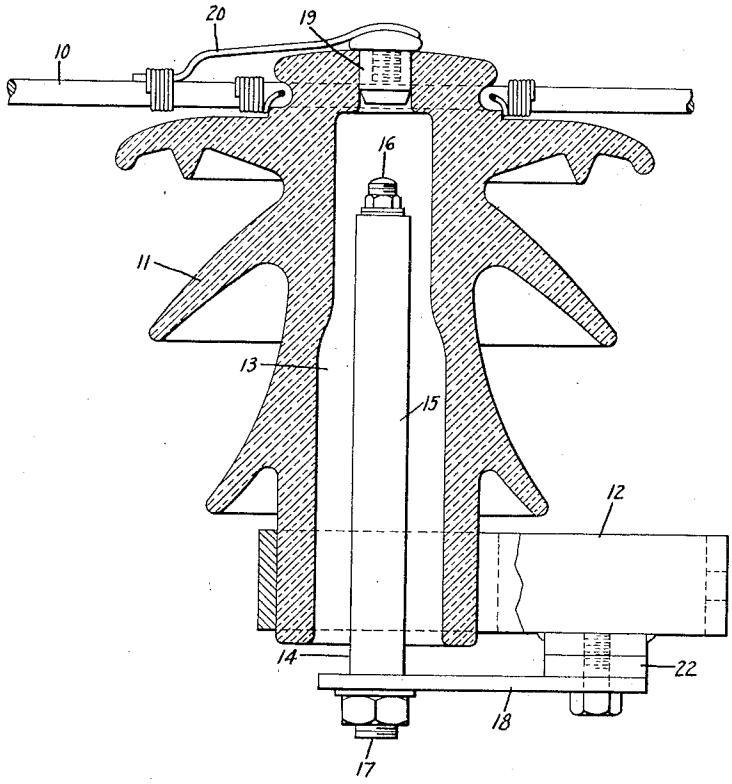
June 2, 1942. N. FITGER 2,285,198

LIGHTNING ARRESTER

Filed Aug. 7, 1940



Inventor:
Nicolai Fitger,
by Harry C. Dunham
His Attorney.

Patented June 2, 1942

2,285,198

UNITED STATES PATENT OFFICE

2,285,198

LIGHTNING ARRESTER

Nicolai Fitger, Berlin-Grunewald, Germany, assignor to General Electric Company, a corporation of New York

Application August 7, 1940, Serial No. 351,738
In Germany October 12, 1939

4 Claims. (Cl. 175—30)

This invention relates to lightning arresters, and more particularly to mounting arrangements for arc expulsion type arresters.

In the protection of electrical transmission lines from over voltages such as lightning surges, it is advantageous to use arc expulsion type arresters because of their relatively low cost. With this type of arrester it is generally necessary to provide a special crossarm on the transmission line poles or towers to support the expulsion arrester tubes which are usually so mounted as to provide a small air gap between the end of the tube and the line conductor to be protected. Such special supporting means for the arrester tubes limit the economies which may otherwise be effected by their use.

It is therefore an object of the present invention to provide a new and improved arc expulsion type lightning arerster and line supporting insulator arrangement which eliminates the necessity for a special crossarm support for the lightning arrester tubes.

For a consideration of what I believe to be novel and my invention, attention is directed to the following description and the claims appended thereto taken in connection with the accompanying drawing, the single figure of which is a cross sectional view of an insulator and an expulsion type lightning arrester arrangement constructed in accordance with the invention.

