(No Model.) 2 Sheets—Sheet 1.

C. C. CHESNEY.

LIGHTNING ARRESTER.

No. 588,320. Patented Aug. 17, 1897.

Fig. 1.

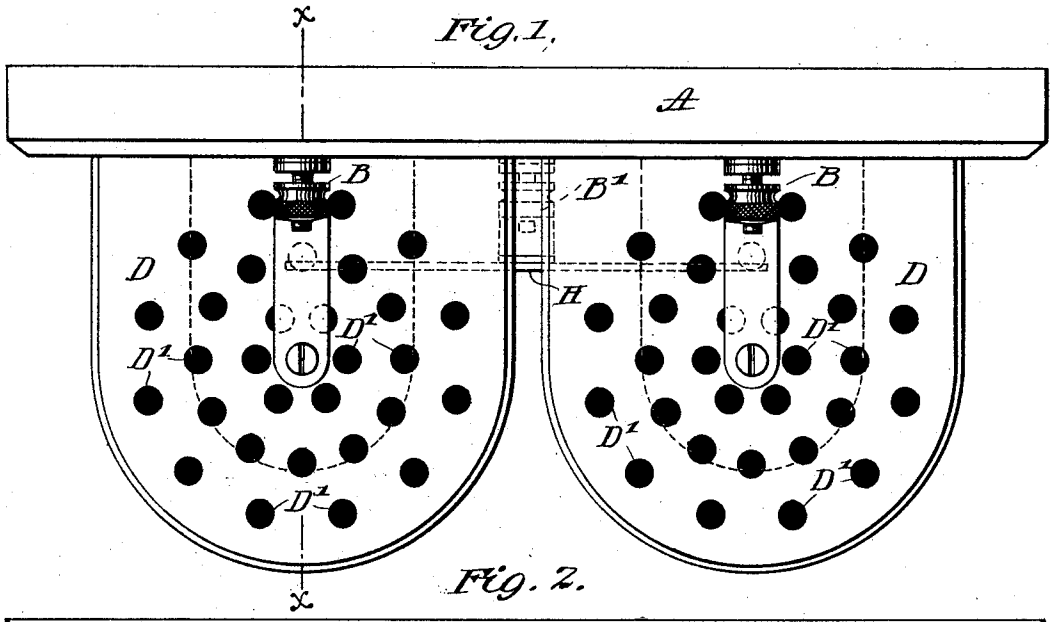
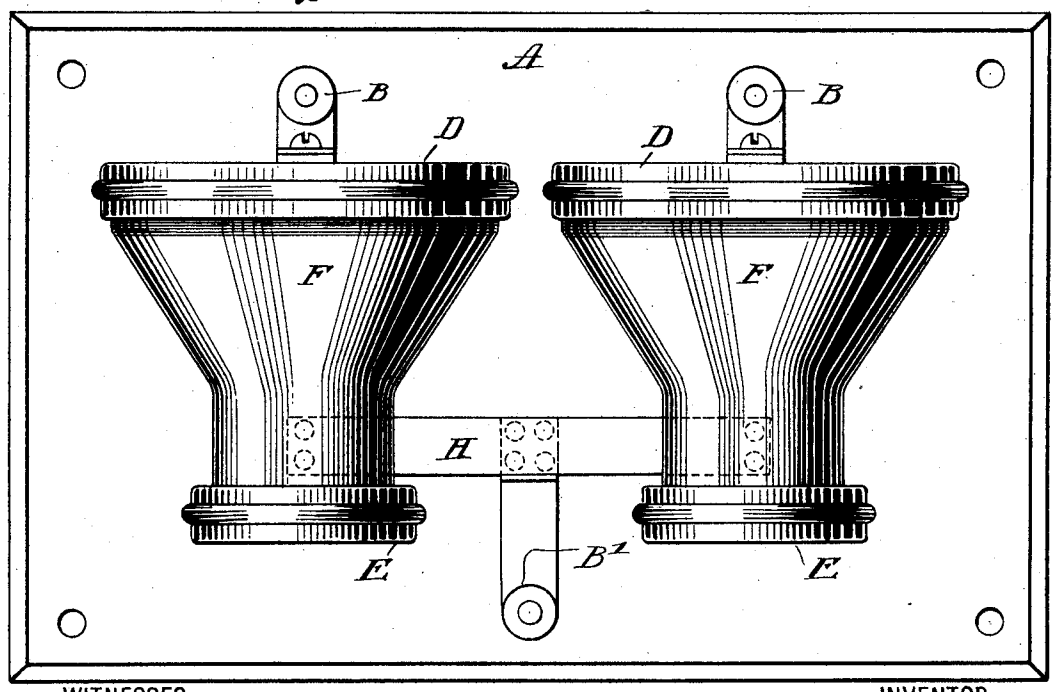


