Feb. 12, 1929. 1,701,646

L. R. TAYLOR

CONNECTING CABLE AND PLUG THEREFOR

Filed March 22, 1922

FIG. 1.

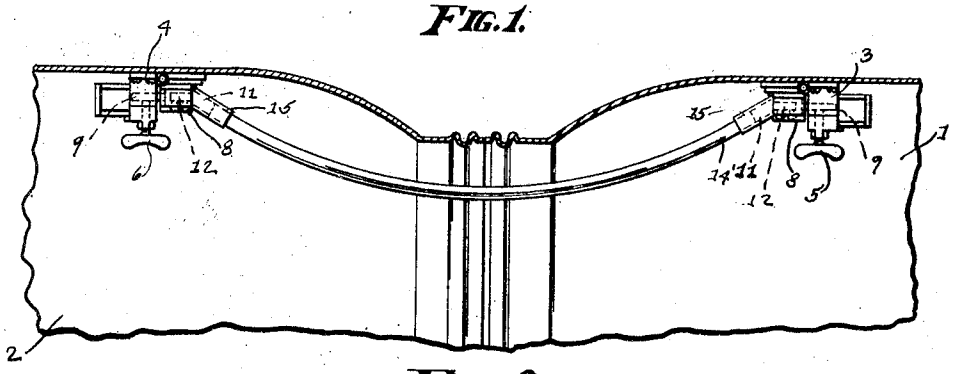


FIG. 2.

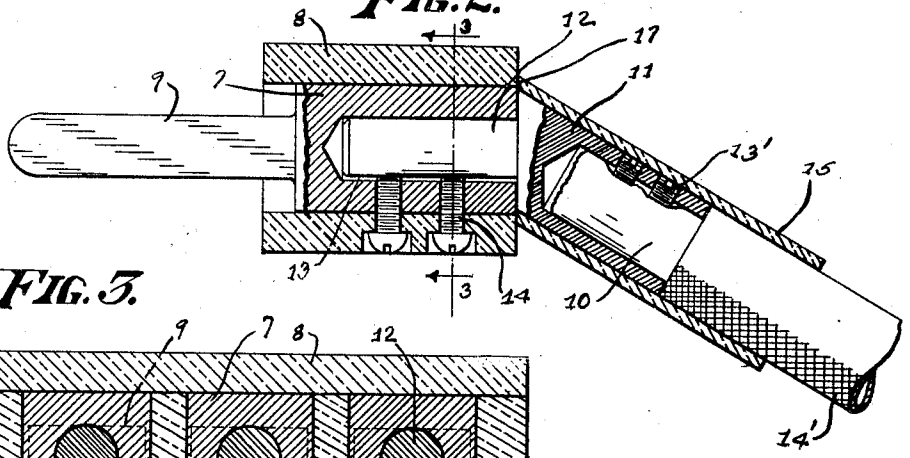


FIG. 3.

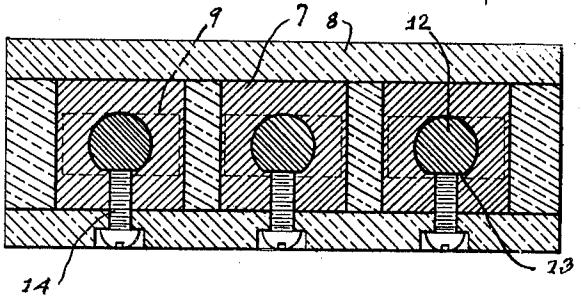
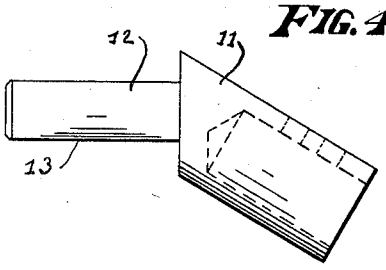


FIG. 4.



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CONNECTING CABLE AND PLUG THEREFOR.

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This invention relates to connecting cables and plugs therefor.

In the use of attaching cables, it has been found that the maximum wear occurs at the point of union of the terminal plug and cable. This is particularly true where the cable is used under very severe conditions, as for example, on railway coaches such as those having electrical systems necessitating the coupling electrically of one system within one car with the system in the next car. It is, therefore, a primary object of this invention to provide an attaching cable with terminal plugs in such a manner that an extremely long life will be had.

Further objects of this invention are to provide plugs for connecting cables which will allow the cable, adjacent the plug, to assume its approximately natural curvature; to provide a plug which will seat in a socket disposed in one plane, but which has a cable receiving extension which is substantially tangential to the adjacent portion of the catenary traced by the cable; and to provide a plug which has its projecting parts completely insulated.

Further objects are to provide an attaching cable with semi-permanently positioned plugs at its ends, and to provide a simple and cheap form of construction which will have a long life.

An embodiment of the invention is shown in the accompanying drawing, in which:

Fig. 1 is a side elevation of the attaching cable and the terminal plugs in position within their sockets, such view illustrating the usual sockets found on railway coaches for the electrical systems.

