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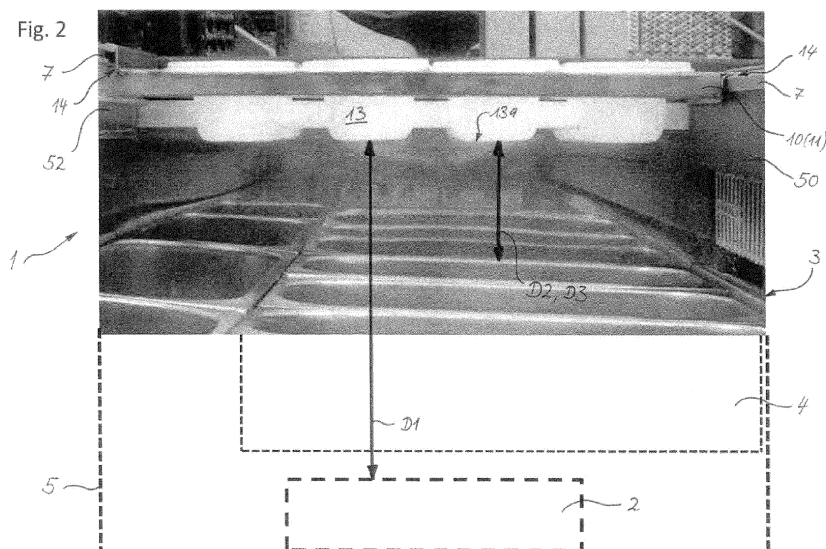
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(54) Display cabinet for frozen confectioneries

(57) The present invention relates to a display cabinet (1) for frozen confectioneries, comprising: a refrigeration means (2), and a display area (3) disposed above the refrigeration means (2) which is designed to receive a first container (4) for products (P1) like ice cream to be kept frozen by the refrigeration means (2), characterized in that the display cabinet (1) further comprises a movable carrier (10) being horizontally movably arranged above the display area (3) such that in each position of the carrier (10) at least a part of the display area (3) for receiving the first container (4) is accessible from above, wherein

the carrier (10) comprises a frame (11) having an opening (12) designed to receive a second container (13) or having a flat or recessed supporting portion made of a heat-conductive material for supporting the at least one second container (13) for products (P2) like toppings to be kept refrigerated by the refrigeration means (2) and movable over the display area (3) via the carrier (10). The invention further relates to a kit comprising the display cabinet, first containers (4) and a plurality of second containers (13), a carrier (10), and a method for presenting frozen products (P1) and refrigerated products (P2) in a display cabinet (1).

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Description**Field of the Invention**

5 **[0001]** The invention relates to a display cabinet for frozen products or confectioneries such as ice cream, a kit having a display cabinet, at least one first container and a plurality of second containers having a different depth, a carrier for being horizontally movably arranged in a display cabinet, and a method for presenting frozen products or confectioneries like ice cream and refrigerated products or comestibles like humid toppings in a display cabinet.

Background of the Invention

[0002] Display cabinets for low-temperature storing, presenting and distributing frozen confectioneries like ice cream are commonly known in the prior art.

15 **[0003]** Figure 5 shows a known display cabinet 100 having a refrigeration means 200 and a display area 300 which is disposed above the refrigeration means 200. The display area 300 is designed to receive containers 400 for/with ice cream which are kept frozen by the refrigeration means 200. The display cabinet 100 preferably has a housing 500 having a plurality of side walls which laterally delimit the display area 300 and do also house the refrigeration means 200. Usually, a transparent (glass) display unit 600 is provided on top of the housing 500 to allow the customers to see the displayed products.

20 **[0004]** Ice cream, for instance, is often served along with toppings like fruits, (fruit or chocolate) sauce, chocolate or the like. These toppings, in particular humid toppings, need to be refrigerated to keep them fresh. However, while ice cream is kept frozen at a temperature of about -16°C to -18°C by use of the refrigeration means, the toppings must be stored at a temperature of between +3 and +7°C, preferably about +4°C to be still flowable so that they can be dispersed/sprinkled/spread/applied on the ice cream. Hence, the toppings cannot be stored in an area of the display unit similar to the containers used for the ice cream as the toppings would freeze therein and can then not be applied onto the ice cream. Therefore, toppings are stored separately in an additional refrigerator, which means that the consumer cannot visualize them.

25 **[0005]** US 2010/0043471 A1 shows a convertible refrigerated display having a pair of sliding shelves that project inside a front wall of a glass compartment and are engaged with threaded bars extending vertically and being driven by a gear motor to move the shelves in a desired vertical position. The implementation of said sliding shelves including their driving mechanism requires a lot of space and must be installed at the time of producing the display device. Further, there is a need for additional electricity consumers thus further increasing the current consumption. Moreover, the shelves are provided at a vertical position where they obstruct the customer's view on the frozen and displayed product in the containers and where the temperature is too high for storing/displaying toppings to be refrigerated. Also, the shelves are only movable in a vertical direction so that the goods placed on said shelves cannot be easily moved horizontally along the display cabinet.

Summary of the Invention

40 **[0006]** The present invention aims to improve on the above-mentioned drawbacks, and an object thereof is to provide a display cabinet, a kit, a carrier and a method for presenting products or comestibles which allow for ice cream or the like to be kept frozen and other products or comestibles (like humid toppings) to be kept refrigerated within the same display cabinet while the visibility of and accessibility to both the product groups is easy.

45 **[0007]** The object is to be accomplished by means of the independent claims. The dependent claims advantageously study further the central idea of the invention.

[0008] According to a first aspect of the invention, there is provided a display cabinet for frozen confectioneries. The display cabinet comprises a refrigeration means and a display area disposed above the refrigeration means which is designed to receive at least one first container for ice cream or the like products to be kept frozen, i.e. maintained at a temperature preferably between -16°C and -18°C, by the refrigeration means. The display cabinet further comprises a movable carrier or slide being horizontally movably arranged above the display area such that in each position of the carrier at least a part of the display area for receiving the first container is accessible from above (i.e. exposed), wherein the carrier comprises a frame having an opening designed to receive at least one second container or having a flat or recessed supporting portion (like a cavity) made of a heat-conductive material for supporting the at least one second container for products like (humid) toppings to be kept refrigerated by the refrigeration means, i.e. maintained at a temperature preferably between +3°C and 7°C, more preferably around +4°C, and movable over the display area via the carrier.

[0009] As the products to be refrigerated are placed above the display area, they are further distanced from the refrigeration means and also distanced to first containers for storing and displaying frozen products. As the temperature

above the display area or first containers increases, the second containers can be placed in a region having an ideal and constant temperature for refrigerating products like toppings rather than storing them at a distant location (like a separate refrigerator). For instance, the products to be refrigerated or the bottom of the second container is preferably about 5 to 15cm above the display area or top of the first container. Hence, there is only one refrigerating means needed and the refrigerated toppings are always available within the same display cabinet. As they are placed on a slidable carrier, a good accessibility of the frozen products in the first containers is still given since the carrier does only need to be moved aside in case a user wants to access a first container currently positioned below the carrier. Further, the carrier can be easily moved in the vicinity of a first container in case a frozen product taken out of said first container should be garnished with a product (topping) provided in a second container on the carrier. The products to be kept frozen can thus be stored at a temperature of about -16°C to -18°C while the products on the carrier being placed above the display area and thus above the refrigeration means can be stored at a constant and ideal temperature of preferably between +3°C and 7°C, e.g., +4°C independent from their horizontal position. This is because the temperature above the refrigeration means or display area or first containers increases and thus passes from negative to positive temperatures at a particular level, and the carrier can be easily placed at a level having the desired temperature for refrigerating and not freezing the respective products in the second containers.

[0010] The carrier is preferably removably arranged above the display area so that an easy installation is obtained. Further, the display cabinet can be selectively and easily used with and without the carrier.

[0011] The carrier preferably spans the display area in a horizontal direction orthogonal to its moving direction. Hence, the carrier can be simply placed onto the display area or at least its frame. Further, as the carrier can be horizontally moved over the display area and since it spans over the whole display area, the carrier can be easily moved to any position above the display area; i.e. in the vicinity of every first container.

