(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 358 081 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
08.08.2018 Bulletin 2018/32

(51) Int Cl.:
E01F 1/00 *(2006.01)*

(21) Application number: **17154931.4**

(22) Date of filing: **07.02.2017**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(71) Applicant: **Pregymix S.r.l.**
67039 Sulmona (AQ) (IT)

(72) Inventors:
- **LANCIA, Alessandro**
  67039 Sulmona (AQ) (IT)
- **LANCIA, Andrea**
  67039 Sulmona (AQ) (IT)

(74) Representative: **Romano, Giuseppe**
Società Italiana Brevetti S.p.A
Piazza di Pietra, 39
00186 Roma (IT)

(54) MODULAR PLATFORM SYSTEM AND PLATFORM ELEMENTS

(57) Modular system for implementing railway platforms, or the like, and to corresponding modular platform elements (1,10).

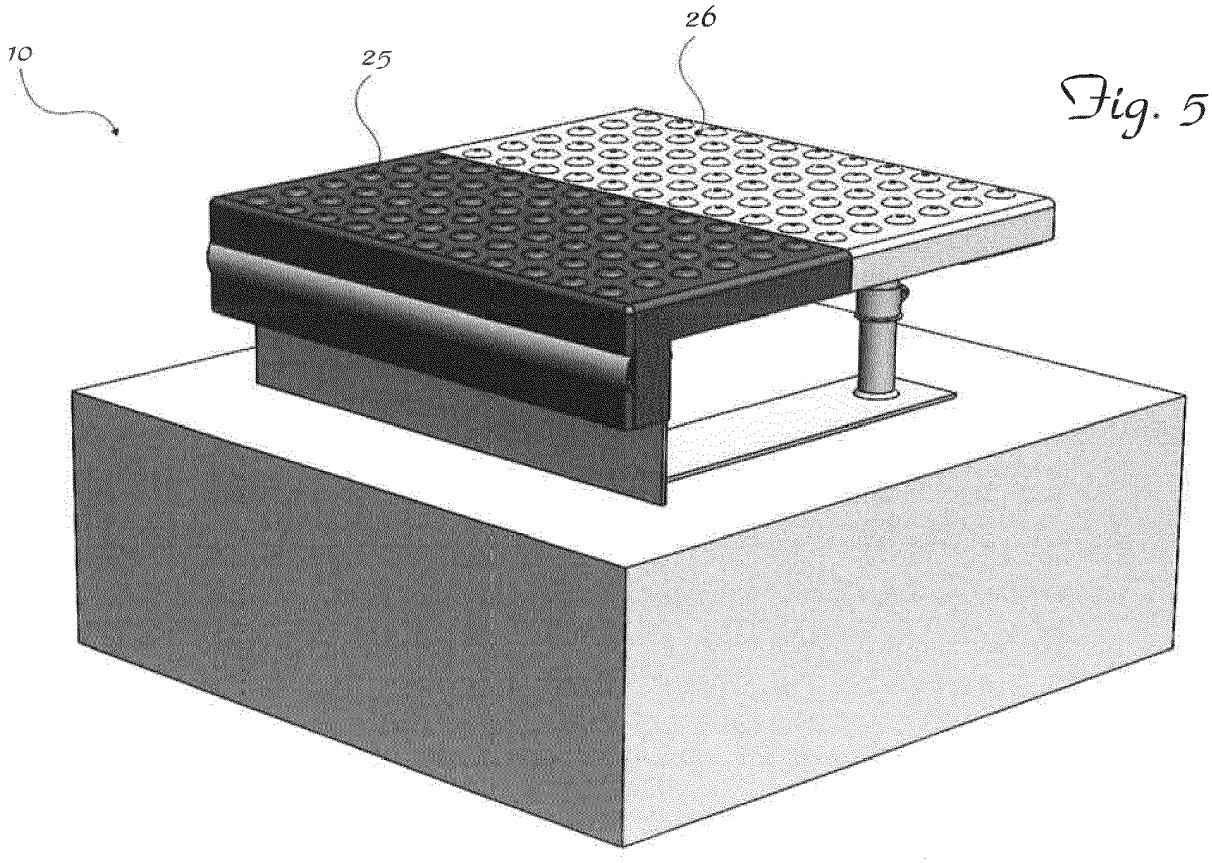


Fig. 5

EP 3 358 081 A1

Description

[0001] The present invention relates to a modular system for implementing railway platforms or the like (pavements, traffic circles or other), and to corresponding modular platform elements.

