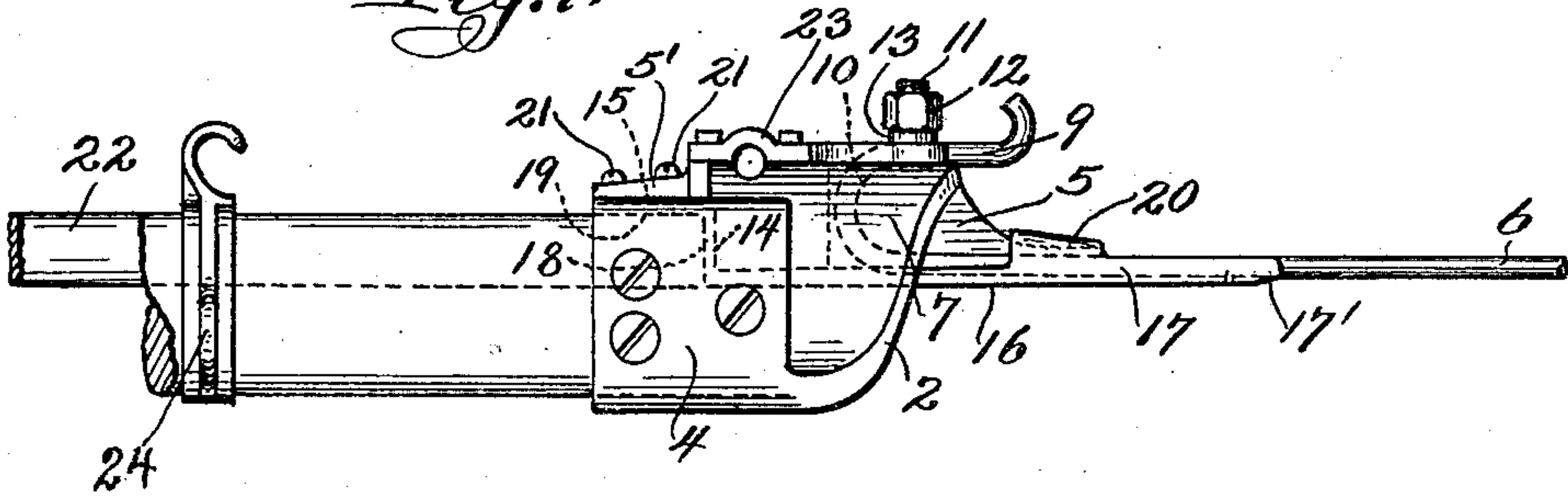


H. B. CLARKE.  
SECTION INSULATOR.  
APPLICATION FILED MAY 21, 1908.

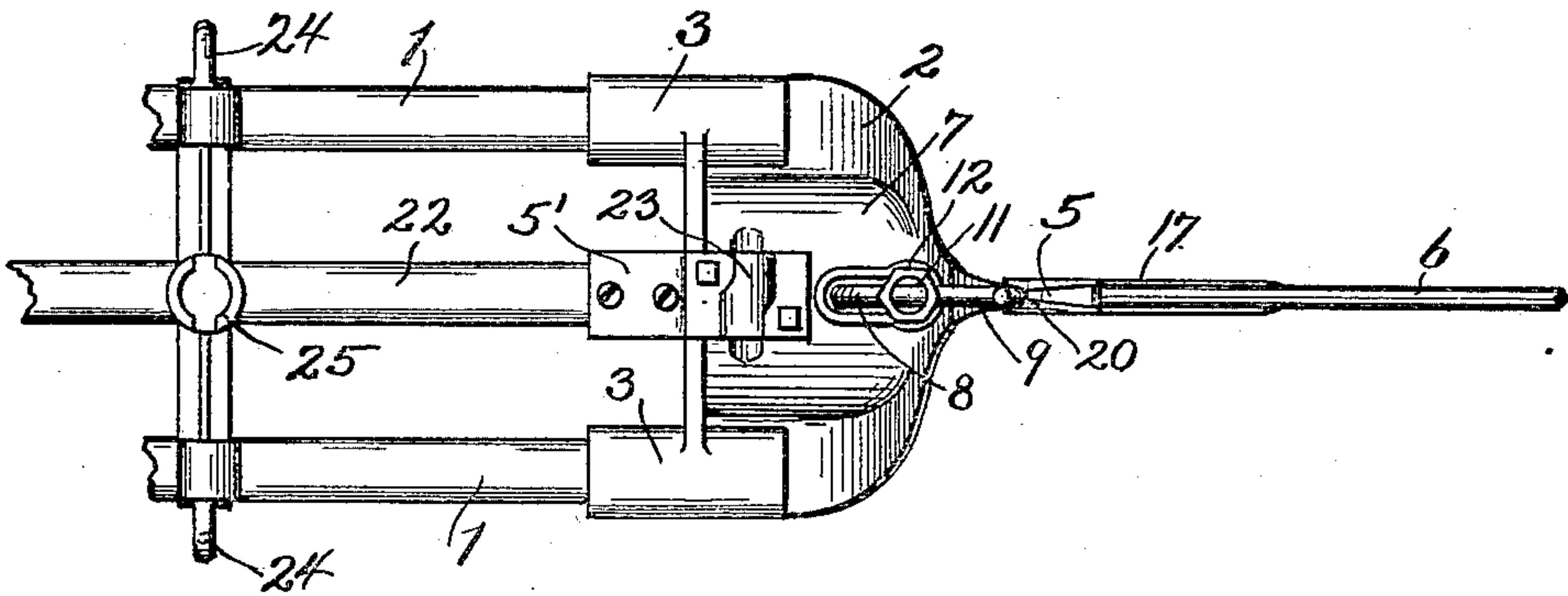
931,385.

