

No. 803,215.

PATENTED OCT. 31, 1905.

H. P. DAVIS & T. VARNEY.

## OVERHEAD STRUCTURE FOR ELECTRIC RAILWAYS.

APPLICATION FILED OCT. 19, 1904.

2 SHEETS—SHEET 1.

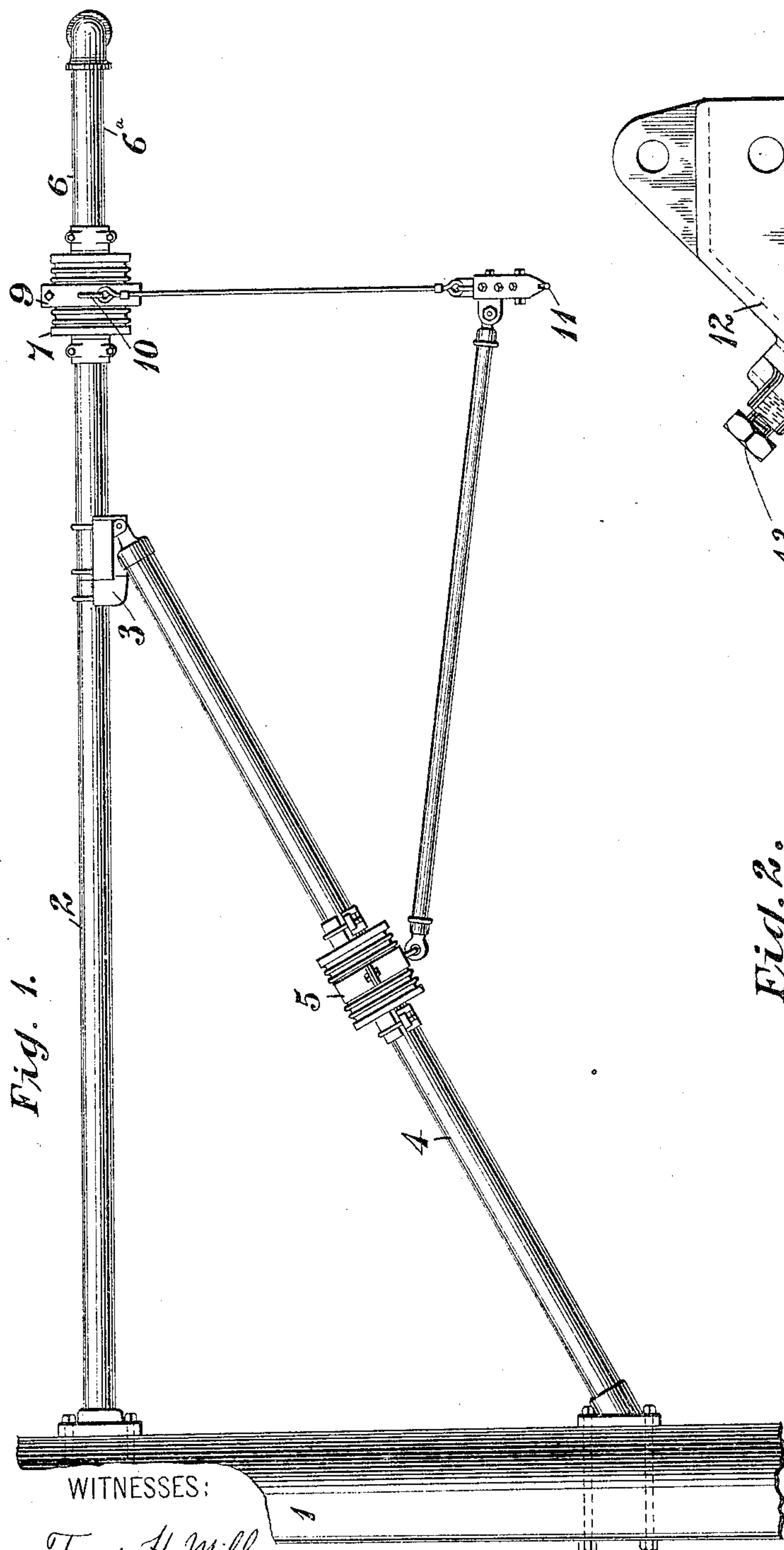


Fig. 1.

