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(54) **Device mountable to a rail, so that means for screening off the railway can be connected to a number of devices**

An eine Eisenbahnschiene zu befestigende Vorrichtung, so dass Mittel um die Eisenbahn abzuschirmen mit einer Vielzahl von Vorrichtungen verbunden werden können

Dispositif pour montage sur un rail de telle façon que des moyens de protection par rapport à la voie puissent être connectés à une pluralité de tels dispositifs

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(56) References cited:
WO-A-95/34719 **DE-C- 19 503 638**

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Description

[0001] The invention relates to a device mountable to a rail, so that means for screening off the railway can be connected to a number of spaced apart devices, said device comprising a connecting bar extending almost horizontally during use of said device, in which the end of said connecting bar can be slid under the rail and be fixed to the rail foot, and said connecting bar carries an upright at a distance from the end connected to said rail foot (cf. WO 9534719 A).

[0002] With known devices of this type, a number of them are fixed to the rail in spaced apart relationship so that then their uprights can be connected to each other by belts, cables or metal parts. This occurs in particular on locations where people are working near the rail. Said devices are intended to prevent the railway workers from contact with a passing train.

[0003] A difficulty of said known structure is that the connection of the end of the connecting bar to the rail has to occur through means mounted near the rail. Therefore, during said work, one has to make sure that there are no trains approaching. Further, said known structure is not very stable since the connecting point is situated at a considerable distance from the upright, whereas said upright must be able to absorb loads.

[0004] The object of the invention is to remove this difficulties and to that end provides for, that the end of the connecting bar to be slid under the rail is provided with a hook portion that, after sliding it under the rail, can embrace the rail foot, the connecting bar being provided with a lock pivotably connected to it at a distance from said hook portion, said lock being able to embrace the other side of the rail foot and being operable with the help of a coupling bar pivotably connected to it and also pivotably connected to a connecting piece being in turn pivotably connected to the connecting bar, in which said coupling bar can extend towards the upright at an angle with the connecting bar and can be fixed to said upright at a distance from the connecting point between connecting bar and upright, after locking of the end portion of the connecting bar to the rail foot has taken place, in which all pivot axes are square to the plane going through the connecting bar and the upright.

[0005] In particular, it will be provided for, that in the locked state of the device, the connecting piece extends almost parallel to the connecting bar and that the pivot point between the coupling bar and the connecting piece is situated closer to the free end of said connecting bar than the pivot point between said connecting bar and said connecting piece.

[0006] In this way, a strong locking of the device to the rail is achieved.

[0007] On mounting the device to the rail, first the free end of the connecting bar is slid under the rail and then pulled back slightly in order to bring the hook portion around the rail foot. Subsequently, by means of a relatively small movement of the coupling bar, the lock can

be pivoted across the rail foot. Then, the free end of the coupling bar is situated at a considerable distance from the rail, so that, on mounting the device onto the rail and locking it, one can remain at a distance from the rail. After movement of the coupling bar, to wit substantially in longitudinal direction thereof, its free end will contact the upright in a certain place and it can be fixed to it.

[0008] By the presence of the coupling bar between the connecting bar and the upright, the latter is supported in a better way, so that it is able to absorb higher loads, also in case of a lightweight version.

[0009] For fixing the coupling bar to the upright, one can use a pin which is slidable substantially in longitudinal direction of the coupling bar and which is pressed outwardly and out of the end of the coupling bar by a spring and which can be received in a bore in the upright.

[0010] When the upright is constituted by a pipe, a further bore for passing tools by means of which the pin can be pushed back can be provided opposite the bore in which the pin is received. In this way, the connection between the coupling bar and the upright can be removed, and the device can be removed from the rail. It can be provided for, that the pin can be pushed back by special tools only.

[0011] In order to make the device suitable for rails of different width of the rail foot, it can be provided for, that the hook portion situated at the free end of the connecting bar is connected to a bush which is slidably yet not rotatably mounted to the connecting bar and can be brought at the appropriate distance from the lock by means of a bolt. Further, it is desirable that both the connecting bar and the coupling bar are electrically insulated from the rail, since the rail can be live and said bars must be touched with the hands.

