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(71) Applicants: • TALLERES CRIADO, S.L. 42330 San Esteban de Gormaz-Soria (ES)	(72) Inventor: CARRO GIL, ADRIAN 42330 SAN ESTEBAN DE GORMAZ-SORIA (ES)
	(74) Representative: Lefevre-Groboillot, David André et al Cabinet Weinstein 176 avenue Charles de Gaulle 92200 Neuilly sur Seine (FR)

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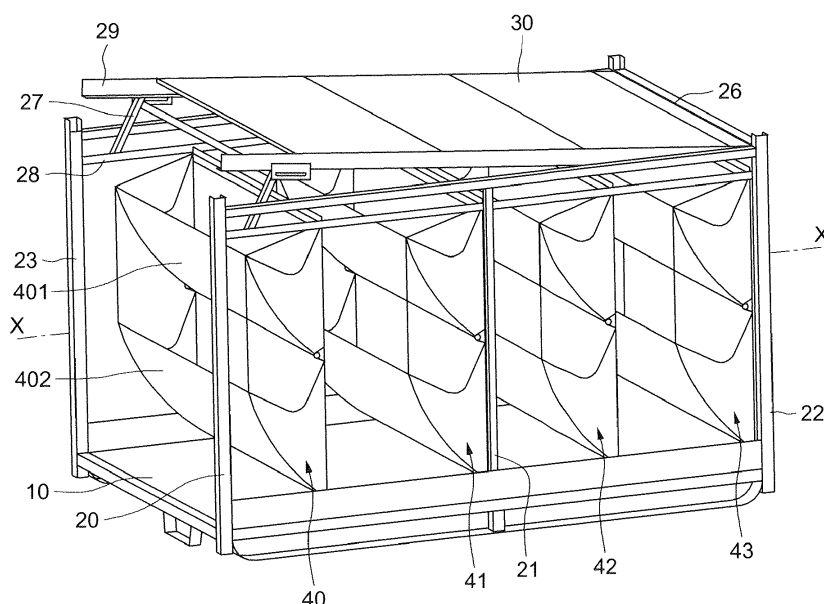
CONTAINER SYSTEM FOR LARGE AUTOMOTIVE APPEARANCE PARTS

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Container system for goods, the container system comprising a casing having a longitudinal horizontal axis (X-X) and two side walls, and a first set of receptacles (40-43, 401, 402, ...), each receptacle comprising a bag in cloth to carry smoothly one individual good placed in it and rigid parts to hold the individual good, the receptacles being distributed at least along the axis (X-X) with the rigid parts transversal to the axis (X-X), characterized

in that the receptacles when loaded, hung vertically and are movable back and forth along the axis (X-X) by way of a slide link system (28) attached to the two side walls and rigid parts of at least some of the receptacles, and wherein the bags can be flattened, and arrange horizontally on a further slide link system (29) in a upper part of the container to let a lower part of the container free of receptacles of the first set of receptacles.

Fig.1



Description

[0001] The present invention concerns a container system for automotive appearance parts, in particular large appearance parts such as instrument panels. Containers according to the invention can however be used for many different goods.

[0002] Instrument panels for cars are large and important parts in cars. The instrument panel can also be called dashboard. Its design is specific to each car model. It is often manufactured in specialized factory of an equipment manufacturer and transported to plants where it is assembled with other parts in the final assembled car.

[0003] The shape of the instrument panel is quite complex, because it incorporates space for the steering wheel, panels with control lights and indicators, vents and glove box. Instrument panels also exist for left hand drive cars and for right hand drive cars. The instrument panel is typically an elongated object, defined on the basis of a panel main direction, that is finally placed horizontally in the front of the passenger and driver compartment of the car.

[0004] Often the instrument panel is molded in plastics and its surface has to be very carefully protected against shocks and scratches, during the all phases of transport, that include the loading and unloading of the panels in a transportation system. This is of primary importance, since the instrument panel is highly visible in the final assembled car.

[0005] Container systems are thus designed to handle the instrument panels from the production plant to the assembly plant. They typically embark 8 or 10 identical individual instrument panels. As many instrument panel designs exist, and because the panels need to be handled gently, containers are most of the time designed on a model basis, to accommodate and protect the precise design of the model and make sure the ergonomics will allow easy handling. This is of course expensive and time-consuming, as a new model of container has to be created each time a new model of instrument panel is produced.

