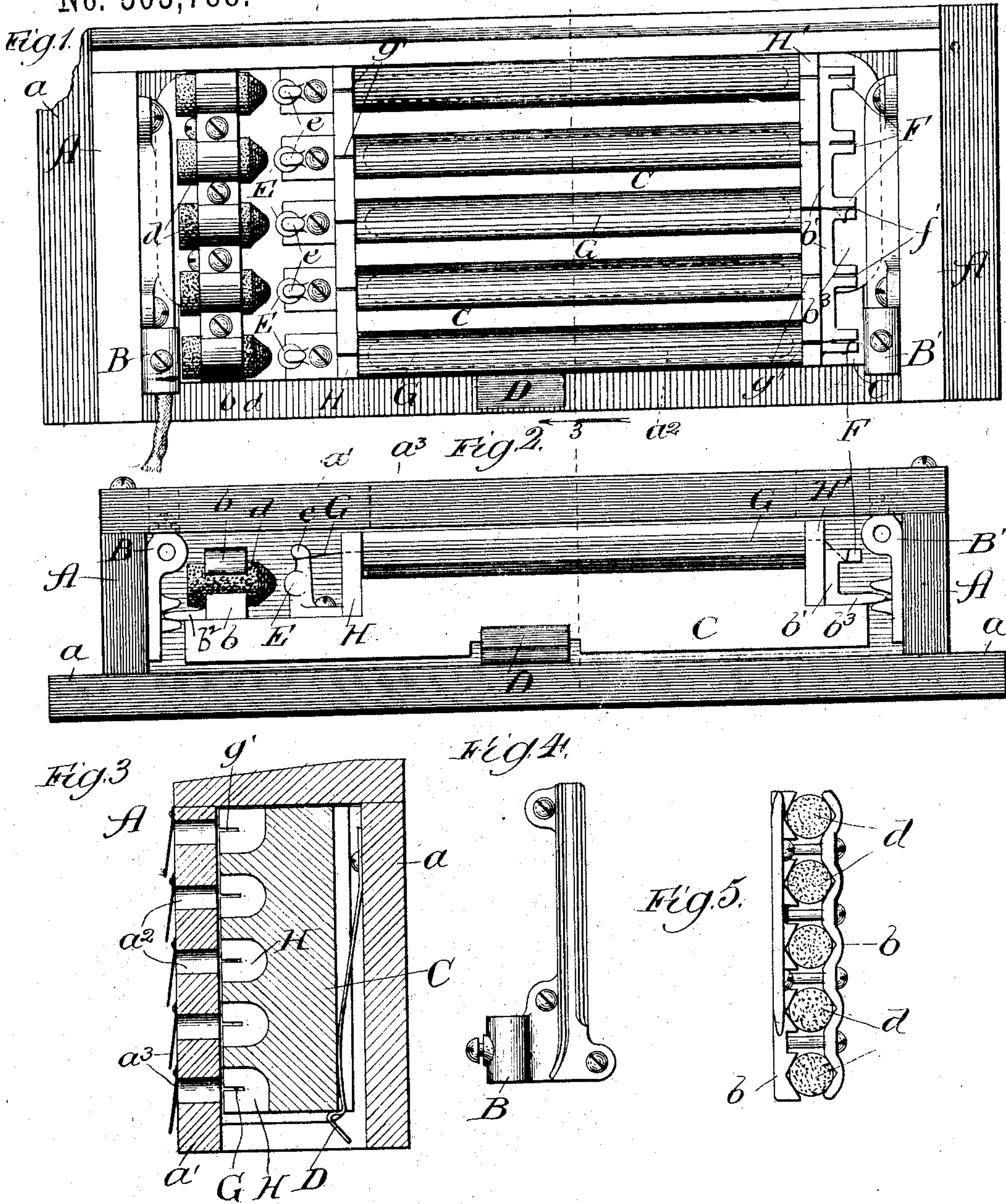


(No Model.)

W. LE R. EMMET.
LIGHTNING ARRESTER.

No. 503,788.

Patented Aug. 22, 1893.



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UNITED STATES PATENT OFFICE.

WILLIAM LE ROY EMMET, OF CHICAGO, ILLINOIS.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 503,788, dated August 22, 1893.

Application filed July 11, 1892. Serial No. 439,626. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LE ROY EMMET, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Lightning - Arresters, of which the following is a specification.

The object of my invention is to provide a multiple fuse lightning arrester for use on electric circuits, and it is intended to afford several paths of discharge for a shock of lightning, and means by which the circuit may resume its normal electric condition after it has been disturbed by such a discharge; and my invention consists in the features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a front view of my invention, with the cover removed. Fig. 2 is a bottom view, with the cover in place. Fig. 3 is a sectional elevation on line 3 of Fig. 2, looking in the direction of the arrows; and Figs. 4 and 5 are details of construction hereinafter described.

In constructing my improved lightning arrester, I prefer to make it of two main portions, a receptacle or box, A, containing the terminals, B, B', with which the wires to the line and ground are permanently connected, and which serves also as a housing for the arrester proper, protecting it from the weather.

