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(54) **Packaging device**

(57) The invention relates to a package device, comprising: a first container for containing a first and a second good, a second container for collecting the first good at least partly, the second container being attached to the first container (2), a separation means which is provided between the first container and the second container, wherein in a sealed condition the separation means pre-

vents an outflow of the first and second good from the first container and an inflow of the first and the second good into the second container, and an opening means which unseals the separation means at least partly when being actuated, wherein the first good at least partly leaves the first container and enters the second container through the unsealed separation means.

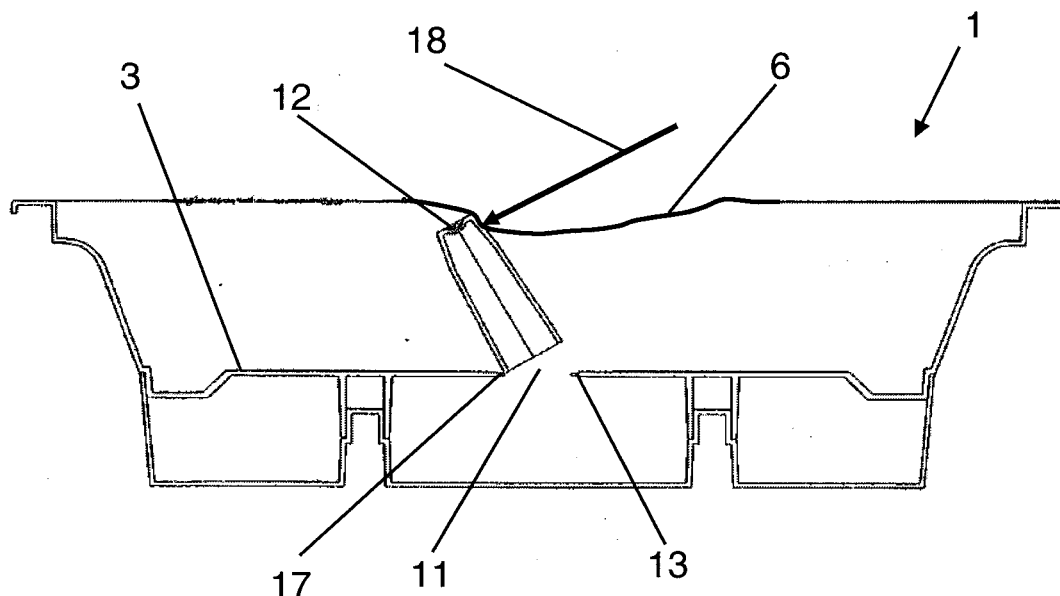


Fig. 3

Description

[0001] The present invention relates to a functional package device.

[0002] Functional package devices are widely used in food, technical, pharmaceutical and medical industry. The present invention is exemplary explained for the use in food industry but is not limited to that area.

[0003] In food industry package devices are used to keep goods fresh, to keep the goods under a protective atmosphere and/or to prevent the goods from the influence of oxygen or UV-radiation, for example. Further, package devices are used that consist of several partitions which contain several goods which are mixed before consumption, for example a solid good like a drink powder and a liquid good like water. The goods are divided from each others by plastic films or aluminum foils which are broken or removed right before consumption.

[0004] Very often a solid and a liquid good are stored in one space of the package for flavor or conservation reasons but only one of the goods is dedicated for consumption, for example sardines or vegetables in oil. Before consumption the different goods have to be separated. In the example of oil sardines the sardines have to be taken out of the package after opening it either by fingers or cutlery. This results, at least, in inconvenient oily fingers and the oil may also trickle on the floor or the table.

[0005] It is an object of the present invention to provide a package device which enables a separation of at least two goods before opening the package device.

[0006] This is achieved by:

A package device, comprising: a first container for containing a first and a second good, a second container for collecting the first good at least partly, the second container being attached to the first container (2), a separation means which is provided between the first container and the second container, wherein in a sealed condition the separation means prevents an outflow of the first and second good from the first container and an inflow of the first and the second good into the second container, and an opening means which unseals the separation means at least partly when being actuated, wherein the first good at least partly leaves the first container and enters the second container through the unsealed separation means.

