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(54) **MODULE FOR CONSTRUCTING ROAD MARKINGS AND/OR ANTI-SKID CROSSINGS**

(57) The invention relates to a module for constructing road markings and/or anti-skid crossings, which can be used in particular for zebra crossings (11), curbs and sidewalks. Said module consists of a block of porcelain material (1), the upper surface of which has grooves that

establish anti-skid ridges, such that the nature of the porcelain material gives the blocks a color that contrasts with the color of the road in which it is inserted; the road markings therefore do not need painting or repainting owing to deterioration.

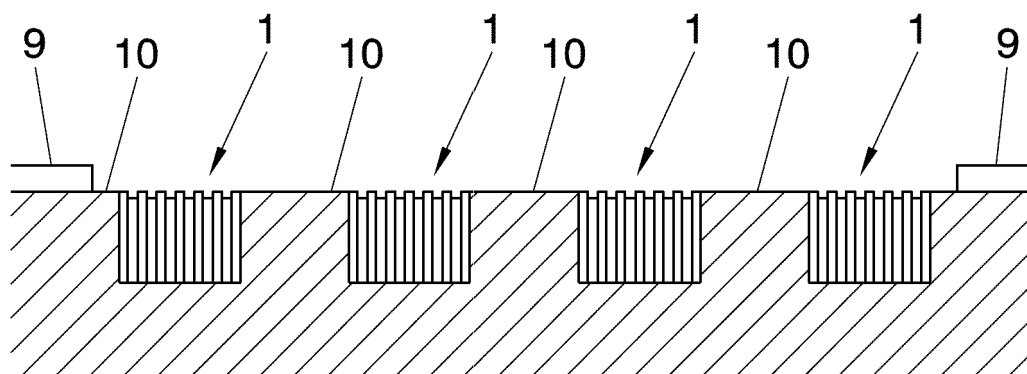


FIG. 4

Description

OBJECT OF THE INVENTION

[0001] The present invention, as expressed in the statement of this specification, relates to a module for the construction of road markings and/or anti-skid crossings, being an object of the invention to provide modules made of porcelain material through which horizontal road markings such as zebra crossings may be constructed; being able to also build with those modules walking surfaces such as sidewalks. A purpose of the invention consists in that the road markings provided by the same do not require maintenance, being unnecessary their painting and periodic repainting, since the nature of the porcelain material forming these modules of the invention enable permanent colors able to contrast by themselves and on a continuous basis with the color of the road on which the marking is applied. In addition, and also due to the own characteristics of the porcelain material of the module, surfaces with anti-skid capacity far superior to that conventionally provided may be provided.

[0002] Another purpose of the invention is to provide an additional commercial output to surplus pieces of porcelain material from the construction sector, thus helping the manufacturers of ceramic tiles during periods in which there is little demand for these tiles for construction.

BACKGROUND OF THE INVENTION

[0003] The horizontal road markings such as zebra crossings, direction indication arrows, separating lines and others that are conventionally created through application of white, yellow or other colors paintings are known, said paintings having anti-skid and light refractory properties.

[0004] These conventional markings have drawbacks relating to the fact that the deterioration of the painted surfaces is very high due to the continuous passage of vehicles, forcing periodic repainting with the consequent expenses and inconvenience to pedestrians and occupants of vehicles.

[0005] We do not have knowledge of any module for constructing road markings in the current state of the art which is formed by a block of porcelain material such that the own porcelain material provides the anti-skid and color contrast features required for the road sign, in the way that the module of the present invention does.

DESCRIPTION OF THE INVENTION

[0006] To achieve the objectives and avoid the drawbacks referred to in previous paragraphs, the invention consists of a module for the construction of road markings and/or anti-skid crossings, for particular application, inter alia, in the construction of zebra crossings, curbs and sidewalks.

[0007] According to the invention, the module of the

same consists of a block of porcelain material the upper surface of which has grooves that establish anti-skid ridges, and such that the nature of the porcelain material gives the blocks a color that contrasts with the color of the road in which it is inserted, providing the corresponding marking without the need for painting or repainting owing to temporary deterioration.

[0008] In a preferred embodiment of the invention, the aforementioned block of porcelain material consists of a plurality of flat ceramic pieces joined in adjacency by their main faces through an adhesive; such that the upper edges of those pieces and gaps established between them determine the anti-skid ridges of the aforementioned grooves of the upper surface of the block.

[0009] In other embodiments of the invention, the aforementioned block of porcelain material is a one-piece block on the upper surface of which the anti-skid ridges have been made.

[0010] In any of the embodiments of the invention, the aforementioned upper surface of the module may include in addition to the aforementioned grooves drainage channels to facilitate the drainage of water and improve the anti-skid character of said surface.

