

Foot & Chadwick. Lightning Rod.

No 93,609.

Patented Aug. 10. 1869.

Fig. 1.

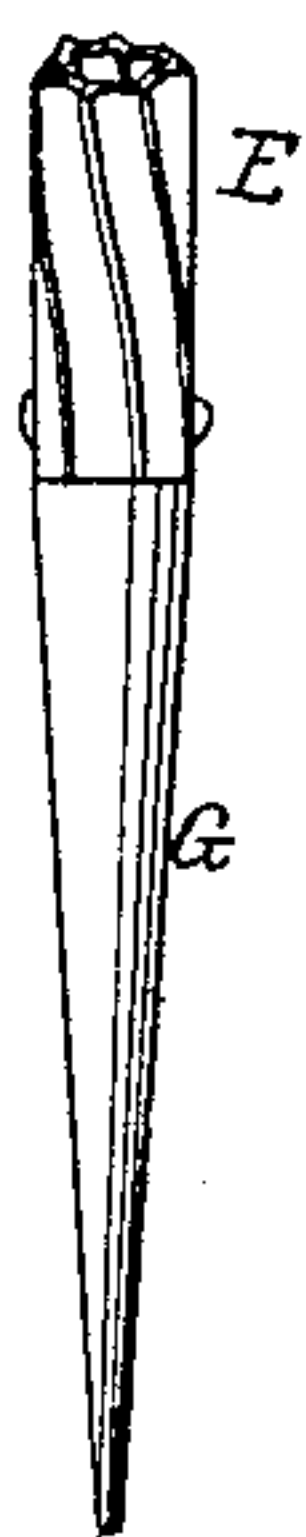
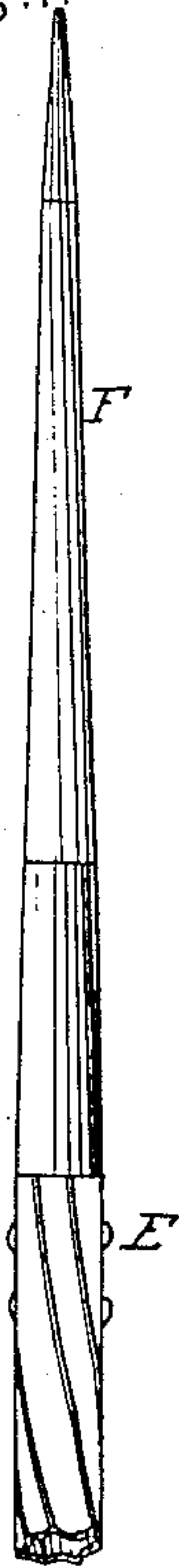


Fig. 2.

