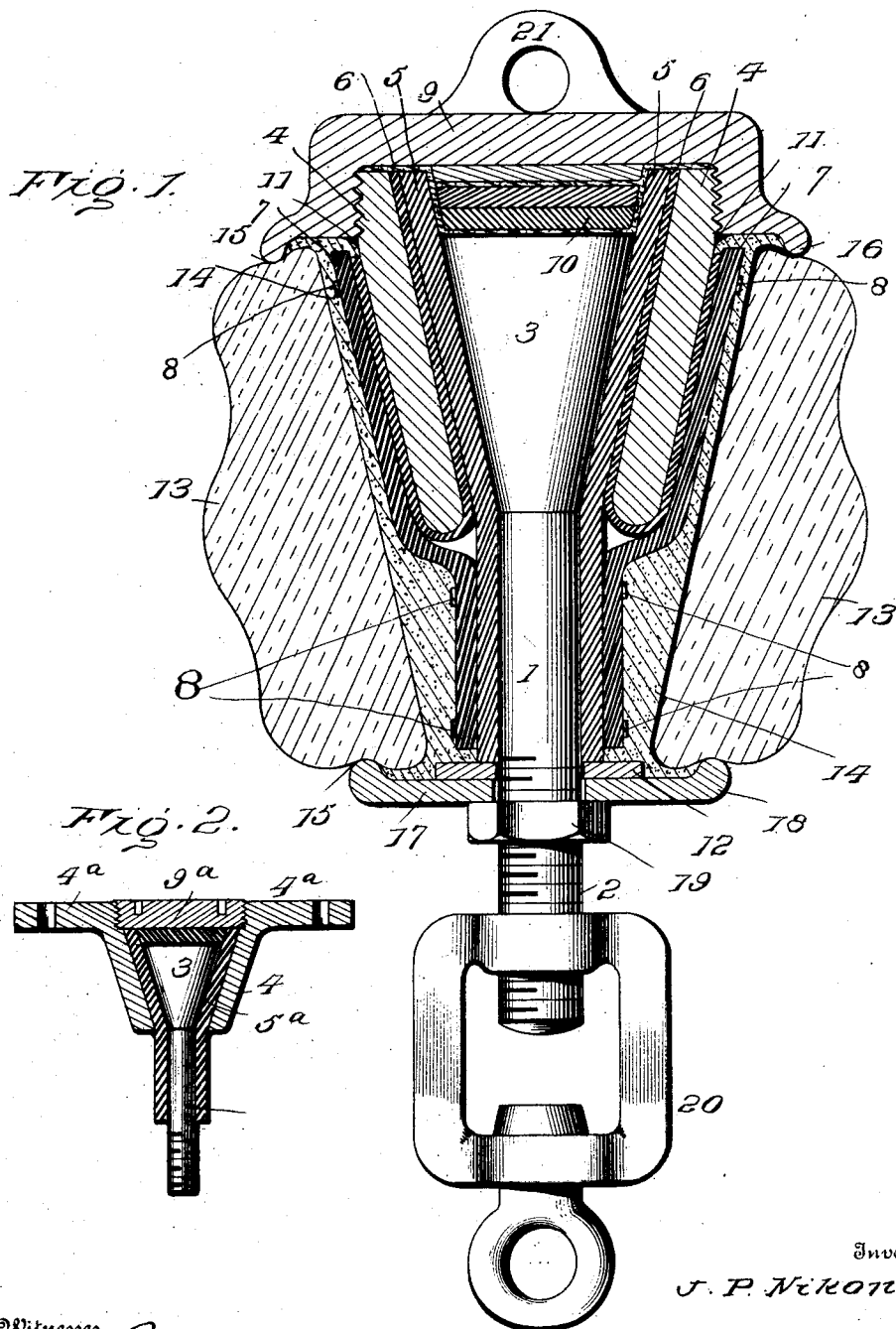


No. 889,956.

PATENTED JUNE 9, 1908.

J. P. NIKONOW.
INSULATOR.

APPLICATION FILED MAY 11, 1906. RENEWED JULY 30, 1907.



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JOHN P. NIKONOW, OF PITTSBURG, PENNSYLVANIA.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN P. NIKONOW, subject of the Czar of Russia, residing at Pittsburg, in the county of Allegheny and
5 Stat of Pennsylvania, have invented certain new and useful Improvements in Insulators, of which the following is a specification.

