

R. H. MANSON.
LIGHTNING ARRESTER.
APPLICATION FILED NOV. 27, 1916.

1,236,584.

Patented Aug. 14, 1917.

FIG 1

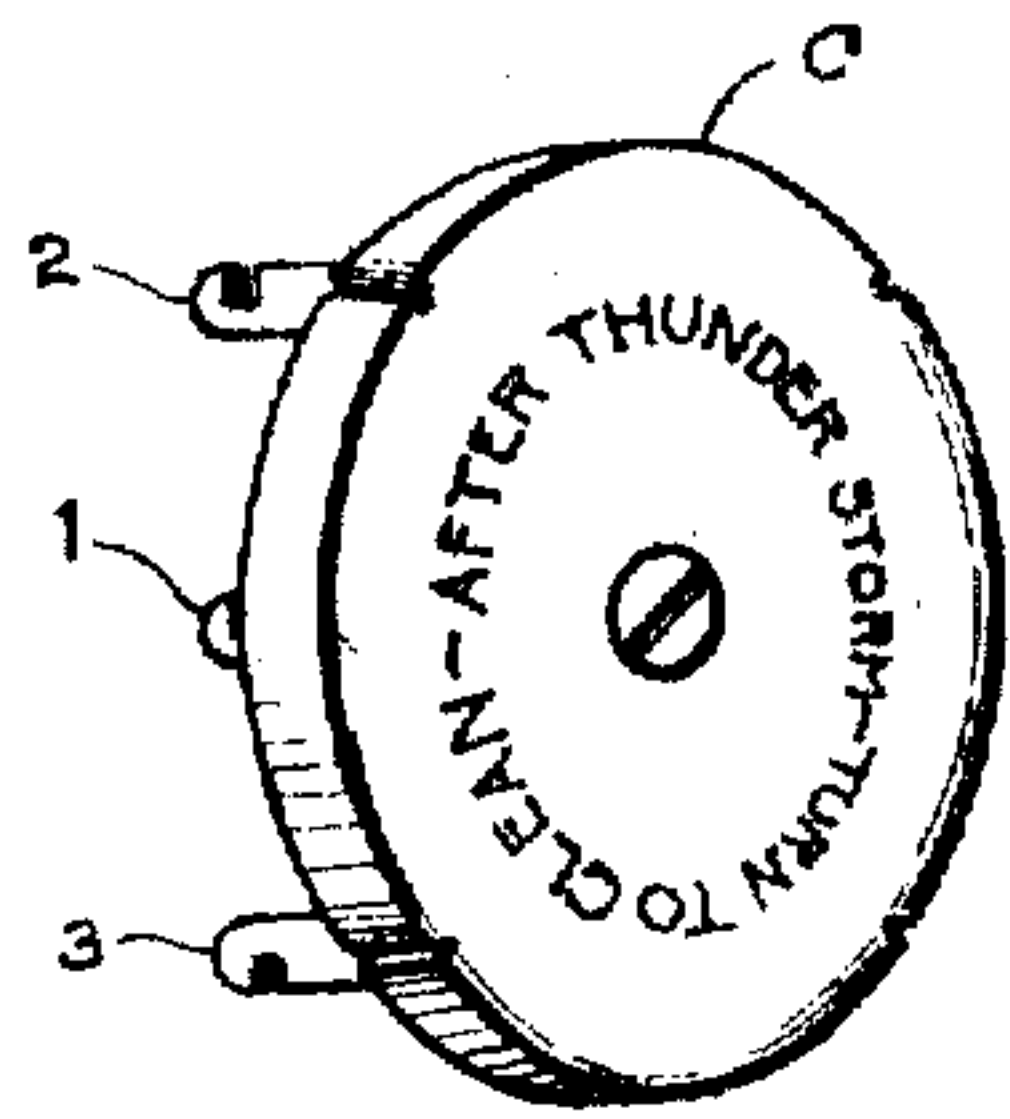


FIG 2

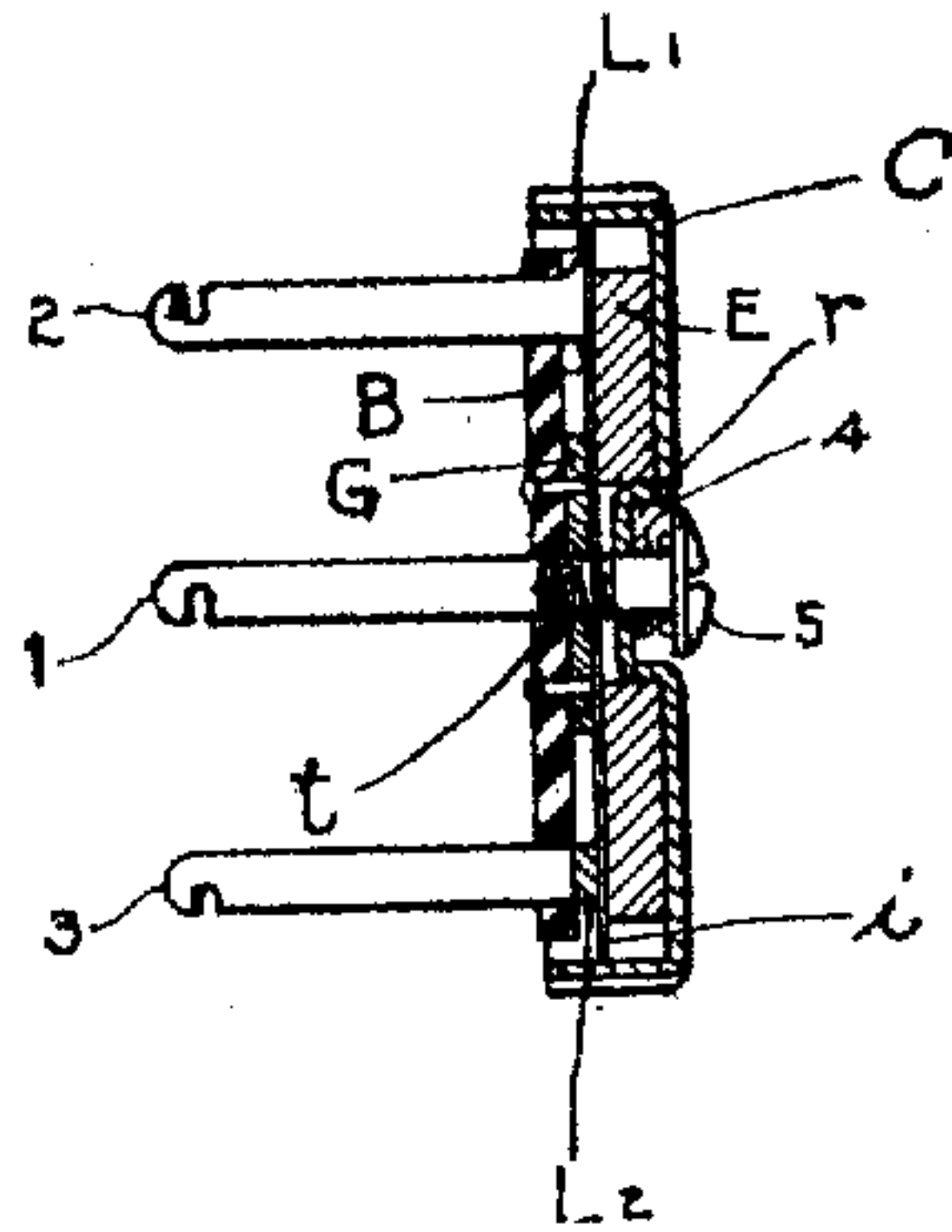
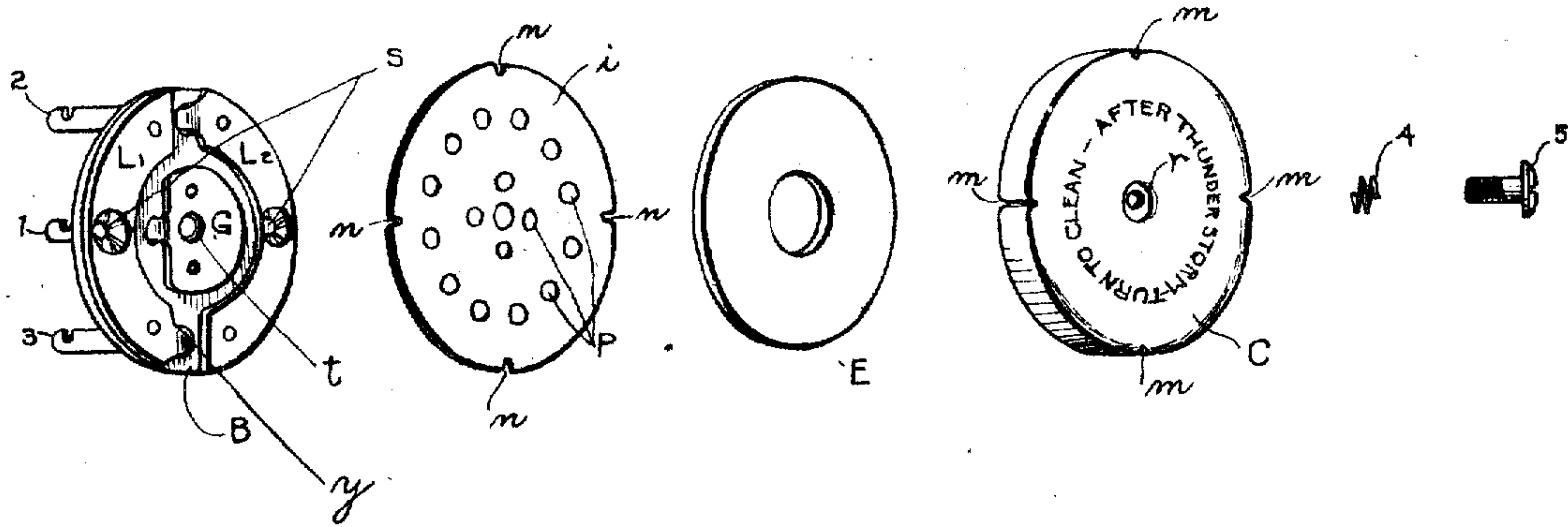


