

No. 724,339.

PATENTED MAR. 31, 1903.

H. M. SHAW.
LIGHTNING ARRESTER.
APPLICATION FILED SEPT. 20, 1901.

NO MODEL.

Fig. 1

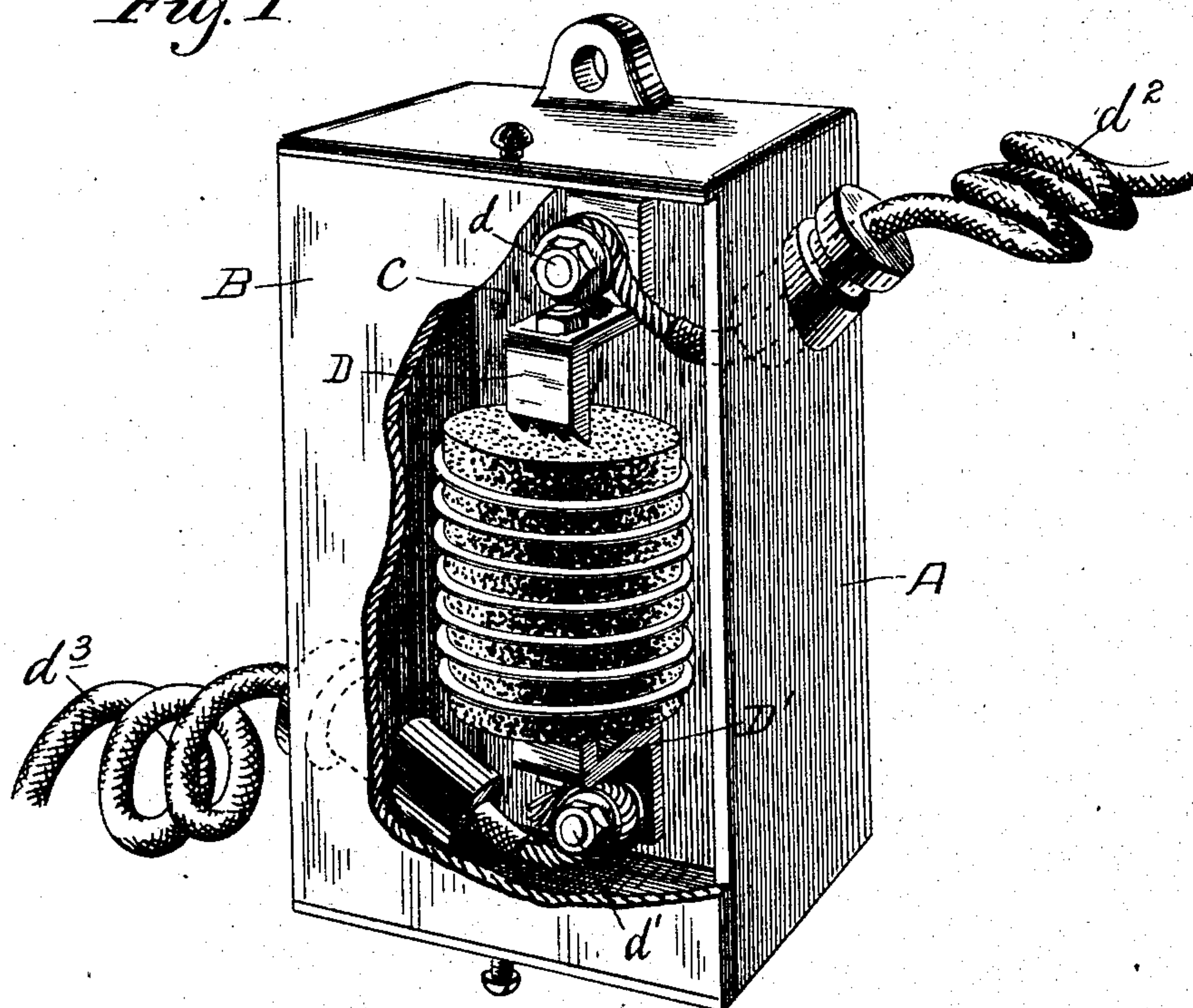
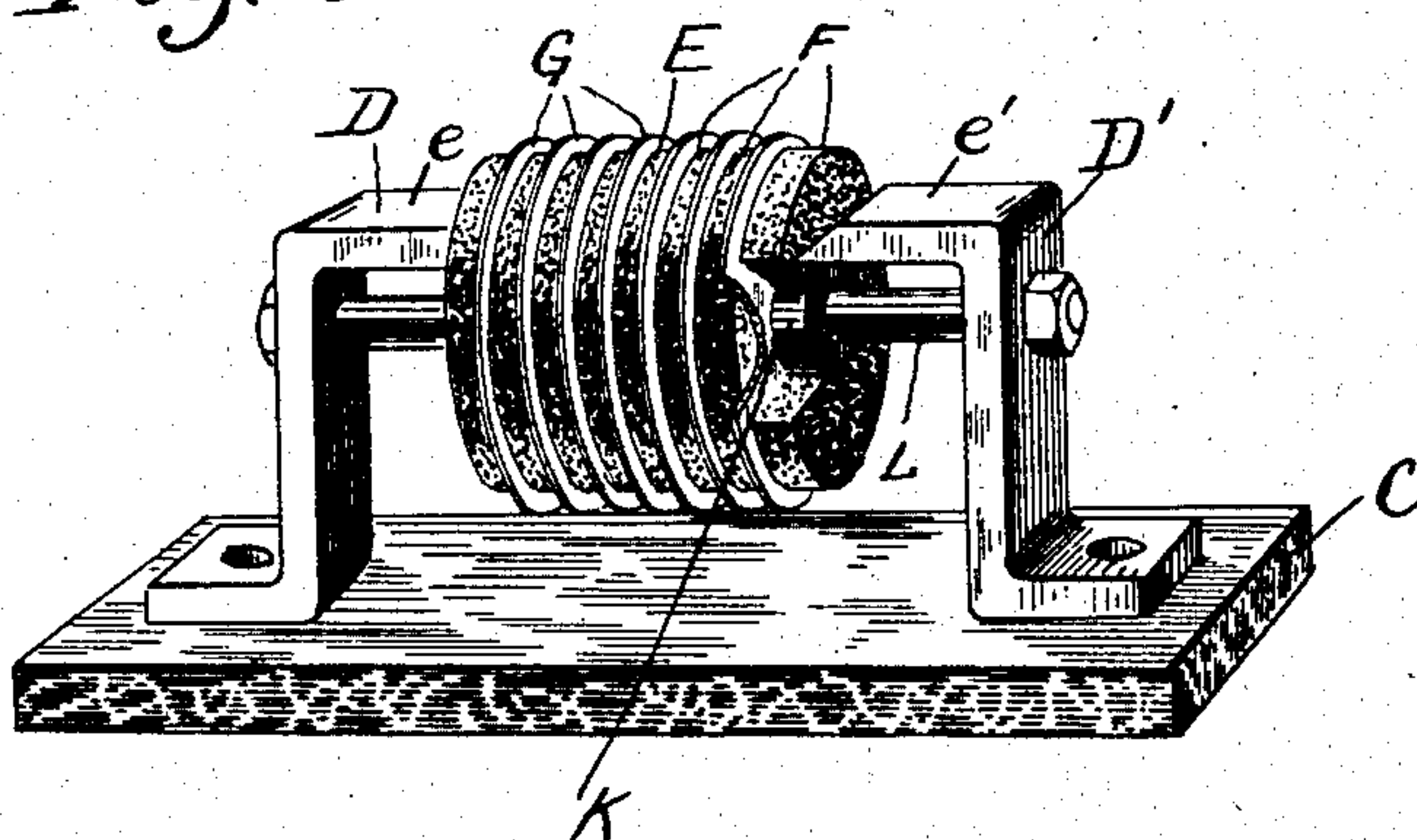