[0007] The first container serves as a storage for the first and the second good. The second container is attached to the first container. The second container is able to collect the first good. A separation means between the first and the second container prevents an outflow of the first and second good from the first container and an inflow of the first and second goods into the second container in a sealed status of the separation means. An opening means is provided for unsealing the separation

means at least in a portion, thus enabling a flow of at least a part of the first good from the first container into the second container.

[0008] The basic idea of the invention is to a package device which enables a separation of at least two different goods by means of a separation means which can at least be partly unsealed.

[0009] Advantageous embodiments and configurations of the invention result from the dependent claims and from the description in synopsis with the figures of the drawing.

[0010] In an advantageous embodiment of the invention the separation means comprises a bottom of the first container. This makes it possible that the bottom of the first container is used as the separation means, hence the build-up of the package device is simplified in advantageous manner.

[0011] In another advantageous embodiment of the invention the bottom of the first container comprises at least one sealable bore. This makes it possible to separate the first good from the second good in a very comfortable and easy way when the bore is unsealed.

[0012] In a further advantageous embodiment of the invention the opening means comprises at least one removable or tiltable first protrusion which extends from a first side of the bottom of the first container and seals the at least one bore at least partially. The first protrusion may be part of the first container, an extra opening means for unsealing the separation means can be saved, thus reducing the parts and the assembly of the package device.

[0013] In one advantageous configuration of the invention the first container comprises at least one sidewall which extends from the first side of the bottom, wherein a sealing film is provided which spans over the at least one sidewall of the first container and prevents the first and the second good from leaking out of the first container when the at least one bore is sealed. The sealing film makes it possible to keep the goods in the package device and may protect the goods from detrimental environmental influences like oxygen, for example.

[0014] According to one embodiment of the invention the sealing film is flexible. Therefore, the film is deformable and thus advantageously resistant against impacts.

[0015] In another advantageous configuration of the invention the at least one first protrusion is removable or tiltable from the at least one bore through the film. Since the film is flexible it might be stretched in such a manner that a force can be applied on the first protrusion, thus removing the first protrusion from its initial sealing position on the bore.

[0016] In an advantageous embodiment of the invention the at least one protrusion is connected to the bottom of the first container by predetermined breaking points. This makes it possible to remove or tilt the first protrusion with lower forces and reduces the risk that the intersection area of the bottom of the first container and the base of the first protrusion breaks in an undesirable manner.

[0017] In a further advantageous embodiment of the invention the first container comprises first ribs and/or second protrusions on the bottom of the first container. These first ribs and second protrusions increase the stiffness of the container thus enabling the use of thinner container walls and resulting in a material saving which reduces the costs of the package device.

[0018] According to another advantageous configuration of the invention the second container comprises second ribs (and/or third protrusions on a bottom of the second container. These second ribs and third protrusions increase the stiffness of the container thus enabling the use of thinner container walls and resulting in a material saving which reduces the costs of the package device.

[0019] In a preferred embodiment of the invention the first container and the second container are attached to each other by a snap-in connection. This enables a very convenient and easy assembling of the package device thus reducing the costs for producing the package device.

[0020] According to another preferred embodiment the first container and/or the second container comprise several separated partitions. This makes it possible to store more than a first and a second good thus increasing the flexibility and applicableness of the package device.

[0021] In an advantageous embodiment of the invention the bore comprises a filter, which prevents the second good from entering the second container. By using a filter, parts of the second good that would normally pass through the bore might be withheld by the filter thus resulting in a improved separation of the first and the second good.

[0022] In an advantageous configuration of the invention the first container is detachable from the second container. This makes it possible to separate the containers from each other after use. Thus, a better recyclability of the package device is provided.

[0023] In a preferred configuration of the invention the first good is a liquid good and the second good is a solid good or a good that is less liquid than the first good. This makes it possible to store two different goods in the package device that can easily be separated by the package device.

[0024] The configurations and embodiments of the invention described above might be combined - if nothing else is explicated - complimentary with each other.

