

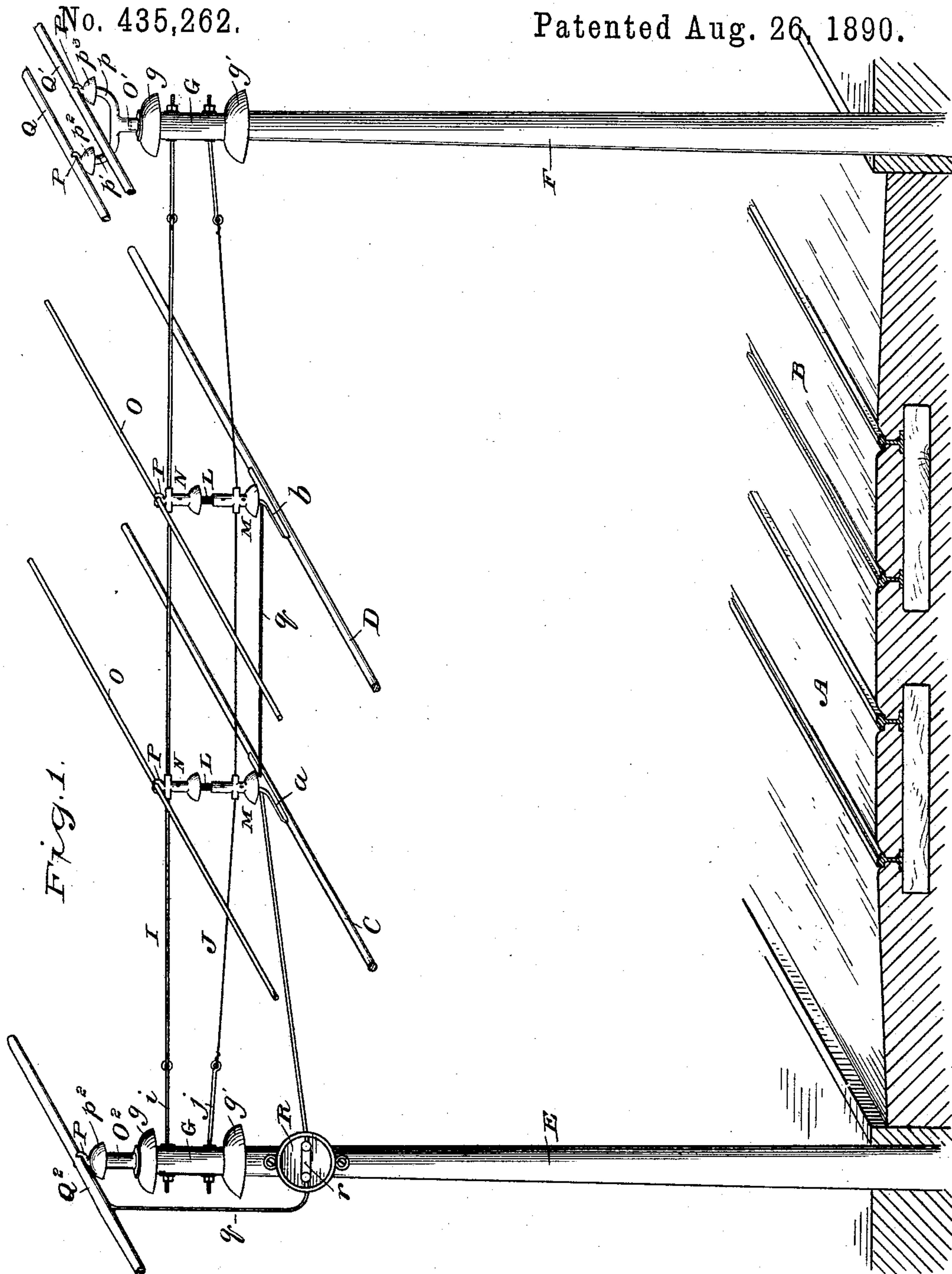
(No Model.)

3 Sheets—Sheet 1.

C. J. VAN DEPOELE.
STRUCTURE FOR SUPPORTING AND INSULATING SUSPENDED BARE
CONDUCTORS.

No. 435,262.

Patented Aug. 26, 1890.



Witnesses

H. A. Lamb

Stephen James

Inventor

Charles J. Van Depoele

By his Attorney

Frankland James

(No Model.)

