

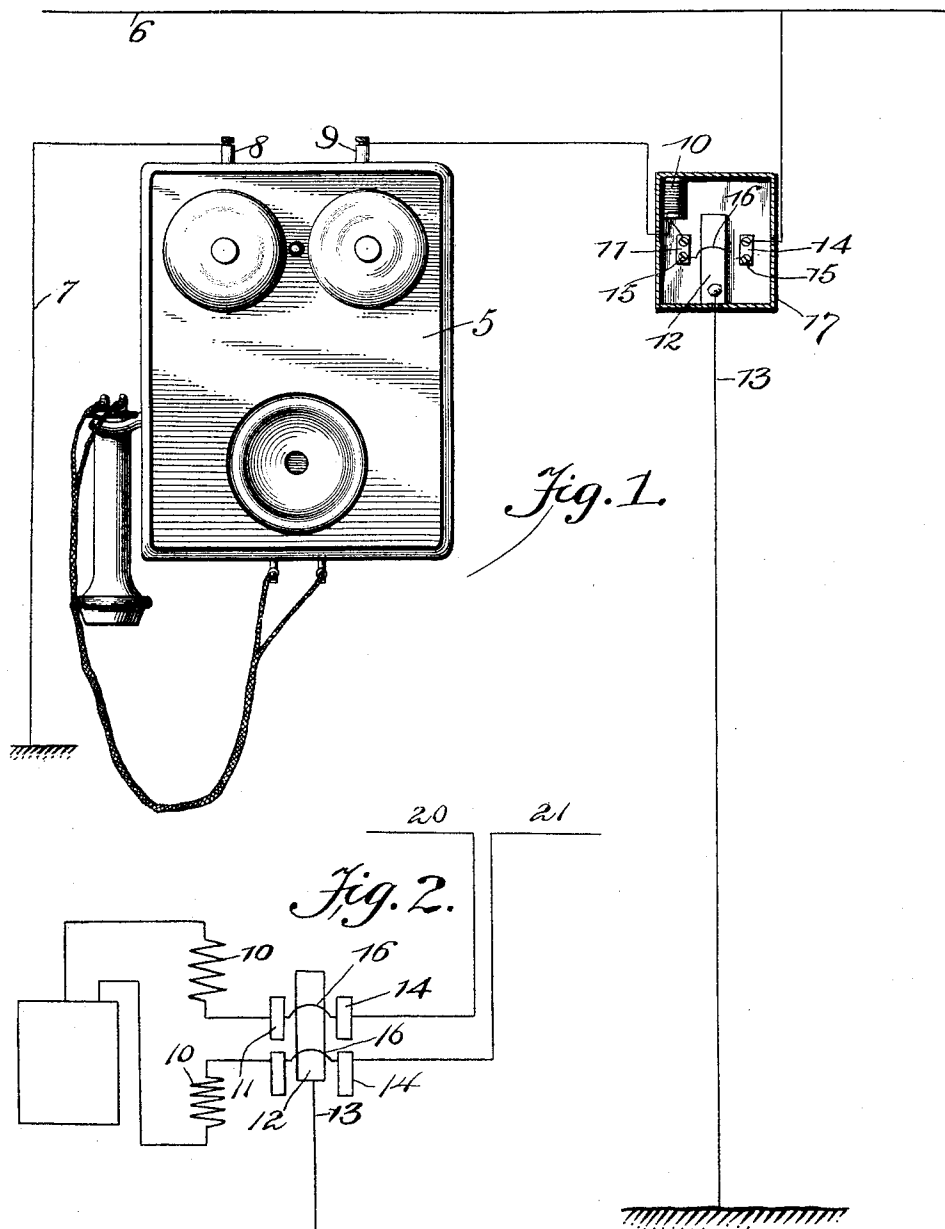
No. 640,744.

Patented Jan. 9, 1900.

C. C. CHINN.
LIGHTNING ARRESTER.

(Application filed July 21, 1899.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES C. CHINN, OF CANTON, MISSOURI, ASSIGNOR OF ONE-HALF TO
HENRY C. CHINN, OF SAME PLACE.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 640,744, dated January 9, 1900.

Application filed July 21, 1899. Serial No. 724,671. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. CHINN, a citizen of the United States, residing at Canton, in the county of Lewis and State of Missouri, have invented a new and useful Lightning-Arrester, of which the following is a specification.

