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(54) **Bottle crate with pivotable divider elements and method for producing same**

(57) Bottle crate (1) suitable for carrying and storing individual bottles and bottle packs, the bottle crate comprising a bottom wall (2) and lateral walls (3,4,5,6;23) together forming an interior space in which the individual bottles (20) and bottle packs can be stored. The bottle crate further comprises pivotable divider elements (7,8; 27,28,29) provided in the interior space and movable between a first position wherein the divider elements are

positioned out of the way for the storage of bottle packs in the interior space and a second position in which the divider elements are positioned for separating individual bottles stored in the interior space from each other. The divider elements are pivotally connected to the lateral walls and the lateral walls comprise cavities for accommodating the divider elements in the first position.

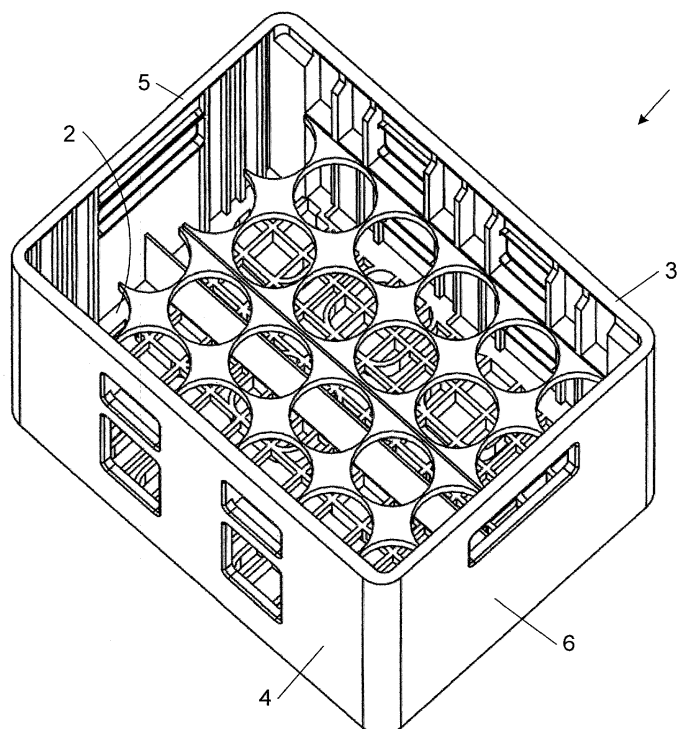


Fig. 2

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Description

Technical field

[0001] The present invention relates to a bottle crate suitable for carrying and storing individual bottles and packs of bottles.

[0002] The present invention further relates to a method for producing such a bottle crate.

Background art

[0003] Bottle crates suitable for carrying and storing individual bottles as well as packs of bottles are for example known from BE-A-1016429 and EP-A-2597045. When storing individual bottles, contact between the bottles is undesirable since this may lead to scuffing and breakage of the bottles during manipulation and transportation and the like. Therefore, the known crates have movable divider elements which can be moved out of the way when bottle packs are stored in the crate.

[0004] The known bottle crates have the disadvantage that the presence of the movable divider elements increases the dimensions of the bottle crate. In particular, in the case of BE-A-1016429, the divider elements are provided in the middle of the crate, thus increasing the length of the crate. In the case of EP-A-2597045, a divider plate is provided which is moved to a position just above the bottom of the bottle crate when it is used for storing bottle packs, thus increasing the height of the crate. An increase in dimensions is undesirable because the crate takes up a higher volume for the same amount of bottles and also because more material is used for producing the crate.

Disclosure of the invention

[0005] It is an aim of the present invention to provide a bottle crate with movable divider elements in which the presence of the movable divider elements has less impact on the dimensions of the bottle crate.

[0006] This aim is achieved according to the invention with the bottle crate showing the technical characteristics of the first independent claim.

[0007] It is another aim of the present invention to provide a method for producing such a bottle crate.

[0008] This aim is achieved according to the invention with the method comprising the steps of the second independent claim.

[0009] The invention provides a bottle crate suitable for carrying and storing individual bottles and bottle packs, the bottle crate comprising a bottom wall and lateral walls together forming an interior space in which the individual bottles and bottle packs can be stored. The bottle crate further comprises pivotable divider elements provided in the interior space and movable between a first position wherein the divider elements are positioned out of the way for the storage of bottle packs in the interior

space and a second position in which the divider elements are positioned for separating individual bottles stored in the interior space from each other. The divider elements are pivotally connected to the lateral walls and the lateral walls comprise cavities or compartments for accommodating the divider elements in the first position.

[0010] In bottle crates it is inherent that the crate needs to be able to support the weight of a predetermined number of fully loaded bottle crates that are stacked on top of it, so including the weight of full bottles stored in these crates. For this reason, in particular in injection moulded bottle crates, it is inherent that the lateral walls of the bottle crate have a certain strength, and as a result a certain thickness (formed by a plate thickness plus reinforcing ribs thereon), to achieve this capability to support. According to the invention, the volume created by this thickness is used to store or accommodate the divider elements when they are not in use, i.e. when bottle packs are stored in the bottle crate. In other words, according to the invention, the divider elements are in the first position fully included in the volume that is taken up by the respective lateral wall. As a result, in the bottle crate of the invention, the provision of the divider elements can have less or even no impact on the overall dimensions of the bottle crate.

