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(54) Refrigerating apparatus and shelf for said apparatus

(57) The present invention relates to a refrigerating apparatus (10), in particular a refrigerator, a freezer, a refrigerator-freezer or the like, of the type comprising a cooled cell fitted with at least one shelf (3) adapted to support food containers (1A, 1B, 1C), said shelf (3) being provided with at least one track (4, 41, 42, 5) for positioning said containers (1A, 1B, 1C) on said shelf (3), wherein said at least one track (4, 41, 42, 5) can be removably secured to said shelf (3). The present invention also relates to a supporting shelf (3) of a refrigerating apparatus, in particular a refrigerator, a freezer, a refrigerator-freezer or the like, adapted to support food containers, said supporting shelf being provided with at least one track for positioning said container, wherein the supporting shelf (3) comprises a removable part (31, 31', 31 '') and a supporting part (32), and wherein said at least one track (4, 41, 42, 5) is integral with the removable part (31), the supporting part (32) being coupled to the cell walls and the removable part (31, 31', 31 '') being supported by the supporting part (32).

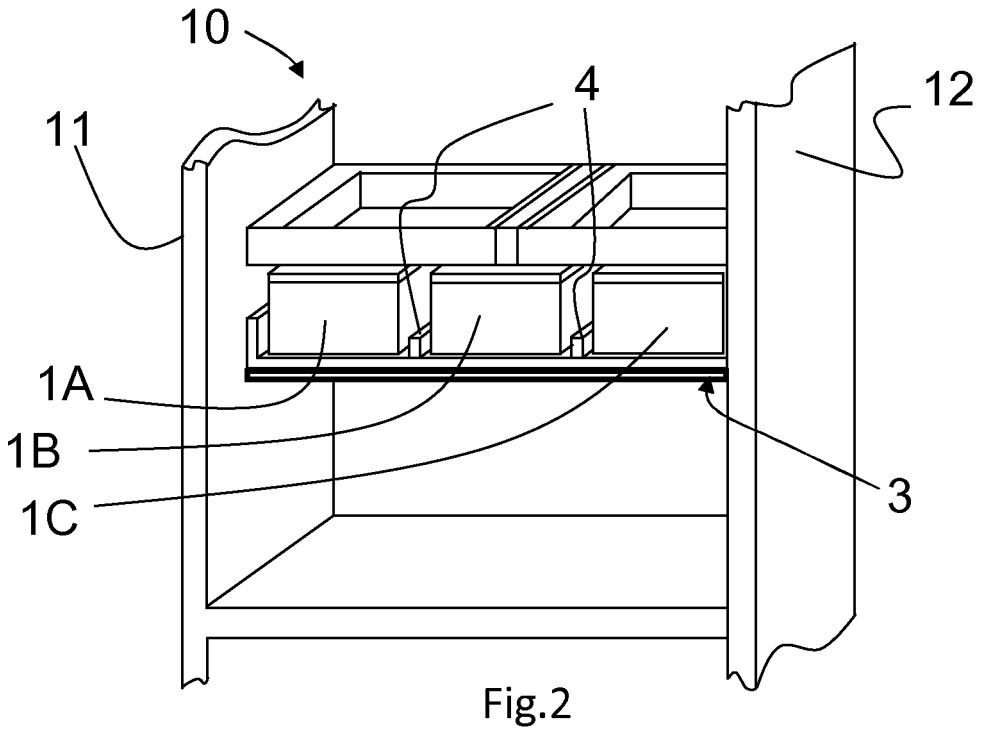

Fig.2

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Description

[0001] The present invention relates to a refrigerating apparatus comprising a cooled cell fitted with at least one shelf provided with tracks for securing food containers.

[0002] As known, shelves are arranged in the cooled cell of a refrigerating apparatus which extend between the two side walls of the cell for supporting foodstuffs; such shelves are often made of glass or, less frequently, plastic or metal grid; these shelves are commonly used for laying containers suitable for containing specific types of food, such as vegetables, cheese or liquid substances.

[0003] In a solution currently available on the market, the containers are hung under the shelves, for better space distribution and utilization within the cell: in this case, the containers are drawers equipped with tracks that are engaged with the shelf top, thus allowing the hanging drawer to be extracted.

[0004] One drawback of such hanging drawers is that they require that the foodstuffs contained therein do not exceed certain weight limits, in order to prevent the tracks, which are typically made of plastic, from being overly stressed.

[0005] When containers are laid on the shelves, on the contrary, they can normally be moved freely on the shelf surface in order to ensure the utmost flexibility as regards the arrangement of the foodstuffs to be preserved and the type and shape of containers; however, this implies that these containers may accidentally tip over, with easily imaginable consequences when they are used for storing liquids.

[0006] Refrigerating apparatuses have then been developed wherein the refrigerating cell is adapted to removably accommodate at least one sealed food container and wherein the refrigerating apparatus also comprises a suction system which can be connected to the sealed container through a suction duct for the purpose of creating a vacuum in the latter.

[0007] Refrigerating apparatuses of this type are per se known; in this regard, reference may be made, for example, to pending patent application WO 2006/097801 in the name of the present Applicant.

[0008] In such refrigerating apparatuses, a vacuum, or more precisely a condition of depression relative to the outer environment, is created in the sealed containers by means of a duct coupled to the sealed container and to a suction device, as schematically shown in Fig. 1, which is a side view of a portion of a cell of such a refrigerating apparatus.

[0009] In this respect, it can be observed that sealed container 1', equipped with a cover 2', rests on shelf 3': container 1' can be inserted into and removed from the cell for placing or picking foodstuffs into/from it; when sealed container 1' is inserted in the cell and laid on shelf 3', it is guided by side tracks 4' in a manner such that vacuum intake duct 6' enters into a matching hole, provided with a gasket, obtained in the rear wall of container 1', thereby putting the inside of the latter in communication with pump 8' for the purpose of generating a depression or vacuum therein; in this respect, it should be pointed out that the presence of side tracks 4' allows the user to insert the container into the cell by simply letting it slide over shelf 3' until intake duct 6' properly engages with container 1': in fact, the tracks allow container 1' to be correctly positioned with respect to duct 6' without the user having to take any particular measures.

