(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 050 816 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
03.08.2016 Bulletin 2016/31

(51) Int Cl.:
B65D 19/32 *(2006.01)* *B65D 19/38* *(2006.01)*

(21) Application number: **15382022.0**

(22) Date of filing: **29.01.2015**

(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

(71) Applicant: **Northpalet Fabrica S.L**
33950 Sotrondio (ES)

(72) Inventor: **Fernàndez Gutierrez, Antón**
E-33950 Sotrondio (ES)

(74) Representative: **ABG Patentes, S.L.**
Avenida de Burgos, 16D
Edificio Euromor
28036 Madrid (ES)

(54) PALLET WITH SAFETY ELEMENTS

(57) The invention provides a pallet (1) comprising a main body (2) with a front surface (21) intended for receiving goods, a rear surface opposite the front surface (21) and a lateral perimeter (22), a plurality of shoes (3) fixed to the main body (2) by connection means (4), a first cavity comprised in the main body (2) with an inlet (5) located on the lateral perimeter (22) and a stiffening element (14) housed in this first cavity. The invention further comprises at least one securing element (6) fixed to the inlet (5) of the cavity and the stiffening element, where the securing element (6) comprises first fixing means adapted for being fixed to the stiffening element, and second fixing means adapted for being fixed to the inlet (5) of the cavity.

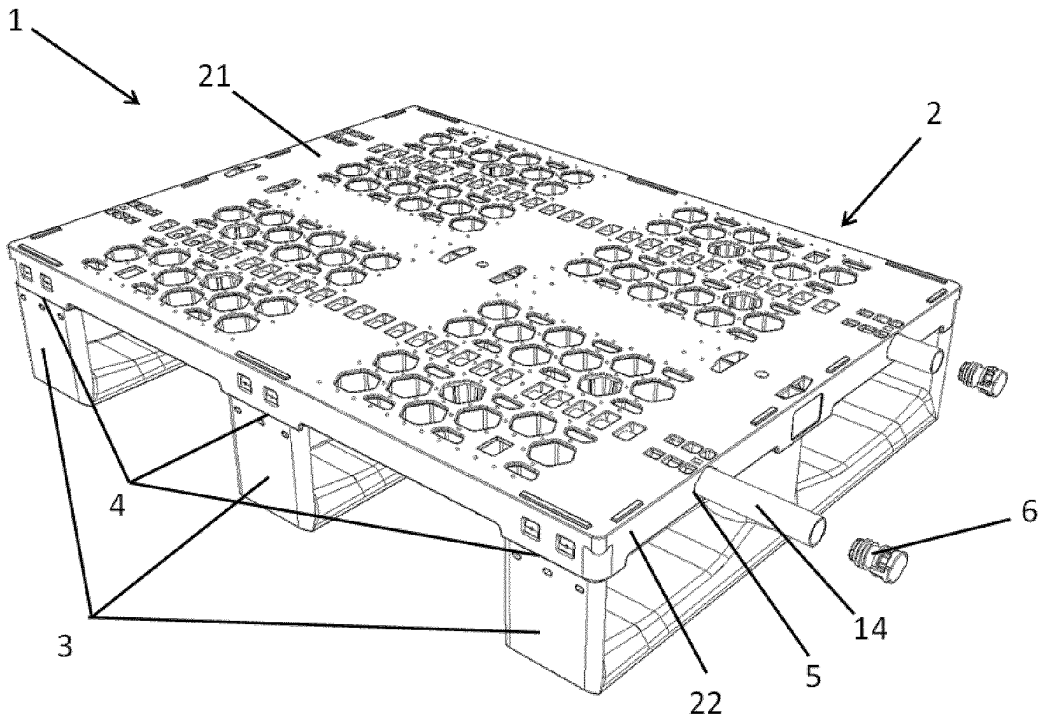

Figure 1

EP 3 050 816 A1

Description

Object of the Invention

[0001] The present invention is comprised in the technical field of pallets for transporting goods.

Background of the Invention

[0002] There is a wide range of products in the field of pallets for transporting goods.

[0003] These pallets must comply with various stiffness and strength requirements with respect to different types of loads. They must also be compatible with logistic automation systems transporting them, and finally they must also be impact resistant. Therefore they often incorporate solutions that improve performance with respect to such requirements.

[0004] An example of these pallets is described in document ES1071497U. The pallet described in this document incorporates a series of stiffening tubes inserted into the top part or main body. In normal use, these tubes do not move, but due to the backlashes generated and the change in size caused by thermal expansion and shrinkage effects, it could cause the tubes to eventually protrude through the edges of the pallet, such that dirt can enter, causing inconveniences while at the same time reducing the mechanical properties of the pallet.

[0005] Additionally, these pallets have other problems such as difficulty in holding the film that is placed to cover the pallet and its goods when it are placed thereon, and the weak securing provided for the rubbers used to hinder sliding of said pallet.

Description of the Invention

[0006] The present invention provides a solution to the problems mentioned in the preceding section by means of a pallet according to claim 1. The dependent claims define preferred embodiments of the invention.

[0007] In a first inventive aspect, the invention relates to a pallet comprising

a main body with a front surface intended for receiving goods, a rear surface opposite the front surface and a lateral perimeter,

a plurality of shoes fixed to the main body by connection means,

a first cavity comprised in the main body with an inlet located on the lateral perimeter,

a stiffening element housed in this first cavity,

the pallet being characterized in that it additionally comprises at least one securing element fixed to the inlet of the cavity and to the stiffening element,

where the securing element comprises:

first fixing means adapted for being fixed to the stiffening element,

second fixing means adapted for being fixed to the inlet of the cavity.

