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(54) **Refrigerating appliance**

(57) The present invention relates to a refrigerating
appliance equipped with compartments cooled by cold
air produced by an evaporator and conveyed into the
compartments through a distribution duct communicating
therewith and housing at least one flow regulator capable
of intercepting the cold air flow in order to cool one or
more compartments.

When the refrigerating appliance is a freezer, ac-
cording to an advantageous variant an electric resistance
may be provided in at least one compartment, so that
such compartment can be converted into a compartment
operating at a different temperature as necessary.

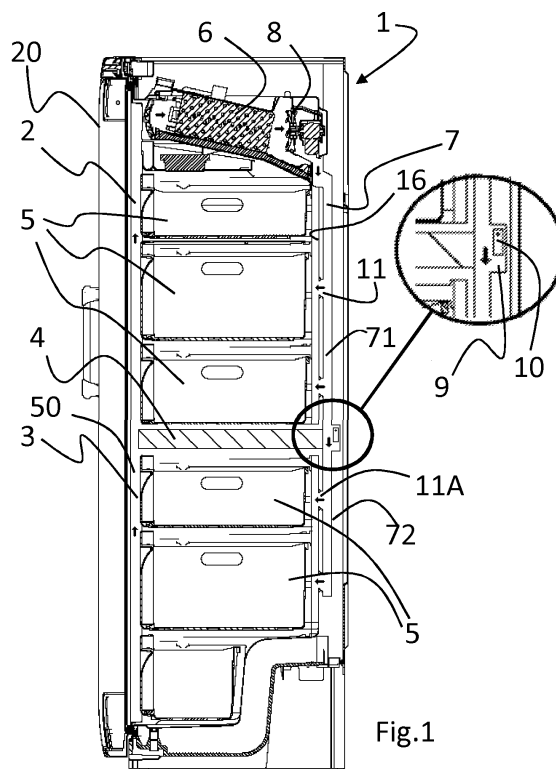


Fig.1

Description

DESCRIPTION

[0001] The present invention relates to a refrigerating appliance according to the preamble of the first claim, and typically applies to freezers and refrigerator-freezers, in particular to upright no-frost freezers, used for preserving and/or storing foodstuffs.

[0002] It should be stated beforehand that, in the present description and in the following claims, the term "freezer" (as well as "refrigerator-freezer") refers to refrigerating appliances operating at temperatures below 0 °C, preferably between -5 °C and -30 °C; furthermore, the term "no-frost" refers to refrigerating appliances wherein foodstuffs cooling is ensured by cold air conveyed into the refrigerating cell by a forced ventilation system; the circulating air is cooled by an evaporation-type exchanger, or evaporator, by thermal exchange with a colder refrigerating fluid. In an upright freezer or refrigerator-freezer, the section through which the user can reach inside the refrigerating cell is a vertical one.

[0003] An important aspect related to the operation of these appliances is the variability of the load placed therein; in fact, in normal household applications the quantity of foodstuffs preserved in the freezer may change considerably over one or more weeks: as a matter of fact, the freezer is usually full of foodstuffs immediately after shopping, and is then gradually emptied within 1-2 weeks, so that the operating conditions of the appliance may change significantly between the beginning and the end of this time interval.

[0004] Of course, the freezer and its refrigerating circuit are nonetheless sized for the heaviest operating conditions, which implies that they are not sized appropriately for small loads in the refrigerated compartment.

[0005] In fact, when the load occupies only a limited portion of the freezer compartment, the refrigerating system still operates as if the freezer compartment were completely filled with foodstuffs. This leads to a much higher energy consumption than would theoretically be required for preserving those foodstuffs properly.

[0006] A solution to this problem is described in document EP 320 574 by LIEBHERR-HAUSGERATE GmbH: the refrigerating apparatus described therein comprises a compartment provided in its upper region with a cold air inlet duct and a removable insulating wall, which is inserted into the compartment in order to subdivide it into two distinct chambers; each chamber includes drawers located at a distance from one another and from the back wall of the compartment, so as to create interspaces for the circulation of the cold air flow coming from the upper lamellar pack. When the insulating wall is inserted, the air flow within the refrigerating apparatus is stopped and only the upper chamber is cooled.

[0007] A drawback of this solution is that when no drawers are placed in the apparatus it is not possible to obtain a proper air circulation in the chambers: in fact, if

the chambers are empty, no air will be directed into the interspaces provided between the drawers, so that the air will follow a random path within the chamber without ensuring a homogeneous cooling effect.

[0008] The present invention aims at improving this state of the art by providing a refrigerating appliance consisting of a freezer or a refrigerator-freezer characterized by features that allow to reduce the energy consumption when the load conditions of the appliance change, while at the same time also being flexible to use because it can be used without distinction in a configuration with drawers or in a configuration without drawers.

[0009] The object of the present invention is a refrigerating appliance equipped with compartments cooled by cold air produced by an evaporator and conveyed into the compartments through a distribution duct communicating therewith and housing at least one flow regulator capable of intercepting the cold air flow in order to cool one or more compartments.

[0010] The features of the invention are set out specifically in the appended claims; said features and the advantages obtained therefrom will become more apparent from the following description concerning a non-limiting example of the invention.

