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(54) A CONTAINER FOR RECEIVING, IN PARTICULAR FOR STORING AND/OR TRANSPORTING, GOODS TO BE KEPT AT A CERTAIN TEMPERATURE OR IN A CERTAIN TEMPERATURE RANGE OR TO BE COOLED

(57) A container (10) serves for receiving, in particular for storing and/or transporting, goods (32) to be kept at a certain temperature or in a certain temperature range or to be cooled. It comprises an upwardly open receiving portion (12) for receiving the goods (32) to be kept at a certain temperature or in a certain temperature range or to be cooled. According to the invention it is proposed that it further comprises a flexible and essentially two-dimensional separating means (20) having a peripheral edge (22) and being attached to the receiving portion (12) by means of only a partial edge portion (24a) of its peripheral edge (22).

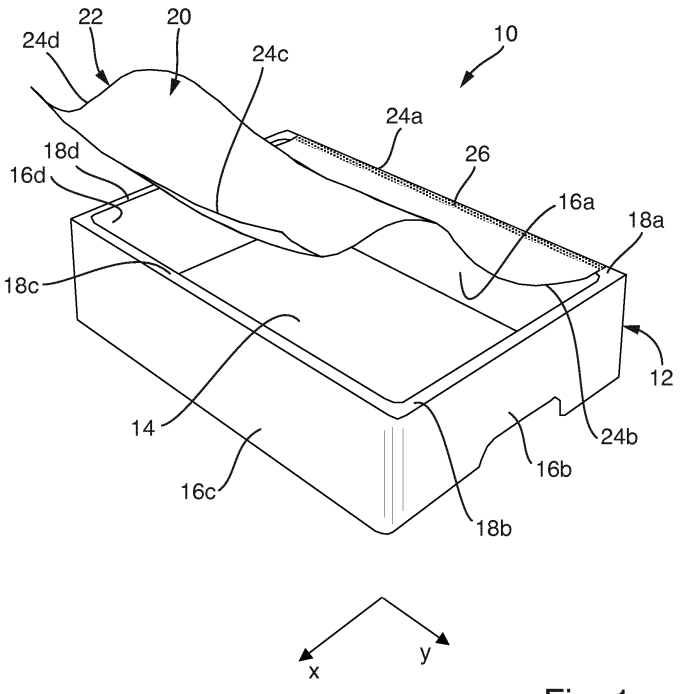

Fig. 1

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Description

[0001] The present invention relates to a container for receiving, in particular for storing and/or transporting, goods to be cooled according to the preamble of claim 1.

[0002] It is well known to the skilled person that for example in fish markets box-type or tray-type containers made of a plastic material are used for storing and transporting fishes and seafood. In order to preserve freshness and quality of the goods, cooling means are used, such as water ice cubes or crushed ice. These cooling means are put either on the bottom of the container, and the goods then are placed over the cooling means, or the cooling means are placed over the goods. By doing so, the goods are actively cooled.

[0003] It is an object of the present invention to provide a container for receiving, in particular for storing and/or transporting, goods to be kept at a certain temperature or in a certain temperature range or to be cooled, which is easy to use by a user.

[0004] This object is achieved by means of a container according to claim 1. Further advantageous embodiments are claimed in subclaims. Furthermore, essential features of the invention are disclosed in the following specification and in the attached drawings wherein these features may be essential to the invention alone or in various combinations.

[0005] The invention proposes a container for receiving, in particular for storing and/or transporting, goods to be kept at a certain temperature or in a certain temperature range or to be cooled, comprising an upwardly open receiving portion for receiving the goods to be kept at a certain temperature or in a certain temperature range or to be cooled. The term "container" is to be understood in a broad sense, which means, that any type of receptacle having a sort of bottom surface which at least partially is delimited by a side wall such that it can receive a good is comprised within this term, such as any box-type or tray-type container.

[0006] The goods which can be received by the container can be, by way of example, any kind of food, such as fish, seafood, meat, vegetables, fruits, or pharmaceutical products such as drugs, or the like. In typical applications, cooling is provided by water ice, such as ice cubes or crushed ice, but can also be provided by specific cooling elements, which are typically, by way of example, formed by a fluid-tight plastic envelope which is filled with a fluid having a relatively high thermal capacity and which has been cooled down to a desired cooling temperature prior to use. Depending on the specific characteristics of the cooling elements, especially the (starting) temperature of the cooling elements relative to the (starting) temperature of the goods, the goods are simply kept at a certain temperature or in a certain temperature range, or are cooled down.

[0007] The present invention specifically proposes that the container further comprises a flexible and essentially two-dimensional, that is essentially thin separating means having a peripheral edge and being attached to the receiving portion by means of only a partial edge portion of its peripheral edge. An example for a flexible and essentially two-dimensional separating means is a flat and thin web- or sheet-type material.

[0008] The separating means is fixedly attached to the receiving portion such that it cannot fall away or be lost. This has the advantage that a user does not have to handle two separate parts when using the inventive container. Also, a user does not need to have different suppliers and/or stocks for the receiving portion and the separating means. Already therefore costs and preparation time is reduced when using the inventive container.

