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(54) **GRATING WITH MESH STRUCTURE**

GITTER MIT MASCHENSTRUKTUR

RÉSEAU À STRUCTURE MAILLÉE

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Description

Area of the invention

[0001] The present invention relates to a grating with mesh structure, where there is a pattern of openings at the top side of the grating, which allow water to drain away from the top side, where the grating is made from sheet metal, where the openings in the top side of the grating are formed by pressing the sheet metal so that walls are formed between the openings and have the shape of barrel arches, where the top of the arches forms the top of the grating and where the sides of the arches form the side walls of the adjacent openings.

Background of the invention

[0002] The present invention is motivated by the desire to produce mesh gratings with a high degree of air passage in relation to perforated gratings, where air passage is typically 15 to 25%. It is further motivated by the desire to produce a grating with a high strength/weight ratio.

[0003] Furthermore, the objective is to produce a grating that is particularly useful in environments with high demands for cleaning and slip resistance, as is the case in the food industry. There are known mesh gratings made of intersecting slats. These mesh gratings therefore use several sub-components, and wherever there are joints between the slats intersecting in the grating structure, there is a risk of accumulation of food products and bacterial growth.

[0004] Furthermore, conventional mesh gratings, which are made of slats, are labour-intensive, since they require the handling of several sub-components.

[0005] Perforated or safety gratings are known as well. Perforated gratings are made by punching openings in the sheet metal. The punching of openings in such gratings may also lead to crevices and cracks, where food can accumulate and bacteria can grow and are therefore not suitable for use in the food industry.

[0006] Furthermore, known perforated gratings generally have an air passage of only 15 to 25%. This means that such perforated gratings are unsuitable for use in floor structures in mezzanine floors. The use of perforated gratings with such a small air passage in turn requires the use of separate sprinklers underneath the floor, as the air/water passage water will be insufficient.

[0007] An example of a grating, as described in the introduction, is known from US 1 117 568, DE 2423305 A1, EP 0288885 A1 and GB 2190114 A. These show gratings with elongated parallel openings which are formed by pressing and punching of the sheet metal in order to shape the walls in the form of barrel arches in between openings. US 1 117 568 provides the basis for the two-part form of claim 1.

Purpose of the invention

[0008] The purpose of the present invention is to describe a grating, which has a mesh structure and where the disadvantages mentioned above have been overcome. According to one aspect, the purpose is to describe a grating, which offers a particularly good strength/weight ratio and which does not require the use of more bars, such as cross bars, support bars and edge bars, which are commonly used in mesh gratings. According to an additional aspect, the purpose of the invention is to describe a grating, which is simple to manufacture with conventional manufacturing technology, and where it is possible to use the manufacturing advantages of perforated gratings.

Description of the invention

[0009] According to the present invention, this is achieved with a grating of the type mentioned above, which is characterised in that there are embossings formed at the top of the arches that extend over the top side of the grating.

[0010] A grating of this type will ensure that the formed thin arches provide great strength with limited use of material. The actual structure and the carrying capacity of the arches is particularly well-known in the construction industry, but the same advantages are offered in the production of gratings. Moreover, a grating that is made from intersecting thin arches provides great strength, as it can be produced in load-bearing sections that can provide support in directions perpendicular to each other, which is unique for gratings, where only one load-bearing direction is normally used.

[0011] The use of arches will result in a rounded top, where water will readily run off and down the sides of the side arches through the openings that are formed in the surface of the grating. Since the arches have a smooth transition, there will be no cracks or joints where there is a risk of accumulation of bacteria. The grating in accordance with the present invention may therefore be particularly suitable for use in areas subject to major cleaning requirements, such as, for example, in the food industry.

[0012] The barrel arches, which form the individual bars, form cross arches in the grating, where the side walls cross each other. The cross arches will contribute with strength as well as a smooth transition, without forming any crevices that lead to accumulation of bacteria.

[0013] The production of the side walls between the adjacent openings by means of pressing of part of the sheet metal is a simple process, which is known from the manufacture of perforated gratings. In other words, the grating can be produced from rolls of metal, steel, pregalvanised steel, aluminium or stainless steel, depending on the requirements placed on the grating. This can take place automatically, and it is possible to manufacture tools allowing the production of different mesh sizes, i.e. different dimensions for the openings in the grating.

[0014] Since the production method used will be pressing, the metal will be subject to cold forming. An inevitable consequence of such a cold forming process is strain hardening, which contributes to raising the strength of the grating.

[0015] The grating in accordance with the invention will therefore not only have the benefits of the strength provided by a barrel arch, but also the strength that is achieved in connection with strain hardening of the material during the manufacture of the grating.

[0016] You could say that the grating is produced by folding sheet metal for creating elements that correspond to the bars in a mesh grating. This makes it possible to achieve particularly high strength, since the folded material will have a higher strength/weight ratio than that of a corresponding side wall/bar that has been formed in a conventional way.

[0017] What is particularly advantageous about the invention is therefore that it produces a grating that only consists of one component rather than multiple components, where there are crevices between the various elements, with a risk of bacterial accumulation.

[0018] By folding material down for creating side walls/bars, it becomes possible to produce a grating with a large air/water passage than what is possible with conventional perforated gratings, without thereby having the disadvantages associated with a mesh grating, which are generally necessary for procuring a corresponding air/water passage.

[0019] According to a further embodiment, the grating is characterised in that the sides of the arches pass at an angle of between 0° and 20°.

[0020] The sides of the arches could generally pass more or less in parallel next to the lower part of the sides of the arches. However, it will also be possible for the sides of the arches after a curved top to have a mutual angle that may be up to about 20°.

[0021] The angle of the sides of the arches can contribute to different strengths in relation to air passage. Optimal air passage will be obtained if the sides of the arches are parallel, but it may also be possible to establish sufficient air/water passage through the grating even if the sides of the arches are made with a mutual angle that is greater than 0°.

[0022] According to a further embodiment, the grating is characterised in that the sheet metal has been punched in connection with the pressing.

[0023] If the sheet metal is punched in connection with the deformation that takes place during pressing, it is possible to govern the shape which will be assumed by the openings. This way it is possible to vary the shape of the formed side walls depending on desire and depending on the way of punching of one or more slots facilitating pressing. When making slots, it is only important to ensure that this does not lead to any sharp or pointed edges that form crevices where bacteria can accumulate.

[0024] Nevertheless, the pressing, regardless if carried out alone or accompanied by punching of the sheet metal, leads to openings in which the side walls form a single continuous side wall, which surrounds the opening and which is made without any joints.

[0025] According to a further embodiment, the grating is characterised in that there are embossings formed at the top of the arch that extend over the top side of the grating.

[0026] Gratings are often subject to requirements for slip resistance. It is therefore possible in connection with embossing to create upward embossings that extend over the top side of the grating. Such embossings will contribute to ensuring slip resistance.

[0027] According to a further embodiment, the grating is characterised in that such embossings constitute closed domed embossings.

[0028] If the embossings are closed domed embossings, a closed surface will be formed between the openings of the grating. The use of domed embossings leads to a rounded transition to the top of the arches, where such embossings are formed.

[0029] Other shapes may be employed as an alternative to domed embossings such as pyramidal embossings or embossings with a truncated cone shape.

[0030] According to a further embodiment, the grating is characterised in that there are openings at the top of the embossings.

[0031] An opening may be formed at the top of the embossings. This makes it possible to create a relatively sharp edge for the embossings in the peripheral area of the openings. This improves slip resistance. The formation of a sharp edge removes any risk of bacterial growth, since such a sharp edge directed upwards will not cause accumulation of bacteria.

[0032] According to a further embodiment, the grating is characterised in that the embossings are made using combined punching so that embossings form lugs directed upwards, which are preferably generally triangular.

[0033] To achieve better slip resistance, it is possible to punch slots in connection with the embossings so that the embossings appear as upward lugs. This is well-known in perforated gratings. Such lugs will preferably be triangular.

[0034] A rounding can be formed at the interface between adjacent lugs so as to reduce the risk of accumulation of bacteria.

[0035] According to a further embodiment, the grating is characterised in that the embossings are formed where the barrel arches cross and form cross arches.

[0036] As mentioned above, intersecting barrel arches form cross arches. Such cross arches are known to constitute a strong structure. The formation of cross arches will give the grating a load-bearing capacity in the directions perpendicular to each other and will therefore make it possible for it to be formed in load-bearing sections that provide support in a longitudinal and transverse direction.

[0037] According to a further embodiment, the grating is characterised in that the sheet metal comprises an

edge area that is bent downwards at an angle of roughly 90° for forming the frame side walls of the grating.

[0038] If the edge area that is used for the production of the grating comprises an edge area that surrounds the area that is furnished with openings, it is possible to bend this edge area downwards. This will result in the shaping of a structure, where the edge area bent downwards corresponds to the edge bars in a conventional grating. This will therefore result in higher strength for the grating, as the edge areas bent downwards will help furnish the grating with strength.

[0039] According to a further embodiment, the grating is characterised in that there are holes formed in the frame side walls for accommodating the connectors that keep together gratings placed side-by-side for forming flooring.

[0040] A grating in accordance with the invention can be used for various purposes, including for staircases, floor slabs, flooring or the like, where an open grating structure is required in a surface where people can walk and where there is a need for washing.

[0041] Since there are holes formed in the frame side walls, connectors, such as, for example, screwed joints, can be used for keeping together gratings that are laid side-by-side. This forms continuous flooring. The flooring will be a load-bearing structure for the sole reason that the grating itself will be a load-bearing structure. There will therefore be very limited need or no need at all for a support that goes across the flooring in a floor structure that is formed of several gratings laid side-by-side. The flooring can therefore only be supported at the outer edge area of the flooring, which is formed by a number of gratings that are laid side-by-side.

[0042] According to a further embodiment, the grating is characterised in that the grating has a mesh size of between 10x30 mm and 50x50 mm, for example, a mesh size of 33x33 mm.

[0043] There are beneficial mesh sizes. Mesh size means the length/width ratio of the openings formed in the grating.

[0044] It is possible to have mesh sizes that are smaller, just like it is also possible to have mesh sizes that are larger. Likewise, it is also possible to have mesh sizes with a different length/width ratio than those listed above.

[0045] According to a further embodiment, the grating is characterised in that openings account for 50% of the surface of the grating.

[0046] Earmarking 50% or more of the grating for openings results in a particularly advantageous structure for floor production. This reduces the demand for sprinklers, since there is no requirement for placing sprinklers underneath a floor that has an opening with air/water passage of 50% or more.

