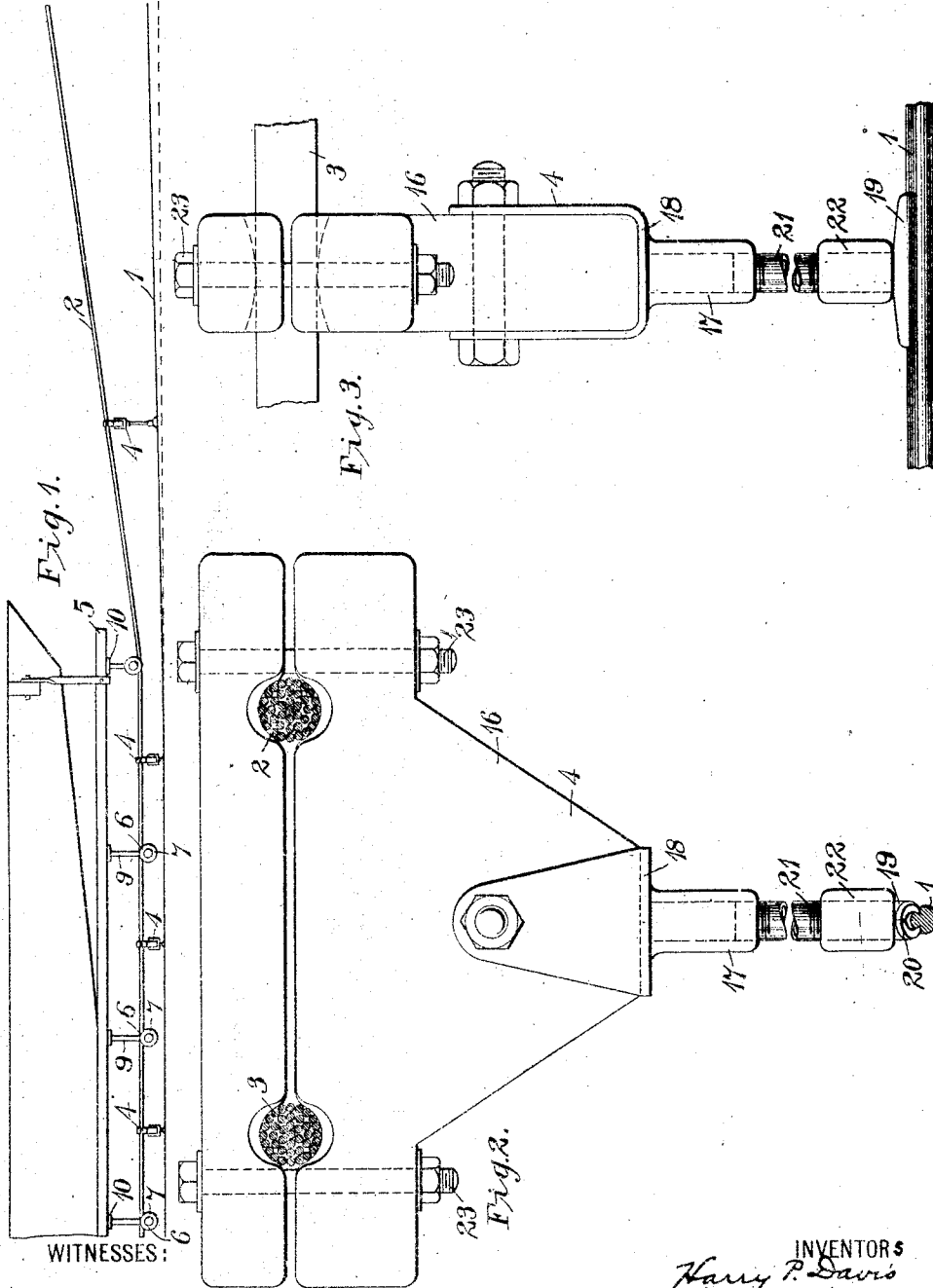


H. P. DAVIS & T. VARNEY.
ELECTRIC LINE CONSTRUCTION.
APPLICATION FILED JUNE 4, 1906.

946,537.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 1.



