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(54) Rail slab with an elastic mat for a floating railway

Schienenplatte mit elastischer Matte für eine gleitende Eisenbahnstrecke

Dalle de rails avec tapis élastique pour un chemin de fer flottant

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Description

[0001] The invention concerns a rail slab with an elastic mat for a floating railway, whereby a top side of the rail slab is provided for fixing rails of a railway to, whereby the elastic mat contains a base mat that fits against a bottom side of the rail slab and on which said rail slab rests, whereby the elastic mat contains two opposed standing lateral mat parts which each fit against a lateral side of the rail slab.

[0002] According to the present state of the art, floating railway tracks are made by placing a vibration-absorbing elastic mat between the rail slab and the substructure on which it rests. Further, lateral elastic mats are also placed on the sides of the rail slab between the slab and the adjacent fixed superstructure.

[0003] German patent application No. DE4439816A discloses a rail slab according to the preamble of claim 1 and a method according to the preamble of claim 10, in particular a process for producing a concrete moulded body that carries the rails of a railway track and has a bearing outer surface provided with an elastic layer, which adheres well to the concrete surface.

[0004] Due to shear stresses, these lateral mats can be a limiting factor for obtaining sufficient vibration damping.

[0005] Furthermore, after a period of time, there occurs a loss of the vibration-absorbing qualities of this system as a result of a constant load of the elastic mat, which is usually made of an elastomer such as for example recycled resin-bonded rubber, vulcanised rubber, polyurethane (PU). For the current systems of floating rail tracks, a loss of performance is observed per time decade of about 1dB, which corresponds to a loss of 3dB to 4dB over a period of 20 years.

[0006] The invention aims to remedy these disadvantages by means of a floating railway slab with an elastic mat and a method for manufacturing a floating railway track, as in the claims appended hereto, whereby they make it possible to obtain sufficient vibration damping in a simple manner without the aforesaid disadvantages.

[0007] To this aim, the standing lateral mat parts have a cross section which widens as of the bottom of the rail slab to the upper side of the rail slab. As a result, the lateral mat parts will be relieved when the base mat is being pressed down, for example due to a load on the rail slab caused by a railway vehicle.

[0008] Practically, the cross section of the rail slab further preferably narrows from the bottom to the top side.

[0009] In particular, the lateral elastic mat parts are placed opposite each other with inner sides that incline towards each other, so that when the base mat is being pressed down, for example due to a load on the rail slab by a railway vehicle, the lateral mat parts will be relieved as the stress on these parts is reduced.

[0010] Other particularities and advantages of the invention will become clear from the following description of practical embodiments of the invention and the method

according to the invention; this description is given as an example only and does not limit the scope of the claimed protection in any way; the following figures of reference refer to the accompanying drawings.

Figure 1 is a schematic representation of a cross section of a rail slab with an elastic mat according to a first embodiment of the invention, whereby the elastic mat is formed of a base mat and two standing lateral mat parts.

Figure 2 is a schematic representation of a detail of a cross section of a rail slab with an elastic mat according to a second embodiment of the invention, whereby the rail slab has lateral sides with a non-linear profile according to a vertical direction.

Figure 3 is a schematic representation of a detail of a cross section of a rail slab with an elastic mat according to a third embodiment of the invention.

[0011] In the different drawings, identical reference figures refer to analogous elements.

[0012] The invention generally concerns a rail slab with an elastic mat for a floating railway track whereby performance losses of the vibration-absorbing qualities are compensated. The top side of the rail slab is hereby provided to fix rails of a railway to, and the rails are preferably continuously supported by the rail slab. The rail slab further rests with a bottom side on an elastic mat. The specific construction of the floating railway slab with the elastic mat according to the invention ensures an at least partial compensation of a reduced vibration damping which is due, for example, to the rigidity of the lateral mat parts.

[0013] Said lateral elastic mat parts are squeezed between the rail slab and the adjacent building material. As the inner sides of the mat parts extending opposite one another incline towards each other, the tension on the lateral mat parts will be reduced when the base mat is pressed due to a vertical load of the rail slab. Moreover, the mat parts will be preferably relieved more on the top side than on the bottom side, as these mat parts widen from the bottom side of the rail slab to the top side of the rail slab. By relieving the lateral mat parts, the tension on these mat parts is reduced, which results in a lower resonant frequency of the floating railway system as a whole and thus also in a better damping of vibrations.

