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(54) **Improved grating for the overflow edge of swimming pools**

(57) A grating for covering the channel of the overflow edge of a swimming pool is described. The grating comprises a plurality of substantially rectangular components (10), able to be connected together along the respective transverse edges through fastening means (12, 14). Each component (10) of the grating comprises a base (16), provided with a plurality of openings for the passage of the water from the swimming pool towards the channel of the overflow edge. A plurality of slats (18) that are able

to be walked upon are fixedly connected onto the base (16) of each component (10), said slats being separated by spaces (20) for the passage of the water. Along at least one of the longitudinal edges of each component (10) a groove (22) is foreseen that extends for at least part of the length (L) of such a longitudinal edge. The function of such a groove (22) is that of forming a recess between the grating and the structure of the channel of the overflow edge with the function of grip for the swimmer's fingers.

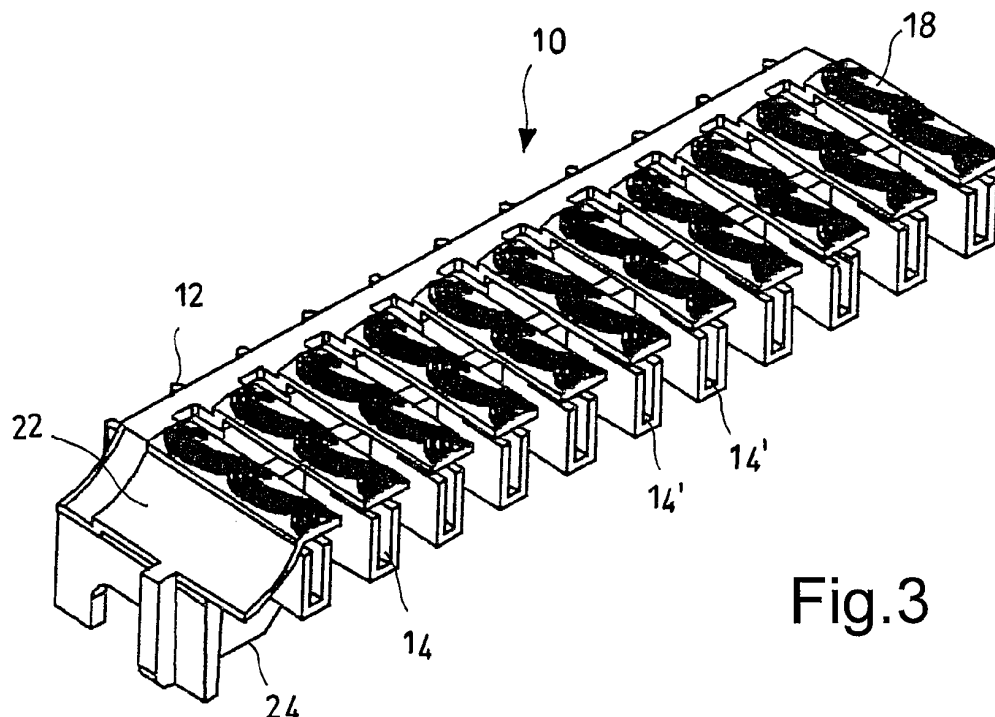


Fig.3

Description

[0001] The present invention refers to an improved grating for the overflow edge of swimming pools.

[0002] Most swimming pools, both in-ground and above ground, are provided with a water recirculation system the function of which is that of recovering the water contained in the swimming pool, sending it to a filtration system, disinfecting it and then sending it back into the swimming pool itself.

[0003] In swimming pools, two different water recirculation systems can normally be used. A first system foresees that the water of the swimming pool is sucked by a pump through a series of openings, called "skimmers", formed on the side walls of the swimming pool itself. The water is then sent to the treatment plant and sent back into the swimming pool. During this journey, the water is usually added to chlorine or another disinfecting product.

[0004] A second system, so-called "overflow edge" system, on the other hand, foresees that the water surface layer, notoriously the most polluted, continuously overflows into a perimeter channel arranged along the edges of the swimming pool and flows by dropping into a collection tank, called "compensation tank". From here the water is then sucked by a treatment plant and, after having received a suitable chemical disinfection treatment, is then sent back into the swimming pool. The water quality is thus much greater with respect to what is obtained in "skimmer" systems, since the more polluted water surface layer is constantly purified from organic residues.

[0005] The perimeter channel of the overflow edge is normally covered by a grating that can be tread upon and that allows the water to easily overflow and, simultaneously, prevents people from being able to trip over the channel itself or big objects from accidentally falling in it, that could jeopardise the good operation of the water recirculation system. The grating is indeed usually positioned at the same level as the flooring positioned at the edges of the swimming pool, coinciding with the overflow level.

[0006] If the perimeter channel of the overflow edge is not rectilinear, i.e. complexly shaped, the covering grating must consequently be made with elements that can curve or in any case that can bend, so as to be able to adapt to the geometry of the channel itself. A grating for the overflow edge of swimming pools of this type is described, for example, in the European patent EP 1 245 758 B1 to the same applicant.

