

H. F. HOXIE.
SECTION INSULATOR FOR ELECTRIC LINES.
APPLICATION FILED DEC. 6, 1907.

946,546.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 1.

Fig. 2.

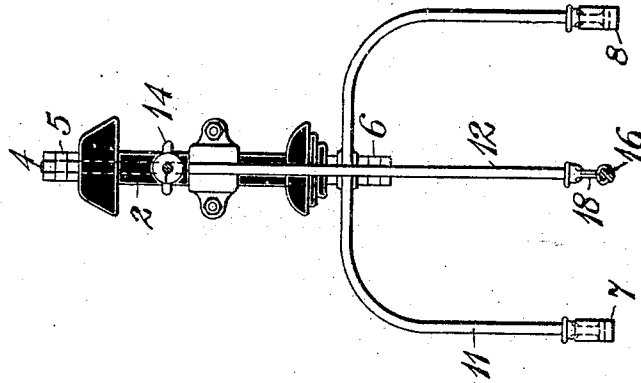
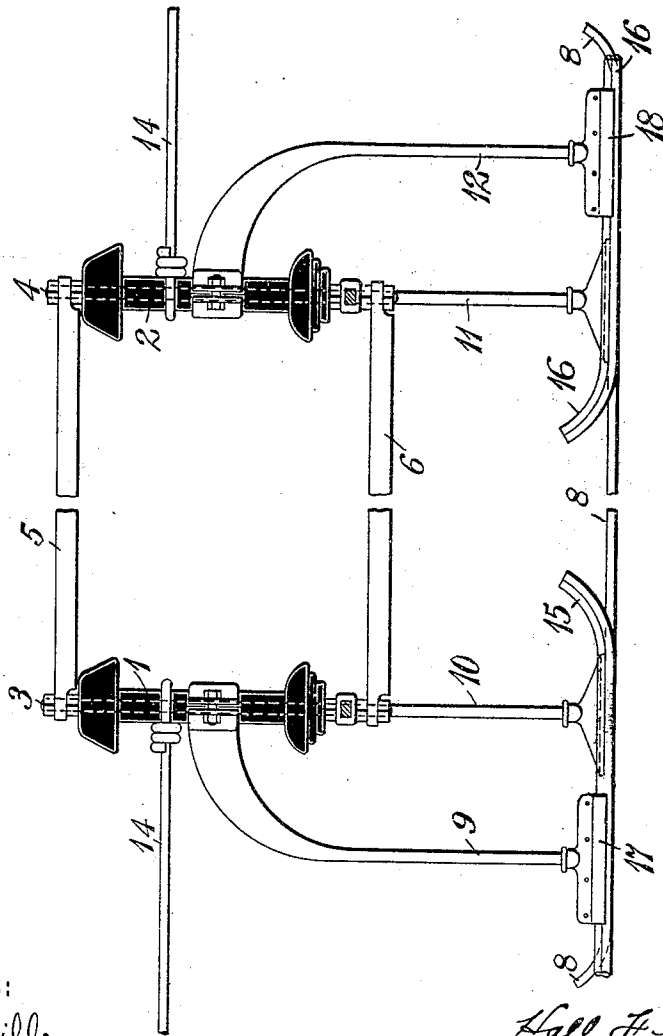


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 4.