[0012] In order to achieve this, according to the invention it can be provided for, that the end portions of said connecting bar and of said coupling bar situated near the rail have a smaller diameter than the further part of said bars and are secured therein using bushes of electrically insulating material.

[0013] For example, the bushes can be mounted between the telescoped portions of the bars by bonding.

[0014] The invention is further explained by way of an embodiment shown in the drawing, in which:

fig. 1 and 2 show a side view of a device according to the invention in the position in which it is mounted to and locked onto a rail;

fig. 3 shows a part of fig. 2, but in the position in which the locking has been discontinued; and

fig. 4 shows in cross-section the connecting point between the upright and the coupling bar, as it is indicated by the circle IV in fig. 1.

[0015] The device 1 shown in the drawing consists of the connecting bar 2 changing to the upright 3 by means of a bend. The device is fixed to the rail 4 in a way to be described further.

[0016] After a number of such devices 1 have been fixed to the rail 4, their uprights 3 can be connected by means of belts, cables or metal strips, to which end the uprights 3 can be provided with fasteners 5. Thus, a safeguard for protecting the railway workers is achieved along the railway.

[0017] The connecting bar 2 is provided with an end piece 6 being secured in it by means of a bush 7 of electrically insulating material. The end piece 6 is provided with the pivot point 8 in which lock 9 is rotatable, provided with a hook 10 which can fall across the rail foot. Operation of the lock 9 takes place by means of the coupling bar 12. Said bar 12 is provided with an end piece 13 being mounted in the bar by means of a bush 14 of electrically insulating material. The end piece 13 is pivotably connected to the lock 9 at the point 15. At the point 16, said end piece 13 is pivotably connected to a connecting piece 17 which at the other side, at the point 18, is pivotably connected to the end piece 6 of the connecting bar 2.

[0018] A bush 19 guided by a pin 20 mounted in the end piece 6 is slidable on the end piece 6. By means of a bolt 21 screwed into a threaded portion in the end piece 6, the position of the bush 19 on the end piece 6 can be adjusted. The bush 19 carries the hook portion 22 that can grasp around the rail foot 11. Thus, the device can be applied with rails having a varying width of the foot. Since the bush 19 can be mounted in the correct place on the end piece beforehand, no work needs to be done near the rails 4.

[0019] Fig. 3 shows the position of the parts 9, 12, 13 and 17 when they are in the unlocked position before the lock 9 can be clamped onto a rail. When the device must be clamped onto the rail, the bar 12 will be moved from the position shown in fig. 3 into the position of fig. 1. With unlocking, the coupling bar 12 will be pivoted in the direction of the arrow R in fig. 1 and after that be pulled back in its longitudinal direction.

[0020] Fig. 4 shows the way of securing the coupling bar 12 to the upright 3. To that end, the coupling bar is provided with a pin 23 slidably received therein, which is pressed out by a spring 24 and can be accommodated in a bore 25 in the upright 3. From the other side of the upright 3, the pin can be pushed back against the action of said spring 24. This can be realized through a tool that can be brought into a bore 26 and can be moved in the direction of the arrow P.

[0021] In fig. 1, dash lines T show the profile which must be available for a train, and within which no objects are allowed.

[0022] It will be obvious, that only one possible embodiment of a device according to the invention has been illustrated in the drawing and described above, and that many changes can be made without leaving the inventive idea, as it is defined in the accompanying claims.

