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(54) Folded container for items such as bottles

(57) A fold-flat container (200) having a foldable base portion (180) and a wall section (210) extending therefrom, the wall section comprising: first and second outer panels (110, 120) connected along a first fold line (115), a printable surface of the outer panels forming an external surface of the container; and first and second inner panels (130, 140) connected along a second fold line (135), a printable surface of the inner panels defining an interior volume of the container, wherein the second outer panel (120) is connected to the first inner panel (130) along a third fold line (150).

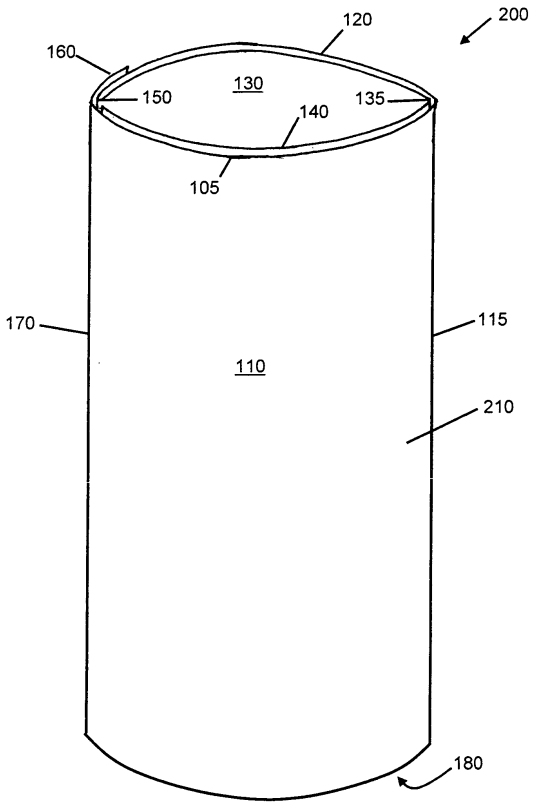

Fig. 2

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Description

[0001] The invention relates to packaging, and in particular to fold-flat containers for items such as bottles.

[0002] Packaging containers for items such as bottles are well known, many of which are typically of two main different types of construction, both in the form of cylindrical cardboard tubes for containing the bottle, the tube being sealed at each end with end caps. A first type of container is made from a helically-wound cardboard strip, with an overlaid printed paper wrapping. A second type is made from a rectangular pre-printed cardboard blank formed into a tubular shape and glued along the long edges of the blank. Both types of construction offer the required rigidity and flexibility of packaging design for high value items such as bottles of spirits.

[0003] A significant problem with existing packaging solutions of this type, however, is that the packaging occupies a substantial volume once constructed, which increases the costs associated with transportation from where the packaging is made to where the packaging is to be used, for example at a bottling plant.

[0004] A further problem is that such constructions are expensive to produce, and may require manual handling, particularly for the second type, which further adds to the cost of production.

[0005] Other packaging containers are known, which attempt to address the issue of maintaining rigidity while using a method more amenable to mass production and transportation. EP 1955958, for example, discloses a rectangular section container comprising a self-supporting inner structure within a self-supporting outer structure, the structures being formed from paperboard and in which the inner structure is shaped and dimensioned to create a friction fit with the outer structure. This allows for a rigid container to be made which is more amenable to being transported in flat-pack form.

[0006] Such a solution, however, requires two containers to be made, which have to be fitted together after assembly of each container. This is inefficient in terms of the need to effectively have two container blanks processed when making each single container.

[0007] It is therefore an object of the present invention to address one or more of the above problems, and to make a container that maintains the rigidity and aesthetic qualities for packaging high value items, while allowing for a more efficient means of production and transportation of the container.

[0008] In accordance with a first aspect of the invention there is provided a fold-flat container having a foldable base portion and a wall section extending therefrom, the wall section comprising:

first and second outer panels connected along a first fold line, a printable surface of the outer panels forming an external surface of the container; and
first and second inner panels connected along a second fold line, a printable surface of the inner panels defining an interior volume of the container,
wherein the first outer panel is attached to the second outer panel adjacent a third fold line connecting the second outer panel to the first inner panel.

[0009] The use of outer panels to define an exterior of the container together with inner panels to define the interior allows for a construction of container having an improved rigidity, i.e. resistance to buckling, while retaining the flexibility and efficiency of a fold-flat container. Having the outer panels connected with each other and folded together to make the wall of the container retains the rigidity of the container while allowing the printable surfaces of the panels to be used for decorating either or both of the inside and outside of the container.

[0010] In comparison with existing cardboard constructions where increased rigidity is provided by an increased thickness of card, the present invention offers a solution that reduces substantially the volume taken up by the container when transported, while retaining the required strength as well as aesthetic qualities required for packaging high value items.

[0011] The second fold line of the fold-flat container preferably comprises a longitudinal slit extending between opposing ends of the first and second inner panels. This longitudinal slit reduces the bending stress on the double-thickness wall of the container once constructed, so as to balance the absence of a fold in the inner wall adjacent to the third fold line. The resulting container has a more uniform cross-sectional shape when constructed. The longitudinal slit may be in the form of a continuous slit along the second fold line, or alternatively in the form of a series of slits or perforations running along the fold line.

[0012] The container may comprise a flap connected along a fourth fold line to the first outer panel, a surface of the flap being bonded, e.g. glued, to a portion of the surface of the second outer panel adjacent the third fold line. Bonding the container together with such a flap results in an ease of construction more amenable to mass production, and allows the container to be folded flat after bonding.

