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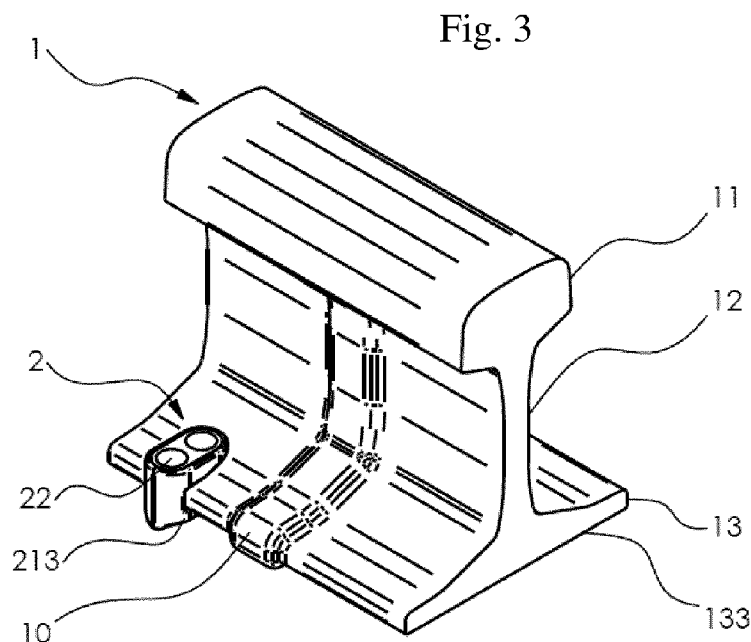
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(54) Title: TAG FOR PROVIDING THE INFORMATION OF A RAIL



(57) Abstract: The present invention relates to a tag for providing the information of a rail, the rail (1) comprising a rail head (11), a rail web (12) and a rail foot (13), the tag (2, 2') configured to be attached to the rail foot (13) in the transverse direction (T) of the rail (1), comprising: a base body (21, 21') which partially encloses the rail foot (13), and a label (22, 22') which contains information of the rail (1).

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Tag for Providing the Information of a Rail

Technical Field

The present invention relates to a tag for providing the information of a rail and/or a weld
5 joint of a rail.

Background Art

At the end of the nineteenth century, aluminothermic welding was invented to weld rail
tracks with the development of the metallurgical and chemical industries. To prepare
10 aluminothermic welding for connecting two rail ends and to obtain a desired certain
metallic structure in the welding gap, a worker should understand the characteristics of a
rail. Also, to check a weld joint of a rail, a worker should also understand the
characteristics and the history of the weld joint. Therefore, the information of a rail or a
weld joint of a rail becomes crucial for workers to prepare the welding or future repair
15 and maintenance of a rail. Namely, before/during/after welding, workers need to obtain
information of the rail or of the weld joint of the rail.

However, the conventional method is to use a rail clamp to cover the whole bottom of a
rail foot and clamping the two sides of the rail foot, which may lead to damage of a rail.
Also, it takes much time to attaching such conventional rail clamp to the rail foot and thus
20 is not efficient for installation. Hence, a conventional rail clamp does not provide a fast-
marking, non-destructive and stable-fastening tag for providing the information of a rail.

Technical Problem to be Solved

The objective of the present invention is to provide a fast-marking, non-destructive and
25 stable-fastening tag for providing the information of a rail.

Summary of the Invention

The following summarizes some aspects of the present invention to provide a basic understanding of the technology discussed. This summary is not an extensive overview of all contemplated features of the invention, and is intended neither to identify key or critical elements of all aspects of the invention nor to delineate the scope of any or all aspects of the invention. Its sole purpose is to present some concepts of one or more aspects of the invention in a summary form as a prelude to the more detailed description that is presented later.

A first aspect of the present invention provides a tag for providing the information of a rail, the rail comprising a rail head, a rail web and a rail foot, the tag configured to be attached to the rail foot in the transverse direction of the rail, comprising: a base body which partially encloses the rail foot, and a label which contains information of the rail.

In a second aspect of the present invention according to the first aspect, wherein the base body includes an upper lip and a lower lip, the label located on the upper side of the upper lip.

In a third aspect of the present invention according to the second aspect, further comprising a fastener that attaches the base body to the rail, the fastener located on the upper side of the lower lip.

In a fourth aspect of the present invention according to the third aspect, wherein the fastener is made of magnet, adhesive material, or any fastening means, the adhesive material including adhesive glues, an adhesive tape, or an adhesive strip, the fastening means including embedded attachment, interlocking attachment, a hook and loop fastener, a cable tie, or a spring.

In a fifth aspect of the present invention according to the third or fourth aspect, wherein the fastener is used for attaching the tag to the bottom of the rail foot.

In a sixth aspect of the present invention according to the second aspect, wherein the base body includes another upper lip, the lower lip extending along the bottom of the rail foot and integrally connecting the two upper lips, the two upper lips respectively holding the two sides of the rail foot.

In a seventh aspect of the present invention according to the sixth aspect, wherein the upper lip includes an engaging tip for holding the tag onto the rail foot.

In an eighth aspect of the present invention according to the seventh aspect, wherein the base body includes a groove on the upper side of the lower tip and the engaging tip includes a slope feature.

In a ninth aspect of the present invention according to one of the second to eighth aspects,
5 wherein the underside of the upper lip is configured to be compatible with the profile of the rail foot.

In a tenth aspect of the present invention according to one of the second to ninth aspects, wherein the underside of the lower lip includes a reinforcing protrusion.

In an eleventh aspect of the present invention according to one of the first to tenth aspects,
10 wherein wherein the label is designed as an adhesive sticker or as an imprint which is made by printing, laser engraving or cutting, or as electronic data identification, the label including a two-dimensional code (e.g., QR code or data matrix).

In a twelfth aspect of the present invention according to one of the first to eleventh aspects, wherein the upper lip is disposed horizontally or at an angle to allow the label to be read.

15 In a thirteenth aspect of the present invention according to one of the first to twelfth aspects, wherein the rail includes a weld joint.

In a fourteenth aspect of the present invention according to one of the second to thirteenth aspects, wherein the base body is made of rubber, plastic, metal, wood, or polymer composite.

20 In a fifteenth aspect of the present invention according to one of the first to fourteenth aspects, wherein the information includes the used process and material, date of execution, ingredient, quality, characteristic, function, feature, purpose, history, or use of the rail or of a weld joint of the rail.

Advantageously, the present invention aims to provide a fast-marking, non-destructive
25 and stable-fastening tag for providing the information of a rail.

Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

Brief Description of Drawings

Fig. 1 is a perspective view of a tag for providing the information of a rail in accordance with the first embodiment of the present invention.

Fig. 2 is a perspective view of a tag of Fig. 1 which is to be applied to a rail.

5 Fig. 3 is a perspective view of a tag of Fig. 1 which is applied to a rail.

Fig. 4 is a side view of Fig. 3.

Fig. 5 is a cross-section view taken along the line A-A of Fig. 4.

Fig. 6 is a perspective view of a tag for providing the information of a rail in accordance with the second embodiment of the present invention.

10 Fig. 7 is a perspective view of a tag of Fig. 6 which is applied to a rail.

Fig. 8 is a side view of Fig. 7.

Fig. 9 is a cross-section view taken along the line B-B of Fig. 8.

Fig. 10 is an illustrated view showing how the tag of Fig. 6 is applied to a rail.

15 Detailed Description

Although the invention has been explained in relation to its preferred embodiment(s) as mentioned above, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the present invention. It is, therefore, contemplated that the appended claim or claims will cover such modifications and variations that fall within the true scope of the invention.

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Fig. 1 is a perspective view of a tag for providing the information of a rail in accordance with the first embodiment of the present invention. Fig. 2 is a perspective view of a tag of Fig. 1 which is to be applied to a rail. Fig. 3 is a perspective view of a tag of Fig. 1 which is applied to a rail. Fig. 4 is a side view of Fig. 3. Fig. 5 is a cross-section view taken along the line A-A of Fig. 4. Fig. 6 is a perspective view of a tag for providing the information of a rail in accordance with the second embodiment of the present invention. Fig. 7 is a perspective view of a tag of Fig. 6 which is applied to a rail. Fig. 8 is a side

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view of Fig. 7. Fig. 9 is a cross-section view taken along the line B-B of Fig. 8. Fig. 10 is an illustrated view showing how the tag of Fig. 6 is applied to a rail.

Please refer to Figs. 1-10 together. A rail 1 comprises a rail head 11, a rail web 12, and a rail foot 13. The rail 1 can also include a weld joint 10, such as an aluminothermic welding joint. The present invention can be applied to all types and all lengths of rails. The rail 1 shown in the drawings is illustrated just as a simplified section of rails for the purpose of the explanation. The first embodiment and the second embodiment provide a tag 2, 2' for providing the information of a rail 1. The tag 2, 2' is configured to be attached to the rail foot 13 in the transverse direction T of the rail 1. For example, after the repair of a specific section of a rail 1, a rail worker can efficiently apply the tag 2, 2' to the rail foot 13 of a rail 1. Later, if a worker wants to obtain the property of the specific section of the rail 1, the worker can simply check the information shown on the tag 2, 2' that is attached to the specific section of the rail 1. Namely, if a worker wants to obtain the information of the rail 1, a worker does not need to inspect or test the rail 1 itself again. The information includes the used process and material, date of execution, ingredient, quality, characteristic, function, feature, purpose, history, or use of the rail 1 or of a weld joint 10 of the rail 1.

Specifically, the tag 2, 2' comprises a base body 21, 21' and a label 22, 22'. The base body 21, 21' partially encloses the rail foot 13, holding onto the top 132 of the rail foot 13 and the bottom 133 of the rail foot 13 so that the tag 2, 2' is stably attached to the rail 1. In a preferred embodiment, the base body 21, 21' is made of rubber, plastic, metal, wood, or polymer composite. The base body 21, 21' includes an upper lip 211, 211' and a lower lip 213, 213'. The label 22, 22' is located on the upper side 2111, 2111' of the upper lip 211, 211'.

A label 22, 22' contains information of the rail 1. The label 22, 22' is mounted on upper side 2111, 2111' of the upper lip 211, 211'. The upper lip 211, 211' is disposed horizontally or at an angle to allow the label 22, 22' to be read. In a preferred embodiment, the label 22, 22' is designed as an adhesive sticker or as an imprint which is made by printing, laser engraving or cutting, the label 22, 22' including a two-dimensional code (e.g., QR code or data matrix), a mark, a trademark, a logo, or a company name. In an embodiment, the upper side 2111, 2111' of the upper lip 211, 211' includes a grooved

platform for receiving the label 22, 22'. In another embodiment, the upper side 2111, 2111' of the upper lip 211, 211' is a flatten plane.

The present invention can be categorized into two main embodiments in respect of the attachment to the rail foot 13.

5 First embodiment

Please refer to Figs. 1-5 together. The tag 2 of the first embodiment further comprises a fastener 23. The fastener 23 is made of magnet, adhesive material, or any fastening means. The magnet can attach to the rail 1 in a non-destructive and efficient manner. The adhesive material can be adhesive glues, an adhesive tape, or an adhesive strip. The adhesive tape or the adhesive strip can be two sided so that they can stick to the base body 21 and the rail foot 13. The fastening means may be any kind of embedded attachment, interlocking attachment, a hook and loop fastener, a cable tie, a spring and so on. The fastener 23 is located on the upper side 2131 of the lower lip 213 and attaches the base body 21 to the rail 1 in a substantially non-detachable manner. Particularly, the fastener 23 is used for attaching the tag 2 to the bottom 133 of the rail foot 13. In this way, the fastener 23 achieves a stable attachment between the tag 2 and the rail 1. In a preferred embodiment, the tag 2 attaches only to the bottom 133 of the rail foot 13 by the fastener 23. In a preferred embodiment, the fastening means can also be a spring which is used for fastening the tag 2 to the rail 1. The spring is located on the upper side 2131 of the lower lip 213. When a worker wants to apply the tag 2 to the rail 1, he or she can compress the spring and put the tag 2 into the rail foot 13. The spring then is relaxed and exerts a force against the rail foot 13 so that the upper lip 211 and the lower lip 213 and the spring is fastened on the rail 1.

Second embodiment

25 Please refer to Figs. 6-10 together in reference to Figs. 1-5. In the tag 2' of the second embodiment, the base body 21' includes another upper lip 211'. The two upper lips 211', 212' respectively holding the two sides of the rail foot 13. The lower lip 213' extends along the bottom 133 of the rail foot 13 and integrally connecting the two upper lips 211', 212'. In other words, the two upper lips 211', 212' and the lower lip 213' are integrally formed. In a preferred embodiment, the base body 21' of the second embodiment may be made of flexible materials, such as rubber, plastics, fibres, metal materials, wood, or

polymer composite. When applying the tag 2' to the rail foot 13, a worker may slightly bend the tag 2' so that the tag 2' can accommodate and hold onto the rail foot 13. The two upper lips 211', 212' hold the top 132 of the rail foot 13 at two sides of the rail 1.

