(No Model.)

E. MARSHALL.

LIGHTNING ROD.

No. 589,566. Patented Sept. 7, 1897.

Fig. 1.

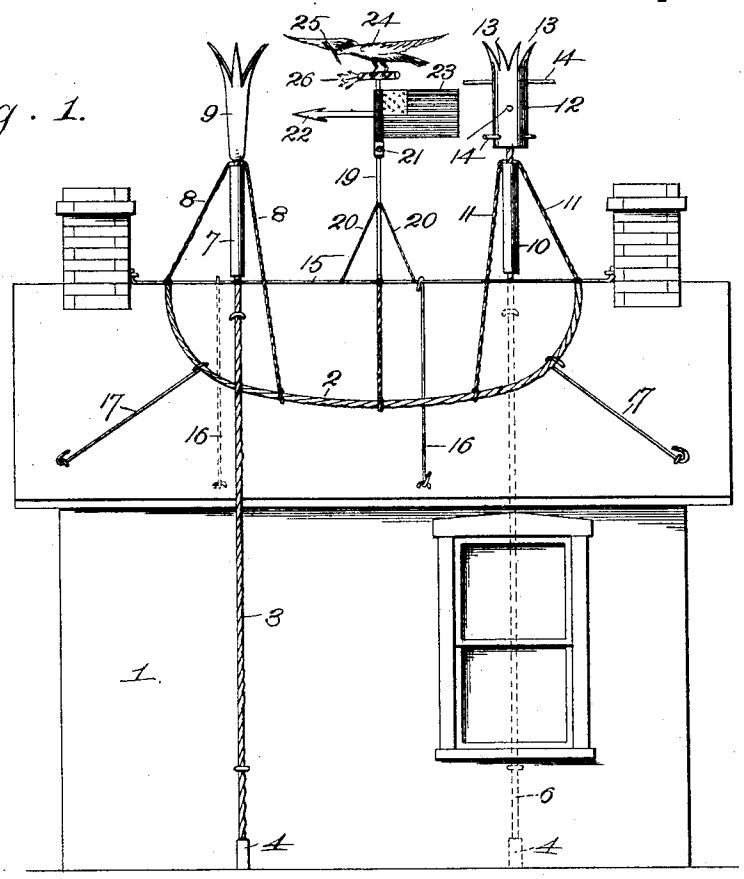


Fig. 3.

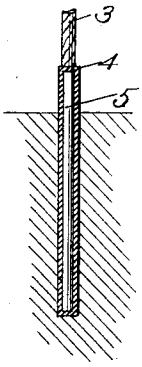
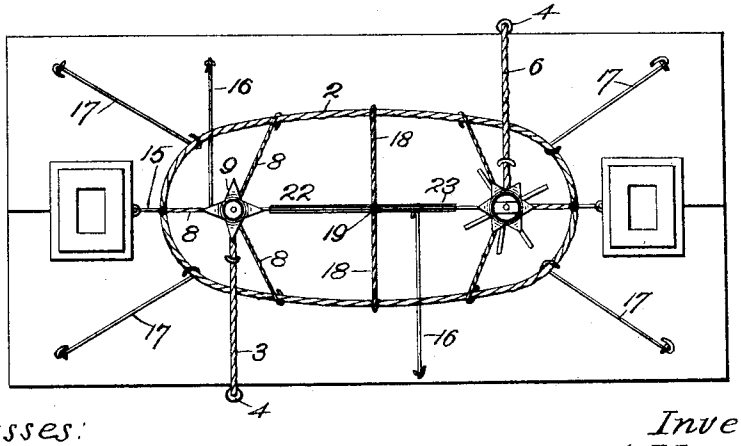


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ELBRIDGE MARSHALL, OF GARNETT, KANSAS, ASSIGNOR OF NINE-TENTHS TO ED STEIN, J. H. CANNON, D. M. MOORE, E. A. DUPREE, J. H. MCEWEN, C. A. MCEWEN, AND W. L. MCEWEN, OF SAME PLACE.

LIGHTNING-ROD.

SPECIFICATION forming part of Letters Patent No. 589,566, dated September 7, 1897.

Application filed June 1, 1897. Serial No. 638,932. (No model.)

To all whom it may concern:

Be it known that I, ELBRIDGE MARSHALL, of Garnett, Anderson county, Kansas, have invented certain new and useful Improvements in Lightning-Rods, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to lightning-rods; and it consists in certain novel and peculiar features of construction and combinations of parts, as will be hereinafter described and claimed.

