

(No Model.)

H. O. HENNEBERG.
LIGHTNING ARRESTER.

No. 493,926.

Patented Mar. 21, 1893.

Fig. 1

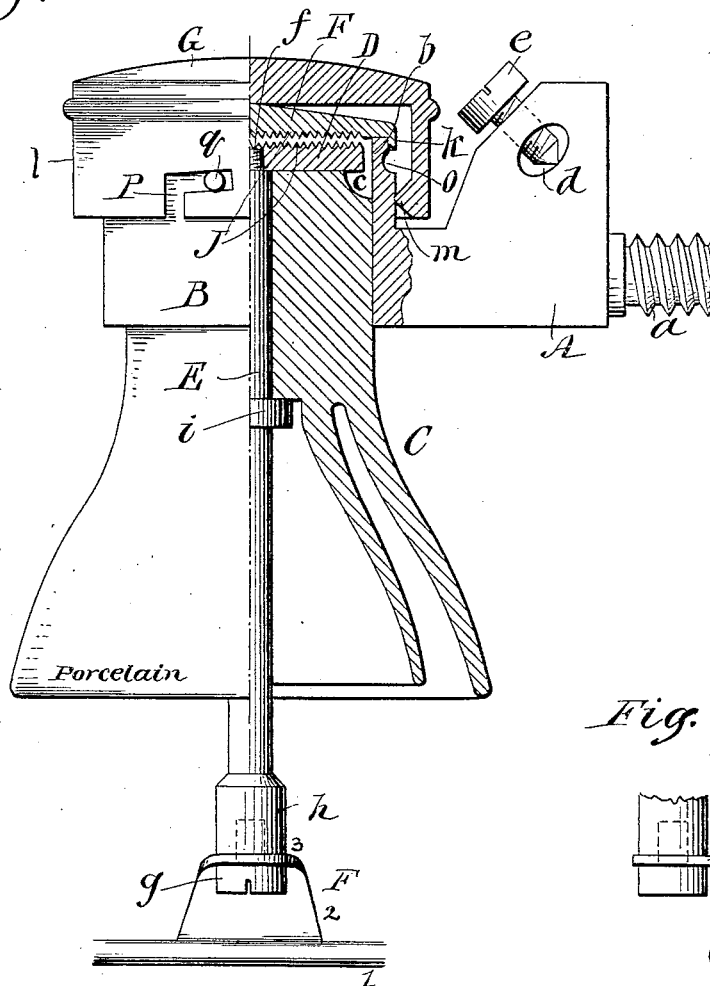
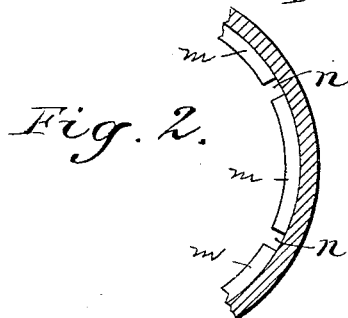
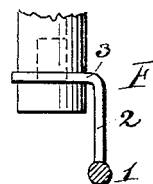


Fig. 3.



WITNESSES:

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LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 493,926, dated March 21, 1893.

Application filed December 9, 1892. Serial No. 454,565. (No model.) Patented in Germany December 8, 1891, No. 64,111.

To all whom it may concern:

Be it known that I, HERMANN OTTO HENNEBERG, a subject of the King of Prussia and German Emperor, residing at the city of Berlin, Kingdom of Prussia, German Empire, have invented new and useful Improvements in Lightning-Arresters, (patented in Germany December 8, 1891, No. 64,111,) of which the following is a specification.

This invention has reference to lightning arresters for electric conductors and consists in the improved construction hereinafter described and set forth, whereby a simple and efficient arrangement is provided in which the essential conducting portions are thoroughly protected against moisture, and the cover is capable of being firmly secured in position as well as readily detached.

In the accompanying drawings forming part of this specification, Figure 1, is a vertical view partly in section of a lightning arrester embodying my improvements. Fig. 2, is a detail sectional plan view of the lower portion of the cover, and Fig. 3, is a detail sectional view showing the connection of the electrical conductor with the improved lightning arrester.

The metal bracket A is designed to be secured to a standard or fixed part, for which purpose a screw *a* may be employed. The said bracket A is further provided with a collar B, which permanently embraces the neck of the insulating bell C, the connection being such that the upper edge portion of the collar projects above said neck to present an annular seat *b*, the adjacent portion of the neck being cut away as indicated at *c*, so that the said seat will have greater clearance from the neck.

