



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
20.03.2019 Bulletin 2019/12

(51) Int Cl.:
E04B 9/16 (2006.01) E04B 9/26 (2006.01)

(21) Application number: **18195057.7**

(22) Date of filing: **18.09.2018**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **Cipriani, Giuseppe**
38068 Rovereto (TN) (IT)
(72) Inventor: **Cipriani, Giuseppe**
38068 Rovereto (TN) (IT)
(74) Representative: **Manfrin, Marta et al**
Società Italiana Brevetti S.p.A.
Stradone San Fermo 21 sc. B
37121 Verona (VR) (IT)

(30) Priority: **19.09.2017 IT 201700104697**

(54) **SECTION BAR FOR SUPPORT STRUCTURES, OR SUPPORT STRUCTURES OF FALSE CEILINGS**

(57) The present disclosure refers to a metal bar (2a), including a base wall (22) and lateral sides (21), and wherein said base wall (22) and said lateral sides (21) define a cavity (24). Each of the lateral sides (21) has an engagement zone (26), each engagement zone including at least two niches or recesses, and wherein an en-

gagement opening is defined as a distance between two niches or recesses of the same engagement zone and a pitch of the bar is defined as a distance between an engagement zone and a subsequent engagement zone. The pitch between two subsequent engagement zones is 100 mm or multiples of 100 mm.

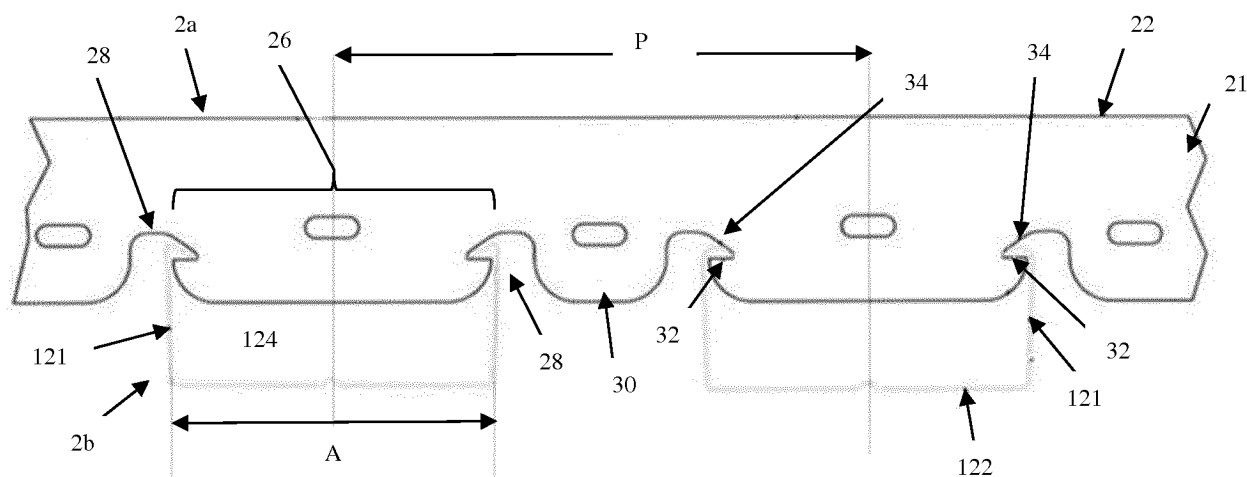


Fig. 5

Description

[0001] The present disclosure refers to a bar for supporting structures, or bearing structures, of false ceilings, in other words supporting structures for slabs or panels, for example made of plasterboard, placed underneath an actual ceiling.

[0002] The supporting structures for false ceilings comprise a support frame intended to the support or bearing of the panels or slabs. The bars are connected to the ceiling by means of a so-called hanger, steel bars or other engagement accessories. Each slab has width L1 and length L2 defined by manufacturing standards.

[0003] The support frame includes metal bars, preferably but not limited to "C" or "U" shape (in other words, bars shaped by one lateral wall and two opposite sides or lateral shoulders). The metal bars are cross overlaid to ideally form a grid, which constitutes a floor for the plasterboard slabs CG of the false ceiling.

[0004] More in particular, to realize the connection and according to a first solution, the use of so-called snap bars having specific recesses or niches onto the corresponding wings or edges of the "C" or of the "U" is provided.

[0005] More in particular, with reference to figure 1, a principal bar I, placed above and a secondary bar II, is provided. The latter bar is hence placed underneath the grid. The principal bar has niches and recesses intended to receive the wings of the "C" of the secondary bar (figure 2).

