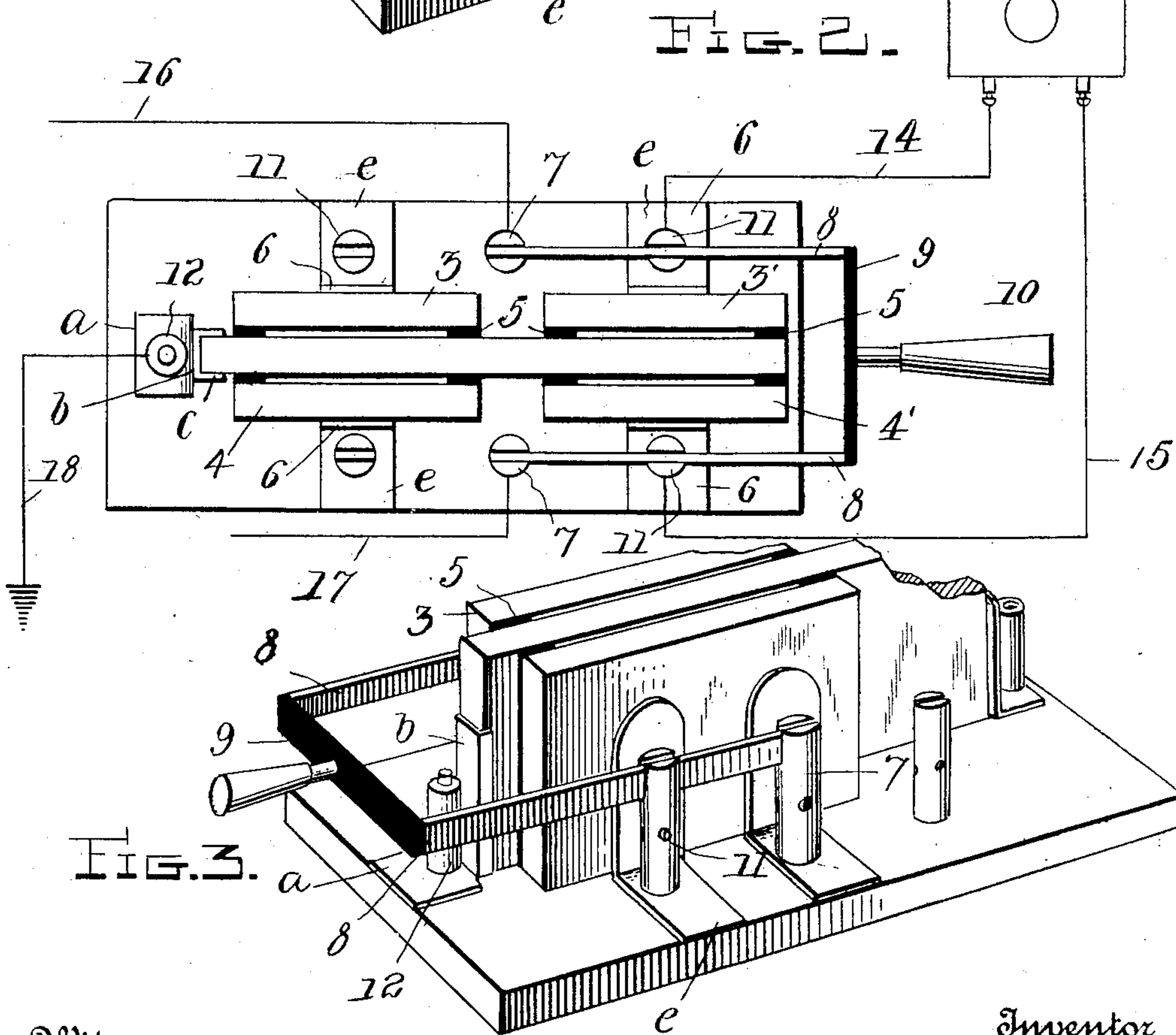