[0007] The European standard EN 15288-1:2008, which concerns the safety requirements for the design of swimming pools, foresees that along the edges of the swimming pool there is a continuous groove having the function of grip (or "hand grip" or "finger hold") for the swimmer. A schematic representation of such a groove, having predefined minimum width and depth, is shown in the attached figure 1.

[0008] Normally, the gripping groove is directly formed

in the ceramic tiles covering the swimming pool or, in the case of swimming pools provided with an overflow edge recirculation system, it can be obtained by lowering the grating for covering the channel with respect to the overflow level, so that it is the channel itself that offers a suitable grip for the swimmer's fingers. In the first case, however, there are economic kinds of problems (due to the need of using special tiles, often not easy to automatically manufacture for their particular shape) and appearance problems (discontinuity of the flooring with respect to the water surface), whereas in the second case there are safety problems (the step that the lowered grating forms with the overflow profile can make the users trip over). Moreover, the presence of gripping grooves of the first type in swimming pools provided with a recirculation system with an overflow edge could disturb the normal water flow during recirculation, or generate accumulation of dirt along the grooves themselves.

[0009] The document US 2008/0134427 describes a swimming pool in which, in addition to the normal overflow edge provided with a grating for treading upon, there is an additional profile, separated from such a grating, in which the gripping groove is formed. The additional profile thus has the same function as the aforementioned ceramic tiles with the groove, as well as the same defects. One of the problems of the prior art is then that of obtaining a grip groove which is as horizontal as possible. The additional profile described in the document US 2008/0134427 obtains this result thanks to the regularity of the application plane. Moreover, between the additional profile of US 2008/0134427 and the laying surface there is a spacing that is not water tight, so that it is necessary for a sealing material to be applied between the application plane in concrete and the profile itself, with a consequent increase in costs and of the complexity of the construction.

[0010] The purpose of the present invention is therefore that of making an improved grating for the overflow edge of swimming pools that is capable of solving the aforementioned drawbacks of the prior art in an extremely simple, cost-effective and particularly functional manner.

[0011] In particular, one purpose of the invention is that of making an improved grating for the overflow edge of swimming pools that can be installed at the same level as the overflow profile, whilst still making it possible to create a grip for the swimmer without disturbing the regular flow of the water during recirculation, and avoiding accumulation of dirt along the overflow edge itself, at the same time.

[0012] Another purpose of the invention is that of making an improved grating for the overflow edge of swimming pools that makes it possible to keep its safety characteristics unaltered even with the groove for the swimmer to grip on.

[0013] A further purpose of the invention is that of making an improved grating for the overflow edge of swimming pools that is capable of having the smallest impact

on appearance as possible on the flooring positioned at the edges of the swimming pool.

[0014] Yet another purpose of the invention is that of making an improved grating for the overflow edge of swimming pools that does not require the use of expensive tiles shaped with the groove for the swimmer to grip on, which form the flooring positioned at the edges of the swimming pool.

[0015] These purposes according to the present invention are achieved by making an improved grating for the overflow edge of swimming pools as outlined in claim 1.

[0016] Further characteristics of the invention are highlighted in the dependent claims, which are an integrated part of the present description.

[0017] The characteristics and the advantages of an improved grating for the overflow edge of swimming pools according to the present invention shall become clearer from the following description, given as an example and not for limiting purposes, with reference to the attached schematic drawings in which:

figure 1 is a schematic representation of a continuous groove having the function of grip for the swimmer, as defined by the standards in force concerning safety in swimming pools;

figure 2 is a front axonometric view of a first embodiment of a component of an improved grating for the overflow edge of swimming pools according to the present invention;

figure 3 is a rear axonometric view of the component of figure 2;

figure 4 is a plan view from below of the component of figure 2;

figure 5 is a side elevation view of the component of figure 2;

figure 6 is a top plan view of the component of figure 2;

figure 7 is another side elevation view of the component of figure 2, in which it is overturned with respect to the view of figure 5;

figure 8 is a section view of a second embodiment of a component of an improved grating for the overflow edge of swimming pools according to the present invention;

figure 8A is a detailed view of the detail indicated with A in figure 8;

figure 9 is a top plan view of the component of figure 8;

figure 10 is a plan view from below of the component of figure 8; and

figure 11 is another side elevation view of the component of figure 8.

[0018] With reference to the figures 2-11, the components 10 of an improved grating for the overflow edge of swimming pools are shown according to the present invention. The grating is indeed of the type comprising a plurality of substantially rectangular components 10, con-

figured so as to be connected to one another, along the respective transverse edges, through suitable fastening means 12 and 14, as shall be specified more in detail in the rest of the description.