The object of the invention is to produce a device of this character whereby the intensity of the electric fluid may be equalized on all parts of the building equipped with such device, to the end that the electricity may be conveyed from atmosphere to ground or from ground to atmosphere without an explosion and consequent injury to the building or its occupants.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents in side elevation a building equipped with my improved lightning-rod. Fig. 2 represents a top plan view of the same with the eagle-point omitted. Fig. 3 represents a vertical section of a part to be hereinafter described.

In the said drawings, 1 designates a building of any style or type.

2 designates an endless cable or crown of circular, elliptical, or other form which is secured upon the roof of the building in any suitable manner and which is a good conductor of electricity.

3 designates an electric rod or cable which is secured to one side of the building and is electrically connected at its lower end to a hermetically-sealed copper cylinder or tube 4, and incased therein by preference is a steel rod or bar, which is thus protected from air or moisture and consequent rust or corrosion. This conductor is of suitable length to effectually "earth" or "ground" the rod, and its upper end projects above the surface of the ground for convenience of attachment to the lower end of rod or cable 3.

At the opposite side of the building and at a suitable point a similar rod is planted in the ground to a suitable depth, and electrically connected to the same at its lower end is a cable or rod 6, like the cable or rod 3.

Electrically connected to the upper end of the rod 3 in any suitable manner and incasing the same by preference is a conducting-cylinder 7, and said cylinder serves the purpose of a strengthening or stiffening rod and is braced or secured in its upright position by means of the guys 8 in the form of conducting cables or rods, said guys being attached at their lower ends to the endless cable or "crown," as I prefer to call it, 2. Surrounding said cylinder or sleeve 7 in turn is what I term a "lily-point" 9 for the lightning-rod, said point being substantially in the form of a lily and constructed, preferably, of sheet-copper or equivalent material.

The advantage of providing the lightning-rod with a plurality of points, as shown, is to divide the electric fluid as it comes in contact with the point of the rod, and thereby lessen any chance of an explosion, or to divide it as it passes upwardly, in order that it may escape with the least possible resistance from the rod to the atmosphere, and thus prevent the explosion which would almost invariably occur if, for instance, a spherical point of any superficial area were employed, as may be illustrated most forcibly and clearly with an ordinary static machine. The electricity in such machine, when it reaches the end of the conductor, instead of being distributed immediately, tends to spread or distribute itself over the entire surface of the same and does not pass off into the atmosphere until the volume or pressure of oncoming fluid compels it to, and when it is thus forced or compelled to pass off an explosion invariably occurs. The advantage of these points for dividing the current is illustrated by the leaves of an ordinary tree, each of which serves as a point from which the electric fluid may pass off freely and easily to the atmosphere.

10 designates a metallic cylinder or sleeve

which vertically incases the upper end of the rod 6 and is braced in such vertical position by a tripod comprising a series of guys 11 in the form of cables or rods. Surmounting the same is a different style of lightning-rod point, this point being in the form of a cylinder 12, terminating at its upper end in a plurality of points 13, which serve the same function as previously described with reference to the lily-point. Said cylinder or point 12, however, is provided with a large number of spines or arms 14, whereby its capacity for dividing and distributing the electric current or fluid is materially increased. This point, like the tubular point 9, is adapted to convey the electric fluid from the clouds to the earth, or vice versa, whether in the form of globe or chain lightning. Owing to its tubular formation and to the cylinder or sleeve which it surmounts, it is obvious that independent currents passing in opposite directions, one up and the other down, may pass without danger of explosion owing to the fact that the outside surface of said conductors serve to convey the electric fluid to or from the crown or endless rod or cable 2, whereby it may all escape down one of the rods or cables to the earth, while the ascending fluid passes up through the rod to the interior of said conductors via the longitudinal conductor 15 and said crown or endless rod or cable and is subdivided and distributed from the various points or spines of the conductors, as will be readily understood.

Hitherto, so far as my knowledge extends, there has been in use no lightning-rod provided with or terminating in a hollow point having a plurality of receiving or distributing subpoints, and thereby peculiarly adapted for use in regions where globe-lightning is frequent, in order to obviate its destructive effect. This point of course serves equally well for chain-lightning, though the customary single-pointed lightning-rods now in use are much more effective in destroying the effects of chain-lightning than of globe-lightning.

16 designates two or more metallic arms, which are electrically connected to and extend outwardly from the rod 15, and 17 designates another series of rods which are electrically connected to radiate outward from the endless crown or cable 2. Said rods or arms may extend in any and all directions upon the roof, for the purpose of equalizing the intensity of the electric fluid on all parts of the building, and are adapted to conduct the electricity to and centralize it in the crown or cable 2, from which it passes upward through the conductors described to the atmosphere or downward through the rods or cables 3 6 to the ground.