The receptacle or box A is preferably made of wood, rectangular in shape, with projecting end pieces, a , on the base, for securing it to the wall or other desired place, the lower side being left open, thus affording a means for the ready insertion or removal of the arrester proper. The cover, a' , is secured to the main portion in any convenient manner, and is provided with rectangular apertures, a^2 , extending in the direction of its length, (as shown by dotted lines in Fig. 1) thus affording an easy method for the escape of gases after the fuse blows, and the hinged leather flaps, a^3 , protect these apertures from the weather, while permitting a free circulation of air. The terminals, B and B', are provided with grooved rails, which receive and make electrical contact with the flanges of the metallic pieces, b , b' , on the arrester proper.

The arrester proper consists of a board or other insulating material, C, on which is

mounted at one end a set of two or more electrodes, d , which are connected electrically by a metallic clamp, b , and are connected with a line wire terminal by its flange, b^2 . These electrodes, I prefer to make of carbon. Mounted independently on the board C, and opposite the electrodes d , is another set of electrodes, E, secured in such a manner that the space between each pair of electrodes may be regulated at will. To the opposite end of the board C is secured a metal piece, b' , provided with a flange, b^3 , to fit a corresponding groove in the ground terminal B'. This metallic piece has a series of lugs, F, in line with, and corresponding in number to, the electrodes, and are provided with slots f' , through which and around the lugs are fastened several fine metallic wires G. The opposite ends being secured around the hooks e , serve to make electrical connection between the electrodes E and the ground terminal.

To isolate the fuse wires from each other and other parts of the arrester, the piece C has a series of grooves, corresponding in number to the fuse wires, with strips of insulating material, H and H' at each end of the said grooves, and slotted to permit the passage of the fine fuse wires. This arrangement serves to protect each compartment and air space, between each pair of electrodes, from the flame or gases consequent to the blowing of a fuse, and the apertures in the cover afford an easy means for the gases to escape to the outer air.

The air space between the electrodes D and E, is sufficient to prevent the normal electric pressure from causing the passage of current through the arrester to the ground, and the distance between the metallic piece b' and the electrodes E should be sufficient to prevent severe arcing when the fuse wire blows.

The operation of my improved lightning arrester is as follows: When lightning strikes the line wire, the difference in electric pressure between the electrodes may be increased to such an extent that a spark passes between one pair of electrodes and through its fuse wire to the ground. The current from the dynamo, or other source, following the path thus opened, fuses the wire and breaks the circuit formed by the passage of lightning, thereby restoring the normal electrical con-

dition. The lightning will, in nearly every instance, take one only of the several paths of discharge afforded it, and it will readily be seen that the arrester will dispose of as many shocks of lightning as there are fuse wires. When one or all of the fuse wires are blown, the arrester can be readily removed from its receptacle and re-adjusted, or another one inserted.

While I have entered into a more or less minute description as to the details of my invention, I do not desire to be limited thereto unduly any more than is pointed out in the claims; on the contrary, I contemplate changes in form, construction and arrangement and the use of equivalents, as occasion may warrant or necessity render expedient.

I claim—

1. As an improvement in lightning arresters, the combination of a main portion containing a single pair of terminal connections for line and ground, forming a receptacle and protection for the arrester proper and adapted to isolate the fuse chambers in the arrester proper from each other and the electrodes, and the arrester proper containing several sets of electrodes and fuse wires, adapted to be easily inserted or removed from the receptacle, the whole offering several paths of discharge for one shock of lightning, substantially as described.

2. As an improvement in lightning arresters, an arrester proper composed of several pairs of electrodes one set of which are connected together electrically, and with a line wire terminal, and the opposite set independently connected with the ground contact piece, the individual connections between the electrodes and the ground contact being contained in separate compartments of insulating material, forming part of the arrester proper, and which serves to protect each from the action of the other, substantially as described.

3. As an improvement in lightning arresters, the combination of a main portion containing a single pair of terminal connections for line and ground, and forming a receptacle and protector for the arrester proper, and an arrester proper composed of several pairs of electrodes, one set of which are connected together electrically and with the line wire contact piece, and the opposite set independently connected with the ground contact piece, individual fuse connections between the elec-

trodes and the ground contact, and contained in separate compartments of insulating material, forming part of the arrester proper, and which serves to protect each fuse from the action of the other, substantially as described.

4. As an improvement in lightning arresters, the combination of a main portion containing the terminal connections with the line and ground wires, and forming a receptacle for the arrester proper, the arrester proper adapted to be easily inserted or removed therefrom, and composed of two or more pairs of electrodes, one set of which are connected together electrically and connected with the normal electric circuit, and a series of fine metallic wires, connecting the opposite of electrodes independently with the ground, substantially as described.

5. As an improvement in lightning arresters, the combination of a main portion containing a single pair of terminal connections for line and ground, and forming a receptacle for the arrester proper, and adapted to isolate the fuse chambers in the arrester proper from each other, apertures in the cover extending in line with and adjacent to the fuse chambers, hinged flaps protecting the apertures, and an arrester proper provided with several fuse chambers, substantially as described.

6. As an improvement in lightning arresters, the combination of terminals B, B' with their grooved rails, a metallic contact piece b forming the electrical connection between one set of the electrodes, the flange b² for contacting the line wire terminal, the metallic contact piece b', with its flanges b³, and the series of fuse wires G connecting the other set of electrodes with the contact piece b', the whole forming several arresters between a single pair of contact flanges, substantially as described.

7. As an improvement in lightning arresters, the combination of a single pair of terminals for line and ground, a single pair of contact flanges adapted to engage the same, two or more arresters between and adapted to electrically connect the contact flanges, substantially as described.

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Witnesses:

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