

No. 896,934.

PATENTED AUG. 25, 1908.

J. P. NIKONOW.
INSULATOR.

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Fig. 1.

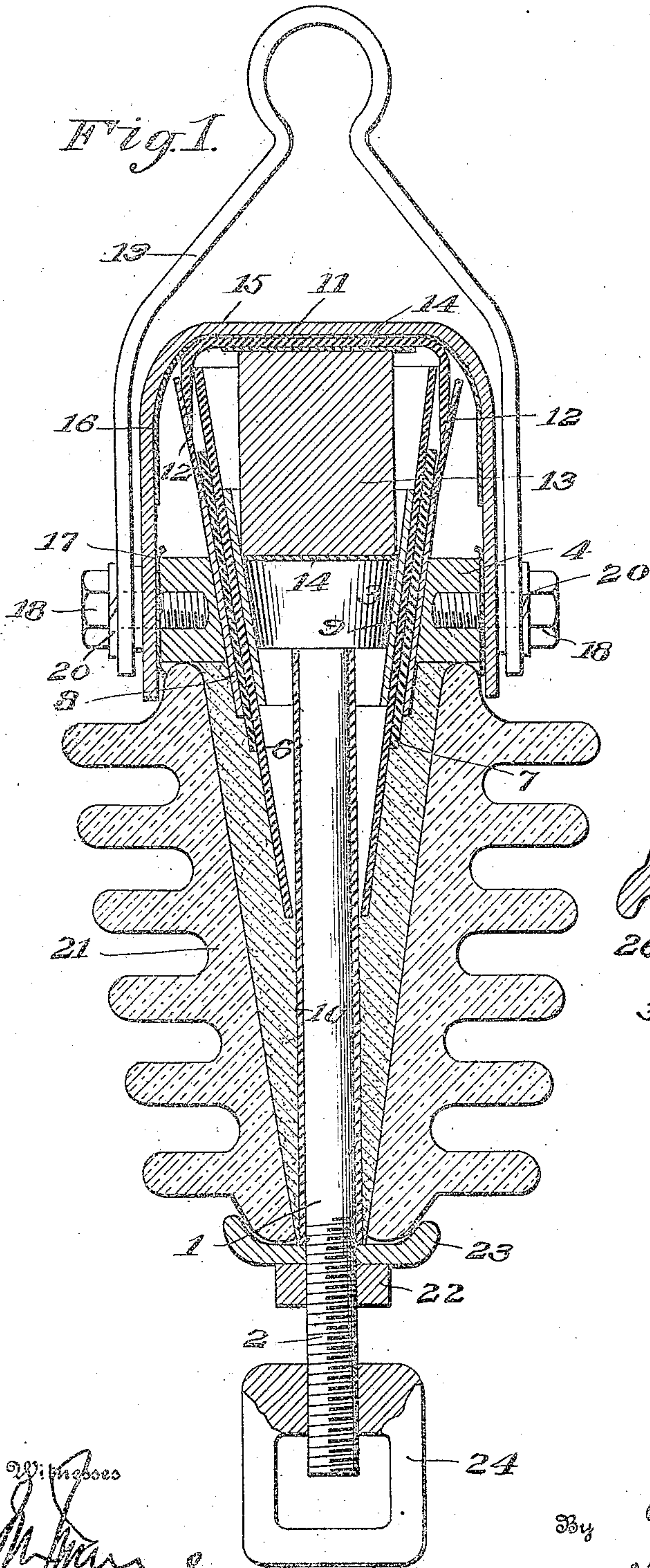


Fig. 3.