[0011] The example of the present invention is illustrated in the annexed drawings, wherein:

Fig. 1 is a sectional side view of a freezer according to the present invention in a first operating condition, wherein the whole inner space is cooled;

Fig. 2 is a sectional side view of the freezer of Fig. 1 in a second operating condition,

wherein the inner space is only partially cooled;

Fig. 3 is a sectional side view of a grid-type flow regulator in the closed condition;

Fig. 4 is a sectional side view of the flow regulator of Fig. 3 in the open condition;

Fig. 5 is a sectional side view of a slide-type flow regulator;

Fig. 6 is a sectional side view of a butterfly-type flow regulator;

Fig. 7 is a sectional side view of a freezer according to the present invention with more than two compartments;

Fig. 8 is a diagrammatic view of an embodiment of the refrigerating apparatus of Fig. 1 without drawers and with an auxiliary evaporator;

Fig. 9 shows an embodiment of a distribution duct provided in the form of an interspace of the back wall of the freezer compartment;

Fig. 10 shows an embodiment of a distribution duct provided in the form of a circular-section tube arranged behind the back wall of the freezer compartment;

Fig. 11 shows an embodiment of a distribution duct provided in the form of a trapezoidal-section tube arranged behind the back wall of the freezer compartment;

Fig. 12 shows an embodiment of a distribution duct provided in the form of a circular-section tube arranged in front of the back wall of the freezer compartment;

Fig. 13 shows an insulating separator wall fitted with a flow regulator;

Fig. 4 is a sectional view of a separator wall equipped with a flow regulator inserted in the distribution duct.

[0012] Referring to Figs. 1 and 2, there is shown a freezer 1, in particular an upright freezer, the inner space of which is subdivided into two compartments 2, 3 separated by a separator wall 4 made of insulating material, e.g. polystyrene, polyurethane foam or the like.

[0013] Tests carried out have shown that for thermal insulation purposes the proper thickness of the separator wall lies between 40mm and 60mm, in particular 50mm. Separator wall 4 may appropriately consist of a fixed component of freezer 1; as an alternative, it may be a removable component of freezer 1, so that it can be cleaned more easily.

[0014] On the underside of the separator wall there may be provided a condensate collector (not shown because per se known) connected through a drain tube to a basin arranged above the compressor, for discharging any condensate that may form on the separator wall.

[0015] Two compartments 2, 3 may be accessible to a user by means of either a single door 20 or two distinct doors.

[0016] In the illustrated example, each compartment 2 and 3 houses drawers 5 of a per se known type, which are adapted to contain foodstuffs; compartments 2, 3 may however accommodate no drawers, but be fitted, for example, with shelves for supporting the foodstuffs, without any detriment to the operation of the refrigerating appliance according to the present invention, as will be explained below.

[0017] Freezer 1 is of the no-frost type, in accordance with the meaning provided above: for this purpose, it comprises an evaporator 6 included in the refrigerating pack, which cools an air flow produced by a fan 8.

[0018] In Figs. 1 and 2 there is a distribution duct 7 provided in the form of a walled canalization at the back wall of the cell.

[0019] In the embodiment shown in Figs. 1, 2, 7 and 8, the distribution duct consists of an interspace adjacent to back wall 16 of the cell which is in fluid communication with compartments 2 and 3 through apertures 11 and 11A.

[0020] Along distribution duct 7 there is a flow regulator 9, as shown in the enlarged details in Figs. 1 and 2.

[0021] Flow regulator 9 is equipped with a shutter 10 which, in the example shown in Figs. 1 and 2, consists of a bulkhead rotating about an axis perpendicular to duct 7, thereby intercepting the port of the duct so as to either stop the cold air flow or allow it to pass from upper section 71 to lower section 72 of distribution duct 7. According to a possible embodiment of the present invention, flow

regulator 9 consists of an electromechanical valve commonly known as "damper", i.e. a bulkhead that can rotate about an axis, as shown in Figs. 1 and 2 and as known to those skilled in the art of household refrigeration; such a "damper" may be included in separator wall 4, said separator wall 4 being mechanically connected to distribution duct 7 in a manner such that the damper can act upon distribution duct 7 in order to open and/or close a section thereof. The "damper" is an advantageous example of an actuator which can be controlled electronically in a very simple manner.

[0022] Separator wall 4 is illustrated in more detail in Fig. 13, and may comprise at least one region also equipped with a flow regulator 90, similar for example to flow regulator 9 and adapted to allow cold air to flow along its return path 50 towards evaporator 6, which region will be described in more detail later on.

[0023] The cold air flow produced by fan 8 is conveyed into distribution duct 7, and from there it is distributed homogeneously into compartments 2 and 3 through apertures 11 and 11A, respectively.

[0024] Upper section 71 of duct 7 communicates with upper compartment 2, whereas lower section 72 of duct 7 communicates with lower compartment 3; thus, when in the first operating condition shown in Fig. 1, with the flow regulator 9 open, both compartments 2 and 3 are cooled, whereas in the second operating condition of Fig. 2, with flow regulator 9 closed, only first compartment 2 is cooled.

[0025] It should be mentioned that flow regulator 9 can also be actuated for closing the section of duct 7 only partially: by varying the degree of opening of flow regulator 9, the flow rate of the cold air conveyed into compartment 3 is changed accordingly, resulting in a temperature variation within that compartment.

[0026] In the refrigerating apparatus according to the present invention there is thus a compartment (upper compartment 2 in the illustrated example) which is always cooled by the cold air coming from evaporator 6, whereas the other compartment(s) may be left uncooled or be cooled to different temperatures.

