

[54] **ASSEMBLY FOR SECURING A RAIL TO A RAIL CARRIER**

[75] Inventor: **Helmut Scherbaum**, Linz, Austria

[73] Assignee: **Vereinigte Österreichische Eisen- und Stahlwerke Aktiengesellschaft**, Linz, Austria

[22] Filed: **July 19, 1972**

[21] Appl. No.: **273,141**

[30] **Foreign Application Priority Data**

Aug. 11, 1971 Austria 7005/71

[52] U.S. Cl. **238/349**

[51] Int. Cl. **E01b 9/28**

[58] Field of Search 238/349, 315, 317, 283, 238/350, 351

[56] **References Cited**

UNITED STATES PATENTS

3,640,460	2/1972	Baseler	238/349
3,528,610	9/1970	Holstein	238/349
1,562,458	11/1925	Lehman	238/317
3,690,551	9/1972	Munch	238/349

FOREIGN PATENTS OR APPLICATIONS

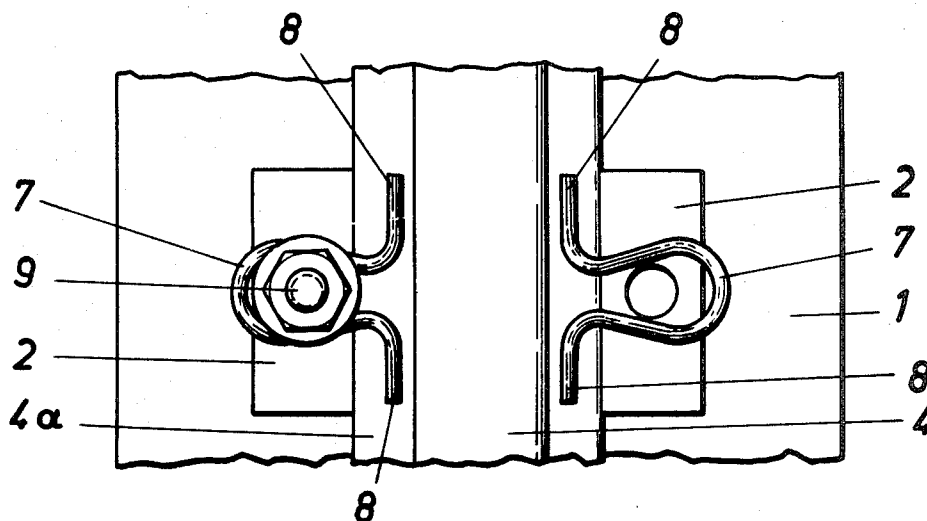
222,978 7/1959 Australia..... 238/349

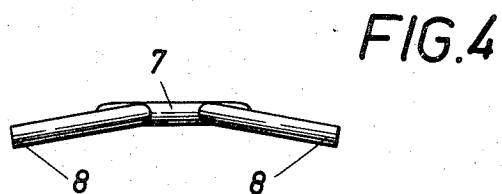
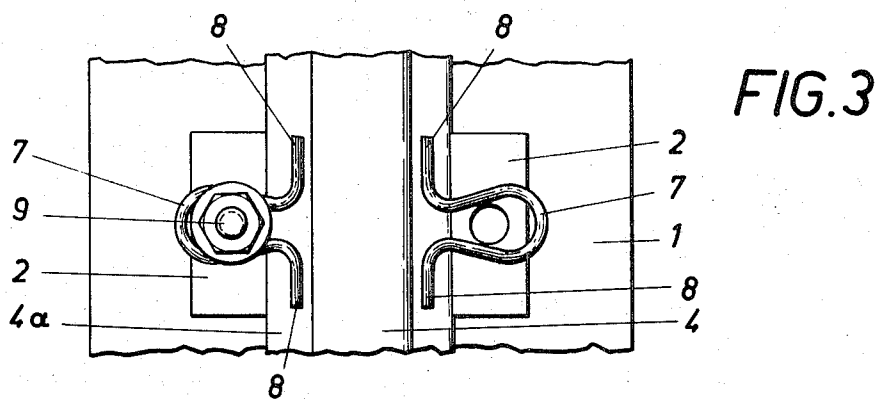
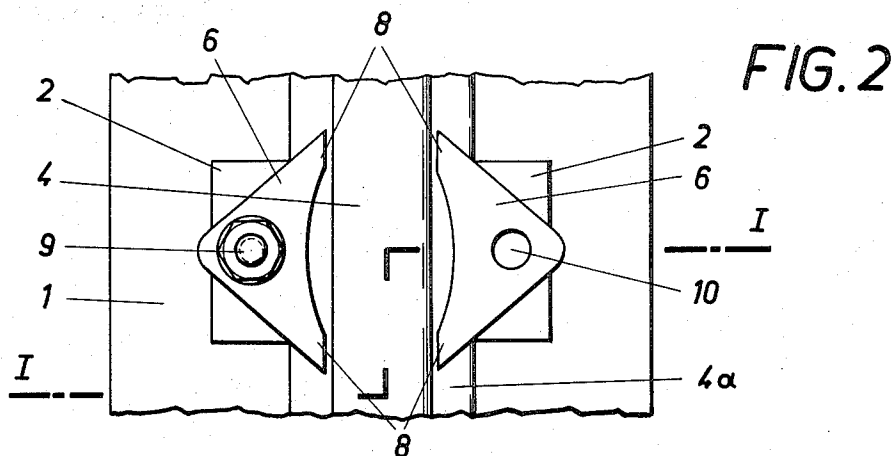
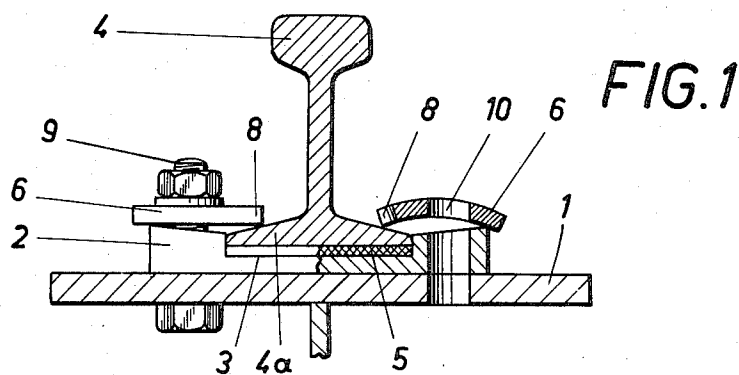
Primary Examiner—Robert G. Sheridan
Assistant Examiner—Richard A. Bertsch
Attorney, Agent, or Firm—Kurt Kelman

[57] **ABSTRACT**

A baseplate is adapted to be secured to a rail carrier and formed with a groove-like recess adapted to receive a rail foot of said rail and to hold said rail foot against a lateral movement. Two resilient clamping members are disposed on opposite sides of said recess. Each of said clamping members has two downwardly facing, sharp, pressure-exerting edge portions spaced apart in the longitudinal direction of said recess and overlying the same. Pivotal mounting means connect each of said clamping members to said baseplate for pivotal movement about a predetermined axis in response to a predetermined force acting on said pressure-exerting edge portions in the longitudinal direction of said recess. Said pivotal mounting means for each of said clamping members comprise a threaded fastener, which is centered on said axis and extends through said clamping member into said baseplate and retains said clamping member on said baseplate. The rail foot is as wide as said recess and has downwardly and laterally outwardly inclined top surfaces on opposite sides. The threaded fasteners force said pressure-exerting edge portions against said inclined top surfaces so that the latter can exert said force on said pressure-exerting edge portions.