[0047] Because of the arched structure, water will easily penetrate through the gratings, which are used to form a floor.

[0048] According to a further embodiment, the grating is characterised in that the grating is made of steel.

[0049] Gratings can usually be made of steel. However, as mentioned before, it will also be possible to use other metals, such as aluminium. Steel can be used in various qualities that may be galvanised or non-galvanised, and it will also be possible to use stainless steel.

[0050] According to a further embodiment, the grating is characterised in that it is made using cold forming.

[0051] The use of cold forming for the production of the grating achieves strain hardening. This helps establish a high strength/weight ratio.

[0052] What the various embodiments of the present invention have in common is the advantage of being able to produce the grating of one component only. This component can be manufactured using known manufacturing equipment used for the production of perforated gratings, but where the advantages of mesh gratings are achieved.

[0053] In production, the grating can be produced using a single tool, which forms the openings, and a follow-up tool, where the edge area forms the frame side walls. This will be a production method that is already used in connection with perforated gratings, where the use of multiple tools in the manufacturing process is familiar, as well.

Description of drawings

[0054] The invention will subsequently be explained in greater detail with reference to the accompanying drawings, where

Fig. 1-5 display perspective views of various embodiments of a grating in accordance with the invention;
Fig. 6 displays a floor structure consisting of a combination of several gratings, as shown in Fig. 3;
Fig. 7 displays a detailed view of the grating displayed in Fig. 1;
Fig. 8-11 display various cross-sections of the grating displayed in Fig. 1;
Fig. 12 corresponds to Fig. 7 and displays an enlarged detail of the grating displayed in Fig. 2.
Fig. 13-16 correspond to Fig. 8-11 and display various cross-sections of the grating displayed in Fig. 2;
Fig. 17 corresponds to Fig. 7 and displays an enlarged detail of the grating displayed in Fig. 3;
Fig. 18-21 correspond to Fig. 8-11 and display various cross-sections of the grating displayed in Fig. 3;
Fig. 22 corresponds to Fig. 7 and displays an enlarged partial view of the grating displayed in Fig. 4; and
Fig. 23-26 correspond to Fig. 8-11 and display various cross-sections of the grating displayed in Fig. 4.

Detailed description of the invention

[0055] Identical or corresponding components will be referred to in the following sections with the same reference designation across various figures. A specific explanation of details will therefore not necessarily be given

in connection with each individual figure.

[0056] Fig. 1 shows a grating 1 that has a top side 2, where a series of openings 3 are formed, which are limited by walls 4. The grating 1 is made of sheet metal, which has frame side walls 5, which are formed in an edge area that surrounds the area, where the openings 3 have been established. Holes 6 are formed in the frame side walls 5 for connecting multiple adjacent gratings using connectors (not displayed) that can take the form of, for example, screw-nut connections.

[0057] Fig. 2 displays a picture of a grating 1' that corresponds to the grating displayed in Fig. 1. This grating has embossings 7 at the top side of the walls 4. The embossings 7 are made where the walls 7 cross each other.

[0058] The embossings 7 are made as closed domed embossings 7.

[0059] Fig. 3 displays an additional embodiment for a grating 1", which corresponds to the grating displayed in Fig. 1. This embodiment features embossings 7', which are formed where the walls 4 cross each other. The embossings 7' are made with openings 8 at the top of the embossing.

[0060] Fig. 4 displays a grating 1‴ that corresponds to the grating displayed in Fig. 1, but featuring embossings 7". The embossings 7" are formed by lugs 9, which form openings. The embossings 7" are also formed where the walls 4 cross each other.

[0061] Fig. 5 displays an alternative embodiment, where a grating 1⁗ is formed with openings 3 in the first part 10 of the top side 2 of the grating. Embossings 11 with lugs 12 are formed in the second part 10' of the top side of the grating. The embossings 11 and lugs 12 correspond to the embossings 7" and lugs 9 that are displayed in Fig. 4.

[0062] Fig. 6 displays a flooring 13 that is made of four gratings 1' laid side-by-side, as displayed in Fig. 2.

[0063] Fig. 7 shows an enlarged view, where the opening 3 is observed to be surrounded by four walls 4. Each of the walls 4 is formed as a barrel arch. Cross arches are formed in an area 14, where the side walls cross each other. The shape of the arches is clearly seen in the cross-sections displayed in Fig. 8-11. A side wall 4 here is observed to be formed with a cross-section with an arch that has a top 15 that forms the top 2 of the grating, and the sides 16 of the arches are directed downwards and form side walls for the adjacent openings 3. It can therefore be said that the wall 4 is made up of two side walls, each of which has been formed of the sides 16 of the arches.

[0064] The shape of the arches is clearly observed in the various cross-sections displayed in Fig. 8-10.

[0065] Fig. 11 displays a cross-section of a barrel arch, and the cross-section of the walls 4 can therefore not be seen.

[0066] The side walls 4 are observed to form a continuous wall that surrounds an opening 3, and there are smooth transitions at the arches. These smooth, curved transitions make it possible for water from the topside to easily flow through the openings 3.

[0067] Fig. 12 displays the embossings 7, which are also illustrated in Fig. 2. Fig. 12 illustrates how the embossings 7 are formed of closed domed embossings. The embossings 7 in this structure will generate slip resistance.

[0068] The embossings 7 are formed in the area 14, where the walls 4 cross each other and next to the top side 2 of the grating.

[0069] Fig. 13 shows various sectional views which, similar to sectional views 8-11, display how the walls 4 are formed of barrel arches that form cross arches wherever the walls 4 cross.

[0070] Fig. 17 displays a grating 1", including more clearly the embossings 7', where openings 8 are formed at the top. The openings 8 make possible an additional opening area in the formed grating and simultaneously provide slip resistance. The openings 8 can have an edge area 17, which is sharp-edged to improve slip resistance.

[0071] Similar to the sectional views above, Fig. 18-21 show how the walls 4 are shaped in the form of arches.

[0072] Fig. 22 displays the grating 1‴ with the embossings 7", which are illustrated in Fig. 4. Here it is observed more clearly how the embossings 7" are formed of four lugs 9.

[0073] The lugs 9 in the displayed shape are largely triangular, but have a rounded top. The lugs 9 will have edges 18, which are sharp-edged and which provide very secure slip resistance.

[0074] Similar to the previous sectional drawings, Fig. 23-26 also display how this grating is made with walls shaped like barrel arches.

Claims

1. A grating (1) with mesh structure, where there is a pattern of openings at a top side (2) of the grating (1), which allow water to drain away from the top side (2), where the grating (1) is made from sheet metal, where openings (3) in the top side (2) of the grating (3) are formed by pressing the sheet metal so that walls (4) are formed between the openings (3) and have the shape of barrel arches, where a top (15) of the arches forms the top (2) of the grating (1) and where sides (16) of the arches form the side walls (4) of the adjacent openings (3), and where the openings (3) are rectangular and the barrel arches form cross arches in the grating (2) where the side walls (4) cross each other,
   characterised in that there are embossings (7) formed at the top (15) of the arches that extend over the top side (2) of the grating (1).

2. A grating (1) according to claim 1 **characterised in that** the sides (16) of the arches have a mutual angle that is up to about 20°.

3. A grating (1) according to claim 1 or 2 **characterised in that** the embossings (7) are closed domed embossings (7).

4. A grating (1) according to claim 1 or 2 **characterised in that** there are openings (8) at a top of the embossings (7).

5. A grating (1) according to claim 1 or 2 **characterised in that** the embossings (7) are made using combined punching so that the embossings (7) form lugs directed upwards, which are preferably generally triangular.

6. A grating (1) according to claims 1-5 **characterised in that** the embossings (7) are formed where the barrel arches cross and form cross arches.

7. A grating (1) according to any of the preceding claims **characterised in that** the sheet metal comprises an edge area that is bent downwards at an angle of roughly 90° relative to the top side (2) of the grating (1) for forming frame side walls (5) of the grating (1).

8. A grating (1) according to claim 7 **characterised in that** there are holes formed in the frame side walls (5) for accommodating the connectors that keep together gratings (1) placed side-by-side for forming flooring.

9. A grating (1) according to any of the preceding claims **characterised in that** the grating (1) has a mesh size of between 10x30 mm and 50x50 mm, for example, a mesh size of 33x33 mm.

10. A grating (1) according to any of the preceding claims **characterised in that** openings (3) account for 50% of the surface of the grating.

11. A grating (1) according to any of the preceding claims **characterised in that** the grating (1) is made of steel.

12. A grating (1) according to any of the preceding claims **characterised in that** the grating (1) is produced by the process of cold forming.

Patentansprüche

1. Gitter (1) mit Maschenstruktur, bei dem ein Muster von Öffnungen an einer Oberseite (2) des Gitters (1) vorhanden ist, die es Wasser erlauben, von der Oberseite (2) weg abzufließen, wobei das Gitter (1) aus Blech hergestellt ist, wobei Öffnungen (3) in der Oberseite (2) des Gitters (3) durch Pressen des Blechs derart gebildet sind, dass Wände (4) zwischen den Öffnungen (3) gebildet sind und die Form von Tonnenbögen aufweisen, wobei eine Oberseite (15) der Bögen die Oberseite (2) des Gitters (1) bildet, und wobei Seiten (16) der Bögen die Seitenwände (4) der angrenzenden Öffnungen (3) bilden, und wobei die Öffnungen (3) rechteckig sind und die Tonnenbögen Kreuzbögen in dem Gitter (2) bilden, wobei die Seitenwände (4) einander kreuzen,
dadurch gekennzeichnet, dass an der Oberseite (15) der Wölbungen, Prägungen (7) gebildet sind, die sich über die Oberseite (2) des Gitters (1) erstrecken.

2. Gitter (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Seiten (16) der Bögen einen gegenseitigen Winkel aufweisen, der bis zu etwa 20° beträgt.

3. Gitter (1) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Prägungen (7) geschlossene Kuppelprägungen (7) sind.

4. Gitter (1) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** an einer Oberseite der Prägungen (7) Öffnungen (8) vorhanden sind.

5. Gitter (1) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Prägungen (7) durch kombiniertes Stanzen derart hergestellt sind, dass die Prägungen (7) Ansätze bilden, die nach oben gerichtet sind, die bevorzugt allgemein dreieckig sind.

6. Gitter (1) nach den Ansprüchen 1-5, **dadurch gekennzeichnet, dass** die Prägungen (7) dort ausgebildet sind, wo die Tonnenbögen einander kreuzen und Querbögen bilden.