Fig. 2 is a detail of one of the plugs showing it in position in the intermediate connecting member.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a view of a metal portion of a plug removed from its sheath and from the attaching cable.

The coaches 1 and 2 are shown equipped with permanently positioned socket members 3 and 4, respectively, which are in turn provided with clamping thumb screws 5 and 6. It is customary in this type of construction to provide multiple sockets and to provide multiple tongue plugs to cooperate therewith. One of these multiple tongue plugs is illustrated in Fig. 2 from which it will be seen that the plug comprises a metallic body 7 provided with an external insulating sheath 8 and with projecting tongue-like members 9 which, as may be seen from Fig. 3, are of rectangular contour. These tongues 9 are slipped into the corresponding sockets in the members 3 and 4 and clamped in position by means of the thumb screws 5 and 6.

In the practice of this invention, the bared end 10 of the attaching cable is positioned within a hollow cylindrical extension 11 of the terminal plug. This plug has a cylindrical projecting tongue or plug portion proper, indicated at 12 in Fig. 2 which is adapted to be positioned within the socket formed in the block or metal portions 7 of the multiple plug. The extension 12 may be provided with a flat bottom portion as indicated at 13 in Fig. 3 against which a pair of set screws 14 are adapted to bear to retain the plug both against withdrawal and rotation. The socket of the block 7 may be formed with one side flattened to cooperate with the flat bottom portion 13 of extension 12 (see Fig. 3). Thus the extension 12 can only be inserted in the socket of block 7 in one position of rotation. This arrangement will also maintain the extension 12 and block 7 in proper relative alignment.

The extension, or projecting portion, 11 is angularly arranged with respect to the axis of the plug portion 12 and the angle is such that the cable may assume its natural position even adjacent the terminal plug. In other words, the axis of the extension 11 is tangent to the catenary traced by the cable. In this manner, it will be seen, sharp bends or unusual stresses are not imposed upon the cable at the point where it joins the terminal plug.

A convenient way of retaining the cable in position is to secure the bared portion 10 by means of a pair of set screws 13′ threaded through apertures in the socket member 11 of the terminal plug. The insulation 14′ of the cable extends to the end of the socket member 11 and an insulating sheath 15 is slipped over the member 11 and a portion of the insulating sheath 14′ of the cable. It is to be noted that the outer end of the insulating sheath 15 is cut along a slanting plane as indicated at 17 so that it will abut against the insulating casing 8 of the multiple tongue plug. It will be seen that the insulating sheath 15 completely covers all of the metallic portions which would otherwise be exposed when the plug portion 12 is in its adjusted po-

sition. If desired, the set screws 13′ may be omitted and solder may be run into the socket of the member 11 to thereby secure the bared portion 10 of the cable in position. A simple sweating operation may be found sufficient under certain conditions.

It will be seen from the description and drawings that an attaching cable equipped with terminal plugs has been provided which has an extremely long life; which will not break adjacent the plugs under normal conditions; and which is of extremely simple construction. It will further be seen that when the plug portion 12 has been subjected to excessive wear, the terminal plugs may be removed from the bared portion 10 of the cable as these plugs are semi-removably attached to the cable.

It is to be understood that the term "catenary" is intended to describe the actual curve traced by the suspended cable.

I claim:

1. A cable adapted to span the distance between terminals on two adjacent coaches of a railroad train and to be suspended between said terminals, said cable comprising in combination a flexible conductor of predetermined length with reference to the distance between terminals of standard coaches whereby said conductor is adapted to be suspended in a relatively flat catenary, and a plug member at each end of said conductor including a projecting tongue adapted to be engaged with said terminals and connecting portions rigidly connected with said tongues and with the extremities of said conductor, each such connecting portion being disposed at an angle with its respective tongue corresponding substantially to the tangent of the catenary of the conductor in its normal suspended position.

2. A cable adapted to span the distance between the terminals on two adjacent coaches of a railroad train and to be suspended between said terminals in a relatively flat catenary, said cable comprising in combination a flexible conductor of predetermined length with reference to the distance between terminals of stationary coaches whereby to be adapted to depend between such terminals in a predetermined relatively flat catenary, a plug member at each end of the conductor including a projecting element detachably engageable with said terminals, and connecting portions rigidly connected with the respective extremities of the conductor and with said elements, each such connecting portion being disposed at an angle with its respective element corresponding substantially to the tangent of the catenary of the conductor in its normal suspended position and each projecting element having a surface formed to engage such a terminal in but one position of rotation whereby to maintain a proper relation between said connecting portions and said flexible conductor.

3. A terminal plug for flexible cables adapted to span the distance between terminals on two adjacent railway coaches, said plug comprising a plug-in-tongue adapted to be engaged with said terminals and a socket portion adapted to receive an end of said cable and having its cable receiving socket disposed at an angle relative to said plug-in-tongue corresponding to a tangent of the catenary which said cables assume when suspended between said terminals.

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