[0009] Since the separating means is attached to the receiving portion by means of only a partial edge portion of its peripheral edge, the separating means can easily be moved away by a user in order to provide access to the receiving portion for loading the receiving portion with the goods to be kept at a certain temperature or in a certain temperature range or to be cooled. After the receiving portion has been loaded with the goods to be kept at a certain temperature or in a certain temperature range or to be cooled, the separating means can be moved back, by way of example can be folded back, over the goods such that the separating means at least essentially covers the goods to be kept at a certain temperature or in a certain temperature range or to be cooled. All this reduces again the preparation time of the inventive container.

[0010] After the goods have been covered by the separating means, a desired cooling means may be placed on the separating means (or, also in specific applications, nothing is placed on the separating means, and thus the separating means simply serves as a protective cover). By consequence, the separating means provides a separation between the goods to be cooled and the cooling means such that the cooling means does not directly contact the goods. The cooling means may comprise, by way of example, water ice cubes or crushed ice, or any other suitable device for providing a low temperature in order to keep the goods at a desired low temperature at least for a certain amount of time. The cooling performance is enhanced by the separating means being and essentially two-dimensional device, which means that it is rather thin compared to its two-dimensional extensions.

[0011] In a preferred embodiment of the invention the separating means comprises a flexible film, more specifically a plastic film. The term "film" especially stands for a very thin and flexible material. This provides - in the case of active cooling - for a high cooling performance, long durability, good flexibility and low costs. In a preferred embodiment of the invention the material of the flexible film comprises polyethylene or polypropylene or a biodegradable or a biologic material, such as starch or a natural textile material or the like. These materials are admitted and certified for use in the context of food. Preferably, the plastic film is transparent such that a user can see what is below the plastic film.

[0012] In yet another embodiment the partial edge portion of the separating means is attached to the receiving portion at least partially by means of gluing. Glueing is a simple way to fixedly attach a variety of different materials, and it includes classical glueing by applying a glueing layer which hardens after an amount of time as well as glueing by means of an adhesive tape. Especially in this latter case, but also in the case of other attachments techniques, the separating means may be removed from the receiving portion after use and be replaced by a new separating means which helps to comply with hygienic requirements.

[0013] In yet another embodiment the partial edge portion of the separating means is attached to the receiving portion at least partially by means of clamping. This has the advantage that no specific fixation material is needed, which is specifically desirable if the goods are food.

[0014] In yet another embodiment an attachment means of the partial edge portion of the separating means to the receiving portion comprises a slit formed in the receiving portion which receives the partial edge portion of the separating means. This is a way to mechanically fix the separating means to the receiving portion which is cheap and simple.

[0015] In yet another embodiment the partial edge portion of the separating means is attached to the receiving portion at least partially by means of welding. This has again the advantage that no specific fixation material is needed, which is specifically desirable if the goods are food. In order to be able to weld heat sensitive materials, it is particularly desirable to use ultrasonic welding techniques. However, other welding technologies are applicable as well.

[0016] In yet another embodiment of the invention the receiving portion, viewed from above, has at least one essentially straight edge wherein the partial edge portion of the separating means is attached to this essentially straight edge. This is easy to manufacture and provides the possibility to fully fold back the separating means when goods are to be loaded into the receiving portion, without leaving covered an area of the receiving portion by the separating means.

[0017] In yet another embodiment of the invention the partial edge portion of the separating means is attached to the receiving portion in a region essentially adjacent to a bottom portion of the receiving portion. This may protect the zone from external influences where the separating means is attached to the receiving portion and it may also be used to protect a bottom portion of the receiving portion.

[0018] In yet another embodiment of the invention the receiving portion, viewed from above, has an at least essentially rectangular shape. This is easy to manufacture and provides the best flexibility in use, especially in case of food products, such as fish, seafood, or the like.

[0019] In yet another embodiment of the invention the separating means, viewed from above, has essentially the same shape as the receiving portion but is slightly oversized with respect to the shape of the receiving portion. This has the advantage that the material for the separating means is used very economically, since it has always a sufficient, but not an excessive size. Also, a user does not need to care of the right size of the separating means, which again saves time when using the inventive container. In this context, it is particularly preferred that the separating means is (slightly) oversized in a first direction and (slightly) downsized in a second direction, the second direction preferably being orthogonal to the first direction, such as to make it fit easily into the container by folding the separating means correspondingly.

[0020] In yet another embodiment of the invention the separating means comprises a plurality of small holes, preferably a plurality of microperforations. By way of example, these holes allow water occurring when cooling means such as water ice are melting to penetrate the separating means, and allows also air to circulate through the separating means which may have advantages in the case of the storage or transportation of food.

[0021] In yet another embodiment of the invention the material of the receiving portion comprises a foam, preferably a polystyrene foam. This is a lightweight material which is admitted and certified for use in the context with food.

[0022] In yet another embodiment of the invention the receiving portion comprises a bottom wall and a side wall, the side wall being outwardly inclined relative to the bottom wall such that the container can be stacked within another identical container. This reduces the space needed for the storage of the inventive containers.

[0023] In yet another embodiment of the invention the receiving portion comprises a bottom wall having an interior surface which is at least partially inclined from a centre towards a side wall. Fluid therefore is led towards the side wall by gravity, which helps to keep relatively dry the centre part of the interior surface which the goods are placed on.