[0006] The secondary "C" bar has width 50mm and the pitch P, which is intended to be the distance between the centre of two pairs of niches intended to engage, or the pitch of a so-called engagement zone, is precisely of 50mm. To clarify, in the scope of the present disclosure, it is defined as "engagement zone" the zone which comprises a couple of subsequent niches each intended to receive a corresponding wing or edge of the "C" of a secondary bar.

[0007] A traditional assembly system of the false ceiling involving the use of those profiles is defined in figure 1.

[0008] The author of the present disclosure acknowledges that there is a match between the pitch of the engagement zone and the width of the secondary bar II depending of the dimension of the width L1 of the plasterboard slab CG.

[0009] In other words, this pitch is defined by the width L1 of the plasterboard slabs which are applied to form the false ceiling. Such slabs have width L1 of 1250 mm and length L2 variable from 2000 to 2500 or 3000.

[0010] Since the width L1 of the slab is a multiple of 50 mm, the pitch of the engagement zone is equal to 50 mm in order to have the lateral edges of each slab, when each slab is supported on the grid, supporting onto one half of the secondary bar II of the grid G as shown in figure 1. The support allows an overall stability of the structure.

[0011] In such figure, it can be noticed that the ends

of the plasterboard slabs realize a junction point exactly at the middle of the secondary bar II. In such way, it is possible to longitudinally fix the external edges to the slabs of the structure of the secondary bar II by means of screws.

[0012] In a second solution, predominant in some European Countries, the primary snap bar is not used because the secondary bar used for false ceilings has a width of 60 mm, therefore impossible to be assembled on a snap bar with a pitch 50mm. Even if a wider pitch equal to the width of the secondary bar 60 mm was used, considering the width of 1250 mm and the fact that 60 is not a divisor, it would have not been possible to be assembled the edge of the slab onto a secondary bar of the grid.

[0013] To overcome such a drawback, connection accessories such as that in figure 2 are used, to join a secondary bar of width 60 mm with a primary bar. The connection accessory of figure 2 is, in particular, intended to connect and to fix the metal bars together, at the crossing zone between two metal bars in the grid configuration. The advantages for the first solution are considerable because the shape of the accessory is implemented into the primary profile, allowing to obtain a saving in terms of number of components, easy assembly, assembly speed and positioning at exact pitch, eliminating the chance of human error during placing.

[0014] Furthermore, the known connection accessories do not need many manual operations to be fixed to the profiles by an operator, with a resulting delay of assembling. Furthermore, the need to perform many manual operations implies in some instances a lack of safety, due to profiles not completely locked or not fixed according to the best practise.

[0015] The present disclosure hence begins from the position of the technical problem to provide a snap profile metal bar to allow an efficient connection to another bar in a support frame for false ceiling and which, in general, allows to overcome the abovementioned drawbacks with reference made to the state of art and/or to achieve further advantages or features.

[0016] Such technical problem may be solved by means of a bar according to the independent claim 1, a support frame to support a false ceiling and a method according to the corresponding independent claims. Particular embodiments of the scope of the present disclosure are defined in the corresponding dependent claims. Basically, an engagement bar is proposed wherein the pitch between two engagement zones is greater than the engagement width, i. e. the width of the secondary bar, and which is a pitch equal to 100 mm or multiples of 100. The value of 100 mm is to be intended as much an exact value as with a constructing tolerance up to 10 mm, preferably up to 5 mm and more preferably up to 3 mm. The pitch is no longer bound to the width of the secondary bar. As a consequence, a grid with a broader mesh width may be achieved. The fact that the mesh width can be broadened by the chance of taking advantage of not only

the width of the plasterboard slabs of the false ceiling but even the length. In particular, preferably, the plasterboard slab may be oriented as a length orientation. Such orientation is orthogonal with respect to that of the state of art.

[0017] Thus, the slab is arranged with length parallel to the longitudinal direction of the snap profile metal bar.

[0018] More in detail, by means of a pitch equal to 100 mm or multiples of 100 mm, the pitch may be bound to the length, or long side, of the plasterboard slabs, rather than to the width, or short side, of the slabs.

[0019] Features and way of use of the subject-matter of the present disclosure will be evident from the following detailed description of its preferred embodiments, given by way of non-limiting examples.

[0020] It is also to be understood that, within the scope of the present disclosure, all possible combinations of embodiments are comprised, which are described referring to the following detailed description.