[0025] Exemplary embodiments of the invention will be explained in more detail with reference to the drawing, in which:

Fig. 1 shows a schematic three-dimensional view of the package device of the invention;

Fig. 2 shows a schematic cross-sectional view of the package device of the invention;

Fig. 3 shows a another schematic cross-sectional view of the package device of the invention.

[0026] In the figures of the drawing, same structural elements have the same reference numerals if nothing else is explicated.

[0027] Fig. 1 shows a tub shaped first container 2 with a bottom 3 and four sidewalls 4 of which only one is provided with a reference sign. The four sidewalls 4 extend from a first side of the bottom 3 and expire in an circumferential upper edge 5 of the first container 2, respectively. It is also possible that the first container 2 comprises only one, two or three sidewalls or even more than four sidewalls, depending on the application of the package device 1. For example, a first container 2 with only one sidewall results in a bowl-shaped container 2. First and second goods might be placed in the first container 2, for example three different solid goods, one gel-like good and one liquid good or the same. It is further possible to store several goods which are of the same type but different sizes, for example maize kernel of different sizes that have to be separated by size. The first container 2 comprises a first protrusion 12 which seals a bore in the bottom 3 of the first container 2. The bore is not shown in Fig. 1. A second container 7 is attached to the bottom 3 of the first container 2. The second container 7 comprises a bottom and four sidewalls 9 of which only one is provided with a reference sign. It is possible that the second container 7 comprises just one, two, three or even more than four sidewalls 9. The material of the first container 2 and the second container 7 is preferably a plastic material. Preferably the same material is used for both containers 2, 7 whereby the recyclability of the package device 1 after use is increased. It is also possible to use different materials for both containers 2, 7 thus enabling specific features like transparency for the second container 7 and opaqueness for the first container 2 or vice versa.

[0028] Fig. 2 shows a schematic sectional view of the package device 1. The second container 7 is attached to the first container 2 and forms a cavity 10. The cavity 10 and/or at least one of the containers 2, 7 might be pressurized and/or filled with a protective gas or evacuated. According to a preferred embodiment, the second container 7 is bonded to the first container 2 by means of second ribs 16 protruding from the bottom 8 of the second container 7 and first ribs 14 and second protrusions 15 protruding from the bottom 3 of the first container. These protrusions and ribs 14, 15, 16 also increase the stiffness of the containers 2, 7, respectively. The protrusions and ribs 14, 15, 16 are preferably formed as circumferential protrusions and ribs 14, 15, 16 or as longitudinal protrusions and ribs 14, 15, 16, respectively, depending on the shape of the first and the second container 2, 7. Nevertheless, these protrusions and ribs 14, 15, 16 are not imperative to connect the containers 2, 7. It is also possible to connect the second container 7 to the first container 2 only by a circumferential seam between the sidewalls 9 of the second container 7 and the bottom of the first container 3.

[0029] Preferably the second container 7 is attached to the first container 2 by a detachable snap-in connection which enables a comfortable and easy assembling of the package device 1. Further, it is also possible to connect the second container 7 to the first container 2 by an inseparable connection, such as a welded connection or the same.

[0030] The first protrusion 12 is attached to the bottom 3 of the first container 2 in a removable or tiltable manner. In its initial position the first protrusion 12 seals a bore 11 through which at least the first good is flowable into the second container 7 when the bore 11 is unsealed. Fig. 2 shows the first protrusion 12 in its initial position thus sealing the bore 11. The bore 11 preferably has a round cross-section, but depending on the application of the package device 1 it is possible to provide the bore 11 with any advantageous geometric shape like a rectangular or slit-like shape, for example. To improve the separation of the first and the second good the bore 11 can be provided with a filter or the cross-section of the bore 11 might be dimensioned such that only the first good but not the second good can pass the bore 11. It is possible, that the bottom 3 of the first container 2 comprises a variety of bores 11 and first protrusions 12. The bores 11 might be all of the same diameter or different diameters depending on the goods that have to be separated. Depending on the number of bores 11 a variety of goods might then be separated by the bores 11. The first protrusion 12 and the first container 2 preferably consist of one part. Preferably of one molded plastic part.