[0013] The container may comprise a window in the first or second outer panel, an edge of the window being adjacent to, or coincident with, that of a window in the second or first inner panel, respectively. The window in the first or second outer panel is preferably smaller than the window in the second or first inner panel. Such a window allows the contents of the container to be viewed, as well as offering the possibility of the inner panel being provided with a printed design that can also be viewed through the window. The window may comprise a transparent material, such as a PVC or other transparent polymeric film, bonded to the relevant inner or outer panel.

[0014] The base section of the container may define an elliptical, including circular, shape of the container wall section. The base section, which can form a part of the container blank, can thereby define the cross-sectional

shape of the container. A further end cap may be provided to seal an end of the container opposing the base portion, which serves also to define the cross-sectional shape at an opposing end of the container.

[0015] A printed design may be provided on the printable surfaces of the inner and outer panels. In particular in conjunction with a window as described above, a printed design can be provided which requires only one printing operation yet is visible on both the inner and outer panels of the container.

[0016] In accordance with a second aspect of the invention there is provided a printable blank for a fold-flat container having a foldable base portion and a wall section extending therefrom, the wall section comprising:

first and second outer panels connected along a first fold line, a printable surface of the outer panels configured to form an external surface of the container; and

first and second inner panels connected along a second fold line, a printable surface of the inner panels configured to define an interior volume of the container,

wherein the first outer panel is attachable to the second outer panel adjacent a third fold line connecting the second outer panel to the first inner panel, the printable surfaces of the inner and outer panels being contiguous.

[0017] The blank is suitable for being constructed into the container of the first aspect of the invention. As the printable surfaces of the inner and outer panels are contiguous, the blank can be constructed into a container in which a printed design is viewable on both the outside and inside surfaces.

[0018] The invention will now be described by way of example, and with reference to the enclosed drawings in which:

figure 1 shows a printable surface of a foldable blank for making a cylindrical fold-flat container;

figure 2 shows a side view of the cylindrical container made from the blank of figure 1;

figure 3 is a schematic cross-sectional view of a container comprising top and bottom end caps and a reinforcing top ring; and

figures 4, 5 and 6 are drawings of alternative foldable blanks for cylindrical containers having different cross-sectional shapes.

[0019] The foldable blank 100 shown in figure 1 comprises first and second outer panels 110, 120 connected along a first fold line 115, and first and second inner panels 130, 140 connected along a second fold line 135. The second outer panel 120 is connected to the first inner panel 130 along a third fold line 150. A flap 160 is connected to the first outer panel 110 along a fourth fold line 170.

[0020] A foldable base portion 180 comprises further panels or tabs, together with associated flaps that, when assembled, form a rigid circular base for the container. Gluing points 190 are provided to bond the circular panel 191 to a corresponding tab 192, and to secure tabs 193a, 193b to corresponding tabs 194a, 194b. Further sections 185a, 185b folds over on to the first and second outer panels, forming a rim around the base portion along a base fold line 186.

[0021] A gluing region 165 corresponds with the flap 160 once the first and second inner panels 130, 140 are folded underneath the first and second outer panels 110, 120 along the third fold line 150, and the outer and inner panels folded along the first and second fold lines 115, 135. The flap 160 then folds around the third fold line 150 to join the second outer panel 120 to the first outer panel 110 along the gluing region 165.

[0022] When forming the container in fold-flat form from the blank 100 shown in figure 1, the base portion 180 is folded underneath the outer and inner panels, the tabs 193a, 193b, 194a, 194b joined and the circular portion 191 and tab 192 joined such that the base portion 180 can, when required, be simply unfolded to form an internal base of the container and define the cross-sectional shape of the wall formed by the inner and outer panels 130, 140, 110, 120. The open end of the container thereby formed is then defined by the upper edge 105 of the blank 100.

[0023] Shown in figure 2 is a container 200 after assembly from the blank 100 of figure 1, the container comprising a base portion 180 and a wall portion 210 formed of the outer and inner panels 110, 120, 130, 140. The upper edge 105 is illustrated to indicate the method of folding the inner and outer panels 130, 140, 110, 120. The outer panels 110, 120 form the visible exterior surface of the container 200, while the inner panels 130, 140 form the visible interior surface of the container 200. The first and second outer panels 110, 120 are connected at opposing edges by the first fold line 115 and the third fold line 170 joining the first outer panel 110 to the flap 160. The shape of the container, in the form of a flattened ellipse, is shown exaggerated to illustrate the position of the fold lines 115, 135, 150, 170.

[0024] As can be seen from figure 2, the container 200 comprises a double thickness fold along the first and second fold lines 135, 115, while having only a single fold along the third fold line 170. If the fold line 135 was not weakened in some way, this would cause a distortion of the shape when assembled into the container 200. Consequently, the second fold line 135 is preferably provided with a longitudinal slit 136 (shown in figure 1). This longitudinal slit 136 runs along the majority of the length of the second fold line 135 connecting the first and second inner panels 130, 140, with the result that the fold is substantially weakened. The longitudinal slit 136 preferably has a defined width greater than a thickness of the panels, such that any distortion of the shape of the container 200 is minimised.

[0025] The container 200 may be constructed to have a circular or elliptical cross-section, depending on the shape of the base portion 180. If elliptical, the long axis of the ellipse will typically be orthogonal to the first and second fold lines 115, 135.

[0026] A window may be provided in one or more of the outer and inner panels. Preferably, a window provided in the first outer panel 110 will have a matching corresponding window having a similar or greater extent in the second inner panel 140, so that the contents of the container 200, as well as any printed design on the inner panels 130, 140, can be viewed. To protect the contents of the container 200, a transparent material may be provided across the window, preferably glued to the inner surface of the first outer panel 110, i.e. positioned between the second inner panel 140 and the first outer panel 110 in the container 200. The transparent material may be a PVC film or other suitable polymeric material.