[0021] Reference will be made to the figures of the attached drawings, wherein:

- Figure 1 shows a schematic plant view of a system for false ceilings according to the state of art;
- Figure 2 shows a lateral view of a snap profile bar according to the state of art;
- Figure 3 shows a view of a connection accessory according to the state of art;
- Figure 4 shows a schematic plant view of a system for false ceilings according to the present disclosure;
- Figure 5 shows a lateral view of a snap bar according to the present disclosure.

[0022] Referring to the figures 4-5 a snap profile bar 2a according to the present disclosure is shown. The snap profile bar 2a is a body lengthened in a longitudinal direction, has "C" or "U" shape or section and is intended to be connected to an underneath bar, called secondary and identified by the reference number 2b. A plurality of primary bars and secondary bars are cross overlaid, to define a grid configuration (partially observable in figure 4) or support frame 100 for the support of slabs 200, preferably made of plasterboard. Basically, in the support frame 100, the snap profile metal bars 2a of a first series, or primary metal bars, are in parallel arranged one regularly spaced from each other and metal bars 2b of a second series, or secondary metal bars 2b, are in parallel arranged one regularly spaced from each other. The snap profile metal bars 2a of a first series, or primary bars, are overlaid to the second series of secondary metal bars 2b along an orthogonal direction to the first series.

[0023] As a consequence, in the grid configuration each snap profile metal bar 2a of the first series, that is placed above, or upper metal bar, is arranged in a cross and overlaid manner, or as a cross, to at least a metal bar 2b of the second series, that is placed underneath, or lower metal bar.

[0024] The snap profile metal bar 2a includes a base

wall 22 and two lateral sides 21, of which only one is observable in the drawings.

[0025] The base wall 22 and the two lateral sides 21 define a "C" or "U" shape profile with a cavity also non-observable in the drawings. Even the second bar 2b includes a base wall 122 and lateral sides 121 that realize a cavity 124.

[0026] Each of the lateral sides 21 of the snap profile bar 2a has a plurality of engagement zones 26 that follows each other in sequence or subsequently along a longitudinal direction. Each engagement zone 26 includes at least two niches or recesses 28. The lateral sides 121 of the second bar 2b are received in the corresponding niches of the engagement zone 26 of the snap profile metal bar 2a.

[0027] An engagement opening A is defined as a distance comprised between two niches or recesses 28 of the same engagement zone 26. The engagement opening A corresponds to the width or width of the secondary bar 2b. A pitch P of the snap profile metal bar 2a is defined as a distance or interaxle spacing along a longitudinal direction of the snap profile 2a between a centre of an engagement zone 26 comprised between the two niches 28 and a centre comprised between the two niches 28 of an engagement zone 26 which niches are subsequent or adjoining to the sequence. As a consequence, the pitch P is also intended as the distance or interaxle spacing between the centre of a first secondary bar 2b and the centre of a subsequent secondary bar 2b adjoining to the first one.

[0028] According to a feature the present disclosure, the pitch P between two subsequent engagement zones 26 is of 100 mm or multiples of 100 mm. In other words, in the snap bar according to the present disclosure, the pitch is not equal to the width of the engagement zone 26, but greater than that. It implies that, in the snap profile bar according to the present disclosure, the pitch P is bound to the engagement width, and hence to the width or width of the second bar.

[0029] Because of this adjustment, more clearance can be obtained regarding the value of width of the pitch P with respect to the width or length of the slab, in order for a side of the slab to be supported on one of the two bar 2a, 2b when the slab is assembled on the grid.

[0030] For example, in one embodiment of the present disclosure, the plasterboard slab 200 is oriented according to an orientation of length L2, orthogonal to that of state of art.

[0031] In this case, the length L2 of the slab 200 is exploited for the support of the slab at a secondary bar.

[0032] For example, the standard length of the slab usually is 2000, 2500 or 3000 mm. Preferably, the pitch P between two subsequent engagement zones is chosen in such a way to be a divisor of 2000mm, 2500 mm or 3000 mm, for example 100 mm. In other words, the pitch P between two subsequent engagement zones is 100 mm in order to allow the support of a slab in the direction of the length L2. The length values of 2000 mm, 2500

mm or 3000 mm allow an operating space in the aforementioned clearance of the pitch broader than the standard width of 1250 mm of the slabs 200.

