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- (54) **Title:** SOLE PLATE ASSEMBLY FOR RAILS FIXATION

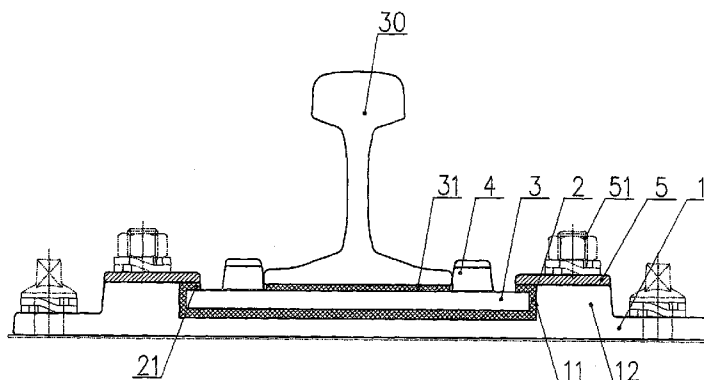


Fig. 1

- (57) **Abstract:** The sole plate assembly for fixation of rails and parts of switches between the railroad tie or fixed carriage and travelled parts of railway superstructure, which contains the base plate (1) equipped with a recession (11), housing a flexible inter-plate (2), covering the bottom and side walls of the recession (11), while the flexible inter-plate (2) houses the distribution plate (3).



Sole Plate Assembly for Rails Fixation

Technical Field

The technical solution relates to the sole plate assembly for fixation of rails and parts of switches between the railroad tie or fixed carriage way and travelled parts of the superstructure on the trails for railway, suburban, underground and tram applications.

Contemporary State of the Art

There exist two separate systems as a means for rails fixation. One of them is the fixation for railroad ties or carriers on gravel ballast and the other one is the upper structure for fixed carriage way.

The hitherto known and used solutions of highly flexible means for fixation of rails and parts of switches are based on a compact assembly with vulcanised rubber, which is used for dampening vibrations or absorption of dynamic loads of rails in horizontal and vertical directions, used mainly for fixed carriage way or on assemblies of detachable sets for fixation, mainly for rails, with flexible elements, consisting of flexible inter-plate for dampening in vertical direction. This type of means is used mainly for railroad ties on gravel ballast.

The means for fixation of rails and switches can be divided to sole plate type and no sole plate type. The no sole plate type fixation is described in patents EP 0295685, EP 455594, EP 377765, DE 3918091, reaching the flexibility of rails suspension placement in connection with the gravel ballast of only 0,6 up to 1,0 mm.

Patent CZ 293627 describes a device for highly flexible fixation of railway rails for concrete railroad ties consisting of two angular guiding plates through which pass the fixation screws for thrust tightening ears to the foot of the rail against the concrete railroad tie. At least flexible inter-layer is placed between the foot of the rail and the concrete railroad tie. The fixation reaches the value of rail suspension of at least 1,5 mm.

The invention application CZ 2003-0889 (A3) describes placement for the rail section in the shape of the ribbed sole plate with intermediate plate of flexible material.

The invention application WO 2011/076543 (A1) contains an assembled set of fixation system fixed to a concrete railroad tie without ribs for attachment clip.

The patent EP 0548734 contains a flexible fixation of switch parts arranged with the use of supporting elements that are not secured by any attachment element.

The invention application DE 4406105 (A1) contains a system of fixation with distribution plate with ribs, not secured by plates or attachment elements, but only by a flexible element and sleeper screws are used for fixation.

In US 6409092 patent, the fixation system contains the distribution plate with ribs, located in a flexible inter-plate, which is not placed inside of any base plate.

In EP 1041200 patent, the fixation system contains the distribution plate with a flexible inter-plate, which does not act against horizontal loads.

In EP 1974100 patent, the fixation system contains the distribution plate with a flexible inter-plate, which is secured by sleeper screws.

Nature of the Technical Solution

The aim of the technical solution is to use the sole plate assembly for improvement of fixation of rails and switch parts, mainly to reach dampening of vibrations, absorption of dynamic load, high values of their suspension and establishment of work positions.

This can be reached by a sole plate assembly for fixation of rails and parts of switches between a railroad tie or a fixed carriage and travelled parts of railway superstructure according to this technical solution, which is based mainly on the fact that it contains the base plate with a recession, which holds a flexible inter-plate,

covering the bottom and side walls of the recession, while the flexible plate holds the distribution plate.

In consideration of dampening it is advantageous for the distribution plate to be equipped with ribs and across the opposite bent edges of the flexible inter-plate it is fixed with attachment nuts, fixed by a screw connection on the base plate, while the rail is placed between the ribs on the flexible bed.

For the realisation simplicity it is advantageous for the distribution plate to be equipped with ribs, between which the distribution plate with the rail is placed.

In consideration of the trail construction it is advantageous for the distribution plate to have a slope of 1 : 20 up to 1 : 40 in its upper part.

List of Figures in Drawings

The technical solution will be explained in detail using the drawing with schematic displaying of the sole plate assembly with ribs on the distribution plate in Fig. 1 and the sole plate assembly with ribs on the base plate in Fig.2.

Examples of Technical Solution

The sole plate assembly according to Fig. 1 contains the base plate 1, equipped with a recession 11 for the flexible inter-plate 2, abut against the bottom and sides of the recession 11, while its edges 21 are lifted up against each other. The flexible inter-plate 2 contains the distribution plate 3, with adjacent above-mentioned edges 21 of the flexible inter-plate from the upside. The edges 21 are pressed to the distribution plate 3 by attachment beds 5 fixed by the screw connection 51 in lifted parts 12 of the base plate 1. The rail 30 fits on the distribution plate 3 via the flexible bed 31. The rail 30 fixation may be performed using well known means.