[0006] Those container systems are often based on racks having left metallic posts and right metallic posts, the instrument panels hanging between the left and right posts, being held by molded plastic support members specifically designed for the individual panel model to receive it without damaging it. The racks can for example have two levels and be able to accommodate 4 or 5 individual panels per level. Or, as another example, the racks can have 5 levels and be adapted to accommodate only one panel per level. The racks can extend longitudinally or vertically. They can be placed in a casing having a front door. The casing is useful to protect the racks from water, dust and various pollution, including tree leaves, when the racks are moved outdoors or kept unused in a storage, sometime unsheltered area. The racks can also include drawer mechanisms to enable the user to easily load the individual instrument panels in the container.

[0007] It has been contemplated to design containers with pockets made of cloth or fabric. For instance, US6164440 discloses a conveyor for individual units with loops of strip material that form receiving pockets between rods held in guides. And EP2783913 discloses a loading wagons used in transporting means, in which two levels of pouches are used to store goods.

[0008] Nevertheless, there is still a need for handy and flexible solution for containers, allowing easy loading and unloading of goods, in particular instrument panels, and their cautious transportation between different industrial sites.

[0009] The present invention solves the above-indicated problems, and in particular allows obtaining a container system that can be used with several instrument panel models, that is easy to load and unload for a user in a manufacturing plant, and that can be easily transported from one plant to another.

[0010] This is obtained with a container system for goods, the container system comprising a casing having a longitudinal horizontal axis and two side walls, and a first set of receptacles, each receptacle comprising a bag in cloth to carry smoothly one individual good placed in it and rigid parts to hold the individual good, the receptacles being distributed at least along the axis with the rigid parts transversal to the axis, characterized in that the receptacles when loaded, hung vertically and are movable back and forth along the axis by way of a slide link system attached to the two side walls and rigid parts of at least some of the receptacles, and wherein the bags can be flattened, and arranged horizontally on a further slide link system in an upper part of the container to let a lower part of the container free of receptacles of the first set of receptacles.

[0011] According to optional features,

- the receptacles of said first set are distributed vertically by groups of two or more receptacles including one upper receptacle and one lower receptacle, the slide link system being set between the two side walls and at least the rigid parts of the upper receptacles of each group;
- when empty, the lower bag can be folded on the upper bag to be arranged horizontally in a compact manner on the further slide link system;
- the cloth is a flashspun non-woven fabric;
- the receptacles of the first set, when empty, can be folded away against the back wall of the casing;
- the bags of the receptacles of the first set are reinforced by flexible belts to, when loaded with goods, support the goods, and when empty, not to interfere with folding of the receptacles;
- the receptacles can be removed from the casing;

- the container system further comprises a second set of receptacles with other dimensions, to replace the receptacles of the first set to load goods.

[0012] The invention is described in more detail with reference to the drawing, where :

- figure 1 shows a container system according to the invention ;
- figure 2 shows a close view of a receptacle with an instrument panel placed in the receptacle ;
- figure 3 is a view showing a storage functionality of the container system ;
- figure 4 is a view showing the complete container system.

[0013] On figure 1, a container system according to an embodiment of the invention is shown. It is based on a casing having a shape of a rectangular parallelepiped with two opposite sides having an almost square shape, and a main (longitudinal) axis X-X positioned horizontally. A surface forming a floor 10 defines a base and is linked to six vertical posts 20, 21, 22, 23 ..., defining lateral walls (or side walls). Lateral walls are not shown on the figure, for sake of simplicity and to show the interior arrangement of the container system. The container system also has an opening on its front side equipped with some kind of door or closing element and, at the opposite, a backside wall (both are not shown or not visible on the figure, but having almost square shapes). The floor 10 lies at a small height, of about 5 to 20 cm, above a surface on which the container is placed, on the floor of a manufacturing or supply chain plant, or on the floor of a larger shipping container.

