



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
08.01.2014 Bulletin 2014/02

(51) Int Cl.:
A47F 5/11 (2006.01)

(21) Application number: **12461527.9**

(22) Date of filing: **03.07.2012**

(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

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(54) **A foldable display stand with shelves**

(57) A cardboard stand with shelves, foldable from a substantially flat transport configuration to a working configuration, in which it has a form of a box with two side walls (20), a back wall (10) and shelves (30) fixed permanently and pivotably to the back wall (10), comprising

a main shelf portion (31) and a support shelf portion (32A) pivotable with respect to the main shelf portion (31) and distanced from the back wall (10). The side walls (20) are releasably attachable to the back wall (10) and comprise couplers (203A, 204A) for coupling it permanently with the support portions (32) of the shelves (30).

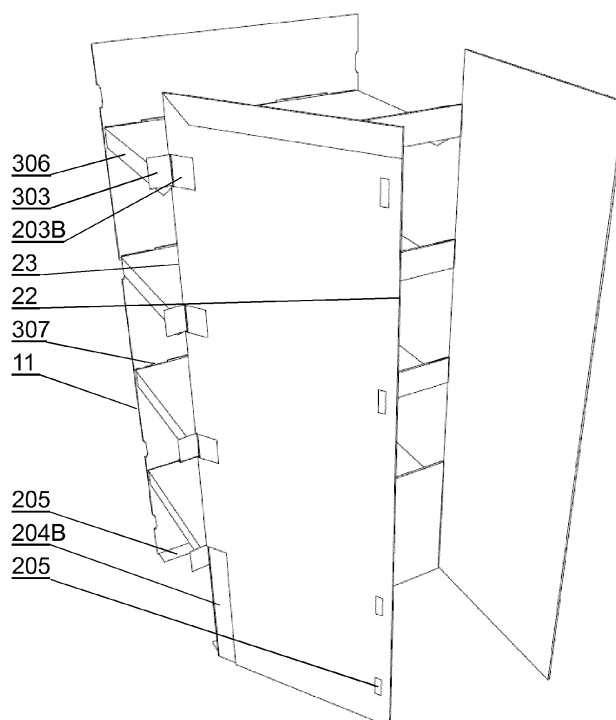


Fig. 1C

Description

[0001] The present invention relates to foldable cardboard stands with shelves.

[0002] There are known cardboard stands, which are foldable from a flat transport configuration to a working configuration. A desirable feature of such stands is a plain construction, simple process for changing the configuration and small dimensions of the transport configuration.

[0003] A European patent application EP 1031304 presents a cardboard stand with shelves positioned in a box comprising side walls, external back wall and front walls formed of one cardboard sheet, and an internal movable back wall formed of another cardboard sheet. The shelves are fastened by gluing its back support flaps with the internal back wall. In addition, the shelves further comprise edge support flaps which can be glued with the side walls only in the working configuration. The stand can be converted from a flat transport configuration to a working configuration by vertically adjusting the internal back wall.

[0004] A European patent EP 1421879 presents a cardboard stand, which is convertible from a flat transport configuration to a working configuration, in which it has a form of a box with side walls and a back wall with shelves mounted within the walls, wherein the shelves are made of separate sheets of cardboard and are mounted on supports integral with the support construction of the box and are mounted by flaps in openings of the back wall. The side edges of the shelves are not supported.

[0005] A European patent application EP 2255703 presents a cardboard stand, which is convertible from a flat transport configuration to a working configuration, in which it has a form of a box with side walls and a back wall with shelves mounted within the walls, wherein the main surface of each shelf comprises a hinge, which folds during the transition from the working configuration to the transport configuration. This weakens the main surfaces of the shelves.

[0006] The aim of the invention is to provide an alternative foldable cardboard stand, which is easy foldable between a transport configuration and a working configuration, having shelves which provide good support for their load.

[0007] The object of the invention is a cardboard stand with shelves, foldable from a substantially flat transport configuration to a working configuration, in which it has a form of a box with two side walls, a back wall and shelves fixed permanently and pivotably to the back wall, comprising a main shelf portion and a support shelf portion pivotable with respect to the main shelf portion and distanced from the back wall, wherein the side walls are releasably attachable to the back wall and comprise couplers for coupling it permanently with the support portions of the shelves.

[0008] Preferably, the support portion of the shelves comprises two layers, and between the layers of the support portion there are positioned couplers of the side

walls.

[0009] Preferably, the back wall has a horizontal folding line at the height of the lowest shelf.

[0010] Preferably, when folding the stand from the working configuration to the transport configuration, the side walls are foldable outwards along a folding line by an angle of about 270°.

[0011] Preferably, the back edges of the side walls extend over the back wall of the stand.

[0012] Preferably, the side walls comprise two layers folded along a front edge, and the coupler is formed from a cutout of a fragment of the internal layer of the side wall which is adjacent and pivotable with respect to the front edge, wherein in the openings formed in the cutouts of the couplers there are positioned reinforcements which form extensions of at least one layer of the support portions of the shelves, the supports being perpendicular to the support portions of the shelves in the working configuration of the stand.

[0013] Preferably, at the edges of the back wall there are positioned first fasteners and at the side walls next to their back edge there are positioned second fasteners configured to be coupled with the first fasteners.

[0014] Preferably, the back wall in the areas along the vertical edges is formed by at least two layers of cardboard, between which there are positioned base portions of the first fasteners, which have fastening portions extending over the vertical edges of the back wall via openings made next to the vertical edges of the back wall. The side wall is formed by at least two layers of cardboard, between which there are positioned base portions of second fasteners, which have fastening portions extending over the internal surface of the side wall via openings made in the internal layer of the side wall.

[0015] Preferably, the fastening portions of the fasteners have an elongated shape and are parallel to the main plane of the back wall.

[0016] Preferably, the base portions of the fasteners have in their main plane a surface larger than the surface of the fastening portions.

[0017] Preferably, the base portions of the fasteners are perforated.

[0018] Preferably, the base portions of the fasteners are fixed between the layers of cardboard by an adhesive.

[0019] Preferably, the fastening portions of the first fasteners are insertable to the fastening portions of the second fasteners.

[0020] Preferably, the fastening portions of the first fasteners have a resilient element attachable by snapping to the fastening portion of the second fasteners and a pressing element for deforming the resilient element by the user to release the snap between the resilient element and the fastening portion.

[0021] The object of the invention is shown in exemplary embodiments on a drawing, in which:

Figs. 1A-1F show the view of the stand in successive stages of transformation from a working configura-

tion shown in Fig. 1A, via intermediate configurations shown in Fig. 1B-1E, to a transport configuration shown in Fig. 1F.

