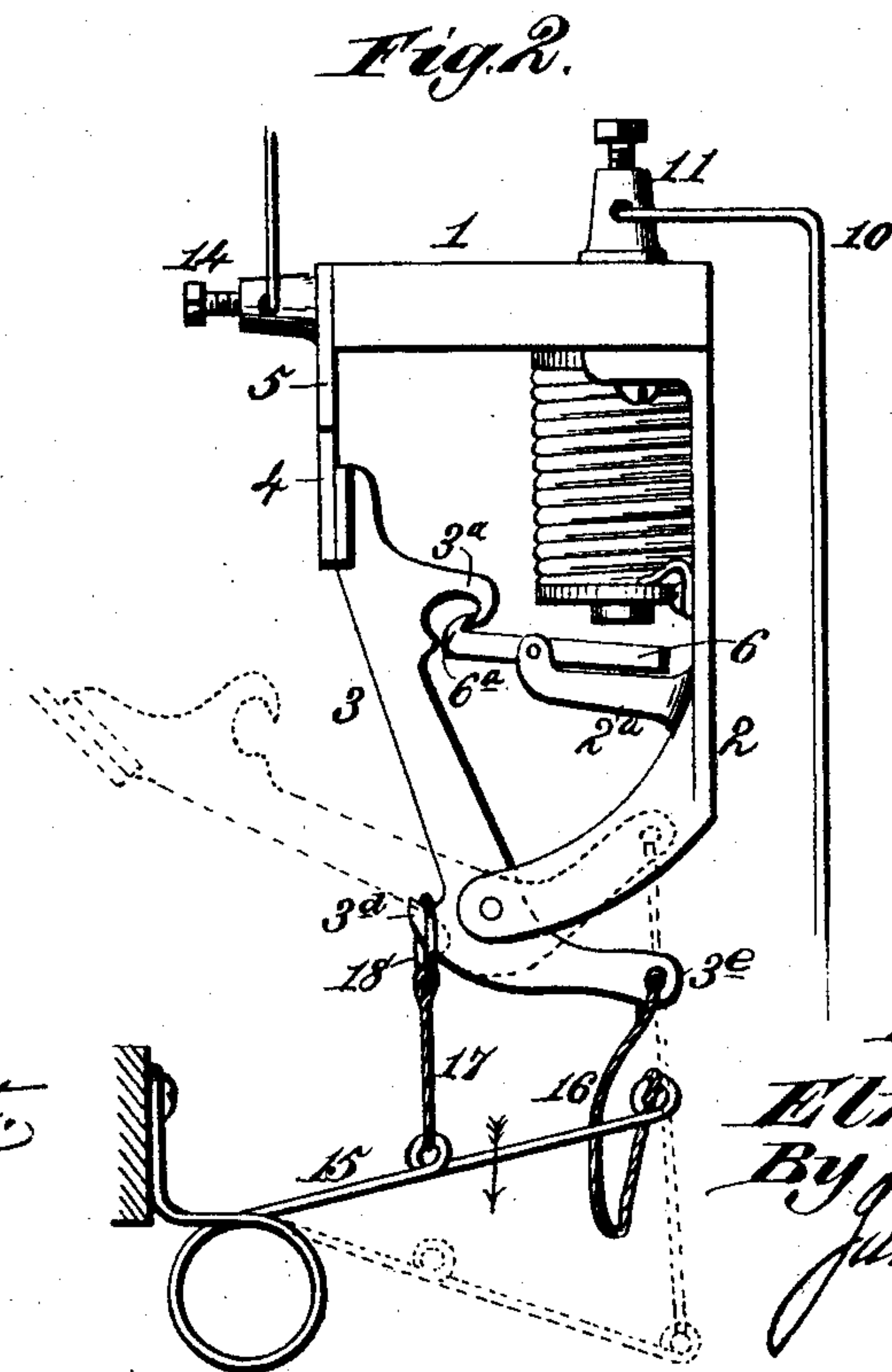