[0033] In other words, with a pitch value of 100mm, the length L2 of the slab, for example 2000 mm, can be exploited and may be hence fixed even a bar having width value of 60 mm or of any other value, since the width of the secondary bar 2b is no longer important. What is important is the pitch P to be a divisor of the length L2 of slab 200, and the value of 100 mm or its multiples may be a divisor of such length L2.

[0034] It should be noted that, however, there is nothing to prevent from using the slabs 200 in the direction of the width and a second bar 2b having width of 50 mm.

[0035] As a consequence, such a snap bar 2a allows to use a 60 mm long bar 2b and to realize a system of false ceiling and to use plasterboard slabs of 1250mmx2000 or 1250x2500 or 1250x3000.

[0036] Preferably each of the lateral sides 21 comprises a side zone or side portion 30 not intended to engage and interposed between two subsequent engagement zones 26. The side portion 30 is prominent with respect to said two subsequent engagement zones 26, and allows to provide structural strength to the bar.

[0037] Preferably, the snap profile bar 2a has a particular joint configuration without any operating space that ensures the joining between the primary bar with the secondary one to be liable and stable (without vibrations).

[0038] In other words, preferably, the engagement zone has a profile that allows strong engagement without high operating spaces. With regard to this, it is noted that the niche 28 has a substantially triangular profile, including a base side 32 parallel to a longitudinal direction of the snap profile bar 2a and an oblique side 34 extended along an oblique direction with respect to said longitudinal direction. The oblique direction of both the niches 28 of the engagement zone 26 is convergent towards the centre of the engagement zone 26.

[0039] The aim of the present disclosure has been above described referring to its preferred embodiments. It is to be intended that other embodiments may subsist which belong to the same inventive core, all included within the scope of the claims hereinafter disclosed.

Claims

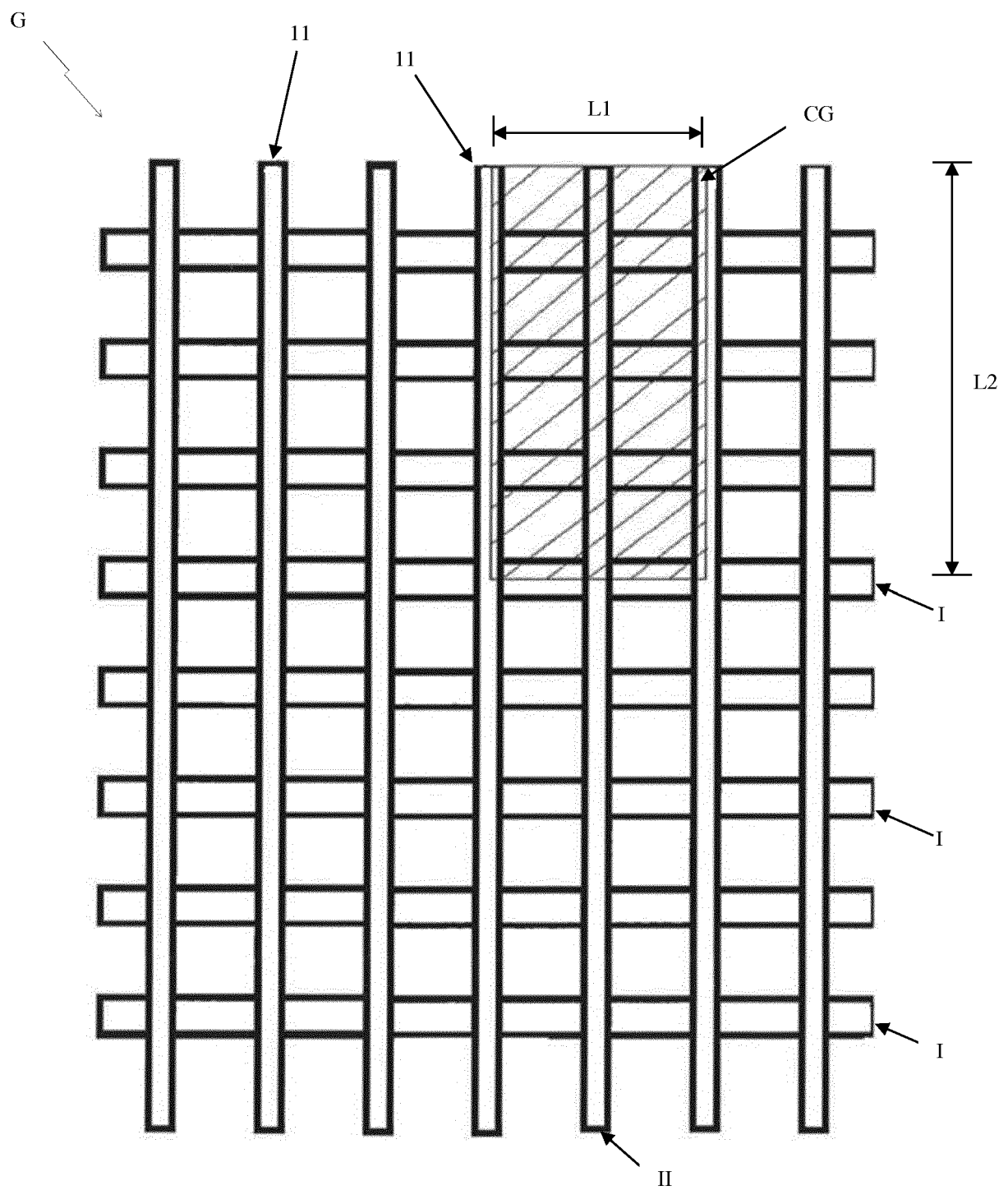
1. A metal bar with snap profile (2a) for making a support structure or a support frame for false ceilings, said metal bar with snap profile (2a) being extended in a longitudinal direction and including a base wall (22) and two lateral sides (21), and wherein said base wall (22) and said two lateral sides (21) define a "C" or "U" shape profile with a cavity, and wherein each of the lateral sides (21) has a plurality of engagement zones (26) in sequence or consecutive in the longitudinal direction, wherein each engagement zone (26) includes at least two niches or recesses (28),

