

No. 840,028.

PATENTED JAN. 1, 1907.

M. O. TROY.
LIGHTNING ARRESTER.
APPLICATION FILED MAR. 30, 1903.

Fig. 1.

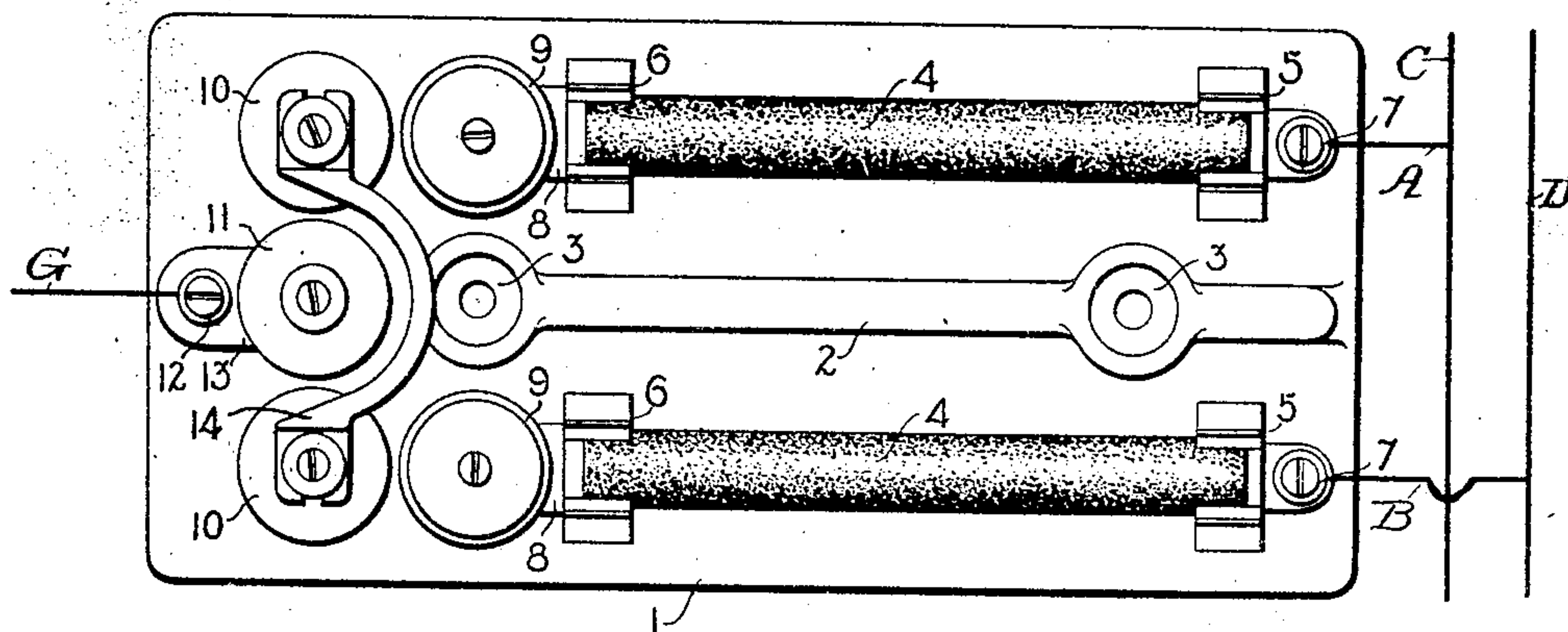


Fig. 2.

