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⑤④ **MEANS FOR FASTENING A RAIL TO A SLEEPER.**

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**DE-A-1 708 640
FI-A- 53 336
US-A-4 143 818**

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Description

The present invention relates to means for fastening a rail to a sleeper, comprising a spring having the general shape of the letter M, the central part of which is arranged to abut a support anchored in the sleeper and the branches of which are arranged to extend onto the foot of the rail, each spring branch acting on the rail foot and having a shoulder limiting the lateral movement of the rail.

A rail fastening means of this kind is disclosed in the DE—A—17 08 640. In the fastening means known from the prior art the side-engaging support is formed by bending down the end of the down-pressing arm, i.e. the branch. However, in order to obtain a sufficient spring force the torque arm of this fastening means must be long and the material of the branch must be of sufficient thickness. Thus—due to the great consumption of material—the known fastening means is comparatively expensive because in the manufacture of rail clamps the material costs constitute the overwhelming part of the total costs.

It is therefore the object of the invention to provide a means for fastening a rail to a sleeper as described above the material consumption of which is considerably reduced.

Therefore the fastening means as described above is characterised in that the spring is substantially planar in the relaxed state and the shoulder which projects below the branch is provided between the body of the branch and an extension which is of reduced depth and whose lower surface acts on the rail foot.

In the fastening means of the present invention, material is saved by virtue of the novel shaping of the ends of the spring. The sideward support of the spring is thereby provided by forming a shoulder having a shape corresponding to the rail foot in the material instead of bending the ends of the spring as known from the prior art. By virtue of the novel shaping of the cross-sectional area of the spring the consumption of material can be decreased without affecting the stiffness of the spring because the resilient portion is shorter.

The invention will in the following be described in more detail, with reference to the accompanying drawing.

Figures 1 and 2 show the rail fastener as mounted on one side of a rail, seen from above and as a partial cross section, respectively.

Figures 3 and 4 show the spring seen from the side and from above.

The rail to be fastened, of which a part only is visible in Figures 1 and 2, is denoted by reference numeral 1 and its foot or base by numeral 2. 3 denotes a sleeper made of e.g. concrete, and 4 denotes a resilient sheet layer between the rail foot and the sleeper.

In the sleeper is rigidly anchored a screw 5 which by means of a shoulder or flange 6 tensions a resilient spring member 7 against the rail foot 2. The spring is preferably formed of a steel bar bent to the general shape of the letter M (or W). The

central part 8 of the spring 7 runs between the rail foot 2 and the screw 5 whereas the screw provides a stop for the spring in the direction away from the rail, and the ends of the spring branches extend onto the rail foot 2 and press the latter against the sheet layer 4 and sleeper 3.

In addition to pressing the rail foot against the sleeper, the spring 7 also limits the lateral movement of the rail by means of a shoulder 14 formed in the surface 13 pressing against the rail foot, in each of the M-branches 10 and 11. Since there is one shoulder 14 on each side of the central part 8 of the spring held by the screw 5, the spring 7 will not turn and the screw prevents the spring from yielding laterally more than what is permitted by the resiliency of the areas between the branches 9 and 10.

The rail fastening arrangement here suggested has the major advantage of being very simple in structure and thus of being cheap, and this is accomplished by using the resiliency of the spring 7 both for pressing the rail foot against the sleeper and for supporting the rail laterally.

Under so-called normal conditions the shoulders 14 of the two spring branches 9 and 10 provide the necessary lateral support. However, one can expect that either the screw 5 may loosen or the spring 7 may be deformed, due e.g. to a difficult climate with severe winters, whereupon either of or both shoulders 14 may slip or yield too much. To encounter this it is preferable to have a spring of rectangular cross-section and to have the central part 8 of the spring to run at a close distance, e.g. 2 to 3 mm, to the edge of the rail foot. Thus the central part 8 of the spring 7 provides an efficient reserve lateral support for the rail. For so-called normal conditions, the spring 7 may as well be of circular cross-section, which saves some material over a rectangular cross section, but on the other hand a spring of rectangular cross section is easier to manufacture and provides a more efficient secondary lateral support.

As shown in Figures 1 and 2, a packing 15 may be placed under the central part 8 of the spring 7, and a further resilient intermediate packing, e.g. in one piece with the sheet layer 4, may still be positioned underneath the packing 15.

The invention is not restricted to the embodiment of the drawing only. The spring 7 need not be planar as seen from the side, and the branches of the spring may extend longer onto the rail foot.