[0031] To ease the tilting or removal of the first protrusion 12 from the bore 11, the base of the first protrusion 12 comprises for example predetermined breaking points 13. The predetermined breaking points 13 enable an easier and more convenient tilting or removal of the first protrusion 12. The predetermined breaking points 13 are preferably provided as a breaking line which circumferentially encompasses the base of the first protrusion 12. The breaking points 13 prevent a cracking of the bottom 3 of the first container 2 in the intersection area of the bottom 3 of the first container 2 and the base of the first protrusion 12 by providing a line of reduced material thickness.

[0032] Fig. 2 illustrates that a sealing film 6 is spanned over the upper edge 5 of the first container. Preferably the film 6 is air- and liquid-tight thus preventing a leaking out of the goods from the package device 1 and hindering the entrance of ambient atmosphere into the package device 1. The film 6 comprises a flexible material, for example a plastic material such as Polyethylene. Due to the flexibility of the material of the film 6 it is possible to apply a force on the first protrusion 12 without destroying or removing the film 6. Thus, the bore 11 can be unsealed through the flexible film 6 without a removal of the film 6. The film 6 might also be composed of an inelastic material like a metallic material, for example an aluminum foil. In this case the film 6 has to be removed before the bore 11 is unsealed or a folding in the film 6 has to be provided

which can be unfolded when a force is applied to the film 6 and the first protrusion 12.

[0033] Fig. 3 shows the package device 1 with the protrusion 12 in a tilted position, thus uncovering the bore 11 and enabling a flow of a good from the first container 2 into the second container 7. A force 18 is applied to the first protrusion 12 through the film 6. Preferably the force 18 is applied manually. Fig. 3 depicts that the film 6 is protruded in direction of the bottom 3 of the first container by the force 18 but the film 6 is not destroyed by the force 18. After the separation of the goods is completed the film 6 is removed and the goods can be taken out of the second container 2. Preferably, the protrusion 12 is still connected to the bottom 3 of the first container 2 after unsealing the bore 11 by at least one retaining means, at least one remaining predetermined breaking point 17 or at least a portion of a breaking line which is provided at the base of the first protrusion 12. Thereby an accidental removal of the first protrusion 12 from the package device 1 when removing the goods from the first container 2 is prevented.

[0034] Notwithstanding the invention has been described by hands of preferred embodiments completely it is not restricted to this embodiments but modifiable in various ways. Particularly, features of the above described embodiments are combinable with each other in any desired way.

[0035] In a preferred modification of the invention the first protrusion 12 is connected to the bottom 3 of the first container by means of hinges. Hence, the bore 11 can be sealed again by swiveling back the first protrusion 12 in its initial position on the bore 11. The sealing of the bore 11 is then accomplished by a rubber sealing which is provided at the base of the first protrusion 12, for example.

[0036] In another preferred modification of the invention the first container 2 and/or the second container 7 are divided in several compartments, wherein the compartments of the first container 2 are each provided with at least one bore 11 and at least one first protrusion 12.

[0037] In a further preferred modification of the invention the first protrusion 12 is pressed by the force 18 in a direction perpendicular to the bottom 3 of the first container 2. Then all the predetermined breaking points 13 are broken nearly at the same time and the first protrusion is pressed into the cavity 10 and prevented from falling out of the package device after removing the film 6.

[0038] In a further advantageous modification of the invention the first container and the second container and/or first container and the first protrusion are composed of different materials. This makes it possible to use a nontransparent material for the first container and a transparent material for the second container, for example. Then, the nontransparent material of the first container can prevent the goods from UV-radiation and the transparent material of the second container makes it possible to observe whether the second good flows into the second container or not. Further it is possible to use

a very stiff material for the first protrusion and a flexible material for the first container, thus enabling an easier breaking of the predetermined breaking points at the base of the first protrusion.

[0039] The above mentioned materials, dimensions and numerical data are only exemplary and serve to describe the embodiments and improvements of the invention and have no limiting character.

