April 18, 1933. F. L. WOLF 1,904,844

SECTION INSULATOR

Filed March 16, 1932

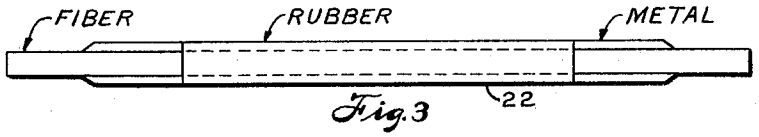


Fig. 3

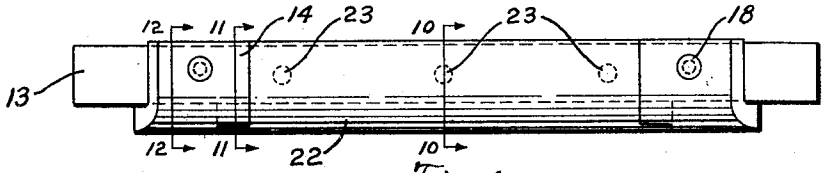


Fig. 4



Fig. 11 Fig. 12 Fig. 10 Fig. 6



Fig. 5

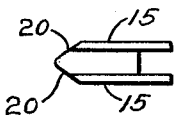


Fig. 9

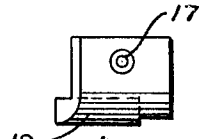


Fig. 7

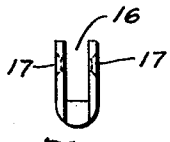


Fig. 8

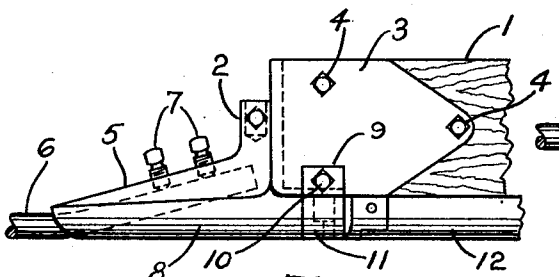


Fig. 1

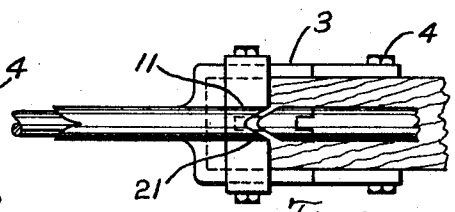


Fig. 2

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Patented Apr. 18, 1933 1,904,844

UNITED STATES PATENT OFFICE

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SECTION INSULATOR

Application filed March 16, 1932. Serial No. 599,163.

My invention relates to section insulators and parts for the same.

The object of my invention is to provide an insulator with a running or bridging member of insulating material which has increased life, resiliency and insulating qualities as compared with those properties now found with existing devices.

My invention resides in the new and novel construction, combination and relation of the elements hereinafter described and shown in the drawing accompanying this specification.

In the drawing:—

Fig. 1 is a side view in elevation of one end of a section insulator embodying my invention.

Fig. 2 is a bottom view of Fig. 1.

Fig. 3 is a top view of a bridging or running member which I employ.

Fig. 4 is a side view in elevation of the bridging or running member shown in Fig. 3.

Fig. 5 is a bottom view of Fig. 4.

Fig. 6 is an end view of Fig. 4.

Fig. 7 is a side view of a metallic arcing member forming a part of the bridging member.

Fig. 8 is an end view of Fig. 7.

Fig. 9 is a top view of Fig. 7.

Fig. 10 is a section on the line 10—10 of Fig. 4.

Fig. 11 is a section on the line 11—11 of Fig. 4.

Fig. 12 is a section on the line 12—12 of Fig. 4.

My invention relates to improvements in section insulators, that is, a device as shown in Matthes Patent 1,773,192 dated August 19, 1930.

In Fig. 1 I have shown only one end of a section insulator as the other end is the same as that shown in Fig. 1 and the intervening member may be of any length desired.

My invention comprises an elongated member 1 of insulating material such as wood or fibre. Mounted on each end is a conductor holder 2, preferably of metal, comprising the spaced and parallel side plates 3 which are secured to the member 1 by means of the through-bolts 4. The projecting portion 5 is provided with a longitudinal recess to receive the trolley wire 6 and the member 5 is provided with set screws 7 to engage the trolley wire 6 and hold it in position.

The projecting member 5 is provided along its lower edge with a running portion 8 which has its lower surface in alignment with the lower surface of the trolley wire. Each end of the member 1 is also provided with a yoke-shaped member 9 which is secured in position by means of the through-bolt 10 which also assists in retaining the member 2 in position on the member 1. The holding member 9 is provided with a downwardly projecting portion 11 which corresponds in height and width with the member 8 and the lower edge of the member 11 is in alignment with the member 8.

Interposed between the holding members 11 is a runner 12 which also has the same height and width and shape as the members 8 and 11 and the lower surface of which is in alignment with that of the members 8 and 11.

The lower surfaces of the members 8, 11 and 12 are running surfaces for the current collector in passing from one trolley wire at one end to the trolley wire at the other end of the section insulator.