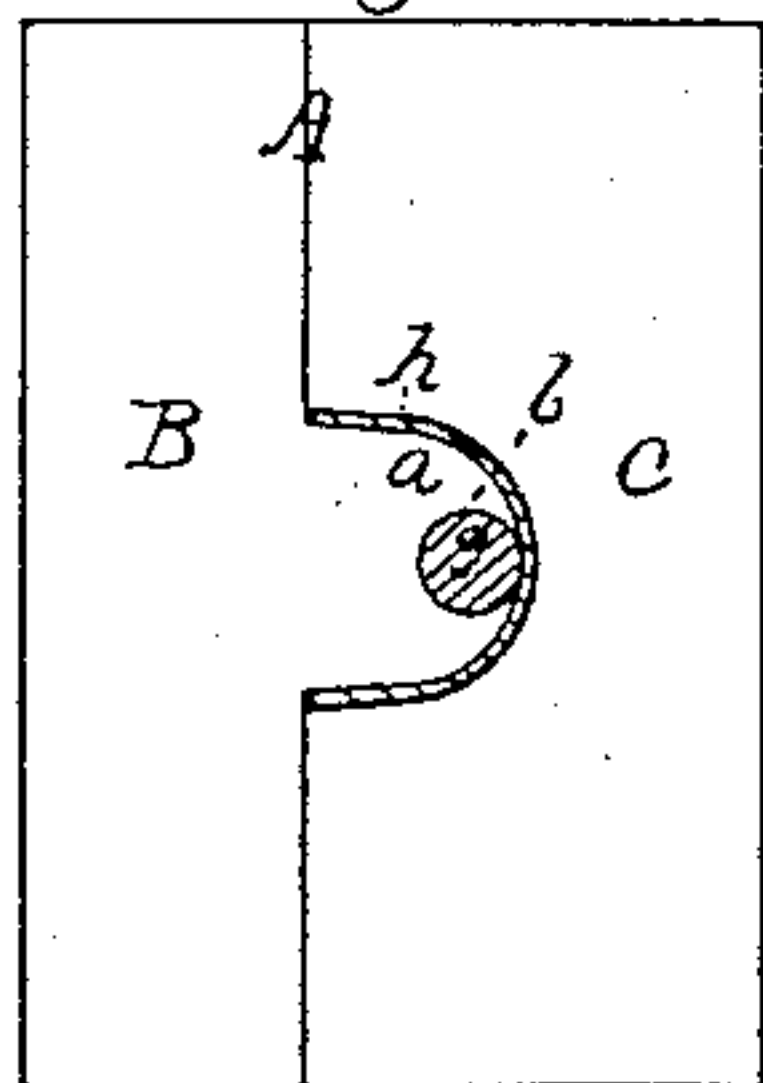


Fig. 3.

