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Certificate of Grant of Patent

Patent Number: GB2544064

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Inventor(s): Jonathan Hamp

This is to Certify that, in accordance with the Patents Act 1977,

a Patent has been granted to the proprietor(s) for an invention entitled "**Safety surfaces**" disclosed in an application filed **4 November 2015**.

Dated 7 February 2018

Tim Moss
Comptroller-General of Patents, Designs and Trade Marks
Intellectual Property Office

The attention of the Proprietor(s) is drawn to the important notes overleaf.

(12) UK Patent (19) GB (11) 2544064 (13) B

(45) Date of B Publication 07.02.2018

(54) Title of the Invention: Safety surfaces

(51) INT CL: ***B32B 15/08*** (2006.01) ***B32B 3/26*** (2006.01) ***B32B 3/30*** (2006.01) ***E01C 5/22*** (2006.01) ***E01C 11/24*** (2006.01) ***E04F 11/104*** (2006.01) ***E04F 11/17*** (2006.01)

(21) Application No: **1519461.6**

(22) Date of Filing: **04.11.2015**

(43) Date of A Publication **10.05.2017**

(56) Documents Cited:
JP 2013067038 A **US 4289819 A**

(58) Field of Search:
As for published application 2544064 A viz:
INT CL **B32B, E01C, E04F**
Other: **WPI, EPODOC, RM25, RM26**
updated as appropriate

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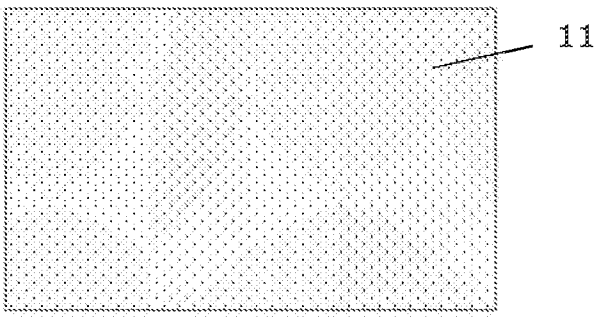

Fig 1

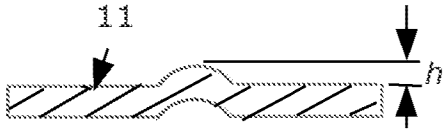

Fig 2

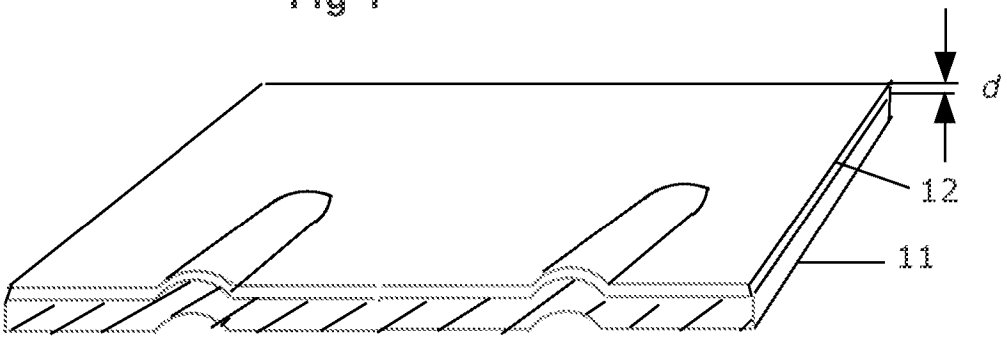

Fig 3

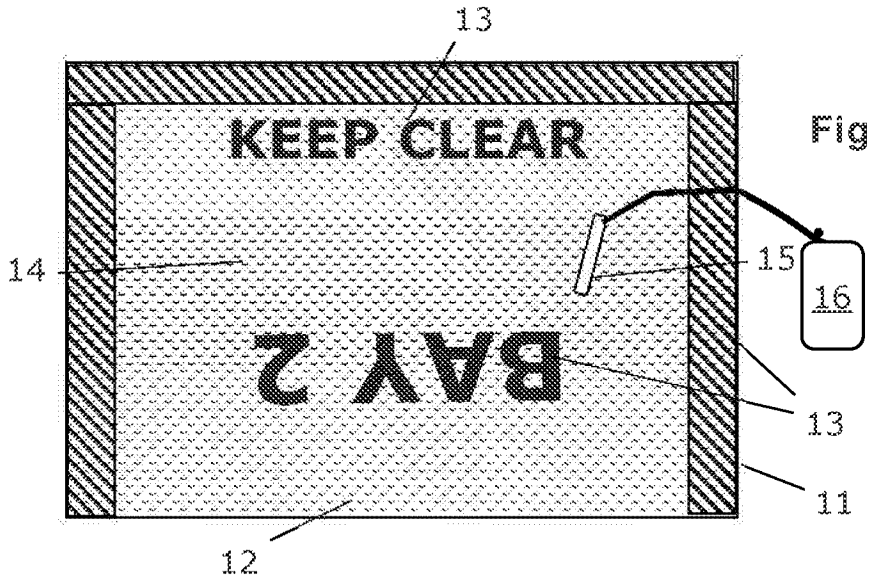

Fig 4

Safety Surfaces

This invention relates to safety surfaces.

The use of chequer plate (or tread plate) for flooring, particularly steps, is widespread in industrial and commercial premises. Chequer plate is an aluminium or mild steel plate with a raised pattern that appears to be configured to afford grip. However, wet or greasy chequer plate can be very slippery. Moreover, being a bare metal surface, it can reflect incident sunlight and artificial light. It is sometimes yellow-painted over, but heavy traffic - work boots, fork lift trucks and so forth - rapidly wears paint away.