[0014] Also, due to a continuous load on the base mat, a commonly called 'creep' of the base mat takes place, and the rail slab sinks in the floating railway track. Due to an oblique shape of the lateral mat parts and the rail slab, the outer sides of the lateral mat parts may hereby come off the lateral walls. As a result, the lateral mat parts are relieved, which enhances the lateral flexibility.

[0015] A first embodiment of a floating railway according to the invention is represented in figure 1. The floating railway is formed here among others of a massive concrete rail slab 1 and an elastic mat. The rail slab 1 has a thickness G which amounts to for example 400 mm to

1000 mm, and the elastic mat has thicknesses A, B and C which amount to for example 20 mm to 30 mm. This elastic mat is made of an elastomer such as recycled rubber and it is formed of a base mat 3 and two connecting lateral mat parts 2. The rail slab 1 rests with a bottom side 6 on the base mat 3 which lies on a substructure 11. The top side 4 of the rail slab 1 is provided to fix the rails 5 of the railway to. Thus, in this first embodiment, grooves are provided in said top side 4 in which the rails 5 are fixed by means of for example an elastic jacket. The rails 5 are hereby continuously supported by the elastic jacket and the rail slab 1. The rail slab 1 has bevelled lateral sides 7 onto which the lateral elastic mat parts 2 connect. These lateral elastic mat parts 2 have an inner side 9 which fits against the rail slab 1 and an outer side 8 which is perpendicular to the base mat 3. Thus, the lateral mat parts 2 form two opposite standing mat parts 2. These mat parts 2 have a cross section which widens as of the bottom side 6 of the rail slab 1 to the top side 4 of the rail slab 1. In contrast, the cross section of the rail slab 1 narrows from the bottom side 6 to the top side 4. In general, the top side 4 and the bottom side 6 are approximately parallel, so that the cross section of the rail slab 1 is trapezoidal.

[0016] The standing lateral mat parts 2 thus have a thickness A on the top side 2" which is larger than the thickness B of these mats 2 on the bottom side 2'. According to this first embodiment, the thickness B on the bottom side 2' of the mat 2 is about 66 % of the thickness A on the top side 2" of the mat 2. More specifically, the thickness B amounts to for example 20 mm, whereas the thickness A amounts to for example 30 mm.

[0017] According to a method of the invention, a floating railway track as in the above-described first embodiment of the invention is manufactured in a concrete case. This concrete case is formed of a fixed concrete bottom or substructure 11 with two opposite standing concrete walls 12. These standing walls 12, according to this method, stand perpendicular to the substructure 11 and extend in the longitudinal direction of the railway. In the concrete case, an elastic base mat 3 is put on the substructure 11 between the walls 12. Against the opposite standing walls 12 are placed standing lateral elastic mat parts 2, with the outer sides 8 of the lateral mat parts 2 connecting to the walls 12. Preferably, these mat parts 2 are placed loosely against the walls 12. The inner sides 9 of the opposed standing lateral mat parts 2 hereby incline towards each other. The bottom side 2' of the lateral mat parts 2 hereby abuts on the edge of the base mat 3. Thus, the entire inner side of the concrete case is lined with the elastic mat formed of the base mat 3 and the lateral mat parts 2. Since the lateral mat parts 2 have a cross section which widens as of the bottom side 2' up to the opposite top side 2" of the lateral mat parts 2, there will be a free space between said mat parts 2 having a trapezoidal cross section and which narrows as of the base mat 3 to the top side 2" of the lateral mat parts 2. This free space is filled with a curing building material

such as concrete. To this end, said building material is cast on the base mat 3, between the opposed extending mat parts 2. The curing building material can be cast in one or several layers. After it has cured, the material thus forms a rail slab 1 which rests on the base mat 3. Consequently, the rail slab 1 is surrounded by an elastic mat, as a result of which there is no direct contact between the rail slab 1 and the concrete case.

[0018] On the top side 4 of the rail slab 1, according to this method, rails 5 which are preferably provided with an elastic jacket are embedded in the curing building material, such that these rails are fixed in a groove in the rail slab. This can be obtained with a "top-down" method known as such which is applied for railways with embedded rails.