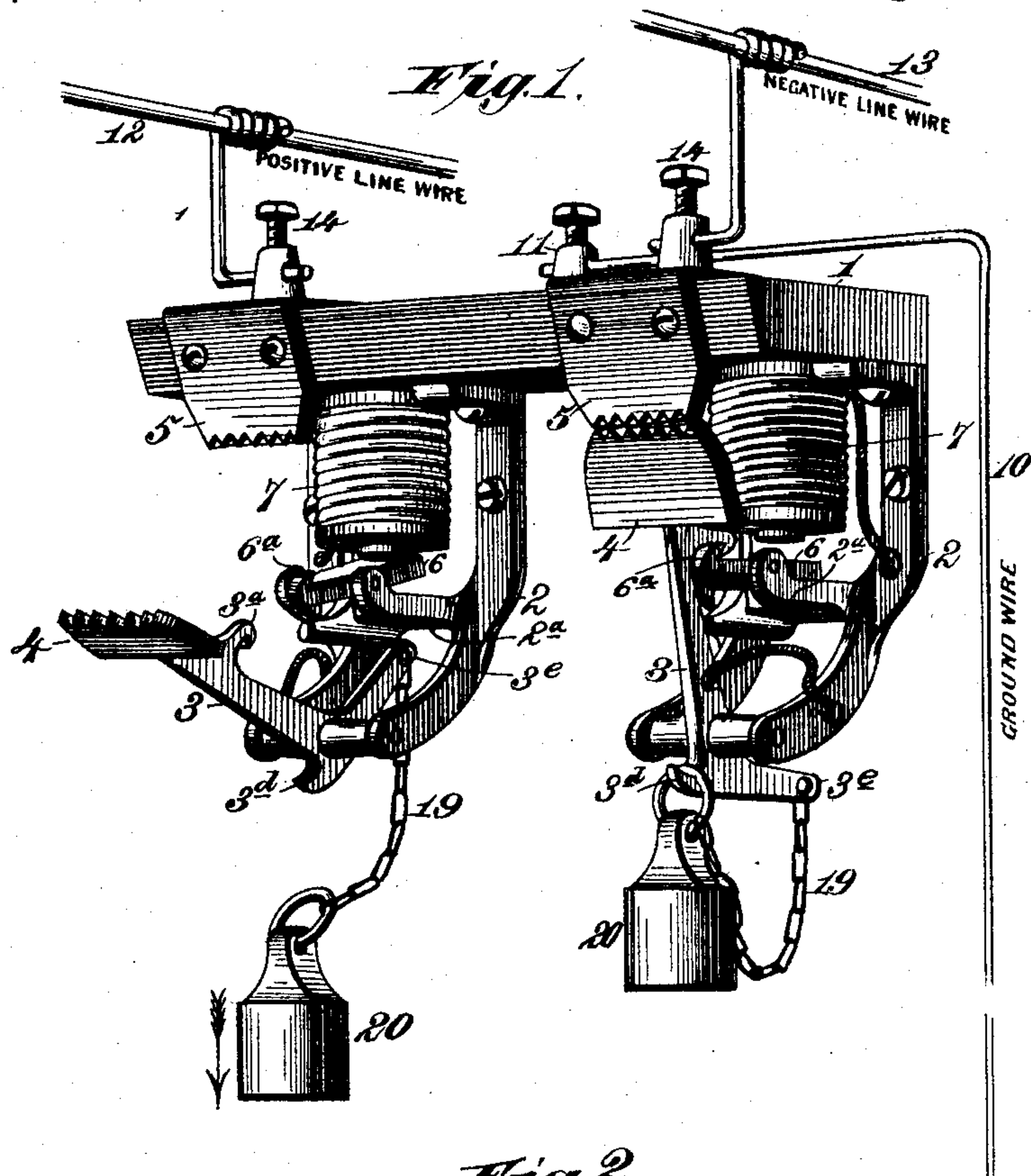