The label 22' is disposed on one of the two upper lips 211', 212' on either side of the rail
5 1. In another embodiment, the label 22' can be provided on both the two upper lips 211', 212'. In a preferred embodiment similar to the first embodiment, a fastener including magnet or adhesive materials can also be provided on the lower lip 213' of the second embodiment, increasing the stabilization of the tag 2'. The upper lip 211' includes an engaging tip 2113' for holding the tag 2' onto the rail foot 13. The base body 21' includes
10 a groove 215' on the upper side of the lower tip so that a worker can easily install the tag 2' onto the rail foot 13 without hugely bending the tag 2'. In addition, the engaging tip 2113' includes a slope feature, which also realizes the easier installation of the tag 2' onto the rail foot 13. For example, please refer to Fig. 10. A worker can first take advantage of the groove 215' to apply the tag 2' partially to one side of the rail foot 13; and then can
15 slightly rotate the tag 2' in relative to the groove 215' in the direction R and take advantage of the slope feature of the engaging tip 2113' so that the upper tip 212' slides onto the top 132 of the rail foot 13 from the bottom 133 of the rail foot 13. In this way, the tag 2' can firmly attach to the rail foot 13.

Please refer to Figs. 1-10 together. In order to adapt to different types of rails, the
20 underside 2112, 2112' of the upper lip 211, 211' is configured to be compatible with the profile of the rail foot 13, preferably an inclining shape of the underside 2112, 2112' of the upper lip 211, 211' which also helps the attachment of the tag 2, 2' and the rail foot 13, whereby the maximum static friction applied by the fastener 23 may prevent subsequent removal of the tag 2, 2' from the rail 1.

25 To optimize the strength and stability of the tag 2, 2', the upper side 2132, 2132' of the lower lip 213, 213' includes a reinforcing protrusion 2133, 2133'. The back 214, 214' of the base body 21, 21' is rounded to make unintentional removal of the tag 2, 2' from the rail 1 more difficult.

In sum, the present invention creates a non-destructive and firm connection between the
30 tag 2, 2' and the rail 1.

List of Elements

1	rail
10	weld joint
11	rail head
12	rail web
13	rail foot
132	top of the rail foot
133	bottom of the rail foot
T	transverse direction
R	direction
2, 2'	tag
21, 21'	base body
211, 211'	upper lip
2111, 2111'	upper side of the upper lip
2112, 2112'	underside of the upper lip
2113'	engaging tip
212'	another upper lip
213, 213'	lower lip
2131, 2131'	upper side of the lower lip
2132, 2132'	underside of the lower lip
2133, 2133'	reinforcing protrusion
214, 214'	back of the base body
215'	groove
22, 22'	label
23	fastener

Claims

1. Tag for providing the information of a rail, the rail (1) comprising a rail head (11), a rail web (12) and a rail foot (13), the tag (2, 2') configured to be attached to the rail foot (13) in the transverse direction (T) of the rail (1), comprising:
 - 5 a base body (21, 21') which partially encloses the rail foot (13), and
 - a label (22, 22') which contains information of the rail (1).
2. The tag of Claim 1, wherein the base body (21, 21') includes an upper lip (211, 211') and a lower lip (213, 213'), the label (22, 22') located on the upper side (2111, 2111') of the upper lip (211, 211').
- 10 3. The tag of Claim 2, further comprising a fastener (23) that attaches the base body (21) to the rail (1), the fastener (23) located on the upper side (2131) of the lower lip (213).
4. The tag of Claim 3, wherein the fastener (23) is made of magnet, adhesive material, or any fastening means, the adhesive material including adhesive glues, an
15 adhesive tape, or an adhesive strip, the fastening means including embedded attachment, interlocking attachment, a hook and loop fastener, a cable tie, or a spring.
5. The tag of Claim 3 or 4, wherein the fastener (23) is used for attaching the tag (2) to the bottom (133) of the rail foot (13).
- 20 6. The tag of Claim 2, wherein the base body (21') includes another upper lip (212'), the lower lip (213') extending along the bottom (133) of the rail foot (13) and integrally connecting the two upper lips (211', 212'), the two upper lips (211', 212') respectively holding the two sides of the rail foot (13).
7. The tag of Claim 6, wherein the upper lip (212') includes an engaging tip (2113')
25 for holding the tag (2') onto the rail foot (13).
8. The tag of Claim 7, wherein the base body (21') includes a groove (215') on the upper side of the lower tip and the engaging tip (2113') includes a slope feature.
9. The tag of one of Claims 2-8, wherein the underside (2112, 2112') of the upper lip (211, 211') is configured to be compatible with the profile of the rail foot (13).
- 30 10. The tag of one of Claims 2-9, wherein the underside (2132, 2132') of the lower lip (213, 213') includes a reinforcing protrusion (2133, 2133').
11. The tag of one of Claims 1-10, wherein the label (22, 22') is designed as an adhesive sticker or as an imprint which is made by printing, laser engraving or

cutting, or as electronic data identification, the label including a two-dimensional code (e.g., QR code or data matrix).

12. The tag of one of Claims 1-11, wherein the upper lip (211, 211') is disposed horizontally or at an angle to allow the label (22, 22') to be read.
- 5 13. The tag of one of Claims 1-12, wherein the rail (1) includes a weld joint (10).
14. The tag of one of Claims 2-13, wherein the base body (21, 21') is made of rubber, plastic, metal, wood, or polymer composite.
15. The tag of one of Claims 1-14, wherein the information includes the used process and material, date of execution, ingredient, quality, characteristic, function,
10 feature, purpose, history, or use of the rail or of a weld joint of the rail.