[0010] According to a variant (dashed line in Fig. 1), vacuum intake duct 6" is coupled to cover 2' of sealed container 1': the latter is first slid over shelf 3', and then duct 6" is lowered and engaged into a hole, provided with a gasket, obtained in cover 2'.

[0011] It is therefore apparent that in both of these solutions it is absolutely necessary to provide a proper interface between container 1' and duct 6" in order to allow the apparatus to operate correctly.

[0012] However, containers 1' take some space within the refrigerated cell, and therefore their use may not be recommended in certain situations, e.g. when there is not enough food to be placed in a vacuum: in such situations, additional room may be made available in the refrigerated cell by removing containers 1' and using shelf 3' for laying foodstuffs.

[0013] In this case, however, the presence of tracks 4' represents a drawback because they protrude from shelf 3' and may prevent the foodstuffs from resting properly on shelf 3'.

[0014] It should be noted that the coupling between container 1' and duct 6' or 6" must be extremely precise for ensuring a tight seal and prevent any leakage; laying foodstuffs on shelf 3' (and therefore also on at least a portion of tracks 4') may cause food sediments to deposit on the tracks, which over time may no longer carry out their function properly due to the accumulated food deposits: as a direct consequence, container 1' will not be positioned correctly relative to duct 6' o 6", thus no longer operating as designed.

[0015] In order to prevent these problems from occurring, it has been thought of making shelf 3' extractable, i.e. removable when containers 1' are not in use, and replaceable with a traditional flat shelf with no tracks.

[0016] Though simple and effective, this solution requires the user to put the traditional shelf somewhere outside the refrigerating apparatus when containers 1' are not in use. In this respect, it should be pointed out that, for hygienic reasons, traditional shelves typically have a glass surface, which makes them easily subject to breakage; this also implies that they should be stored appropriately in a safe place outside the refrigerating apparatus.

[0017] It follows that, for both conventional containers and sealed containers adapted to be placed in a vacuum, it is necessary to ensure that they are properly positioned on the shelf and held there in order to prevent them from turning over or leaking (in the case of sealed containers).

[0018] It is a first object of the present invention to provide a refrigerating apparatus comprising a container

supporting shelf which can solve the above-mentioned problems.

[0019] This and other objects are achieved through a refrigerating apparatus according to the first claim.

[0020] It is another object of the present invention to provide a shelf for a refrigerating apparatus according to claim 9.

[0021] Further advantageous aspects and variants are also specified in the appended claims, which are intended as an integral part of the present description.

[0022] The present invention is based on the idea of providing a refrigerating apparatus comprising a shelf, wherein the container track can be removably secured to said shelf.

[0023] More in particular, the refrigerating apparatus comprises a container shelf which can be disassembled into two parts: a first removable part, fitted with one or more tracks for at least one container, and a second supporting part, with a substantially flat supporting surface.

[0024] The removable part is secured to the top to the supporting part, which in turn is coupled to the cell walls.

[0025] In short, when it is necessary to use sealed containers or containers which are to be held fixedly in position on the shelf, the user will install both parts of the shelf, so as to utilize the tracks that allow the containers to be held in the predetermined position (e.g. when they contain liquids) or the sealed containers to be properly positioned relative to the intake duct; on the contrary, when no containers are needed, the user can remove the shelf part that includes the tracks and leave the second part installed, which will be used just like a traditional shelf.

[0026] It should be observed that the tracks provided on the removable part, when the removable part is assembled together with the supporting part, must be fixed relative to the latter, so as to ensure that the position clearance of the containers is minimal, especially when they are sealed ones, in order to prevent any movements which may result in leaks.

[0027] In this manner, the present invention overcomes the drawbacks of prior-art solutions.

[0028] These features as well as further advantages of the present invention will become apparent from the following description of an embodiment thereof as shown in the annexed drawings, which are supplied by way of non-limiting example, wherein:

Fig. 1 is a side view of a cell of a refrigerating apparatus and a sealed container according to the prior art;
Fig. 2 is a perspective view of a refrigerating apparatus comprising a disassemblable shelf according to the present invention;
Fig. 3 is a perspective view of a first part of the shelf of Fig. 2;
Fig. 4 is a perspective view of a second part of the shelf of Fig. 2;
Fig. 5 is a perspective view of the shelf of Fig. 2;
Fig. 6 is a perspective view of the coupling area of the first and second parts of the shelf of Fig. 5;
Fig. 7 is a front view of the coupling area of Fig. 6;
Fig. 8 is a front view of the shelf of Fig. 5;
Fig. 9 is a perspective view of a variant of the first part of the shelf of Fig. 3;
Fig. 10 is a perspective view of a second variant of the first part of the shelf of Fig. 3;
Fig. 11 is a side view of the second variant of the shelf;
Fig. 12 is a bottom view of the first part of the shelf of Fig. 3;
Fig. 13 is a bottom view of the shelf of Fig. 5.

[0029] Fig. 2 shows a refrigerating apparatus 10. For clarity, the drawing only shows that cell portion which accommodates containers 1A, 1B and 1C. The latter are similar to containers 1' described above, and therefore will not be described any further; let it suffice to say that a vacuum can be created therein by means of a suction system comprising an intake duct afferent to each container.

[0030] In general, some or all containers 1A, 1B and 1C may be sealed ones, or they may be traditional, i.e. unsealed, containers used, for example, for storing liquids, loose solids or powders; in this latter case, the refrigerating apparatus may be a traditional one, i.e. not equipped with a container vacuum system.

[0031] Refrigerating apparatus 10 may be a refrigerator, a freezer, a refrigerator-freezer or the like, in particular for household use.

[0032] As clearly shown, shelf 3 according to the present invention extends between two side walls 11 and 12 of the refrigerating cell, and supports containers 1A, 1B and 1C.

[0033] It is fitted with tracks (Fig. 2 only shows longitudinal tracks 4) adapted to allow each container 1A, 1B and 1C to be positioned correctly relative to the intake duct (not shown in Fig. 2 for clarity).

[0034] The construction of shelf 3 can be understood by also referring to Figs. 3, 4 and 5: it comprises a first removable part 31 and a second part 32 which supports removable part 31.

