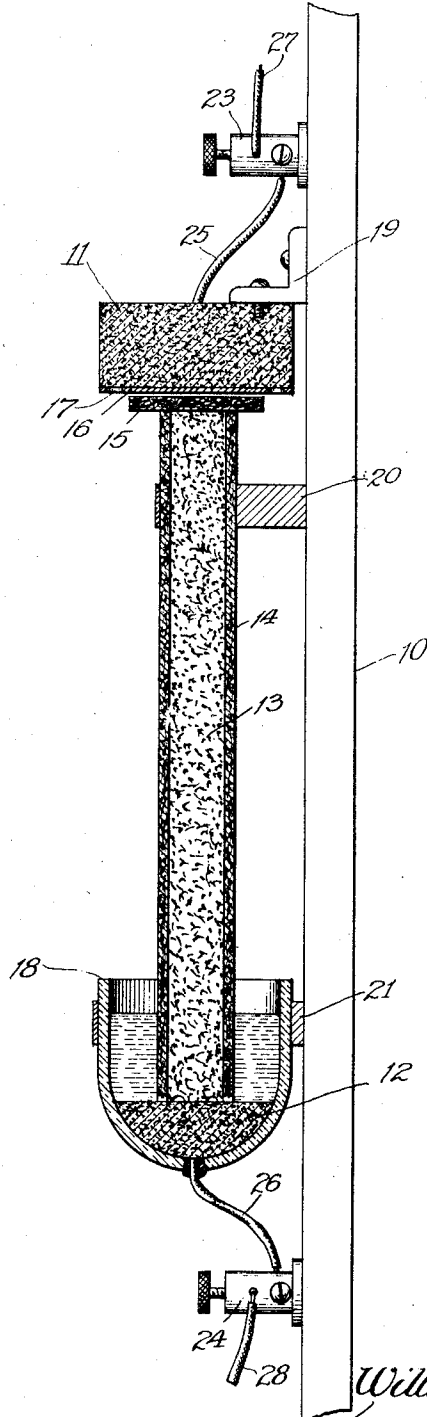


W. R. GARTON.
LIGHTNING ARRESTER.
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979,464.

Patented Dec. 27, 1910.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM R. GARTON, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES J. GRIFFIN, OF MONTEZUMA, IOWA.

LIGHTNING-ARRESTER.

979,464.

Specification of Letters Patent.

Patented Dec. 27, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM R. GARTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lightning-Arresters, of which the following is a specification.

My invention relates to improvements in lightning arresters, and has for its salient object to provide a lightning arrester for association with an electrical conductor, which will at all times dissipate static effect from the conductor, and prevent the accumulation of a static charge thereon, and which will effectively prevent the passage of sneak currents or leakage.

A further object of my invention is to provide such a lightning arrester wherein uniform conditions of resistance to electric current, and capability of discharge of static effect may be maintained practically constant irrespective of atmospheric conditions.

A yet further object of my invention is to provide a lightning arrester which is simple in construction, durable in use, and which requires little attention after installation.

In the single figure of the drawing I have indicated by vertical cross sectional view a convenient construction of lightning arrester embodying my invention, and such construction I will now describe generally and in detail.

In the general embodiment of my invention I provide separated, electrically conductive parts or terminals for connection respectively with the line conductor and the ground, and in contact with one such terminal I arrange a body of material of a highly hygroscopic nature, capable of giving off its moisture to a dry atmosphere, which said body extends into proximity to the other conductor but is electrically insulated from contact therewith.

It is well known that moist air dissipates and prevents the accumulation of static charge, and my invention provides means tending to equalize at all times the atmospheric conditions between a grounded contact or terminal and the terminal connected with the line. The material which I employ for this purpose is preferably of relatively low conductivity and is capable of absorbing moisture from the atmosphere when the air is humid and giving off such moisture

when the atmospheric condition becomes drier, so acting as an equalizing body, to insure the maintenance around the electrically separated parts of a fluid or vapor of sufficient moistness to readily dissipate static charges from the line. Further I preferably provide in conjunction with the material body of the character described, an envelop of durable material, of such mechanically absorbent or capillary qualities as to prevent the incased equalizing body from too rapidly absorbing or giving off moisture, and of such strength as to give form to and preserve the integrity of the equalizing body.

In the specific construction shown I provide upon a suitable base, 10, electrically conductive terminals 11 and 12 in separated relation, it being my preference that such terminals shall be massive and composed of material not liable to oxidation, such as carbon. Between such terminals I arrange an equalizing body 13 of such chemical construction as to have good hygroscopic qualities and relatively poor electrical conductivity, as described, a suitable combination being chlorid of potassium and chlorid of sodium in equal parts in coarse granular form, although obviously other materials may be used. The body 13 extends from a point of contact with the terminal 12 to a point adjacent but preferably out of contact with the terminal 11, and preferably is insulated from terminal 11.

14 indicates a tube of asbestos or other suitable material, durable in its nature, sufficiently strong to give form to the material body 13, and of such capillary qualities as to impede but not prevent the absorption and dissipation of moisture by the equalizing body 13, which is surrounds. The top of the tube 14 I also preferably close by an asbestos washer, 15, separated somewhat from the carbon block 11 to afford an air gap, the insulation of the washer 15 from the terminal 11 being preferably augmented by the insertion below the terminal of a mica washer 16, preferably provided with perforations 17 at points surrounding the subjacent asbestos washer 15.

