

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 1 310 599 A1

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:  
14.05.2003 Bulletin 2003/20

(51) Int Cl. 7: E01F 1/00, B61B 1/02,  
E01C 3/00

(21) Application number: 02079729.6

(22) Date of filing: 11.11.2002

(84) Designated Contracting States:  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
IE IT LI LU MC NL PT SE SK TR  
Designated Extension States:  
AL LT LV MK RO SI

(30) Priority: 13.11.2001 NL 1019356

(71) Applicant: Compa Tech N.V.  
5611 LH Eindhoven (NL)

(72) Inventor: van Bakel, Petrus Kalman  
5241 CB Rosmalen (NL)

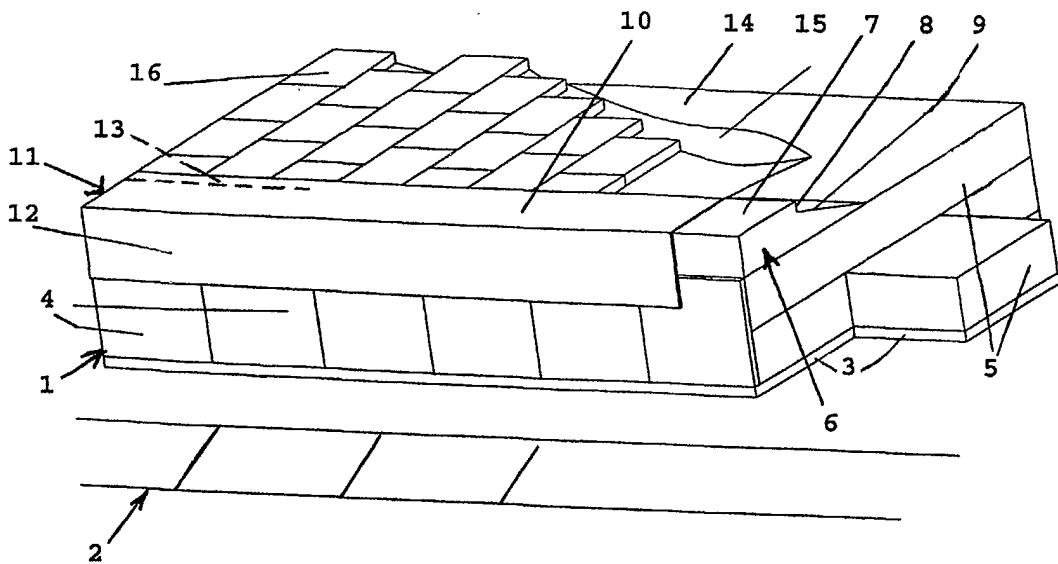
(74) Representative: Lips, Hendrik Jan George, Ir.  
HAAGSCH OCTROOIBUREAU  
Breitnerlaan 146  
2596 HG Den Haag (NL)

### (54) Platform

(57) Platform, such as a platform (1) at a railway station or a platform for loading and unloading at a transfer station and the like, said platform being assembled from, blocks (5, 6) of foamed plastic provided on an underground (3) and having their outer sides provided with vertical protection plates (4). Possibly, a layer of sand (15) for supporting the pavement (16) can have been provided on the uppermost blocks. The blocks (6) adjacent the protecting plates (4) are at least partly covered

by a substantially L-shaped, relatively rigid adjusting edge (11), its vertical leg (12) extending across the protecting plates (4). Method for repairing an existing platform in which, after removing an amount of sand, the space created is filled-up by blocks (5, 6) of foamed plastic. The blocks (6) adjacent the retaining wall (4) are covered by a substantially L-shaped adjusting edge (11). Adjusting mechanisms (17) are used for bringing the adjusting edge (11) in place.

FIG. 1



**Description**

**[0001]** The invention relates to a platform, such as in particular a platform at a railway station or a platform for loading and unloading at a transfer station and the like, said platform being assembled from vertical walls with a filling body between them with a pavement on it.

**[0002]** With the known platforms, the filling body is almost completely comprised of sand. This has the difficulty, that sand has a relatively high specific mass and that the total platform thus has a considerable weight. Therefore, the platform should be mounted on a firm base, so that subsidences of the underground and thus of the platform itself are prevented as much as possible.