[0002] Nowadays the need for improving safety of pedestrians walking along and/or standing on platforms, such as railway platforms, pavements, traffic circles or the like, is particularly felt, even and above all in case of disabled, blind, etc. pedestrians.

[0003] Therefore, the increase in the safety level is desirable, by improving the possibility of stepping on trampling surfaces, by increasing the signalling level near dangerous areas, etc.

[0004] Therefore, the object of the present invention is to solve the problems left still open by the known art and this is obtained through platform elements as defined in claim 1.

[0005] An additional object of the present invention is a modular platform system as defined in claim 15.

[0006] Additional features of the subject invention device are defined in the corresponding depending claims.

[0007] The present invention, by overcoming the problems of known art, involves several and evident advantages.

[0008] First of all, the system according to the present invention is characterized by the application versatility thereof. In fact it can be applied in several different situations, from the road field to the railway field, harbour field or other, for implementing platforms in variable shapes, sections and sizes, depending upon the specific performances and needs required by the circumstances.

[0009] A huge advantage, which constitutes a particular value of the system according to the invention, is also linked to the materials used for the implementation thereof, which are:

- profiles in recycled rubber, which characterize it as environmental-friendly product;
- laminated retro-reflecting materials, which guarantee an exceptional night visibility;
- reinforced concrete, which constitutes the structural core thereof.

[0010] Furthermore, an additional advantage has to be seen in that the use of such system, the single modular elements thereof can be prefabricated, makes particularly simple, quick and cheap the process for laying the platform.

[0011] On the other side, the same process itself for implementing the modular elements is particularly simple. In fact the concrete is cast in formworks suitable to the requested sizes, wherein even all components of the manufactured product are housed. Once the implementation moulds are taken down, the manufactured product has already the necessary front rubberised profiles and the possible metal inserts and/or high-visibility reflecting elements. The presence of rubberised coating profiles is so that the elements according to the invention are capable of absorbing possible shocks.

[0012] These and other advantages, together with the features and use modes of the present invention, will result evident from the following detailed description of preferred embodiments thereof, shown by way of example and not with limitative purposes, by referring to the figures of the enclosed drawings, wherein:

- figure 1 and figure 2 show, in section, two possible installations of a platform element according to an embodiment of the present invention;
- figure 3 shows, in section, a second embodiment of a platform element according to the present invention;
- figure 4 is an exploded view of a platform element according to the present invention;
- figure 5 is a perspective view of a platform element according to the present invention; and
- figure 6 is a section view of a possible installation of a platform system according to the present invention.

[0013] The present invention will be described in details hereinafter by referring to the above-mentioned figures.

[0014] By firstly referring to figure 1, this shows a first embodiment of a modular platform element 1 according to the present invention.

[0015] In particular, the platform element 1 first of all comprises a structure 2 made of reinforced concrete, in turn comprising a trampling portion 3.

[0016] Such trampling portion 3 is substantially shaped like a plate and it is coated with a floor coating 4, mechanically coupled to the structure 2, to form a trampling surface 5.

[0017] Then, the platform element 1 comprises means 6, 7, 8 for resting upon the ground and means 15, 16, 17 for connecting to other elements 1, 10 similar to adjacent modular platform structures 50 and/or to a pre-existing pavement 11.

[0018] The two distinct installation possibilities are shown in figures 1 and 2.

[0019] Advantageously, the floor coating 4 is made of polymeric material, preferably not vulcanized and non-flammable rubber, preferably recycled rubber.

[0020] In the preferred embodiments, the structure made of concrete 2 comprises a reinforcement 11 implemented for example by means of an electro-welded grid.

[0021] The platform element is rested upon the ground through corresponding means 6, 7, 8 for resting upon the ground. Such means comprises two or more supports 7 which can be adjusted in height and/or elements 8 for anchoring to the ground.

[0022] Similarly, the platform element can be connected mechanically to other adjacent modular platform elements and/or to a pre-existing pavement 11, by means of connecting means 15, 16, for example fastening stir-

rups 16, preferably made of metal, and corresponding fastening elements 17, preferably screw, expansion elements or the like.

[0023] According to a possible embodiment, a platform element 1 according to the present invention is implemented so that the structure made of reinforced concrete comprises an extreme protection portion 20 of the platform itself.