[0008] This pallet advantageously allows the stiffening means to be fixed to the securing element, which is in turn fixed to the main body. The stiffening means are thereby prevented from moving or protruding from the main body, assuring that load strength is always the same.

[0009] In a particular embodiment, the first cavity is substantially in the shape of a cylinder and the stiffening element is substantially in the shape of a tube, the axes of the cylinder and tube being perpendicular to the lateral perimeter.

[0010] This embodiment allows a simpler fixing.

[0011] In a particular embodiment, the first fixing means comprise at least one substantially circular deformable element, the outer diameter of which is greater than the inner diameter of the stiffening element, such that it allows the securing element to be partially inserted into the stiffening element and remain fixed therein by friction.

[0012] This configuration allows the plug to participate in the stiffening function of the stiffening means when attaching the stiffening means to the main body to which it contributes to stiffening. Indeed, the fact that they are partially inserted allows the assembly formed by the stiffening means and the first fixing means to have a length greater than the stiffening means alone, which allows better stiffening of the pallet.

[0013] In a particular embodiment, the first fixing means comprise a set of deformable circular sheets which are inserted into the stiffening element and offer frictional resistance against the inner walls of the stiffening element. In a more particular embodiment, the first fixing means comprise three deformable circular sheets.

[0014] In a particular embodiment, the second fixing means comprise a tongue adapted for being fixed to the inlet of the cavity.

[0015] In a particular embodiment, the pallet additionally comprises a second cavity located on the front surface of the pallet, this second cavity having a polygonal shape intended for housing a non-slip element.

[0016] This embodiment allows a non-slip element to be snap-fitted into the polygonal cavity, such that once the sliding element is inside the cavity it cannot be removed without being damaged, preventing loss of these elements and also preventing them from being able to be taken out intact.

[0017] In a particular embodiment, the pallet additionally comprises a non-slip element manufactured from an elastomeric material which is housed inside the second cavity.

[0018] In a particular embodiment, the connection means comprise clamping elements suitable for being attached to the main body by clamping. In a particular embodiment, these connection means additionally comprise discharge openings.

[0019] These openings make the pallet washing oper-

ation easier since the interior of the connection means is hollow in a particular embodiment, and as a result of these openings water can come out of said hollow interior of the connection means and is therefore prevented from accumulating therein.

[0020] In a particular embodiment, the pallet additionally comprises projections, each of the projections having a root comprised on the lateral perimeter of the pallet and an end protruding from the lateral perimeter oriented towards the rear surface. In a particular embodiment, the projections are located in the corners of the lateral perimeter of the pallet.

[0021] This embodiment provides better gripping for the wrapping film because when the pallet and the goods it contains are wrapped with a wrapping film, the film is coupled in the projection and does not readily slide out of it.

[0022] In a particular embodiment, the shoes are replaceable. Therefore, the pallet is advantageously reparable, i.e., a shoe can be changed when it breaks. In a particular embodiment, this is achieved by means of protuberances in the area of the connection means intended for fitting into the main body. In a more particular embodiment, the lateral perimeter of the main body comprises windows such that in the coupling position, each protuberance is at the height of a window, such that each protuberance is partially inserted into a window, producing an abutment effect, such that once it is inserted into the main body, it cannot be removed by reversing the movement of entry. The protuberances are stiff enough so as to not significantly deform when the shoe is inserted into the main body.

[0023] In a particular embodiment, the protuberances comprise a wedge-shaped part to make insertion thereof into the main body easier, and a stepped area to prevent it from coming out once inserted. Furthermore, the central area of the shoe comprises adjustment means. This configuration means that in order to remove a shoe, it is necessary to first destroy the protuberances, for example with a drill or chisel, and then insert a lever in a disassembly opening made in the shoe, followed by a movement of the lever, causing the adjustment means to come out of the central part of the shoe. In a particular embodiment, the protuberances comprise a guide which allows directing an instrument, for example a drill or chisel, towards the center of the protrusion, such that it can be more easily destroyed.

[0024] In a particular embodiment, the pallet is molded providing the cavity intended for housing the stiffening element during molding and placing the stiffening element in this cavity before the pallet cools down and shrinks, so the interference fit between the cavity housing the stiffening element and said stiffening element is greater than in pallets known in the state of the art.

[0025] In a particular embodiment, the pallet is manufactured by two-component injection using two different plastic components, a stiffer one and another less stiff one. In a particular embodiment, the stiffer plastic is arranged in the part of the main body surrounding the stiffening element except the area close to the lateral perimeter, and the less stiff plastic is arranged in the area close to the lateral perimeter. Advantageously, arranging the stiffer plastic in the previously mentioned area improves mechanical performance of the pallet, and arranging the more plastic and less stiff plastic in the other previously mentioned area allows better impact absorption.

[0026] In a particular embodiment, the stiffer plastic has additives with components providing it with non-slip properties.

[0027] All the features and/or steps of methods described in this specification (including the claims, description and drawings) can be combined in any combination, except combinations of such mutually exclusive features.

Description of the Drawings

[0028] The foregoing and other advantages and features of the invention will be better understood from the following detailed description of a preferred embodiment provided only by way of illustrative and non-limiting example in reference to the attached drawings.

Figure 1 shows an example of a pallet according to the invention.

Figure 2 shows a detail of the securing element of a pallet according to the invention.

Figure 3 shows a detail of the second cavity of a pallet according to the invention.

Figure 4 shows a detail of the connection means of a pallet according to the invention.

