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(54) **FURNITURE UNIT**

(57) A furniture unit (101) which can be unfolded from a flat pack configuration to a deployed configuration. Two rigid body panels (102, 103) are connected by hinges to three foldable spacer panels (104, 105, 106). In the deployed configuration, the three spacer panels hold the body panels apart to define a space between the body panels.

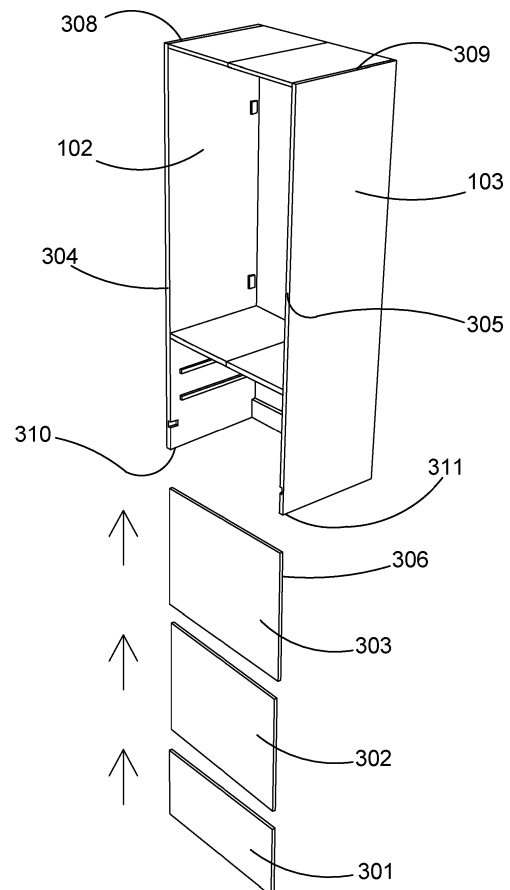


FIG.3

EP 4 059 379 A1

Description

[0001] The present invention relates to a furniture unit.

[0002] Furniture units may be obtained pre-assembled, or alternatively in flat pack format. Flat pack furniture is generally assembled by an end user. The assembly process invariably requires the use of tools and fasteners to connect components of the furniture unit together. The assembly is often time consuming. Furthermore, separately packaged fasteners such as screws, nails and lugs are easy to lose, further delaying the assembly process.

[0003] Flat pack furniture is also difficult to dis-assemble. Permanent fasteners such as screws and nails are difficult to remove. Even when they have been removed, the components of the furniture unit may be damaged, making it difficult to reassemble the components. This is particularly inconvenient for those in rented and temporary accommodation, who may need to move location regularly, taking their furniture with them.

[0004] It is amongst the objects of the present invention to address these problems.

[0005] In a first aspect the invention provides a furniture unit according to claim 1. The unit may be moved from a deployed configuration to a flat pack configuration (and vice versa) without detaching or assembling any of the components. The spacer remains mounted on the first and second body panels in both the deployed and flat pack configurations. This enables fast deployment. It also enables fast conversion of the unit to a flat pack configuration, in which it is easy to transport. No tools are required for deployment, or for conversion to the flat pack configuration. No fasteners need to be provided to the user because in the flat pack configuration, the unit is completely ready for deployment.

[0006] The spacer need not be mounted at corresponding points on the first and second body panels. That is, the mounting locations of the spacer may differ between the first and second body panels.

[0007] In some embodiments the spacer comprises first and second portions which have generally equal lengths and which are pivotally connected to each other, wherein the first portion is moveably mounted to the first body panel and the second portion is moveably mounted to the second body panel, such that in the flat pack configuration, the two portions of the spacer adopt a side by side orientation between the body panels. The equal length of the spacer portions enables the body portions to remain parallel when they are brought together. It also enables the body panels to lie directly on top of one another when in the flat pack configuration, so that the two largest dimensions of the flat pack are the same as the two largest dimensions of the body panels, when the body panels are the same sizes (or of the largest body panel if the body panels are of different sizes). The generally equal lengths of the spacer portions therefore provides a space efficient flat pack configuration.

[0008] In some embodiments the two spacer portions are connected to each other by a hinge, which is option-

ally a one way hinge. A hinge provides a convenient folding axis to enable easy folding. It also provides a defined folding direction, in case a user is in any doubt as to how to move from the deployed to the flat pack configuration. A one way hinge only permits folding in one direction. This is useful as it may force the user to move the unit in a direction which obtains the most space-efficient flat pack configuration.

[0009] In some embodiments the spacer is pivotally mounted to one, or both, of the body panels. The pivotal mounting provides a smooth range of movement between the deployed and the flat pack configurations.

[0010] In some embodiments the unit further comprises a brace which is removably engageable with a body panel or with the spacer to retain the unit in its deployed configuration. This ensures that the unit is rigid and is not liable to move from the deployed to the flat pack configuration. The brace may be provided separately to a user, for installation by a user. It may be necessary to remove the brace in order to move the unit from the deployed configuration to the flat pack configuration.

[0011] In some embodiments the brace is a rigid panel. In some embodiments the brace may comprise a batten. The body panels may be provided with a track, with which edges of the brace may be slidably engaged. This permits easy engagement of the brace with the body panels. The track and the respective edges of the brace may have corresponding interlocking dovetails.

[0012] In some embodiments the unit comprises more than one brace to enhance the rigidity of the unit.

[0013] In some embodiments the unit comprises two or more spacers to enhance the rigidity of the unit. In some embodiments when the unit is moved from its deployed configuration to its flat pack configuration, two spacers fold towards each other. This ensures a space-efficient and rigid flat pack configuration, in which the body panels are well supported over their length (ie. there are fewer large gaps between the body panels in the flat pack configuration).

[0014] In some embodiments when the unit is moved from its deployed configuration to its flat pack configuration, two spacers fold in orthogonal directions. This helps to prevent unwanted movement from the deployed configuration to the flat pack configuration.

[0015] In some embodiments, in the deployed configuration, two spacers are panels which are disposed orthogonal to one another. This helps to prevent unwanted movement from the deployed configuration to the flat pack configuration.

[0016] In some embodiments, in the deployed configuration, the spacer forms a top or bottom panel of the furniture unit. This reduces the amount of material required to produce the unit as separate top or bottom panels are not required.

