



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
03.05.2023 Bulletin 2023/18

(51) International Patent Classification (IPC):
B65D 21/06 (2006.01) **B65D 81/26** (2006.01)
B65D 81/38 (2006.01)

(21) Application number: **21204852.4**

(52) Cooperative Patent Classification (CPC):
B65D 21/064; B65D 81/261; B65D 81/3823;
B65D 2203/10

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

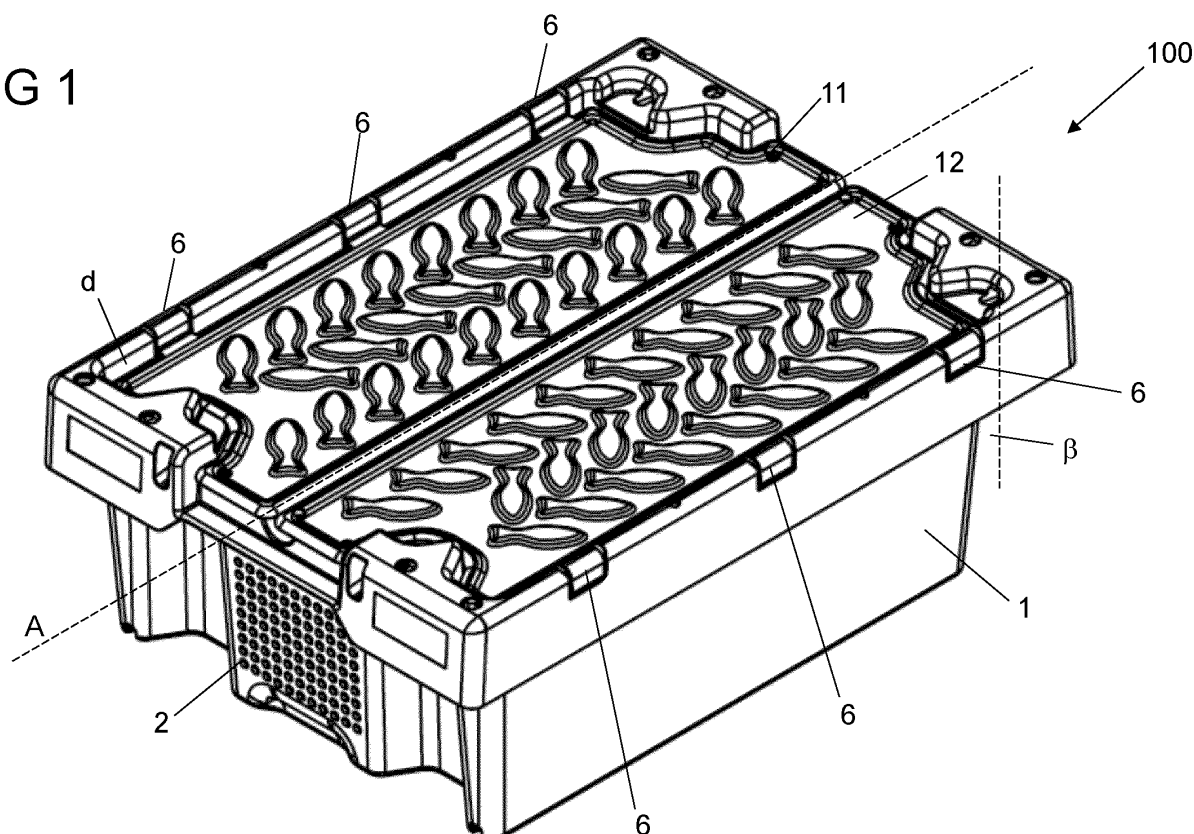
(71) Applicant: **Euro Pool System International B.V.**
2289 DJ Rijswijk (NL)
(72) Inventor: **Toebosch, Ron**
2289DJ Rijswijk (NL)
(74) Representative: **Maikowski & Ninnemann**
Patentanwälte Partnerschaft mbB
Postfach 15 09 20
10671 Berlin (DE)

(54) **CRATE FOR HOLDING AND / OR TRANSPORTING SEAFOOD ON ICE**

(57) The invention relates to a crate (100) for holding and / or transporting seafood on ice, the crate (100) having essentially a rectangular horizontal cross-section with four sidewalls (1, 2, 3, 4) and a bottom (5) defining storage space for the seafood on ice, characterized by at least two lid elements (11, 12) integrated with the crate (100)

for covering the storage space, the at least two lid elements (11, 12) pivotally connected to opposed sidewalls (1, 2, 3, 4), wherein the crate (100) is stackable or nestable with at least one other crate (100, 101) with the at least two lid elements (11, 12) in an open or closed position.

FIG 1



Description

[0001] The invention relates to a crate for holding and / or transporting seafood on ice with the features of claim 1.

[0002] Seafood (e.g. fish, shellfish, lobsters, crabs, prawns, mussels, squid etc.) has to be kept at low temperature after taking it from the water. Usually, the seafood is placed on and / or under ice for this purpose while being transported in styrofoam crates. Those crates are generally difficult to handle if a plurality of crates, e.g. a stack of crates needs to be moved or stored.

[0003] Therefore, alternative designs of crates are required.

[0004] This is addressed by a crate with the features of claim 1.

[0005] This has essentially a rectangular horizontal cross-section with four sidewalls and a bottom defining a storage space for the seafood on ice. Therefore, this is essentially a box shaped (parallelepiped) device. The crate comprises at least two lid elements integrated with the crate for covering the storage space. The at least two lid elements are pivotally connected to opposed sidewalls of the crate, wherein the crate is stackable or nestable with at least one other crate with the at least two lid elements in an open or closed position.

[0006] In one embodiment, the at least two lid elements are essentially flat boards, in particular having structured surfaces. Structured surface can e.g. be roughened surfaces as anti-skid surface.

[0007] In the closed position, the at least two lid elements can form a horizontal surface below the upper rim of the sidewalls. In the closed position the seafood is protected from the environment. If the closed lid elements are vertically somewhat below the rim of the sidewalls, the rim provides some securing of a crate placed on top of the closed lid elements.

[0008] In one embodiment, a crate in the open position and nested with another crate of the same kind, the at least two lid elements of the crates are positioned at least with an angle α of less than 10° , in particular less than 7° , against a vertical plane. This means that in nested arrangement, the lid elements fold relatively close to the sidewalls of the crates so that the overall footprint of nested crates is relatively small. Two stacks of such nested crates can be positioned close to each other as the lid elements fold almost back to a vertical position.

[0009] Furthermore, in a crate the sidewalls can comprise at least one support surface enabling the stacking of another crate on top of the crate. Stacking in this context means e.g. that the stacked crates are secured against lateral movements by e.g. some form-locking device. As support feet of the crates are placed on the support surfaces only on the rim of the sidewalls, the lid elements of the crate can be in a closed or open position, i.e. stacking is possible with open or closed lid elements.

[0010] In a further embodiment, two opposite sidewalls of a crate comprise sidewall structures which are geo-

metrically different from each other. This sidewall structures can be e.g. recesses or protrusions in different arrangements along the respective sidewalls. On one side e.g. four sidewall structures are evenly positioned as protrusion along the sidewall; on the opposite side, four sidewall structures are positioned as protrusions in two groups spaced apart; i.e. an uneven positioning. The nesting of crates is only possible in a first relative orientation of the crates to each other and the stacking of crates is only possible in a second relative orientation of the crates to each other. A nesting would e.g. only possible if all sidewalls with the four evenly positioned sidewall structures are facing the same side. If two crates with different sidewall structures face the same side, the crates could only be stacked upon. Therefore, the orientation of the sidewall structures determines ability to nest or stack.

[0011] In one embodiment, each of the at least two lid elements is pivotally connected to a sidewall through at least one hinge element, the hinge element in particular being a form locking assembly or a film hinge.

[0012] In one embodiment, the at least two lid elements are positioned symmetrically to a long axis, in particular the middle axis of the crate. This implies that the lid elements are relatively slim, but long. Given the overall shape of the crate, the lid elements can fold back against the long sidewalls, without touching the surface, the crate is standing on.

[0013] It is also possible that the bottom and / or the sidewalls of the crate comprise at least one, in particular at least four drainage openings. Meltwater can leave the crate through the drainage opening.

[0014] To reduce heat losses, the sidewalls, the bottom and / or the at least two lid elements of the crate can comprise thermal insulation means. In particular, thermal insulation means comprise a plastic foam structure, in particular a polyurethane structure, embedded into the structure of the crate.

[0015] To prevent an accidental opening of the closed crate, it can comprise locking means releasably fastening the at least two lid elements in the closed position.

[0016] To prevent a deliberate opening, the crate comprises sealing means preventing the opening of the least two lid elements using a tamperproof device, in particular a tie rip.

[0017] The crate can be in the open position with a maximal horizontal cross-section of 300 mm x 400 mm, 600 mm x 400 mm or 800 mm x 300 mm when nested with at least one other crate. This ensures compatibility with other crates of the same kind, so that crates can be stacked and nested together.

[0018] To enable an efficient control of the content of the crate it can comprise at least one area for an ID means, in particular a labeling and / or an electronic means, in particular an RFID.

[0019] For food safety, the sidewalls, the bottom and / or the at least two lid elements comprise HD polyethylene or polypropylene or are made of those materials.

[0020] Embodiments of the invention are shown exemplary in connection with drawings and figures.

Fig. 1 shows a perspective view of a first embodiment of a crate with two lid elements in a closed position; 5

Fig. 1A shows a top view of the first embodiment in Fig. 1 with the two lid elements in the closed position;

Fig. 1B shows a side view of the shorter sidewall of the first embodiment shown in Fig. 1 with the two lid elements in the closed position; 10

Fig. 1C shows a perspective view of the first embodiment as in Fig. 1 but with a different rendering; 15

Fig. 2 shows a perspective view of the first embodiment of the crate with the two lid elements in an open position; 20

Fig. 2A shows a top view of the first embodiment in Fig. 2 with the two lid elements in the open position,

Fig. 2B shows a side view of the shorter sidewall of the first embodiment shown in Fig. 2 with the two lid elements in the open position; 25

Fig. 2C shows the same view as Fig. 2B with a different rendering; 30

Fig. 3 shows a sectional view along the plane A-A in Fig. 2B;

Fig. 4 shows a perspective view of four crates of the first embodiment in a nested crate arrangement; 35

Fig. 4A shows a top view of the nested crate arrangement shown in Fig. 4;

Fig. 4B shows a side view of the shorter sidewall of the nested crate arrangement shown in Fig. 4; 40

Fig. 5 shows a cut sectional view of four crates as shown in Fig. 4; 45

Fig. 6 shows schematically a cross section through a sidewall with air-filled thermal insulation means;

Fig. 7 shows a perspective view of a second embodiment of a crate with two lid elements in a closed position; 50

Fig. 7A shows a side view of the shorter sidewall of the second embodiment shown in Fig. 7 with the two lid elements in the closed position; 55

Fig. 8 shows a perspective view of a second embodiment of the crate with the two lid elements in an

open position;

Fig. 8A shows a top view of the second embodiment in Fig. 7 with the two lid elements in the open position,

Fig. 8B shows a side view of the shorter sidewall of the second embodiment shown in Fig. 7 with the two lid elements in the open position;

Fig. 9 shows a sectional view along the plane B-B in Fig. 8A;

Fig. 10 shows a perspective view of three crates of the second embodiment in a nested crate arrangement;

Fig. 10A shows a top view of the nested crate arrangement shown in Fig. 10;

Fig. 10B shows a side view of the shorter sidewall of the nested crate arrangement shown in Fig. 10;

Fig. 11 shows a perspective view of a stacked arrangement of crates of the second embodiment;

Fig. 12 shows an arrangement of three crates of the second embodiment with six crates of the first embodiment;

Fig. 13 shows an arrangement of many crates of the first and second embodiment on a pallet.

[0021] In Fig. 1 to 5, a first embodiment of a crate 100 is described in an exemplary way. The crate 100 is made of a plastic material such as e.g. polypropylene or HD polyethylene. These plastic materials are suitable for low temperatures, as the crates 100 are filled with ice and seafood is usually transported in a refrigerated transport chain.

[0022] The crate 100 has four sidewalls 1, 2, 3, 4 and a bottom 5 (see Fig. 2) forming an essentially boxed shaped space with an essentially rectangular horizontal cross-section defining the storage space for the seafood on ice. For reasons of simplicity, the seafood and the ice are not shown in any of the following figures.

[0023] There are two longer sidewalls 1, 3 and two shorter sidewalls 2, 4, each on directly opposed sides. The sidewalls 1, 2, 3, 4 are contoured with sidewall structures 31, 32 (see e.g. Fig. 4, 7, 9, 11 and 12) which will be discussed further below.

[0024] The sidewalls 1, 2, 3, 4 are also slightly slanted inwards (see e.g. Fig. 1B) under an angle β against a vertical plane, allowing for stacking and nesting as will also be discussed below. The slanting measured against the vertical plane is less than $\beta = 10^\circ$; in the embodiment shown here it is approximately $\beta = 7^\circ$. Naturally, the angle can vary in other embodiments.

[0025] This embodiment of the crate 100 has specific

dimensions allowing e.g. for efficient transport in a stacked or nested arrangement (see e.g. Fig. 12, 13). The longer sides of the essentially rectangular crate 100 (i.e. the sidewalls 1, 3) have a length of 377 mm (i.e. slightly shorter than 400 mm, see Fig. 4A), the shorter sides 267, 7 mm (see Fig. 1B), i.e. slightly shorter than 300 mm. These dimensions and the dimensions given in the figures allow for an efficient stacking and nesting of crates 100, 101.

[0026] The top of the storage space for the seafood can be closed - as shown in Fig. 1, 1A, 1B, 1C - with two lid elements 11, 12 integrated with the crate 100 for covering the storage space. Each of the two lid elements 11, 12 is pivotally connected through three hinge elements 6 to the longer sidewalls 1, 3, i.e. two opposed sidewalls 1, 3. The hinge elements 6 are form-locking elements so that the lid elements 11, 12 can e.g. be clipped onto the sidewalls 1, 3 in assembly. In case of a replacement, the lid elements 6 can be exchanged. Alternatively, the lid elements 11, 12 could be formed in one piece with the sidewalls 1, 3 through e.g. a film hinge. In other embodiments - e.g. depending on the size of the crate - a different number of hinge elements 6 can be used.

[0027] In the embodiment shown in Fig. 1 to 5, the two lid elements 11, 12 have essentially the same sizes and the same designs, i.e. they close along the long middle axis A (see Fig. 1) of the crate 100, i.e. they are symmetric to that middle axis A. In the embodiment shown, there is no overlap between the two lid elements 11, 12 in the closed position.

[0028] The lid elements 11, 12 and the sidewalls 1, 2, 3, 4 are not symmetrical to an axis perpendicular to the middle axis A, as can e.g. be seen in Fig. 1, 1A. This means in particular that the lid elements 11, 12 and the sidewalls 1, 2, 3, 4 shown in Fig. 1 at the front sidewall 2 have a different shape than at the back sidewall 4.