[0014] A surface forming a ceiling 30 is linked to the upper part of the posts 20, 21, 22, 23... The ceiling 30 is articulated on the top of the backside wall through a hinge 26 that allows it to rotate by 10 to 35° and move apart the lateral walls and posts 20 and 23 near the front opening, widening the space to access to the inside of the container. Articulated arms 27 and guiding rails 28 close to the opening allow and control such a movement of the ceiling.

[0015] This modification of the geometry of the container allows a user to have a wider access to the interior of the container system, for the introduction of items in the inside of the container, in a downward movement.

[0016] The guiding rails 28 are horizontal, perpendicular to the posts 20 to 23 and fixed to it. The ceiling has longitudinal frame bars 29 that, when the ceiling is rotated downward to close the container, are horizontal and parallel to the guiding rails 28. When the ceiling is rotated upward to create a wider access to the container, the frame bars 29 are at an oblique angle to the guiding rails 28, the articulated arms 27 being positioned as an angle

brace or spacer between each frame bar 29 and the corresponding guiding rail 28. The end of the articulated arm 27 in contact with the associated guiding rail 28 is guided by said rail during the movement of rising up or pulling down the ceiling. The other end of the articulated arm 27 is fixed to the associated frame bar 29.

[0017] Furthermore, the frame bars 29 are by themselves designed as guiding rails, as discussed below.

[0018] The figure 1 further shows four groups 40, 41, 42 and 43 of two bags positioned in the container, one behind the other from the front opening to the backside wall. Each group consists of an upper bag and a lower bag. The upper and lower bags of group 40 are referenced 401 and 402. Each bag has a wide opening orientated upward and slightly in the direction of the opening of the container.

[0019] As can be seen either on figure 1 or on figure 2, each bag is made essentially of a front wall of cloth 50 and of a back wall of cloth 51, both being rectangular shaped and joining each other in an inferior junction, based for example on sewing or stitching. Both walls of cloth of each bag extends from the proximity of one side wall of the container to the proximity of the other side wall, perpendicular to it. At the proximity of the container walls the bags are laterally interrupted and closed by lateral walls of cloth placed vertically and joining the back wall of cloth and the front wall of cloth in two junctions defining a general shape of a V, based for example on sewing or stitching.

[0020] The upper limits of both walls of cloth are rigidified by the introduction, in the cloth, of rigid bars 501, reaching both lateral extremities of the walls of cloth. The common lower limit of both walls of cloth is also rigidified by a similar rigid bar 501, positioned similarly and having the same length.

[0021] The lower limit of the walls of cloth of the upper bag joins the upper limit of the back wall of cloth of the lower bag, and only one rigid bar or no rigid bar at all may be used there in various embodiments, to rigidify the lower part of the upper bag and the upper part of the back wall of cloth of the lower bag, should rigidification be needed at this line of separation 502.

[0022] In the context of loading the container with goods such as instrument panels, the rigid bar 501 of the back wall of cloth of each upper bag is introduced at its both ends in the respective horizontal guiding rails 28 fixed on the upper parts of the two lateral walls of the container (see figure 1). The two bags of each of group of two bags hang from this bar and rails, one under the other. The rigid bar 501 has rollers at its both ends that are designed to be inserted in the corresponding guiding rails 28 and allow it to be moved easily from the depth of the container to the entrance and *vice versa* even if the bags are heavily loaded.

[0023] Flexible belts 60 are placed on both sides of each group of two bags, from the extremity of the upper rigid bar of the back wall of cloth of the upper bag, to the extremity of the upper rigid bar of the front wall of cloth

of the upper bag, and finally to the extremity of the upper rigid bar of the front wall of cloth of the lower bag.

[0024] The bags define a set of receptacles distributed by groups of two along the axis X-X. These receptacles are movable back and forth along the axis X-X by way of the rails 28 forming a slide link system attached to the two side walls, with the help of the rigid bars of the upper bags, forming rigid parts of upper bags, that are distributed along the axis X-X.

