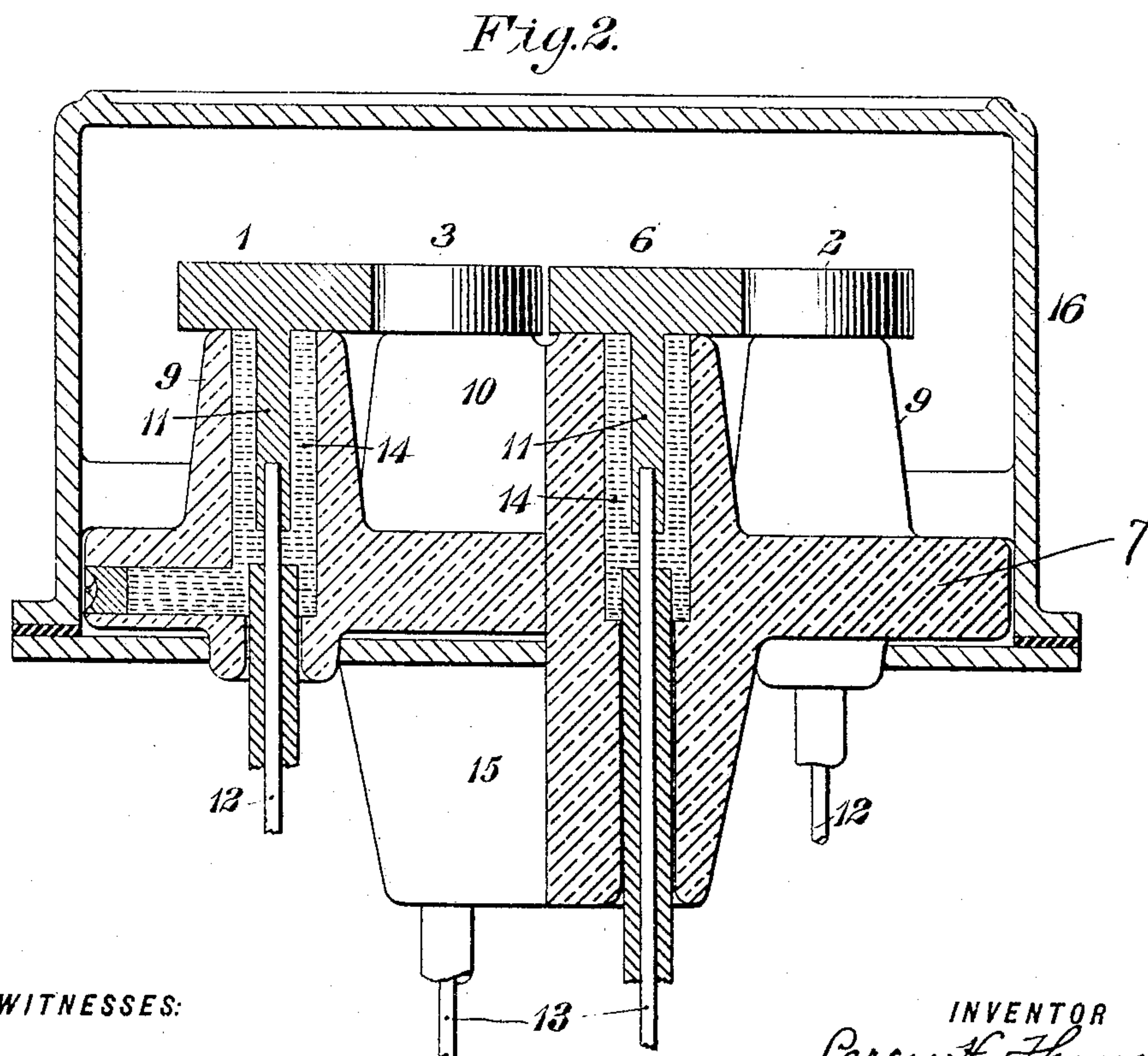