[0019] Each component 10 comprises a base 16, provided with a plurality of openings for the passage of the water from the swimming pool towards the channel (not shown) of the overflow edge arranged below the grating. On the base 16 of each component 10, preferably made as a single piece with it, a plurality of slats 18 are fixed, arranged parallel with respect to the wall of the swimming pool once the components 10 of the grating have been correctly mounted on the channel of the overflow edge. Between one slat 18 and the adjacent ones, spaces 20 are formed, with a width of no more than 8 mm based upon the standards in force concerning construction of swimming pools for the passage of the water. The slats 18, that make up the plane of the grating that can be tread upon, can thus be provided at the top with a shaped surface that is suitable for preventing people from tripping over.

[0020] According to the invention, along at least one of the longitudinal edges of each component 10 of the grating a groove 22 is foreseen that extends for at least part of the length L of such longitudinal edge. The function of such a groove 22 is that of forming a recess between the grating and the structure of the channel of the overflow edge with the function of grip ("handgrip") for the swimmer's fingers, in compliance with the European standard EN 15288-1:2008.

[0021] As shown in figure 8A, the groove 22 is preferably shaped in section like an arc of circumference, so as to make it easier to grip with the fingers and not to create sharp edges that are dangerous for the swimmer's hands or for anyone walking on top of the grating.

[0022] The portion of the base 16 of each component 10 positioned below the groove 22 thus has a projection 24 having the function of strengthening such a base 16 precisely because of the presence of the groove 22.

[0023] Based upon the embodiment of the grating shown in figures 2-7, each component 10 has a transversal length L' that is noticeably greater with respect to the longitudinal length L. The fastening means 12 and 14 between contiguous components 10 thus foresee a plurality of "male" fastening means 12, arranged on one of the transverse edges of each component 10, and a plurality of hollow or "female" fastening means 14, arranged on the opposite transverse edge of each component 10 and in which the "male" fastening means 12 can be inserted.

[0024] Based upon such an embodiment, moreover, the "male" fastening means 12 can be inserted to a greater or lesser extent into the relative "female" fastening means 14. It is therefore possible to connect successive and not parallel components 10 to one another, even if they are arranged on a same plane substantially coinciding with the flooring positioned at the edges of the swimming pool. In such a way the grating formed by the com-

ponents 10 can easily cover a channel of the overflow edge of the curvilinear type, be it concave or convex.

[0025] It is finally possible to foresee the presence of at least one "male" fastening means 12' having a different shape with respect to the other "male" fastening means 12, arranged in the central area of each component 10 and suitable for being inserted in a corresponding "female" fastening means 14' in turn arranged in the central area of each component 10 and shaped differently with respect to the other "female" fastening means 14. For example, the "male" fastening means 12' that are shaped differently can be provided with a tooth inserted so as to shape couple with a slot foreseen in the "female" fastening means 14' in turn shaped differently.

[0026] Once joined together, these special differently shaped fastening means 12' and 14' can allow the components 10 of the grating to tilt in a horizontal plane around the rotation point formed by the junction of such fastening means 12' and 14', making it easier for the grating to adapt to the curvilinear shape of the channel of the overflow edge.

[0027] According to the embodiment of the grating shown in the figures 8-11, each component 10 on the other hand, has a transversal length L' that is shorter with respect to the longitudinal length L. Even in this case the fastening means 12 and 14 between contiguous components 10 consist of a plurality of "male" fastening means 12, arranged on one of the transverse edges of each component 10, and a plurality of hollow or "female" fastening means 14, arranged on the opposite transverse edge of each component 10. The "male" fastening means 12 however, snap into corresponding "female" fastening means 14, since this particular embodiment of the grating is foreseen to cover the substantially rectilinear channels of the overflow edge. Indeed, in such a case, it is not necessary for the various components 10 of the grating to be arranged according to predetermined angles with respect to one another, but rather they must be snapped in and aligned one after the other.

[0028] Each component 10 of the grating, irrespective of the embodiment, is normally manufactured in plastic material, preferably 20% calcium carbonate-filled polypropylene copolymer, but it can also be manufactured with another suitable material.

[0029] The longitudinal length L and the transversal length L' of the components 10 can vary based upon the type of application of the grating, as can also the width and depth measurements of the groove 22, also vary. Typically, according to the aforementioned European standard UNI EN 15288-1:2009 (see figure 1), the groove 22 shall have a minimum width of about 20 mm and a minimum depth of about 15 mm. If made with a shape in section like an arc of circumference, the groove 22 shall have a preferred radius of curvature comprised between about 20 mm and about 30 mm.

[0030] It has thus been seen that the improved grating for the overflow edge of swimming pools according to the present invention achieves the purposes previously high-

lighted, in particular obtaining the following advantages:

- simplicity and cost-effectiveness of manufacture of the groove for the swimmer to grip on, since it is integrated in the elements of the grating for covering the channel of the overflow edge. With respect to the overflow edge described, for example, in the document US 2008/0134427, there is thus a saving of a constructive component;
- elimination of possible problems of accumulation of dirt and of difficulties in making the water recirculate, since it is not necessary to foresee the groove for the swimmer to grip on in the containment structure of the swimming pool, between the tank and the channel of the overflow edge;
- no safety problems for people, since the grating remains at the same level as the flooring positioned at the edges of the swimming pool and undesired steps are not formed;
- possibility of adapting to any constructive technology of the swimming pool, since the recess is made in a component that is always foreseen but that is not part of the structure of the tank
- possibility of improving the safety of existing swimming pools in a simple and cost-effective manner since if the grating is made in the standard market modules, that is to say with a width of 250 mm, it can replace the existing grating without any intervention on the structure of the swimming pool
- possibility of making gratings provided with a groove for the swimmer to grip on that can be adapted to both rectilinear channels, and to curvilinear channels.