[0025] Figure 2 shows an instrument panel 200 positioned in one of the bag. The bag used in this figure is an upper bag. The instrument panel is easily introduced in the opening of the bag, and lies on the interior side of the front wall of cloth 50 and on the upper rigid bar of the front wall of cloth. The instrument panel 200 has a generally concave shape, the concavity being placed in contact with the rigid bar 501 of the front wall of cloth 50, to allow support and stabilization of the panel. The exterior of the instrument panel is on its convex side and does not come into contact with the rigid bar. The cloth of the front and back walls of cloth come into contact with various surfaces of the instrument panel, and because of their smoothness, support and maintain it firmly without any risk of damaging its surface and its visual aspect. Finally, the bag in cloth allows to carry smoothly the panel 200 and the rigid parts allow to hold firmly said panel. The cloth is a flashspun non-woven fabric, for example based on Tyvek (registered Trademark). It is advantageous because it is a non-marking material that allows to avoid any deterioration of the surface of the appearance parts transported in the container system.

[0026] As is visible on figure 2, the movement of introduction of the instrument panel in the upper bag 401 is made easy by the raising of the ceiling 30 apart from the lateral walls and posts 20 and 23 near the door of the container. This offers a wider access to the interior of the upper bag, for the introduction of items, in particular an instrument panel, in a downward movement.

[0027] The introduction of items, again in particular an instrument panel, in the lower bag 402, is facilitated by the fact that the opening of the lower bag is of easy access for a human operator thanks to its height above the floor 10 (see figure 1) that does not require an human operator to raise its arms too high (causing unwanted and repeated physical effort), and also because some space is empty just over the opening of the lower bag, as the front wall of cloth of the upper bag is positioned slanting downwardly to the back of the container.

[0028] Figure 3 shows a functionality of the container system that can be used when no instrument panel is stored in it.

[0029] The lower bag 402 is closed by pressing its front wall of cloth against its back wall of cloth. The same is done with the upper bag 401. Then the lower bag is folded on the upper bag 401, using the limit between the back wall of the lower bag and the upper bag (line of separation 502) as a rotation axis and folding line. This leads to a retracted and flat bag assembly.

[0030] Then, the extremities of the upper rigid bar 501 of the upper bag are taken out of the guiding rails 28 and put on the frame bars 29. If the articulated arms 27 are designed as guiding rails, the movement can be done through these intermediate guiding rails. If the articulated arms 27 are not designed as guiding rails, then the movement can be done with no guiding of the upper rigid bars 501. The extremities of the upper rigid bar 501 being equipped with rollers, they slide easily on the frame bars 29.

[0031] The extremities of the upper bar 501 of the lower bag and/or the extremities of a bar present at the line of separation 502 are also put, in a further movement, on the frame bars 29. These extremities can be, in some embodiments, equipped with rollers, and thus slide easily on the frame bars 29.

[0032] The retracted bag assembly is then pushed in the direction of the back of a container on the frame bars 29 acting as guiding rails.

[0033] This is done for each of the groups of bags, one after the other. This allows storing the groups of bags in a small volume close to the ceiling 30 of the container.

[0034] Generally speaking, the flexible belts 60, when the bags are loaded with instrument panels, support the instrument panels, and when the bags are empty, do not interfere with the folding of the receptacles.

[0035] Otherwise, the receptacles, when empty, can be also be pushed away against the back wall of the casing.

[0036] Figure 4 shows the complete container system with its lateral walls 90 (or side walls) and with its front door 80. The front door 80 can be made of a transparent material, allowing the bags being seen even when the container is closed. The material of the front door can be a soft cloth with soft handles, the combination of which allowing an easy manipulation of the door. When the container system is full and needs to be closed, the ceiling 30 is pivoted and brought horizontal against the posts of the door 80, before the front door panel is placed to close the container.

[0037] As can also be seen on the figure, the ceiling 30 and the floor 10 of the container are made of several rectangular panels that can be separated from each other when the container needs to be folded and temporarily stored. Side walls 90 are also visible on the figure.

[0038] The receptacles shown on the figures are those of a first set of receptacles. The container system can also be used with a second set of receptacles of other dimensions, to replace the receptacles of the first set. This allows to load instrument panels of other dimensions than those adapted to the receptacles of the first set and shown on figure 2.