The runner 12 comprises an elongated member 13 which may be of wood, built-up fibre, bakelite or other similar insulating material and I have shown the same as having a rectangular cross section although the section may be made to meet requirements.

Adjacent each end of the member 13, but not at the end, is a U-shaped metal member 14 shown in Figs. 7, 8 and 9 and comprises side walls 15 spaced apart and producing a channel 16. The side walls have registering passages 17 to receive the through-rivet 18 to hold the members 14 in position on the member 13. The lower portion 19 of the member 14 is made heavy to withstand the wear of the passing current collector and also such arcing as may be produced. The outer end of the member 14 has its faces 20 beveled which permits placing the member 14 in over-

lapping relation with respect to the adjacent member 11 which has its adjacent faces 21 beveled to correspond with the beveled faces 20 on the member 14.

The members 11 are in electrical engagement with the holding members 2 but the members 14 are spaced and insulated from the adjacent holding member 11 thus forming an air gap between the adjacent members 11 and 14.

Interposed between the inner ends of the members 14 is a covering of rubber 22 applied to the side and bottom faces of the member 13 and may also be applied to the upper surface of the member 13 if desired.

This covering of rubber is preferably mechanically interlocked with the member 13 through the medium of the transversely positioned holes 23. The rubber coating is also secured to the member 13 by means of a surface union which may be accomplished by coating the surface of the member 13 with a material which has a strong adhesion to the material of the member 13 and for the rubber coating 22 and this material may be one of a number of rubber cements suitable for the material such as thermoprene or a heat plastic rubber isomer having a less unsaturation than rubber and which are well known in the rubber art. The member 13 may be composed of a fibre impregnated with synthetic resins which may have a strong affinity for the rubber.

The rubber coating 22 is vulcanized upon the surface of the member 13 between the parts 14 and is preferably of the nature of what is known as car spring rubber or it may be a grade such as used in rubber tires and which is tough but somewhat yielding and possessing high wearing properties when subjected to the passing of the current collector thereacross.

By insulating the members 14 from the members 11 arcing at the point of the members 14 adjacent that of the rubber 22 is either eliminated or reduced to a very small amount, hence there is very little, if any, burning of the rubber due to arcing.

A running or bridging member constructed as above described possesses very long life as compared with a runner composed of only wood or fibre which warps or splits in a very short time.

In place of having the end face of the member 14 beveled in two directions the same overlapping results may be secured by having the end face a single obliquely disposed surface and having the adjacent surface of the member 11 beveled in like manner.

I prefer to make the member 13 of a stiff or reasonably stiff material which has very little bending property as it will then act as a support or brace for the more resilient deformable or bendable rubber member 22. If the runner was made entirely of a resilient rubber and mounted to the lower face of the member 1 it would be very likely to bend sideways with the passage of the current collector and possibly throw the collector from its position.

There will be other modifications which will suggest themselves to those skilled in the art but I wish to be limited only by my claims.

I claim:—

1. A trolley wire section insulator comprising an elongated insulating bar having a conductor holder at each end, a runner holding member associated with each conductor holder, an insulated runner positioned between the runner holding members and comprising an elongated fiber member having its ends exposed for attachment to the runner holding members on the insulator, metal members embracing the fiber member adjacent its ends adjacent to but spaced from the adjacent holding member, the end of the metal embracing member being beveled and the adjacent face of adjacent holding member being correspondingly beveled and the said beveled faces overlapping and a covering of resilient soft vulcanized rubber extending along the surfaces of the fiber member between the said metal members.

2. A section insulator comprising in combination an insulating bar having a conductor holder at each end of the bar and a runner holder detachably secured to each conductor holder at the inner end thereof, an insulating runner extending between the runner holders and secured thereto comprising an elongated member of stiff insulating material, a metallic member adjacent each end of the elongated member and the end of the elongated member projecting beyond the metallic member and mounted in the adjacent runner holding member, the metallic member and its holding member spaced and insulated from each other and a strip of soft vulcanized rubber extending between the metallic members and forming a running surface for a current collector.

3. A section insulator comprising in combination an insulating bar having a conductor holder secured to each end of the bar and a runner holder secured to each conductor holder at the inner end thereof, an insulating runner extending between the runner holders and detachably secured thereto comprising an elongated member of stiff insulating material, a metallic member secured to each end of the elongated member adjacent to but not at the end of the member, and a layer of deformable rubber secured to the sides of the elongated member between the metallic members and the lower surface acting as a running surface for a passing current collector.

4. A section insulator comprising in com-

bination a bar of insulating material, conductor holders secured to each end of the bar, a runner positioned between the conductor holders and having its lower edge in alignment with the lower edge of the holders and holding members for the ends of the runner to secure the runner in position, the runner comprising an elongated member of stiff insulating material having its ends held by the runner holding members and a coating of deformable rubber extending along the side and bottom surfaces of the elongated member and secured to the said member.

