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(54) **REFRIGERATION APPLIANCE, IN PARTICULAR FOR HOUSEHOLD USE, AND RELATIVE METHOD OF REALIZATION**

(57) The present invention relates to a refrigeration appliance (1), in particular for household use, comprising:  
- at least one cabinet (2) adapted to define at least one refrigeration compartment (2A, 2B, 2C);  
- a refrigerating circuit (CR) divided into a high-pressure side (10) and a low-pressure side (20), wherein said high-pressure side (10) begins at the outlet of a compressor (11) that allows compressing a refrigerating fluid, comprises a condenser (12) for condensing the refriger-

ating fluid coming from the compressor (11), and reaches the inlet of an expansion member (13);  
- a tray (30) for collecting a liquid coming from said at least one refrigeration compartment (2A, 2B, 2C) and positioned in proximity to said compressor (11).

The present invention is characterized in that at least one tract (101; 102) of the high-pressure side (10) is so realized as to at least partially enter said tray (30).

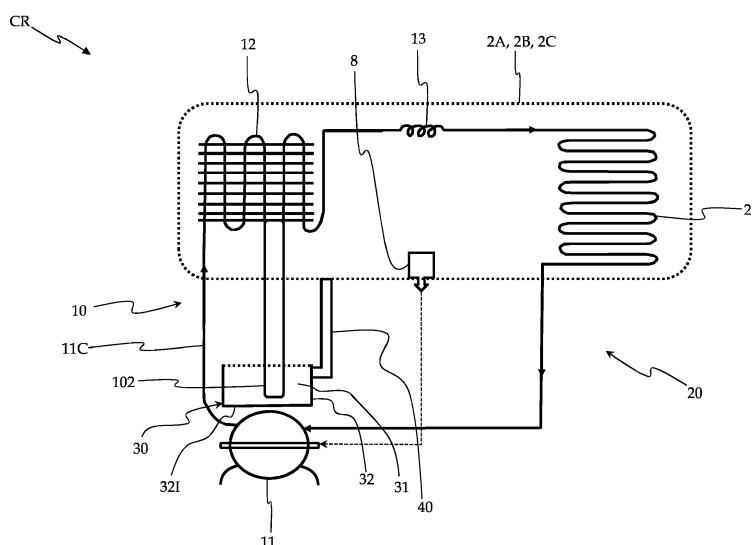


Fig. 3

## Description

**[0001]** The present invention relates to a refrigeration appliance, in particular for household use, according to the preamble of claim 1.

**[0002]** The present invention also relates to a relative method of realization of said refrigeration appliance.

**[0003]** The invention finds application in the field of refrigeration appliances, in particular for household use, comprising at least one inner compartment for storing foodstuffs.

**[0004]** A refrigeration appliance known in the art typically comprise two inner refrigeration compartments which are kept at different temperatures, thus providing at least two different foodstuff preservation states, in particular a refrigerator compartment suitable for preserving fresh food at a temperature between 0°C and 10°C and a freezer compartment suitable for preserving frozen food at a temperature between -15°C and -30°C. Such refrigeration appliances are commonly referred to by those skilled in the art of household refrigeration as "double-door" or "combined" refrigerators, depending on the relative position of the two refrigeration compartments; in a "double door" refrigeration appliance the freezer compartment is arranged above the refrigerator compartment, whereas in a "combined" refrigeration appliance the freezer compartment is located at the bottom.

**[0005]** It is also known in the art that refrigeration appliances can be of the no-frost or static type.

**[0006]** The cooling of said refrigeration appliances and, consequently, of the food contained therein, takes place in a known manner; indeed, refrigeration appliances (of a static or no-frost type) are equipped with a refrigerating circuit comprising at least a compressor for compressing a refrigerating fluid and a condenser for condensing the refrigerating fluid coming from the compressor; the compressor and the condenser are connected by means of a duct that allows the refrigerating fluid to flow from the compressor to the condenser.

**[0007]** Indeed, the operation of a refrigeration appliance is based on the principle of the refrigeration cycle, which can be substantially schematized in the following phases:

- the refrigerating fluid, initially in the gaseous state, is compressed by the compressor and, as a consequence of the compression (pressure increase), the temperature of the refrigerating fluid increases;
- the temperature of the refrigerating fluid is then lowered through the action of the condenser, normally consisting of a cooling coil (or "external grid") positioned in the rear part of the refrigeration appliance and that brings back the refrigerating fluid to the liquid state, extracting at least part of the heat by means of heat exchange with the environment;
- the refrigerating fluid flows to an expansion member (a capillary or expansion valve) that allows lowering the pressure and the temperature of the refrigerating

fluid coming from the high-pressure side of the refrigerating circuit, in such a way as to make it pass from a liquid state to a biphasic mixture (i.e. in the form of gas-liquid), and to make it flow into the low-pressure side of said refrigeration circuit;

- the refrigerating fluid then flows through at least one evaporator absorbing heat, i.e., correspondingly, transmitting cold, for the cooling of at least one refrigeration compartment;
- after heat absorption, the refrigerating fluid evaporates, returns to gaseous form and is aspirated by the compressor, in such a way as to start a new refrigeration cycle.