In version according to Fig. 2, the ribs 4 are placed directly on the base plate 1. There is a recession 11 between them, housing a flexible inter-plate 2 containing a distribution plate 3, on which the rail 30 is fixed using a flexible bed 31.

The version according to Fig. 2 is advantageous due to the simplicity of dampening in horizontal and vertical direction, as well as in transversal and longitudinal direction.

In both of the versions - in consideration of the trail construction - it is possible for the distribution plate 3 to have a slope of 1 : 20 up to 1 : 40 in its upper part.

Industrial Applicability

The sole plate assembly is usual mainly for arrangement of dampening of rails and switch parts.

CLAIMS

1. The sole plate assembly for fixation of rails and parts of switches between the railroad tie or fixed carriage and travelled parts of railway superstructure, **characterised by the fact that** it contains the base plate (1) equipped with a recession (11), housing a flexible inter-plate (2), covering the bottom and side walls of the recession (11), while the flexible inter-plate (2) houses the distribution plate (3).
2. The sole plate assembly according to claim 1 **characterised by the fact that** the distribution plate (3) is equipped with ribs (4) and it is fixed across the oppositely lifted up edges (21) of the flexible inter-layer using attachment beds fixed on the base plate (1).
3. The sole plate assembly according to claims 1 and 2 **characterised by the fact that** a rail (30) is placed on a flexible bed (31) between the ribs (4) of the distribution plate (3).
4. The sole plate assembly according to claim 1 **characterised by the fact that** the base plate (1) is equipped with ribs (4) between which there is placed the distribution plate (3) with the rail (30).
5. The sole plate assembly according to claims 1 up to 4 **characterised by the fact that** the distribution plate (3) has a slope of 1 : 20 up to 1 : 40 in its upper part).

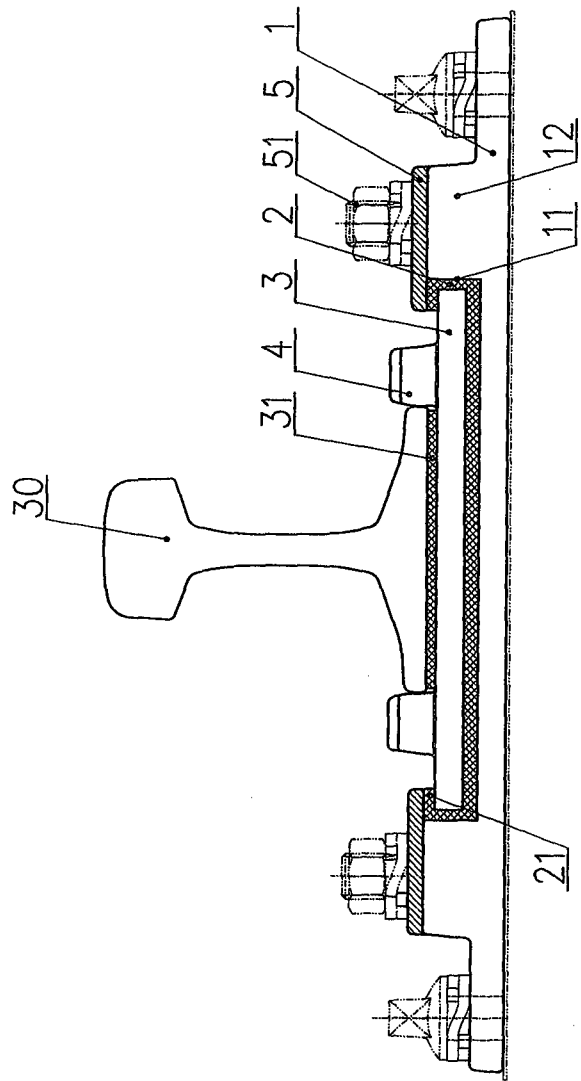


Fig. 1

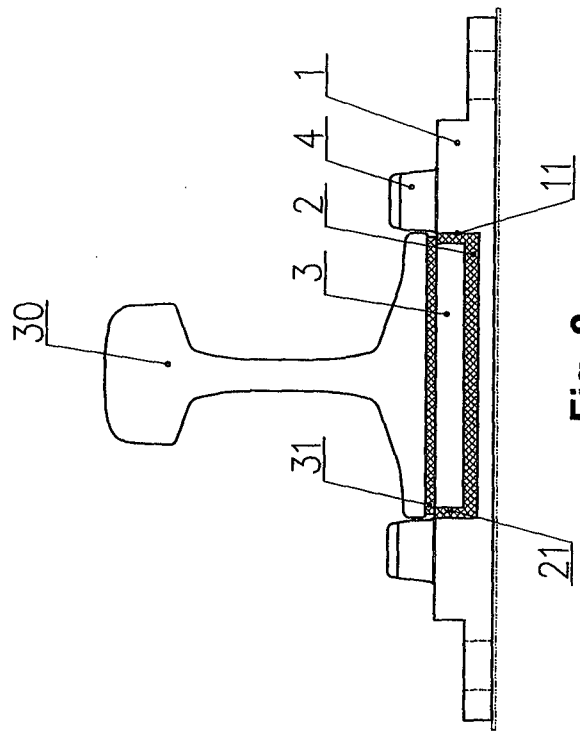


Fig. 2