[0027] The container 200 is preferably constructed from cartonboard, with a preferred thickness within the range of 300 to 600 microns, an exemplary thickness being around 450 microns. A typical size of container made according to the invention would have a diameter of around 100 mm and a length of around 270mm, being suitable dimensions for a conventional spirits bottle. Such a size of container could be made from a blank having total overall dimensions of around 375 mm by 620 mm.

[0028] Illustrated in figure 3 is a schematic cross-sectional view of a container 200 with additional elements in the form of top and bottom end caps 301, 302 and a reinforcing top ring 303. Each of these elements are preferably moulded or otherwise formed from a thermoplastic or thermosetting polymeric material, although one or more may alternatively be formed from sheet metal in certain embodiments. The container 200 according to the invention may comprise one or more of these elements, although will in most cases comprise at least a top cap 301 when filled and shipped.

[0029] In order to secure the upper edge 105 of the container 200, a reinforcing top ring 303 can be provided after assembly of the container from the folded state and prior to filling. The reinforcing top ring 303 has a cross-section that is configured to engage with the upper edge 105, preferably along both the inner and outer surfaces 304, 305 and the top edge 105. In the embodiment shown, the cross-section is u-shaped, although engagement with the outer surface 305 may not be required in all cases. The inner side 306 of the ring cross-section is preferably longer than the outer side 307, allowing the ring 303 to be more easily fitted inside the container 200 along the first and second inner panels 130, 140 (see figure 2). A tapered portion 308 along the edge of the inner side 305 may also be provided for the same purpose. When in place along the top edge 105 of the container 200, the ring 303 serves to provide a more stable cross-sectional shape to the container, to allow the container 200 to be more reliably filled, while also allowing a top cap 301 to be more easily fixed after filling. Without such a reinforcing top ring 303, the upper edge 105 of the container may not provide a correctly-shaped opening to allow the container 200 to be filled reliably. For example, a container designed to have a circular cross-section may in practice take the form of an ellipse due to the shape memory of the material after assembling the container from a folded state. This can make filling the container more difficult without some means of forcing the top edge 105 to conform to the desired shape, which would otherwise only occur once a cap is applied. A further advantage of the reinforcing ring 303 is to maintain the cross-sectional shape of the container after a cap is removed and the contents taken out. This allows the fold-flat container 200 of the invention to more closely resemble a conventional container that has not been assembled from a folded form, maintaining the aesthetic advantages of a non-folded container in one that can be shipped in a folded form.

[0030] The reinforcing ring 303 may be bonded to the upper edge 105 of the container although, with a sufficiently closely-fitting ring, this may not be required.

[0031] The container 200 may alternatively or additionally comprise a bottom end cap 302 for securing the bottom edge 309 of the container 200 and providing a more stable base, as well as strengthening the bottom 310 of the container 200 for more securely carrying heavier contents. As with the reinforcing top ring 303, the bottom end cap 302, which may be bonded to the bottom edge 309 of the container, preferably comprises a ring having a u-shaped cross-section, the ring engaging with at least the inner surface 304 and bottom edge 309 of the container 200. To strengthen the base of the container 200, the bottom end cap 302 may also provide a re-entrant closed end 311 to the container 200, rather than an open end as with the reinforcing top ring 303, although this may not be required in all embodiments, for example if reinforcement of the base 310 of the container 200 is not required but where a more stable base is.

[0032] In a general aspect therefore, the container 200 may additionally comprise an end reinforcement element having a ring portion engaged with at least an inner surface and an edge of an end of the container 200. The ring portion preferably has a u-shaped cross-section engaged with inner and outer surfaces of the container. In one form, the reinforcement element is in the form of an open ring and is attached, and preferably bonded, to the open top end of the container. In another form, the reinforcement element is in the form of an end cap 302 providing a closed end to the bottom of the container 200.

[0033] The cross-sectional shape of a container according to the invention may in certain embodiments be other than elliptical or circular as in the embodiments described above. By providing further folds at corresponding locations in the first and second inner and outer panels and/or by altering the shape of the base portion of the container 200, other cross-sectional shapes may be provided for, examples of which are described below with reference to figures 4, 5 and 6. To ensure such al-

ternative shapes are maintained after assembly of the container from the folded state, one or more end reinforcing elements may be provided, as described above.

[0034] Figures 4, 5 and 6 illustrate alternative exemplary foldable blanks 400, 500, 600 for containers having, when assembled, cross-sectional shapes other than elliptical or circular. The blank 400 in figure 4 comprises a foldable base portion 480 having a truncated elliptical base panel 491, together with corresponding tabs 494a, 494b that are folded and bonded together, and glued at glue areas 490, when the blank 400 is in a folded and assembled state. The blank 400 comprises first and second outer panels 410, 420 connected along a fold line 415a. Additional fold lines 415b, 415c are provided in the second outer panel 420 to allow the panel 420 to conform to the truncated elliptical form of the base portion 491 when assembled. First and second inner panels 430, 440 are connected along a second fold line 435a, the second fold line 435a having a longitudinal slit 436a extending between opposing ends of the panels 430, 440. Additional fold lines 435b, 435c are provided in the second inner panel 430 to allow the panel 430 to conform to the truncated elliptical form of the base portion 491 when assembled. An additional longitudinal slit 436b is provided along the fold line 435c. The longitudinal slits 436a, 436b serve the same purpose as that of the blank 100 illustrated in figure 1 and described above. Other than the different base portion 480 and the additional fold lines, the blank 400 in figure 4 is assembled in a similar way to that of figure 1.