[0024] In yet another embodiment of the invention the receiving portion comprises a bottom wall and a side wall, a groove being formed in the bottom wall adjacent an intersection of the bottom wall with the side wall. This helps to collect fluid and to keep relatively dry the centre part of the bottom wall.

[0025] In yet another embodiment of the invention the receiving portion may be foldable. More specifically, the side walls of such a receiving portion may be pivotable from an upright working position into a substantially flat storing and transportation position.

[0026] In yet another emobidement of the invention the two-dimensional separating means has an additional functionality, such as corrosion protection, food presentation and/or antimicrobial performance. It is to be noted that in principle this feature of an additional functionality is independent from the feature of the separating means being attached to the receiving portion by means of only a partial edge portion of its peripheral edge. It therefore

could be claimed without this feature e.g. in a divisional patent application.

[0027] The principle of corrosion protection may be realized by using a separating means which is made of a modified polymer such that it acts as a reactive barrier protecting packaged good against destructive corrosion. The corrosion protective separating means may be comprise high-surface area copper particles that are permanently bonded into a polymer compound. The food presentation function may be realized by using a separating means which is colored, e.g such that a brown copper-like or black appearance is created, and/or by including pictures or photographs on the visible surface of the separating means. The function of antimicrobial performance (food preservation) may be realized by a separating means which comprises some antimicrobial active compound, such as silver ions, copper, titandioxid, or the like.

[0028] Other features and advantages of the invention will become apparent from the following detailed description. It is to be understood that the same reference signs will be used in different embodiments for those elements and regions having equivalent functional characteristics. Also, subsequent embodiments generally will be described only with respect to differences to preceding embodiments. This means that any variations which have been mentioned with respect to a preceding embodiment may also apply to one or more of the subsequent embodiments.

Figure 1 is a perspective view on a first embodiment of container for storing and transporting goods to be kept at a certain temperature or in a certain temperature range or to be cooled having a receiving portion and a separating means, in an empty state;

Figure 2 is sectional side view on a second embodiment of a container, in an empty state;

Figure 3 is a view similar to figure 2 on the container of figure 2, in a state where the receiving portion is loaded with goods and cooling means;

Figure 4 is a partial view similar to figure 2 on a third embodiment of a container in an empty state;

Figure 5 is a sectional side view on a fourth embodiment of a container, in an empty state;

Figure 6 is a view similar to figure 5, in a state where the receiving portion is loaded with goods and cooling means; and

Figure 7 is a sectional side view in a fifth embodiment of a container where the receiving portion is loaded with goods, prior to loading tempering means.

[0029] Referring now to figure 1, a container is generally designated with reference numeral 10. It comprises a tray-type receiving portion 12 having, when viewed from above, a generally rectangular shape. The receiving portion 12 comprises a plate-type bottom wall 14 which, in use, extends generally horizontally and has a rectangular shape, and four side walls 16a-16d which are integrally with the bottom wall 14 and with each other and which, in use, extend generally vertically. As can be seen from figure 1, the receiving portion 12 is upwardly open. By consequence, each side wall 16a-16d has a straight upper edge 18a-18d.

[0030] The receiving portion 12, by way of example, may be manufactured of a foam material, preferably a polystyrene foam. Particularly preferred is an expanded polystyrene foam, known as "EPS". Such a material provides a very good thermal insulation characteristic.

[0031] The container 10 further comprises a flexible and essentially two-dimensional, that is rather thin separating means 20, which presently is, by way of example, in the form of a flexible film, such as a plastic film, e.g. a polyethylene or propylene film, or a biodegradable or biologic film. The separating means 20 preferably is transparent and has essentially the same rectangular shape, when viewed from above, as the receiving portion 12 or its bottom wall 14, respectively. By consequence, the separating means 20 has a peripheral edge 22 with four straight partial edge portions 24a-24d.

[0032] The separating means 20 is fixedly attached to the straight upper edge 18a of the receiving portion 12 by means of only the partial edge portion 24a of its peripheral edge 22. An attachment area 26 is drawn in figure 1 by means of a dotted area. All other partial edge portions 24b-24d are not attached to the receiving portion 12 and are therefore free.

[0033] The separating means 20 may be fixedly attached to the receiving portion 12 in the attachment area 26, by way of example, at least partially by means of gluing and/or welding, the latter being preferably ultrasonic welding. As will be explained further below, the separating means 20 also or additionally may be fixedly attached to the receiving portion 12 in the attachment area 26 by means of clamping.

[0034] As can readily be seen from figure 1, the separating means 20, when viewed from above, has essentially the same rectangular shape as the receiving portion 12 or its bottom wall 14, respectively. However, in its two dimensions, it is slightly oversized with respect to the size of the receiving portion 12 or the bottom wall 14, respectively. That is, in a flat state of the separating means 20 it extends essentially in the directions x and y as indicated by the respective coordinate arrows in figure 1. Preferably, the separating means 20 is more oversized in the length direction x than in the width direction y.

[0035] The separating means 20 may comprise a plurality of small holes, preferably a plurality of microperforations. However, these holes or microperforations, respectively, are not shown in the drawing.