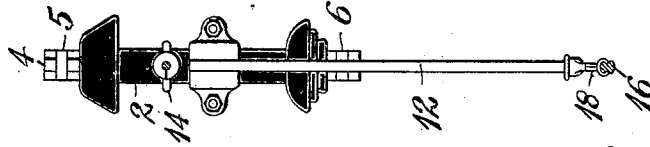
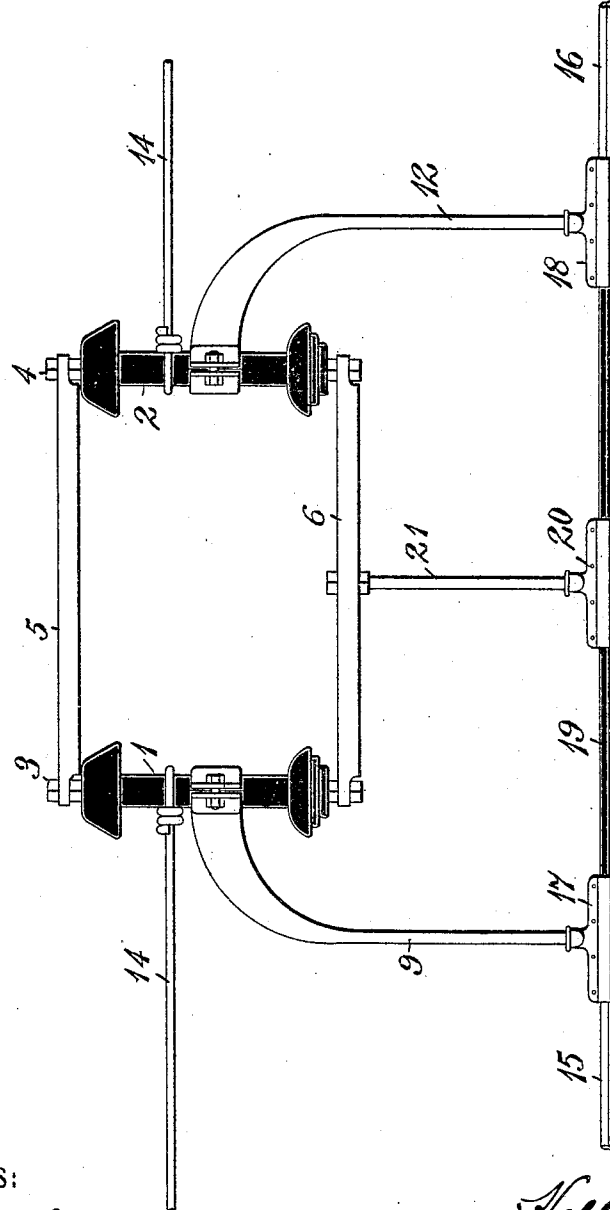


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SECTION-INSULATOR FOR ELECTRIC LINES.

946,546.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed December 6, 1907. Serial No. 405,410.

To all whom it may concern:

Be it known that I, HALL F. HOXIE, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Section-Insulators for Electric Lines, of which the following is a specification.

My invention relates to electric lines, and particularly to electric railway trolley lines, and it has for its object to provide a section insulator for such lines that shall be simple and durable and adapted for use in connection with relatively high voltage distribution and high speed sliding or bow trolleys.

In trolley line construction it is usually desirable to divide the line into a series of sections which are insulated from each other and which may or may not be connected through suitable switching devices, by a shunt circuit. When an arrangement of this kind is employed, a section break insulator must be provided which is capable of withstanding the mechanical tension on the line and which is also capable of resisting the electrical strains imposed by the voltage of the line. In the prior art, rods or bars of wood or other insulating material have usually been employed to fill in the gap formed at a section break, but, with arrangements of this kind, the depreciation is usually excessive by reason of the flashing and burning which occurs when the trolley becomes disengaged from the supply conductor.

According to one embodiment of my present invention, I avoid the aforesaid difficulties by providing an actual mechanical as well as an electrical break in the supply line conductor and guide rails on either side of the break, at a material distance from the conductor, for guiding the sliding or bow trolley over the gap.

In another arrangement of my invention, which is adapted for use with wheel trolleys, I fill in the gap between the adjacent ends of the interrupted conductor by a strip of insulating material, such as porcelain, which is capable of resisting the action of heat but which is unable to sustain large forces in tension, improved means being provided for relieving the insulating strip from substan-

tially all the mechanical strains which would ordinarily be imposed upon it.

Figures 1 and 2 of the accompanying drawings are, respectively, side and end elevations of a section break insulator constructed in accordance with my invention and adapted for use with sliding or bow trolleys. Figs. 3 and 4 are similar views of a section insulator adapted for wheel trolleys, both forms being intended primarily for use with well known forms of catenary line construction.

Referring first to Figs. 1 and 2, the device here illustrated comprises a pair of insulating spools or sleeves 1 and 2, mounted on bolts or rods 3 and 4, strain rods 5 and 6, guide bars 7 and 8 and a plurality of supporting brackets 9, 10, 11, and 12. The bolts 3 and 4, on which the insulating spools 1 and 2 are mounted, are tied together at corresponding ends by the strain rods 5 and 6 and the frame thus formed is supported by the interrupted messenger or supporting cable 14 the adjacent ends of which are tied to the insulating spools 1 and 2. The trolley conductors 15 and 16 are supported, in the usual manner, from the sections of messenger cable and their adjacent ends are held rigidly in position by the supporting brackets 9 and 12, the upper ends of which are clamped to the insulating spools 1 and 2 and the lower extremities of which are provided with trolley clamps 17 and 18. The extremities of the trolley conductors 15 and 16 and of the guide bars 7 and 8 are bent upwardly in order that the sliding or bow trolley may pass smoothly across the break. The guide bars 7 and 8 are supported by the U-shaped brackets 10 and 11 which are secured to the lower extremities of the bolts 3 and 4 and hold the guide bars at a material distance apart in the horizontal plane of the interrupted trolley conductor and parallel to it. By this means an ample air space is provided for the insulation of high trolley line voltages without impeding the progress of an electric vehicle as its trolley passes over the section break insulator.