7. Gitter (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** das Blech eine Randfläche umfasst, die mit einem Winkel von ungefähr 90° in Bezug auf die Oberseite (2) des Gitters (1) nach unten gebogen ist, um Rahmenseitenwände (5) des Gitters (1) zu bilden.

8. Sensor (1) nach Anspruch 7, **dadurch gekennzeichnet, dass** in den Rahmenseitenwänden (5) Löcher gebildet sind, um die Verbinder aufzunehmen, die Seite an Seite angeordnete Gitter (1) zusammenhalten, um einen Bodenbelag zu bilden.

9. Gitter (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gitter (1) eine Maschenweite zwischen 10 x 30 mm und 50 x 50 mm aufweist, beispielsweise eine Maschenweite von 33 x 33 mm.

10. Gitter (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** Öffnungen (3) 50 % der Oberfläche des Gitters ausmachen.

11. Gitter (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gitter (1) aus Stahl hergestellt ist.

12. Gitter (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gitter (1) durch den Kaltumformprozess hergestellt ist.

Revendications

1. Réseau (1) à structure maillée, où il existe un motif d'ouvertures au niveau d'un côté supérieur (2) du réseau (1), qui permettent à de l'eau de s'écouler depuis le côté supérieur (2), où le réseau (1) est constitué de tôle, où des ouvertures (3) dans le côté supérieur (2) du réseau (3) sont formées en pressant la tôle de sorte que des parois (4) sont formées entre les ouvertures (3) et ont la forme d'arcs en berceau, où un sommet (15) des arcs forme le sommet (2) du réseau (1) et où des côtés (16) des arcs forment les parois latérales (4) des ouvertures (3) adjacentes, et où les ouvertures (3) sont rectangulaires et les arcs en berceau forment des arcs transversaux dans le réseau (2) où les parois latérales (4) se croisent, **caractérisé en ce qu'**il existe des bossages (7) formés au niveau du sommet (15) des arcs qui s'étendent sur le côté supérieur (2) du réseau (1).

2. Réseau (1) selon la revendication 1, **caractérisé en ce que** les côtés (16) des arcs ont un angle mutuel qui va jusqu'à environ 20°.

3. Réseau (1) selon la revendication 1 ou 2, **caractérisé en ce que** les bossages (7) sont des bossages (7) bombés fermés.

4. Réseau (1) selon la revendication 1 ou 2, **caractérisé en ce qu'**il existe des ouvertures (8) au niveau d'un sommet des bossages (7).

5. Réseau (1) selon la revendication 1 ou 2, **caractérisé en ce que** les bossages (7) sont constitués par poinçonnage combiné de sorte que les bossages (7) forment des ergots dirigés vers le haut, qui sont de préférence généralement triangulaires.

6. Réseau (1) selon les revendications 1 à 5, **caractérisé en ce que** les bossages (7) sont formés où les arcs en berceau se croisent et forment des arcs transversaux.

7. Réseau (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la tôle comprend une zone de bordure qui est repliée vers le bas selon un angle d'environ 90° par rapport au côté supérieur (2) du réseau (1) pour former des parois latérales de cadre (5) du réseau (1).

8. Réseau (1) selon la revendication 7, **caractérisé en ce qu'**il existe des trous formés dans les parois latérales de cadre (5) pour loger les connecteurs qui maintiennent ensemble des réseaux (1) placés côte à côte pour former un plancher.

9. Réseau (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le réseau (1) a un maillage compris entre 10x30 mm et 50x50 mm, par exemple, un maillage de 33x33 mm.

10. Réseau (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** des ouvertures (3) représentent 50 % de la surface du réseau.

11. Réseau (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le réseau (1) est constitué d'acier.

12. Réseau (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le réseau (1) est produit par le procédé de formage à froid.

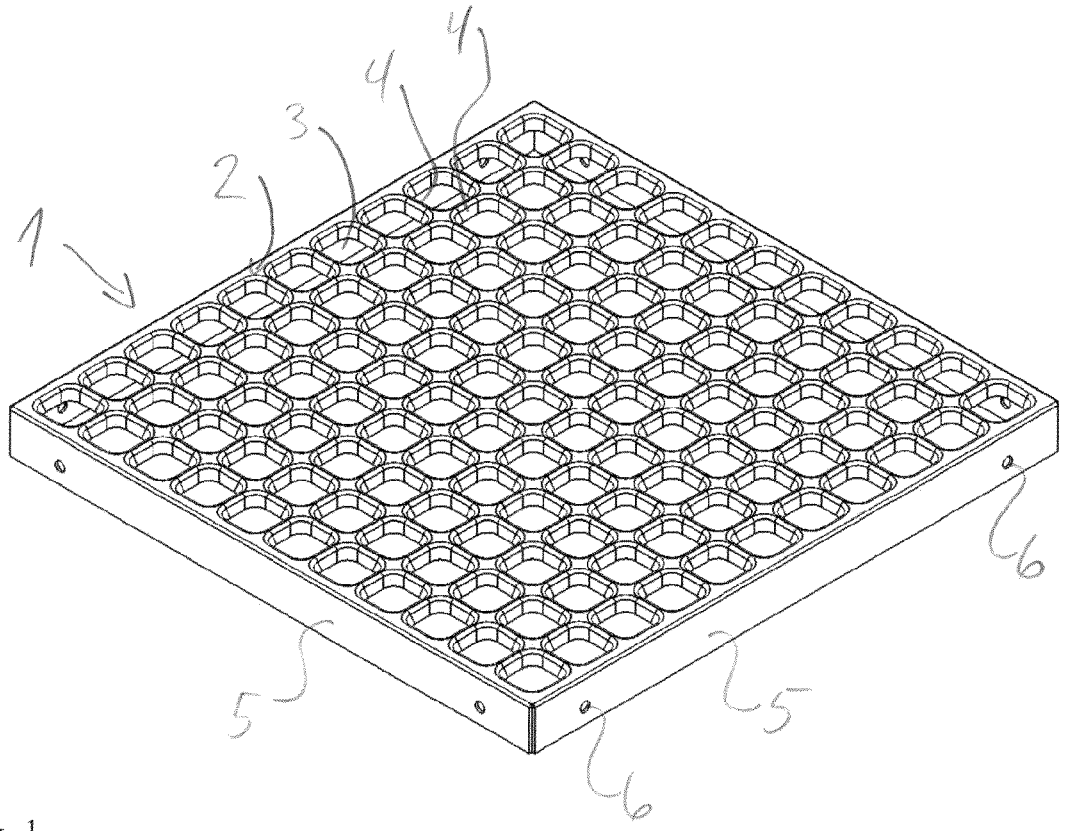
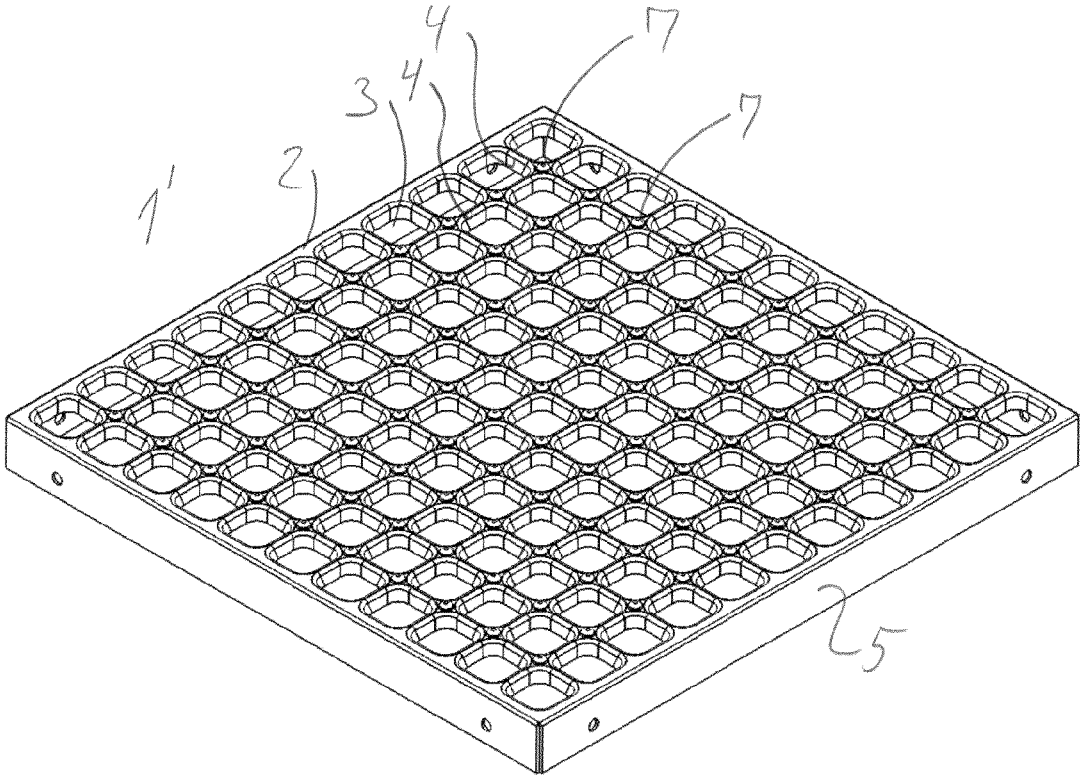


