



(43) International Publication Date
1 November 2012 (01.11.2012)

- (51) International Patent Classification:
E04C 2/42 (2006.01) *E04H 4/12* (2006.01)
- (21) International Application Number:
PCT/IB2012/052136
- (22) International Filing Date:
27 April 2012 (27.04.2012)
- (25) Filing Language: Italian
- (26) Publication Language: English
- (30) Priority Data:
BO2011A000227 27 April 2011 (27.04.2011) IT
- (71) Applicant (for all designated States except US): NEXUS S.r.l. [IT/IT]; Via Roncolina, 3, Polverigi (IT).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): GREGANTI, Simone [IT/IT]; Via di Colle Onorato, 17, I-60035 Jesi (IT).
- (74) Agents: JORIO, Paolo et al.; STUDIO TORTA S.p.A., Via Viotti, 9, I-10121 Torino (IT).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,

CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) Title: MODULE FOR OBTAINING A PERIMETER GRATING FOR SWIMMING POOLS

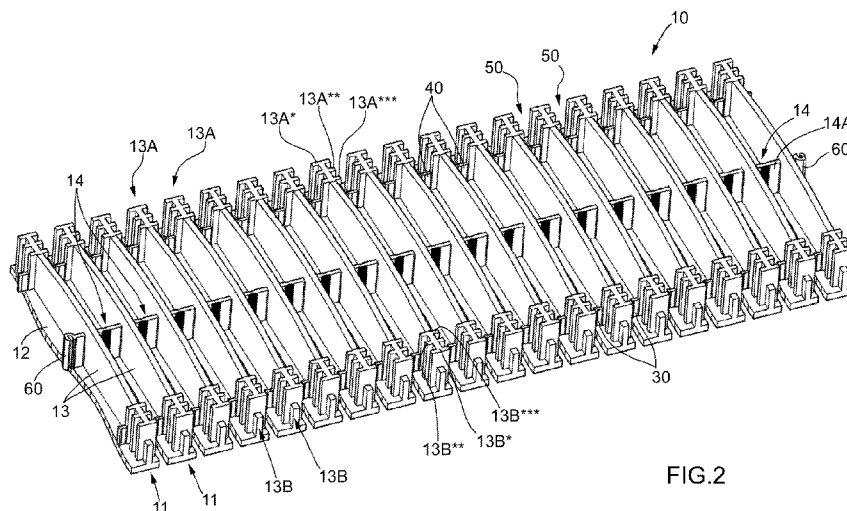


FIG.2

(57) Abstract: A module (10) for obtaining a modular grating (100) for swimming pools presents a plurality of sticks (11), each of which is connected with each adjacent stick (11) by means of a central spacing element (14) lying along a line (L1; L2) defining the contour of the swimming pool and by means of a lateral spacing element (40) presenting a portion (40A) with reduced thickness, which is obtained in correspondence to a free space (50) between a stick (11) and the other, and can easily be cut so as to allow the module (10) to be bent as a function of the profile of the contour of the pool.

"MODULE FOR OBTAINING A PERIMETER GRATING FOR SWIMMING POOLS"

TECHNICAL FIELD

The present invention relates to a module for obtaining a perimeter grating for swimming pools.

BACKGROUND ART

As known swimming pools are divided into two broad categories: (1) the traditional ones that provide a certain difference in height between the edge of the pool and the water surface; and (1) those of a new generation in which, instead, the water overflow is on a level with the surrounding floor.

The pools of the second type are spreading quickly because this type of pool, so-called "beach-style", is more appealing than the traditional type.

The "beach-style" swimming pool provides that the edge of the pool is equipped with a perimeter grating to cover the raceway where the water ends up when overflowing from the pool itself.

In addition to presenting a certain aesthetic appeal the perimeter grating must have a high resistance to deformation due to the weight of users, to be comfortable underfoot, but, above all, must not be slippery even when wet.

Another feature of said grating increasingly requested is related to the bendable aspect of the grating itself to allow a smooth adaptation to the development of the perimeter edge of the pool, without there being the need to produce modules having different shapes.

