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(54) **GRID FOR COVERING AN OVERFLOW DUCT OF A SWIMMING POOL, AND METHOD FOR THE MANUFACTURE THEREOF**

GITTER ZUM ABDECKEN EINES ÜBERLAUFKANALS EINES SCHWIMMBECKENS UND
VERFAHREN ZUR HERSTELLUNG DAVON

GRILLE DE RECOUVREMENT D'UN CONDUIT DE TROP-PLEIN D'UNE PISCINE ET SON
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Description

[0001] The present invention relates to a grid for covering an overflow duct of a swimming pool of the kind defined in claim 1.

[0002] A grid of that kind is disclosed in DE 89 12 497 U and further grids are known from DE 20 2008 010194 U, WO 95/20085 A1, FR 2 372 292 A1, WO 01/89786 A2 and WO 82/04090 A1.

[0003] Grids for covering the overflow ducts of swimming pools are made mainly from plastic material. Particularly widespread are grids with a rigid configuration for straight-sided swimming pools, as well as flexible-slat grids which are designed to allow their use also for covering overflow ducts with curvilinear progression.

[0004] Covering grids made of plastic, however, have a relatively low-quality appearance.

[0005] For high-quality swimming pools, grids for covering the overflow duct which are made of a natural or synthetic, composite, stone material have been proposed. These grids have a rigid configuration and, in order to cover curvilinear sections of overflow ducts, it is necessary to provide grid portions with specific configurations which, in the case of synthetic stone materials, include the preparation of special moulds.

[0006] This solution is extremely complex and costly.

[0007] One object of the present invention is to propose a covering grid which is able to overcome the aforementioned drawbacks of grids according to the prior art.

[0008] This object, along with other objects, is achieved according to the invention by means of a covering grid the main features of which are defined in claim 1.

[0009] The covering grids according to the invention may be made from a wide range of materials, colours and finishes. These grids may be provided with associated spillway rims and flooring with corresponding characteristics, resulting in innovative aesthetic effects.

[0010] A covering grid according to the present invention also offers the advantage of being able to be cut in an interspace between tread elements, so as to shorten its length by one or more intervals corresponding to the width of a tread element, in particular at the ends of one side of a swimming pool, the length of which is not equal to a whole multiple of the length of a grid.

[0011] The present invention likewise relates to a structure for covering an overflow duct comprising a grid having the aforementioned characteristics, as defined in the attached Claim 6, and to a method for manufacturing such a covering grid, the main characteristic features of this method being defined in the accompanying Claim 7.

[0012] Further characteristic features and advantages of the invention will become clear from the following description provided purely by way of a non-limiting example, with reference to the accompanying drawings in which:

- Figure 1 is a partial cross-sectional view of an over-

flow duct of a swimming pool with spillway rim, provided with a covering grid designed in accordance with the present invention;

- Figure 2 is a perspective view of the covering grid according to Figure 1;
- Figure 3 is a top plan view of the grid according to the preceding figures; and
- Figure 4 is a front view of a spillway rim which can be associated with a covering grid according to the present invention.

[0013] Figure 1 shows a cross-sectional view of part of a swimming pool P, comprising a basin A, bounded by side walls B, and a bottom wall (not shown).

[0014] Figure 1 shows in particular an edge portion of the pool P with which an overflow duct D, shown in schematic form, is associated. This overflow duct D may be made in one of various manners known per se, for example in the manner described and illustrated in European patent EP 1 148 184 B1.

[0015] The overflow duct D has two facing, vertical, side walls C and a bottom wall E.

[0016] Two horizontal shoulders F, G are defined at the top of the vertical walls C of the duct D, on which shoulders a covering grid, according to the present invention, denoted overall by 1, rests with its opposite ends.

[0017] A spillway rim S, which will be described more fully below, is conveniently mounted on the shoulder F, adjacent to the grid 1.

[0018] With reference in particular to Figures 2 and 3, in the manner illustrated, a grid 1 for covering the overflow duct D comprises an array of tread elements 2 with an elongated shape.

[0019] These tread elements 2 are conveniently made of a moulded or cast composite material, in particular a synthetic stone material, and are arranged coplanar, aligned and mutually spaced along an alignment direction indicated by X-X in Figures 2 and 3.

[0020] Conveniently, but not necessarily, the longitudinal direction of the single tread elements 2 is essentially perpendicular to their direction of alignment X-X.

[0021] In the embodiment shown by way of example each tread element 2 has the form of a slab with an at least approximately parallelepiped shape and has, on the upper side, a plurality of transverse grooves 2a, between which treadable projections 2b are defined.

[0022] The grooves 2a are preferably aligned with each other along the aforementioned direction of alignment X-X.