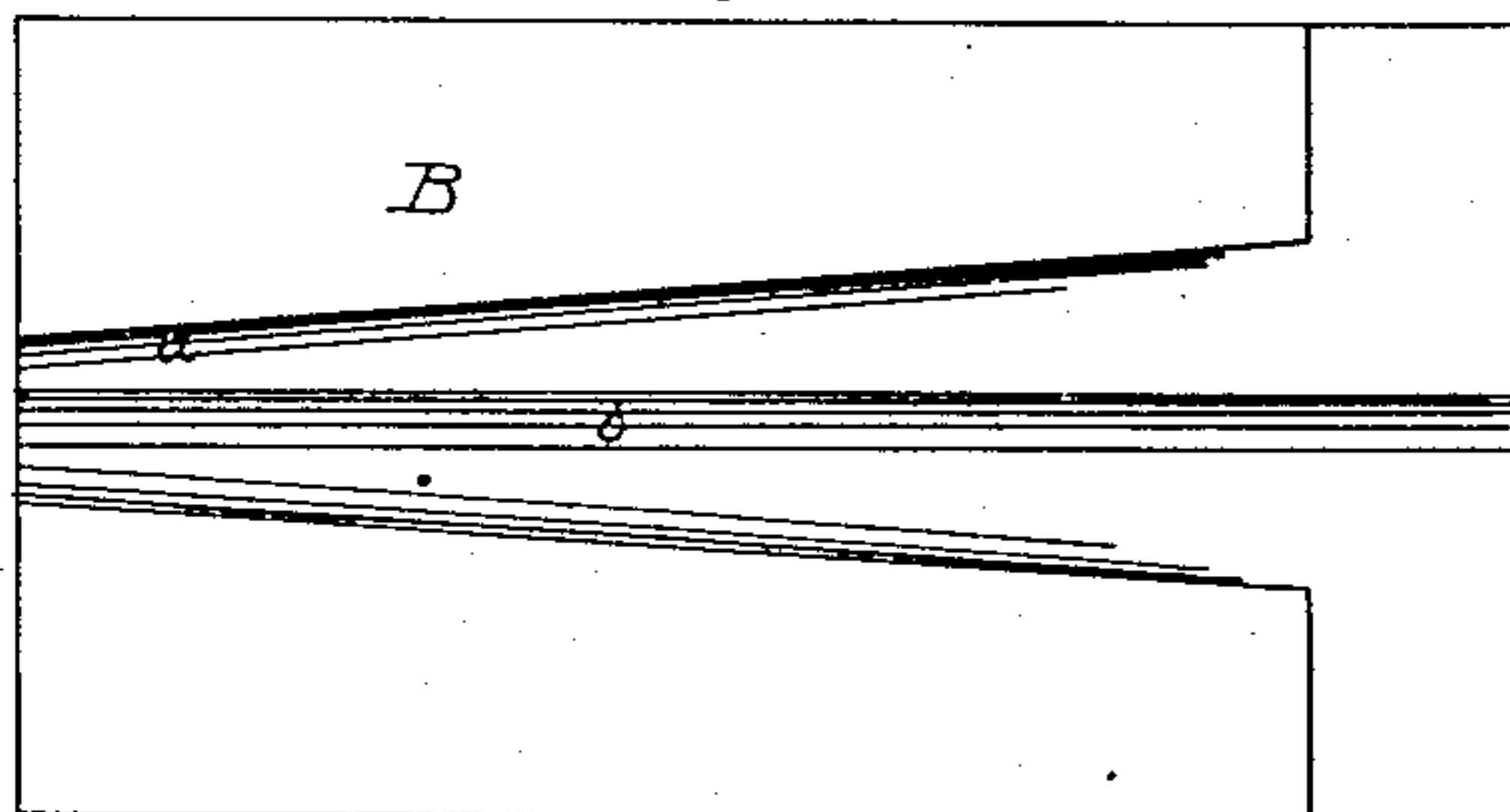


Fig. 4.