[0011] In embodiments according to the invention, the lateral walls of the bottle crate may be provided with reinforcing posts extending adjacent to the cavities and over substantially the entire height and thickness of the lateral walls. Due to the cavities for accommodating the divider elements, the thickness of the lateral walls is locally reduced. So at the cavities, the strength of the lateral wall is weaker with respect to other parts of the lateral wall. The reinforcing posts may be provided to compensate for this weakening of the lateral wall due to the cavities. The reinforcing posts may be provided in, at or near to corners of the bottle crate, in the middle of the lateral walls or anywhere else on the lateral walls where needed. Because the reinforcing posts are (preferably) not thicker than the lateral walls, they can also have little or no impact on the overall dimensions of the bottle crate. For example, in the case of an injection moulded bottle crate, the reinforcing posts may be formed by full, beam-shaped posts extending in height direction of the bottle crate, having the full thickness of the lateral wall and a width of for example 2.0 to 3.0 cm.

[0012] In embodiments according to the invention, spring means are provided for moving the divider elements from the first position to the second position. This means that the spring means are biased to effect this movement. This has the advantage that when the bottle packs are removed from the interior space, the divider elements are moved by the spring means (so without manual intervention by the user) to the second position to subsequently keep individual (empty) bottles, that are put back into the interior space, spaced from each other. The biasing of the spring means is preferably such that when a bottle pack is replaced in the interior space, the

divider elements give way due to the weight of the bottle pack, without further manual intervention by the user.

[0013] In embodiments according to the invention, the spring means comprise torsion springs arranged at a pivot axis of the respective divider element, and the torsion springs are at least in the second position protected by parts of the respective divider element and/or the respective lateral wall. This has the advantage that the torsion springs are protected against dirt, moisture or the like, which can ensure a good operation of the torsion springs and hence the divider elements over a long period of time.

[0014] In another aspect of this disclosure, which may but is not necessarily combined with the other aspects of this disclosure, the invention provides a bottle crate suitable for carrying and storing individual bottles and bottle packs, the bottle crate comprising a bottom wall and lateral walls together forming an interior space in which the individual bottles and bottle packs can be stored. The bottle crate further comprises pivotable divider elements provided in the interior space and movable between a first position wherein the divider elements are positioned out of the way for the storage of bottle packs in the interior space and a second position in which the divider elements are positioned for separating individual bottles stored in the interior space from each other. The divider elements are pivotally connected to the lateral walls and/or on both sides of a single separation wall in the middle of the interior space and have a planar shape with a thickness of at most 10.0 mm, preferably at most 5.0 mm. In the first position, the divider elements preferably extend parallel to and closely adjacent to the lateral walls and/or the single separation wall of the bottle crate. The hinge axis of each of the pivotally connected divider elements is preferably in a direction parallel to the bottom wall of the bottle crate and is preferably closely adjacent to or even inside the volume of the respective lateral wall and/or separation wall. In the second position, the divider elements preferably extend parallel to the bottom wall of the bottle crate and at a predetermined distance from the bottom wall, chosen in function of the bottles to be stored in the crate. This distance can for example be in the range of 7.0 to 15.0 cm. With these alternative embodiments, it is likewise possible to provide a bottle crate with movable divider elements in which the presence of the movable divider elements has less impact on the dimensions of the bottle crate.

Brief description of the drawings

[0015] The invention will be further elucidated by means of the following description and the appended figures.

Figure 1 shows a perspective view of a bottle crate according to the invention, with the divider elements in the first position.

Figure 2 shows a perspective view of a bottle crate according to the invention, with the divider elements

in the second position.

Figure 3 shows a detail of a bottle crate according to the invention, with the divider elements in the first position.

Figure 4 shows a detail of a bottle crate according to the invention, with the divider elements in the second position.

Figure 5 schematically shows an embodiment of divider elements.

Modes for carrying out the invention

[0016] The present invention will be described with respect to particular embodiments and with reference to certain drawings but the invention is not limited thereto but only by the claims. The drawings described are only schematic and are non-limiting. In the drawings, the size of some of the elements may be exaggerated and not drawn on scale for illustrative purposes. The dimensions and the relative dimensions do not necessarily correspond to actual reductions to practice of the invention.

[0017] Furthermore, the terms first, second, third and the like in the description and in the claims, are used for distinguishing between similar elements and not necessarily for describing a sequential or chronological order. The terms are interchangeable under appropriate circumstances and the embodiments of the invention can operate in other sequences than described or illustrated herein.

[0018] Moreover, the terms top, bottom, over, under and the like in the description and the claims are used for descriptive purposes and not necessarily for describing relative positions. The terms so used are interchangeable under appropriate circumstances and the embodiments of the invention described herein can operate in other orientations than described or illustrated herein.

[0019] Furthermore, the various embodiments, although referred to as "preferred" are to be construed as exemplary manners in which the invention may be implemented rather than as limiting the scope of the invention.

[0020] The term "comprising", used in the claims, should not be interpreted as being restricted to the elements or steps listed thereafter; it does not exclude other elements or steps. It needs to be interpreted as specifying the presence of the stated features, integers, steps or components as referred to, but does not preclude the presence or addition of one or more other features, integers, steps or components, or groups thereof. Thus, the scope of the expression "a device comprising A and B" should not be limited to devices consisting only of components A and B, rather with respect to the present invention, the only enumerated components of the device are A and B, and further the claim should be interpreted as including equivalents of those components.