The gratings for traditional swimming pools are generally of two types.

According to a first type, used when the pool has straight

edges, the grating comprises a plurality of sticks, each of which comprises a horizontal upper strip coplanar with the upper strips of the other sticks to define a pedestrian level of the grating, and a lower vertical rib, which extends below the upper strip in order to ensure sufficient rigidity to the stick.

The bottom rib of each stick is connected to the bottom rib of each stick adjacent to it by means of two spacing elements substantially perpendicular to the bottom rib and to the upper strip.

According to the other of the two known types mentioned above, used when the swimming pool has edges at least partly curved, the bottom rib of each stick is connected to the bottom rib of each stick adjacent to it by means of a single central spacing element being shaped so as to allow the bending of the stick as a function of the pool contour.

The known gratings of the types described above have a relatively low stability, causing to the users an unpleasant feeling of instability, and may cause a fall with serious consequences for the users themselves.

DISCLOSURE OF INVENTION

The main purpose of the present invention is to provide a module for obtaining a swimming pool perimeter grating, which is free from the drawbacks described above and, at the same time, is easy and economical to produce.

Another object of the present invention is to provide a bendable module with a variable radius which allows an easy adaptation of the grating to the shape of the swimming pool without there being the need to produce modules having different shapes.

Advantageously, but not necessarily, the module object of the present invention is manufactured by means of a single operation of injection molding. The module furthermore measures 1 meter in length.

According to the present invention there is provided, therefore, a module for obtaining a swimming pool perimeter grating, as claimed in Claim 1 or in any of the Claims depending directly or indirectly on Claim 1.

A further object of the present invention is a grating for swimming pools formed by a plurality of modules coupled to one another.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention, a preferred embodiment is now described, purely by way of non limiting example and with reference to the accompanying drawings, in which:

- Figure 1 is a top perspective view of a module according to the dictates of the present invention;
- Figure 2 is a bottom perspective view of the module of Figure 1;
- Figure 3 is a plan view of a first detail of Figure 2;
- Figure 4 is a plan view of a second detail of Figure 2 shown in its initial configuration;
- Figure 5 is a plan view of the detail of Figure 4 shown in its final configuration; and
- Figure 6 is a plan view of two assembled modules to form a grating according to the invention.

BEST MODE FOR CARRYING OUT THE INVENTION

In Figures 1 and 2, with 10 has been indicated as a whole, a module for the construction of a modular grating 100 (Figure 6) for swimming pools (not shown), main object of the present invention.

The module 10 comprises a plurality of sticks 11, each of which comprises a horizontal top strip 12, which is coplanar to the strips 12 of the other sticks 11 to define a pedestrian level of the module 10, and a lower vertical rib 13, which extends below the strip 12 perpendicular to the strip 12 to give the strip 12 itself sufficient rigidity.

The rib 13 of each stick 11 is connected to the rib 13 of each adjacent stick 11 by means of a central spacing element 14, which extends perpendicularly to the strip 12 and the rib 13, and lies, together with the other elements 14, along a line L1 which follows the contour of the pool (in Figure 1 the line L1 is a straight line).

In the example shown in Figures 1 and 2, each strip 12 has an undulating shape, and is obtained in one piece with the rib 13 and with the relative elements 14.

Each element 14 comprises two end portions 14A, each of which extends towards the other portion 14A from the corresponding rib 13, and is connected with the other portion 14A by way of a hinge 20 which is also obtained directly in the molding operation (see below).

The hinge 20 is shown in greater detail in Figure 3, is obtained preferably in one piece, and in the same molding operation, with the other elements that constitute the module 10, is obtained by hollowing the two opposite faces of the element 14 with respective hollows of a substantially cylindrical shape, and has a thickness less than the thickness of the portions 14A.

Each rib 13 has two terminal reinforcement devices 13A, 13B, each of which comprises three support segments 13A*, 13A**, 13A*** and, respectively, 13B*, 13B**, 13B***, which are

substantially parallel to each other, and have substantially the same height.