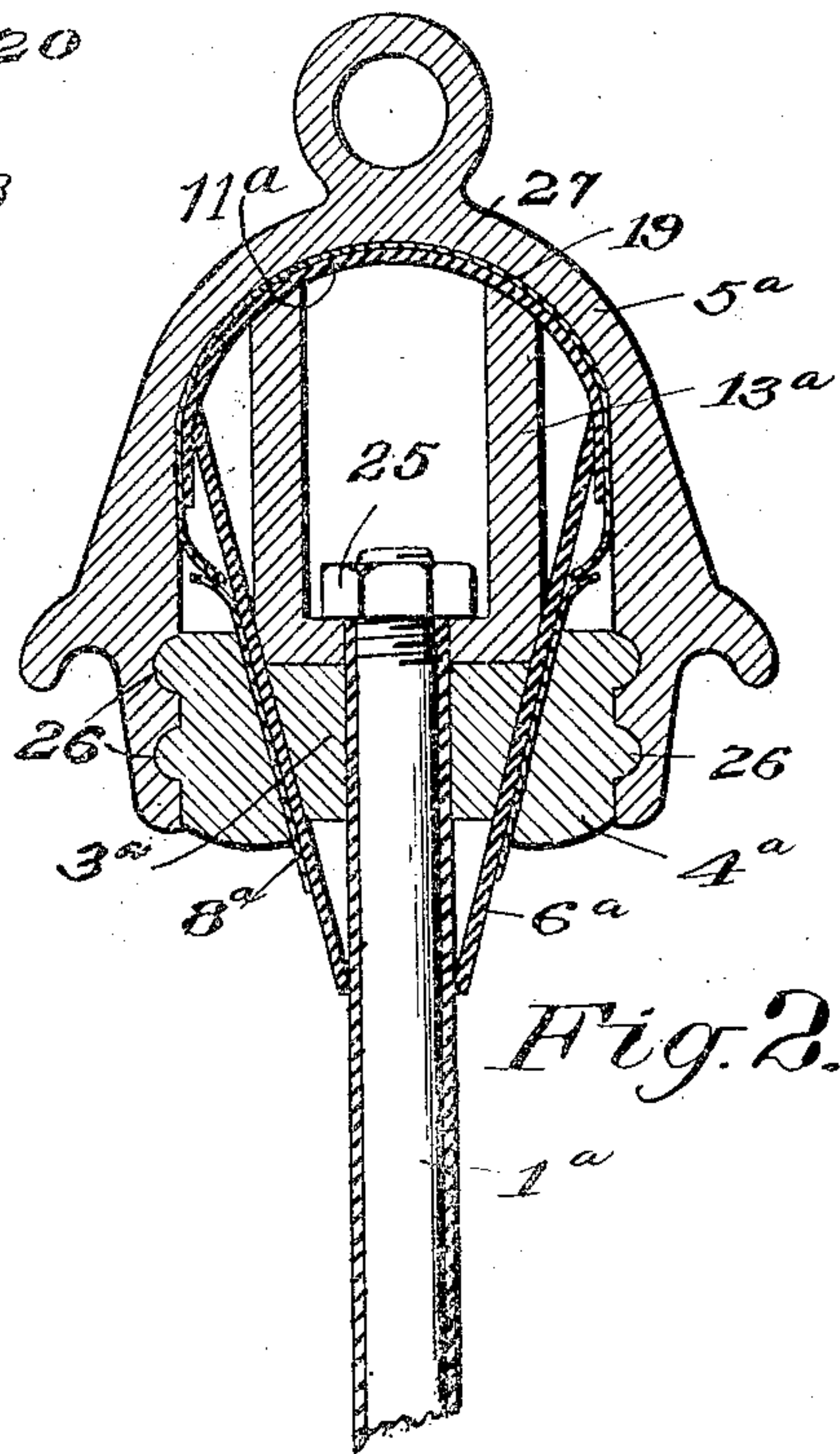