and wherein a pitch of the metal bar with snap profile (2a) is defined as a distance or interaxle spacing between a center of an engagement zone comprised between the two niches and a center comprised between the two niches (28) of an engagement zone consecutive or adjacent in the sequence, and wherein the pitch (P) between two consecutive engagement zones (26) is of 100 mm or multiples of 100 mm.

2. The metal bar with snap profile (2a) according to claim 1, each of the side walls (21) comprises an edge zone or edge portion (30) not intended for engaging and interposed between two consecutive engagement zones (26), said edge portion (30) being prominent with respect to said two consecutive engagement zones (26).
3. The metal bar with snap profile (2a) according to claim 1 or 2, wherein the pitch (P) between two consecutive engagement zones is a divisor of 2000 mm, 2500 mm or 3000 mm.
4. The metal bar with snap profile (2a) according to any of the preceding claims, wherein the pitch (P) between two consecutive engagement zones is 100 mm.
5. The metal bar with snap profile (2a) according to any of the preceding claims, wherein the niches (28) has a substantially triangular profile, including a base side (32) parallel to a longitudinal direction of the metal bar of engagement (2a) and an oblique side (34) extended along an oblique direction with respect to said longitudinal direction, the oblique direction of both niches (28) of the engagement zone (26) being convergent towards the center of the engagement zone (26).
6. A support frame for a false ceiling, said frame including at least two metal bars (2a, 2b), wherein a first metal bar is a metal bar with snap profile (2a) according to anyone of the claims from 1 to 5, and wherein a second metal bar (2b) is arranged as a cross and underneath the first metal bar with snap profile (2a) and wherein the second metal bar (2b) comprises a base wall (122) and lateral sides (121), and wherein the lateral side (121) of the second profile (2b) are housed in the respective niches of the engagement zone (28) of the metal bar with snap profile (2a).
7. The support frame (100) according to claim 6, wherein the width of the base wall (122) of the second bar (2b) is less than the pitch of the engagement zone.
8. The support frame (100) according to claim 5, 6 or 7, wherein the width of the base wall (122) of the second bar (2b) is greater than 50 mm.