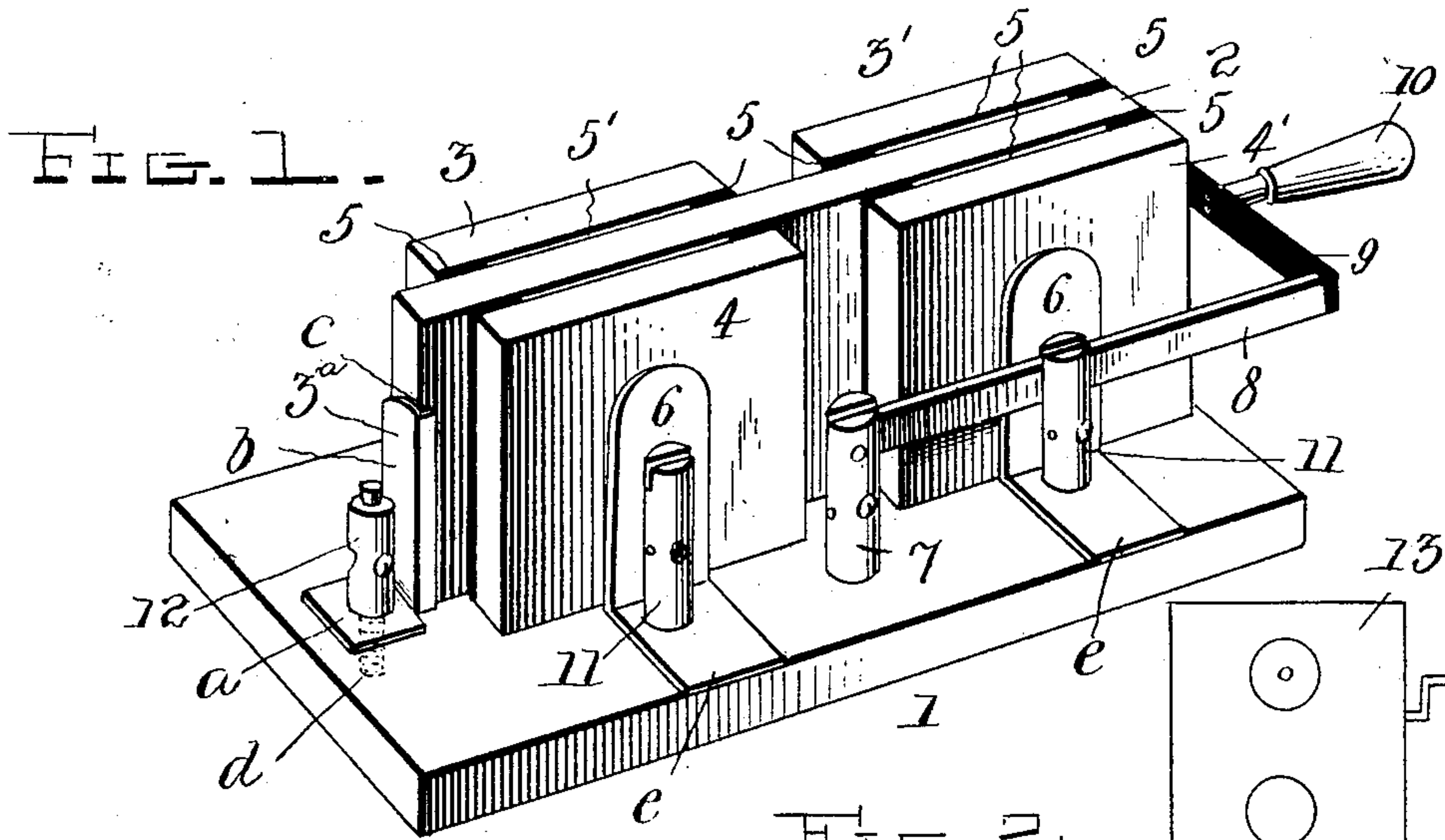