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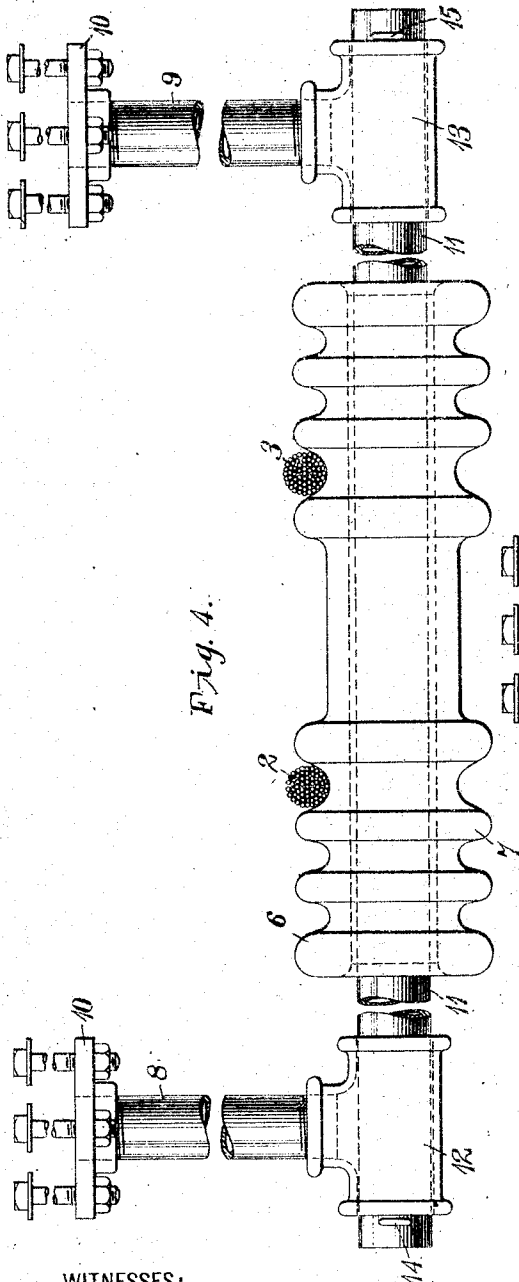


Fig. 4.

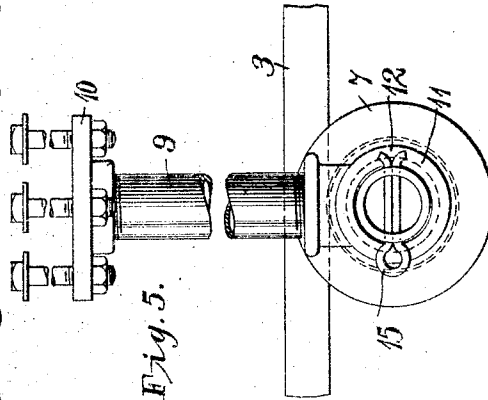


Fig. 5.

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UNITED STATES PATENT OFFICE.

HARRY P. DAVIS AND THEODORE VARNEY, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRIC-LINE CONSTRUCTION.

946,537.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed June 4, 1906. Serial No. 320,134.

To all whom it may concern:

Be it known that we, HARRY P. DAVIS and THEODORE VARNEY, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electric-Line Construction, of which the following is a specification.

Our invention relates to electric line construction and particularly to a catenary form of such construction as is adapted for electric railway trolley lines.

The object of our invention is to provide a line construction of the class above indicated, which shall be simple in arrangement and which shall be adapted for use in sections where the overhead space is limited.

When it is desirable to install a double messenger catenary line construction under bridges or through tunnels where the overhead space is limited, it is necessary to modify the usual arrangement so that a minimum vertical space may be required and so that the danger of grounding the messenger cables may be avoided.

According to our present invention, the messenger cables, which are usually electrically connected to the trolley wire which they support, are insulated therefrom by an improved trolley hanger and are themselves supported by a hanger which comprises an insulating cylinder mounted on a rod or tube and hung in stationary sockets projecting downwardly from an overhead surface.

Our invention is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a section of electric trolley line arranged in accordance therewith; Figs. 2 and 3 are views of the improved trolley hanger shown in Fig. 1 and Figs. 4 and 5 are views of the messenger support also shown in Fig. 1.