[0017] In some embodiments, in the deployed configuration, the spacer forms a shelf within the furniture unit.

[0018] In some embodiments the spacer is connected to the body panels by hinges, which are optionally one

way hinges. The hinges provide a smooth range of movement between the deployed and flat pack configurations. A hinge also provides a convenient folding axis to enable easy folding. It also provides a defined folding direction, in case a user is in any doubt as to how to move from the deployed to the flat pack configuration. A one way hinge only permits folding in one direction. This is useful as it may force the user to move the unit in a direction which obtains the most space-efficient flat pack configuration.

[0019] In some embodiments, in the flat pack configuration, the thickness of the unit is less than 100mm.

[0020] In some embodiments the unit is provided with means for attaching a door or cover.

[0021] In some embodiments the rigid body panels or the spacer is made from wood. Other materials such as plastics and metals may also be used.

[0022] In some embodiments the first and second body panels have generally the same dimensions. This provides a flat pack configuration which is space efficient and which is easy to handle.

[0023] In some embodiments, in the flat pack configuration, corresponding edges of the first and second body panels are generally in registry with each another. That is, although the body panels may not be physically touching in the flat pack configuration, they may lie directly on top of one another, such that their outlines are coterminous when viewed from above. This is shown for a preferred embodiment in figure 5 and the associated description. This provides a flat pack configuration which is space efficient.

[0024] In some embodiments the furniture unit is a wardrobe, a bedside unit, or a frame for a chest of drawers. In other embodiments the furniture unit is a kitchen unit.

[0025] In some embodiments the furniture unit is a drawer.

[0026] In a further aspect of the invention there is provided a kit according to claim 23.

[0027] In some embodiments the body panels of the furniture unit are provided with supports upon which a drawer may be removably located.

[0028] In a further aspect the invention provides a furniture unit according to claim 26.

[0029] Embodiments of the invention are now described with reference to the figures of the drawings, in which:

Figure 1 is a perspective view of the front of a wardrobe according to the invention.

Figure 2 is an exploded view of a drawer according to the invention.

Figure 3 is an exploded rear perspective view of a wardrobe according to the invention, showing the insertion of brace panels.

Figure 4 is an exploded front perspective view of a wardrobe according to the invention, showing the insertion of brace panels. The wardrobe is provided with a removable drawer according to the invention.

Figure 5 shows a perspective schematic view of a wardrobe according to the invention in its flat pack configuration.

Figure 6 shows a perspective schematic view of the wardrobe shown in Figure 3 when provided with further brace members.

Figure 7 shows an alternative view of part of the wardrobe shown in Figure 6.

[0030] Figure 1 shows a wardrobe (101) in its deployed configuration. The wardrobe comprises two rectangular body panels (102, 103) which are parallel and vertical when the wardrobe is in its deployed configuration and stood upon a floor. The body panels are made of wood. The body panels are connected by three spacers (104, 105, 106). The spacers are flat panels when in the deployed configuration and are connected by hinges (not shown) at each of their ends to each of the body panels. The first spacer (106) extends from the upper edge (108) of a first body panel (103) to the upper edge (107) of the second body panel (102). A second spacer (105) is disposed between the body panels (103, 102) at a height which is lower than the first spacer, but which is raised above the lower edges (109, 110) of the body panels. A third spacer (104) extends between a front edge (111) of the first body panel (103) and a front edge (112) of the body second panel (102). In the deployed configuration, the third spacer (104) is disposed parallel to the front edges (111, 112) of the body panels (103, 102). It is therefore orthogonal to the first (106) and second (105) spacers. A lower edge (113) of the third spacer is in line with the lower edges (110, 109) of the body panels.

[0031] Each of the spacers (106, 105, 104) are formed of two portions of equal size. The two portions of each spacer are connected by a hinge (not shown) where they abut, such that the two portions may pivot relative to each other along the fold lines (114, 115, 116). The hinges are one way hinges. The hinge which connects the two portions of the first spacer is arranged such that when the body panels (102, 103) are brought towards each other, the fold line (114) may only move in a downwards direction (as indicated by the arrow in the figure). The hinge connecting the two portions of the second spacer (105) is arranged so that when the body panels (102, 103) are brought towards each other, the fold line (115) may only move in an upwards direction (as indicated by the arrow in the figure). The hinge connecting the two portions of the third spacer (104) is arranged so that when the body panels (102, 103) are brought towards each other, the fold line (116) may only move towards the rear of the panels (102, 103) (as indicated by the arrow in the figure).

[0032] When the body panels (102, 103) are moved together the three spacers fold such that the body panel (102) lies directly alongside the body panel (103). This means that the two largest dimensions of the flat pack (the height and width) are the same as (and not greater than) the height and width of the body panels. In the flat pack configuration, the spacers (106, 105, 104) are folded in half and sandwiched between the body panels in a concertina manner. The fact that the two portions of each spacer are of generally equal length allows the spacers to fold such that the body panels remain parallel as they are brought together, and lie directly alongside one another in the flat pack configuration.

[0033] The wardrobe is provided with fittings (117) for attaching a door. The fittings are vertically spaced at points near the front edges (111, 112) of the body panels, and on faces of the body panels which face each other, when in the deployed configuration. Each body panel is provided with two fittings. In a lower portion of the body panels, on faces of the panels which face each other, there are provided runners (118) for supporting a removable drawer (not shown).

[0034] Figure 2 shows an exploded view of a drawer (200) according to the invention, in its deployed configuration. The drawer comprises a front rectangular body panel (201) and a rear rectangular body panel (202). The two body panels are connected by spacers (203, 204). The front body panel has a slightly larger area than the second body panel. The spacers (203, 204) are rectangular panels formed from two portions. The two portions are connected to the front and rear body panels at their outer ends. Their inner ends are connected to each other by a hinge (not shown). The inner ends of each of the spacer portions are connected at the first (206) second (205) fold lines. The hinges connecting the inner ends of the spacers are one way hinges arranged such that when the body panels (201, 202) are brought together, the fold lines (206, 205) may only fold inwards (ie. towards each other). The equal length of the spacer portions allows the front and rear body panels to remain parallel when they are brought together to move the drawer from its deployed configuration to its flat pack configuration. In the flat pack configuration the two portions of each spacer lie parallel to one another and are sandwiched between the front and rear body panels.

