

No. 666,545.

Patented Jan. 22, 1901.

W. N. McANGE.
LIGHTNING ARRESTER.
(Application filed Mar. 23, 1900.)

(No Model.)

Fig. 2.

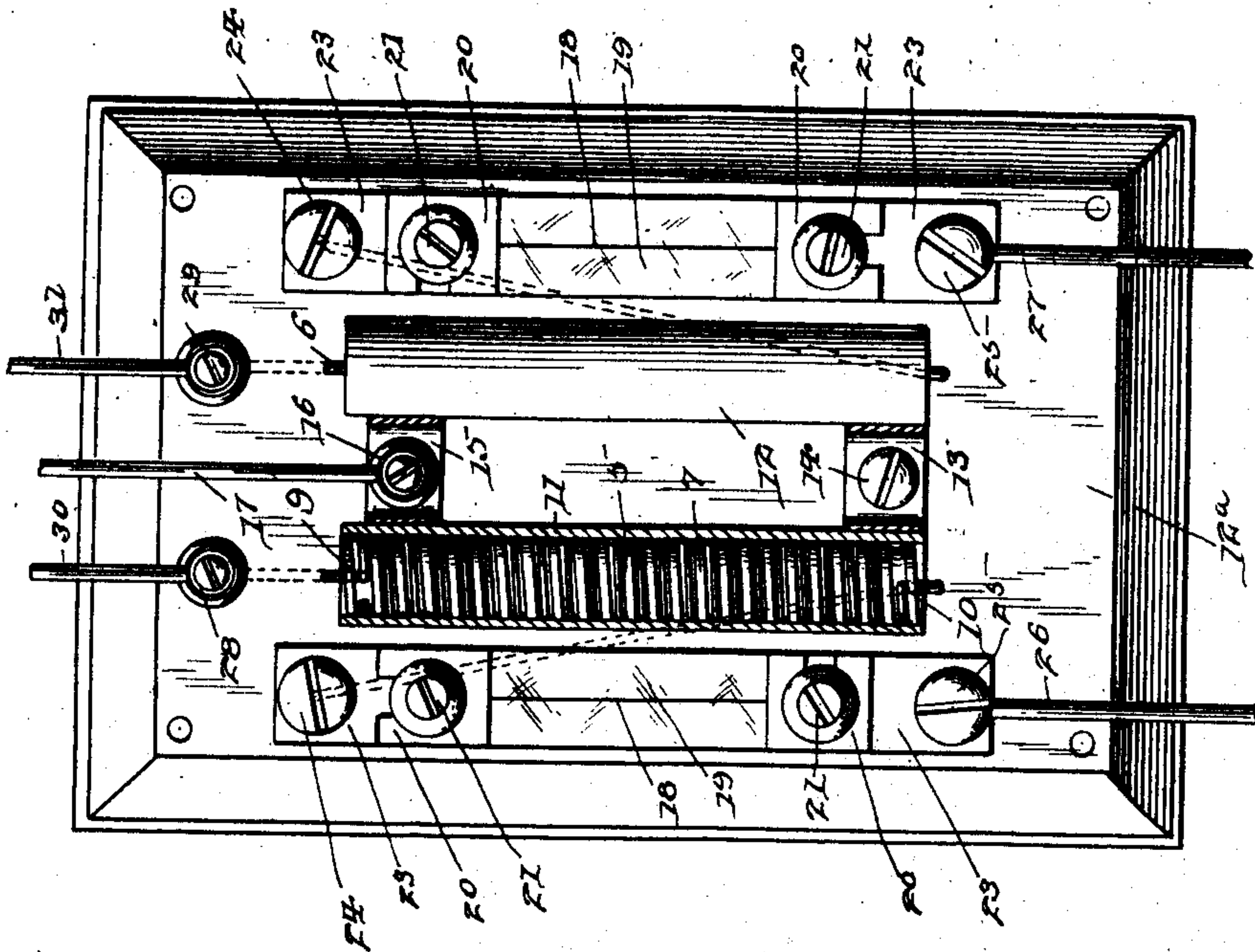
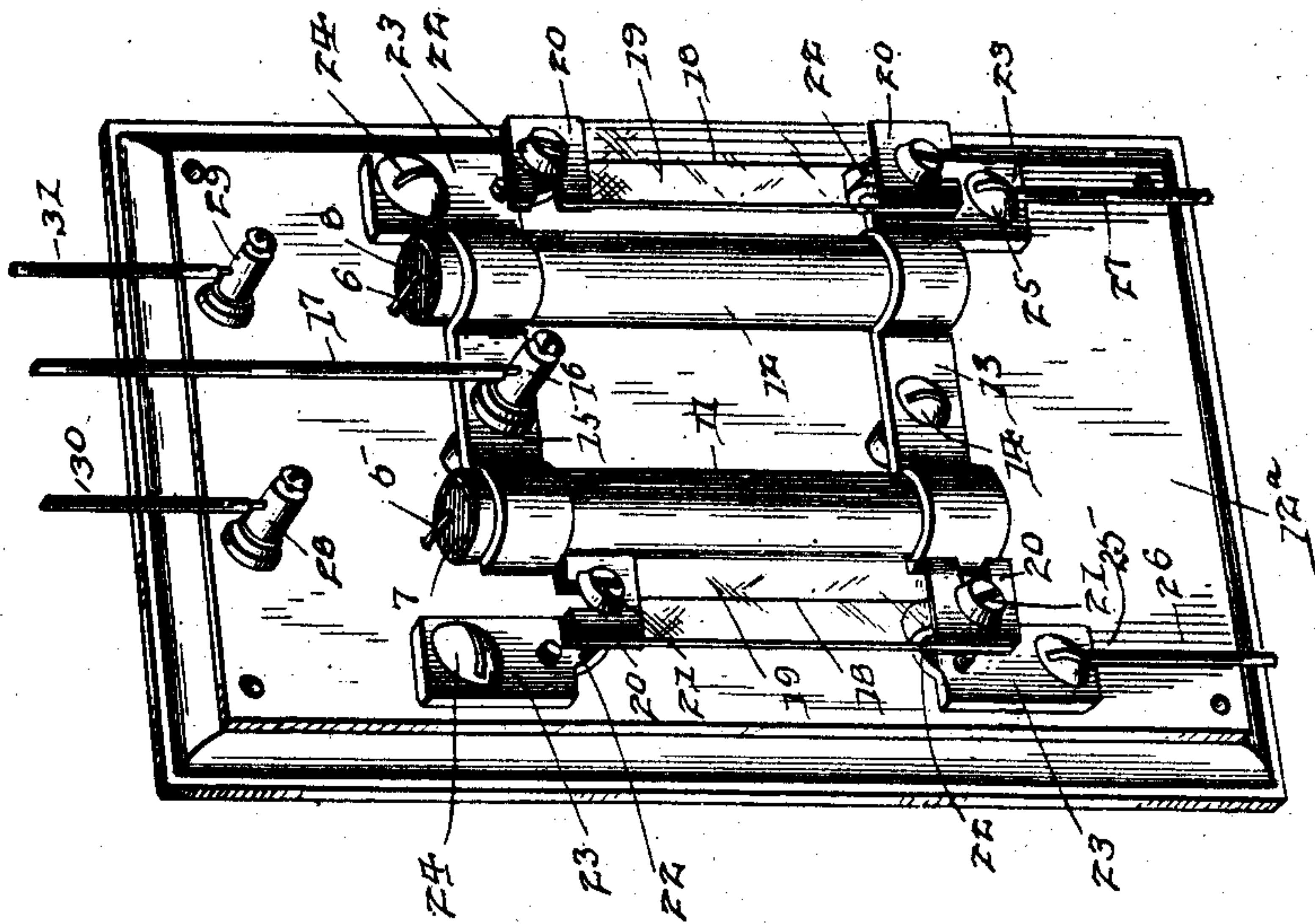