Patented Aug. 17, 1909.

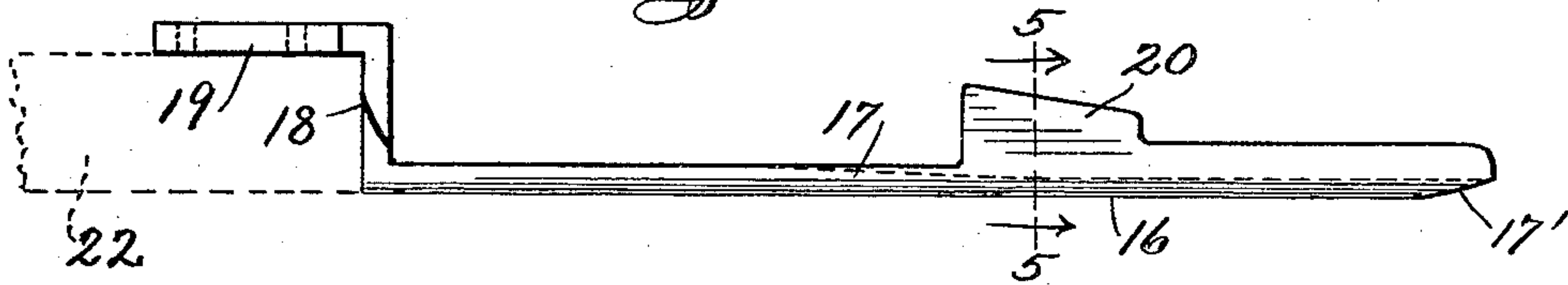
*Fig. 1.*



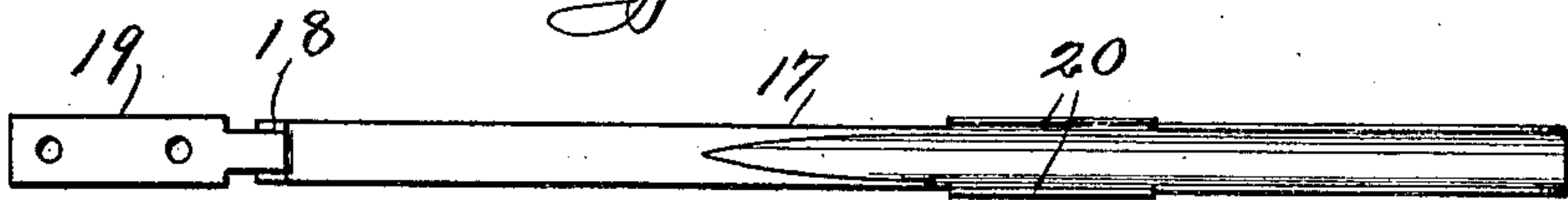
*Fig. 2.*



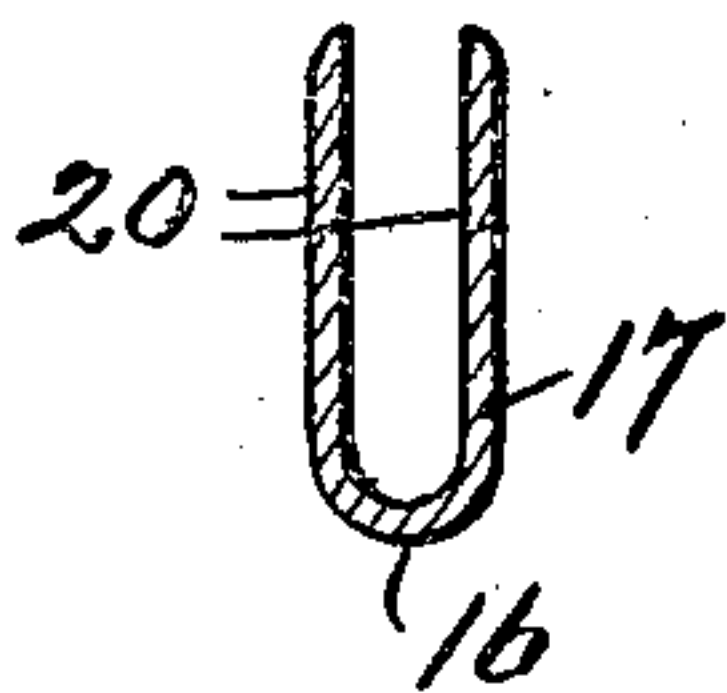
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

HENRY B. CLARKE, OF HIGHLAND PARK, ILLINOIS.