[0019] According to a specific variant of this method, the outer sides 8 of the lateral mat parts 2 are provided with a relief, as a result of which the contact surface between the standing walls 12 and the lateral mat parts 2 is reduced. This relief is an unevenness of the surface of the outer side 8 of the lateral mat parts 2 and it may consist of indentations and/or standing elements. In contrast, the walls 12 are preferably flat. Thus, open spaces are created between the mat parts 2 and the walls 12. Such a relief is advantageous in that, when the rail slab 1 is loaded as a railway vehicle runs over the railway, the lateral mat parts 2 will easily come off the standing walls 12, such that these mat parts 2 affect the vertical rigidity of the floating railway track only to a minimal extent.

[0020] According to another variant of this method, the concrete standing walls 12 consist of a temporary formwork. This formwork is removed after the rail slab 1 has been made or after the curing building material of the rail slab 1 has cured. A permanent surrounding material, such as for example crushed stone or concrete, is then put all around the rail slab 1 against the outer side 8 of the lateral mat parts 2.

[0021] According to a further variant of this method, the rails 5 are fixed on top of the rail slab 1 instead of in the above-described grooves.

[0022] According to an alternative method, the base mat 3 is placed on a fixed substructure 11 on which the rail slab 1 is subsequently placed. The lateral mat parts 2 are then placed against the lateral sides of the rail slab 1, after which a curing building material is applied to the mat parts 2.

[0023] A second embodiment according to the invention is represented in figure 2 and mainly differs from the first embodiment in that the cross section of the lateral side 7 of the rail slab 1 has a non-linear profile. The lateral side 7 has an angle with a vertical 14 which is larger on the top side 4 of the rail slab 1 than on the bottom side 6 of the rail slab 1. Thus, for an upper part of the lateral side 7, this angle is for example 0.2° to 0.4°, and for a lower part of this lateral side 7, said angle is for example 0.8° to 2.2°.

[0024] The upper part of the lateral side 7 has a height which is for example 25% to 50% of the total height of

the lateral side 7 or also of the height of the rail slab 1.

[0025] According to a possible method of the invention, the rail slab 1 of the second embodiment is cast in three different layers, whereby these layers are formed of a building material such as for example concrete. Thus, the first lower concrete layer 1' has a thickness D which amounts to for example 150 mm to 300 mm, and the second, connecting concrete layer 1'' has a thickness E which amounts to for example 150 mm to 250 mm, and a third top concrete layer 1''' has a thickness F which amounts to for example 150 mm to 200 mm. This top layer 1''' can also be made, just as the other layers, of another road surfacing material.

[0026] The lateral sides of the first concrete layer 1' and the second concrete layer 1'' are situated in line with each other, in contrast to the lateral side of the top concrete layer 1'''. Consequently, the lateral side 7 of the rail slab 1 exhibits a dent between the third and the second concrete layer 1''' and 1'' respectively, as a result of which the latter has a non-linear profile in the vertical direction.

[0027] The outer sides 8 of the lateral mat parts 2 in this embodiment preferably have a relief 15 at the third and second concrete layer 1''' and 1'' respectively. This relief 15 is an uneven surface which may consist for example of a corrugated surface or of standing studs.

[0028] A third embodiment according to the invention is represented in figure 3 and mainly differs from the second embodiment in that the standing wall 12 of the concrete case forms an angle in relation to the vertical 14 on the flat substructure 11. The standing walls 12 are inclined towards each other in this case. As a result, the cross section of the concrete case is larger on the bottom side 6 of the rail slab 1 than on the top side 4 of the rail slab 1.

[0029] Naturally, the invention is not restricted to the above-described method and device, but defined by the appended claims

[0030] Thus, according to the invention, the elastic mat may consist of a base mat and two standing lateral sides which form a whole and are made of a single piece of elastomer material. Thus, the elastic mat may also consist of several parts that are glued together.

[0031] Thus, the elastic mat can be made of recycled rubber or other elastomers known to a person skilled in the art.

[0032] Thus, the cross section of the lateral mat parts may have various forms whereby it widens at least partly from the bottom side to the top side.

[0033] Thus, the standing walls of the concrete case and/or the rail slab can also be provided with an unevenness such as for example vertical ribs.