List of reference signs

[0040]

- | | | |
|----|------------------------------|----|
| 1 | Package device | 5 |
| 2 | First container | 10 |
| 3 | Bottom | |
| 4 | Sidewall | 15 |
| 5 | Circumferential upper edge | 20 |
| 6 | Sealing film | 25 |
| 7 | Second container | |
| 8 | Bottom | 30 |
| 9 | Sidewall | 35 |
| 10 | Cavity | |
| 11 | Bore | 40 |
| 12 | First protrusion | 45 |
| 13 | Predetermined breaking point | 50 |
| 14 | First rib | |
| 15 | Second protrusion | |
| 16 | Second rib | |
| 17 | Predetermined breaking point | |
| 18 | Force | |

Claims

1. Package device (1), comprising:

a first container (2) for containing a first and a second good;
a second container (7) for collecting the first good at least partly, the second container (7)

being attached to the first container (2);
a separation means (3) which is provided between the first container (2) and the second container (7), wherein in a sealed condition the separation means (3) prevents an outflow of the first and second good from the first container (2) and an inflow of the first and the second good into the second container (7); and
an opening means (12) which when being actuated unseals the separation means (3) at least partly, such that the first good at least partly leaves the first container (2) and enters the second container (7) through the unsealed separation means (3).

2. Package device according to claim 1, **characterized in that** the separation means (3) comprises a bottom (3) of the first container (2).

3. Package device according to claim 2, **characterized in that** the bottom (3) of the first container (2) comprises at least one sealable bore (11).

4. Package device according to claim 3, **characterized in that** the opening means (12) comprises at least one removable or tiltable first protrusion (12) which extends from a first side of the bottom (3) of the first container (2) and seals the at least one bore (11) at least partially.

5. Package device according to one of claims 2 or 4, **characterized in that** the first container comprises at least one sidewall (4) which extends from the first side of the bottom (3), wherein a sealing film (6) is provided which spans over the at least one sidewall (4) of the first container (2) and prevents the first and the second good from leaking out of the first container (2) when the at least one bore (11) is sealed.

6. Package device according to claim 5, **characterized in that** the sealing film (6) is flexible.

7. Package device according to one of claims 4 to 6, **characterized in that** the at least one first protrusion (12) is removable or tiltable from the at least one bore (11) through the film (6).

8. Package device according to one of claims 4 to 7, **characterized in that** the at least one protrusion (12) is connected to the bottom (3) of the first container (2) by predetermined breaking points (13).

9. Package device according to one of the preceding claims, **characterized in that** the first container (2) comprises first ribs (14) and/or second protrusions (15) on the bottom (3) of the first container (2).

10. Package device according to one of the preceding

claims, **characterized in that** the second container (7) comprises second ribs (15) and/or third protrusions on a bottom (8) of the second container (7).

11. Package device according to one of the preceding claims, **characterized in that** the first container (2) and the second container (7) are attached to each other by a snap-in connection. 5
12. Package device according to one of the preceding claims, **characterized in that** the first container (2) and/or the second container (7) comprise several separated partitions. 10
13. Package device according to one of claims 2 to 11, **characterized in that** the bore (11) comprises a filter, which prevents the second good from entering the second container (7). 15
14. Package device according to one of the preceding claims, **characterized in that** the first container (2) is detachable from the second container (7). 20
15. Package device according to one of the preceding claims, **characterized in that** the first good is a liquid good and the second good is a solid good or a good that is less liquid than the first good. 25