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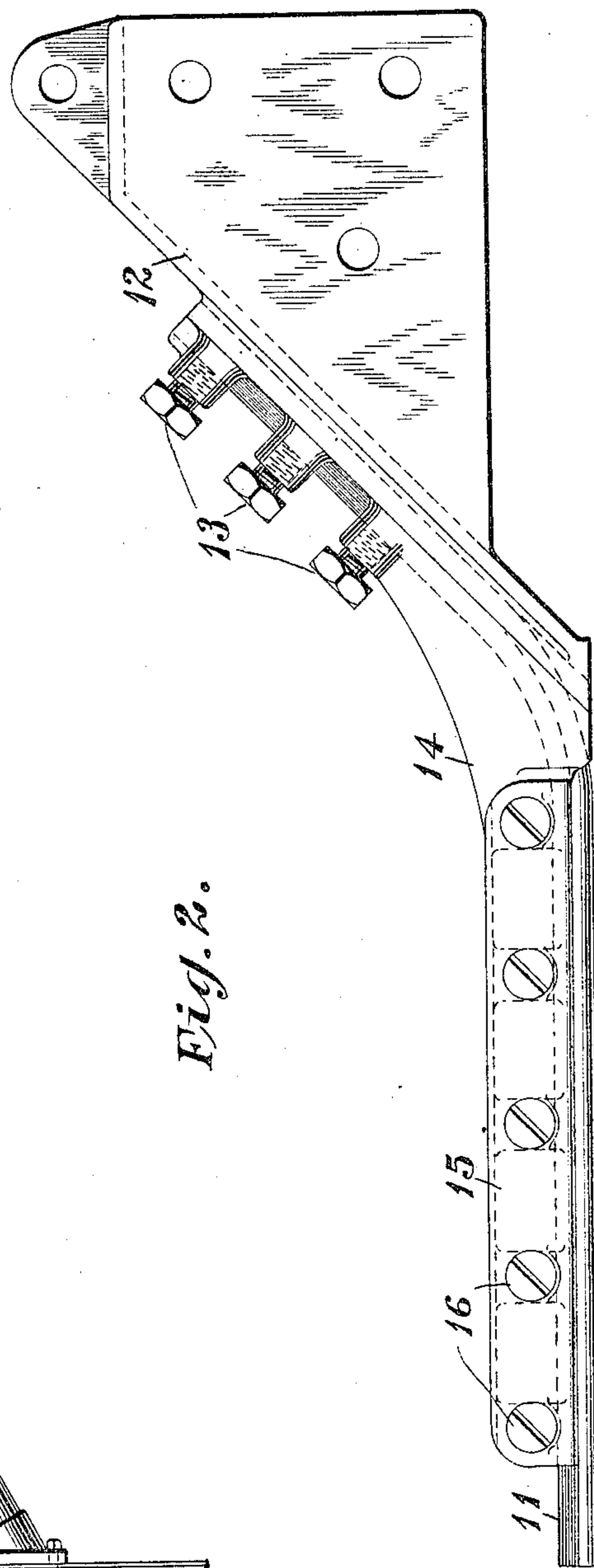


Fig. 2.

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Fig. 3.