**[0008]** The refrigeration cycle is repeated several times and is normally interrupted by a control unit (preferably connected to a thermostat), which ensures the compressor is switched off when in the refrigeration compartment of the appliance the preset temperature has been reached.

**[0009]** In no-frost refrigeration appliances, the cold produced by the evaporator is transferred to an airflow over the evaporator which, moved by a fan, circulates through at least one refrigeration compartment. Since the evaporator surface temperature is much lower than 0 °C, the humidity held by air in contact with such surface turns into ice, which accumulates on the evaporator. In no-frost refrigeration appliances, defrosting is managed electronically and, during appropriate operation phases called indeed defrosting, consists in the activation of appropriate heating means producing the melting of the accumulated ice. Known refrigeration appliances then comprise a tray for collecting a liquid coming from the inner compartment of the refrigeration appliance and positioned in proximity to the compressor; normally, said collecting tray is positioned above the compressor.

**[0010]** Such positioning of the collecting tray allows exploiting the heat generated by said compressor in order to obtain the evaporation of the surrounding environment of at least part of the liquid collected in the tray. Indeed, in no-frost refrigeration appliances, the ice accumulated on the evaporator melts during the defrosting phase and is channelled towards such collecting tray; moreover, a similar tray is provided in refrigeration appliances of a static type for collecting condensed water that forms on one wall (normally rear wall) of the refrigeration appliance, through which heat exchange with the evaporator occurs.

**[0011]** Nevertheless, it was noted that known refrigeration appliances have some drawbacks, since the heat produced by the compressor and dispersed in the environment may not be sufficient to achieve an effective heating of the collecting tray and an adequate disposal of the liquid contained in it.

**[0012]** As a consequence, in known refrigeration appliances, phenomena of overflow of the liquid contained in the tray may occur, which inevitably can damage both the refrigeration appliance and the surrounding environ-

ment; it should be noted that such phenomena of overflow of the liquid contained in the tray can also be dangerous, in particular in cases where they are such that the liquid is brought in contact with the electrical circuit of the refrigeration appliance or of the dwelling in which the refrigeration appliance is installed.

**[0013]** Furthermore, the arrival of variable speed compressors (also known as "VCC" or "variable capacity compressor") has allowed that, as a result of both the nonuniform power absorbed by them and their higher efficiency, the heat produced by such compressors can also be lower than that produced by the compressors known in the art; as a consequence, the implementation of variable speed compressors in known refrigeration appliances may also increase the risk of insufficient heating of the collecting tray and, consequently, of an inadequate disposal of the liquid contained in it.

**[0014]** In this frame, it is the main object of the present invention to provide a refrigeration appliance, in particular for household use, which is adapted to overcome the above-described drawbacks, thus being particularly efficient and economical.

**[0015]** It is a further object of the present invention to provide a refrigeration appliance, in particular for household use, which is so realised as to achieve an efficient heating of the tray for collecting the liquid coming from the inner compartment of the refrigeration appliance.

**[0016]** Consequently, it is one object of the present invention to provide a refrigeration appliance, in particular for household use, which is so realised as to allow an adequate disposal of the liquid collected in said tray and as to prevent that phenomena of overflow of said liquid may occur.

**[0017]** Thus, it is another object of the present invention to provide a refrigeration appliance, in particular for household use, which is so realised as to prevent possible damages of both the refrigeration appliance and the environment in which it is installed.

**[0018]** To achieve said objects, the present invention provides a refrigeration appliance, in particular for household use, and a relative method of realization, which incorporate the features set out in the appended claims, which are intended to be an integral part of the present description.

**[0019]** Further objects, features and advantages of the present invention will become apparent from the following detailed description and from the annexed drawings, which are supplied by way of non-limiting example, wherein:

- Fig. 1 is a perspective view of a refrigeration appliance according to the present invention;
- Fig. 2 is a schematic diagram of a first embodiment of the refrigeration appliance according to the present invention;
- Fig. 3 is a schematic diagram of a second embodiment of the refrigeration appliance according to the present invention;

- Fig. 4 is a perspective view of a component of the refrigeration appliance according to the present invention.

