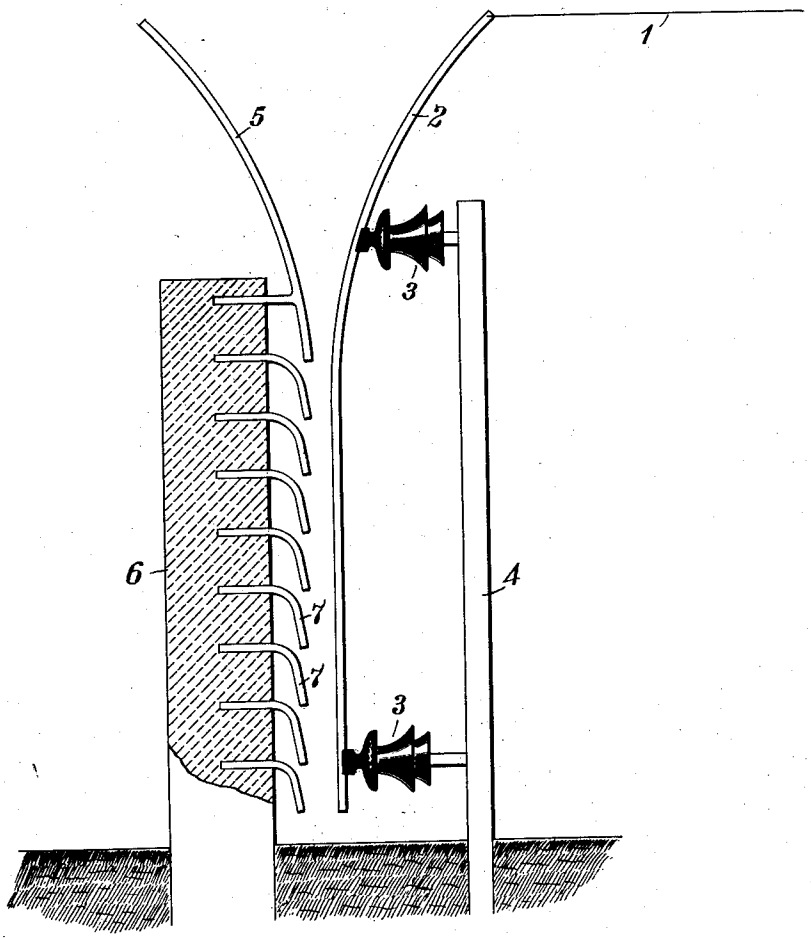
R. P. JACKSON.

LIGHTNING ARRESTER.

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1,177,336. Patented Mar. 28, 1916.



WITNESSES:

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LIGHTNING-ARRESTER.

1,177,336. Specification of Letters Patent. Patented Mar. 28, 1916.

Application filed February 3, 1910, Serial No. 541,735. Renewed July 14, 1915. Serial No. 39,896.

To all whom it may concern:

Be it known that I, RAY P. JACKSON, a citizen of the United States, and a resident of Pittsburgh, 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 lightning arresters, and it has for its object to provide an arrester that shall be unusually effective in operation.

In the single figure of the accompanying drawing, which illustrates an arrester constructed in accordance with my invention, the terminal that is connected to the line 1 to be protected consists of a rod or bar 2 having a curved or horn-shaped upper end, the said terminal being supported by insulators 3 that are mounted upon a post 4. Mounted adjacent to the terminal 2 is another and shorter terminal member 5, that is also curved or horn-shaped, and is so arranged as to diverge from the upper end of the terminal member 2.

The terminal member 5 is supported by means of a high-resistance and grounded post 6 that is preferably composed of Portland cement, concrete or other refractory material possessing high resistance, though, of course, other materials may be employed, if desired. Projecting at intervals from one side of the post 6, and arranged vertically substantially in line with the terminal 5, of which they constitute an extension, are a plurality of conductors 7 which are shown as curving downwardly, said conductors overlapping but not engaging one another, the uppermost conductor being overlapped by the terminal member 5. The conductors 7 are separated from the longer terminal member 2 by air-gaps that increase in width as the distances thereof from the shorter terminal member 5 increase; that is, the air-gaps between the terminal member 2 and the conductors that are located near the ground are greater than the gaps between the terminal member 2 and the conductors that are near the shorter terminal member 5. The post 6 serves as a high-resistance for connecting the parts 5 and 7 to each other and to the ground. Of course, other means may be employed for connecting the said parts and for supporting them, but since the post 6 serves both functions, it is preferred.

