W. H. HALL.

Lightning Arrester.

No. 70,203. Patented Oct. 29, 1867.

Fig. 1

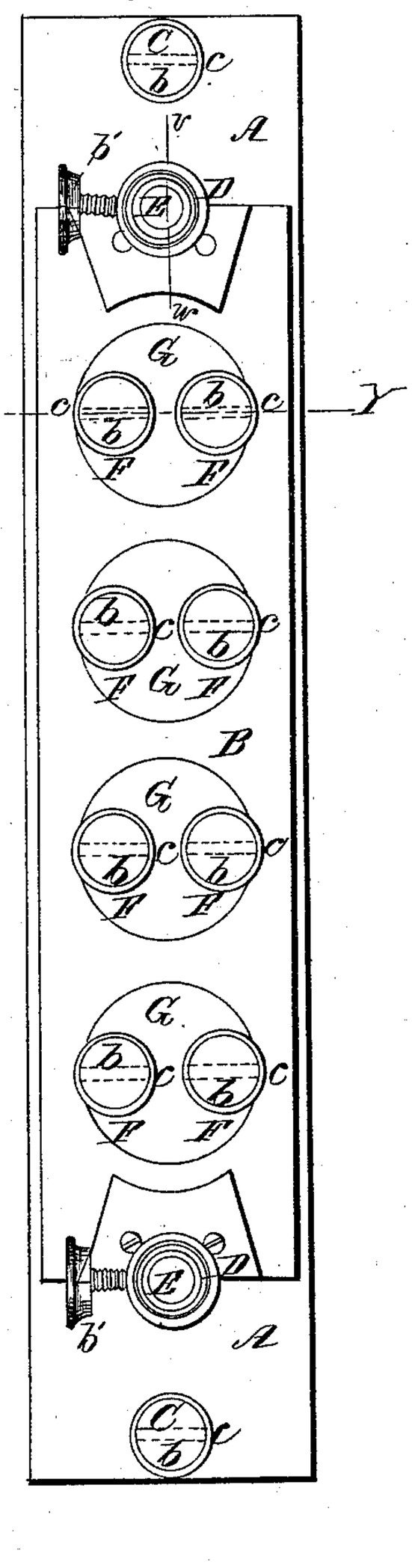


Fig. 2.

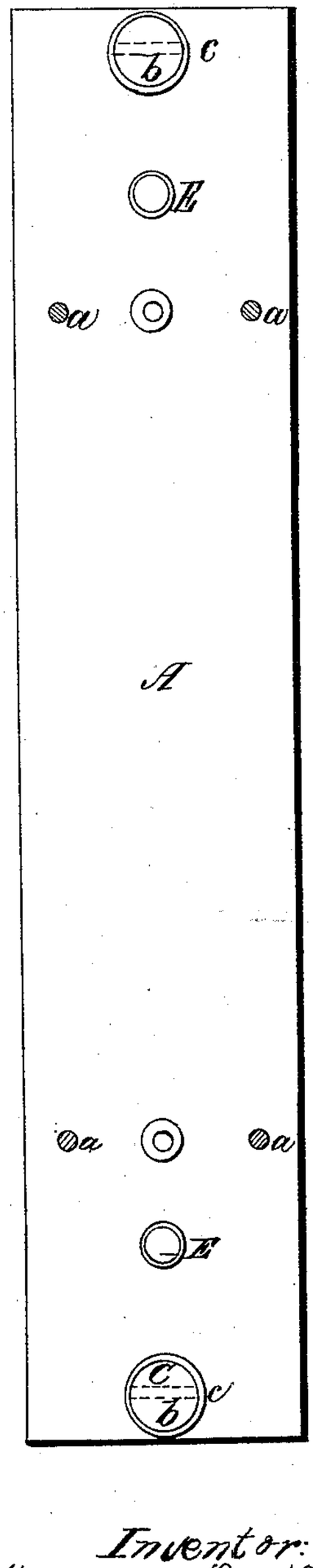


Fig. 4.

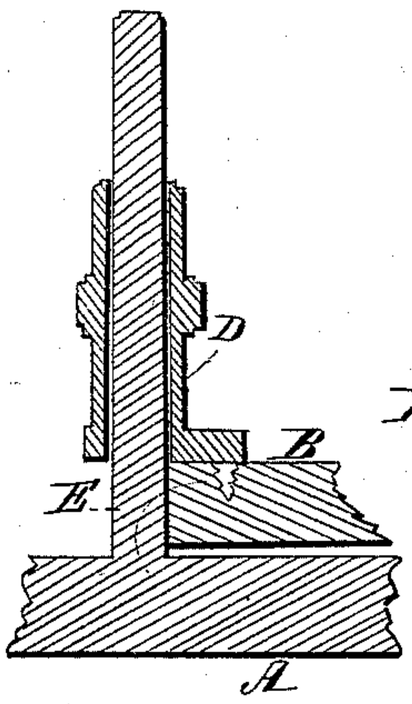
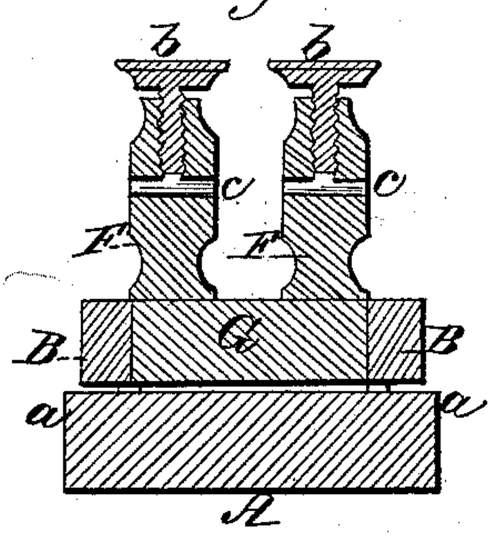


Fig. 3.