[0029] This allows the use of different support surfaces 21, 22, 23, 24 on the rim of the sidewalls 1, 2, 3, 4 as can be best seen in Fig. 1A.

[0030] In other alternatives, more than two lid elements 11, 12 can be used. In case of four lid elements, the long lid elements 11, 12 shown e.g. in Fig. 1 could be halved, resulting in four lid elements.

[0031] The lid elements 11, 12 have a structured surface (here also shown in an exemplary decorative design).

[0032] The lid elements 11, 12 are positioned some vertical distance d (see Fig. 1, e.g. 10 to 15 mm) below the upper rim of the sidewalls 1, 2, 3, 4 so that the upper parts of the sidewalls 1, 2, 3, 4 provide some barrier against lateral shifts of stacked crates 100, 101.

[0033] The width of each of the two lid elements 11, 12 is slightly less than the height of the sidewalls 1, 2, 3, 4 (in this case less than 140 mm). Therefore, as seen in the views of Fig. 2B and 2C, the folded back lid elements 11, 12 extend almost down to the surface on which the crate 100 is standing.

[0034] The first embodiment of the crate 100 is stack-

able with other crates 101 with the at least two lid elements 11, 12 in a closed position or an open position, as e.g. shown in Fig. 12.

[0035] In the closed position an upper crate 101 stands with support feet 40 (see Fig. 1C) only on the support areas 21, 22, 23, 24 of the sidewalls 1, 2, 3, 4 enabling the stacking of another crate 101 on top of the two lid elements 11, 12. As the support feet of the upper crate 101 only stands on the support areas 21, 22, 23, 24 of the sidewalls 1, 2, 3, 4 the lid elements 11, 12, can be either in the closed or open position, i.e. stacking of crates 100, 101 is possible in either arrangement as can be seen in Fig. 12. On the upper left hand side in Fig. 12, a first crate 100 is standing on a second crate 101 with open lid elements 11, 12.

[0036] The crate 100 is also nestable (i.e. stacked arrangement with open lid elements 11, 12) with other crates 101 with the at least two lid elements 11, 12 in an open position, as shown in Fig. 2, 2A, 2B and on the upper right hand side of Fig. 12.

[0037] In Fig. 2, the embodiment shown in Fig. 1 is depicted in the open position, i.e. the two lid elements 11, 12 are rotated from the (closed) horizontal position in Fig. 1 into a vertical position (essentially a 270° turn around the hinge elements 6). This position of the lid elements 11, 12 is shown in a top view in Fig. 2A and in a lateral view with a short sidewall 2 in front in Fig. 2B and 2C.

[0038] In the lateral view of Fig. 2B and 2C, two drainage openings 7 are visible which are located at the bottom of the sidewall 2. Symmetrically positioned drainage openings 7 are also located in the opposite sidewall 4, i.e. in this embodiment four drainage openings are present.

[0039] Through the drainage openings 7 meltwater can flow out of the crate 100 so that the seafood is always stored on solid ice. In an alternative embodiment, the drainage openings 7 could be positioned alternatively or additionally in the bottom 5 of the crate 100.

[0040] Fig. 2C shows the same view as Fig. 2B but with a different rendering. Here, two further features are shown in more detail which can be used in this embodiment.

[0041] First, the lid elements 11, 12 can be releasably fastened in the closed position by locking means 9 such as clamp elements which operate as a form-lock and / or a friction lock.

[0042] The crate 100 also has sealing means 10 preventing the opening of the least two lid elements 11, 12 using a tamperproof device, in particular a tie rip. In Fig. 2C only the hole through which a tie rip could be fastened is shown.

[0043] In Fig. 2C, it is furthermore shown that the crate comprises an area for an ID means 16, in particular a labeling and / or an electronic means, in particular an RFID. The area could hold a QR code or a barcode identifying the origin of the seafood and / or the content. Alternatively or additionally, this task could be performed

with an RFID.

[0044] Fig. 3 shows the crate 100 in a sectional view along the central plane A-A (shown in Fig. 2B).

[0045] Returning to Fig. 2, 2A, 2B, 2C, the lid elements 11, 12 are shown in their vertical position, i.e. the angle between the open lid elements 11, 12 and a vertical plane is 0° when the crate 100 is standing by itself, i.e. in a non-nested state. With the open lid elements 11, 12, the width of the crate is increased to 275,7 mm. In this open position, several crates 100 of this kind could be placed next to each other for displaying the seafood, e.g. in a market.

[0046] The nesting and stacking of crates 100, 102 can preferably be achieved by using crates 100, 101 of the same shape (e.g. for nesting shown in Fig. 4A, 5) or at least with crates 100, 101 of the same design having different, but matching sizes (e.g. width of first crate matches the length of a second crate as shown e.g. in Fig. 12, 13).

[0047] In Fig. 4, 4A, 4B four identical crates 100 of the first embodiment are shown in a nested arrangement, i.e. the crates 100 are empty so that the storage spaces of the crates 100 can be filled with other crates 101.

[0048] As best can be seen in Fig. 4B and Fig. 5, the nesting of the crates 100, 101 results in a slight outward push of the lid elements 11, 12. The size of the crates 100, 101 is designed so that the maximal angle α of the lid elements 11, 12 against a vertical plane is less than 10°. In the depicted embodiment, the angle α is about 7° resulting in a maximum lateral width of the nested crates 100, 101 of 300 mm.

[0049] In Fig. 5, a sectional view of four crates 100, 101 as in Fig. 4B is shown. It can be seen that in this embodiment the material of the lid elements 11, 12, the sidewalls 1, 3 and the bottom 5 is solid.

[0050] It should be noted that in the embodiment shown, the nesting in this embodiment is only possible in a particular orientation of the crates 100, 101 relative to each other. In the embodiment of the crates 100, 101 the shorter sidewalls 2, 4, are not identically shaped. The second sidewall 2 has a vertical first wall structure 31 with a smaller width than a corresponding second sidewall structure 32 on the opposite fourth sidewall 4. This means that nesting - as shown in Fig. 4 - is only possible if the respective sidewall structures 31, 32 are oriented correctly.

[0051] If e.g. the upper crate 100 would be turned by 180° around a vertical axis, the upper crate 100 would be stacked upon the lower crate 101. In this case, the support feet 40 would be automatically placed onto the correct support areas 21, 22, 23, 24 of the rim of the lower crate 101.

[0052] The differently shaped vertical structures 31, 32 of the short sidewalls 2, 4 can be seen e.g. in Fig. 12. In the upper left, the two different sidewall structures 31, 32 are visible. The upper crate 100 has the smaller sidewall structure 32, the lower crate 101 has the wider sidewall structure 32 on the sidewall facing the front.

[0053] As different sidewall structures 31, 32 are ori-

ented to the same side of the crate arrangement, the crates 100, 101 are stacked. On the upper right hand side in Fig. 12, the same sidewall structures 32 are facing the same side, therefore, the crates 100, 101 are nested.

[0054] Therefore, in one first orientation for crates 100, 101 only nesting is possible (see upper right of Fig. 12) in the other second orientation of the crates 100, 101 only stacking is possible (see e.g. upper left of Fig. 12).

[0055] To distinguish the orientations of the crates 100, 101 the crates could comprise visual orientation markers, e.g. in the form of a color coding. This would allow an easier manual handling. The orientation marker could be in addition or alternatively be in the form of a magnetic or electronic marker so that machines handling crates 100, 101 could distinguish the different orientations of the crates 100, 101.

[0056] In an alternative embodiment, the plastic material of the lid elements 11, 12, the sidewalls 1, 2, 3, 4 and / or the bottom 5 of the crate 100 can comprise air filled sections as thermal insulation means 8, such as porous plastic sections or e.g. polyurethane sections, as shown schematically in Fig. 6 for a sidewall 1.

[0057] In Fig. 7 to 10 a second embodiment of a crate is shown, which has essentially the same features as the first embodiment, so that the above given description is also applicable.

[0058] One difference between the first and the second embodiment is in the size of the crate 100. The second embodiment is larger, as the long sidewalls 1, 3 have a length of 600 mm. The maximum width, i.e. with crates 100, 101 nested and the lid elements 11, 12 folded to the sides, is 400 mm (see Fig. 10B).

[0059] Fig. 7, 7A correspond to Fig. 1, 1B of the first embodiment, the crate 100 of the second embodiment having a width in the closed position of 359 mm (see Fig. 7A).

[0060] Fig. 8, 8A, 8B, 9 correspond to Fig. 2, 2A, 2B, 3 of the first embodiment, the crate 100 of the second embodiment having a width of 374 mm in the open position.

[0061] Fig. 10, 10A, 10B correspond to Fig. 4, 4A, 4B, but here only three crates 100, 101 are shown in a nested arrangement. The maximum width of the nested crates 100, 101 with the lid elements 11, 12 folded to the sides is 400 mm.

[0062] In Fig. 11, a stacked arrangement of three crates 100, 101 of the second embodiment is shown. The stacking works in the same way as for the first embodiment described above, i.e. support feet 40 are positioned on eight support surfaces 21, 22, 23, 24, 25, 26, 27, 28 on the rim of the sidewalls 1, 3 for keeping stacked crates 100, 101 laterally in a secure position. For this purpose, the long sidewalls 1, 3 of the crates 100, 101 comprise four vertical sidewall structures 31, 32 (directed away from the sidewalls 1, 3). The lower end of these sidewall structures 31, 32 form the support feet 40. As mentioned in connection with the first embodiment, the sidewall structures 31, 32 are formed differently on the two side-

walls 1, 3.

[0063] The support surfaces 21, 22, 23, 24, 25, 26, 27, 28 are part of recesses 30 in the rim of the sidewalls 1, 3, into which the support feet 40 fit.

[0064] If crates 100, 101 are so oriented that the different vertical sidewall structures 31, 32 are facing the same long sidewall 1, 3, the crates 100, 101 are stacked, as shown in Fig. 11 with closed lid elements 11, 12.

[0065] In Fig 12 the stacking of three larger crates 100 is shown in the lower part. Each of them have different sidewall structures 31, 32 facing the same side.

[0066] In case the lid elements 11, 12 are opened and folded towards the outside of the sidewalls 1, 3 and sidewall structures 31, 32 are oriented identically, the crates 100, 101 would be nested, as can be seen in the left background of Fig. 13 in which a high stack of crates 100, 102 of the second embodiment is shown in a nested arrangement.

[0067] Fig. 12 and 13, each shows a plurality of crates in different stacked and nested arrangements. Fig. 13 shows a large number of crates 100, 101 of the first and second embodiment placed on a pallet.

[0068] Due to the dimension of the crates 100, 101 it is e.g. possible to have two nested smaller crates of the first embodiments on top of one closed crate of the larger second embodiments. The length of the second embodiment is 600 mm, i.e. it fits two parallel nested arrangements of crates of the first embodiment having a maximal width (lid elements 11, 12 in open position) of 300 mm.

[0069] The height of the crates 100, 101 is chosen such that two stacked crates 100 of the first embodiment (see Fig. 12 upper left) have the same height as four nested crates (see Fig. 12 upper right).

Reference Numbers

[0070]

- 1 First sidewall of crate
- 2 Second sidewall of crate
- 3 Third sidewall of crate
- 4 Fourth sidewall of crate
- 5 Bottom of crate
- 6 Hinge element of lid element
- 7 Drainage openings
- 8 Thermal insulation means
- 9 Locking means
- 10 Sealing means
- 11 First lid element
- 12 Second lid element
- 16 ID means
- 21 First support surface
- 22 Second support surface
- 23 Third support surface
- 24 Fourth support surface

- 25 Fifth support surface
- 26 Sixth support surface
- 27 Seventh support surface
- 28 Eighth support surface
- 5 30 Recess in rim of sidewall.
- 31 First sidewall structure
- 32 Second sidewall structure
- 10 40 Support feet
- 100 Crate
- 101 Second Crate in a stacked / nested crate arrangement
- 15 A middle axis
- d distance between upper rim and level of lid element in closed position
- α angle between an open lid element and the vertical plane
- 20 β angle of sidewall against vertical plane

Claims

- 25 1. Crate (100) for holding and / or transporting seafood on ice, the crate (100) having essentially a rectangular horizontal cross-section with four sidewalls (1, 2, 3, 4) and a bottom (5) defining storage space for the seafood on ice,
- 30 **characterized by**
at least two lid elements (11, 12) integrated with the crate (100) for covering the storage space, the at least two lid elements (11, 12) pivotally connected to opposed sidewalls (1, 2, 3, 4), wherein the crate (100) is stackable or nestable with at least one other crate (100, 101) with the at least two lid elements (11, 12) in an open or closed position.
- 35
- 40 2. Crate (100) according to claim 1, where the at least two lid elements (11, 12) are essentially flat boards, in particular having structured surfaces.
- 45 3. Crate (100) according to claim 1 or 2, wherein in the closed position the at least two lid elements (11, 12) form a horizontal surface below the upper rim of the sidewalls (1, 2, 3, 4).
- 50 4. Crate (100) according to at least one of the preceding claims, wherein the crate (100) being in the open position and nested with a crate (101) of the same kind, the at least two lid elements (11, 12) of the crates (100, 101) are positioned at least with an angle (α) of less than 10°, in particular less than 7°, against a vertical plane.
- 55 5. Crate (100) according to at least one of the preceding claims, wherein the sidewalls (1, 2, 3, 4) comprise

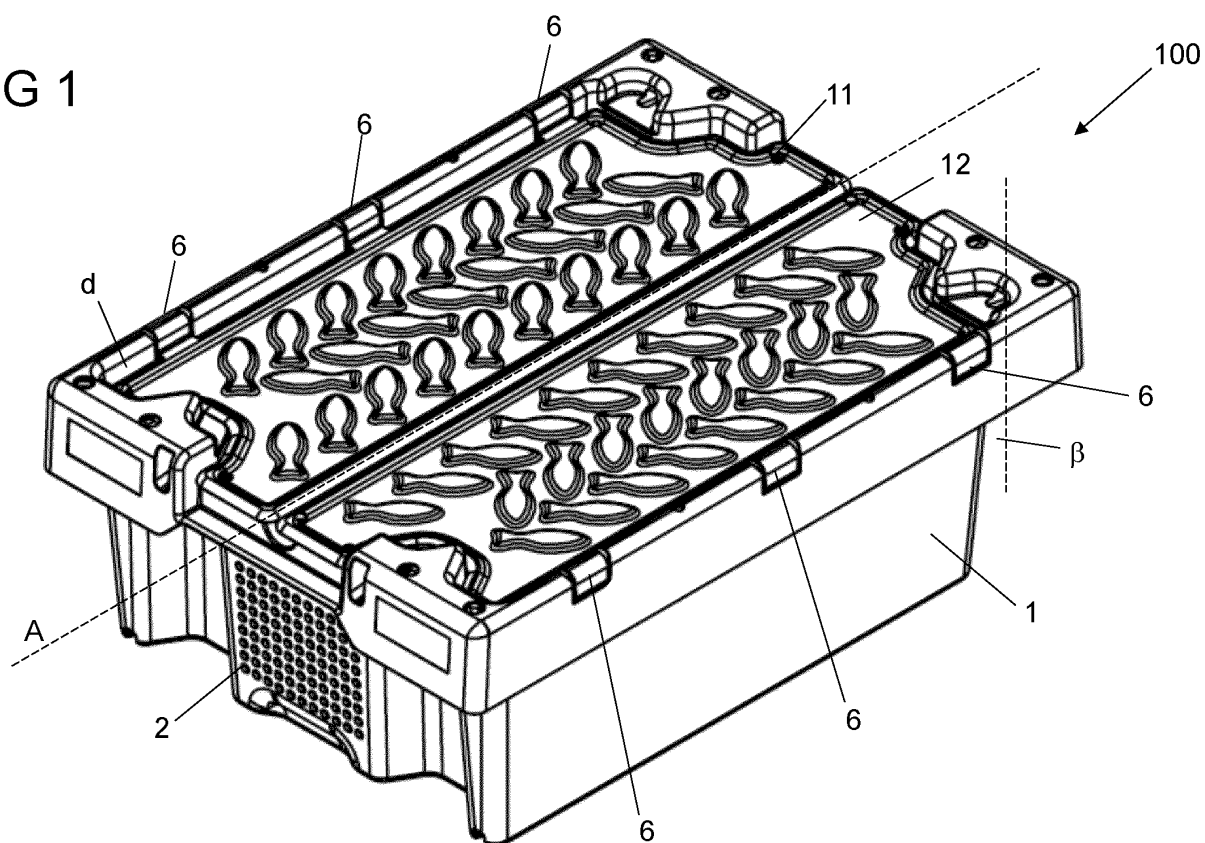
at least one support surface (21, 22, 23, 24, 25, 26, 27, 28) enabling the stacking of another crate (101) on top of the crate (100).

