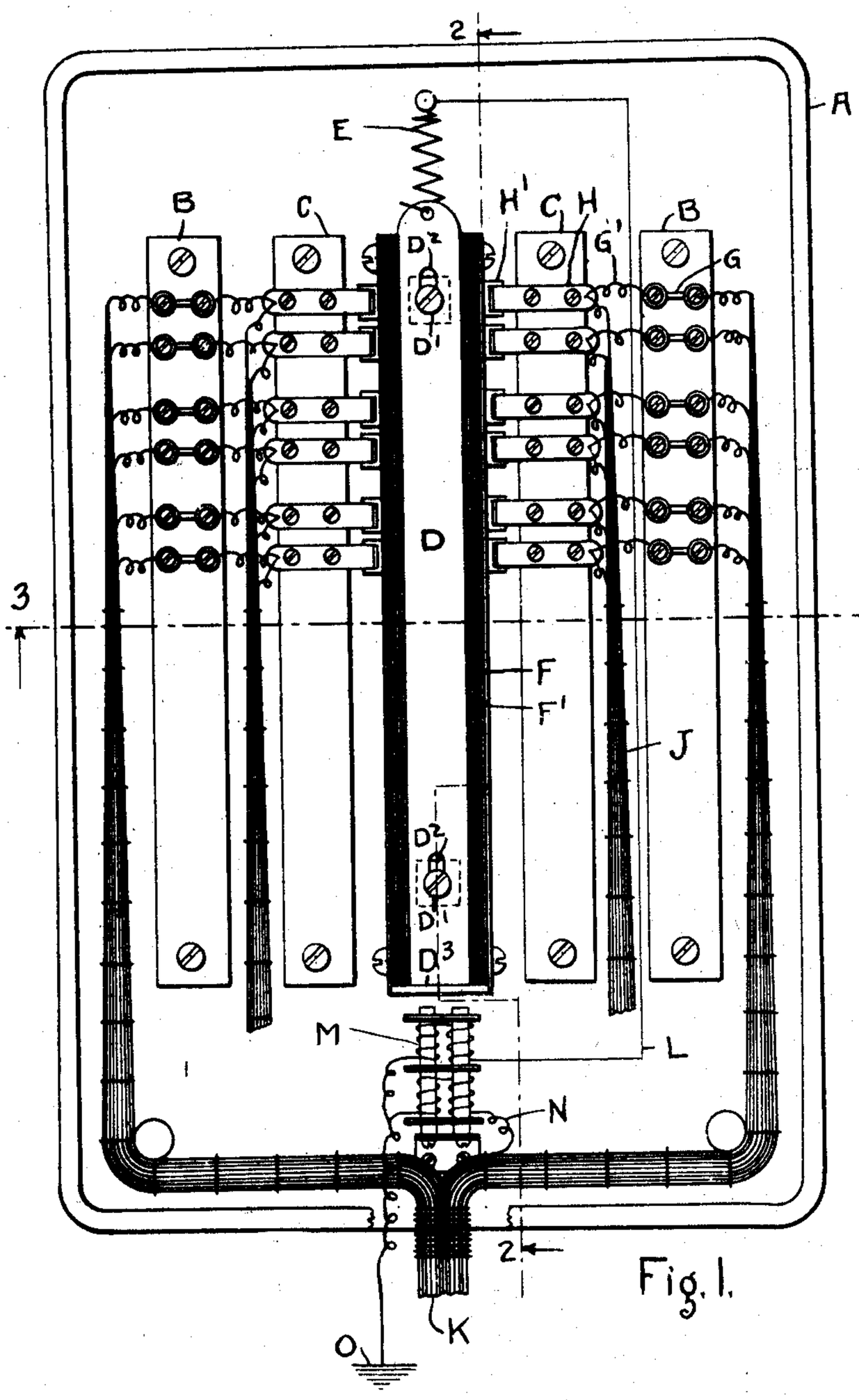

Fig. 1.