[0024] Such extreme portion 20 in turn can be coated with a protection coating 21. In this way, the platform element 1 can easily become the terminal element of the platform, which identifies the edge thereof.

[0025] The protection coating band 21 advantageously can house retro-reflecting elements, or indications of various kind, to improve visibility of the manufactured product and/or provide indications to users.

[0026] Advantageously, even the protection coating 21 can be made of polymeric material, preferably not vulcanized and non-flammable rubber, preferably recycled rubber.

[0027] For all embodiments sofar described, the floor coating 4 advantageously can have a trampling surface implemented to fulfil the anti-slip function.

[0028] Furthermore, the floor coating 4 can be divided into several areas 25, 26, each one bearing a different surface finishing.

[0029] For example, one of said areas 26 can bear a surface finishing which reproduces in relief a code for signalling the proximity to the platform end.

[0030] Typically, in railway field, such signalling code is implemented though a yellow-coloured band, whereon there is a plurality of half-balls in relief projecting on the floor surface, so that they can be detected easily by users (even by blind users).

[0031] Still, an additional possible example can be the case wherein one of said areas 27 bears a surface finishing which reproduces in relief the code for signalling the platform direction.

[0032] Typically, in railway field, such signalling code is implemented by means of a red-coloured band, whereon there is a plurality of rectilinear projections, parallel therebetween, arranged according to the direction to be shown.

[0033] It is evident, as illustrated in figure 6, that the platform elements 1, 10 according to the present invention, can be used and combined therebetween so as to cooperate and form as a whole a platform system which overlaps and/or wholly replaces possible pre-existing manufactured products, such as pavements, floor coverings, screeds, etc.

[0034] According to anyone one of the sofar described embodiments, a platform element 1, 10 according to the present invention can further provide one or more heating elements, buried in the concrete. In particular they can be of resistive type, power-supplied type and means can be provided for the electric connection between adjacent platform elements. The platform heating can be particularly important, for example to avoid the formation of ice in case of particularly low room temperature, and then to further increase the safety level for users offered by the system.

[0035] The present invention has been sofar described by referring to preferred embodiments thereof. It is to be meant that other embodiments may exist, belonging to the same inventive core, as defined by the scope of the herebelow reported claims.

Claims

1. A modular platform element (1, 10) comprising a structure (2) made of reinforced concrete comprising a trampling portion (3) substantially shaped like a plate and a floor coating (4) coupled to said structure (2) at least at said trampling portion (3) to form a trampling surface (5), comprising means (6, 7, 8) for resting upon the ground and means (15, 16, 17) for connecting to other platform elements (1, 10), platform structures (50) and/or to a pre-existing pavement (11).

2. The platform element (1, 10) according to claim 1, wherein said floor coating (4) is made of polymeric material, preferably not vulcanized and non-flammable rubber, preferably recycled rubber.

3. The platform element (1, 10) according to anyone of the preceding claims, wherein said structure (2) made of reinforced concrete comprises a reinforcement (11) implemented by means of an electro-welded grid.

4. The platform element (1, 10) according to anyone of the preceding claims, wherein said means (6, 7, 8) for resting upon the ground comprises two or more supports (7) which can be adjusted in height and/or means (8) for anchoring to the ground.

5. The platform element (1, 10) according to anyone of the preceding claims, wherein said means (15, 16) for connecting to other platform elements (1, 10) or to a pre-existing pavement (11) comprises preferably metal fastening stirrups (16) and corresponding fastening elements (17).

6. The platform element (1) according to anyone of the preceding claims, wherein said structure (2) made of reinforced concrete comprises an extreme protection portion (20) of the platform.

7. The platform element (1) according to claim 6, wherein said extreme protection portion (6) is coated by a protection coating (21).

8. The platform element (1) according to claim 7, wherein said protection coating (21) is made of pol-

ymeric material, preferably not vulcanized and non-flammable rubber, preferably recycled rubber.

9. The platform element (1, 10) according to anyone of the preceding claims, wherein said floor coating (4) has an anti-slip trampling surface.

10. The platform element (1, 10) according to anyone of the preceding claims, wherein said floor coating (4) is divided into several areas (25), each one bearing a different surface finishing.

11. The platform element (1, 10) according to claim 10, wherein one of said areas (25) bears a surface finishing which reproduces in relief a code for signalling the proximity to the platform end.