[0035] Removable part 31 is fitted with tracks, namely longitudinal tracks 4 and a transversal track 5; the latter also performs the function of only allowing the containers to go in to a certain depth; in addition, Fig. 3 shows side shoulders 41 and 42, which also act as tracks for correctly positioning containers 1A and 1C.

[0036] Fig. 4 shows the second part of shelf 3, i.e. supporting part 32, which comprises a frame 33 that surrounds a flat central supporting portion 34; frame 33 is preferably made of plastic material, whereas central portion 34 is made of glass.

[0037] Supporting part 32 is coupled to and supported by side walls 11 and 12 of the cell, through frame 33 resting on supports protruding inwards from cell walls 11 and 12, or in a similar manner through grooves made on

said walls 11 and 12.

[0038] On frame 33, two projections 37 and 38 and two concave profiles can then be observed at which frame 33 protrudes less from the central supporting portion than where it lacks such a profile; removable part 31 of shelf 3 engages with supporting part 32 at concave profiles 35 and 36.

[0039] As can also be seen by referring to Fig. 5, removable part 31 and supporting part 32, when assembled, extend parallel to each other and are arranged horizontally in the cell, so as to provide the foodstuff support function as designed; as clearly shown, when assembled the removable part is located on top of the supporting part and the tracks are integral with the removable part, so that the tracks, when the removable part is mounted on the supporting part, are fixed in position relative to the latter.

[0040] The two parts are substantially superimposable and can be coupled to each other to form shelf 3 when containers 1A, 1B and 1C need to be used: in this solution, the coupling is obtained through side hooks and front 9A and rear 9B centering brackets provided on the sides of the removable part 31, which will be described in detail later on with reference to Figs. 6, 7 and 8.

[0041] In this regard, it should be pointed out that, once removable part 31 has been installed on supporting part 32, the tracks are fixed in position and cannot be moved unless the whole removable part 31 is displaced: this implies, especially in the case of sealed containers, that the position taken by the containers when they are laid on shelf 3 is a certain and univocal position, thus preventing any positioning mistakes that a user might otherwise make by moving the tracks on the shelf.

[0042] It can therefore be stated that, when removable part 31 is installed on supporting part 32, the tracks maintain a fixed position with respect to supporting part 32.

[0043] The advantages attainable with refrigerating apparatus 10, when equipped with said shelf 3, are then apparent: when containers 1A, 1B and 1C need to be used, removable part 31 is positioned on top of supporting part 32 and coupled thereto, thus preventing any mutual movement which might cause the intake duct to disconnect from or misalign with the respective container.

[0044] Container 1A, 1B or 1C is therefore inserted into the refrigerating cell and properly positioned therein with the help of tracks 4, 41, 42, 5 provided on removable part 31: in this manner, the intake duct can be plugged onto container 1A, 1B and 1C (as described for the prior art with reference to Fig. 1) without any risk of improper connection or air leaks.

[0045] Advantageously then, when containers 1A, 1B and 1C are in use, no shelf part needs to be removed and stored outside the refrigerating apparatus, since the shelf remains fully assembled inside the refrigerating apparatus.

[0046] When, on the contrary, containers 1A, 1B and 1C are not needed, after removing them from the refrigerating cell the user will remove removable part 31 only, while supporting part 32 can be used as a support for foodstuffs without running the risk of soiling or damaging tracks 4, 41, 42, 5.

[0047] In this case, a further advantage is given by the fact that removable part 31 is preferably made of plastic materials and can be stored outside the apparatus without any particular problem (unlike glass shelves), apart from the room taken up.

[0048] The coupling between removable part 31 and supporting part 32 will now be described in detail with reference to Figs. 6, 7 and 8, which are enlarged views of one of the two coupling areas (the other area on the opposite side of shelf 3 is designed in the same way).

[0049] These drawings show side hook 8 and front 9A and rear 9B centering brackets: the latter protrude laterally from the body of removable part 31 and have a substantially downward "L" shape, so as to abut against the edge of corresponding concave profile 36 in order to track the insertion and centering movement of removable part 31 onto supporting part 32: in this regard, it must in fact be pointed out that a wrong positioning of removable part 31 would otherwise cause an incorrect positioning of tracks 4, 41, 42, 5 and hence of containers 1A, 1B o 1C, resulting in a malfunctioning or damaged refrigerating apparatus.

[0050] When front 9A and rear 9B centering brackets are inserted, they ensure that removable part 31 is correctly positioned on supporting part 32: when the rear centering brackets abut against projections 37 and 38, the removable part 31 will be positioned correctly, and a downward movement thereof in the direction of supporting part 32 will cause curved terminal 81 of side hooks 8 to snap onto the frame of supporting part 32 at concave profiles 35 or 36, as shown in Fig. 8.

[0051] It should also be noted that side hook 8 comprises a curved terminal 81 and a grip handle 82, which is used for disengaging curved terminal 81 from supporting part 32: in fact, side hook 8 is made of plastic material and is therefore elastically deformable; since grip handle 82 is provided in one piece with curved terminal 81, being both made of plastic material, it follows that, when removable part 31 is coupled to supporting part 32, by applying a force onto the handle away from the supporting part, curved terminal 81 will follow and disengage from supporting part 32, thus decoupling the removable part, which can then be removed.

[0052] It should be observed that, advantageously in terms of simplification of the production process, hook 8 is made in one piece with removable part 31, also made of plastic material, and with tracks 4, 41, 42, 5, so that whole removable part 31 can be manufactured with a single moulding step.

[0053] Although the drawings show three containers 1A, 1B and 1C, and removable part 31 has been consequently illustrated and described herein as fitted with tracks 4, 41, 42 and 5 dedicated to such containers, it is of course conceivable to employ any number of containers without departing from the scope and teachings of

the present invention.

[0054] Referring now back to removable part 32, in the above-described embodiment it has one supporting surface 39A, 39B and 39C for each container 1A, 1B and 1C, which surface extends as a flat portion between a shoulder and a track or between two adjacent tracks: in this manner, containers 1A, 1B and 1C rest directly on the removable part.