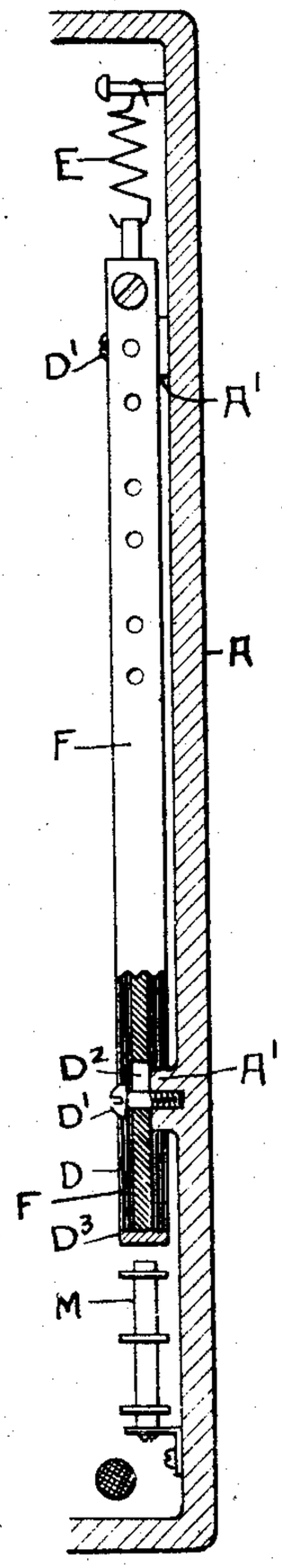

Fig. 2.

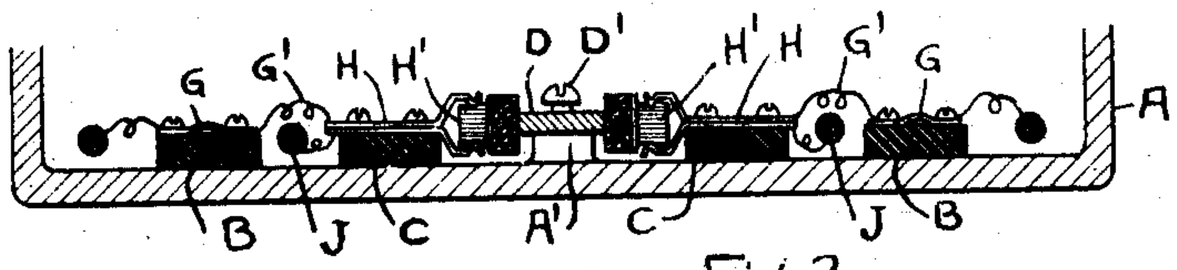

Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

NILS EMEL NORSTROM, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ANDERSON ELECTRIC & MANUFACTURING CO., OF WICHITA, KANSAS.

CABLE-BOX.

980,885. Specification of Letters Patent. Patented Jan. 3, 1911.

Application filed March 22, 1907, Serial No. 363,810. Renewed June 15, 1910. Serial No. 567,071.

To all whom it may concern:

Be it known that I, NILS EMEL NORSTROM, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Cable-Boxes, of which the following is a specification.

My invention relates to cable boxes (sometimes called cable protectors or cable terminals) designed to be attached to telephone or telegraph poles, or elsewhere as may be desired, and has for its object improvements in such devices.

In the accompanying drawings Figure 1 is an elevation, the front part of the box being removed so as to show the interior; Fig. 2 is a section on line 2—2 of Fig. 1; and Fig. 3 is a section on line 3—3 of Fig. 1.

In the said drawings A is a plain cast iron box of rectangular shape to the back wall of which are secured strips of wood B, B and C, C. In the center of the box is a metallic slide D supported by a spring E. The back of the slide rests against bosses A^1 on the inner back face of the box A and is guided by screws D^1 which pass through slots D^2 in the slide D. On the outer edges of the slide D are secured strips or plates of carbon F faced with perforated sheets or narrow strips of mica F^1. These pieces of mica are not insulating plates but simply small or narrow spacing pieces of insulating material to prevent actual contact between the carbons F and adjacent carbons H^1. If the plate D is prevented from lateral vibration toward the adjacent blocks H^1 and the said blocks H^1 are carefully secured close to the carbon F, but far enough away to leave a small air gap, the mica may be omitted. The spring E is of sufficient strength to hold the slide D lightly in its upper position with the lower ends of the slots D^2 against the screws D^1.

On the strips B are a series of fuses G which are connected by short pieces of wire G^1 with metallic clamps or pairs of spring pieces H secured to the strips C. Each clamp H carries a carbon block H^1 which is supported closely adjacent to one of the carbon plates or strips F.