**[0020]** Referring now to the description of figure 1, a refrigeration appliance, in particular for household use, according to the present invention, is designated as a whole by reference numeral 1.

**[0021]** Said refrigeration appliance 1 comprises at least one cabinet 2 adapted to define at least one refrigeration compartment 2A, 2B, 2C.

**[0022]** In particular, said at least one refrigeration compartment 2A, 2B, 2C can comprise one refrigerator compartment 2A for preserving fresh food (normally at a temperature between 0°C and 10°C) and a freezer compartment 2B for preserving frozen food (normally at a temperature between -15°C and -30°C); furthermore, in no-frost refrigeration appliances 1, said at least one refrigeration compartment 2A, 2B, 2C can comprise an additional refrigeration compartment 2C inside the cabinet 2 and adapted to include at least one evaporator 21 and one fan (not shown). It is however clear that the refrigeration appliance 1 may be so realised as to comprise only one refrigeration compartment 2A, 2B, 2C or a larger number of inner refrigeration compartments 2A, 2B, 2C, in particular kept at different temperatures from each other, thus providing different foodstuffs preservation states.

**[0023]** The refrigeration appliance 1 represented in Fig. 1 shows that the refrigerator compartment 2A is arranged above the freezing compartment 2B; as a consequence, the refrigeration appliance 1 represented in Fig. 1 is of the "combined" type. It is however clear that, according to the present invention, the relative position between the refrigerator compartment 2A and the freezing compartment 2B may be of a different type as well, i.e., the refrigeration appliance 1 may be of a "double door" type.

**[0024]** The refrigeration appliance 1 according to the present invention preferably comprises a first door 3A and a second door 3B respectively provided for closing the refrigerator compartment 2A and the freezing compartment 2B; moreover, each door 3A, 3B is connected to the refrigerating appliance 1 by means of one or more hinges (not shown) that allow for constrained outward rotation of the door 3A, 3B for their opening (as shown in Fig. 1) and for closing it. Preferably, the refrigeration appliance 1 comprises at least one gasket (not shown in Fig. 1) for optimum coupling of said at least one door 3A, 3B with said at least one cabinet 2.

**[0025]** The refrigeration appliance 1 represented in Fig. 1 shows some elements commonly comprised in a refrigeration appliance 1, such as a plurality of shelves 4 and a plurality of containers 5 that are arranged at different levels in said refrigerator compartment 2A and a plurality of drawers 6 and/or a plurality of shelves (not shown) that may be closed by means of a hinged front panel, which can be rotated to allow access to the shelf, arranged at different levels in said freezer compartment

2B. Figure 1 also shows door shelves 7 associated with said first door 3A of the refrigerator compartment 2A, said door shelves 7 being adapted to receive containers, bottles and possible foodstuffs.

**[0026]** Figures 2 and 3 shows the schematic diagrams respectively of a first and a second embodiment of the refrigeration appliance 1 according to the present invention, said refrigeration appliance 1 comprising a refrigerating circuit, designated as a whole by reference numeral CR.

**[0027]** The refrigerating circuit CR is divided into a high-pressure side 10 and a low-pressure side 20, wherein said high-pressure side 10 begins at the outlet of a compressor 11 that allows compressing a refrigerating fluid, comprises a condenser 12 for condensing the refrigerating fluid coming from the compressor 11, and reaches the inlet of an expansion member 13. Instead, the low-pressure side 20 begins at the outlet of the expansion member 13, comprises one evaporator 21 and reaches the inlet of the compressor 11. Substantially, the high-pressure side 10 comprises a set of components in which the refrigerating fluid is in a high pressure and high temperature condition, while the low-pressure side 20 comprises a set of components in which the refrigerating fluid is in a low pressure and low temperature condition.

**[0028]** The compressor 11 is powered by a power line, which can be closed via a switch (not shown), and is controlled by a control unit 8 which controls the temperature inside said cabinet 2 and/or of said at least one refrigeration compartment 2A, 2B, 2C, in particular in the refrigerator compartment 2A and in the freezer compartment 2B.

**[0029]** The condenser 12 may be of any known type and used in household refrigeration appliances, in particular it may be air-cooled, static or with finned coil and/or ventilated by means of a fan (not shown).

