W. R. GARTON.

LIGHTNING ARRESTER.

APPLICATION FILED NOV. 2, 1908.

946,542. Patented Jan. 18, 1910

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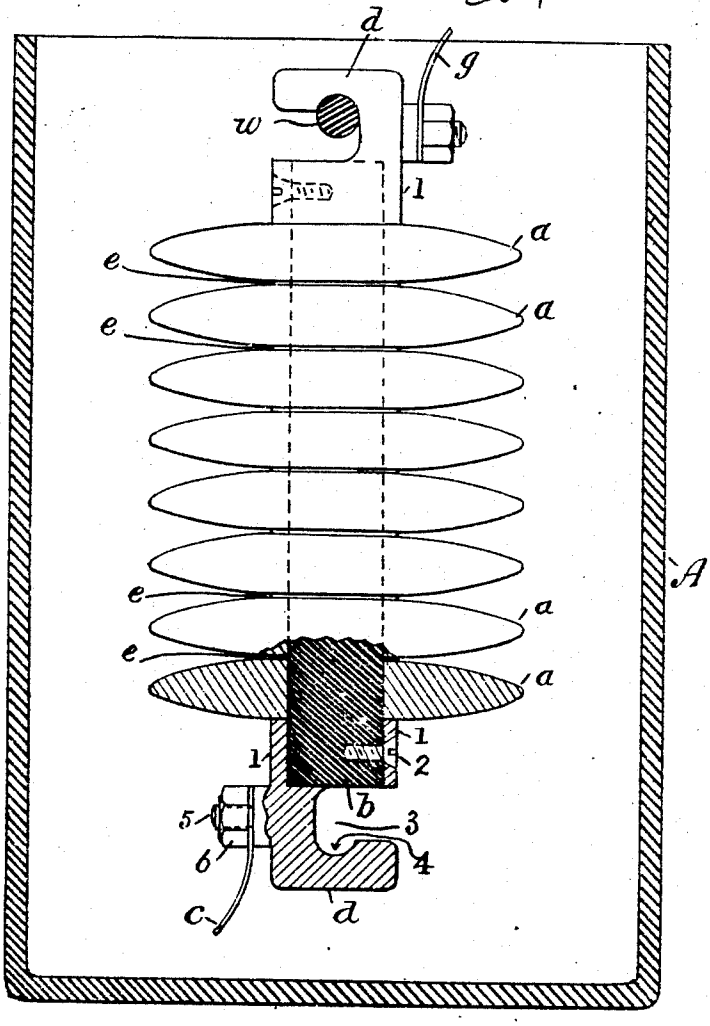

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UNITED STATES PATENT OFFICE.

WILLIAM R. GARTON, OF BROOKLYN, NEW YORK, ASSIGNOR TO C. J. GRIFFIN, OF MONTEZUMA, IOWA.

LIGHTNING-ARRESTER.

946,542. Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed November 2, 1908. Serial No. 460,576.

To all whom it may concern:

Be it known that I, WILLIAM R. GARTON, residing at Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Lightning-Arresters, of which the following is a specification.

The present invention relates to improvements in lightning arresters for association with electrical conductors and in certain respects is an improvement upon the invention shown and described in my pending application for United States Patent Number 401,573, filed November 11, 1907. In the said application an arrester is shown having separated terminals and an interposed equalizing body of material having the qualities of absorbing moisture from humid air and also of giving off moisture to drier air, the said body contacting with one terminal and electrically insulated from the other terminal and inclosed in an envelop of material absorbent by capillary action. The body referred to is composed of a suitable combination of materials such as chlorid of potassium and chlorid of sodium, in coarse or granular form, inclosed in an asbestos envelop.

The present invention provides an arrester to be placed in a circuit having an equalizing body composed of a combination of chlorid of potassium and chlorid of sodium, or other similar materials, and suitable binding powders which when mixed together and pressed in a mold bring about a chemical action which causes the combination eventually to assume a solid form of the nature of adamant, reasonably impervious to moisture, but in some degree an absorbent.

The inherent properties of the combination of materials are such that a portion of the moisture originally in the same when in the plastic state is retained, after some of the materials have become crystallized, and forms a mass of granules or crystals retaining little or no moisture holding in suspension the other globules in intimate relation with each other in the mass which retain moisture in a large degree. I thus provide an apparently solid non-absorbent body which is capable of supporting itself without an external envelop, which holds moisture in suspension and is highly electrostatic, of high ohmic resistance, and of low static impedance, and therefore under certain conditions is a prohibitive conductor and other conditions a good conductor.

I will now proceed to describe the invention, referring to the accompanying drawing, which represents one embodiment of the same, which I have found to be of practical value,—in side elevation and partly in section.