[0023] The tread elements 2 are fixed to a flexible interconnection member 3, which extends along said direction of alignment X-X.

[0024] Preferably the interconnection member 3 consists of a rectilinear steel rod, in particular made of spring steel, or plastic or composite material and is incorporated in the tread elements 2 during their moulding process, as will be described more fully below.

[0025] Interspaces 4 are defined between pairs of ad-

jacent tread elements 2, said interspaces having a width which is preferably smaller than the width of the tread elements.

[0026] The arrangement overall is such that the ends of the tread elements 2 which extend on a same side with respect to the interconnection member 3 can be moved towards and away from one another, such that the array of these tread elements is capable of assuming an at least partially curved configuration in its plane of lie, corresponding to the plane of the drawing in Figure 3.

[0027] Owing to this characteristic feature, the grid 1 may be used for covering both straight sections and winding sections of the overflow duct D.

[0028] In other words, the portions of the interconnection element 3 which extend between two adjacent tread elements 2 are able to function as "hinges", preferably of the resilient type.

[0029] Preferably, the interconnection element 3 extends through the tread elements 2, in their intermediate portion, opposite one of the projections 2b. A grid 1 according to the present invention may be manufactured in the manner described below.

[0030] A composite material suitable for casting in a mould is firstly provided. This material may be, for example, a synthetic stone material made using natural stone, such as a marble or granite, in powder or granular form, mixed with a synthetic resin, such as a polyester resin.

[0031] The composite material may moreover comprise substances in powder or ground form which are not necessarily inorganic, for example substances obtained from wood.

[0032] Then a mould having a plurality of adjacent seats, each with a shape corresponding to the desired shape of the tread elements, is provided, said seats being coplanar and aligned and mutually spaced along a direction of alignment which forms an angle with respect to the longitudinal direction of said seats.

[0033] Then the flexible interconnection member 3 is inserted through these seats, along said direction of alignment.

[0034] An amount of the aforementioned composite material is then cast inside the seats of the mould so as to form therein respective tread elements in which the interconnection member is at least partially incorporated.

[0035] The cast material is then allowed to harden and extraction of the grid from the mould may then be performed.

[0036] Figure 4 shows a front view of a portion of the spillway rim S which can be conveniently mounted on the edge of the swimming pool P together with the covering grids 1 according to the invention.

[0037] In the embodiment shown in Figures 1 and 4, the spillway rim portion S comprises a plurality of blocks 5 which are conveniently made by means of moulding using a composite material such as that used to manufacture the grid 1, or a different material.

[0038] The blocks 5 are arranged coplanar and longitudinally aligned and mutually spaced along an alignment

direction indicated by Y-Y in Figure 4.

[0039] Said blocks 5 are fixed to a flexible interconnection member 6, similar to the interconnection member 3 of the tread elements 2 of the grid 1.

[0040] In the embodiment shown each block 5 has a form essentially similar to that of a prism with a trapezium-like cross section, having an upper surface 5a slightly inclined downwards towards the basin A (Figure 1) and rounded, adjacent, upper edges 5b, 5c.

[0041] An interspace 7, the width of which on average corresponds to the width of the interspaces 4 defined between the tread elements 2 of a grid 1, is defined between adjacent blocks 5.

[0042] Conveniently, although not necessarily, in the spillway rim S the interval J (Figure 4) formed by a block 5 and an associated interspace 7 corresponds to the average extension, in the direction X-X, of a set of two tread elements 2 and two interspaces 4, as indicated in Figure 3.

[0043] With reference to Figure 1, the bottom side 5d of the blocks 5 conveniently is provided with a longitudinal groove 8 having a shape complementing that of a projection H of a profiled part K mounted on the edge of the basin A.

[0044] This solution facilitates greatly the operation of laying in position the spillway rim S.

[0045] By means of special profiling of the groove 8 in the blocks 5 and/or of the projection H of the profiled part K the height of the spillway rim relative to the covering grids 1 may be varied.

[0046] The spillway rim S may be easily manufactured using a method similar to that described above in connection with the covering grid 1.

[0047] Obviously, without altering the principle of the invention, the embodiments and the constructional details may be greatly varied with respect to that described and illustrated purely by way of a non-limiting example, without thereby departing from the scope of the invention as defined in the accompanying claims.

