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

(57) A cardboard stand with shelves, foldable from a flat transport configuration to a working configuration in which it has a form of a box with side walls (310), a back wall (100) and shelves (200A, 200B) mounted between the walls. At least one shelf (200A, 200B) comprises a main plane (220) and side holders (230) comprising a first portion (231) joined by a first hinge (233) with the side edge of the main plane (220) and by a second hinge (234), inclined with respect to the first hinge (233), with a second portion (232), the second portion (232) being fixed to the side wall (310).

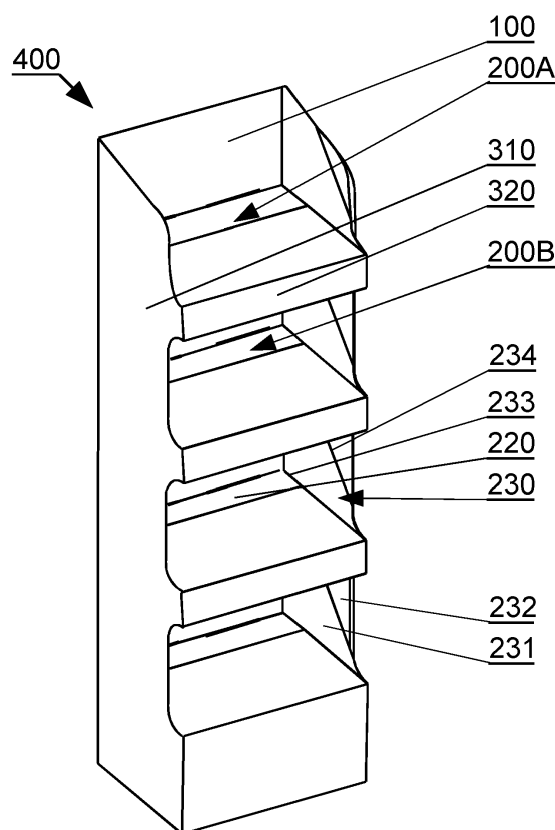


Fig.1

Description

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

[0002] 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.

[0003] 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.

[0004] 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.

[0005] The aim of the invention is to provide a foldable cardboard display stand which is easily foldable between a transport configuration and a working configuration, with shelves providing good support for shelf load.

[0006] The object of the present invention is a cardboard stand with shelves, foldable from a flat transport configuration to a working configuration in which it has a form of a box with side walls, a back wall and shelves mounted between the walls, the stand comprising at least one shelf comprises a main plane and side holders comprising a first portion joined by a first hinge with the side edge of the main plane and by a second hinge, inclined with respect to the first hinge, with a second portion, the second portion being fixed to the side wall.

[0007] Preferably, when the stand is folded from the flat transport configuration to the working configuration, the first hinge moves from a position extended to 180° to a position folded to 90°, and the second hinge moves from a position folded to 0° to a position extended to 180°.

[0008] Preferably, the second portion of the side holder is permanently fixed to the side wall.

[0009] Preferably, the second hinge is inclined at 45° with respect to the first hinge.

[0010] Preferably, the stand further comprises a front

wall between the front edges of the side walls and with openings between the main planes of the shelves.

[0011] Preferably, at least one shelf has its main plane joined with the front wall by a hinge.

[0012] Preferably, the hinge comprises a shelf reinforcement plane formed from the sheet portion within the openings of the front wall and joined with the main plane of the shelf.

[0013] Preferably, the shelves comprise flaps at the back edge for fixing the back edge of the shelf to slots in the back wall.

[0014] Preferably, the flaps are permanently fixed to the back wall.

[0015] Preferably, the side walls are formed from at least one cardboard sheet, which is separate from the cardboard sheet from which the back wall is formed and from the cardboard sheets from which the at least one shelf is formed, wherein the cardboard sheets are permanently fixed together.

[0016] Preferably, the side walls comprise foldable extensions separated from the side edges of the side walls by folding lines for temporarily affixing the side walls to the back wall when the stand is folded to the working configuration.

[0017] The object of the invention is presented by means of exemplary embodiment on a drawing, in which:

Fig. 1 shows the stand in a working configuration, Fig. 2A-2D show the cut-outs of cardboard sheet for individual components of the stand, wherein Fig. 2A shows the back wall, Fig. 2B shows the main shelves, Fig. 2C shows the top shelf and Fig. 2D shows the supporting structure.

Fig. 3 shows the stand in a flat transport configuration, viewed from the back, obtained by assembling the individual components shown in Fig. 2A-2D.

Fig. 4A-4F show consecutive phases of transforming the stand from a flat transport configuration shown in Fig. 4A, 4B, via an intermediate configuration shown in Figs. 4C, 4D to a working configuration shown in Fig. 4E, 4F.

[0018] The dashed lines on the figures showing the cut-out sheets correspond to folding lines, and the continuous lines correspond to edges and cut-out lines.

[0019] The stand according to the invention is made of cardboard, preferably of corrugated cardboard.

[0020] The stand 400 is foldable from a flat transport configuration to a working configuration, in which it has a form of a box with at least side walls 310 and a back wall 100 and having shelves 200A, 200B mounted between the walls. The embodiment shown in a working configuration in Fig. 1 has a parallelepiped shape with side walls 310, a back wall 100 and a front wall 320 with openings for shelves 200A, 200B which are fixed to the back wall 100, to the side walls 310 and to the front wall 320. Each shelf 200A, 200B comprises a main plane 220 and a pair of side holders 230, which comprise a first

portion 231 joined by a first hinge 233 with a side edge of the main plane 220 and by a second hinge 234 inclined with respect to the first hinge 233 with a second portion 232 connected with the side wall 310.