[0031] The improved grating for the overflow edge of swimming pools of the present invention thus conceived can undergo numerous modifications and variants, all covered by the same inventive concept; moreover, all the details can be replaced by technically equivalent elements. In practice the materials used, as well as the shapes and sizes, can be any according to the technical requirements. The scope of protection of the invention is thus defined by the attached claims.

Claims

1. Grating for covering the channel of the overflow edge of a swimming pool, comprising a plurality of substantially rectangular components (10), able to be connected together along the respective transverse edges through fastening means (12, 14), each of said components (10) comprising a base (16), provided with a plurality of openings for the passage of the water from the swimming pool towards the channel of the overflow edge, said base (16) having a plurality of slats (18), that are able to be walked upon,

fixedly connected onto it, said slats (18) being separated by spaces (20) through which the water can pass, **characterised in that** a groove (22), that extends for at least part of the length (L) of said longitudinal edge, is provided along at least one of said longitudinal edges of each of said components (10), said groove (22) forming a recess between the grating and the structure of the channel of the overflow edge with the function of a grip for the swimmer's fingers.

2. Grating according to claim 1, **characterised in that** said groove (22) is shaped in section like an arc of circumference, so as to make it easier to grip with the fingers and not to create sharp edges that are dangerous for the swimmer's hands or for anyone walking on top of the grating. 10
3. Grating according to claim 1 or 2, **characterised in that** the portion of the base (16) of each of said components (10) positioned below said groove (22) has a projection (24) having the function of strengthening said base (16) due to the presence of said groove (22). 20
4. Grating according to any one of claims 1 to 3, **characterised in that** said groove (22) has a minimum width of about 20 mm and a minimum depth of about 15 mm. 25
5. Grating according to any one of claims 2 to 4, **characterised in that** said groove (22) has a radius of curvature comprised between about 20 mm and about 30 mm. 30
6. Grating according to any one of the previous claims, **characterised in that** said fastening means (12, 14) between contiguous components (10) consist of a plurality of "male" fastening means (12), arranged on one of the transverse edges of each of said components (10), and a plurality of hollow or "female" fastening means (14), arranged on the opposite transverse edge of each of said components (10) and in which said "male" fastening means (12) can be inserted. 35 40 45
7. Grating according to claim 6, **characterised in that** at least one "male" fastening means (12'), arranged in the central area of each of said components (10), is of a different shape with respect to the other "male" fastening means (12) and is suitable for being inserted in a corresponding "female" fastening means (14') in turn arranged in the central area of each of said components (10) and shaped differently with respect to the other "female" fastening means (14), said differently shaped "male" and "female" fastening means (12', 14') operating as rotation elements in a horizontal plane for said components (10) of the grat-

ing, so that said grating can cover a channel of the overflow edge of the curvilinear type, be it concave or convex.

- 5 8. Grating according to claim 6, **characterised in that** said "male" fastening means (12) snap into the corresponding "female" fastening means (14), so that said grating can cover a channel of the overflow edge of the rectilinear type. 10
9. Grating according to any one of the previous claims, **characterised in that** said slats (18) that can be walked upon are made in a single piece with said base (16) and are arranged parallel to the wall of the swimming pool once said components (10) of the grating have been correctly mounted on the channel of the overflow edge, said spaces (20) between one slat (18) and the adjacent one having a width of no more than 8 mm. 15 20 25 30 35 40 45 50 55