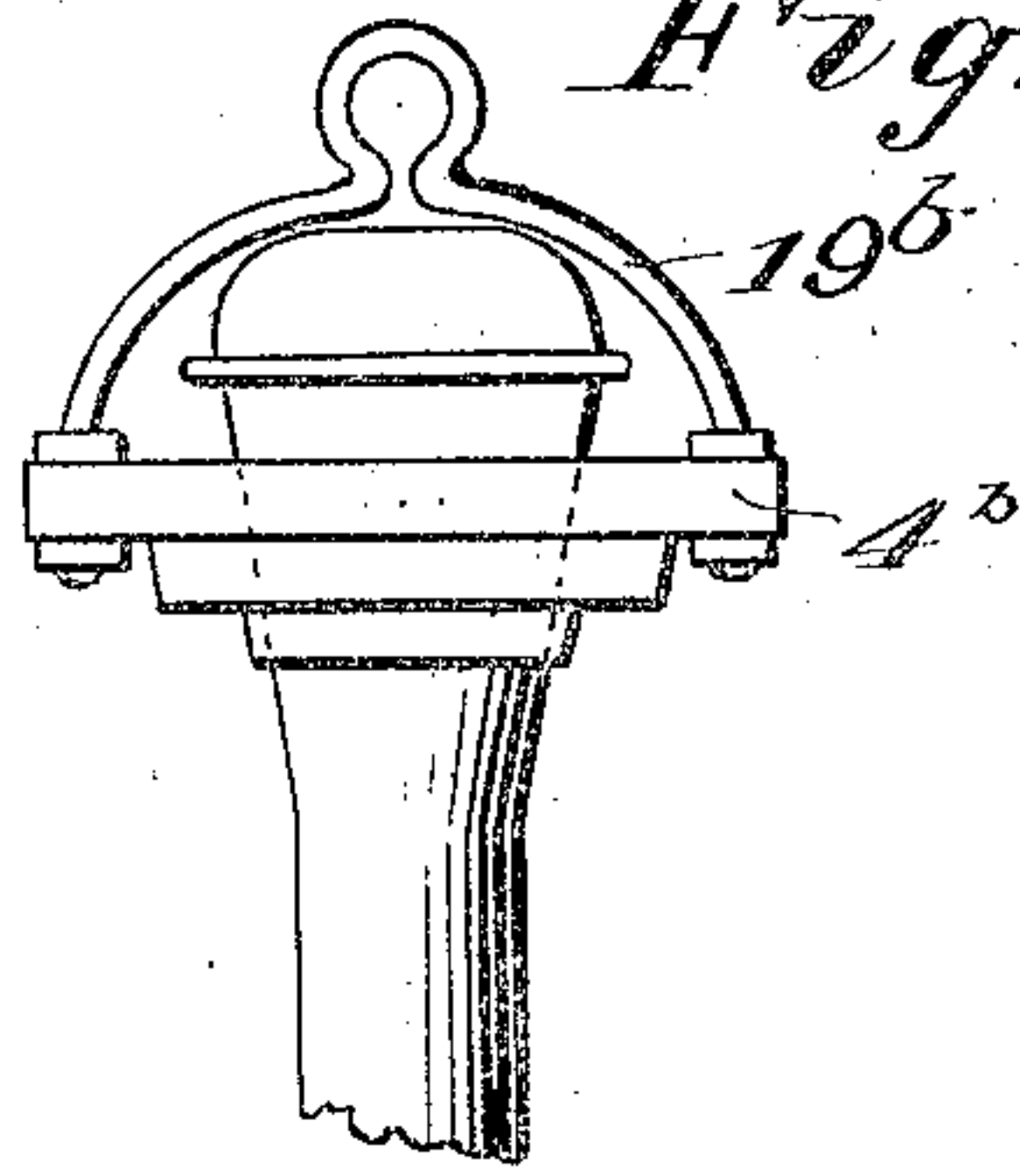