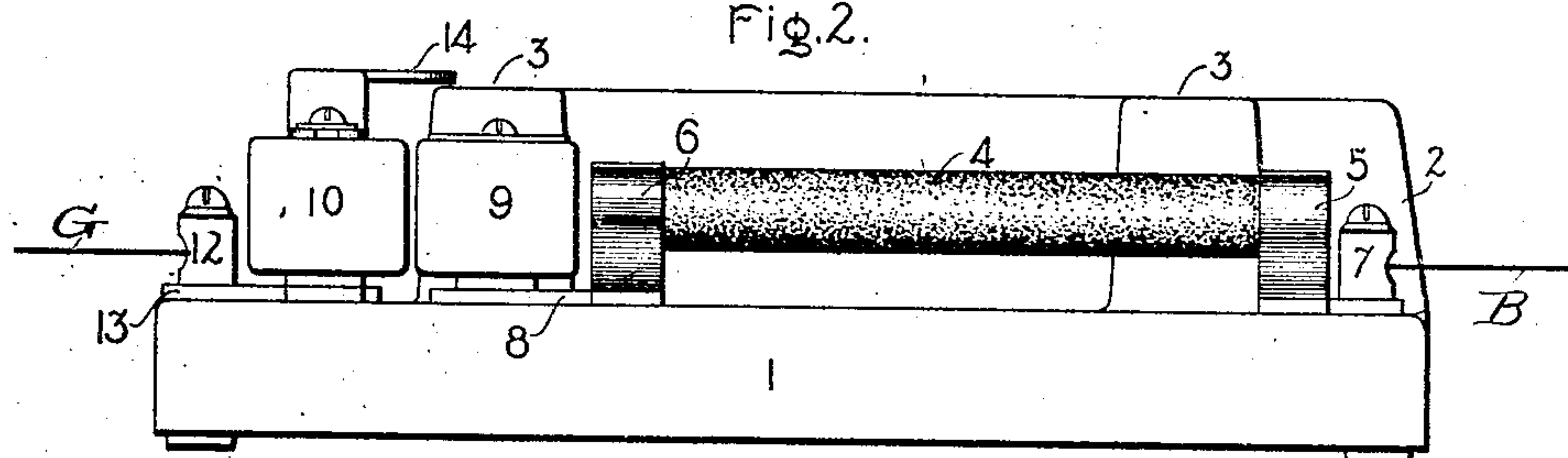
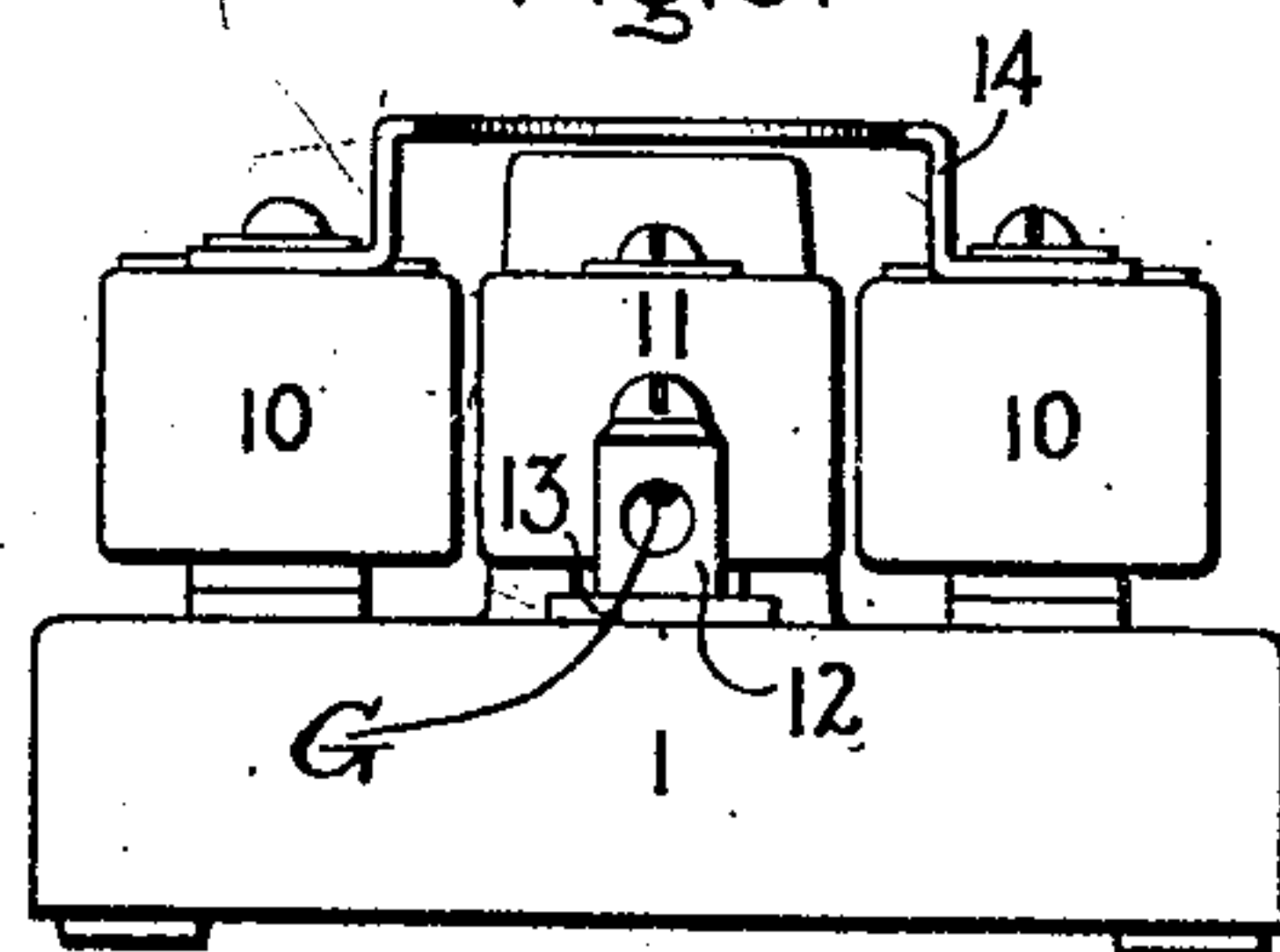


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

MATTHEW O. TROY, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY. A CORPORATION OF NEW YORK.

LIGHTNING-ARRESTER.

No. 840,028.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed March 30, 1903. Serial No. 150,136.