In the drawing *a*, *a*, indicate a plurality of disk electrodes ovoid in horizontal cross-section and having a central hole, composed of materials mixed in a plastic state and pressed in a mold. These electrodes are arranged upon a rod *b* of insulating or high ohmic resistance material, and between each electrode is a thin washer *c* of insulating material. The insulating rod or support *b* extends beyond the outer electrodes *a a* and attached to the extensions are the metal or other contacting material terminals *d d*, one end 1 of which has an orifice adapted to inclose the terminal, which is secured thereto by a screw 2. The inner ends of the metal terminals bear upon the contiguous electrodes and make electrical contact therewith. A cavity 3 is formed in one side of each terminal, and a depression 4 is made toward the outer end thereof; and upon the side of each terminal is a lug 5 upon which is a screw-thread adapted to receive a nut 6, constituting a means of attachment for a line wire *g*, and a ground wire *e*. The device as a whole is thus adapted to be suspended or supported by either terminal from a wire *ac*, which may be located in the walls of a tank A, or in any other suitable support; as it is designed that the device may be suspended in the open air, or in an insulated chamber surrounded by air or immersed in insulating liquid.

The electrodes *a* may be composed of a mixture of chlorid of potassium and chlorid of sodium or other suitable capillation material, a mechanical binder as asbestos or other material in a fibrous form, and a chemical binder as cement or plaster of paris, all in suitable proportions; in the preparation of the mixture water is supplied to cause the same to assume a plastic form, in which state it is placed in a mold and allowed to harden. By this combination the chlorids are held in a structure composed of the cement and fiber which supports the same and prevents the inclosed moisture

from being dissipated in dry air, and also permits in some degree the absorption of moisture from the drier air. When such a body or member, forming a homogeneous mass of non-conducting and conducting material, is interposed in the path of an electric circuit it offers a high ohmic resistance to the current, but permits the passage of static and sneak currents, and is adapted to support itself in any form it may be molded.

Capillation is one of the inherent qualities of the materials enumerated which I make use of, for instance the body or member may be dried out by excessive heat as by the passage of excessive current, and in such an event it would at once begin to restore to itself moisture by absorption or capillation, and it is therefore a liquid or semi-liquid conductor, as it becomes while moist of a gelatin or crystalline character.

The utility of the device will be apparent, for as an electric charge comes from the line wire to the wire *g*, it passes to the terminal *d* and thence to the first electrode *a* and to each successive one of the lower terminal *d*, to the ground by the wire *c*.

I claim as my invention—

1. A member or body adapted to be interposed in an electric circuit adapted to absorb moisture from its surrounding medium.

2. A solid homogeneous member or body arranged to be interposed in an electric circuit adapted to absorb moisture from its surrounding medium.

3. In a lightning arrester, a member or body adapted to be interposed in a circuit composed of a mixture of hygroscopic material and of non-hygroscopic material, the latter holding the former in suspension and supporting the same.

4. In a lightning arrester, an equalizing body or member adapted to be interposed in a circuit composed of chlorid of potassium and chlorid of sodium, and a chemical binding material.

5. In a lightning arrester, a member or body adapted to be interposed in a circuit composed of a mixture of hygroscopic material and non-hygroscopic material, the latter consisting of suitable binding material to form a support for the former.

6. In a lightning arrester, an equalizing body or member adapted to be interposed in a circuit composed of chlorid of potassium, chlorid of sodium, a chemical binding material, and a mechanical binding material.

7. In a lightning arrester, a support, a member or body secured therein composed of a mixture of hygroscopic material and of non-hygroscopic material, the latter holding and supporting the former.

8. In a lightning arrester, an insulating support, a member or body provided at each end with terminals composed of a mixture of hygroscopic material and of non-hygroscopic material, the latter holding the former and supporting the same.

9. In a lightning arrester, an insulating support, a member or body provided at each end with conducting terminals embedded in said body, which is composed of a mixture of hygroscopic material and non-hygroscopic material, the latter holding and supporting the former.

10. In a lightning arrester, an insulating base provided with outwardly extending standards, a member or body having conducting terminals projecting from each end thereof, secured in said standards and provided with metal plates embedded in said body, the said body composed of a mixture of hygroscopic material and non-hygroscopic material, the latter holding and supporting the former.

11. In a lightning arrester, an insulating support, a member or body provided at each end with conducting terminals embedded in said body and attached to said support and having means of connection with a circuit, the said body composed of a mixture of hygroscopic material and non-hygroscopic material, the latter holding and supporting the former.

12. In a lightning arrester, an equalizing body or member adapted to be interposed in a circuit composed of chlorid of calcium or calcium of chlorid and chlorid of sodium, and a chemical binding material.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 27th day of October, 1908.

WILLIAM R. GARTON.

Witnesses:
VIOLET E. LEIST,
EDWARD KIRKHAM.