FIG 3



Inventor
Ray H. Manson
By Frank M. Slough
His Atty

UNITED STATES PATENT OFFICE.

RAY H. MANSON, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

LIGHTNING-ARRESTER.

1,236,584.

Specification of Letters Patent.

Patented Aug. 14, 1917.

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To all whom it may concern:

Be it known that I, RAY H. MANSON, a citizen of the United States, and a resident of Rochester, in the county of Monroe and State of New York, have invented new and useful Improvements in Lightning-Arresters, of which the following is a full, clear, and exact description.

This invention relates to that type of lightning arresters used more particularly in connection with telephones in which the device must be simple and compact and which may be easily attached to a telephone and when so attached must occupy very little space.

Among the objects of my invention is the provision of such an instrument which is adapted to be easily operated to remove any particles of carbon dust or the like which may accumulate between the contacts of the arrester without disassembling the same; furthermore, to provide some easily operated means to clean the carbon particles from the openings in the dielectric where they are harmful, and to accomplish this in a compact device having rigid permanent connections between the terminal wires and the terminal plates of the device without necessitating the use of contacts in the circuits thereof. Some contacts have often become dirty and form an imperfect electrical connection and it is one of the objects of my invention to provide against this.

Other objects of my invention and the invention itself will be made clear by reference to the accompanying drawings forming a part of this specification, in which are used similar characters of reference indicating corresponding parts in all the views, and in which—

Figure 1 is a perspective view of an embodiment of my invention. Fig. 2 is a cross-sectional view of the embodiment illustrated in Fig. 1 and Fig. 3 shows in perspective the various elements relatively placed as they are in the assembled device as illustrated in Figs. 1 and 2 but are shown in Fig. 3 disassembled and separated for the sake of clearness.

Referring to the figures at "B" I show a back plate which is made of insulating material, such as hard rubber, fiber or any other approved insulating material and upon which is mounted the terminal plates G, L₁ and L₂, these comprising the ground plate, and the two line plates, respectively. Each of these terminal plates is provided with terminals 1, 2 and 3 whereby connection can be made from the conducting wires leading to the ground and to the two sides of the telephone line to which the telephone equipment is connected.

The dielectric disk *i* is adapted to be placed over the terminal plates G, L₁, and L₂. This insulating disk *i* has preferably a plurality of openings therein, *p*. Notches *n* are provided preferably at the periphery of this disk for a purpose later to be described. An electrode annular disk E is adapted to be placed over the insulating disk *i*. The function of the small openings *p* is to provide a conducting air-space for lightning or abnormal electrical discharges between the line plates L₁ and L₂ to the ground plate G. The dielectric disk *i*, by its thickness, determines the space between the electrode annular disk E and the terminal plates.

After the dielectric disk *i* and the electrode disk E, which preferably is made of carbon, is in place, the cap C, preferably made of enameled metal is placed over the assembled operating parts just described and is so placed thereon that the notches *m* of the cap C engage the notches *n* of the insulating disk *i*. The parts are then secured together by placing the spiral spring 4 in the recess *r* of the cap C and by projecting the machine screw 5 through the said spring, the cap C, the annular electrode disk E, and the dielectric disk *i*, passing through the central perforation in each of these parts and yieldingly secures these together by means of its threaded portion engaging the threads *t* of the ground plate G.

