No. 883,303. PATENTED MAR. 31, 1908.

W. E. DRAKE.

SECURITY LIGHTNING ARRESTER.

APPLICATION FILED FEB. 21, 1907.

Fig. 1.

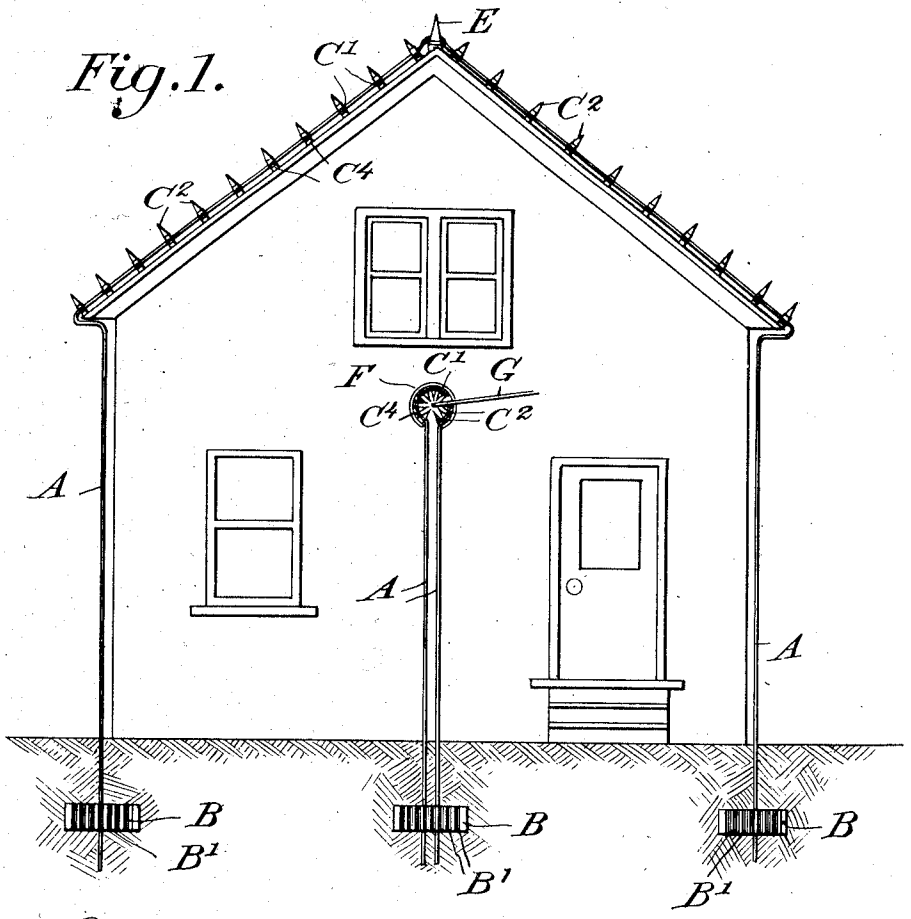


Fig. 2.

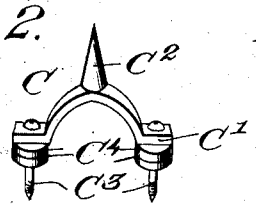


Fig. 3



Fig. 4

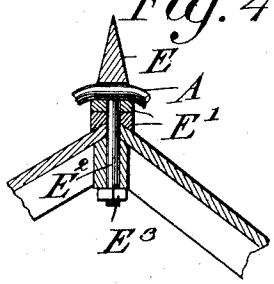


Fig. 5



Fig. 6.

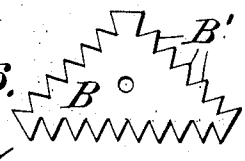
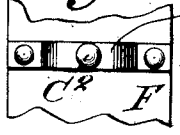


Fig. 7



Witnesses

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SECURITY LIGHTNING-ARRESTER.

No. 883,303. Specification of Letters Patent. Patented March 31, 1908.

Application filed February 21, 1907. Serial No. 358,572.

To all whom it may concern:

Be it known that I, WILLIAM E. DRAKE, a citizen of the United States, residing at Grand Island, in the county of Hall and State of Nebraska, have invented a new and useful Improvement in a Security Lightning-Arrester, of which the following is a specification.

This invention relates to an improvement in that class of devices commonly known as lightning rods and which I have termed as a more appropriate name a lightning arrester.

My invention is not one adapted for the protection of buildings and other objects from damage by lightning in the usual manner but is also adapted for use as a lightning arrester in connection with electrical wires entering a building.

The invention is also useful when applied to a building as a safe-guard against heavy winds as the building is securely anchored to the ground by the conductors which also serve as an important part of the lightning arrester.

While it is a common belief that protection is given by lightning rods, through the ability of the rod to convey to the ground the electrical current accompanying a stroke of lightning yet it is still known by those skilled in such devices that the efficiency of the lightning rod consists not in its service as a conductor for a disruptive discharge but in its efficiency in preventing such discharges by maintaining an equilibrium between the electrification of a passing cloud, or the atmosphere in general and building or the ground in the immediate neighborhood of the building so protected.