The module 10 furthermore comprises, for each support segment 13B***, two respective teeth 30 opposites to one another, each of which protrudes from the relative support segment 13B*** towards the adjacent support element 13B***, and is disposed at a given distance from the adjacent tooth 30 so as to define a free space 31 to enable an easy folding of the module 10.

As shown in Figure 2, each support segment 13A*** is connected with each adjacent support segment 13A*** by a respective lateral spacing element 40, which is arranged on the opposite side of the corresponding teeth 30 with respect to the corresponding element 14, and presents, in one initial configuration, a central portion 40A with reduced thickness obtained, similarly to the corresponding free space 31, in correspondence of a free space 50 between a stick 11 and the other.

As shown in Figures 4 and 5, the portions 40A are shaped in such a way as to be easily cut along a cutting plane T and allow the bending of the module 10 (Figure 6) as a function of the edge profile of the swimming pool. Each cutting operation gives the element 40 a final configuration comprising two portions 40B* and 40B** having respective edges 40C* and, respectively, 40C** (Figure 5).

As shown in Figures 1 and 2, each module 10 is provided with two end hooks 60, which allow to connect more modules 10 one to the other (Figure 6) so as to obtain a modular grating 100 for swimming pools, and have opposite concavity between each other to allow to easily couple the hook 60 of a module 10 with the hook 60 of an adjacent module 10 and to always maintain the portions 40B* and 40B** facing the center of curvature regardless of the direction of curvature of the

module 10 itself.

In use, in order to proceed with the bending of a module 10 the following is performed:

- the installer, after realizing the length of a curved portion of the modular grating 100, cuts the portions 40A using, for example, a cutter; obviously the number of portions 40A to be cut with the cutter corresponds to the number of sticks 11 which must be arranged in the curved portion in question;
- at this point, the installer connects the module 10 considered with an adjacent module 10 in one direction or another by means of respective hooks 60; folds the module 10, and locks it in a known way in this curved configuration, for example by inserting the modular grating 100 in a shaped recess (not shown) formed in the screed which is located poolside.

In connection with the above, it should be noted that:

the presence of the hinges 20 allows an easy rotation of the sticks 11 so as to force the modular grating 100 to follow on the whole a line L2 (Figure 6), which has at least one curved portion, and is substantially parallel to the contour of the swimming pool;

as a result of bending of the module 10, the free spaces 31 are widened, and the edges 40C* and 40C** are close to one another to give the module 10 the necessary curvature, if necessary, the edges 40C* and 40C** are positioned contacting each other if necessary by pressing lightly on each other.

With reference to Figure 6, the straight module 10 is extremely stable and leans on reinforcement terminal devices 13A, 13B, while the folded module 10 has a plurality of elements 40 cut in their final configurations (Figure 5). The number of elements 40 which are cut is determined from time to time by the installer according to the length of the curved portion.

It should be noted finally that the modular grating 100 is mounted in a shaped recess (not shown) formed in the screed (or alternatively in a prefabricated raceway) which is located poolside by means of the interposition of two rubber stabilizing elements (not shown), each of which has a L shape, is arranged between the screed and one of the terminal reinforcement devices 13A, 13B, ensures the modular grating 100, a relatively high stability, and prevents sliding of the sticks 11.

The module 10 has an excellent resistance to deformation due to the weight of the users even when disposed in a curved configuration. The presence of the hinges 20 allows, moreover, a smooth rotation of the sticks 11.