[0036] As will be shown and explained in further detail below, the container 10 of figure 1 serves for receiving, in particular for storing and/or transporting, goods to be kept at a certain temperature or in a certain temperature range or to be cooled. The goods may be, by way of example, any type of food, such as fish, seafood, meat, vegetables, fruits, and the like, or any pharmaceutical product, such as drugs, and the like. In use, the separating means 20 is folded back such that a user has full access to an interior volume (without reference sign) of the receiving portion 12. The receiving portion 12 then can be loaded with the goods. After the goods being loaded into the receiving portion 12, the separating means 20 is moved back over the goods such that it essentially covers the goods being placed within the receiving portion 12. Thereafter, tempering means, preferably cooling means of any type, in particular water ice, such as ice cubes or crushed ice, is placed on the separating means 20 in order to cool the goods.

[0037] Now reference is made to figures 2 and 3 which show a second embodiment of a container 10. The container 10 of figures is 2 and 3 distinguishes from the container 10 of figure 1 in that the four side walls 16a-16d are outwardly inclined relative to the bottom wall 14 (in figures 2 and 3 only the side walls 16a-16c being visible) by an angle A which is greater than 0°, and which preferably is in the range of approximately 10° and 25°. This allows two or more identical containers 10 to be stacked within each other.

[0038] Furthermore, the container 10 of figures 2 and 3 has a receiving portion 12 comprising a bottom wall 14 having an interior surface 28 (which is the upper surface of the bottom wall 14) which is at least partially downwardly inclined from a centre 29 towards a side wall 16 by an angle B which is greater than 0°, and which preferably is in the range of approximately 5° to 10°. This allows fluid to flow by gravity from the centre of the bottom wall 14 to the edge of the bottom wall 14.

[0039] Additionally, the container 10 of figures 2 and 3 has a receiving portion 12 comprising a groove 30 being formed in the interior surface 28 of the bottom wall 14 adjacent an intersection of the bottom wall 14 with a respective one of side walls 16a-16d. The groove may have any suitable shape, such as rectangular, trapezoidal, semicircular, or the like.

[0040] Figure 2 shows the container 10 in an empty state wherein the receiving portion 12 is not loaded with any good. By consequence, the separating means 20 is laying loosely in the interior volume of the receiving portion 12 and partially contacts the bottom wall 14. However, the separating means 20 is fixedly attached to the receiving portion 12 by means of the attachment area 26 and therefore cannot fall away or be lost during storage and handling.

[0041] Figure 3 shows the container 10 in a state where the receiving portion 12 is loaded with goods 32, by way of example in the form of fishes. As can be seen from figure 3, the goods 32 are covered with the separating means 20, and tempering means, presently cooling means 34 in the form of ice cubes are placed on the separating means 20. Therefore, the cooling means 34 do not directly contact the goods 32.

[0042] A third embodiment of a container 10 is shown in figure 4. In this embodiment, the separating means 20 is not fixedly attached to the receiving portion 12 (only) by means of gluing or welding, but rather by means of a very narrow slit 36 formed in the upper edge 18a of the side wall 16a, the slit 36 receiving the partial edge portion 24a of the separating means 20 and thus clamping the partial edge portion 24a.

[0043] A forth embodiment of a container 10 is shown in figures 5 and 6. A first difference with respect to the previous embodiments is that the side walls 16a and 16c are not inclined relative to the bottom wall but rather in an angle of approx. 90°. Furthermore, the separating means 20 is much longer than in the previous embodiments. This allows the goods 32 to be placed on top of a first portion 20a of the separating means 20 (figure 5), then to fold a remainder portion 20b of the separating means 20 back over the goods 32, and then to place the tempering means, that is the cooling means 34, on top of the remainder portion 20b (figure 6). The goods 32 thus are quasi wrapped by the separating means 20.

[0044] A fifth embodiment of a container 10 is shown in figure 7. This embodiment differs from the previous embodiments essentially in that the partial edge portion 24a of the peripheral edge 22 of the separating means 22 is attached to the receiving portion 12 in a region of the side wall 16a of the receiving portion 12 which is essentially adjacent to a bottom portion, namely the bottom wall 14, of the receiving portion 12.

[0045] In an embodiment not shown in the drawing the receiving portion may be foldable. More specifically, the side walls of such a receiving portion may be pivotable from an upright working position into a substantially flat storing and transportation position.

Claims

1. A container (10) for receiving, in particular for storing and/or transporting, goods (32) to be kept at a certain temperature or in a certain temperature range or to be cooled, comprising an upwardly open receiving portion (12) for receiving the goods (32) to be kept at a certain temperature or in a certain temperature range or to be cooled, **characterized in that** it further comprises a flexible and essentially two-dimensional separating means (20) having a peripheral edge (22) and being attached to the receiving portion (12) by means of only a partial edge portion (24a) of its peripheral edge (22).

2. The container (10) of claim 1 wherein the separating means (20) comprises a flexible film, more preferably a plastic film.

3. The container (10) of claim 2 wherein the material of the flexible film (20) comprises polyethylene or polypropylene and/or a biodegradable and/or biologic material.

4. The container (10) of at least one of the preceding claims wherein the partial edge portion (24a) of the separating means (20) is attached to the receiving portion (12) at least partially by means of gluing.