Reference may now be had to Figs. 3 and 4, in which corresponding parts are designated by the same reference characters. In the arrangement here illustrated, the guide bars 7 and 8 and their supporting brackets

10 and 11 are omitted. The trolley conductor 15—16 is rendered mechanically continuous by a relatively short section 19 of hard insulating material, such as porcelain, which is supported at its ends by the trolley clamps 17 and 18 and at an intermediate point in its length by a clamp 20 which is suspended by a rod 21 from the strain rod 6. By this means, the section break is adapted for use with wheel trolleys without impairing its efficiency or shortening its life.

The section insulator of my invention is not restricted in its use to any particular type of line construction and, furthermore, it is conceivable that various modifications in its structure may be effected without departing from the spirit of the invention. I, therefore, desire that only such limitations shall be imposed as are indicated in the appended claims.

I claim as my invention:

1. In an electric line structure, the combination with an interrupted line conductor, a pair of vertically disposed insulators, supporting means therefor, and a pair of strain rods connecting corresponding ends of the insulators together, of bracket arms projecting downwardly from the insulators and respectively attached to the ends of the interrupted line conductor.

2. In an electric line structure, the combination with an interrupted line conductor, a pair of insulating sleeves materially separated from each other and joined by strain rods, and means for supporting the insulating frame thus formed, of brackets that connect the ends of the interrupted line to the insulators, and means for guiding a trolley across the break in the line conductor.

3. In an electric line structure, the combination with an interrupted line conductor, a pair of insulating sleeves, bolts or rods on which the sleeves are mounted, tension rods connecting corresponding ends of the bolts, and means for supporting the frame formed by the rods and the bolts, of means for securing the adjacent ends of the interrupted line conductor to the insulating sleeves, and means for guiding a trolley across the break in the conductor.

4. In an electric line structure, the combination with an interrupted messenger or supporting cable, an interrupted line conductor supported therefrom, a pair of insulating sleeves to which the adjacent ends of the messenger wire are attached, strain rods joining the insulators, and means for supporting the adjacent ends of the interrupted line conductor from the insulators, of means for guiding the trolley across the break in the line conductor.

5. In an electric line structure, the combination with an interrupted line conductor, a

pair of insulating sleeves materially separated from each other and joined by strain rods, and means for supporting the insulating frame, of brackets that connect the ends of the interrupted line to the insulators, and guide bars parallel to the line conductor and materially separated from it for guiding the trolley over the break.

6. In an electric line structure, the combination with an interrupted messenger or supporting cable, an interrupted line conductor supported therefrom, a pair of insulating sleeves to which the adjacent ends of the messenger wire are attached, strain rods joining the insulators, and means for supporting the adjacent ends of the interrupted line conductor from the insulators, and guide bars parallel to the line conductor and materially separated from it for guiding the trolley over the break.

7. In an electric line structure, the combination with an interrupted line conductor and insulating means for holding the line terminals at a predetermined distance apart, of a pair of laterally spaced bars for guiding the trolley across the break in the line conductor.

8. In an electric line structure, the combination with an interrupted line conductor and insulating means for holding the line terminals at a predetermined distance apart, of a pair of laterally spaced guide bars disposed parallel to the line conductor at the sides thereof for guiding the trolley over the break.

9. In an electric line structure, the combination with an interrupted line conductor and insulating means comprising a pair of sleeve insulators, supporting rods therefor and substantially parallel strain bars connecting the supporting rods for holding the line terminals at a predetermined distance apart, of independent means for guiding the trolley across the break in the line conductor.

10. In an electric line structure, the combination with an interrupted line conductor and insulating means comprising a pair of sleeve insulators, supporting rods therefor and substantially parallel strain bars connecting the supporting rods for holding the line terminals at a predetermined distance apart, of guide bars parallel to the line conductor and materially separated from it for guiding the trolley over the break.

In testimony whereof, I have hereunto subscribed my name this 19th day of November, 1907.

HALL F. HOXIE.

Witnesses:

H. C. TENER,
WM. H. CAPEL.