5. An article of manufacture comprising an elongated insulating member of fiber, a U-shaped metal member applied to the sides and bottom of the fiber member adjacent to each end of the fiber member with the ends of the fiber member projecting longitudinally from the U-shaped members, means to secure the U-shaped members to the fiber member and a covering of deformable rubber extending between the U-shaped members along the sides and bottom surfaces of the fiber members and having a surface union therewith and in addition mechanically interlocked with the fiber member, the outer end faces of the U-shaped members being beveled transversely to the longitudinal axis of the runner.

6. A runner for a section insulator comprising an elongated member of fiber, U-shaped metal members positioned adjacent each end of the fiber member and secured thereto and a layer of deformable vulcanized rubber extending along the fiber member between the U-shaped members and having its lower surface adapted to contact with a moving current collector, the rubber layer being secured to the fiber member.

7. A runner for a section insulator comprising a stiff elongated member of insulating material, metal members secured to the ends of the elongated member a distance back from the ends of the elongated member, the side and bottom faces of the elongated member between the metal members having a layer of deformable rubber vulcanized upon the elongated member and having a surface union therewith.

8. A runner for a section insulator comprising a stiff elongated member of insulating material, metal members secured to the ends of the elongated member a distance back from the ends of the elongated member, the side and bottom faces of the elongated member between the metal members having a layer of deformable rubber vulcanized upon the elongated member and having a surface union therewith, the rubber layer on the bottom surface of the elongated member having a greater thickness than that on the side faces.

9. A runner for a section insulator comprising a stiff elongated central member of insulating material, spaced metal members secured to the central member at its ends, the portion of the central member between the metal members being enclosed in a rubber casing which has a surface union with the sides of the central member.

10. A runner for a section insulator comprising a stiff elongated central member of insulating material, spaced metal members secured to the central member at its ends, the portion of the central member between the metal members being enclosed in a rubber casing which has a surface union with the sides of the central member, the ends of the central member projecting beyond the metal members in a longitudinal direction.

11. A runner for a section insulator comprising a stiff elongated central member of insulating material, spaced metal members secured to the central member at its ends, the portion of the central member between the metal members being enclosed in a rubber casing which has a surface union with the sides of the central member, the end faces of the metal members being obliquely disposed to the longitudinal axis of the central member.

12. A runner for a section insulator comprising a stiff elongated central member of insulating material, spaced metal members secured to the central member, deformable rubber interposed between the inner faces of the metal members and secured to the side faces of the central member and enclosing the lower face of the central member, and means for securing the runner in position on the section insulator.

13. A runner for a section insulator comprising an elongated rubber member having side and bottom walls, the latter thicker than the former, the rubber member formed of deformable vulcanized rubber, an elongated member associated with the rubber member to prevent its deformation and the ends of the said elongated member projecting beyond the ends of the rubber member.

14. A runner for a section insulator comprising an elongated rubber member formed of deformable vulcanized rubber and an elongated member associated with the rubber member to prevent its deformation and partly enclosed by the rubber member.

15. A runner for a section insulator comprising an elongated rubber member formed of deformable vulcanized rubber and an elongated member associated with the rubber member to prevent its deformation, the rubber member being vulcanized to and having a surface union with the said elongated member.

16. A runner for a section insulator comprising an elongated rubber member formed of deformable vulcanized rubber and an elongated member associated with the rubber member to prevent its deformation, the rub-

ber member being vulcanized to and having a surface union with the said elongated member and metallic members at each end of the rubber members and having its side and bottom surfaces in alignment with those of the rubber member.

17. A section insulator comprising in combination an insulating bar having a conductor holder at each end and a portion of the holders extending horizontally and projecting longitudinally from the ends of the bar and positioned below the lower surface of the bar and having the lower surfaces in alignment, a runner extending between the conductor holders and positioned below the bar and having its lower surface in alignment with that of the projecting portion of the conductor holders, the runner consisting of an elongated member of deformable rubber and a stiffening member associated therewith to resist deformation of the rubber member and a metallic member at each end of the rubber member and means to secure each end of the runner in position between the conductor holders.

18. A runner for a section insulator comprising an elongated rubber member formed of deformable rubber, an elongated member associated with the rubber member to prevent its deformation and partly enclosed by the rubber member, a metal member mounted on the elongated member at each end of the rubber member.

19. A runner for a section insulator comprising an elongated rubber member formed of vulcanized rubber, an elongated member of insulating material associated with the rubber member to prevent its bending and projecting from each end of the rubber member and in alignment therewith, a metal arcing member mounted on the elongated insulating member at each end of the rubber member and a metal supporting member removably mounted on each end of the elongated insulating member to secure the elongated member in position on the section insulator.

20. A section insulator comprising in combination an insulating bar, a metallic end member secured to each end of the bar and spaced apart and having aligned lower edges, a detachable member secured to each end member to receive the trolley wire and means to secure the wire in place, a bridging member extending between the inner ends of the end members and comprising a rubber coating having its lower edge aligned with that of each end member and an elongated insulating member enclosed along its sides by the rubber coating whereby the bridging member is supported and metallic members mounted on the elongated member adjacent the rubber member but spaced from the end members.

In testimony whereof I affix my signature.

FRED L. WOLF.