

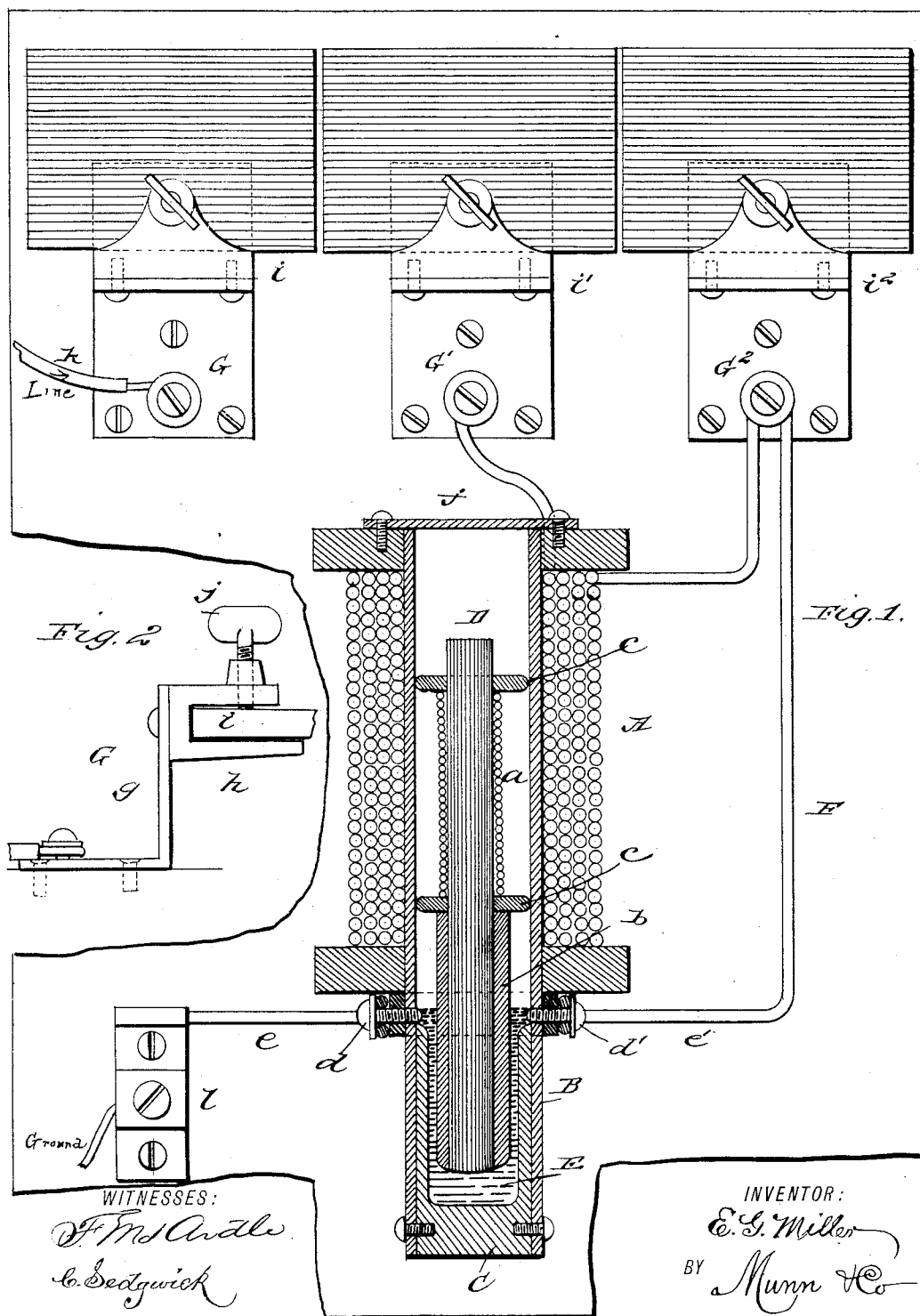
(No Model.)

2 Sheets—Sheet 1.

E. G. MILLER.
LIGHTNING ARRESTER.

No. 472,135.

Patented Apr. 5, 1892.