[0011] On the other hand, according to the preferred embodiments of the invention, the grooves that establish the anti-skid ridges are established through elongated gaps on the upper surface of the block, establishing the height of said gaps between 0.5 and 3 mm; while their width is established between 5 and 12 mm.

[0012] According to various embodiments of the invention, the aforementioned blocks of porcelain material are arranged in the corresponding construction in longitudinal connection, such that the set of grooves of the upper surface of each block is oriented in the same direction as the set of grooves of each remaining block; or in parallel connection, such that the set of grooves of the upper surface of each block is parallel to the set of grooves of each remaining block.

[0013] Moreover, according to various embodiments of the invention wherein the module is formed by the cited one-piece block, four configurations have been established consisting of: a tile for zebra crossings with a length and width exceeding its height and without drainage channels; a tile for sidewalks with similar dimensions to those of the tile for zebra crossings and provided with drainage channels; a block for straight curbs provided with rounding on the upper edge closest to the road and provided with a dihedral cut on the upper edge opposite to the one mentioned before for flushing with the sidewalk; and a block for curved outline curbs that is different from the previous block for straight curbs in that it has a curvature in its longitudinal direction.

[0014] Moreover, in any embodiment, the referred porcelain material can be provided with additives that increase the degree of refraction of light.

[0015] With the structure described, the module for construction of the invention has advantages relative to that it allows the construction of road markings that do

not require painting or repainting, such that they generate much less hassle for pedestrians and occupants of vehicles and fewer maintenance expenses to the entities that are responsible for it. Other advantageous features of the invention with respect to the state of the art consist in that the surfaces provided by the module of the invention have a far superior anti-skid character than that of the conventional road signs, providing also the advantage that the invention enables an additional output for surplus ceramic pieces in the construction sector.

[0016] Next, in order to facilitate a better understanding of this specification and forming an integral part of the same are accompanied figures in which the object of the invention has been represented with illustrative character and without limitation.

BRIEF DESCRIPTION OF THE FIGURES

[0017]

Figure 1.- It shows a perspective view of a module for construction of various markings and/or anti-skid crossings carried out according to a first embodiment of the invention.

Figure 2.- It shows an enlarged detail of the module of the previous figure 1 in which are best appreciated some of its characteristics.

Figure 3.- It shows a perspective view of a detail of a module analogous to the one of the previous figures but including an additional feature consisting of a drainage channel.

Figure 4.- It shows a profile and sectioned schematic view of an application of the module of the previous figures for the construction of a road marking consisting of a zebra crossing.

Figures 5 and 6.- They show respectively two plant views that show longitudinal and parallel configurations to display two possibilities of connection in the modules of the previous figures.

Figures 7 a 10.- They show respective perspective views of four variants of a second embodiment of the module for constructing road markings and/or anti-skid crossings, according to the present invention.

Figure 11.- It shows a perspective view of an application of the invention for the construction of a road and a curb, using modules as those shown in the previous figures 8 and 9.

DESCRIPTION OF AT LEAST ONE EXAMPLE OF EMBODIMENT OF THE INVENTION

[0018] Below is a description of two examples of the invention alluding to the references of the figures.

[0019] Thus, the first example of the invention, shown in figures 1 to 6, consists of a block of porcelain material 1 the upper surface of which 3 has grooves that establish anti-skid ridges 6 as it can be seen in figures 1 and 2,

such that the nature of the porcelain material gives the blocks a color 1 that contrasts with respect to the road 10 in which it is inserted without requiring painting or repainting owing to temporary deterioration, such as it is shown in figure 4, where the application of the block 1 to the construction of a road sign 11 consisting of a zebra crossing has been represented.

[0020] Said block 1 is formed by a plurality of flat ceramic pieces 5 joined in adjacency by their main faces through an adhesive 2, as shown in figures 1 to 3, and such that the upper edges of those pieces 5 and the gaps among the same determine anti-skid ridges 6 on the upper surface 3 of the block 1.

[0021] In addition, the aforementioned surface 3 of the block 1 may include drainage channels 4, such as it is shown in figure 3, to facilitate the drainage of water and improve the anti-skid character of the surface 3.

[0022] In this first example of the invention the grooves that establish the anti-skid ridges 6 on the block 1 are established through elongated gaps on the upper surface 3 of the block 1, having a height 7 between 0.5 and 3 mm, while the width 8 is established between 5 and 12 mm; with preferential values of 1 mm for the height 7 and of 10 mm for the width 8, as shown in figure 3.