[0021] Figs. 1-4 show an embodiment of a bottle crate 1 according to the invention, suitable for carrying and storing individual bottles (Figs. 2 and 4, bottles are not

shown for clarity) and bottle packs (Figs. 1 and 3, bottle packs are not shown for clarity). The bottle crate 1 is an injection moulded bottle crate comprising a bottom wall 2 and lateral walls 3, 4, 5, 6 together forming an interior space in which the individual bottles and bottle packs can be stored. As shown, and as is common with injection moulded bottle crates, the bottom and lateral walls can have various ridges for reinforcement and various openings for drainage of liquids, handles, visibility of the bottles and the like. The bottle crate further comprises pivotable divider elements 7, 8 provided in the interior space and movable between a first position (Figs. 1 and 3) wherein the divider elements 7, 8 are positioned out of the way for the storage of bottle packs in the interior space and a second position (Figs. 2 and 4) in which the divider elements 7, 8 are positioned for separating individual bottles stored in the interior space from each other. The divider elements 7, 8 are pivotally connected to the lateral walls 3, 4 and the lateral walls comprise cavities or compartments for accommodating the divider elements in the first position. This is clear from figs. 1 and 3: in the first position the top surface of the divider elements 7, 8 is flush with the innermost surfaces of the parts forming the lateral walls 3, 4.

[0022] The bottle crate 1 further has a fixed divider plate 9 in the middle. This plate 9 has a relatively low height and functions mainly to increase the strength of the bottom wall 2 of the crate 1. This plate 9 is not essential and can be left out in alternative embodiments of the crate.

[0023] The bottle crate 1 is configured for storing 24 bottles. These can be stored in 4-packs, 6-packs, 8-packs, 12-packs, or in combinations thereof; or individually. In the latter case, the divider elements 7, 8 are moved upwards to the position shown in Figs 2 and 4, so that the individual bottles are kept spaced from each other to prevent scuffing or breakage of the bottles. It has been found that a clearance of about 0.5 mm is optimal for avoiding scuffing and breakage without substantially reducing the bottle space in the crate. The divider elements 7, 8 are preferably configured for maintaining such a clearance.

[0024] The bottle crate 1 is configured for supporting the weight of a predetermined number of fully loaded bottle crates that are stacked on top of it, so including the weight of full bottles stored in these crates. For this reason the lateral walls 3, 4, 5, 6 of the bottle crate 1 are configured to have a certain strength, and as a result have a certain predetermined thickness (measured from the outermost parts to the innermost parts of the lateral wall) to achieve this capability to support. The volume created by this thickness is commonly 1.0 to 2.0 cm wide, but can also be different depending on the specifications of the bottle crate. In the bottle crate 1, the volume taken up by the lateral walls 3, 4 is used to store or accommodate the divider elements 7, 8 when they are not in use, i.e. when bottle packs are stored in the bottle crate. As a result, in the bottle crate 1, the provision of the divider

elements 7, 8 has substantially no impact on the overall dimensions of the bottle crate.

[0025] The lateral walls 3, 4 of the bottle crate 1 are provided with reinforcing posts 11, 12, which are full, beam-shaped posts extending in height direction of the bottle crate, having the full thickness of the lateral wall and a width of for example 2.0 to 3.0 cm. These posts 11, 12 are provided adjacent to the cavities for the divider elements 7, 8 and extend over substantially the entire height and thickness of the lateral walls 3, 4. Due to the cavities for accommodating the divider elements, the thickness of the lateral walls 3, 4 is locally reduced. So at the cavities, the strength of the lateral wall is weaker with respect to other parts of the lateral wall. The reinforcing posts 11, 12 are provided to compensate for this weakening of the lateral wall due to the cavities. The reinforcing posts 11, 12 are provided at the corners of the bottle crate 1, but could also be provided in the middle of the lateral walls or anywhere else on the lateral walls where needed. Because the reinforcing posts 11, 12 are not thicker than the lateral walls 3, 4, they also have no impact on the overall dimensions of the bottle crate.

[0026] As shown in figs. 3 and 4, coil springs 13, 14 are provided for moving the divider elements 7, 8 from the first position to the second position. These coil springs are biased to effect this movement. This has the advantage that when the bottle packs are removed from the interior space, the divider elements 7, 8 are moved by the springs, so without manual intervention by the user to the second position. The biasing of the springs 13, 14 is preferably such that when a bottle pack is replaced in the interior space, the divider elements 7, 8 give way due to the weight of the bottle pack, without further manual intervention by the user.

[0027] The springs 13, 14 comprise torsion springs arranged at a pivot axis of the respective divider element 7. As shown in Fig. 4, the torsion springs 13, 14 are in the second position protected by parts of the respective divider element 7 and the respective lateral wall 3. This has the advantage that the torsion springs 13, 14 are protected against dirt, moisture or the like, which can ensure a good operation of the torsion springs and hence the divider elements over a long period of time.

[0028] In the crate of figs. 1-4, the pivot axis of each of the divider elements 7, 8 extends parallel to the bottom wall 2 of the crate 1. The pivot axes of their hinges are located inside the volume of the respective lateral wall 3, 4.

[0029] In the crate of figs. 1-4, the divider elements 7, 8 have a planar shape and extend substantially parallel to the bottom wall 2 when in the second position. In order to ensure an accurate horizontal position, corresponding stop elements 15, 16 can be provided on the divider elements 7, 8 and the respective lateral wall 3, for example as shown in figs. 3 and 4, but this can be carried out in many ways which are known per se to the person skilled in the art.