[0021] The cut-out sheet of the back wall 100, shown in Fig. 2A, has a rectangular shape and comprises a foldable bottom foot 104 separated from the main plane by a bottom folding line 103. The back wall 100 further comprises a set of slots 101 in which the flaps 210 of shelves 200A, 200B, as shown in Figs. 2B-2C, are to be inserted when assembling the stand. The back wall further comprises coupling elements 102, such as turnable locking protrusions, positioned alongside the height of the back wall, for coupling the back wall 100 with the side walls shown in Fig. 2D.

[0022] Figs. 2B-2C show the cut-out sheets of shelves, wherein Fig. 2B shows the main shelf 200A and Fig. 2C shows the top shelf 200B. The shelves 200A, 200B comprise a rectangular main plane 220 with a pair of side holders 230. The side holders 230 comprise a first hinge 233 joining the holder 230 with the main plane 220 and a second hinge 234 inclined by an angle of preferably 45° to the first hinge, which divides the side holder to two portions 231, 232, wherein the first portion 231 adjacent to the first hinge 233 is movable, and the second portion 232 is to be permanently fixed to the side wall 310, for example by an adhesive strip 235. The hinges 233, 234 are formed by folding lines made in the cut-out sheet. Furthermore, the shelves comprise flaps 210, preferably rectangular, extending from the back edge of main plane 220 and connected with the main plane 220 by folding lines 211. The flaps 210 are to be positioned in the slots 101 of the back wall 100. The flaps 210 can be only inserted into the slots 101 or may comprise adhesive strips 213 for permanently fixing the flaps 210 to the back wall 100. The top shelf 200B is constructed in a similar manner as the main shelves 200A, but its side holder 230 is smaller to allow inclined shape of the top portion of the side walls 310.

[0023] Fig. 2D shows a cut-out sheet 300 forming the support structure of the stand 400. It comprises side walls 310 joined by folding lines 302, 303 with the front wall 320 having openings. It may further comprise shelf reinforcements 330 formed from the sheet portion within the openings of the front wall 320, joined by folding lines 323 with the front wall, to be joined with the shelves 200A, 200B for example by adhering the bottom surface of the reinforcements 330 to the top surface of the shelves 200A, 200B, as shown in Fig. 1. Adhesive strips 331 can be attached at the top surface. The support structure further comprises a foldable bottom foot 305 separated from the main plane by a bottom folding line 304.

[0024] The side walls 310 further comprise foldable extensions 314 separated from the side edges of the side walls 310 by folding lines 311 with coupling elements 312 for coupling with the coupling elements 102 of the back wall 100. Therefore, the side walls 310 are fixed to the back wall 100 temporarily, i.e. only when the stand is in

the working configuration, and when the stand is to be folded to the flat transport configuration, the coupling between the side walls 310 and the back wall 100 is to be decoupled. For example, the coupling elements 312 may have a form of openings 312 into which the turnable locking protrusions 102 can be inserted and turned to affix the back wall 100 to the side walls 310 in the working configuration. Various other coupling elements 102, 312 can be used, such as adhesive strips, Velcro-type fasteners, magnetic couplers, etc.

[0025] Fig. 3 shows the cut-out sheets 100, 200A, 200B, 300 assembled to form a flat transport configuration, viewed from the back.

[0026] Fig. 4 shows consecutive phases of transforming the stand from the transport configuration to the working configuration. In the transport configuration shown in Fig. 4A, the side walls 310 are overlaid one on another at the front side of the stand 400. To transform the stand to the working configuration, the side walls 310 are folded away from the front side, obtaining a flat extended configuration as shown in Fig. 4B. Next, the side walls 310 are folded towards the back side, which causes the side walls 310 to push the side holders 230 of the shelves and thereby folding of the hinges 233, 234 and movement of the main plane 220 of the shelves downwards, resulting in spatial extension of the stand, as shown in Figs. 4C, 4D. When the side walls are folded by an angle of 90° with respect to the back wall, the main planes 220 of the shelves 200A, 200B are positioned in a horizontal position, and the stand is fully extended spatially, as shown in Fig. 4E. Next, the extensions 314 of the side walls 310 can be folded along the folding lines 311 and affixed to the back wall 100 by coupling elements 102, 312. The bottom feet 104, 305 can be folded for better protection of the bottom edge of the stand to achieve a fully functional working configuration as shown in Fig. 4F. Therefore, when the stand is folded from the flat transport configuration of Fig. 4B to the working configuration of Fig. 4E, the first hinge 233 moves from a position extended to 180° to a position folded to 90°, and the second hinge 234 moves from a position folded to 0° to a position extended to 180°.

[0027] The construction of the stand according to the invention is easy to be transformed between the flat transport configuration and the working configuration, by simply moving the side walls 310 and possibly coupling/decoupling the coupling elements 102, 312 between the side walls 310 and the back wall 100. The shelves 200A, 200B are permanently fixed at least to the side walls 310 and to the back wall 100, which provides good support for shelf load in the working configuration, which is achieved instantly and does not require additional actions after folding the side walls 310.