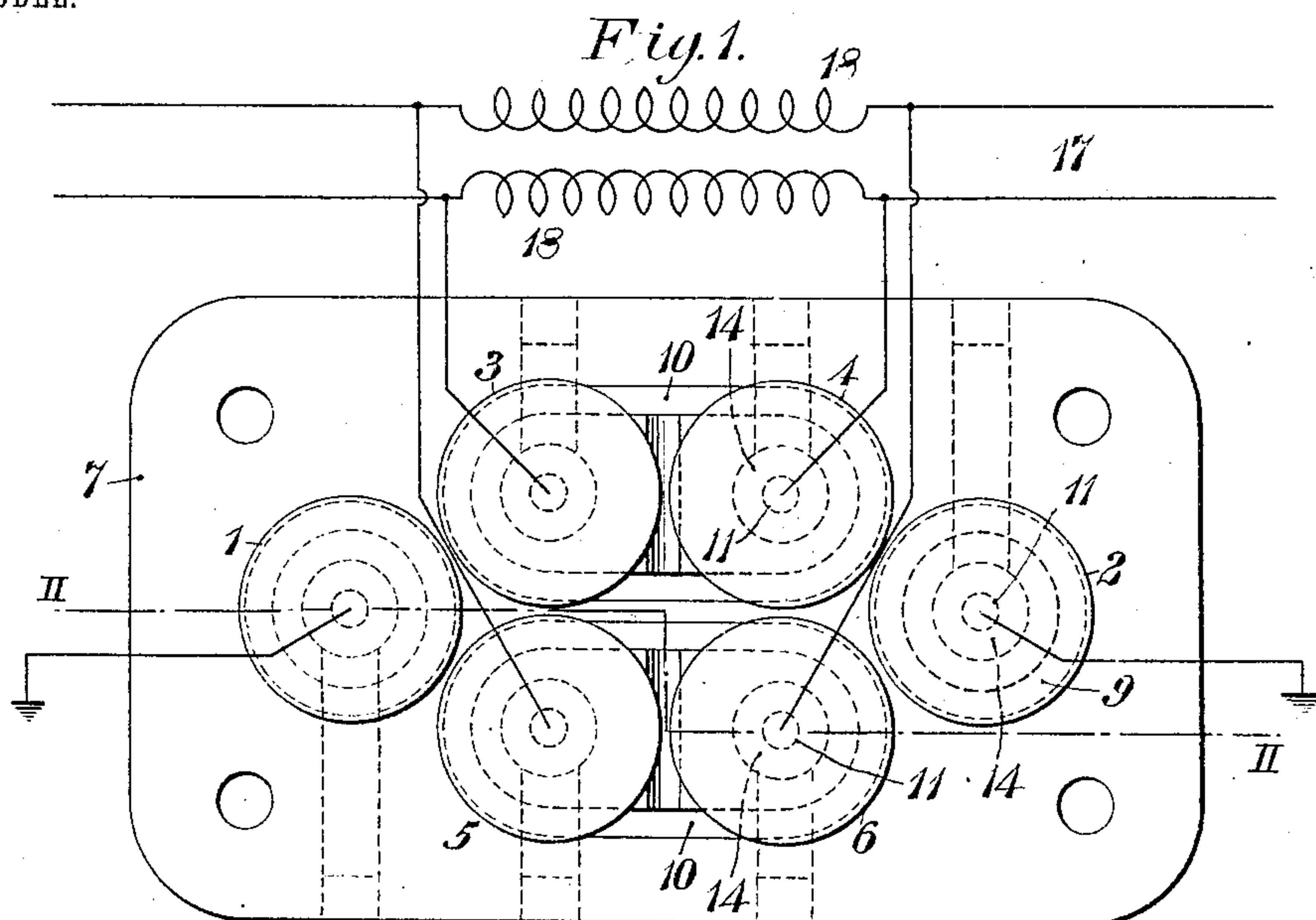