[0030] The thickness of the divider elements 7, 8 can

for example be around 10.0 mm, preferably around 5.0 mm or even thinner. In the first position, the divider elements extend parallel to and closely adjacent to the respective lateral wall 3, 4 of the bottle crate. In the second position, the divider elements extend parallel to the bottom wall 2 of the bottle crate at a distance which is chosen in function of the bottles to be stored in the bottle crate. This distance can for example be in the range of 7.0 to 15.0 cm.

[0031] In the crate of figs. 1-4, the divider elements 7, 8 are connected to the longer lateral walls 3, 4. In alternative embodiments, divider elements could also be provided on the shorter lateral walls 5, 6.

[0032] The crate of figs. 1-4 has a full depth wall structure, which means that the wall structure of the crate is higher than the height of the bottles for which it is intended. The dividers 7, 8 are preferably located at about shoulder height of the bottles for which the crate is intended. In alternative embodiments, the crate may also have a reduced height, e.g. up to shoulder height of the bottles, which means that weight of a crate placed on top of one crate is supported by the bottles themselves.

[0033] In the crate of figs. 1-4, there are two divider elements 7, 8 which are each provided for dividing two rows of bottles. Each of the divider elements 7, 8 is a plate with holes for accommodating each time one bottle, each plate extending over about half of the interior space. In alternative embodiments, there could also be more divider elements, for example by dividing the plates 7, 8 up into separate parts. This could have advantages as already one or more divider elements would then be moved to the second position when one bottle pack, e.g. a 6-pack, is taken out.

[0034] Such an embodiment is explained by means of fig. 5. In this embodiment, there are individually movable divider elements 27, 28, 29 which are each pivotally connected to the lateral wall 23 and are each time provided for keeping four bottles 20 spaced from each other. Each of these divider elements is then preferably provided with its own torsion spring at its hinge, for moving the element from the first to the second position. With this embodiment, as soon as a bottle pack is taken out, the divider elements which are no longer obstructed by this bottle pack are moved to the second position, which has advantages upon replacing individual (empty) bottles in the available space. Furthermore, with this embodiment, the large cavity of the bottle crate 1 of figs. 1-4, which extends along almost the entire length of the lateral wall 3, 4, is divided up into a series of smaller cavities and, as a result, reinforcing posts or ridges can be provided between the divider elements 27, 28, 29, i.e. between their respective cavities in the lateral wall 23. So in the embodiment of fig. 5, the lateral walls are less weakened by providing the divider elements as compared to the embodiment of figs. 1-4.

[0035] In alternative embodiments, which may have features in common with the other embodiments described herein, the invention provides a bottle crate 1

suitable for carrying and storing individual bottles and bottle packs, the bottle crate comprising a bottom wall 2 and lateral walls 3, 4, 5, 6 together forming an interior space in which the individual bottles and bottle packs can be stored. The bottle crate further comprises pivotable divider elements 7-8 or 27-29 provided in the interior space and movable between a first position wherein the divider elements are positioned out of the way for the storage of bottle packs in the interior space and a second position in which the divider elements are positioned for separating individual bottles stored in the interior space from each other. The divider elements can be pivotally connected to the lateral walls and/or a single separation wall in the middle of the interior space. The divider elements can have a planar shape with a thickness of at most 10.0mm, preferably at most 5.0 mm. In the first position (figs. 1 and 3), the divider elements preferably extend parallel to and closely adjacent to the lateral walls and/or the separation wall of the bottle crate. The hinge axis of each of the pivotally connected divider elements is preferably in a direction parallel to the bottom wall of the bottle crate and is preferably closely adjacent to or even inside the volume of the respective lateral wall and/or the separation wall. In the second position (figs 2 and 4), the divider elements preferably extend parallel to the bottom wall of the bottle crate and at a predetermined distance from the bottom wall, chosen in function of the bottles to be stored in the crate. This distance can for example be in the range of 7.0 to 15.0 cm.

[0036] The bottle crates disclosed herein may be produced by means of an injection-moulding process, comprising the steps of (i) configuring a first mould for injection-moulding the crate, supplying a first thermoplastic material in molten form to the mould and injection-moulding the crate and cooling the moulded crate to solidify the first thermoplastic material; (ii) configuring a second mould for injection-moulding the divider elements, supplying a second thermoplastic material in molten form to the second mould and injection-moulding the divider elements and cooling the moulded divider elements to solidify the second thermoplastic material; and (iii) assembling the divider elements in the bottle crate, such that the divider elements are pivotally connected to the lateral walls. The assembling step may comprise mounting a pivot axis and spring means on the divider elements and/or the lateral walls, such that the divider elements are provided to be moved from the first position to the second position as described herein.

[0037] The first thermoplastic material can be any thermoplastic material that is used in the art for producing injection-moulded bottle crates, such as for example HDPE. The second thermoplastic material can also be any thermoplastic material that is used in the art for producing injection-moulded bottle crates, but also any thermoplastic material that is suitable for producing planar divider elements.