Claims

1. Grid (1) for covering an overflow duct (D) of a swimming pool (P), comprising an array of tread elements (2) with an elongated shape, which are made from a composite moulded or cast material, in particular a synthetic stone material, and are arranged co-planar, aligned and mutually spaced along a direction of alignment (X-X) forming an angle with respect to their longitudinal direction and which are fixed to at least one interconnection member (3) with an elongated shape, which extends along said direction of alignment (X-X), said interconnection member (3) being flexible such that the ends of at least some of the tread elements (2) which extend on a same side with respect to the

interconnection member (3) can be moved towards or away from one another, so that said array of tread elements (2) is capable of assuming an at least partially curved configuration in the plane in which said tread elements (2) lie;

the grid being **characterised in that** said at least one interconnection member (3) extends through an intermediate portion of the tread elements (2), in which it is partially incorporated during moulding of the composite material with which said tread elements (2) are formed.

2. Grid according to Claim 1, wherein said interconnection member (3) is resiliently flexible.

3. Grid according to Claim 2, wherein said interconnection member (3) is a rectilinear rod made of steel, in particular spring steel.

4. Grid according to any one of the preceding claims, wherein each tread element (2) has the shape of an at least approximately parallelepiped slab, having on one side a plurality of transverse grooves (2a) between which treadable projections (2b) are defined; the grooves (2a) of the tread elements (2) being preferably aligned with each other along the aforementioned direction of alignment (X-X).

5. Grid according to Claim 4, wherein said interconnection member (3) extends through said tread elements (2), in a portion thereof which forms one of said projections (2b).

6. Structure for covering an overflow duct (D) of a swimming pool (P) comprising
a grid (1) according to one or more of the preceding claims, and
a spillway rim (S) comprising a plurality of blocks (5) arranged aligned and mutually spaced along a predetermined direction of alignment and fixed to at least one further flexible interconnection member (6) with an elongated shape, which extends along said direction of alignment of the blocks (5).

7. Method for manufacturing a grid (1) for covering an overflow duct (D) of a swimming pool (P) according to one of Claims 1 to 5, comprising the steps of:

- providing a composite material suitable for casting in a mould;
- providing a mould having a plurality of adjacent seats, each with a shape corresponding to that of a tread element (2), said seats being coplanar and aligned and mutually spaced along a direction of alignment which forms an angle with respect to their longitudinal direction;
- inserting a flexible interconnection member (3) of elongated shape through said seats, along

said direction of alignment; and

- casting an amount of said composite material inside the seats of said mould so as to form therein respective tread elements (2) in which said interconnection member (3) is partially incorporated.

8. Method for manufacturing a spillway rim (S) for use in association with a covering grid (1) according to one or more of Claims 1 to 5, for forming a covering structure according to Claim 6, comprising the steps of:

- providing a composite material suitable for casting in a mould;
- providing a mould having a plurality of adjacent seats, each with a shape corresponding to that of the aforementioned blocks (5), said seats being aligned and mutually spaced along a rectilinear direction;
- inserting a flexible interconnection member (6) of elongated shape through said seats, along said direction of alignment; and
- casting an amount of said composite material inside the seats of said mould, such as to form therein respective blocks (5) in which said interconnection member (6) is partially incorporated.

Patentansprüche

1. Gitter (1) zum Abdecken eines Überlaufkanals (D) eines Schwimmbeckens (P), umfassend eine Gruppierung von Trittelementen (2) mit einer länglichen Form, die aus einem geformten oder gegossenen Verbundmaterial, insbesondere aus einem Kunststeinmaterial, hergestellt sind und die koplanar angeordnet und entlang einer Richtung der Ausrichtung (X-X) ausgerichtet und voneinander beabstandet sind und einen Winkel bezüglich ihrer Längsrichtung bilden, und die an mindestens einem Verbindungselement (3) mit einer länglichen Form angebracht sind, das sich entlang der Richtung der Ausrichtung (X-X) erstreckt, wobei das Verbindungselement (3) derart flexibel ist, dass die Enden von mindestens einigen der Trittelemente (2), die sich auf der gleichen Seite bezüglich des Verbindungselements (3) erstrecken, aufeinander zu oder weg bewegt werden können, so dass die Gruppierung von Trittelementen (2) eine mindestens teilweise gekrümmte Konfiguration in der Ebene annehmen kann, in der die Trittelemente (2) vorliegen; wobei das Gitter **dadurch gekennzeichnet ist, dass** sich das mindestens eine Verbindungselement (3) durch einen Zwischenabschnitt der Trittelemente (2) erstreckt, in den es teilweise während des Formens des Verbundmaterials, aus dem die Trittelemente

mente (2) ausgebildet sind, einbezogen worden ist.

2. Gitter nach Anspruch 1, bei dem das Verbindungselement (3) elastisch flexibel ist.

3. Gitter nach Anspruch 2, bei dem das Verbindungselement (3) ein gerader Stab ist, der aus Stahl, insbesondere Federstahl, hergestellt ist.