**[0030]** In the embodiment shown in Figures 2 and 3, the expansion member 13 is constituted by a capillary (normally made of copper), i.e. a thin duct (with a diameter of some tenths of a millimetre) and some meters in length; said capillary may be substituted by any expansion member known in the art. The expansion member 13 allows to determine a significant pressure (and temperature) drop of the refrigerating fluid present in the refrigerating circuit CR and to measure the inlet of the refrigerating fluid inside the evaporator 14; it will be understood that, if the refrigeration appliance is provided with several refrigeration compartments 2A, 2B, 2C, the refrigerating circuit CR may comprise a plurality of evaporators 14.

**[0031]** Moreover, the refrigeration appliance 1, according to the present invention, comprises a tray 30 for collecting a liquid coming from said at least one refrigeration compartment 2A, 2B, 2C and positioned in proximity to said compressor 11; such positioning of the collecting tray 30 allows exploiting the heat produced by the compressor 11, in order to obtain the evaporation of the surrounding environment of at least part of the liquid collect-

ed in the tray 30 and coming from the refrigeration compartment 2A, 2B, 2C.

**[0032]** In a preferred embodiment, said tray 30 is positioned above the compressor 11, in particular in a condition in which the refrigeration appliance 1 is installed in the environment where it will be used; however, it is clear that the tray 30 may also be positioned in a different way, but however preferably in such a way as to exploit the heat produced by said compressor 11 in order to obtain the evaporation of at least part of the liquid coming from the refrigeration compartment 2A, 2B, 2C.

**[0033]** Figures 2 and 3 also show that the tray 30 is connected to the refrigeration compartment 2A, 2B, 2C by means of a pipe 40, that allows the liquid of the refrigeration compartment 2A, 2B, 2C to flow to the tray 30. It should be noted that this may be the liquid that forms after the melting of the ice accumulated on the evaporator 21, in particular in a refrigeration appliance 1 of the no-frost type, or it may be constituted by the condensed water which normally forms on one wall through which the heat exchange with the evaporator 21 occurs, in particular in a refrigeration appliance 1 of the static type. It should also be noted that, if the refrigeration appliance 1 is of the no-frost type, the evaporator 21 may be associated with a fan (not shown) for the movement of refrigerating air inside the refrigeration appliance 1.

**[0034]** As shown in Figures 2 and 3, according to the present invention, at least one tract 101; 102 of the high-pressure side 10 is realized in such a way that it enters, at least partially, said tray 30.

**[0035]** In particular, said at least one tract 101; 102 of the high-pressure side 10 is realized in such a way that it enters, at least partially, the volume 31 delimited by the walls 32, 32I of the tray 30.

**[0036]** According to a first embodiment (schematically shown in Fig. 2), said at least one tract comprises a first branch 101 of a duct 11C that connects the compressor 11 to the condenser 12 and allows the refrigerating fluid to flow from the compressor 11 to the condenser 12.

**[0037]** According to a second embodiment (schematically shown in Fig. 3), said at least one tract comprises a second branch 102 that extends from the condenser 12; in particular, said condenser 12 comprises a system of pipes arranged as a coil, and said second branch 102 extends from said coil and then enters, at least partially, the tray 30.

**[0038]** The peculiar realization of said at least one tract 101; 102 of the high-pressure side 10, according to the present invention, allows to exploit optimally the heat generated by the compressor 11 and present in the high-pressure side 10, in order to contribute substantially to realize an efficient heating of the tray 30 for collecting the liquid coming from said at least one refrigeration compartment 2A, 2B, 2C; as a consequence, such provision allows maximizing the evaporation of the surrounding environment of the liquid collected in the tray 30 coming from the refrigeration compartment 2A, 2B, 2C.

**[0039]** The provision of said at least one tract 101; 102

of the high-pressure side 10, according to the present invention, allows to achieve an adequate disposal of the liquid collected in said tray 30 and to prevent that phenomena of overflow of said liquid may occur.

**[0040]** As a consequence, said at least one tract 101; 102 of the high-pressure side 10 allows to realize the refrigeration appliance 1 in such a way as to prevent possible damages of such refrigeration appliance 1 or of the environment in which it is installed; indeed, in known refrigeration appliances such damages may occur after the overflow of the liquid from the tray and an unwanted contact with an electrical circuit.

**[0041]** Figure 4 shows a possible embodiment of said at least one tract 101; 102 of the high-pressure side 10.

**[0042]** As can be seen from this figure, said at least one tract 101; 102 comprises:

- a first portion 103 extending from the high-pressure side 10;
- a central portion 104 adapted to be housed inside the tray 30;
- a second portion 105 returning to the high-pressure side 10.