In conjunction with the parts described, I preferably provide a receptacle for receiving and retaining such free moisture as may accumulate in the neighborhood of the chemical body 13, such receptacles in the

specific construction shown consisting of an insulating cup 18 in the bottom of which the terminal 12 is seated. In the specific structure indicated the arrester is intended for installation in vertical position, and clips 19, 20 and 21 are provided in suitable position to respectively secure with respect to the base 10 the terminal 11, casing 14 and receptacle 18.

23 and 24 respectively indicate binding posts connected by wires 25 and 26 respectively with the terminals 11 and 12 (wire 26 being sealed in receptacle 18) and adapted for connection by wires 27 and 28 with the line conductor and the ground respectively.

The entire structure may be incased if desired, and hermetically sealed so that proper conditions, initially created may be definitely maintained.

It will be apparent to those skilled in the art, however, that my invention is not limited to the particular form of devices shown in the drawing for purposes of illustration, and that the positions and relations of the parts might be changed without departure from the spirit and scope of my invention.

In operation it will be understood that the material body 13, of very poor electrical conductivity, absorbs moisture from the air when the air is humid, and gives off such moisture when the air is dry, so acting as an equalizing medium and insuring the constant maintenance of a vaporous or humid atmospheric condition between such material body and the electrically-non-contacting terminal 11, so that static effect on the line conductors to which said terminal 11 is connected may be efficiently dissipated.

I have found from experience that the construction described efficiently prevents material leakage of electric current from the line by reason of the air gap and mica insulation as well as the relative non-conductivity of the incased hygroscopic body, and effectively prevents arcing by either static or dynamic discharge. Although capable of discharging the effect of lightning if the line be struck, I believe that the protector is usually effective in preventing such striking of the line, as the continuous dissipation of the static charge prevents the building up of as great a difference of potential between the wire and higher atmospheric strata as would otherwise prevail and so tends to act as a protector against as well as an arrester of lightning strokes.

I wish it to be distinctly understood that I do not desire my invention to be limited to the use of the specific materials described to produce the desired effect, as any material or materials of a chemical character which will produce the desired effect will fairly fall within the scope of the claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is;

1. A lightning arrester, comprising terminals in separated relation, and an equalizing body having the qualities of absorbing moisture from humid air and giving off moisture to drier air, interposed between said terminals.

2. In a lightning arrester, separated terminals, and an interposed equalizing body of material having qualities of absorbing moisture from humid air and giving off moisture to drier air, contacting with one terminal and electrically insulated from the other terminal.

3. In a lightning arrester, separated terminals, an interposed equalizing body of material of hygroscopic character, contacting with one terminal and electrically insulated from the other terminal, and an envelop of material absorbent by capillary action surrounding said equalizing body.

4. In a lightning arrester, separated non-oxidizing terminals, an interposed comminuted, hygroscopic, equalizing body, and an asbestos casing surrounding and giving form to said comminuted body.

5. In a lightning arrester, separated carbon terminals, an interposed body of comminuted, hygroscopic substance, contacting with one terminal and insulated from the other, and a casing surrounding the said body.

6. In a lightning arrester, a pair of vertically separated contacts, a receptacle surrounding the lower contact; an asbestos tube extending upward from the lower contact into proximity to the upper contact, and a body of hygroscopic material of low conductivity incased in said tube, contacting with the lower terminal and non-contacting with the upper terminal.

7. In a lightning arrester, non-contacting conductive parts, and means comprising a body of character to absorb moisture from humid atmosphere or give off moisture to drier air, for maintaining between the conductive parts a vaporous condition.

8. In a lightning arrester, the combination with non-contacting conductors, of means for maintaining between said conductors a vaporous condition, comprising a body having an affinity for and adapted to collect the moisture of the atmosphere.

9. In a lightning arrester, the combination of a terminal, and a body of material having an affinity for and adapted to collect moisture of the atmosphere, electrically insulated from, but in operative proximity to, said terminal.

10. In a lightning arrester, the combination of a liquid receptacle, a terminal separated therefrom and an element absorbent by capillary action extending from the

liquid receptacle into proximity to said terminal.

11. In a lightning arrester, the combination of a liquid receptacle, a terminal separated therefrom, an element absorbent by capillary action, having one end immersed in said receptacle and its other end arranged in proximity to said terminal, and means for automatically maintaining a supply of water in said receptacle, comprising a body of material having an affinity for the moisture of the atmosphere.

12. In a lightning arrester, the combination of separated conductors and an interposed body of material containing chlorid of potassium.

13. In a lightning arrester, the combination of separated conductors and an interposed body of material containing chlorid of sodium.

14. In a lightning arrester, the combination of separated conductors and an interposed body of material containing chlorid of potassium and chlorid of sodium.

15. In a lightning arrester, a receptacle for moisture, a terminal above said receptacle, and a capillary element extending from

said receptacle into proximity to, but insulated from the terminal.

16. In a lightning arrester, a receptacle for moisture, means for maintaining moisture therein comprising a body having an affinity for moisture of the air, and a terminal insulated from said receptacle.

17. In a lightning arrester, the combination of separated terminals, a moisture receptacle surrounding one terminal, a body of material having affinity for moisture of the atmosphere arranged to maintain moisture in said receptacle and a capillary element extending from said receptacle toward the outside terminal.

18. In a lightning arrester, separated terminals, a cup surrounding one terminal, a tube of capillary material extending from said terminal in the cup into proximity to the outside terminal, and a body of equalizing material in the tube.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

WILLIAM R. GARTON.

In the presence of—

GEO. T. MAY, Jr.,

MARY F. ALLEN.