(No Model.)

E. A. SPERRY.
LIGHTNING ARRESTER.

No. 369,036.

Patented Aug. 30, 1887.



Witnesses.
Robert Everett.
Geo. H. Rea.

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UNITED STATES PATENT OFFICE.

ELMER A. SPERRY, OF CHICAGO, ILLINOIS.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 369,036, dated August 30, 1887.

Application filed May 8, 1886. Serial No. 201,586. (No model.)

To all whom it may concern:

Be it known that I, ELMER A. SPERRY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Lightning-Arresters for Electric Circuits, of which the following is a specification.

The present invention relates to that class of lightning-arresters for electric circuits in which two conducting plates or electrodes are separated from each other by a short interval, across which a discharge of lightning may pass by disruption to earth.

The object of the invention is to provide a simple and efficient construction and arrangement of devices operating in such manner that the conducting-plates may be withdrawn from each other for the purpose of breaking any sparks or are which may have been established between the conducting-plates.

The following is a full and clear description of the apparatus constituting my invention, and in the accompanying drawings Figure 1 is a perspective view showing an electric circuit provided with two lightning-arresters, one of which is shown in its normal position and the other when it is in operation. Fig. 2 is a view of an apparatus possessing a spring for restoring it to its normal position.

The reference-numeral 1 designates a frame or support, upon which are mounted the parts constituting my lightning-arrester. A metallic bracket or hanger, 2, is secured to the support 1, and it has arms or branches, in which is journaled or pivoted a swinging arm, 3, carrying at one of its ends the serrated jaw or conducting-plate 4. This plate co-operates with a similar serrated plate, 5, fixed to the frame or support 1, and, as is customary with lightning-arresters of this description, a short interval is left between the two plates, so that a small static charge can leap such interval and pass to ground without disturbing the position of the conducting-plates or jaws. The bracket 2 also has arms 2^a, serving as supports for a pivoted armature, 6, which faces the core of an electro-magnet, 7, placed in the path of a grounded circuit. The armature 6 is provided with a flange, 6^a, at its end, which engages with a hooked projection, 3^a, formed on the arm 3, so that when the parts are thus interlocked the armature will be in the posi-

tion shown at the right side of Fig. 1, and the two conductor-plates be held in their normal positions ready for operation. The electro-magnet 7 has one terminal connected with the bracket or hanger 2, and the other terminal is connected with the grounded wire 10 through the binding-post 11 at the rear of the instrument.

The stationary conductor-plate, or, as is shown in the drawings, the two plates belonging to separate instruments, are connected with the positive and negative line-wires 12 13 by means of binding-posts 14. The arm 3 is provided in front of its pivot with a hooked projection, 3^d, and in rear of such pivot it has an extension, 3^e. To the latter is attached a chain, 19, which bears a weight, 20; or, as is shown in Fig. 2, a spring and cord arrangement may be resorted to. The spring 15 is of the lever type, and it has a cord, 16, which is connected with the extension 3^e of the arm 3, and when the conducting-plates or jaws are in their normal positions stress is applied to the spring and the cord 16 is loose or not stretched. Another cord, 17, having a ring, 18, is connected with the spring, and the ring is engaged with the hook 3^d, as is shown in full lines in Fig. 2.

The operation of an instrument constructed as above described is as follows, viz: When the arrester is in its normal position and a small static charge comes in from the line, the same will pass over the small interval between the conducting-plates, and in its passage to the ground it goes through the pivoted arm and other metallic connections. A small static charge leaping the interval between the jaws or plates passes to the ground through the coil of the electro-magnet, but is not of sufficient strength to magnetize its core. For such reason the armature is not affected, and the conducting-plates are maintained in their normal positions. When, however, a heavy dangerous charge is coming in, or if the circuit is grounded on the line, the core of the electro-magnet becomes sufficiently magnetized to attract the rear end of the armature 6, and by such change of position the flange on said armature is liberated from the hook on the swinging arm, thus releasing the latter and permitting it to swing forward in order to separate the conducting-plates, as is clearly indicated

in the drawings. It is evident that the separation of the plates in the automatic manner described will break any sparks or arc which may have been established between the conducting-plates, thus removing the danger of lightning disabling dynamos and giving immediate indication of any dangerous ground on the circuit.

In the construction shown in Fig. 1 the falling of the weight which is hooked to the pivoted arm bearing one of the conducting-plates causes such jaw to swing forward and separate from the stationary plate. This falling of the weight takes place when the arm is liberated from the armature, and it is evident that by such act of falling the weight restores the conducting-plate to its original position, by reason of the chain 19 being attached to the side of the pivoted arm opposite to that bearing the hook. The conducting-plates are thus in immediate readiness to take off another charge, and all that is required is the replacing or hanging of the weight upon the hook, so as to have the chain 19 loose. In the construction shown in Fig. 2 the conducting-plates are held in position by the spring-arm 15 and the cord and ring engaging with the hook on the pivoted arm. When a voltaic arc is established between the plates and a large quantity of current passes through the electro-magnet, the armature is instantly attracted, thus releasing the pivoted arm, and from its weight allowing it to

swing into the position shown in the dotted lines in Fig. 2. The change of angle of the pivoted arm causes the ring to be released from its hook, and the spring-arm is instantly projected in the direction of the arrow, and, being connected with arm 13^e by the cord 16, instantly replaces the pivoted arm and conducting-plates to their original positions, as shown in the full lines in the drawings.

Having thus described my invention, what I claim is—

1. A lightning-arrester consisting, essentially, of a fixed conducting-plate, a swinging arm bearing the companion conducting-plate, an electro-magnet placed in a grounded circuit, an armature adapted to engage and lock the swinging arm, and means, substantially as set forth, for restoring the swinging arm to its normal position after the separation of the conducting-plates, substantially as described.

2. A lightning-arrester consisting of the fixed and movable conducting-plates, the pivoted arm bearing the latter, having a hook and extension on opposite sides of its pivot, and the chain and weight or its described equivalent connected with said extension.

In testimony whereof I affix my signature in presence of two witnesses.

ELMER A. SPERRY.

Witnesses:

A. M. TANNER,
J. A. RUTHERFORD.