[0023] The blocks 1 can be connected in series to each other in longitudinal connection 12 or in parallel connection 13, such as it is shown in figures 5 and 6 respectively, such that in the longitudinal connection 12 the set of grooves of the upper surface 3 of each block is oriented in the same direction as the set of grooves of each remaining block, while in the parallel connection 13 the set of grooves of the upper surface 3 of each block is parallel to the set of grooves of each remaining block.

[0024] For a road sign 11, such as a zebra crossing between two sidewalks 9 as the one shown in figure 4, both configurations 12 and 13 can be put into practice, and you can choose any of them also in other circumstances in terms of the horizontal direction to which you want to give greater degree of anti-skid capacity.

[0025] The second example of the invention, shown in figures 7 to 11, is analogous in all to the previous one, with the exception that the adhesive 2 is not used for forming the block, such that all the block 1A, 1B, 1C, 1D is a compact block of porcelain material in which the anti-skid ridges of its upper surface are made jointly to the carrying out of the block of porcelain material.

[0026] Obviously, in this second example the top surfaces of the blocks can also include the drainage channels 4, as shown in block 1B of figure 8.

[0027] Four variants have been envisaged for this second embodiment of the module of the invention, shown respectively in figures 7 to 10, consisting of:

- Tile for zebra crossings 1A with a length and width exceeding its height and without drainage channels 4, such as the one shown in figure 7.
- Tile for sidewalks 1B with similar dimensions to those of the previous tile for zebra crossings 1A but

provided with drainage channels 4, as the one shown in figure 8.

- Block for straight curbs 1C provided with rounding on the upper edge closest to the road and provided with a dihedral cut on the upper edge opposite to the one mentioned before for flushing with the sidewalk, such as the one shown in figure 9.
- Block for curved outline curbs 1D analogous to the previous block for straight curbs 1C but with the difference that it is given a curvature in its longitudinal direction, such as the block shown in figure 10.

[0028] Figure 11 shows an application of two of the previous pieces, specifically of the tile for sidewalks 1 B and the block for straight curbs 1C, with which is built a sidewalk curb 14 and corresponding pavement, such as it is shown in the aforementioned figure 11.

Claims

1. Module for constructing road markings and/or anti-skid crossings, for particular application, inter alia, in the construction of zebra crossings (11), curbs (14) and sidewalks (9); **characterized in that** it consists of a block of porcelain material (1, 1A, 1B, 1C, 1D) the upper surface of which (3) has grooves that establish anti-skid ridges (6); and such that the nature of the porcelain material gives the blocks a color that contrasts with the color of the road (10) in which it is inserted, providing the corresponding marking without the need for painting or repainting owing to temporary deterioration.
2. Module for constructing road markings and/or anti-skid crossings, according to claim 1, **characterized in that** said block of porcelain material (1) consists of a plurality of flat ceramic pieces (5) joined in adjacency by their main faces through an adhesive (2); such that the upper edges of those pieces (5) and gaps established between them determine the anti-skid ridges (6) of the aforementioned grooves of the upper surface (3) of the block (1).
3. Module for constructing road markings and/or anti-skid crossings, according to claim 1, **characterized in that** said block of porcelain material (1A, 1B, 1C, 1D) is a one-piece block on the upper surface of which (3) the anti-skid ridges (6) have been made.
4. Module for constructing road markings and/or anti-skid crossings, according to any one of the previous claims, **characterized in that** said upper surface (3) includes, in addition to the aforementioned grooves, drainage channels (4) to facilitate the drainage of water and improve the anti-skid character of said surface (3).
5. Module for constructing road markings and/or anti-skid crossings, according to any one of the previous claims, **characterized in that** the grooves that establish the anti-skid ridges (6) are established through elongated gaps on the upper surface (3) of the block, establishing the height (7) of said gaps between 0.5 and 3 mm; while their width (8) is established between 5 and 12 mm.
6. Module for constructing road markings and/or anti-skid crossings, according to any one of the previous claims, **characterized in that** said blocks of porcelain material are arranged in the corresponding construction, in longitudinal connection (12), such that the set of grooves of the upper surface (3) of each block is oriented in the same direction as the set of grooves of each remaining block; or in parallel connection (13), such that the set of grooves of the upper surface (3) of each block is parallel to the set of grooves of each remaining block.
7. Module for constructing road markings and/or anti-skid crossings, according to any one of claims 3 to 6, **characterized in that** said one-piece block is configured as: a tile for zebra crossings (1A) with a length and width exceeding its height and without drainage channels (4); a tile for sidewalks (1B) with similar dimensions to those of the tile for zebra crossings (1A) and provided with drainage channels (4); a block for straight curbs (1C) provided with rounding on the upper edge closest to the road and provided with a dihedral cut on the upper edge opposite to the previously mentioned edge for flushing with the sidewalk; and a block for curved outline curbs (1D) that is different from the previous block for straight curbs (1C) **in that** it has a curvature in its longitudinal direction.
8. Module for constructing road markings and/or anti-skid crossings, according to any one of the previous claims, **characterized in that** said porcelain material has additives, with respect to the conventional porcelain, that increase the degree of refraction of light of said material.