[0035] The blank 500 in figure 5 comprises a foldable base portion 580 having a rounded rectangular cross-sectional shape when assembled, provided by base panels 591 a, 591 b that are folded and connected via tabs 592 and slots 593 when the blank 500 is in a folded and assembled state. The blank 500 comprises first and second outer panels 510, 520 connected along a fold line 515a. Additional fold lines 515b, 515c are provided in the second outer panel 520 to allow the panel 520 to conform to the shape of the base portion 580 when assembled. First and second inner panels 530, 540 are connected along a second fold line 535a, the second fold line 535a having a longitudinal slit 536a extending between opposing ends of the panels 530, 540. Additional fold lines 535b, 535c are provided in the second inner panel 530 to allow the panel 530 to conform to the shape of the base portion 580 when assembled. Further closely-spaced fold lines 537 are also provided in the first and second inner panels 540, 530 to allow the panels to conform with the rounded corners of the base portion 580. Additional longitudinal slits 536b, 536c are provided along corresponding fold lines 535b, 535c. The longitudinal slits 536a, 536b, 536c serve the same purpose as that of the blank 100 illustrated in figure 1 and described above. Other than the different base portion 580 and the additional fold lines, the blank 500 in figure 5 is assembled in a similar way to that of figure 1.

[0036] The blank 600 in figure 6 comprises a foldable base portion 680 having truncated elliptical shaped base panels 691 a, 691 b that are folded and bonded together, and glued at glue areas 690 when the blank 600 is in a folded and assembled state. The base panels 691 a, 691 b are folded and connected via tabs 692 and slots 693 when the blank 600 is in a folded and assembled state. The blank 600 comprises first and second outer panels 610, 620 connected along a fold line 615a. Additional fold lines 615b, 615c are provided in the first and second outer panels 610, 620 to allow the panels to conform to the truncated elliptical form of the base portion 680 when assembled. First and second inner panels 630, 640 are connected along a second fold line 635a. Additional fold lines 635b, 635c are provided in the first and second inner panels 630, 640 to allow the panels to conform to the truncated elliptical form of the base portion 680 when assembled. Other than the different shaped base portion 680 and the additional fold lines, the blank 600 in figure 6 is assembled in a similar way to that of figure 1.

[0037] Other embodiments are intentionally within the scope of the invention as defined by the appended claims.

Claims

1. A fold-flat container (200) having a foldable base portion (180) and a wall section (210) extending therefrom, the wall section comprising:

   first and second outer panels (110,120) connected along a first fold line (115), a printable surface of the outer panels forming an external surface of the container; and
   first and second inner panels (130,140) connected along a second fold line (135), a printable surface of the inner panels defining an interior volume of the container,
   wherein the first outer panel is attached to the second outer panel adjacent a third fold line (150) connecting the second outer panel to the first inner panel.

2. The container (200) of claim 1 wherein the second fold line (135) comprises a longitudinal slit (136) extending between opposing ends of the first and second inner panels (130, 140).

3. The container (200) of claim 1 or claim 2 comprising a flap (160) connected along a fourth fold line (170) to the first outer panel (110), a surface of the flap being bonded to a portion (165) of the surface of the second outer panel (120) adjacent the third fold line (150).

4. The container (200) of any preceding claim wherein the first outer panel (110) comprises a window, an edge of the window adjacent to that of a window in

the second inner panel (140).

5. The container (200) of any of claims 1 to 3 wherein the second outer panel (120) comprises a window, an edge of the window adjacent that of a window in the first inner panel (130).

6. The container (200) of any preceding claim wherein the base portion (180) defines an elliptical shape of the container wall section (210).

7. The container (200) of claim 6 wherein the base portion (180) defines a substantially circular shape of the container wall section (210).

8. The container (200) of claim 6 or claim 7 comprising an end cap (301) configured to seal an end of the container opposing the base portion (180).

9. The container (200) of any preceding claim comprising a printed design provided on the printable surfaces of the inner and outer panels (110,120,130,140).

10. The container (200) of any preceding claim comprising an end reinforcement element (302,303) having a ring portion engaged with at least an inner surface (304) and an edge (105,309) of an end of the container (200).

11. A printable blank (100) for a fold-flat container (200) having a foldable base portion (180) and a wall section (210) extending therefrom, the wall section (210) comprising:

first and second outer panels (110,120) connected along a first fold line (115), a printable surface of the outer panels configured to form an external surface of the container (200); and
first and second inner panels (130,140) connected along a second fold line (135), a printable surface of the inner panels configured to define an interior volume of the container (200),
wherein the first outer panel (110) is attachable to the second outer panel (120) adjacent a third fold line (150) connecting the second outer panel (120) to the first inner panel (130), the printable surfaces of the inner and outer panels being contiguous.

12. The printable blank (100) of claim 11 wherein the second fold line (135) comprises a longitudinal slit (136) extending between opposing ends of the first and second inner panels (130,140).

13. The printable blank (100) of claim 11 or claim 12 comprising a flap (160) connected along a fourth fold line (170) to the first outer panel (110), a surface of the flap being configured to bond to a portion (165) of the printable surface of the second outer panel (120) adjacent the third fold line (150).

14. The printable blank (100) of any one of claims 11 to 13 wherein the first outer panel (110) comprises a window configured to coincide with a window in the second inner panel (140) when folding the blank along the third fold line (150).

15. The printable blank (100) of any one of claims 11 to 13 wherein the second outer panel (120) comprises a window configured to coincide with a window in the first inner panel (130) when folding the blank along the third fold line (150).