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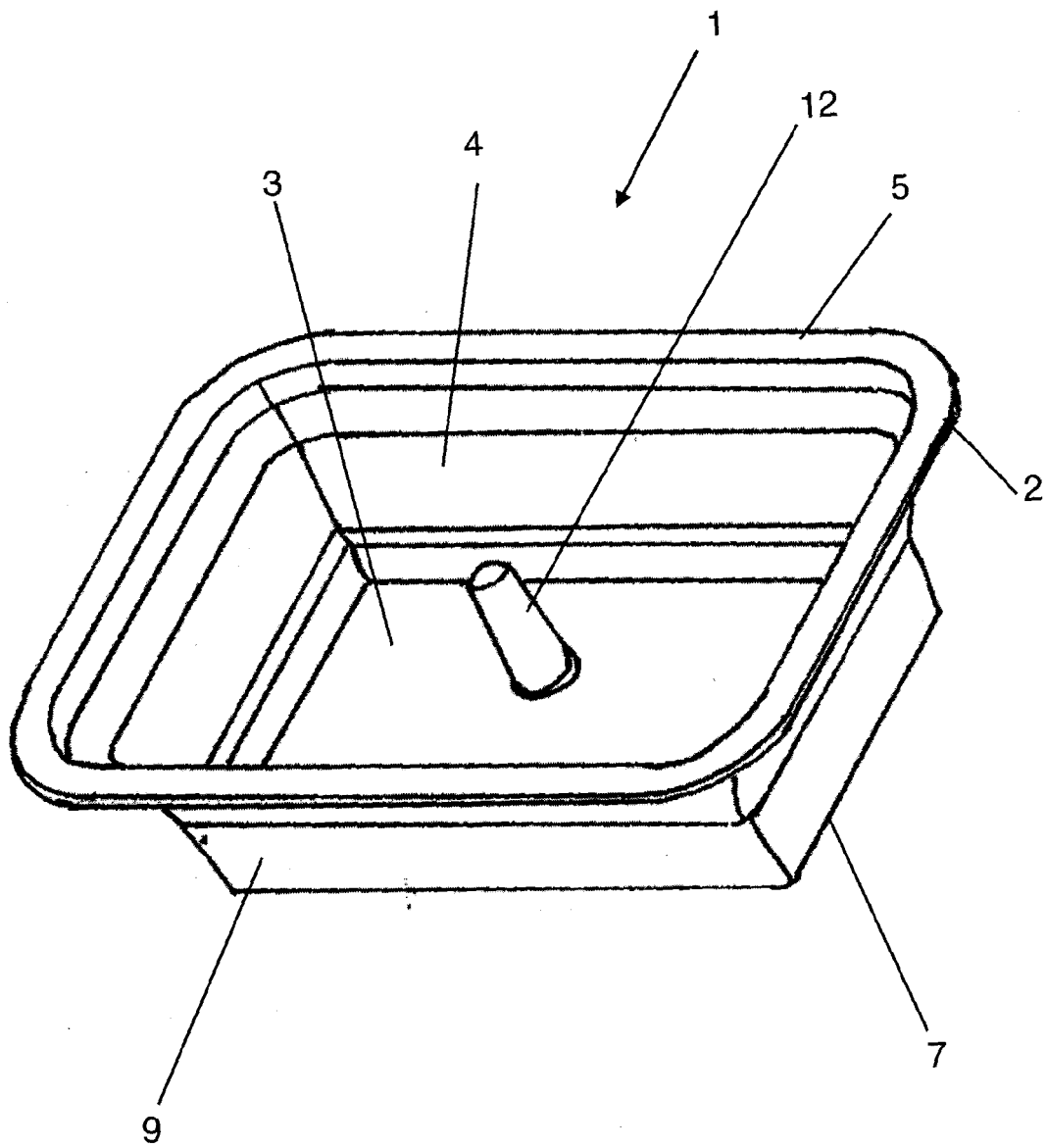