[0012] Moreover, the display cabinet preferably comprises a plurality of side walls laterally delimiting the display area and preferably housing the refrigeration means, wherein two opposite side walls of the plurality of side walls extending along the horizontal moving direction of the carrier comprise a sliding rail means for slidably receiving the carrier. The sliding rail means preferably comprises a stepped or recessed portion in at least one of the opposite side walls and/or a top face of at least one of the opposite side walls and/or a separate rail means preferably removably attached to at least one of the side walls which extend horizontally along the opposite side walls, preferably along the whole display area. Hence, the carrier can be easily placed onto the display area (or its frame) without changing the design of a yet existing display cabinet or by only slightly changing the display cabinet by attaching a simple rail means. Therefore, the carrier can be used with any existing display cabinet without or without considerably changing the respective display cabinet.

[0013] The frame of the carrier preferably comprises two opposite sliding portions for slidably supporting the carrier over the display area, which sliding portions preferably cooperates with the sliding rail means of the side walls. As the carrier or frame comprises (preferably integrally formed) opposite sliding portions, the carrier can easily and securely rest above the display area and on respective sliding rails. In case the sliding portions are integrally formed with the carrier (or frame), secure and cost-saving sliding portions can be simply provided when producing the carrier.

[0014] According to a preferred embodiment of the invention, at least one of the sliding portions preferably has an L-shaped structure having a first leg extending from a side portion of the carrier upwards and a second leg extending sideways from the upper end of the first leg and away from the display area. It is thus possible to provide the carrier with a preferably integrally formed sliding portion to securely support and guide the carrier laterally and from below.

[0015] The frame of the carrier preferably has a substantially rectangular form, wherein the opening for receiving the at least one second container or the heat-conductive flat or recessed supporting portion for supporting the at least one second container preferably has a rectangular form as well. The carrier is preferably made of metal, more preferably a metal sheet, steel, aluminum, plastic, wood or the like, wherein the frame of the carrier is preferably integrally formed. Hence, the carrier can be easily produced. Preferably, the carrier is provided with an opening of the frame which is designed such that two or more of the second containers can be received therein. In case the carrier is provided with a heat-conductive supporting portion, this portion is designed such that two or more of the second containers can be supported thereon/thereby. Hence, a desired number of toppings or the like (i.e. second containers) can be received in/on and moved via the carrier.

[0016] According to a second aspect of the invention, there is provided a kit having a display cabinet according to the invention which further comprises at least one first container for frozen products like ice cream and a plurality of second containers for refrigerated products like (humid) toppings, wherein the second containers have a different depth so that the vertical distance between the bottom of the second containers to the refrigeration means or the top of the at least one first container depends on the depth of the second container when being provided in the opening of the frame of the carrier, wherein the deepest second container is designed to be closer to the refrigeration means than a flatter second container but still positioned above the first container when placed in the movable carrier.

[0017] In addition to the advantages mentioned above, the kit provides for the products in the second containers to be refrigerated at a predetermined ideal temperature for optimizing the product storage.

[0018] According to a third aspect of the invention, there is provided a carrier for being horizontally movably arranged in a display cabinet and above a display area for receiving at least one first container, wherein the carrier comprises a frame having an opening for receiving at least one second container or having a flat or recessed portion made of a heat-conductive material for supporting the at least one second container to be movable via the carrier, wherein the frame further comprises two opposite sliding portions for slidably supporting the carrier over said display area. At least one of the sliding portions preferably has an L-shaped structure having a first leg extending from a side portion of the carrier upwards and a second leg extending sideways from the upper end of the first leg and away from the opening or heat-conductive supporting portion to support and guide the carrier laterally and from below.

[0019] Said carrier allows for products being kept refrigerated to be placed in a display area further distanced from a refrigeration means than a product being kept frozen without changing the layout or design of a display cabinet.

[0020] The frame of the carrier preferably has a substantially rectangular form. The opening for receiving the at least one second container or the heat-conductive flat or recessed supporting portion for supporting the at least one second container preferably has a rectangular form. The opening of the frame is preferably designed such that two or more of the second containers can be received therein or the heat-conductive supporting portion of the frame is designed such that two or more of the second containers can be supported thereon/thereby. The carrier is preferably made of metal, more preferably a metal sheet, steel, aluminum, plastic, wood or the like. The frame of the carrier is preferably integrally formed.

[0021] According to a fourth aspect of the invention, there is provided a method for presenting frozen products or confectionery like ice cream and refrigerated products like humid toppings in a display cabinet. The method comprises the steps of:

- placing at least one first container for frozen products in a display area of the display cabinet above a refrigeration means of the display cabinet,
- placing a movable carrier comprising a frame above the display area and first container such that the carrier is horizontally movable above the display area such that in each position of the carrier at least a part of the display area for receiving the first container is exposed/accessible from above, and
- placing at least one second container for refrigerated products on the frame, preferably in a heat-conductive cavity or in an opening of the frame or on a flat or recessed heat-conductive supporting portion of the frame (i.e. preferably made of a heat-conductive material),

wherein the first container is provided above the refrigeration means such that products stored/displayed therein are kept frozen, and the second container is provided above the refrigeration means and the first container such that products stored/displayed therein are kept refrigerated.

[0022] The carrier is preferably movable along sliding rail means for slidably receiving the carrier, wherein the sliding rail means are preferably formed by a stepped or recessed portion in at least one of the opposite side walls of a plurality of side walls laterally delimiting the display area and/or a top face of at least one of the opposite side walls and/or a separate rail means preferably removably attached to at least one of the side walls which extend horizontally along the opposite side walls, preferably along the whole display cabinet or display area.

[0023] Further features, advantages and objects of the present invention would come apparent for the skilled person when reading the following detailed description of embodiments of the present invention, when taking in conjunction with the figures of the enclosed drawings.

Brief Description of the Drawings

[0024]

Figure 1a shows a perspective view of a display cabinet according to the invention with a carrier according to the invention,

Figure 1b shows a partial view of the display cabinet of figure 1a with the carrier,

Figure 2 shows a perspective view of the interior of the display cabinet of figure 1a with the carrier,

Figure 3a shows a top view of a carrier according to the invention,

Figure 3b shows a bottom view of the carrier of figure 3a,

Figure 3c shows a side view of the carrier of figure 3a,

Figure 3d shows a sectional side view along line A-A of the carrier of figure 3a,

Figure 4 shows a perspective schematic view of the carrier of figure 3a, and

5 Figure 5 shows a perspective view of a known display cabinet.

Detailed Description of the Invention

10 **[0025]** Figure 1a shows a display cabinet 1 according to the present invention. The display cabinet 1 comprises a refrigeration means 2 (see also figure 2) for cooling (i.e. freezing and refrigerating) comestible products P1, P2 to be displayed by the display cabinet 1. Such refrigeration means 2 are well known in the prior art so that a further description thereof is omitted herein.

15 **[0026]** The display cabinet 1 further comprises a display area 3 for displaying the frozen products P1. Therefore, the display area 3 is disposed above the refrigeration means 2 (see figure 2) so that the display area 3 can be maximally cooled, e.g. to a temperature of about -16°C to -18°C. The display area 3 is designed to receive at least one or more first containers 4 for frozen products P1 like ice cream to be (kept) frozen by the refrigeration means 2.

20 **[0027]** For example, the display area 3 can comprise a basically horizontal wall provided with openings designed to receive and support the respective first container(s) 4. The first containers 4 can be designed to extend over the whole width of the display cabinet 1 so that a plurality of containers 4 can be provided within the display area 3 side-by-side along the longitudinal direction of the display area 3 (i.e. in a horizontal direction orthogonal to the traverse direction) as shown in the known display cabinet of figure 5. However, also any other arrangement - preferably side-by-side - of the first containers 4 is possible, as, for instance, shown in figures 1 and 2 where the first containers 4 are arranged side-by-side in two or more rows, wherein the first containers 4 in all, a few or one of the rows extend along a traverse direction of the display cabinet 1 or display area 3 and the first containers 4 in at least one of the other rows extend in the same direction or in a direction orthogonal to the other containers 4. However, the invention is not limited to a particular arrangement of the first containers 4 as long as they are provided or receivable in the display area 3 above the refrigeration means 2.