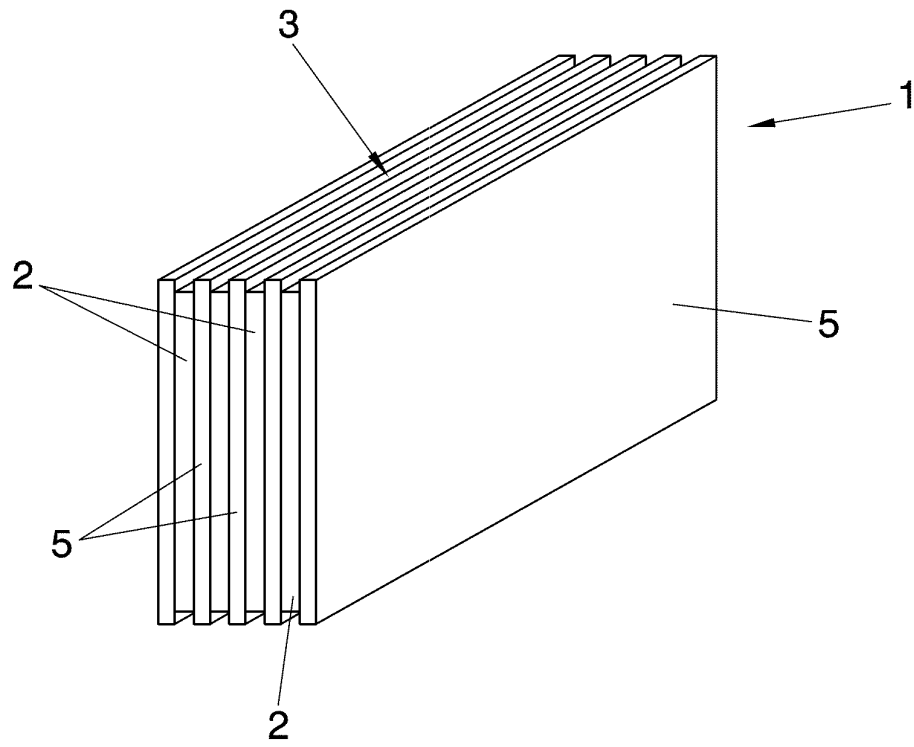


FIG. 1

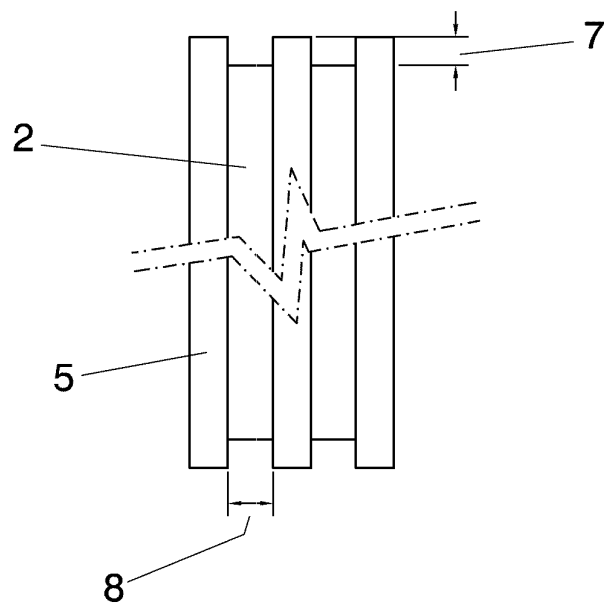


FIG. 2

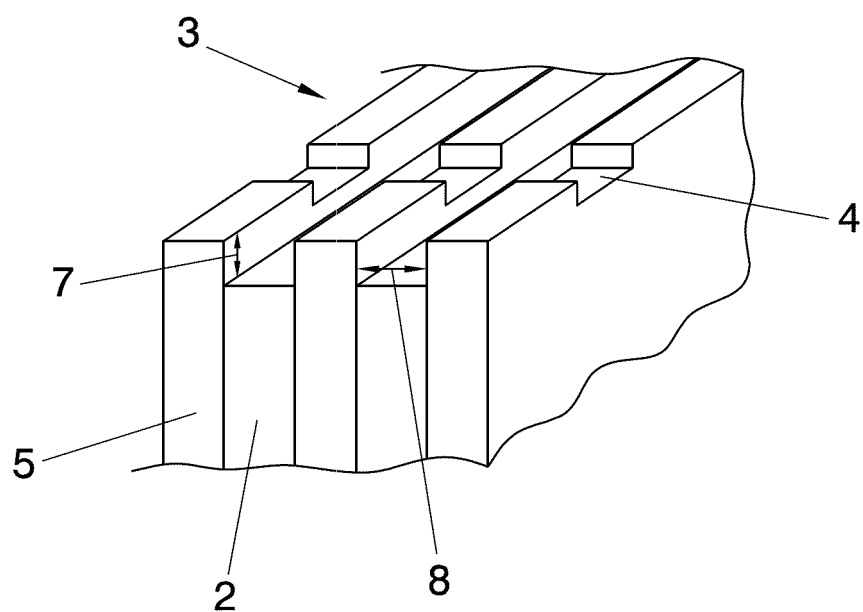


FIG. 3

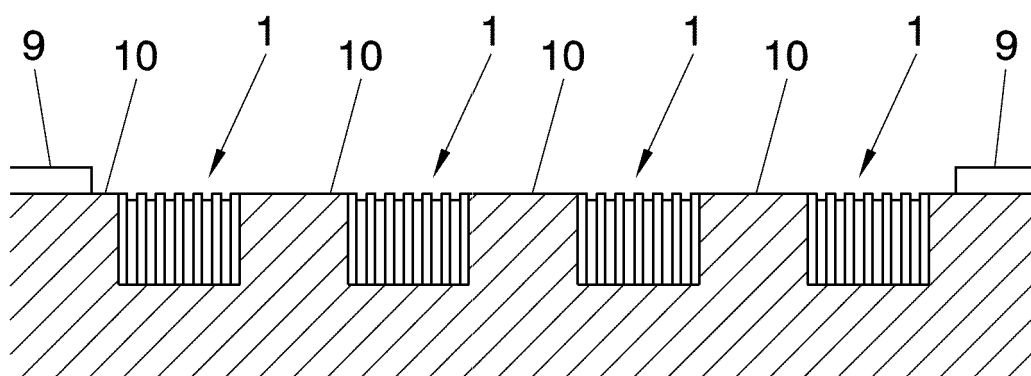


FIG. 4

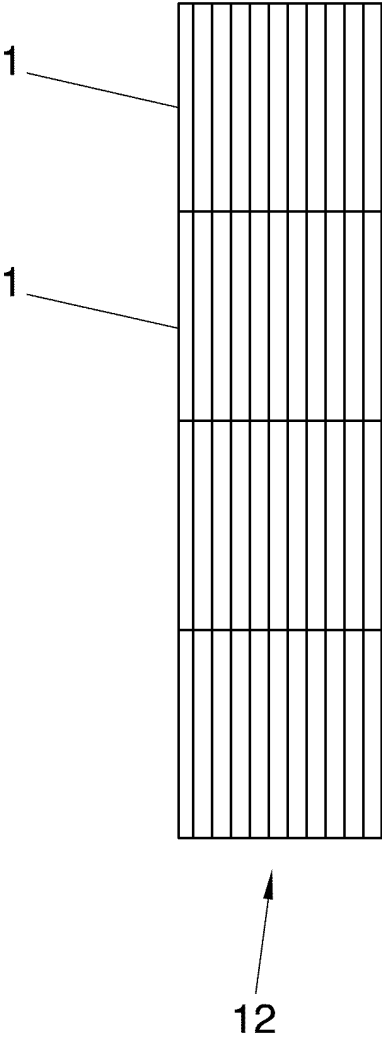


FIG. 5

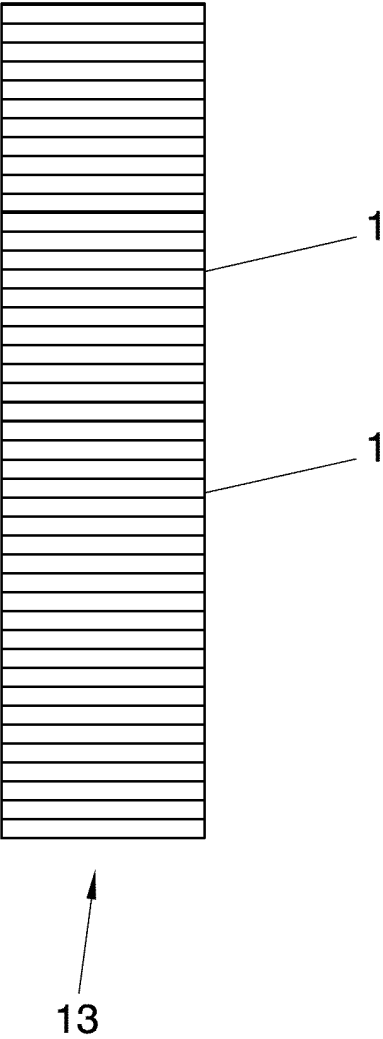


