

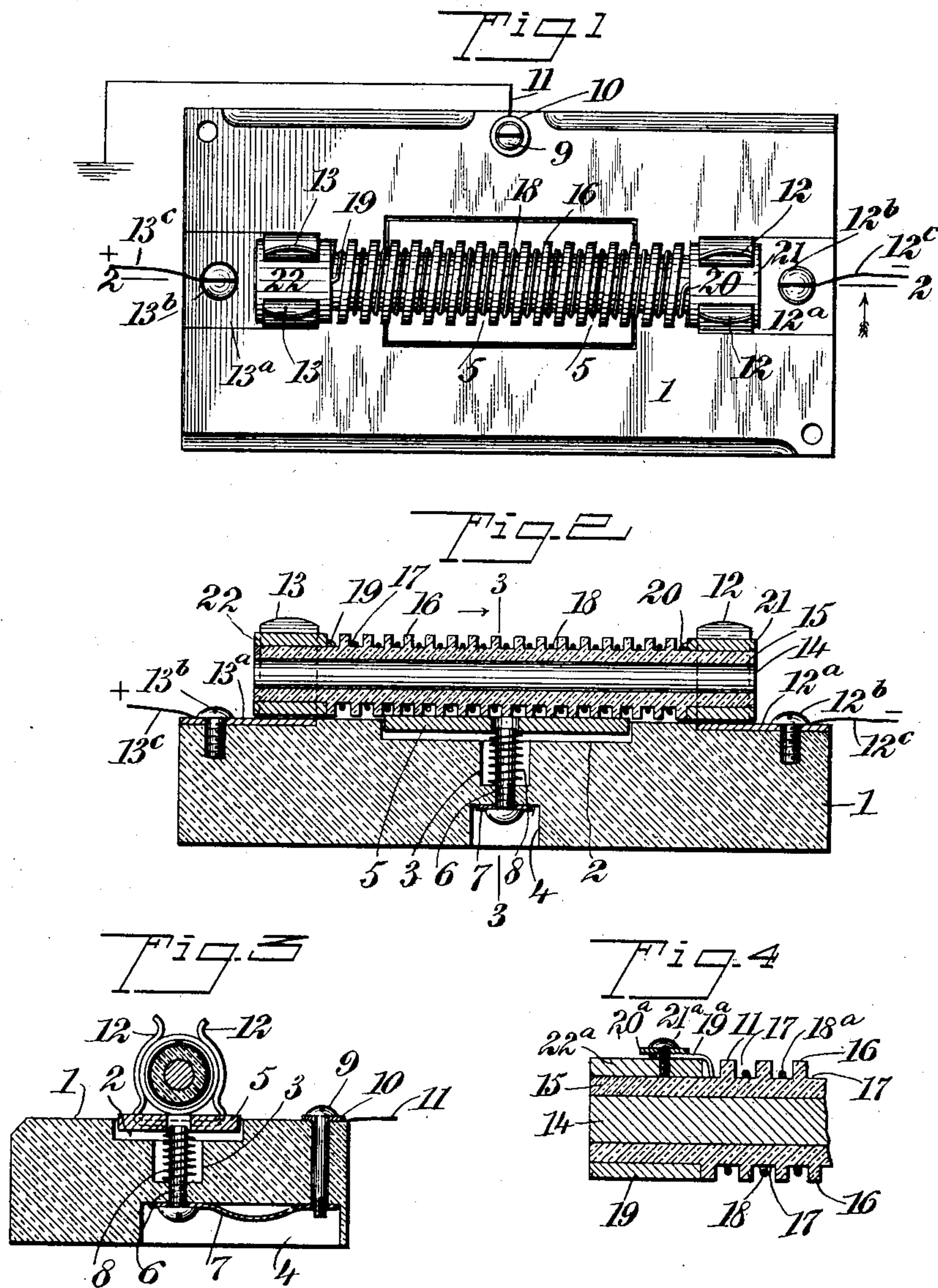
No. 753,582.

PATENTED MAR. 1, 1904.

H. N. KEIFER.
LIGHTNING ARRESTER.

APPLICATION FILED JUNE 30, 1903.

NO MODEL.



WITNESSES:

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HAROLD NEWMARK KEIFER, OF TOPEKA, KANSAS.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 753,582, dated March 1, 1904.

Application filed June 30, 1903. Serial No. 163,741. (No model.)

To all whom it may concern:

Be it known that I, HAROLD NEWMARK KEIFER, a citizen of the United States, and a resident of Topeka, in the county of Shawnee and State of Kansas, have invented a new and Improved Lightning-Arrester, of which the following is a full, clear, and exact description.