Figures 5a-5b show details of the main body of a pallet according to the invention in which projections are seen.

Figures 6a-6b show details of the location of projections.

Figures 7a-7c show a particular view of a shoe disassembled from and assembled on a pallet according to the invention.

Detailed Description of the Invention

[0029] Having explained the object of the invention, specific non-limiting embodiments will be described below.

[0030] Figure 1 shows an example of a pallet according to the invention. This drawing shows a pallet (1) comprising the following elements:

a main body (2) with a front surface (21) intended for receiving goods, a rear surface opposite the front surface (21) and a lateral perimeter (22),
a plurality of shoes (3) fixed to the main body (2) by connection means (4),
a first cavity comprised in the main body (2) with an inlet (5) located on the lateral perimeter (22), and
a stiffening element (14) housed in this first cavity.

[0031] This pallet (1) also has a securing element (6) intended for being fixed to the inlet (5) of the cavity and to the stiffening element. In this securing element (6) there are first fixing means adapted for being fixed to the stiffening element (14) and second fixing means adapted for being fixed to the inlet (5) of the cavity.

[0032] In this pallet (1), the first cavity is a substantially cylindrical cavity and the stiffening element (14) is a tube, the axis of the cylinder being perpendicular to the lateral perimeter (22). The invention thereby provides a stiffening element (14) which is arranged inside the main body (2) in the operative position, making it stiffer.

[0033] Figure 2 shows a detail of the fixing means. It can be seen that for better coupling, the first fixing means comprise at least one substantially circular deformable element (7), the outer diameter of which is greater than the inner diameter of the stiffening element (not depicted), such that it allows the securing element (6) to be partially inserted into the stiffening element (not depicted) and remain fixed therein by friction. In this case, the deformable element (7) comprises a set of three deformable circular sheets which are inserted into the stiffening element (not depicted) and offer frictional resistance against the inner walls of said stiffening element. Furthermore, the securing element (6) also comprises a beveled front part (15) favoring insertion of the securing element (6) into the stiffening element (not depicted). The second fixing means of the securing element (6) depicted in this drawing comprise a tongue (8) adapted for being fixed to the inlet of the cavity and a stop (16) adapted for hindering the securing element (6) from coming out once it is in its coupling position in the pallet (1).

[0034] Figure 3 shows a detail of a pallet (1) according to the invention. The pallet (1) of this drawing additionally comprises a second cavity (9) located on the front surface (21) of the pallet (1), this second cavity (9) having a polygonal shape intended for housing a non-slip element made of an elastomeric material intended for being snap-fitted into said second cavity (9).

[0035] Figure 4 shows a detail of a shoe (3) of a pallet (1) according to the invention. This shoe (3) is attached to the main body (2) by connection means (4) comprising clamping elements suitable for being attached to the main body (2) by clamping. Additionally, the shoe (3) comprises discharge openings (10).

[0036] In a preferred embodiment of the pallet (1) of the invention, the main body (2) of the pallet (1) additionally comprises projections (11) intended for holding a wrapping film that is usually placed for holding the load. Figures 5a to 5b show detailed views of the main body (2) of the pallet (1) where different embodiments of the projections (11) are seen. Each of the projections (11) has a root (12) comprised on the lateral perimeter (22) of the pallet (1) and an end (13) protruding from the lateral perimeter (22). In a particular embodiment, the end (13) of each projection (11) is oriented towards the rear surface of the main body (2). A hook effect suitable for holding the wrapping film and hindering accidental removal thereof is therefore created.

[0037] In preferred embodiments, these projections (11) are placed in the corners of the lateral perimeter (22). Figures 6a and 6b show this placement.

[0038] Figure 7a shows a particular view of a pallet (1) according to the invention in which the shoe (3) is separated from the main body (2). This drawing shows protuberances (31) comprised in the connection means (4) of the shoe (3) and windows (24) comprised on the lateral perimeter (22) of the main body (2). Furthermore, in the central area of the shoe (3) there are adjustment means (32) intended for being adjusted by clamping in the main body (2).

[0039] A detail of the disassembled shoe (3) can be seen in Figure 7b. This drawing shows how a protuberance (31) comprised in the connection means (4) of the shoe (3) comprises a wedge-shaped area (33) to make insertion thereof into the main body (2) easier, and a stepped area (34) to prevent it from coming out once inserted into the main body. It can also be seen how the protuberance comprises a guide (35) which allows directing an instrument, for example a drill or chisel, towards the center of the protrusion (31), such that it can be more easily destroyed if it is necessary to disassemble the shoe (3).

[0040] Figure 7c shows the coupling of the shoe (3) in the main body, such that each protuberance (31) is at the height of a window (24), such that each protuberance (31) is partially inserted into a window (24). Due to the previously mentioned configuration of the protuberance (31) comprising an wedge-shaped area and a stepped area, once the shoe (3) is inserted into main body (2) an abutment effect is produced, such that the shoe (3) cannot be removed by reversing the movement of entry. The protuberances (31) are stiff enough so as to not significantly deform when the shoe (3) is inserted into the main body (2), so they do not deform to make coming out easier.

[0041] This configuration prevents the shoe from being removed by simply pulling in the direction opposite the direction of entry of the shoe into the main body. A simple way to remove this shoe is by first destroying the protuberances, for example with a drill or chisel, and then inserting a lever in a disassembly opening (36) made in the shoe, as seen in Figure 7a, followed by a movement of the lever, causing the adjustment means to come out of the central part of the shoe. In a particular embodiment, the protuberances comprise a guide which allows directing an instrument, for example a drill or chisel, towards the center of the protrusion, such that it can be more easily destroyed.

