March 19, 1929. P. G. SWARS 1,705,689

SECTION INSULATOR

Filed Jan. 2, 1925 2 Sheets-Sheet 1

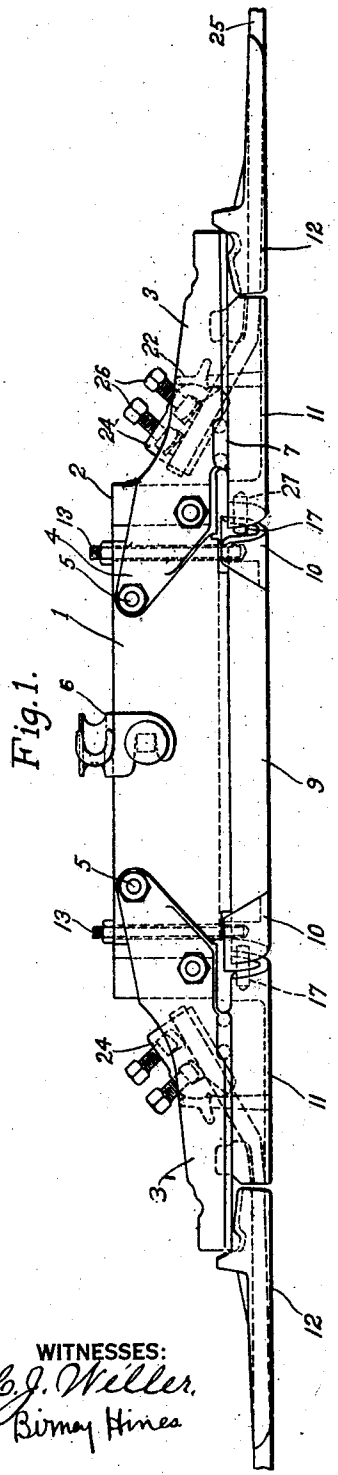


Fig. 1.

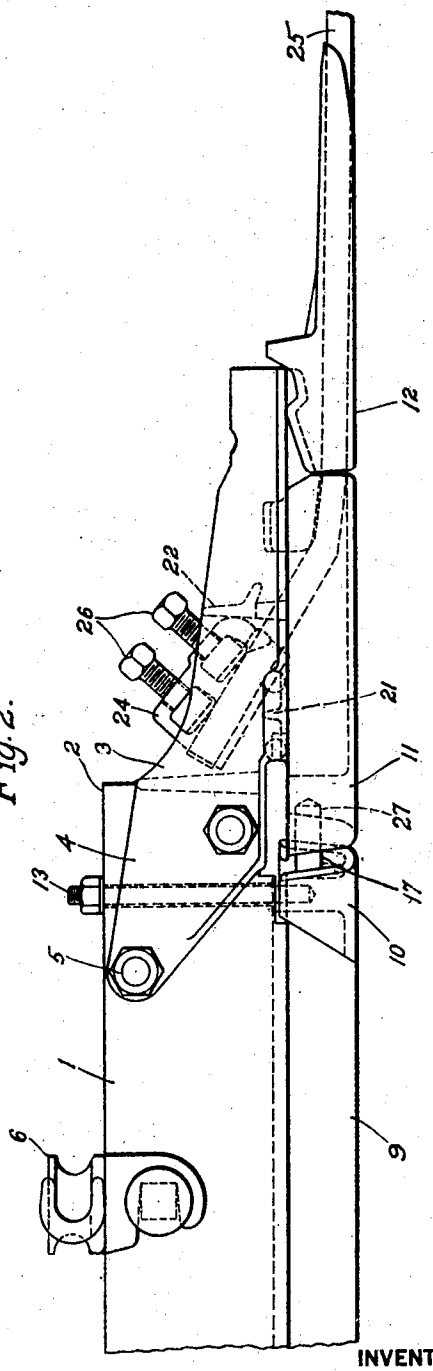


Fig. 2.