Claims

1. Device mountable to a rail (4), so that means for screening off the railway can be connected to a number of spaced apart devices (1), said device comprising a connecting bar (2) extending almost horizontally during use of said device, in which the end (6) of said connecting bar can be slid under the rail (4) and be fixed to the rail foot (11), and said connecting bar (2) carries an upright (3) at a distance from the end (6) connected to said rail foot (11), **characterized in that** the end (6) of the connecting bar (2) to be slid under the rail (4) is provided with a hook portion (22) which, after sliding it under the rail (4), can embrace the rail foot (11), the connecting bar (2) being provided with a lock (9) pivotably connected to it at a distance from said hook portion (22), said lock being able to embrace the other side of the rail foot (11) and being operable with the help of a coupling bar (12) pivotably connected to it and also pivotably connected to a connecting piece (17) being in turn pivotably connected to the connecting bar (2), in which said coupling bar (12) can extend towards the upright (3) at an angle with the connecting bar (2) and can be fixed to said upright at a distance from the connecting point between connecting bar (2) and upright (3), after locking of the end portion of the connecting bar (2) to the rail foot (11) has taken place, in which all pivot axes (8, 15, 16, 18) are square to the plane going through the connecting bar (2) and the upright (3).
2. Device according to claim 1, **characterized in that** in the locked state of the device, the connecting piece (9) extends almost parallel to the connecting bar (2) and that the pivot point (16) between the coupling bar (12) and the connecting piece (9) is situated closer to the free end of said connecting bar (2) than the pivot point (18) between said connecting bar (2) and said connecting piece (9).
3. Device according to claim 1 or 2, **characterized in that** for fixing the coupling bar (12) to the upright (3), a pin (23) is used which is slidable substantially in longitudinal direction of the coupling bar (12) and which is pressed outwardly and out of the end of the coupling bar (12) by a spring (24) and which can be received in a bore (25) in the upright (3).
4. Device according to claim 3, **characterized in that** at a tubular upright (3), opposite the bore (25) in which the pin (23) is received, a further bore (26) is provided for passing a tool by means of which the pin (23) can be pushed back.
5. Device according to one of the preceding claims, **characterized in that** the hook portion (22) situated at the free end of the connecting bar (2) is connect-

ed to a bush (19) which is slidably yet not rotatably mounted to the connecting bar (2, 6) and can be brought at the appropriate distance from the lock (9) by means of a bolt (21).

6. Device according to one of the preceding claims, **characterized in that** the end pieces (6, 13) of said connecting bar (2) and of said coupling bar (12) situated near the rail (4) have a smaller diameter than the further part of said bars and are secured therein using bushes (7, 14) of electrically insulating material.
7. Device according to claim 6, **characterized in that** the bushes (7, 14) are mounted between the telescoped portions (6, 13) of the bars (2, 12) by bonding.

Patentansprüche

1. Vorrichtung zur Befestigung an einer Schiene (4) derart, daß Mittel zum Entfernen der Laufbahn an einer Anzahl von beabstandeten Vorrichtungen (1) vorgesehen sind, wobei die besagte Vorrichtung einen Anschlußstab (2) aufweist, der sich während des Gebrauchs, in welchem das Ende (6) des besagten Anschlußstabes unter die Schiene (4) geschoben werden und am Fuß (11) der Schiene befestigt werden kann, im wesentlichen in einem horizontalen Bereich der besagten Vorrichtung erstreckt, und wobei der besagte Anschlußstab (2) in einem Abstand von dem am besagten Fuß (11) der Schiene befestigten Ende (6) einen aufrecht stehenden Bereich (3) aufweist, **dadurch gekennzeichnet, daß** das unter die Schiene (4) zu schiebende Ende (6) des Anschlußstabes (2) mit einem hakenförmigen Teil (22) versehen ist, der, nachdem er unter die Schiene (4) geschoben wurde, den Schienenfuß (11) umfassen kann, wobei der Anschlußstab (2) mit einer Verriegelung (9) versehen ist, die an diesem in einem Abstand vom besagten hakenförmigen Teil (22) gelenkig befestigt ist, wobei die besagte Verriegelung geeignet ist, die andere Seite des Schienenfußes (11) zu umfassen und mittels eines gelenkig an diesem und auch gelenkig an einem Anschlußstück (17) befestigten Koppelstabes (12), der seinerseits gelenkig am Anschlußstab (2) befestigt ist, betätigbar ist, wobei sich der besagte Koppelstab (12) in Richtung des aufrecht stehenden Bereiches (3) unter einem Winkel zum Anschlußstab (2) erstrecken kann und an dem besagten aufrecht stehenden Bereich in einem Abstand vom Anschlußpunkt zwischen dem Anschlußstab (2) und dem aufrecht stehenden Bereich (3) befestigt werden kann, nachdem eine Verriegelung des Endbereiches des Anschlußstabes (2) am Schienenfuß (11) erfolgt ist, bei der alle Ge-

lenkachsen (8, 15, 16, 18) senkrecht zu der durch den Anschlußstab (2) und den aufrecht stehenden Bereich (3) verlaufenden Fläche liegen.

2. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, daß** sich im verriegelten Zustand der Vorrichtung das Anschlußstück (9) weitgehend parallel zum Anschlußstab (2) erstreckt und daß der Gelenkpunkt (16) zwischen dem Koppelstab (12) und dem Anschlußstück (9) näher am freien Ende des besagten Anschlußstabes (2) liegt als der Gelenkpunkt (18) zwischen besagtem Anschlußstab (2) und dem besagtem Anschlußstück (9).
3. Vorrichtung gemäß Anspruch 1 oder 2, **dadurch gekennzeichnet, daß** für die Befestigung des Koppelstabes (12) am aufrecht stehenden Bereich (3) ein Stift (23) verwendet wird, der im wesentlichen in der Längsrichtung des Koppelstabes (12) gleitend verschiebbar ist und der durch eine Feder (24) nach außen und aus dem Ende des Koppelstabes (12) heraus gedrückt wird und der in einer Bohrung (25) im aufrecht stehenden Bereich (3) aufgenommen werden kann.
4. Vorrichtung gemäß Anspruch 3, **dadurch gekennzeichnet, daß** an einem rohrartigen aufrecht stehenden Bereich (3), gegenüber der Bohrung (25), in der der Stift (23) aufgenommen wird, eine weitere Durchgangsbohrung (26) für ein Werkzeug vorgesehen ist, vermittle dessen der Stift (23) zurückgedrückt werden kann.
5. Vorrichtung gemäß einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, daß** der hakenförmige Teil (22), der am freien Ende des Anschlußstabes (2) angeordnet ist, mit einer Buchse (19) verbunden ist, die verschiebbar, jedoch nicht drehbar am Anschlußstab (2, 6) angeordnet ist und die mittels eines Bolzens (21) in den passenden Abstand von der Verriegelung (9) gebracht werden kann.
6. Vorrichtung gemäß einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, daß** die Anschlußstücke (6, 13) des besagten Anschlußstabes (2) und des besagten Koppelstabes (12), die in der Nähe der Schiene (4) angeordnet sind, einen geringeren Durchmesser als der übrige Bereich der besagten Stäbe aufweisen und daß sie darin mit Buchsen (7, 14) aus elektrisch isolierendem Material gesichert sind.
7. Vorrichtung gemäß Anspruch 6, **dadurch gekennzeichnet, daß** die Buchsen (7, 14) durch Kleben zwischen den ineinandergeschobenen Teilen (6, 13) der Stäbe (2, 12) angebracht sind.