Claims

1. A bottle crate (1) suitable for carrying and storing individual bottles and bottle packs, the bottle crate comprising a bottom wall (2) and lateral walls (3, 4, 5, 6 ; 23) together forming an interior space in which the individual bottles (20) and bottle packs can be stored, and movable divider elements (7, 8; 27, 28, 29) provided in the interior space and movable between a first position wherein the divider elements are positioned out of the way for the storage of bottle packs in the interior space and a second position in which the divider elements are positioned for separating individual bottles stored in the interior space from each other, **characterized in that** the divider elements are pivotally connected to the lateral walls and **in that** the lateral walls comprise cavities for accommodating the divider elements in the first position. 5
2. The bottle crate according to claim 1, wherein the lateral walls are provided with reinforcing posts (11, 12) extending adjacent to the cavities and over substantially the entire height and thickness of the lateral walls. 10
3. The bottle crate according to claim 1 or 2, wherein spring means (13, 14) are provided for moving the divider elements from the first position to the second position. 15
4. The bottle crate according to claim 3, wherein the spring means (13, 14) comprise torsion springs arranged at a pivot axis of the respective divider element and wherein the torsion springs are at least in the second position protected by the material of the respective divider element and/or the respective lateral wall. 20
5. The bottle crate according to any one of the preceding claims, wherein the divider elements (7, 8; 27, 28, 29) have a planar shape and extend substantially parallel to the bottom wall when in the second position. 25
6. The bottle crate according to claim 5, wherein the divider elements, when in the second position, extend at a predetermined distance from the bottom wall, the distance preferably being in the range of 7.0 to 15.0 cm. 30
7. The bottle crate according to any one of the preceding claims, wherein the lateral walls comprise shorter and longer lateral walls, the divider elements being pivotally connected to the longer lateral walls (3, 4). 35
8. The bottle crate according to any one of the preceding claims, wherein the divider elements are provided for dividing each time two rows of bottles. 40
9. The bottle crate according to any one of the preceding claims, wherein two divider elements (7, 8) are provided, each being a plate with holes for accommodating each time one bottle, each plate extending over about half of the interior space. 45
10. The bottle crate according to any one of the preceding claims, wherein a plurality of divider elements (27, 28, 29) are provided, each being an arm with dividing parts for dividing each time four bottles. 50
11. The bottle crate according to any one of the preceding claims, wherein the divider elements (7, 8; 27, 28, 29) have a planar shape with a thickness of at most 10.0 mm, preferably at most 5.0 mm. 55
12. A method for producing an injection moulded bottle crate (1) according to any one of the preceding claims, comprising the steps of:
 - injecting a first thermoplastic material in an injection mould for forming the bottom wall (2) and lateral walls (3, 4, 5, 6) of the bottle crate;
 - injecting a second thermoplastic material in a second injection mould to form the divider elements (7, 8; 27, 28, 29) of the bottle crate;
 - assembling the divider elements in the bottle crate, such that the divider elements are pivotally connected to the lateral walls.