[0027] Flow regulator 90 arranged on wall 4 is controlled in the same manner as flow regulator 9 of distribution duct 7: when the latter closes duct 7, flow regulator 90 is also controlled for closing air return path 50, in order to insulate the two adjacent compartments thermally. Likewise, flow regulator 90 may also close or open the air passage section partially.

[0028] For simplicity's sake, the flow regulators are shown in a simplified form which is useful for understanding their operation, but they are actually fitted with all the control and actuation units required for switching them from closed to open; said control and actuation units may be either built in, e.g. when the flow regulator is actuated manually, or separate, e.g. when the shutter is actuated by a drive unit such as an electric motor, which is controlled by a control element such as a push-button or a lever that can be operated by a user.

[0029] The air circulation in the freezer is illustrated through downward-pointing arrows in duct 7 and upward-pointing arrows (which designate a return path 50 in which flow regulator 90 of separator wall 4 is located) alongside door 20: the air, cooled by evaporator 6, is pushed by fan 8 into upper section 71 of duct 7, and then enters duct 2 through apertures 11; if flow regulator 9 is open, the remaining cold air flow is pushed downwards into second section 72 of duct 7 and enters lower compartment 3 through corresponding apertures 11A.

[0030] After the air has exchanged heat with the food-stuffs, its temperature increases slightly and it flows back up within the compartments towards evaporator 6, ready for a new cycle; to this end, the forced circulation generated by fan 8 pushes the air along a return path 50 to evaporator 6. In a simpler embodiment of the present invention, return path 50 comprises an interspace obtained between separator wall 4 and the door's inner panel; in another embodiment which is more efficient from the energetic point of view, said interspace is kept to a minimum and return path 50 comprises a canalization obtained within separator wall 4 and adapted to put compartment 3 in communication with compartment 2.

[0031] When both compartments 2 and 3 are to be cooled, flow regulator 90 of the separator wall is open, and therefore the air in lower compartment 3 goes up beyond separator wall 4 and returns to evaporator 6.

[0032] When only the upper compartment 2 must be cooled, flow regulator 9 is closed in order to stop the downward-directed cold air flow, and also flow regulator 90 is closed in order to prevent any thermal dispersion towards compartment 3, which requires no cooling.

[0033] It should be pointed out that duct 7, which is distinct from compartments 2 and 3, is preferably arranged behind back wall 16 of said compartments, which is opposite to door 20, thus improving the compactness of freezer 1.

[0034] As can be easily understood, the choice of the type of flow regulator 9, 90 is not particularly binding for the proper operation of the present invention, since this item may be provided in different forms, each offering specific advantages.

[0035] By way of example, Figs. 3 to 6 show some different types of flow regulators which are especially advantageous when housed in duct 7.

[0036] In particular, a first type of regulator which is light, inexpensive and easy to install is the one illustrated in Figs. 3 and 4 in its two operating conditions (closed and open), i.e. a grid-type flow regulator 9'.

[0037] The latter is made up of two overlaid grids 10'A, 10'B which can translate parallel to each other, so as to open or close the air passage (for simplicity, the air flow is indicated by arrows in Figs. 3 and 4); in this case, the flow regulator may be actuated simply and effortlessly by a user's hand.

[0038] Another type of flow regulator 9" is illustrated by way of example in Fig. 5: in this case, the flow regulator simply consists of a slide 10" that slides perpendicularly

to the axis of duct 7, so as to interrupt the continuity thereof; in this case as well, the flow regulator can be manufactured easily and economically.

[0039] A different type of flow regulator 9'" is shown in Fig. 6: in this case, flow regulator 9'" is a butterfly unit which comprises a shutter 10'" of the same size as duct 7 in which it is inserted, which can rotate about an axis perpendicular to the axis of the duct 7, and which, in the embodiment illustrated herein by way of example, is fitted with actuation units 15 such as, for example, a direct-current electric motor that can be controlled by a user through a push-button or the like; motor 15 shutter 10'" to rotate, thus opening or closing the port of duct 7.

[0040] These types of flow regulators, in particular the grid type 9', may also be used on wall 4 by arranging them along the air return path 50 to the evaporator 6, and therefore preferably in the front region of wall 4 near the door, as shown in Figs. 8 and 13.

[0041] Of course, other equivalent solutions may be employed in the place of the aforementioned types of flow regulators without departing from the teachings and protection scope of the present invention.

[0042] Likewise, it is necessary to comprehend that, though Figs. 1 and 2 show a freezer 1 having only two compartments 2 and 3, it is nonetheless possible to apply the teachings of the present invention more in general to a refrigerating apparatus comprising three or more compartments cooled by cold air conveyed thereto through a distribution duct in fluid communication therewith, which houses at least one flow regulator for intercepting the cold air flow in order to cool one or more compartments.

[0043] An example of such a situation is shown Fig. 7, which illustrates a no-frost refrigerating appliance 1' with three compartments 21, 22 and 23, in which a distribution duct 7 conveys into compartments 21, 22 and 23 the cold air produced by a heat exchanger and pushed by a fan; the compartments have different volumes, and while compartments 21 and 23 are provided with drawers 5, remaining compartment 22 has no drawer, without any detriment to the operation of the appliance: in fact, the cold air is supplied to compartments 21, 22 and 23 through apertures 11, 11A and 11B, respectively; compartments 21, 22 and 23 are separated by separator walls 4 and 40 similar to separator wall 4 described above.