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

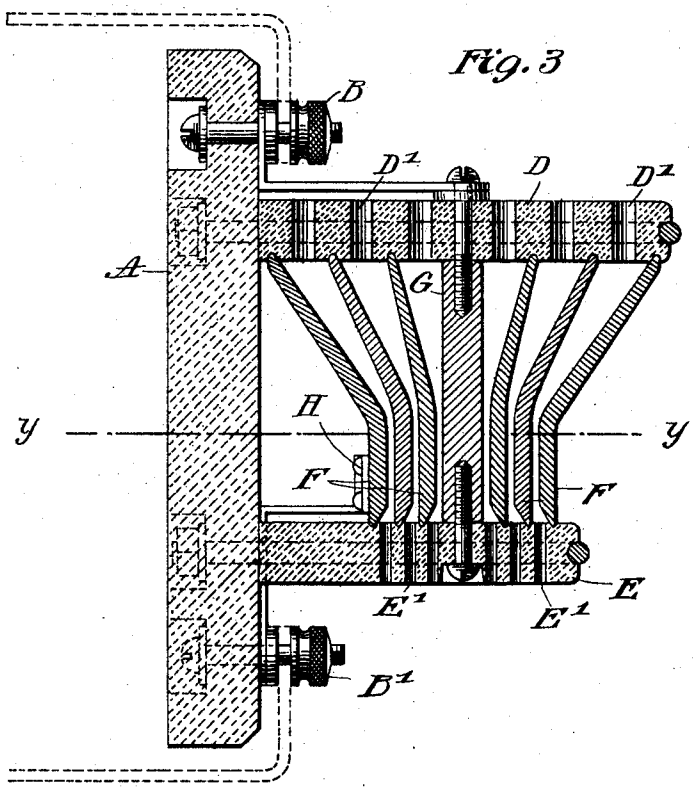
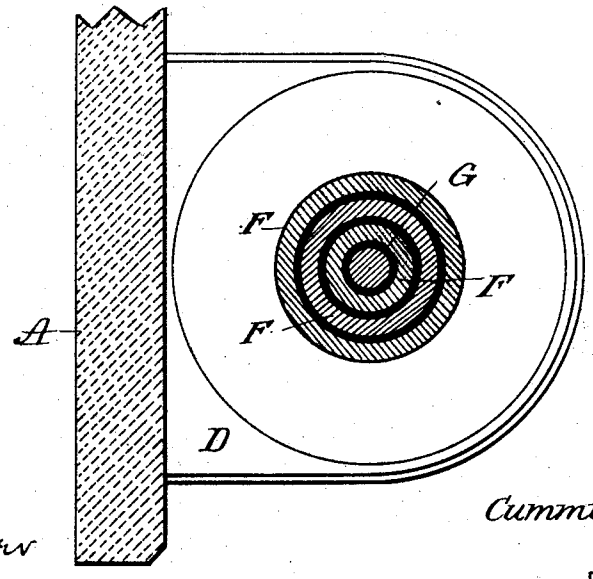


Fig. 4.



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UNITED STATES PATENT OFFICE.

CUMMINGS C. CHESNEY, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO JOHN F. KELLY, OF SAME PLACE.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 588,320, dated August 17, 1897.

Application filed May 14, 1897. Serial No. 636,536. (No model.)

To all whom it may concern:

Be it known that I, CUMMINGS C. CHESNEY, a citizen of the United States, residing at Pittsfield, county of Berkshire, and State of Massachusetts, have invented certain new and useful Improvements in Lightning-Arresters, of which the following is a full, clear, and exact description.

My invention relates to improvements in lightning-arresters; and it consists in the novel construction, form, and arrangement of the parts thereof hereinafter described.

The object of my invention is to provide a simple, inexpensive, compact, and effective lightning-arrester.