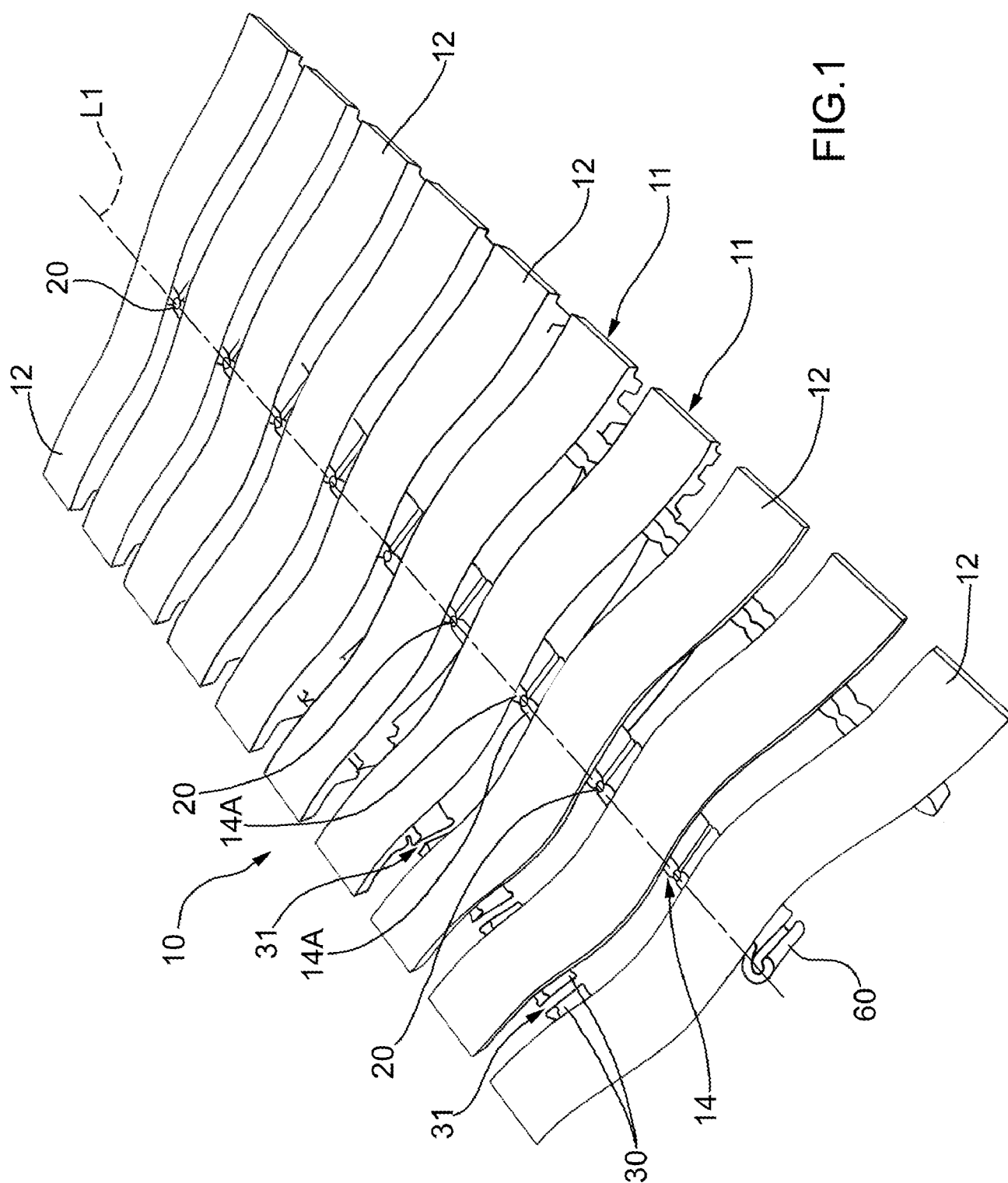
CLAIMS

1. A module (10) for obtaining a modular grating (100) for swimming pools; the module (10) comprising:
a plurality of sticks (11), which are substantially perpendicular to a line (L1; L2) defining the contour of the swimming pool; each stick (11) of at least part of the sticks (11) being connected to each adjacent stick (11) by means of a central spacing element (14), which lies along the line (L1; L2);
the module (10) being characterised in that each stick (11) of at least part of the sticks (11) is furthermore connected to each adjacent stick (11) by means of a lateral spacing element (40) presenting a portion (40A) with reduced thickness, which is obtained in correspondence to a free space (50) between the adjacent sticks (11), and can easily be cut, so as to allow the module (10) to be bent as a function of the contour of the swimming pool.
2. A module (10) according to Claim 1, characterised in that each central spacing element (14) presents a hinge (20), which is suited to allow the rotation of the relative sticks (11).
3. A module (10) according to Claim 2, characterised in that each hinge (20) is obtained by hollowing the two opposite faces of the relative central spacing element (14), reducing their thickness.
4. A module (10) according to any of the previous Claims, characterised in that, on the opposite side of the lateral spacing element (40) with respect to the central spacing element (14), there are provided at least two teeth (30) defining between them a free space (31).
5. A module (10) according to any of the previous Claims and comprising, furthermore, two end hooks (60) presenting respective concavities opposite to each other.
6. A module (10) according to any of the previous Claims, characterised in that the module (10) is manufactured by means of a single operation of injection moulding.