In the operation of the device, discharges occur between the terminal member 2 and either the terminal member 5 or the conductor 7 at distances from the ground that vary with the intensity of the discharge. For instance, discharges of comparatively low intensity or voltage will occur between the terminal members 1 and 5, since the air-gap between the said members provides the shortest path to the ground. In this path, there is the greatest amount of resistance, and, consequently, there is the greatest obstruction to the passage of current from the line to the ground. The arc that follows such a discharge will rise between the diverging portions of the terminal members 2 and 5 and will ultimately interrupt itself, by reason of its distortion.

Discharges of higher voltage will occur between the terminal member 2 and the conductor 7, the greater the voltage or intensity of the discharge, the greater the air-gap that the discharge will jump. The arcs which follow the discharges will, because of their own heat, move upwardly between the terminal member 2 and the conductors 7, being transferred from one of the conductors 7 to the next above, and so on, because of the overlapping thereof, until transferred to the terminal member 5, between which and the member 2 they will ultimately be extinguished. Since the resistance between the conductors 7 and the ground decreases as the distance of the said conductors from the terminal member 5 increases, it will be understood that the amount of current that will follow a discharge from the line to the ground will vary with the intensity or voltage of the discharge, so that the disturbance of the line varies with the intensity or voltage of the discharge.

I claim as my invention:

1. A lightning arrester comprising relatively long and short diverging terminal members, the former of which is connected directly to the line to be protected, a resistance interposed between the shorter terminal member and the ground, and a plurality of downwardly extending overlapping conductors that are connected at intervals to the resistance and constitute an extension of the shorter terminal member,

the said conductors being separated from the longer terminal member by air spaces, the widths of which differ as the distance from the shorter terminal member increases.

2. A lightning arrester comprising relatively long and short diverging terminal members, a resistance connected to the shorter terminal member, and a plurality of conductors that are connected at intervals to the resistance and have overlapping laterally bent ends to constitute an extension of the shorter terminal member.

3. A lightning arrester comprising relatively long and short diverging terminal members, a resistance connected to the shorter terminal member, a plurality of conductors that are connected at intervals to the resistance and have overlapping laterally bent ends to constitute an extension of the shorter terminal member, the said conductors being separated from the longer terminal member by air spaces, the widths of which differ as the distance between the same and the shorter terminal member increases.

4. A lightning arrester comprising a pair of diverging terminal members of unequal length, a series of curved conductors arranged to constitute an extension of the shorter terminal member, and a single high-resistance support for said curved conductors.

5. A lightning arrester comprising two diverging terminal members of unequal length, a series of conductors that constitute an extension of the shorter terminal members and have overlapping laterally bent ends, and a single high-resistance support for said overlapping conductors.

6. A lightning arrester comprising terminal members one of which consists of a plurality of conductors having overlapping laterally bent ends and a single high-resistance support for said conductors.

7. A lightning arrester comprising a pair of terminal members one of which consists of a refractory high-resistance member and a series of conducting members having overlapping laterally bent ends and supported thereby.

8. A lightning arrester comprising relatively long and short diverging terminal members, the former of which is connected directly to the line, a refractory high-resistance member that supports the shorter terminal member and is connected to ground, and a plurality of conductors that are supported by the high resistance member and have overlapping laterally bent ends to constitute an extension of the shorter terminal member.

9. A lightning arrester comprising relatively long and short diverging terminal members, the former of which is connected directly to the line, a refractory high-resistance member that supports the shorter terminal member and is connected to ground, and a plurality of conductors that are supported by the high-resistance member and have overlapping laterally bent ends to constitute an extension of the shorter terminal member, the said conductors being separated from the longer terminal member by air spaces, the widths of which differ as the distance from the shorter terminal member increases.

In testimony whereof, I have hereunto subscribed my name this 31st day of Jan., 1910.

RAY P. JACKSON.

Witnesses:
L. A. MAGRAW,
B. B. HINES.