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(12) # EUROPEAN PATENT APPLICATION

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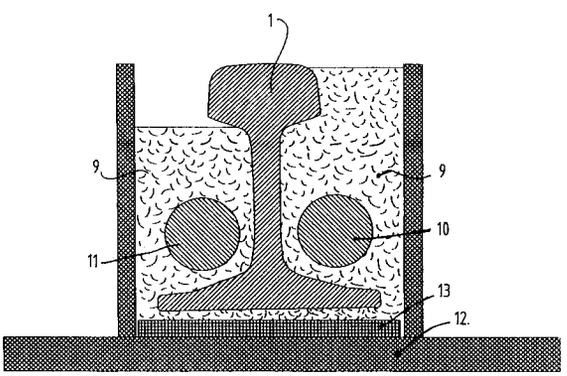
(54) **Rail bar.**

(57) Noise nuisance is considerably reduced by arranging in the web recess of a rail bar a mouldable material (9) with a low specific mass, for instance Corkelast®. When a body of considerably greater specific mass (10,11) is arranged in this mass the generated noise is limited still further. Application in a railway system wherein the body of the wheels of the train or tram is filled with Corkelast® brings about a still further limitation of the noise nuisance.

FIG.4



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The invention relates to a rail bar.

Rail and tramway services cause noise nuisance. Particularly for instance where the train or tram moves through a bend in the route, a high screeching noise level is generated which strikes the human ear as being unpleasant. In built-up areas it is the intention to counter this nuisance by placing sound-insulating walls and the like. In the case of tram services in a built-up area this is not possible, or hardly so.

It is the object of the invention to prevent the problem of noise nuisance at the source and to bring about vibration damping, that is, the attempt is made to prevent the occurrence of the noise.

This is achieved according to the invention by employing a rail bar whereof at least the web recess is filled with a mouldable material with a relatively low specific mass.

A suitable material for the application according to the invention is a polymer filled with finely divided cells, for instance cork particles. This product is commercially available under the name Corkelast®.

The material can be arranged in the web recess of the rail bar by means of casting.

In existing rail constructions an element in the form and size of the web recess of the rail bar can be arranged by means of adhesive.

A further considerable improvement is achieved when a body of considerably greater specific mass is arranged in the material of low specific mass. The body of considerably greater specific mass than the surrounding material absorbs the vibration energy generated in the rail bar. The body can for instance be of steel.

Yet a further improvement can be achieved by arranging the rail bars on the support of the rail bar with interposing of a support layer of flexible material with a specific mass equal to or lower than that of the surrounding mass. A layer of material of low specific mass can be arranged between the flexible support layer and the rail bar.

A further improvement in the operation of a railway system is obtained by use of rail bars according to the invention and trains having wheels whereof the body is filled with for instance Corkelast®.

The invention is elucidated with reference to a drawing of an embodiment.

Figure 1 shows a view of a rail bar according to the invention on a railway,

Figure 2 shows in cross sectional view a rail bar according to the invention,

Figure 3 shows an element of Corkelast® in the form and with the size of the web recess of a rail bar, and

Figure 4 shows a second embodiment in cross sectional view.

The rail bar 1 according to the invention can be secured to a sleeper 2 of a railway 3 using rail clips 4 and 5. According to the invention the web recess 6, 7 of rail 1 is filled with a material with a low specific mass, for instance Corkelast®. The material can be cast in or, in the case of an already placed rail, an element 8 of Corkelast® as according to figure 3 can be fixed by glueing into the form of the web recess of the rail.

According to a second embodiment as in figure 4 a body 10, 11 of considerably higher specific mass is arranged in the mass 9 of low specific weight. The bodies 10, 11 can for instance be a cylindrical steel rod. The rods 10 and 11 absorb the vibration energy generated by the rail and transmitted via the mass 9 to the rods 10 and 11. The rail bar and the surrounding masses can be arranged in a support 12 with interposition of a supporting layer 13 of flexible material with a specific mass equal to or lower than that of the mass 9.

Claims

1. Rail bar whereof at least the web recess is filled with a mouldable material with a low specific mass.

2. Rail bar as claimed in claim 1, **characterized in that** a body of considerably greater specific mass is arranged in the material of low specific mass.

3. Rail bar as claimed in claim 2, **characterized in that** the body is of steel.

4. Rail bar as claimed in claims 1-3, **characterized in that** the rail is arranged in a rail support with interposing of a supporting layer of flexible material and a layer of material with a low specific mass.