A particularly dangerous situation is the loading bay dock leveller, universally of chequer plate, on which fork lift trucks have to manoeuvre in a small space and under heavy load on an incline, often in the wet.

Anti-slip surfacing is known comprising plastic sheet which is used for school playgrounds and other ground markings. The sheet is bonded to a cleaned and primed, flat concrete or asphalt surface using gas jets which fuse the plastic to the surface. While still soft from the heat, a grit, which might comprise glass bead, flint or aluminium oxide, is scattered on the surface to sink in, but not completely, giving a good and durable anti-slip effect.

On account of the raised pattern of chequer plate, this surfacing has never been considered suitable for it.

However, it is now found that plastic sheet can be effectively bonded to chequer plate such that the raised pattern persists in the bonded plastic sheet, giving an enhanced anti-slip protection.

The invention comprises a method for applying a durable non-slip surface to chequer plate having a surface pattern projecting to a height h comprising applying plastic sheet of thickness d, where d is not less than $h/2$ and not greater than $2h$, heating the sheet to soften it whereby it conforms to the surface pattern and bonds to the chequer plate, and applying grit to the plastic while still soft from the bonding operation.

GB2483750 discloses the application of gritted plastic surface coatings to steps e.g. in stadiums and the incorporation of promotional and other signage therein using contrasting appliqués incorporated within a matrix so as to leave no unlevel edges from which delamination could proceed.

Such technique can be used when applying plastic anti-slip coating to chequer plate. Particularly on dock levellers, safety edging and other warning indicia, as well as bay numbering, can be included. The incorporation of signage as appliqués in a matrix leaves

no upstanding edges that might give rise to a trip hazard or provide an edge from which delamination can proceed.

The relief pattern on the surface coating gives enhanced anti-slip protection due to the reduced contact area, and hence increased contact pressure, as compared to a flat surface, yet the coating wears well and maintains its visibility over extended periods.

The invention also comprises chequer plate flooring having a surface pattern projecting to a height *h* comprising a gritted, durable non-slip surface of heat-bonded plastic sheet of thickness *d*, where *d* is not less than *h*/2 and not greater than 2*h*.

A method for applying a surface to chequer plate and chequer plate flooring according to the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a face-on view of chequer plate:

Figure 2 is a section through the chequer plate of Figure 1, to a larger scale;

Figure 3 is a view of a small area of chequer plate with a plastic anti-slip coating; and

Figure 4 is a plan view of a dock leveller chequer plate surface.

The drawings illustrate a method for applying a durable non-slip surface to chequer plate 11 having a surface pattern projecting to a height *h* comprising applying plastic sheet 12 of thickness *d*, where *d* is not less than *h*/2 and not greater than 2*h*, heating the sheet 12 to soften it whereby it conforms to the surface pattern and bonds to the chequer plate 11, and applying grit to the still-soft plastic while still soft from the bonding operation. The height *h* is usually two or three millimetres. Plastic sheet is commercially available in 2, 3 or 4 mm thicknesses.

GB2483750 discloses the application of gritted plastic surface coatings to steps e.g. in stadiums and the incorporation of promotional and other signage therein using contrasting appliqués incorporated within a matrix. Such coatings, on flat stair treads, are, of course, flat on top.

Such technique can, it is now found, be used when applying plastic anti-slip coating to chequer plate. Particularly on dock levellers, safety edging and other warning indicia, as well as bay numbering, can be included. The incorporation of signage as appliqués in a matrix leaves no upstanding edges, even, surprisingly, when a join coincides with a raised area of the surface pattern of the chequer plate, that might give rise to a trip hazard or provide an edge from which delamination can proceed.

On the dock leveller chequer plate cover of Figure 4, signage appliqués 13 of thermoplastic sheet are laid into a cut out matrix 14 and all are bonded to each other and

direct to the top of the chequer plate 11 by means of a hot gas jet 15 fed from a gas bottle 15. Grit is spread over the surface while still soft from the heating step so as to sink partially into the plastic and constitute the principal anti-slip component. The pattern of the chequer plate echoed in the plastic covering appears at least not to detract from the anti-slip properties of the gritted coating, possibly affording greater grip to fork lift tyres, and promises to resist wear, even by spinning truck tyres, to give a reasonable service life. And, while the plastic is firmly bonded to the metal chequer plate, it can be readily removed for replacement.

Claims:

1 A method for applying a durable non-slip surface to chequer plate having a surface pattern projecting to a height *h* comprising applying plastic sheet of thickness *d*, where *d* is not less than *h*/2 and not greater than 2*h*, heating the sheet to soften it whereby it conforms to the surface pattern and bonds to the chequer plate, and applying grit to the plastic while still soft from the bonding operation.

2 A method according to claim 1, in which promotional or other signage is incorporated using contrasting appliqués incorporated within a matrix so as to leave no unlevel edges from which delamination could proceed.

3 A method according to claim 1 or claim 2, used on chequer plate dock levellers, including signage comprising promotional signage, safety edging or other warning indicia, and/or bay numbering.

4 Chequer plate flooring having a surface pattern projecting to a height *h* comprising a gritted, durable non-slip surface of heat-bonded plastic sheet of thickness *d*, where *d* is not less than *h*/2 and not greater than 2*h*.

5 Chequer plate flooring according to claim 4, in which promotional or other signage is incorporated as contrasting appliqués incorporated within a matrix with no unlevel edges from which delamination could proceed.

6 Chequer plate flooring according to claim 4 or claim 5, comprising a step.

7 Chequer plate flooring according to claim 4 or claim 5, comprising a loading bay platform.