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(54) **Method for connecting rail bars and rail bar connection obtained according to the method.**

Verfahren zum Verbinden von Eisenbahnschienen und entsprechend hergestellte Verbindung

Méthode pour l'interconnexion de sections de rails de chemin de fer et connexion ainsi obtenue

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Description

[0001] The invention is related to a method for mutually connecting rail bars with their end faces in electrically conducting manner, comprising the following steps;

- placing on either side against the rail bar a connecting plate extending in lengthwise direction over both rail bars for connecting, and,
- clampingly connecting the connecting plates to the rail bar by transversely directed nut-bolt connecting members. Such a method is disclosed in US-A-1507770. In addition to supporting and guiding rail-bound vehicles, rail bars also have the function of conducting electrical currents and signals.

[0002] Stricter requirements are recently being made of the conducting properties of rail bars. This is inter alia the result of the increase in the electrical power of locomotives. The material of rail bars generally has a limited electrical conductivity. Particularly at connecting positions between rail bars located mutually in line problems of electrical conduction can occur since the electrical conductivity is usually limited at these connecting positions. This can result in a temperature stress at this location.

[0003] The invention has for its object to obviate this drawback.

[0004] This is achieved according to the invention by interposing of at least one electrically conducting member between the rail bar and the connecting plate, and injecting a curing adhesive into the space between the rail bar and the connecting plate.

[0005] According to the invention a good electrical conductivity is obtained due to the presence of at least one conducting wire, while tensile strain and pressure loads occurring in longitudinal direction can further be absorbed by the combination of the plates and adhesive agents.

[0006] Preferably arranged between the end faces of the rail bars for mutual connection is an electrically conducting profile plate.

[0007] The conducting member is preferably of copper in order to obtain a high electrical conductivity.

[0008] The conducting member is received clampingly between the rail bar and the connecting bar so that a good contact pressure is obtained. After injection of the adhesive the pressure in the injected space is increased by tightening the connecting bolts. Spaces possibly not filled with adhesive are hereby filled and the excess adhesive is pressed outside. This excess adhesive can then be removed with suitable means.

[0009] The invention further relates to a rail bar connection consisting of a pair of connecting plates placed on either side against rail bars located mutually in line, with interposing of conducting wires, nut-bolt connecting means clampingly connecting the connecting plates located on either side of the rail bars, and curing adhesive

injected into the space between the respective connecting plates and the rail bar.

[0010] The invention will be elucidated with reference to an embodiment according to the annexed drawings, in which:

figure 1 shows a perspective view with exploded parts of a connection of two rail bars according to the invention, and

figure 2 shows a cross section of the connecting construction according to figure 1.

[0011] According to the invention two rail bars 1, 2 are placed with their end faces against each other with interposing of for instance a profile piece 3. The latter can be of plastic. Connecting plates 4, 5 are placed in overlapping manner on the side of the rail bars 1, 2 for connecting. Copper conducting rods 6, 7 and 8, 9 are herein received clampingly at the top and bottom respectively in figure 1 between connecting plates 4, 5 and both rail bars 1, 2. The connecting plates 4, 5 for instance, and therein the copper conducting rods 6, 7 and 8, 9, are then clamped fixedly by nut-bolt connections 10. The remaining interspace between connecting plates 4, 5 and rail bars 1, 2 is then filled by injecting an adhesive 11, 12 (figure 2). The adhesive 11, 12 then cures.

Claims

1. A method for mutually connecting rail bars (1,2) with their end faces in electrically conducting manner, comprising the following steps;
 - placing on either side against the rail bar a connecting plate (4,5) extending in lengthwise direction over both rail bars for connecting, and,
 - clampingly connecting the connecting plates to the rail bar by transversely directed nut-bolt connecting members (10), **characterized by** interposing of at least one electrically conducting member (6,7,8,9) between the rail bar and the connecting plate, and
 - injecting a curing adhesive (11,12) into the space between the rail bar and the connecting plate.
2. Method as claimed in claim 1, **characterized in that** prior to mutual connection of the rail bars a profile plate (3) is arranged between the end faces of the rail bars for connection.
3. Method as claimed in claim 2, **characterized in that** the profile plate (3) is of conducting material.
4. Method as claimed in claim 1, **characterized in that** the conducting member (6,7,8,9) is of copper.

5. Method as claimed in claims 1-4, **characterized in that** after injection of the adhesive (11,12) the pressure in the injected space is increased by tightening the connecting bolts.