[0042] In a particular embodiment, the pallet is molded providing the cavity intended for housing the stiffening element during molding and placing the stiffening element in this cavity before the pallet cools down and shrinks, so the interference fit between the cavity housing the stiffening element and said stiffening element is greater than in pallets known in the state of the art.

[0043] In a particular embodiment, the pallet is manufactured by two-component injection using two different plastic components, a stiffer one and another less stiff one. In a particular embodiment, the stiffer plastic is arranged in the part of the main body surrounding the stiffening element except the area close to the lateral perimeter, and the less stiff plastic is arranged in the area close to the lateral perimeter. Advantageously, arranging the stiffer plastic in the previously mentioned area improves mechanical performance of the pallet, and arranging the more plastic and less stiff plastic in the other previously mentioned area allows better impact absorption.

[0044] In a particular embodiment, the stiffer plastic has additives with components providing it with non-slip properties.

Claims

1. A pallet (1) comprising
a main body (2) with a front surface (21) intended for receiving goods, a rear surface opposite the front surface (21) and a lateral perimeter (22),
a plurality of shoes (3) fixed to the main body (2) by connection means (4),
a first cavity comprised in the main body (2) with an inlet (5) located on the lateral perimeter (22),
a stiffening element (14) housed in this first cavity,
the pallet (1) being **characterized in that** it additionally comprises at least one securing element (6) fixed to the inlet (5) of the cavity and to the stiffening element,
where the securing element (6) comprises:
first fixing means adapted for being fixed to the stiffening element, and
second fixing means adapted for being fixed to the inlet (5) of the cavity.

2. The pallet (1) according to claim 1, wherein the first cavity is substantially in the shape of a cylinder and the stiffening element (14) is substantially in the shape of a tube, the axes of the cylinder and tube being perpendicular to the lateral perimeter (22).

3. The pallet (1) according to the preceding claim, wherein the first fixing means comprise at least one substantially circular deformable element (7), the outer diameter of which is greater than the inner diameter of the stiffening element (14), such that it allows the securing element (6) to be partially inserted into the stiffening element (14) and remain fixed therein by friction.

4. The pallet (1) according to the preceding claim, wherein the first fixing means comprise a set of deformable circular sheets which are inserted into the stiffening element and offer frictional resistance against the inner walls of the stiffening element (14).

5. The pallet (1) according to any of the preceding claims, wherein the second fixing means comprise a tongue (8) adapted for being fixed to the inlet (5) of the cavity.

6. The pallet (1) according to any of the preceding claims, additionally comprising a second cavity (9) located on the front surface (21) of the pallet (1), this second cavity (9) having a polygonal shape intended for housing a non-slip element.

7. The pallet (1) according to the preceding claim, additionally comprising a non-slip element manufactured from an elastomeric material which is housed inside the second cavity (9).

8. The pallet (1) according to any of the preceding claims, wherein the connection means (4) comprise clamping elements suitable for being attached to the main body (2) by clamping, these connection means (4) additionally comprising discharge openings (10).

9. The pallet (1) according to any of the preceding claims, additionally comprising projections (11), each of the projections having a root (12) comprised on the lateral perimeter (22) of the pallet (1) and an end (13) protruding from the lateral perimeter (22) oriented towards the rear surface.

10. The pallet (1) according to the preceding claim, wherein the projections (11) are located in the corners of the lateral perimeter (22) of the pallet (1).

11. The pallet (1) according to any of the preceding claims, wherein the connection means (4) comprise at least one protuberance (31) located in the area intended for fitting in the main body (2).

12. The pallet (1) according to the preceding claim, wherein the lateral perimeter (22) of the main body (2) comprises at least one window (24) arranged such that in the position in which the shoe (3) is coupled to the main body (2), the window (24) is located at the height of a protuberance (31), allowing the protuberance (31) to be inserted at least partially through the window (24).

13. The pallet (1) according to any of the preceding claims, wherein the cavity intended for housing the stiffening element is provided during molding and the stiffening element is located in this cavity before the pallet cools down and shrinks.

14. The pallet (1) according to any of the preceding claims, comprising at least two different types of plastic, a stiffer one and another less stiff one.

15. The pallet (1) according to the preceding claim,

wherein the stiffer plastic is arranged in the part of the main body surrounding the stiffening element except the area close to the lateral perimeter, and the less stiff plastic is arranged in the area close to the lateral perimeter.