[0034] Thus, the opposing standing walls of the concrete case may also be inclined away from one another, so that the cross section of the space in the concrete case widens from the bottom side to the top side.

[0035] Thus, the rail slab can be built out of concrete but also of other materials that a person skilled in the art deems suitable, or combinations thereof, such as for ex-

ample asphalt. Thus, the above-described concrete case can also be made of other suitable building materials.

[0036] Thus, the outer side and/or the inner side of the lateral mat parts may feature a relief that is at least partially uneven, as a result of which the contact surface with the standing walls and/or the lateral sides of the rail slab is reduced.

[0037] Thus, the different qualities of the above-described embodiments can be mutually combined.

Claims

1. Rail slab (1) with an elastic mat (2,3) for a floating railway, which rail slab (1) has a top side (4) and a bottom side (6), whereby rails (5) are fixed to the top side (4) of the rail slab (1), whereby the elastic mat (2,3) contains a base mat (3) which fits against the bottom side (6) of the rail slab (1) and on which said rail slab (1) rests, whereby the elastic mat (2,3) further contains two opposed standing lateral mat parts (2) which each fit with an inner side (9) against a lateral side (7) of the rail slab (1) and extend parallel to the rails (5), **characterised in that** the standing lateral mat parts (2) have a cross section which widens from the bottom side (6) of the rail slab (1) to the top side (4) of the rail slab (1).
2. Rail slab according to claim 1, whereby the cross section of the rail slab (1) narrows from the bottom side (6) to the top side (4).
3. Rail slab according to any one of claims 1 or 2, whereby an outer side (8) extending opposite the inner side (9) of each of the standing lateral mat parts (2) is perpendicular to the base mat (3).
4. Rail slab according to any one of claims 1 to 3, whereby the standing lateral mat parts (2) fit against the base mat (3) and whereby, preferably, the standing lateral mat parts (2) and the base mat (3) form a continuous whole.
5. Rail slab according to any one of claims 1 to 4, whereby the outer side (8) and/or the inner side (9) of the lateral mat parts (2) feature a relief which is at least partly uneven.
6. Rail slab according to any one of claims 1 to 5, whereby the base mat (3) rests on a substructure (11) and whereby standing walls (12) stand on this substructure (11) forming a formwork and/or a concrete case which fits against the outer side (8) of the lateral mat parts (2).
7. Rail slab according to claim 6, whereby the outer side (8) of the lateral mat parts (2) fits loosely against the standing walls (12).

8. Rail slab according to claim 6 or 7, whereby the outer side (8) and/or the inner side (9) of the lateral mat parts (2) is uneven, as a result of which the contact surface between the lateral mat parts (2) and the standing walls (12) and/or the rail slab (1) is reduced.
9. Rail slab according to any one of claims 1 to 8, whereby the top side (4) of the rail slab (1) is provided with at least one groove (10) to fix rails (5) of a railway in.
10. Method for the construction of a railway with a floating railway slab (1), whereby a formwork is made with a substructure (11) with two opposite extending standing walls (12) on it, whereby an elastic base mat (3) is placed on the substructure (11) and lateral elastic mat parts (2) are placed opposite one another against the standing walls (12) of the formwork extending opposite each other, whereby a bottom side (2'') of the lateral elastic mat parts (2) fits against the elastic base mat (3), whereby a curing building material is cast on the base mat (3) between the standing walls (12) of the formwork, so that the lateral elastic mat parts (2) extend between the formwork and the curing building material, whereby the building material cures and forms the floating railway slab (1) which rests on the base mat (3), **characterised in that** the lateral elastic mat parts (2) are placed opposite each other with a thickness (A,B) which increases as of the bottom side (2') of the lateral elastic mat parts (2) towards an opposite top side (2'').
11. Method according to claim 10, whereby the lateral elastic mat parts (2) are provided with their inner sides (9) inclined towards one another.
12. Method according to claims 10 or 11, whereby a concrete case is made which forms the above-mentioned substructure (11) and standing walls (12) of the formwork.
13. Method according to any one of claims 10 to 12, whereby the substructure (11) and the standing walls (12) of the formwork are lined with an elastic mat in one piece on an inner side, which mat comprises the elastic base mat (3) and the lateral mat parts (2).
14. Method according to any one of claims 10 to 13, whereby the lateral mat parts (2) are placed loosely fitting against the standing walls (12), whereby a contact surface is formed between an outer side (8) of the lateral mat parts (2) and the standing walls (12) and whereby, preferably, this contact surface is reduced as at least a part of the outer side (8) of the lateral mat parts (2) is provided with a relief (15) formed of unevenness's.
15. Method according to any one of claims 10 to 14, whereby the standing walls (12) of the formwork are

placed perpendicular to the substructure (11) and the lateral mat parts (2) are placed vertically against the standing walls (12) with an outer side (8) or whereby the standing walls (12) are made to incline towards each other.