Fig. 1

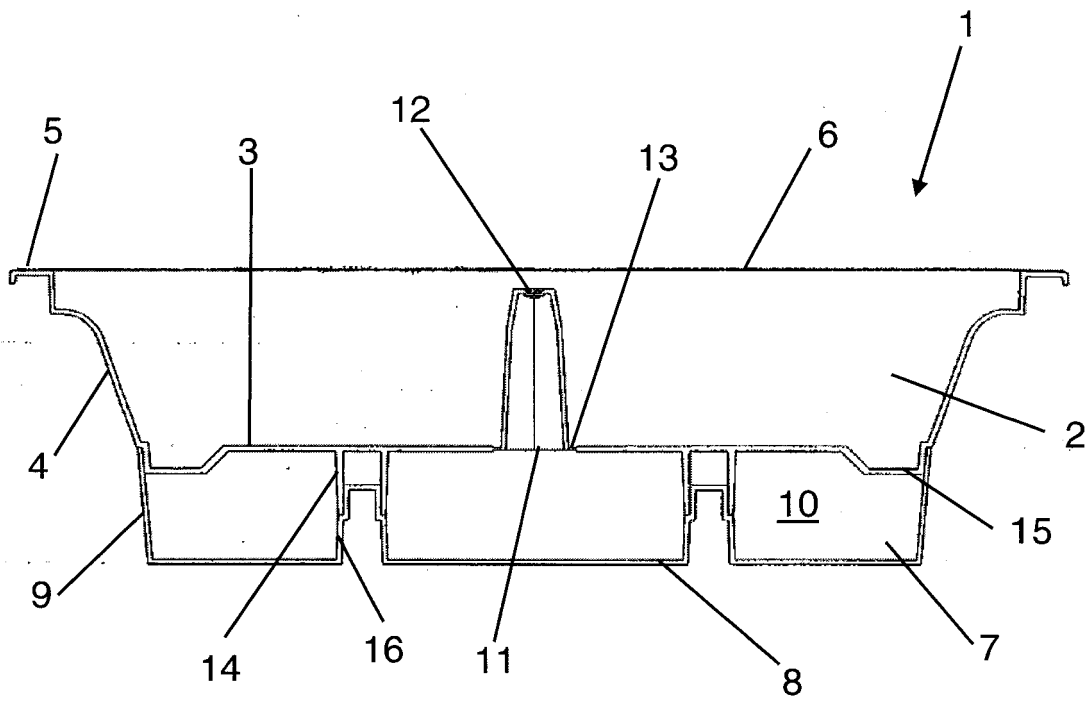


Fig. 2

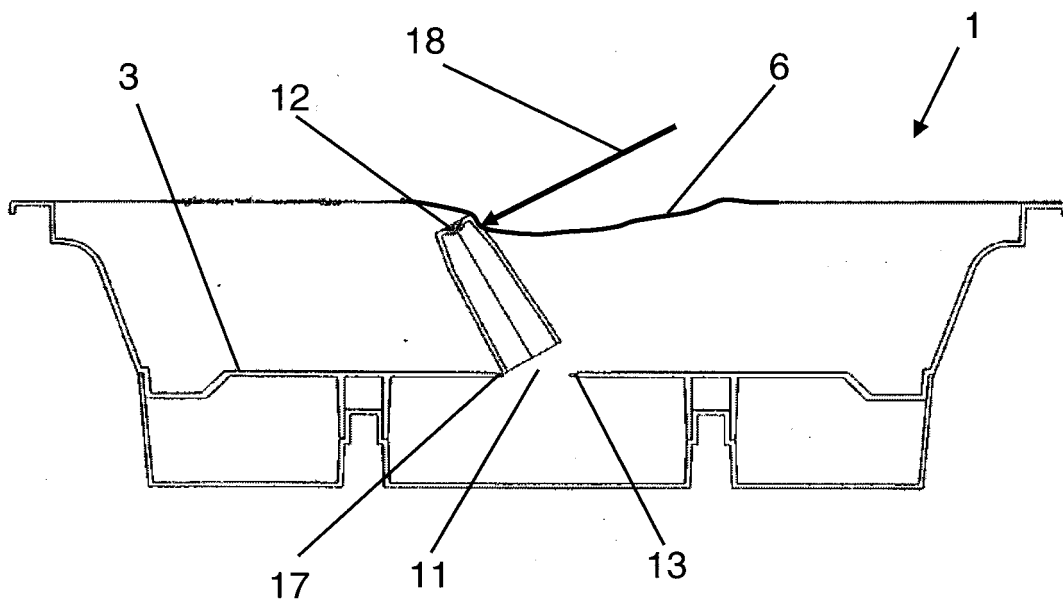


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 10 15 7887

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (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 29 June 2010	Examiner Derrien, Yannick
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	

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EPO FORM 1503 03-82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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