4. Gitter nach einem der vorhergehenden Ansprüche, bei dem jedes Trittelement (2) die Form einer mindestens etwa parallelepipedförmigen Platte aufweist, die auf einer Seite eine Mehrzahl von Querrillen (2a) aufweist, zwischen denen betretbare Vorwölbungen (2b) festgelegt sind; wobei die Rillen (2a) der Trittelemente (2) vorzugsweise entlang der vorstehend genannten Richtung der Ausrichtung (X-X) ausgerichtet sind.

5. Gitter nach Anspruch 4, bei dem sich das Verbindungselement (3) durch die Trittelemente (2) in einem Abschnitt davon erstreckt, der eine der Vorwölbungen (2b) bildet.

6. Struktur zum Abdecken eines Überlaufkanals (D) eines Schwimmbeckens (P), umfassend ein Gitter (1) gemäß einem oder mehreren der vorhergehenden Ansprüche und einen Überlaufrinnenrand (S), der eine Mehrzahl von Blöcken (5) umfasst, die entlang einer vorgegebenen Ausrichtungsrichtung ausgerichtet und voneinander beabstandet sind und an mindestens einem weiteren flexiblen Verbindungselement (6) mit einer länglichen Form angebracht sind, das sich entlang der Richtung der Ausrichtung der Blöcke (5) erstreckt.

7. Verfahren zur Herstellung eines Gitters (1) zum Abdecken eines Überlaufkanals (D) eines Schwimmbeckens (P) nach einem der Ansprüche 1 bis 5, umfassend die Schritte:

- Bereitstellen eines Verbundmaterials, das zum Gießen in ein Formwerkzeug geeignet ist;
- Bereitstellen eines Formwerkzeugs, das eine Mehrzahl von angrenzenden Mulden aufweist, die jeweils eine Form aufweisen, die derjenigen eines Trittelements (2) entspricht, wobei die Mulden koplanar und entlang einer Richtung der Ausrichtung ausgerichtet und voneinander beabstandet sind, so dass ein Winkel in Bezug auf deren Längsrichtung ausgebildet wird;
- Einsetzen eines flexiblen Verbindungselements (3) mit einer länglichen Form durch die Mulden entlang der Richtung der Ausrichtung; und
- Gießen einer Menge des Verbundmaterials in die Mulden des Formwerkzeugs, so dass darin jeweilige Trittelemente (2) gebildet werden, in

die das Verbindungselement (3) teilweise einbezogen ist.

8. Verfahren zur Herstellung eines Überlaufrinnenrands (S) zur Verwendung zusammen mit einem Abdeckgitter (1) nach einem der Ansprüche 1 bis 5 zur Bildung einer Abdeckungsstruktur nach Anspruch 6, umfassend die Schritte:

- Bereitstellen eines Verbundmaterials, das zum Gießen in ein Formwerkzeug geeignet ist;
- Bereitstellen eines Formwerkzeugs, das eine Mehrzahl von angrenzenden Mulden aufweist, die jeweils eine Form aufweisen, die derjenigen der vorstehend genannten Blöcke (5) entspricht, wobei die Mulden entlang einer geraden Richtung ausgerichtet und voneinander beabstandet sind;
- Einsetzen eines flexiblen Verbindungselements (6) mit einer länglichen Form durch die Mulden entlang der Richtung der Ausrichtung; und
- Gießen einer Menge des Verbundmaterials in die Mulden des Formwerkzeugs, so dass darin jeweilige Blöcke (5) gebildet werden, in die das Verbindungselement (6) teilweise einbezogen ist.

Revendications

1. Grille (1) de recouvrement d'un conduit de trop-plein (D) d'une piscine (P), comprenant un réseau d'éléments de marche (2) ayant une forme allongée, qui sont fabriqués à partir d'un matériau composite moulé ou coulé, en particulier un matériau de pierre synthétique, et sont agencés de manière coplanaire, alignés et espacés deux à deux le long d'une direction d'alignement (X-X) formant un angle par rapport à leur direction longitudinale et qui sont fixés à au moins un élément d'interconnexion (3) ayant une forme allongée, qui se prolonge le long de ladite direction d'alignement (X-X), ledit élément d'interconnexion (3) étant flexible de sorte que les extrémités d'au moins certains des éléments de marche (2) qui se prolongent du même côté par rapport à l'élément d'interconnexion (3) peuvent se rapprocher ou s'éloigner les uns des autres, de sorte que ledit réseau d'éléments de marche (2) est capable de prendre une configuration au moins partiellement incurvée dans le plan dans lequel lesdits éléments de marche (2) se trouvent ; la grille étant **caractérisée en ce que** ledit au moins un élément d'interconnexion (3) se prolonge à travers une partie intermédiaire des éléments de marche (2), dans laquelle il est partiellement incorporé lors du moulage du matériau composite avec lequel lesdits éléments de marche (2) sont formés.