[0055] In this respect, a variant is shown in Fig. 9, wherein it can be seen that removable part 31' consists of tracks 4, 41, 42 and 5 only, lacking the above-described container supporting surface: in this case, the containers are guided in position by the tracks as described but, instead of resting on the removable part, they rest directly on underlying supporting surface 32; this solution offers the advantage that less material is required for manufacturing removable part 31, and that the latter can be stored more easily when not in use, especially if it is disassemblable; in this latter case, for example, it is conceivable that tracks 4 and shoulders 41 and 42 snap onto rear track 5, so that part 31 can be disassembled into several elongated, rod-like parts which can be easily stored.

[0056] Of course, even though the drawings described above show sealed containers 1A, 1B and 1C, more in general they may be of any type, even unsealed ones: in this case, the tracks hold the container in position, preventing it from accidentally turning over and spilling its contents. Such a solution is especially useful when the containers are used for liquids, powders or loose material.

[0057] A further variant is shown in Figs. 10 and 11: in this case removable part 31" is pivoted to supporting part 32 through pivot arm 8": as can be easily understood from the annexed drawings, not only removable part 31 " can be removed, but it can also be turned and arranged perpendicularly to supporting part 32, thus resting against a wall of the cell of the refrigerating apparatus.

[0058] Advantageously, the removable part does not need to be stored somewhere outside the apparatus when not in use, i.e. when no containers are used or when it is necessary to use the flat supporting surface of supporting part 32.

[0059] Figs. 11 and 12 show two bottom views of first removable part 31 and of entire shelf 3, respectively: in these drawings, it can be observed that removable part 31 has reinforcement ribs 70 and 71 on its underside: in this case, ribs 70 and 71 extend in two perpendicular directions for the purpose of reinforcing the entire removable part 31; Fig. 12 clearly shows that reinforcement ribs 72 are also provided on the underside of frame 33. Said ribs 70, 71 and 72 are especially useful when frame 33 and the removable part are made of plastic material, since they allow to eliminate or reduce any deformation which may occur over time, thus always ensuring that the containers are positioned correctly. Incidentally, it can also be mentioned that a particularly advantageous type of plastic material which may be suitable for manufacturing the removable part and the frame of the supporting part is polystyrene.

Claims

1. Refrigerating apparatus (10), in particular a refrigerator, a freezer, a refrigerator-freezer or the like, of the type comprising a cooled cell fitted with at least one shelf (3) adapted to support food containers (1A, 1B, 1C), said shelf (3) being provided with at least one track (4, 41, 42, 5) for positioning said containers (1A, 1B, 1C) on said shelf (3),
characterized in that
at least one track (4, 41, 42, 5) can be removably secured to said shelf (3).

2. Refrigerating apparatus according to claim 1, wherein the shelf (3) comprises a removable part (31, 31', 31 ") and a supporting part (32), wherein said at least one track (4, 41, 42, 5) is integral with the removable part (31), so that said at least one track (4, 41, 42, 5), when the removable part (31, 31', 31") is mounted to the supporting part (32), is in a fixed position relative to the latter.

3. Refrigerating apparatus according to claim 2, wherein the supporting part (32) is coupled to the cell walls and the removable part (31, 31', 31") is supported by the supporting part (32).

4. Refrigerating apparatus according to claim 2 or 3, wherein the removable part (31, 31', 31 ") and the supporting part (32) extend parallel to each other when the former is mounted to the latter, the removable part (31, 31', 31") being mounted on top of the supporting part (32).

5. Refrigerating apparatus according to claim 2 or 3 or 4, wherein the removable part (31) can be secured to the supporting part (32) by means of side hooks (8) adapted to engage the supporting part (32), located on at least two opposite sides of the removable part (31) and integral therewith.

6. Refrigerating apparatus according to one or more of the preceding claims, wherein the supporting part (32) comprises a frame (33) around a central supporting plane (34), said frame featuring two concave profiles (35, 36) facing the central supporting portion (34) and adapted to be snap-engaged by at least one curved terminal (81) comprised in said side hooks (8), and wherein said removable part (31, 31', 31 ") also comprises a front centering bracket (9A) and a rear centering bracket (9B) on both sides of said side hooks (8), which front and rear brackets (9A, 9B) protrude laterally from the body of the removable part (31) and are substantially L-shaped,

so as to abut against the edge of the corresponding concave profile (36) of the supporting part (32) in order to guide the centering and coupling movement of the removable part (31) onto the supporting part (32).

7. Refrigerating apparatus according to claim 6, wherein said side hooks (8) are made of plastic material and comprise a grip handle (82) provided in one piece with the curved terminal (81).

8. Refrigerating apparatus according to claim 5, 6 or 7, wherein the removable part (31) is made of plastic material and is provided in one piece with the hook (8) and with said at least one track (4, 41, 42, 5).

9. Supporting shelf (3) of a refrigerating apparatus, in particular a refrigerator, a freezer, a refrigerator-freezer or the like, adapted to support food containers, said supporting shelf being fitted with at least one track for positioning said container,
characterized in that
said supporting shelf (3) comprises a removable part (31, 31', 31") and a supporting part (32), and wherein said at least one track (4, 41, 42, 5) is integral with the removable part (31), the supporting part (32) being coupled to the cell walls and the removable part (31, 31', 31") being supported by the supporting part (32).

10. Refrigerating apparatus (10) comprising a refrigerating cell adapted to removably house at least one food container (1A,1B,1C), wherein the refrigerating apparatus (10) comprises a suction device which can be connected through a suction duct to the container (1A,1B,1C) for the purpose of creating a vacuum therein, and further comprising a shelf (3) for supporting said container, said supporting shelf being fitted with at least one track for positioning said container,
characterized in that
said supporting shelf (3) comprises a removable part (31, 31', 31 ") and a supporting part (32), and wherein said at least one track (4, 41, 42, 5) is integral with the removable part (31), the supporting part (32) being coupled to the cell walls and the removable part (31, 31', 31") being supported by the supporting part (32).