[0035] In order to retain the drawer in the deployed configuration, a rectangular brace panel (207) is located between the spacers and the front and rear body panels. The brace panel may be removed by moving it in the direction shown by the arrow in the figure. By moving the brace panel in the opposite direction, the brace panel may be pushed fitted between the spacers and the front and rear body panels. The brace panel may be prevented from being pushed all the way through the aperture created by spacers and front and rear panels by way of a stop, or several stops (not shown). The brace panel ensures that the angle between the spacers and the front and rear panels is as close to 90° as possible. The brace panel

also forms a bottom working surface of the drawer, upon which contents of the drawer rest. In order to move the drawer from the deployed to the flat pack configuration, the brace panel must be removed.

[0036] Figure 3 is a rear exploded perspective view of the wardrobe shown in figure 1. The wardrobe is in its deployed configuration. The wardrobe is provided with three brace panels (301, 302, 303). Near their rear edges (304, 305) the body panels (102, 103) are each provided with a track having a square-U shaped cross section (not shown). The tracks run parallel to the rear edges of the body panels, on the faces of the body panels which face each other when the wardrobe is in the deployed configuration. The tracks run over the entire length of their respective body panel except for a portion near the upper ends (308, 309) of the panels. The points at which the tracks end act as stops. The edges (306, 307) of the brace panel (303) are slid into the tracks from the lower end (310, 311) of the body panels. The brace is slid up the tracks until it reaches the stops near the upper ends (308, 309) of the body panels. A similar procedure is used to insert the two further brace panels (302, 301). The brace panels maintain the wardrobe in its deployed configuration.

[0037] Figure 4 is an exploded front perspective view of a wardrobe (401) according to the invention, showing the brace panels (402) ready for insertion. The wardrobe is identical to the one shown in figures 1 and 5, except that it is provided with a removable drawer (200) as shown in figure 2.

[0038] Figure 5 shows a perspective schematic view of a wardrobe (101) according to the invention in its flat pack configuration. The spacers (104, 105, 106) are folded in half and sandwiched between the body panels (103, 102). The body panels lie directly above one another, meaning that the height and width of the flat pack configuration is no greater than the height and width of the body panels themselves. That is, when viewed from the 'above' direction shown by arrow 'A' in figure 5, the edges of the first and second body panels are coterminous.

[0039] Figures 6 and 7 show the wardrobe of Figure 3 when provided with further braces or brace members (601-604) in the form of battens. Three of these battens (601-603) brace and support the three spacers (104-106) - with one provided for each spacer (104-106). The battens (601-603) help support the respective spacer (104-106) against load and help keep the furniture unit in its deployed configuration.

[0040] The fourth batten (604) serves to help retain the brace panels (301-303) in position. It also further assists in keeping the furniture unit in its deployed configuration.

[0041] Each batten (601-604) is received in a respective pair of slots or tracks provided in the body panels (102, 103). One of these slots (605) can be seen in Figure 7. Each batten can be slid into its respective pair of slots. In a development rather than simple U-shaped slots, the slots (eg 605) for receiving one or more of the battens (601-604) may be dovetail slots with corresponding dove-

tails provided on the ends of the battens (601-604). This can provide interlocking whilst still allowing sliding engagement.

[0042] Whilst in the above embodiment, the furniture units described are what might be termed bedroom or living room furniture units, the present invention may also be embodied in kitchen furniture, in particular kitchen units. That is the furniture unit may be a kitchen unit.

Statements of Invention

[0043]

1. A furniture unit comprising;
first and second rigid body panels and a spacer which is moveably mounted to both of the body panels, such that the unit is moveable between;
a flat pack configuration in which the spacer is disposed flat between the body panels, and
a deployed configuration in which the body panels are separated by the spacer to define a space between the body panels;
2. A furniture unit according to statement 1 wherein the spacer comprises first and second portions which have generally equal lengths and which are pivotally connected to each other, wherein the first portion is moveably mounted to the first body panel and the second portion is moveably mounted to the second body panel, such that in the flat pack configuration, the two portions of the spacer adopt a side by side orientation between the body panels.
3. A furniture unit according to statement 2 wherein the two spacer portions are connected to each other by a hinge, which is optionally a one way hinge.
4. A furniture unit according to any preceding statement wherein the spacer is pivotally mounted to one, or both, of the body panels.
5. A furniture unit according to any of statements 1 to 4 further comprising a brace which is removably engageable with a body panel or with the spacer to retain the unit in its deployed configuration.
6. A furniture unit according to statement 5 wherein the brace is a rigid panel.
7. A furniture unit according to statement 6 wherein each of the body panels are provided with a track, with which edges of the rigid brace panel may be slidably engaged.
8. A furniture unit according to any of statements 5 to 7 wherein the unit comprises more than one brace.
9. A furniture unit according to any preceding state-

ment wherein the unit comprises two or more spacers.

10. A furniture unit according to statement 9 wherein, when the unit is moved from its deployed configuration to its flat pack configuration, two spacers fold towards each other.

11. A furniture unit according to statement 9 wherein, when the unit is moved from its deployed configuration to its flat pack configuration, two spacers fold in in orthogonal directions.

12. A furniture unit according to statement 9 wherein, in the deployed configuration, two spacers are panels which are disposed orthogonal to one another.

13. A furniture unit according to any preceding statement wherein, in the deployed configuration, the spacer forms a top or bottom panel of the furniture unit.

14. A furniture unit according to any preceding statement, wherein in the deployed configuration, the spacer forms a shelf within the furniture unit.

15. A furniture unit according to any preceding statement wherein the spacer is connected to the body panels by hinges, which are optionally one way hinges.

16. A furniture unit according to any preceding statement wherein, in the flat pack configuration the thickness of the unit is less than 100mm.

17. A furniture unit according to any preceding statement wherein the unit is provided with means for attaching a door or cover.

18. A furniture unit according to any preceding statement wherein the rigid body panels or the spacer is made from wood.

19. A furniture unit according to any preceding statement wherein the first and second body panels have generally the same dimensions.

20. A furniture unit according to any preceding statement wherein, in the flat pack configuration, corresponding edges of the first and second body panels are generally in registry with each another.