The cap C incloses the parts and protects them, and provides on its front surface a space which is very convenient for the placing of an inscription thereon, such as in-

structions to the telephone user advising him to rotate the cap after a thunder storm.

The arrester in operation is connected, by means of line terminals 2 and 3, to the line wires of a telephone or telegraph line, the instruments of which it is adapted to protect by offering a convenient path for the lightning discharge to ground in the well-known manner; the discharge passing through the openings p will pass from one or both of the line terminal plates L_1 and L_2 to the ground plate G . It has been found in practice that such a discharge will disintegrate the surface of the carbon disk E leaving carbon particles between the plates and the electrode disk.

By means of my improved construction I am enabled to rotate the dielectric disk thus carrying these particles to the open space between the line terminal plates such as shown at y where they will drop out of the openings and leave the arrester by means of the open space or channel y . I thus provide means to destroy any short-circuit which may have been formed between the line wires and the ground wire.

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

1. The combination in a lightning arrester, of a line terminal plate, a ground terminal plate, a carbon electrode disk, perforated insulating disk to separate said electrode disk from said plates, a rotatable member directly engaging said insulating disk, to rotatably drive the said insulating disk.

2. The combination in a lightning arrester, of a line terminal plate, a ground terminal plate, a carbon electrode disk, a dust carrying insulating disk to separate said electrode disk from said plates, said insulating disk being notched, an egress channel, and a rotatable inclosing cap member having peripheral indentations coöperating with the said notches to rotate said insulating disk across said egress channel.

3. In a lightning arrester a plurality of line plates, a ground plate, arranged in the same plane as said line plates, an electrode plate superposed over said first named plates, an insulating disk separating said electrode plate from said first named plates, an egress channel between the first named plates, and manually operated means to engage and rotate said insulating member to rotate the said insulating member before said egress channel.

4. In a lightning arrester a plurality of line plates, a ground plate, arranged in the same plane as said line plates, an electrode plate superposed over said first named plates, an insulating disk separating said electrode plate from said first named plates,

an egress channel between the first named plates, a cap for said plates and insulating member, said cap being rotatable and adapted to engage said insulating member at the periphery thereof to rotate the same before said egress channel.

5. In a lightning arrester, the combination of a pair of line plates, a ground plate arranged in the same plane as said line plates, an electrode plate superposed over said first named plates, an insulating disk separating said electrode plate from said first named plates, an egress channel between the first named plates, a cap for said plates and insulating member, said cap having a central depression, compressing means including a coiled spring, said compressing means being seated in said central depression of the said cap, said compressing means being adapted to hold the parts yieldingly together, said cap being rotatable and adapted to engage said insulating member at the periphery thereof to rotate the same before the said egress channel.

6. In a lightning arrester, the combination of a line terminal plate, a ground terminal plate, an egress channel between the said plates, a carbon electrode disk, a dust carrying insulating disk to separate said electrode disk from said plates, a rotatable cap member to inclose the said plates and disks, said rotatable cap member engaging said insulating disk at its periphery to rotate the said insulating disk.

7. In a lightning arrester, the combination of a line terminal plate, a ground terminal plate, an egress channel between the said plates, a carbon electrode disk, an insulating disk containing dust carrying openings, said insulating disk being placed between the carbon disk and said plates, said insulating disk having a notched edge, and a cap member having indentations on its outer inclosing edge to engage said notches and insulating disk to rotate the dust carrying openings of said insulating disk to convey particles of carbon dust from said carbon electrode disk to said egress channel.

8. In a lightning arrester, the combination of a pair of line electrode plates and a ground electrode plate arranged in the same plane, an insulating disk to cover said line plates and ground plate, a carbon plate electrically insulated from said line plates and said ground plate placed over the said insulating disk, the said insulating disk having a notched edge, and rotatable inclosing means for said arrester having coöperating extension on its edge to engage the said notches of said insulating disk whereby the said insulating disk is rotated by the said cap.

9. In a lightning arrester, the combination of line and ground electrode plates ar-

ranged in the same plane, a carbon electrode plate for said electrode in a different plane, a perforated insulating disk to insulate said first named plate from said electrode plates, 5 a cap for said plates and disk adapted to inclose the same, spring means to yieldingly hold the said cap, the said carbon disk, the

said insulating disk and the said plates together, said spring means being located in a central depression of said cap.

In witness whereof, I hereunto subscribe my name this 25th day of November, A. D. 1916.

RAY H. MANSON.