Drawings

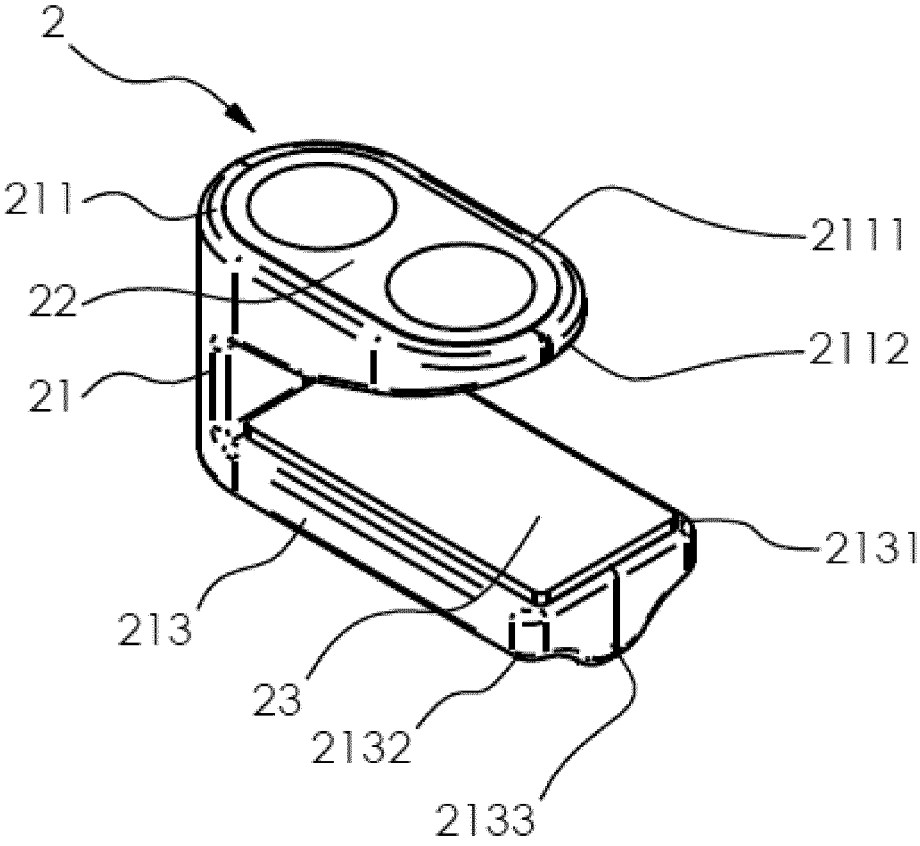


Fig. 1

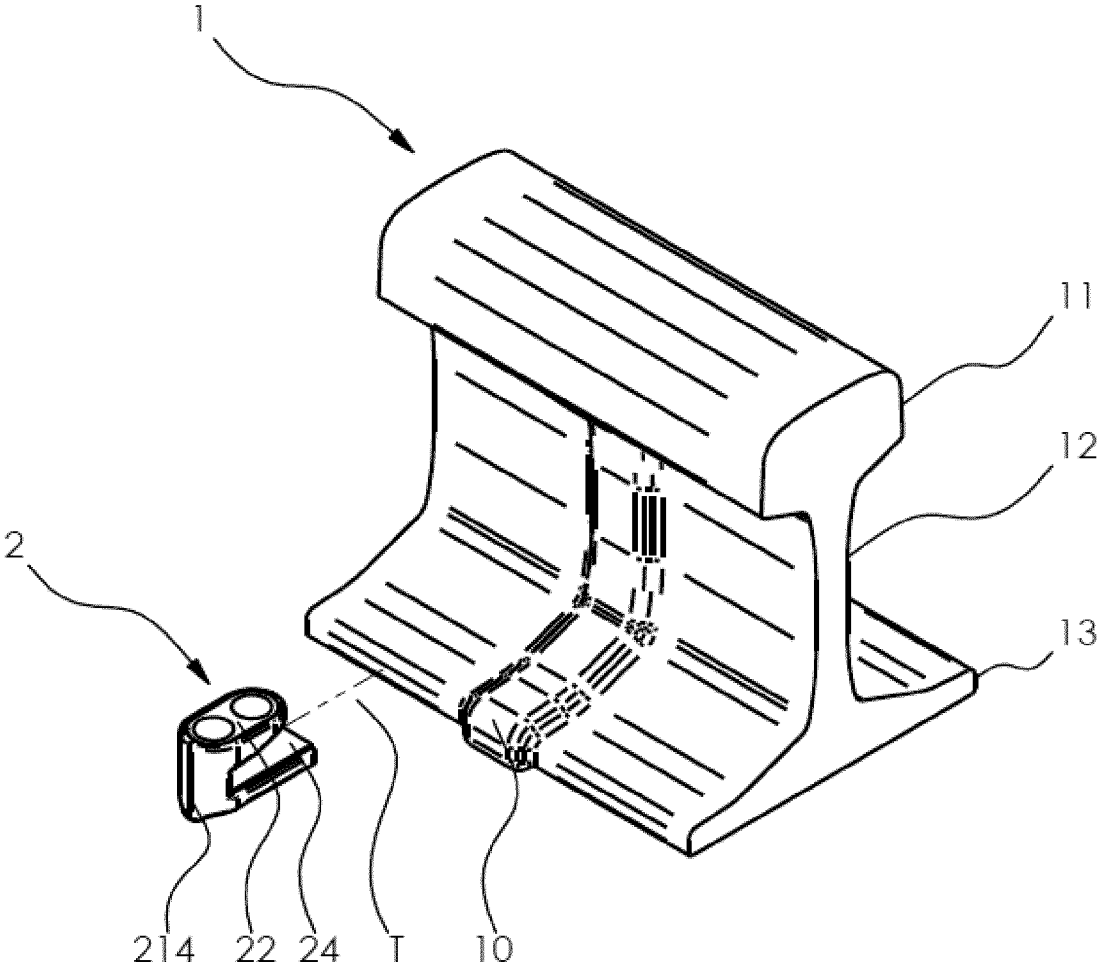


Fig. 2

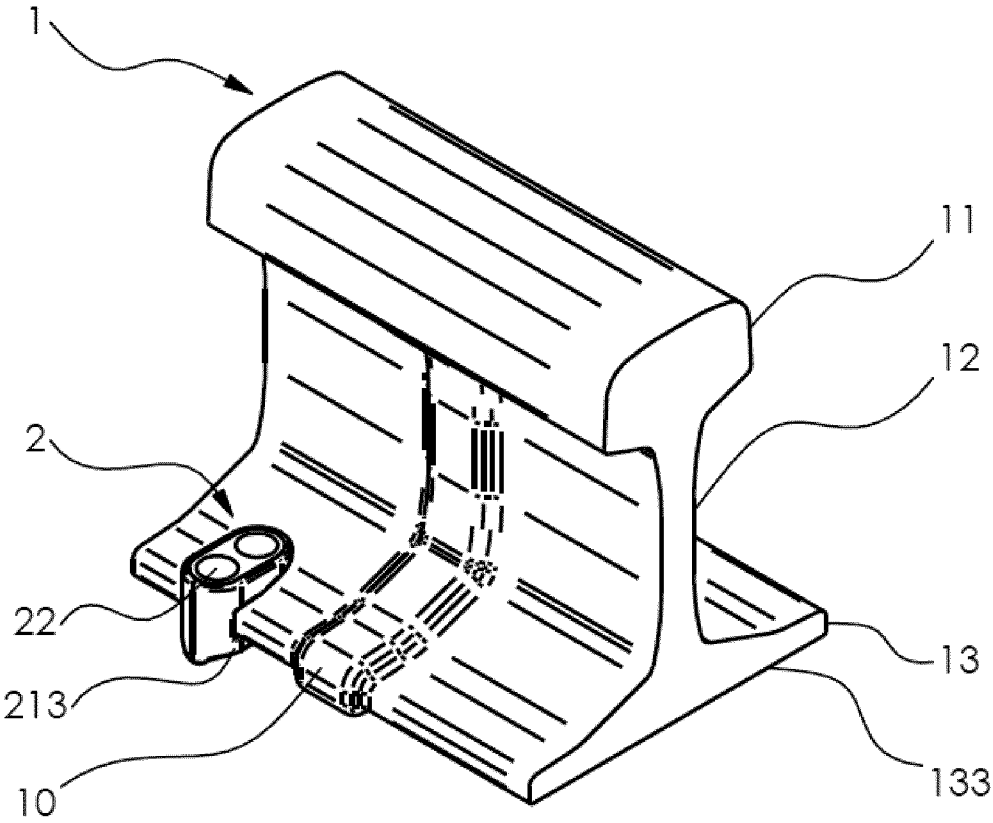


Fig. 3

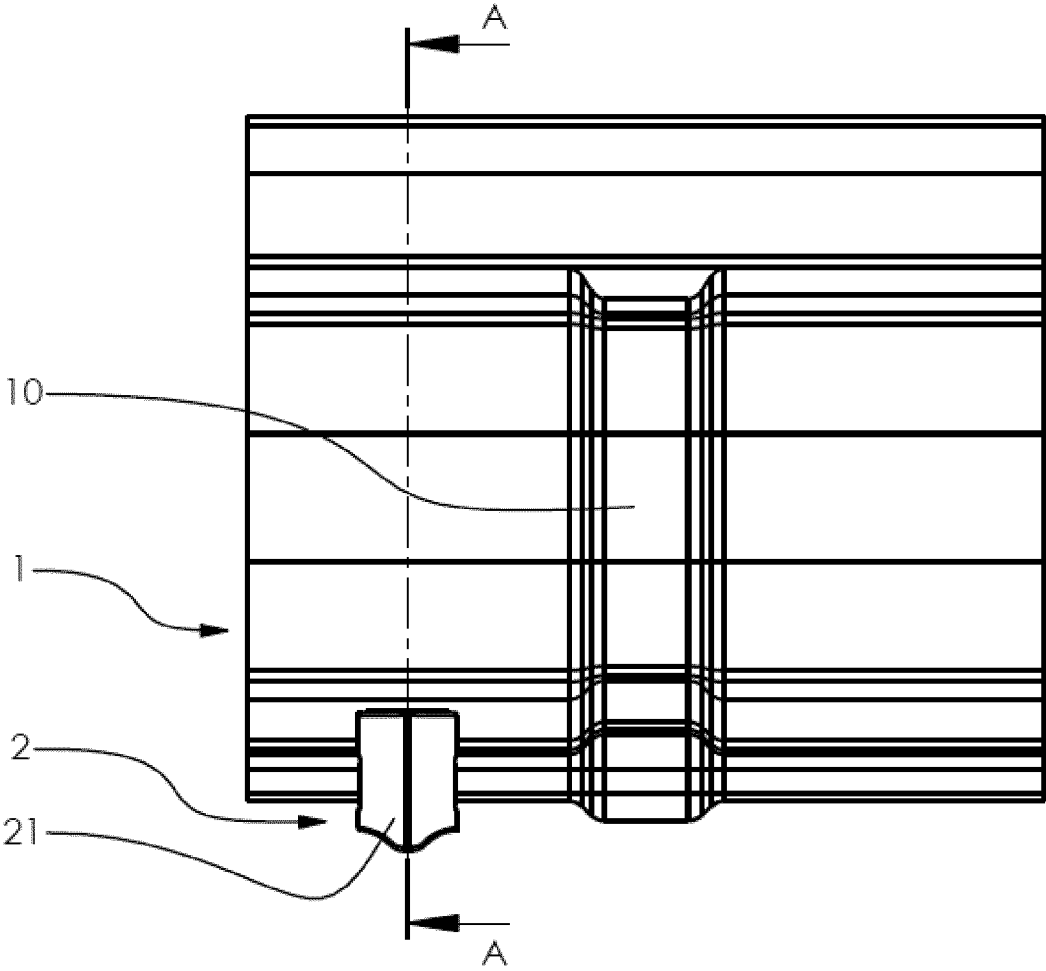


Fig. 4

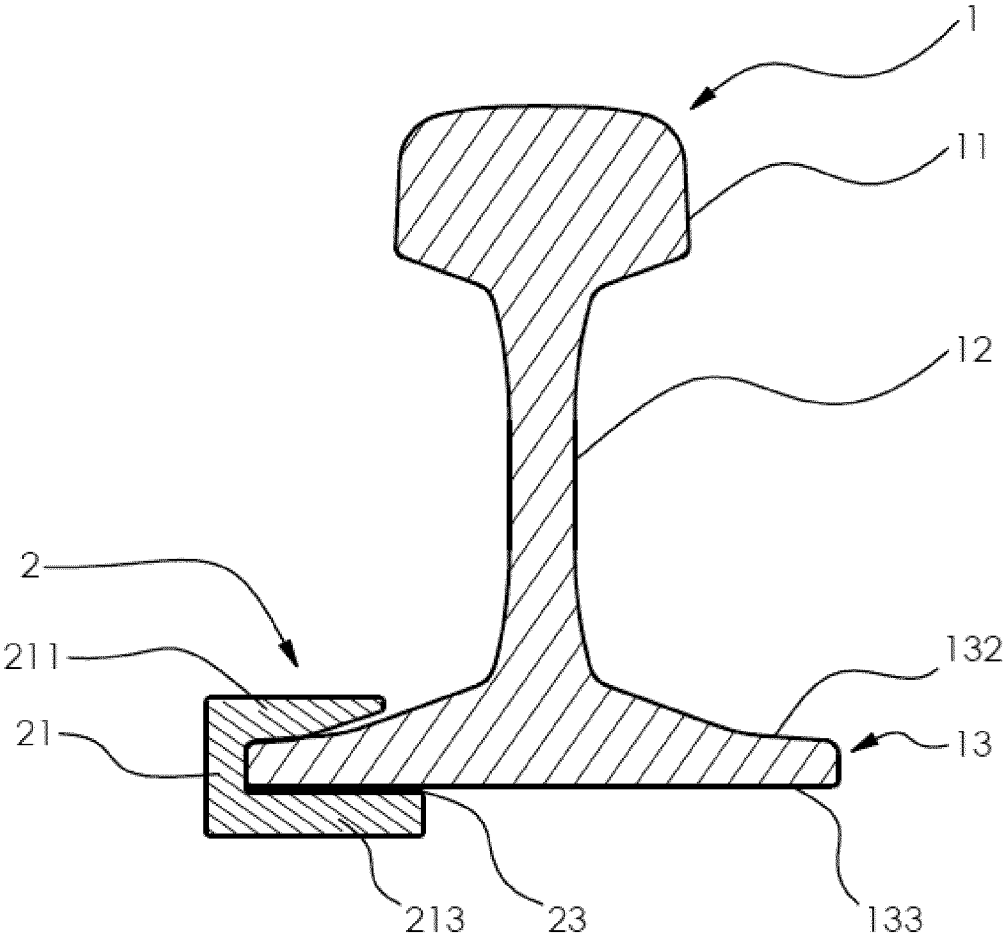


Fig. 5