7. A modular grating (100), preferably for swimming pools, characterised in that it comprises at least one module (10) of the type claimed in any of the Claims from 1 to 6.

8. A modular grating (100) according to Claim 7, characterised in that it comprises at least two modules (10), which are coupled to each other by means of two end hooks (60) presenting respective concavities opposite to each other.

9. A modular grating (100) according to Claim 7 or 8 and comprising, furthermore, two rubber stabilizing elements, each of which is interposed between a lateral lower edge of the modular grating (100) and a housing raceway of the modular grating (100) itself.



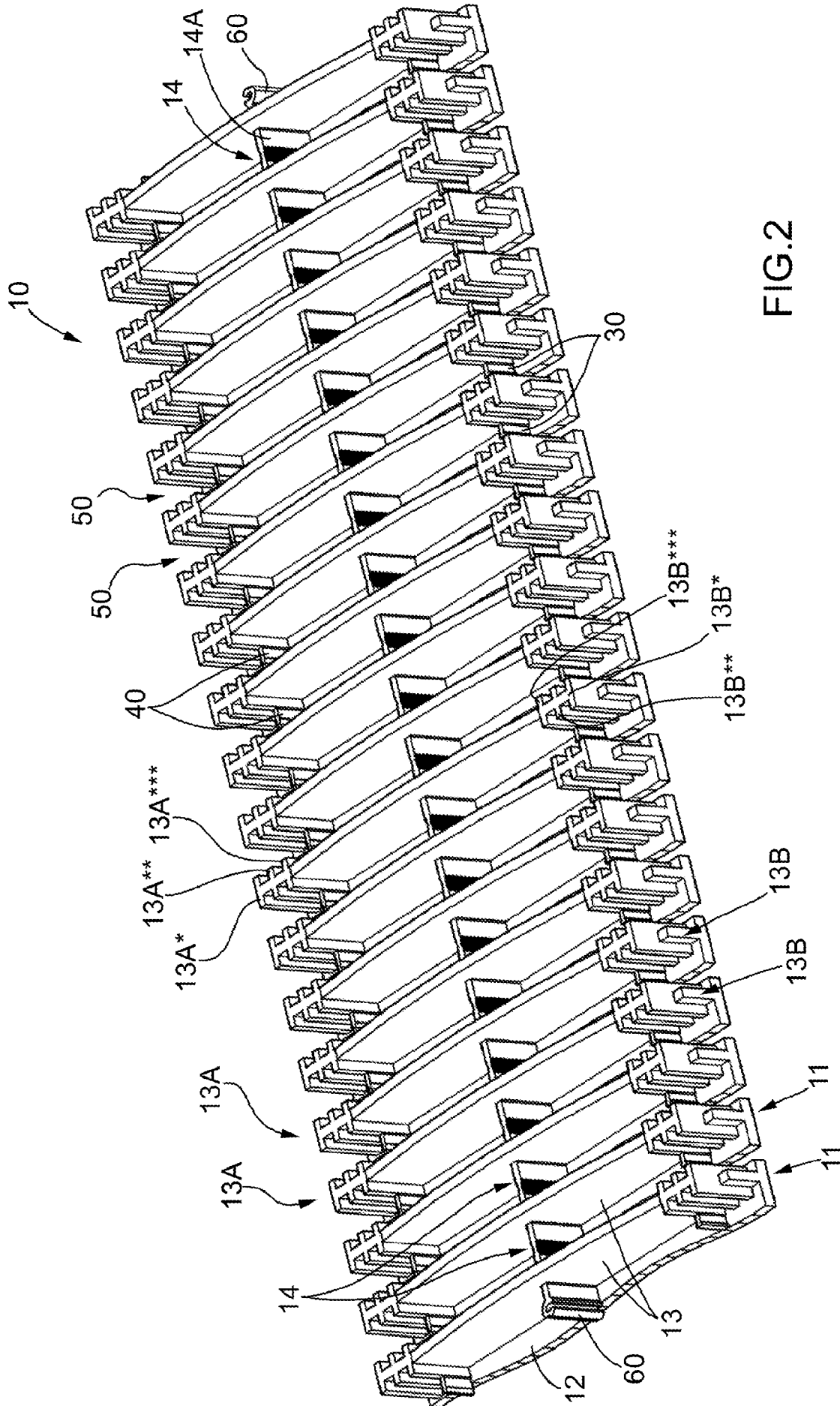