No. 772,190.

PATENTED OCT. 11, 1904.

P. H. THOMAS.
LIGHTNING ARRESTER.
APPLICATION FILED FEB. 6, 1903.

NO MODEL.



WITNESSES:

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PERCY H. THOMAS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO
WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A
CORPORATION OF PENNSYLVANIA.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 772,190, dated October 11, 1904.

Application filed February 6, 1903. Serial No. 142,241. (No model.)

To all whom it may concern:

Be it known that I, PERCY H. THOMAS, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Lightning-Arresters, of which the following is a specification.

My invention relates to devices commonly known as "lightning-arresters" which are employed for diverting from electrical machines and apparatus charges of static electricity, which might otherwise destroy or seriously impair the conductors or conductor insulation of such machines and apparatus.

The object of my invention is to provide a device of the character indicated which shall have a maximum ratio of spark-gaps to discharge-terminals, thereby insuring a compact and comparatively inexpensive structure which shall embody discharge-paths of substantially the same resistance between the two main conductors of the circuit and also between each of such conductors and the ground and where desired also around or between translating devices, or both, in either or both of said main conductors.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 embodies a plan view of the arrester and a diagram of an electric circuit having inductance-coils. Fig. 2 is a sectional view taken on line II II of Fig. 1, the casing being also shown.

As here illustrated, the discharge-terminals consist of six cylinders 1, 2, 3, 4, 5, and 6, preferably formed of brass or other suitable non-arcing metal and comprising two sets the members of each of which are so disposed as to have spark-gaps of substantially the same dimensions between them. The cylinders 3 and 4 also have the same location with reference to each other, as do also the cylinders 5 and 6.

The cylinders are mounted upon a base 7, of porcelain or other suitable insulating material, having small bosses 9 to support the cylinders 1 and 2 and larger bosses 10 to support the cylinders 3, 4, 5, and 6. Each of the cylin-

ders has a rod or stem 11, that projects into the interior of the boss upon which it is supported and is joined in such interior to the lead or terminal wire, the cylinders 1 and 2 being thus joined to the ground lead-wires 12 and the cylinders 3, 4, 5, and 6 to the lead-wires 13, which are connected to the main circuit. The rods or stems 11 may be further insulated and securely held in position by means of suitable insulating material 14, which may be inserted into the space surrounding the rods when hot and in a liquid condition and then be permitted to solidify to hold the parts firmly in place. I have shown the supporting base or frame 7 as also provided with lugs or projections 15 on its outer side through which the lead-wires 13 project and have also shown a metal casing 16 for the discharge-terminals and the main portions of the supporting structure.

As here indicated, the lightning-arrester is employed in connection with the circuit 17, each conductor of which is provided with an inductance-coil 18, the two coils being so disposed as to have mutual as well as self-induction, and in order to thoroughly protect these coils from the injurious effects of lightning charges I connect the discharge-terminals 4 and 6 to the terminals of the respective coils 18 at one end and the discharge-terminals 3 and 5 to the respective terminals of the coils at the other end, the discharge-terminals 1 and 2 being connected to the ground, as indicated in Fig. 1. It will thus be seen that on account of the relative location of the several discharge-terminals an arc-rupturing and discharge-path is provided from each end of each coil to the ground and also a like path between the corresponding ends of the two coils and between the opposite ends of each coil, all of these discharge-paths being provided by means of two sets of discharge-terminals of three terminals each.

Other forms of terminals and other arrangements may of course be employed, if desired.

I claim as my invention—

1. The combination with an electric circuit having adjacent apparatus on both sides to be

protected, of a lightning-arrester comprising two sets of three discharge-terminals, two of the three discharge-terminals being separated by a spark-gap and connected to corresponding terminals of the pieces of apparatus to be protected and forming spark-gaps with the third terminal which is connected to ground, the two discharge-terminals also forming spark-gaps with the corresponding terminals of the other set.

2. A lightning-arrester comprising two sets of discharge-terminals of like form and dimensions, those of each set being separated from each other by spark-gaps and being respectively connected to the sides of the circuit to be protected and to the ground, and an insulating-support comprising a plate having bosses projecting from both sides for the conductors to line and bosses projecting from one side for the grounded leads.

3. A lightning-arrester for protecting two coils which are connected in the respective

sides of an electric circuit and are located in proximity to each other, comprising six discharge-terminals and an insulating-support, said terminals being so disposed as to provide substantially equal discharge-paths across and between both coils at each end and to the ground from each end of each coil.

4. A lightning-arrester comprising a plurality of discharge-terminals of like form and dimensions, two of which are grounded and the remainder of which are connected to the line to be protected, and an insulating-plate having integral bosses for the leads, those for the line-leads projecting from both sides of the plate.

In testimony whereof I have hereunto subscribed my name this 23d day of January, 1903.

PERCY H. THOMAS.

Witnesses:

JAMES B. YOUNG,
J. C. MORSE.