Patentansprüche

1. Schienenplatte (1) mit einer elastischen Matte (2, 3) für eine schwimmend gelagerte Eisenbahn, wobei die Schienenplatte (1) eine Oberseite (4) und eine Unterseite (6) aufweist, wobei Schienen (5) an der Oberseite (4) der Schienenplatte (1) befestigt sind, wobei die elastische Matte (2, 3) eine Grundmatte (3) umfasst, die an der Unterseite (6) der Schienenplatte (1) anliegt und auf der die Schienenplatte (1) ruht, wobei die elastische Matte (2, 3) ferner zwei gegenüberliegende stehende seitlichen Mattenteile (2) umfasst, die jeweils mit einer Innenseite (9) an einer lateralen Seite (7) der Schienenplatte (1) anliegen und sich parallel zu den Schienen (5) erstrecken, **dadurch gekennzeichnet, dass** die stehenden seitlichen Mattenteile (2) einen Querschnitt aufweisen, der von der Unterseite (6) der Schienenplatte (1) in Richtung auf die Oberseite (4) der Schienenplatte (1) breiter wird.
2. Schienenplatte nach Anspruch 1, wobei der Querschnitt der Schienenplatte (1) von der Unterseite (6) zur Oberseite (4) schmaler wird.
3. Schienenplatte nach einem der Ansprüche 1 oder 2, wobei eine Außenseite (8), die sich gegenüber der Innenseite (9) von jedem der stehenden seitlichen Mattenteile (2) erstreckt, senkrecht zur Grundmatte (3) ist.
4. Schienenplatte nach einem der Ansprüche 1 bis 3, wobei die stehenden seitlichen Mattenteile (2) an der Grundmatte (3) anliegen und wobei die stehenden seitlichen Mattenteile (2) und die Grundmatte (3) vorzugsweise ein durchgehendes Ganzes bilden.
5. Schienenplatte nach einem der Ansprüche 1 bis 4, wobei die Außenseite (8) und/oder die Innenseite (9) der seitlichen Mattenteile (2) ein Relief aufweisen, das wenigstens teilweise uneben ist.
6. Schienenplatte nach einem der Ansprüche 1 bis 5, wobei die Grundmatte (3) auf einem Unterbau (11) ruht und wobei stehende Wände (12) auf diesem Unterbau (11) stehen und eine Schalung und/oder einen Betonmantel bilden, die oder der an der Außenseite (8) der seitlichen Mattenteile (2) anliegt.
7. Schienenplatte nach Anspruch 6, wobei die Außenseite (8) der seitlichen Mattenteile (2) lose an den

stehenden Wänden (12) anliegt.