[0039] Automotive instrument panels can be loaded into a container system according to the above description, using the following steps : until the casing is full, the operator sets a receptacle open on the slide link system close to the front opening, loads instrument panels in the receptacle, for example one in the upper bag and one in

the lower bag, and then pushes the receptacle, on the slide link system in the direction of the inside of the container. He then has enough space to set another receptacle open on the slide link system close to the front opening. This other receptacle is taken from a set of receptacles kept outside of the container, and easily accessible for the human operator. Once the container is full, the ceiling is pivoted against the posts and the door is closed.

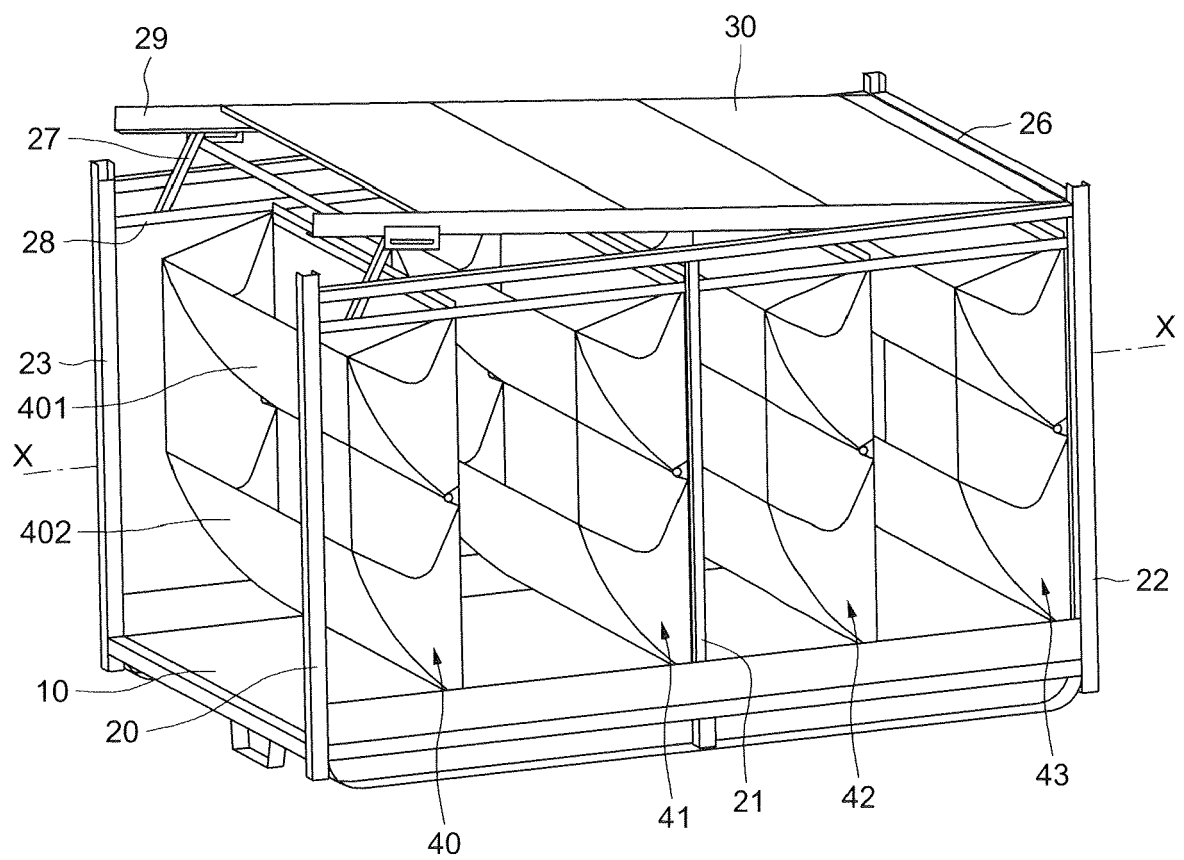
Claims

1. Container system for goods, the container system comprising a casing having a longitudinal horizontal axis (X-X) and two side walls, and a first set of receptacles (40-43, 401, 402, ...), each receptacle comprising a bag in cloth to carry smoothly one individual good placed in it and rigid parts (501) to hold the individual good, the receptacles being distributed at least along the axis (X-X) with the rigid parts (501) transversal to the axis (X-X), **characterized in that** the receptacles when loaded, hung vertically and are movable back and forth along the axis (X-X) by way of a slide link system (28) attached to the two side walls and rigid parts of at least some of the receptacles, and wherein the bags can be flatten, and arrange horizontally on a further slide link system (29) in a upper part of the container to let a lower part of the container free of receptacles of the first set of receptacles.
2. Container system for goods according to claim 1, wherein the receptacles of said first set are distributed vertically by groups of two or more receptacles including one upper receptacle (401) and one lower receptacle (402), the slide link system (28) being set between the two side walls and at least the rigid parts (51) of the upper receptacles (401) of each group.
3. Container system for goods according to claim 2, wherein when empty, the lower bag can be folded on the upper bag to be arrange horizontally in a compact manner on the further slide link system (29).
4. Container system for goods according to any of claims 1 to 3, wherein the cloth is a flashspun non-woven fabric.
5. Container system for goods according to any of claims 1 to 4, wherein the receptacles of the first set, when empty, can be folded away against the back wall of the casing.
6. Container system for goods according to any of claims 1 to 5, wherein the bags of the receptacles of the first set are reinforced by flexible belts (60) to, when loaded with goods, support the goods, and when empty, not to interfere with folding of the re-

ceptacles.

7. Container system for goods according to any of claims 1 to 6, wherein the receptacles can be removed from the casing.
8. Container system for goods according to any of claims 1 to 7, wherein the container system further comprises a second set of receptacles with other dimensions, to replace the receptacles of the first set to load goods of other dimensions than those adapted to the receptacles of the first set in the casing.

