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L. S. BRACH  
LIGHTNING ARRESTER

1,752,660

Filed Feb. 14, 1929

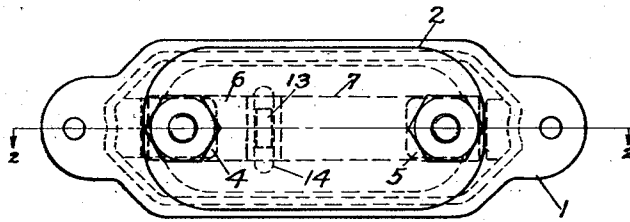


FIG. 1

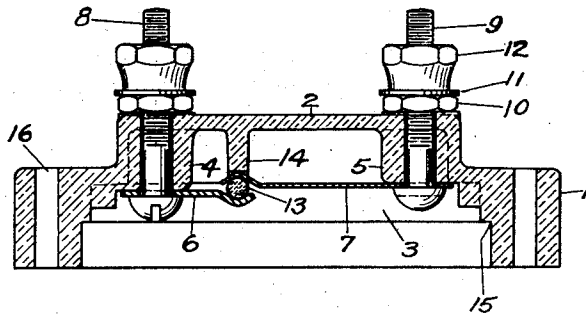


FIG. 2

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## UNITED STATES PATENT OFFICE

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## LIGHTNING ARRESTER

Application filed February 14, 1929. Serial No. 339,755.

This invention relates to a lightning arrester particularly adapted, although not limited, for use in connection with wireless aerials.

3 The object of the invention is to provide an arrester of the non-air gap type which will take away the normal static charges which tend to accumulate on the line wire to which the arrester is connected, and to maintain a uniform and non-varying discharge path between the line wire and the ground.

10 Another object of my invention is to provide an arrester of the type described, in which the parts are rugged and when assembled are not apt to get out of order. These and other objects will be apparent upon reading of the specification taken in connection with the annexed drawing, wherein:

15 Figure 1 is a plan view of the arrester showing the interior parts in dotted position.

20 Figure 2 is a longitudinal sectional view on the line 2-2 of Figure 1.

25 In the drawing, 1 is an insulator of any suitable character, preferably a material such as bakelite or porcelain that can be moulded to the shape shown. The central portion 2 of the insulator 1 is raised so as to provide a recess 3 within the interior of the insulator. In this recessed portion the insulator is provided with bosses 4 and 5 on which are mounted electrodes 6 and 7 by means of the terminal studs 8 and 9, which studs are fastened to the insulator 1 by nuts 10. Each of the studs 8 and 9 is provided with a washer 30 11 and a clamping nut 12 to clamp the attaching wire between the washer 11 and the nut 12.

35 The electrodes 6 and 7 extend toward each other from the terminal studs 8 and 9, and preferably their ends overlap each other. These ends are arcuately formed to receive and hold within the arcuately-formed surfaces, a piece of very high resistance material such as silicon carbide, or as generally known 45 to the trade as carborundum. The piece of

carborundum 13 is preferably circular and as shown is in the form of a cylinder.

As will be seen in Figure 2, the piece or stone of carborundum makes contact with the curved ends of the electrodes 6 and 7 over a short arc, and these curved ends then gradually deflect away from the carborundum. I have found that this construction has certain electrical characteristics in that when a heavy discharge takes place, the excess current which is not carried by the actual contact of the carborundum with the curved ends of the electrodes 6 and 7, will pass through the air space adjacent this contact, but as these curved ends deflect from the carborundum, this air gap gradually increases, thereby acting to automatically extinguish the arc.

It will be noted that the raised portion 2 of the insulator 1 is provided with a bridge 65 14 which acts to support the outer end of the electrode 7 which is preferably longer than the electrode 6. This latter electrode is preferably made relatively short and thicker than the electrode 7, so as to secure considerable pressure on the carborundum 13 directly over the bridge 14.

70 Preferably the insulator 1 is provided with a shoulder 15 to receive a closing member such as a piece of cardboard which after being placed into position, the outer portion of the recess is filled with sealing wax of some kind to keep the moisture, dirt, etc., from interfering with the normal operation of the arrester. The holes 16 are provided 80 in the insulator for the purpose of mounting the arrester.