2. Grille selon la revendication 1, dans laquelle ledit élément d'interconnexion (3) est flexible de manière élastique.
3. Grille selon la revendication 2, dans laquelle ledit élément d'interconnexion (3) est une tige rectiligne en acier, en particulier en acier à ressort. 5
4. Grille selon l'une quelconque des revendications précédentes, dans laquelle chaque élément de marche (2) a la forme d'une dalle au moins approximativement parallélépipédique, présentant sur une face une pluralité de rainures transversales (2a) entre lesquelles des saillies pouvant être foulées (2b) sont définies ; les rainures (2a) des éléments de marche (2) étant de préférence alignées les unes par rapport aux autres le long de la direction d'alignement (X-X) susmentionnée. 10 15
5. Grille selon la revendication 4, dans laquelle ledit élément d'interconnexion (3) se prolonge à travers lesdits éléments de marche (2), dans une partie de ceux-ci qui forme une desdites saillies (2b). 20
6. Structure de recouvrement d'un conduit de trop-plein (D) d'une piscine (P) comprenant une grille (1) selon une ou plusieurs des revendications précédentes, et un rebord déversoir (S) comprenant une pluralité de blocs (5) alignés et espacés deux à deux le long d'une direction prédéterminée d'alignement et fixés à au moins un élément d'interconnexion flexible (6) supplémentaire ayant une forme allongée, qui se prolonge le long de ladite direction d'alignement des blocs (5). 25 30 35
7. Procédé de fabrication d'une grille (1) de recouvrement d'un conduit de trop-plein (D) d'une piscine (P) selon l'une des revendications 1 à 5, comprenant les étapes suivantes : 40
- fourniture d'un matériau composite approprié pour être coulé dans un moule ;
 - fourniture d'un moule présentant une pluralité de sièges adjacents, chacun ayant une forme correspondant à celle d'un élément de marche (2), lesdits sièges étant coplanaires et alignés et espacés deux à deux le long d'une direction d'alignement qui forme un angle par rapport à leur direction longitudinale ; 45 50
 - insertion d'un élément d'interconnexion flexible (3) de forme allongée à travers lesdits sièges, le long de ladite direction d'alignement ; et
 - coulage d'une quantité dudit matériau composite à l'intérieur des sièges dudit moule afin de former dedans des éléments de marche (2) respectifs dans lesquels ledit élément d'interconnexion (3) est partiellement incorporé. 55
8. Procédé de fabrication d'un rebord déversoir (S) pour une utilisation en association avec une grille de recouvrement (1) selon une ou plusieurs des revendications 1 à 5, pour former une structure de recouvrement selon la revendication 6, comprenant les étapes suivantes :
- fourniture d'un matériau composite approprié pour être coulé dans un moule ;
 - fourniture d'un moule présentant une pluralité de sièges adjacents, chacun ayant une forme correspondant à celle des blocs (5) susmentionnés, lesdits sièges étant alignés et espacés deux à deux le long d'une direction rectiligne ;
 - insertion d'un élément d'interconnexion flexible (6) de forme allongée à travers lesdits sièges, le long de ladite direction d'alignement ; et
 - coulage d'une quantité dudit matériau composite à l'intérieur des sièges dudit moule, de manière à former dedans des blocs (5) respectifs dans lesquels ledit élément d'interconnexion (6) est partiellement incorporé.