21. A furniture unit according to any preceding statement wherein the furniture unit is a wardrobe, a bed-side unit, or a frame for a chest of drawers.

22. A furniture unit according to any preceding statement wherein the furniture unit is a drawer.

23. A kit comprising a drawer according to statement 22 and a furniture unit according to any of statements 1-21, which furniture unit is adapted to receive said drawer.

24. A kit according to statement 23 wherein the body panels of the furniture unit are provided with supports upon which the drawer may be removably located.

25. A furniture unit or kit substantially as described herein, with reference to the figures 1-5 of the drawings.

26. A furniture unit comprising;

first and second rigid body panels and a spacer which is moveably mounted to both of the body panels, such that the unit is moveable between; a flat pack configuration in which the spacer is disposed flat between the body panels, and a deployed configuration in which the body panels are separated by the spacer to define a space between the body panels,

wherein the spacer comprises first and second portions which have generally equal lengths and which are pivotally connected to each other, wherein the first portion is pivotally mounted to the first body panel and the second portion is pivotally mounted to the second body panel, such that in the flat pack configuration, the two portions of the spacer adopt a side by side orientation between the body panels.

Claims

1. A furniture unit (101,401) comprising;

first (102) and second (103) rigid body panels and two spacers (104, 105, 106) which are moveably mounted to both of the body panels, such that the unit is moveable between; a flat pack configuration in which the spacers are disposed flat between the body panels, and a deployed configuration in which the body panels are separated by the spacers to define a space between the body panels, wherein the furniture unit further comprises a brace (301, 302, 303) which is removably engageable with a body panel or with the spacers to retain the unit in its deployed configuration.

2. A furniture unit according to claim 1 wherein the spacers comprise first and second portions which have generally equal lengths and which are pivotally connected to each other, wherein the first portion is moveably mounted to the first body panel and the second portion is moveably mounted to the second

body panel, such that in the flat pack configuration, the two portions of the spacers adopt a side by side orientation between the body panels.

3. A furniture unit according to claim 2 wherein the two spacer portions are connected to each other by a one-way hinge.

4. A furniture unit according to any preceding claim wherein the spacers are pivotally mounted to one, or both, of the body panels.

5. A furniture unit according to any preceding claim wherein the brace is a rigid panel.

6. A furniture unit according to claim 5 wherein each of the body panels are provided with a track, with which edges of the rigid brace panel may be slidably engaged.

7. A furniture unit according to any preceding claim wherein the unit comprises more than one brace.

8. A furniture unit according to any preceding claim wherein the unit comprises more than two spacers.

9. A furniture unit according to claim 8 wherein, when the unit is moved from its deployed configuration to its flat pack configuration, two spacers fold towards each other.

10. A furniture unit according to any preceding claim wherein, when the unit is moved from its deployed configuration to its flat pack configuration, two spacers fold in in orthogonal directions.

11. A furniture unit according to any preceding claim wherein, in the deployed configuration, the two spacers are panels which are disposed orthogonal to one another.

12. A furniture unit according to any preceding claim wherein, in the deployed configuration, one of the spacers forms a top or bottom panel of the furniture unit.

13. A furniture unit according to any preceding claim, wherein in the deployed configuration, one of the spacers forms a shelf within the furniture unit.

14. A furniture unit according to any preceding claim wherein the spacer is connected to the body panels by hinges, which are optionally one way hinges.

15. A furniture unit according to any preceding claim wherein, in the flat pack configuration, corresponding edges of the first and second body panels are generally in registry with each another.