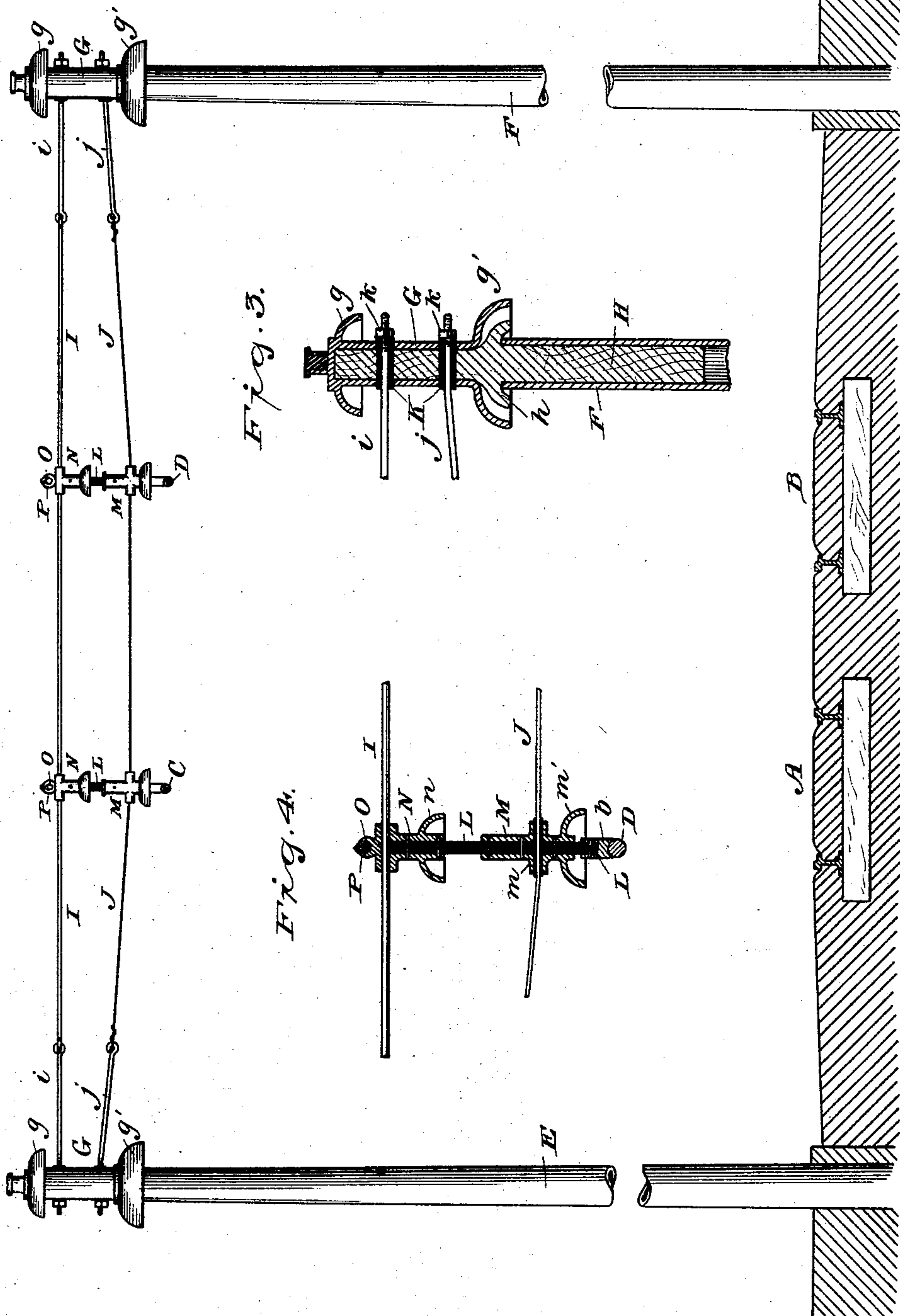
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Fig. 2.