Claims

1. A cardboard stand with shelves, foldable from a flat

transport configuration to a working configuration in which it has a form of a box with side walls (310), a back wall (100) and shelves (200A, 200B) mounted between the walls, **characterized in that** at least one shelf (200A, 200B) comprises a main plane (220) and side holders (230) comprising a first portion (231) joined by a first hinge (233) with the side edge of the main plane (220) and by a second hinge (234), inclined with respect to the first hinge (233), with a second portion (232), the second portion (232) being fixed to the side wall (310).

2. The cardboard stand according to claim 1, wherein when the stand is folded from the flat transport configuration to the working configuration, the first hinge (233) moves from a position extended to 180° to a position folded to 90°, and the second hinge (234) moves from a position folded to 0° to a position extended to 180°.
3. The cardboard stand according to any of previous claims, wherein the second portion (232) of the side holder (230) is permanently fixed to the side wall (310).
4. The cardboard stand according to any of previous claims, wherein the second hinge (234) is inclined at 45° with respect to the first hinge (233).
5. The cardboard stand according to any of previous claims, further comprising a front wall (320) between the front edges of the side walls (310) and with openings between the main planes (220) of the shelves (200A, 200B).
6. The cardboard stand according to claim 5, wherein at least one shelf (200A, 200B) has its main plane (220) joined with the front wall (320) by a hinge (323).
7. The cardboard stand according to claim 6, wherein the hinge (323) comprises a shelf reinforcement plane (330) formed from the sheet portion within the openings of the front wall (320) and joined with the main plane (220) of the shelf (200A, 200B).
8. The cardboard stand according to any of previous claims, wherein the shelves (200A, 200B) comprise flaps (210) at the back edge for fixing the back edge of the shelf (200A, 200B) to slots (101) in the back wall (100).
9. The cardboard stand according to claim 7, wherein the flaps (210) are permanently fixed to the back wall (100).
10. The cardboard stand according to any of previous claims, wherein the side walls (310) are formed from at least one cardboard sheet, which is separate from

the cardboard sheet from which the back wall (100) is formed and from the cardboard sheets from which the at least one shelf (200A, 200B) is formed, wherein the cardboard sheets (310, 100, 200A, 200B) are permanently fixed together.

11. The cardboard stand according to any of previous claims, wherein the side walls (310) comprise foldable extensions (314) separated from the side edges of the side walls (310) by folding lines (311) for temporarily affixing the side walls (310) to the back wall (100) when the stand is folded to the working configuration.