Fig. 1



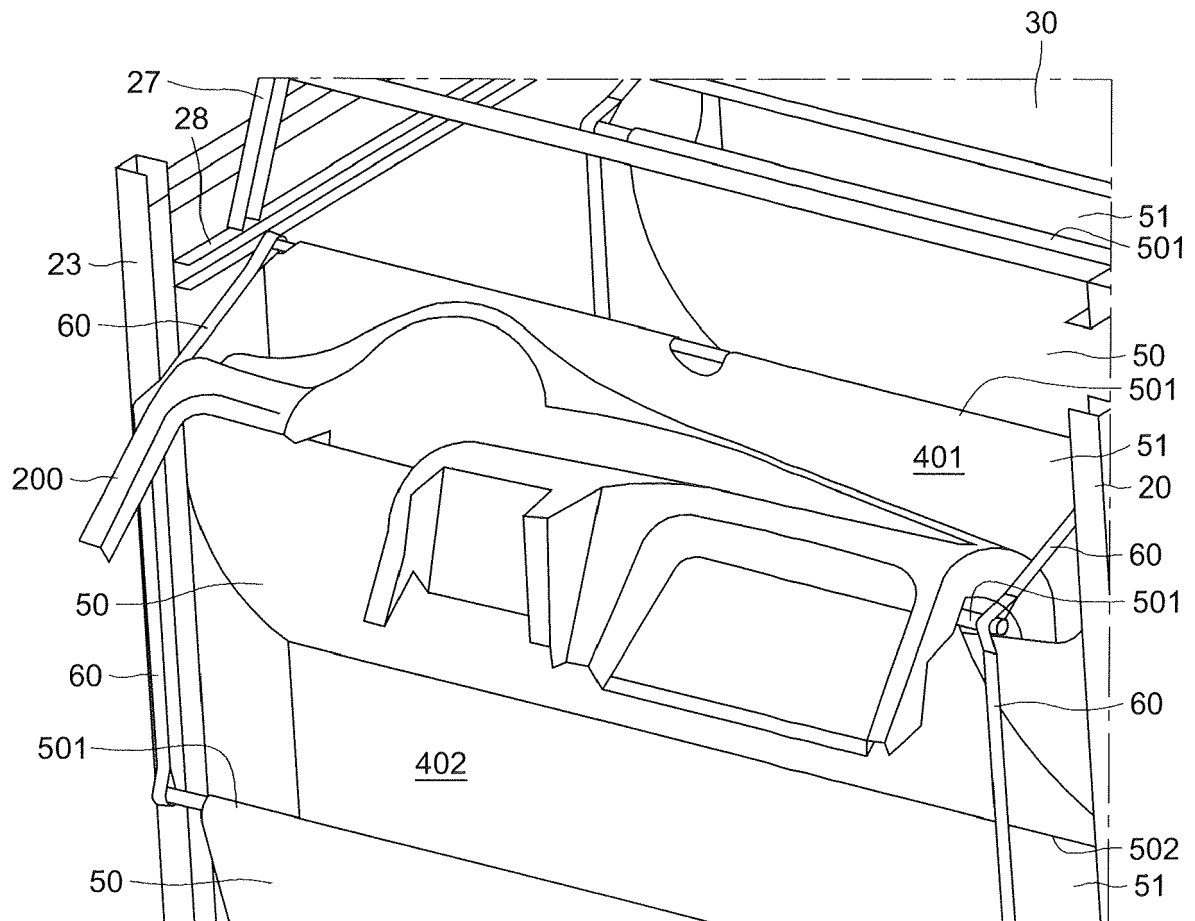