In the illustrated embodiment a transmission line conductor 10 is suitably tied to the cap of a pin type insulator 11 which in turn is secured at its lower end by means of a suitable metal bracket 12 to a crossarm of a pole or tower (not shown). The insulator is provided with a longitudinal tubular passage 13 extending axially therethrough in which, according to the invention, a lightning arrester 14 is arranged coaxially with the insulator. The lightning arrester comprises a longitudinal tube 15 of insulating material having upper and lower electrodes 16 and 17, respectively, extending short distances into the opposite ends of the tube so as to insure that the arc strikes within the tube instead of exteriorly thereof over the outer surface of the tube. At least the inner wall of the tube is of hard fiber or some other suitable material which upon the occurrence of an arc between the electrodes 16 and 17 and consequent heating thereof, emits a large quantity of gas to expel the arc through an axial opening provided through the lower electrode for that purpose. The lightning arrester is secured at its lower electrode 17 which extends beyond the lower end of the insulator by a metallic supporting member or arm 18 to the bracket 12 and is grounded therethrough. The upper electrode 16 of the lightning arrester is spaced by a suitable gap from an electrode 19 closing the upper end of the passage 13 of the insulator and connected by lead 20 to the conductor 10. The gap spacing may be varied by selecting the proper thickness for the washers 22 between the support 18 and bracket 12 which removably or adjustably supports the arm 18.

While in the illustrated embodiment I have shown the lightning arrester tube 15 arranged coaxially within the passage 13 of the insulator and spaced from the adjacent walls thereof, it will be readily understood that such spacing is not essential to the practice of the invention.

It will be obvious that I have provided an arrangement of a lightning arrester of the expulsion tube type and an insulator for supporting the line to be protected which is of a simple, compact design and eliminates the necessity for separate crossarms or other costly supporting means for the lightning arrester tubes. The arrester and insulator may be assembled and calibrated in the factory for the particular line voltage to be protected while the field installation involves only the mounting of the single unit. Faulty mounting of the arrester is thereby precluded while at the same time it is readily accessible for inspection or replacement.

Having described the principle of operation of my invention in what I consider to represent a preferred embodiment, I desire to have it understood that the specific arrangement shown is merely illustrative and that the invention may be carried out in other ways.

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

1. In combination with an insulator for supporting at one end a line to be protected against over voltages and having a longitudinal opening therethrough, a lightning arrester arranged within said opening and having electrodes at opposite ends, one end electrode being spaced by a gap from said line, a bracket member for supporting said insulator, an arm removably supported by said bracket and being grounded therethrough, the opposite end electrode of said lightning arrester being supported by said arm so as to maintain said lightning arrester in a predetermined spaced relationship relative to said insulator and to provide a grounding connection to said opposite end electrode.

2. In combination with an insulator for sup-

porting at one end a line to be protected against over voltages and having a longitudinal passage extending axially therethrough, a support for the opposite end of said insulator, an electrode closing the line end of said passage and electrically connected to said line, an arc expulsion tube type lightning arrester arranged coaxially within said passage, an arm mounted on said insulator support, the line end of said lightning arrester being spaced from said insulator electrode, and means for removably mounting the lower end of said lightning arrester on said arm so as to facilitate replacement of said arrester.

3. In combination with an insulator for supporting at its upper end a line to be protected against over voltages, and having an axially extending passage therethrough, said insulator being provided with an electrode at the line end of said passage and connected to the line, an arc expulsion lightning arrester tube having upper and lower electrodes, a bracket member for supporting said insulator, an arm removably supported by said bracket, and means including said arm for removably mounting said arrester coaxially within said passage and spaced from the walls of said passage, said upper electrode being spaced from said insulator electrode, and said lower electrode having an arc expulsion opening beyond the lower end of said insulator.

4. In combination with an insulator for supporting at one end a line to be protected against over voltages and having a longitudinal passage extending therethrough, an electrode arranged within the line end of said passage substantially closing same and connected to said line, a metallic bracket supporting the opposite end of said insulator, an arc expulsion tube type lightning arrester having upper and lower electrodes, an arm removably supported by said bracket, and means for removably securing said arm to said lower electrode for supporting said arrester coaxially within said passage and spaced from the walls thereof, the lightning arrester electrode nearest said line being spaced by a gap from said insulator electrode, and means for grounding said lower electrode through said bracket, said lower electrode having an arc expulsion opening therethrough.

NICOLAI FITGER.