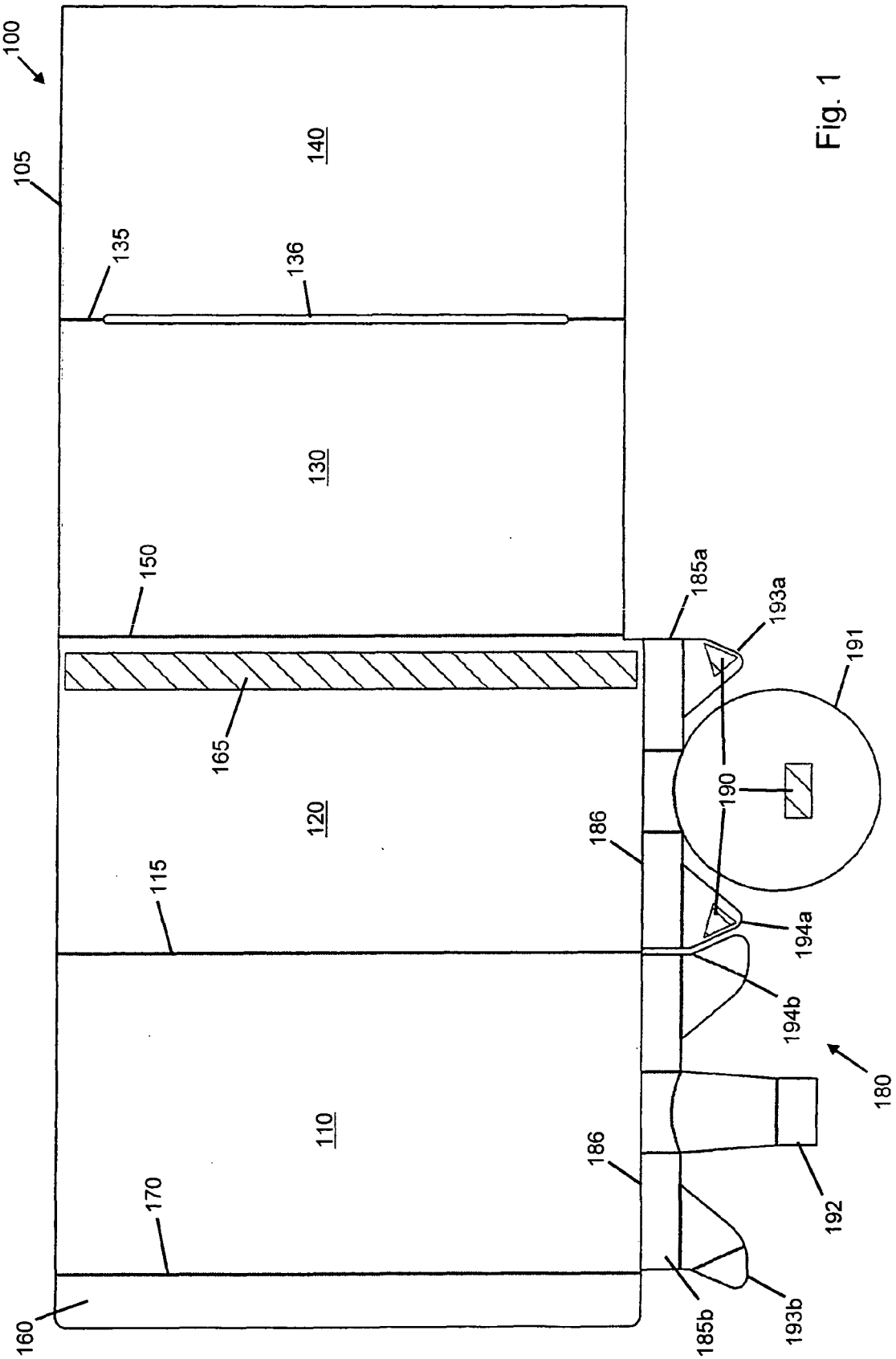
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Fig. 1