Fig. 2.

Witnesses
[Signature]
W. F. Harrison

By

[Signature]

Inventor

J. P. Nikonow.

Attorneys

UNITED STATES PATENT OFFICE.

JOHN P. NIKONOW, OF EAST PITTSBURG, PENNSYLVANIA.

INSULATOR.

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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 East Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Insulators, of which the following is a specification.

The present invention is in the nature of an improved insulator for supporting electric transmission wires and cables which are employed in connection with high tension currents, and one of the objects of the invention is to design an insulator of this character which is adapted to withstand strong mechanical strain.

The invention further contemplates a peculiar arrangement of insulating material whereby surface leakage is reduced to a minimum.

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

Figure 1 is a longitudinal sectional view through an insulator embodying the invention. Fig. 2 is a similar view showing a modification, portions being broken away. Fig. 3 is a side elevation showing a further modification.

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

Referring to the embodiment of the invention shown in Fig. 1 the numeral 1 designates the core which may be formed of steel or similar material and has one end thereof threaded as indicated at 2 while the opposite end is provided with an enlargement 3. This enlargement 3 has substantially a conical formation and may be either made integral with the core 1 or formed as a separate piece and applied thereto as in the modification shown in Fig. 2. Surrounding the enlargement 3 is a ring or collar 4 having the inner face thereof inclined on an angle corresponding to the outer face of the conical enlargement 3. Interposed between the enlargement 3 and collar 4 is an inner insulating sleeve 6 and a second or outer insulating sleeve 7, the ends of the former projecting considerably beyond the ends of the latter. For the purpose of reducing the weight of the insulator to a minimum the collar 4 and enlargement 3 are given

a comparatively shallow formation and thicknesses of sheet metal or similar material are located between the insulating sleeves and the collar 4 and enlargement 3 as indicated at 8 and 9 respectively. These sheet metal sleeves 8 and 9 extend in both directions beyond the collar and enlargement and have a comparatively large contact with the insulating sleeves thereby increasing the effective clamping surface between the said collar and enlargement. This construction results in a still further advantage since the working surfaces of the collar and enlargement bear against the sheet metal sleeves and no special machining of the same after being forged or cast is rendered necessary.

A layer of insulating material 10 surrounds the core 1 and extends within the insulating sleeves 6 and 7, thereby increasing the length of the path which must be followed by the surface leakage and reducing the same to a minimum. An insulating cap 11 is applied to the flared end of the insulating sleeve 6 and a ring 12 overlaps the adjacent edges of the said cap and the outer insulating sleeve 7. Interposed between this cap 11 and the enlargement 3 is a block 13 of wood, porcelain or other suitable material, and layers 14 which are preferably of yielding material are located at opposite ends of the said block so as to evenly distribute the pressure due to any mechanical strain applied to the insulator. A metallic cover 15 receives the insulating cap 11 and the collar 4, a layer 16 of insulating material being interposed between the said cover and the cap and a layer 17 of yielding material being located between the cover and the collar. Bolts 18 are shown as utilized for securing the cover to the collar, and the said bolts also engage the hanger 19 utilized for supporting the insulator. It will also be observed that in the present instance locking washers 20 are employed in connection with the bolts 18 to prevent the latter from working loose. The members 14 and 17 which are of yielding material may serve to evenly distribute the internal stress produced when the members of the insulator are assembled and also operate to hold the insulator sections in a close engagement with each other.

The core 1 is surrounded by an exterior sleeve 21 of porcelain or analogous material, the said sleeve gradually tapering toward the outer end thereof and the space between the sleeve and the core being filled by some

suitable form of cement. The flared end of this external sleeve 21 is engaged by the cover 15 which projects slightly beyond the collar 4 while the opposite end is engaged by
 5 a nut 22 and washer 23 upon the threaded end of the core. This threaded end 2 of the core also has a frame 24 applied thereto by means of which the transmission line is
 10 sleeve 21 surrounds the core and in connection with the cement therein serves to protect the insulating material from the deteriorating influence of the atmosphere and also to prevent excessive surface leakage in
 15 damp or rainy weather. It is also desired to again call attention to the fact that one end of the insulating sleeve 6 projects considerably beyond the enlargement 3 while the opposite end overlaps the insulating layer 10 surrounding the core and that an elongated path is thereby formed for the surface leakage between the metallic portion of the core and the metallic cover, the great resistance of the said path reducing the surface leakage to an
 25 inappreciable extent.

