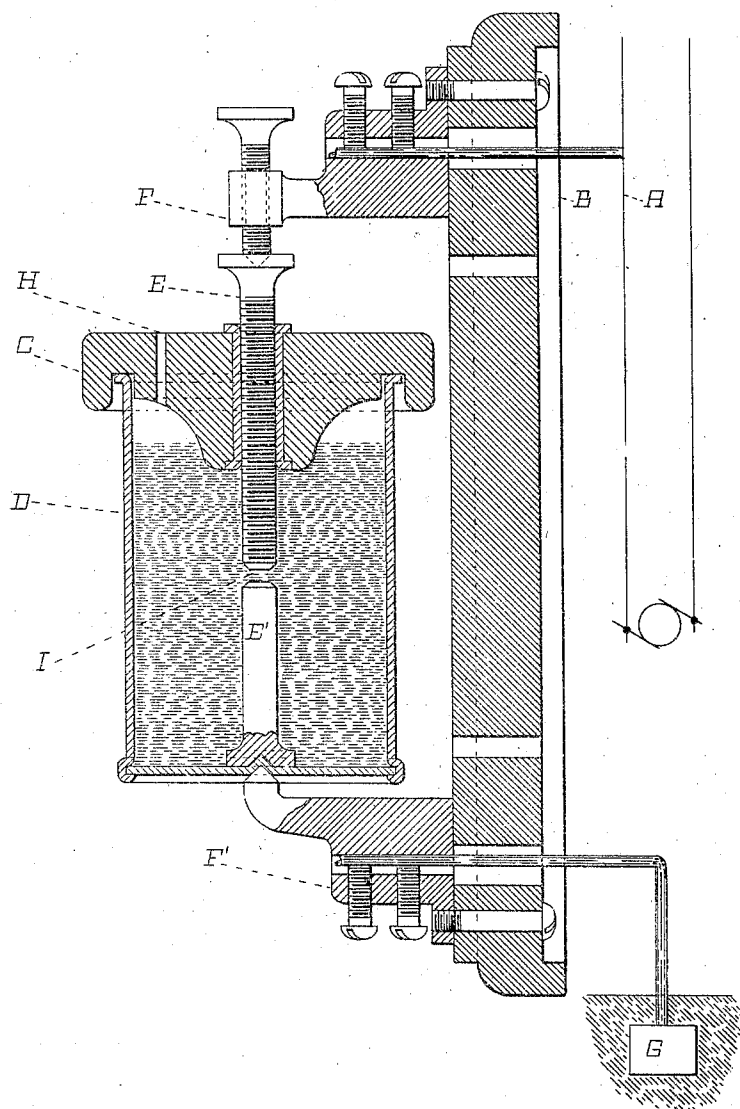


(No Model.)

M. DICKERSON.
LIGHTNING ARRESTER.

No. 474,469

Patented May 10, 1892.



Witnesses

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UNITED STATES PATENT OFFICE.

MALCOLM DICKERSON, OF FORT WAYNE, INDIANA.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 474,469, dated May 10, 1892.

Application filed March 14, 1892. Serial No. 424,845. (No model.)

To all whom it may concern:

Be it known that I, MALCOLM DICKERSON, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Lightning-Arresters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to devices for protecting electric circuits from injury when currents of an extraordinary potential—such as a lightning-discharge—exists upon them. It is usual to provide a path for currents of such high potentials to ground, including in these paths a discharging device known as a “lightning-arrester,” through which the high-potential currents can pass, but which act as a barrier to the escape of currents of lower potential. When such devices are used upon electric-supply circuits, the escape of a lightning-discharge, for example, will establish an arc at the discharging-points or electrodes, and this arc, serving as a conductor, will afford a path of low resistance for the supply-currents to earth, and thus short-circuit the line. It is the object of my invention to avoid these short circuits by preventing the formation or continuance of an arc between the electrodes of the discharging device.

The invention consists in interposing between the discharge-points or electrodes a non-conducting liquid. If the line should at any time reach a dangerous potential—as, for example, when struck by lightning—the high-tension current will escape to ground by disruptive discharge across the electrodes, and the insulating-liquid will immediately close in and prevent the formation of an arc, so that the device will immediately be restored to its normal condition ready to act again and will constitute a barrier against the escape of currents which the circuit is designed to carry.

The invention also comprises other features of novelty, which will be hereinafter described in the specification, and definitely indicated in the appended claims.

In the accompanying drawing, which illustrates the invention, is illustrated a sectional view of a device embodying my invention.

B represents an insulating-base, which may be made of porcelain, glass, or any othersuitable material, upon which are mounted binding-posts F F', by which connection may be made between the earth and the supply-circuit A. Electrodes E E' are mounted between the binding-posts, one or both of which may be made adjustable. Surrounding the electrodes is a reservoir D, which may be made of any suitable material, provided with an insulating-cap C. Within the receptacle D is placed an insulating-liquid, such as oil. The cap is perforated, as at H, to permit the escape of any gases which may be formed. The apparatus is adjusted so that when in action a path of escape between the circuit and the earth-plate G will be provided, the electrodes E and E' being adjusted so that their discharge points or surfaces will be out of contact. The distance may be arranged to suit any desired potential and may vary according to the potential of the current normally carried by the circuit A. As thus organized, the electrode E will be in electrical communication with the circuit A and the electrode E' with the earth, or vice versa. If now the line is raised at any time to a potential sufficiently high to cause a disruptive discharge between the electrodes E and E', an escape will be afforded to earth. If no provisions were made to guard against it, this disruptive discharge would establish an arc at I, through which the current or currents on the circuit A would flow to earth and preserve a closed circuit by maintaining their own arc. I guard against such a result by the liquid resistance contained in the receptacle D.

No arc can be preserved by reason of the closing in of the liquid after the disruptive discharge. It will therefore be seen that the apparatus will always be in condition to afford a path to earth for lightning-discharges or other unusually high potentials, but will always prevent a short circuit for the currents circulating upon the line it is designed to protect. But a single number of discharge-points or electrodes are shown in the drawing. It will, however, be understood that the electrodes might be arranged so as to provide a multiplicity of discharge-points without departing from the spirit of the invention.

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

1. A discharging device for lightning or currents of extraordinary potential having separated points, between which is an interposed insulating-liquid, whereby the high-potential current may escape by disruptive discharge and an arc prevented or extinguished by the closing in of the liquid.
2. A discharging device for lightning or currents of extraordinary potential having a space between its discharging points or surfaces filled with oil, for the purpose described.
3. A discharging device for lightning or currents of extraordinary potential having adjustable electrodes or discharging-points, the

space between the discharge-surfaces being filled with oil, for the purpose described.

4. The combination, with an electric-supply circuit, of a discharging device for currents of extraordinary potential having separated electrodes, and a cap or casing surrounding the electrodes at or near the point of separation, said cap containing an insulating-liquid which fills the space between the discharging-surfaces.

In testimony whereof I affix my signature in presence of two witnesses.

MALCOLM DICKERSON.

Witnesses:

CECIL B. SLAGLE,
ROBERT W. SMYTH.