6. Crate (100) according to at least one of the preceding claims, wherein two opposite sidewalls (1, 2, 3, 4) comprise sidewall structures (31, 32), which are geometrically different from each other, so that the nesting of crates (100, 101) is only possible in a first relative orientation of the crates (100, 101) to each other and the stacking of crates (100, 101) is only possible in a second relative orientation of the crates (100, 101) to each other. 5 10
7. Crate (100) according to at least one of the preceding claims, wherein each of the at least two lid elements (11, 12) is pivotally connected to a sidewall (1, 3) through at least one hinge element (6), the hinge element (6) in particular being a form locking assembly or a film hinge. 15 20
8. Crate (100) of at least one of the preceding claims, wherein the at least two lid elements (11, 12) are positioned symmetrically to a long axis (A), in particular the middle axis of the crate (100). 25
9. Crate (100) according to at least one of the preceding claims, wherein the bottom (5) and / or the sidewalls (1, 2, 3, 4) comprise at least one, in particular at least four drainage openings (7). 30
10. Crate (100) according to at least one of the preceding claims, wherein the sidewalls (1, 2, 3, 4), the bottom (5) and / or the at least two lid elements (11, 12) comprise thermal insulation means (8), in particular wherein the thermal insulation means (8) comprise a plastic foam structure, in particular a polyurethane structure. 35
11. Crate (100) according to at least one of the preceding claims, with locking means (9) of releasably fastening the at least two lid elements (11, 12) in the closed position. 40
12. Crate (100) according to at least one of the preceding claims, with sealing means (10) preventing the opening of the least two lid elements (11, 12) using a tamperproof device, in particular a tie rip. 45
13. Crate (100) according to at least one of the preceding claims, comprising in the open position a maximal horizontal cross-section of 30 cm x 40 cm, 60 cm x 40 cm or 80 cm x 30 cm when nested with at least one other crate (101). 50 55
14. Crate (100) according to at least one of the preceding claims, comprising at least one area for an ID means (16), in particular a labeling and / or an electronic

means, in particular an RFID.

15. Crate (100) according to at least one of the preceding claims, wherein the sidewalls (1, 2, 3, 4), the bottom (5) and / or the at least two lid elements (11, 12) comprise HD polyethylene or polypropylene or are made from those materials.

FIG 1



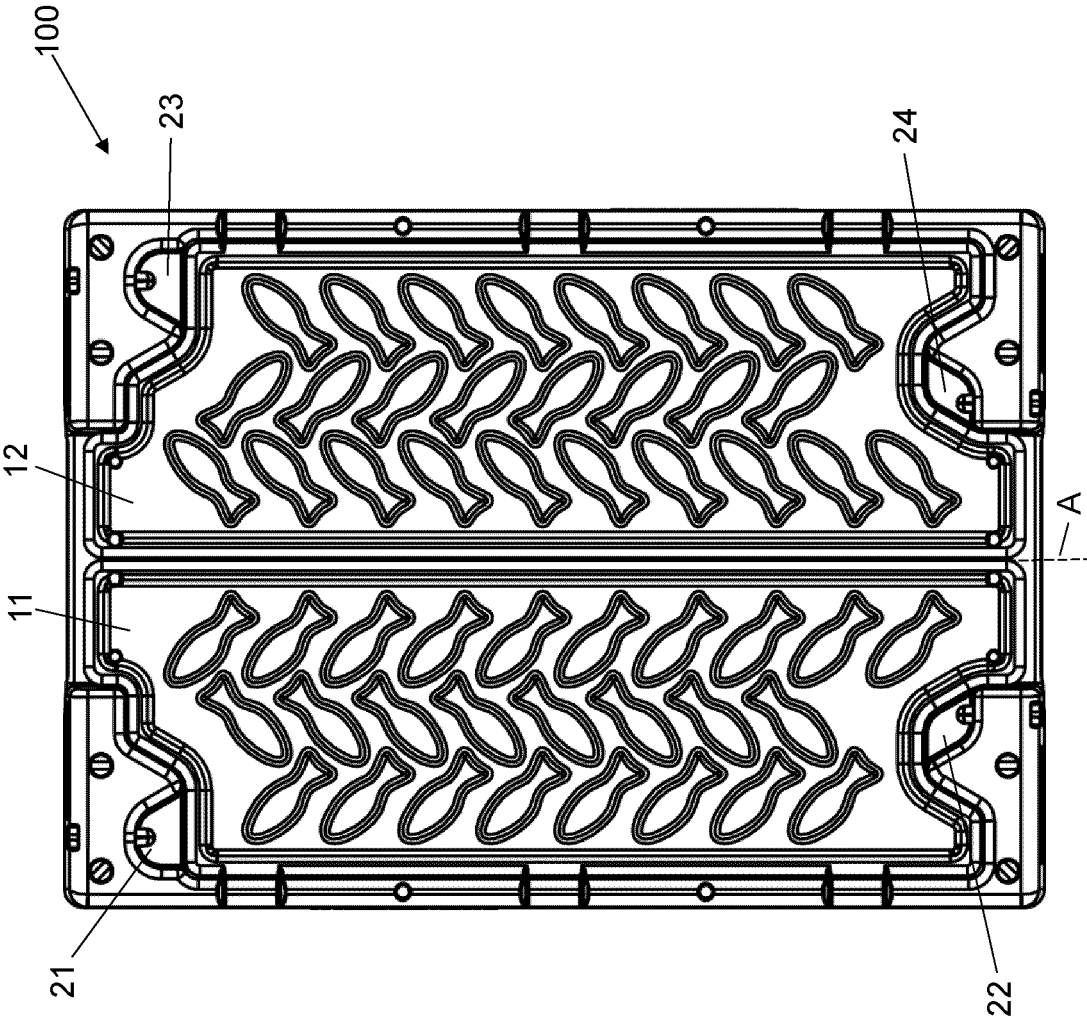


FIG 1A

FIG 1B

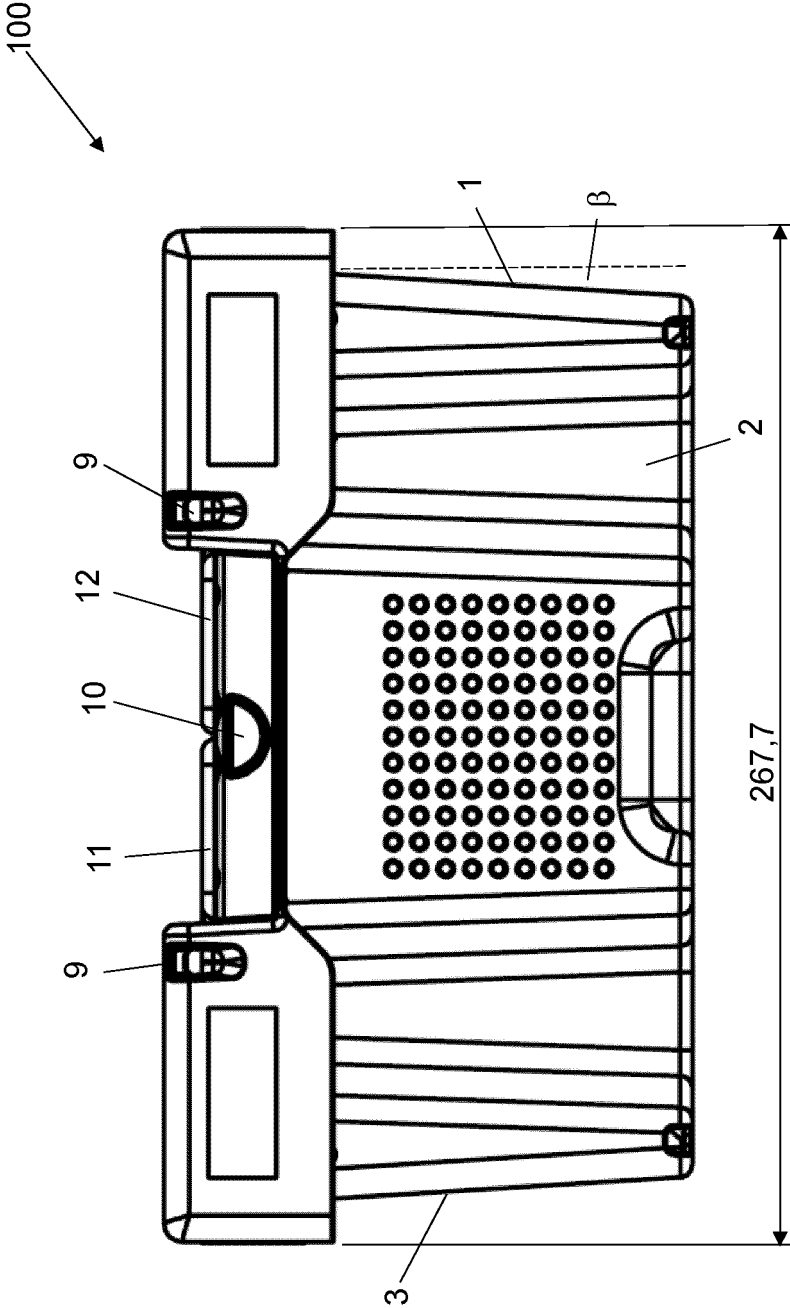
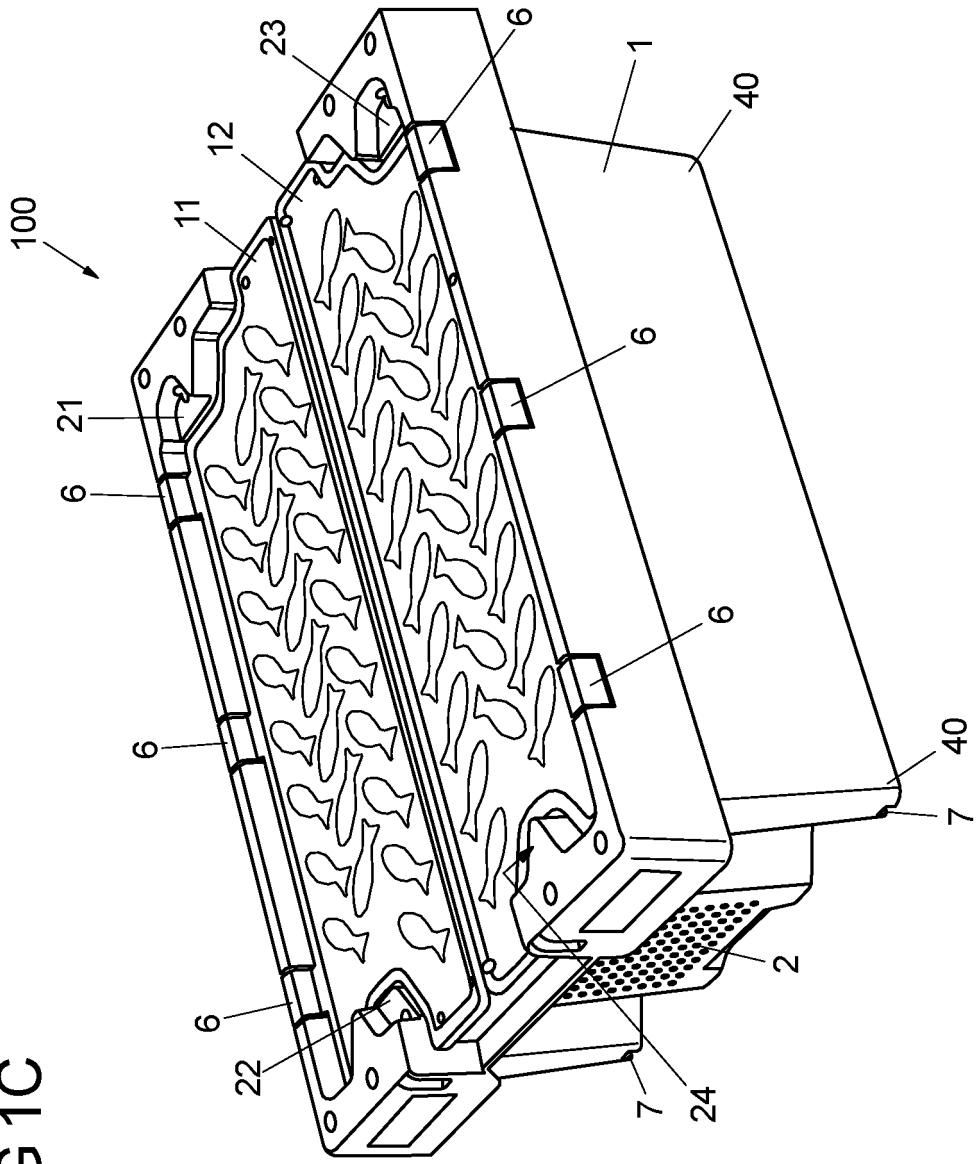