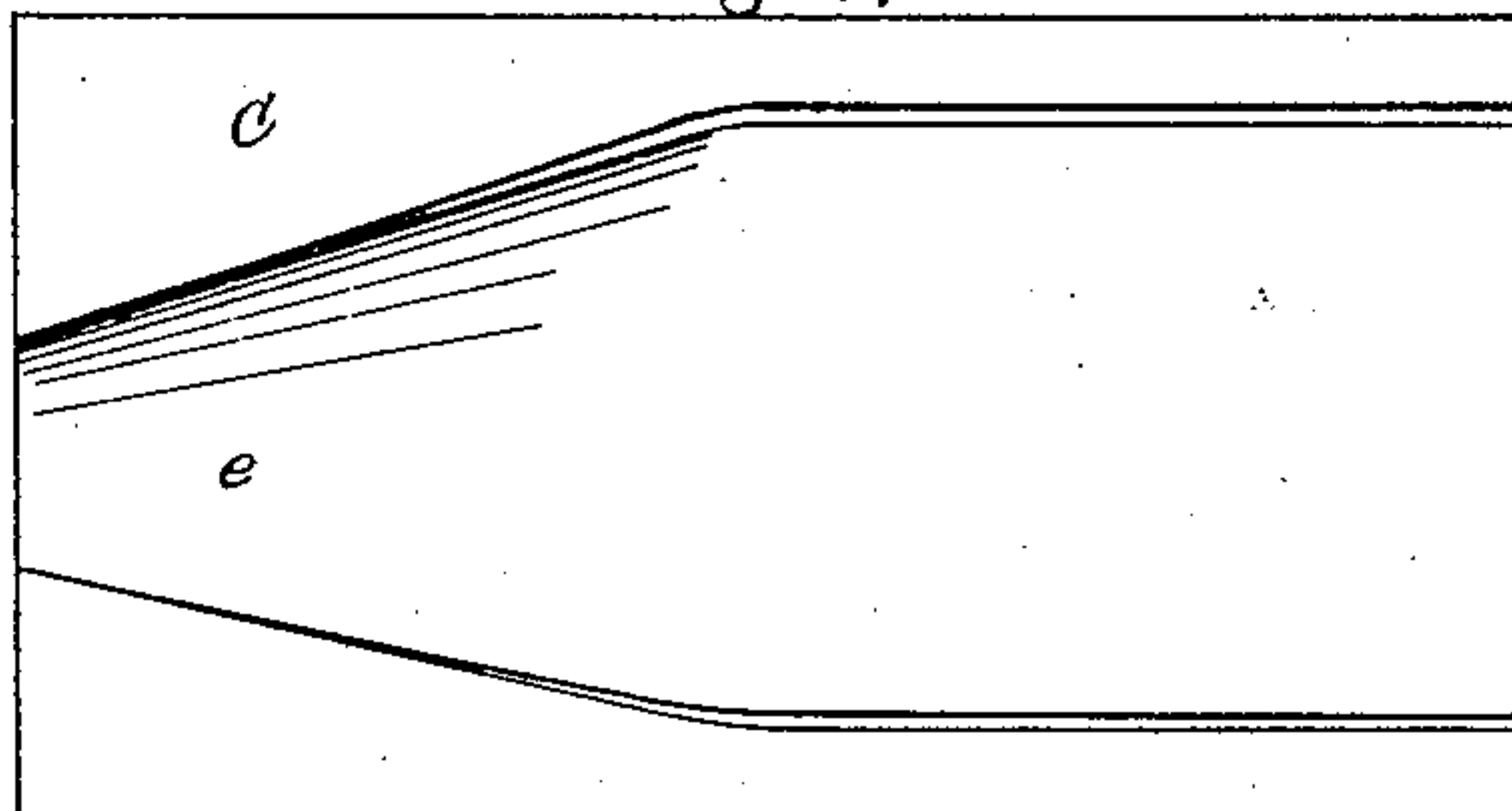


Fig. 5.