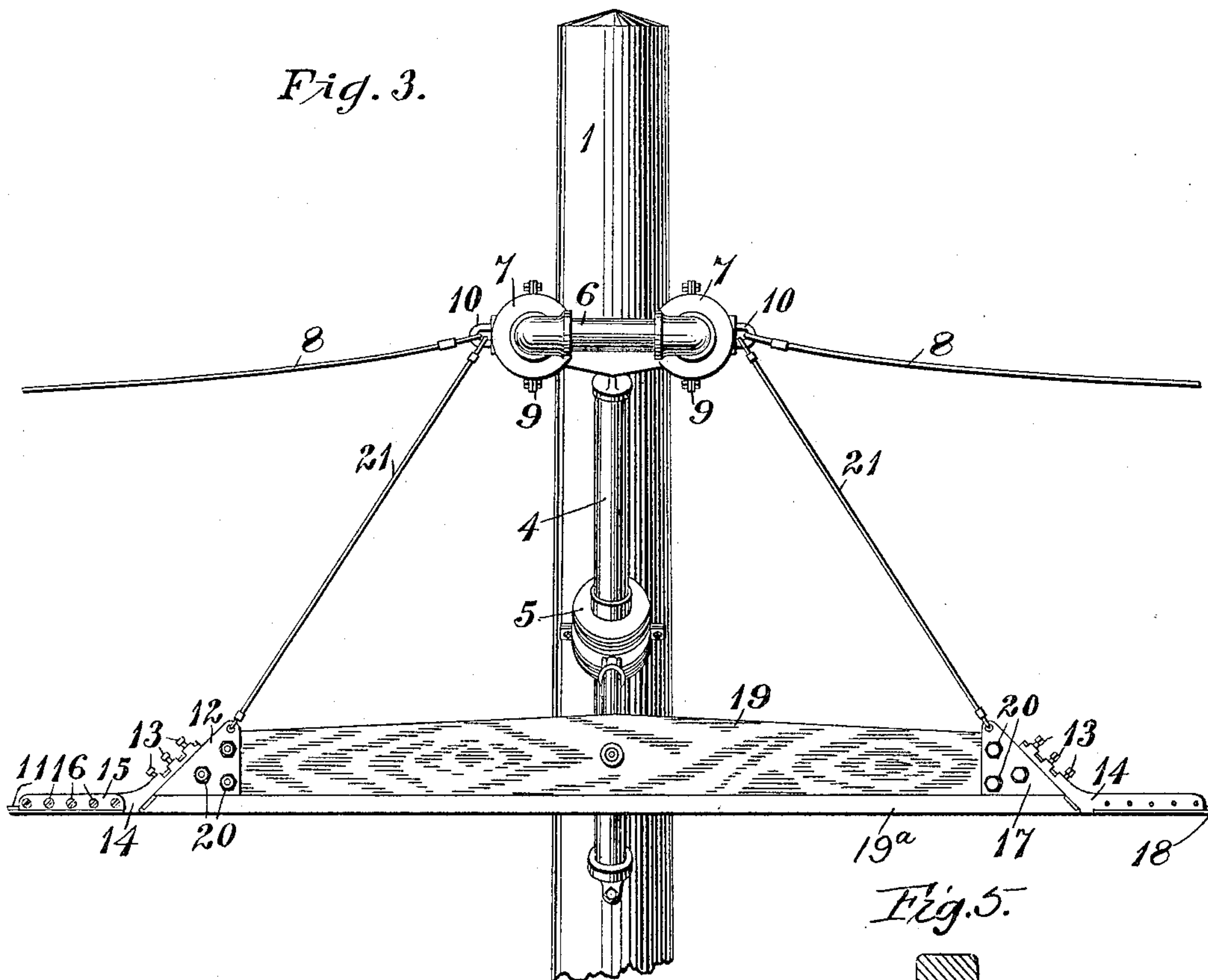


Fig. 4.