FIG 1C



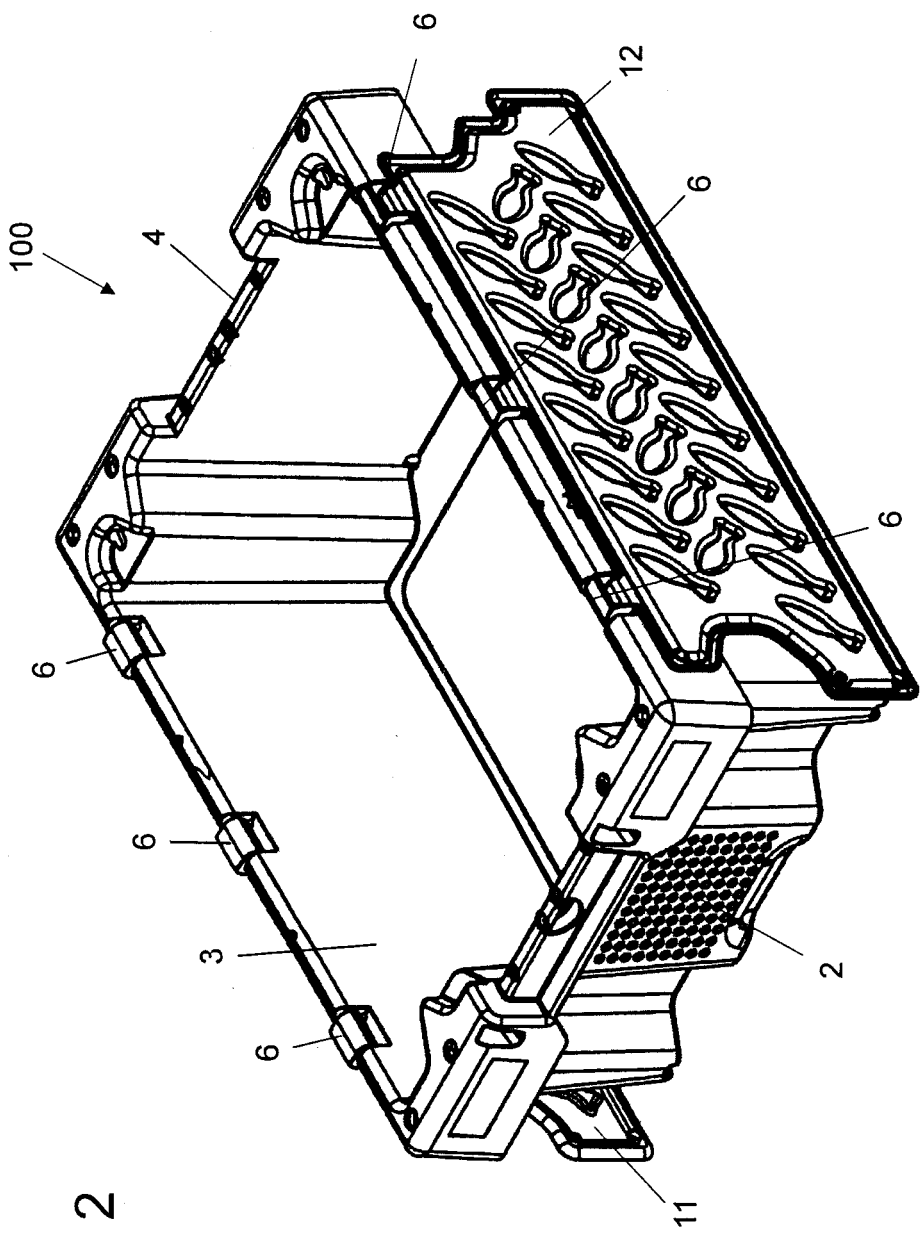


FIG 2

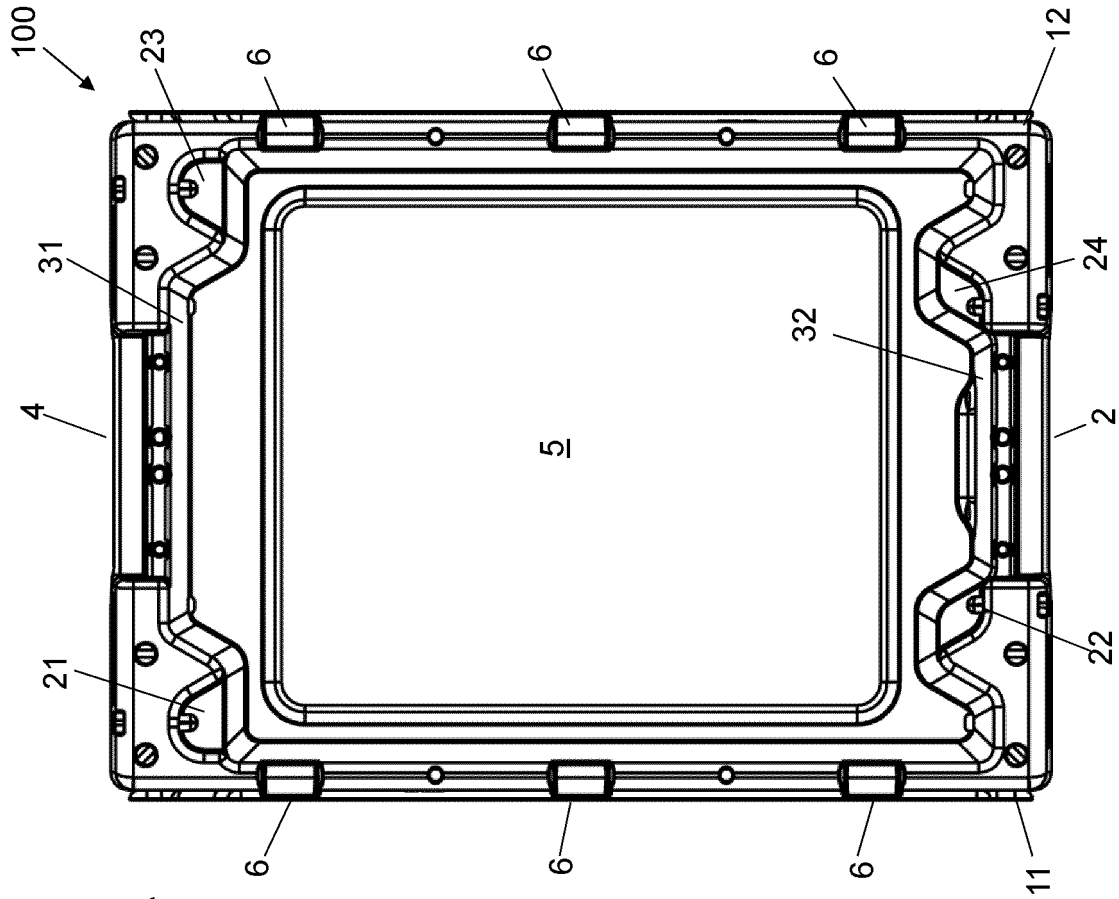
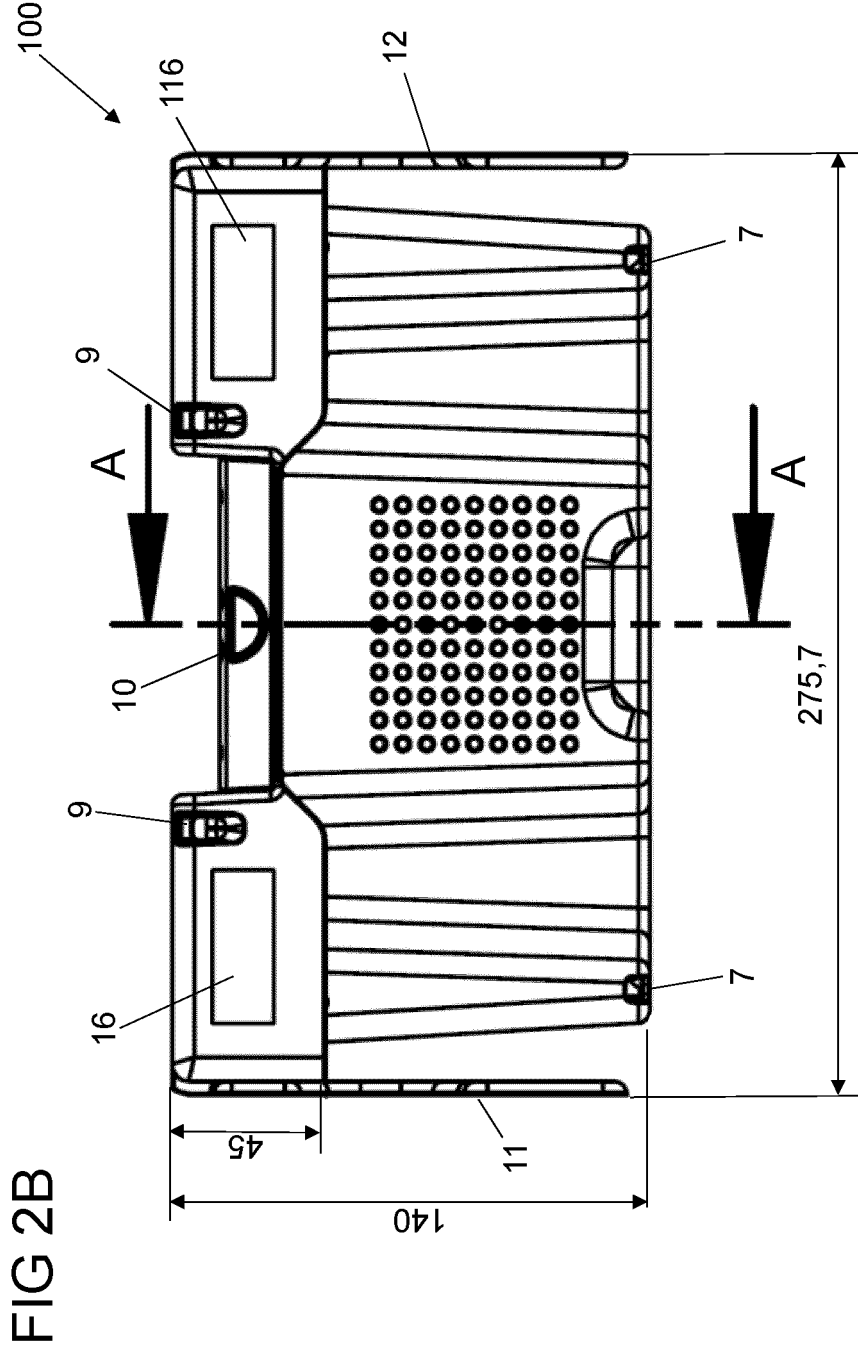
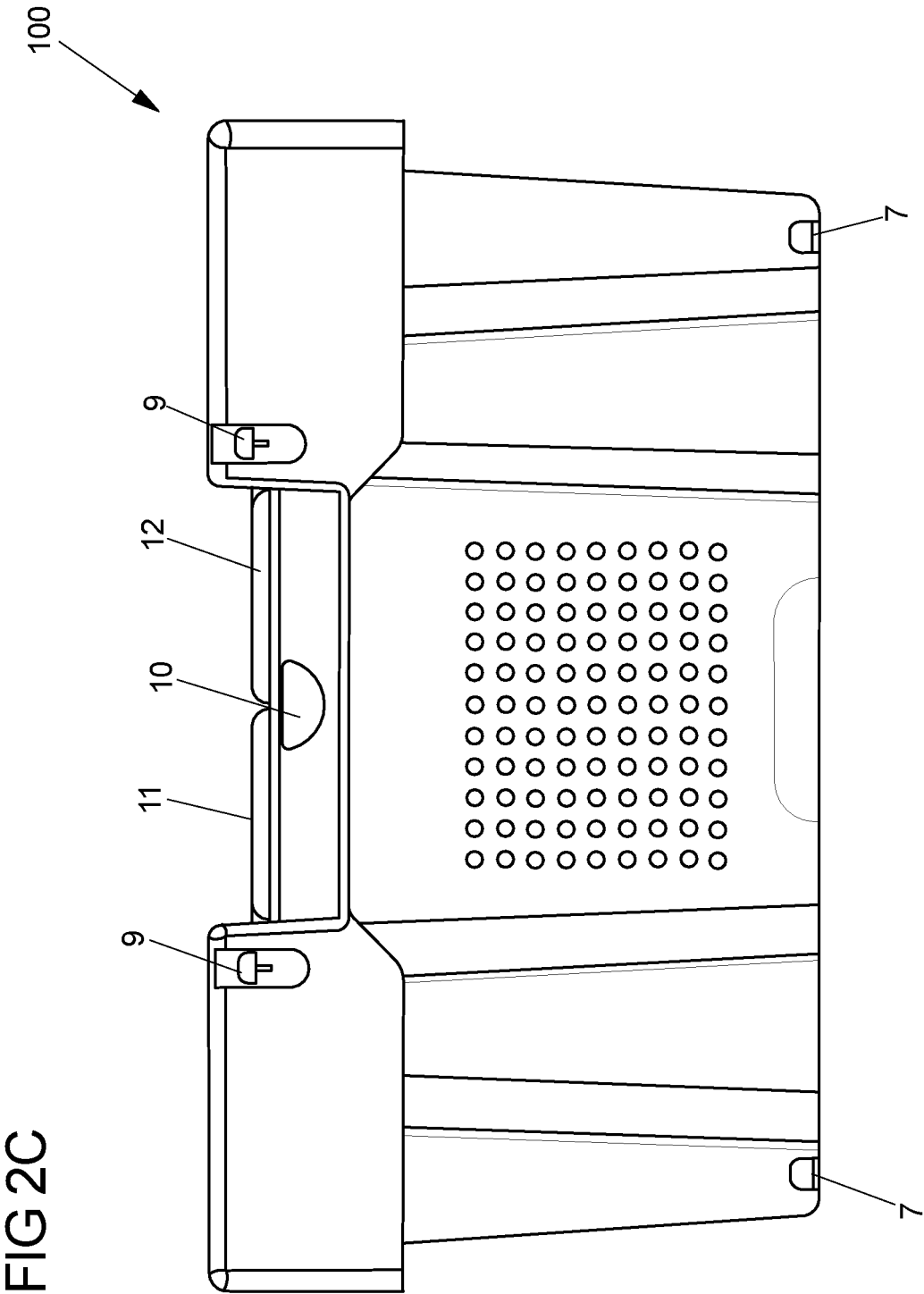
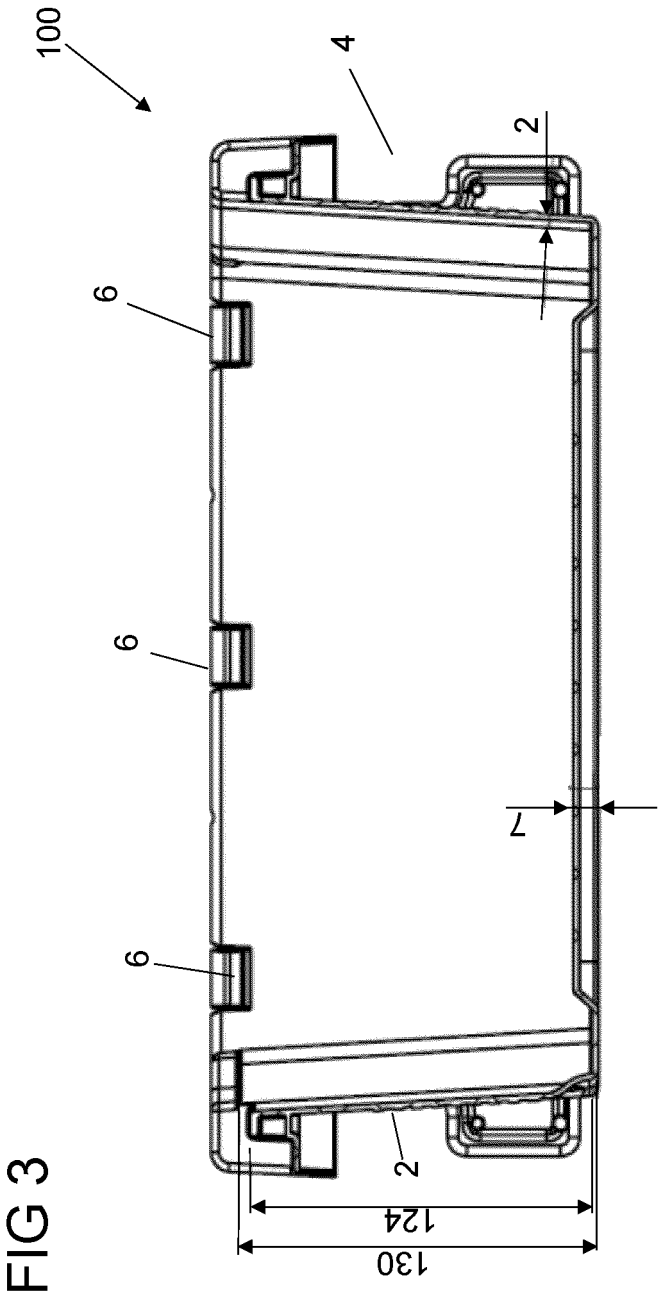
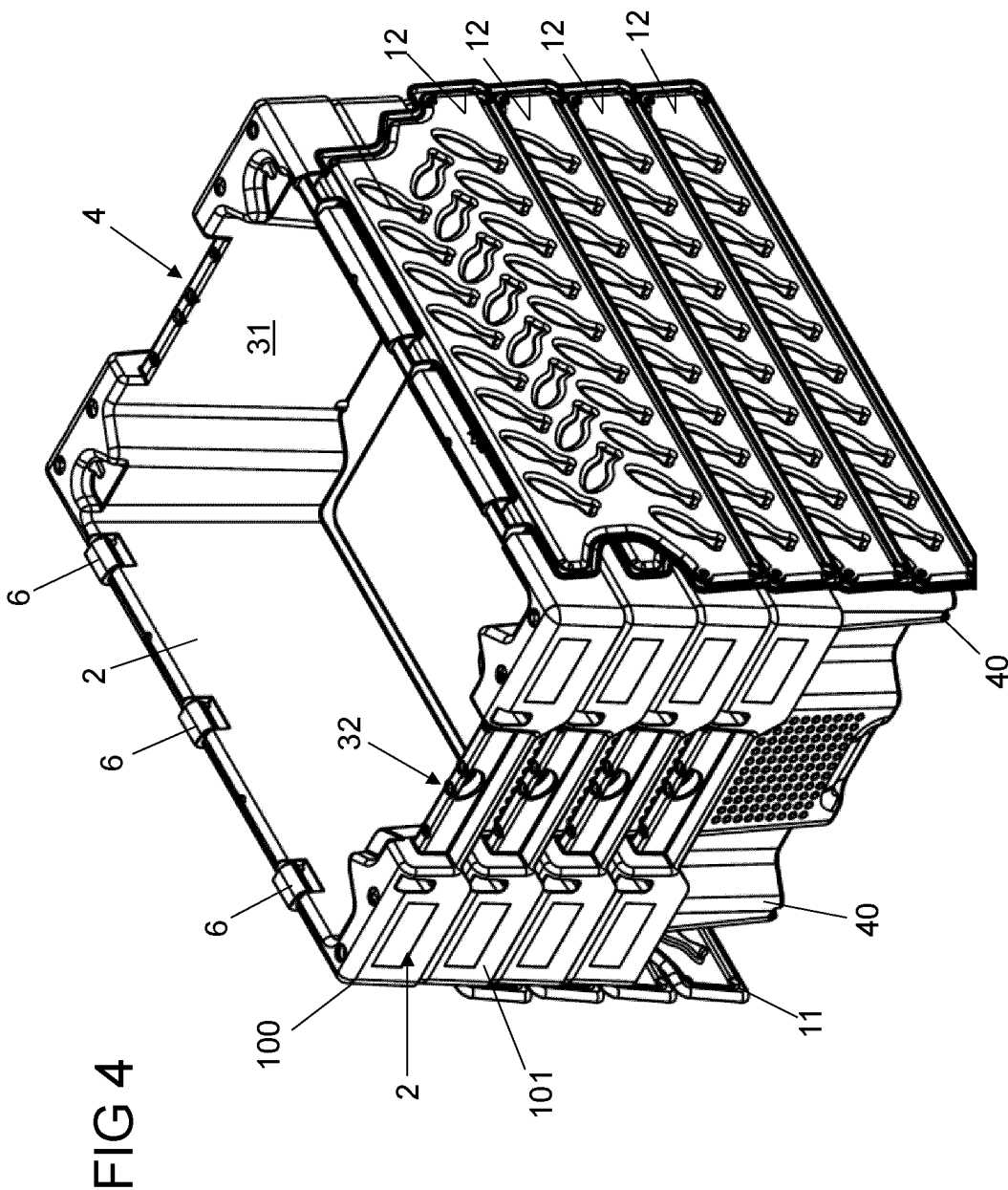