My invention is illustrated by the accompanying drawings, in which—

Figure 1 is a plan view. Fig. 2 is a front elevation. Fig. 3 is a vertical section on the line *x x*, Fig. 2. Fig. 4 is a horizontal section on the line *y y*, Fig. 3.

A is an insulated support.

B B′ are terminal binding-posts.

D is an upper cap, of insulating material, suitably secured to the support A and provided with perforations D′.

E is a lower cap, of insulating material, suitably secured to the support A and provided with perforations E′. In the space between the caps D and E is held a series or nest of concentric cylinders F, preferably formed of any metal having a fairly high melting-point, even common yellow brass answering very well. The upper ends of the cylinders F flare outwardly, forming a series of concentric cones, which by preference successively increase in the angle of the apex. While the parts F are not, strictly speaking, cylinders, they will, for the purposes of this description, be termed "cylinders." To the innermost cylinder F the line-circuit may be electrically connected through the terminal B, or instead of connecting the said line-circuit to the innermost cylinder a separate post G may be provided, the latter construction being shown in the drawings. The outer cylinder F is grounded through the terminal B′. While it is manifest that these connections may be reversed, it is preferred that the line-circuit should lead to the center of the nest, as the surrounding parts serve to protect the same. The post G, while performing the function of a conductor, may also serve as a binding means to draw the insulating-caps D E into tight contact with the parts F. The insulating-pieces D E, besides serving to hold the parts F in proper relative position, also prevent arcing across the ends, which would tend to short-circuit the arrester. The insulating-pieces D E are, by preference, provided with suitable grooves or ridges to receive the ends of said cylinders. Each nest of concentric parts is a complete and operative arrester. In the drawings, however, two nests are shown, one for each branch of the circuit to be protected, and, as shown, each nest has a common ground through the connection G.

In operation the lightning starts a series of arcs across the gaps in the narrower end of the arrester and the excessive current passes to the ground through the terminal B′. At the same time a current of air is established through the perforations E′ D′ and between the parts F, the said current tending to blow the arcs upward into the spaces between the flaring ends of the cylinders. As these arcs continue to travel upward the distances between the parts F increase and the surface of metal exposed to heating is also increased. Thus the maintenance of the arcs becomes more and more difficult. This continues until one of the arcs is broken which of course ruptures the circuit.

Among the advantages of the construction herein described are the following:

First. The dividing of the excessive current into a series of small arcs renders it more difficult to maintain the same than in the case of a single arc equal to the sum of the lengths of the small ones. Hence as soon as the lightning has been discharged the arcs are readily blown out or interrupted and the ground-circuit broken.

Second. There being no points of metal to localize the arcs, the same are very unstable and are readily interrupted.

Third. Blowing the arcs through gradually-increasing spaces and toward the upper end of the arrester stretches said arcs until they may be readily interrupted.

Fourth. As the surface of metal exposed to heating increases toward the upper or flar-

ing end of the arrester, the temperature tends to be lower at that end, and hence makes it more difficult to maintain the arc.

In the drawings the preferable form of the parts F is shown, in which the lower ends of the said parts are substantially parallel-sided, while the upper ends only are made to flare outwardly.

What I claim is—

1. In a lightning-arrester, a series of concentric cylinders having flaring sides, said cylinders being spaced apart throughout their length, suitable insulated supporting means and circuit-terminals, therefor.

2. In a lightning-arrester, a series of concentric cylinders having flaring sides, insulated retaining-pieces at opposite ends of said cylinders, said pieces having openings therein, circuit-terminals for the inside and outside cylinders.

3. In a lightning-arrester, a series of concentric cylinders having flaring sides, which successively increase in the angle of the apex, insulated supporting and retaining pieces at opposite ends of said cylinders, said pieces being perforated, circuit-terminals for the inside and outside cylinders.

4. In a lightning-arrester, a series of concentric parts, spaced apart throughout, said parts being substantially parallel toward their lower ends, and flaring outwardly toward their upper ends, circuit-terminals therefor.

5. In a lightning-arrester, a series of concentric parts nested together, but separated from each other throughout their entire length, the lower ends of said parts being parallel, while the upper ends flare outwardly, the flaring ends increasing successively in the angle of the apex, and circuit-terminals therefor.

6. In a lightning-arrester, a nest of concentric cylinders having flaring sides, said parts being separated from each other, a line-terminal and a ground-terminal, the latter being connected to the outer cylinder, substantially as, and for the purpose specified.

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Witnesses:
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