The various connections shown and described provide, as hereinbefore suggested in referring to the passage of electricity upward and downward simultaneously, two circuits, that there may be no possible chance of explosion occurring, which might wreck or fire the building and destroy or endanger the lives of the occupants.

18 designates another conductor, which connects the opposite sides of the crown or cable with the central rod 15, and 19 designates a rod erected vertically and stayed by guys 20 of suitable conducting material.

21 designates a collar which is adjustably mounted upon the rod 19. A wind-vane is mounted rotatably upon said rod and is supported at the required height by said collar, said wind-vane comprising the customary arrow 22 and the tail-vane of feather 23. The latter is preferably of sheet metal, asbestos, or other material indestructible in fire and is in the form of the United States flag, and therefore serves as a most economical way of displaying the flag of our country upon schoolhouses and other public and private buildings.

The rod, above the weather-vane, is provided with a point for receiving or distributing electric fluid in the form of an eagle 24, with his wings outstretched, by preference, and holding in his beak, at an angle of about fifty-six degrees, more or less, and with the point depressed, an ordinary quill pen 25, to signify that the day of arbitration has arrived. In his talons he holds a quiver of broken arrows 26, which are adapted to signify that the days of war are past, as a means for settlement of international complications. This eagle of course provides a plurality of points whereby the electric fluid is divided, and therefore performs a function similar to that of the points 9 and 12, hereinbefore described, and as a consequence reduces the danger of explosion, due to conflicting currents or other cause, to the minimum.

It is to be understood, of course, that while I have shown a single building provided with the three points 9, 12, and 24 two points will be sufficient in many connections, and it is to be understood, furthermore, that the two points may be of like construction, or all three of them may be of the same construction, as preferred.

I prefer to employ two points in all cases in order that there may be two independent paths for the electricity, which is a dual fluid, that it may ascend and descend simultaneously, passing over different circuits or paths.

From the above description it will be apparent that I have produced a lightning-rod which embodies the features of advantage enumerated in the statement of invention, which is comparatively simple and inexpensive and is strong and durable of construction.

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

1. A lightning-rod, comprising a crown or endless cable, a pair of rods or cables connecting with the same and grounded at their lower ends, and provided at their upper ends

with a plurality of points, substantially as and for the purpose set forth.

2. A lightning-rod, comprising a crown or endless cable, a pair of rods or cables connecting with the same and grounded at their lower ends, and provided at their upper ends with hollow or cylindrical points provided with subpoints or spines, substantially as and for the purpose described.

3. A lightning-rod, comprising a crown or endless cable, a pair of rods or cables connecting with the same and grounded at their lower ends, and provided at their upper ends with hollow or cylindrical points provided with subpoints or spines, metallic cylinders or sleeves incasing said rods or cables below said tubular points, to strengthen them and increase their conductive capacity, and braced vertically by means of guys, which are connected at their lower ends to said crown or cable, substantially as described.

4. A lightning-rod, comprising a crown or endless cable, provided with arms radiating in various directions upon the roof of the building equipped with the lightning-rod, a pair of rods or cables connecting with the same and grounded at their lower ends, and provided at their upper ends with hollow or cylindrical points provided with subpoints or spines, metallic cylinders or sleeves incasing said rods or cables below said tubular points, to strengthen them and increase their conductive capacity, and braced vertically by means of guys, which are connected at their lower ends to said crown or cable, substantially as described.

5. A lightning-rod, comprising a crown or endless cable, provided with arms radiating in various directions upon the roof of the building equipped with the lightning-rod, a pair of rods or cables connecting with the same and grounded at their lower ends, and provided at their upper ends with hollow or cylindrical points provided with subpoints or spines, metallic cylinders or sleeves incasing said rods or cables below said tubular points, to strengthen them and increase their conductive capacity, and braced vertically by means of guys which are connected at their lower ends to said crown or cable, a rod electrically connected to said crown or cable, and to the vertical rods or cables, and provided with conducting-rods 16, substantially as described.

6. In combination with and forming a part of a lightning-rod, an "earth-rod," comprising a steel rod or bar and a copper cylinder incasing the same and hermetically sealed, substantially as and for the purpose described.

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

ELBRIDGE MARSHALL.

Witnesses:
ALFRED BROWN,
J. H. MCEWEN.