25 **[0028]** In a preferred embodiment, the display cabinet 1 can comprise a plurality of side walls 50-53 preferably forming a housing 5 of the display cabinet 1. The side walls 50-53 preferably laterally delimit the display area 3. Further, the side walls 50-53 or the housing 5 preferably houses and thus covers the refrigeration means 2. The side walls 50-53 preferably comprise insulating interior panels or themselves are insulating. For cooling purposes (e.g. to allow cooling of the refrigeration means 2), the housing 5 can comprise a ventilation grille 54.

30 **[0029]** The display cabinet 1 can also comprise a transparent display unit 6 which is preferably made of glass or a transparent plastic material and is provided on top of the housing 5 allowing the customers to see the displayed products P1, P2. Preferably, the display unit 6 comprises an opening 60 at one of its sides to access the display area 3.

35 **[0030]** According to the present invention, the display cabinet 1 further comprises a movable carrier 10 which is preferably removably arranged above the display area 3. The carrier 10 itself is also covered by the invention. The movable carrier 10 is arranged to be movable in a horizontal direction M while being positioned above the display area 3 in each of its moving positions. Further, the carrier 10 is movably arranged such that in each position of the carrier 10 at least a part of the display area 3 for receiving the first container(s) 4 is accessible from above. That is to say that at least a part of one of the first containers 4 or even one or more of the first containers 4 are exposed independent from the position of the carrier 10 along its moving direction. Therefore, the carrier 10 preferably has a width being equal to or smaller than the width of the first containers 4. Preferably, the vertical distance between the carrier 10 and the display area 3 or the carrier 10 and the first containers 4 or the carrier 10 and the refrigeration means 2 is identical independent from the horizontal position of the carrier 10 along its moving direction M.

40 **[0031]** The carrier 10 comprises a frame 11 having - according to one embodiment - at least one opening 12 designed to receive one or more of second containers 13 for products P2 like toppings to be (kept) refrigerated (i.e. not frozen) by the refrigeration means 2. According to an alternative or additional embodiment (not shown), the frame 11 can also have a flat or recessed (e.g. a cavity) supporting portion or area for supporting the at least one second container 13 for products P2 like (humid) toppings to be (kept) refrigerated by the refrigeration means 2. To allow the refrigeration means 2 to refrigerate the second containers 13 being placed on the carrier 10 or in a cavity thereof, the supporting portion is made of a heat-conductive material thus transferring the cooling energy via the carrier (particularly the heat-conductive supporting portion) to the second containers 13 thus being (kept) refrigerated. It is noted that also the whole frame 11 or carrier 10 can be made of a heat-conductive material thus forming or providing the supporting portion.

45 **[0032]** It is also possible that the supporting area comprises an opening having a cross-section area being smaller than the cross-section area of the second container 13, so that the second container 13, when being placed on the supporting area, provides thermal transfer directly via the opening being open towards the display area 3 or refrigeration means 2. In the latter case, the bottom of the second container 13 does not expose through and from the carrier 10

towards the display area 3.

[0033] The second containers 13 are movable via the carrier 10 over the display area 3 and, if present, over the first containers 4 received therein. To allow the carrier 10 to be movable over the display area 3, at least two opposite side walls 50, 52 of the plurality of side walls 50-53 extending along the horizontal moving direction M of the carrier 10 preferably comprise a sliding rail means 7 for slidably receiving the carrier 10.

[0034] In a preferred embodiment, the carrier 10 spans the display area 3 in a horizontal direction and orthogonal to its moving direction M as can be seen in figures 1a, 1b and 2. Then, the sliding rail means 7 can comprise a stepped or recessed portion in at least one of the opposite side walls 50, 52, wherein the carrier 10 can rest on the stepped portion or engaged with the recessed portion in a slidable manner. These structures also allow for a good, easy and secure guidance of the carrier 10 along its moving direction M, i.e. when moving the carrier 10 along the respective side walls 50, 52. The carrier 10 can thus be moved along the (whole) display cabinet 1 or its opposite supporting side walls 50, 52.

[0035] It is also possible that the sliding rail means 7 is formed by a top face of at least one of the opposite side walls 50, 52 so that the carrier 10 simply rests on said top face to be supported by said side wall 50, 52.

[0036] Furthermore, there can also be provided a separate rail means preferably removably attached to at least one of the side walls 50, 52 which extends horizontally along one or both of the opposite side walls 50, 52, preferably along the whole display area 3 when seen in the moving direction M.

[0037] To improve the slidability of the carrier 10, the frame 11 of said carrier 10 can comprises one or two opposite sliding portions 14 as depicted in figures 1 to 4 for slidably supporting the carrier 10 over the display area 3. In a preferred embodiment, these sliding portions 14 preferably cooperate(s) with the sliding rail means 7 of the side walls 50, 52.

[0038] In a preferred embodiment, at least one of the sliding portions 14 has an L-shaped structure as shown in figures 2 and 4 (left sliding portion 14) and in figures 3c and 3d (right sliding portion 14) having a first leg 15 extending from a side portion 17 of the carrier 10 upwards and a second leg 16 extending sideways from the upper end of the first leg 15 and away from the display area 3 or opening 12 or heat-conductive supporting portion. Hence, the carrier 10 can be slidably provided on the sliding rail means 7 such that it rests on said sliding rail means 7 with its (horizontally extending) second leg 16 while the carrier 10 is laterally guided by the first leg 15 preferably being in a slidable contact with a side portion of the sliding rail means 7 to thus support and guide the carrier 10 laterally and from below (see, for instance, figure 2). It is noted that the sliding portion 14 or at least the second leg 16 can also be formed in a hook-like manner so that the carrier 10 can be hooked in the (corresponding) sliding rail means 7 thus increasing the guidance of the carrier 10 along its moving direction M.

[0039] As can be seen in figures 2 and 4 (right sliding portion 14) and in figures 3b, 3c and 3d (left sliding portion 14), the sliding portions 14 can also be formed by a laterally extending resting portion 19 extending sideways from a side portion 18 and away from the display area 3 or opening 12 or heat-conductive supporting portion. In this case, a lateral face portion 20 of the frame 11 or carrier 10 can form a guiding portion preferably being in slidable contact with a side portion of the sliding rail means 7. Hence, the carrier 10 can be supported and guided laterally and from below by means of the resting portion 19 and the lateral face portion 20 as can be clearly seen in figure 2.

[0040] According to another embodiment, the sliding portions 14 can also be simply formed by an edge portion 18a of the carrier 10, wherein the bottom portion 19a of the carrier 10 forms a resting portion to rest on the sliding rail means 7 while the lateral face portion 20 of the carrier 10 can form a guiding portion preferably being in slidable contact with a side portion of the sliding rail means 7 to thus support and guide the carrier 10 laterally and from below.

[0041] It is noted that the carrier 10 can comprise identical or different sliding portions 14 preferably on its opposite sides as also shown in figures 2 to 4, while the sliding portions 14 are not limited by the given embodiments in respect of their layout, design and dimensions.

[0042] According to a preferred embodiment, the frame 11 of the carrier 10 has a substantially rectangular form, wherein the opening 12 for receiving the second container(s) 13 or the heat-conductive flat or recessed supporting portion for supporting the second container(s) 13 preferably has a rectangular form as well. However, the invention is not limited to the dimensions and design/forms of the carrier 10 and its opening 12 or heat-conductive supporting portion. It has already been noted that the opening 12 can also be designed such that two or more of the second containers 13 can be received therein, as exemplarily shown in figures 1b and 2. Therefore, the opening 12 can comprise fixed or (re-) movable separators dividing the opening 12 in a desired number and size of receiving openings. On the other hand, in case the carrier 10 comprises a supporting portion, said heat-conductive supporting portion is designed such that two or more of the second containers 13 can be supported thereon or the carrier 10 comprises a desired number of respective supporting portions for supporting one or more second containers 13 each.

