March 8, 1927. 1,620,496

K. SPIECKERMANN

IRON CONTACT RAIL WITH COPPER INSERT

Filed Aug. 28, 1926

Fig. 1.

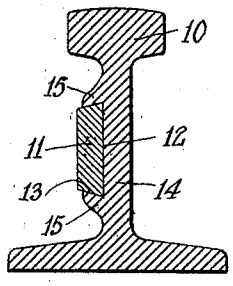


Fig. 2.

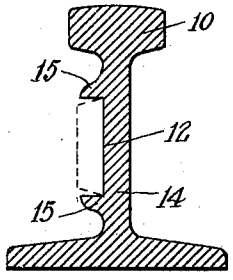
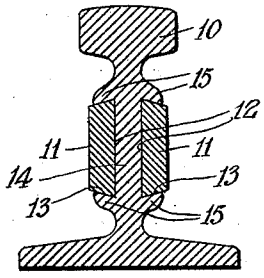


Fig. 3.



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IRON CONTACT RAIL WITH COPPER INSERT.

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The invention relates to power or live rails, such as third rails and the like, employed for conducting electricity to vehicles. Power rails of iron or steel are known in which the top of the rail is provided with a capping or cover of copper. With power rails thus equipped, the copper sheath or capping serves for the direct transfer or conduction of the electric current to the current collector of the vehicle. This expedient, however, possesses the objection that due to the sliding of the collector thereover it quickly wears, that is to say, the copper sheath must after a time be renewed if continuous and appreciable current losses are not to be suffered as a result of the reduced cross-section of conductive material. Since iron is a poor conductor, it is possible that with worn copper sheathed rails that the voltage drop may become so great as to render the certain operation of the installation no longer possible.

It is the object of the present invention to overcome these objectionable features; and the same is set forth more particularly in the accompanying drawings, in which:

Figure 1 is a transverse section thru the improved rail.

Figure 2 is a similar view illustrating the manner of locking the conducting insert to the rail.

Figure 3 illustrates a modification.

As indicated in the drawings, the power rail 10 is of the usual standard type T-rail which may be composed of iron or steel and is designed to receive a strip 11 which, conformably with the invention, is to be of a highly conductive material, as copper. The copper strip 11 is of the shape substantially of a trapezium or beveled block and is intended to be placed with its broader base 12 in a channel 13. The latter must be suitably provided longitudinally of the rail as along the web 14 thereof, the width of the channel at the bottom being substantially equal to the width of the base at said block (Figure 2). Furthermore, in accordance with the invention, the web is constructed along one or both faces with outwardly extending ribs 15 which may be rolled thereon during the rolling of said rail and thus provide the channel 13. After a strip of copper has been set within a channel 13, the aforesaid ribs 15 are to be upset over the same as by a rolling or drawing process in manner well understood and the copper strips are thereby securely dove-tailed in the channel provided and held therein under pressure, making excellent contact with the rail thruout its entire length. Moreover, withdrawal of the copper strip is, therefore, possible only by the application of considerable force.

In Figure 3, copper strips 11 are indicated as applied to opposite sides of the web, two pairs of the ribs 15 to this end being extended from opposite faces of the web as shown. The cross-section and consequently the conductivity of the copper is thereby proportionately increased.

The power rail thus constructed with one or more inserts along its length, possesses considerable mechanical strength and a high degree of conductivity with minimum weight; and said conductivity may be varied to suit in accordance with the thickness of the copper strip employed. Since the contact shoe of the collector glides upon the iron top of the power rail, the section of the copper and thereby its conductivity remain unaltered. A contact shoe of cast iron of appreciable dimensions may be thus employed for effecting the sliding contact and will maintain the top of the rail polished and free of rust, guaranteeing positively sparkless current supply. It will be understood, of course, that at the junction of the individual rail lengths the copper lengths are to be united by a flexible cable or by copper strips in the usual manner so that the connection of the copper conductor is uninterrupted thruout the entire extent of the rail installation and which is of greatest advantage in the certain conduction of the current.

The aforesaid power rails are especially suited, also, as return leads or rails for the propelling current of electric railways since thru the copper strips rolled therein this current is provided with an excellent return conductor which is in good contact at all points with the rail traveled. Stray currents which frequently occur in connection with the operation of electric railways, and whose disagreeable effects are well known, are hereby avoided since the propelling current possesses in the aforesaid rails a return conductor of minimum resistance. Moreover, the strength of the rail is not impaired by the copper strip rolled therein.

The novel rail may also be applied with advantage as contact conductor for the supply of current to electrically driven cranes and loading apparatus, more especially in

view of its great strength, minimum weight and excellent electrical conductivity.

I claim:

1. A power rail of the character set forth having ribs extending at right angles from its web to afford a longitudinal channel, and a strip of highly conductive metal fitting said channel and forcibly held therein by said ribs.

2. A power rail of the character set forth having ribs extending at right angles from its web to afford a longitudinal channel, and a strip of highly conductive metal dovetailed in said channel between said ribs.

3. A power rail of the character set forth having two pairs of ribs extending at right angles from opposite sides of its web to afford thruout its length parallel, longitudinal channels, and strips of highly conductive metal fitting the respective channels and forcibly held therein by the corresponding pairs of ribs.

In testimony whereof I affix my signature.

KARL SPIECKERMANN.