**[0003]** Further, loads will be exerted on the pavement, such as by vehicles driving across it or by placing loads on it. This will cause the sand located underneath the pavement to be pushed away laterally. Thus, forces directed outwardly will be exerted on the vertical walls, for which they should be designed.

**[0004]** All this results in the fact that both the underground on which the platform is to be mounted and the complete platform per se must meet high requirements in order to prevent occurrence of subsidences later. Due to this, the total costs will be relatively high.

**[0005]** The object of the invention is to overcome these difficulties and to that end provides for, that the filling body is substantially formed by blocks of foamed plastic, in which the vertical walls are formed as protecting plates for said plastic.

**[0006]** According to an elaboration of the invention, a layer of sand for supporting the pavement can be provided on the uppermost blocks.

**[0007]** This causes a considerable reduction in the total weight of the platform so that the underground is to meet requirements which are less high. Owing to the fact that the plastic core, contrary to sand, will not exert any outwardly directed forces, the vertical walls only serve for protecting the plastic core. These protection plates can be provided in lightweight form.

**[0008]** Obviously, the foamed plastic needs to meet certain requirements, such as it should be able to resist moisture and pressure load.

**[0009]** As stated before, a layer of sand can be provided on the uppermost blocks made of foamed plastic, upon which a pavement of tiles can be laid.

**[0010]** However, it is possible to use elements of plastic for the pavement, at least the top layer of said elements being of a high quality.

**[0011]** This top layer must be wear-resistant and not smooth, even when there is water on it. In this way, the weight of the entirety can be reduced further.

**[0012]** Further, it can be provided for, that the plastic elements intended for the pavement are provided directly on the blocks of foamed plastic and are connected with them.

**[0013]** According to a further elaboration of the invention, the blocks located immediately adjacent the pro-

tecting plate extend almost to the upper edge of the protecting plate and there they are at least partly covered by a horizontally extending leg of a substantially L-shaped, relatively stiff adjusting ridge, its vertically extending leg extending across a portion of the protecting plate and being connected to it.

**[0014]** In this way, it is achieved that the adjusting ridge and thus the upper edge of the platform will run in the proper way.

**[0015]** In particular, the horizontal leg of the adjusting edge can be provided with a longitudinal edge flanged squarely downwards, which will come to fall across an edge of the blocks located at the protecting plate, whereas the other part of the blocks will be situated on a lower level for receiving the pavement.

**[0016]** The further part of those blocks across which the longitudinal edge of the adjusting edge will fall, can also be beveled for receiving the sand in which the pavement is provided, when it consists of tiles, for example.

**[0017]** The uppermost blocks, being the most outwardly, are thus partly encompassed by the horizontal leg with its flanged longitudinal edge and the vertical leg of the adjusting edge and possibly a portion of the protecting plate. This will provide for a proper capturing of these blocks and a firm structure. The flanged longitudinal edge will likewise contribute to the rigidity of the adjusting edge. It is obvious, that the pavement will align to the top surface of the adjusting edge.

**[0018]** Such a structure can also be applied in repairing a platform which is to be levelled up after subsidences have occurred.

**[0019]** To that end, the invention provides for a method according to which, after removing an amount of sand, the created space is filled-up by blocks of foamed plastic.

**[0020]** The adjusting edge to be used could be provided with a supporting block beforehand, comprising foamed plastic, whereupon an adjusting mechanism sets the edge to the appropriate height before securing the entirety to the existing vertical wall, which is in the shape of a retaining wall.

**[0021]** The space beneath the block can then be filled-up with additional blocks of plastic and sand. Thus, the use of concrete for levelling up is prevented, whereas the weight of the entirety will be reduced in relation to the traditional way of levelling-up. With this way of levelling-up, elements of concrete are employed or the entirety is replaced under application of larger and heavier retaining walls.

**[0022]** Thus, it can be provided for, that the employed adjusting mechanisms comprise adjustable parts for easily obtaining an appropriate trajectory of the blocks of foamed plastic and thus of the adjusting edge.

**[0023]** Possibly, the adjusting mechanisms can be removed afterwards and be replaced by blocks of foamed plastic having the required dimensions. The adjusting mechanisms concerned can then be employed again in repairing other platforms.