[0044] In this variant of the invention, distribution duct 7 is subdivided into three sections 71, 72 and 73, which communicate with compartments 21, 22 and 23, respectively, through apertures 11, 11A and 11B; along duct 7, between different sections 71, 72 and 73, there are two flow regulators 9 and 99 as described above; refrigerating apparatus 1' operates in the same way as well, with the only difference that by controlling flow regulators 9 and 99 a user can choose whether to cool all the compartments or only two of them, i.e. intermediate compartment 22 and upper compartment 21, or alternatively only upper compartment 21, depending on the quantity of foodstuffs stored therein.

[0045] Likewise, in the case where the separator walls are equipped with flow regulators 90, the latter will also close accordingly in order to insulate the cooled compartment(s) thermally from the uncooled compartment(s), or from those compartments which are cooled differently, as will be described below.

[0046] It should be mentioned that, by keeping the distance between the separator wall and the inner side of door 20 sufficiently short, flow regulator 90 may be omitted, with the only drawback of a slight thermal insulation loss when either one of two compartments 2, 3 is left uncooled, but to advantage in terms of production costs of the refrigerating appliance.

[0047] The refrigerating appliance may even have no drawers, as shown in Fig. 8; for example, it may alternatively be fitted with shelves without any operational drawback.

[0048] It is also appropriate to fit a temperature and/or humidity sensor 30, 31 in each compartment, so as to be able to measure the operating parameters separately for each compartment.

[0049] If duct flow regulator 9 and/or wall flow regulator 90 are equipped with electric actuation units, it is conceivable to control them by using the information acquired by sensors 30 and 31, in particular by sensor 31 (preferably consisting of a temperature sensor) located in compartment 3, the cooling of which depends on the opening of distribution duct 7 by flow regulator 9, as a function of user-defined parameters (such parameters comprising, for example, a Boolean indicator attesting whether the user wants to use compartment 3 or not, or the desired temperature value within compartment 3, e.g. a simple two-position button).

[0050] In this regard, it is conceivable that the refrigerating apparatus comprises a control panel communicating with at least sensor 31 and the actuation units, and having a user interface through which it can set those parameters depending on which, once a certain temperature threshold has been detected by sensor 31, the actuation units either open or close distribution duct 7, or alternatively increase or decrease the air passage cross-section (as described above), so as to adjust the cold air flow rate and consequently the temperature in compartment 3. As shown in Figs. 9, 10, 11 and 12, distribution duct 7 may be a simple canalization having any cross-section; for example, in Fig. 9 distribution duct 7' consists of an interspace behind wall 16 provided with an aperture 11C, in Fig. 10 the duct 7" is a circular-section tube arranged behind back wall 16 and communicating with the compartments through outlets 11D, in Fig. 11 duct 7''' is a trapezoidal-section tube arranged behind back wall 16 and communicating with the compartments through outlets 11E, whereas in Fig. 12 duct 7'''' is a circular-section tube arranged in front of back wall 16 (i.e. within the cell of the refrigerating appliance) and communicating with the compartments through outlets 11F (duct 7'''' may of course have a square, rectangular or trapezoidal cross-section).

[0051] According to an extremely advantageous feature, flow regulators 9 and/or 99 of the distribution duct are respectively secured to separator walls 4, 40 on the side thereof that faces duct 7 in the assembled condition: in this case, duct 7 has a hole in which flow regulator 9 is inserted as shown in Fig. 14, wherein the flow regulator is a grid-type flow regulator 9' integral with separator wall 4 and inserted in the hole of duct 7. Of course, different flow regulator types may alternatively be used, but grid-type regulator 9' is preferable because it is very easy to install and can be interfaced at best with non-circular ducts, as is the case when duct 7 is provided as an interspace or as any non-circular-section duct (as described above). Should control efficiency have to be privileged over installation simplicity, grid-type regulator 9' may advantageously be replaced with a "damper" of the above-described type.

[0052] If walls 4, 40 are fixed, tests have shown that it is advantageous to provide a volume distribution such that, for an appliance with two compartments like the one shown in Figs. 1 and 2, the upper compartment takes up about 60% of the total inner volume, while the lower compartment takes up the remaining 40% of the total inner volume. If walls 4, 40 are movable, they shall be fitted with slide guides, e.g. shaped as simple fins projecting from the side walls of the inner compartment of the appliance; insulating wall 4, 40 is supported by and can slide over said fins, and may be provided with a gasket or equivalent sealing means on its side edges for thermal insulation purposes.

[0053] In such a case, it is also conceivable to provide means for moving flow regulators 9 within duct 7, e.g. a slide guide that allows the shutter to translate to different positions along duct 7.

[0054] Apertures 11 may be fitted with deflectors for conveying the cold air flow into the compartments in a predetermined direction.

[0055] Furthermore, evaporator 6 or fan 8, which in the example provided herein are shown in the upper portion of refrigerating apparatus 1, may likewise be arranged in the lower portion thereof: in this latter case, the cold air pushed by the fan will first follow an upward-directed path within the distribution duct, and then it will flow down again towards the evaporator and back to the fan for a new cycle; of course, in this case it will be possible to stop the cooling of the upper compartment while maintaining the cooling of the lower compartment.