-PRIOR ART -

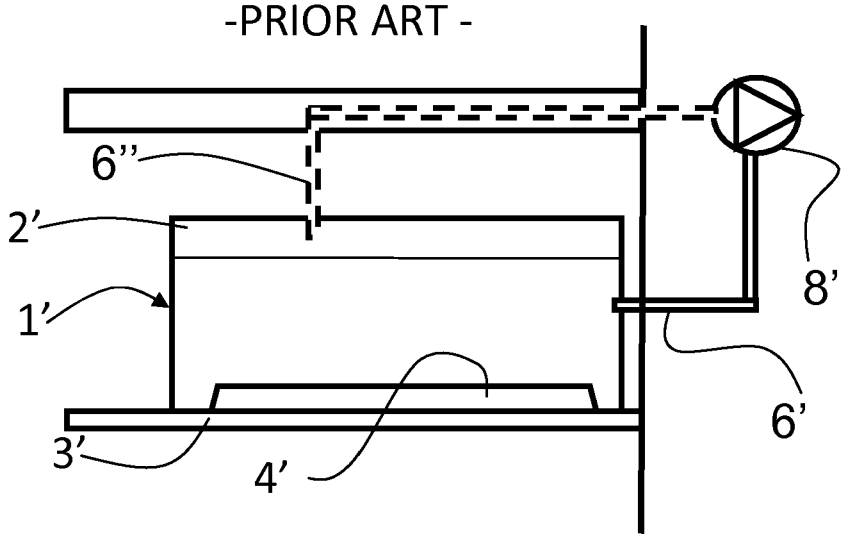

Fig.1

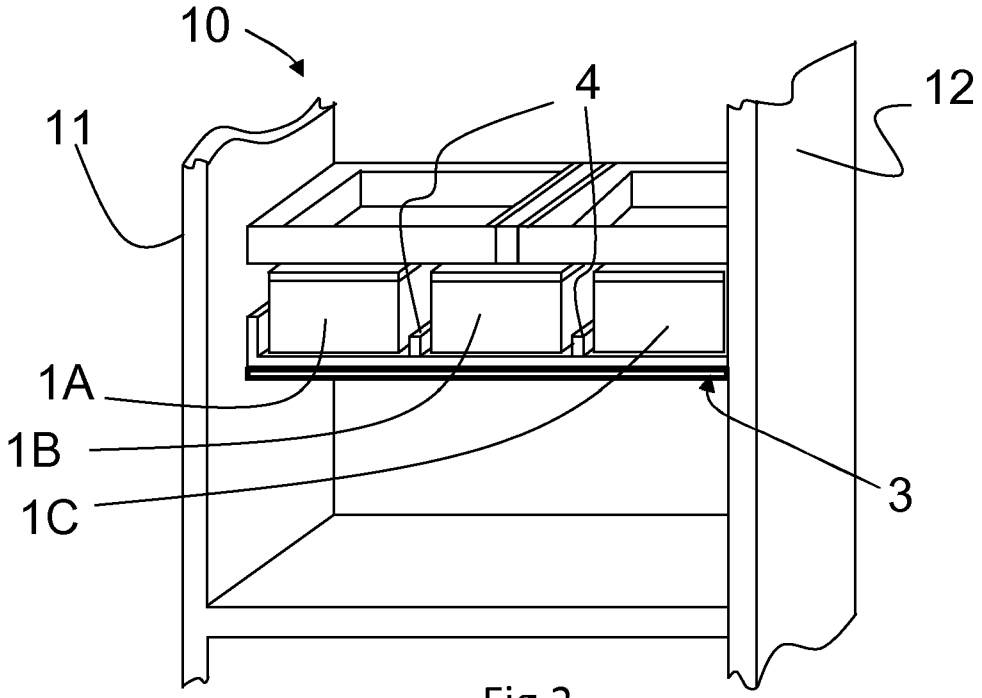

Fig.2

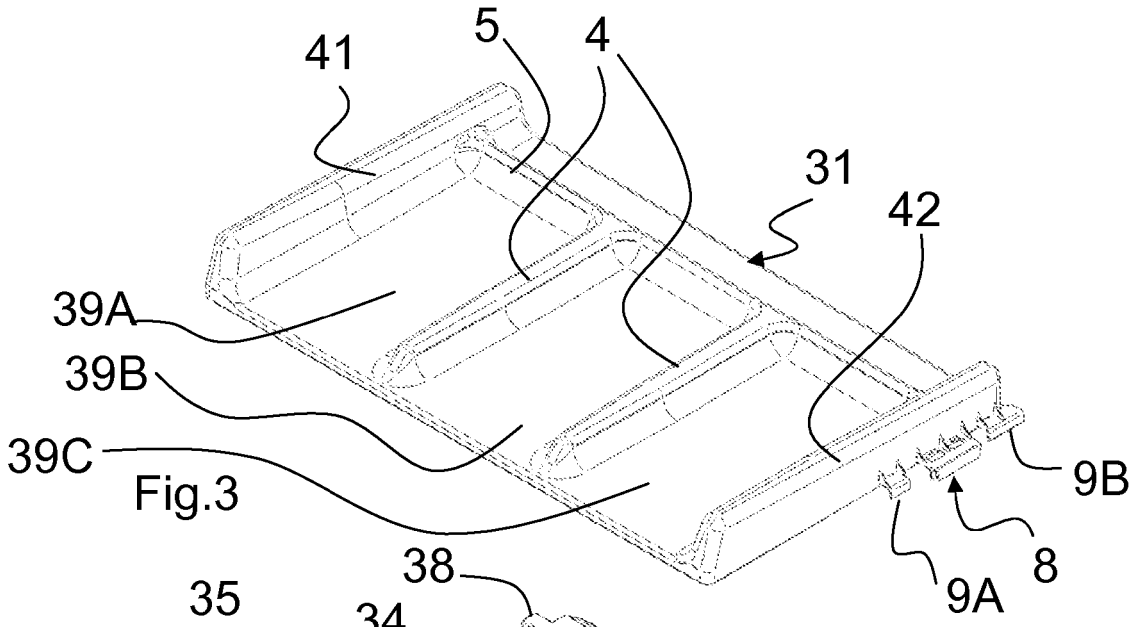

Fig.3

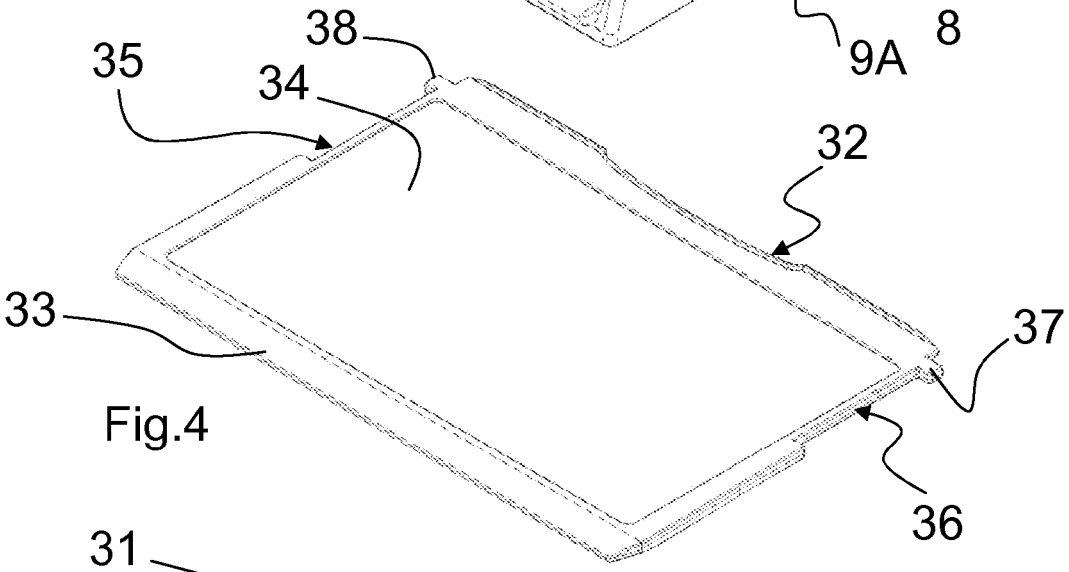