3 Claims, 4 Drawing Figures





ASSEMBLY FOR SECURING A RAIL TO A RAIL CARRIER

This invention relates to a fixing device for the rails of cable railways, inclined elevators or the like, which device comprises a baseplate, which is secured to the rail carrier and is formed with a groove-like recess, which extends in the longitudinal direction of the rail and has the same width as the rail foot. The rail is held down by resilient clamping members, which are secured to the baseplate by respective threaded fasteners and each of which has two spaced apart pressure-exerting portions bearing on the associated inclined surface of the rail foot.

In known devices of that kind, the resilient clamping members comprise a U-shaped spring, the two ends of which form the pressure-exerting members bearing on the rail foot, or substantially triangular, cambered plates, which have one corner directed toward the rail web whereas that side of the plate which is opposite to said corner extends along the outside edge of the rail foot. The U-shaped springs are designed so that the bight of each spring can be forced by an associated threaded fastener against the base plate so as to be non-rotatable relative to the rail foot. Each of the resilient triangular plates is secured by one or two threaded fasteners, which have heads that are similar to hammer heads and embrace from the outside that edge of the plate which is parallel to the rail foot and which by said heads is forced against the baseplate so that the rail foot is held between the triangular clamping members and the baseplates.

That known design has the disadvantage that the rail is pressed by a constant force against the baseplate and a longitudinal displacement of the rail is not opposed by a substantial resistance. For this reason, these known devices cannot be used to fix the rails of cable railways, inclined elevators or the like, particularly if a so-called Abt's shunt is provided in the middle of the line. In such cable railways, the outer wheels of the car of the cable railway or inclined elevator run on a continuous rail and are provided with a flange so that the brakes can act only on the outer rails and the braking operation results in strong forces acting in the longitudinal direction of the outer rail. These forces must be taken up by the fixing device for the rail. The reaction forces in the two rails act in mutually opposite directions because one car ascends and the other descends at the same time. This situation differs from that in normal railroads, where only the car wheels are braked and the forces acting in the longitudinal direction of the rails are relatively small and due to the friction between the braked car and the rail. Besides, in a normal railroad both rails are loaded at the same time and in the same direction because the wheels on both sides of the car can be braked at the same time.

It is apparent that the forces which arise in inclined elevators, cable railways or the like are so strong that the known devices for fixing rails cannot be used because the known U-shaped springs and the triangular clamping members present substantially no resistance to a longitudinal displacement of the rails.

It is an object of the invention to eliminate these disadvantages and to provide for the rails of cable railways, inclined elevators or the like a fixing device which substantially opposes a longitudinal displacement of the rails and comprises only simple components.

In a device of the kind defined first hereinbefore, this object is accomplished by the invention in that the pressure-exerting members have sharp bearing edges and each clamping member is arranged to be pivotally movable about its fixing screw in response to an initial longitudinal displacement of the rail begins. These simple features taught by the invention enable a considerable increase of the clamping force in response to a longitudinal displacement of the rails. When the rail is subjected to a load tending to displace the rail in its longitudinal direction, the initial displacement in that direction results in a pivotal movement of the clamping members, which bear on the inclined surface of the rail foot, about the respective fixing screws so that the initial stress of the clamping members is greatly increased by the resulting displacement of the pressure-exerting portions on the inclined surface of the rail foot. The sharp bearing edges of the pressure-exerting portions of the clamping members ensure a reliable frictional engagement between the clamping members and the rail foot and a resulting rotation of the clamping members in response to the initial displacement of the rails.

In a particularly desirable embodiment of the invention, each resilient clamping member consists in a manner known per se substantially of a cambered triangular plate, which is provided near one corner with an opening forming a passage of the fixing screw and is formed near the other two corners with the pressure-exerting portions bearing on the rail foot. As the fixing screw is tightened, the curvature of the cambered triangular plate is depressed to some extent so that an initial stress is imparted to the resilient clamping member whereas a rotation of the clamping member during a longitudinal displacement of the rail is not prevented.

In another particularly desirable embodiment of the invention, each resilient clamping member consists of an approximately U-shaped spring having outwardly curved legs which have ends that are curved down from the main plane of the U-shaped spring and are provided with end faces forming sharp edges and serve in a manner known per se as pressure-exerting portions bearing on the rail foot. A rotation of the U-shaped springs about the fixing screw extending through the bight of the spring is ensured in this embodiment too.