12. The platform element (1, 10) according to claim 10 or 11, wherein one of said areas (25) bears a surface finishing which reproduces in relief a code for signalling the platform direction.

13. The platform element (1, 10) according to anyone of the preceding claims, wherein said structure (2) made of reinforced concrete comprises one or more heating elements buried in the concrete.

14. The platform element (1, 10) according to claim 13, wherein said heating elements are of resistive type, of power-supplied type and means is provided for the electric connection between adjacent platform elements.

15. A modular platform system, comprising a plurality of platform elements (1, 10) according to anyone of claims 1 to 14.

Fig. 1

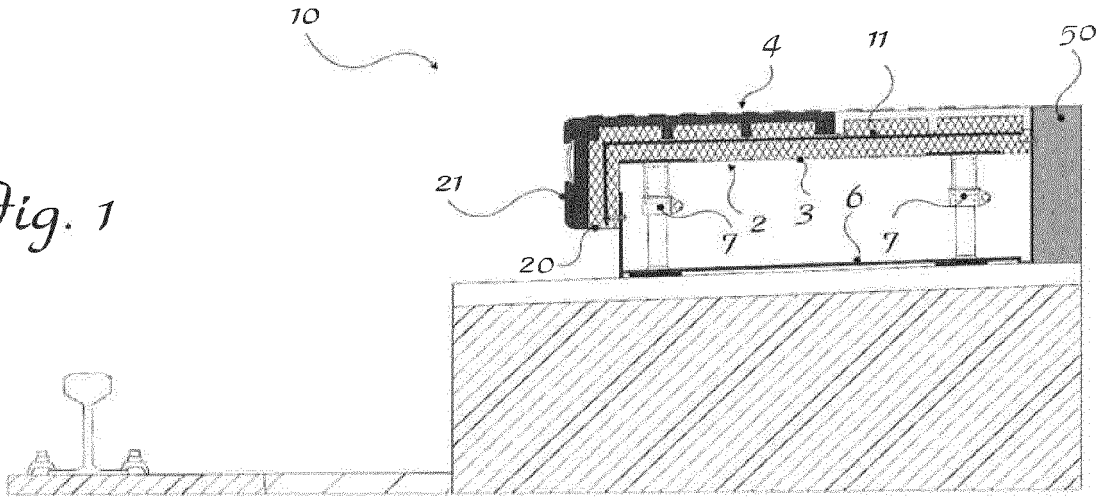


Fig. 2

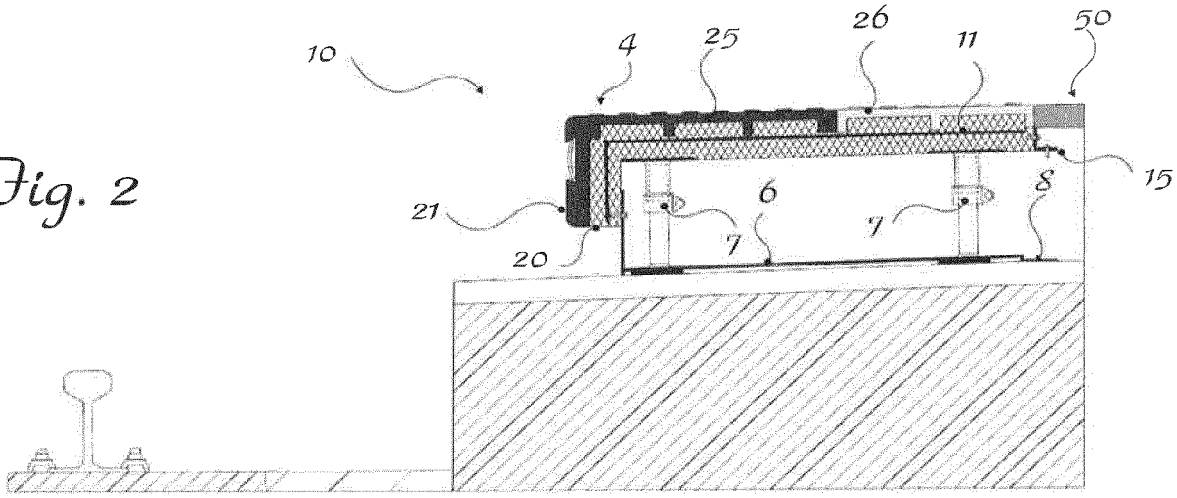
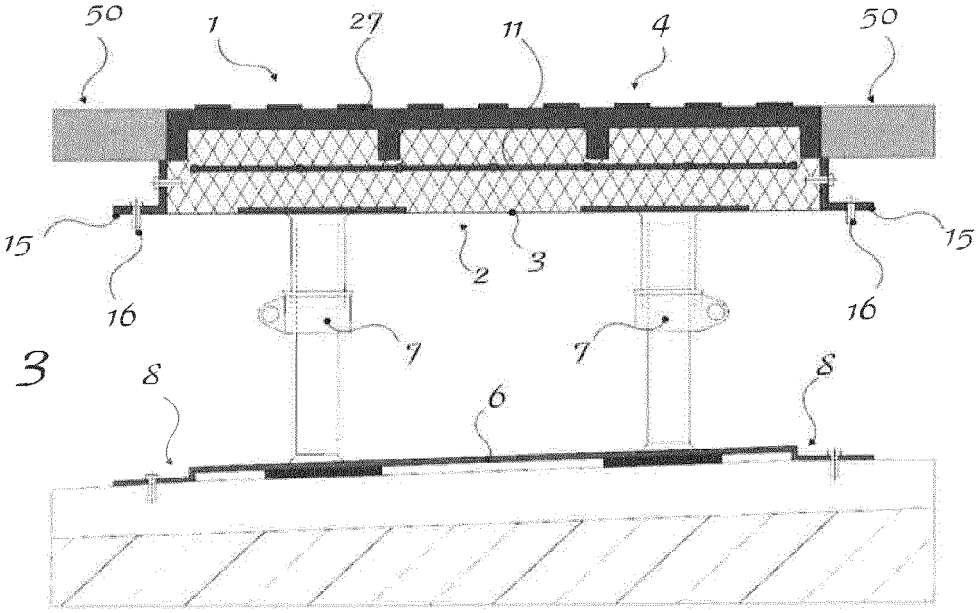