**[0043]** In particular, said first portion 103 extends from the duct 11C in the first embodiment shown in Fig. 2 and from the condenser 12 in the second embodiment shown in Fig. 3, while said second portion 105 connects again to the duct 11C in the first embodiment shown in Fig. 2 and to the condenser 12 in the second embodiment shown in Fig. 3.

**[0044]** In a preferred embodiment, said central portion 104 has a winding shape that maximizes the area of thermal exchange between said at least one tract 101; 102 and the volume 31 delimited by the walls 32, 32I of the tray 30.

**[0045]** Furthermore, said central portion 104 is preferably realized in such a way that it has a surface made of a corrosion-resistant material; in a preferred embodiment, the central portion 104 being coated with an anti-corrosion paint. Such a provision allows to the central portion 104 to maintain its characteristics unchanged, also after a prolonged contact with the liquid coming from the refrigeration compartment 2A, 2B, 2C and collected in the tray 30.

**[0046]** Preferably, the central portion 104 substantially extends in a perpendicular way with respect to said first portion 103 and second portion 105; in particular, said central portion 104 substantially extends in a parallel way with respect to one bottom wall 32I of the tray 30 and in a substantially perpendicular way with respect to the side walls of the tray 30, when the central portion 104 is housed inside the tray 30.

**[0047]** The following description relates to a method of realization of a refrigeration appliance 1, in particular for household use, comprising:

- at least one cabinet 2 adapted to define at least one

refrigeration compartment 2A, 2B, 2C;

- a refrigerating circuit CR divided into a high-pressure side 10 and a low-pressure side 20, wherein said high-pressure side 10 begins at the outlet of a compressor 11 that allows compressing a refrigerating fluid, comprises a condenser 12 for condensing the refrigerating fluid coming from the compressor 11, and reaches the inlet of an expansion member 13;
- a tray 30 for collecting a liquid coming from said at least one refrigeration compartment 2A, 2B, 2C and positioned in proximity to said compressor 11.

**[0048]** According to the present invention, said method comprises a step of realizing at least one tract 101; 102 of said high-pressure side 10 in such a way that it enters, at least partially, said tray 30.

**[0049]** Preferably, said step is obtained by realizing said at least one tract 101; 102 of the high-pressure side 10 in such a way that it enters, at least partially, a volume 31 delimited by the walls 32, 32I of the tray 30.

**[0050]** In particular, said step may be obtained by providing a first branch 101 of a duct 11C that connects the compressor 11 to the condenser 12 and allows the refrigerating fluid to flow from the compressor 11 to the condenser 12. Furthermore, said step may be obtained by providing a second branch 102 extending from the condenser 12, in particular said second branch 102 being so realized as to extend from a condenser 12 comprising a system of pipes arranged as a coil.

**[0051]** Preferably, the method according the present invention comprises the step of realizing said at least one tract 101; 102 in such a way as to comprise:

- a first portion 103 extending from the high-pressure side 10;
- a central portion 104 adapted to be housed inside the tray 30;
- a second portion 105 returning to the high-pressure side 10.

**[0052]** Moreover, the method according the present invention comprises the step of realizing said central portion 104 in such a way as to have a winding shape that maximizes the area of thermal exchange between said at least one tract 101; 102 and the volume 31 delimited by the walls 32, 32I of the tray 30.

**[0053]** The method according the present invention may comprise the step of realizing said central portion 104 in such a way as to have a surface made of a corrosion-resistant material, in particular said central portion 104 being coated with an anti-corrosion paint.

**[0054]** From the present description, features and advantages of the refrigeration appliance and of its relative method of realization, object of the present invention, become apparent.

**[0055]** In particular, it is clear that the particular provision of said at least one tract 101; 102 of the high-pressure side 10, according to the present invention, allows

to exploit optimally the heat generated by the compressor 11 and present in the high-pressure side 10, in order to contribute substantially to realize an efficient heating of the tray 30 for collecting the liquid coming from said at least one refrigeration compartment 2A, 2B, 2C. As a consequence, such provision allows to maximize the evaporation of the surrounding environment of the liquid collected in the tray 30 and coming from the refrigeration compartment 2A, 2B, 2C.

**[0056]** It should be noted then that the provision of said at least one tract 101; 102, according to the present invention, allows to provide a refrigeration appliance 1 which is so realised as to allow an adequate disposal of the liquid collected in said tray 30 and as to prevent that phenomena of overflow of said liquid may occur.

**[0057]** As a consequence, said at least one tract 101; 102 of the high-pressure side 10 allows to realize the refrigeration appliance 1 in such a way as to prevent possible damages of such refrigeration appliance 1 and of the environment in which it is installed; indeed, in known refrigeration appliances such damages may occur after the overflow of the liquid from the tray and its unwanted contact with an electrical circuit.