FIG 2A









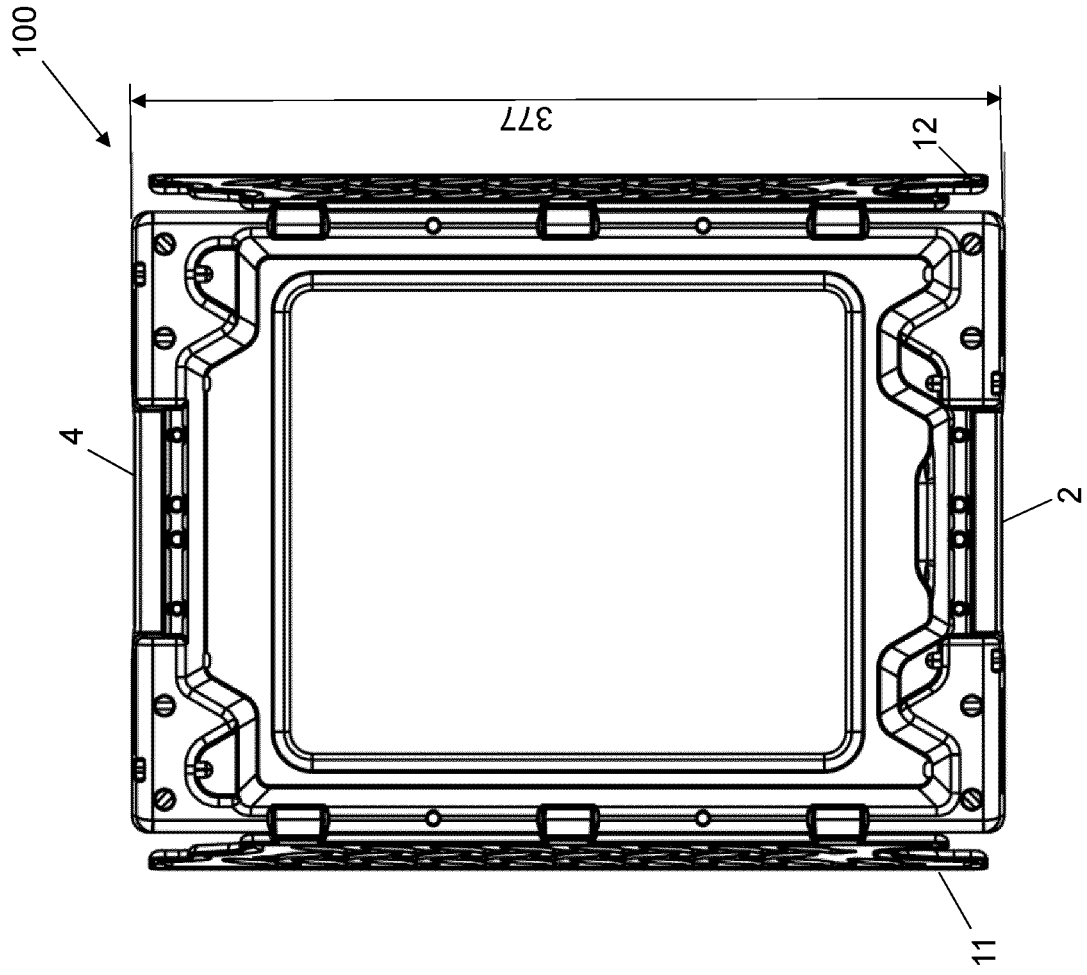


FIG 4A

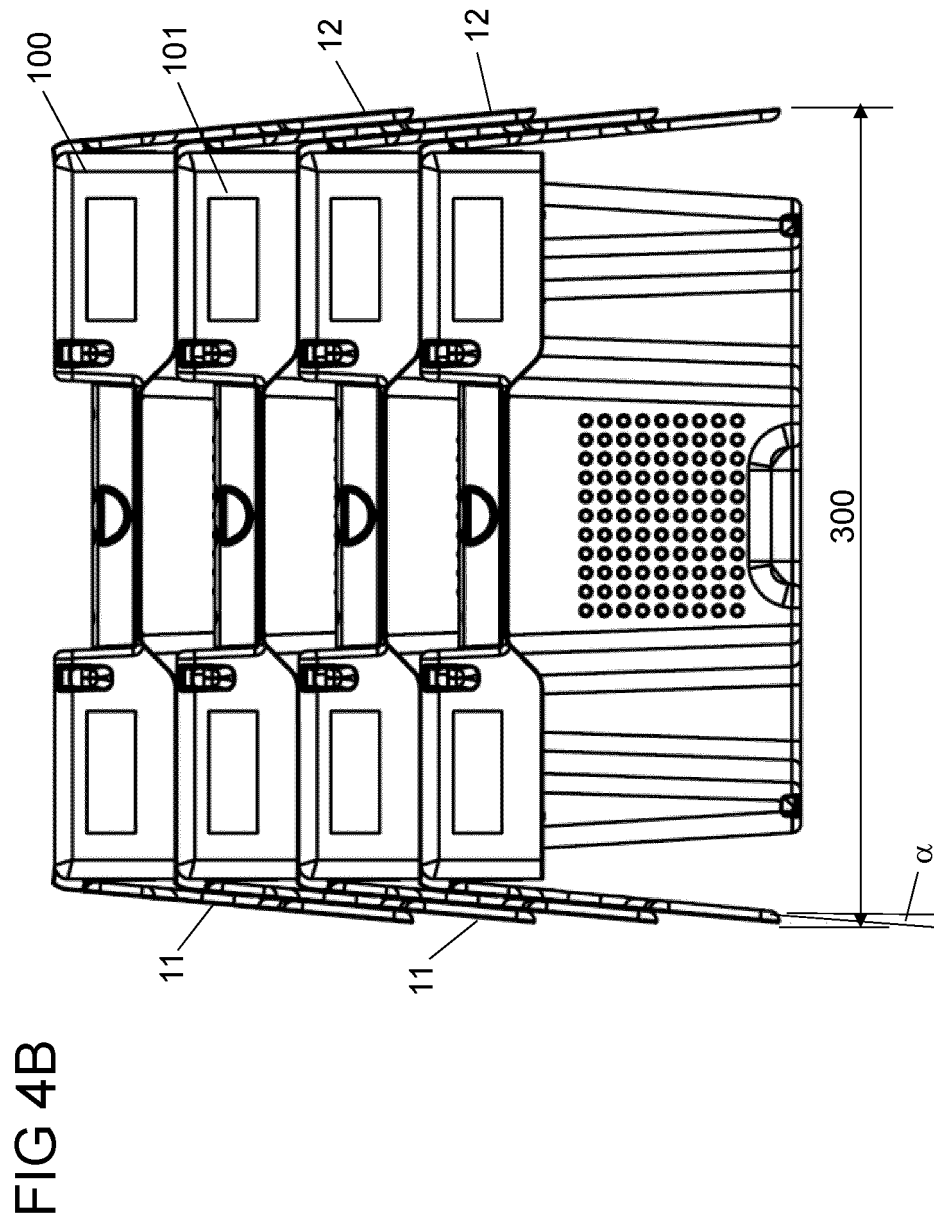
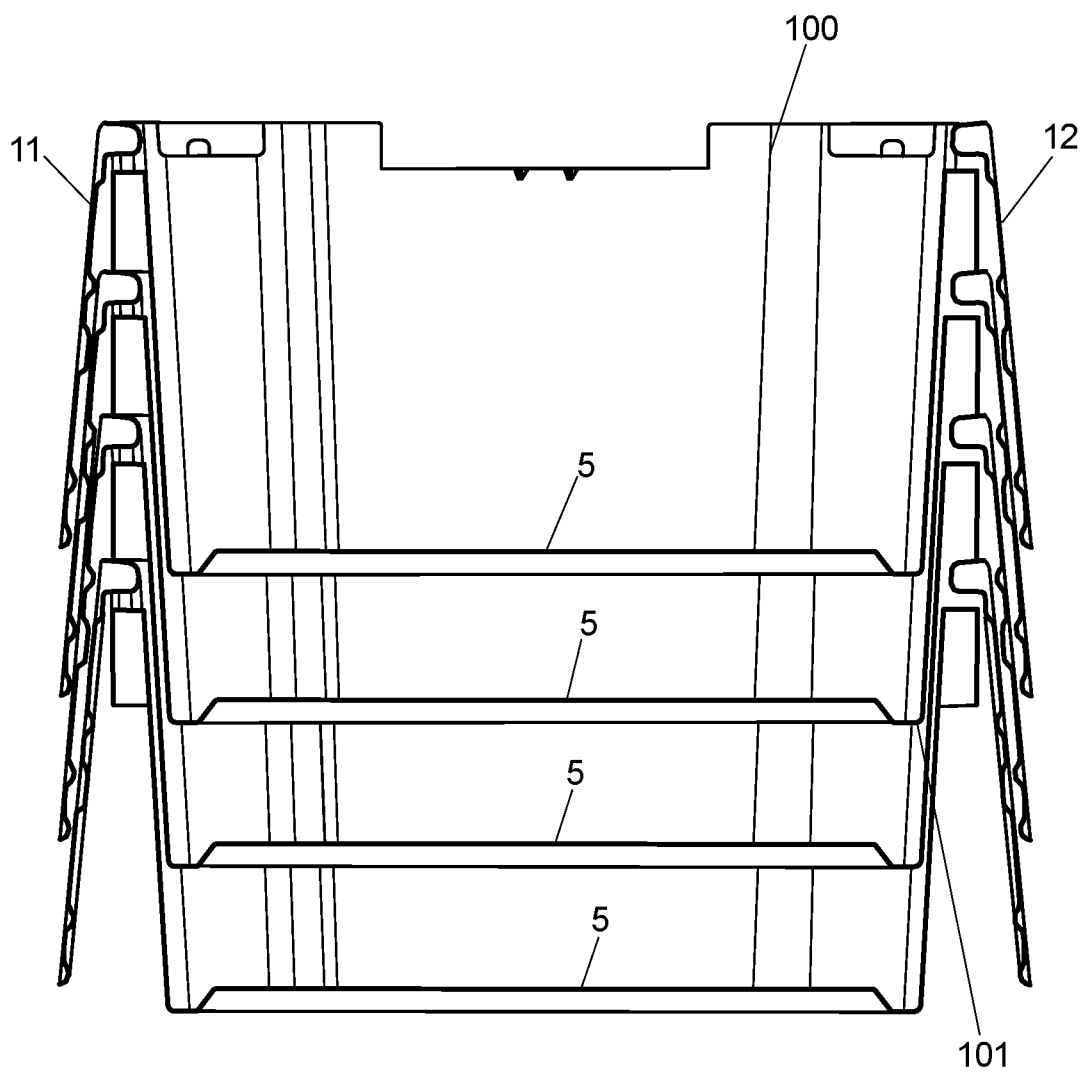


