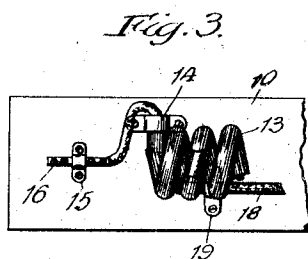
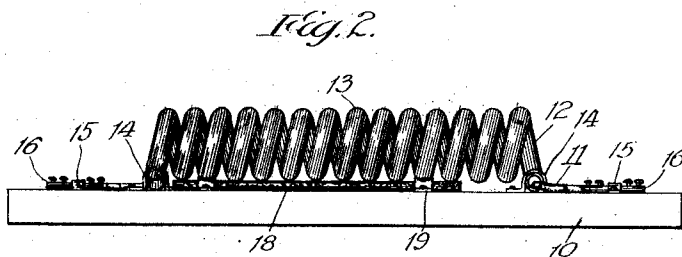
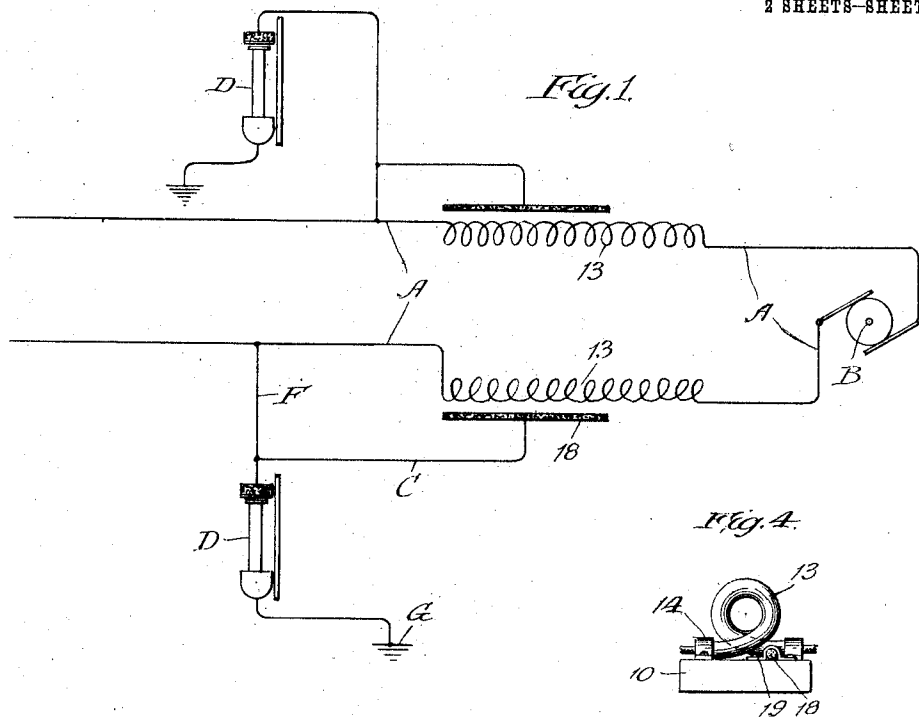


W. R. GARTON.
IMPEDANCE DEVICE.
APPLICATION FILED NOV. 11, 1907.

982,266.

Patented Jan. 24, 1911.