9. The support frame (100) according to claim 8, wherein the width of the base wall (122) of the second bar (2b) is 60 mm.
10. A false ceiling including a support frame (100) according to anyone of the claims from 6 to 9, and a slab having a dimension of length (L2) and a dimension of width (L1), wherein the slab is arranged so that the length (L2) of the slab is parallel to the longitudinal direction of the bar with snap profile (2a). 5 10
11. A method for making a false ceiling including a support frame (100), wherein the support frame includes at least two metal bars (2a, 2b), wherein a first metal bar is a metal bar with snap profile (2a), said metal bar with snap profile (2a) being extended in a longitudinal direction and including a base wall (22) and two lateral sides (21), and wherein said base wall (22) and said two lateral sides (21) define a "C" or "U" shaped profile with a cavity, and wherein each of the lateral sides (21) has a plurality of engagement zones (26) in sequence or consecutive, wherein each engagement zone (26) includes at least two niches or recesses (28), and wherein a second metal bar (2b) is arranged as a cross and underneath the first metal bar with a snap profile (2a) and wherein the second metal bar (2b) includes a base wall (122) and lateral sides (121), and wherein the lateral side (121) of the second bar (2b) are received in respective niches (28) of the metal bar with snap profile (2a) and wherein a pitch (P) of the metal profile with snap profile (2a) is defined as a distance or interaxle spacing between a center of an engagement zone comprised between the two niches (28) of an engagement zone (26) and a center comprised between the two niches (28) of a consecutive or adjacent engagement zone (26) in the sequence, said method providing the association of at least one slab (200) with the support frame (100), and wherein said slab has dimension of length (L2) and width dimension (L1), and wherein the slab is arranged with length (L2) parallel to the longitudinal direction of the metal bar with snap profile (2a) and wherein the pitch (P) of the metal bar with snap profile (2a) is a divisor of the dimension of length of the slab. 15 20 25 30 35 40 45
12. The method according to claim 11, wherein the pitch is of 100 mm or multiple of 100 mm. 50