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SECTION INSULATOR

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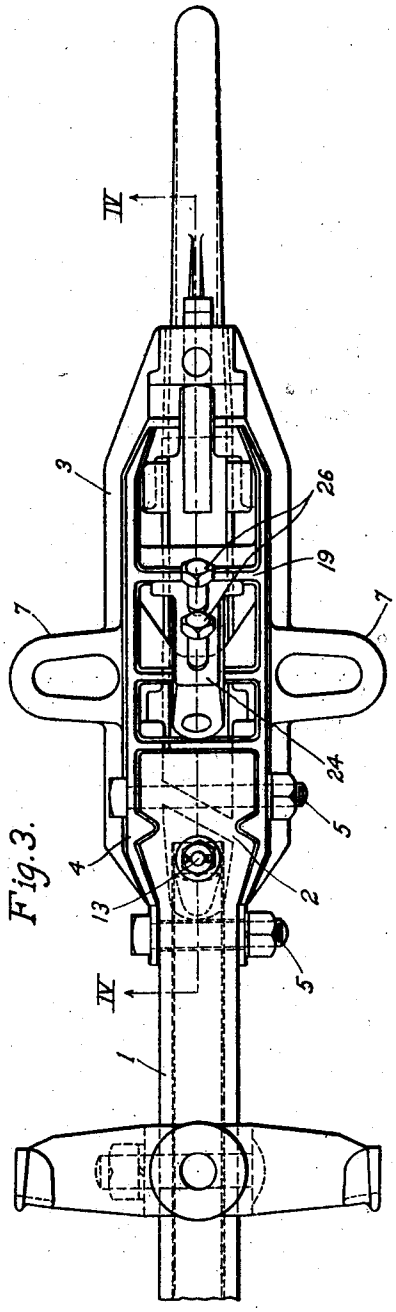


Fig. 3.

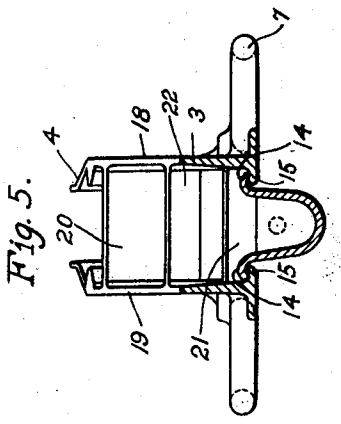


Fig. 5.

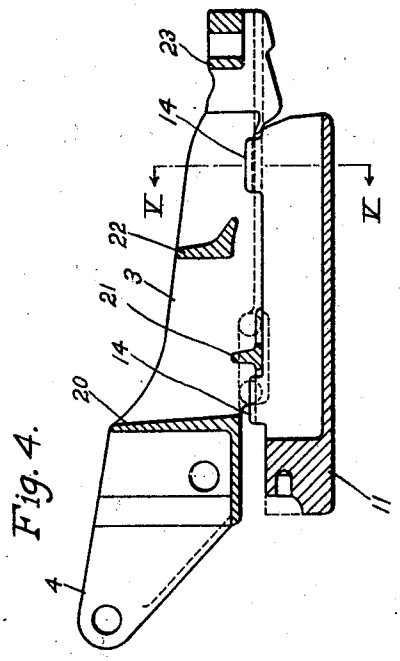


Fig. 4.

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UNITED STATES PATENT OFFICE.

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SECTION INSULATOR.

Application filed January 2, 1926. Serial No. 78,802.

My invention relates to section insulators and particularly to such section insulators as are employed in connection with trolley conductors in overhead line construction for electric railways.

One object of my invention is to provide a section insulator in which worn parts may be easily and quickly replaced.

Another object of my invention is to provide a section insulator that may be economically manufactured and easily and quickly installed in working position.

The section insulator comprising my invention embodies a main body of insulating material that is provided with castings at each end and has its underrun parts so formed that they may be easily and quickly removed and replaced.