In the modification shown in Fig. 2 the conical enlargement 3^a is formed independent of the core 1^a and the latter extends through the enlargement and terminates
 30 within a chamber formed in the block 13^a, a nut 25 being threaded upon the said extremity of the core. In this form of the invention there is but one insulating sleeve 6^a employed and the said insulating sleeve
 35 bears directly against the enlargement 3^a which may be of insulating material, a sheet metal sleeve 8^a being interposed between the insulating sleeve and the collar 4^a which is cast in position. The cover 15^a is provided at its
 40 mouth with the depressions or grooves 26 for receiving portions of the collar 4^a and producing an interlocking connection therewith, the said collar being formed of Babbitt metal or similar material and poured in position
 45 when in a molten state. An insulating cap 11^a is provided which receives the block 13^a and overlaps the flared end of the sleeve 6^a. Interposed between this insulating cap and the cover is sheet metal 27 which receives the
 50 insulating cap and has the edges thereof soldered or otherwise permanently connected to the insulating sleeve 6^a, thereby sealing the interior of the insulator and shielding the same from the action of the atmosphere.

55 A further modification is shown in Fig. 3 in which the cover is omitted from the construction shown in Fig. 2 and the hanger 19^b connected to the collar 4^b, the said hanger being formed so as to bear against the end of
 60 the insulator and hold the same in coöperative relation to the collar.

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

1. In an insulator, the combination of a
 65 core provided with an enlargement, a collar

surrounding the enlargement, an insulating sleeve interposed between the collar and enlargement and projecting beyond the latter in both directions, an insulating cap closing one end of the insulating sleeve, and a block
 70 interposed between the insulating cap and the enlargement.

2. In an insulator, the combination of a core provided with an enlargement, a collar surrounding the enlargement, an insulating
 75 sleeve interposed between the enlargement and the collar and projecting beyond the former in both directions, an insulating cap closing one end of the insulating sleeve, a block interposed between the insulating cap
 80 and the enlargement, and a layer of yielding material at one end of the block.

3. In an insulator, the combination of a core provided with an enlargement, a collar surrounding the enlargement, an insulating
 85 sleeve interposed between the collar and enlargement and projecting beyond the latter in both directions, an insulating cap at one end of the insulating sleeve, and a cover receiving the insulating cap and engaging the
 90 collar.

4. In an insulator, the combination of a core, a collar surrounding the core, an insulating sleeve interposed between the collar and the core, an insulating cap at one end of the
 95 insulating sleeve, and a cover receiving the insulating cap and engaging the collar.

5. In an insulator, the combination of a core, an insulating sleeve receiving one end of the core, an insulating cap at one end of
 100 the insulating sleeve, an insulating ring at the junction of the insulating cap and sleeve, and means exterior of the insulating sleeve for supporting the insulator.

6. In an insulator, the combination of a
 105 core provided with an enlargement, a collar surrounding the enlargement, an insulating sleeve clamped between the collar and enlargement, and a plate between one of the last mentioned members and the insulating
 110 sleeve for increasing the effective clamping surface.

7. In an insulator, the combination of a core provided with an enlarged portion, a collar surrounding the enlarged portion, an
 115 insulating sleeve interposed between the collar and enlarged portion, and plates between the insulating sleeve and the enlarged portion of the core and the collar respectively for increasing the effective clamping surface
 120 of the latter members.

8. In an insulator, the combination of a core provided with an enlargement, a collar surrounding the enlargement, an insulating
 125 sleeve interposed between the collar and enlargement and projecting beyond the latter in both directions, a layer of insulating material surrounding the core and extending within the insulating sleeve, and metallic sleeves fitting between the insulating sleeve and the
 130

collar and enlargement of the core respectively to increase the effective clamping surface of the latter members.

9. In an insulator, the combination of a
5 core provided with an enlargement, a collar
surrounding the enlargement, an insulating
sleeve interposed between the collar and enlargement and projecting beyond the latter,
a layer of insulation surrounding the core and
10 extending within the insulating sleeve, an ex-

terior sleeve surrounding the core, and means cooperating with the collar for holding the exterior sleeve in position.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN P. NIKONOW. [L. S.]

Witnesses:

GEO. RANKIN, Jr.,
MABEL C. JESSOP.