2 SHEETS-SHEET 1.



Witnesses.
Ray White.
Harry R. White

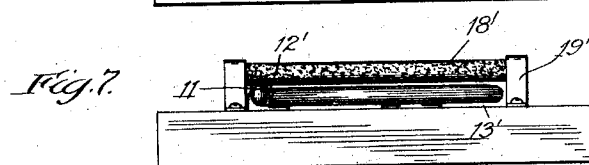
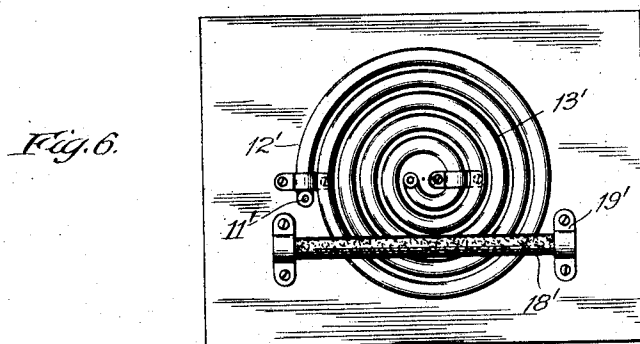
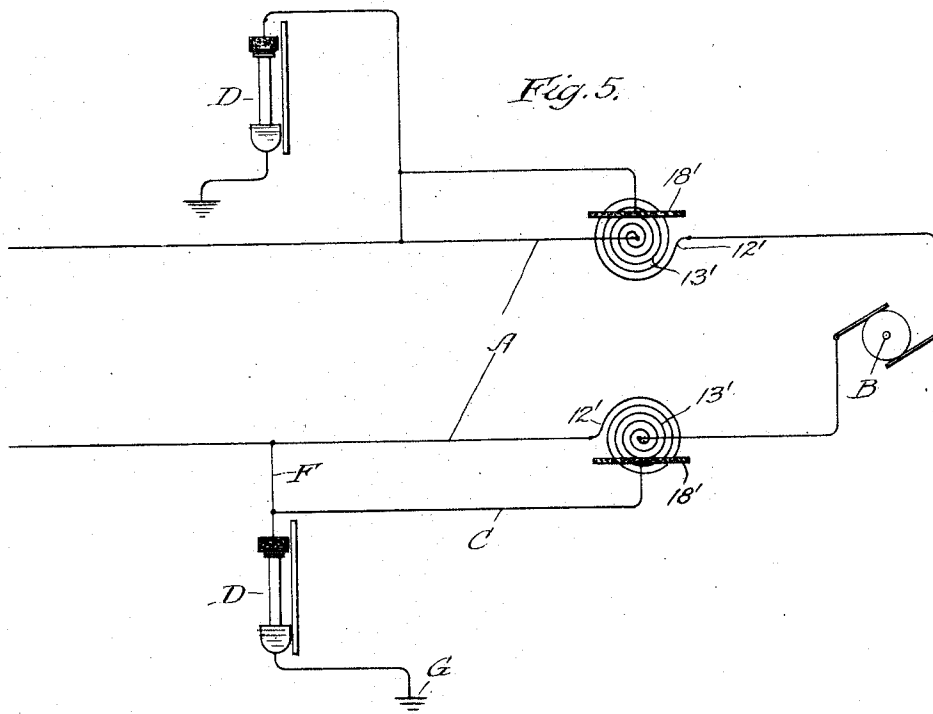
Inventor
William R. Garton.
By George Dainoff May Attys

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IMPEDANCE DEVICE.
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2 SHEETS—SHEET 2.



Witnesses
Ray White.
Harry R. Levitt

Inventor
William R. Garton
By Fred Bain & May

UNITED STATES PATENT OFFICE.

WILLIAM R. GARTON, OF CHICAGO, ILLINOIS.

IMPEDANCE DEVICE.

982,266.

Specification of Letters Patent.

Patented Jan. 24, 1911.

Application filed November 11, 1907. Serial No. 401,572.

To all whom it may concern:

Be it known that I, WILLIAM R. GARTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Impedance Devices, of which the following is a specification.

My invention relates to impedance devices for association with electric line wires, and has for its object to provide a novel, simple and highly efficient impedance coil for the prevention of current surges in the line and a reduction of danger of disturbance or destruction by lightning of the electrical generating and other instrumentalities associated with the line.

In the embodiment of my invention I provide a coil of well insulated wire in form which of itself has high impedance effect, and with said coil associate a sheath or casing surrounding the insulated line wire and following its convolutions in the coil, such sheath or casing being of metal, preferably of paramagnetic qualities, such as iron. Further I preferably provide in juxtaposition to but out of contact with the metallic sheathing an extended electrically-conductive grounded terminal, and I prefer that the elongated mass or terminal be grounded through a lightning arrester.