Referring to the drawings, a trolley line conductor 1 is mechanically supported and electrically separated from messenger cables 2 and 3 by means of trolley hangers 4. The messenger cables 2 and 3 are supported from an overhead surface 5 by means of insulating supports 6. The insulating supports 6 each comprise a corrugated insulating cylinder 7, and stationary hanger rods 8 and 9 which may be suspended from an overhead surface by means of floor flanges 10 to which they are screw-threaded.

The insulator 7 may be cemented or otherwise fixed to a rod or tube 11 that is detachably mounted in a horizontal position by means of sleeve bearings 12 and 13 which have the form of T-pipe connectors, and which are adapted to receive the ends of the rod or tube. The distance between the supports 8 and 9 is such that the rod 11 to which the insulator 7 is attached, may be assembled after the supports are rigidly fixed to an overhead surface and when the insulator is in position it is prevented from slipping out of the bearings by cotter pins 14 and 15. This construction is specially advantageous since the position of the insulator may be adjusted after the supports have been fastened in position and since the insulator itself may be replaced, if it is damaged or broken, after the hanger is mounted. The outer surface of the insulator may preferably be corrugated so that the messenger cables, which are supported by the insulator, may be more easily fastened in position at a predetermined distance apart.

The trolley hangers 4 are preferably located midway between the insulating supports 6 so that the trolley construction may be flexible and each comprises a substantially triangular two-part clamping block 16 of treated wood or other suitable insulating material which may be clamped to the messenger cables, and a trolley clamp 17 which is fixed to the lower member of the insulating block 16. The trolley clamp 17 comprises a U-shaped support 18, the lower portion of which is tubular and is screw-threaded to receive a pair of clamping jaws 19 and 20 that are adapted to engage grooves in the trolley conductor. If it is desirable to separate the trolley conductor from the messenger cables by a greater distance, a rod or pipe 21 may be interposed between the clamp support 18 and the clamping jaws 19 and 20, the latter being screw-threaded into a sleeve 22. The two parts of the clamping block 16 may be forced together, after the cables are in position, by bolts 23 or by any other suitable means.

We desire that variations in size and arrangement of details which do not depart from the spirit of our invention shall be included within its scope.

We claim as our invention:

1. The combination with two side-by-side messenger cables, spaced insulating supports having circumferential grooves to receive said cables, and a trolley wire, of means for supporting the trolley wire from the cables at points between the cable supports, said means comprising a series of insulating blocks each of which consists of a base member having messenger-cable recesses in its upper edge and trolley clamps attached to its lower edge, a cap member having messenger-cable recesses and bolts for clamping the two members together.
2. The combination with messenger cables, cylindrical supporting insulators having circumferential grooves to receive said cables, and a trolley wire, of means for supporting the trolley wire from the messenger cables at points between the cylindrical insulators, said means comprising insulating blocks each of which consists of a lower member having a trolley clamp attached thereto, a cap member and bolts for clamping the messenger cables between said members.
3. In an electric line, the combination with relatively long corrugated cylindrical insulators disposed substantially in a horizontal plane and a pair of messenger cables supported in corrugations of the insulator, of a trolley conductor and means for supporting and insulating the conductor from

the messenger cables at points between the corrugated cylindrical insulators, said means comprising insulating blocks each of which consists of a lower member having a trolley clamp attached thereto, a cap member, and bolts for clamping the messenger cables between said members.

4. An electric line hanger for a catenary construction comprising two stationary supports each of which has a floor flange and bolts at its upper end, and a horizontal sleeve bearing at its lower end, a tube detachably mounted in the sleeve bearings and a cylindrical fluted or corrugated insulator mounted on the tube between the sleeve supports.

5. An electric line hanger comprising stationary supports having floor flanges at their supported ends, and T-pipe connectors at their opposite ends, a tube loosely mounted in the T-pipe connectors, and a corrugated cylindrical insulator surrounding the pipe between the supports.

In testimony whereof, we have hereunto subscribed our names this 1st day of June, 1906.

HARRY P. DAVIS.
THEODORE VARNEY.

Witnesses:

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