Figs. 2A-2D show cardboard blanks for individual components of the stand.

Figs. 3A-3B show the first and second fasteners.

[0022] Dashed lines on the drawings related to cardboard blanks correspond to bending lines. Continuous lines correspond to edges and cutting lines. Variable lines correspond to perforated bending lines. Dashed areas correspond to areas where individual elements of the blanks are joined together. In these areas the adhesive substance may be applied to one or both of the blanks.

[0023] The stand according to the invention is made of cardboard, preferably of corrugated cardboard.

[0024] Figs. 1A-1F show the view of the stand in successive stages of transformation from a working configuration shown in Fig. 1A, via intermediate configurations shown in Fig. 1B-1E, to a generally flat transport configuration shown in Fig. 1F. In the working configuration, the stand has a form of a box with side walls 20, a back wall 10 and shelves 30.

[0025] The shelves 30 of the stand are permanently, pivotably fixed to the back wall 10, i.e. the fixture is not detachable when transforming from the transport configuration to the working configuration and vice versa. The shelves 30 comprise a main portion 31 and a support portion 32A, 32B which is pivotable with respect to the main portion 31 and distanced from the back wall 10. In the working configuration, the support portion 32A, 32B of the shelf is perpendicular with respect to the main portion 31 of the shelf 30. The support portion 32A, 32B of the shelf 30 is double-layered and formed of elements 302A and 302B of the blank 300A or, in case of the lowest shelf - the elements 302A and 302C of the blank 300B, shown in Figs. 2C and 2D. The tongues 305 cut from the flaps 304 of the blanks 300A, 300B and placed in openings 106 of the back wall 10 form a permanent connection of the shelves 30 with the back wall 10 of the stand.

[0026] The back wall 10 of the stand is formed from a blank 100 shown in Fig. 2A. The blank 100 comprises, under the openings 106, areas 108 in which it is glued with tongues 305 of the blanks 300A, 300B forming the shelves 30. The areas of the back wall 10 which are adjacent to the vertical edges 11 are double-layered and formed by folding the flaps 102 by about 180° and gluing them to the element 101 of the blank 100. The blank 100 comprises at the folding line 110 areas 109 in which it is glued with an area 101 after the flaps are folded along the folding line 110. The folding line 110 forms, after the flaps 102 are folded, the edges 11 of the back wall. The flaps 102 of the blank 100 of the back wall 10 are cut into two parts at the height of the lowest shelf 30 of the stand, to allow folding of the stand along the folding line 104. The back wall 10 further comprises a foldable bottom foot 103.

[0027] The side wall 20 is formed from a blank 200

shown in Fig. 2B. The side wall 20 is formed of two layers 201, 202 bent towards each other along the folding line 206 forming a front edge 23 of the stand and glued together in the areas 207. The side walls 20 comprise couplers 203A, 204A which join it pivotably and permanently with the support portions 32A, 32B of the shelves 30, wherein the couplers 203A, 204A of the side walls 20 are positioned, respectively, between the layers 302A, 302B and 302A, 302C of the support portions 32A, 32B of the shelves 30 and glued together in areas 307.

[0028] The couplers 203A, 204A are made by cutting out fragments of the internal layer 201 of the side wall 20, which are adjacent and pivotable with respect to the front edge 23 of the stand, wherein in the openings 203B, 204B of the cut-out couplers 203A, 204A there are placed reinforcements 303 which extend at least one layer 302A of the support portions 32A, 32B of the shelves 30. The reinforcements 303 are perpendicular with respect to the support portions 32A, 32B of the shelves 30 in the working configuration of the stand. The couplers 203A, 204A have preferably a shape and surface equivalent to the openings 203B, 204B made in the internal layer 201 of the side wall 20.

[0029] Furthermore, the blank 200 comprises a flap 209 foldable to the inside of the stand and which is glued to the layer 202 of the side wall 20 in order to reinforce the top edge of the stand.

[0030] The side walls 20 of the stand are releasably coupled with the back wall 10 by fasteners 40, 50 shown in Fig. 3A-3B. The blanks 100, 200 forming the back wall and the side wall comprise openings 105, 205 for placing the fasteners 40, 50 therein in order to join the back wall 10 with the side walls 20.

[0031] At the edges 11 of the back wall 10 there are positioned first fasteners 40 configured to be coupled with second fasteners 50 positioned at the side walls 20 near the back edge 22, wherein the base portions 41 of the first attachment elements 40, having fastening portions 42 extending over the vertical edges 11 of the back wall 10 via openings 105 made near the vertical edges 11 of the back wall 10, are positioned between elements 101 and flaps 102.

[0032] Between the layers 201, 202 of the cardboard of the back wall 20 there are positioned base portions 51 of the second fasteners 50, having fastening portions 52 extending over the internal surface of the layer 201 of the side wall 20 via openings 205 made in the external layer 201 of the side wall 20. The fastening portions 42, 52 of the fasteners 40, 50 are elongated and are parallel to the main surface of the back wall 10. The base portions 41, 51 of the fasteners have in their main plane a surface larger than the surface of the fastening portions 42, 52. The base portions 41, 51 of the fasteners 40, 50 are fixed between layers 101, 102 and 201, 202 of the cardboard by an adhesive substance and are perforated to allow the adhesive to join with the perforated structure and improve the adhesion to the cardboard. The fastening portions 42 of the first fasteners 40 are insertable to the

fastening portions 52 of the second fasteners 50. The fastening portions 42 of the first fasteners 40 have a resilient element 43 which is fixable by snapping in the fastening portion 52 of the second fasteners 50, as well as a pressing element 44 for deforming the resilient element 43 by the user to release the snap between the resilient element 43 and the fastening portion 52.

[0033] In the working configuration of the stand, the back edges 22 of the side walls 20 extend over the back wall 10 of the stand.

[0034] As shown in Figs. 1A-1F, when folding the stand from a working configuration to a transport configuration, the side walls 20 fold outwards along the folding lines 21, located along the front edge 23 by an angle of about 270°, such that in the transport configuration the side walls 20 are parallel and adjacent to the support portions 32A, 32B of the shelves 30. The shelves 30 fold along the folding lines 306 downwards. The back wall 10 further comprises a horizontal folding line 104 at the height of the lowest shelf 30, which allows folding the element 107 and supporting in on the folded walls 20 in the transport configuration of the stand.