[0043] It is noted that the carrier 10 according to the invention can comprise either opening(s) 12 or supporting portion(s) or both, dependent on the demand of the user. It is also possible that an opening 12 in the carrier 10 can be selectively closed by a lid made of a heat-conductive material thus transforming the opening 12 into a supporting portion and the other way around when removing said lid again.

[0044] In a preferred embodiment, the carrier 10 is made of metal, preferably a metal sheet. However, the carrier 10 can also be made of any other suitable material like, for instance, steel, aluminum, plastic, wood, or the like. In case the

carrier 10 is made of a material having a bad heat-conductivity (like wood), a heat-conductive supporting portion can be separately inserted in said wooden carrier 10 being made of a metal or other material having a high heat-conductivity. The frame 11 of the carrier 10 can preferably be integrally formed, e.g. it can be made of a metal sheet and produced by way of a pressing and bending process. To attain a high rigidity and stability of the frame 11, at least two opposite side walls 11b, 11c on opposite sides of a horizontal wall 11a comprising the opening 12 or heat-conductive supporting portion when seen in the intended moving direction M substantially orthogonally extend from the horizontal wall 11a (see figures 3b and 4). A bottom face of these side walls 11b, 11c being opposite to the horizontal wall 11a can form the bottom portion 19a of the carrier 10 as described above, while a lateral face portion of said side walls 11b, 11c can form the lateral face portion 20.

[0045] In the following, an example for the dimensions of the carrier 10 is given with respect to figure 4, wherein the dimensions are not limiting to the invention:

Example 1:

[0046]

•	overall length of the frame 11 (L1):	400-600mm
•	length of the opening 12 or supporting portion (L2):	150-550mm
•	Overall width of the frame 11 (W1):	130-180mm
•	Width of the opening 12 or supporting portion (W2):	100-180mm
•	Width of the portion of the horizontal wall 11a on a side of an L-shaped sliding portion 14 (W3):	25-40mm
•	Width of the portion of the horizontal wall 11a on a side of a horizontally extending sliding portion 14 including the resting portion 19 (W4):	40-60mm
•	Height of the first leg 15 (H1):	15-25mm
•	Width of the second leg 16 (W5):	5-20mm
•	Height of the side walls 11b, 11c (H2):	10-20mm
•	Width of the resting portion 19 (W6):	5-20mm

[0047] In the following, an example for the distance D1 between the bottom 13a of the second container(s) 13 and the refrigeration means 2, the distance D2 between the bottom 13a of the second container(s) 13 and the display area 3, or the distance D3 between the bottom 13a of the second container(s) 13 and the top 14a of the first container(s) 4 are given with respect to figure 2, wherein the dimensions are not limiting to the invention:

Example 2:

[0048]

●	D1:	150-500mm
●	D2/D3:	50-200mm

[0049] It is again noted that the dimensions presented by "Example 1" and "Example 2" are not limiting to the invention. In fact, the particular dimensions mainly depend on the display cabinet 1 and its structure/layout and dimensions as well as the layout and dimensions of the first containers 14 and second containers 13 used.

[0050] The first container(s) 4 and the second container(s) 13 are preferably made of metal, steel, aluminum, plastic, glass, carton, polystyrene or the like, wherein the first container(s) 4 are preferably made of a metal and the second container(s) 13 are preferably made of a plastic material.

[0051] It is again noted that the invention is directed to the display cabinet 1 having said carrier 10 as well as the carrier 10 itself.

[0052] Further, the invention also covers a kit having a display cabinet 1 according to the invention and further comprises at least one first container 4 for frozen products P1 like frozen confectionary (e.g. ice cream) and a plurality of second containers 13 for refrigerated products Ps like (humid) toppings. The second containers 13 of the kit have a different depth so that the distance D1 between the bottom 13a of the second containers 13 and the refrigeration means 2 (or the distance D2 between the bottom 13a of the second containers 13 and the display area 3, or the distance D3 between the bottom of the second containers 13 and the top 14a of the first container(s) 4) depends on the depth of the second container 13 when being provided in the opening 12 of the frame 11 of the carrier 10. Hence, the deepest container 13 is designed to be closer to the refrigeration means 2 (or display area 3; or first container(s) 4) than a flatter second

container 13 but still positioned above the first container 4 when placed in the movable carrier 10. Hence, by varying the distance to the refrigeration means 2 (or display area 3; or first container(s) 4) dependent on the depth of the second container 13, the temperature for refrigerating the products P2 in the second containers 13 can be selectively defined. This is because the temperature above the refrigeration means 2 ((or display area 3; or first container(s) 4) continuously increases. Hence, products P2 which should be refrigerated at a lower temperature can be placed in deeper second containers 13 while products P2 which should be refrigerated at higher temperatures can be placed in flatter second containers 13.

[0053] As an alternative it is also possible to arrange the display area 3 in a slightly angled manner or to layout the carrier 10, e.g. the sliding portion 14 or the horizontal wall 11a or the like, such that the carrier 10 and the display area 3 are slightly angled with respect to each other. As a result, the distance between the carrier 10 or the bottom 13a of the respective second containers 13 and the refrigeration means 2 or the display area 3 or the top 14a of the first containers 14 differs (increases, decreases) along the carrier 10 in a direction orthogonal to its moving direction M. Hence, particular parts of the carrier 10 are higher than others (or at least further distanced from the refrigeration means 2/ the display area 3/ the top 14a of the first container(s) 14) thus being disposed in a different temperature level. Hence, when placing second containers 13 in a region of the carrier 10 being closer to the refrigeration means 2/ the display area 3/ the top 14a of the first containers 14 than others, these containers 13 are placed in a level having a slightly lower temperature than second containers 13 being placed on the (same) carrier 10 in higher level areas.

[0054] In the following, a method for presenting frozen products P1 (e.g. comestibles or confectionery) like ice cream and refrigerated products P2 (e.g. comestibles) like (humid) toppings in a display cabinet is described. The following steps can be carried out in any desired order.

[0055] A first container 4 for frozen products P1 is placed in a display area 3 of the display cabinet 1 above a refrigeration means 2 of the display cabinet 1.

[0056] A movable carrier 10 comprising a frame 11 is placed above the display area 3 and the first container 4 (if the latter has already been placed in the display area 3) such that the carrier 10 is horizontally movable above the display area 3 such that in each position of the carrier 10 (along its moving direction M) at least a part of the display area 3 for receiving the first container 4 is exposed or accessible from above.

[0057] A second container 13 for refrigerated products P2 is placed in a heat-conductive cavity or in an opening 12 of the frame 11 or on a flat or recessed heat-conductive supporting portion of the frame 11.

[0058] The first container 4 is provided above the refrigeration means 2 such that the products P1 stored or placed therein are (kept) frozen, and the second container 13 is provided above the refrigeration means 2 and the first container 4 such that the products P2 stored or placed therein are (kept) refrigerated (but not frozen).

[0059] According to a preferred embodiment, the carrier 10 is movable along sliding rail means 7 for slidably receiving the carrier 10, wherein the sliding rail means 7 are preferably formed by a stepped or recessed portion in at least one of the opposite side walls 50, 52 of a plurality of side walls 50-53 laterally delimiting the display area 3 and/or a top face of at least one of the opposite side walls 50, 52 and/or a separate rail means preferably removably attached to at least one of the side walls 50, 52 which extend horizontally along the opposite side walls 50, 52, preferably along the whole display cabinet 1 or display area 3.

[0060] The invention is not limited to the embodiments described in this application and all features of the embodiments can be combined in any possible way as long as being covered by the scope of the invention as given by the appended claims.

[0061] For instance, the invention is not limited to the number, dimensions, material and arrangement of the first and second containers nor to a particular vertical distance between these containers since this depends on the power of the refrigeration means 2, the size of the display cabinet 1 and the desired temperatures for the respective products P1, P2. The invention is also not limited to the dimensions and material of the carrier 10. Moreover, the display cabinet 1 may also comprise more than one carrier 10. Further, the invention is not limited to ice cream and respective humid toppings but can comprise or relate to any products (preferably comestibles) to be kept frozen and refrigerated.