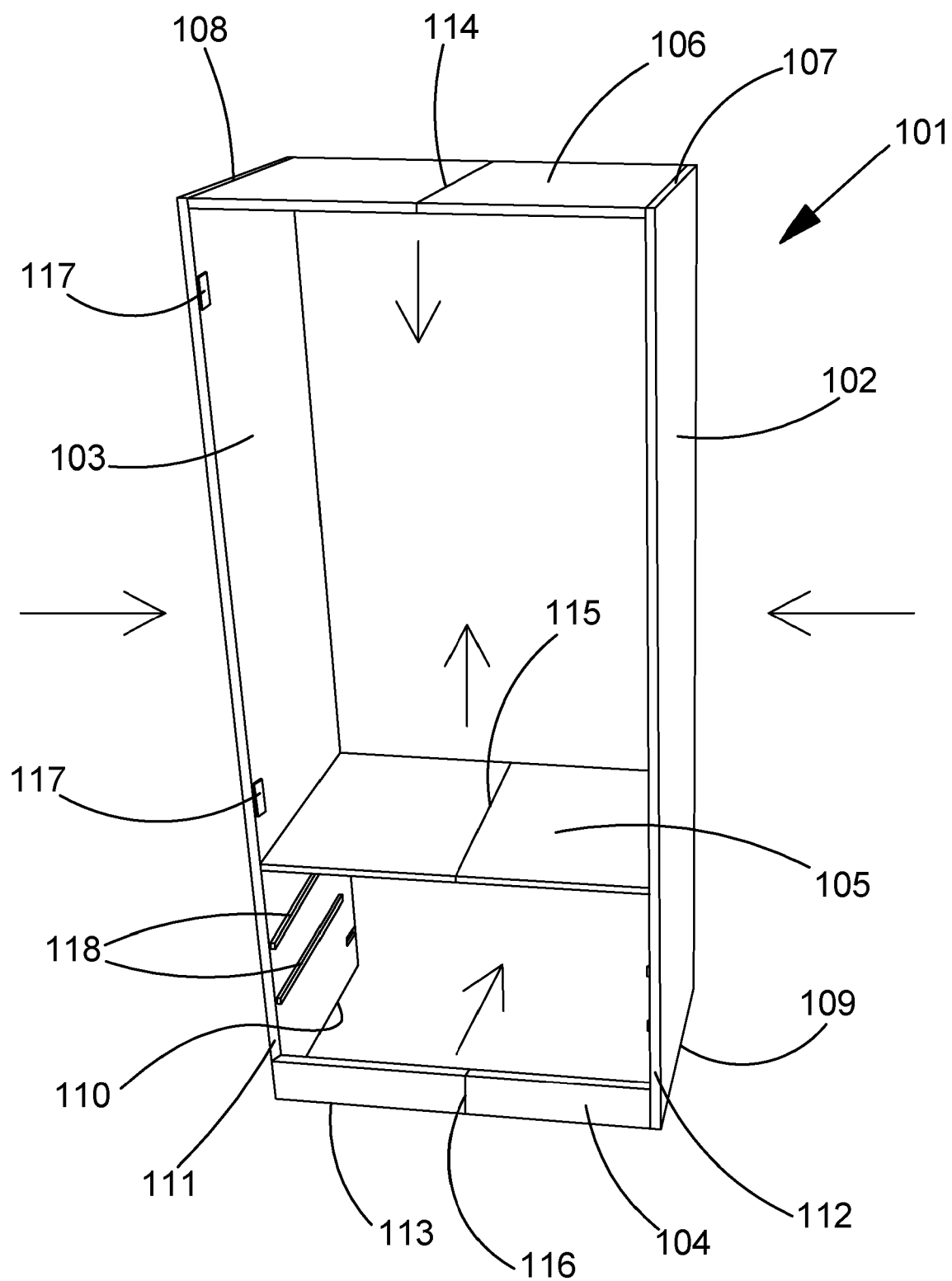
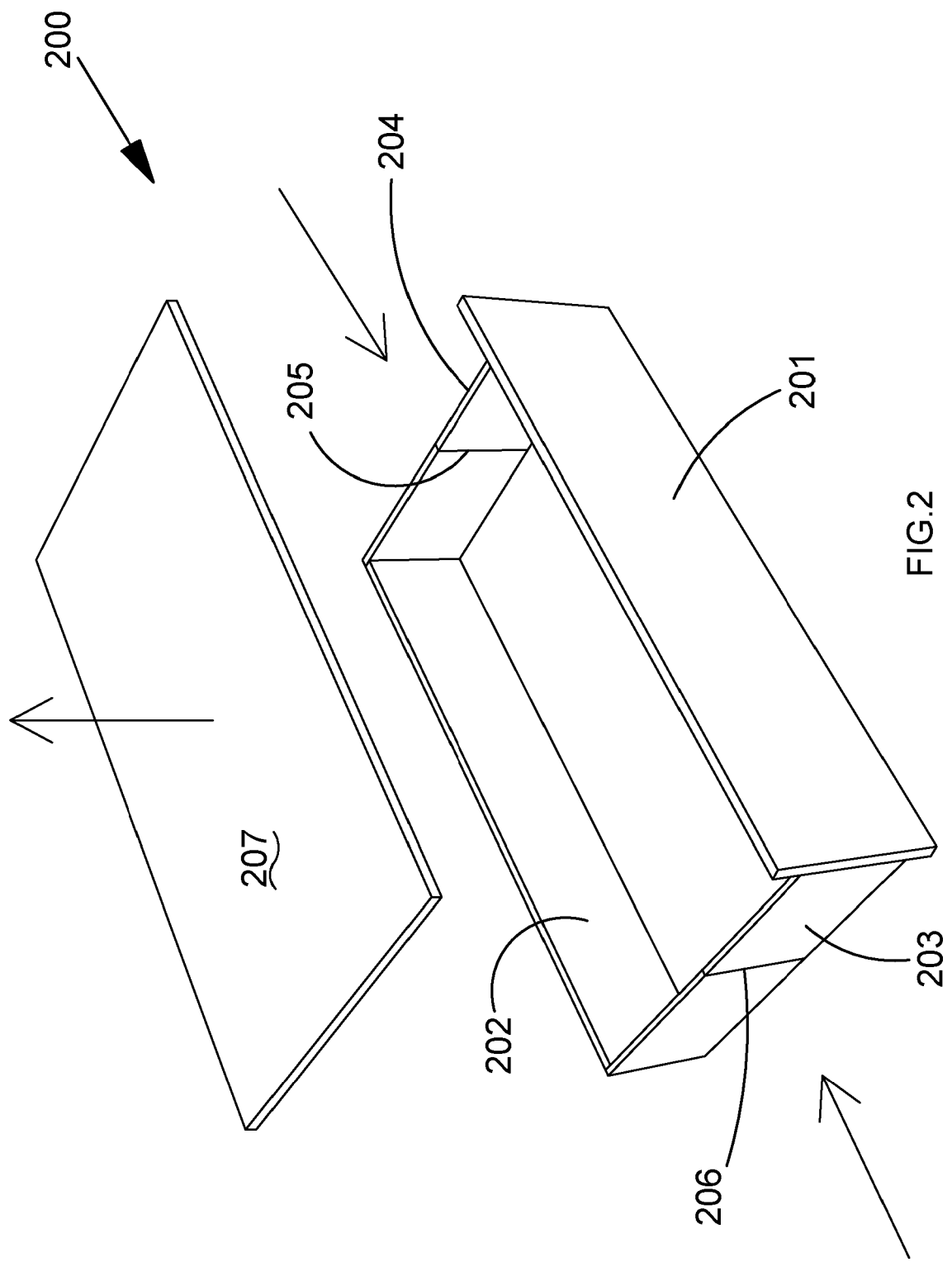


