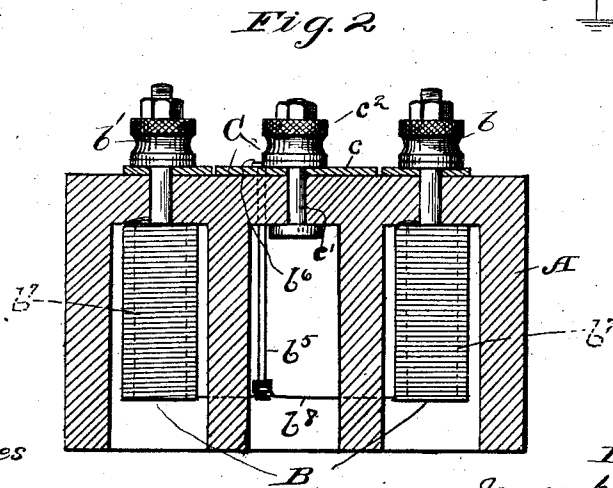
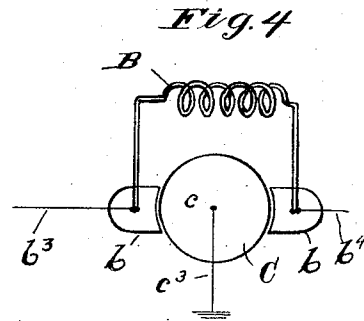
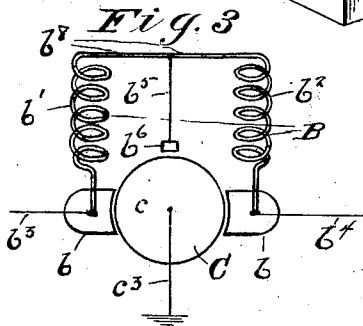
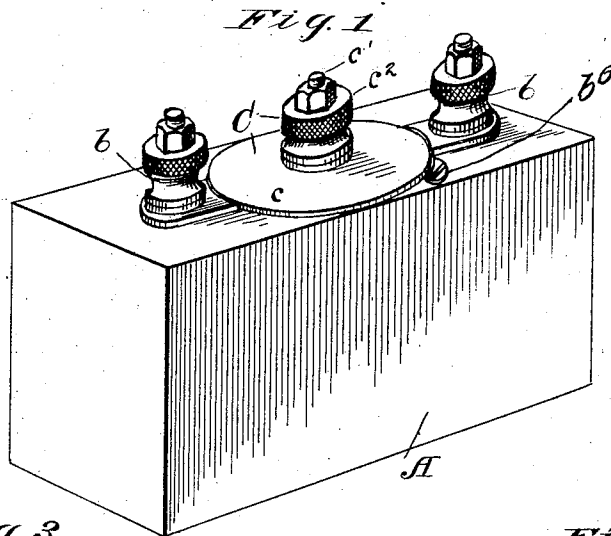


J. C. SEAMAN.
 LIGHTNING ARRESTER.
 APPLICATION FILED OCT. 30, 1907.

953,301.

Patented Mar. 29, 1910.



Witnesses
J. C. Turner
Jno. T. Oberlin

Inventor:
James C. Seaman,
 by *J. B. Fay*
 Attorney.

UNITED STATES PATENT OFFICE.

JAMES C. SEAMAN, OF COLLINWOOD, OHIO.

LIGHTNING-ARRESTER.

953,301.

Specification of Letters Patent. Patented Mar. 29, 1910.

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To all whom it may concern:

Be it known that I, JAMES C. SEAMAN, a citizen of the United States, resident of Collinwood, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Lightning-Arresters, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

As indicated, this invention relates to spark or lightning arresters, particularly to that type of lighting arrester in which the line is protected from a rush of current by means of a choke coil. As is well understood, the sudden establishment in such a coil of the current which follows a lightning stroke or the like requires a very great electromotive force. A narrow air gap being provided to ground, a spark across such gap will accordingly be produced and being a comparatively good conductor the greater portion of the rush of current will pass harmlessly by this path to earth.

The object of the present invention is the provision of a device of this general character that will be adapted to protect the line against a rush of current in either direction, and that will be withal economical in construction and easily installed.

To the accomplishment of these and related ends said invention consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing: Figure 1 represents in perspective, a lightning arrester embodying my several improvements; Fig. 2 is a vertical central section of the same; Fig. 3 is a diagrammatic representation of such arrester showing its connections; and Fig. 4 is a similar diagrammatic representation of a slightly modified form of the arrester.