The present invention relates to an improved insulating device which is particularly designed for use in connection with
10 electric transmission lines carrying currents at a high voltage.

The object of the invention is to provide an insulator which will form an effective barrier against the leakage of the current, which
15 will not be subject to the deteriorating action of the atmosphere, and which is so constructed as to resist any external forces which may be encountered.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result, reference
20 is to be had to the following description and accompanying drawings, in which:

Figure 1 is a longitudinal sectional view through the insulator; and, Fig. 2 is a similar view showing a modification.

Corresponding and like parts are referred
25 to in the following description and indicated in all the views of the drawings by the same reference characters.

The numeral 1 designates the core of the insulator which is in the form of a rod having
35 one end threaded at 2, while the opposite end is enlarged at 3, the said enlarged portion having substantially a conical shape. A collar 4 fits around the enlarged portion 3 and is contracted toward one end so as to correspond
40 in shape to the conical portion 3. A covering or inner layer 5 of mica or analogous insulating material is interposed between the conical enlargement 3 and the collar 4 and extends along the core 1 beyond the end of
45 the collar 4. This covering 5 of mica serves to insulate the collar 4 from the core 1, and as an additional safe-guard, a covering or layer 6 of similar material is placed against the inner and outer surfaces of the said collar,
50 the layer extending around the inner or contracted end of the collar so as to have an approximately U-shaped section. The outer layer 7 of the insulating material surrounds both the collar 4 and its covering 6 and extends
55 beyond the same and is substantially coextensive with the covering 5, the several

layers being held closely together by means of the bands 8. The outer layer 7, as shown, extends inwardly around the smaller or inner end of the collar 4 and meets and closely encircles that portion of the inner layer 5
60 which extends beyond said collar. After the parts 4 have been assembled, the insulator is heated and pressed closely together, and the cover 9 screwed upon the collar 4.

It will be observed that the flared end of the collar extends somewhat beyond the enlarged portion 3 of the core 1 and that the space thus formed is filled by the plates of the insulating material 10 which are preferably embedded in cement. When the cover
65 is screwed in position, the conical portion 3 is forced outwardly and the insulating material between the said conical portion and the collar 4 tightly compressed so as to hold the rod 1 in a fixed position. After being placed
70 in position, the cover is brazed at 11 and thus held against working loose, and a washer 12 which serves as a protection for the mica covering 5 is brazed upon the opposite portion
75 of the core 1. An external sleeve 13 of porcelain or similar material is slipped over the rod 1 and the space between the sleeve 13 and the insulating layer 7 filled with cement
80 14. In order to hold the sleeve 13 in position, an annular groove 15 is formed at each end thereof, and the cover 9 provided with an inwardly extending annular flange 16 which fits within one of the annular grooves. A nut
85 17 provided with an annular flange 18 fitting within the opposite annular groove 15 in the sleeve 13 is screwed upon the opposite end of the core 1, and in order to prevent the nut 17 from working loose a jam-nut 19 may be employed. The sleeve 13 and cement filling 14
90 serve the double function of preventing surface leakage in damp weather, and also of forming a hermetic seal which protects the layers of insulating material against the action of the atmosphere. Owing to the fact
95 that all the mechanical strain is borne by the metallic portions of the insulator, namely, the core 1, collar 4 and cover 9, the sleeve 13 may be formed of glass or similar material without danger of breakage. A frame 20 is
100 screwed upon the threaded portion 2 of the rod 1 and serves as a means for connecting the transmission wire to the insulator.

In order to provide for hanging or supporting the device, an eye 21 is formed upon the cover 9. A modification is shown in Fig.
110 2 which may be employed in connection with

lighter currents. In this instance, the sleeve 13 is omitted, and the collar 4 formed with a flange 4^a which is employed in securing the insulator to a support. The cover is in the nature of a plug 9^a which is screwed within the outer end of the collar 4 and serves as before to force the enlarged portion 3 of the rod 1 outwardly so as to compress the insulating material 5^a between two metallic surfaces.

In both forms of the insulator, however, the essential feature resides in the peculiar cooperation between the conical enlargement 3 and the tapering collar 4 whereby the rod 1 is rigidly held in position against external forces and the insulating material is tightly compressed so as to be protected from atmospheric influence.