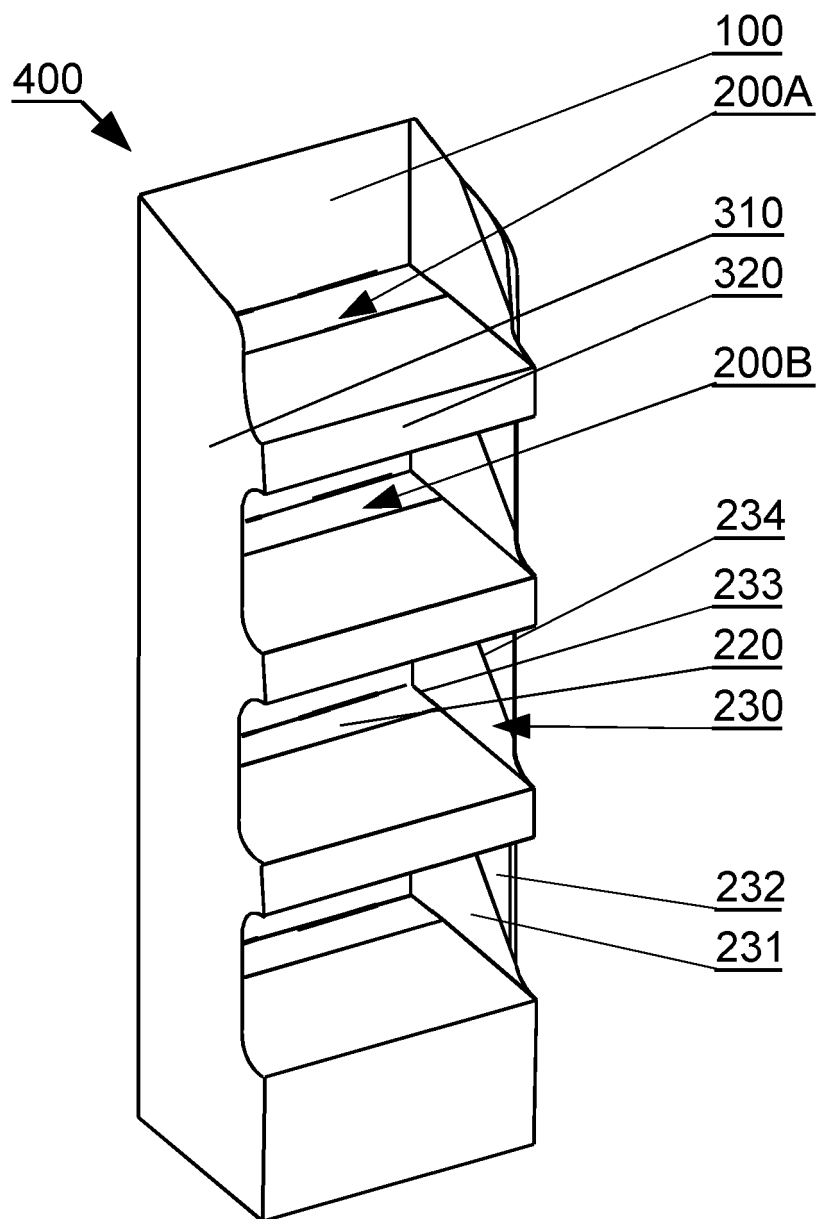


Fig.1

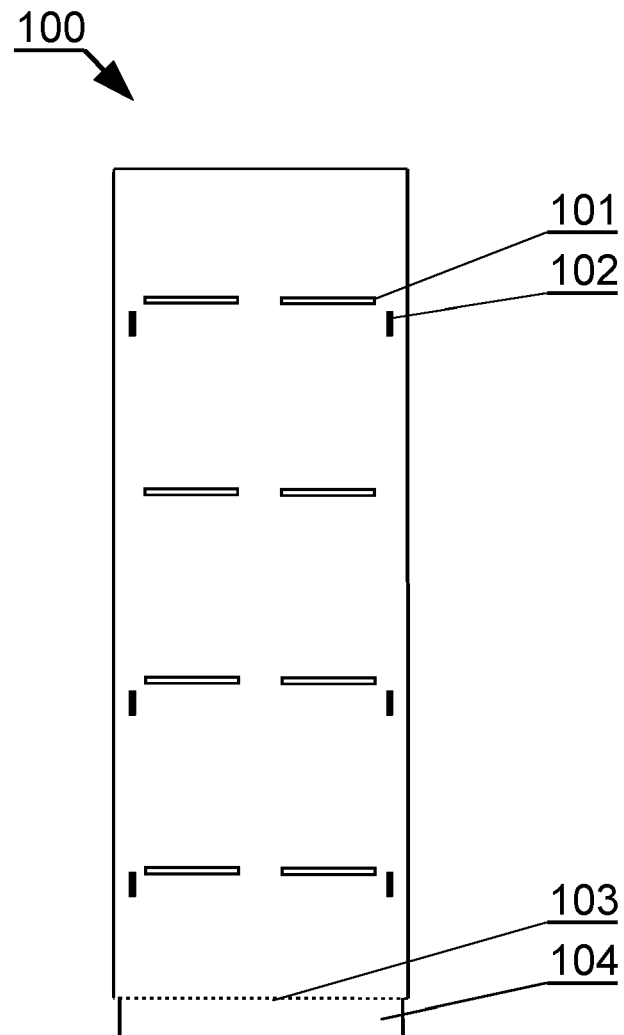


Fig.2A

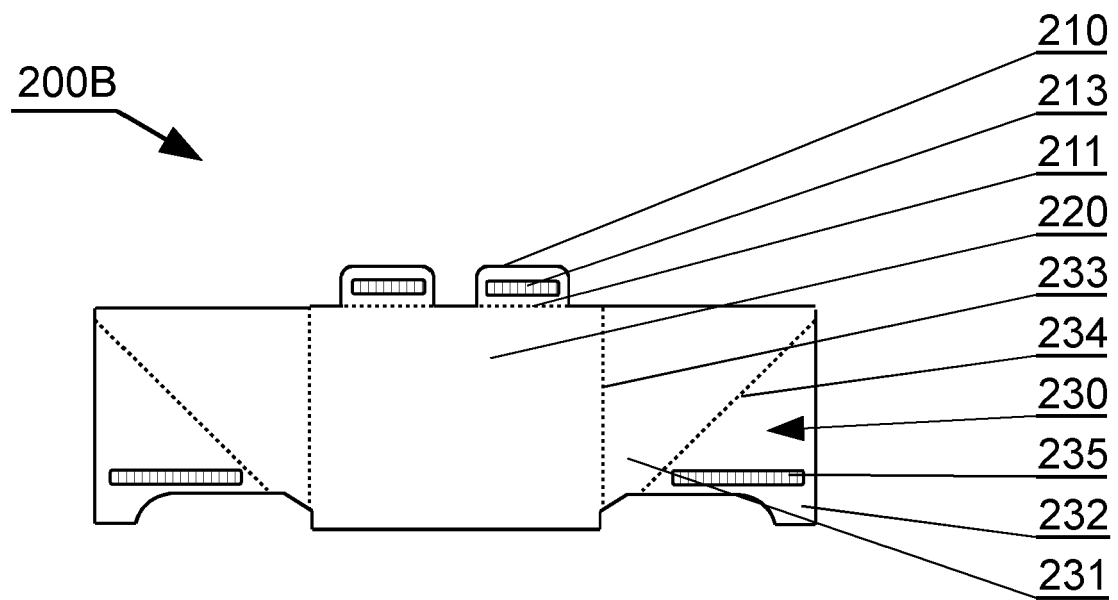