Secured to a convenient bracket in the lower part of the box A is a magnet M, the poles of which are adjacent to an armature D^3 fastened to the lower end of the slide D. The magnet M is preferably provided with two windings as will hereinafter be described and the result is that when an electrical impulse passes through one of the coils of the magnet the slide D is drawn down against the action of the spring E.

The cable K coming from the central office enters the lower part of the box A and is divided into two parts which extend up the two sides of the box. The wires of these branches are connected to the different fuses G. Connected to the clamps H or to the wires G^1 are line jumpers J which are united into a cable and pass through the lower part of the box A to be connected to the wires on the cross-arms on the telephone pole to which the box is attached. A wire L extends from the spring E through one winding of the magnet M to ground at O, and another wire N extends from the cable K through the other winding of the magnet M to the same ground connection. The wire N extends to the central office and serves as a conductor through which an operator thereat may at any time send an impulse through the magnet M to ground.

When the lines between a central office and out-lying stations pass through an apparatus like this the following results may be observed. In case lightning strikes one of the wires which run to the line jumpers J it will leap the gap between the carbon H^1 and the carbon F. From thence it will pass to the plate D, the spring E, the wire L, and through one of the windings of the magnet M to ground at O. The winding through which this current passes is of wire sufficiently large to avoid damage to the magnet M by any current which can be carried by the line wire which is struck. A current thus passing through the magnet M causes that magnet to attract its armature D^3 and to draw down the plate D. The effect of such a movement of the plate D is to shake out the dust particles which accumulate and which would otherwise ground the line. The fuses G, being placed between the line jumpers J and the wires which run to the central office, serve to protect the office and to cause inordinately heavy currents to pass over the course described.

The winding of the magnet M, which is included between the wire N and ground O, may be so connected up at the central office that all incoming or outgoing ground re-

turn calls will pass through this winding. In cases in which this is done these return calls cause frequent vertical vibrations of the plate D the effect of which is to keep the air gap clear and prevent grounding the line. If not arranged so that the plate will be automatically vibrated in this way, then the operator at central may send impulses through the wire N as often as deemed advisable.

As before mentioned, this apparatus is primarily intended to be fastened to the poles which carry the wires running to outlying stations. These poles and the wires being subjected to winds are in continual vibration, and these vibrations are communicated to anything carried by the poles. These vibrations are taken advantage of in the construction of the apparatus so as to give continuous small vibrations of the plate D with respect to the carbons H^1. This is accomplished by leaving a small amount of play between the heads of the screws D^1 and the plate D, as shown in Fig. 2. This looseness in conjunction with suspending the plate D from a spring E permits the said plate D to have small horizontal vibrations due to the vibrations communicated to the supporting pole by the wind. The same conditions, together with the capability of the slide for vertical movement, permit any inspecting lineman to test or clean the apparatus without loosening or displacing any of the parts.

What I claim is:—

1. In a lightning arrester, a carbon plate provided with a ground connection, a spring by which said plate is supported and upon which it is free to vibrate, and a series of line terminals supported closely adjacent to said plate.

2. The combination with a series of terminals representing a series of line wires, of a spring supported plate held closely adjacent to said terminals, a conductor extending from the plate and provided with a ground connection, and a magnet located in said conductor and serving to vibrate said plate upon the passage of an impulse through said conductor.

3. The combination with a plate, and a series of stationary line terminals supported adjacent thereto, of a magnet, and means by which an impulse through said magnet will cause a longitudinal movement of said plate.

4. The combination with a plate provided with a ground connection, a series of line terminals located in a row adjacent to one edge of said plate, and a guide for said plate parallel to the row of terminals, of a magnet for moving said plate on its guide.

5. A plate arranged to be moved longitudinally, said plate being provided with a ground connection, and a series of line terminals supported adjacent to an edge of said plate and in a row parallel to the movement thereof, and a magnet for moving said plate, said magnet being located in the connection to said plate.

6. The combination with a plate provided with a ground connection, a series of line terminals, and connections extending from a central office, of a magnet for moving said plate, and connections for said magnet to said plate and to the connections from the central office.

7. In an arrester, a pair of fixed conducting blocks, a movable conducting block interposed between said fixed blocks, and insulating washers between said fixed and movable blocks.

Signed at Chicago, Ill., this 16th day of March 1907.

NILS EMEL NORSTROM.

Witnesses:

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Carrie E. Jordan.