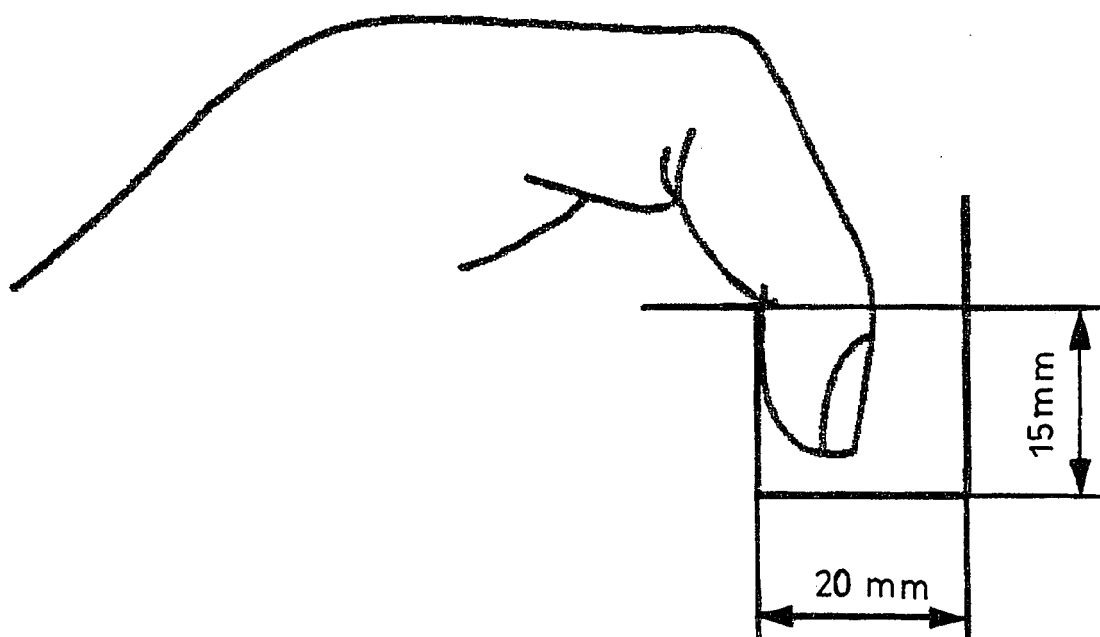


Fig.1

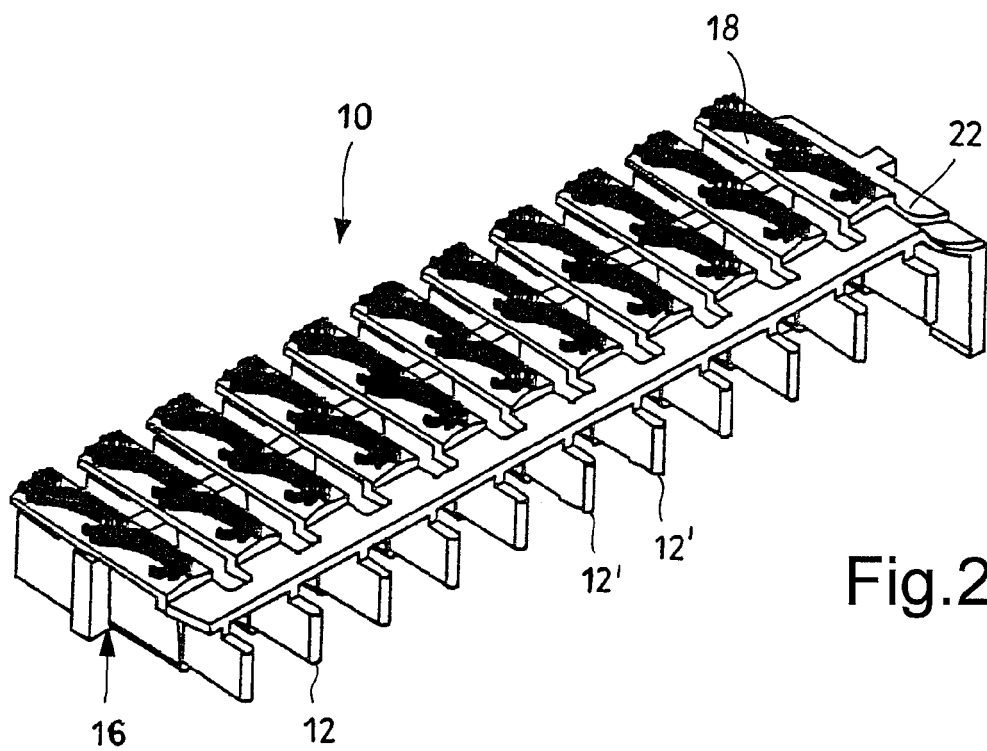


Fig.2

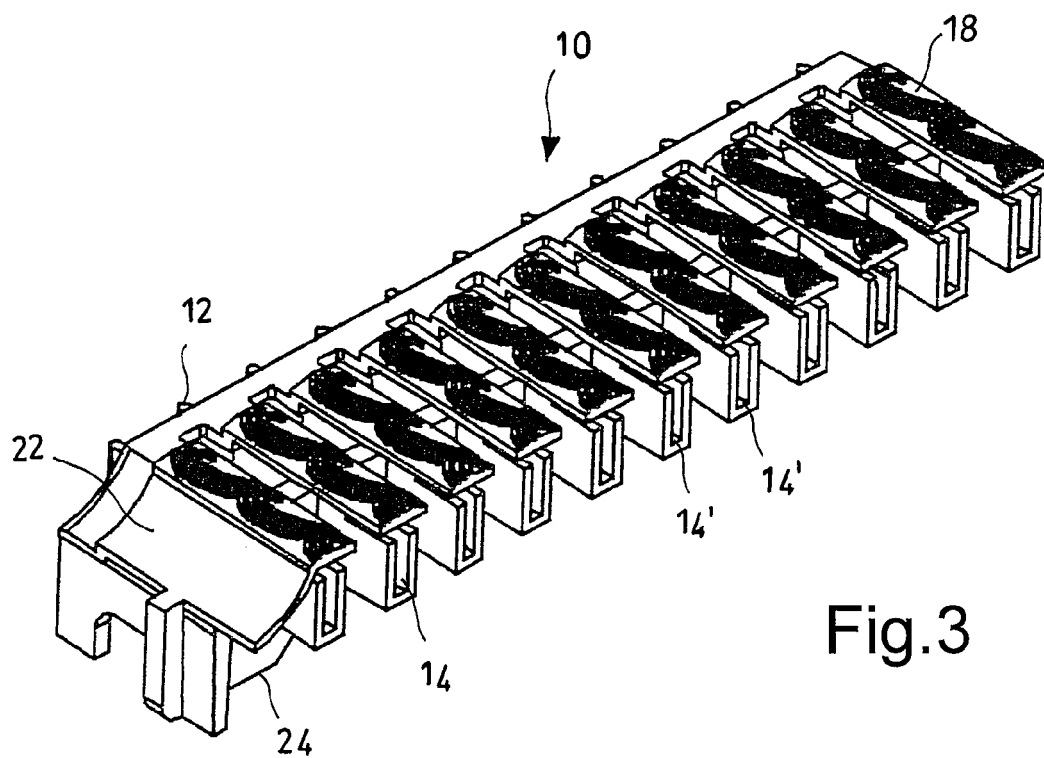


Fig.3

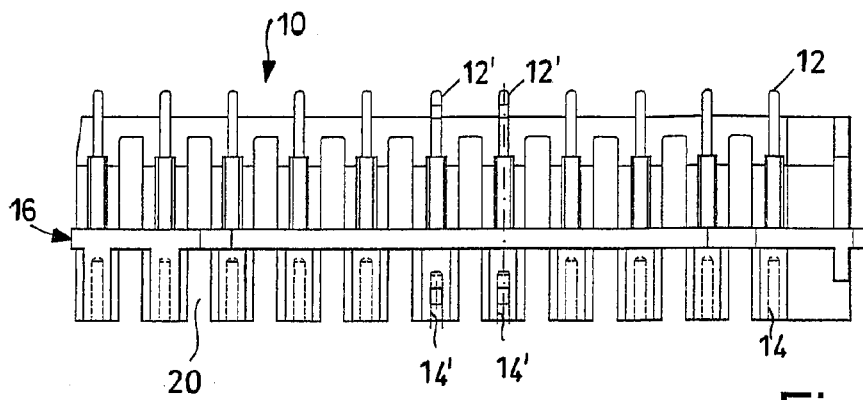


Fig. 4

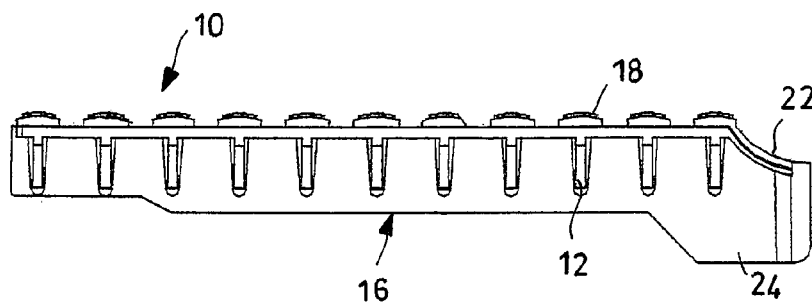


Fig. 5

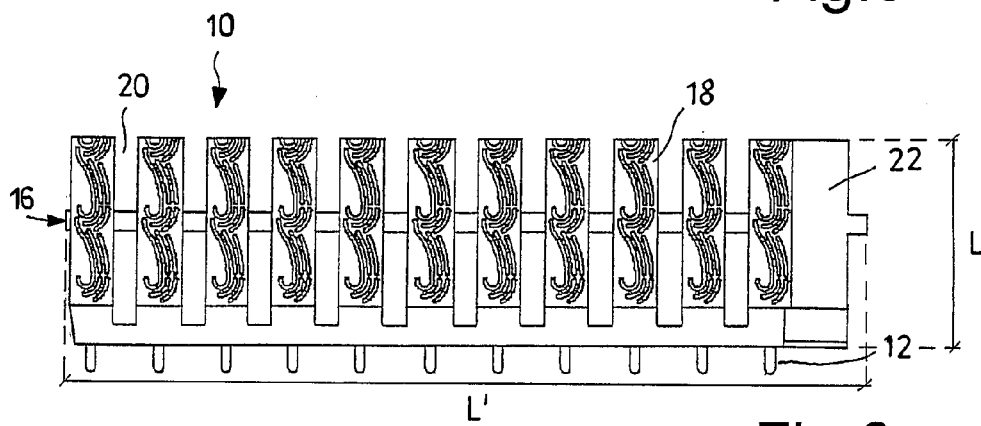


Fig. 6

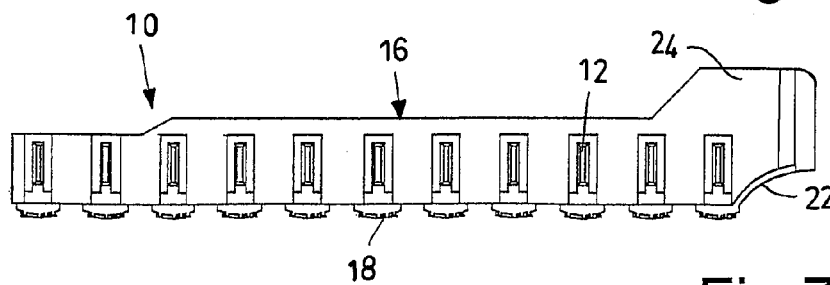


Fig. 7

Fig.8A

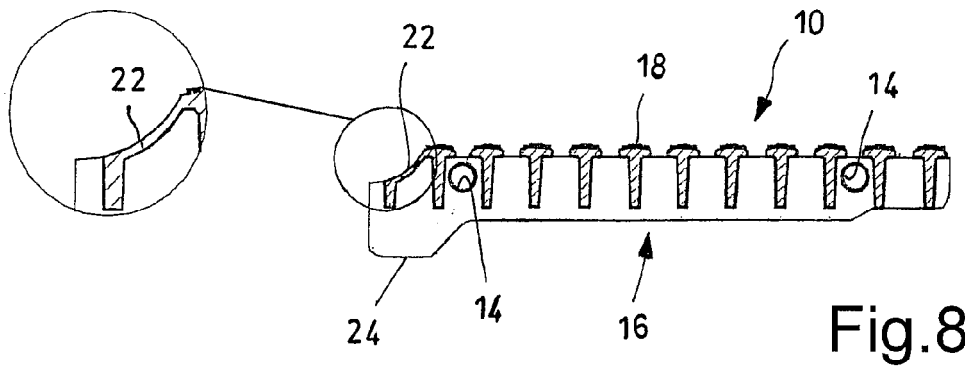


Fig.8

