

July 16, 1946.

H. W. PINKERTON

2,404,088

WEAR PROTECTING DEVICE FOR PARALLEL CONDUCTING WIRES

Filed June 28, 1944

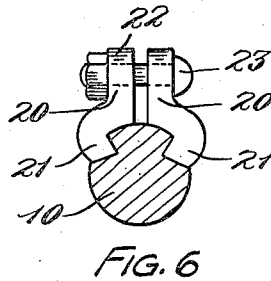
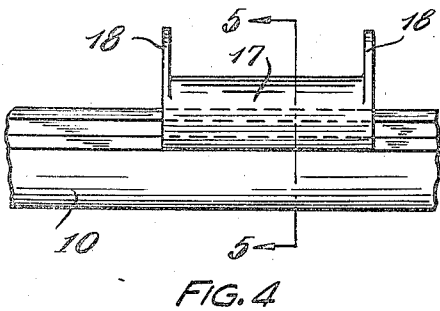
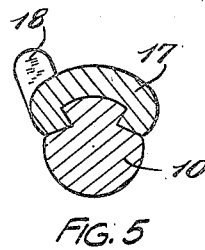
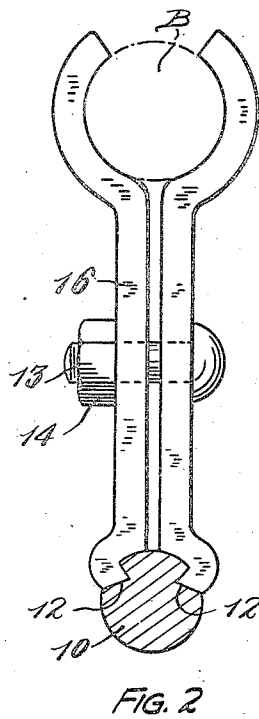
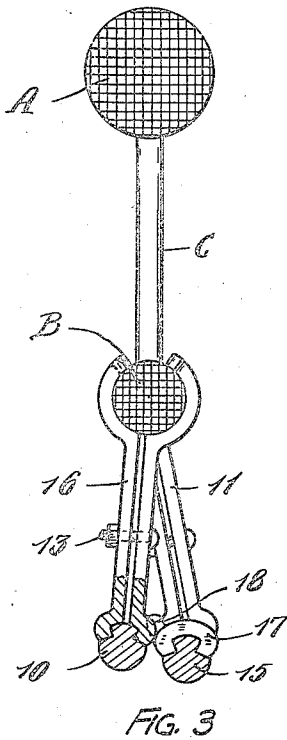
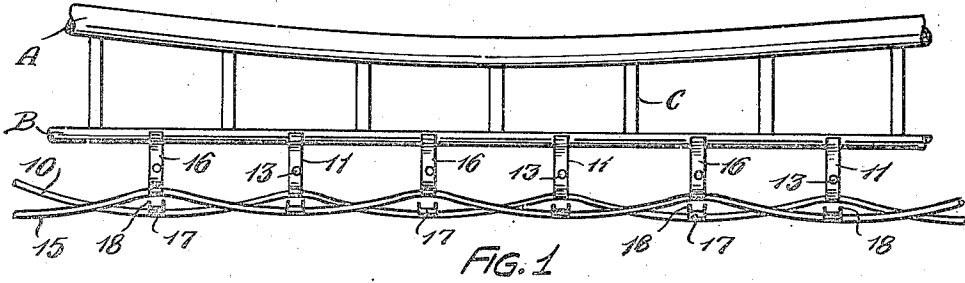


FIG. 6
INVENTOR.
Hugh W. Pinkerton,
BY
Hull & West,
ATTORNEYS

UNITED STATES PATENT OFFICE

2,404,088

WEAR PROTECTING DEVICE FOR PARALLEL CONDUCTING WIRES

Hugh W. Pinkerton, Lakewood, Ohio

Application June 28, 1944, Serial No. 542,557

5 Claims. (Cl. 191—33)

1

This invention relates to electrical conductors, and more particularly to contact wires for the collecting devices or trolleys of electrically propelled vehicles and which are suspended in side-by-side relation from a common messenger cable. These contact wires are suspended from the messenger cable by hanger clamps, the clamps which support one of these contact wires being staggered with respect to those which support the other contact wire. Because these contact wires are under similar tension, their axes should be theoretically in the same horizontal plane. However, there is a slight sag in the portions of each contact wire which are intermediate of the respective hanger clamps therefor, with the result that the central or axial part of each such intermediate portion is below the corresponding part of a clamp-supported portion of the other contact wire. When a current-collecting device, such as the pantograph of an electric locomotive or car, passes beneath and in contact with the aforesaid wires, it raises both wires and brings the axes of the successively-raised portions thereof into a common horizontal plane. As a result of this movement, side wear is produced upon the wires. This wear is greatest where one of the wires rubs against the hanger clamp attached to the other wire. This side wear results in a gradual reduction of area in the wires, with an attendant reduction in the strength and conductivity of the same.

I overcome this side wear by means of the invention set forth in the drawing hereof, wherein Fig. 1 represents a side elevational view of a main and an auxiliary messenger cable, showing the manner in which contact cables or wires are suspended from the latter cable, the sagging of the cables or wires between their supporting hanger clamps being exaggerated for purposes of illustration and explanation; Fig. 2 is a detail in sectional elevation of the auxiliary messenger cable and one of the contact wires or cables, with the hanger clamps for supporting the latter from the former; Fig. 3 an enlarged detail in section of the two contact wires illustrating the manner in which my invention cooperates with the same; Fig. 4 a side elevational view of a portion of one of the wires or cables, having one form of my wearing piece or protector applied thereto; Fig. 5 a detail in section taken on the line 5—5 of Fig. 4; and Fig. 6 a view similar to Fig. 5, showing a modified form of my wearing piece or protector.