5. Rail bar as claimed in claim 1, **characterized in that** the specific mass of the material is about 1.

6. Rail bar as claimed in claims 1 and 5, **characterized in that** the material is Corkelast®.

7. Rail bar as claimed in claims 1-6, **characterized in that** the material is cast in the web recess of the rail bar.

8. Rail bar as claimed in claims 1-7, **characterized in that** an element with the form and dimensions of the web recess is glued into the rail bar.

9. Element of Corkelast® in the form and dimensions of the web recess of a rail bar.

10. Railway system with rail bars as claimed in one or more of the claims 1-9, and trains having wheels whereof the web recess is filled with Corkelast®.

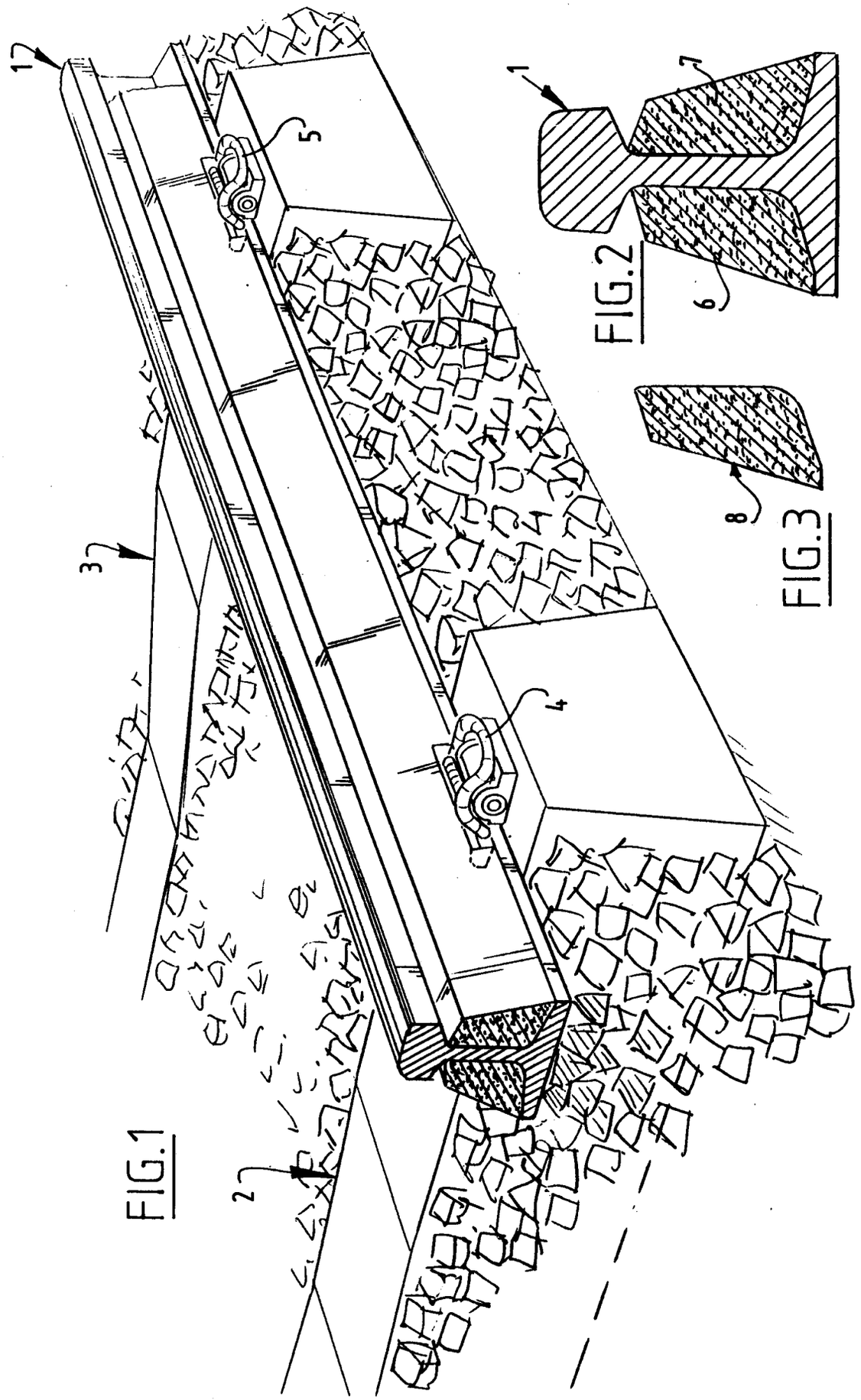
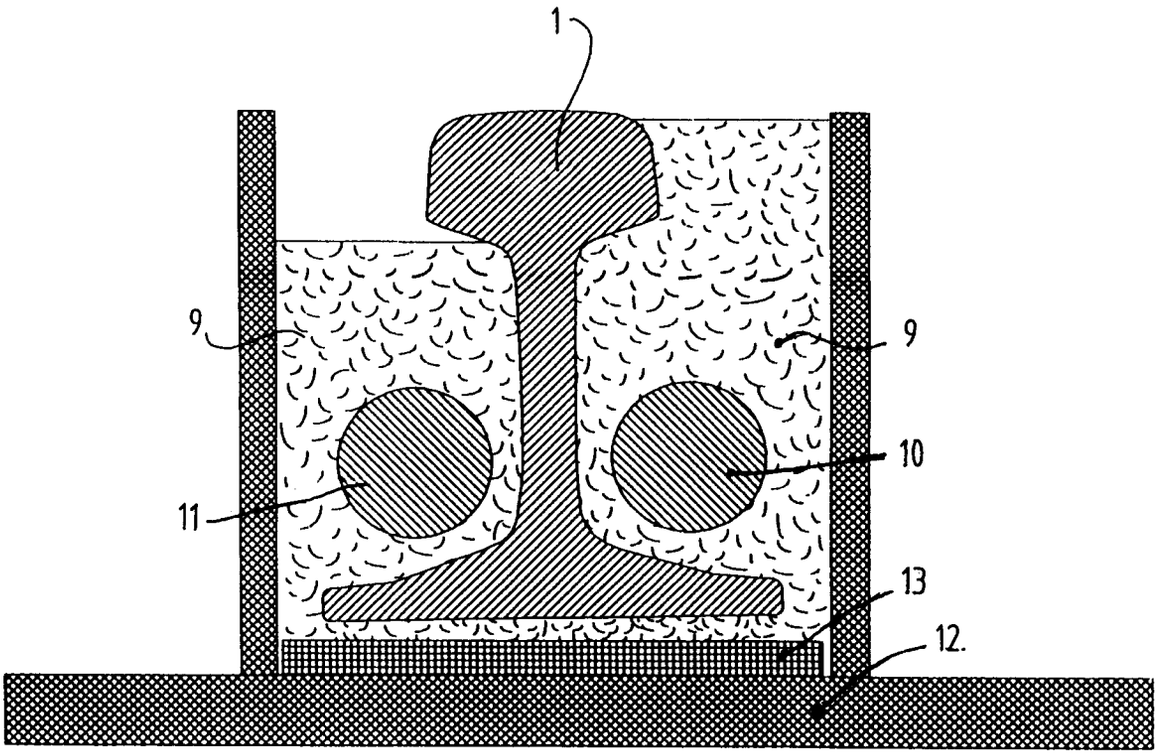