My invention relates to lightning-arresters of the kind provided with a fuse and capable of general use, but particularly adapted for service in connection with telephones, telegraphs, voltmeters, and the like.

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 plan view of a lightning-arrester embodying my invention. Fig. 2 is a vertical longitudinal section through the same upon the line 2 2 of Fig. 1 looking in the direction of the arrow. Fig. 3 is a vertical cross-section upon the line 3 3 of Fig. 2 looking in the direction of the arrow, and Fig. 4 is a fragmentary section of a modified form of the insulating-spool, slightly enlarged.

A base 1 is provided with a central aperture 2 and with a countersink 3 disposed centrally thereof. This base is likewise provided with a slot 4, one end of which is substantially in alinement with the countersink 3, as indicated more particularly in Fig. 3. A plate 5 of conducting material is mounted upon the upper end of a stem 6, which is provided with a leaf-spring 7 and is encircled by a spiral spring 8, as indicated in Figs. 2 and 3. A screw 9, provided with a washer 10, serves as a binding-post for a ground-wire 11. The leaf-spring 7 is engaged by the screw 9, as indicated more particularly in Fig. 3. Clip-springs 12 13 are integrally mounted upon bases 12^a 13^a, these bases being engaged by screws 12^b 13^b for the purpose of securing terminal wires 12^c 13^c.

Upon a core 14 of iron is mounted a cylinder 15 of insulating material, this cylinder being provided with a spiral rib 16, the convolutions of which virtually form grooves 17 for partially shielding a wire 18. This wire may be of any suitable metal and is of such size as to be fused when the current reaches a certain danger limit. The ends of wire

may be soldered to terminal rings 21 22, as shown in Fig. 2. If desired, however, the modified structure shown in Fig. 4 may be employed. The core 14 and the cylinder 15 have the same structure as that shown in Fig. 2; but each end 19^a of a wire 18^a is secured by means of a washer 20^a and a screw 21^a, so as to make a good connection with a terminal ring 22^a.

The invention is used as follows: The cylinder 15, provided with its iron core 14 and with the other attachments above described, is sprung into place so as to be engaged by the spring-clips 12 13, as indicated in Figs. 1 and 2. The plate 5 thereupon compresses the spiral spring 8 to a slight extent and the reaction of this spring keeps the plate 5 neatly pressed against the under side of the cylinder. The wires are next connected up in the usual manner. If now the line-wires 12^c 13^c receive from any source a current of such energy as to be dangerous or if either of them is struck by lightning, the excess of electricity jumps across from the wire 18 to the plate 5 and passes through the stem 6, leaf-spring 7, and screw 9 to the ground-wire 11. The wires 18 18^a being drawn tightly upon the cylinder 15 are always maintained at a certain predetermined distance from the plate 5, and the excess of electricity must in each instance leap across the same distance in order to be grounded. The gentle pressure of the plate 5 against the under side of the cylinder insures a uniform distance between the wire and the plate, and thus makes the lightning-arrester always reliable. If for any reason the charge of lightning or excessive current is not carried to the ground without damaging any part of the apparatus or escaping to any extent into objects disposed adjacent to the apparatus, the wires 18 18^a are instantly fused, thereby cutting off all communication and preventing any further flow of the current. The iron core 14 is acted upon inductively by the wire 18, and by its own inductance upon this wire causes the lightning to leap with greater readiness to the plate 5 connected with the ground.

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

1. In a lightning-arrester, the combination

of a cylinder of insulating material provided with a spiral rib, a wire wound upon said cylinder and disposed adjacent to said rib, a plate of conducting material disposed adjacent to
5 said cylinder, spring mechanism for automatically forcing said plate toward said cylinder, and electrical connections between said plate and the earth.

2. In a lightning-arrester, the combination
10 of an iron core, a cylinder of insulating material encircling the same and provided with a spiral rib, a wire of fusible metal wound closely upon said cylinder of insulating material and disposed adjacent to said rib, a plate
15 of conducting material disposed adjacent to said cylinder, and pressure mechanism for forcing said plate gently against said rib so as to maintain the same a uniform distance from said wire.

3. In a lightning-arrester, the combination 20 of a cylinder, metallic members mounted upon the ends thereof, a wire wound spirally upon said cylinder and connected with said metallic members, spring-clips for engaging said metallic members, said spring-clips being pro- 25 vided with electrical connections, a member of conducting material disposed adjacent to said cylinder, and spring mechanism for normally forcing said conducting member toward said cylinder. 30

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HAROLD NEWMARK KEIFER.

Witnesses:

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