Attention is directed to the fact that an absolutely water tight joint is obtained by brazing the cover 9 and washer 12 upon the rod 1 and that these joints in connection with the cement filling 14 effectively prevent any moisture from coming into contact with the insulating material. This insulator will be found particularly desirable for use where considerable mechanical strain has to be resisted and a good insulator is required. By adjusting the frame or turn buckle 20, the tension in the line wire can be regulated and the insulator is adapted to resist any strain which can be thus produced.

Having thus described the invention, what is claimed as new is:

1. In an insulator, the combination of a core, means for connecting a transmission line to the core, a collar surrounding the core, insulating material interposed between the collar and the core, a sleeve of insulating material slipped over the core, a cover secured to the collar, and a nut screwed upon the core and cooperating with the before mentioned cover to hold the sleeve in position.

2. In an insulator, the combination of a core having a conical enlargement at one end thereof, means for connecting a transmission line to the opposite end, a collar fitting over the conical enlargement and having a tapered formation, insulating material interposed between the collar and the core, a second layer of insulating material surrounding the collar, a sleeve of insulating material slipped over the core, the space between the said sleeve and the second layer of insulating material being filled with cement, a cover fitting upon the flared end of the collar and provided with means for engaging with one end of the before mentioned insulating sleeve, the said cover operating to force the conical enlargement of the core within the collar and compress the insulating material between the two members, and a nut screwed upon the opposite end of the rod and cooperating with the cover to hold the insulating sleeve in position.

3. An insulator comprising a core pro-

vided with an enlarged end, a collar surrounding and substantially conforming to the enlarged end of the core, an insulating cover for said collar extending over the inner and outer face thereof and continuously around the smaller end of the collar, an inner insulating layer interposed between the collar and the enlarged end of the core and extending beyond the smaller end of the collar and closely encircling the core, an outer insulating layer surrounding the collar and extending around the smaller end thereof and closely encircling the extended portion of the inner layer, and a cover screwing on said collar, insulating material being provided between the end of the core and said cover.

4. An insulator, comprising a core, a collar surrounding a portion of said core, an insulating layer interposed between the core and the collar, another insulating layer encircling the collar, both of said layers extending beyond the collar and the first named layer encircling the core while the other layer encircles that portion of the first named layer which encircles the core, a sleeve surrounding the said layers of insulating material, a cover secured to said collar and adapted to engage with one end of said sleeve; and a nut screwed on one end of said core and engaging the opposite end of said sleeve.

5. An insulator, comprising a core, a collar surrounding a portion of the core, an insulating layer 5 interposed between the core and the collar, another insulating layer 7 encircling the collar, both of said layers extending beyond the collar and one encircling the core while the other encircles that portion of the layer 5 which encircles the core, a sleeve surrounding the several layers of insulating material, a cover secured to said collar and adapted to engage with one end of said sleeve, and a nut secured on said core and engaging the opposite end of said sleeve.

6. An insulator comprising a core provided with an enlarged end, a collar adapted to surround the enlarged end of the core, a cover secured to said collar and provided with a flange, a sleeve of insulating material adapted to encircle the core and the said collar and arranged to be engaged at one end by said flange, a nut screwing on the other end of said core and provided with a flange adapted to engage the other end of said sleeve, and an insulating material filling the space between the collar and the core and between the sleeve and the said core.

7. An insulator, comprising a core, a collar surrounding the core, a cover secured to the outer end of the collar, an insulating sleeve adapted to be slipped over the core, the cover bearing against one end of said sleeve, and means secured to the core and bearing against the opposite end of said sleeve to hold the same against the core.

8. An insulator, comprising a core pro-

- vided with an enlarged end, a collar adapted to be slipped over the core and held against outward movement thereon by the enlarged end of the core, an insulating sleeve adapted to be slipped over the core, the cover bearing against one end of the sleeve, and means secured to the core and bearing against the opposite end of said sleeve to press the same against the cover.
- 10 9. In an insulator, the combination of a core, an insulating sleeve adapted to be slipped over the core, means secured on one end of the core for engaging one end of said sleeve, a cover abutting against the opposite end of said sleeve, and means for holding said cover in rigid relation to the core, the cover being detachably connected to its holding means.
- In testimony whereof I affix my signature in presence of two witnesses.
- JOHN P. NIKONOW. [L. s.]
- Witnesses:
- BIRNEY HINES,
ELMER E. LITTLE.