FIG 5



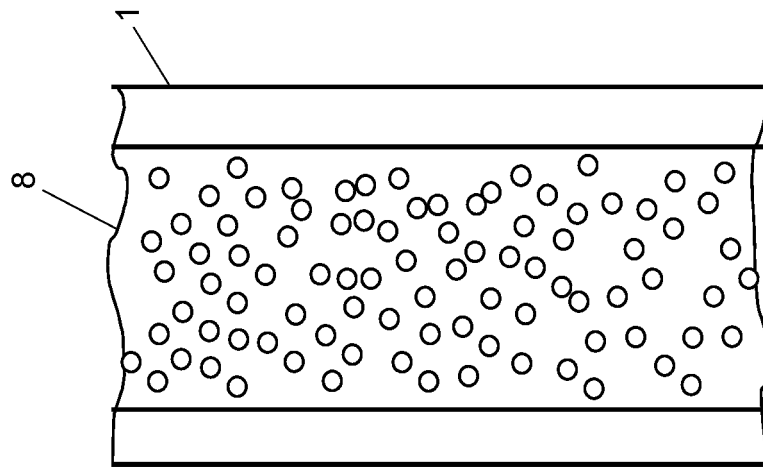


FIG 6

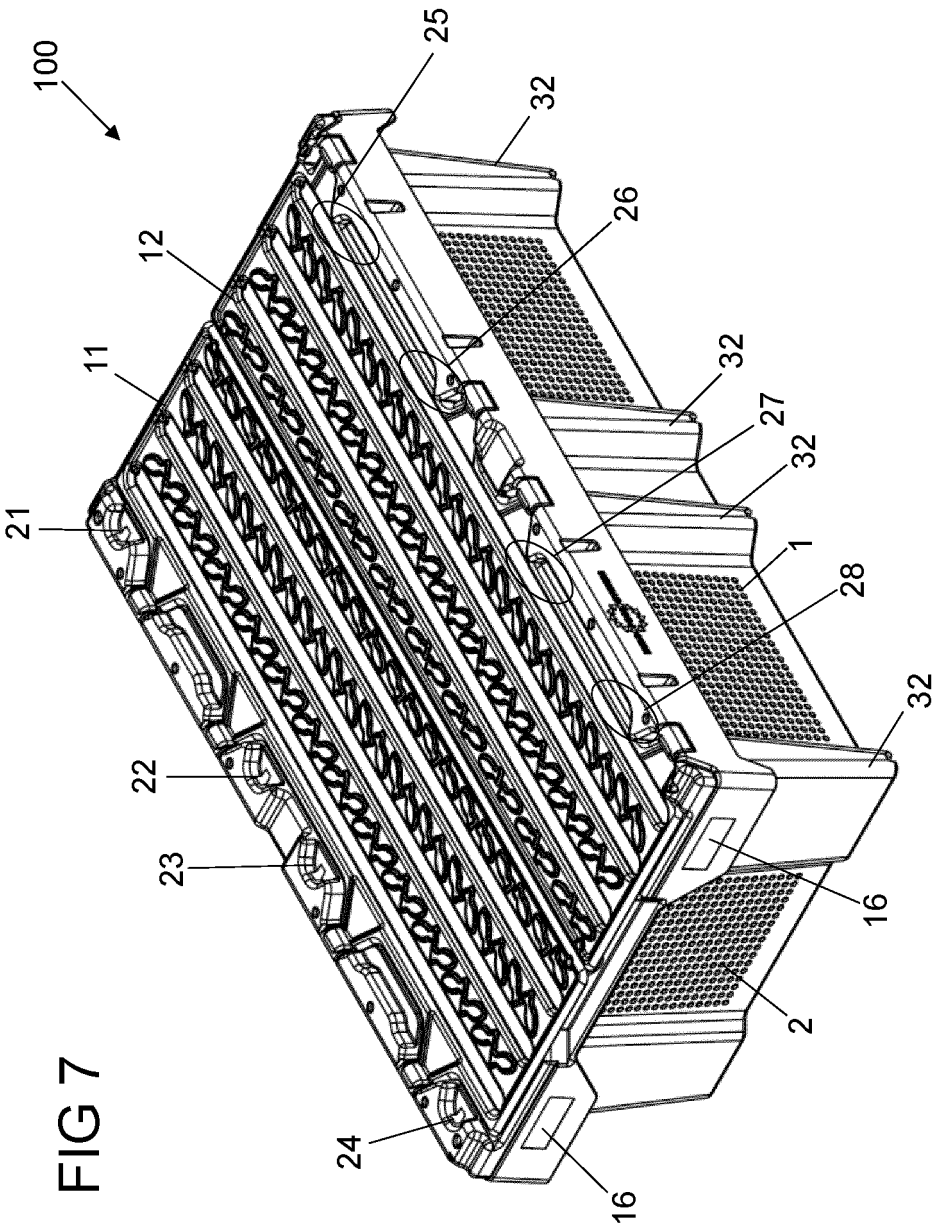


FIG 7A

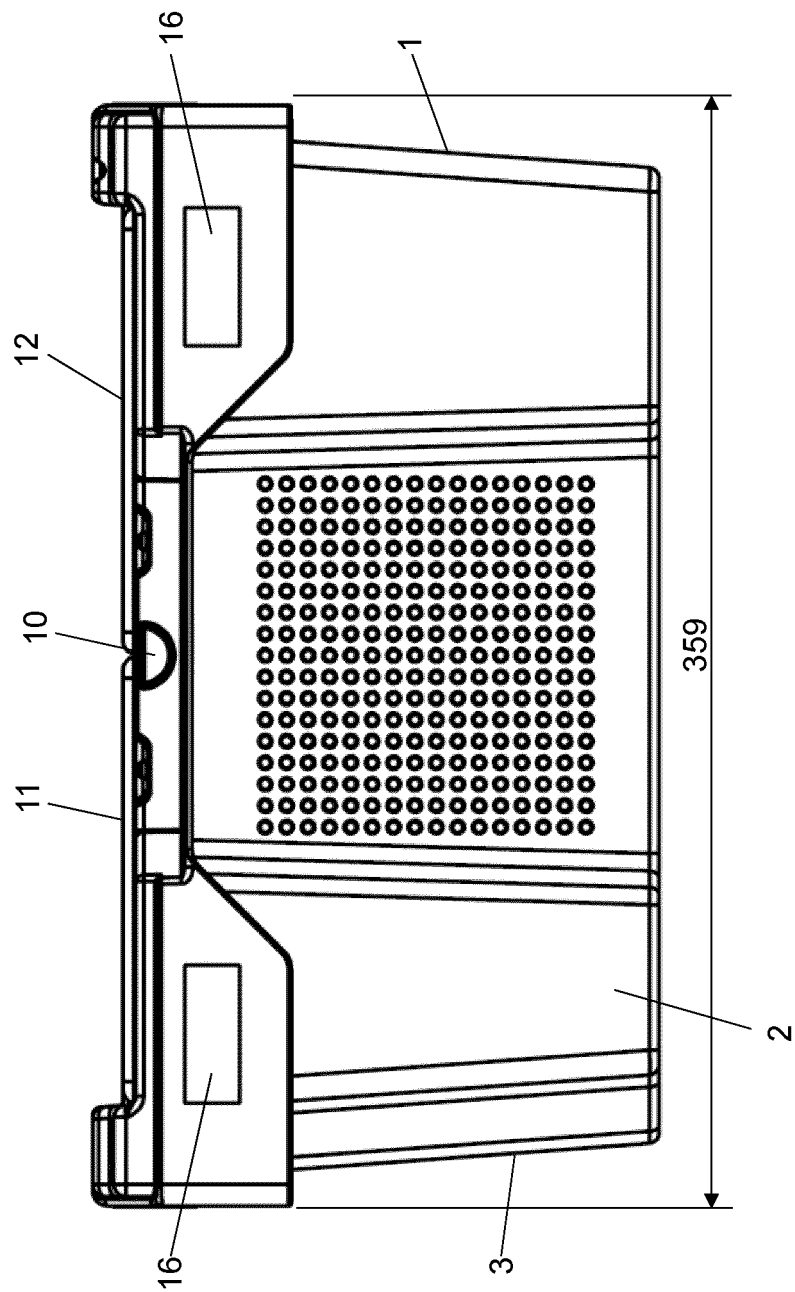
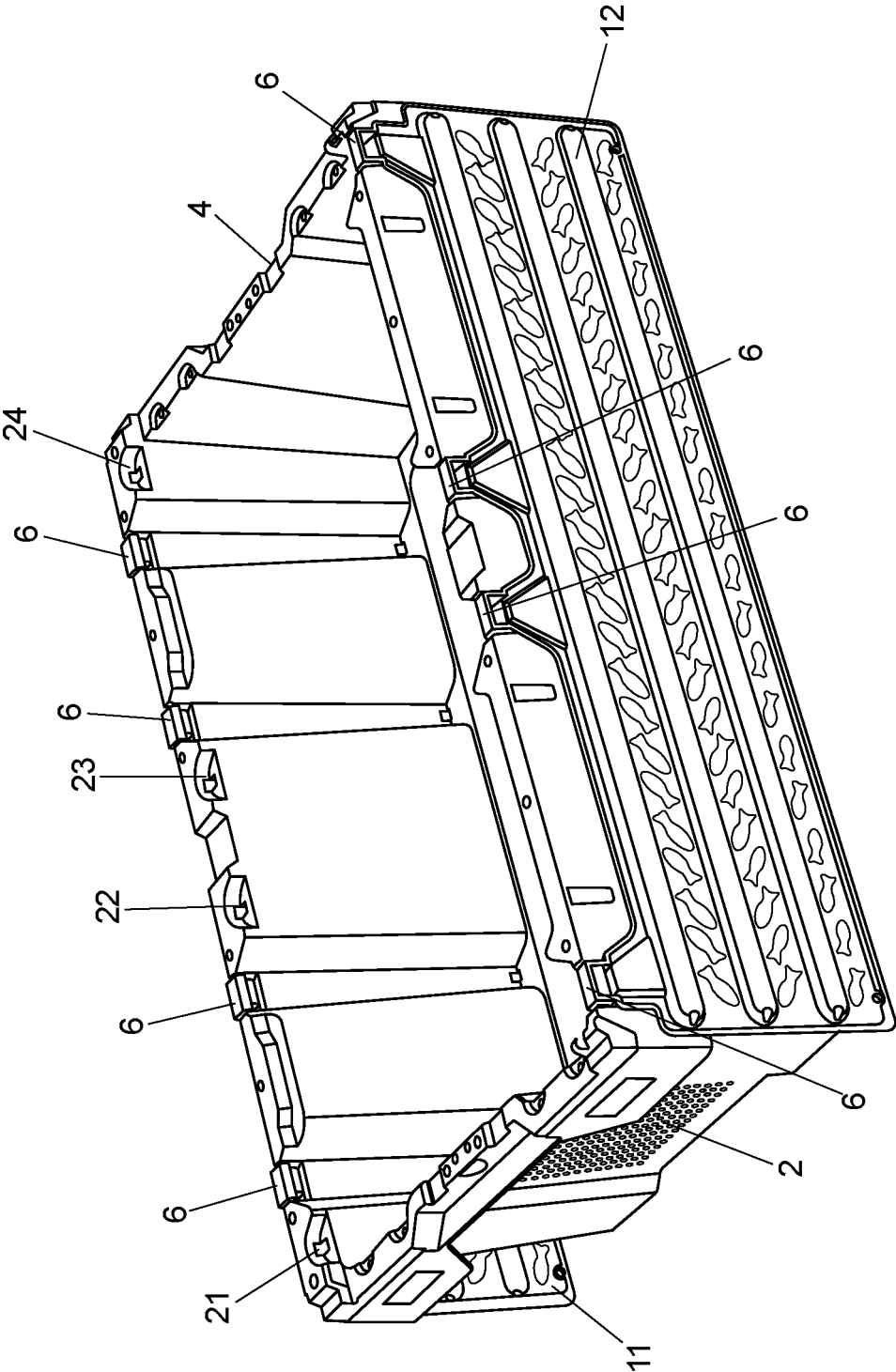