[0056] According to an extremely advantageous variant, the refrigerating appliance is an upright no-frost freezer 1", which is therefore suitable for keeping the whole inner space at a temperature substantially lower than 0°C, and an electric resistance 60 is installed in lower compartment 3 for warming said compartment to a temperature between 0°C and 10°C, as shown by way of example in Fig. 8: with flow regulator 9 in the open condition, lower compartment 3 is cooled by cold air to a temperature between -5°C and -30°C, typically -18°C; should it be desirable to turn the lower compartment 3

into a refrigerator compartment (i.e. operating at a higher temperature between 0°C and 10°C, typically 5°C) or into a higher-temperature freezer compartment (e.g. -12°C, which temperature is particularly appropriate for preserving foodstuffs to be taken within a short time from freezing or for optimally preserving particular types of foodstuffs, such as ice-cream, for which the traditional 18°C freezing temperature is not recommended), it will be sufficient to turn on the electric resistance, which will then generate heat, thus increasing the compartment temperature to the desired value (i.e. about -12°C or above 0°C, according to the user's preferences).

[0057] This solution allows to obtain a refrigerating apparatus which, while being equipped with a single evaporator of the type adapted to be installed in freezers, has a compartment that can alternatively be kept at ambient temperature or cooled like any traditional freezer compartment (i.e. substantially to -18°C), or else cooled like a higher-temperature freezer compartment (i.e. substantially to -12°C) or like a refrigerator compartment (i.e. substantially operating at temperatures higher than 0°C). It follows that this refrigerating appliance offers wide flexibility of use.

[0058] The above description has clearly illustrated the several advantages of the present invention, which overcomes the drawbacks of the prior art by providing a refrigerating appliance which is extremely flexible because it can be used alternatively with or without drawers and at full or half load, and which, according to an extremely advantageous variant, can convert a portion of its inner volume alternatively into an uncooled compartment, a compartment cooled to temperatures between 0°C and 10°C (i.e. a refrigerator compartment), or a compartment cooled to temperatures between -5°C and -30°C (i.e. a freezer compartment). It should also be underlined that the present invention is prearranged for being subjected to modifications which may easily be conceived by a man skilled in the art of household refrigeration: by way of non-limiting example of such modifications, it should be pointed out that lower compartment 3 may be converted into a variable-temperature compartment by providing that, within the refrigerating appliance architecture illustrated in Fig. 1, flow regulator 9 has several degrees of opening, each of which corresponds to a predetermined refrigerating power level supplied to compartment 3. Although the example illustrated and described herein relates to an upright freezer, the teaching of the present invention is also applicable without requiring any further inventive effort to a so-called "sink" (horizontal) freezer.

Claims

1. Refrigerating appliance (1,1',1'') comprising a cell for storing foodstuffs to be preserved or the like, **characterized in that** said cell is subdivisible into a plurality of compartments (2,3,21,22,23) by means of at least one ther-

moinsulating separator wall (4,40), said separator wall (4,40) being movable inside the refrigerating appliance in order to obtain variable-volume compartments.

2. Refrigerating appliance (1,1',1'') according to claim 1, **characterized by** comprising a distribution duct (7) for conveying a cold air flow, which is in fluid communication with said compartments (2,3,21,22,23) for conveying cold air therein, said distribution duct (7) housing at least one flow regulator (9,99) adapted to intercept the cold air flow so as to convey it towards one or more of said compartments (2,3,21,22,23).
3. Refrigerating appliance (1,1',1'') according to claim 1 or 2, wherein the separator wall (4,40) comprises at least one flow regulator (90) adapted to intercept the cold air flow along an air return path (50) towards an evaporator (6).
4. Refrigerating appliance (1,1',1'') according to claim 3, wherein the flow regulators (9,99) of the distribution duct are arranged in the distribution duct (7) substantially at the same height as the separator wall (4,40).
5. Refrigerating appliance (1,1',1'') according to claim 4, wherein the flow regulators (9,99) of the distribution duct are associated with said separator wall (4,40) on the side thereof facing the distribution duct (7), and wherein the distribution duct (7) has at least one aperture at the separator wall (4,40), so as to allow said flow regulators (9,99) to be inserted therein.
6. Refrigerating appliance (1,1',1'') according to claim 5, wherein the flow regulators (9,99) of the distribution duct and/or the flow regulators (90) of the separator wall (4,40) comprise at least one shutter (10,10'A,10'B,10'',10''') which can be switched between a closed position, in which it stops the cold air flow, and an open position, in which it allows the cold air to flow through, wherein the flow regulators (9,99,90) further comprise shutter actuation units (15) and shutter control units.
7. Refrigerating appliance (1,1',1'') according to claim 2, wherein it comprises means for moving said flow regulators (9) within said distribution duct (7).
8. Refrigerating appliance (1,1',1'') according to claims 6 and 7, wherein said means for moving said flow regulators (9) within said distribution duct (7) are a slide guide that allows said shutter to translate to different positions along said distribution duct (7).
9. Refrigerating appliance (1,1',1'') according to one or more of the preceding claims, wherein it comprises

fins projecting from the side walls of said compartment of the appliance for supporting said separator wall (4, 40) and allowing said separator wall to slide over said fins.