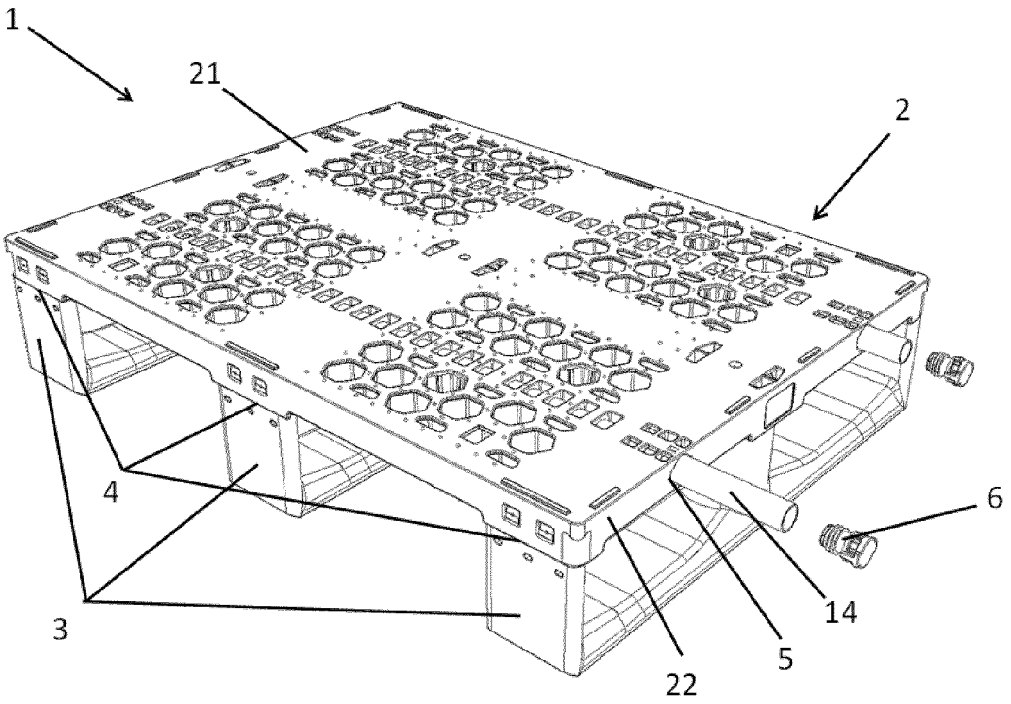

Figure 1

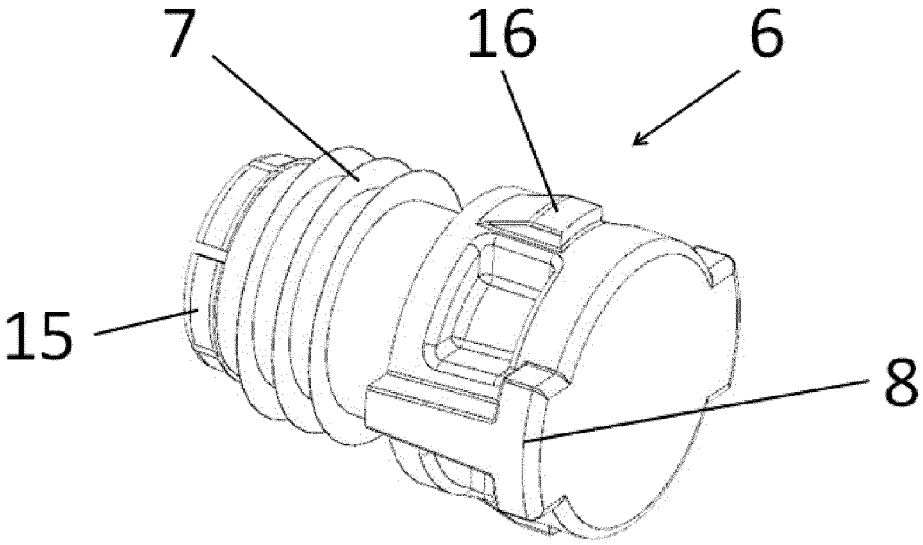

Figure 2

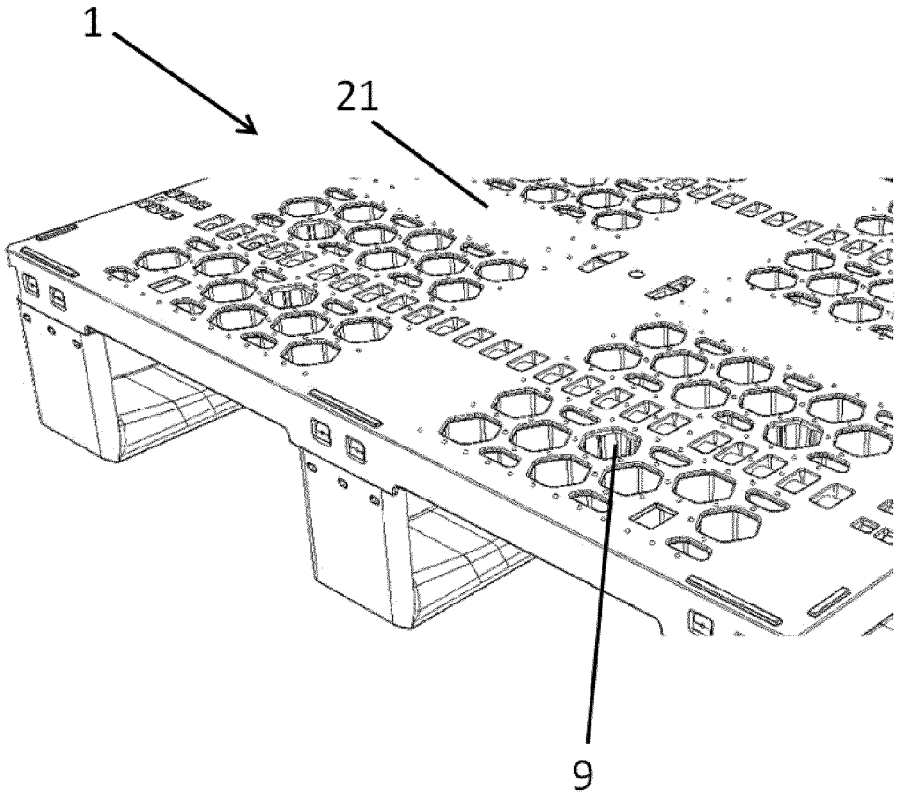

Figure 3

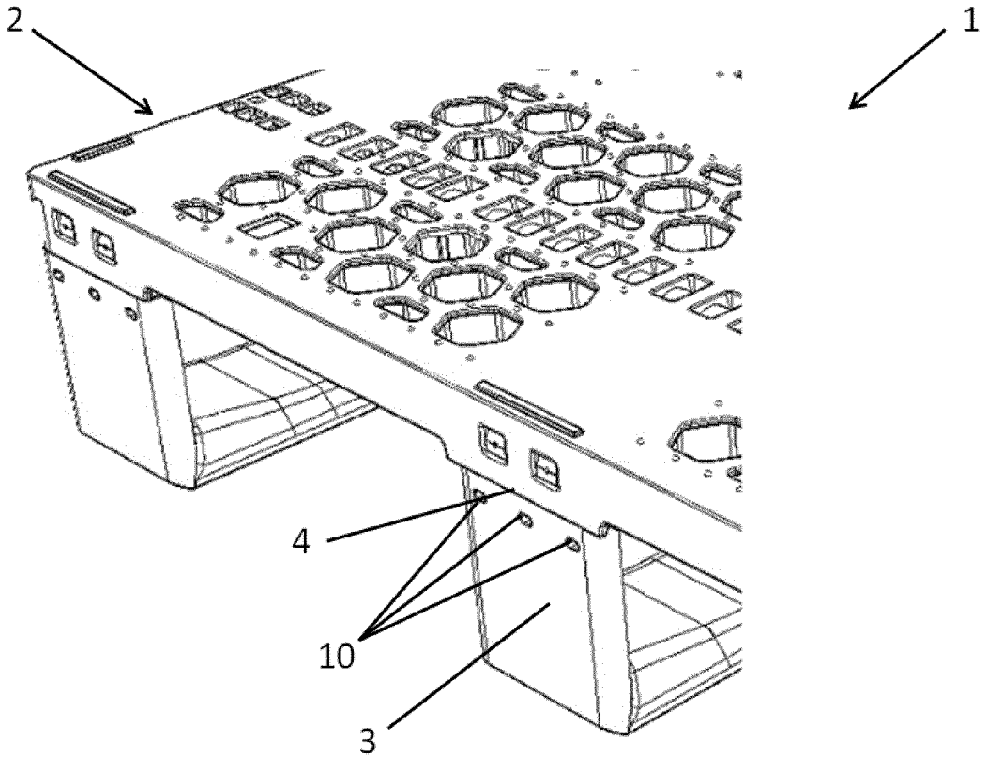

Figure 4

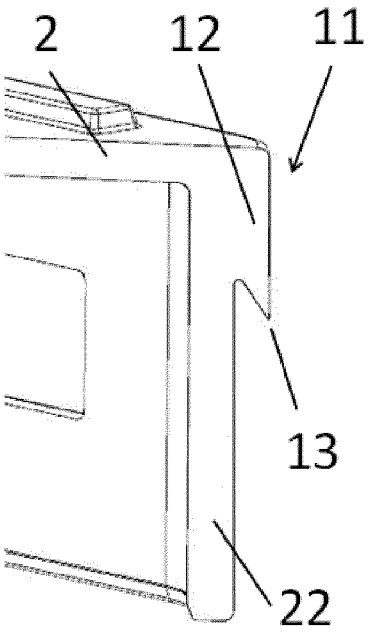

Figure 5a

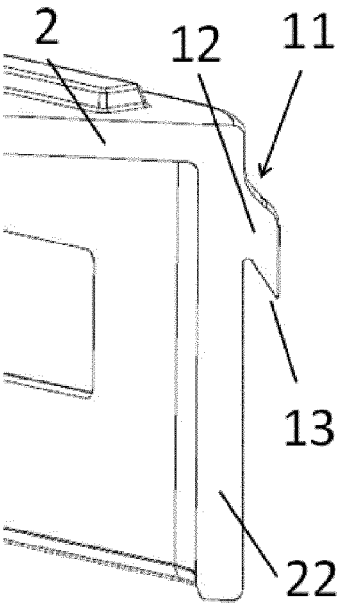

Figure 5b

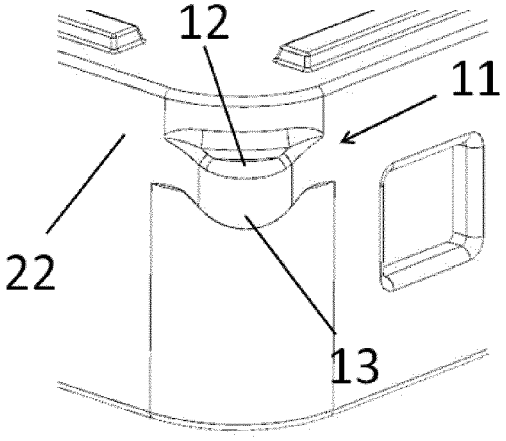

Figure 6a

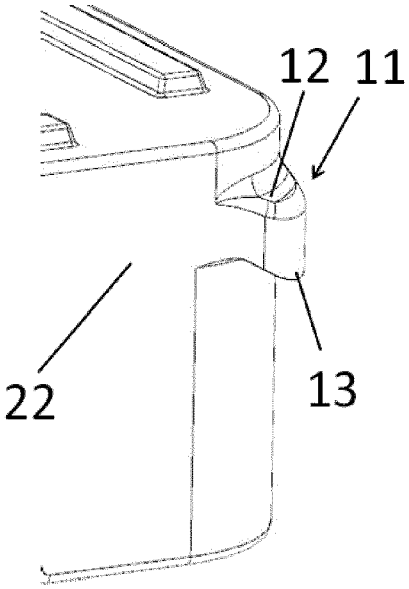

Figure 6b

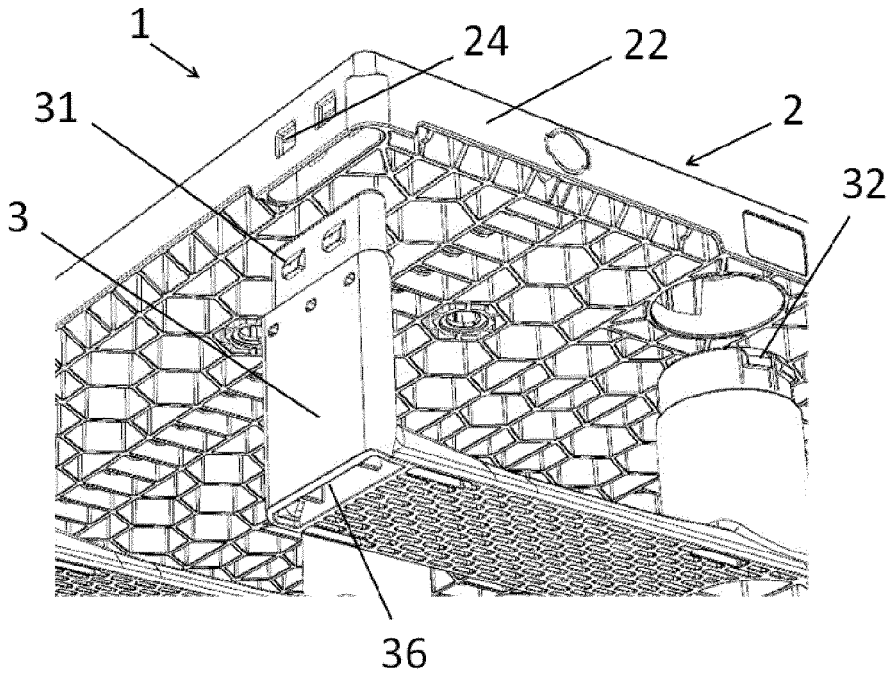

Figure 7a

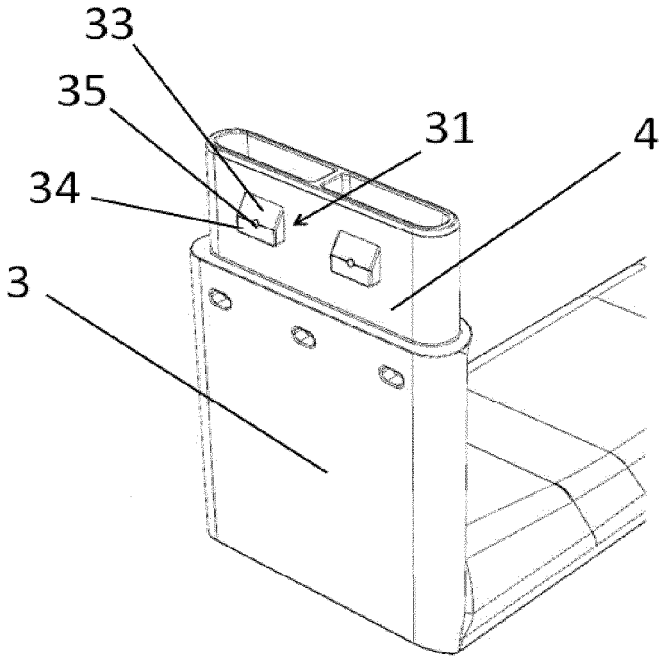

Figure 7b

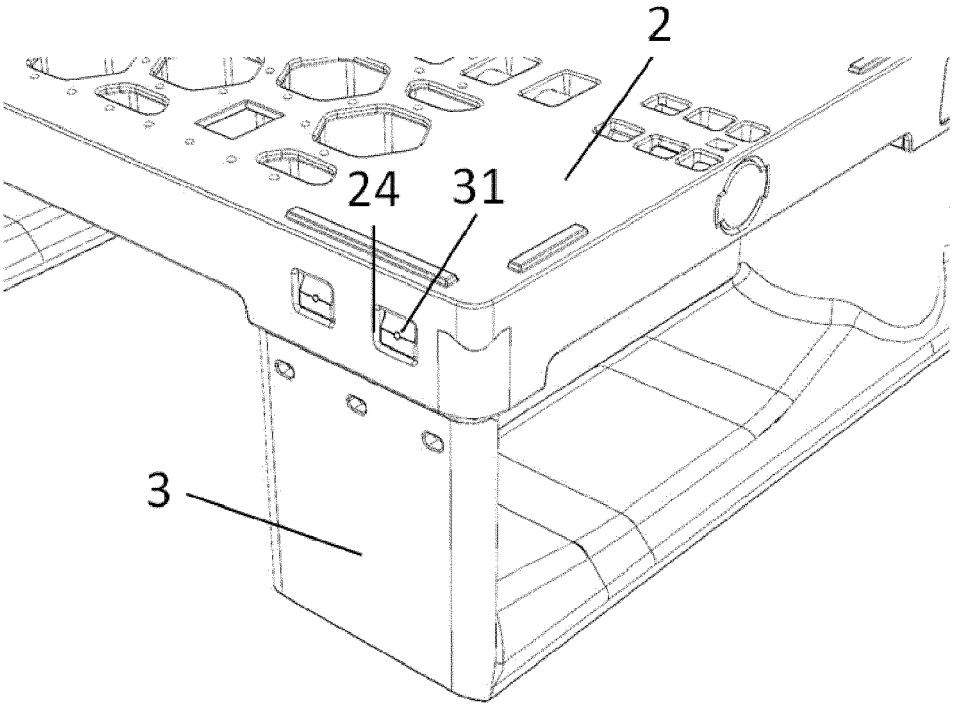

Figure 7c

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 15 38 2022

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 Y	DE 298 05 070 U1 (SOTRALENTZ SA [FR]) 23 July 1998 (1998-07-23) * page 4 - page 6 * * figures 1-7 *	1,2 1,2,6-15	INV. B65D19/32 ADD. B65D19/38
Y,D	ES 1 071 497 U (FERNANDEZ GUTIERREZ ANTON [ES]) 5 March 2010 (2010-03-05) * column 5 - column 8 * * figures 1-10 *	1,2,11, 12	
Y	US 2008/236454 A1 (NAIDU VISHNU [US] ET AL) 2 October 2008 (2008-10-02) * paragraph [0058] - paragraph [0062] * * figures 1-13 *	6,7,13	