FIG 8



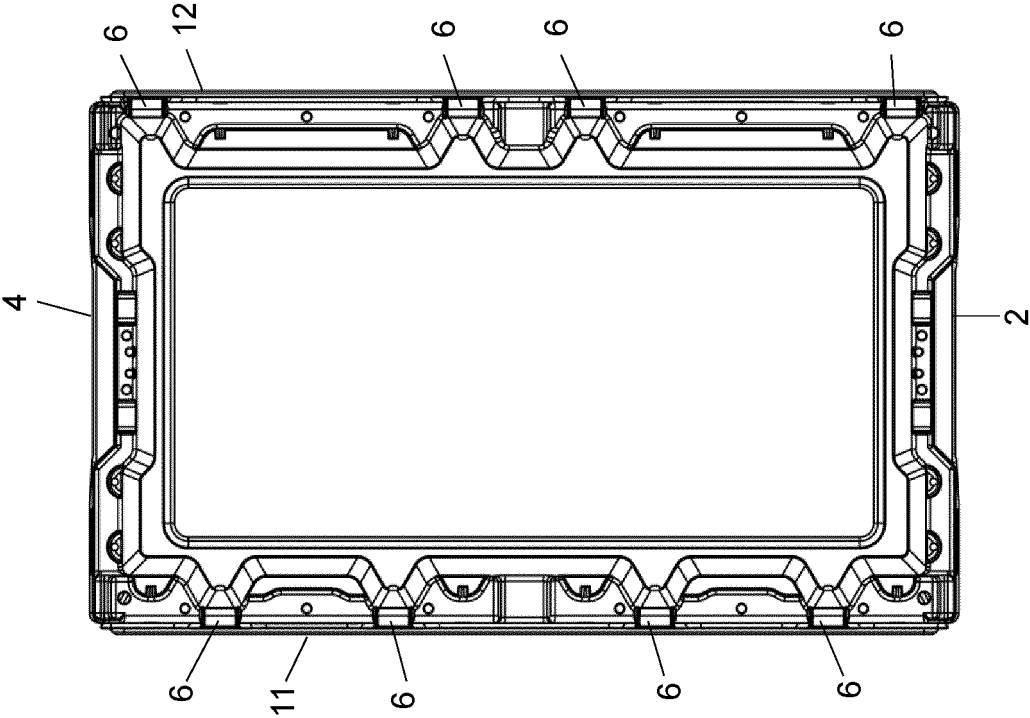


FIG 8A

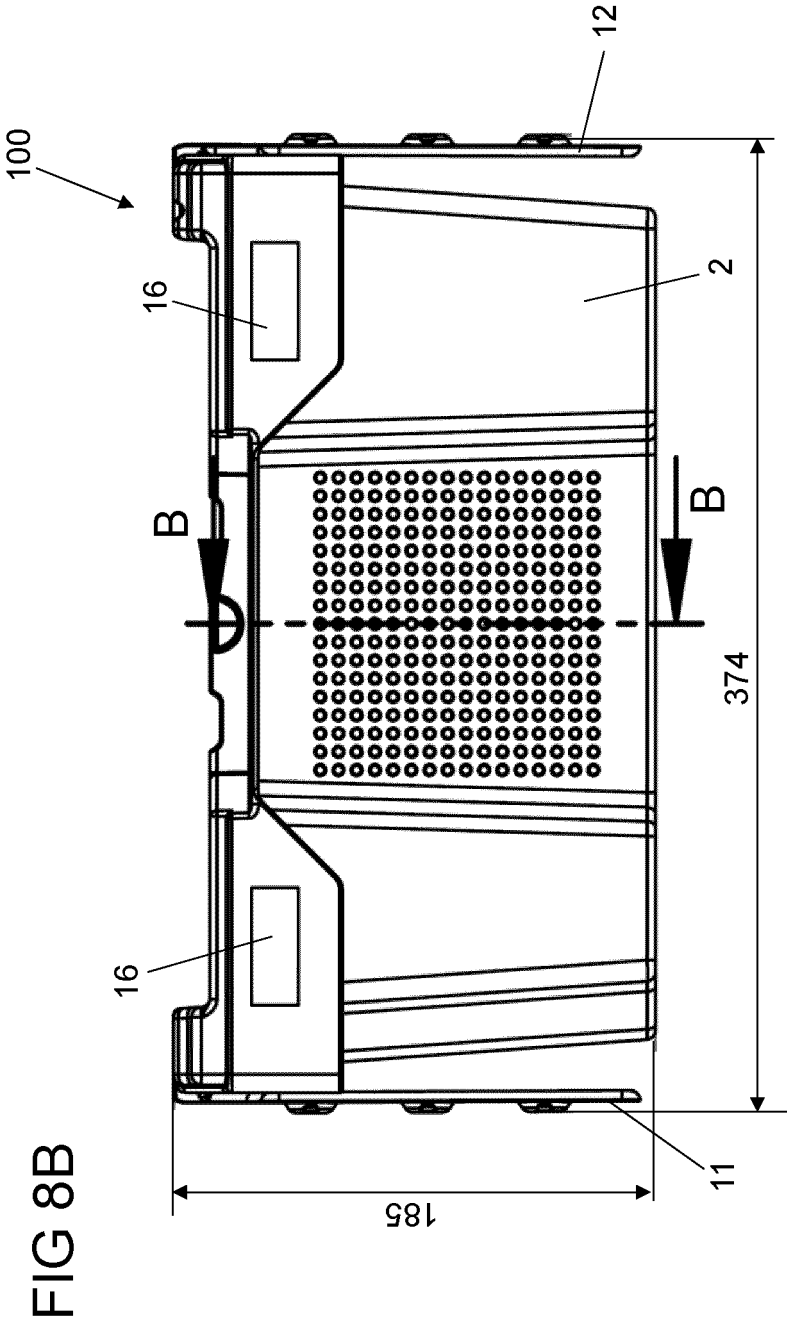


FIG 9

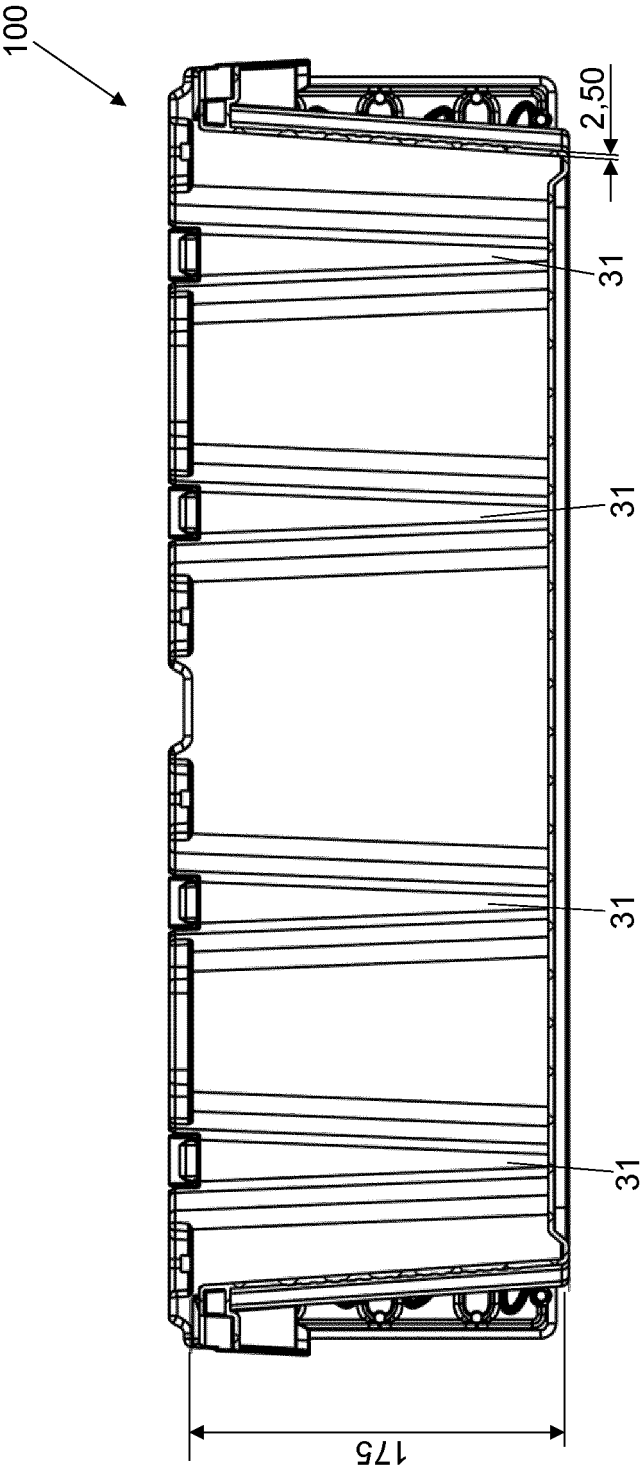
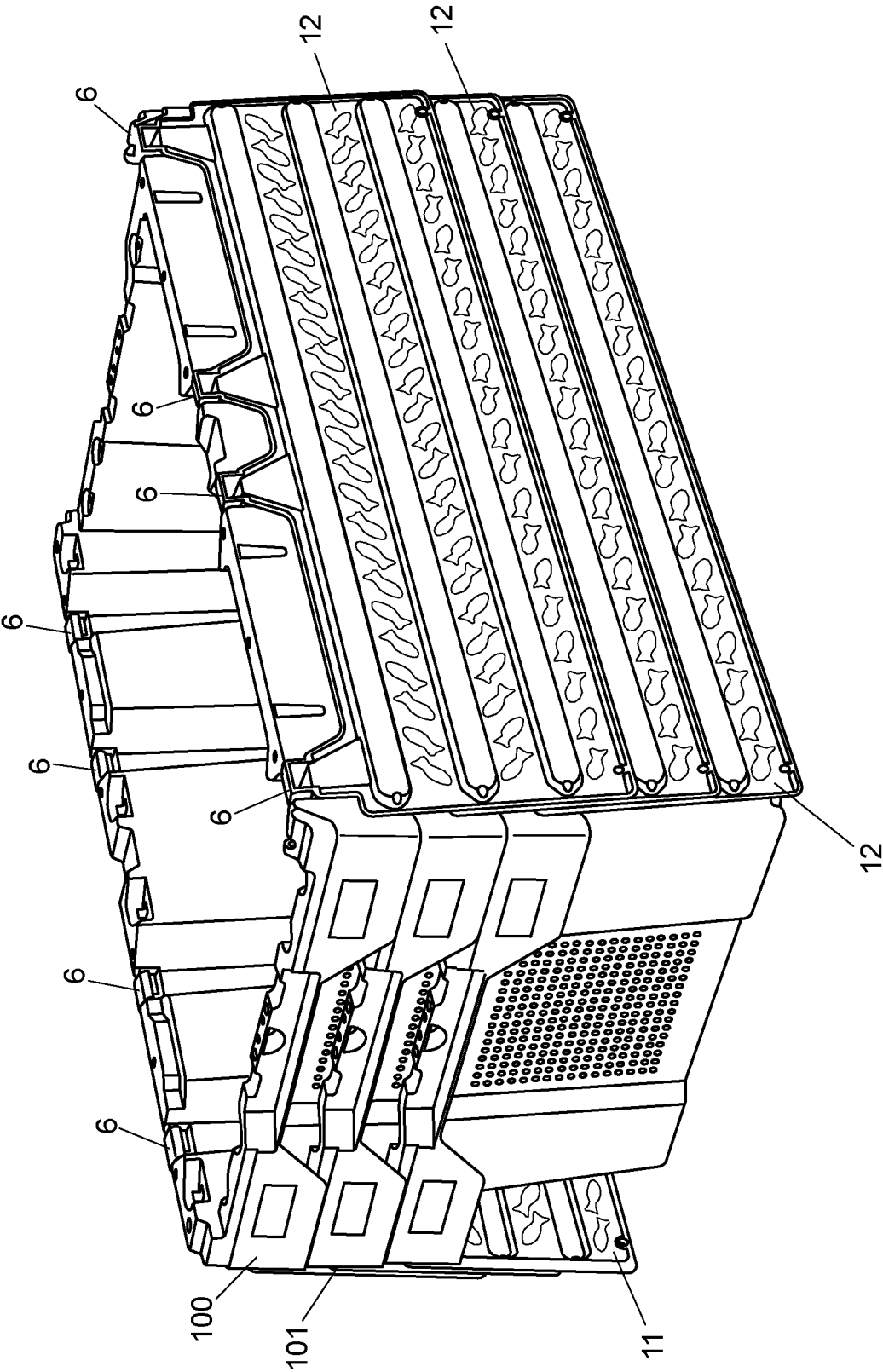