Fig. 1



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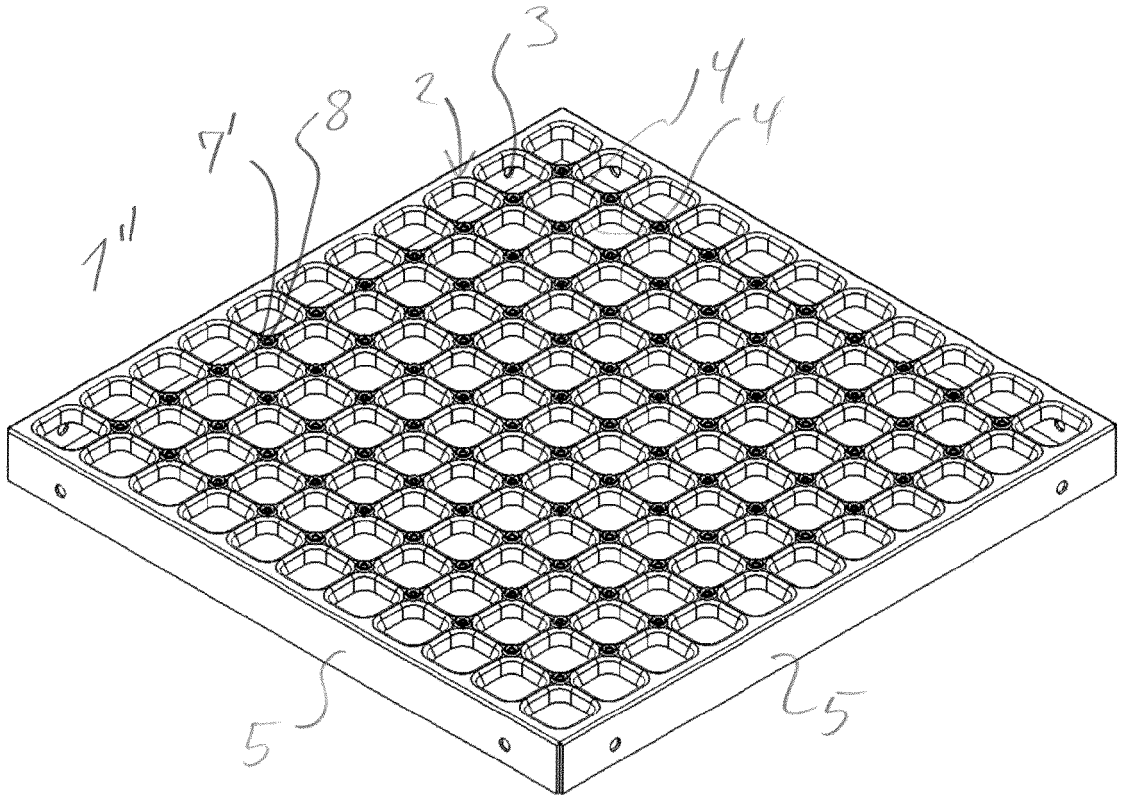

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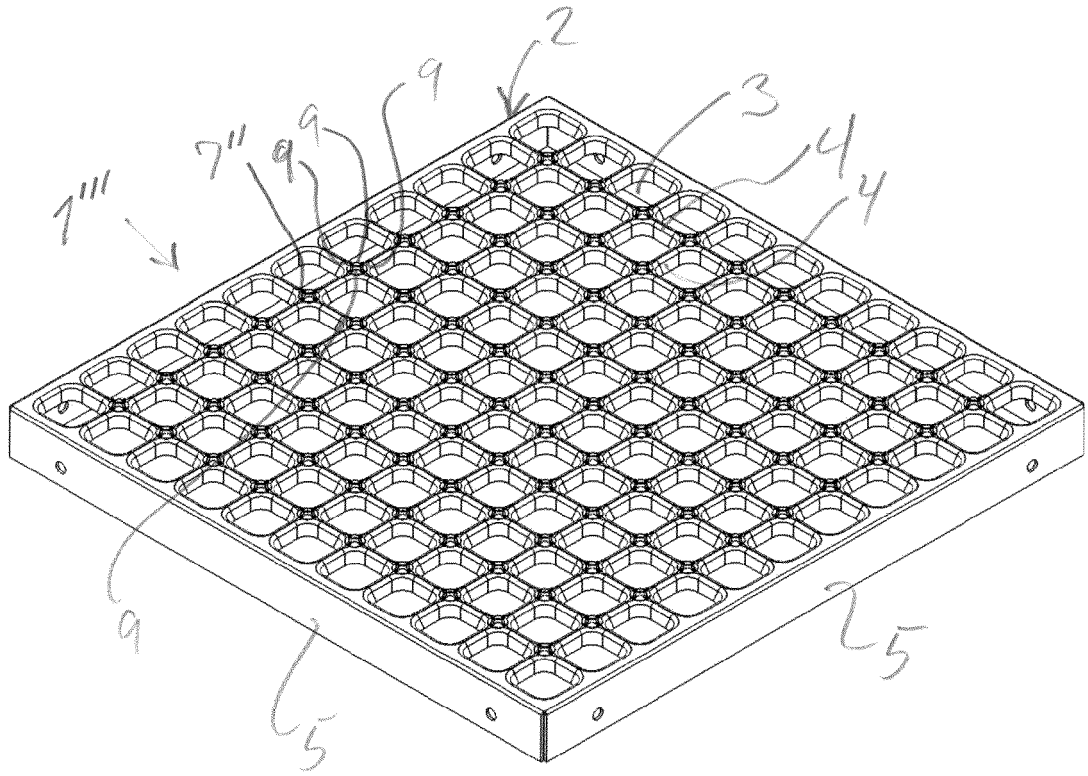

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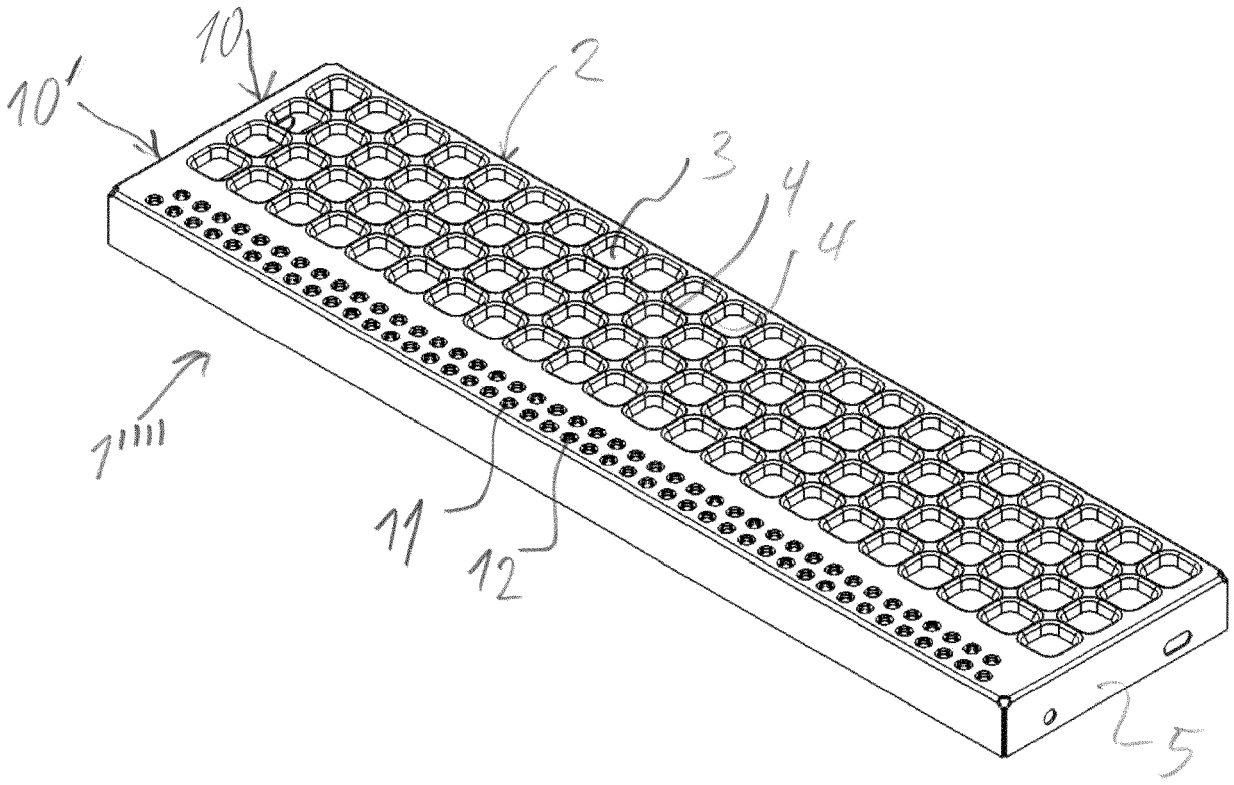
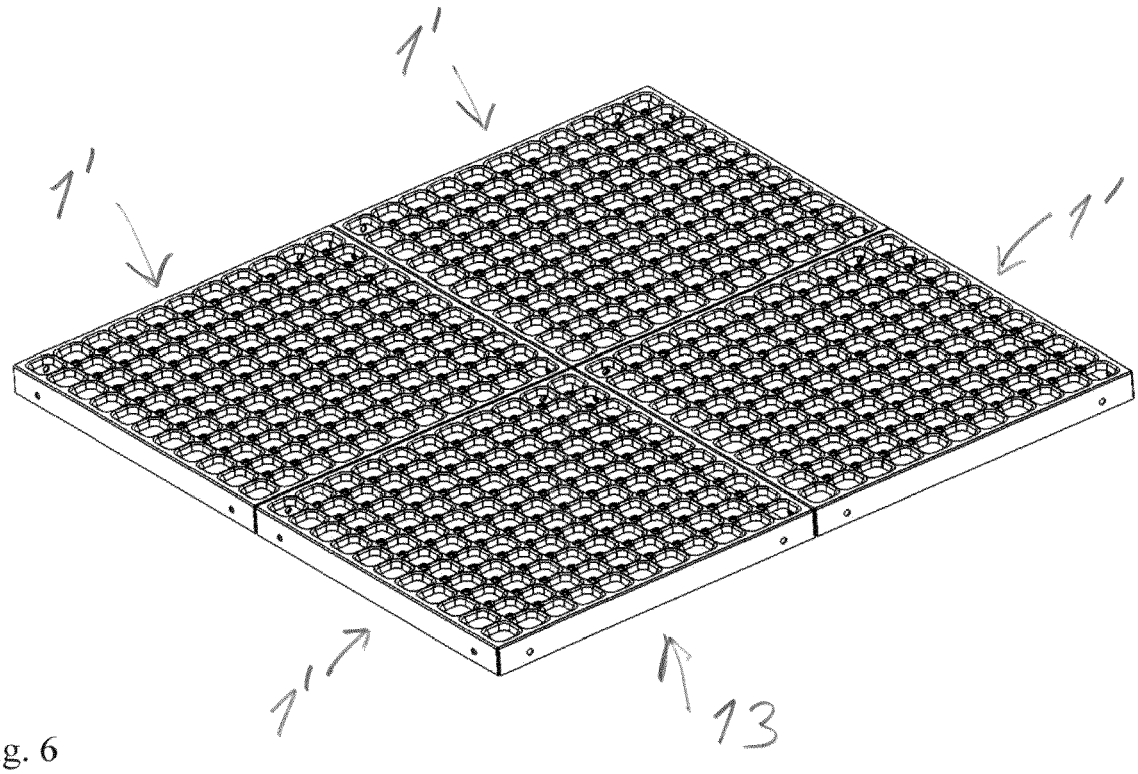