Fig.2B

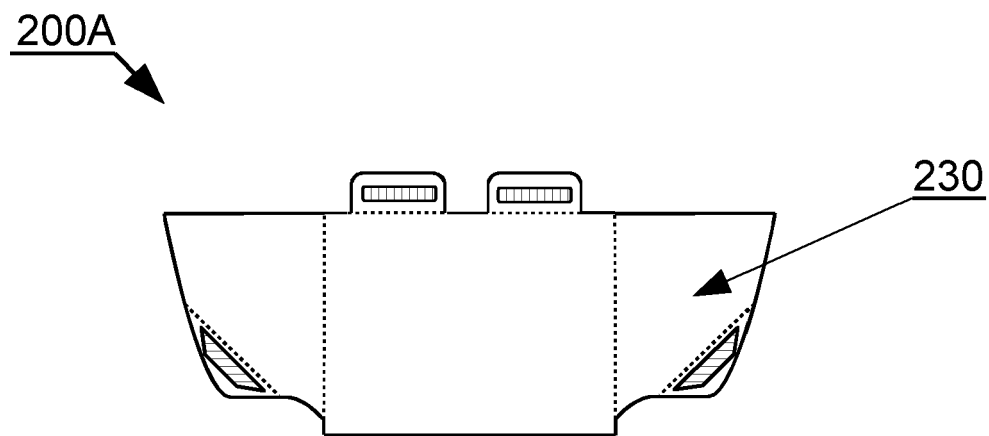


Fig.2C

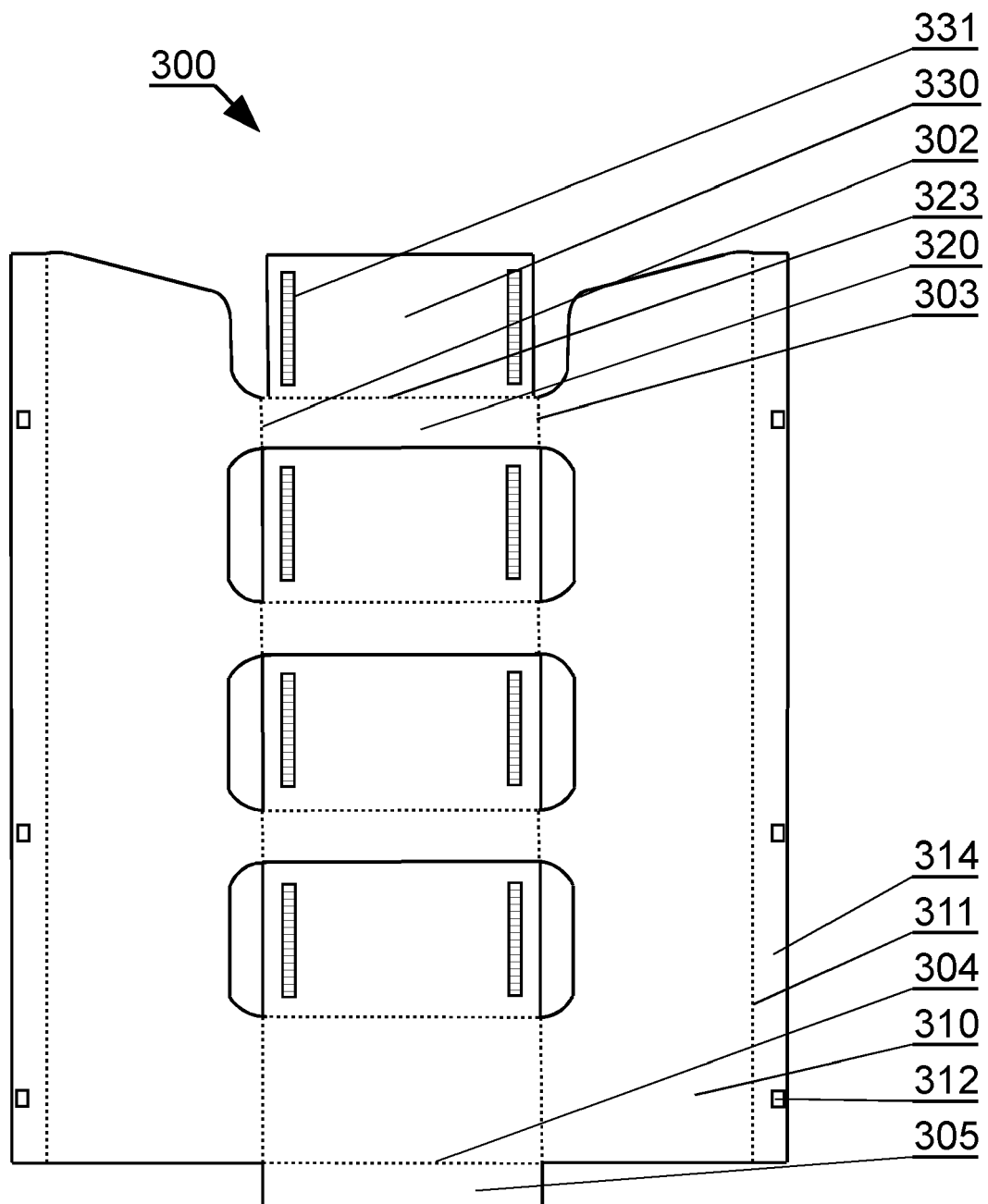


Fig.2D