FIG 10



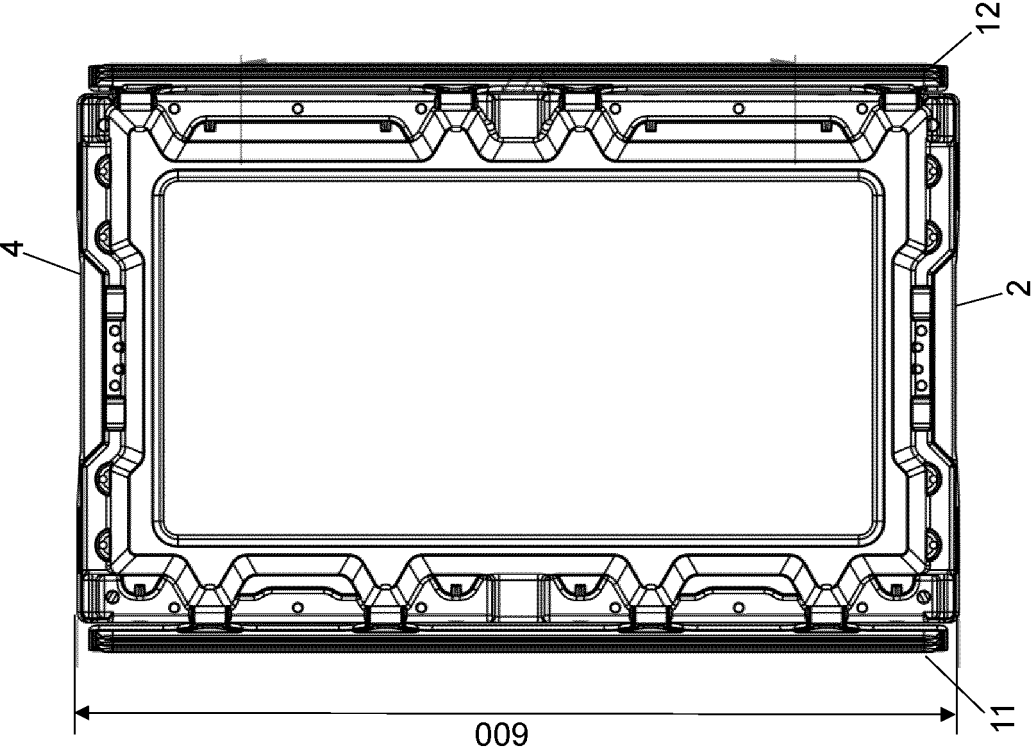


FIG 10A

FIG 10B

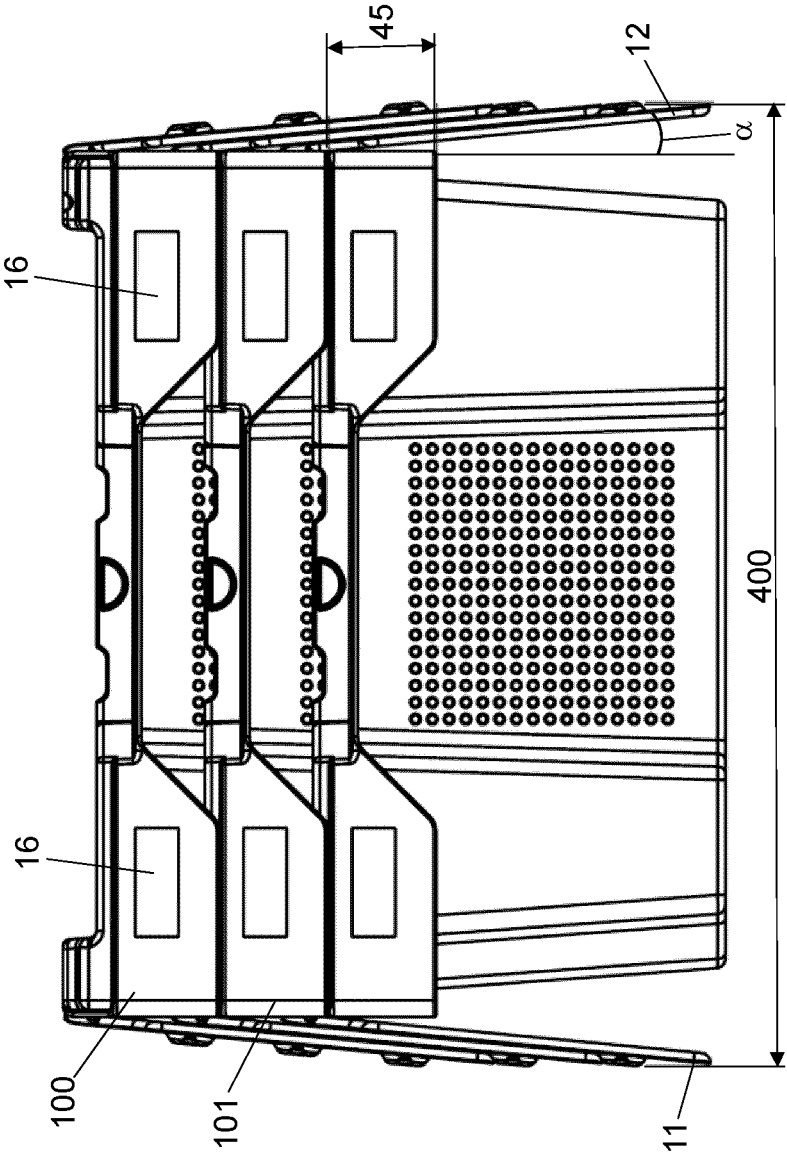


FIG 11

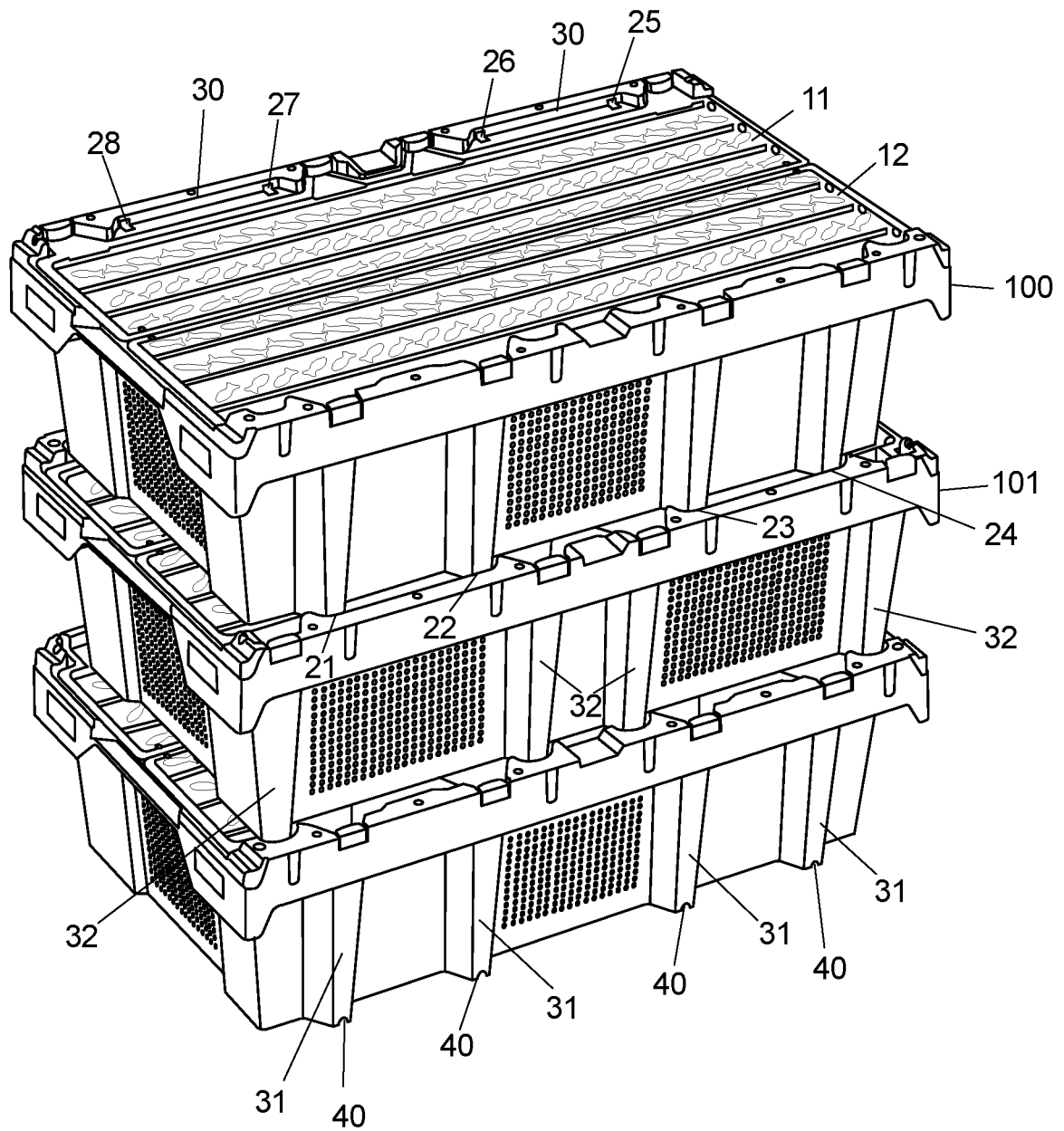


FIG 12

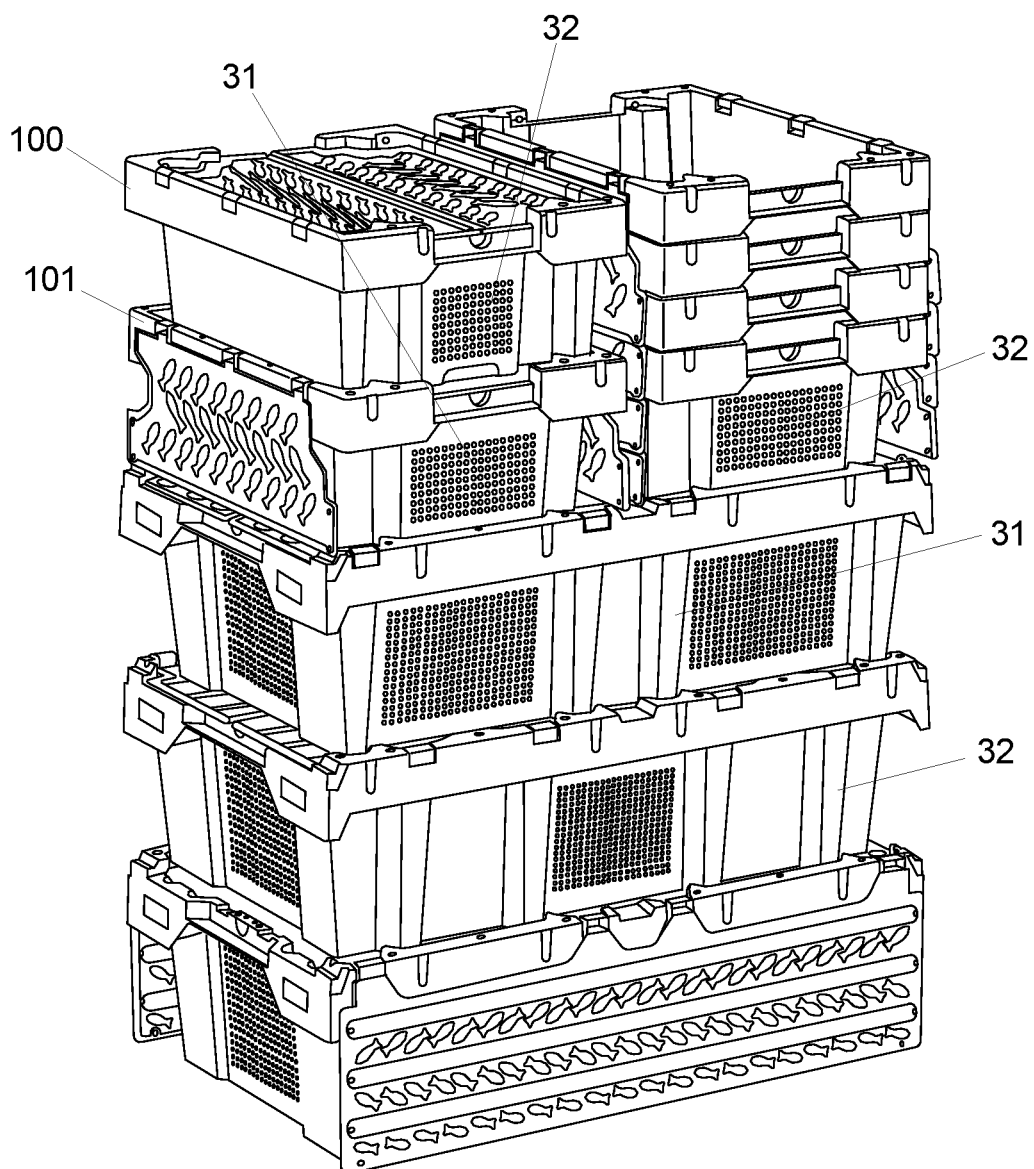
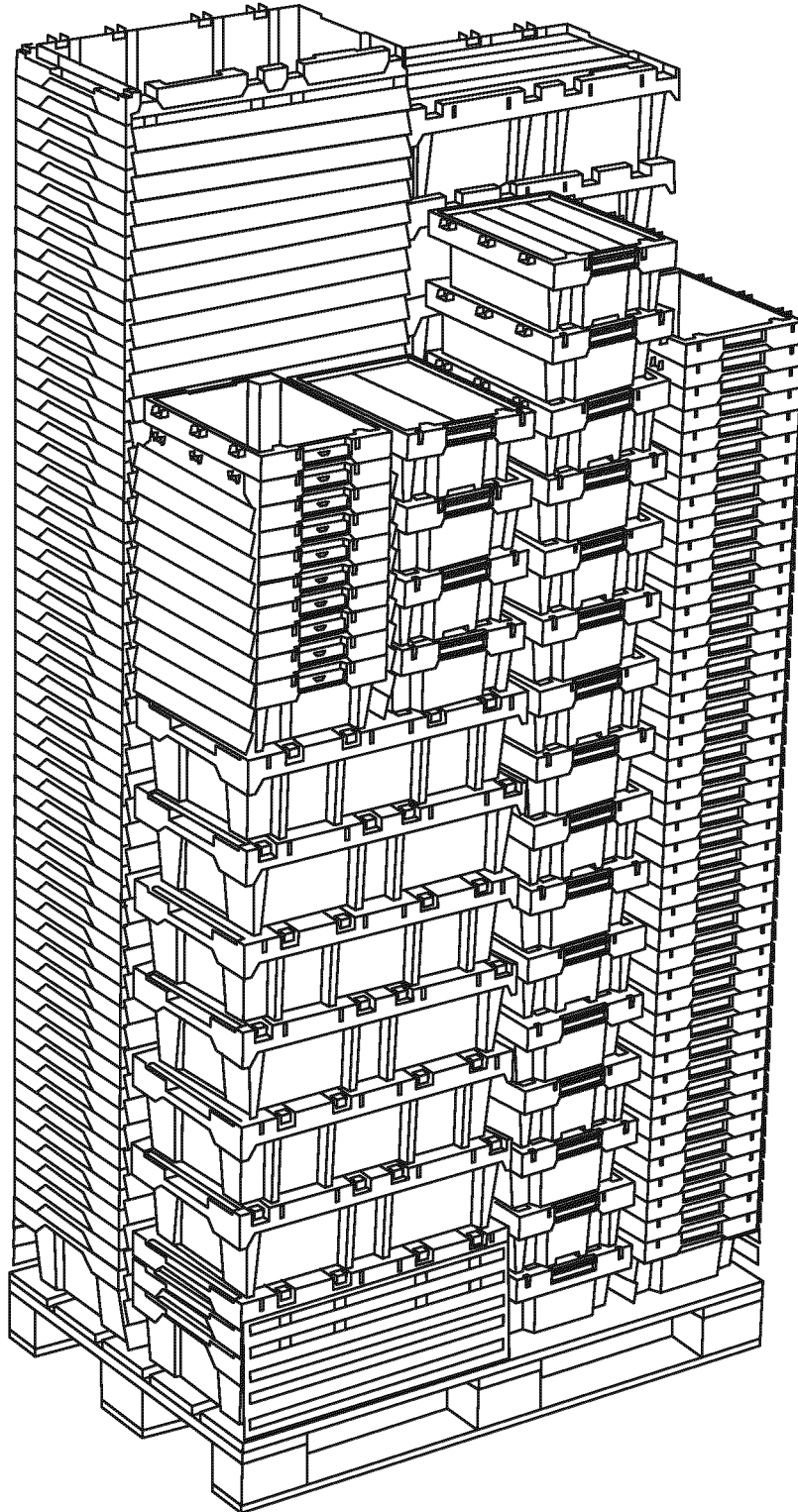


FIG 13





EUROPEAN SEARCH REPORT

Application Number

EP 21 20 4852

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	GB 2 373 238 A (MCKECHNIE INVEST HOLDINGS [GB]; PAXTON C G LTD [GB]) 18 September 2002 (2002-09-18)	1-8, 13	INV. B65D21/06 B65D81/26 B65D81/38
Y	* page 4 - page 8 * * figures 1-17 *	9-12, 14, 15	
X	US 6 000 576 A (LIU CHING-RONG [TW]) 14 December 1999 (1999-12-14)	1-8, 11-13	
Y	* column 2, line 65 - column 4, line 30 * * figures 1-10 *	9, 10, 14, 15	
X	US 5 353 948 A (LANOUE MICHEL [CA] ET AL) 11 October 1994 (1994-10-11)	1-8, 11-13	
Y	* column 2, line 48 - column 4, line 23 * * figures 1-9 *	9, 10, 14, 15	
Y	US 2010/147727 A1 (VALDIMARSSON DADI [IS] ET AL) 17 June 2010 (2010-06-17) * paragraph [0005] - paragraph [0026] * * figures 1-6 *	9-12, 14, 15	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		26 April 2022	Rodriguez Gombau, F
CATEGORY OF CITED DOCUMENTS		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	
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			

EPO FORM 1503 03.82 (P04C01)

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

EP 21 20 4852

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-04-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2373238 A	18-09-2002	NONE	
US 6000576 A	14-12-1999	NONE	
US 5353948 A	11-10-1994	CA 2095095 A1 US 5353948 A	29-10-1994 11-10-1994
US 2010147727 A1	17-06-2010	CA 2628737 A1 EP 1963204 A1 US 2010147727 A1 WO 2007054980 A1	18-05-2007 03-09-2008 17-06-2010 18-05-2007