Claims

1. A cardboard stand with shelves, foldable from a substantially flat transport configuration to a working configuration, in which it has a form of a box with two side walls (20), a back wall (10) and shelves (30) fixed permanently and pivotably to the back wall (10), comprising a main shelf portion (31) and a support shelf portion (32A) pivotable with respect to the main shelf portion (31) and distanced from the back wall (10), **characterized in that** the side walls (20) are releasably attachable to the back wall (10) and comprise couplers (203A, 204A) for coupling it permanently with the support portions (32) of the shelves (30).
2. The cardboard stand according to claim 1, **characterized in that** the support portion (32A, 32B) of the shelves (30) comprises two layers, and between the layers (302A, 302B; 302A, 302C) of the support portion (32A, 32B) there are positioned couplers (203A, 204A) of the side walls (20).
3. The cardboard stand according to claim 1, **characterized in that** the back wall (10) has a horizontal folding line (104) at the height of the lowest shelf (30).
4. The cardboard stand according to claim 1, **characterized in that** when folding it from the working configuration to the transport configuration, the side walls (20) are foldable outwards along a folding line (21) by an angle of about 270°.
5. The cardboard stand according to claim 1, **character-**

ized in that the back edges (22) of the side walls (20) extend over the back wall (10) of the stand.

6. The cardboard stand according to any of claims 1-2, **characterized in that** the side walls (20) comprise two layers (201, 202) folded along a front edge (23), and the coupler (203A, 204A) is formed from a cutout of a fragment of the internal layer (201) of the side wall (20) which is adjacent and pivotable with respect to the front edge (23), wherein in the openings (203B, 204B) formed in the cutouts of the couplers (203A, 204A) there are positioned reinforcements (303) which form extensions of at least one layer (302A) of the support portions (32) of the shelves (30), the supports (303) being perpendicular to the support portions (32) of the shelves (30) in the working configuration of the stand.
7. The cardboard stand according to claim 1, **characterized in that** at the edges (11) of the back wall (10) there are positioned first fasteners (40) and at the side walls (20) next to their back edge (22) there are positioned second fasteners (50) configured to be coupled with the first fasteners (40).
8. The cardboard stand according to claim 7, **characterized in that:**
 - the back wall (10) in the areas along the vertical edges (11) is formed by at least two layers (101, 102) of cardboard, between which there are positioned base portions (41) of the first fasteners (40), which have fastening portions (42) extending over the vertical edges (11) of the back wall (10) via openings (105) made next to the vertical edges (11) of the back wall (10),
 - the side wall (20) is formed by at least two layers (201, 202) of cardboard, between which there are positioned base portions (51) of second fasteners (50), which have fastening portions (52) extending over the internal surface (201) of the side wall (20) via openings (205) made in the internal layer (201) of the side wall (20).
9. The cardboard stand according to claim 8, **characterized in that** the fastening portions (42, 52) of the fasteners (40, 50) have an elongated shape and are parallel to the main plane of the back wall (10).
10. The cardboard stand according to claim 8, **characterized in that** the base portions (41, 51) of the fasteners have in their main plane a surface larger than the surface of the fastening portions (42, 52).
11. The cardboard stand according to any of claims 9-10, **characterized in that** the base portions (41, 51) of the fasteners (40, 50) are perforated.

12. The cardboard stand according to any of claims 9-11, **characterized in that** the base portions (41, 51) of the fasteners (40, 50) are fixed between the layers (101, 102; 201, 202) of cardboard by an adhesive.

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13. The cardboard stand according to any of claims 9-12, **characterized in that** the fastening portions (42) of the first fasteners (40) are insertable to the fastening portions (52) of the second fasteners (50).

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14. The cardboard stand according to any of claims 9-13, **characterized in that** the fastening portions (42) of the first fasteners (40) have a resilient element (43) attachable by snapping to the fastening portion (52) of the second fasteners (50) and a pressing element (44) for deforming the resilient element (43) by the user to release the snap between the resilient element (43) and the fastening portion (52).

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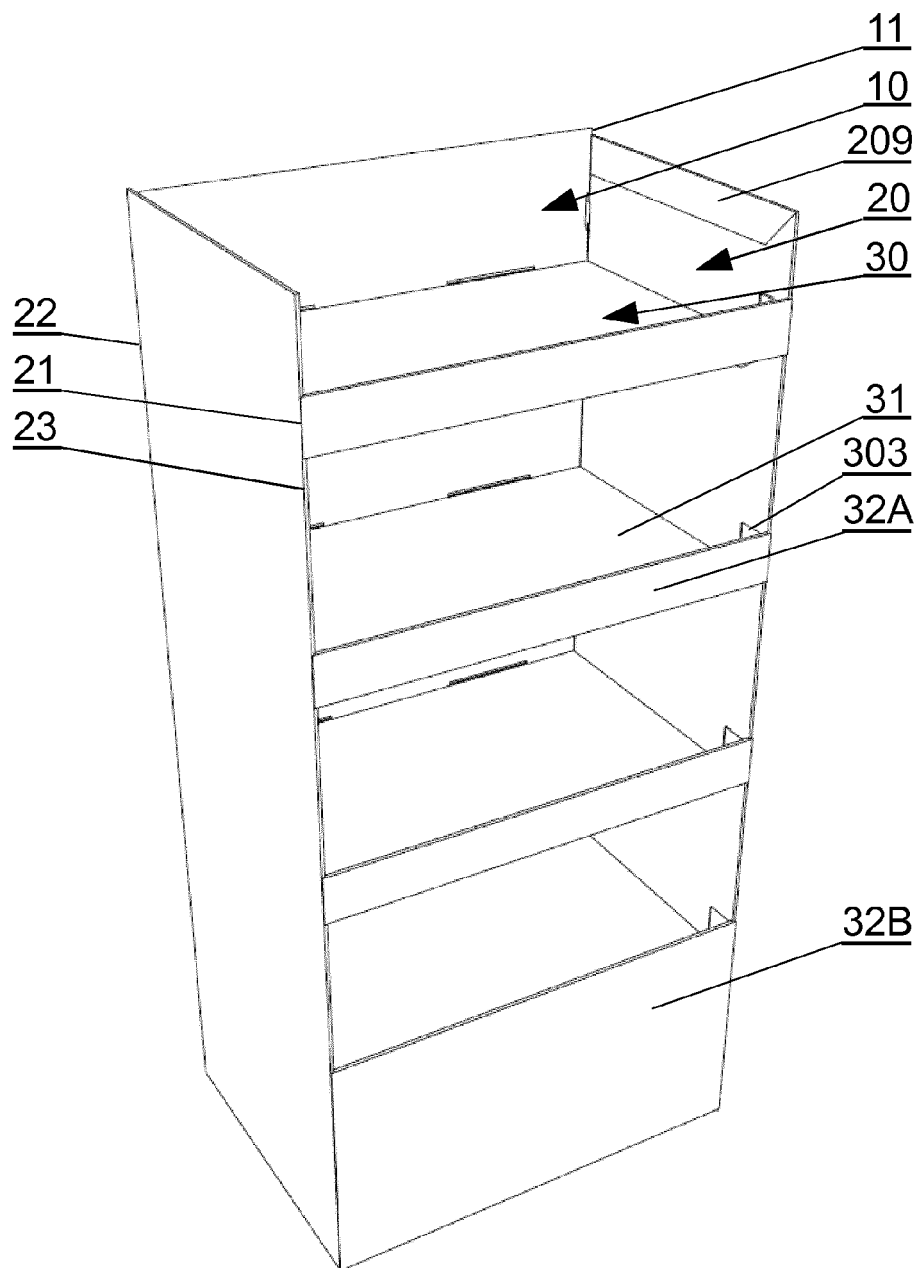