Describing the parts by reference characters, A denotes a main messenger cable and B an auxiliary messenger cable suspended from the

2

former cable, as by hangers C. 10 denotes one of the contact wires or cables which is suspended from the auxiliary messenger cable by means of hanger clips comprising each a pair of side members 11, the upper ends of which are curved to embrace the major portion of the external surface of the cable B, and the lower ends of which are so shaped as to conform to the upper portion of the contact wires or cables and to engage the sides of the angular grooves 12 with which opposite sides of contact wires or cables are provided. The opposed members of the hanger clips are connected by means of a bolt 13 and nut 14.

The adjacent cable 15 is suspended in like manner from the auxiliary messenger cable B by means of hanger clips, the side members whereof are indicated at 16 and which are identical in construction with the hanger clips 11. The construction of the hanger clips and of the contact wires or cables and the manner in which the latter are connected to and supported by the former are old and well known in the art to which my invention relates.

With the parts constructed and arranged as thus far described, when a current-collecting device, such as the pantograph of an electric locomotive, passes beneath and in contact with the wires 10 and 15, it lifts the sagging portions thereof (greatly exaggerated in Fig. 1) and brings the axes thereof into a common horizontal plane. In so doing, however, the adjacent sides of the contact wires will rub against each other and the side of each contact wire will also rub against the adjacent portions of the hanger clips which support the other contact wire. The disadvantages of this action have been explained heretofore.

In order to overcome this side wear, I equip each of the contact wires with wearing pieces or spacers, such as indicated at 17 in Figs. 4 and 5. These wearing pieces or spacers are applied to the portions of each contact wire which are immediately below the hanger clips which support the other contact wire and are of somewhat greater length than the width of the said hanger clips. The wearing pieces or spacers are of sleeve-like form, whereby they may be applied to the upper portions of the contact wires with their lower edges fitted within the grooves 12. The side portions of these wearing pieces or spacers are of such thickness that they project beyond the external surfaces of the portions of the contact wires which are therebelow and to which they are respectively applied. The interior of each of the wearing pieces or spacers is of such shape as to conform to the upper portion of each contact

3

or trolley wire and to engage the top of the same as well as the angular grooves 12. In order to maintain registration of these wearing pieces or spacers with the hanger clips thereabove, I provide each end of the same with a lip 18 projected toward the hanger clip on the adjacent wire. They are preferably made of softer metal than that of which the contact wires are made, for example, copper, brass, bronze, etc., but should be of non-ferric material in order to prevent the setting up of any local electrolytic action between the same and the hanger clips. These wearing pieces or spacers may be of spring metal, in which case their lower ends may be sprung apart sufficiently to enable them to be received within the grooves 12.

In Fig. 6 there is shown a modification of the wearing piece or spacer shown in Figs. 2-5, the wearing piece or spacer in this modification being made of two opposed symmetrical sections 20 each having its lower end 21 shaped to conform to a portion of the top of the wire 10 and each having a flange 22 extending upwardly from the wire-engaging portion, the said flanges being connected by bolts, one of which is indicated at 23.

As has been stated hereinbefore, the drawing shows on an exaggerated scale in Fig. 1 the maximum displacement between two contact wires in installations such as described and illustrated herein. In practice, this vertical displacement seldom exceeds half the diameter of a contact wire. However, this displacement is sufficient to cause the wearing of the contact wires by rubbing against each other or against the hanger clips, as explained hereinbefore, and I am enabled to overcome this objectionable and detrimental action by means of the wearing pieces or spacers constructed substantially as shown and described herein.

Having thus described my invention, what I claim is:

1. The combination, with a messenger cable, a pair of contact wires and hanger clips of substantially equal length connecting the contact wires with the messenger cable thereby to support the contact wires from said messenger cable, of wearing pieces or spacers secured to each of the said contact wires and positioned thereon so as to register with the hanger clips for the other of said wires and projecting beyond that surface of each wire which is presented toward the adjacent surface of the other wire and beyond the

4

surfaces of the hangers by which such other wire is supported.

2. The combination, with a messenger cable, a pair of contact wires and hanger clips of substantially equal length connecting the contact wires with the messenger cable thereby to support the contact wires from said messenger cable with the hanger clips for one of the said wires alternating along the messenger cable with the hanger clips for the other of said wires, of wearing pieces or spacers secured to each of the said wires and positioned thereon so as to register with the hanger clips for the other of said wires, the said wearing pieces or spacers projecting beyond that surface of each wire which is presented toward the adjacent surface of the other wire and beyond the surfaces of the hangers by which such other wire is supported.

3. The combination, with a messenger cable, a pair of contact wires, and hanger clips of substantially equal length connecting the contact wires with the messenger cable thereby to support the contact wires from said messenger cable with the hanger clips for one of the said wires alternating along the messenger cable with the hanger clips for the other of said wires, each of the said wires having an angular groove on each side of and adjacent to the top thereof, of wearing pieces or spacers embracing the top of each wire and having their lower edges fitted within the grooves thereof, the said wearing pieces or spacers being positioned on each of said wires so as to register with the hanger clips for the other of said wires and projecting beyond that surface of each wire which is presented toward the adjacent surface of the other wire and beyond the surfaces of the hangers by which such other wire is supported.

4. In the combination set forth in claim 2, each wearing piece or spacer being provided with projections adapted to receive therebetween the lower portion of such hanger clip.

5. In the combination set forth in claim 3, the wearing pieces or spacers comprising each two symmetrical sections each having a base adapted to rest upon a portion of the top of a wire and a lower end adapted to fit within a groove on said wire and each section also having a vertical flange, and securing means extending through and connecting said flanges.

HUGH W. PINKERTON.