8. Schienenplatte nach Anspruch 6 oder 7, wobei die Außenseite (8) und/oder die Innenseite (9) der seitlichen Mattenteile (2) uneben sind, wodurch die Kontaktfläche zwischen den seitlichen Mattenteilen (2) und den stehenden Wänden (12) und/oder der Schienenplatte (1) verringert ist.
9. Schienenplatte nach einem der Ansprüche 1 bis 8, wobei die Oberseite (4) der Schienenplatte (1) mit wenigstens einer Rille (10) versehen ist, um Schienen (5) einer Eisenbahn darin zu befestigen.
10. Verfahren zum Bau einer Eisenbahn mit einer schwimmend gelagerten Schienenplatte (1), wobei eine Schalung mit einem Unterbau (11) mit zwei sich gegenüberliegend erstreckenden, darauf stehenden Wänden (12) hergestellt wird, wobei eine elastische Grundmatte (3) auf dem Unterbau (11) angeordnet wird und seitliche elastische Mattenteile (2) einander gegenüberliegend an den stehenden Wänden (12) der Schalung angeordnet werden, sich einander gegenüberliegend erstrecken, wobei eine Unterseite (2') der seitlichen elastischen Mattenteile (2) an der elastischen Grundmatte (3) anliegt, wobei ein aushärtender Baustoff auf die Grundmatte (3) zwischen die stehenden Wände (12) der Schalung gegossen wird, so dass sich die seitlichen elastischen Mattenteile (2) zwischen der Schalung und dem aushärtenden Baustoff erstrecken, wobei der Baustoff aushärtet und die schwimmend gelagerte Schienenplatte (1) bildet, die auf der Grundmatte (3) ruht, **dadurch gekennzeichnet, dass** die seitlichen elastischen Mattenteile (2) einander gegenüberliegend mit einer Dicke (A, B) angeordnet sind, die von der Unterseite (2') der seitlichen elastischen Mattenteile (2) in Richtung auf eine gegenüberliegende Oberseite (2'') zunimmt.
11. Verfahren nach Anspruch 10, wobei die seitlichen elastischen Mattenteile (2) derart vorgesehen sind, dass ihre Innenseiten (9) zueinander geneigt sind.
12. Verfahren nach Anspruch 10 oder 11, wobei ein Betonmantel hergestellt wird, der den oben genannten Unterbau (11) und die stehenden Wände (12) der Schalung bildet.
13. Verfahren nach einem der Ansprüche 10 bis 12, wobei der Unterbau (11) und die stehenden Wände (12) der Schalung an einer Innenseite mit einer einstückigen elastischen Matte ausgekleidet werden, wobei diese Matte die elastische Grundmatte (3) und die seitlichen Mattenteile (2) umfasst.
14. Verfahren nach einem der Ansprüche 10 bis 13, wobei die seitlichen Mattenteile (2) lose anliegend an

den stehenden Wänden (12) angeordnet werden, wobei eine Kontaktfläche zwischen einer Außenseite (8) der seitlichen Mattenteile (2) und den stehenden Wänden (12) gebildet wird und wobei diese Kontaktfläche vorzugsweise verringert wird, da wenigstens ein Teil der Außenseite (8) der seitlichen Mattenteile (2) mit einem Relief (15) versehen wird, das aus Unebenheiten gebildet ist.

15. Verfahren nach einem der Ansprüche 10 bis 14, wobei die stehenden Wände (12) der Schalung senkrecht zum Unterbau (11) angeordnet werden und die seitlichen Mattenteile (2) mit einer Außenseite (8) vertikal an den stehenden Wänden (12) angeordnet werden oder wobei die stehenden Wände (12) derart ausgeführt werden, dass sie zueinander geneigt sind.

Revendications

1. Dalle (1) de rails avec un tapis élastique (2, 3) pour un chemin de fer flottant, laquelle dalle (1) de rails comporte un côté supérieur (4) et un côté inférieur (6), moyennant quoi des rails (5) sont fixés au côté supérieur (4) de la dalle (1) de rails, moyennant quoi le tapis élastique (2, 3) contient un tapis de base (3) qui s'ajuste contre le côté inférieur (6) de la dalle (1) de rails et sur lequel ladite dalle (1) de rails repose, moyennant quoi le tapis élastique (2, 3) contient en outre deux parties de tapis latérales verticales opposées (2) qui s'ajustent chacune avec un côté intérieur (9) contre un côté latéral (7) de la dalle (1) de rails et s'étendent parallèlement aux rails (5), **caractérisée en ce que** les parties de tapis latérales verticales (2) ont une section transversale qui s'élargit depuis le côté inférieur (6) de la dalle (1) de rails vers le côté supérieur (4) de la dalle (1) de rails.
2. Dalle de rails selon la revendication 1, moyennant quoi la section transversale de la dalle (1) de rails rétrécit depuis le côté inférieur (6) vers le côté supérieur (4).
3. Dalle de rails selon l'une quelconque des revendications 1 ou 2, moyennant quoi un côté extérieur (8) s'étendant à l'opposé du côté intérieur (9) de chacune des parties de tapis latérales verticales (2) est perpendiculaire au tapis de base (3).
4. Dalle de rails selon l'une quelconque des revendications 1 à 3, moyennant quoi les parties de tapis latérales verticales (2) s'ajustent contre le tapis de base (3) et moyennant quoi, de préférence, les parties de tapis latérales verticales (2) et le tapis de base (3) forment un ensemble continu.
5. Dalle de rails selon l'une quelconque des revendi-

cations 1 à 4, moyennant quoi le côté extérieur (8) et/ou le côté intérieur (9) des parties de tapis latérales (2) présentent un relief qui est au moins partiellement inégal.