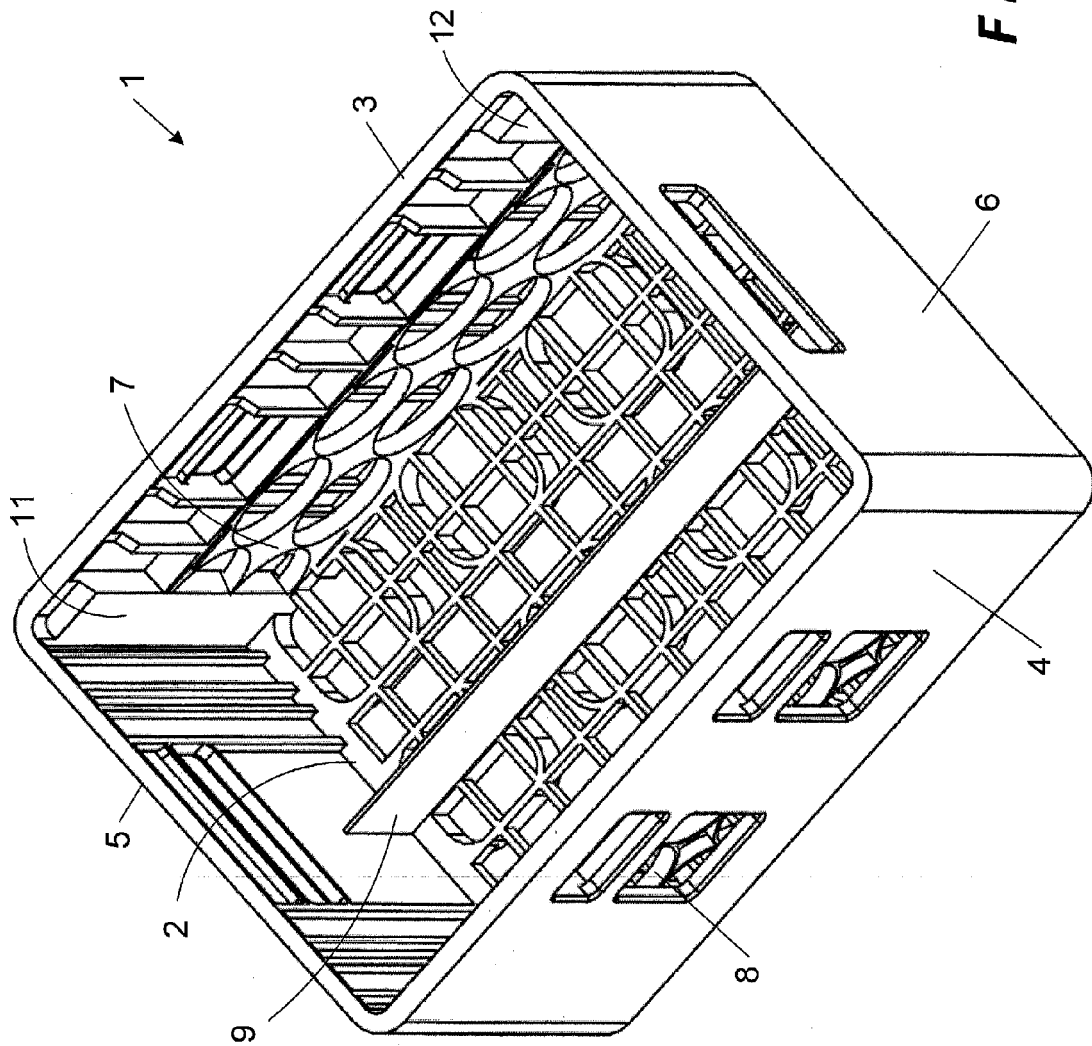


Fig. 1

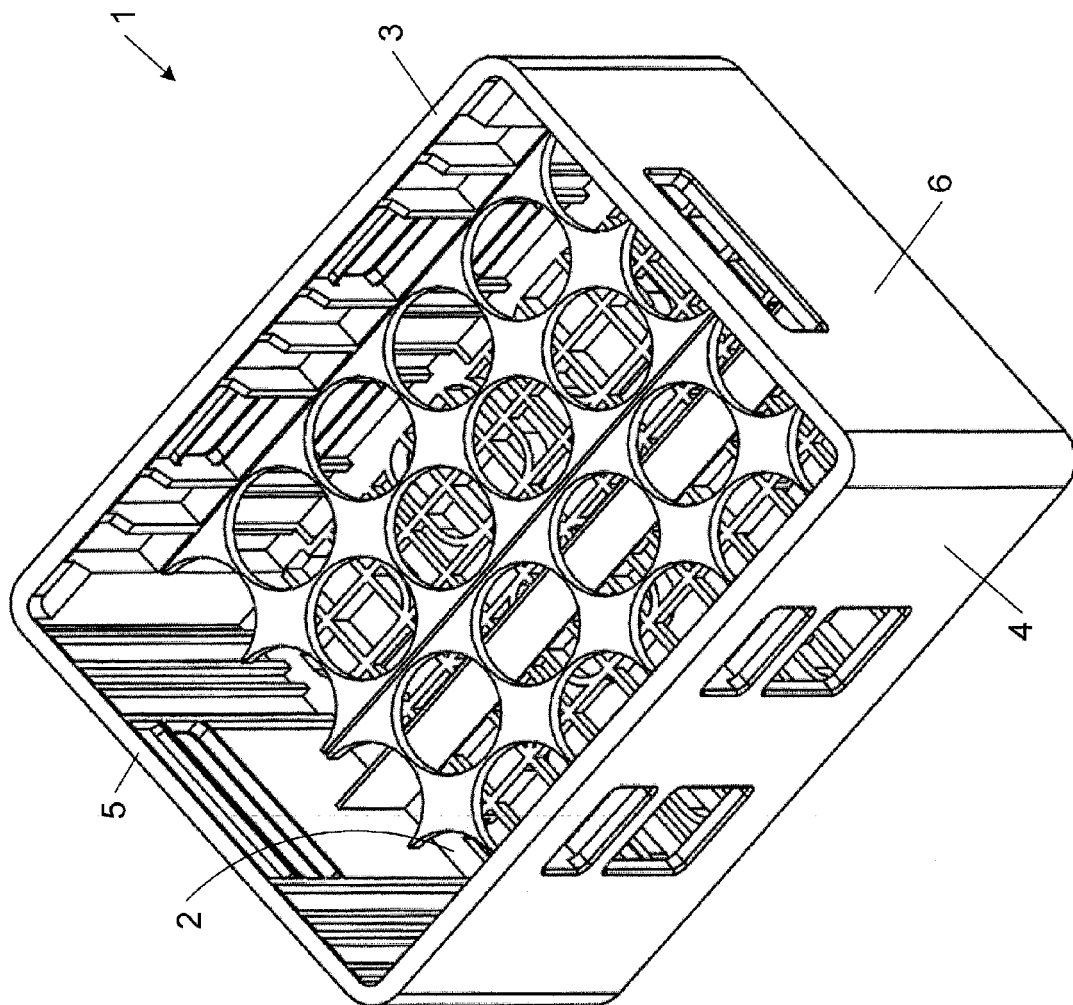


Fig. 2

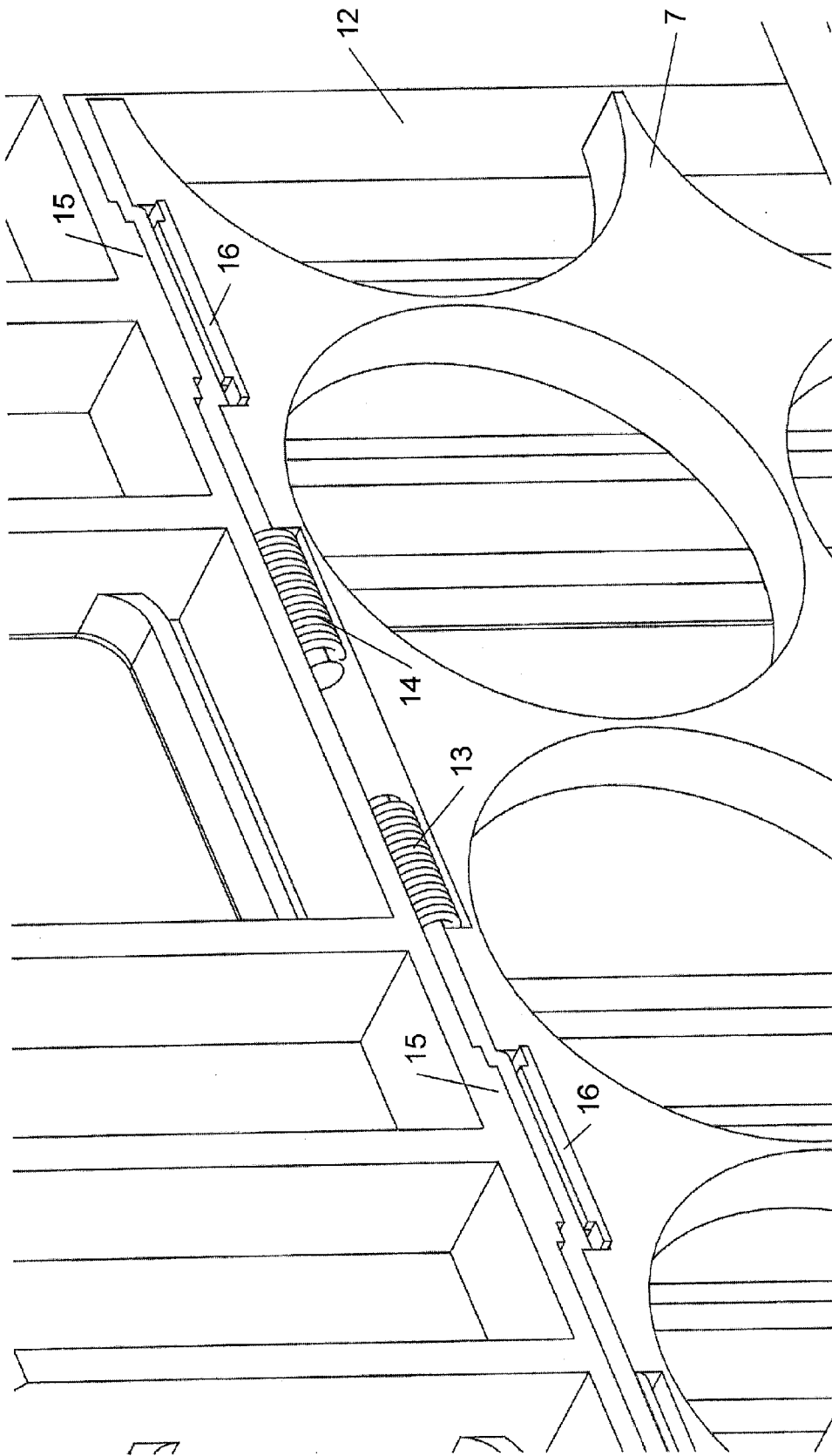


Fig. 3

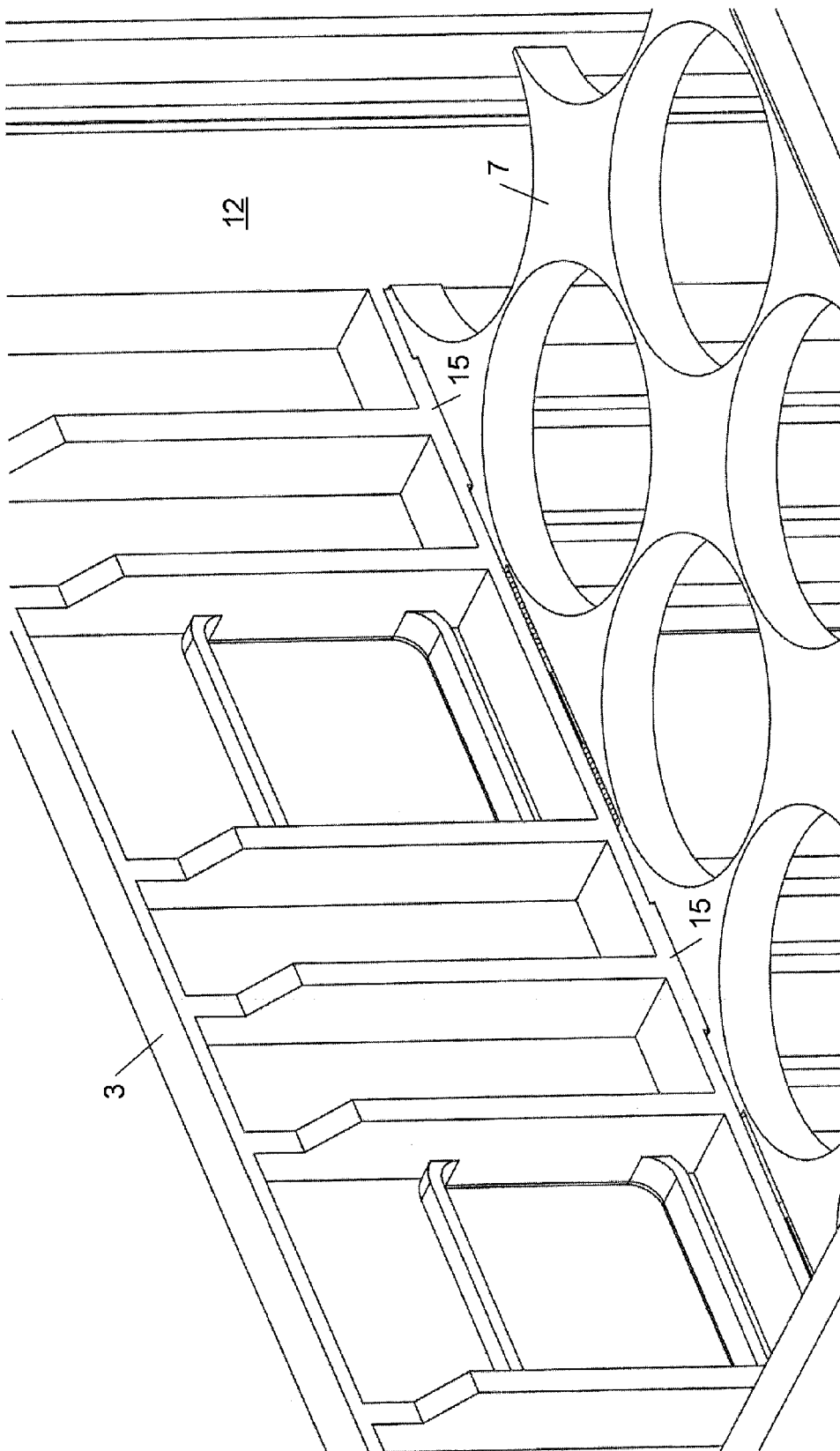


Fig. 4

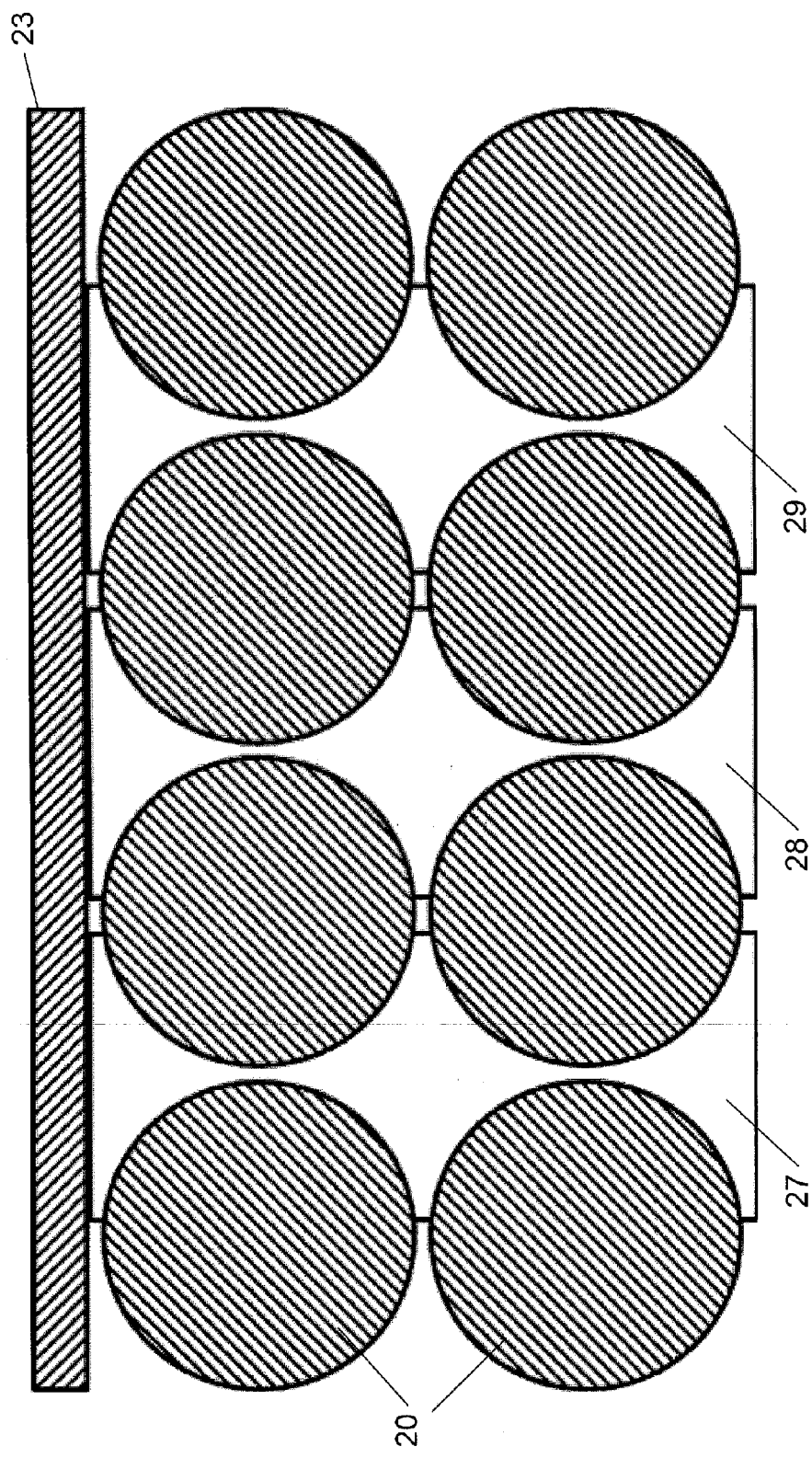


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
EP 14 19 0520

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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,D	BE 1 016 429 A3 (D W PLASTICS NV [BE]) 3 October 2006 (2006-10-03) * page 7, line 17 - line 28; figures 6,7 * * page 8, line 29 - line 31 * -----	1-12	INV. B65D1/24 B65D85/30
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 1 April 2015	Examiner Zanghi, Amedeo
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	BE 1016429	A3	03-10-2006	NONE
15	-----			
20				
25				
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35				
40				
45				
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Patent documents cited in the description

- BE 1016429 A [0003] [0004]
- EP 2597045 A [0003] [0004]