5. The container (10) of at least one of the preceding claims wherein the partial edge portion (24a) of the separating means (20) is attached to the receiving portion (12) at least partially by means of clamping.

6. The container (10) of claim 5 wherein an attachment region (26) of the partial edge portion (24a) of the separating means (20) to the receiving portion (12) comprises a slit (36) formed in the receiving portion (12) which receives the partial edge portion (24a) of the separating means (20).

7. The container (10) of at least one of the preceding claims wherein the partial edge portion (24a) of the separating means (20) is attached to the receiving portion (12) at least partially by means of welding.

8. The container (10) of at least one of the preceding claims wherein the receiving portion (12), viewed from above, has at least one essentially straight edge (18a) wherein the partial edge portion (24a) of the separating means (20) is attached to this essentially straight edge (18a).

9. The container (10) of at least on of claims 1-7 wherein the partial edge portion (24a) of the separating means (20) is attached to the receiving portion (12) in a region essentially adjacent to a bottom portion (14) of the receiving portion (12).

10. The container (10) of at least one of claims 8 and 9 wherein the receiving portion (12), viewed from above, has an at least essentially rectangular shape.

11. The container (10) of at least one of the preceding claims wherein the separating means (20), viewed from above, has essentially the same shape as the receiving portion (12) but is slightly oversized in at least one direction with respect to the size of the receiving portion (12).

12. The container (10) of at least one of the preceding claims wherein the separating means (20) comprises a plurality of small holes, preferably a plurality of microperforations.

13. The container (10) of at least one of the preceding claims wherein the material of the receiving portion (12) comprises a foam, preferably a polystyrene foam.

14. The container (10) of at least one of the preceding claims wherein the receiving portion (12) comprises a bottom wall (14) and at least a side wall (16a-d), the side wall (16a-d) being outwardly inclined relative to the bottom wall (14) such that the container (10) can be stacked within another identical container (10).

15. The container (10) of at least one of the preceding claims wherein the receiving portion (12) comprises a bottom wall (14) having an interior surface (28) which is at least partially inclined from a center (29) towards a side wall (16a-d).

16. The container (10) of at least one of the preceding claims wherein the receiving portion (12) comprises a bottom wall (14) and at least a side wall (16a-d), a groove (30) being formed in the bottom wall (14) adjacent an intersection of the bottom wall (14) with the side wall (16a-d).

17. The container of at least one of the preceding claims wherein the receiving portion is foldable.

18. The container (10) of at least one of the preceding claims wherein the two-dimensional separating means (20) has an additional functionality, such as corrosion protection, food presentation and/or antimicrobial performance.

19. A method of receiving, in particular of storing and/or transporting, goods (32) to be kept at a certain temperature or in a certain temperature range or to be cooled, comprising the following steps:

a. providing an upwardly open receiving portion (12) for receiving the goods (32) to be kept at a certain temperature or in a certain temperature range or to be cooled,
b. providing a flexible and essentially two-dimensional separating means (20) having a peripheral edge (22) and being attached to the receiving portion (12) by means of only a partial edge portion (24a) of its peripheral edge (22),
c. placing the goods (32) in the receiving portion (12),
d. placing the separating means (20) on top of the goods (32), and
e. placing a tempering means, more preferably a cooling means (34), on top of the separating means (20).