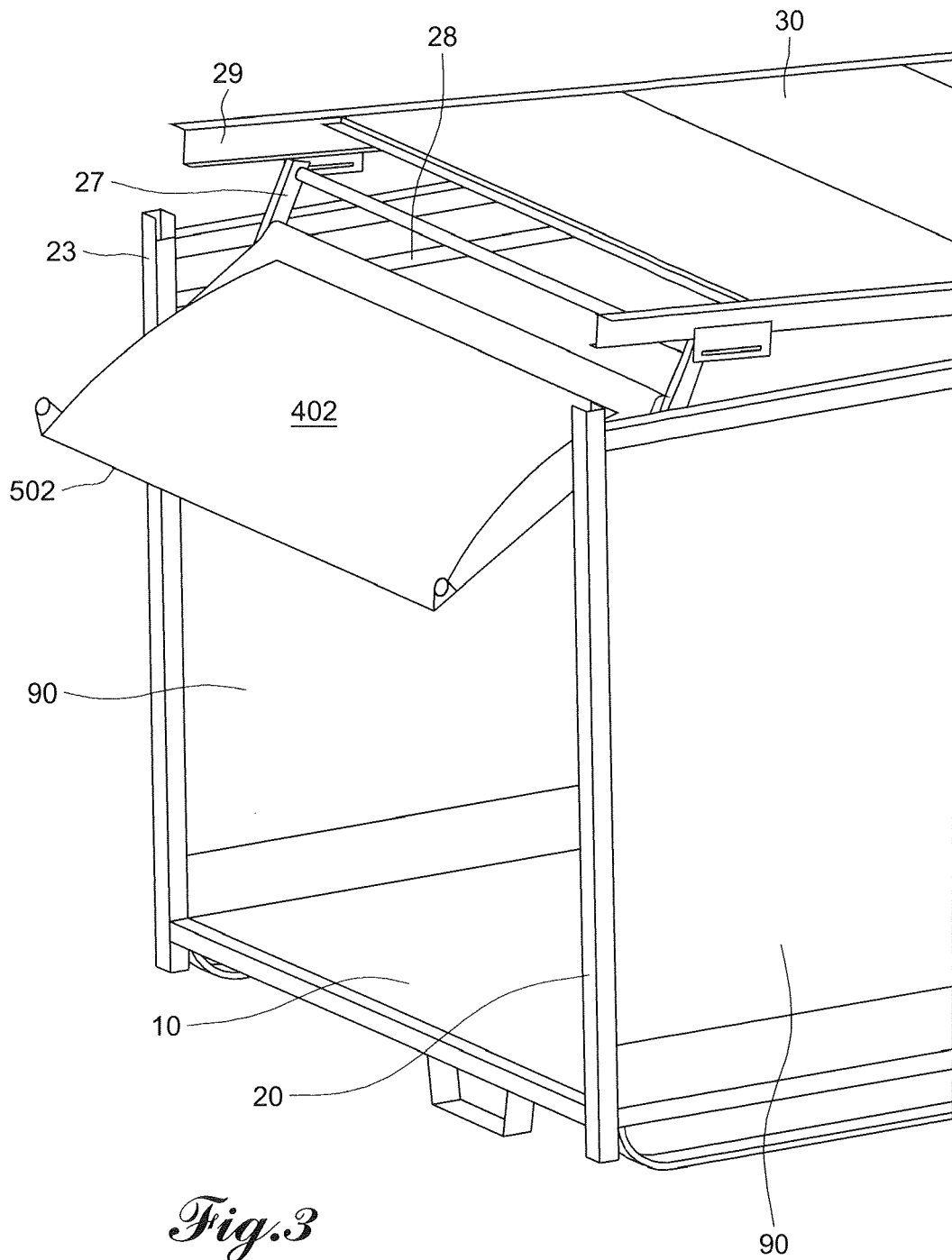