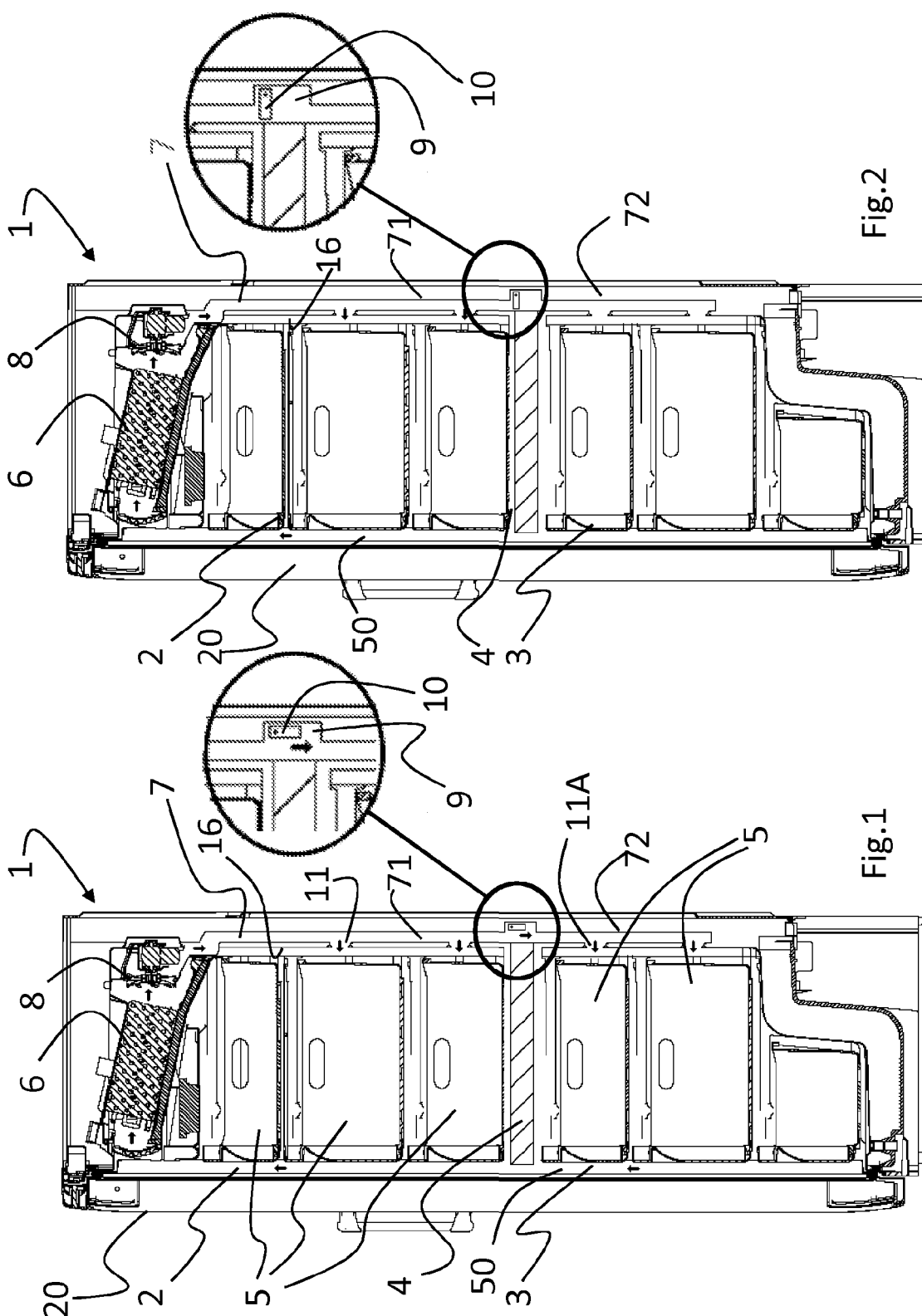
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10. Refrigerating appliance (1,1',1'') according to one or more of the preceding claims, wherein said separator wall is removable.
11. Refrigerating appliance (1,1',1'') according to claims 2 and 10, said distribution duct (7) comprising a plurality of apertures (11,11A,11B) for the fluid connection with said compartments (2,3,21,22,23), **characterized by** comprising means for interrupting, in particular in an automatic way, the cold air flow through one or more of said apertures when the separator wall (40) is inserted into said cell.
12. Refrigerating appliance (1,1',1'') according to one or more of claims 2 to 11, wherein the distribution duct is provided in the form of an interspace located behind a wall of the cell of the refrigerating appliance.
13. Refrigerating appliance (1,1',1'') according to one or more of the preceding claims, in which a compartment is always cooled.
14. Refrigerating appliance (1,1',1'') according to one or more of claims 2 to 12, wherein said distribution duct comprises an upper section (71) which communicates with an upper compartment (2), and a lower section (72) which communicates with a lower compartment (3), said refrigerating appliance (1,1',1'') being in a first operating condition in which both compartments (2,3) are cooled, and a second operating condition in which only a first compartment (2) is cooled.
15. Refrigerating appliance (1,1',1'') according to one or more of the preceding claims, wherein said separator wall is provided with a gasket or equivalent sealing means on its side edges.