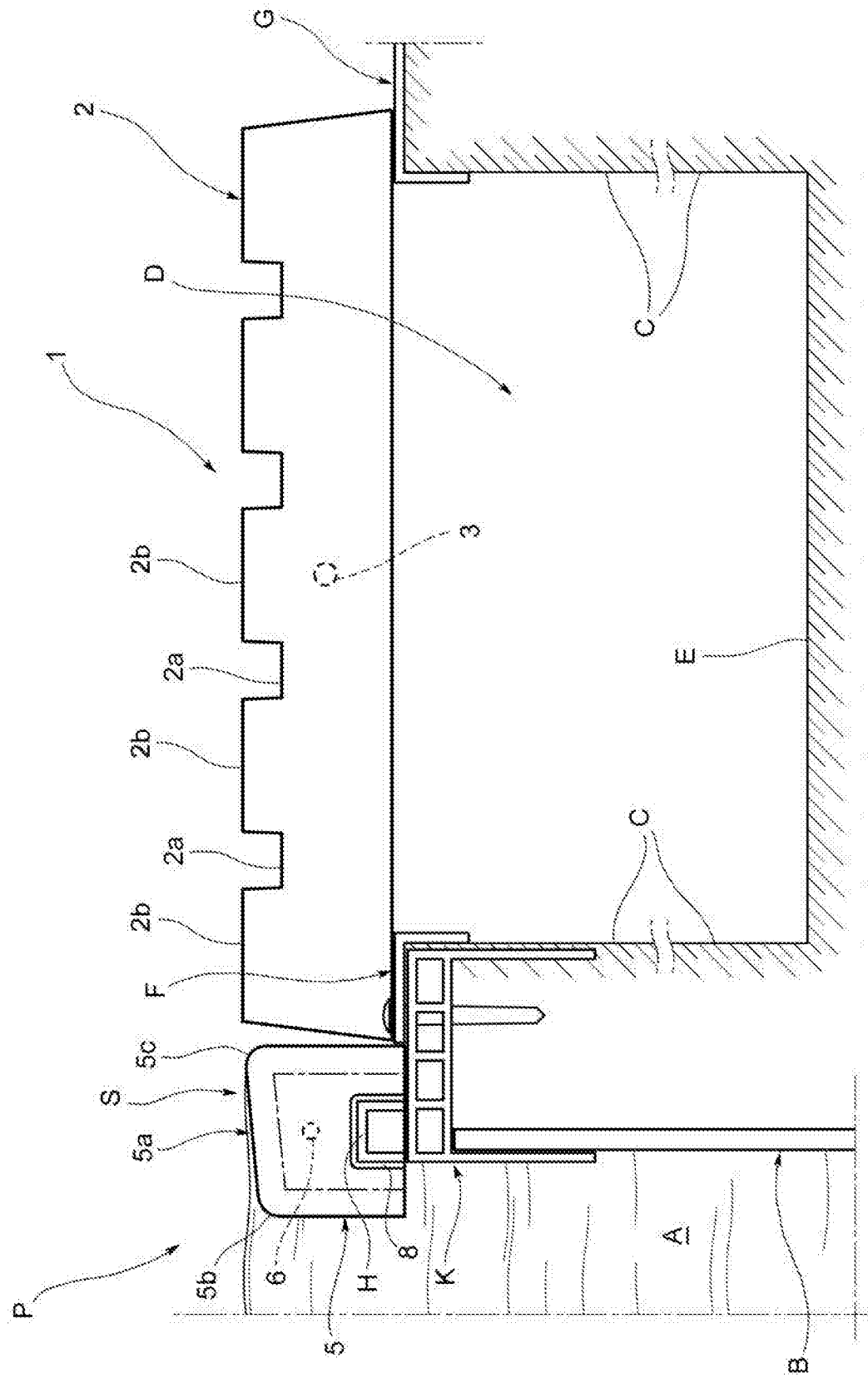


FIG. 1

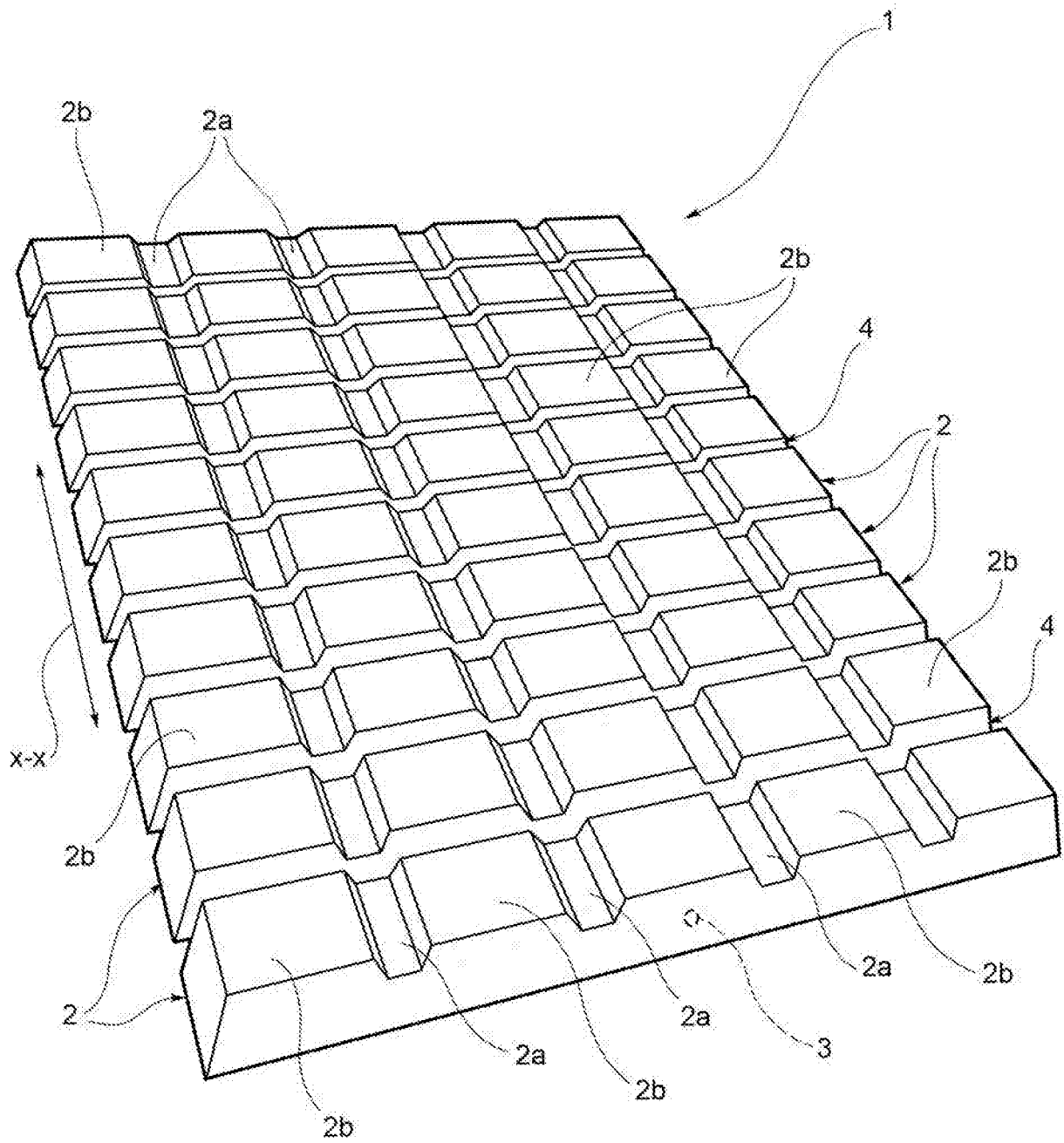


FIG. 2