6. Rail bar connection comprising a pair of connecting plates (4,5) placed on either side against rail bars (1,2), said rail bars being located mutually in line, with electrically conducting members (6,7,8,9) between both the adjacent rail bar ends and said connecting plate, nut-bolt connecting means (10) for clampingly connecting the connecting plates to the rail bars, and curing adhesive (11,12) injected into the space between the respective connecting plates and the rail bar.

Patentansprüche

1. Verfahren zum gegenseitigen Verbinden von Schienenstangen (1,2) über ihre Stirnflächen auf eine elektrisch leitende Weise, welches die folgenden Schritte umfaßt:

- Anordnen einer Verbindungsplatte (4,5) auf jeder Seite gegen die Schienenstange, die sich zum Verbinden in Längsrichtung über beide Schienenstangen erstreckt, und
- klemmendes Verbinden der Verbindungsplatten an die Schienenstange mit quer liegenden Mutter/Bolzen-Verbindungselementen (10), **gekennzeichnet durch** Anordnen wenigstens eines elektrisch leitenden Elementes (6,7,8,9) zwischen der Schienenstange und der Verbindungsplatte, und
- Einspritzen eines aushärtenden Klebstoffs (11,12) in den Raum zwischen der Schienenstange und der Verbindungsplatte.

2. Verfahren nach Anspruch 1, **dadurch gekennzeichnet, daß** vor der gegenseitigen Verbindung der Schienenstangen eine Profilplatte (3) zwischen den Stirnflächen der Schienenstangen zum Verbinden angeordnet wird.

3. Verfahren nach Anspruch 2, **dadurch gekennzeichnet, daß** die Profilplatte (3) aus einem leitenden Material ist.

4. Verfahren nach Anspruch 1, **dadurch gekennzeichnet, daß** das leitende Element (6,7,8,9) aus Kupfer ist.

5. Verfahren nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, daß** nach der Einspritzung des Klebstoffs (11,12) der Druck im eingespritzten Raum durch Festziehen der Verbindungsbolzen erhöht wird.

6. Schienenstangenverbindung, die ein Paar Verbindungsplatten (4,5) umfaßt, die auf jeder Seite gegen die Schienenstangen (1,2) angeordnet sind, wobei die Schienenstangen gegenseitig in Linie angeordnet sind, mit elektrisch leitenden Elementen (6,7,8,9) zwischen den beieinander liegenden Enden der Schienenstangen einerseits und der Verbindungsplatte andererseits, Mutter/Bolzen-Verbindungselementen (10) zum klemmenden Verbinden der Verbindungsplatten an die Schienenstangen, und einem aushärtenden Klebstoff (11,12), der in den Raum zwischen den jeweiligen Verbindungsplatten und der Schienenstange eingespritzt ist.

Revendications

1. Procédé pour connecter mutuellement des sections de rails (1, 2) avec leurs faces d'extrémité de manière électriquement conductrice, comprenant les étapes suivantes consistant à :

- placer sur chaque côté contre la section de rails une plaque de connexion (4, 5) s'étendant dans le sens de la longueur sur les deux sections de rails à des fins de connexion, et
- connecter par serrage les plaques de connexion à la section de rails par des éléments de connexion à écrou-boulon dirigés dans le sens transversal (10), **caractérisé par** l'interposition d'au moins un élément électriquement conducteur (6, 7, 8, 9) entre la section de rail et la plaque de connexion, et
- injecter un adhésif durcissable (11, 12) dans l'espace situé entre la section de rails et la plaque de connexion.

2. Procédé selon la revendication 1, **caractérisé en ce que** avant la connexion mutuelle des sections de rails, une plaque profilée (3) est disposée entre les faces d'extrémité des sections de rails à des fins de connexion.

3. Procédé selon la revendication 2, **caractérisé en ce que** la plaque profilée (3) est constituée d'un matériau conducteur.

4. Procédé selon la revendication 1, **caractérisé en ce que** l'élément conducteur (6, 7, 8, 9) est constitué de cuivre.

5. Procédé selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** après injection de l'adhésif (11, 12), la pression dans l'espace ayant reçu l'adhésif est accrue en serrant les boulons de connexion.

6. Connexion de sections de rails comprenant une

paire de plaques de connexion (4, 5) placées de chaque côté contre les sections de rails (1, 2), lesdites sections de rails étant placées mutuellement en ligne, avec les éléments électriquement conducteurs (6, 7, 8, 9) entre les deux extrémités de section de rails adjacentes et ladite plaque de connexion, des moyens de connexion à écrou-boulon (10) pour connecter par serrage les plaques de connexion aux sections de rails et l'adhésif durcissable injecté (11, 12) placé dans l'espace entre les plaques de connexion et la section de rails respectives.

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