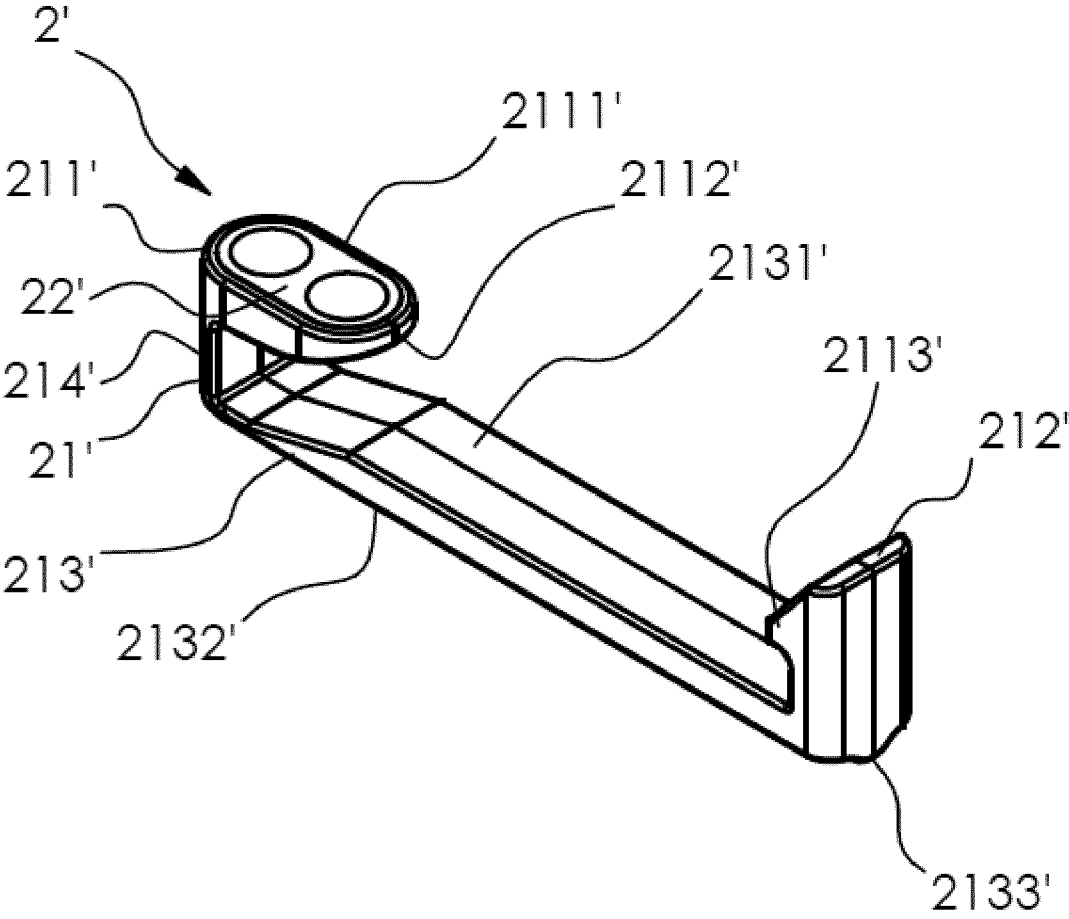


Fig. 6

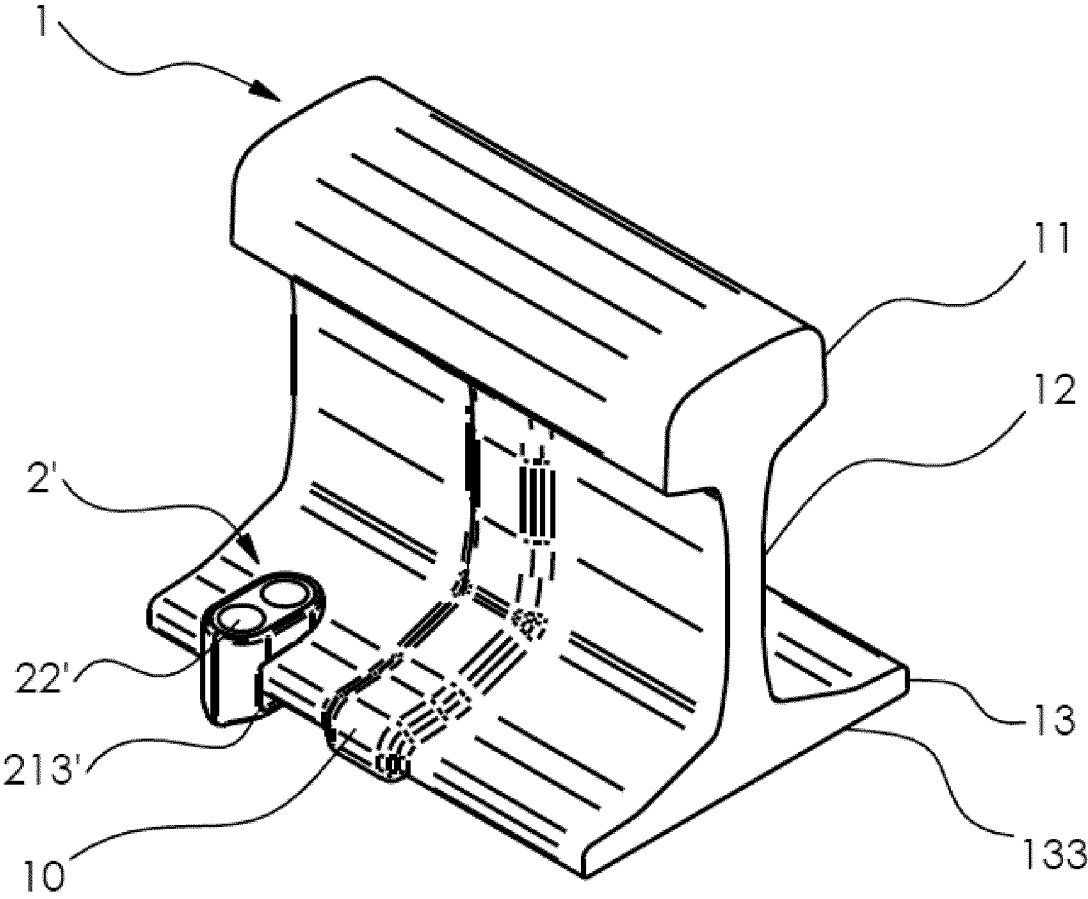


Fig. 7

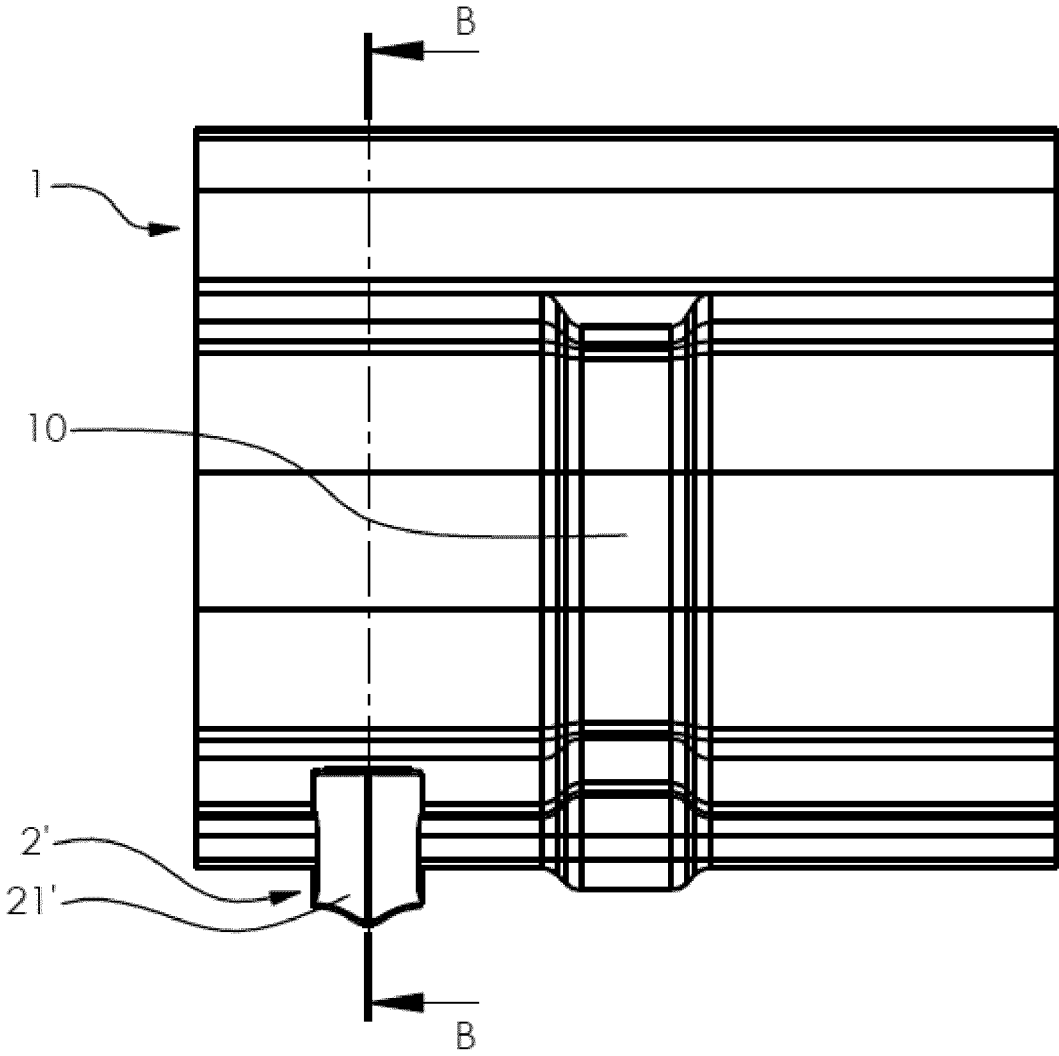


Fig. 8

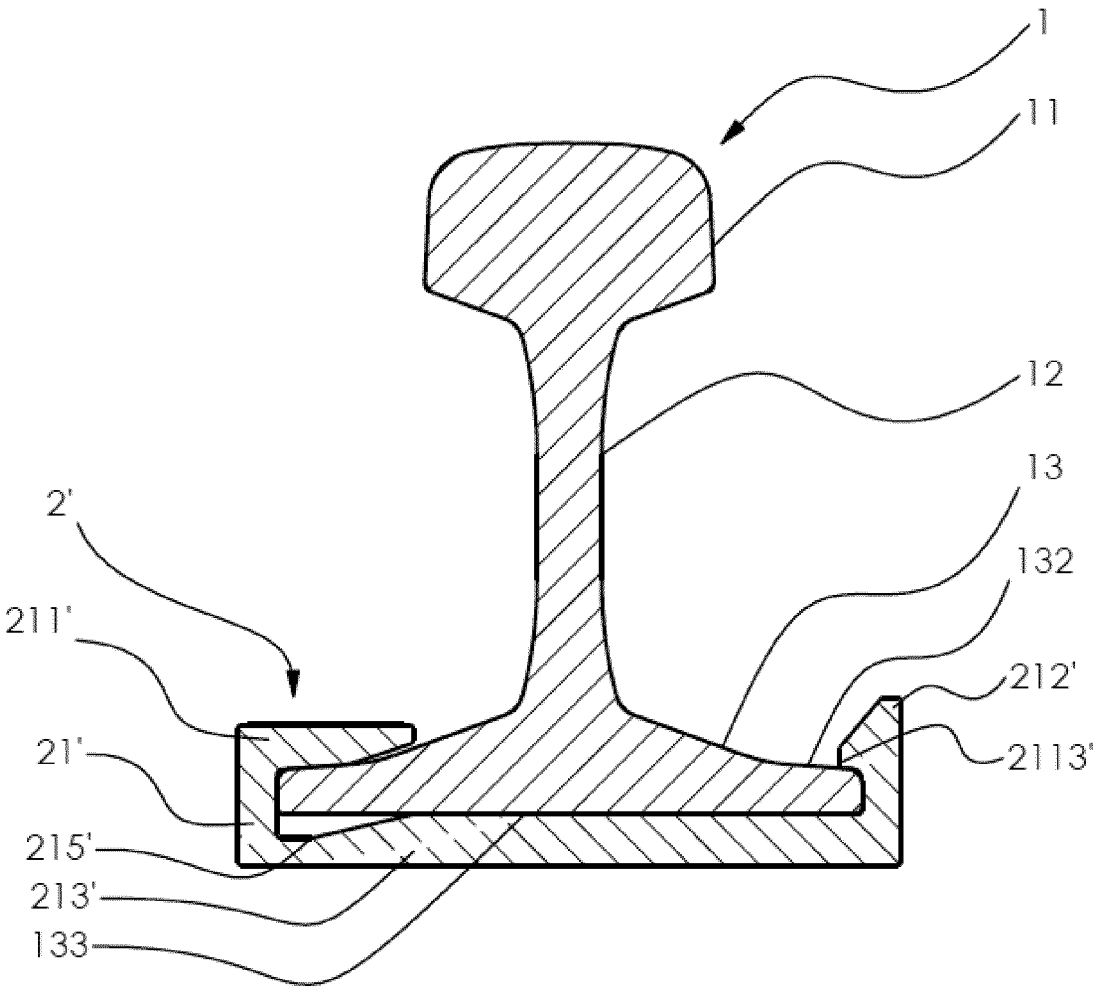


Fig. 9

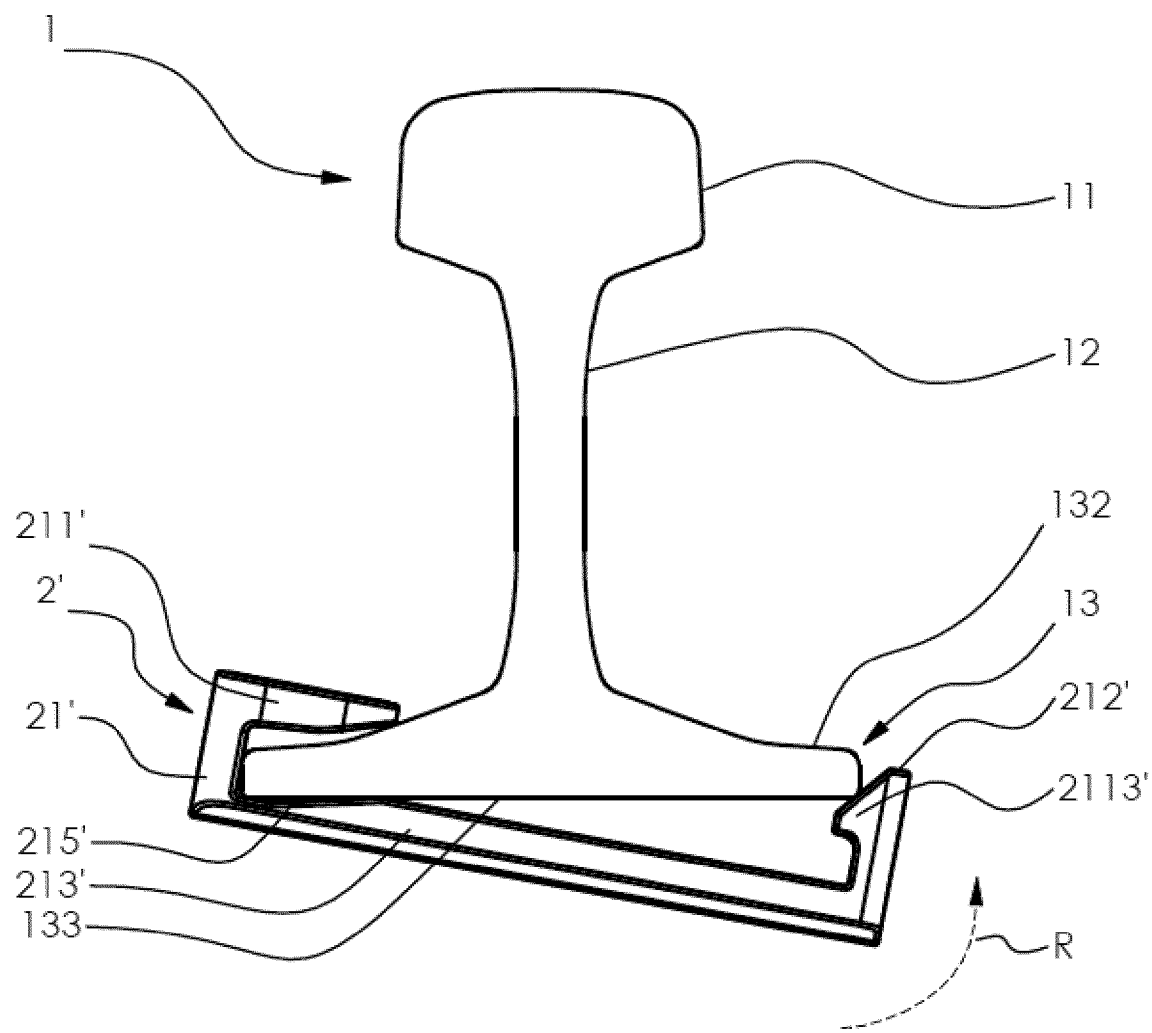


Fig. 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2022/062916

A. CLASSIFICATION OF SUBJECT MATTER INV. E01B26/00 G09F7/18 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) E01B G09F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2015/124834 A1 (KAVONIUS MIIKA [FI]) 27 August 2015 (2015-08-27) the whole document -----	1
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4 July 2022	13/07/2022	
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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2022/062916

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A	JP 2001 195001 A (NIPPON HOAN KIZAI SEIZO KK) 19 July 2001 (2001-07-19) abstract; figures -----	1-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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