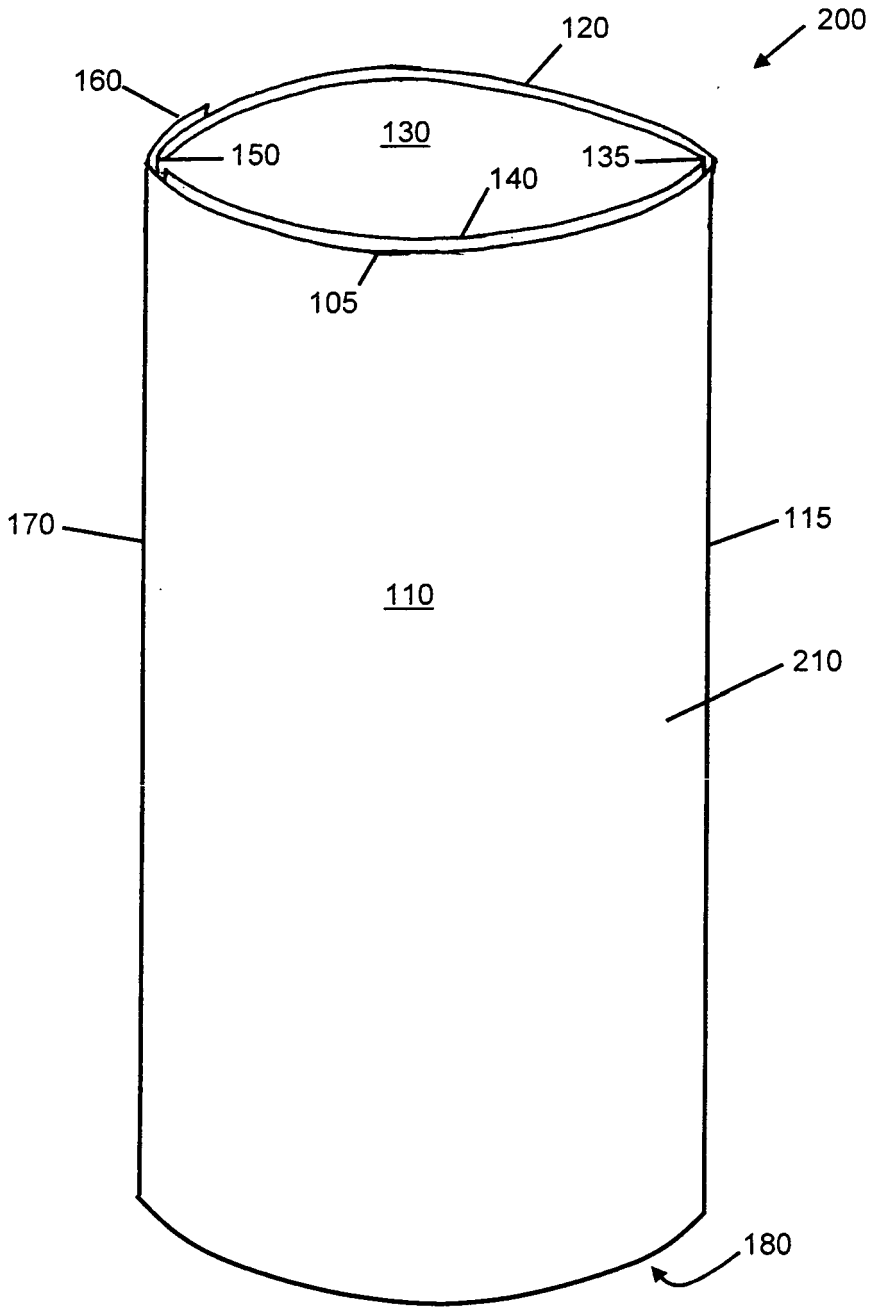

Fig. 2

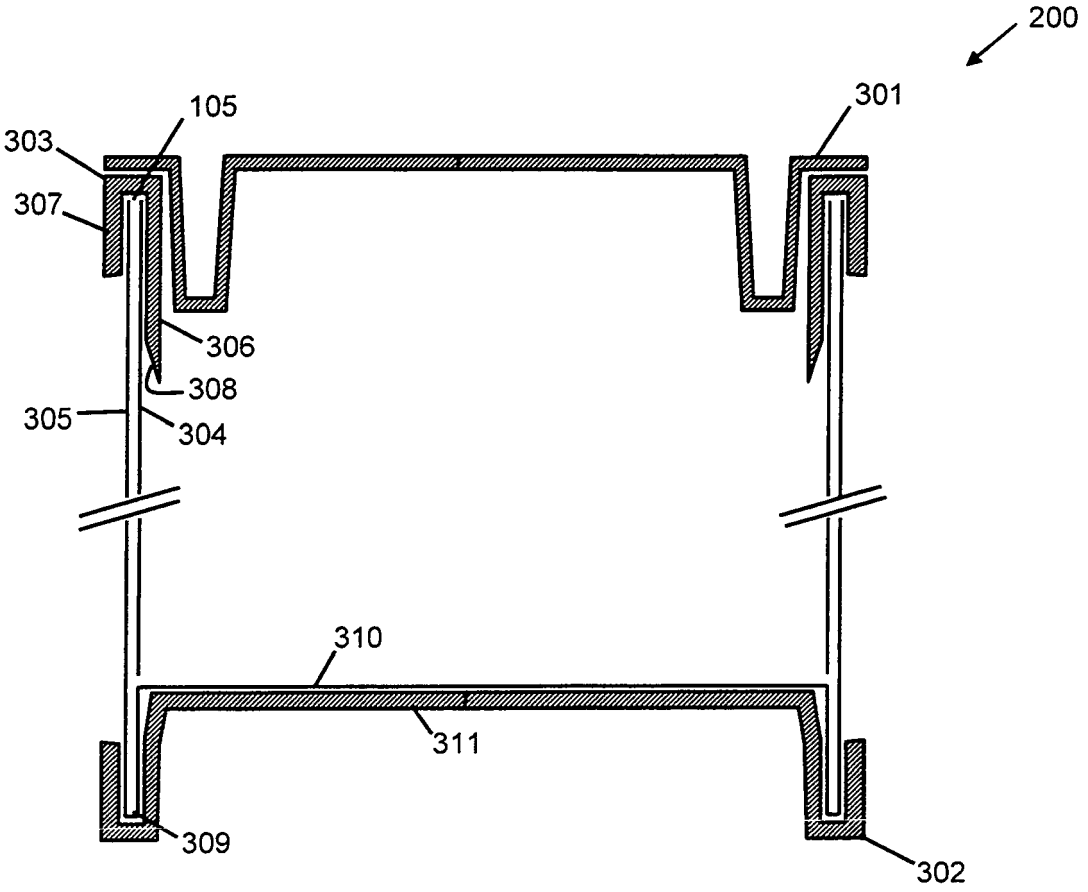

Fig. 3

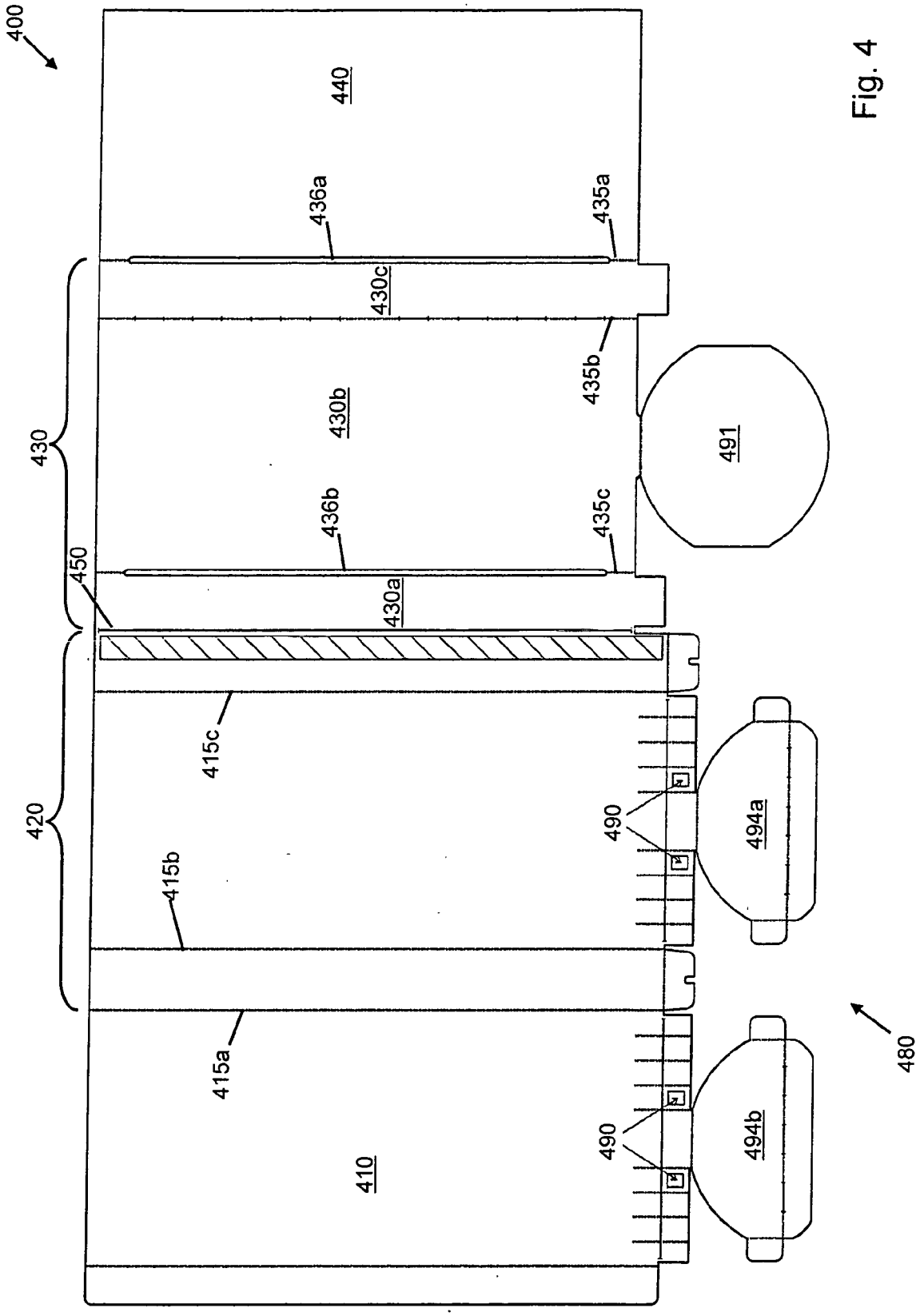