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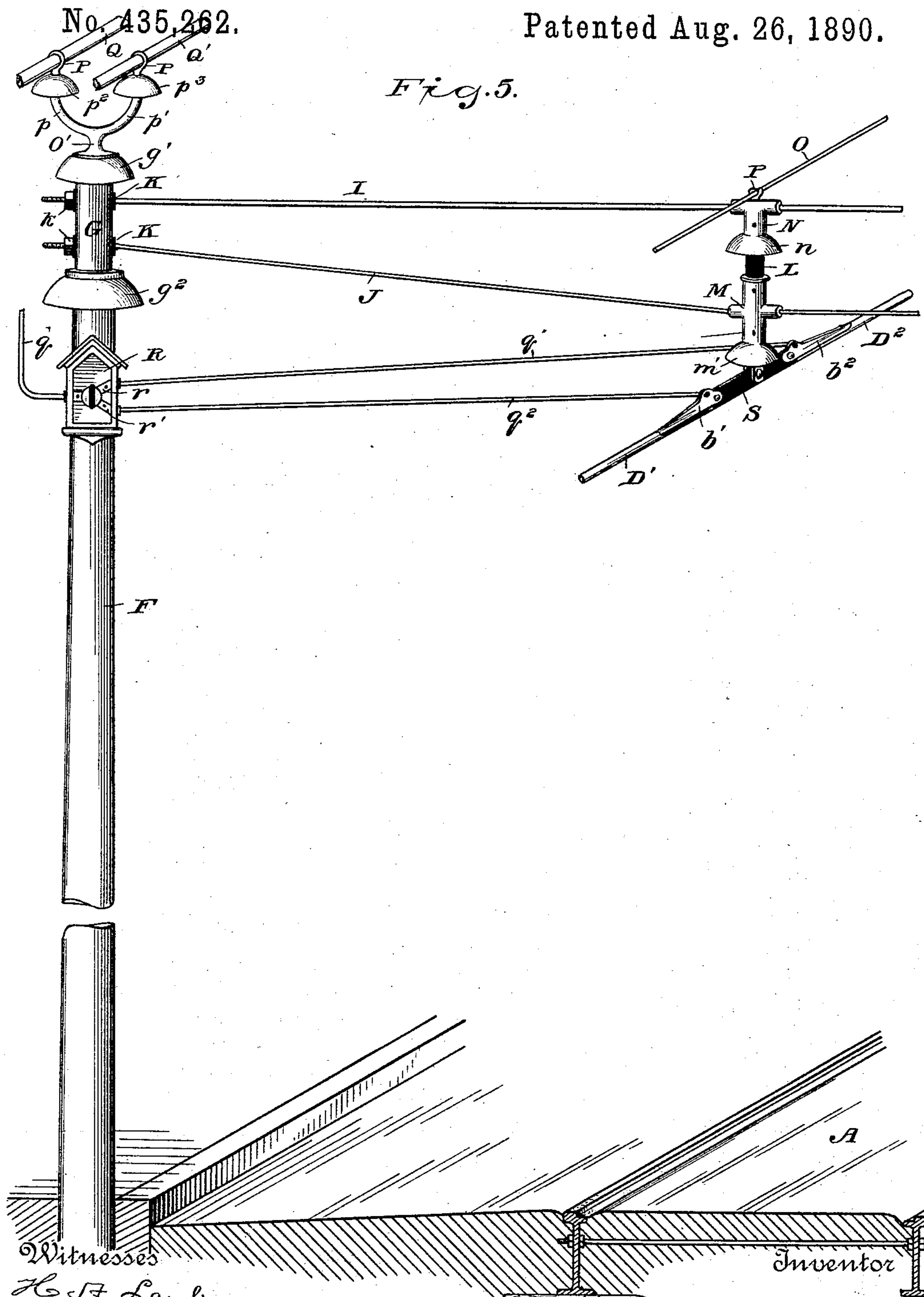
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Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES J. VAN DEPOELE, OF LYNN, MASSACHUSETTS.

STRUCTURE FOR SUPPORTING AND INSULATING SUSPENDED BARE CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 435,262, dated August 26, 1890.

Application filed April 18, 1890. Serial No. 348,544. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. VAN DEPOELE, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Structures for Supporting and Insulating Suspended Bare Conductors, of which the following is a description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to a new and improved structure for supporting and insulating suspended bare conductors, the invention being illustrated in connection with a system of suspended conductors for an electric railway of the type in which the supply-current is collected from a bare conductor suspended above and along the line of travel.

The construction and arrangement of the various parts will be hereinafter described, and referred to in the appended claims.