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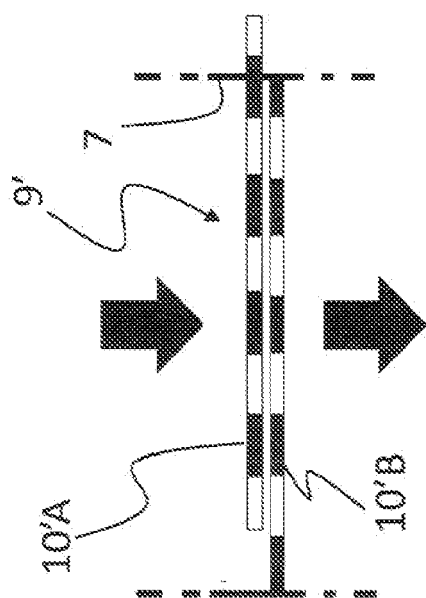


Fig. 4

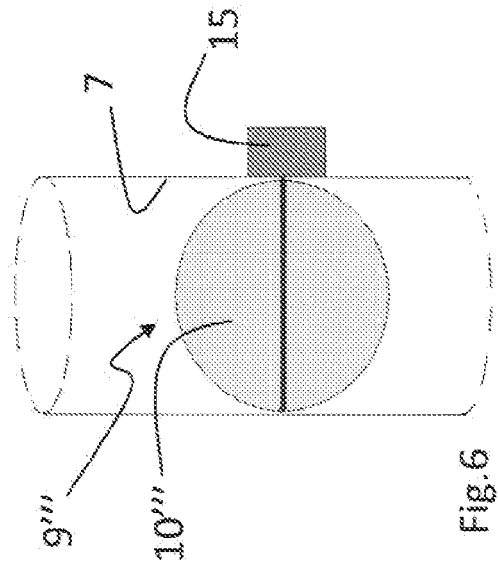


Fig. 6

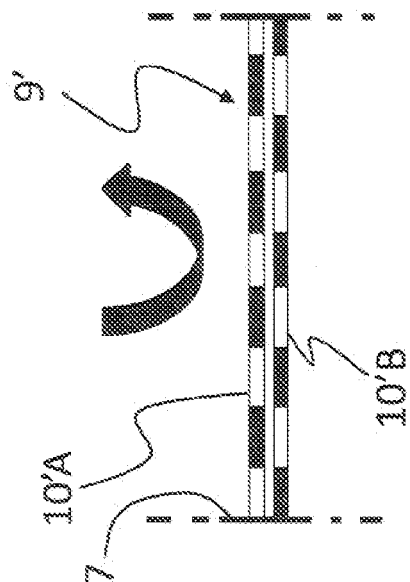


Fig. 3

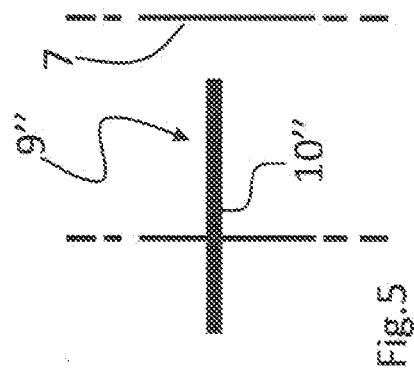