Fig. 2



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HARRY M. SHAW, OF NEWARK, NEW JERSEY.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 724,339, dated March 31, 1903.

Application filed September 20, 1901. Serial No. 75,886. (No model.)

To all whom it may concern:

Be it known that I, HARRY M. SHAW, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Lightning-Arresters, of which the following is a specification.

My present invention relates to lightning-arresters for application to circuits which would form arcs or which are of sufficient potential to cause a continuance of a discharge of current when the spaces of the lightning-arrester have been bridged by a discharge inductively produced by the clouds.

My present invention relates to an improved means for protecting electrical apparatus from damage by lightning or atmospheric discharges of electricity, which discharges, although they may not in themselves be sufficient to materially injure the apparatus, often provide a path for the current generated by the apparatus or flowing therethrough, which then is liable to cause damage to the apparatus.

The object of my invention is to provide a lightning-arrester having features of novelty and advantage, and in the drawings I have shown one embodiment of my invention.

Figure 1 is a perspective view with parts of the casing broken away. Fig. 2 is a perspective view of the arrester removed from its casing.

A is the casing in which the lightning-arrester is located and has on its front side a removable cover B.

C is a plate of insulating material, such as slate, to which the parts of my lightning-arrester are secured. To this plate are secured ribbons of metal D D', preferably of brass, by means of the screws $d d'$, which also constitute binding-posts for the attachment of the stranded wire d^2 and the ground-wire d^3 . These ribbons of metal D D' project upwardly from the slate piece C. Then their ends are bent toward each other substantially parallel with the base, as is clearly shown in the drawings at $e e'$, their opposing edges being serrated or toothed.

E denotes a composite body made up of plates of non-arcing material F, such as carbon and thin sheets of mica G, arranged in alternation. These plates of carbon are mounted on the

insulating-washers K, and the plates of mica extend down between these insulating-washers to the bolt L, which is of a non-conducting material, such as fiber. The ends of the bolt pass through the upright parts of the ribbons D D' and are secured thereto by means of nuts, so that the composite body E just about fills the space between the serrated ends $e e'$ of the ribbons D D'.

The current is fed to the instrument first through the stranded wire until it reaches the flat ribbon D, where it spreads throughout this flat ribbon and is broken into small discharges from the serrated end e and diverted into the flat disks of carbon. Here it is broken up into infinitesimal sparks in passing from one carbon disk over or through the insulator to the succeeding carbon disk, and so on until it is received at the serrated ends e' of the ribbon D', from whence it is led off into the ground through the wire d^3 .

It has been common in lightning-arresters to provide two metal plates having oppositely-disposed serrated portions, but without any intervening substance between the serrated portions. It has been found by the use of an instrument of this kind that the air is apt to become highly heated and arcs formed, and such a construction has never been fully satisfactory. It has also been customary to provide in a lightning-arrester a series of alternately-arranged plates of non-arcing metal and mica or plates of non-arcing material insulated from one another and separated by an air-space; but good results have never been obtained from such a construction. I have found that the best result can be obtained by providing a composite body of carbon and mica or carbon and air-gaps arranged in alternation and delivering the current to the carbon through a flat ribbon of metal having a serrated end and in taking the current from the opposite end of this composite body through a flat ribbon of metal having a serrated end and from there to the ground, and, further, in mounting these alternate layers of carbon and mica on an insulating-sleeve of fiber, the whole being supported by a bolt of fiber secured to the flat ribbon of metal. Thus this composite body is completely insulated, and the current delivered to it at one end must pass over or

through the successive mica steps or air-gaps and the carbon.

I claim as my invention—

1. In a lightning-arrester, in combination
5 the insulating-base, the metal ribbons having oppositely-disposed serrated ends, and the composite body made up of alternate plates of a non-arcing material and mica, said composite body being insulated from its support
10 and positioned between the serrated ends of the metallic ribbons, substantially as described.

2. In a lightning-arrester, in combination the insulating-base, the flat metallic ribbons
15 supported on said base and having oppositely-disposed serrated ends, a non-conducting bolt connecting said ribbons, and a composite body mounted on said non-conducting bolt and positioned between the serrated ends
20 of said metallic ribbons, said body being made up of alternate layers of carbon and mica, substantially as described.

3. In a lightning-arrester, in combination the insulating-base, the flat metallic ribbons

supported thereon and having oppositely-dis- 25 posed serrated edges, a composite body made up of alternate plates of carbon and mica arranged on a non-conducting sleeve, said body being positioned between the serrated ends of said metallic ribbons, and a bolt of non- 30 conducting material passing through said sleeve and having its ends secured to said metallic ribbons, substantially as described.

4. In a lightning-arrester, in combination, the insulating-base, the metallic ribbons hav- 35 ing oppositely-disposed serrated ends, and a composite body made up of a series of plates of non-arcing material insulated from one another and separated by a non-conductor, said composite body being insulated from its sup- 40 port and positioned between the serrated ends of the metallic ribbons, substantially as described.

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