In the drawings, Figure 1 is a view in perspective showing a portion of an electric railway, its working-conductors, and the means for supporting and insulating the same. Fig. 2 is an end view of a portion of an electric-railway-conductor system. Fig. 3 is a sectional detail of the upper portion of one of the conductor-supporting posts. Fig. 4 is a sectional detail of one of the conductor-insulating supports. Fig. 5 is a view in perspective showing a portion of an electric railway with one of its working-conductors, and showing also the means for supplying the current thereto and for disposing the supply-circuit.

As seen in Fig. 1, A B are the tracks of an electric railway, and C D are working-conductors therefor suspended above and substantially parallel with said tracks.

E F are poles by which the conductors are suspended, said poles being placed at suitable intervals along each side of the line of way. The poles E F are desirably constructed of metal tubes, in order to give greater stability and prominence to the structure. The poles, being set in the ground, should be effectively insulated from the conductor-supporting parts, and I therefore provide each pole with a removable top piece or cap G. (Shown in section in Fig. 3.) The top or cap G is in the

form of a short tube, closed at its upper end by an expanded bell-shaped flange *g*, and it is also provided at its lower part with a second bell-flange *g'*. The cap G is connected to and secured upon the upper end of the pole F by a strong bar H, which fits into the cap G and into the upper end of the pole F, thus securely uniting them. The bar H must be of insulating material, and may be of wood—such, for instance, as white oak—which has been thoroughly saturated with a water-proof insulating compound—as linseed oil—and the bar H is furthermore provided with a shoulder to retain it in position upon the top of the pole F, and said shoulder is desirably formed into a bell-flange *h*. The bell-flange *h* is smaller than the bell *g'* upon the lower part of the cap G, and forms a second flange between the cap and the pole, thereby most effectually preventing the passage of water from the bell *g'* to the pole F. The conductors C D are sustained directly by attachment to ears or clamps *a b*, said ears or clamps being secured to said conductor in any desired manner so as to sustain the same in position, to be freely engaged by contact devices traveling along the under sides of said conductors. The supporting-poles E F are joined by transverse supporting devices, formed desirably of iron rods I J, the rod I being also preferably somewhat stronger than the rod J. The rods I J may be jointed to end pieces *ij*, which said end pieces pass through openings through the caps G, the said openings being each thoroughly insulated, as by tubes K, of vulcanized fiber or other good insulating material, said tubes being inserted in the caps G and securely fastened therein. The end pieces *ij* are screw-threaded at their outer extremities and provided with nuts *k*, by which the tension of the rods I J may be adjusted, as desired. The ear *b*, carrying the conductor, is sustained by both the rods I J and insulating-hanger L, to the lower extremity of which said ear is secured, the insulator L being connected with the rods I J by connectors M N. The connector N is formed with a socket in its lower part to receive the upper end of the insulator L and with a flange *n* for deflecting the water from said insulator, the upper part of the connector N being formed to fit over or upon and be supported by the

rod I. The lower connector M is formed tubular to allow the insulator L to pass there-through, and it is provided at about its central portion with a transverse groove or opening *m* to receive the rod J, to which it is thereby secured. The connector M extends somewhat below the rod J and is expanded to form a flange *m'*, covering the lower extremity of the insulator L and protecting it from rain. The insulator L is attached by screws or rivets to the connectors M N, so that when assembled the insulator L and connectors M N form a strong vertical tie between the transverse-rods I J, forming them into a frame the total strength of which is available in sustaining the conductor D, and, furthermore, the central portion of the insulator L being exposed between the connectors M N and protected from descending rain by the flange *n* forms a most effective insulation between the two members of the transverse supports.

Upon the top of the connector N is formed a clip P, within which is secured a guard-wire O, which extends along the line of way parallel with and above the working-conductor D.

The tops of the poles may also be utilized to carry additional conductors. For example, as seen in Fig. 1, the top of the cap G is provided or formed with a short upward extension O', which, as seen, is provided with bifurcated arms *p p'*, which at their upper extremities are formed with bell-flanges *p² p³* and on top of the bell-flanges with clips P, in which are sustained insulated conductors Q Q'. The conductors Q Q' may be employed to convey current for any purpose, for the supply of the working-conductors C D or otherwise. Where both the railway-conductors are of the same polarity and represent one side only of the working-circuit, a single feeding-conductor is all that is required, and under these circumstances I provide the top of the cap G with a single support O² desirably formed with a bell-flange at its upper extremity, which said flange may be of insulating material, if desired, and said flange carries at its upper central portion a clip P, in which is sustained a conductor Q², said conductor to supply the working-conductors C D, to which it is connected by conductor *q*, which passes through a fuse-box R, provided with a detachable fuse *r*, and thence to the ears *a b*, by which the conductor is sustained and with which said ears are in metallic connection.