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Fig. 4

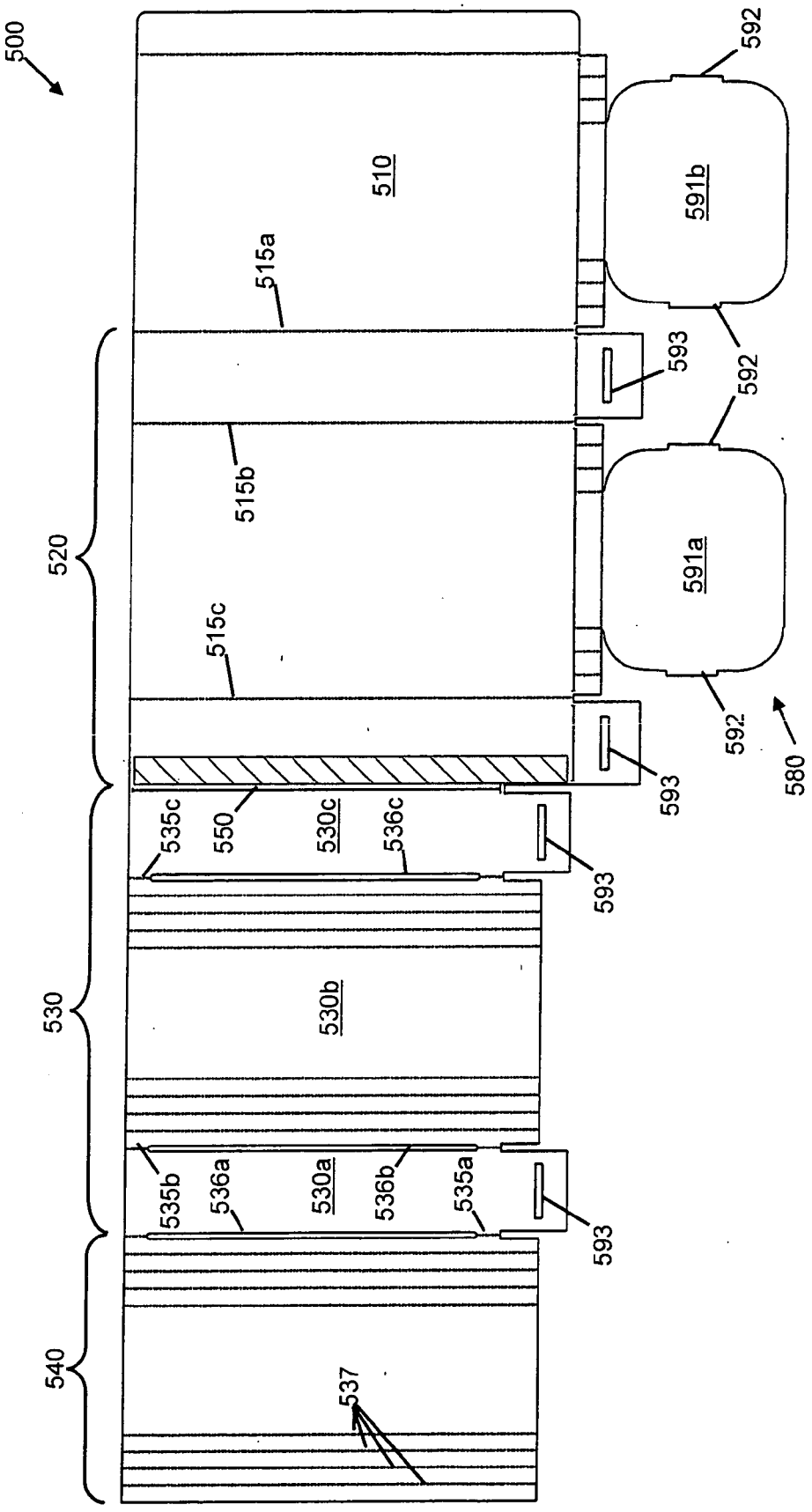
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Fig. 5