FIG.2

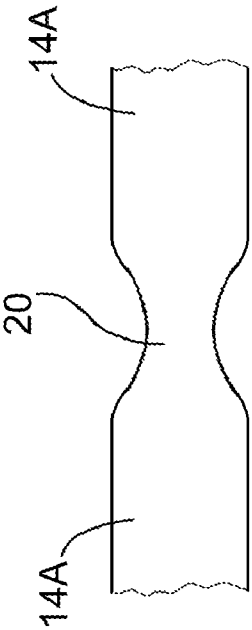


FIG. 3

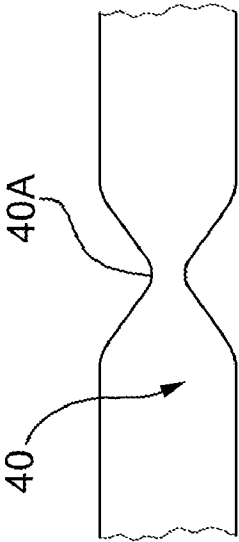


FIG. 4

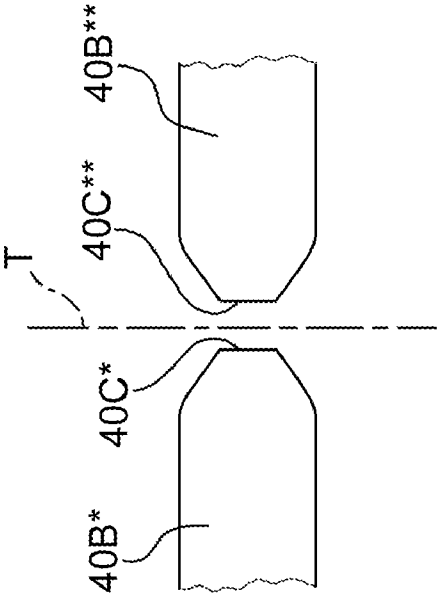


FIG. 5

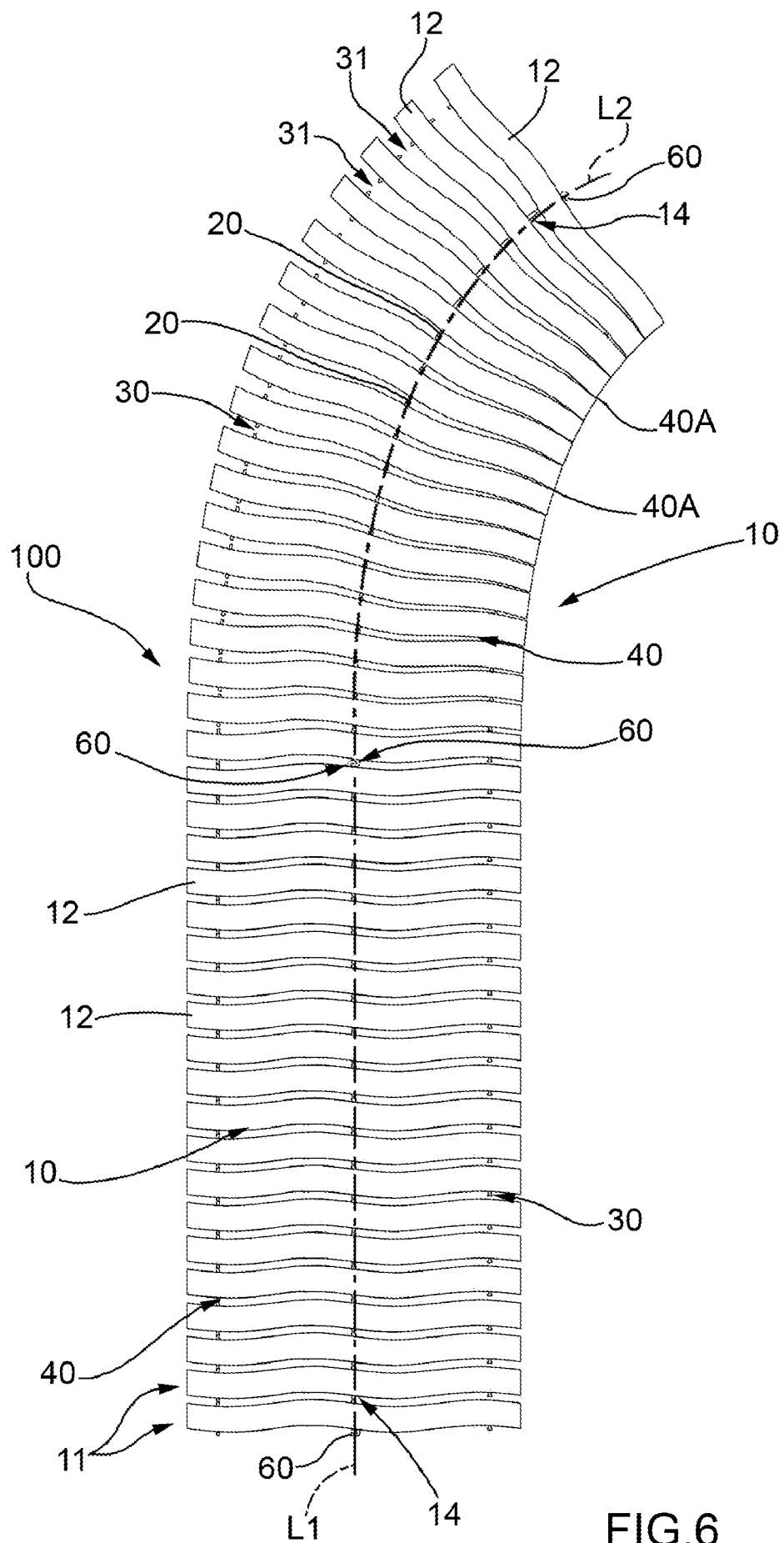


FIG.6

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/052136

A. CLASSIFICATION OF SUBJECT MATTER
INV. E04C2/42 E04H4/12
ADD.

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)
E04C E04H

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)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 650 066 A (BLANDIN JEAN-CLAUDE [FR] ET AL) 22 July 1997 (1997-07-22) column 2, line 51 - column 3, line 54; figures 1,2,5	1,2,5-8
A	FR 2 846 994 A1 (PROCOPI [FR]) 14 May 2004 (2004-05-14) page 4, line 3 - page 6, line 26; figures 3-6	1,2,5-8
A	DE 26 02 114 A1 (ARENS E KG) 4 August 1977 (1977-08-04) figure 1	1

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

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

1 October 2012

Date of mailing of the international search report

09/10/2012

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Mysliwetz, Wolfgang

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2012/052136

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5650066	A	22-07-1997	CA	2169754 A1	27-07-1995
			EP	0804664 A1	05-11-1997
			FR	2715425 A1	28-07-1995
			US	5650066 A	22-07-1997
			WO	9520085 A1	27-07-1995

FR 2846994	A1	14-05-2004	NONE		

DE 2602114	A1	04-08-1977	NONE		