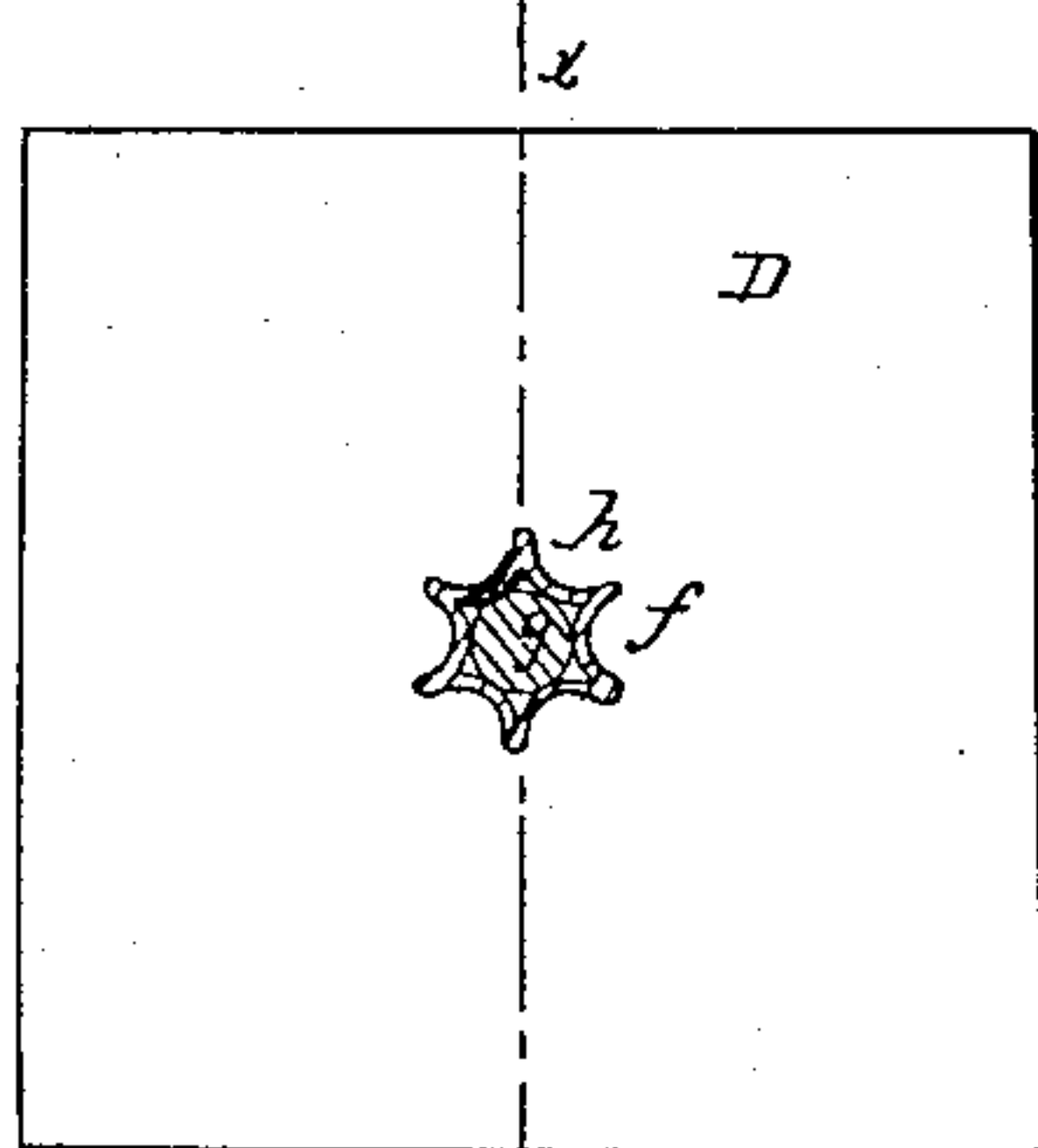
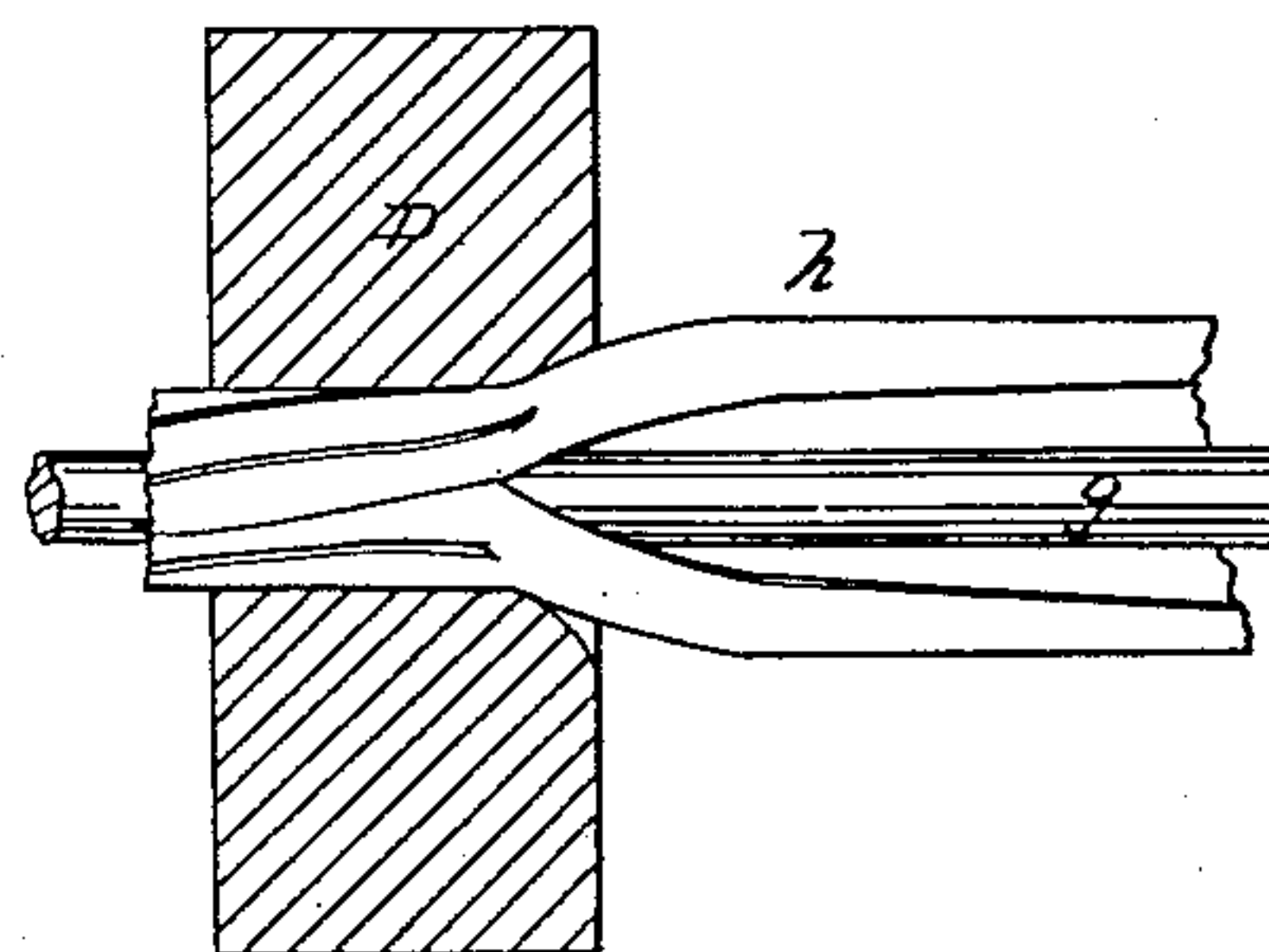


Fig. 6.