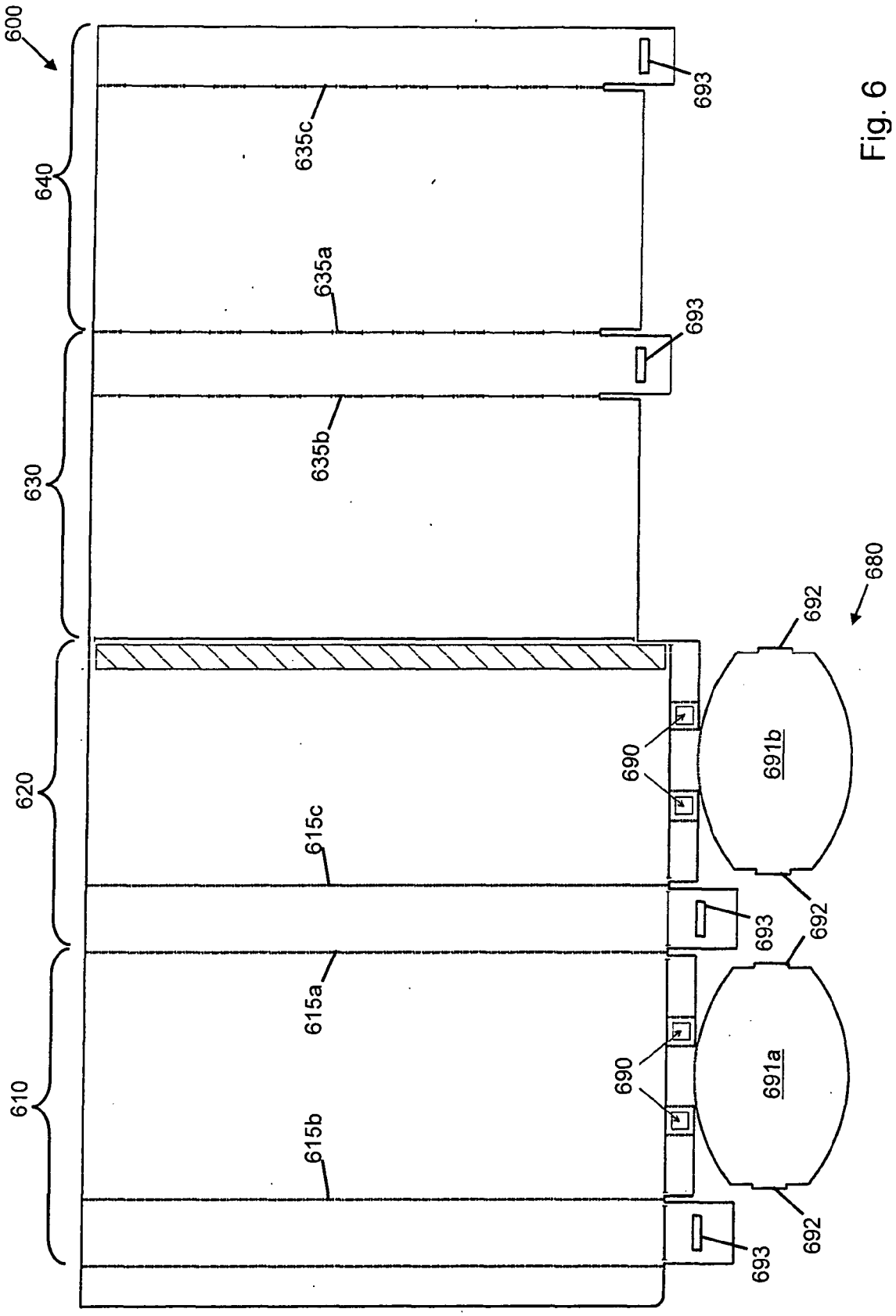
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Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 09 25 2149

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	US 5 911 358 A (KENNER RALF [DE] ET AL) 15 June 1999 (1999-06-15) * abstract; figures 1,2,6 * * column 3, line 14 - column 4, line 33 *	1-15	INV. B65D5/02
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 November 2009	Segerer, Heiko

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 25 2149

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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10-11-2009

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REFERENCES CITED IN THE DESCRIPTION

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