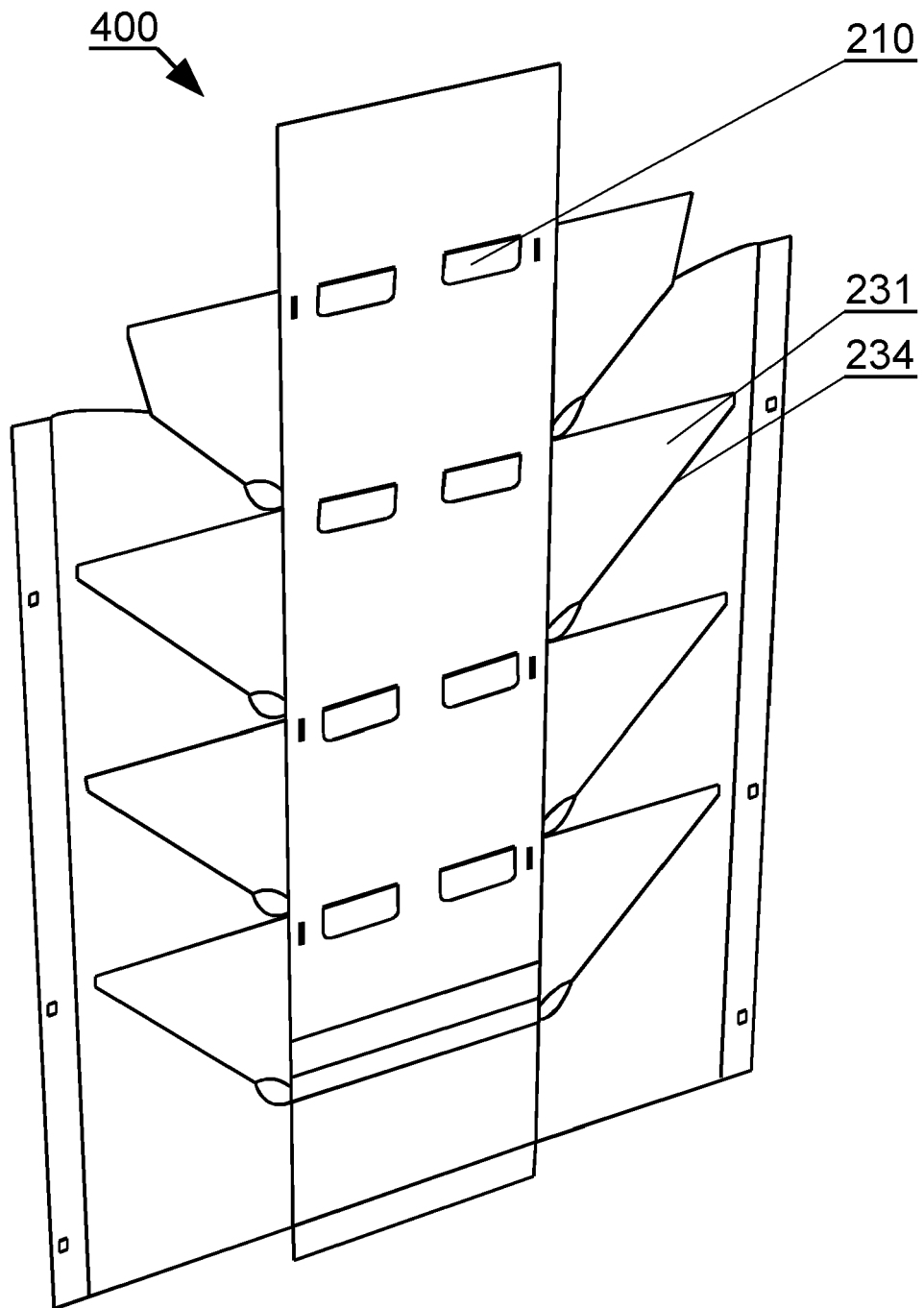


Fig.3

Fig.4A

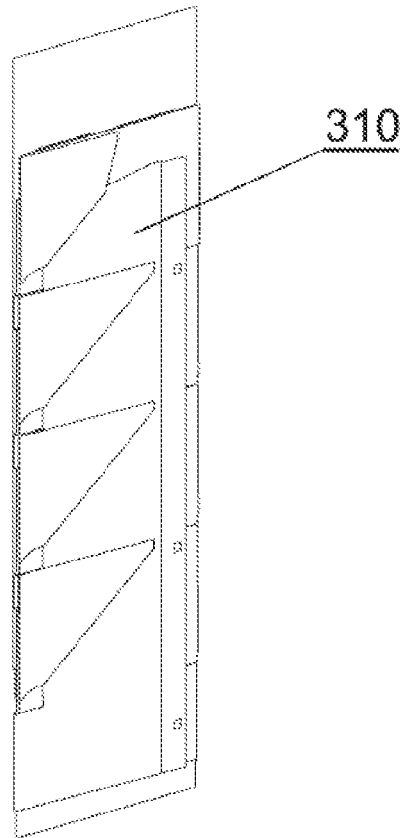
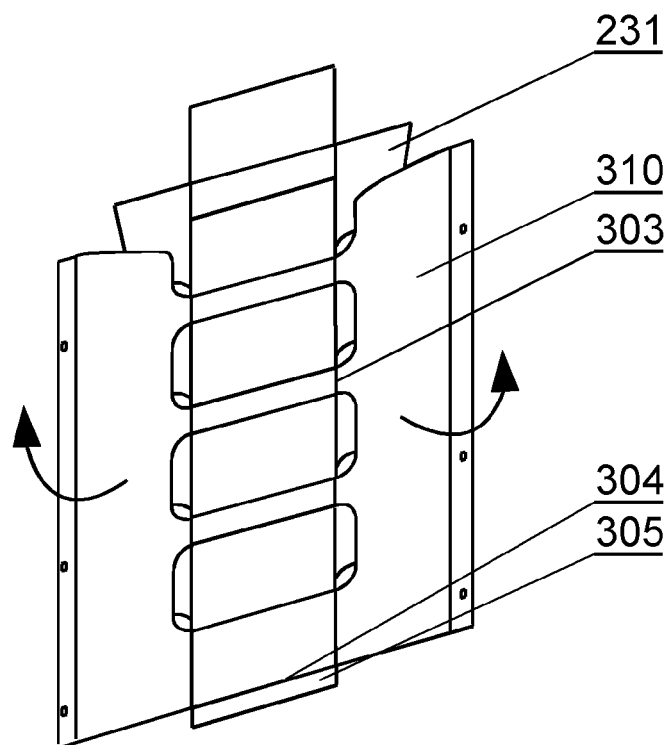