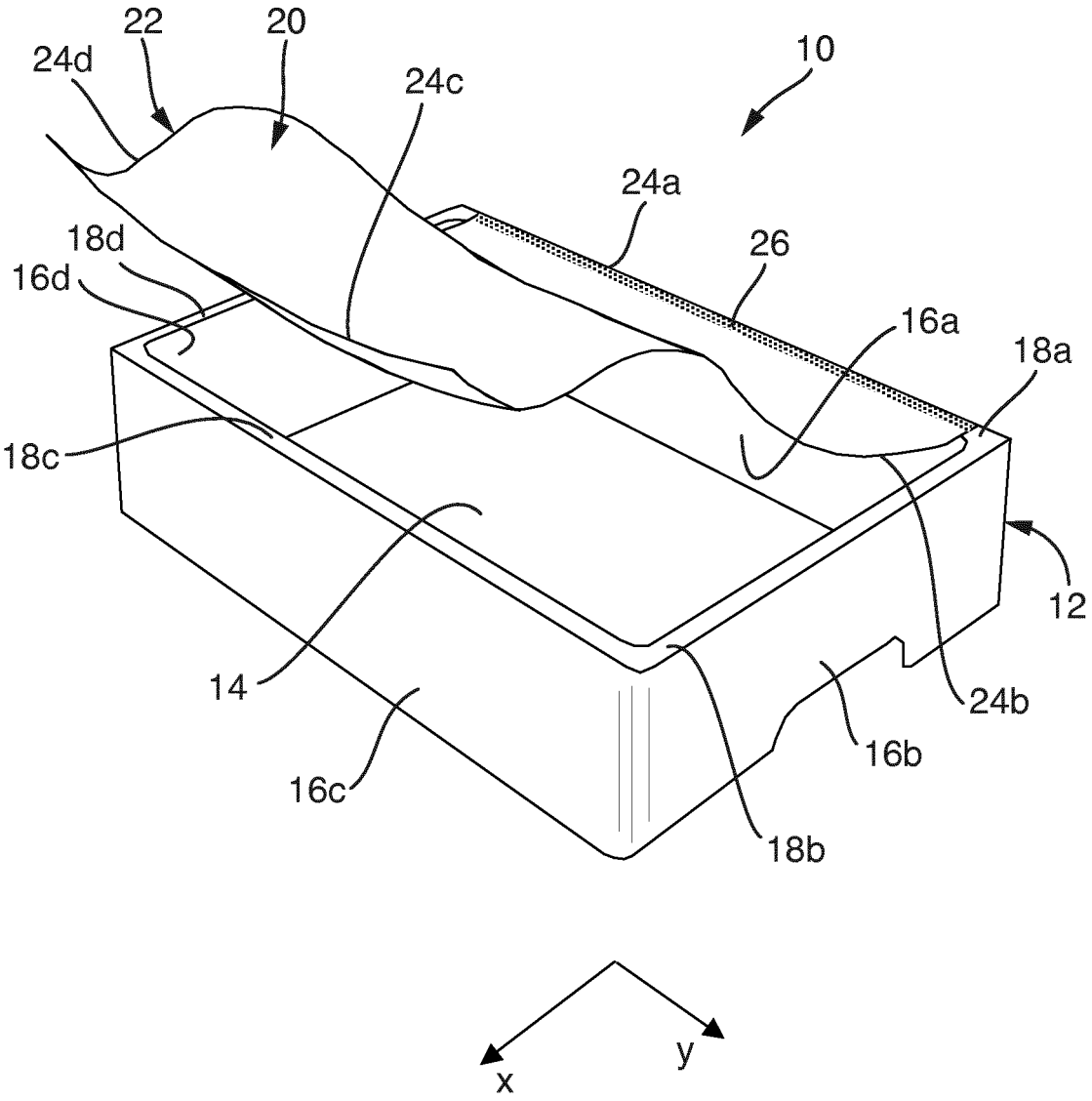
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Fig. 1

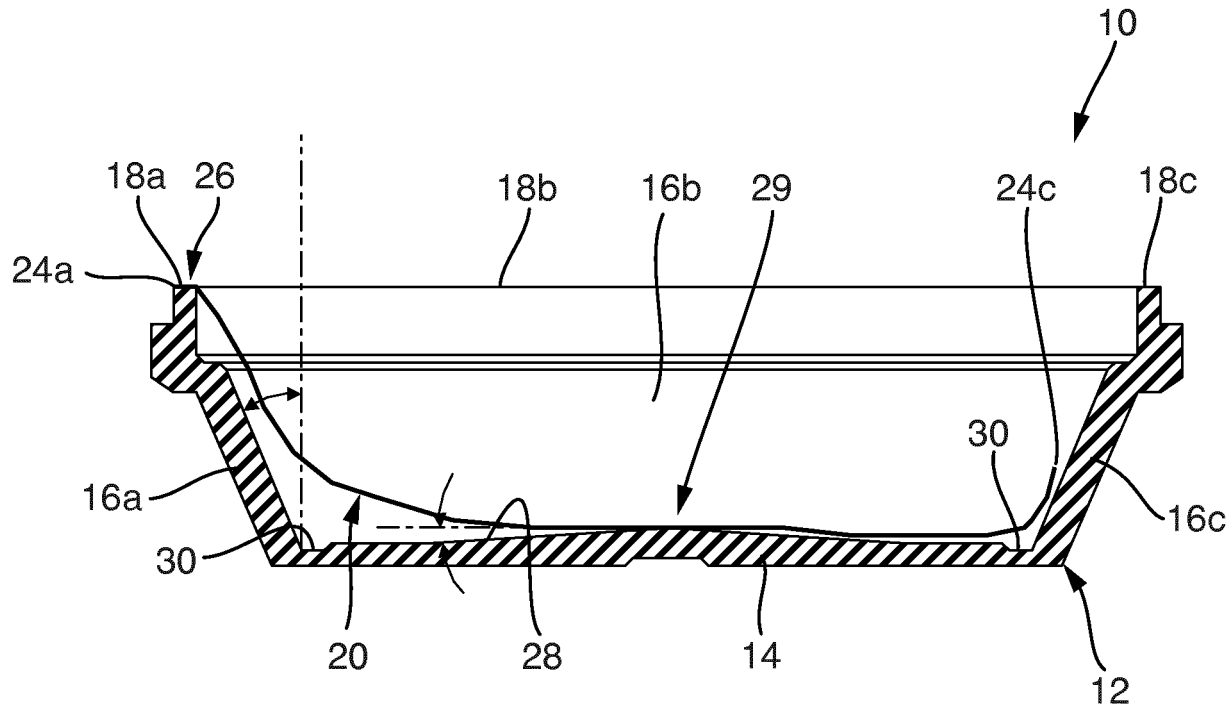
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Fig. 2