Revendications

1. Dispositif pouvant être monté sur un rail (4), de sorte que les moyens pour protéger la voie des chemins de fer, peuvent être raccordés à un certain nombre de dispositifs espacés (1), ledit dispositif comprenant une barre de connexion (2) s'étendant presque à l'horizontal pendant l'utilisation dudit dispositif, dans lequel l'extrémité (6) de ladite barre de connexion peut coulisser sous le rail (4) et être fixée au patin de rail (11), et ladite barre de connexion (2) supporte une pièce verticale (3) à une certaine distance de l'extrémité (6) raccordée audit patin de rail (11), **caractérisé en ce que** l'extrémité (6) de la barre de connexion (2) qui doit être mise à coulisser sous le rail (4) est pourvue d'une partie de crochet (22), qui, après coulissement de celle-ci sous le rail (4), peut entourer le patin de rail (11), la barre de connexion (2) étant pourvue d'un verrou (9) accouplé en pivot à celle-ci à une certaine distance depuis ladite partie de crochet (22), ledit verrou pouvant entourer l'autre côté du patin de rail (11) et étant actionnable à l'aide d'une barre de couplage (12) accouplée en pivot à celui-ci et également accouplée en pivot à une pièce de connexion (17) qui, à son tour, est accouplée en pivot à ladite barre de connexion (2), dans lequel ladite barre de couplage (12) peut s'étendre vers la partie verticale (3) selon un certain angle avec la barre de connexion (2) et peut être fixée à ladite partie verticale à une certaine distance du point de connexion entre la barre de connexion (2) et la partie verticale (3), après que le verrouillage de la partie d'extrémité de la barre de connexion (2) au patin du rail (11) ait eu lieu, dans lequel la totalité des axes de pivot (8, 15, 16, 16, 18) sont carrés au plan passant par la barre de connexion (2) et par la partie verticale (3).
2. Dispositif selon la revendication 1, **caractérisé en ce qu'à** l'état verrouillé du dispositif, la pièce de connexion (9) s'étend presque parallèle à la barre de connexion (2) et **en ce que** le point pivot (16) entre la barre de couplage (12) et la pièce de connexion (9) est situé plus près de l'extrémité libre de ladite barre de connexion (2) que le point pivot (18) entre ladite barre de connexion (2) et ladite pièce de connexion (9).
3. Dispositif selon la revendication 1 ou 2, **caractérisé en ce que**, pour fixer la barre de couplage (12) à la partie verticale (3), une broche (23) est utilisée qui peut coulisser sensiblement dans la direction longitudinale de la barre de couplage (12) et qui est pressée vers l'extérieur et à l'extérieur de l'extrémité de la barre de couplage (12) par un ressort (24) qui peut être reçu dans un alésage (25) dans la partie verticale (3).
4. Dispositif selon la revendication 3, **caractérisé en ce que** dans une partie verticale tubulaire (3), opposée à l'alésage (25) dans lequel la broche (23) est reçue, un autre alésage (26) est ménagé pour faire passer un outil au moyen duquel la broche (23) peut être poussée en arrière.
5. Dispositif selon l'une des revendications précédentes, **caractérisé en ce que** la partie de crochet (22) située au niveau de l'extrémité libre de la barre de connexion (2) est connectée à une douille (19) qui est montée coulissante mais non tournante sur la barre de connexion (2, 6) et peut être amenée à une distance appropriée du verrou (9) au moyen d'un boulon (21).
6. Dispositif selon l'une des revendications précédentes, **caractérisé en ce que** les pièces d'extrémité (6, 13) de ladite barre de connexion (2) et de ladite barre de couplage (12) situées près du rail (4) ont un diamètre plus petit que l'autre partie desdites barres et sont fixées dans celles-ci en utilisant des douilles (7, 14) d'un matériau électriquement isolant.
7. Dispositif selon la revendication 6, **caractérisé en ce que** les douilles (7, 14) sont montées entre les portions télescopiques (6, 13) des barres (2, 12) par soudage.