For a better understanding of my invention, reference may be had to the accompanying drawings, in which

Figure 1 is a view, in side elevation, of a section insulator embodying my invention.

Fig. 2 is an enlarged view, in side elevation, of one end of the section insulator shown in Fig. 1.

Fig. 3 is a plan view of the portion of the section insulator shown in Fig. 2.

Fig. 4 is a view in longitudinal section of one of the end castings of the section insulator, taken along the line IV—IV of Fig. 3, and

Fig. 5 is a view in vertical section of one of the end castings taken along the line V—V of Fig. 4.

Referring to the drawings, I have shown a section insulator having a body member 1 of insulating material, such as treated wood, which is provided with enlarged ends 2, to which are attached metallic end castings 3. The inner ends 4 of the end castings 3 are provided with recesses that are adapted to receive the enlarged ends 2 of the body member 1 and form a dove-tailed fit therewith. The dove-tailed parts are further secured together by means of bolts 5 that pass therethrough.

A suitable hanger 6 is attached to the insulator at its central portion as a means for supporting the insulator in operative position, and additional means for steadying and supporting it are furnished in the form of eyelets 7 in the sides of the end castings 3, to which supporting wires may be secured.

Instead of rounding the under side and edges of the body member 1 and the end castings 3 to form a smooth under-running surface for a trolley collector, I have provided a separate underruning section comprising an insulating body runner 9, two stirrup castings or arcing tips 10, two metallic end runners 11 and two metallic bayonet approach members 12. The auxiliary insulating body runner 9 is held in position against the main insulating body member 1 by means of the stirrup castings or arcing tips 10, which fit over the ends of the body runner 9 and which are, in turn, held against the body member 1 by means of stud bolts 13.

Each metallic end runner 11 is preferably formed by casting it with a rounded under portion that is adapted to form a smooth surface for a trolley conductor, and is provided with a number of outwardly extending lugs or lips 14 on its upper side (see Fig. 5). The lips 14 are adapted to slidably fit on co-operating inwardly extending lugs 15 that are located on the under portions of the side walls of the end castings 3.

The approach members 12 shown in the drawing are of the bayonet type such as is described in Patent No. 1,563,455, but any other form of removable approach member may be used, if desired.

While the body member 1 and the body runner 9 are formed of insulating material, such as wood, the electrical separation of the current-conducting parts is made more effective by means of air gaps that are located between the arcing tips 10 and the end runners 11. In order to keep the air gaps open, as hereinafter explained, I provide small cylindrical insulating pins 17 that are located in the gaps between the arcing tips and the end runners.

By referring to the drawings, it will be seen that the end castings 3 are formed somewhat in the shape of a rectangular box comprising two vertical side walls 18 and 19 and a series of vertical webs or walls 20, 21, 22 and 23. The side walls 18 and 19 and the webs or walls 20 and 22 form a recess or chamber in which may be located a removable block 24 for holding a trolley conductor 25. The block 24 is provided with a longitudinal opening adapted to receive the end of the trolley conductor 25 and is also provided with set-screws 26 for fastening the end of the trolley conductor 25 therein.

If the trolley conductor 25 is fastened in the block 24 after the block is placed in position in the above-described recess in the end casting 3, any tension exerted upon it will tend to withdraw it from the end casting 3 and thereby cause the block 24, to which it is fastened, to bear against the web 22, and thus prevent further movement of the trolley conductor 25.

It should be noted particularly that the block 24 for securing the trolley conductor 25 to the section insulator is adapted to be freely removed from its chamber or recess in the end castings 3 when it is not fastened to the trolley conductor 25.

The section insulator may be, and preferably is, assembled at the place where it is manufactured by securing the end castings 3 to the body member 1 by means of the bolts 5. The end runners 11 are next separately placed against the under sides of the corresponding end castings 3 and are moved outwardly so that their lips 14 slidably engage the lugs 15 on the end castings 3 to such degree that the end runners 11 are securely locked in position against the under sides of the end castings, as shown in Fig. 4. The insulating spacing pins 17 are then placed in position in recesses or holes 27 in the inner ends of the end runners 11 so that they project toward the center of the section insulator.