**[0024]** The invention is further explained by way of embodiments, illustrated in the drawing, in which:

Fig. 1 illustrates schematically the structure of a platform according to the present invention, provided at a railway line, in which certain parts have been omitted for the sake of clarity;

Fig. 2 illustrates schematically a method of repairing a platform, to wit in particular its longitudinal edge; and

Fig. 3 illustrates schematically a further elaboration of the method of Fig. 2.

**[0025]** Fig. 1 shows the structure of a platform 1, which is situated adjacent a railway line 2 and being located on the underground 3. The underground 3 can e.g. be formed of a layer of compressed sand.

**[0026]** Rectangular blocks 5 and 6 of foamed plastic have been stacked on the underground 3. Vertical protecting plates 4 have been secured on the side wall of thus formed core, which can comprise e.g. a lightweight, impact-resistant material or a similar suitable material. It is also desirable, that the protecting plates 4, at the railway line 2 in particular, consist of a noise dampening, non-metallic material.

**[0027]** At the protecting plates 4, the specially formed blocks 6 are located, having their top surface 7 merging into an edge 8 and an upper surface 9 extending obliquely away from said edge. On the upper surface 9 of the blocks 6 is the horizontally extending leg 10 of a substantially L-shaped adjusting edge 11, its vertical leg 12 extending across part of the protecting plates 4.

**[0028]** As appears in particular from figure 2, the leg 10 is provided with a flanged wall 13. The wall 13 can come to fall across the edge 8 of the blocks 6.

**[0029]** Sand 15 is provided on the oblique surface 9 of the blocks 6 and the upper surface 14 of the blocks 5, and the pavement 16 is mounted on said sand, in which the pavement can comprise tiles, for example.

**[0030]** As stated above, possibly the sand 15 can be omitted and the blocks 5 and 6 can be designed in such a way, that the pavement can be provided immediately on them. The pavement will then comprise plastic elements, having at least a high quality top layer. Possibly, the elements can be connected to the blocks 5 and 6.

**[0031]** In figures 2 and 3, corresponding parts have been indicated with the same reference numbers as in figure 1.

**[0032]** Figure 2 illustrates the repair of a platform 1, which has been constructed in the conventional way, in which heavy retaining walls 20 have been employed. After excavating a part of the sand, adjusting mechanisms 17, provided with the supports 18 are placed on the retaining wall 20 in spaced-apart relationship.

**[0033]** After setting the height of the adjusting edge 11 described above and already provided with blocks 6, with the help of the adjusting mechanisms 17, the space created underneath the adjusting edge 11 can be filled-

up by supporting blocks of foamed plastic 6.

**[0034]** The space behind the blocks 6 can, after excavating the sand from between the retaining walls 20, be filled-up by blocks of foamed plastic and by sand 15.

**[0035]** As illustrated in figure 3, after that the used adjusting mechanisms 17 can be removed and be replaced by blocks 19 of foamed plastic having the required dimensions. The blocks 19 will consist of some parts, in a way not further indicated, for allowing mounting thereof.

**[0036]** It will be obvious, that only one possible embodiment of the invention of a platform and of a method for repairing it according to the invention have been illustrated in the drawing and described above and that many modifications can be made without leaving the inventive idea, as it has been indicated in the claims.

## Claims

1. Platform, such as a platform (1) at a railway station or a platform for loading and unloading at a transfer station and the like, said platform being assembled from vertical walls (4) with a filling body between them with a pavement (16) on it, **characterized in that** the the filling body is substantially formed by blocks (5, 6) of foamed plastic, in which the vertical walls (4) are formed as protecting plates (4) for said plastic.
2. Platform according to claim 1, **characterized in that** a layer of sand (15) for supporting the pavement (16) has been provided on the uppermost blocks.
3. Platform according to claim 1 or 2, **characterized in that** elements of plastic are used for the pavement (16), at least the top layer of them being of a high quality.
4. Platform according to claim 3, **characterized in that** the plastic elements intended for the pavement (16) are provided directly on the blocks (5, 6) of foamed plastic and are connected with them.
5. Platform according to one of the preceding claims, **characterized in that** blocks (6) located immediately adjacent the protecting plate (4) extend almost to the upper edge of the protecting plate (4) and there they are at least partly covered by a horizontally extending leg (10) of a substantially L-shaped, relatively stiff adjusting ridge (11), its vertically extending leg (12) extending across a portion of the protecting plate (4) and being connected to it.
6. Platform according to claim 5, **characterized in that** the horizontal leg (10) of the adjusting edge (11) is provided with a longitudinal edge (13) flang-