Fig.4B



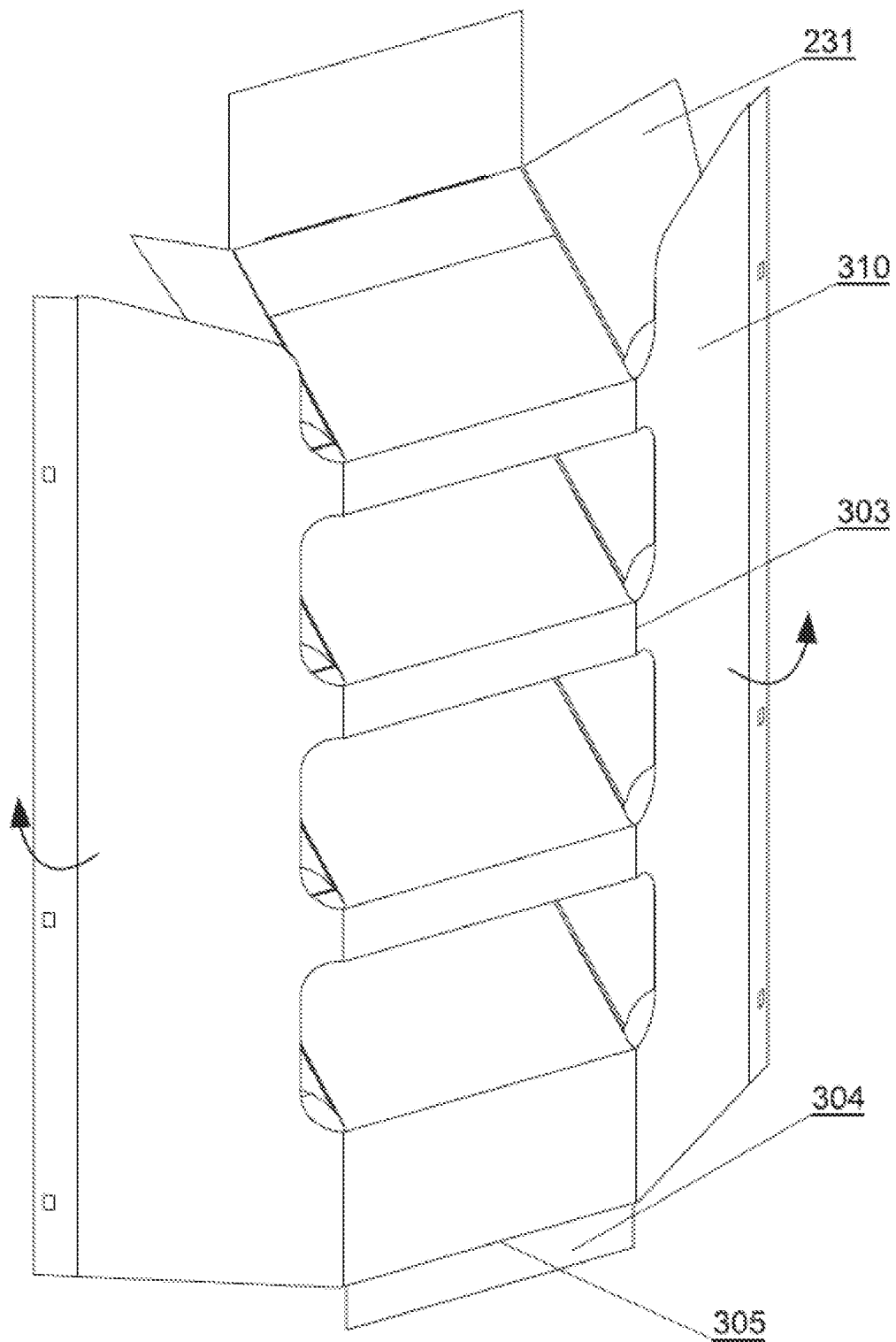


Fig.4C

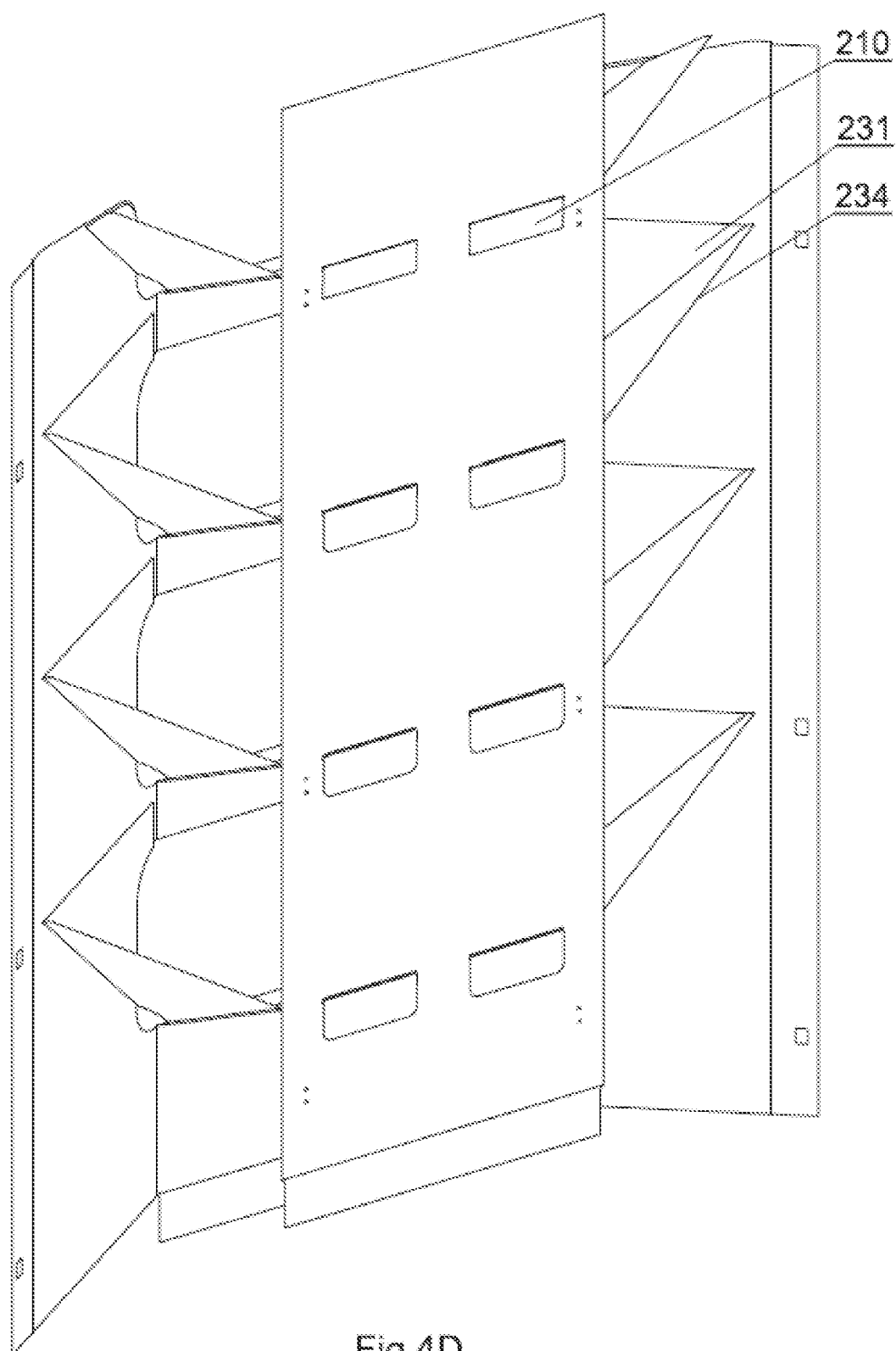


Fig.4D

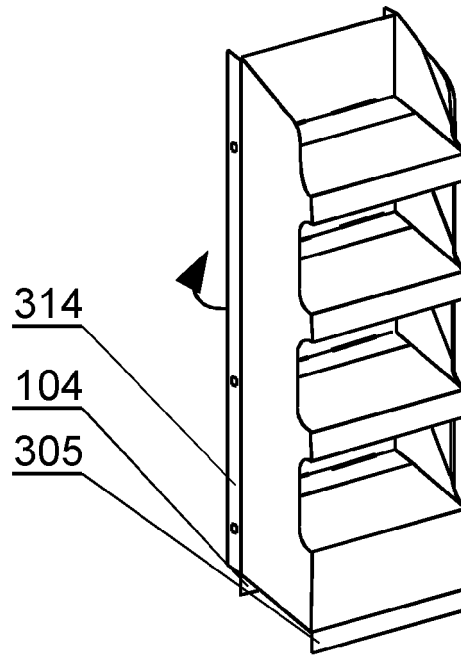


Fig. 4E

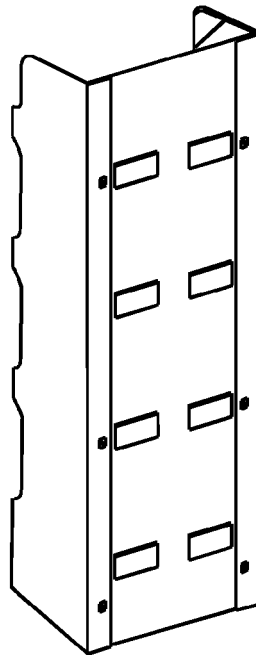


Fig. 4F



EUROPEAN SEARCH REPORT

Application Number
EP 11 46 1533

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Y	* paragraph [0018]; claim 26; figures 1-3,8 *	7,9-11	
Y,D	----- EP 1 421 879 A1 (SIMPSON PRINT LTD [GB]) 26 May 2004 (2004-05-26) * paragraph [0025] - paragraph [0026]; figure 1 *	7,9,10	
Y	----- EP 2 030 536 A2 (PLASTOTECH S R L [IT]) 4 March 2009 (2009-03-04) * figure 7 *	11	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			A47B A47F
Place of search		Date of completion of the search	Examiner
The Hague		6 January 2012	Kohler, Pierre
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 11 46 1533

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REFERENCES CITED IN THE DESCRIPTION

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