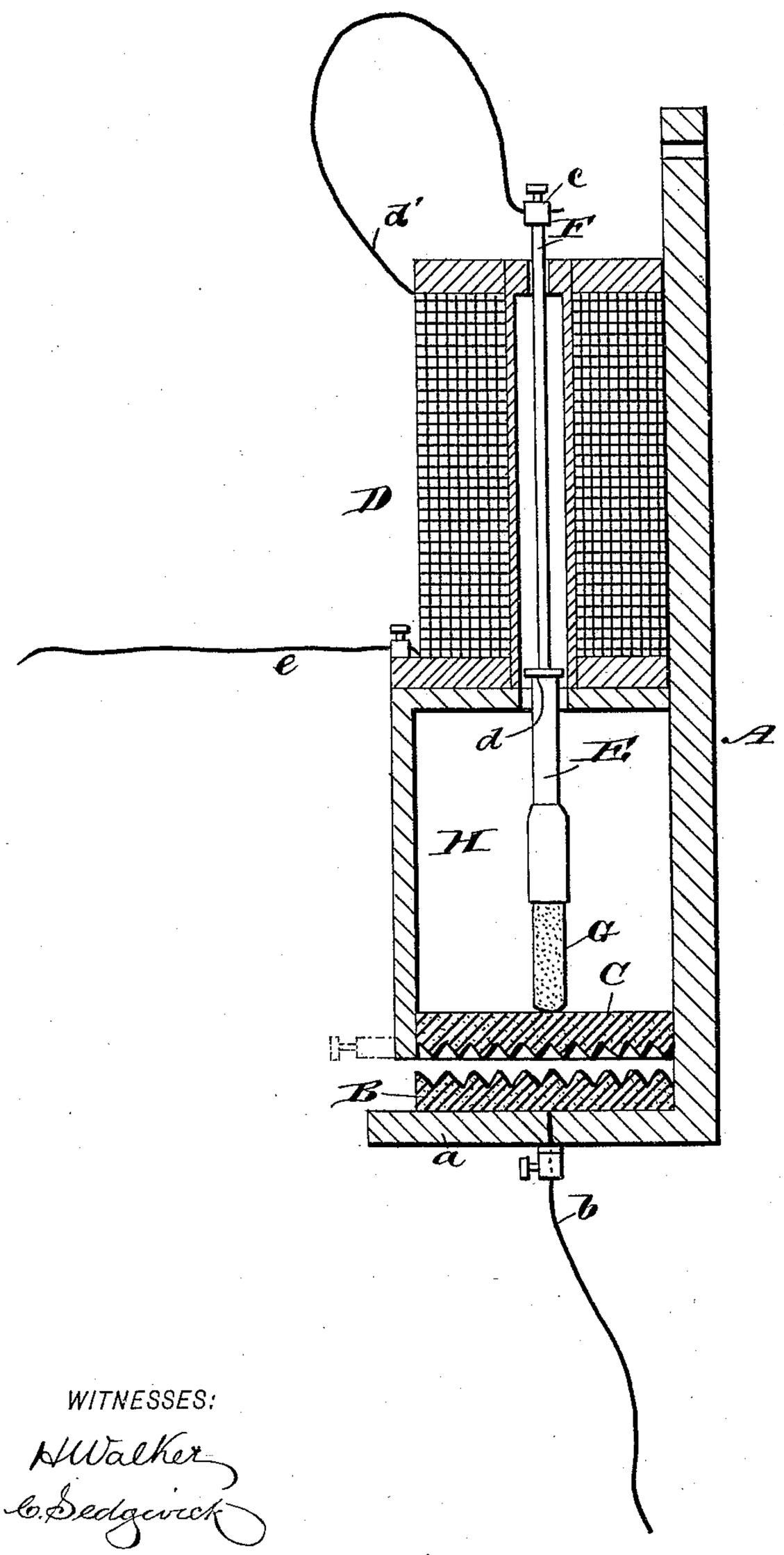
(No Model.)

W. R. GARTON.

LIGHTNING ARRESTER.

No. 488,002. Patented Dec. 13, 1892.



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WILLIAM R. GARTON, OF KEOKUK, IOWA.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 488,002, dated December 13, 1892.

Application filed July 11, 1892. Serial No. 439,561. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM RICHARD GARTON, of Keokuk, in the county of Lee and State of Iowa, have invented a new and Improved Lightning-Arrester, of which the following is a specification, reference being had to the annexed drawing, which is a vertical transverse section.

The object of my invention is to construct a lightning-arrester for electric lines, for the protection of all electrical apparatus connected with the lines, and for the protection of the dynamos and lamps upon the lines.

My invention consists in a solenoid provided with an armature arranged to slide in the solenoid, provided at one end with a guide-rod which receives a flexible conductor and furnished at the opposite end with a carbon rod, and in the combination, with the said solenoid and carbon-carrying armature, of a pair of serrated plates arranged with their faces near each other, but not in contact, one of the plates being connected with the ground, the other being normally in contact with the carbon carried by the armature.

It also consists in the combination, with the carbon carried by the armature and the carbon lightning-arrester plate, of a closed chamber which is nearly air-tight, inclosing the upper surface of the plate, and the carbon carried by the armature, all as will be hereinafter more fully described.

To the back board A is attached a shelf *a* at right angles, which supports the lower serrated carbon plate B, the said plate being connected by the wire *b* with the ground. Above the plate B is supported another carbon plate C, with its serrated surface opposite and near the serrated surface of the plate B, but electrically insulated therefrom. Above the plate C is placed a solenoid D, which is rigidly connected to the back board A.

To the solenoid D is fitted an armature E, provided at its upper end with a guide-rod F, terminating in a binding-post *c*. The upper end of the armature E is provided with a flange *d*, which fits the bore of the solenoid D practically air-tight, and the upper end of the bore of the solenoid is contracted to form a guide for the rod F. The lower end of the armature E is enlarged in diameter and bored longitudinally to receive the carbon rod G and the upper end of the enlarged portion of the armature is beveled to facilitate its entrance into the bore of the solenoid.

The upper portion of the carbon plate C, the lower end of the armature E, and the carbon rod G are inclosed in a chamber H, which is nearly air-tight. The binding-post *c* is connected with one terminal of the solenoid, D by the flexible cord *d'*, the remaining terminal of the said solenoid being connected with the line-wire by the wire *e*.

When the lightning strikes the line with which the instrument is connected, the charge passes through the winding of the solenoid, through the flexible cord *d'*, guide-rod F, armature E, carbon rod G, carbon plate C, through the air-space between the plates C B to the ground through the ground-wire *b*. During the passage of the lightning-charge an arc is established between the plates C B, and after the energizing of the solenoid an arc is formed between the carbon rod G and plate C; but the solenoid D being energized the armature E is drawn up into the solenoid, thereby removing the carbon rod G from the carbon plate C, elongating the arc existing between the rod and plate until the current is weakened to such an extent as to cause the arc to become extinguished.

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

1. In a lightning-arrester for electric lines, the combination of a pair of serrated plates arranged parallel with each other, but electrically insulated from each other, a solenoid, arranged above the upper plate, an armature inserted in the solenoid and connected with one terminal of the solenoid, a carbon rod carried by the armature and arranged to contact with the upper plate, and the ground and line connections, substantially as specified.

2. In a lightning-arrester for electric lines, the combination of the serrated plates B C, the air-tight chamber H, the solenoid D, armature E, provided with the guide-rod F, the carbon rod G, carried by the armature, and the electrical connections, substantially as specified.

WILLIAM R. GARTON.

Witnesses:
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