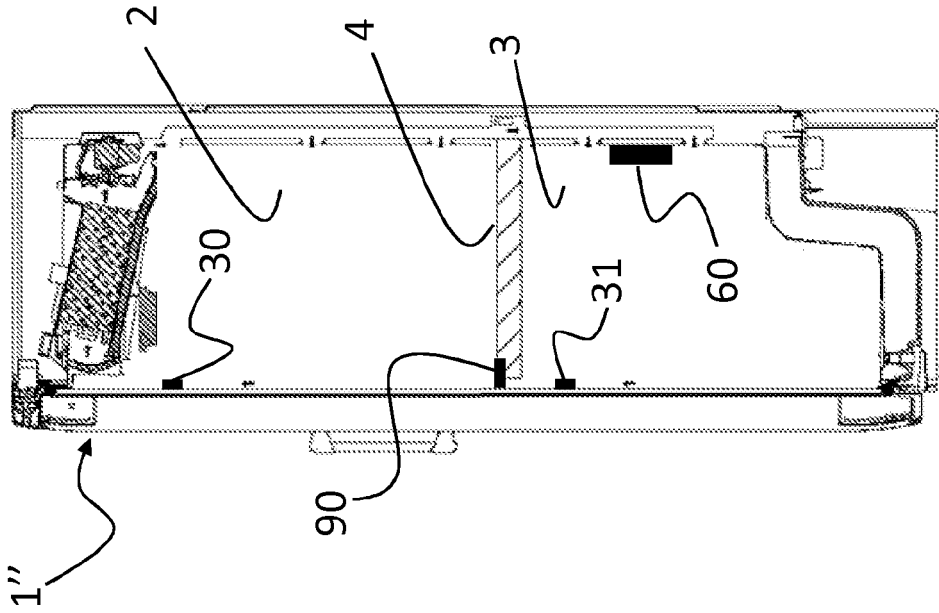
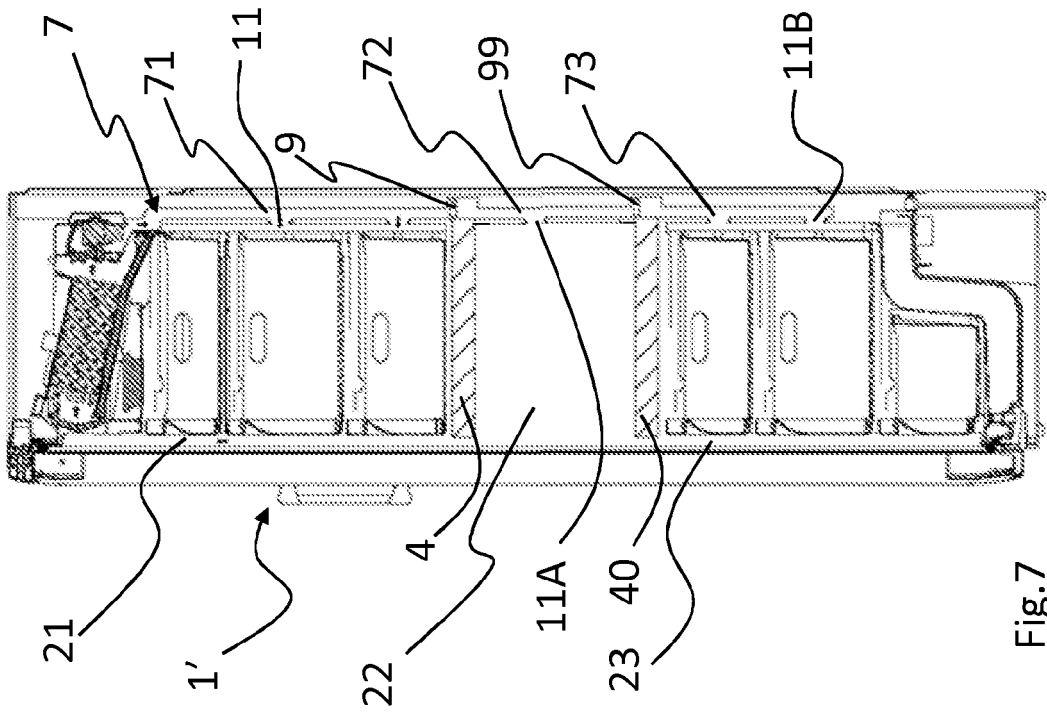
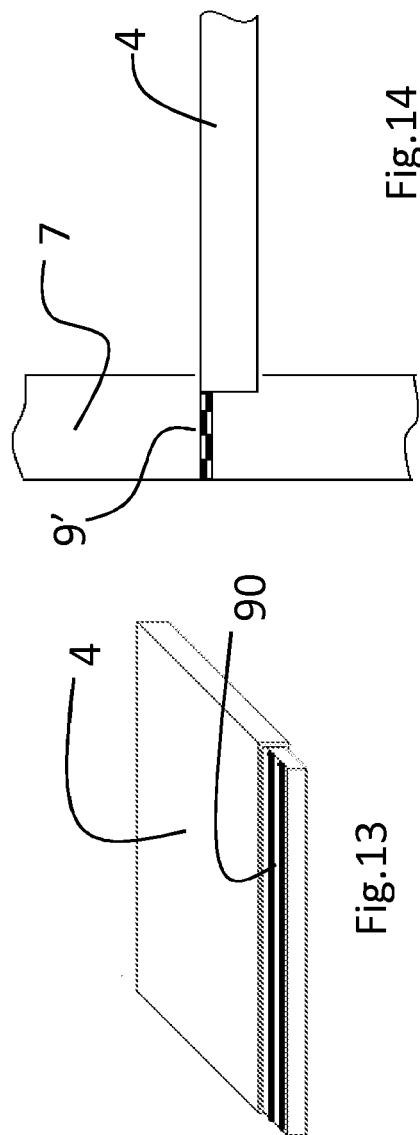
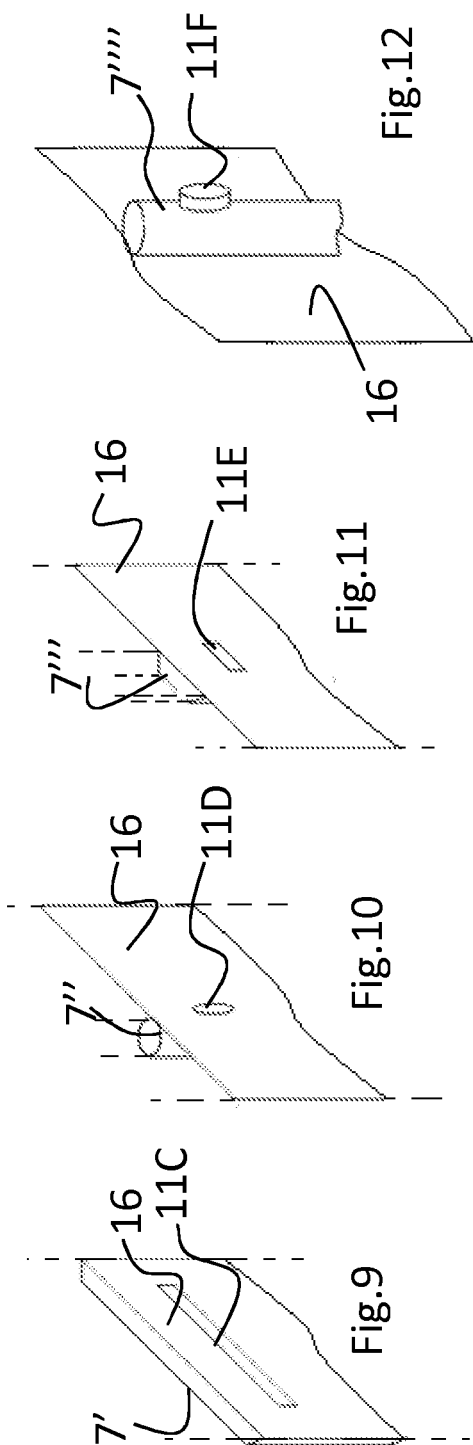


Fig. 5





REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 320574 A [0006]