6. Dalle de rails selon l'une quelconque des revendications 1 à 5, moyennant quoi le tapis de base (3) repose sur une sous-structure (11) et moyennant quoi des parois verticales (12) se tiennent verticalement sur cette sous-structure (11) formant une ossature et/ou une coque en béton qui s'ajustent contre le côté extérieur (8) des parties de tapis latérales (2).

7. Dalle de rails selon la revendication 6, moyennant quoi le côté extérieur (8) des parties de tapis latérales (2) s'ajuste librement contre les parois verticales (12).

8. Dalle de rails selon la revendication 6 ou 7, moyennant quoi le côté extérieur (8) et/ou le côté intérieur (9) des parties de tapis latérales (2) sont inégaux, à la suite de quoi la surface de contact entre les parties de tapis latérales (2) et les parois verticales (12) et/ou la dalle (1) de rails est réduite.

9. Dalle de rails selon l'une quelconque des revendications 1 à 8, moyennant quoi le côté supérieur (4) de la dalle (1) de rails est pourvu d'au moins une rainure (10) pour y fixer les rails (5) d'un chemin de fer.

10. Procédé pour la construction d'un chemin de fer avec une dalle (1) de chemin de fer flottant, moyennant quoi une ossature est fabriquée avec une sous-structure (11) dotée de deux parois verticales s'étendant à l'opposé (12) sur celle-ci, moyennant quoi un tapis de base élastique (3) est placé sur la sous-structure (11) et des parties de tapis élastique latérales (2) sont placées à l'opposé les unes des autres contre les parois verticales (12) de l'ossature s'étendant à l'opposé les unes des autres, moyennant quoi un côté inférieur (2') des parties de tapis élastique latérales (2) s'ajuste contre le tapis de base élastique (3), moyennant quoi un matériau de construction durcissant est coulé sur le tapis de base (3) entre les parois verticales (12) de l'ossature, de telle sorte que les parties de tapis élastique latérales (2) s'étendent entre l'ossature et le matériau de construction durcissant, moyennant quoi le matériau de construction durcit et forme la dalle (1) de chemin de fer flottant qui repose sur le tapis de base (3), **caractérisé en ce que** les parties de tapis élastique latérales (2) sont placées à l'opposé les unes des autres avec une épaisseur (A, B) qui augmente à partir du côté inférieur (2') des parties de tapis élastique latérales (2) vers un côté supérieur opposé (2'').

11. Procédé selon la revendication 10, moyennant quoi

les parties de tapis élastique latérales (2) sont prévues avec leurs côtés intérieurs (9) inclinés les uns vers les autres.

5 12. Procédé selon la revendication 10 ou 11, moyennant quoi une coque en béton est fabriquée, laquelle forme la sous-structure (11) et les parois verticales (12) précitées de l'ossature.

10 13. Procédé selon l'une quelconque des revendications 10 à 12, moyennant quoi la sous-structure (11) et les parois verticales (12) de l'ossature sont recouvertes d'un tapis élastique d'un seul tenant sur un côté intérieur, lequel tapis comprend le tapis de base élastique (3) et les parties de tapis latérales (2).

15 14. Procédé selon l'une quelconque des revendications 10 à 13, moyennant quoi les parties de tapis latérales (2) sont placées s'ajustant librement contre les parois verticales (12), moyennant quoi une surface de contact est formée entre un côté extérieur (8) des parties de tapis latérales (2) et les parois verticales (12) et moyennant quoi, de préférence, cette surface de contact est réduite quand au moins une partie du côté extérieur (8) des parties de tapis latérales (2) est pourvue d'un relief (15) formé d'inégalités.