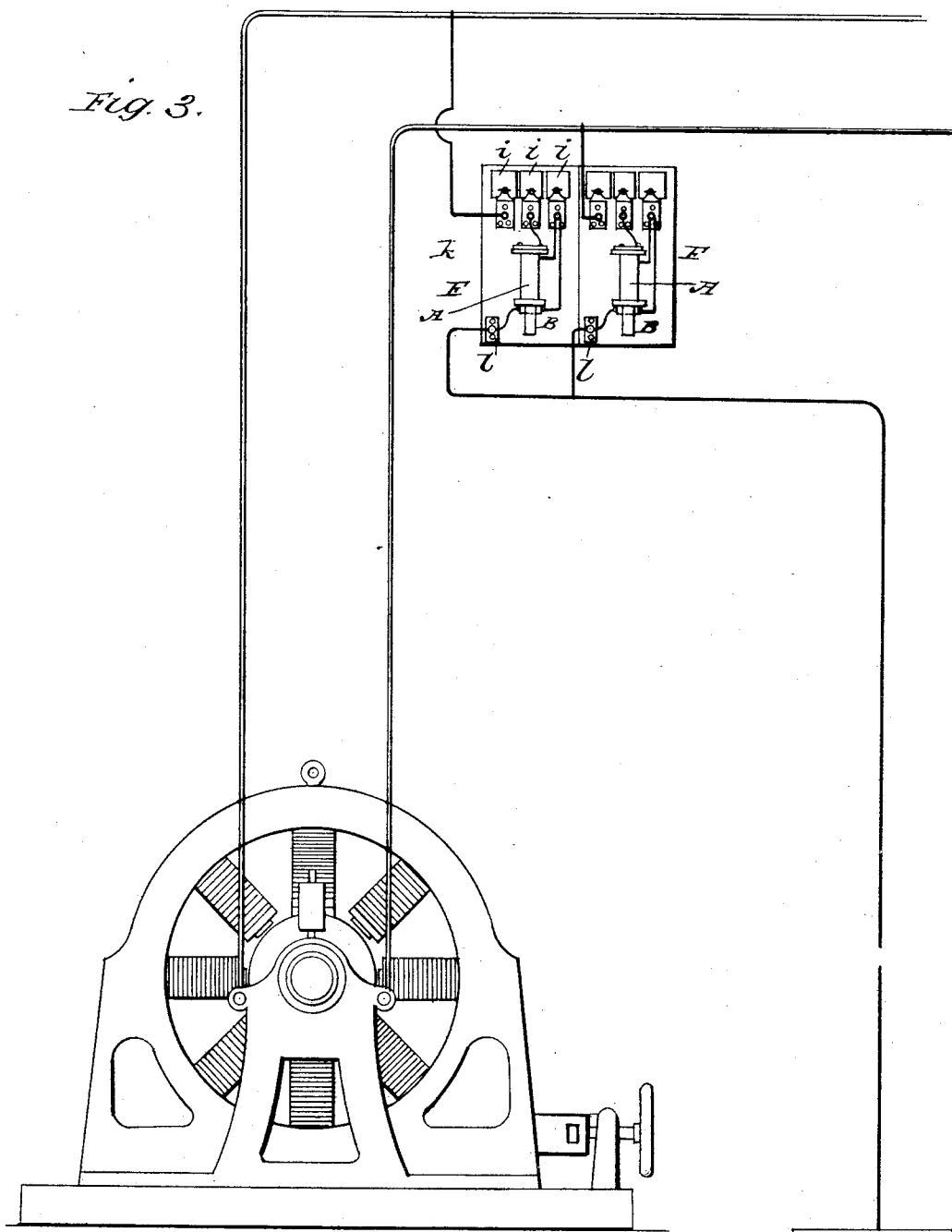


E. G. MILLER.
LIGHTNING ARRESTER.

No. 472,135.

Patented Apr. 5, 1892.

Fig. 3.



WITNESSES:

O. McArthur

C. Sedgwick

INVENTOR:

E. G. Miller

BY *Munn & Co*

ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD G. MILLER, OF WILKINSBURG, PENNSYLVANIA.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 472,135, dated April 5, 1892.

Application filed August 27, 1890. Serial No. 363,163. (No model.)