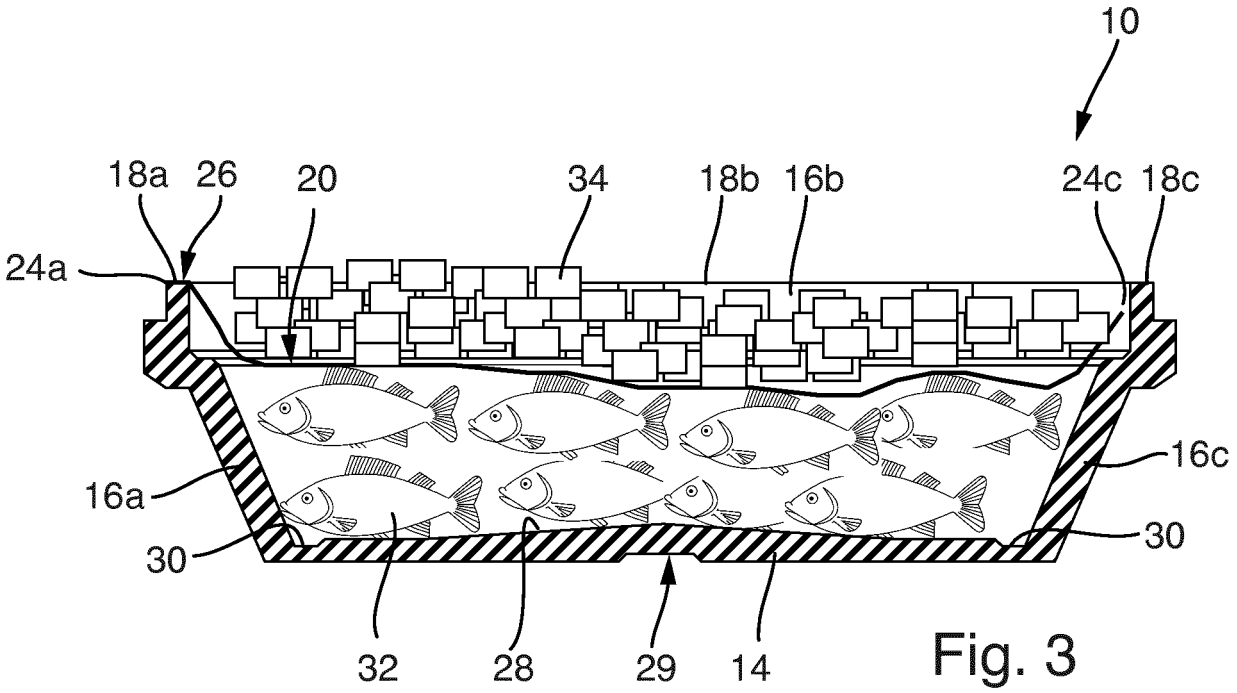
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Fig. 3

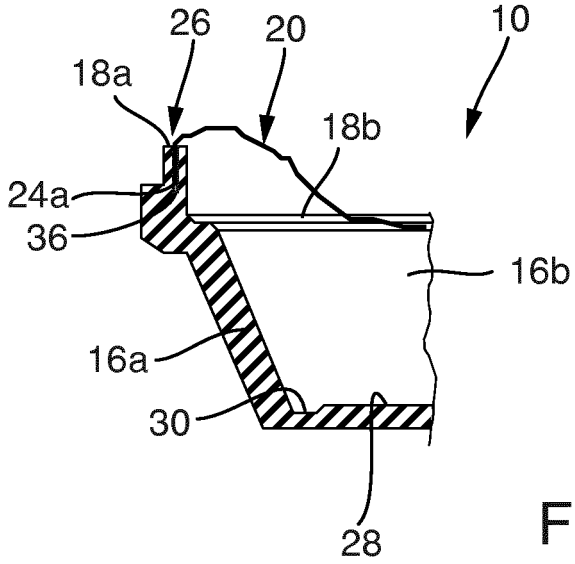
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Fig. 4

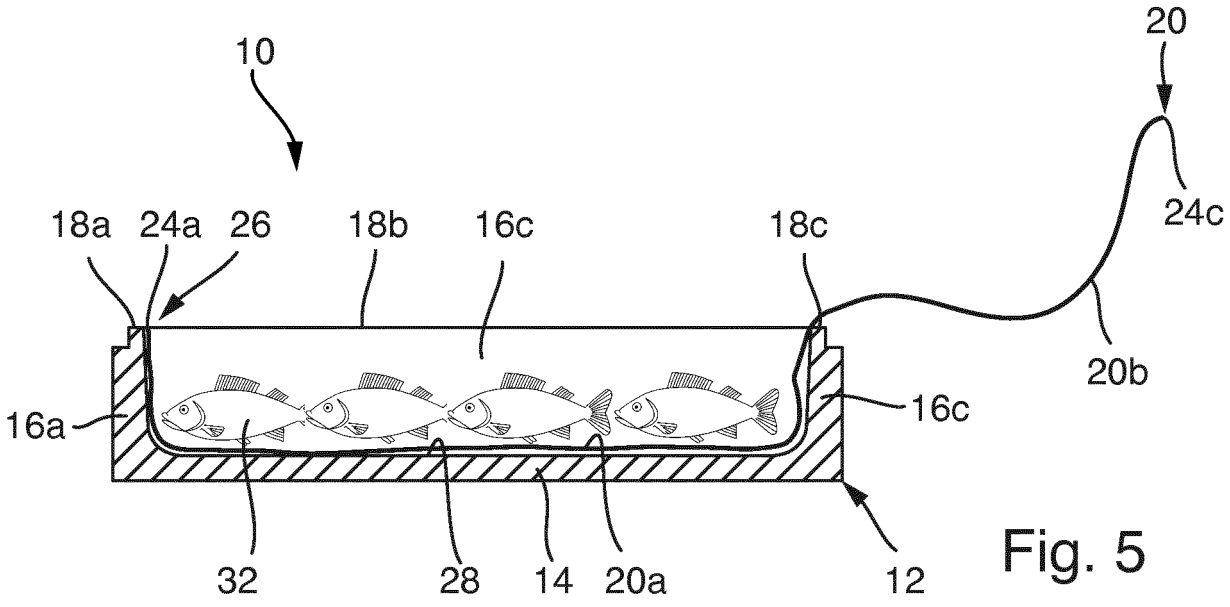
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Fig. 5