In the body of the bracket A, is a perforation *d* which together with a binding screw *e* permits connection of a ground wire with the bracket.

Resting upon the top of the insulating bell C, is a metal plate D, centrally perforated for the engagement of the threaded end *f* of a vertical rod E, extending down through the insulating bell and depending below the same for connection with the conductor to be guarded.

Any suitable means for securing such connection may be resorted to.

In Figs. 1 and 3, I have shown the electrical conductor 1, as having a metal ear 2 connected thereto, the upper portion 3 of said ear being bent horizontally and perforated for the passage of a screw *g*, acting to clamp said portion 3 against the socket end *h* of the rod, in which said screw is seated. This arrangement effects the proper suspension of the conductor and maintains the same in proper electrical contact with the rod.

With a view of insuring the rod E, occupying a proper position within the bell C, when the former is introduced, said rod is provided with an offset *i*, adapted to bear against the interior seat of the bell and limit the movement of the rod.

An inner metal cover F, rests on the seat *b* of the bracket, so as to be parallel with but a short distance from the plate D, the adjacent surface of both the cover and the plate being provided with a series of ribs J, as shown in Fig. 1. The cover F is provided with a marginal depending flange *k*, which embraces the outer side of the seat *b*, and operates to more effectually exclude moisture from the space between the plate D and said cover. The top surface of the cover F is made convex or slopes off toward the edge so as to shed any moisture that may lodge thereon. The cover F is securely held on its seat, and the space between the same and the plate D, is more securely protected by an outer cover G, having a rim *l* depending, as shown in Fig. 1, and having an interior rib *m*, beveled to bear against the collar B. As will be seen from said figure, the cover G bears against the central portion of the inner cover, F, and the space between the inner and outer covers and between the latter and the bracket forms a chamber from which the moisture is conducted through openings *n*, formed in the rib *m*.

As will be seen, not only is the under edge of the flange *k* outwardly beveled, but the surface of the collar adjacent thereto is provided with a depression *o*, to keep the moisture shed from the cover F well away from the joint at the seat.

Owing to the liability of the more exposed metal parts in this class of devices to become oxidized, it is desirable to avoid complicated connections between the outer cover and the collar and yet at the same time firmly secure the cover in position when required. Even a simple screw thread will not suffice, owing to the difficulty of starting the thread when the parts have become corroded. A satisfactory form of connection is that illustrated, wherein the rim *l* of the cover *G*, has a series of bayonet slots *P*, adapted to engage lugs *q* projecting from the collar, the horizontal part of each slot being inclined so that the cover can be quickly secured in position with a cam like action, and as readily detached, irrespective of the oxidized condition of the parts.

The operation of the improved construction will be easily understood by those familiar with this class of devices. The separation of the plate *D* and inner cover *F*, is sufficient to interrupt the passage of the current on the conductor suspended by the rod *E*. When, as frequently happens, the current becomes abnormal under the action of a charge of lightning, a discharge will take place from plate *D*, to cover *F*, and will be grounded through the collar, bracket and grounding wire, thereby protecting the line and restoring the working conductor to its normal condition. The discharge from plate *D* to inner cover *F* is greatly facilitated by the opposing ribs *J*.

From the foregoing it will be readily seen that the improved device not only constitutes a so called lightning arrester for the line conductor, but is at the same time, an insulating suspending medium for the same. In addition, the arrangement is such that the important parts, to wit;—the parallel faces of the

plate *D*, and cover *F*, are thoroughly protected against the action of moisture in a simple and durable manner.

I claim—

1. In a lightning arrester for electric conductors the combination of a plate and an inner cover adjacent to the same, the former being in electrical connection with a conductor and the latter adapted for ground connection, and an outer cover holding the inner cover in position and forming a moisture conducting chamber around the same.

2. In a lightning arrester for electrical conductors, the combination of a discharge plate and an inner cover relatively separated, the latter having its upper face convexed to form a water shed, and an outer cover bearing on the central portion of said upper face and forming a moisture conducting chamber.

3. In a lightning arrester for electric conductors, the combination of a discharge plate and an inner cover relatively separated, and an outer cover having a depending rim provided with an inner closing rib perforated as described.

4. In a lightning arrester, the combination with a bracket having a perforation and binding screw for ground wire connection, a collar carried by said bracket and suspending an insulating bell, a discharge plate, an inner cover resting on the collar, and an outer cover holding the inner cover in position and forming a moisture conducting chamber, substantially as set forth.

In testimony whereof I have affixed my signature in the presence of two witnesses.

HERMANN OTTO HENNEBERG.

Witnesses:

GUSTAV STENZEL,
MAX WAGNER.