The form in which the instrument is shown in the figures just described is that which I preferably adopt when designing the same for use in connection with telegraph or other signal lines, although with practically no modification, except in size of parts, it is adapted for use in any other

connection. In such figures, then, A represents the base or casing of the several parts of the device, such base preferably consisting of a solid block of porcelain, slate or other non-conducting refractory material, suitably hollowed out on its under side to provide room for the reception of such parts, the connections for which are on the top of the base. These parts comprise essentially a choke coil B and a grounded terminal C separated from the respective terminals *b b* of such choke coil by air gaps. Such grounded terminal consists preferably of a disk, or plate, *c* of carbon secured to the top of the base A by a screw *c'* projected upwardly therethrough and bearing a thumb-nut *c''* on its upper end. Such screw and nut form a terminal for the attachment of one end of a conductor *c''*, Figs. 3 and 4, leading to a suitable plate, not shown, embedded in the earth or otherwise grounded.

In the first form of the choke coil B, illustrated in Figs. 1 to 3, inclusive, such coil consists in effect of two coils *b' b''* adapted to be serially connected in the line, the wires *b'' b'* of which are attached to the binding posts provided in connection with the respective terminals *b b* aforesaid. Each of the two coils *b' b''* consists of two terminally joined conductors, Fig. 3, of suitable size contiguously wound upon iron cores *b'* but insulated from each other, by which means mutually opposing inductances are developed, thus augmenting the choking effect of the coil. The connection *b''* between the two coils is joined by means of a short conductor *b''* with a terminal *b''* on the top of the base A separated, like the terminals *b b* proper of the coil, by an air gap from disk C constituting the grounded terminal of the device.

The modified form of the device illustrated diagrammatically only, Fig. 4, differs from that just described merely in that choke-coil B instead of being made up of a plurality of parts consists of but a single coil, the arrangement of parts and connections being otherwise the same, except that the additional sparking terminal *b''* connected with the mid-point of the two coils is omitted.

The method of installation as well as the operation of the device should be sufficiently evident from the foregoing description without further dwelling thereon. It will be

noted, however, that by means of the above described construction I am enabled to employ a single coil to choke a sudden rush of current irrespective of the direction of flow of the same along the line, thus greatly enhancing the value of a device of this character. The choke, in other words, comes between two terminals equally accessible to the ground plate providing a lead from either side of the arrester to ground each equally effective. An additional advantage of prime importance arising from this construction is that the device, being reversible, cannot be put in wrongly but is "fool proof". Where in addition I connect the mid-point with a third terminal from which a current of high potential may escape to such grounded terminal across the intervening air gap, it will be seen that one coil may be burned out without wholly destroying the efficiency of the device; the remaining coil in most instances would suffice to still protect the line. The advantage gained in compactness and increased efficiency by doubling the conductor forming the coil so as to utilize the mutual inductances thereby developed will be quite obvious.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a device of the character described, the combination of a base of non-conducting material, two choke coils inclosed in said base, the inner ends of said coils being connected and their outer ends extending without said base, whereby said coils may be con-

nected in series in a line, a conductor leading from the connection between said coils to a point contiguous to the outer ends of the same, and a grounded terminal separated from the terminals of said coils and that of said conductor by air gaps, substantially as described.

2. In a device of the character described, the combination of a base of non-conducting material, two choke coils inclosed in said base, the inner ends of said coils being connected and their outer ends extending without one face of said base, whereby said coils may be connected in series in a line, a conductor leading from the connection between said coils to the same face of said base, and a grounded terminal on such face separated from the terminals of said coils and that of said conductor by air gaps, substantially as described.

3. In a device of the character described, the combination of a base of non-conducting material, two choke coils inclosed in said base, each of said choke coils consisting of two terminally joined conductors contiguously disposed in the coils but insulated from each other, the inner ends of said coils being connected and their outer ends extending without one face of said base, whereby said coils may be connected in series in a line, a conductor leading from the connection between said coils to the same face of said base, and a grounded terminal on such face separated from the terminals of said coils and that of said conductor by air gaps, substantially as described.

Signed by me, this 26th day of October, 1907.

JAMES C. SEAMAN.

Attested by:

E. R. RODD,
JNO. F. OBERLIN.