Y	DE 83 10 685 U1 (CRAEMER PAUL GMBH & CO [DE]) 28 July 1983 (1983-07-28) * page 6, line 15 - line 22 * * figures 1,3 *	6,7	
Y	WO 01/27404 A1 (XYLECO INC [US]; MEDOFF MARSHALL [US]; LAGACE ARTHUR P [US]; MCFADDEN) 19 April 2001 (2001-04-19) * page 8, line 35 - line 37 * * figures 1-7 *	8	TECHNICAL FIELDS SEARCHED (IPC) B65D
Y	US 2008/066658 A1 (MUIRHEAD SCOTT A [CA]) 20 March 2008 (2008-03-20) * claims 1,2; figures 1-17 *	9,10	
Y	JP 2004 090930 A (DAINIPPON INK & CHEMICALS) 25 March 2004 (2004-03-25) * abstract; figures 1-7 *	9,10	
Y	WO 2008/054219 A1 (EURO COMPOSITE PLASTIC AS [NO]; OSBAKK GEORG [NO]) 8 May 2008 (2008-05-08) * claim 1; figure 1 *	14,15	

-/--

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 July 2015	Fitterer, Johann

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 15 38 2022

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 868 080 A (WYLER CRAIG STEVEN [US] ET AL) 9 February 1999 (1999-02-09) * figures 1-6 * -----	1-15	
A	US 4 735 154 A (HEMERY ANDRE [FR]) 5 April 1988 (1988-04-05) * figure 1 * -----	1-15	