Fig. 5



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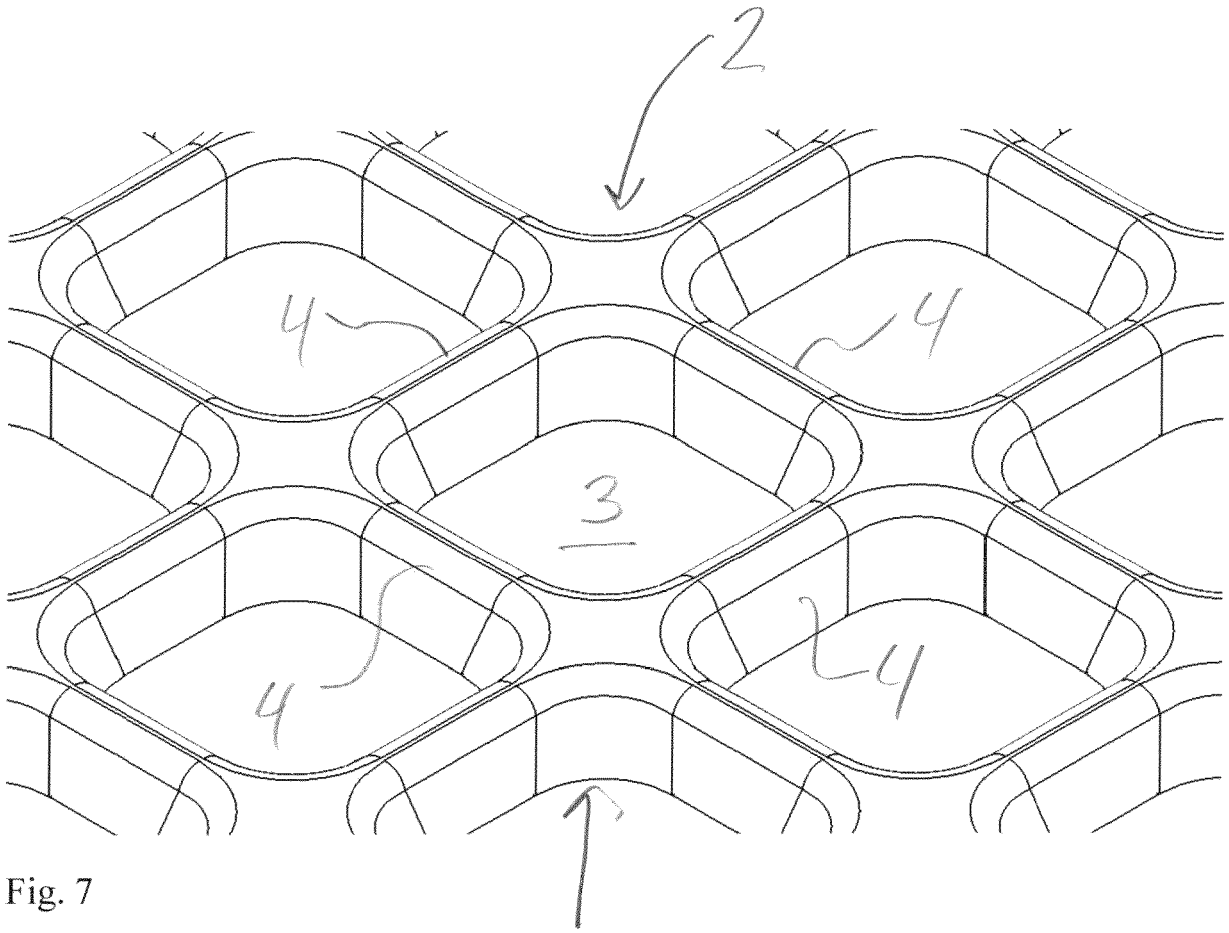

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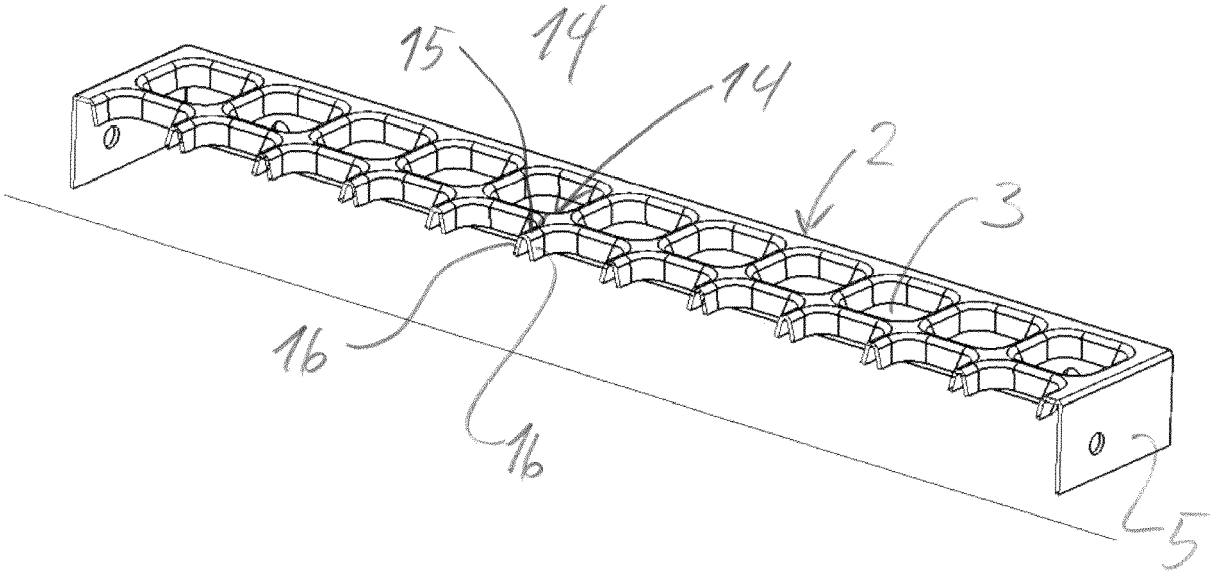

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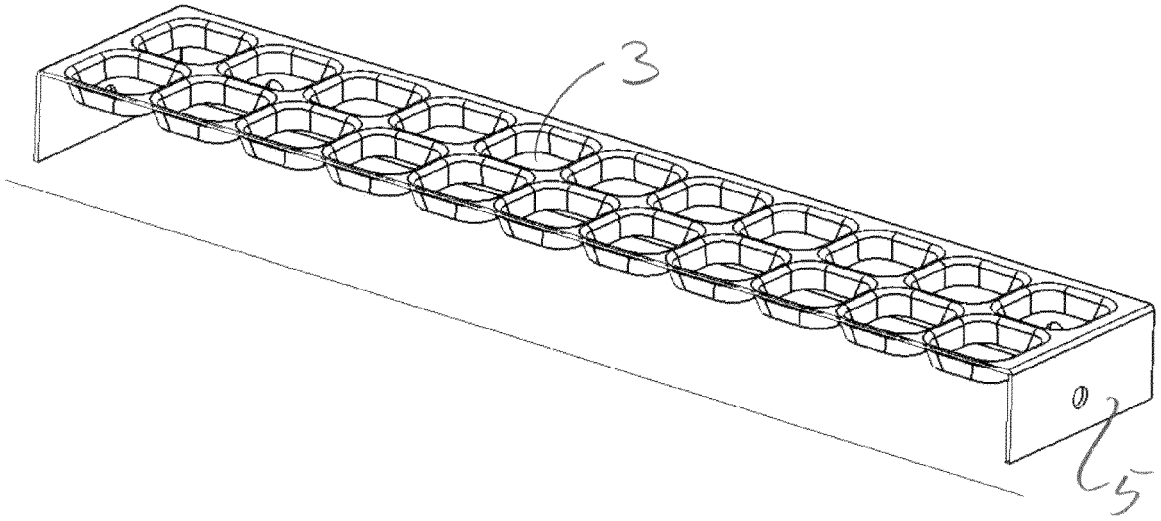

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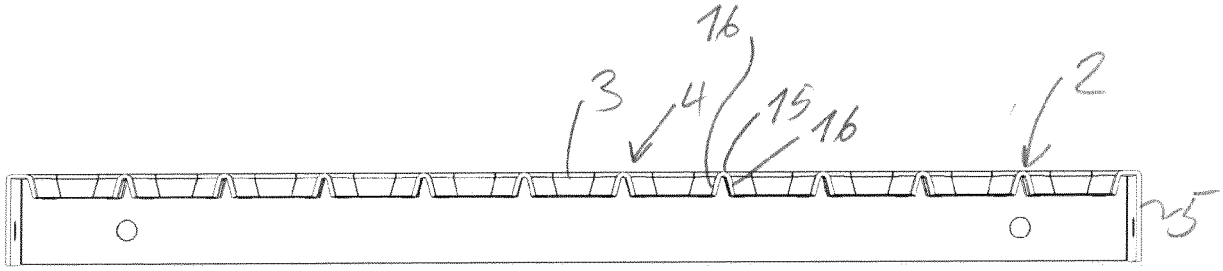

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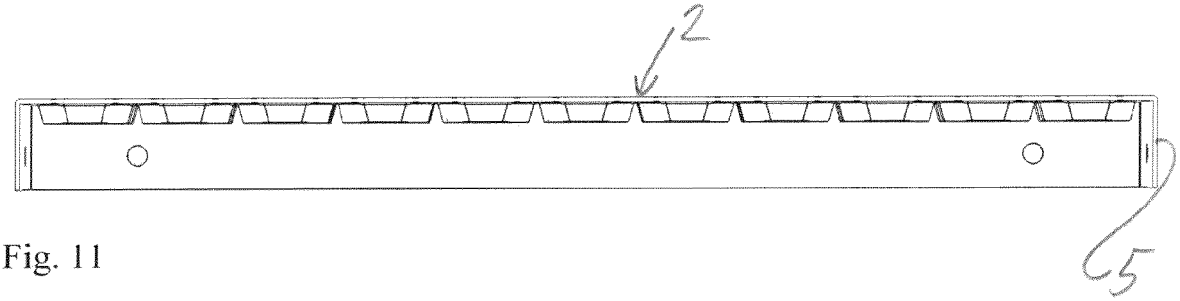