Fig. 3



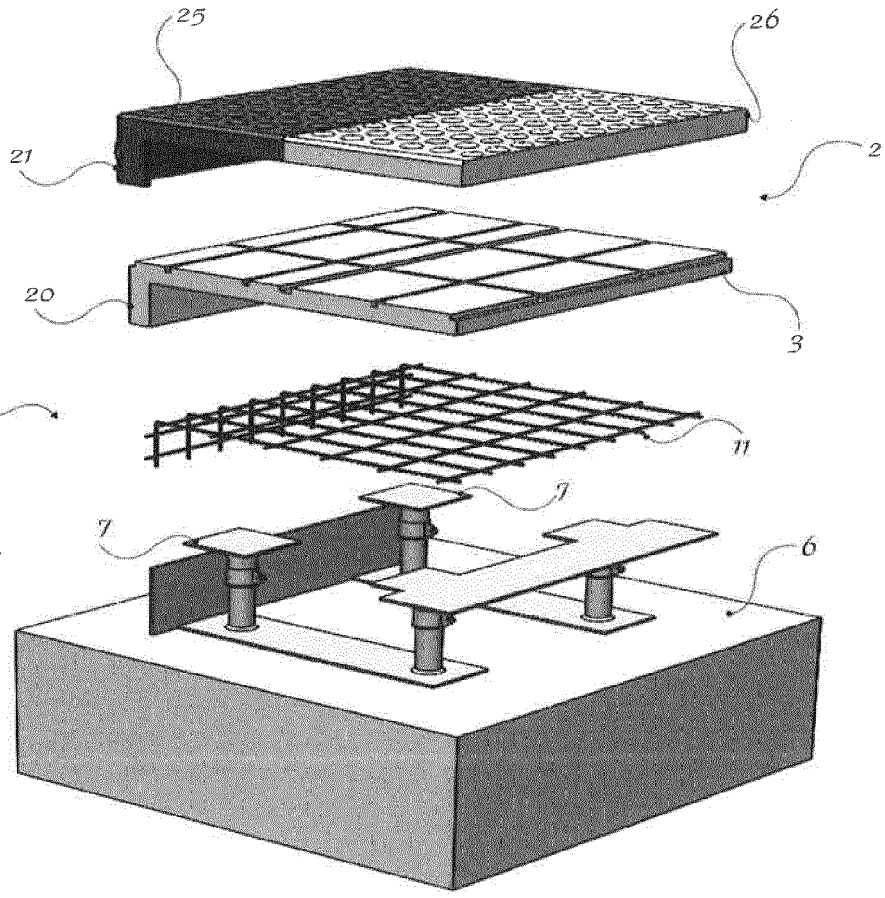


Fig. 4

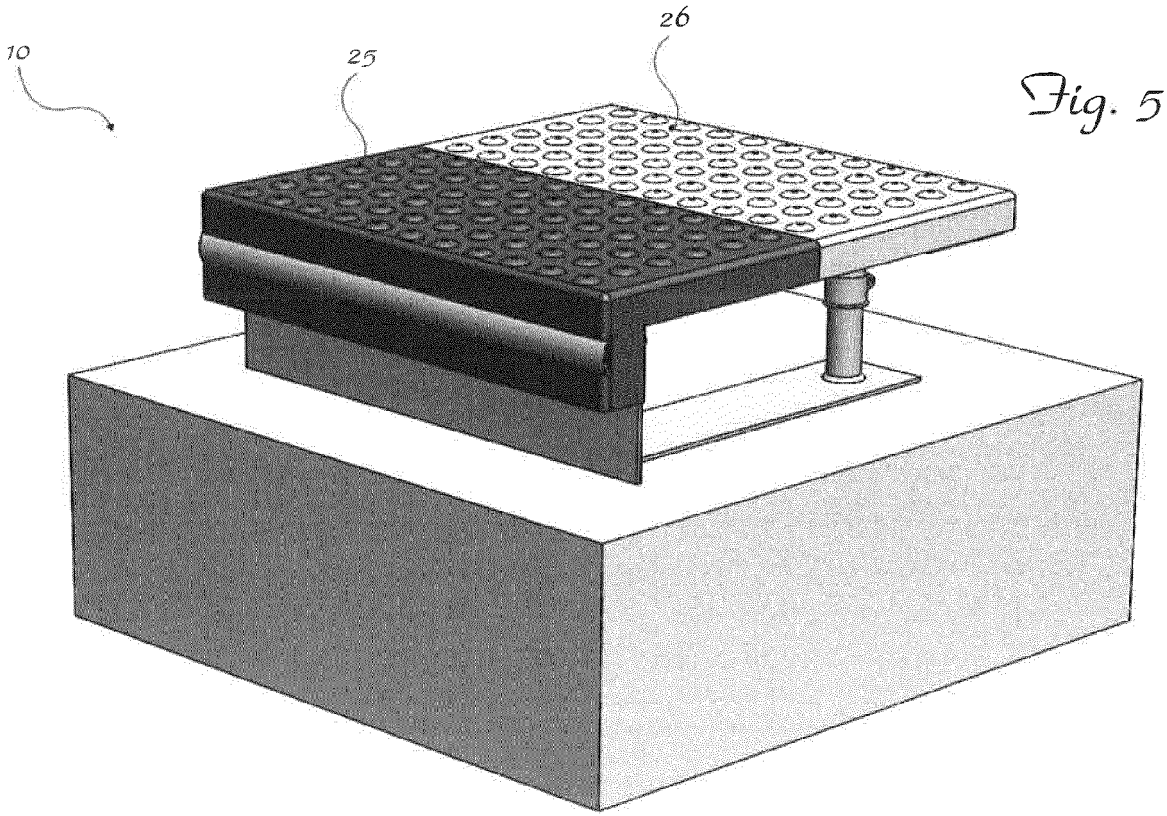


Fig. 5

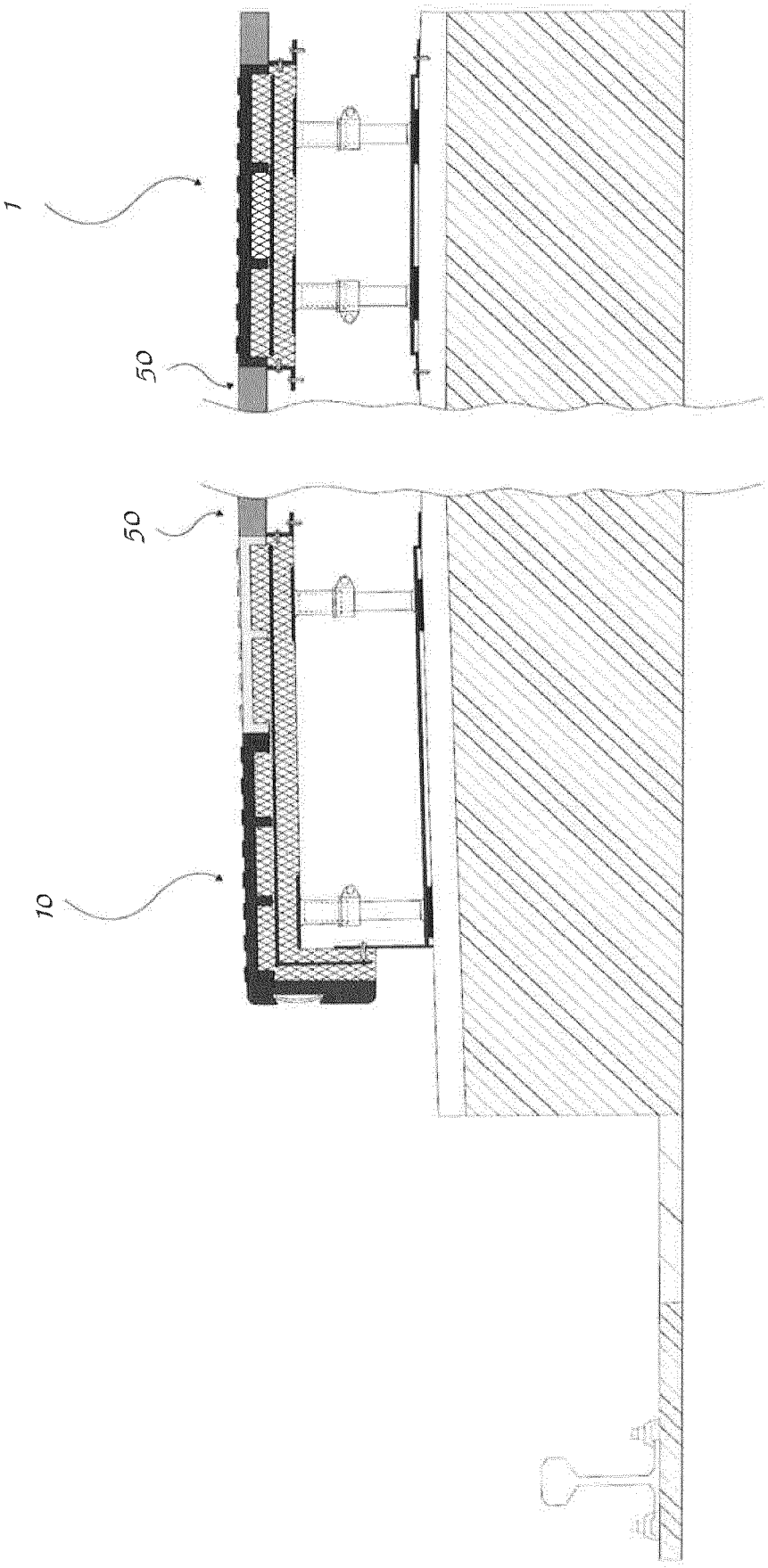


Fig. 6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 17 15 4931

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	EP 2 792 792 A1 (PREGYMIX S R L [IT]) 22 October 2014 (2014-10-22) * the whole document *	1-11,15 12-14	INV. E01F1/00
Y	DE 10 2010 019892 A1 (SPENGLER HERBERT [DE]) 10 November 2011 (2011-11-10) * paragraphs [0001], [0010], [0012], [0018] * * figures 1,4 *	12-14	
A	US 2006/037155 A1 (SZEKELY KENNETH E J [CA]) 23 February 2006 (2006-02-23) * paragraphs [0002], [0014], [0018], [0043] - [0051], [0057], [0062], [0063] * * figures 1-8,10 *	1-15	

TECHNICAL FIELDS SEARCHED (IPC)

E01F
B61B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 July 2017	Kremsler, Stefan

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 17 15 4931

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-07-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2792792 A1	22-10-2014	EP 2792792 A1	22-10-2014
		IT AQ20130003 U1	16-10-2014
DE 102010019892 A1	10-11-2011	NONE	
US 2006037155 A1	23-02-2006	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82