FIG.1



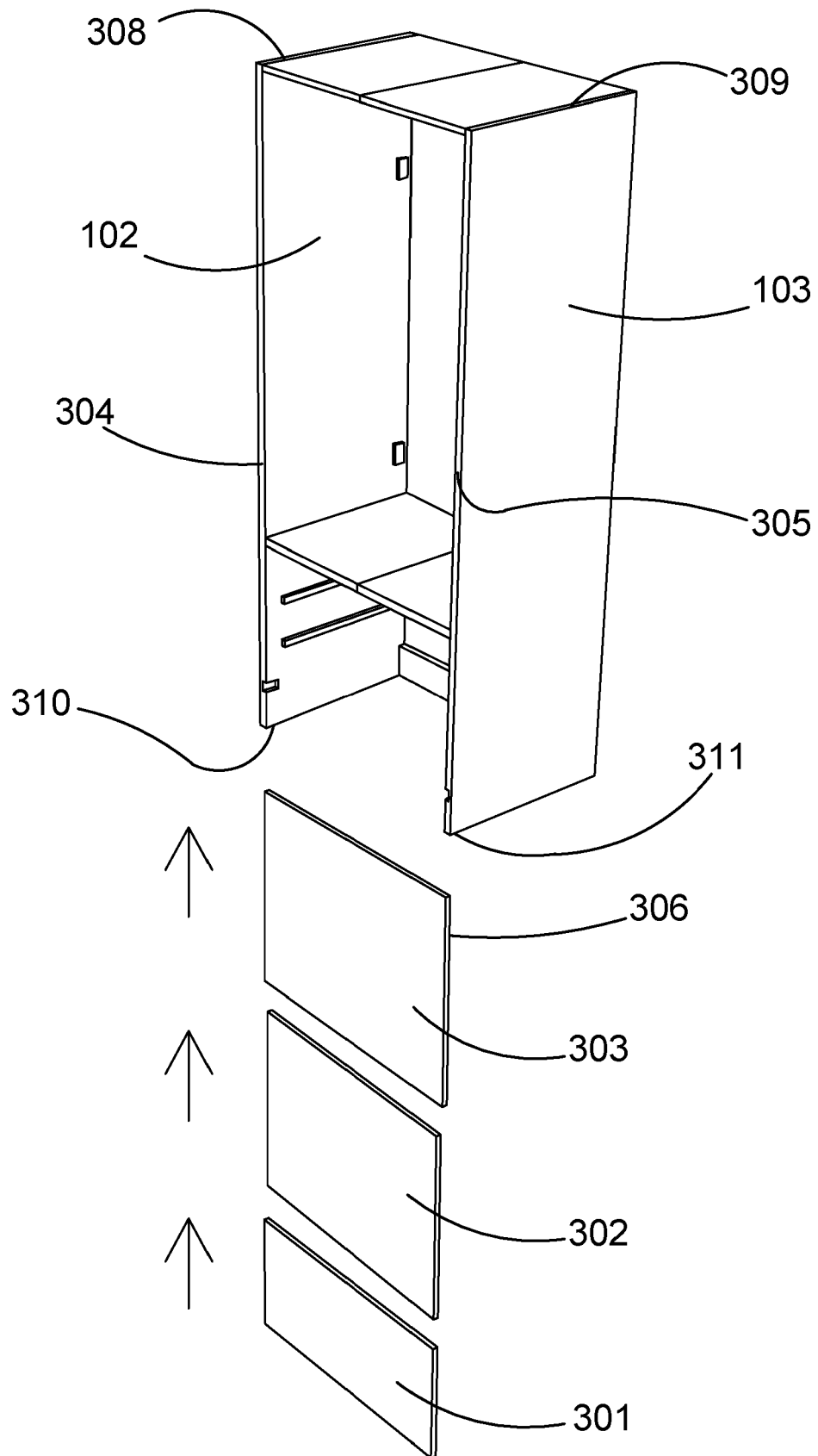


FIG.3

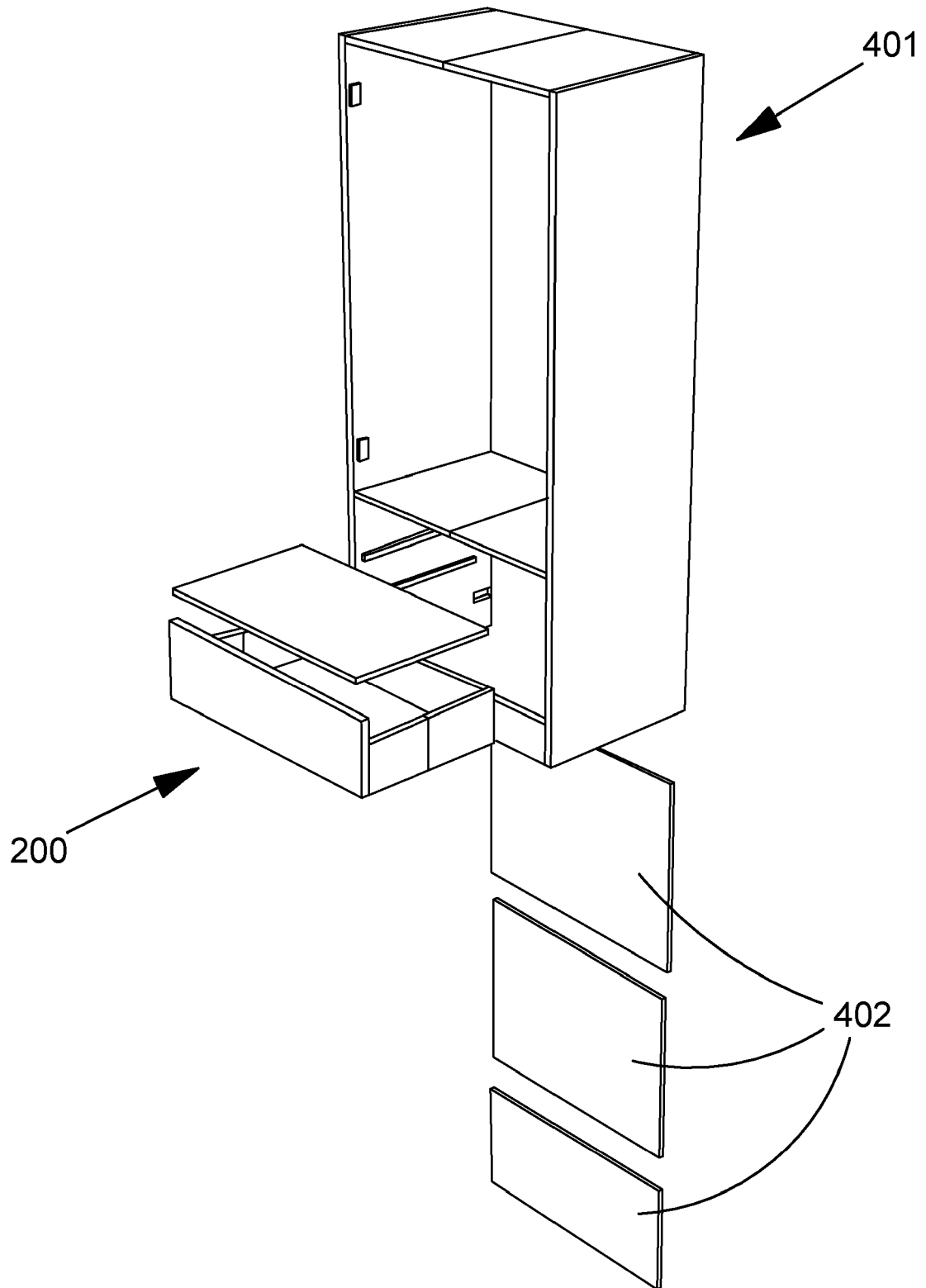


FIG.4

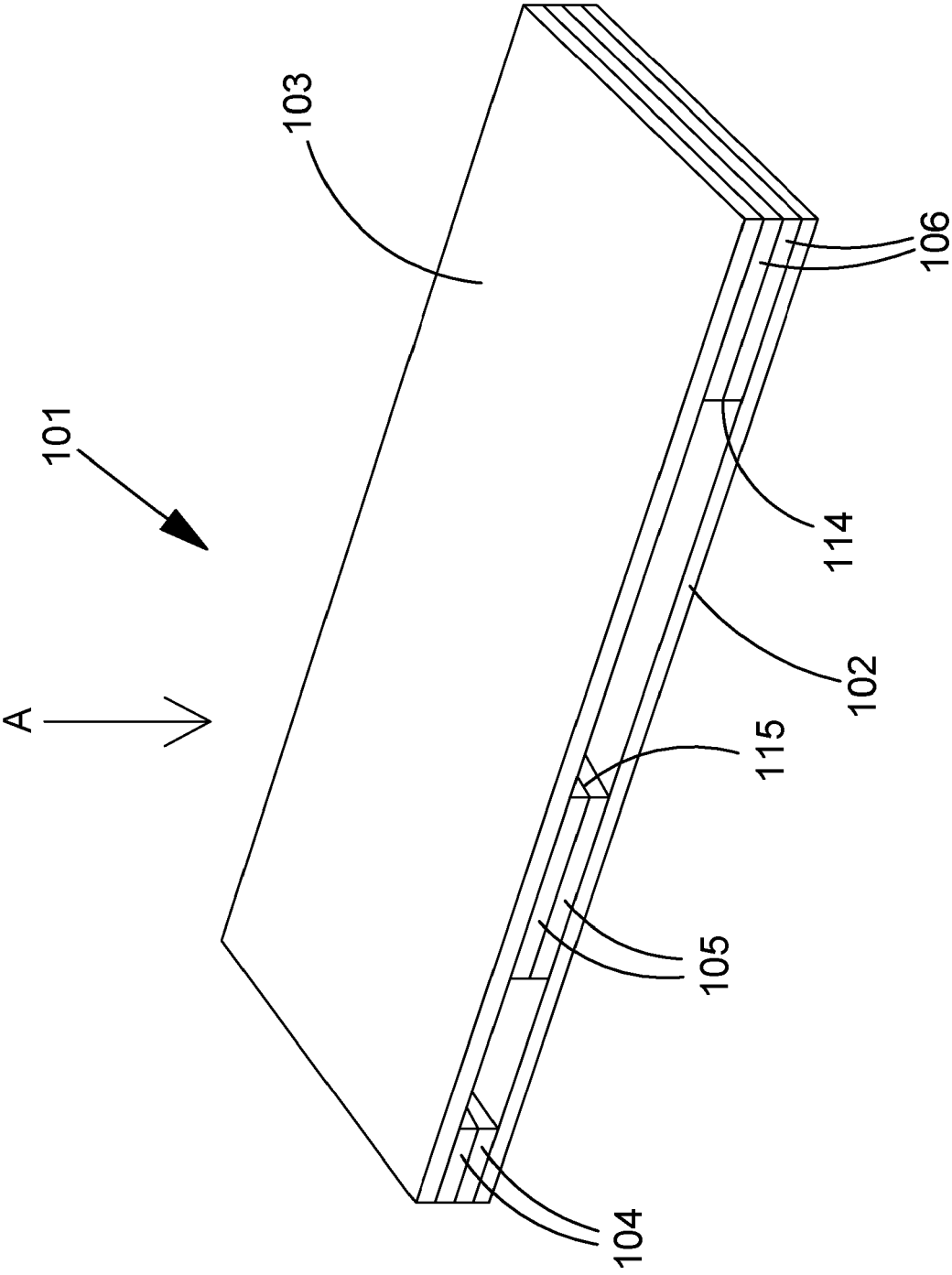


FIG. 5

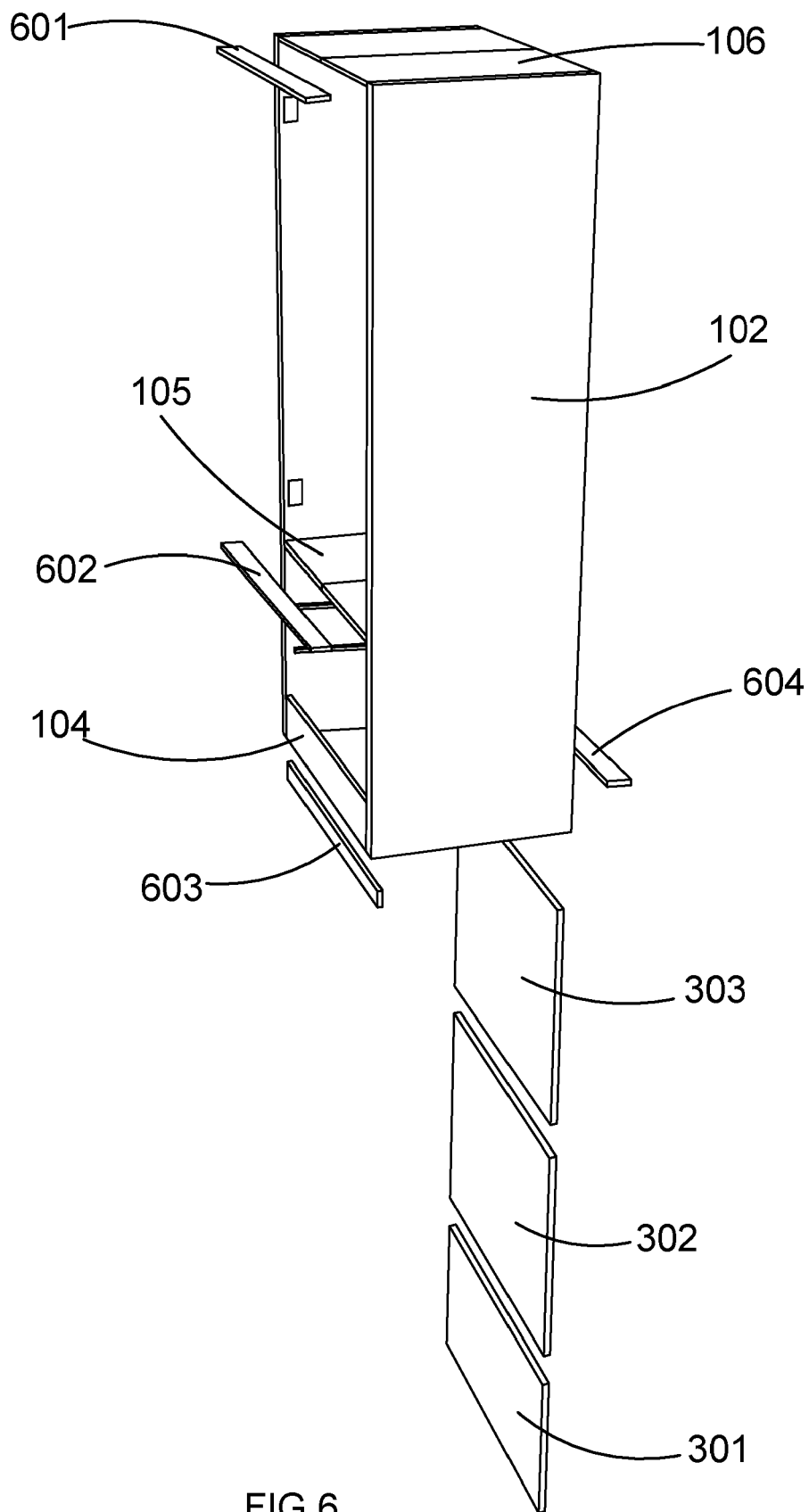


FIG.6

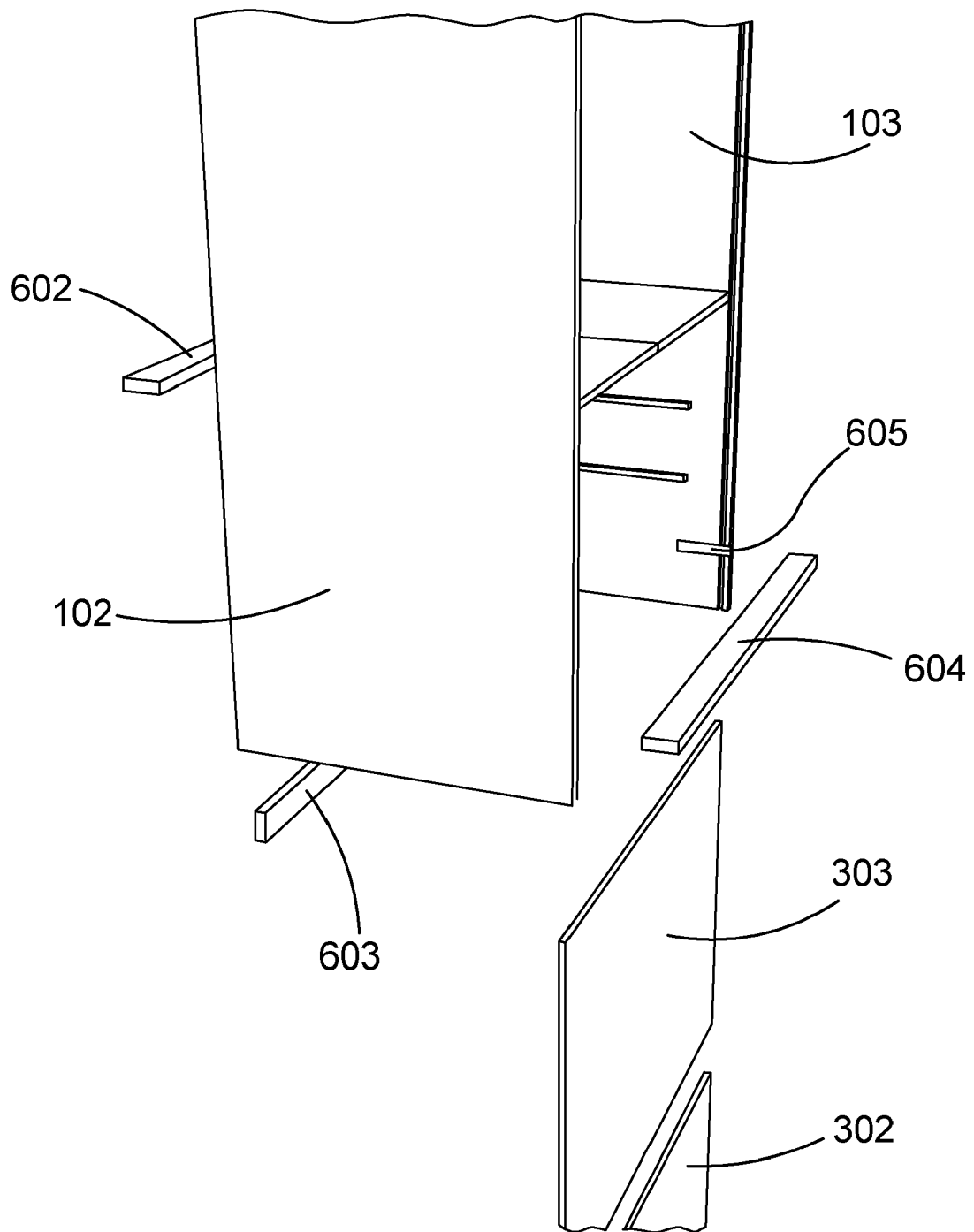


FIG.7



EUROPEAN SEARCH REPORT

Application Number

EP 22 16 0086

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EPO FORM 1503 03.82 (P04C01)

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 17 June 2022	Examiner de Cornulier, P
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	

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

EP 22 16 0086

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
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