Fig. 1A

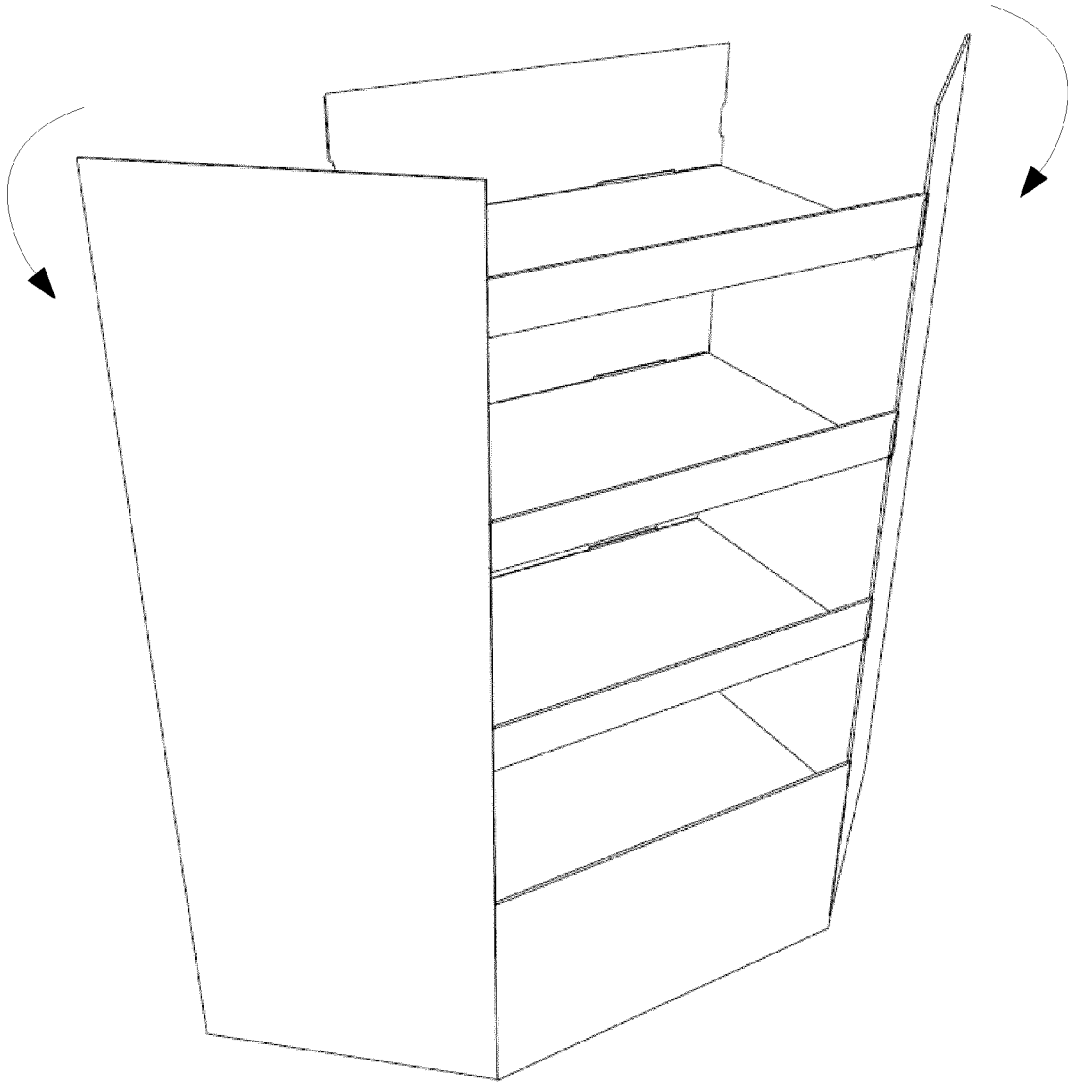


Fig. 1B

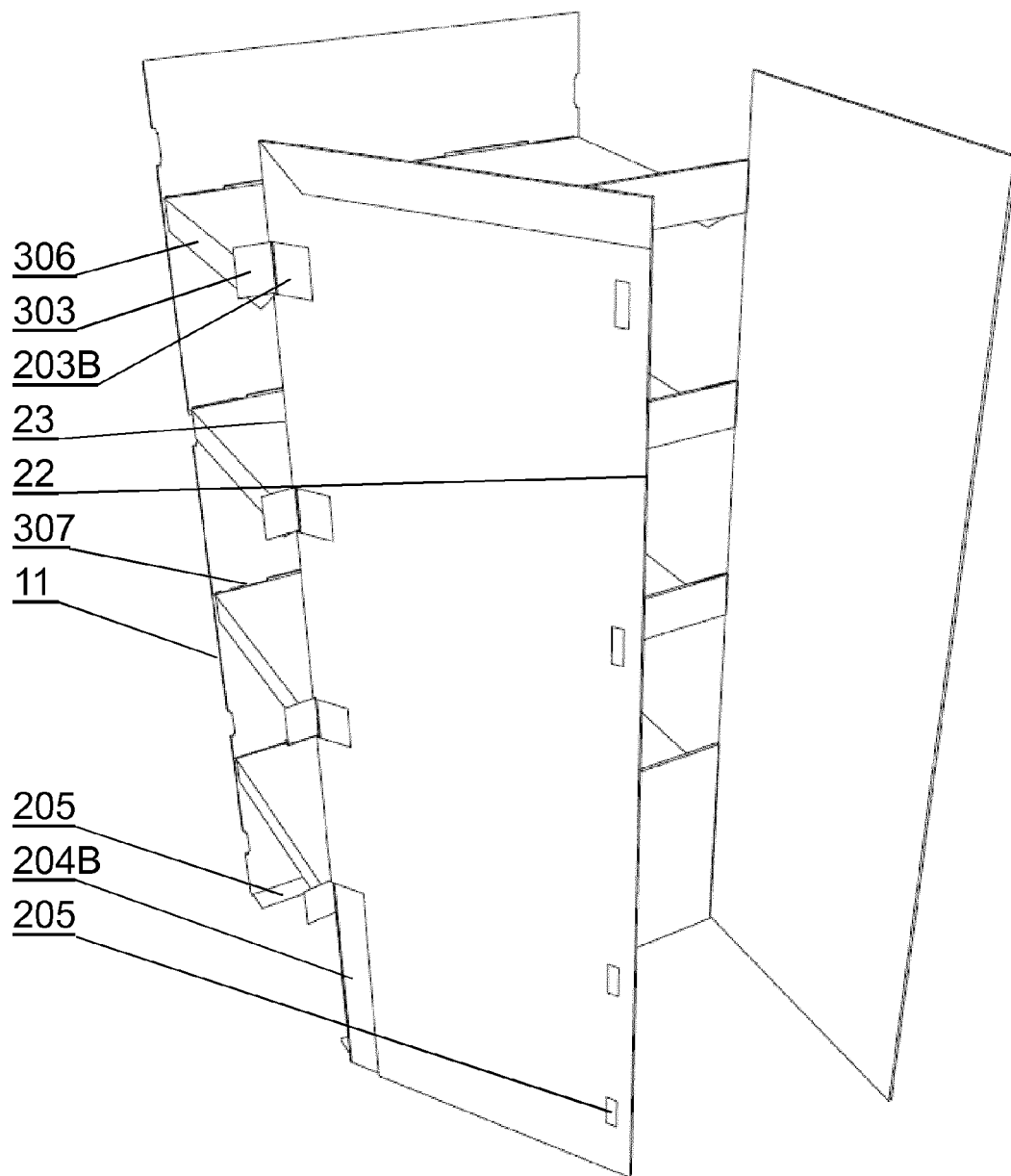


Fig. 1C

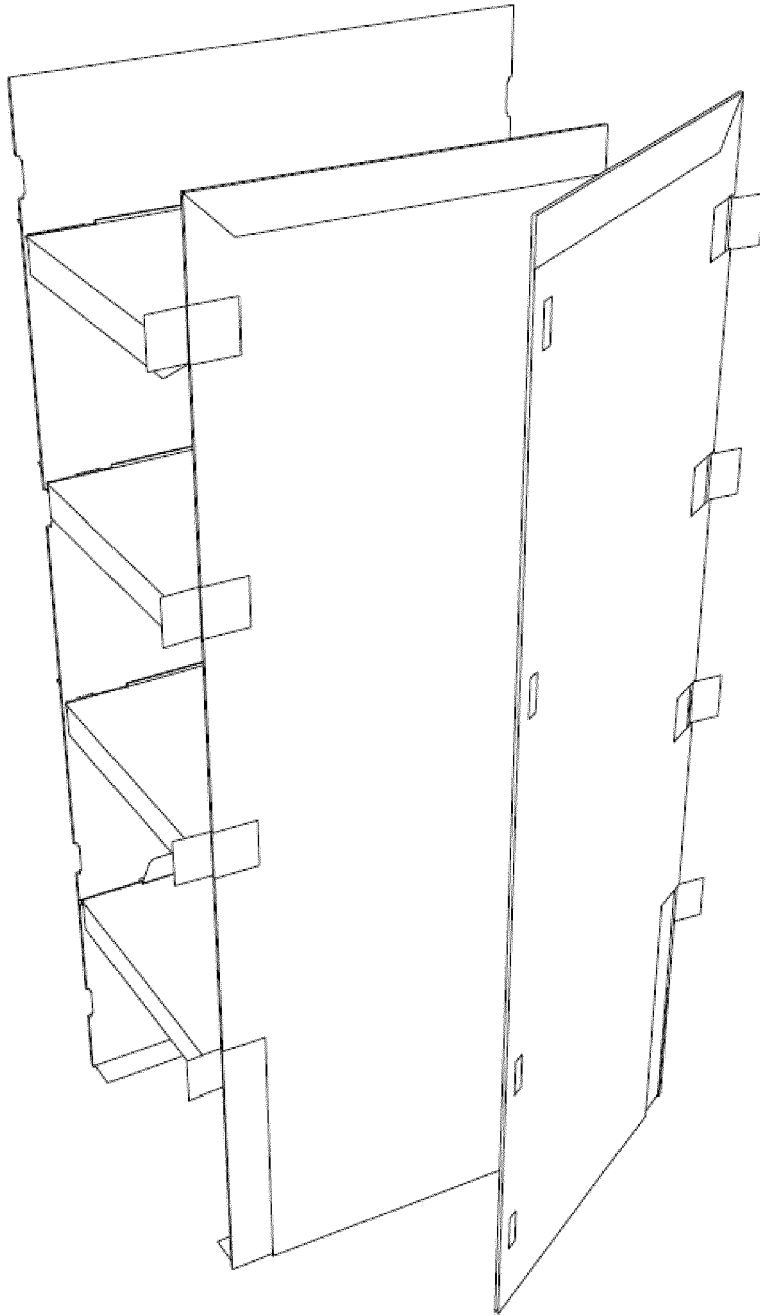


Fig. 1D

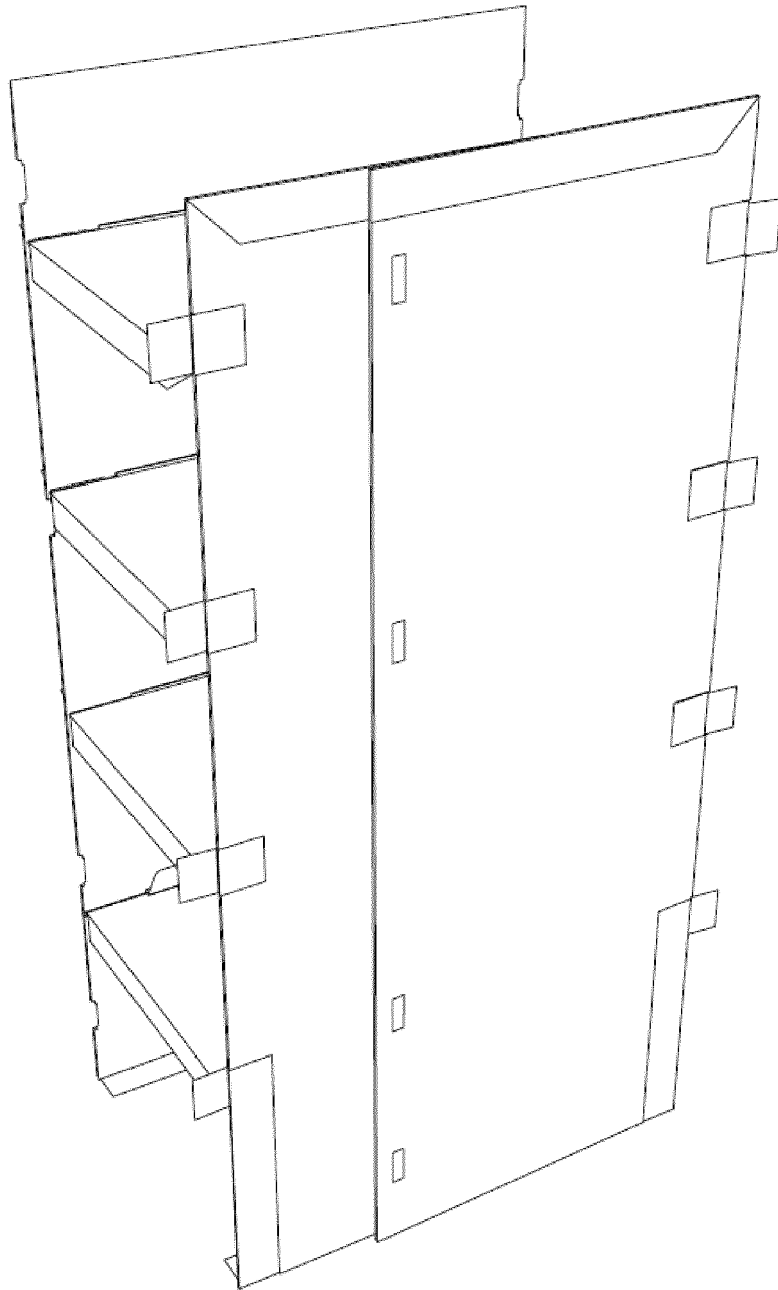


Fig. 1E

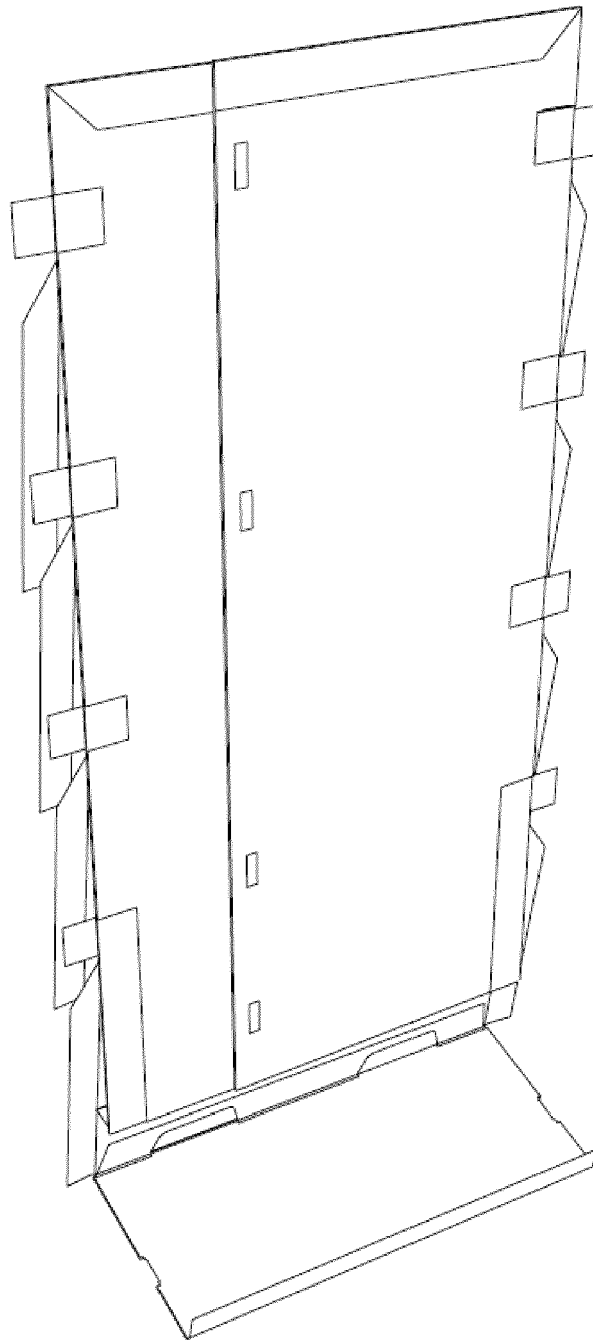


Fig. 1F