No. 860,157.

PATENTED JULY 16, 1907.

W. D. SHIRK.
LIGHTNING ARRESTING SWITCH.
APPLICATION FILED FEB. 28, 1906.



Witnesses
for A. Schell.
[Signature]

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UNITED STATES PATENT OFFICE.

WASHINGTON D. SHIRK, OF FAIRFIELD, IOWA.

LIGHTNING-ARRESTING SWITCH.

No. 860,157.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed February 28, 1906. Serial No. 303,413.

To all whom it may concern:

Be it known that I, WASHINGTON D. SHIRK, a citizen of the United States of America, residing at Fairfield, in the county of Jefferson and State of Iowa, have invented certain new and useful Improvements in Lightning-Arresting Switches, of which the following is a specification.

This invention relates to new and useful improvements in lightning arresters and it is the primary object of this invention to provide a novel device wherein any excessive current will be grounded.

It is also an object of this invention to provide a novel device of this character used in combination with a switch, wherein an arresting means is provided when the switch is in service and when the switch is out of service.

A further object of this invention is to produce a novel device of this kind providing for uninterrupted operation of the line circuit, though the carbons disintegrate.

It is a still further object of this invention to use in a novel device of this character carbons having relatively large surfaces to afford a free escape of excessive currents, and at the same time minimize the possibility of any injury being done.

It is also an object of this invention to provide a novel device of this character that will not only act as an arrester, but fully answer all the purposes of a switch.

It is also especially the object of this invention by the use of the switch to cut out the instrument entirely on the approach of an electric storm.

Finally an object of this invention is to produce a device of the character noted, which will possess advantages in points of simplicity, utility, efficiency and durability, proving at the same time comparatively inexpensive to produce and maintain.

With the foregoing and other objects in view the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this specification wherein like characters denote corresponding parts in the several views, in which—

Figure 1, is a view in perspective of the invention. Fig. 2, is a top plan view thereof, showing a diagrammatic view of the wires. Fig. 3, is a view in perspective of a slightly modified form of the invention.

In these drawings 1, indicates a base of porcelain or other non-conductive material which may be of any desired shape, but it is preferably rectangular as illustrated. Arranged centrally of the base is a rectangularly shaped carbon strip 2, which extends nearly the entire length of the base, but terminates a slight distance from the ends of the base. Bearing against the ends of the

carbon 2, are angular clips 3^a, of any suitable conductive material, said clips being secured to the base 1, thereby holding the carbon 2, in its position. These clips may be of any desired construction, but as shown, they comprise a foot *a*, and an upright *b*, said upright being provided with flanges *c*, which contact with the sides of the carbon and frictionally hold the same. These clips are made of one piece of material, and a securing means *d*, passes through the base *a*, to hold the clip to the base 1.

At each side of the carbon 2, and near the opposite ends thereof are smaller carbons 3 and 3', and 4 and 4', which are the same height as the carbon 2, and approximately square, although it may be stated that this form is not essential to the invention, it being but necessary that these carbons be of less length than the central carbon. Interposed between the carbons 3 and 3', and 4 and 4', and the central carbon 2, are insulating strips 5, of mica or other such material. These strips are so arranged as to allow an air gap 5', between the central carbon and the smaller carbons, which gap will be broken down by the high potential of the lightning discharge.

Against the outer surface of each of the smaller carbons, bears a clip 6, of a conductive material. This clip is angular in form and has its foot *e*, secured to the base 1. Between the clips 6, on both sides of the carbon 2, and approximately centrally of the base 1, are posts 7, which have their upper or free ends bifurcated. Between the bifurcations of the posts are pivoted the ends of the blades or knives 8, of conductive material, which blades are of such length as to extend beyond the ends of the carbon 2. The opposite ends of the knives are connected by a cross non-conductive strip 9, provided with an operating handle 10. The posts 7, are of conducting material.

Mounted on the foot *e*, of each of the clips 6, is a post 11, of conductive material. These posts have their free or upper ends bifurcated for the reception of the knives or blades 8. Mounted on the foot *a*, of one of the clips 3, is a post 12, which is also of conductive material.

Between the instrument 13, which may be a phone or other device and two of the posts 11, are the wires 14, 15. Secured to the posts 7, are the line wires 16, 17, and held by the post 12, is a ground wire 18.