Another rail fastener is of course arranged at the other side of the rail.

Claims

1. Means for fastening a rail to a sleeper, comprising a spring (7) having the general shape of the letter M, the central part (8) of which is arranged to abut a support anchored in the sleeper and the branches of which are arranged to extend onto the foot (2) of the rail (1), each spring branch (9, 10) acting on the rail foot (2) and having a shoulder (14) limiting the lateral movement of

the rail (1), characterised in that the spring (7) is substantially planar in the relaxed state and the shoulder (14) which projects below the branch (9, 10) is provided between the body of the branch (9, 10) and an extension (11, 12) which is of reduced depth and whose lower surface (13) acts on the rail foot (2).

2. Means according to claim 1, in which the central part (8) of the spring (7) is arranged to run close to the edge of the rail foot (2) and the spring has a rectangular cross section.

3. Means according to claim 1 or 2, in which between the central part (8) of the spring (7) and the sleeper (3) is arranged a packing (15), and between the rail and the sleeper is arranged a resilient sheet layer (4) extending underneath the packing (15).

4. Means according to any of claims 1 to 3, in which the extension (11, 12) is wider than the body of the branch (9, 10).

Patentansprüche

1. Mittel zur Befestigung einer Schiene an einer Schwelle bestehend aus einer Feder (7) mit allgemein M-förmiger Gestalt, deren mittlerer Bereich (8) so angeordnet ist, daß er sich gegen eine in der Schwelle verankerte Stütze anlehnt, und deren Arme so angeordnet sind, daß sie sich bis auf den Fuß (2) der Schiene (1) erstrecken, wobei jeder Federarm (9, 10) auf den Schienenfuß (2) einwirkt und eine Schulter (14) zur Begrenzung der seitlichen Bewegung der Schiene (1) aufweist, dadurch gekennzeichnet, daß die Feder (7) in ihrem entspannten Zustand im wesentlichen eben ist und die unter dem Arm (9, 10) vorstehende Schulter (14) zwischen dem Rumpf des Armes (9, 10) und einer Verlängerung (11, 12) angeordnet ist, die eine verringerte Dicke hat und deren untere Fläche (13) auf den Schienenfuß (2) einwirkt.

2. Mittel nach Anspruch 1, bei dem der mittlere Bereich (8) der Feder (7) zur Anlehnung nahe an der Kante des Schienenfußes (2) ausgebildet ist

und bei dem die Feder einen rechteckförmigen Querschnitt hat.

3. Mittel nach Anspruch 1 oder 2, wobei zwischen dem mittleren Bereich (8) der Feder (7) und der Schwelle (3) eine Dichtung (15) ist, und wobei zwischen Schiene und Schwelle eine sich unterhalb der Dichtung (15) erstreckende nachgiebige Schicht (4) vorgesehen ist.

4. Mittel nach einem der Ansprüche 1 bis 3, bei dem die Verlängerung (11, 12) breiter ist als der Rumpf des Armes (9, 10).

Revendications

1. Dispositif de fixation d'un rail à une traverse constitué d'un ressort (7) ayant la forme générale d'un M, dont la partie centrale (8) est disposée de manière à s'appuyer contre un support ancré dans la traverse, et dont les bras sont disposés de manière qu'ils s'étendent jusqu'au pied (2) du rail (1), chaque bras de ressort (9, 10) agissant sur le pied (2) de rail et présentant un épaulement (14) pour limiter le déplacement latéral du rail (1), caractérisé par le fait que le ressort (7) est sensiblement plan en position de détente et l'épaulement (14) en saillie sous le bras (9, 10) est disposé entre le corps du bras (9, 10) et un prolongement (11, 12) qui possède une épaisseur réduite et dont la face inférieure (13) agit sur le pied (2) de rail.

2. Dispositif selon la revendication 1, dans lequel la partie centrale (8) du ressort (7) est conformée pour s'appuyer au voisinage de l'arête du pied (2) de rail, et dans lequel le ressort a une section transversale rectangulaire.

3. Dispositif selon la revendication 1 ou 2, dans lequel un joint d'étanchéité (15) se trouve entre la partie centrale (8) du ressort (7) et la traverse (3), et dans lequel une couche élastique (4) s'étendant sous le joint d'étanchéité (15) est prévue entre le rail et la traverse.

4. Dispositif selon l'une des revendications 1 à 3, dans lequel le prolongement (11, 12) est plus large que le corps du bras (9, 10).

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