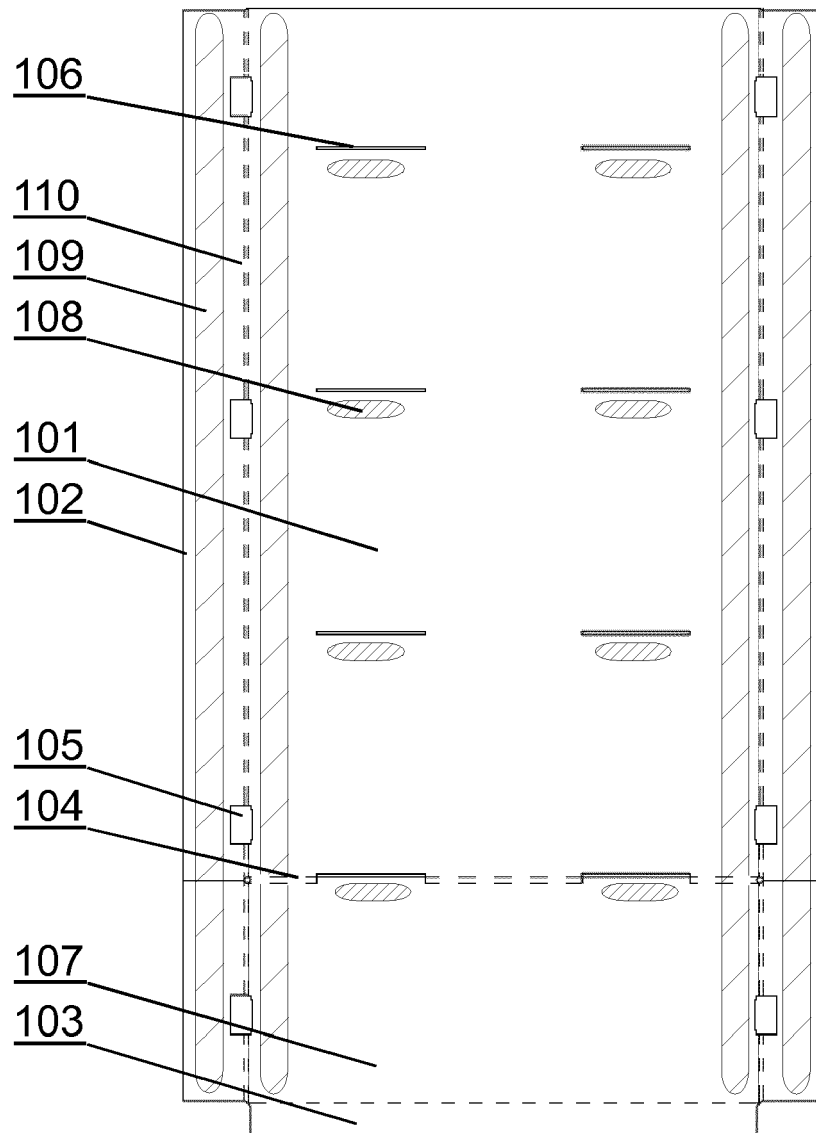


Fig. 2A

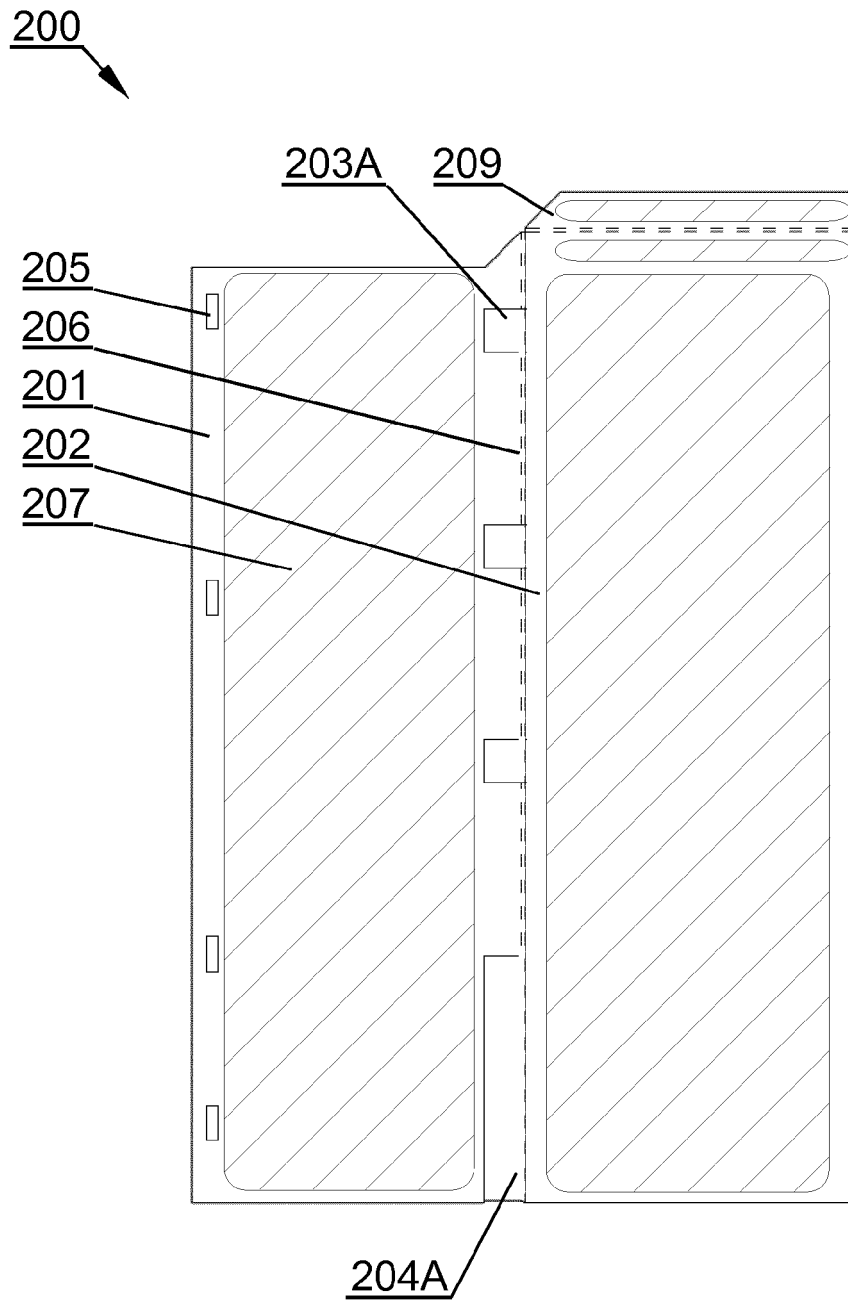


Fig. 2B

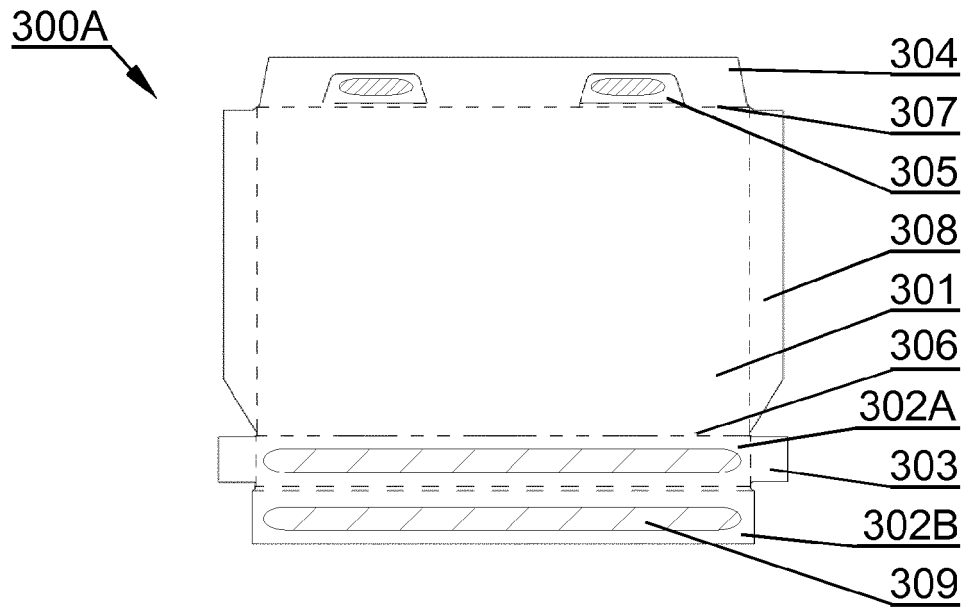


Fig. 2C

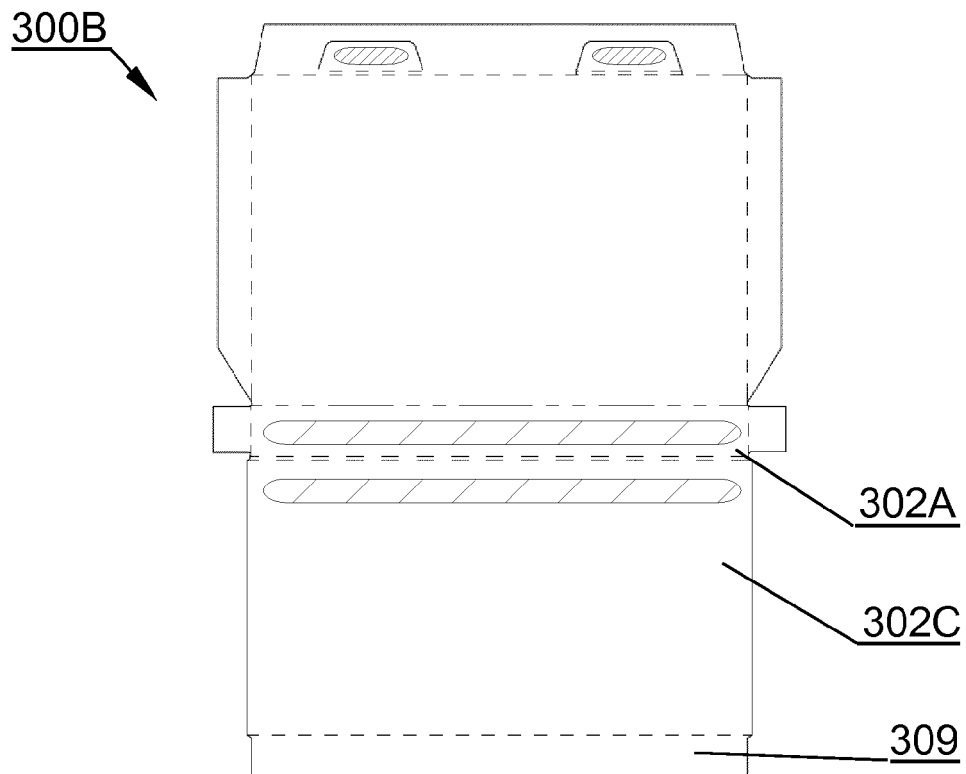


Fig. 2D

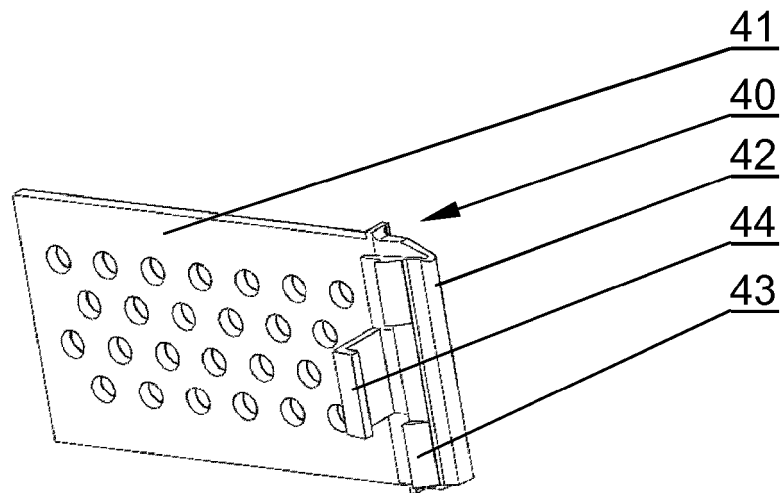


Fig. 3A

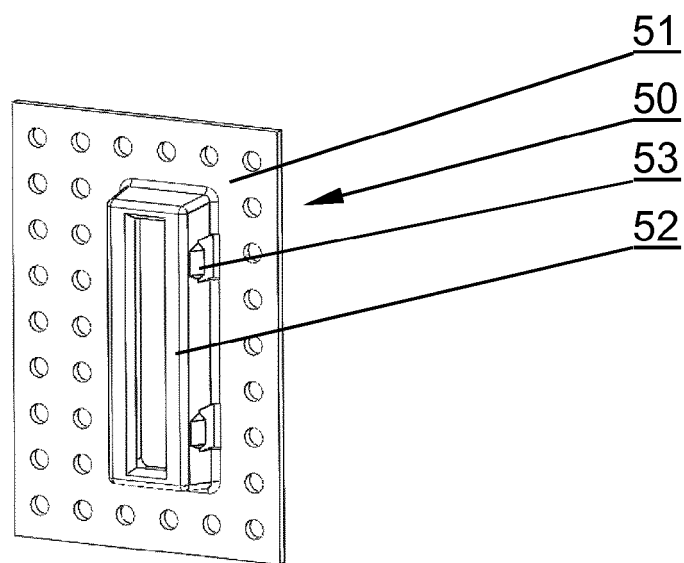


Fig. 3B



EUROPEAN SEARCH REPORT

Application Number
EP 12 46 1527

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2010/051568 A1 (KALWAT JOSHUA R [US] ET AL) 4 March 2010 (2010-03-04) * the whole document *	1-14	INV. A47F5/11
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			TECHNICAL FIELDS SEARCHED (IPC)
			A47F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 15 January 2013	Examiner Cardan, Cosmin
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	

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EPO FORM 1503 03/82 (P04C01)

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

EP 12 46 1527

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The members are as contained in the European Patent Office EDP file on
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15-01-2013

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