## SECTION-INSULATOR.

No. 931,385.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed May 21, 1906. Serial No. 317,892.

*To all whom it may concern:*

Be it known that I, HENRY B. CLARKE, a citizen of the United States, residing at Highland Park, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Section-Insulators for Trolley-Wires, of which the following is a specification.

This invention relates to improvements in section insulators of that type used for connecting the contiguous ends of sections of overhead trolley wires in such manner that the trolley wheel or equivalent device may travel from one section to another over a mechanically-uninterrupted support.

The salient object of the present invention is to provide a section insulator of the character described so constructed and arranged that those parts which are subject to wear by the traverse of the trolley wheel, form comparatively small features of the mechanism as a whole and are made readily detachable so that they may be renewed at slight expense and conveniently from time to time.

Another feature of the invention is to provide a construction which minimizes the tendency of the trolley wheel to jump, by minimizing the interruption or lack of continuity at the points where the trolley wheel and connector meet in the contact or track surface; and a further and general object of the invention is to provide improvements in the details and construction of the device.

To the above ends the invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims.

The invention will be readily understood from the following description, reference being had to the accompanying drawing, in which—

Figure 1 is a side elevation of one end and the central portion of a connector embodying my invention; the other end of the device being a duplicate of that shown; Fig. 2 is a plan view of the parts shown in Fig. 1; Fig. 3 is a detail side elevation of one of the detachable wear shoes and a fragmentary portion of the track bar with which it connects; Fig. 4 is a top or plan view of the shoe; Fig. 5 is a cross sectional detail taken on line 5—5 of Fig. 3.

Section insulators of the general character to which this invention pertains are disclosed in prior United States patents No.

570,140 of October 27, 1896, and No. 716,978 of December 30, 1902.

Referring to the drawing, 1, 1, designate a pair of tension bars formed of wood or other suitable insulating material and securely united at their respective ends with main castings 2; one only being shown but it being understood that the other casting 2 is identical. These bars are conveniently united with the casting by engaging sockets 3 in the latter, through which sockets and the contained bars are inserted securing screws 4. The member 2 is so formed as to provide a centrally disposed vertical web-like portion 5 adapted for connection thereto of the trolley wire 6 and united with the socket portions 3 of the casting by means of lateral webs 7 which merge into the portion 5, as seen clearly in the drawing. Through the member 5 is formed a vertical mortise or aperture 8, through which the end of the trolley wire is passed upwardly and bent back upon itself, as indicated at 9; that face of the mortise aperture 10 which sustains the chief tension of the trolley wire being rounded so as to avoid abrupt bends in the wire. Upon the upper side of the member 5, in vertical alinement with the trolley wire, is provided a stud 11 which is of considerably larger diameter than the diameter of the trolley wire and is split so that the trolley wire may pass therethrough, and upon the end of this split stud is threaded a clamping nut 12 and washer 13. The under side of the member 5 is grooved to receive the upper side of the trolley wire which underlies the same. The inner end of the vertical center web 5 terminates in a right angled rabbet forming an upright shoulder 14 and an overhanging surface 15.

16 designates as a whole the detachable wear shoe forming the salient feature of the present invention. This shoe comprises a long slender shoe portion proper 17 constructed to underlie the lower edge of the member 5 and the contiguous portion of the trolley wire 6, an upstanding portion 18 which fits against the upright shoulder 14 and a horizontally extending portion 19 which underlies the extension 5' of the member 5. The outer end portion of the part 17 is of U-shape in cross section so that it not only fits the under side of the trolley wire internally but externally is rounded to a track surface conforming approximately



to the trolley wire, and the extremity 17' of this part is tapered down thin so as to merge into the under surface of the trolley wire in a substantially smooth manner. At a point midlength of the part 17 a pair of integral ears 20 is provided which embrace the sides of the extension of the member 5 and have their upper edges crimped over the upper edge of said extension so as to clamp the trolley wire firmly between the shoe and extension and at the same time secure this part of the shoe rigidly in place. The horizontal portion 19 of the shoe is secured to the extension 5' by means of screws 21 inserted through these parts.