Claims

1. Display cabinet (1) for frozen confectioneries, like ice cream, comprising:

a refrigeration means (2),

a display area (3) disposed above the refrigeration means (2) which is designed to receive at least one first container (4) for products (P1) like ice cream to be kept frozen by the refrigeration means (2),

characterized in that

the display cabinet (1) further comprises a movable carrier (10) being horizontally movably arranged above the display area (3) such that in each position of the carrier (10) at least a part of the display area (3) for receiving

the first container (4) is accessible from above,
 wherein the carrier (10) comprises a frame (11) having an opening (12) designed to receive at least one second
 container (13) or having a flat or recessed supporting portion made of a heat-conductive material for supporting
 the at least one second container (13) for products (P2) like toppings to be kept refrigerated by the refrigeration
 means (2) and
 movable over the display area (3) via the carrier (10).

2. The display cabinet (1) according to claim 1, wherein the carrier (10) is removably arranged above the display area (3).

3. The display cabinet (1) according to claim 1 or 2,
 wherein the carrier (10) spans the display area (3) in a horizontal direction orthogonal to its moving direction (M).

4. The display cabinet (1) according to any of the preceding claims, further comprising a plurality of side walls (50-53)
 laterally delimiting the display area (3) and preferably housing the refrigeration means (2), wherein two opposite
 side walls (50, 52) of the plurality of side walls (50-53) extending along the horizontal moving direction (M) of the
 carrier (10) comprise a sliding rail means (7) for slidably receiving the carrier (10).

5. The display cabinet (1) according to claim 4, wherein the sliding rail means (7) comprises a stepped or recessed
 portion in at least one of the opposite side walls (50, 52) and/or a top face of at least one of the opposite side walls
 (50, 52) and/or a separate rail means preferably removably attached to at least one of the side walls (50, 52) which
 extend horizontally along the opposite side walls (50, 52), preferably along the whole display area (3).

6. The display cabinet (1) according to any of the preceding claims, wherein the frame (11) comprises two opposite
 sliding portions (14) for slidably supporting the carrier (10) over the display area (3), which sliding portions (14)
 preferably cooperates with the sliding rail means (7) of the side walls (50, 52).

7. The display cabinet (1) according to claim 6, wherein at least one of the sliding portions (14) has an L-shaped
 structure having a first leg (15) extending from a side portion (17) of the carrier (10) upwards and a second leg (16)
 extending sideways from the upper end of the first leg (15) and away from the display area (3) to support and guide
 the carrier (10) laterally and from below.

8. The display cabinet (1) according to any of the preceding claims, wherein the frame (11) of the carrier (10) has a
 substantially rectangular form, wherein the opening (12) for receiving the at least one second container (13) or the
 heat-conductive flat or recessed supporting portion for supporting the at least one second container (13) preferably
 has a rectangular form as well.

9. The display cabinet (1) according to any of the preceding claims, wherein the carrier (10) is made of metal, preferably
 a metal sheet, steel, aluminum, plastic, or wood, and wherein the frame (11) of the carrier (10) is preferably integrally
 formed.

10. The display cabinet (1) according to any of the preceding claims, wherein the opening (12) of the frame (11) is
 designed such that two or more of the second containers (13) can be received therein or wherein the heat-conductive
 supporting portion of the frame (11) is designed such that two or more of the second containers (13) can be supported
 thereon.

11. A kit having a display cabinet (1) according to any of claims 1 to 10 and further comprising at least one first container
 (4) for frozen products (P1) like ice cream and a plurality of second containers (13) for refrigerated products (P2)
 like humid toppings, wherein the second containers (13) have a different depth so that the vertical distance between
 the bottom of the second containers (13) to the refrigeration means (2) or the top of the at least one first container
 (4) depends on the depth of the second container (13) when being provided in the opening (12) of the frame (11)
 of the carrier (10), wherein the deepest second container (13) is designed to be closer to the refrigeration means
 (2) or the top of the at least one first container (4) than a flatter second container (13) but still positioned above the
 at least one first container (4) when placed in the movable carrier (10).

12. A carrier (10) for being horizontally movably arranged in a display cabinet (1) and above a display area (3) for
 receiving at least one first container (4), wherein the carrier (10) comprises a frame (11) having an opening (12) for
 receiving at least one second container (13) or having a flat or recessed portion made of a heat-conductive material
 for supporting the at least one second container (13) to be movable via the carrier (10), wherein the frame (11)

further comprises two opposite sliding portions (14) for slidably supporting the carrier (4) over said display area (3), and wherein at least one of the sliding portions (14) preferably has an L-shaped structure having a first leg (15) extending from a side portion (17) of the carrier (10) upwards and a second leg (16) extending sideways from the upper end of the first leg (15) and away from the opening (12) or heat-conductive supporting portion to support and guide the carrier (10) laterally and from below.

13. The carrier (10) according to claim 12, wherein the frame (11) of the carrier (10) preferably has a substantially rectangular form, wherein the opening (12) for receiving the at least one second container (13) or the heat-conductive flat or recessed supporting portion for supporting the at least one second container (13) preferably has a rectangular form, wherein the opening (12) of the frame (11) preferably is designed such that two or more of the second containers (13) can be received therein or wherein the heat-conductive supporting portion of the frame (11) is designed such that two or more of the second containers (13) can be supported thereon, wherein the carrier (10) is preferably made of metal, more preferably a metal sheet, steel, aluminum, plastic, or wood, and wherein the frame (11) of the carrier (10) is preferably integrally formed.

14. A method for presenting frozen products (P1) like ice cream and refrigerated products (P2) like humid toppings in a display cabinet (1), comprising the steps of:

- placing at least one first container (4) for frozen products (P1) in a display area (3) of the display cabinet (1) above a refrigeration means (2) of the display cabinet (1),
- placing a movable carrier (10) comprising a frame (11) above the display area (3) and, if already placed in the display area (3), above the first container(s) (4) such that the carrier (10) is horizontally movable above the display area (3) such that in each position of the carrier (10) at least a part of the display area (3) for receiving the first container (4) is accessible from above, and
- placing at least one second container (13) for refrigerated products (P2) in a heat-conductive cavity or in an opening (12) of the frame (11) or on a flat or recessed heat-conductive supporting portion of the frame (11),

wherein the first container (4) is provided above the refrigeration means (2) such that the products (P1) therein are kept frozen, and the second container (13) is provided above the refrigeration means (2) and the first container (4) such that the products (P2) therein are kept refrigerated.

15. The method according to claim 14, wherein the carrier (10) is movable along sliding rail means (7) for slidably receiving the carrier (10), wherein the sliding rail means (7) are preferably formed by a stepped or recessed portion in at least one of the opposite side walls (50, 52) of a plurality of side walls (50-53) laterally delimiting the display area (3) and/or a top face of at least one of the opposite side walls (50, 52) and/or a separate rail means preferably removably attached to at least one of the side walls (50, 52) which extend horizontally along the opposite side walls (50, 52), preferably along the whole display cabinet (1) or display area (3).