For the purpose of conveniently separating a line of electric conductors into insulated sections, I provide the arrangement seen in Fig. 5, which differs from that already described in that the working-conductor is divided into separate portions D' D², the extremities of which are attached to half-ears *b' b²*, the said half-ears being themselves connected by an insulating link or bar S, the insulator S being bolted to the insulator L. With this arrangement the supply-connection *q* extends to a fuse-box R, provided with fuses

r r', the inner ends of both the fuses being connected to the supply-connection *q*, so that in case of a short circuit upon one division of the line represented—say by the conductor D'—the fuse *r'* may be blown and further flow of current through said conductor prevented without in any way affecting the supply of current to the section represented by the conductor D².

Various modifications and changes may be made in the herein-described apparatus in view of the foregoing description without departing from the spirit or nature of the invention, which is therefore not limited to the precise details set forth by way of illustration.

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

1. A conductor-support comprising double transverse rods or wires, a connection of insulating material attached to and uniting said rods, and a conductor sustained by the insulated connection, substantially as described.
2. A conductor-support comprising duplex transverse rods or wires, insulated connections secured to both supporting-rods and uniting the same, working-conductors secured to the connecting-supports, and a separate electrical connection extending from the conductors to the supply-circuit, substantially as described.
3. The combination of supporting-poles, double transverse connections extending between the poles, insulating devices engaging both the transverse connections and uniting the same, working-conductors attached at the lower parts of said insulating devices, and a conductor or conductors extending from the supply-circuit into metallic connection with the working-conductors, substantially as described.
4. A conductor-support comprising oppositely-placed poles having insulated caps, double transverse rods or wires extending between and secured to and insulated from the caps of said poles, insulators uniting the transverse supports and connected directly to and carrying the working-conductors at their lower extremities, and means for adjusting the tension of the transverse supports, substantially as described.
5. The combination, with double transverse supports and means for sustaining the same, of insulators connected to and uniting the transverse supports, working-conductors secured at the lower ends of the insulators, and guard-wires carried by and secured in the upper parts of the insulated connections, said guard-wires being parallel with and insulated from the working-conductors, substantially as described.
6. The combination, with a plurality of transverse supporting rods or wires, of an insulator extending between and connected to the said supports and the conductor attached to the lower part of the insulator and sustained thereby, substantially as described.

7. The combination, with suitable transverse supports, of a working-conductor, an insulator to which said conductor is attached, and connectors separated by the insulating-conductor support and connected to said support and to the transverse tension devices, substantially as described.

8. The combination, with an electric-railway pole, of a removable cap and an insulating-connection connecting the cap to and supporting the same upon the pole, substantially as described.

9. The combination, with an electric-railway pole, of a cap therefor, an insulating-bar fitting into the cap and into the upper end of the pole to unite the same, and formed with a flange for preventing the access of water to the top of the pole, substantially as described.

10. The combination, with an electric-railway pole, of a cap therefor, an insulated bar fitting into the cap and into the upper end of the pole to unite the same and formed with a flange for preventing the access of water to the top of the pole, said cap being formed with a flange extending over and protecting the joint between the cap and the pole, substantially as described.

11. A pole provided with a removable cap, said cap being connected with the pole by an insulating-connection and formed with an upward extension, said extension provided

with an arm or arms carrying clips at their extremities for sustaining conductors, substantially as described.

12. The combination, with a pair of oppositely-located poles having removable insulated caps, each cap formed with two insulated apertures therein, of two transverse conductor-supporting rods or wires formed or provided at their extremities with screw-threaded end pieces adapted to pass through the insulated openings in the caps and adjusting-nuts upon the extremity or extremities of said transverse rods, and working-conductors connected to and supported by both the transverse rods or wires, substantially as described.

13. The combination, with a pair of oppositely-located poles provided with insulated caps, transverse supports extending between the insulating-caps and carrying a working-conductor or conductors, a supply-conductor also carried upon the pole-caps, a supply connection or connections extending between the supply and working conductors, and a fuse-box included in the supply-connection, substantially as described.

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

CHARLES J. VAN DEPOELE.

Witnesses:

S. G. HOPKINS,

FRANKLAND JANNUS.