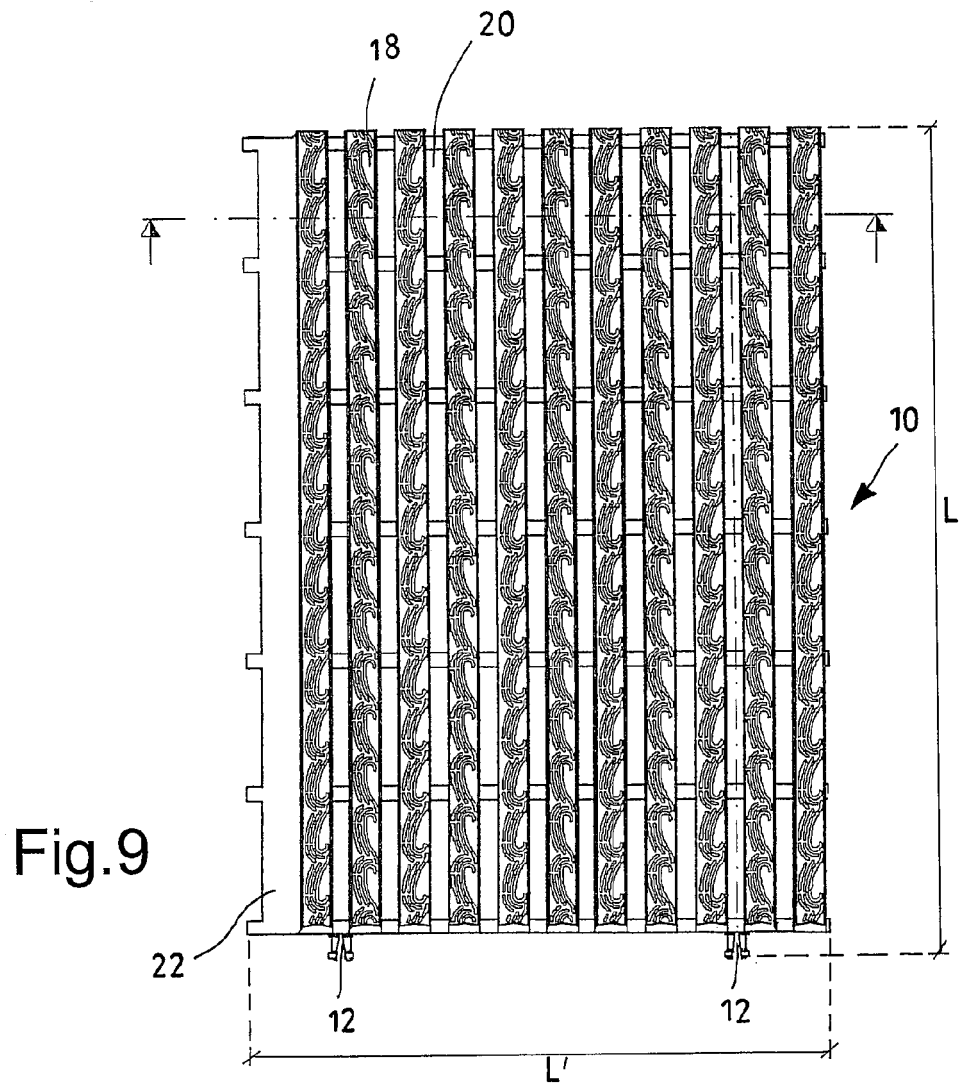


Fig.9

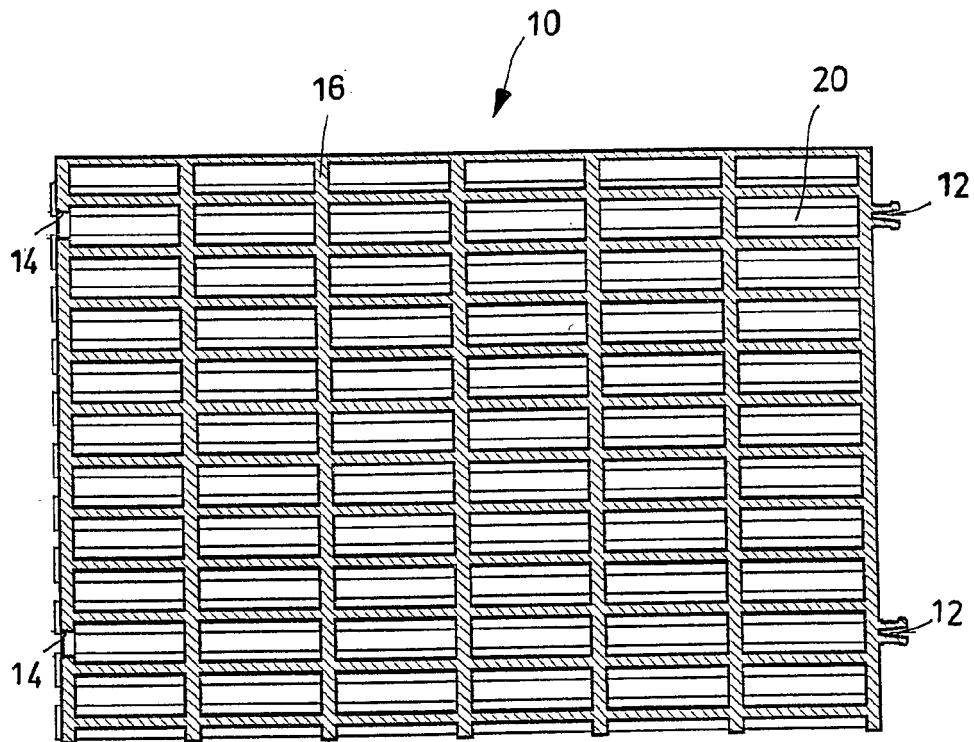


Fig.10

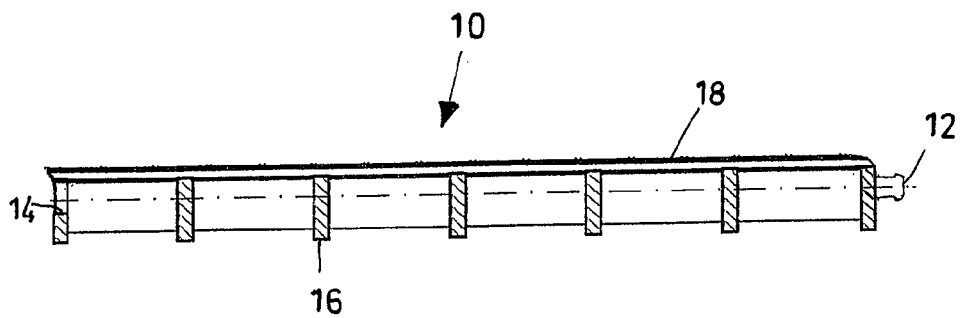


Fig.11



EUROPEAN SEARCH REPORT

Application Number
EP 10 18 7861

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 1 245 758 A2 (A & T EUROP SPA [IT]) 2 October 2002 (2002-10-02) * paragraph [0012] - paragraphs [0023], [0 26]; claims 1.2.4-7; figures 1-4 * -----	1-9	INV. E04C2/42 E04H4/12
Y	US 2008/134427 A1 (LAWSON ROBERT B [US]) 12 June 2008 (2008-06-12) * paragraph [0009] - paragraph [0012]; figures 2-4 * -----	1-9	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04C E04H
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 February 2011	Examiner Mysliwetz, Wolfgang
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EPO FORM 1503 03.82 (P04C01)

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

EP 10 18 7861

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14-02-2011

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EP 1245758	A2	02-10-2002	AT 334279 T 15-08-2006
		DE 60213309 T2 27-09-2007	
		ES 2269598 T3 01-04-2007	
		IT MI20010187 U1 30-09-2002	

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REFERENCES CITED IN THE DESCRIPTION

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- US 20080134427 A [0009] [0030]