When the switch is in the position shown in Fig. 1, the instrument 13, is in communication with the line wires and the high potential of the lightning discharge will pass through the posts 11, clips 6, carbons 3' and 4', jump the spaces 5', to the carbon 2, and pass there-through, through the slip 3, to the post 12, and to the ground by the wire 18.

In case of an approaching storm, the blades 8, are thrown into engagement with the clips 6, at the opposite end, thereby cutting out the instrument 13, and

excessive current will pass through the clips 6, as before described, through the carbons 3 and 4, jump the air gaps 5', to the carbon 2, and pass as before, out by the ground wire 18. The high potential of the lightning discharge being such as to disintegrate any one of the carbons, no trouble is made with the circuit of the instrument for as soon as the switch is thrown back to its normal position, the circuit will be restored.

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

1. In combination with a base, a central carbon carried thereby, carbons on each side of the central carbon and spaced therefrom, clips carried by the base engaging the carbons and holding them in position, and blades pivotally connected to the base, and electrically connected with certain of the clips.

2. In combination, a base, a central carbon, a ground wire in communication therewith, carbons on each side of the central carbon and spaced therefrom, a switch carried by the base, line wires connected to the switch, and means whereby high potential of the lightning discharge will pass from the switch through the carbons to the ground wire.

3. In combination with a base, a central carbon thereon, a clip carried by the base and bearing against the end of the carbon, said clip being provided with flanges engaging the sides of the carbon, carbons on each side of the central carbon and spaced therefrom, clips for holding the second named carbons in position, and blades pivotally connected to the base engaging certain of the clips.

4. In combination with a base, a central carbon carried thereby, an angular clip bearing against the end of the carbon, the foot of said clip being secured to the base, carbons on each side of the central carbon and spaced therefrom, angular clips engaging the second named carbons, the feet of the clips being secured to the base, posts carried by the feet of all the clips, and blades pivotally connected to the base engaging certain of the posts.

5. In combination with a base, a central carbon carried thereby, carbons on each side of the central carbon, near each end thereof, said second named carbons being spaced from the central carbons, clips carried by the base engaging the carbons and holding them in position, and blades pivotally connected to the base engaging certain of the clips.

6. In a device of the character described, a suitable base, posts mounted thereon, switch blades pivotally connected thereto, conductors connected to the said posts, a carbon plate extending longitudinally of the base with its edge resting on said base, conducting plates on each side of the first mentioned plate, the said conducting plates being insulated from the first mentioned plate near their ends with an air gap between the side plates and the main plate, switch contacts on the base, conductors therefrom, clips electrically connected with the said contacts said clips being in contact with one set of conductor plates, a second series of switch contacts electrically connected to another set of conductor plates, and a grounding conductor connected to the first named plate.

7. In a lightning arresting switch, a suitable base, a main conducting plate, a ground conductor connected to said plate, conductor plates arranged in pairs near each end of the main conducting plate, insulation interposed between the second named plates and the main conducting plate whereby air gaps are formed between the said plates, switch blades, means for pivotally connecting the switch blades to the base, conductors electrically connected to the ends of the blades, contact posts for the blades, means for electrically connecting the said contact posts with a pair of contacting plates at one end of the base, conductors connected to the said contacting posts, a suitable instrument in circuit therewith, contacting posts electrically connected to the pair of conductor plates at the opposite end of the base and adapted to engage the switch blades.

8. In a lightning arresting switch, a suitable base, a conducting plate supported thereon, means for grounding the current from the said plate, conducting plates insulated from the first mentioned plates at their ends with intermediate air gaps which are traversed by excess current, suitable conductors in contact with said conductor plates, a switch adapted to make and break a circuit through the conductors and suitable conductor wires connected to the switch.

9. In combination, a base, a central carbon, a ground wire in communication therewith, carbons on each side of the central carbon and spaced therefrom, a switch carried by the base and straddling the carbons and line wires connected to the switch.

In testimony whereof I affix my signature in the presence of two witnesses this 26th day of Feb., 1906.

WASHINGTON D. SHIRK.

Witnesses:

E. F. SIMMONS,

VINNIE A. VERNON.