In the particular embodiment of my invention shown in the drawing; Figure 1 is a diagrammatic view, showing the impedance devices installed in conjunction with a line circuit; Fig. 2 is a side elevation of the impedance device; Fig. 3 is a plan view of an end portion thereof; and, Fig. 4 is an end elevation; Fig. 5 is a diagrammatic illustration of a modified embodiment of my invention; and Figs. 6 and 7 are respectively plan and side elevations of such modified form.

Throughout the several views like numerals of reference refer always to like parts.

Referring particularly to Figs. 2 to 4, 10 indicates in general an insulating base, and 11 a line wire heavily insulated. 12 indicates a metallic sheath, or casing, surrounding or substantially surrounding the wire 11, and said line wire and its sheath are together coiled in suitable form for effective action as an impedance. In the views referred to said parts are coiled about a longitudinal axis in convolutions of uniform diameter in relatively close proximity to each other, to form a coil, as indicated in general at 13.

The ends of the coil 13 are held by clips 14 and at such clips the sheath preferably terminates. The insulated wire, projecting therebeyond, is secured upon the base by suitable clips 15, and may for convenience be provided with connecting sleeves 16 for connecting the proximate portions of the line wire. Upon the insulating base, in suitable relation to the coil 13 to traverse the convolutions of said coil but out of contact therewith, I provide an extended conductive mass or terminal preferably in the form of a carbon bar 18, secured upon the base by a suitable clip 19, such bar being preferably arranged in parallelism to the axis of the coil, and of extent to lie in proximity to a number of the convolutions of said coil.

In the installation of the device, as shown in Fig. 1, the opposite extremities of wire 11 and the coil 13 are connected in line wires A—A leading to the dynamo B, or other electrical machine or instrument, and the carbon bars 18 are connected by wires C to suitable lightning arresters D wired to ground G. In many instances it is also desirable to connect the lightning arrester to the line wire by a tap F.

In the modified form of my invention shown in Figs. 5 and 7, the same arrangement of insulated line wire 11' and surrounding iron sheath 12' is retained, but the sheathed wire is coiled in a flat spiral, generally indicated at 13'. In such instance the carbon bar 18' is supported on clips 19' above the coil 13' in such relation thereto as to traverse a number of convolutions of the coil, and the assembled devices are wired in circuit as heretofore described. Thus it will be seen that the embodiment of the idea may be changed in form without departure from the spirit and scope of the invention, and numerous other modifications within the teachings of my invention will readily occur to those skilled in the art.

I find that in operation the device described offers a very effective impedance in the line, and efficiently prevents the occurrence of surges therein and effectively insures the instruments in the line against damage by lightning.

It is well known that a mere coil of wire has a decided impedance effect, and I have found that a line wire coiled in suitable form and surrounded throughout its coiled length by a metallic sheath insulated therefrom offers greatly enhanced impedance in

the line. Further I have found that where the metallic casing is of iron such impedance effect is most pronounced in virtue of the magnetic effect produced in the iron by variations of current value in the line.

It will be apparent that when the line is charged with lightning it will not follow the coil of exceedingly high impedance, but will traverse the surface of the coil and seek ground through the carbon or other conductor 18 and the lightning arrester connected therewith, such carbon 18 affording a large surface presentation in relatively close proximity to but air insulated from the impedance coil 13.

While I have herein set forth an embodiment of my invention in some detail, it will be apparent to those skilled in the art that the specific embodiments described are selected for purposes of full disclosure and without intent to limit my invention to the particular construction shown further than as specified in the claim.

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

In a lightning arresting device of the character described, a solid flat base, a line wire having a relatively heavy insulation thereover, a portion of said wire being suitably coiled for effective action as an impedance, an open-circuit electrically-conducting sheath surrounding and following the convolutions of said coiled portion of the wire, clips for securing the coiled portion in position above the base, a ground terminal of suitable material in operative proximity to the sheath, and clips for securing said terminal in position on the base, substantially as and for the purpose described.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

WILLIAM R. GARTON.

In the presence of—

GEO. T. MAY, Jr.,

MARY F. ALLEN.