**[0058]** It is however clear that many variations may be made to the refrigeration appliance, and its relative method of realization, object of the present invention, and that in its practical implementation the various components may have different shapes and arrangements or be replaced with other technically equivalent elements without departing from the novelty spirit of the inventive idea.

**[0059]** In particular, the present invention has provided a detailed description of a refrigeration appliance particularly adapted for household use; however, the present invention may conveniently find application also for refrigerating appliances that can be used in the nautical or hospitality sectors. A further variation may consist in the fact that said at least one tract 101; 102 can be constituted by a portion of the high-pressure side 10 positioned between the condenser 12 and the expansion member 13.

**[0060]** Therefore it will be understood that the present invention is not limited to the above-described refrigeration appliance, and its relative method of realization, but it may be subject to various modifications, improvements, substitutions of parts and equivalent elements without departing from the novelty spirit of the inventive idea, as clearly specified in the following claims.

## Claims

1. Refrigeration appliance (1), in particular for household use, comprising:

- at least one cabinet (2) adapted to define at least one refrigeration compartment (2A, 2B, 2C);
- a refrigerating circuit (CR) divided into a high-pressure side (10) and a low-pressure side (20),

wherein said high-pressure side (10) begins at the outlet of a compressor (11) that allows compressing a refrigerating fluid, comprises a condenser (12) for condensing the refrigerating fluid coming from the compressor (11), and reaches the inlet of an expansion member (13);

- a tray (30) for collecting a liquid coming from said at least one refrigeration compartment (2A, 2B, 2C) and positioned in proximity to said compressor (11),

### **characterized in that**

at least one tract (101; 102) of the high-pressure side (10) is so realized as to at least partially enter said tray (30).

2. Refrigeration appliance (1) according to claim 1, **characterized in that** said at least one tract (101; 102) of the high-pressure side (10) is so realized as to at least partially enter the volume (31) delimited by the walls (32, 32I) of the tray (30).

3. Refrigeration appliance (1) according to one or more of the preceding claims, **characterized in that** said at least one tract comprises a first branch (101) of a duct (11C) that connects the compressor (11) to the condenser (12) and allows the refrigerating fluid to flow from the compressor (11) to the condenser (12).

4. Refrigeration appliance (1) according to one or more of the preceding claims, **characterized in that** said at least one tract comprises a second branch (102) that extends from the condenser (12).

5. Refrigeration appliance (1) according to claim 4, **characterized in that** said condenser (12) comprises a system of pipes arranged as a coil, and said second branch (102) extends from said coil and then enters, at least partially, the tray (30).

6. Refrigeration appliance (1) according to one or more of the preceding claims, **characterized in that** said at least one tract (101; 102) comprises:

- a first portion (103) extending from the high-pressure side (10);
- a central portion (104) adapted to be housed inside the tray (30);
- a second portion (105) returning to the high-pressure side (10).

7. Refrigeration appliance (1) according to claim 6, **characterized in that** said central portion (104) has a winding shape that maximizes the area of thermal exchange between said at least one tract (101; 102) and the volume (31) delimited by the walls (32, 32I) of the tray (30).

8. Refrigeration appliance (1) according to one or more of claims 6 and 7, **characterized in that** said central portion (104) is preferably so realized as to have a surface made of a corrosion-resistant material, in particular said central portion (104) being coated with an anti-corrosion paint. 5
9. Method for manufacturing a refrigeration appliance (1), in particular for household use, comprising: 10
- at least one cabinet (2) adapted to define at least one refrigeration compartment (2A, 2B, 2C) for storing foodstuffs;
  - a refrigerating circuit (CR) divided into a high-pressure side (10) and a low-pressure side (20), wherein said high-pressure side (10) begins at the outlet of a compressor (11) that allows compressing a refrigerating fluid, comprises a condenser (12) for condensing the refrigerating fluid coming from the compressor (11), and reaches the inlet of an expansion member (13); 15
  - a tray (30) for collecting a liquid coming from said at least one refrigeration compartment (2A, 2B, 2C) and positioned in proximity to said compressor (11), 20 25
- characterized in that**
- said method comprises a step of realizing at least one tract (101; 102) of said high-pressure side (10) in such a way that it enters, at least partially, said tray (30). 30
10. Method according to claim 9, **characterized in that** said step is obtained by realizing said at least one tract (101; 102) of the high-pressure side (10) in such a way that it enters, at least partially, a volume (31) delimited by the walls (32, 32I) of the tray (30). 35
11. Method according to one or more of the preceding claims 9 and 10, **characterized in that** said step is obtained by providing a first branch (101) of a duct (11C) that connects the compressor (11) to the condenser (12) and allows the refrigerating fluid to flow from the compressor (11) to the condenser (12). 40 45
12. Method according to one or more of the preceding claims 9 and 10, **characterized in that** said step is obtained by providing a second branch (102) extending from the condenser (12), in particular said second branch (102) being so realized as to extend from a condenser (12) comprising a system of pipes arranged as a coil. 50
13. Method according to one or more of claims 9 to 12, **characterized in that** it comprises the step of realizing said at least one tract (101; 102) in such a way as to comprise: 55
- a first portion (103) extending from the high-pressure side (10);
  - a central portion (104) adapted to be housed inside the tray (30);
  - a second portion (105) returning to the high-pressure side (10).
14. Method according to claim 13, **characterized in that** it comprises the step of realizing said central portion (104) in such a way as to have a winding shape that maximizes the area of thermal exchange between said at least one tract (101; 102) and the volume (31) delimited by the walls (32, 32I) of the tray (30).
15. Method according to one or more of claims 13 and 14, **characterized in that** it comprises the step of realizing said central portion (104) in such a way as to have a surface made of a corrosion-resistant material, in particular said central portion (104) being coated with an anti-corrosion paint.