Witnesses:
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L. L. Bond.

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WILLIAM H. HALL, OF CHICAGO, ILLINOIS.

Letters Patent No. 70,203, *dated October* 29, 1867.

IMPROVEMENT IN LIGHTNING-ARRESTER FOR TELEGRAPHS.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM H. HALL, of the city of Chicago, in the county of Cook, and State of Illinois, have invented certain new and useful Improvements in Lightning-Arresters for Telegraphic Purposes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top or plan view.

Figure 2, a top view of the ground-plate.

Figure 3, a cross-section at red line *x y*, and

Figure 4, a section on red line *v w*, showing post.

Like letters refer to the same parts in all of the figures.

The nature and objects of my invention consist in constructing a lightning-arrester so that there will be a non-conducting plate supporting small connecting plates, one or more, brought near to the ground-plate without any non-conducting substance between them; in making such non-conducting plate adjustable by means of slides and set or thumb-screws; in providing non-conducting stops or supports between the plates A and B; in surrounding the small connecting plates with a non-conducting support or plate, and in the several combinations hereinafter set forth and claimed.

Heretofore only very imperfect arresters have been used, and paper has been placed between the connecting-plate and the ground-plate, so that whenever lightning entered on the conducting-wire, holes were burned through, so that the machinery would fail to operate until it was changed, and so that constant care was required to keep it in order. With inexperienced operators this was a frequent source of difficulty and vexatious delays. All of these difficulties, and the imperfections of the old arresters, are overcome by my device.

To enable others skilled in the art to make and use my invention and improved arrester, I will describe its construction and operation.

The length of the plates A and B will depend upon the number of wires to be connected with the arrester, as any number can be used, there being no limit in that respect. The drawing shows four, and for this number I make the ground-plate A about ten inches in length. It is made about two inches in width. At either or at each end are inserted, by screwing or otherwise, the posts C, into which the ground-wires are inserted at *c*, and fastened by the thumb-screws *b*. Into the ground-plate I insert four or more non-conducting supports, *a*, which project upwards about one-sixteenth of an inch, more or less, and usually the non-conducting plate B rests upon these supports. It will be obvious that these supports, *a*, may be attached to the plate B. I also attach to the plate A two or more supporting posts, E, which project upwards about three inches. These posts are provided with collars or slides, D, which slide easily upon them, and are at their lower ends connected with and attached to the non-conducting plate B, and are provided with thumb-screws *b'*, so that by their use I can raise or lower the plate B, and adjust the distance between it and the ground-plate, as may be required. The non-conducting plate B is provided with one or more circular or other shaped plates, G, for connecting the wires and making the circuit continuous. Into each of these plates are inserted two posts, F, which are made in the usual manner, and provided with thumb-screws *b* to fasten the wires at *c*. It will be apparent that this connection can be made with one post, but I prefer the use of two for each, for the reason that by the employment of two I insure the descent of the current of electricity into and across the connecting-plate G, thereby making the operation of this plate with the ground-plate certain. The connecting-plates or disks G are made of the same thickness as the plate B, so as to pass entirely through it and approach near the ground-plate A. The form and size of the non-conducting plate B are sufficiently shown in the drawings, and, with the supports *a*, may be made of any good non-conducting substance suitable for that purpose, but I prefer gutta percha, ebony, or other hard wood.

In operation the batteries and conducting-wires are connected to the posts F at *c*, and secured by the thumb-screws and the ground-wires connected to the posts C, and the non-conducting plate B at rest on the supports *a* or adjusted upon the posts or standards E, so that in ordinary use or in fair weather no effect is produced, but whenever atmospheric electricity passes upon the wires, or any unusual quantity of electricity, in passing the plate or disk G, it passes over or through it, and this plate being so adjusted with reference to the

ground-plate that only a certain quantity can pass without being taken by the ground-plate, all excess will pass from G to A, and from thence to the ground, so that the machinery and the batteries are perfectly protected, and the operator can continue his labors during a severe thunder-storm with safety and accuracy.

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

1. Supporting the connecting-plate G over the ground-plate A, without any non-conducting substance between them, by means of the plate B, substantially as specified.

2. Connecting the plate B to the ground-plate A adjustably by means of the posts E and slides D, substantially as and for the purposes specified.

3. The non-conducting plate B, when surrounding and supporting the connecting-plates or disks G, substantially as specified and shown.

4. The non-conducting supports *a*, substantially as and for the purposes specified.

5. The combination of the ground-plate A and posts E with the non-conducting plate B, non-conducting supports *a*, and collars or slides D, substantially as specified.

6. The combination of the ground-plate A, posts C, and standards E, with the plate B, connecting-plate G, post or posts F, and slides or collars D, substantially as and for the purposes specified.

WILLIAM H. HALL.

Witnesses:

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