ed squarely downwards, which will come to fall across an edge (8) of the blocks (6) located at the protecting plate (4), whereas the other part of these blocks (6) will be situated on a lower level for receiving the pavement (16). 5

7. Platform according to claim 6, **characterized in that** the further part of those blocks (6) across which the longitudinal edge (13) of the adjusting edge (11) will fall, is bevelled for receiving the sand (15) in which the pavement (16) is provided. 10
8. Method for repairing a platform using the means according to one or more of the preceding claims, **characterized in that** after removing an amount of sand, the space created is filled up by blocks (5, 6) of foamed plastic. 15
9. Method according to claim 8, **characterized in that** a block (6) to be mounted at the retaining wall (20), serves for support and filling for the adjusting edge (11) set by means of an adjusting mechanism (17). 20
10. Method according to claim 9, **characterized in that** the employed adjusting mechanisms (17) comprise adjustable parts (18) for obtaining a correct trajectory of the adjusting edge (11). 25
11. Method according to claim 10, **characterized in that** the adjusting mechanisms (17) are removed afterwards and are replaced by blocks (19) of foamed plastic having the required dimensions. 30

35

40

45

50

55

FIG. 1

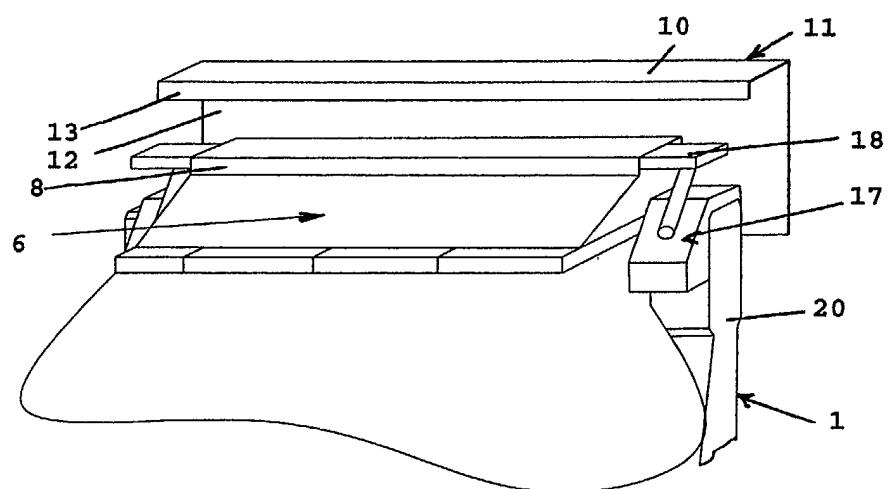
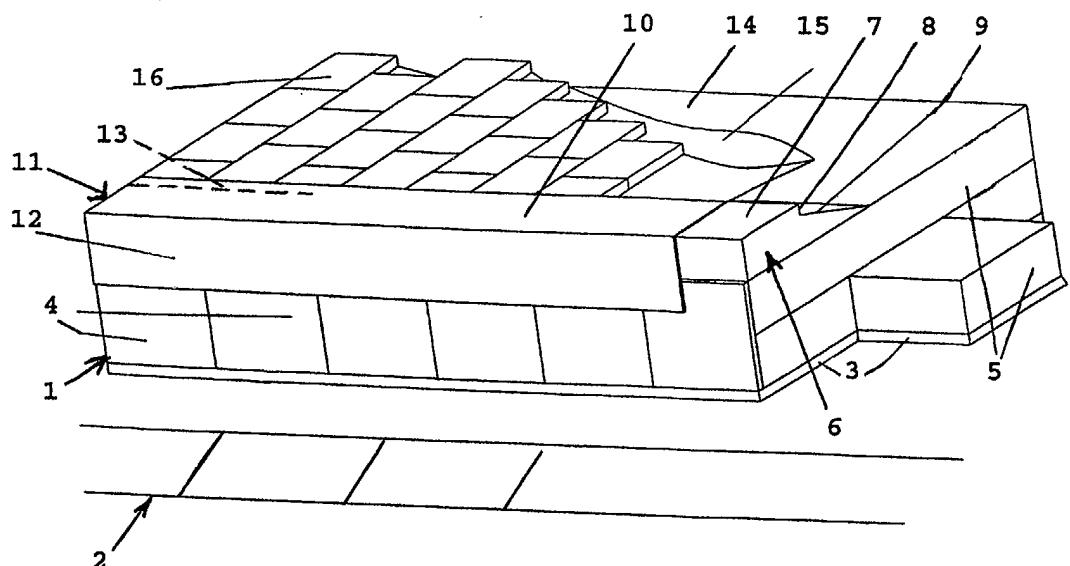
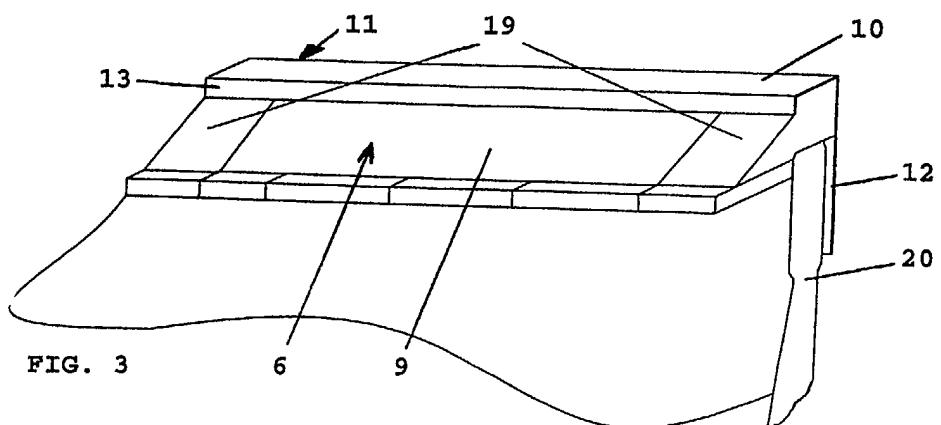