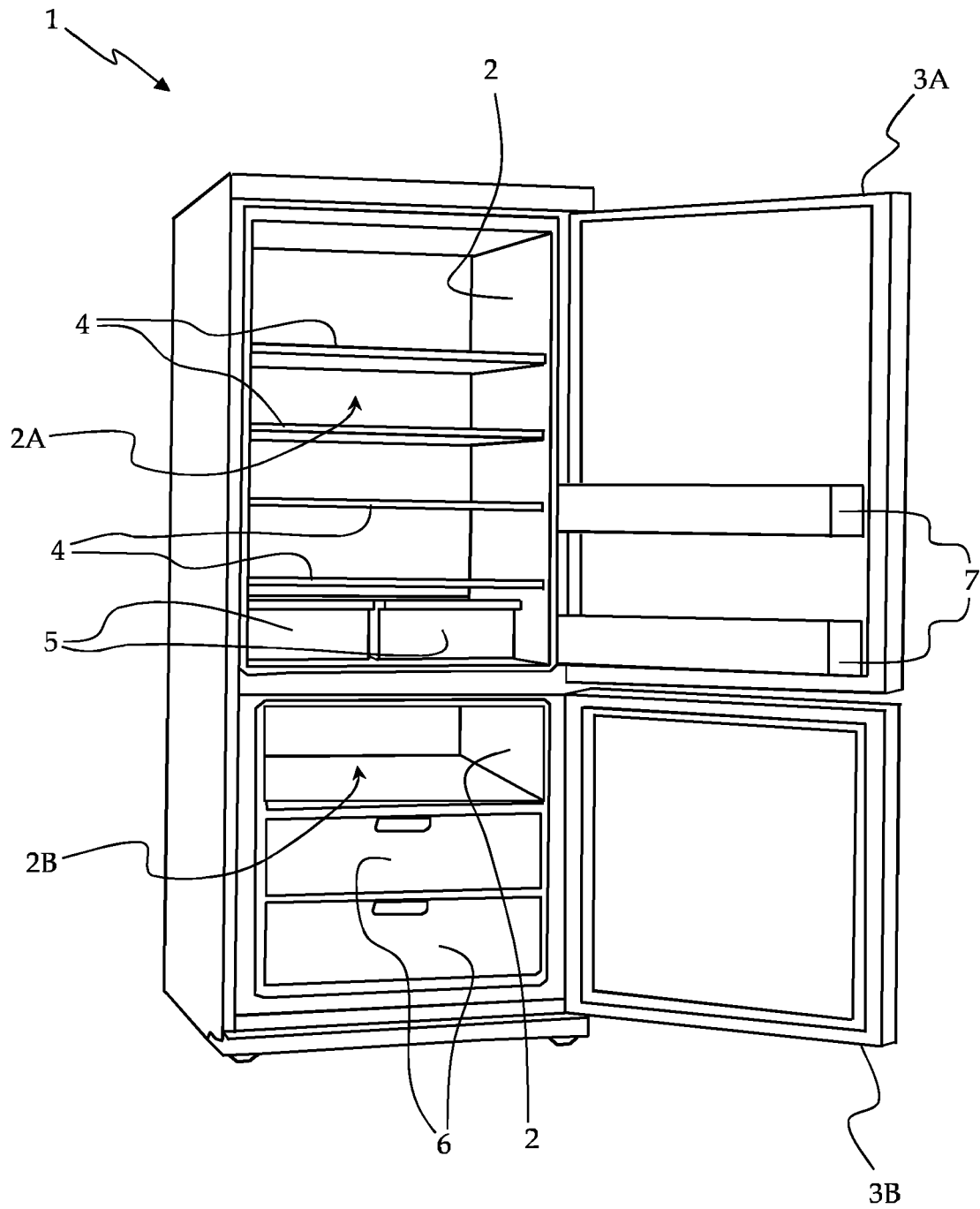


Fig. 1