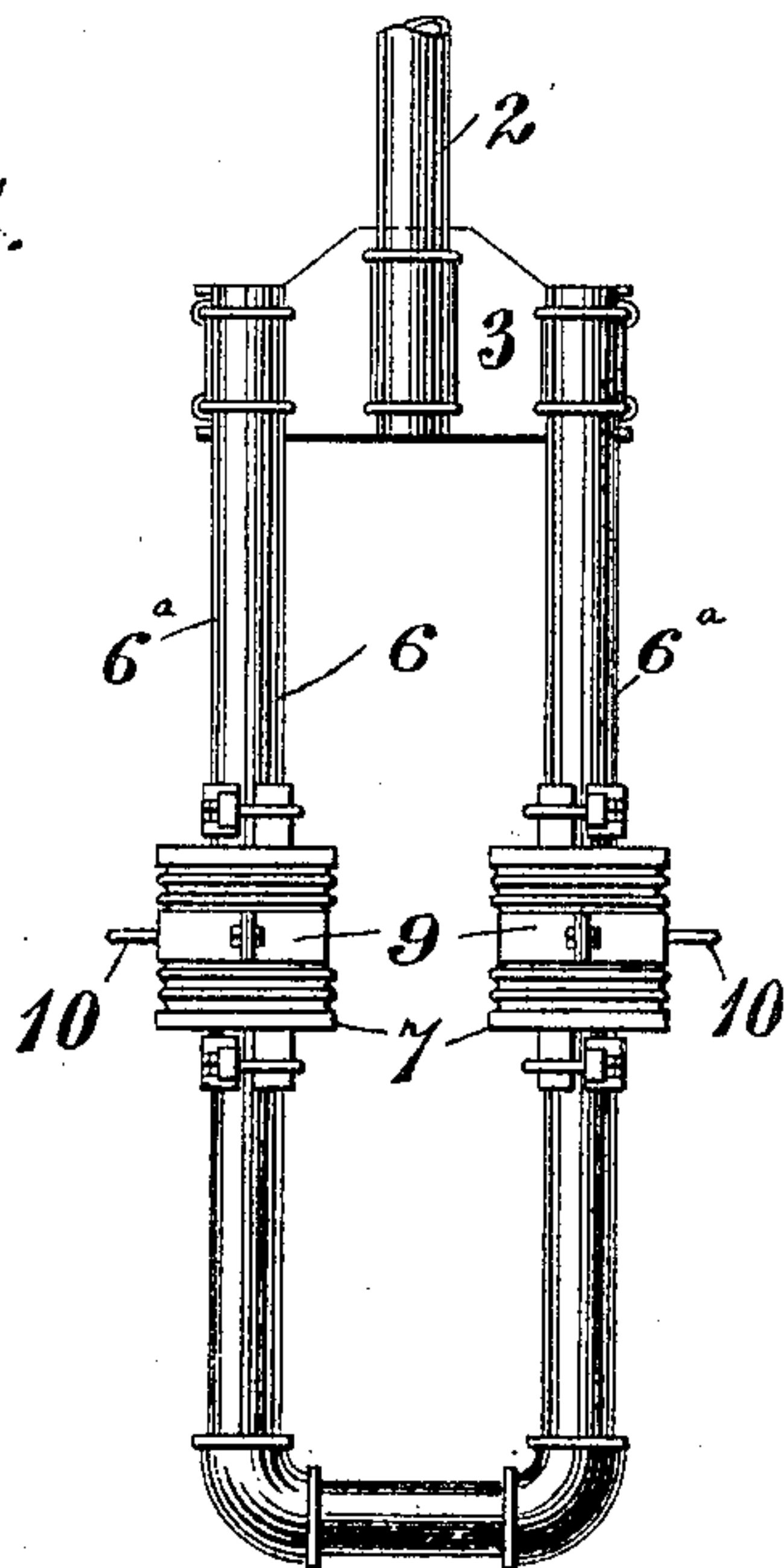
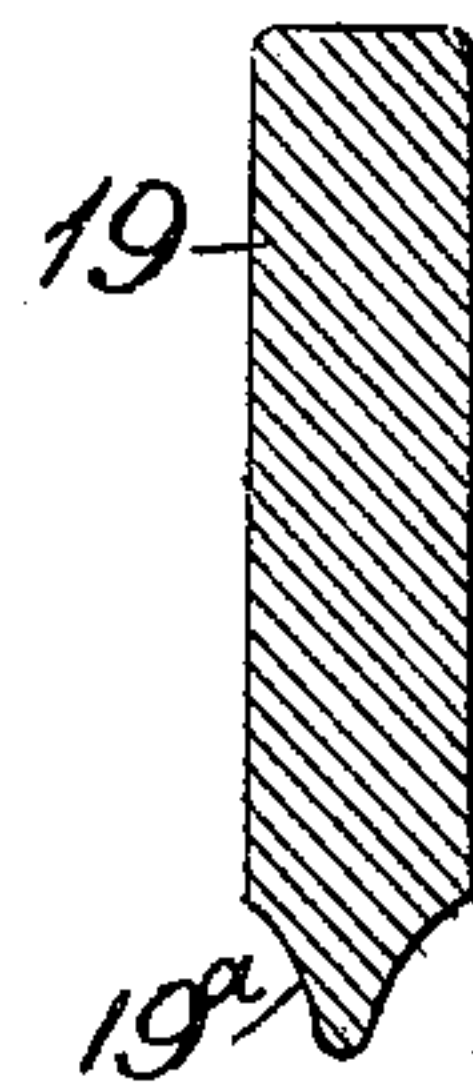


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## OVERHEAD STRUCTURE FOR ELECTRIC RAILWAYS.

No. 803,215.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed October 19, 1904. Serial No. 229,180.

*To all whom it may concern:*

Be it known that we, HARRY P. DAVIS and THEODORE VARNEY, citizens of the United States, and residents of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Overhead Structures for Electric Railways, of which the following is a specification.

Our invention relates to electric railways, and particularly to apparatus for supporting and insulating trolley-conductors.

The object of our invention is to provide a simple, efficient, and durable means for supporting and insulating trolley-conductors in cases where it is desired that a trolley shall pass uninterruptedly from a line of one voltage to that of another voltage or from a line carrying alternating current to one carrying direct current, and vice versa.