FIG. 1

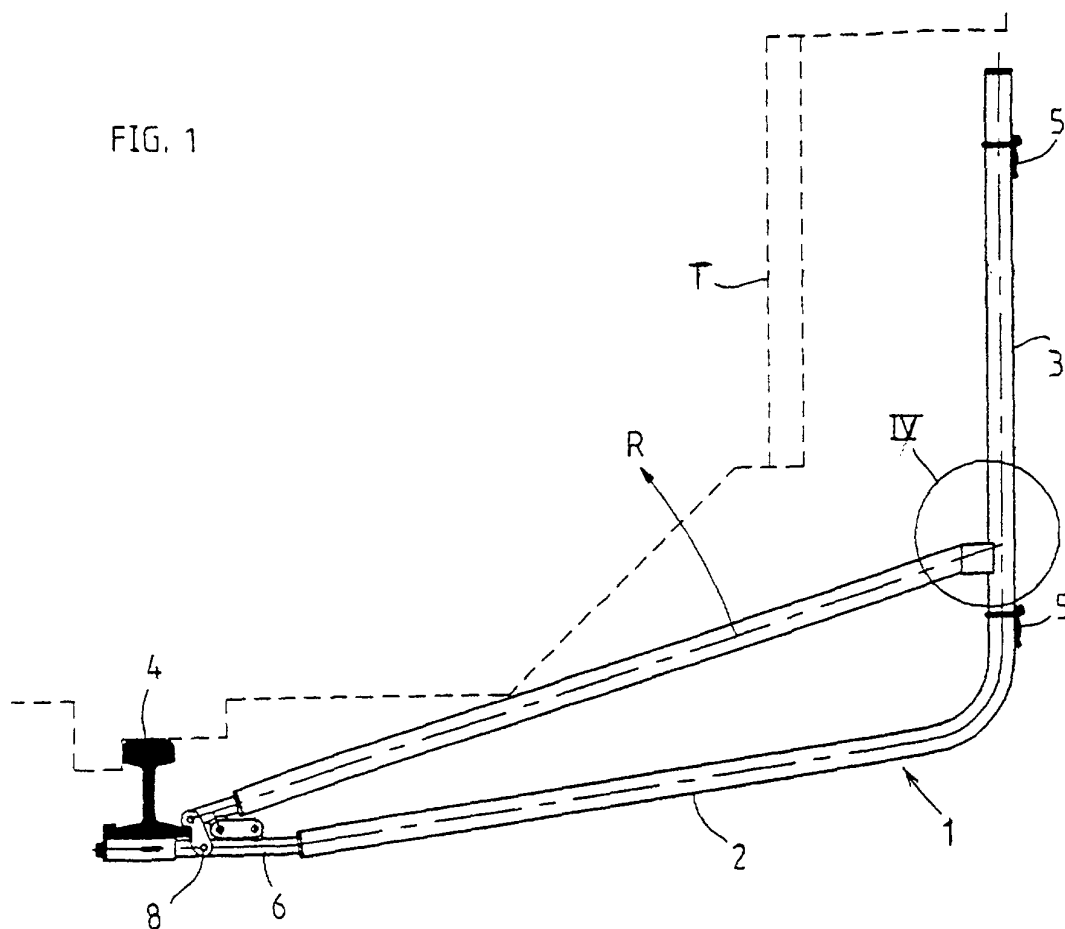


FIG. 2

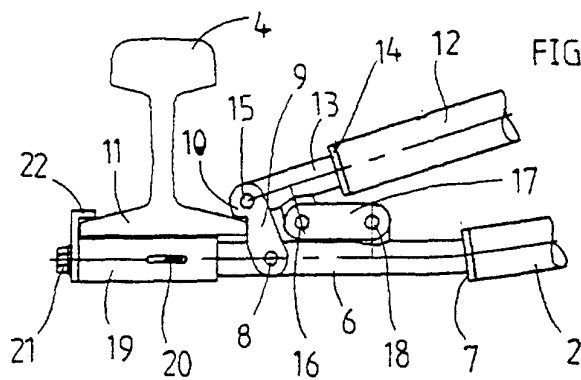


FIG. 3

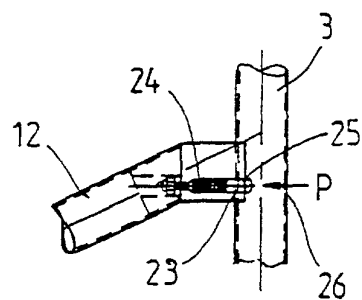
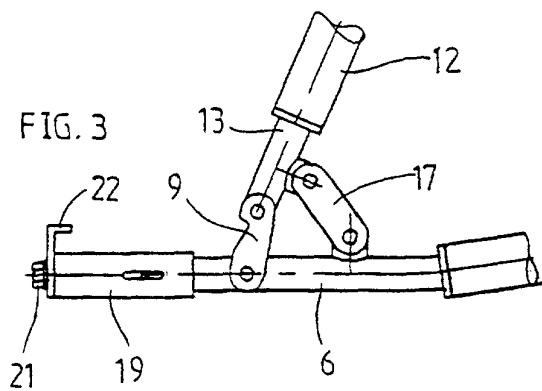


FIG. 4