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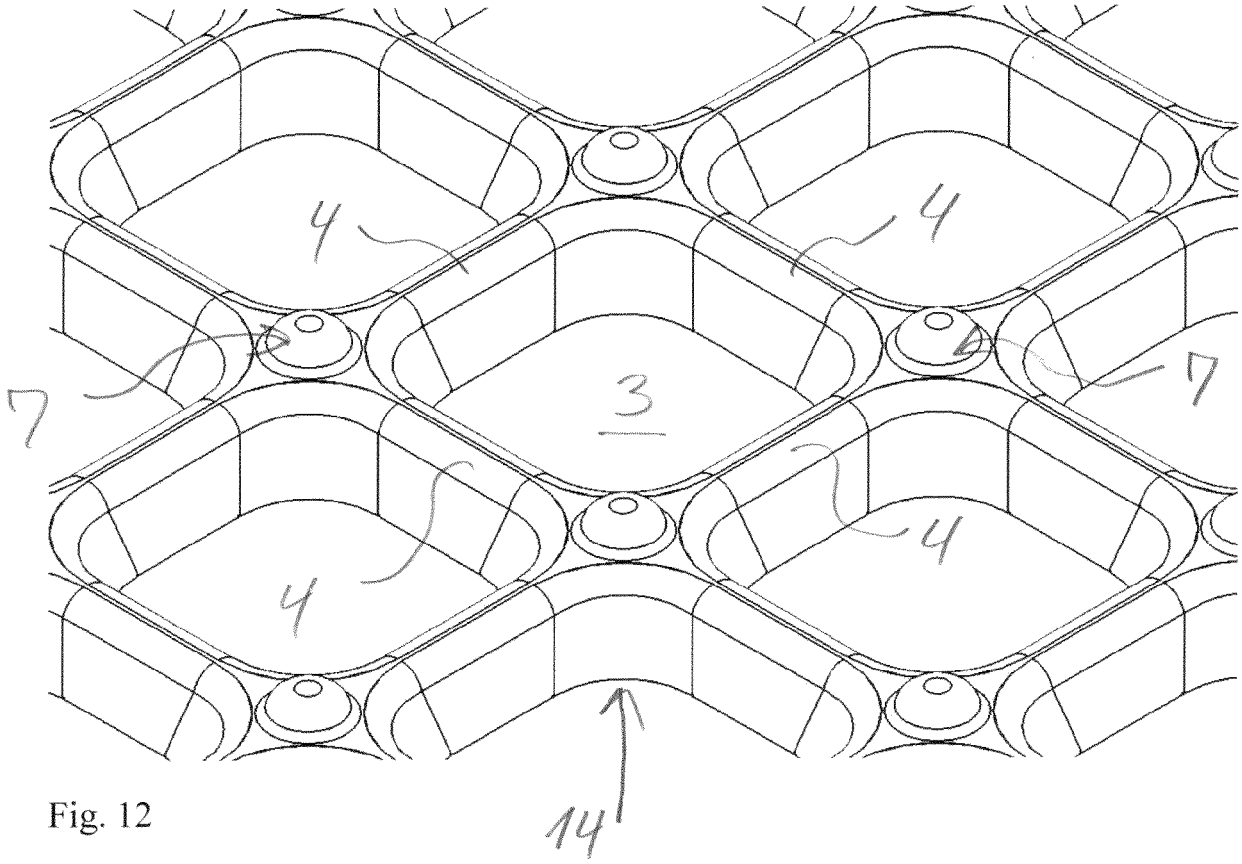

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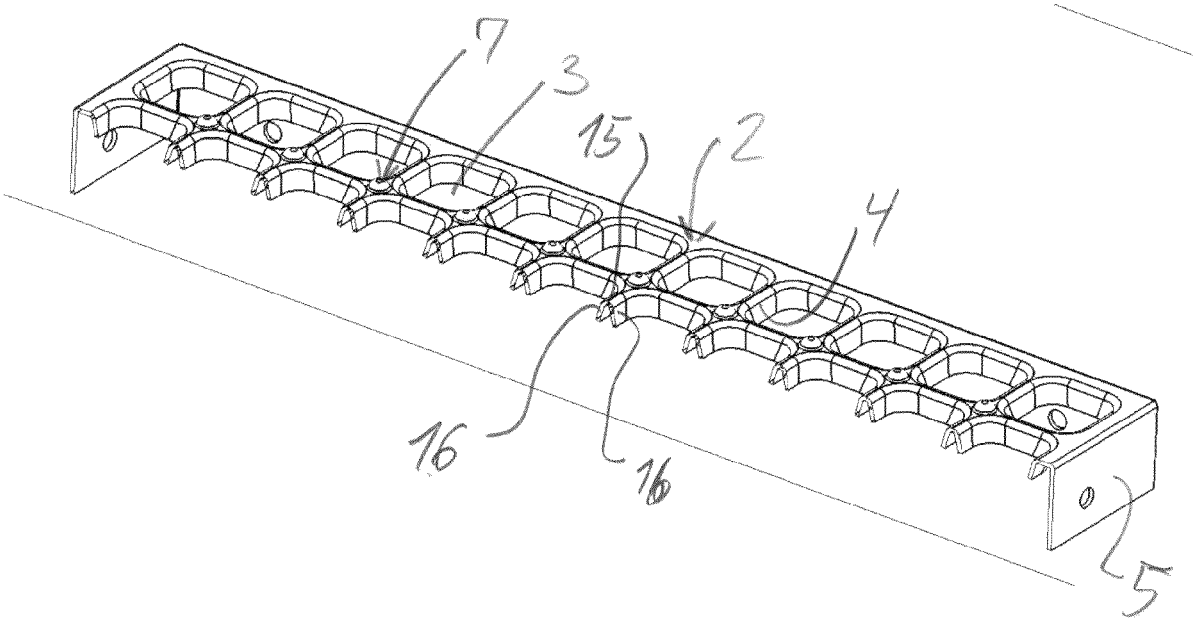

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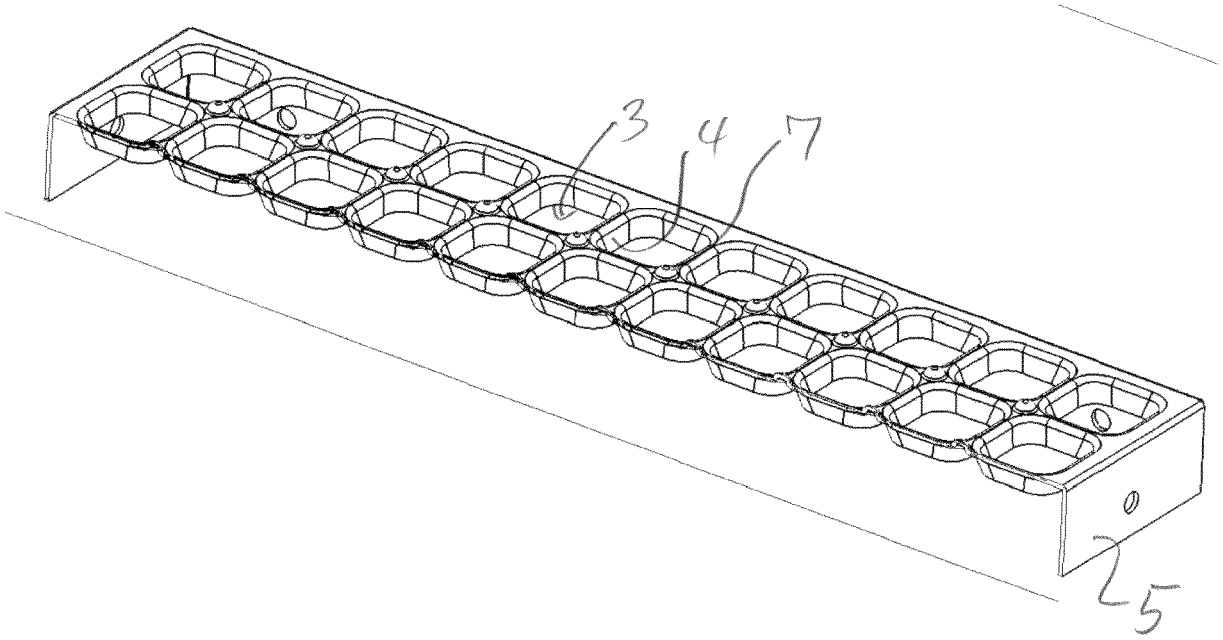

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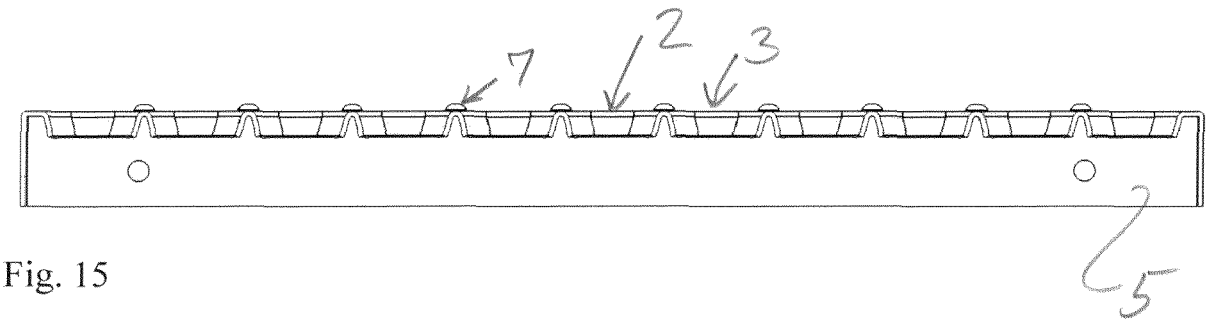

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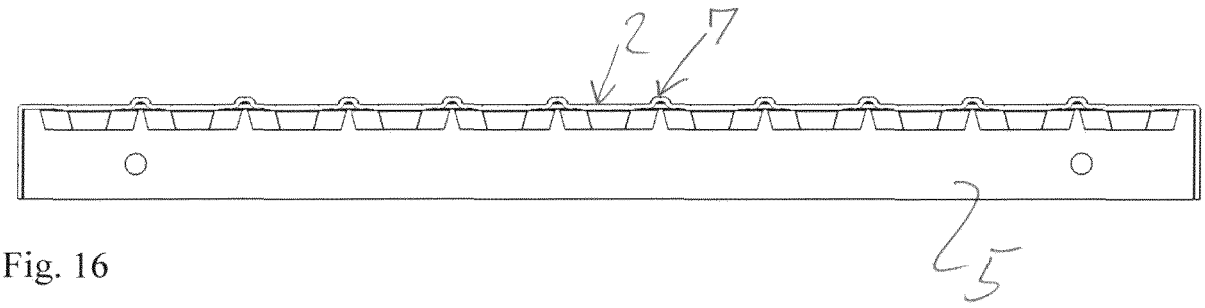