FIG. 2





DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	EP 0 997 581 A (VENCER RESIL LIMITED) 3 May 2000 (2000-05-03)	1	E01F1/00 B61B1/02
Y	* the whole document *	2,3,8-10	E01C3/00
Y	---		
Y	NL 9 200 116 A (HAAKSBERGEN GEMEENTE) 16 August 1993 (1993-08-16)	2,3	
A	* page 6, line 3 - line 30; figure 2 *	1,5,7-9	
Y	---		
Y	NL 1 012 567 C (COMPATECH B V) 15 January 2001 (2001-01-15)	8-10	
A	* the whole document *	1,5,11	
A	---		
A	EP 0 472 803 A (VEST NOVA AB) 4 March 1992 (1992-03-04)	1,6	
A	* column 2, line 7 - line 38; figure 2 *	-----	
A	---		
GB 2 300 009 A (BAIKOFF EUGENE M A) 23 October 1996 (1996-10-23)	-----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E01F B61B E01C
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	13 February 2003	Verveer, D	
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone	T : theory or principle underlying the invention		
Y : particularly relevant if combined with another document of the same category	E : earlier patent document, but published on, or after the filing date		
A : technological background	D : document cited in the application		
O : non-written disclosure	L : document cited for other reasons		
P : intermediate document	& : member of the same patent family, corresponding document		

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 02 07 9729

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.

13-02-2003

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 0997581	A	03-05-2000	GB EP	2343205 A 0997581 A1	03-05-2000 03-05-2000	
NL 9200116	A	16-08-1993		NONE		
NL 1012567	C	15-01-2001	NL	1012567 C2	15-01-2001	
EP 0472803	A	04-03-1992	SE EP SE	468017 B 0472803 A1 8900785 A	19-10-1992 04-03-1992 08-09-1990	
GB 2300009	A	23-10-1996		NONE		