A	DE 83 32 940 U1 (SIBO VERPACKUNGSBEDARF BERND H [DE]) 5 January 1984 (1984-01-05) * figure 4 * -----	3-5	
			TECHNICAL FIELDS SEARCHED (IPC)

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 July 2015	Fitterer, Johann

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 15 38 2022

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.

09-07-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 29805070 U1	23-07-1998	NONE	
ES 1071497 U	05-03-2010	NONE	
US 2008236454 A1	02-10-2008	AU 2008232611 A1	09-10-2008
		AU 2008232684 A1	09-10-2008
		CA 2682536 A1	09-10-2008
		CA 2682546 A1	09-10-2008
		CN 101687568 A	31-03-2010
		CN 101687569 A	31-03-2010
		CN 102295092 A	28-12-2011
		DK 2129586 T3	15-10-2012
		EP 2129586 A1	09-12-2009
		EP 2129587 A1	09-12-2009
		ES 2390799 T3	16-11-2012
		HK 1139906 A1	23-11-2012
		JP 4981166 B2	18-07-2012
		JP 5102348 B2	19-12-2012
		JP 5400211 B2	29-01-2014
		JP 2010523408 A	15-07-2010
		JP 2010523415 A	15-07-2010
		JP 2012250777 A	20-12-2012
		KR 20090122265 A	26-11-2009
		KR 20090122462 A	30-11-2009
		NZ 579864 A	29-06-2012
		NZ 579867 A	31-08-2012
		PT 2129586 E	02-10-2012