Fig. 1.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM N. MCANGE, OF SUFFOLK, VIRGINIA.

LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 666,545, dated January 22, 1901.

Application filed March 23, 1900. Serial No. 9,955. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM N. MCANGE, a citizen of the United States, residing at Suffolk, in the county of Nansemond and State of Virginia, have invented a new and useful Lightning-Arrester, of which the following is a specification.

This invention relates to lightning-arresters in general, and more particularly to that class employed for protecting electrical circuits and connected machines or instruments from the effects of atmospheric electricity, one object of the invention being to provide a construction in which the excessive charge will be effectively grounded prior to reaching the instrument or other apparatus protected.

A further object of the invention is to provide a construction which will be simple and cheap of manufacture and in which the leap- ing of the charge around the arrester will be prevented.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in both views, Figure 1 is a perspective view showing the complete arrester. Fig. 2 is a plan view with the casing of one of the choking-coils shown in section to illustrate the formation of the coil.

Referring now to the drawings, the present lightning-arrester comprises two parallel choking-coils 5 and 6, of suitable conducting-wire, these coils being similar in every respect and each being wound in a helical groove in the periphery of a cylindrical core 7 and 8, respectively, of vulcanite, wood, or other suitable insulating material, the extremities of each coil being passed inwardly of the core through a radial perforation therein and then outwardly through an axial perforation, as shown at 9 and 10, so that the coils are effectively prevented from untwisting and consequent displacement from their respective cores. The outer surfaces of the coils are sunken slightly below the surfaces of the cores, so as not to contact with tubular metallic casings 11 and 12, which are slipped over the coils and their cores and lie with their inner faces in direct contact with the outer faces of the cores and with sufficient friction to prevent dislodgment of the casings. The casings are thus insulated at points from the coils and are isolated from the coils

at other points by air-spaces, so that currents of normal potential in the coils cannot pass to the casings.

The coils, with their cores and casings, are mounted upon an insulating-base 12^a, of marble, porcelain, or other suitable material, and are held in place thereon by means of clamping-plates 13 and 15, the ends of each of which are arc-shaped to engage the outer faces of the casings, and the plates are of equal length, so that the coils are held parallel mutually. The plate 13 is shown as held to the base 12 by a screw 14, while the plate 15 is held to the base by the stem of a binding-post 16, this post forming a means for connection of a ground-wire 17 with the plate 15 and thence with the casings of the choking-coils.

At the outer side of each of the choking-coils is located a fuse-wire 18, which in each instance is mounted upon the usual mica plate or sheet 19, the terminals of the wires being formed by metallic plates 20, carried by the mica sheet, and these metallic plates 20 are directly engaged by binding-screws 21, which are passed through the usual slots in the plates and into posts 22, mounted upon the base 12. The posts 22 are in the form of fingers, as shown in Fig. 1, which project upwardly from plates 23, which are in turn attached directly to the base 12^a by means of attaching-screws. The attaching-screws 24 at one end of each of the fuse-wires are electrically connected with the farther end of the adjacent choking-coil, as illustrated in dotted lines in Fig. 2 of the drawings, while the attaching-screws 25 at the opposite ends of the fuse-wires have conductors 26 and 27 connected therewith which lead to the instruments or machines to be protected. The ends of the choking-coils adjacent to the attaching-screws 24 are electrically connected with binding-posts 28 and 29, which are in turn connected with the line-wires 30 and 31, as shown. With this construction it will be seen that both line-wires are connected with the terminals of their respective choking-coils and that the current from one line-wire after passing through the corresponding choking-coil passes through the fuse-wire in connection therewith, thence to the instruments or machines to be protected, then through the second fuse, then through the second coil, and

thence to the second line-wire. Therefore should either line become overcharged at any time the outer periphery of each choking-coil will present a succession of discharge-points 5 which, in coöperation with the encircling metallic casing, will act to discharge the excess current to the ground-wire. Furthermore, such current as is not thus discharged will in passing through the fuse-wire burn it out if 10 that current be sufficient to harm the instruments or machines, and such instruments are thus doubly protected.

It will of course be understood that in practice the specific construction and arrangement herein shown may be altered and various modifications may be made; furthermore, that any suitable materials and proportions may be used for the various parts without departing from the spirit of the invention.

20 What is claimed is—

1. A lightning-arrester comprising an insulating-core having a helical groove, a choking-coil wound in the groove of the core and having connection with the line and the instrument to be protected, said coil lying below 25 the surface of the core, and a tubular, metallic protecting-casing fitted to the core and inclosing the coil, said casing being separated from the coil by an interspace and 30 having a ground connection.

2. A lightning-arrester comprising a base, a core having a helical groove, a choking-coil

wound in the groove and lying below the surface of the core, a conductive protecting cylindrical casing for the coil engaging the core 35 and separated from the coil by a continuous interspace, a ground connection with the casing, a fuse-wire in series with the coil, and means for attachment of line and instrument wires with the coil and fuse, respectively. 40

3. A lightning-arrester comprising a base, choking-coils adapted for connection with separate line and instrument wires, a conductive, inclosing casing for each coil and separated therefrom by an interspace, conductive 45 clamping-plates engaged with the casings and with the base, and a ground connection with one of the clamping-plates.

4. A lightning-arrester comprising a base, choking-coils adapted for connection with 50 line and instrument wires, a fuse between each coil and the connected instrument, a protecting conductive casing inclosing each coil and separated therefrom by an interspace, conductive clamping-plates engaged with the 55 casings and held upon the base, and a ground connection with one of the clamping-plates.

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

WILLIAM N. MCANGE.

Witnesses:

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J. C. BRADY.