Fig. 1a

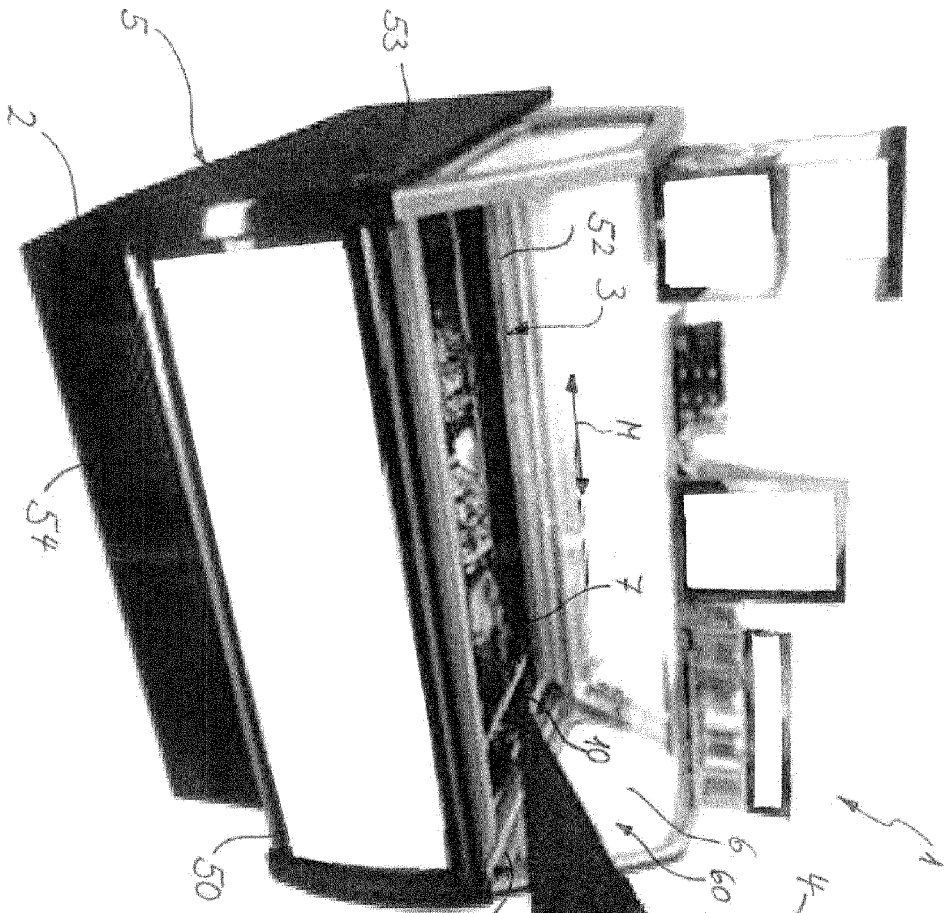
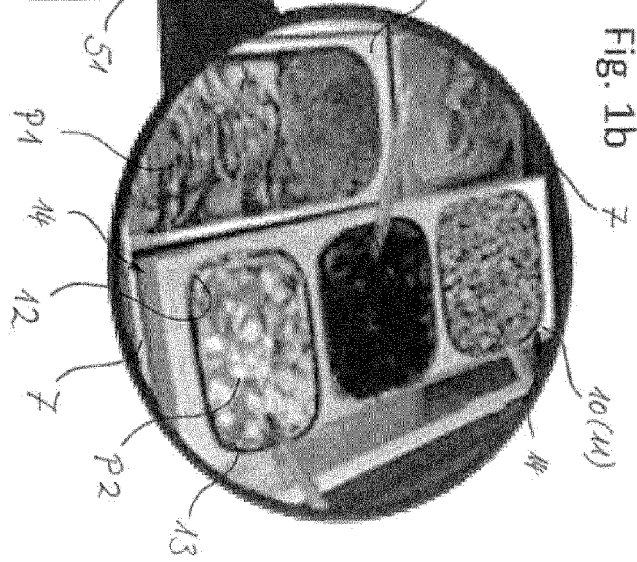