In the accompanying drawings, Figure 1 is a side elevation of one trolley-conductor support. Fig. 2 is a detail view of a casting constituting a part of our present improvement, a portion of a cooperating trolley-conductor section being also shown. Fig. 3 is an elevation of the apparatus shown in Fig. 1 at right angles to the view there shown. Fig. 4 is a plan view of a portion of the supporting structure shown in Figs. 1 and 3, and Fig. 5 is a transverse sectional view of the insulating-bar shown in Fig. 3.

In the system to which the present invention pertains the trolley-conductor is preferably supported in such position relative to the track as may be desired by means of a messenger wire or cable, which is in turn supported from poles located adjacent to the track by means of suitable laterally-projecting bracket-arms, though any other suitable supporting means may be utilized.

In cases where it is desired to run the trolley directly from a circuit of one voltage to that of another voltage or from a circuit carrying alternating current to one carrying direct current, and vice versa, we provide special devices, which will be now described.

The pole 1, that is located adjacent to the point where the change in voltage or in kind of current takes place, is provided with a laterally-projecting arm 2, upon the free end of which is mounted a block or head 3. Between the block or head 3 and the pole 1 is

interposed an inclined brace-arm 4, having an insulator 5.

Mounted in the head or block 3 are the ends of a U-shaped supplemental frame 6, each arm 6<sup>a</sup> of which is provided with an insulator 7, to which the end of a messenger-wire 8 is fastened by means of a suitable clamp 9, having an eye 10. The end of a trolley-wire 11 is bent upward at a suitable angle into a passage-way in the outer edge of a triangular casting 12 and is clamped in position therein by means of suitable set-screws 13. The casting 12 is extended some distance in the normal direction of the trolley-conductor to form a clamping-ear 14, and another clamping-ear 15 is provided at the opposite side of the trolley-wire and is fastened to the first-named ear by means of suitable bolts 16. The other casting 17, to which the end of the trolley-conductor 18 is fastened in the same manner as that already described, is of the same form and is provided with the same attachments as the casting 12, but is reversely disposed.

A bar 19 of the proper length and shape and formed of some non-conducting material which has sufficient strength and resistance to atmospheric conditions—such, for example, as hard wood—is interposed between the two castings 12 and 17 and has its ends securely fastened thereto by means of bolts 20. The lower edge 19<sup>a</sup> of the bar 19 preferably conforms in shape to the corresponding side of the trolley-conductors 11 and 18, as indicated in Fig. 5, and is flush therewith, so that the trolley may move freely from one conductor to the other. The castings 12 and 17 are supported from the eyes 10 by means of inclined hangers 21, which may be wires, cables, or other forms of suspension devices having sufficient strength.

The trolley-conductor and messenger-cable supporting and insulating devices herein shown and described but not claimed are claimed by us in another pending application, Serial No. 229,178, filed October 19, 1904.

Such variations in the structure here shown and described as do not change the mode of operation or result are regarded as within the scope of our invention and are intended to be covered by the claims.

We claim as our invention—



1. An overhead structure for electric railways comprising two trolley-conductor sections having upturned ends, a non-conducting bar having metal end pieces to which the  
5 upturned ends of the trolley-conductor sections are clamped, a pole, an arm projecting laterally from said pole and provided with insulators, and suspension means connecting said insulators to the said metal end pieces.
- 10 2. An overhead structure for electric railways comprising two trolley-conductor sections, a non-conducting bridging-bar having metal castings bolted to its ends, said castings having means for clamping the ends of the  
15 trolley-conductor sections thereto, and a supporting structure comprising a pole, an approximately horizontal arm having a double extension provided with cylindrical insulators and links connecting the insulators with  
20 said castings.
3. An overhead structure for electric railways comprising trolley-conductor sections, a wooden bar having end castings to which the ends of said trolley-conductor sections  
25 are fastened, a supporting structure comprising a pole, a laterally-projecting arm having

a double-arm extension, insulators upon said extension-arms, and rods or links extending between the said insulators and the castings to which the trolley-conductor sections are  
30 fastened.

4. An overhead structure for electric railways comprising trolley-conductor sections, a non-conducting bar having metal end pieces provided with upturned sockets to re-  
35 ceive the ends of the trolley-conductor sections and with means for clamping said ends in said sockets, a supporting structure comprising a pole, a laterally-projecting arm having an extension provided with insulators, 40  
and links or rods connecting said castings with said insulators.

In testimony whereof we have hereunto subscribed our names this 8th day of October, 1904.

HARRY P. DAVIS.  
THEODORE VARNEY.

Witnesses:

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