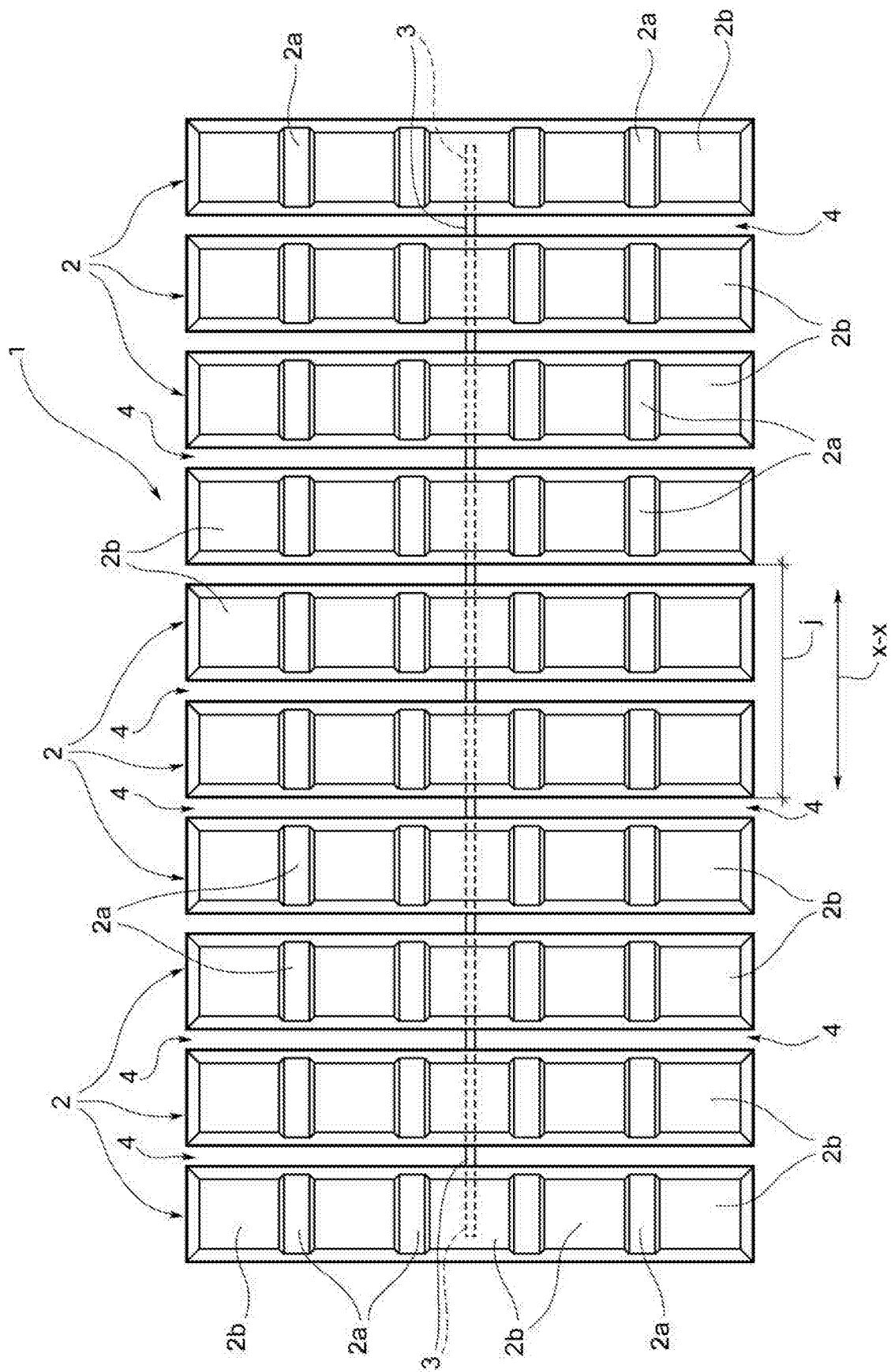


FIG. 3

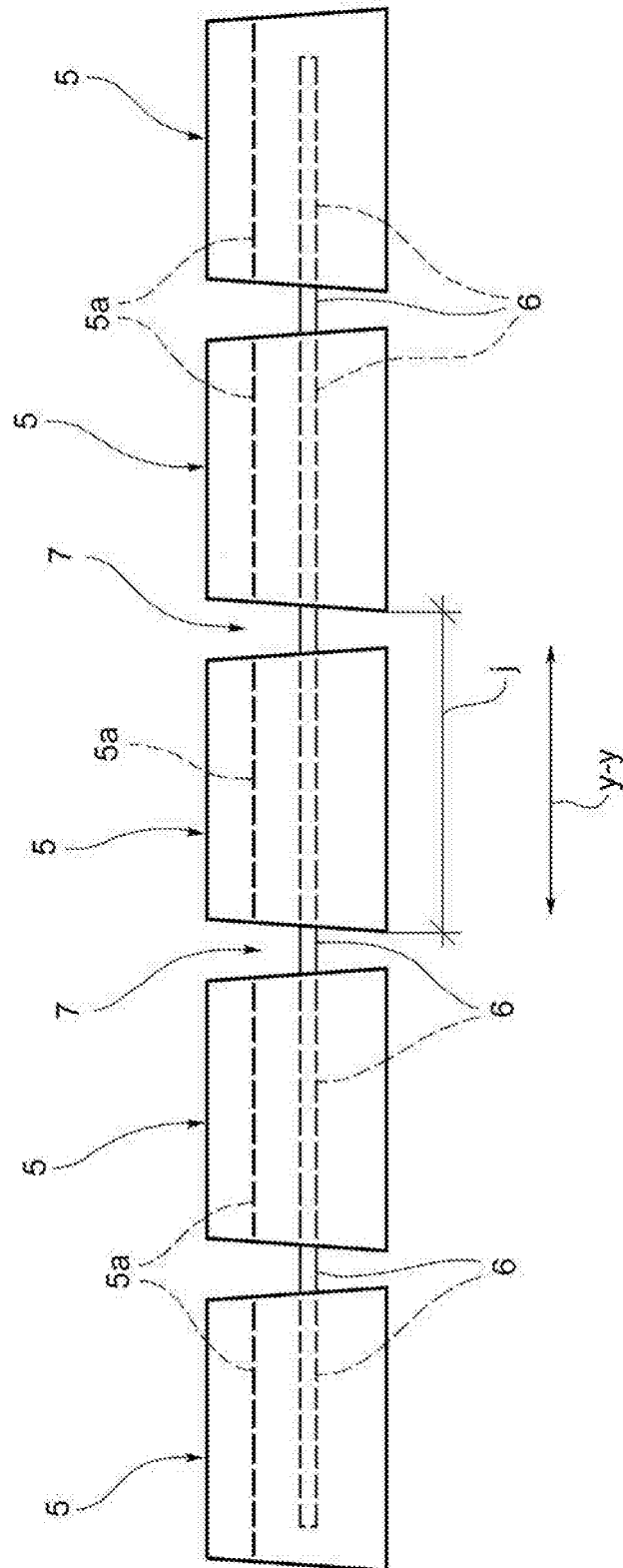


FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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