		TW 200902385 A	16-01-2009
		TW 200920659 A	16-05-2009
		US 2008236454 A1	02-10-2008
		US 2008236455 A1	02-10-2008
		WO 2008121818 A1	09-10-2008
		WO 2008121823 A1	09-10-2008
		ZA 200907594 A	28-07-2010
		ZA 200907595 A	28-07-2010
DE 8310685 U1	28-07-1983	CH 662998 A5	13-11-1987
		DE 8310685 U1	28-07-1983
		FR 2544287 A1	19-10-1984
WO 0127404 A1	19-04-2001	AU 7879700 A	23-04-2001
		WO 0127404 A1	19-04-2001
US 2008066658 A1	20-03-2008	US 2001029874 A1	18-10-2001
		US 2004168618 A1	02-09-2004
		US 2008066658 A1	20-03-2008

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 15 38 2022

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.

09-07-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 2011017106 A1	27-01-2011
JP 2004090930 A	25-03-2004	NONE	
WO 2008054219 A1	08-05-2008	NONE	
US 5868080 A	09-02-1999	NONE	
US 4735154 A	05-04-1988	CA 1285502 C	02-07-1991
		DE 3664128 D1	03-08-1989
		EP 0226505 A1	24-06-1987
		FR 2590870 A1	05-06-1987
		US 4735154 A	05-04-1988
DE 8332940 U1	05-01-1984	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- ES 1071497 U **[0004]**