55



ARTE NOTA

Fig. 1

ARTE NOTA

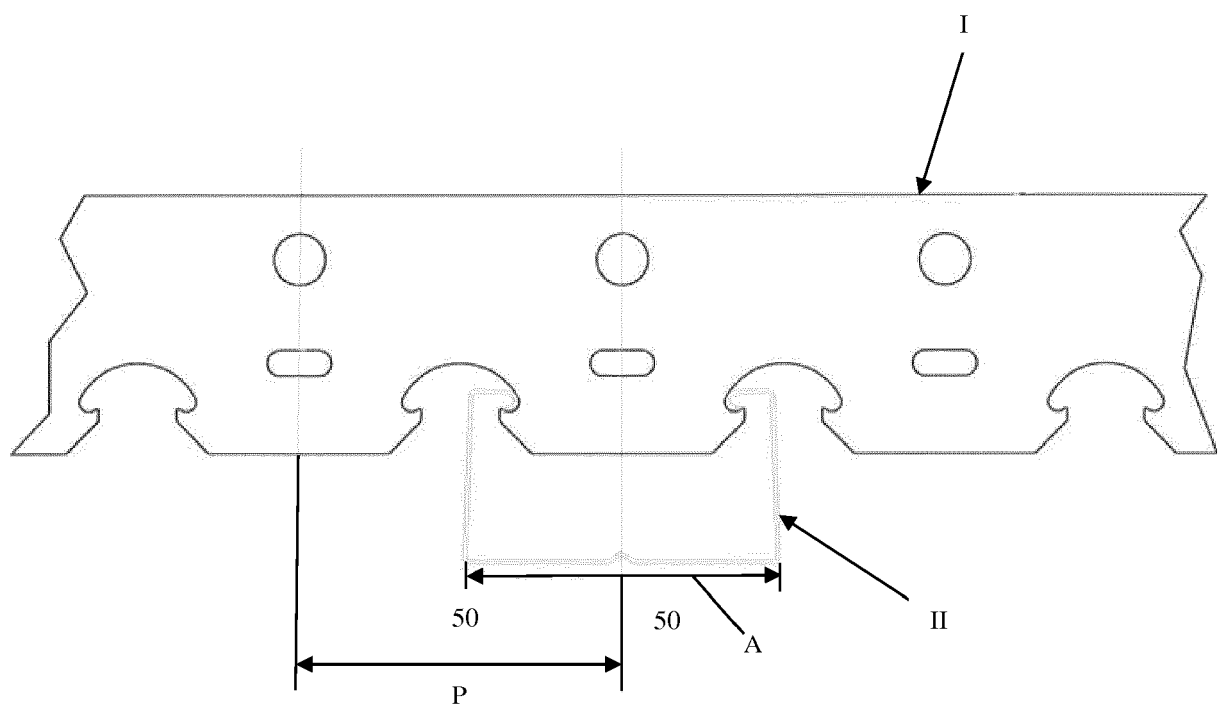


Fig. 2

ARTE NOTA

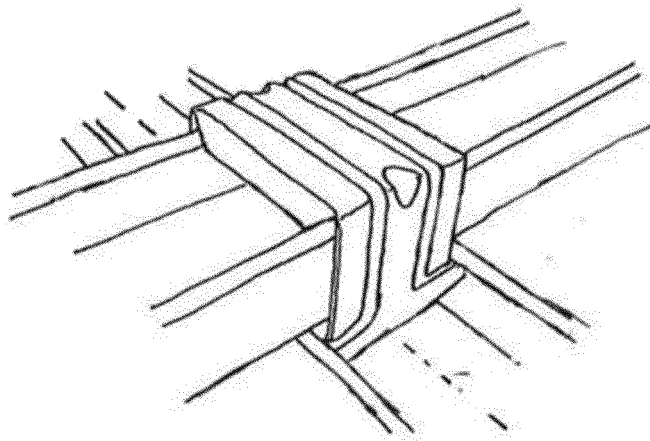


Fig. 3

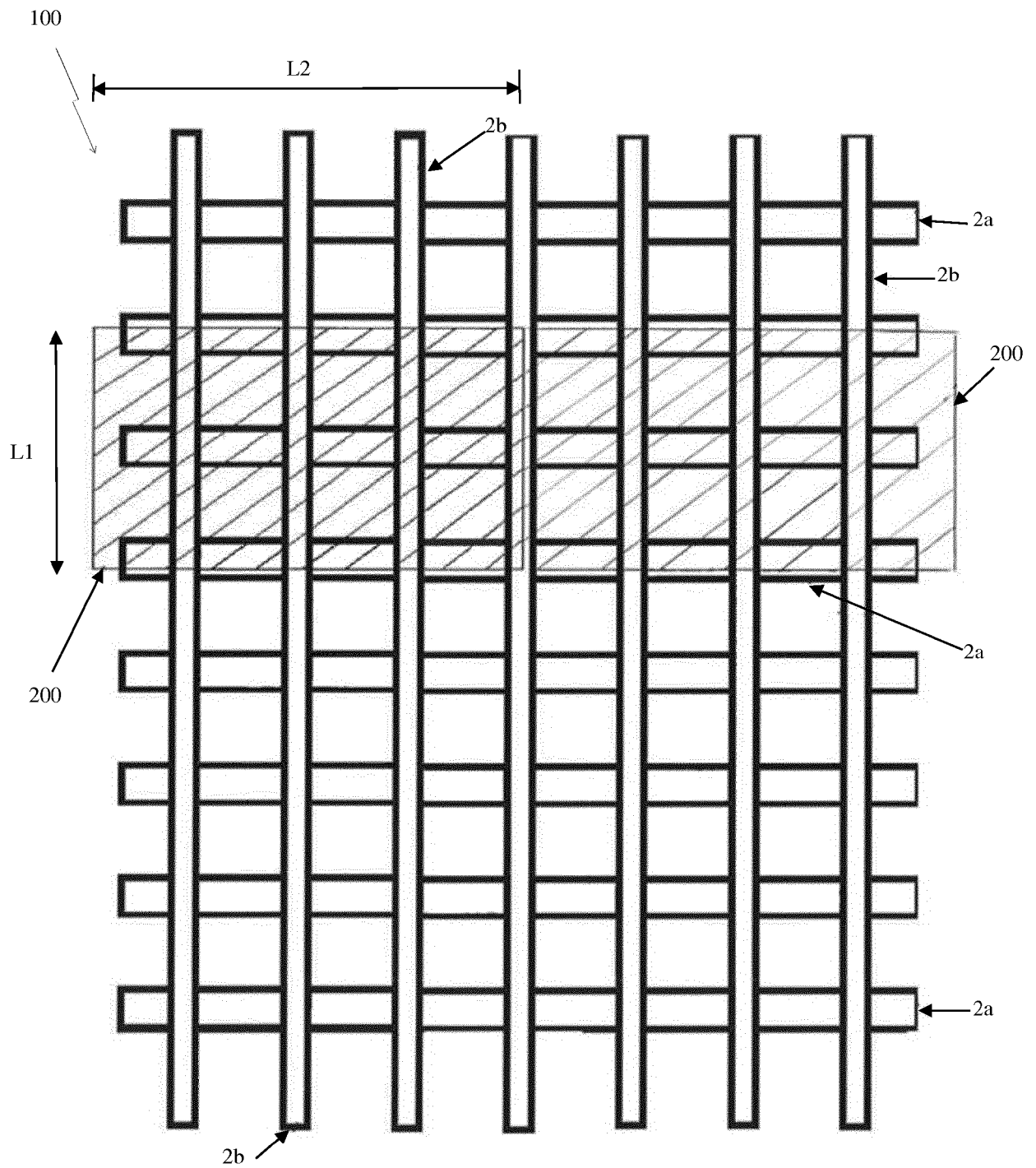


Fig. 4

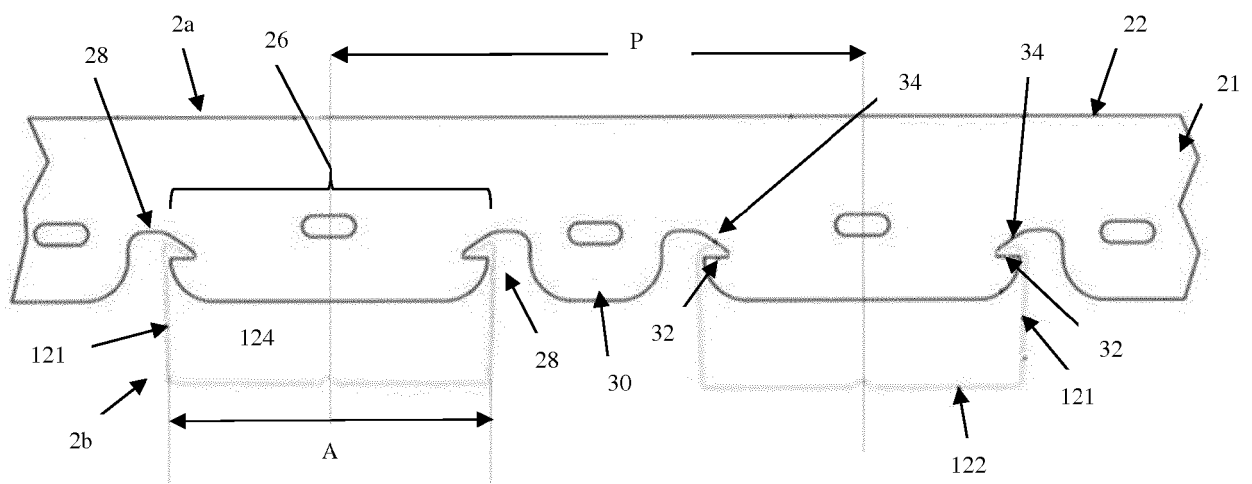


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
EP 18 19 5057

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2017/042268 A1 (HUNTER DOUGLAS IND BV [NL]) 16 March 2017 (2017-03-16) * figure 1 *	1-12	INV. E04B9/16 E04B9/26
X	EP 0 985 778 A2 (HUNTER DOUGLAS IND BV [NL]) 15 March 2000 (2000-03-15) * figures 8,9a,9b,9c,10 * * paragraph [0012] * * paragraph [0024] *	1-12	
X	DE 31 48 777 A1 (NAGELSTUTZ & EICHLER GMBH & CO [DE]) 16 June 1983 (1983-06-16) * figures 1-6 *	1-12	
A	DE 19 18 152 A1 (PGH AUFBAU) 15 October 1970 (1970-10-15) * figures 1-6 *	1-12	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E04B
Place of search		Date of completion of the search	Examiner
The Hague		15 January 2019	Petrinja, Etjel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.02 (P04C01)

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

EP 18 19 5057

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

15-01-2019

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 2017042268	A1	16-03-2017	CA 2997830 A1	16-03-2017
			CN 108026724 A	11-05-2018
			EP 3347540 A1	18-07-2018
			WO 2017042268 A1	16-03-2017

EP 0985778	A2	15-03-2000	AT 287999 T	15-02-2005
			CN 1261123 A	26-07-2000
			DE 69923396 T2	29-12-2005
			DK 0985778 T3	06-06-2005
			EP 0985778 A2	15-03-2000
			ES 2235441 T3	01-07-2005
			HK 1023383 A1	15-04-2005
			KR 20000023007 A	25-04-2000
			MY 131808 A	28-09-2007
			SG 91828 A1	15-10-2002
			TW 399116 B	21-07-2000
			US 6672025 B1	06-01-2004
			US 2004065038 A1	08-04-2004

DE 3148777	A1	16-06-1983	AT 375994 B	25-09-1984
			CH 658092 A5	15-10-1986
			DE 3148777 A1	16-06-1983
			NL 8204486 A	01-07-1983

DE 1918152	A1	15-10-1970	NONE	