Fig.4

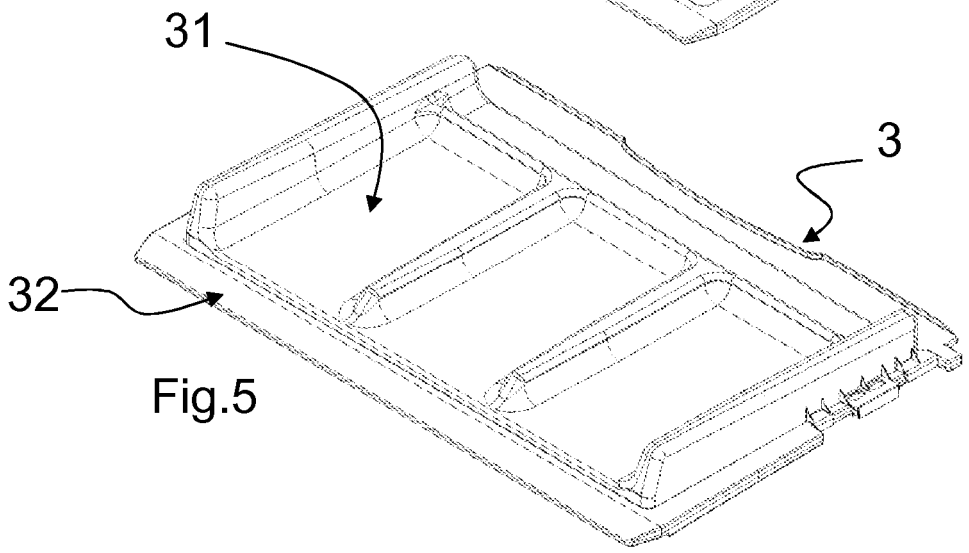

Fig.5

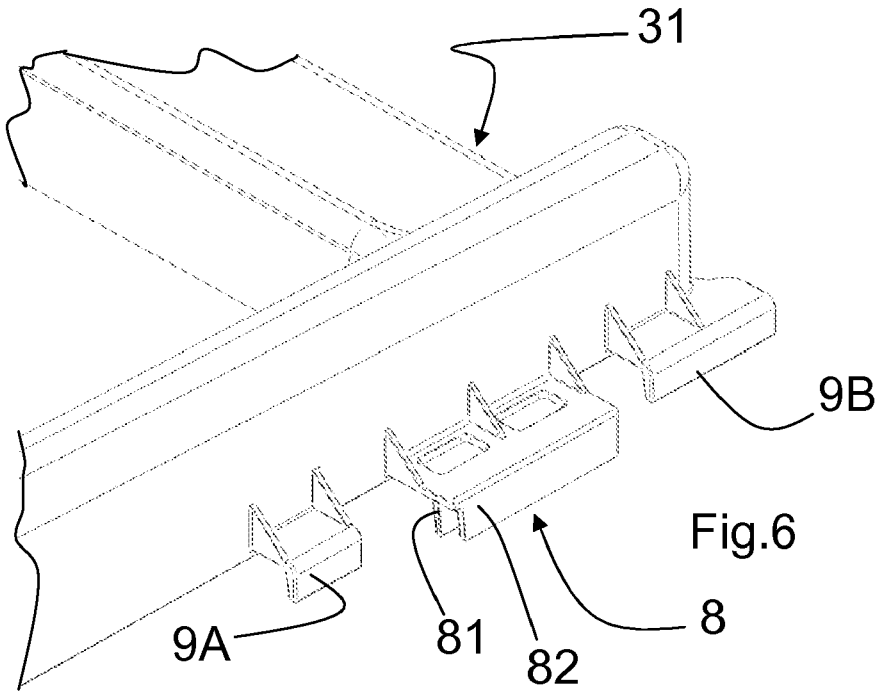

Fig.6

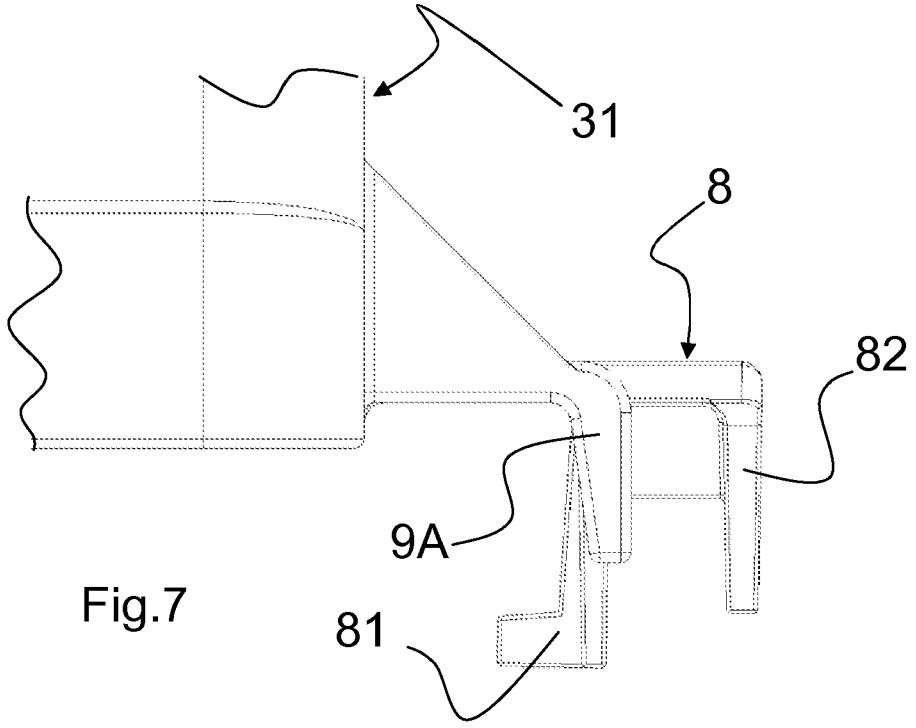

Fig.7

