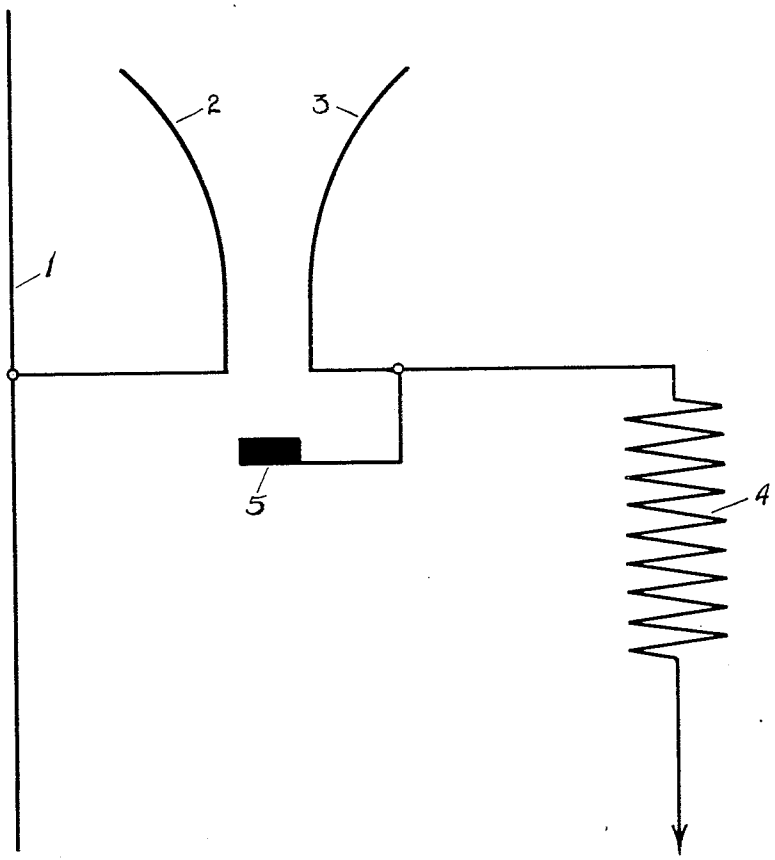
No. 855,440. PATENTED JUNE 4, 1907.

R. APT.

ELECTRICAL SAFETY DEVICE.

APPLICATION FILED AUG. 17, 1906.



Witnesses:
A. Gordon Hamilton.
Helen Agnew

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UNITED STATES PATENT OFFICE.

RICHARD APT, OF BERLIN, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRICAL SAFETY DEVICE.

No. 855,440. Specification of Letters Patent. Patented June 4, 1907.

Application filed August 17, 1906. Serial No. 330,975.

To all whom it may concern:

Be it known that I, RICHARD APT, a subject of the King of Prussia, residing at Berlin, Germany, have invented certain new and useful Improvements in Electrical Safety Devices, of which the following is a specification.

Lightning arresters or safety devices for electrical transmission systems commonly include a spark gap or sparking section which is so installed as not to be broken down by the normal or operating potential of the line, but to break down at a certain excess over the normal potential and thereby conduct to ground the abnormal charge.

At operating potentials up to about 3000 volts, difficulty arises from the fact that the spark gaps must be made very small in order that they may act with sufficient sensitiveness at a potential exceeding the normal potential of the system by a reasonable percentage. Such small sparking lengths, however, entail disturbances of various kinds. Small impurities may alter the proper relative distance of the electrodes to a considerable extent, and bridges may easily be formed across the gap by dirt, rain drops or insects, and may thereby break down the spark gap and cause disturbances in operation.

The present invention utilizes the property of the so-called radio-active substances to reduce the sparking potential so that a spark gap is produced which possesses considerable length, even at small potentials. The general plan for carrying out this idea is shown diagrammatically in the drawing forming a part of this specification.

In the drawing, the line conductor 1 to be protected is connected to an electrode 2 of a spark gap and the corresponding electrode 3 is connected to ground through resistance 4. A body of radio-active material 5 is supported in a small receptacle in proximity to the spark gap in such position that radiations therefrom will pass into the space between the sparking electrodes 2 and 3.

Radiations from this source act upon the spark gap or sparking members by ionizing in such manner that a potential of a certain amount can pass through a considerably longer air gap than would otherwise be the case. As the effectiveness of the radio-active substance does not change or weaken within a reasonable time, this source of radiation requires no attention and may be regarded as practically constant.

It should be understood that the above described device is applicable to potential safety devices and lightning arresters of any construction wherein it is desired to increase the length of a spark gap for a certain potential.

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

1. The combination with a line conductor to be protected from abnormal potential, of a spark gap connected thereto to provide a discharge path for abnormal charges, and radio-active material supported in proximity to said spark gap to decrease the break down potential thereof.

2. The combination with a line conductor to be protected, of a path to ground including a spark gap, and means for ionizing said spark gap to decrease the break down potential thereof.

3. The combination with a spark gap having conductors of the horn type, of radio-active material in proximity thereto to ionize the space between said conductors and to decrease the break down potential of said gap.

4. The combination with a spark gap having electrodes, of radio-active material in proximity thereto to ionize the space between said electrodes and to decrease the break down potential of said gap.

In witness whereof, I have hereunto set my hand this 2nd day of August, 1906.

RICHARD APT.

Witnesses:

JULIUS RUMLAND,

ARTHUR LINGER.