22 designates a bridge bar which is secured to extend between the two inner or proximate ends of the shoe members 16 and serves to form a track surface for the trolley wheel from one shoe to the other. To this end said bridge bar is constructed to fit at its ends in the angles of the offset portions of the shoes with its under surface flush with the under surfaces of the shoes and rigidly held in position by means of the same screws 21 which unite the shoe members to the main castings; these screws being extended downwardly into the ends of the bridge bar, as indicated clearly in Fig. 1. This bridge bar, it will be understood, is made of hard fiber or other suitable insulating material, and inasmuch as it is secured to, and removable with, the shoes it can likewise be renewed or repaired with the greatest convenience. In order that the bridge bar and the contiguous ends of the shoes may be additionally held against lateral or rocking movement, the end face 14 of the member 5 against which the upright portion 18 of the shoe fits is mortised or grooved to receive said portion 18, as best indicated in Figs. 3 and 4.

The connector is, as usual, provided with suitable eyes or supports, as indicated at 23, 24 and 25, whereby it may be mounted upon or attached to the supporting cross wires.

The use and operation of the device are obvious to those familiar with this art.

It will be obvious that the shoe members and bridge bar 22 take all of the wear of the trolley wheel traversing the device, and accordingly are the only parts which deteriorate with use. The construction is such that these parts may be renewed and replaced at a trifling expense, and moreover the construction is such that these shoes may be applied to those connectors of this type already in use without any reconstruction of the device other than substituting a suitable bridge bar and adding the shoes thereto. In the use of these connectors unprovided with a shoe of this character, such for example as the device shown in Patent No. 570,140, there is necessarily an interruption in the continuity of the track surface where the trolley

wire comes nearest to the end of the bridge bar. This interruption permits the trolley wheel to jump slightly, and the repeated blows caused by the trolley wheel passing over these gaps or interruptions results in rapidly increasing the gap and wearing away the parts. Moreover, arcing is caused at these points, and this in itself augments the destruction of the device besides wasting energy.

The details of construction may be somewhat modified without departing from the invention.

I claim as my invention:

1. In combination with trolley wires, of a section insulator comprising end members to which the wires are attached, and an insulating bridge bar extending between said end members, of a wear shoe detachably connected with each end member, each wear shoe comprising a contact portion, one end of which underlies the contiguous attached portion of the trolley wire and the other end of which is offset and abuts against the contiguous end of said bridge member, means for detachably uniting the inner ends of the wear shoes to the respective end members and corresponding ends of the bridge members, and means for clamping the outer end of each wear shoe to the under side of the trolley wire.

2. In combination with trolley wires, of a section insulator comprising end members to which the wires are attached, insulating tension bars connecting said end members, and an insulating bridge bar extending between each end member, of a wear shoe detachably connected with each end member, each wear shoe comprising a contact portion one end of which underlies a contiguous attached portion of the trolley wire and the other end of which abuts against the contiguous end of said bridge member, means for detachably uniting the ends of the bridge members to the wear shoes for clamping the outer end of each wear shoe to the under side of the trolley wire.

3. In combination with trolley wires, of a section insulator comprising end members to which the trolley wires are attached, insulating tension bars connecting said end members and an insulating bridge bar extending between said end members, of a wear shoe detachably connected with each end member, each wear shoe comprising a relatively long contact portion, one end of which underlies the contiguous attached portion of the trolley wire and the other end of which abuts against the contiguous end of said bridge member, means for detachably uniting the inner ends of the wear shoes to the respective end members and corresponding ends of the bridge members, and means for clamping the outer end of each wear shoe to the under side of the trolley wire.



4. In combination with a trolley wire, of a  
section insulator comprising a pair of end  
castings and a pair of tension bars uniting  
said end castings, each end member having  
5 a centrally disposed longitudinally extend-  
ing web-like portion to which the trolley  
wire is attached so as to underlie a part of the  
under surface thereof, a wear shoe fitted to  
each end member, each wear shoe comprising  
10 an elongated contact portion underlying the  
attached end of the trolley wire provided  
with ears embracing the trolley wire and  
a superposed part of the end member, and  
an upwardly extending offset portion, a  
15 bridge bar having its ends secured within  
the rabbets of the shoe member, and means  
detachably securing said wear shoes and  
bridge bar to the end members of the insu-  
lator.

5. In combination with trolley wires, of a 20  
section insulator comprising end members  
to which the trolley wires are attached, a  
pair of insulating tension bars connecting  
said end members, an insulating bridge bar  
extending between each end member, a wear 25  
shoe detachably connected to each end mem-  
ber, each wear shoe comprising a contact  
portion one end of which underlies a con-  
tiguous attached portion of the trolley wire,  
means for detachably uniting the inner ends 30  
of the wear shoe to the respective end mem-  
bers, and means for clamping the outer end  
of each wear shoe to the trolley wire.

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Witnesses:

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