This invention relates to lightning-arresters; and it has for its object to provide a cheap and efficient construction which may be employed in connection with a telephone or other instrument to be protected against excessive charges of electricity whether said charges be due to lightning, to crossed wires, or from any other cause, the structure comprising a ground-plate and discharge-plates adjacent thereto, the arc between a discharge-plate and a ground-plate being assisted initially by means of a fuse connecting the discharge-plates and lying in close proximity to the ground-plate.

In the drawings forming a portion of this specification, and in which similar numerals of reference designate corresponding parts in both views, Figure 1 shows a lightning-arrester in series with a telephone instrument to be protected, said instrument being in a bridged line. Fig. 2 is a diagram showing a modification of a lightning-arrester connected to protect an instrument in a complete metallic circuit.

Referring now to the drawings, 5 represents a telephone instrument of any desired construction, which in Fig. 1 of the drawings is included in a bridge-circuit comprising a line-wire 6 and from which instrument leads the usual ground-wire 7. The wires 6 and 7 are connected with the usual binding-posts 8 and 9 of the telephone instrument, and connected with post 9 is one terminal of a helix 10, forming an element of the lightning-arrester and the opposite terminal of which is connected with a discharge-plate 11. Adjacent the plate 11 and isolated therefrom is a ground-plate 12, having the usual ground connection 13; also adjacent the plate 12, and preferably on the opposite side thereof from the plate 11, is a second discharge-plate 14, having direct electrical connection with the conductor 6. The plates 11 and 14 are supported by the screws 15, and connected with

them and extending across the ground-plate 12 is a fuse 16 of such dimensions and material as to fuse under the influence of a current having a voltage less than that required to establish an arc between either plate 11 or 14 and the plate 12, the interspace between the fuse and the plate 12 being less than either of the interspaces between plate 12 and plates 11 and 14 to insure the formation of an arc between the fuse and the ground-plate in preference to its formation between a discharge-plate and the ground-plate. To assist in this arcing operation, the solenoid 10 is employed, and thus if the conductor 6 become overcharged the current will pass from said conductor to the plate 14, from which its tendency will be to pass to plate 11 through the fuse 16 and through the solenoid 10 and telephone to the ground connection 7. The counter electromotive force of the solenoid 10 will, however, act to retard the flow of current therethrough, resulting in the sudden raising of the potential of the current in the fuse to a point to insure a discharge therefrom to the plate 12. This sudden rise in potential is assisted in the formation of the arc by the melting of the fuse under the influence of a current in its passage therethrough, the instantaneous arc at the time of melting being deflected to the ground-plate.

In Fig. 2 of the drawings there is shown a construction in which two plates 11 are employed, with each of which is connected one terminal of a solenoid 10, the opposite terminal of each solenoid being connected directly with the telephone instrument 5. Two plates 14 are also employed, which are connected with their respective plates 11 by means of fuses 16, said plates 14 having also direct connection with line-wires 20 and 21, and with which wires the plates and telephone instrument are thus in series. In this construction it will be readily understood that the excessive charge in either line-wire 20 and 21 will be grounded to the common plate 12 from its respective discharge-plate assisted by the fusing of the fuse, as above described.

It will of course be understood that various other modifications of the lightning-arrester may be made and that its specific construction may be altered and that it may be con-

nected with an instrument to be protected in any desired effective manner.

Having thus described the invention, what is claimed is—

5 1. In a lightning-arrester, the combination with a ground-plate, of discharge-plates adjacent thereto and adapted to discharge to the ground-plate, and a fuse connected with the discharge-plates and lying adjacent
10 the ground-plate and adapted to discharge thereto.

2. In a lightning-arrester, the combination with a ground-plate, of discharge-plates adjacent the ground-plate and adapted to discharge thereto, a fusible connection between
15 the discharge-plates and adapted to discharge to the ground-plate, and a resistance in the circuit of the discharge-plates.

3. In a lightning-arrester, the combination
20 with a ground-plate, of a discharge-plate at each side of the ground-plate and separated

therefrom by an interspace and adapted to discharge thereto, a fuse-wire connected with the discharge-plates and separated from the ground-plate by an interspace less than the
25 separation of the ground-plate from the discharge-plate, said fuse-wire being adapted to discharge to the ground-plate, whereby the fusing of the wires will act to assist arcing between a discharge-plate and the ground-plate,
30 a line connection with one of the discharge-plates, and an instrument having intimate connection with the other discharge-plate, and a choking-coil between the instrument and its plate.

35 In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES C. CHINN.

Witnesses:

A. D. RANSOM,
J. W. LILLARD.