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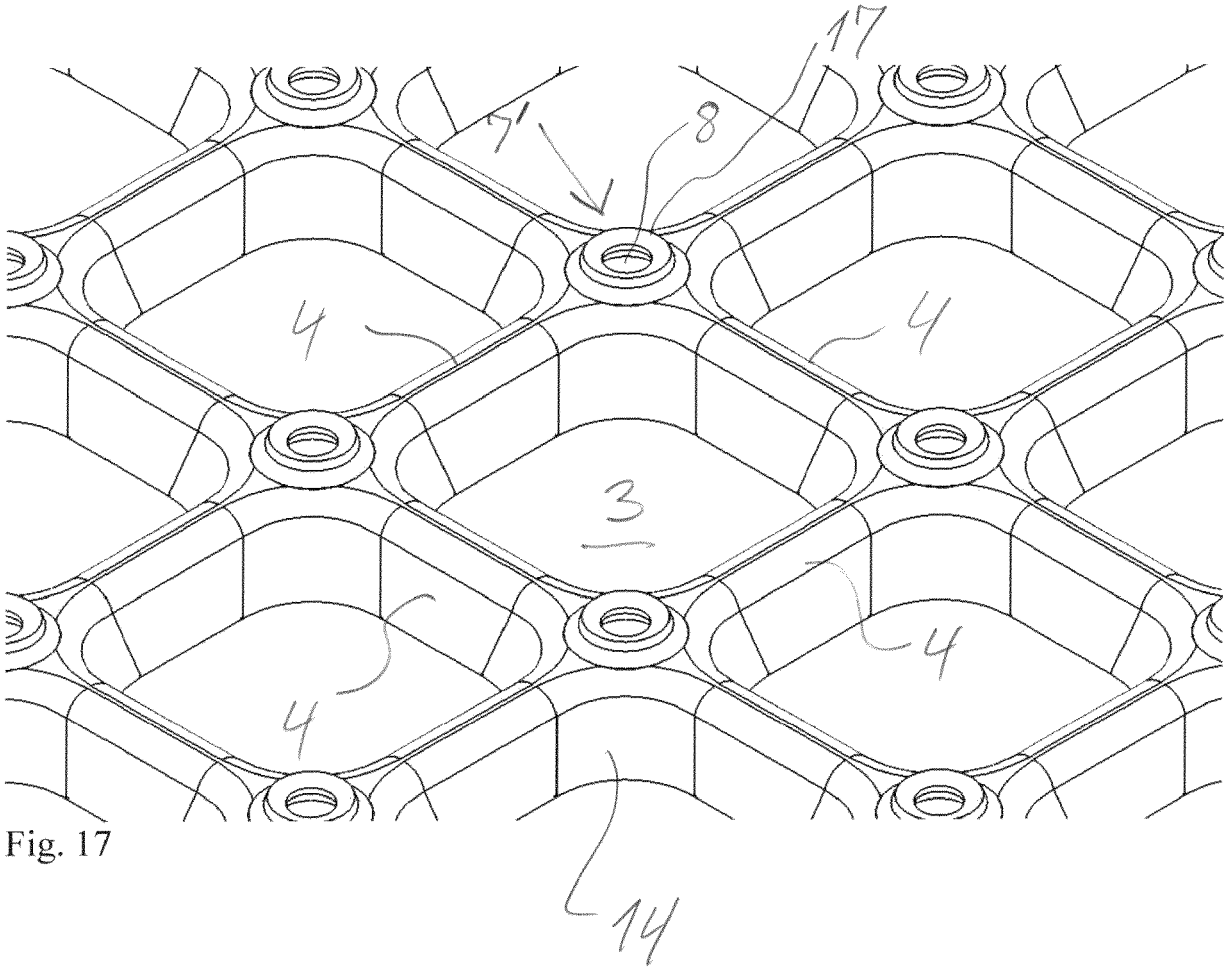

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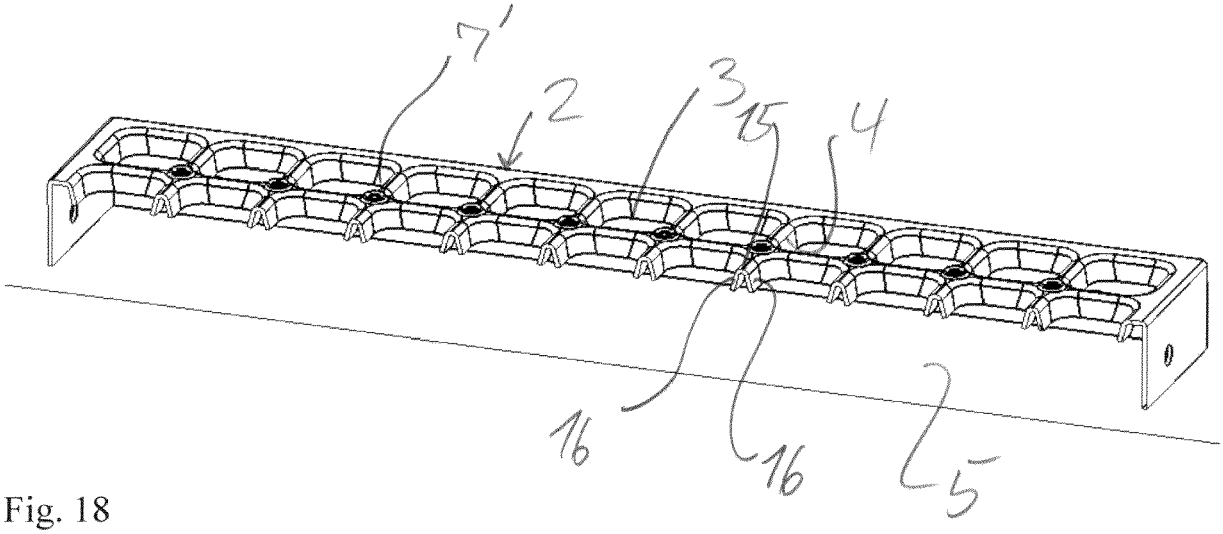

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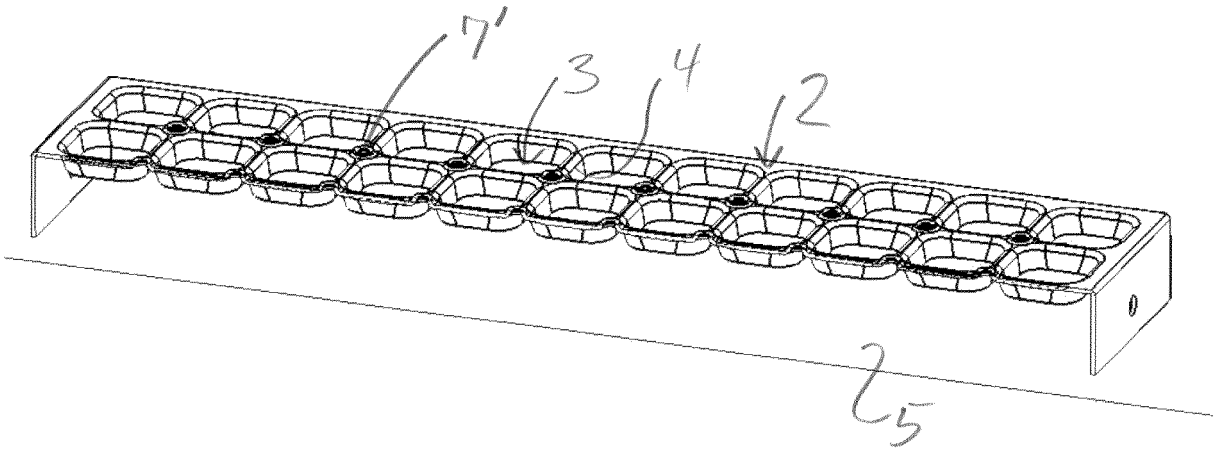

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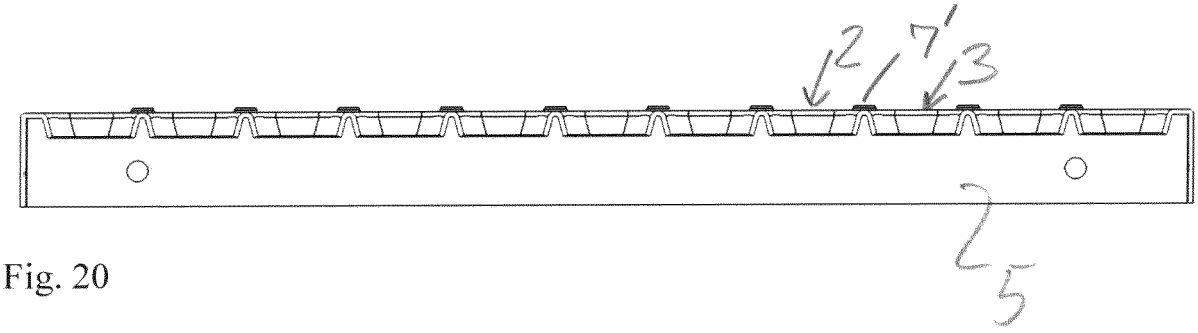

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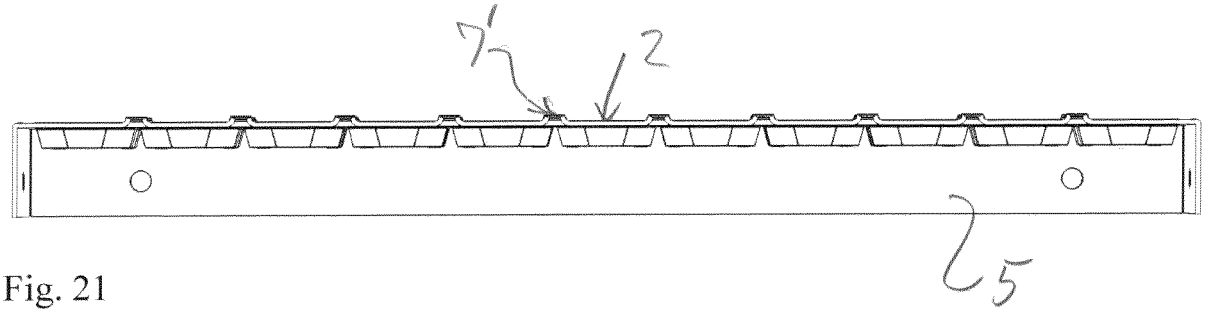