20 25 30 35 40 45 50 55 15. Procédé selon l'une quelconque des revendications 10 à 14, moyennant quoi les parois verticales (12) de l'ossature sont placées perpendiculairement à la sous-structure (11) et les parties de tapis latérales (2) sont placées verticalement contre les parois verticales (12) avec un côté extérieur (8) ou moyennant quoi les parois verticales (12) sont créées pour s'incliner les unes vers les autres.

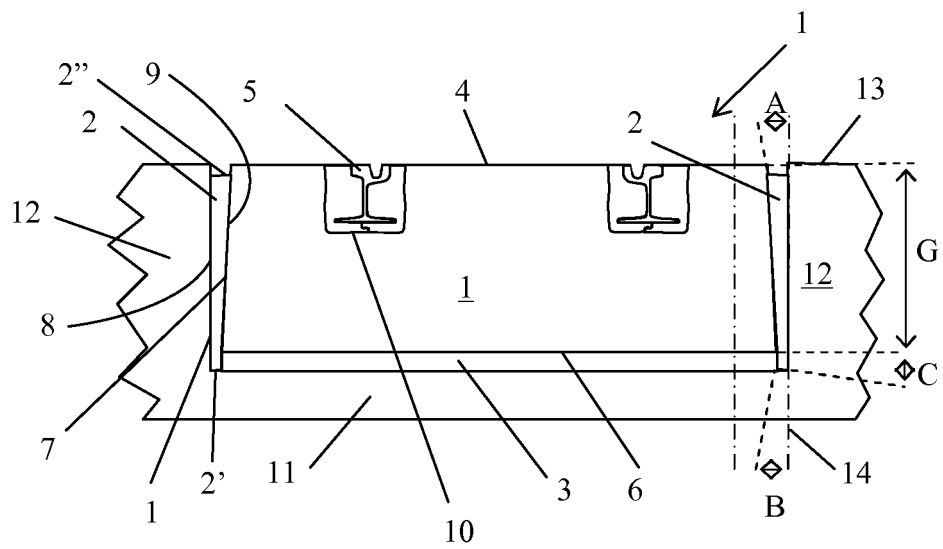


FIG. 1

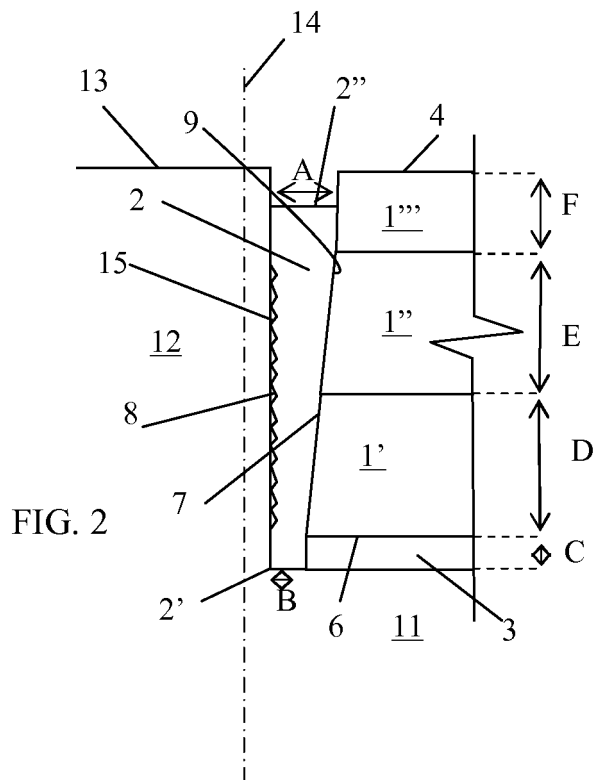


FIG. 2

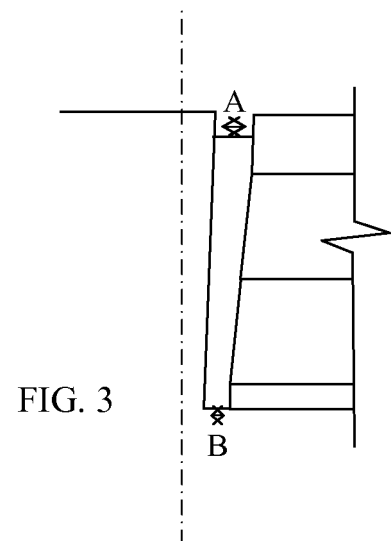


FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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