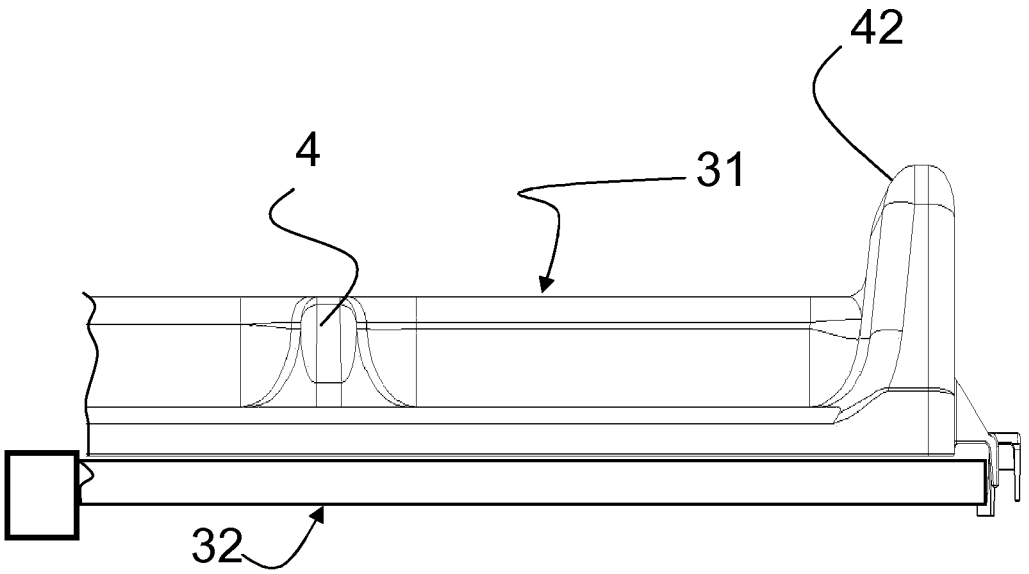

Fig.8

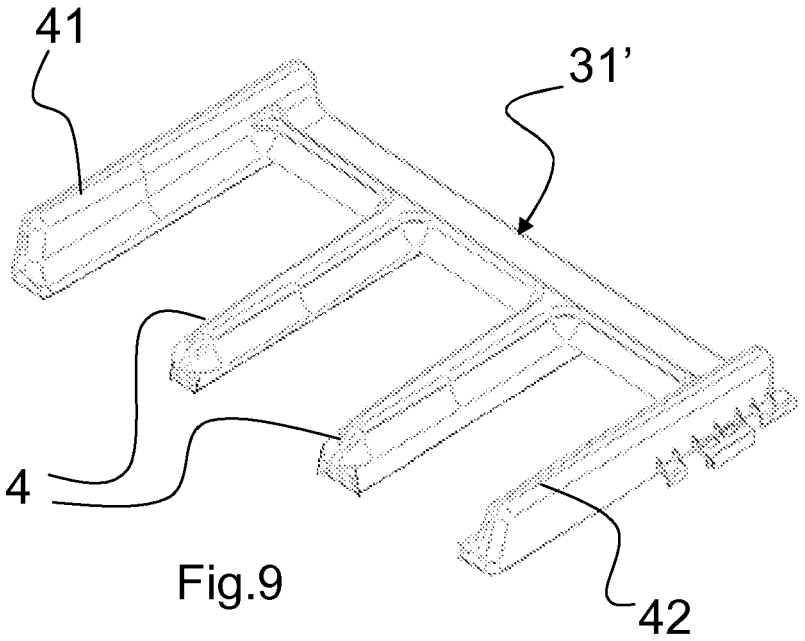

Fig.9

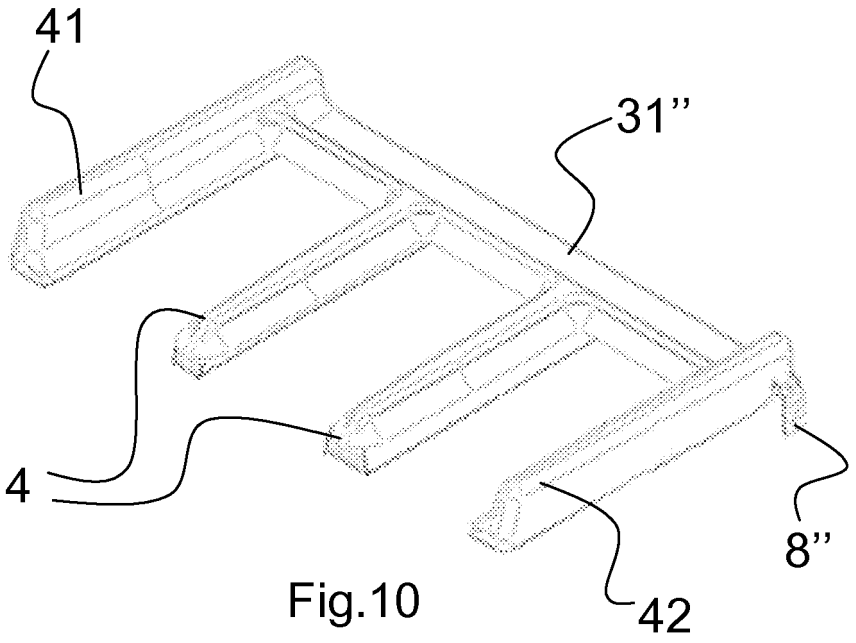

Fig.10

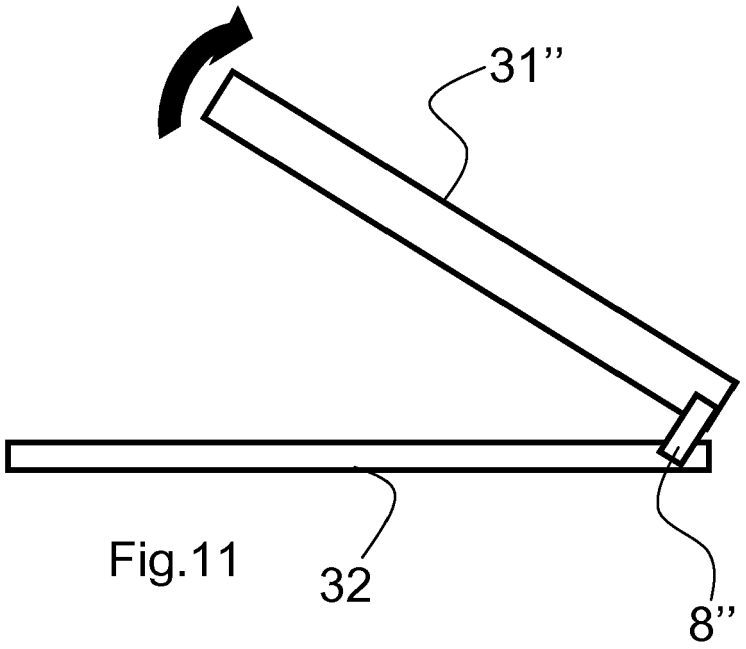

Fig.11