To all whom it may concern:

Be it known that I, EDWARD G. MILLER, of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Lightning-Arrester for Electric-Light Circuits, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side sectional elevation of my improved lightning-arrester. Fig. 2 is a detail view of one of the carbon-holders, and Fig. 3 is a diagrammatic view showing the circuits.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to construct a lightning-arrester for dynamo-circuits which will convey the charge to the ground, thus preventing it from reaching the dynamo; also, to extinguish any arc that might be formed by the passage of the lightning.

My invention consists in a helix provided with a mercury-switch at the bottom, and furnished with a movable core or armature for displacing the mercury.

It also consists in the combination, with the helix and the circuits, of a series of carbon blocks arranged in a line with narrow air-spaces between them, all as will be hereinafter more fully described.

The helix A is provided with a tubular core B, which projects below the lower end of the helix and is closed at its lower end by the axially-bored plug C, which serves to reduce the retaining capacity of the lower end of the tubular core B. In the tube is placed an armature D, formed of a bundle of iron wires having spiral wrappings *a*, the bundle being inclosed at its lower end in an insulating-tube *b* and furnished with collars *c*, which loosely fit the tubular core B. In diametrically-opposite sides of the tubular core B are inserted the screws *d d'*, which clamp the ends of the conductors *e e'*, and in the tube *b* is placed a body of mercury E.

The upper end of the helix A is furnished with a cap *f*, which prevents the armature D from being thrown out of the helix, and also excludes dust and moisture. To the base F, which supports the helix A, are attached the carbon-clamps G, G', and G². The construc-

tion of these clamps is shown in Fig. 2. Each clamp consists of an angled plate *g*, provided with a jaw *h*, which extends upwardly parallel with the base-board, a carbon block *i* being held in the jaw by the thumb-screw *j*. A wire *k* extends from the clamp G to the conductor to be protected. The clamp G' is connected with one terminal of the helix A. The remaining terminal is connected with the clamp G², and the said clamp is connected by the wire *e'* with the screw *d'*. The wire *e*, which is connected with the screw *d*, is attached to the clamp *l*, which receives the ground-wire.

One such arrester is to be attached to each line, as shown in Fig. 3. The carbon plates *i i'*, held by the clamps G G' G², are arranged near, but not in contact with, each other, the carbons *i i'* being separated a little more than the carbons *i' i²*.

When the current is working normally, the parts of the arrester remain in the condition shown in Fig. 1; but when either branch of the line is struck by lightning the charge escapes by way of the wire *k* and carbon plates *i i'*. The lightning, leaping from the plate *i* to the plate *i'*, either passes through the clamp G' and helix A to the clamp G², thence through the wire F and through the mercury in the lower part of the core B to the ground-pin, or it may leap the space between the plates *i' i²* and then pass through the wire F, thence to the ground, as before.

If an arc is established between the carbon plates and the dynamo finds a circuit through the arrester and the ground the helix A becomes energized and draws up the armature D, thus allowing the mercury to recede from the screws *d d'*, breaking the ground connection and returning the circuit to its normal condition.

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

1. In a lightning-arrester for dynamo-circuits, the combination, with the plates *i i'* and clamps G G' G², of the helix A, connected to the plates G' G², the armature D, the core B, provided with the mercury-changer, and the plate G², connected with the ground through-out, substantially as specified.

2. In a lightning-arrester for dynamo-circuits, the combination, with the helix A, pro-

vided with the tubular core B, of the body of mercury E, contained in the lower part of the tubular core, the contact-screws $d d'$, the armature D, provided with the insulated covering b , and the cap f , covering the opening of the helix, substantially as specified.

3. In a lightning-arrester for dynamo-circuits, the combination of the carbon blocks $i i'$, the clamps G G' G², the helix A, connected with the clamps G' G², the tubular core B, reduced in diameter at its lower end and

containing the body of mercury E, the contact-screws $d d'$, entering the tubular core B, the ground-wires $e e'$, connected with the clamp G and screws $d d'$, and the armature D, furnished with the insulating-covering b , and the guiding-collars c , substantially as specified.

EDWARD G. MILLER.

Witnesses:

G. P. SHANE,

J. A. E. HOEVELER.