To all whom it may concern:

Be it known that I, MATTHEW O. TROY, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Lightning-Arresters, of which the following is a specification.

As lightning-arresters have been constructed and installed heretofore on transmission and similar circuits, conductor-wires have been connected at intervals with virtually separate arresters, which were grounded singly or in multiple, so that the reactive charge due to the resonant action of the line-wires upon each other had to pass through the total resistance of at least two arresters respectively connected to the lines, or else specially-designed resistance apparatus had to be installed between the line-wires to provide a path for the reactive discharge. The resistance of two arresters, particularly such as are used on high-potential circuits, is so great that there is considerable danger of the reactive charge arcing across from line to line and short-circuiting the apparatus, so that auxiliary resistance means have been necessary on all high-tension circuits heretofore.

My invention consists in an arrangement and connection of lightning-arresters whereby a part of their resistance may be rendered available for the control of the reactive discharge.

The invention will be readily understood by reference to the following description, taken in connection with the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top plan of two lightning-arresters mounted upon a single base and arranged and connected according to my invention. Fig. 2 is a side elevation, and Fig. 3 is a left-hand elevation thereof.

The arresters and their supports are similar to those shown and described in the patent to Wirt, No. 669,155, granted March 5, 1901. The base 1 is a rectangular slab of porcelain or other suitable insulation, with a central longitudinal web or barrier 2 projecting upward from its face and provided near its ends with enlargements having counter-sunk holes 3 3 for attaching-screws.

The lightning-arresters are secured to the base 1 on opposite sides of the barrier 2.

The non-inductive resistance-bars 4 4 are supported at their ends by clips 5 5 and 6 6. The clips 5 5 are connected to binding-posts 7 7 for attaching leads A B from the respective line-wires C D, and the clips 6 6 are connected by strips 8 8 to metal cylinders 9 9. Cylinders 10 10 are independently mounted upon the base, with small air spaces or gaps between them and the cylinders 9 9. In case the arresters are to be used on circuits of higher potential the number of independent cylinders 10 is correspondingly increased. Between the independent cylinders 10 10 and in case there are a number of pairs then between the outermost pair an intermediate cylinder 11 is arranged with short gaps between it and the adjacent cylinders 10 10. A binding-post 12 is connected to the intermediate cylinder 11 by a strip 13 for connecting a common ground-wire G to both arresters. When a static charge exists on either line-wire, it is conducted to ground through the respective binding-post 7, resistance-bar 4, cylinder 9, the air-gap between cylinders 9 and 10, cylinder 10, the air-gap between cylinders 10 and 11 to the ground-wire by cylinder 11, and binding-post 12.

In order that the reactive discharge may traverse the lightning-arresters without passing through their total resistances, I connect the independent cylinders 10 by a shunt-conductor, so that there are the same number of gaps in the path of the reaction discharge from line to line as there are gaps in either path of the static discharge from line to ground. The shunt connection shown in the drawings consists of a U-shaped strip 14 of suitable material provided with flattened slotted ends, whereby it is readily attached, by means of screws, to the outer ends of the metallic cylinders 10. Where a larger number of independent cylinders 10 are employed, the shunt connection will be connected to the middle members of the respective series of cylinders.

My invention is applicable to most of the various forms of lightning-arresters now in use and is not restricted to the particular form shown in the drawings.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The means for protecting line conductors of an electric circuit, consisting of devices

for providing a series of spark-gaps between the respective line conductors and ground and a shunt connection between said devices whereby a path is provided between line and
5 line of less resistance than the resistance of two devices.

2. The combination with a plurality of lightning-arresters for protecting line conductors of an electric circuit each comprising
10 a series of conductor parts separated by spark-gaps and adapted to provide a resistance path between a line conductor and ground, of means for conductively connecting a conductor part of one resistance path
15 with a conductor part of another resistance path whereby the number of spark-gaps in the path of the reactive discharge is less than the sum of spark-gaps in two arresters.

3. The combination with a plurality of
20 lightning-arresters for protecting line conductors of an electric circuit each comprising a series of conductor parts separated by spark-gaps and adapted to provide a resistance path between a line conductor and ground,
25 of means for conductively connecting an intermediate conductor part of one resistance

path with an intermediate part of another resistance path whereby the number of spark-gaps in the path of the reactive discharge is equal to the number of spark-gaps in either
30 of said lightning-arresters.

4. The combination of a base, two lightning-arresters mounted on said base, each comprising a series of independent metallic parts separated by spark-gaps, and a metallic
35 connection between an intermediate metallic part of one arrester and a corresponding metallic part of the other arrester.

5. The combination of a base, two lightning-arresters mounted on said base, each
40 comprising a non-inductive resistance and a plurality of metallic cylinders arranged in series and separated by spark-gaps, and a metallic connection between an intermediate cylinder of one arrester and a corresponding
45 cylinder of the other arrester.

In witness whereof I have hereunto set my hand this 28th day of March, 1903.

MATTHEW O. TROY.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.