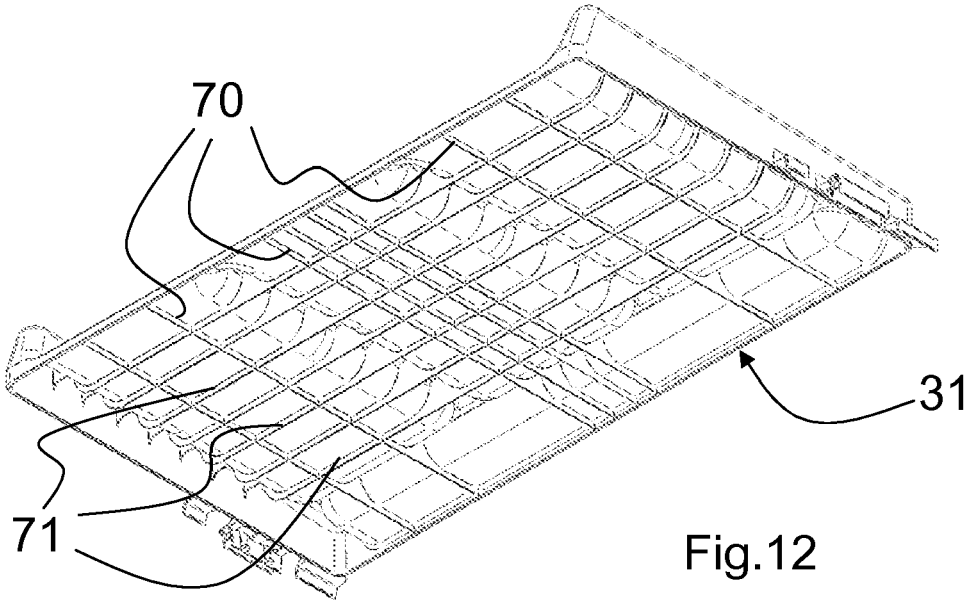

Fig.12

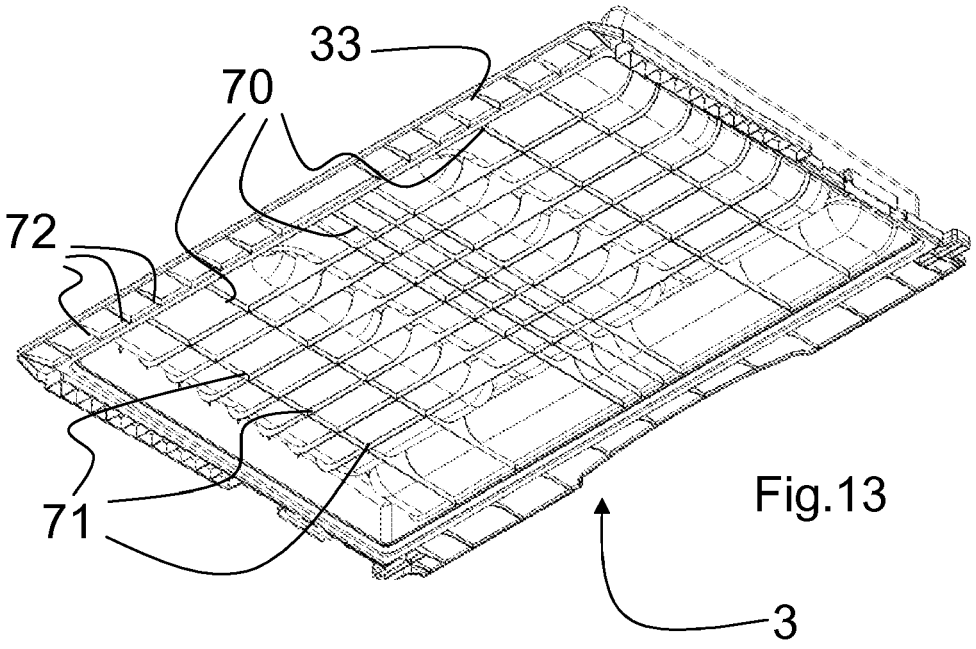

Fig.13

REFERENCES CITED IN THE DESCRIPTION

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