Witnesses:

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United States Patent Office.

DAVID A. FOOT AND AVERY CHADWICK, OF WINONA, MINNESOTA.

Letters Patent No. 93,609, dated August 10, 1869.

IMPROVEMENT IN LIGHTNING-RODS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, DAVID A. FOOT and AVERY CHADWICK, of Winona, in the county of Winona, and State of Minnesota, have invented certain new and useful Improvements in Lightning-Rods; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use our invention, we will proceed to describe it.

Our invention relates to lightning-rods, and consists in constructing them in a novel form and manner, by means of suitable dies and formers, and also in providing them with a discharging-point.

In the drawings—

Figure 1 is a perspective view of a portion of the upper and lower ends of our rod;

Figure 2 is an end view of the formers or plates for shaping the strips of copper out of which the rod is to be made, in the commencement of the operation;

Figures 3 and 4 are plan views of the interior faces of these formers;

Figure 5 is an end view of the die through which the rod is to be drawn after leaving the formers; and

Figure 6 is a cross-section of fig. 5, on the line *x-x*, also showing the copper strip in process of being formed.

In constructing our lightning-rod, we first make a former, A, consisting of two plates, B and C, as clearly shown in figs. 2, 3, and 4.

The upper plate, B, is provided with a tongue, *a*, which has in it a semicircular groove, *b*, as shown in figs. 2 and 3, and the tongue, and the groove in it, are both shaped as shown in the same figures, the former decreasing in height, or tapering from its front to its rear end, and the latter continuing of uniform size throughout.

The under plate, C, is provided with a groove, *e*, shaped on its front end as shown in fig. 2, so as to receive the tongue *a*, and then expanding gradually into a flat shallow groove toward its rear end, as shown in fig. 4, and so that when the plates B and C are placed together, the upper edge of the groove *b* will be parallel with the bottom of the groove *e*.

We also make a die, D, having a star-shaped opening, *f*, of any desired size, and with any desired number of points, as clearly shown in fig. 5, and the opening is a little larger at one end than at the other, as shown in fig. 6.

Having thus constructed the formers, and the die of the size desired, we take strips of copper, of suitable width and length to form sections of our rod, and form them up one after the other in these tools.

In doing this, we take a round metallic rod, *g*, of the same diameter, or nearly so, of the groove *b*, in the former A, and place it therein, and place the copper strip *h*, out of which a section of the rod is to be formed, in the groove *e*, and press the plates B and C of the former A together, when the end of the strip will assume the form shown in fig. 2. We then draw the rod *g*, with the strip *h*, far enough through the former A to enter the opening in the die D, suitably placed for that purpose, and then draw them on through the former A and the die D by any suitable mechanism for the purpose, when the copper strip will be formed up with its edges closely and neatly lapped, and with its outline similar in shape to the opening in the die, as shown in fig. 6.

Having thus made a number of these sections, we rivet them together, to form a rod, E, partly shown in fig. 1, of the required length.

This rod we provide with a receiving-point, F, or with any number of the same, made of solid copper, silver-plated, and platina-tipped.

We also provide it with a discharging-point, G, made of solid copper, and silver-plated.

In this way we get a star-shaped lightning-rod of great strength and beauty, furnishing in a small compass a great extent of surface for the electric current, with the most approved receiving-points, and a novel ground or discharge-point, as well as a rod that can be readily adapted to the contour of buildings to which it may be attached.

Having thus described our invention,

What we claim, is—

1. A hollow, star-shaped copper lightning-rod, provided at its lower end with a solid copper discharging-point, plated with silver, and its upper end with one or more receiving-points, the whole constructed and arranged substantially as herein described.

2. The combination of the former A, die D, and metallic rod *g*, constructed substantially as herein described, for the purpose of drawing star or similar-shaped lightning-rods, as set forth.

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Witnesses:

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