Having thus described my invention, what I claim is:

1. In a lightning arrester, a pair of electrodes anchored at one end and having their free ends arranged in overlapping relationship, and a circular piece of carborundum supported by and between said overlapping ends which are formed to contact with the 85 90

carborundum over a certain portion of its surface and then gradually deflect from the carborundum to form auxiliary air gaps around the carborundum.

2. In a lightning arrester, an insulator, a pair of metallic members forming electrodes carried by the insulator and extending in substantially the same plane toward each other so their ends overlap, said ends being formed to provide a grip therebetween and a piece of silicon carbide supported in said grip by and between said over-lapping ends at least one of which arcuately encircles said carbide piece.

3. In a lightning arrester, a recessed insulator having terminals near each end, an electrode within the recess at each end thereof anchored and electrically connected one each to said terminals, said electrodes extending in substantially the same plane toward each other and having their ends arcuately formed to provide a grip and a piece of carborundum held by and between said arcuately formed ends, and a boss forming part of the insulator supporting the electrodes where at least one of them engages the carborundum.

4. In a lightning arrester, a pair of electrodes mounted so as to have free ends and a piece of silicon carbide supported by said electrodes between said free ends, at least one of said free ends having a portion partly encircling said silicon carbide piece, and a support extending from a wall of the insulator for the electrodes adjacent the point where they engage said silicon carbide piece.

5. In a lightning arrester, a recessed insulator having terminals near each end, an electrode within the recess at each end thereof anchored and electrically connected one each to said terminals, said electrodes extending toward each other and having their free ends overlapping, a piece of carborundum held by and between and only at said free ends, one of said electrodes being shorter and stiffer than the other, and a support extending from the inner wall of the insulator for the free ends of said electrodes adjacent the point where they engage the carborundum piece, said free ends formed to act as auxiliary spark gaps in parallel to the carborundum piece.

6. In a lightning arrester, a pair of electrodes with means for making connection thereto, said electrodes comprising flat metallic members extending toward each other and having their free ends formed to provide a grip, and a cylindrically formed piece of carborundum supported between said formed ends in said grip and forming a high resistance between said electrodes, said ends being formed to act as auxiliary gaps for heavy discharges.

7. In a lightning arrester, an insulator having a recess therein, a single pair of terminal studs carried by the insulator and lo-

cated one at each end of the recess and extending through the top wall thereof, a current-conducting member fastened to each of said studs within the recess and extending toward each other and having their ends formed in overlapping relationship, to provide a grip, and a piece of high resistance material held in said grip.

In testimony whereof, I affix my signature.

LEON S. BRACH.

## DISCLAIMER

1,752,660.—*Leon S. Brach*, East Orange, N. J. LIGHTNING ARRESTER. Patent dated April 1, 1930. Disclaimer filed November 24, 1930, by the patentee, assignee, *L. S. Brach Manufacturing Corp.*, consenting.

Hereby enters this disclaimer to the following claims, to wit:

"1. In a lightning arrester, a pair of electrodes anchored at one end and having their free ends arranged in overlapping relationship, and a circular piece of carborundum supported by and between said overlapping ends which are formed to contact with the carborundum over a certain portion of its surface and then gradually deflect from the carborundum to form auxiliary air gaps around the carborundum.

"2. In a lightning arrester, an insulator, a pair of metallic members forming electrodes carried by the insulator and extending in substantially the same plane toward each other so their ends overlap, said ends being formed to provide a grip therebetween and a piece of silicon carbide supported in said grip by and between said overlapping ends, at least one of which arcuately encircles said carbide piece."

"6. In a lightning arrester, a pair of electrodes with means for making connection thereto, said electrodes comprising flat metallic members extending toward each other and having their free ends formed to provide a grip, and a cylindrically formed piece of carborundum supported between said formed ends in said grip and forming a high resistance between said electrodes, said ends being formed to act as auxiliary gaps for heavy discharges.

"7. In a lightning arrester, an insulator having a recess therein, a single pair of terminal studs carried by the insulator and located one at each end of the recess and extending through the top wall thereof, a current-conducting member fastened to each of said studs within the recess and extending toward each other and having their ends formed in overlapping relationship to provide a grip, and a piece of high resistance material held in said grip."

[*Official Gazette December 16, 1930.*]