The insulating body runner 9 is next placed in position against the body member 1 and is held there by the arcing tips or stirrups 10 which grip its ends and which, in turn, are fastened to the body member 1 by means of the stud bolts 13. After the arcing tips or stirrup castings 10 are placed in position, the insulating blocks 17 in the inner ends of the end runners will rest against them and effectually prevent the end runners 11 from sliding inwardly to permit the interlocking lips 14 to become disengaged from the interlocking lugs 15. These assembled parts together with the removable blocks 24 and bayonet approach members 12 may be shipped to the place where the section insulator is to be used.

In placing the section insulator in operative position, the assembled parts are first placed in position in the overhead line construction and secured thereto by the hanger 6 and the eyes 7. The trolley conductors 25 are then threaded into the end castings 3 and their ends fastened in the removable blocks 24, located in the chambers in the end castings. The approach members 12 may next be placed on the trolley conductor, driven into locking position in the section insulator and their lips clinched around the trolley conductor.

If any one of the underrunning parts becomes worn, it may be easily and quickly replaced by removing the stirrup castings or arcing tips 10 and the stud bolts 13, thereby releasing the body runner 9 and permitting the end runners 11 to be moved toward the center of the insulator, so that their lips 14 will become disengaged from the co-operating lugs 15 on the underside of the end castings 3 and release the end runners.

Various modifications and changes may be made in the device illustrated herein as embodying my invention without departing from the spirit and scope thereof, and all such modifications and changes are intended to be covered by the appended claims.

I claim as my invention:

1. A section insulator for trolley conductors comprising an insulating body member, a body runner, arcing tips for the body runner and means for fastening the arcing tips to the body member, end members provided with recesses, removable means for holding the trolley conductors and adapted to be held in said recesses, removable end runners provided with interlocking means to secure them to the end members, and insulating blocks located between the arcing tips and the end runners.

2. A section insulator for trolley conductors comprising an insulating body member, a body runner secured to the body member, end members provided with recesses, removable means for holding the trolley conductors and adapted to be held in said recesses, and removable end runners provided with interlocking means to secure them to the end members.

3. A section insulator for trolley conductors comprising an insulating body member, end members therefor, runners removably attached to the body member and the end members, and insulating blocks adapted to separate the runners from the corresponding end members.

4. A section insulator for trolley conductors, comprising an insulating body member, a body runner, arcing tips for the runner and stud bolts adapted to removably fasten the arcing tips to the body member, end members attached to the body member, and end runners aligned with the body runner and removably fastened to the end members.

5. A section insulator for trolley conductors comprising an end member and an end runner severally provided with lugs, said lugs being so disposed that the lugs on the end runner are above the lugs on the end member for vertically supporting the end runner in position when the lugs are slidably engaged.

6. A section insulator for trolley conductors, comprising an insulating body member, an end member therefor provided with a chamber, a runner removably attached to the end member, and separate means located in the chamber for holding a trolley conductor.

7. A section insulator for trolley conductors comprising an insulating body member and an end member therefor provided with a chamber, a runner removably attached to the end member, and a trolley-conductor-holding means loosely mounted in the chamber.

8. A section insulator for trolley conductors comprising an insulating body member, a runner fastened thereto, an end member provided with a chamber, and a trolley-conductor-holding means comprising a block, and means for securing the block to the conductor, said block being disposed on the conductor in position to be held against one wall of said chamber by the tension of the conductor.

9. A section insulator for trolley conductors comprising an end member traversed by a wall, and means for holding a trolley conductor comprising a block and means for fastening the block to the conductor, said block being disposed at one side of said wall and adapted to bear against it when the conductor is under tension.

In testimony whereof, I have hereunto subscribed my name this 29th day of December, 1925.

PAUL G. SWARS.