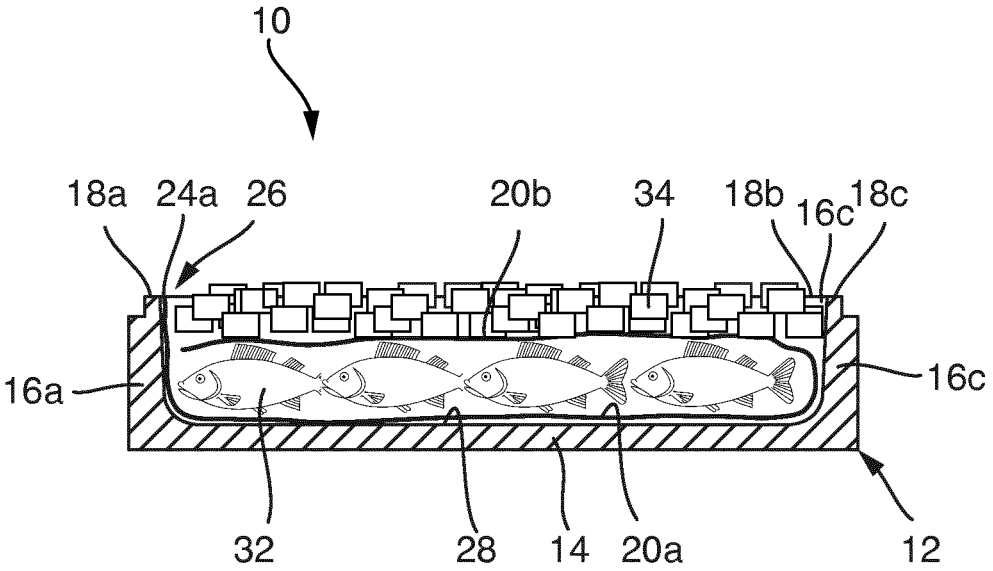
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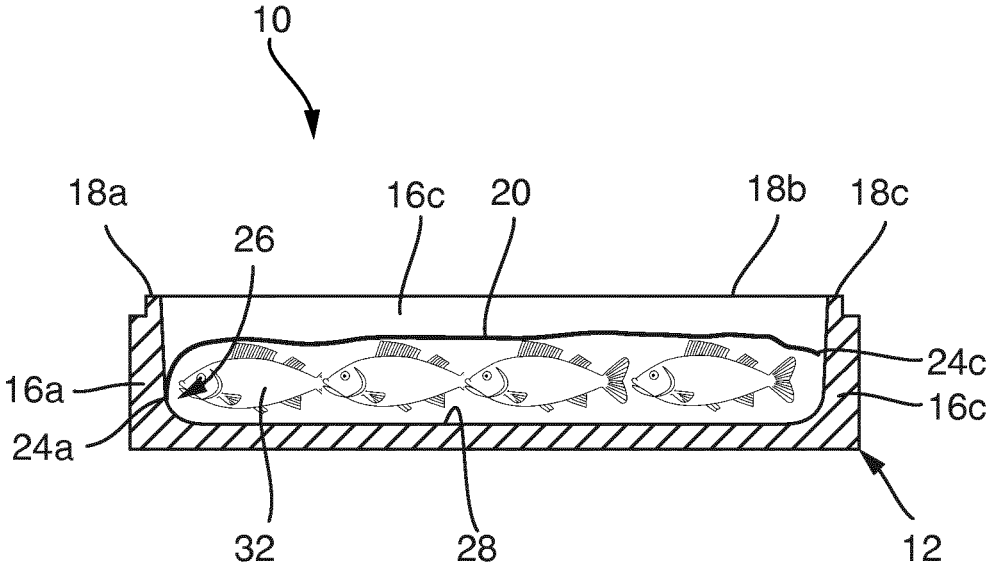
Fig. 6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24a
32
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12

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 18 16 9746

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	US 2 003 224 A (SCHOETTLE EDWIN J) 28 May 1935 (1935-05-28) * page 1, column 1, line 34 - page 1, column 2, line 37; figures *	1,5,6,8, 10-12 2-4,7,9, 13-16,18	INV. F25D3/08 B65D25/16
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