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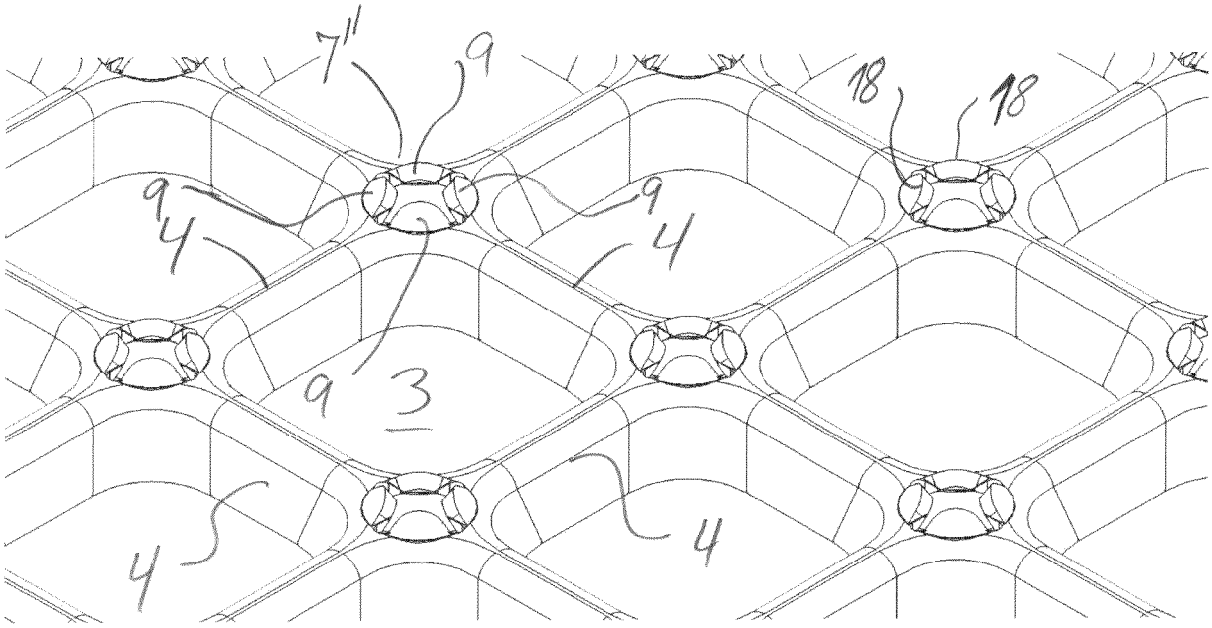

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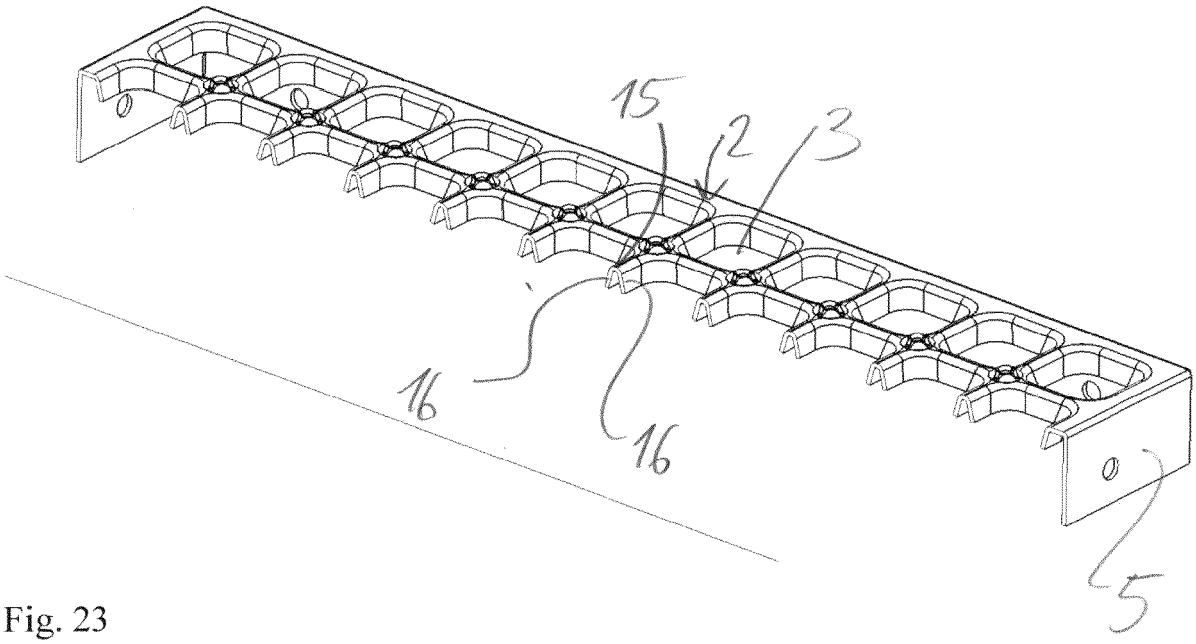

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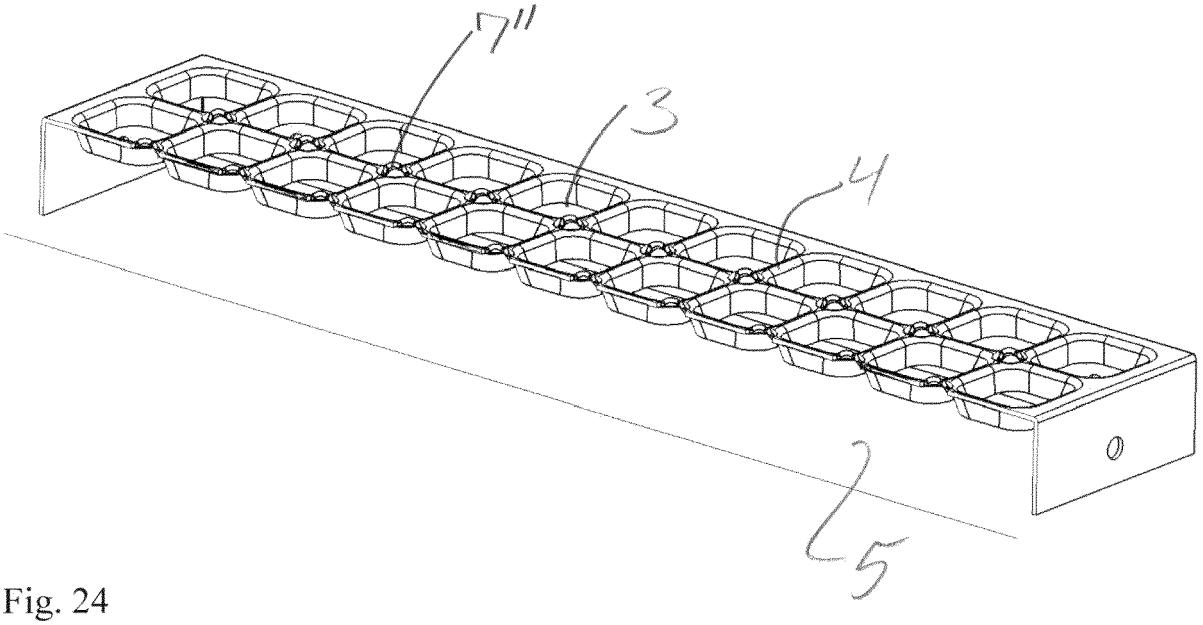

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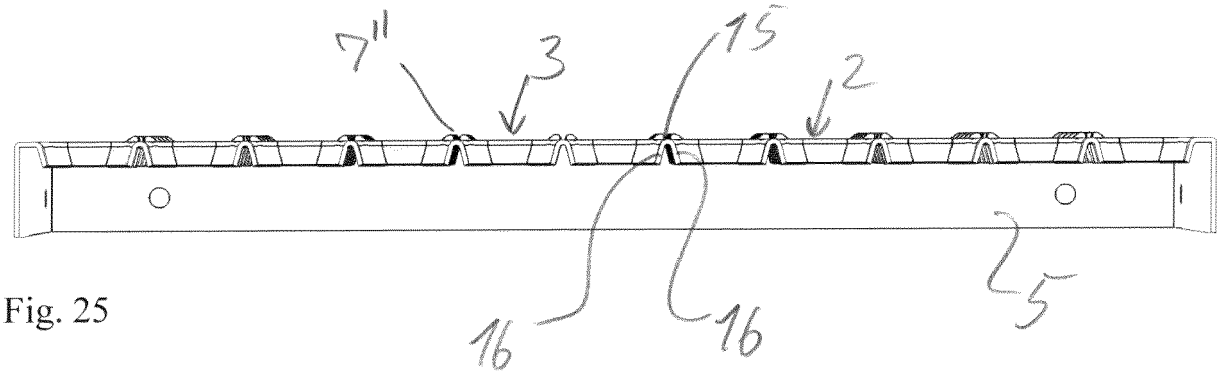

Fig. 25

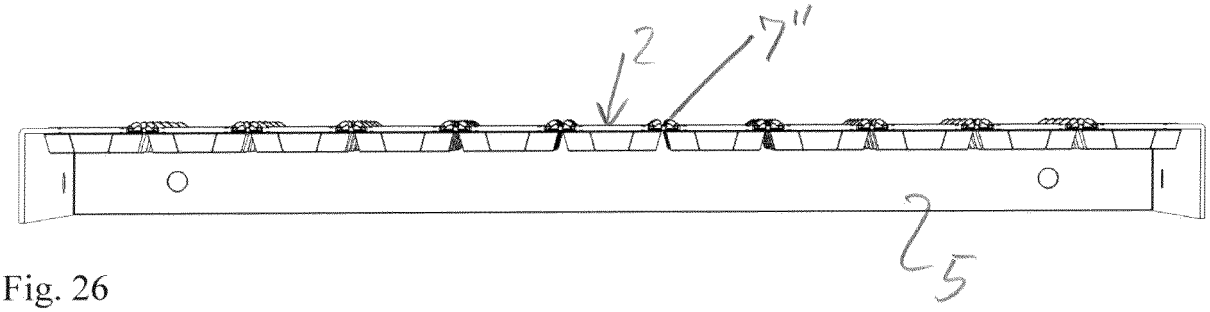

Fig. 26

REFERENCES CITED IN THE DESCRIPTION

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