An embodiment of the invention is shown diagrammatically and by way of example on the accompanying drawing, in which

FIG. 1 is a partial sectional view taken on line I—I in FIG. 2 and showing a device according to the invention,

FIG. 2 is a top plan view showing the device,

FIG. 3 is a top plan view showing a device which comprises different clamping members and

FIG. 4 is an enlarged side elevation showing a clamping member of the device shown in FIG. 3.

The device according to the invention comprises a baseplate 2, which is secured to the rail carrier 1 and is formed with a groove-like recess 3, which extends in the longitudinal direction of the rail and has the same width as the rail foot. In the recess 3, the rail 4 rests on a resilient pad 5 and is held against lateral displacement. The rail foot 4a is held down by resilient clamping members, which are secured to the baseplate 2 and apply pressure to the rail foot 4a. The clamping members may consist of cambered triangular plates 6 (FIGS. 1 and 2) or of approximately U-shaped springs 7 having outwardly curved legs (FIGS. 3 and 4). The

3

resilient clamping members have two spaced apart pressure-exerting portions 8, which bear on the inclined surface of the rail foot 4a. In response to the initial longitudinal displacement of the rails, each clamping member is pivotally moved about its fixing screw 9 so that the initial stress of the clamping members and the clamping force exerting thereby are increased.

In FIGS. 1, 2, and 3, the rigid-hand clamping member is shown in its position assumed before the fixation of the clamping member to the baseplate. FIG. 1 shows clearly the camber of the triangular plate 6. When the plate 6 is forced down by the fixing screw 9, which extends through the passage opening 10 and which serves desirably also to secure the baseplate 2 on the rail carrier 1, the required initial stress is imparted to the clamping members and the pressure-exerting portions 8 are forced strongly against the inclined surface of the rail foot.

A similar action is produced by means of the U-shaped spring 7 having pressure-exerting portions 8 which are curved down out of the main plane of the spring. This is clearly apparent from FIG. 4.

The resilient clamping members according to the invention consist of cambered, approximately triangular plates 6 or of U-shaped springs 7 having outwardly curved legs and constitute simple means having pressure-exerting edge portions 8 which bear on the rail foot to maintain the frictional engagement between the clamping members and the rail.

What is claimed is:

1. An assembly for securing a rail to a rail carrier, the rail having a rail foot with two downwardly and laterally outwardly inclined top surfaces extending in opposite directions, which comprises

1. a baseplate secured to the rail carrier and defining a groove-like recess receiving the rail foot and holding the rail against lateral movement,

4

2. two resilient clamping members disposed on opposite sides of the recess, each of the clamping members having two downwardly facing, sharp, pressure-exerting edge portions spaced apart in the longitudinal direction of the rail, the edge portions resiliently pressing solely against longitudinally spaced portions of a respective one of the inclined rail foot surfaces and being arranged to be laterally movable in respect thereto, and

3. a threaded fastener means having an axis and pivotally connecting each clamping member to the baseplate for pivotal movement about the axis in response to a force exerted by the top surface on the pressure-exerting edge portions in the longitudinal direction, the fastener means extending through the clamping member into the baseplate and retaining the clamping member thereon, and the pivotal movement of the clamping member causing the lateral movement of the edge portions thereon.

2. The assembly of claim 1, wherein the clamping member is a cambered triangular plate pretensioned by the fastener means, the plate having a first, a second and a third corner, the plate defining an aperture adjacent the first corner and receiving the threaded fastener means, and the pressure-exerting edge portions being disposed adjacent the second and third corners.

3. The assembly of claim 1, wherein the clamping member is an approximately U-shaped spring defining a main plane and having two outwardly and oppositely extending legs in the longitudinal direction, the legs extending in planes extending downwardly from the main plane and having the pressure-exerting edge portions at their respective ends.

* * * * *

40

45

50

55

60

65