Fig. 1b



250

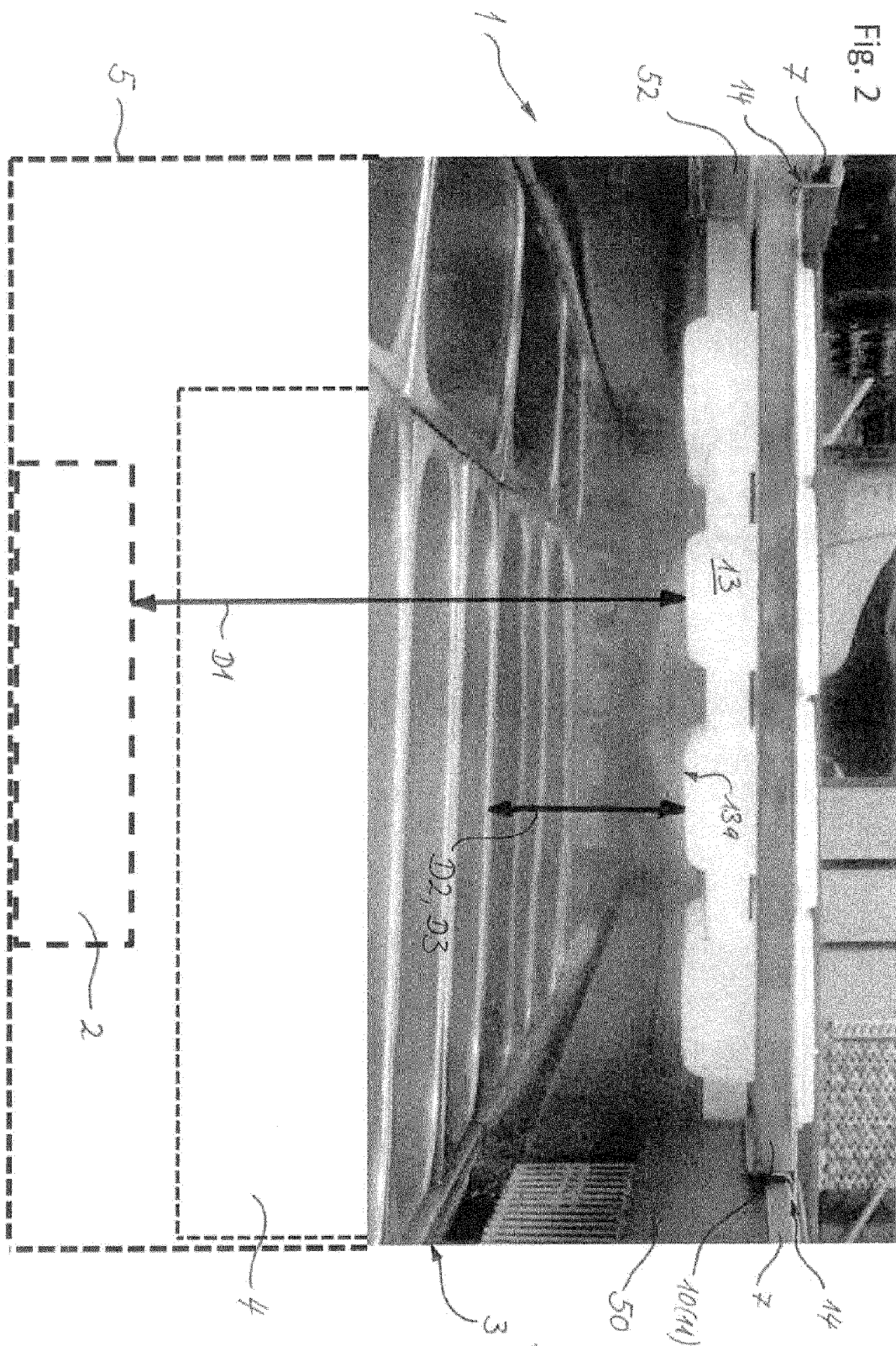


Fig. 3a

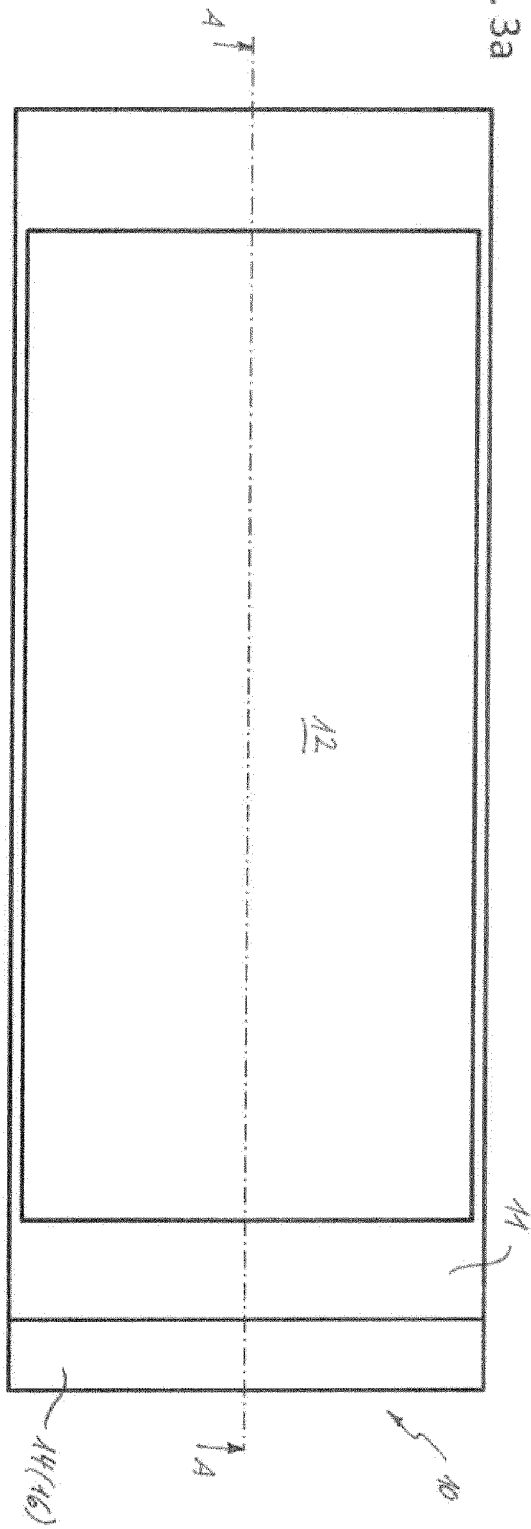


Fig. 3b

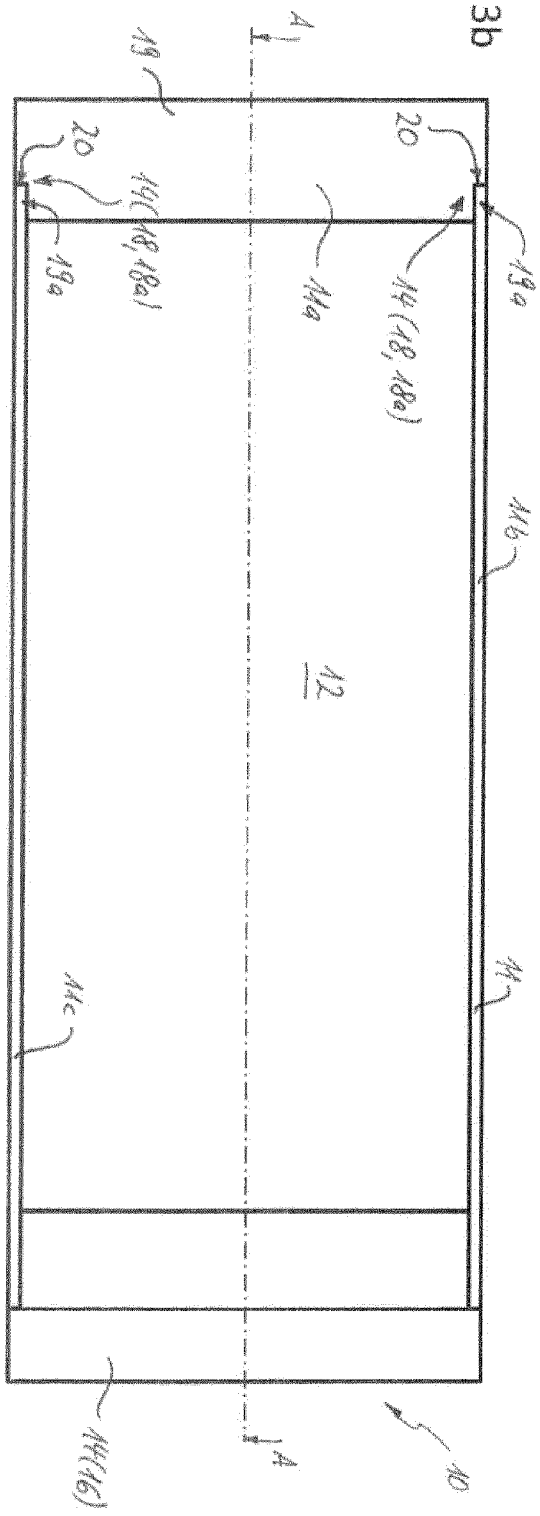


Fig. 3c

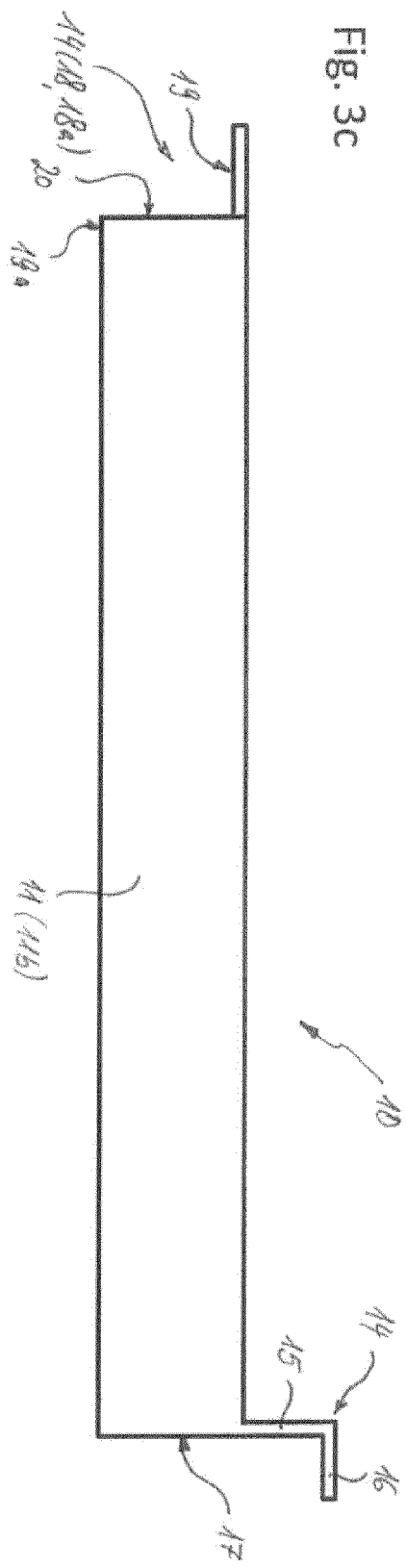


Fig. 3d

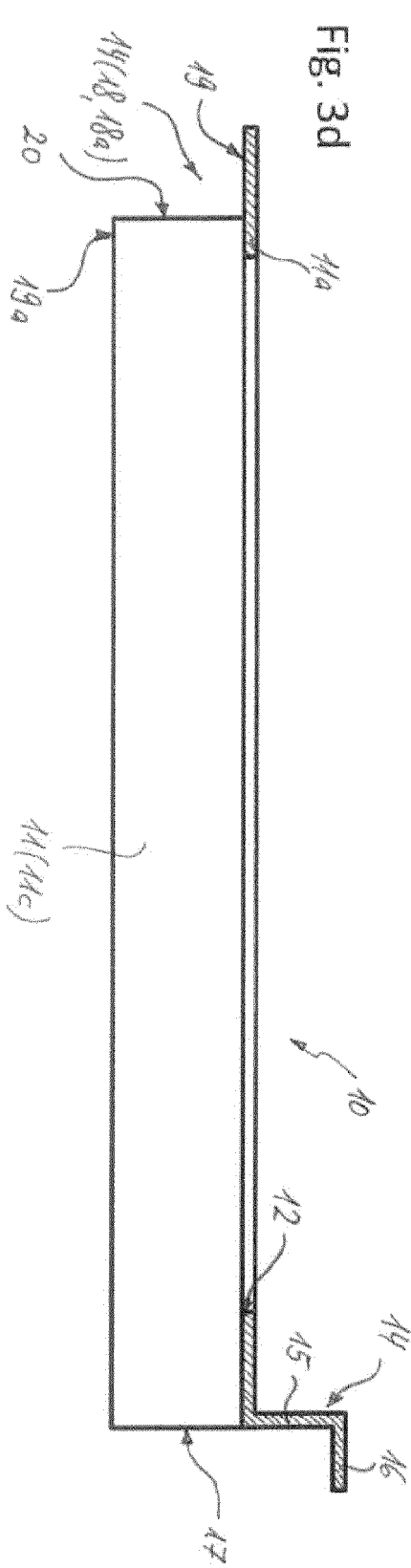


Fig. 4

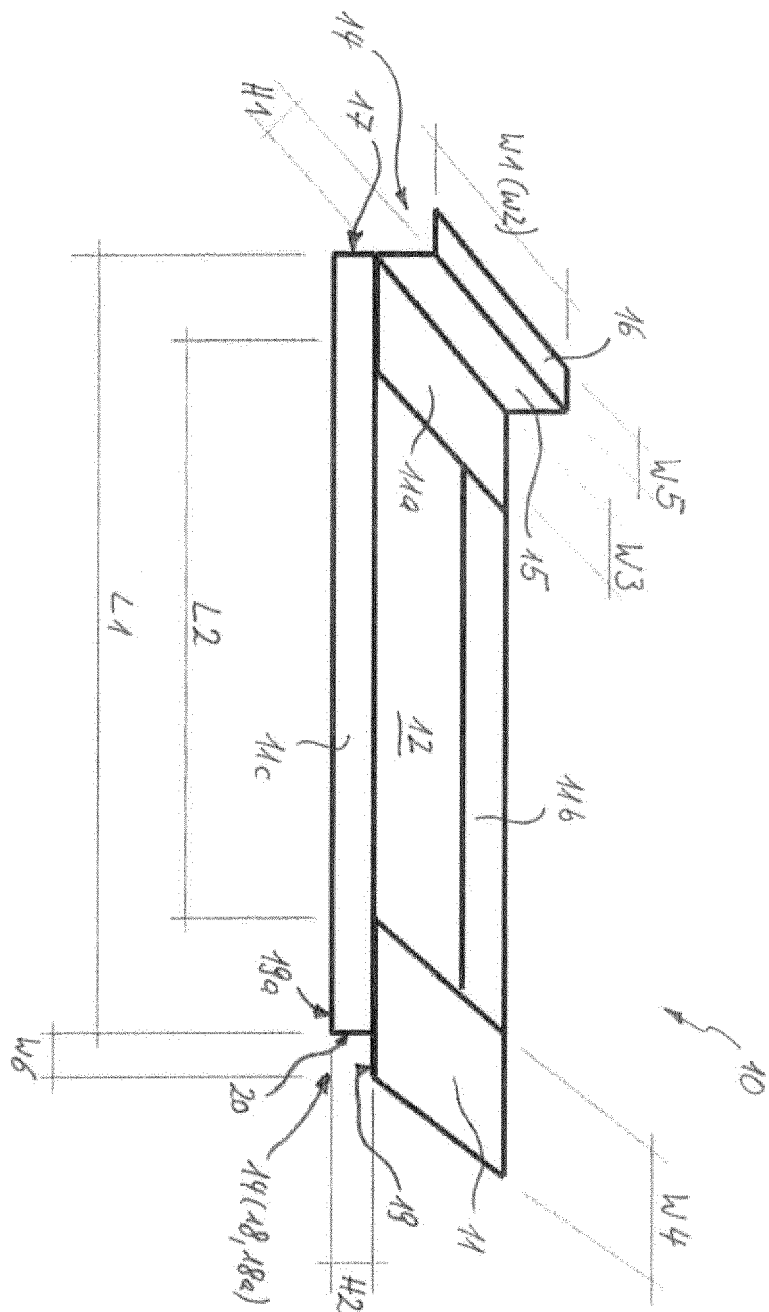
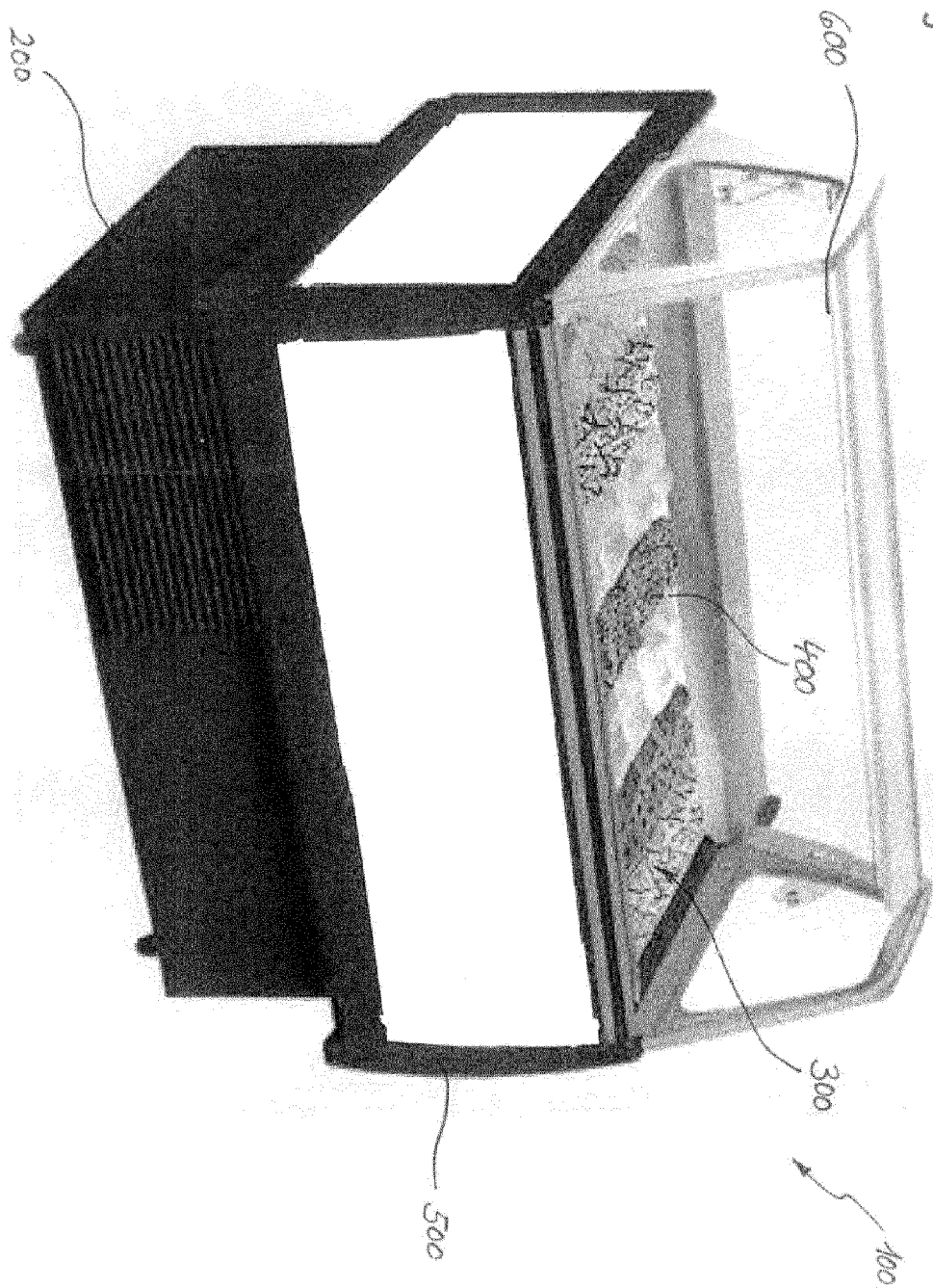


Fig. 5





EUROPEAN SEARCH REPORT

Application Number
EP 12 17 0521

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	US 2010/043471 A1 (BOCCHINI PIERLUIGI [IT]) 25 February 2010 (2010-02-25) * the whole document *	1-15	INV. A47F3/04
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Place of search The Hague		Date of completion of the search 4 October 2012	Examiner Ottesen, Rune
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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04-10-2012

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