Fig. 2



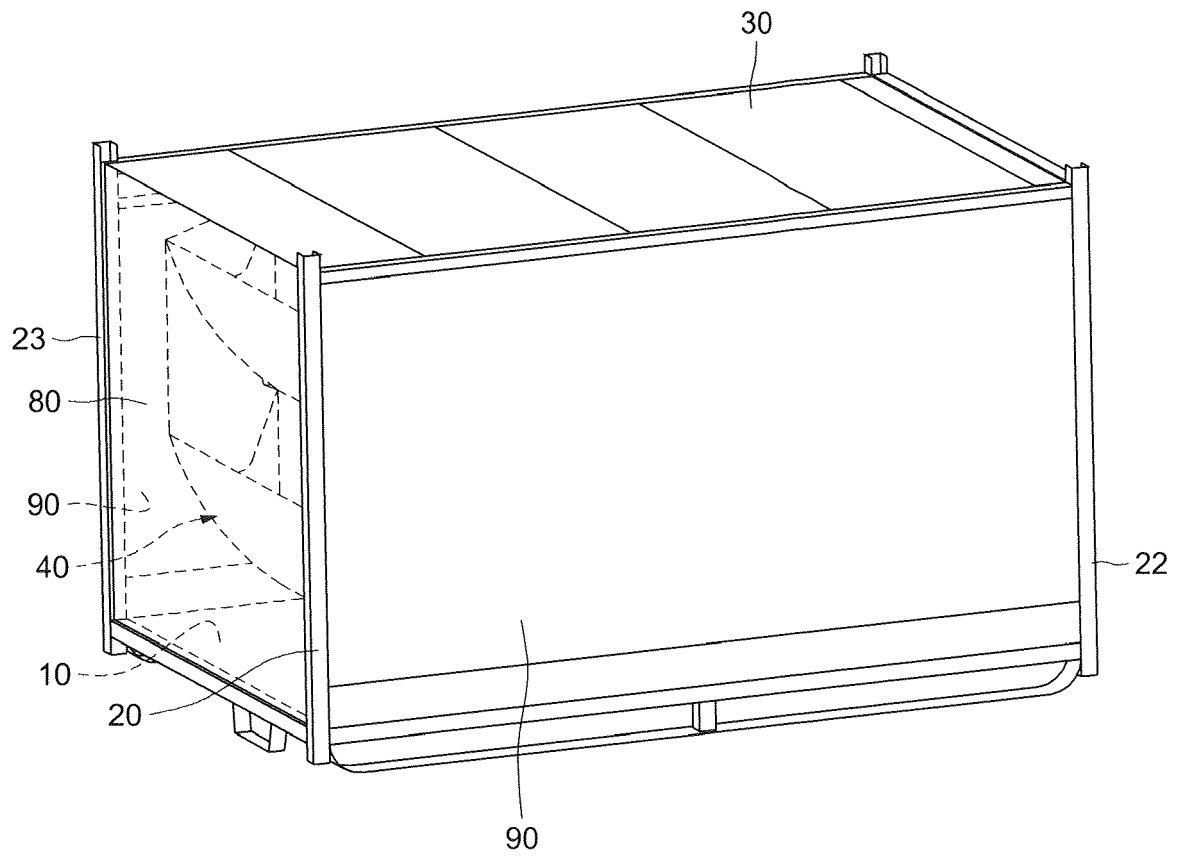


Fig.4



EUROPEAN SEARCH REPORT

 Application Number
 EP 17 38 2044

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EPO FORM 1503 03.82 (P04C01)

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 June 2017	Examiner Lämmel, Gunnar
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
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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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