FIG. 6

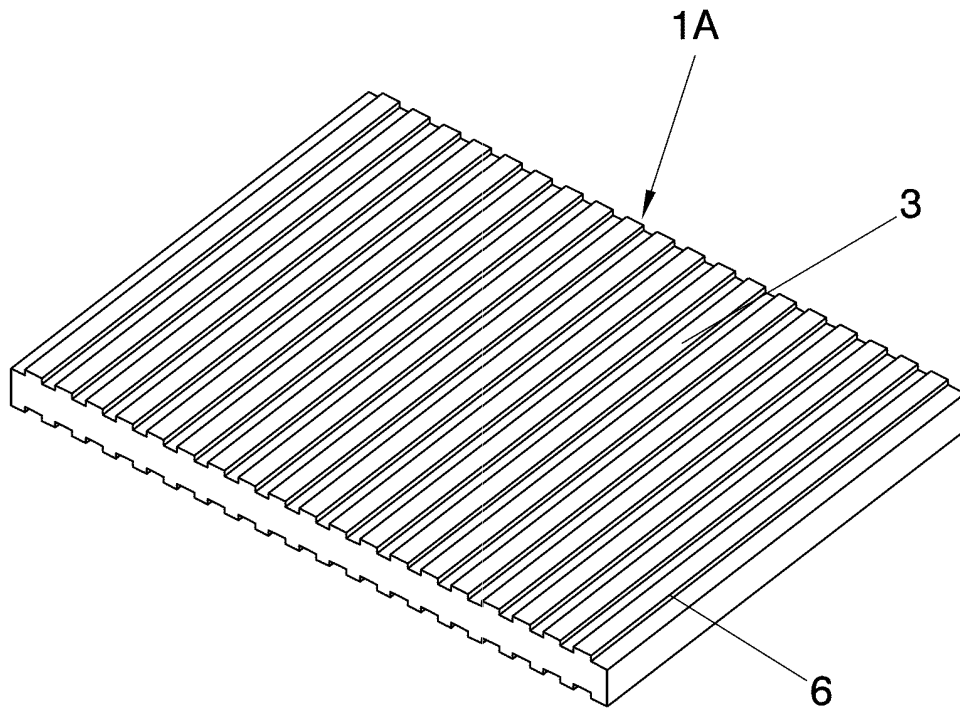


FIG. 7

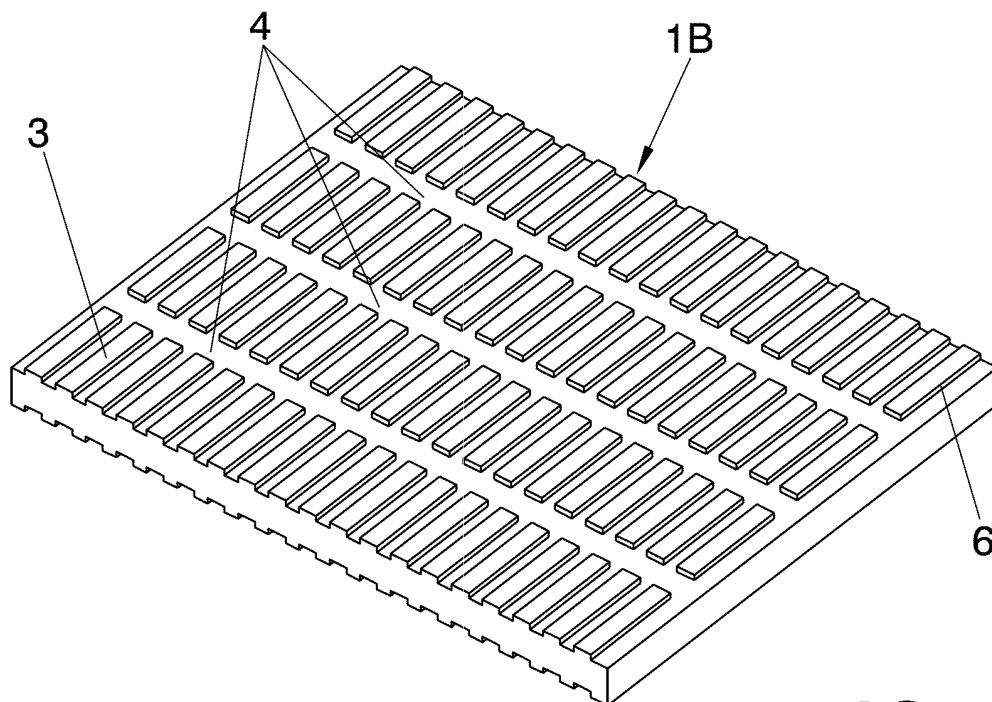


FIG. 8

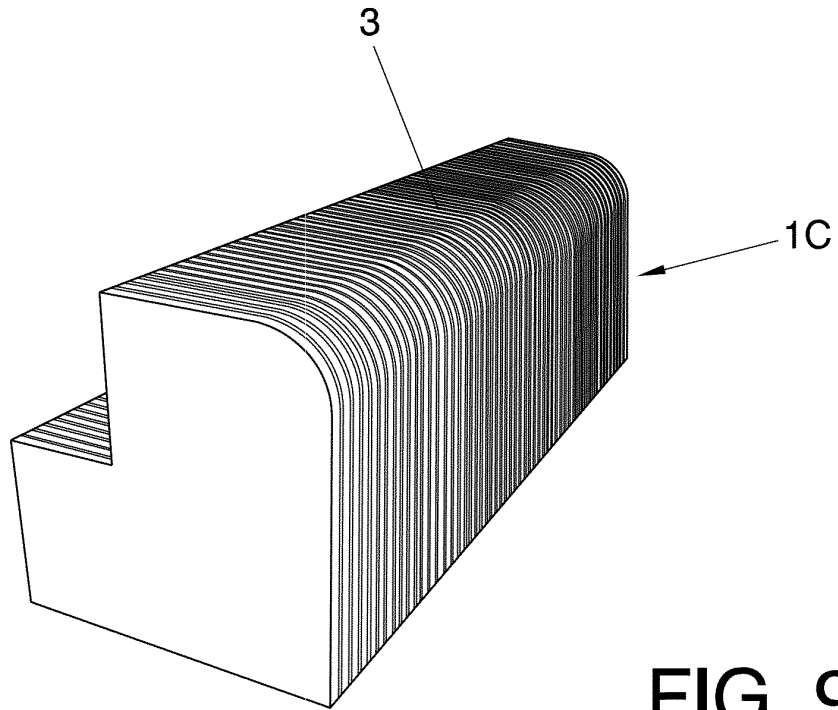


FIG. 9

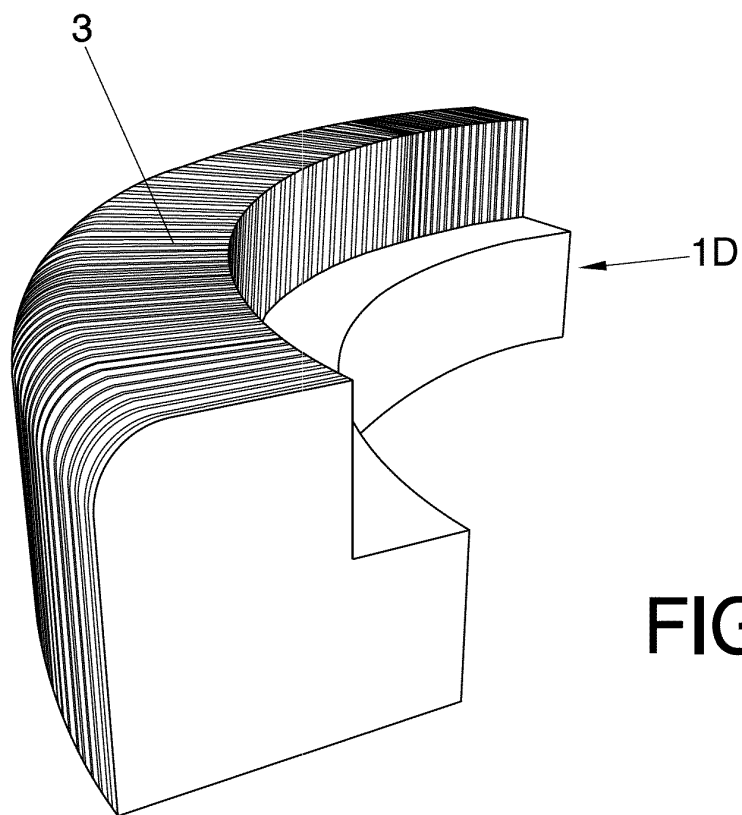


FIG. 10

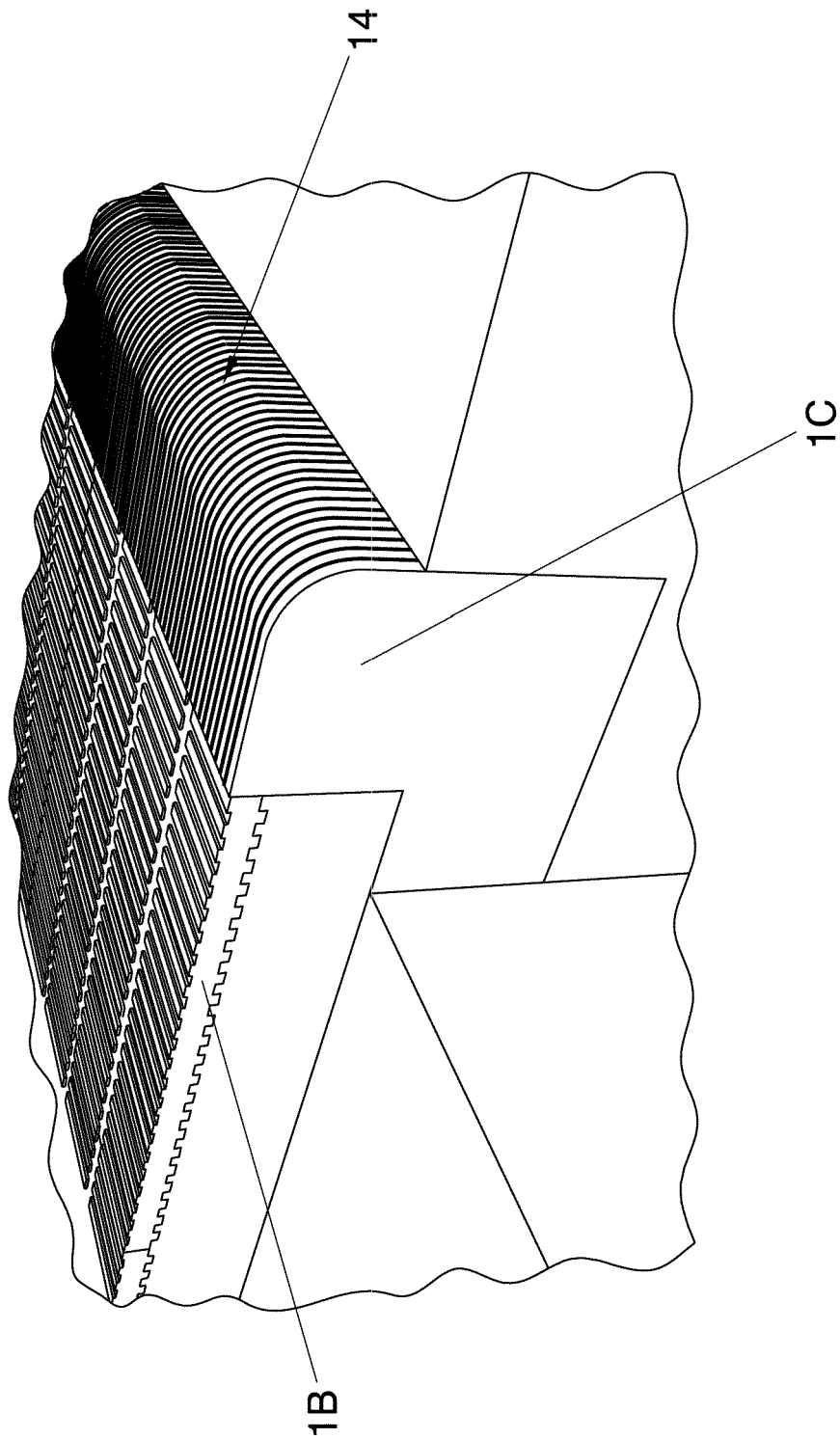


FIG. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2011/070283

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)
E01C, E01F

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)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y		4-6
Y	EP 1854920 A2 (FLORIM CERAMICHE S P A SOCIETA) 14/11/2007, paragraphs[24 - 25]; figures.	4
Y	US 6705797 B1 (WADA SHOHEI) 16/03/2004, column 4, lines 16 - 36; figures.	5,6
A	GB 2134147 A (FORLIVESI CERAMICHE) 08/08/1984, lines 50 - 77; figures.	1,3-8
A	FR 2906550 A1 (DELATTRE MICHEL) 04/04/2008, the whole document.	1,3-7

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance.	
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"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2011/070283

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CLASSIFICATION OF SUBJECT MATTER

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