It is supposed that disruptive discharges are due to the fact that there is a difference in potential between the earth and a cloud above the earth or between the cloud and roof of a building and that the discharge is a sudden equalization of potential and that the discharge may take place either downward or upward. Also that the discharge is greatly facilitated by sharp points or elevations rising to a point through the comparative ease with which the charge of electricity escapes from such points as compared with its escape from a plane surface. Therefore, by providing the building to be protected with a number of such points, and by grounding said points, a difference of potential in the neighborhood of the building is avoided by affording an easy path for the flow of the current thereby preventing such a difference in potential as would produce a disruptive discharge.

In my invention I have embodied this theory and have provided electrical conductors with a very large number of points manufactured separate from the conductor itself, and readily applied in any number to the building along the line of the conductor and have also provided means by which these points may be partially electrified thereby rendering still more easy the escape of electricity from or to the surrounding atmosphere.

In the drawings:—Figure 1 is a diagrammatic representation of the end of a building provided with my device both for protecting the building and for protecting electrical wires run into the building. Fig. 2 is a detail perspective view of a form of point to be applied to cylindrical conductors. Fig. 3 is a detail perspective view of a form of point best adapted for use with flat conductors. Fig. 4 is a detail section through a form of needle, showing the same applied to the crest of a building, a portion of the roof being in section. Fig. 5 is a detail view partly broken away showing the manner of applying the points shown in Fig. 2 to an arrester for protecting electrical wires entering buildings. Fig. 6 is a plan view of an anchor. Fig. 7 is a plan view looking down upon a point or needle such as is shown in Fig. 2.

In these drawings A represents a conductor of any kind, cylindrical, twisted or flat. These conductors have their lower ends embedded in the ground and pass through a triangular anchor plate B which has serrated edges B′. The conductors A are securely keyed or otherwise held in the anchor plate and as shown in Fig. 1 extends some distance below them. These anchor plates not only serve to anchor the building or other object over which the conductor wires A are passed and thus protect them from heavy winds, but also by reason of their large surfaces and their many points they aid greatly in distributing gradually the electrical current into the ground.

In equipping a building with my system the conductors A are passed entirely over it and are secured upon opposite sides of the building to suitable anchors and all chimneys cupolas, gables, peaks and other high points upon the building are to be provided with similar conductors which are either con-

nected to the main wires or also extend to the ground where they are anchored as shown in Fig. 1. Placed along all of these conductors and their branches are suitable needles. These needles are constructed as follows:—I take a metal bracket as shown at C and D, the bracket at C being adapted for use in connection with cylindrical or twisted conductors, and that at D being best adapted for use with plain, flat metal strips. As these brackets are substantially the same with the exception of the shape, a description of the form shown in Fig. 2 will be sufficient to make the construction clear. The bracket C is provided with foot portions C′ and its bowed portion is provided with an upwardly projecting needle C^2 formed integral with the bracket and it is applied to the building by placing it over the conductor A and securing it by means of suitable spikes C^3 which are driven through the foot portions, these foot portions being suitably perforated for the passage of the spikes. These spikes also pass through one or more sets of disks C^4, which disks when the device is in position raised between the roof of the building and the foot portions C′ and upon each side of and out of contact with the conductor A. Each set of disks consists preferably in a copper and a zinc disk and form batteries, generating under proper atmospheric conditions a small amount of current which electrifies the point C.

Where the conductor A passes over the crest of a building I employ a needle E which is perforated for the passage of said conductor A and the needle carries a pole E^2 which extends down through a rafter or ridge pole and is locked in place by a nut E^3. Disks E′ of copper and zinc are interposed between the crest of the building and the base of the needle E. When protection is to be had in the case of an electrical wire such as a telephone wire, entering the building I employ a semi-circular ring F through which the electrical wire G centrally passes and the conductor wires A lead up from the ground to and around the inside of the ring F and back again to the ground, both ends being anchored by one of the plates B. The conductor wire is secured to the ring F by means of a continuous row of needles of the form shown in Fig. 5 according to the kind of conductor wire employed. The needles point inwardly and form almost a complete ring of points about the wire G and would receive and convey to the ground any heavy overload of current upon the wire, such as would be caused by a lightning stroke.

It will be understood that in applying my system to a building the number of needles may run from a few hundred to several thousand according to the size of the building, and that where ornamental effects are desired they may be formed in ornamental designs without in any way altering the main idea as illustrated in Figs. 2 and 3.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A device of the kind described comprising a conductor of electricity, means for grounding the ends of said conductor, a semi-circular ring inclosing an electrical wire, the conductor looping around said wire within the ring, and a plurality of brackets provided with needles, said brackets being secured to the ring and straddling the conductor as and for the purpose set forth.

2. A device of the kind described comprising conductor wires, anchor plates through which said wires pass and to which they are secured, said plates having serrated edges and a plurality of needles carrying brackets having bowed portions, said brackets straddling the conductor.

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Witnesses:
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D. Bishop.