FIG.1

FIG.2

FIG.3

FIG.4



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EUROPEAN SEARCH REPORT

Application Number
EP 94 20 1449

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	RAILWAY GAZETTE INTERNATIONAL, vol.149, no.5, May 1993, LONDON GB pages 295 - 298, XP000303931 BAXTER 'Dynamics holds the key to whole life costs'	1,5-7	E01B19/00
Y	The May-issue of the Gazette was in the posssession of the EPO library on May 11th 1993 * page 297, column 1, line 63 - column 2, line 23; figure 2 *	2-4	
X	EP-A-0 404 756 (ALLGEMEINE BAUGESELLSCHAFT A.PORR AG.)	1,7-9	
Y	* page 4, line 20 - line 52; figures 2,3 *	4	
A		5	
X	WO-A-86 02678 (EISNER)	1,7	
A	* page 3, line 13 - line 30; figure *	5	
Y	AU-A-37419/68 * page 6, line 4 - page 7,line 26 * * figures 1,2 *	2,3	
A	EP-A-0 211 461 (EDILON B.V.) * the whole document *	1,5-7	
A	EP-A-0 290 759 (MESSERSCHMITT-BÖLKOW-BLOHM G.M.B.H.) * abstract; figure 1 *	10	
A	DE-C-16 774 (TAYLOR) * the whole document *	10	

TECHNICAL FIELDS SEARCHED (Int.Cl.5)
E01B
E01C
B60B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 August 1994	Blommaert, S

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