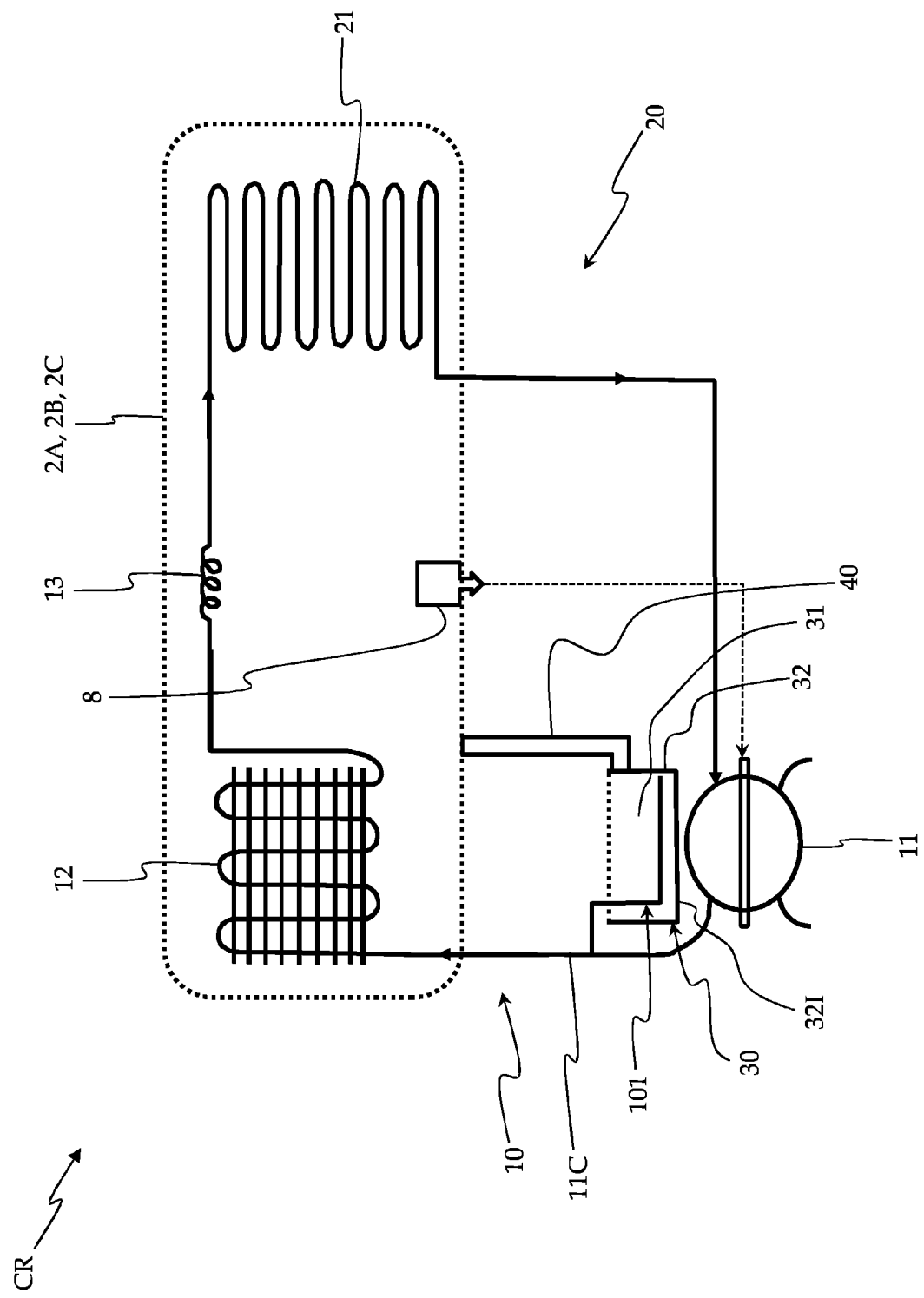


Fig. 2

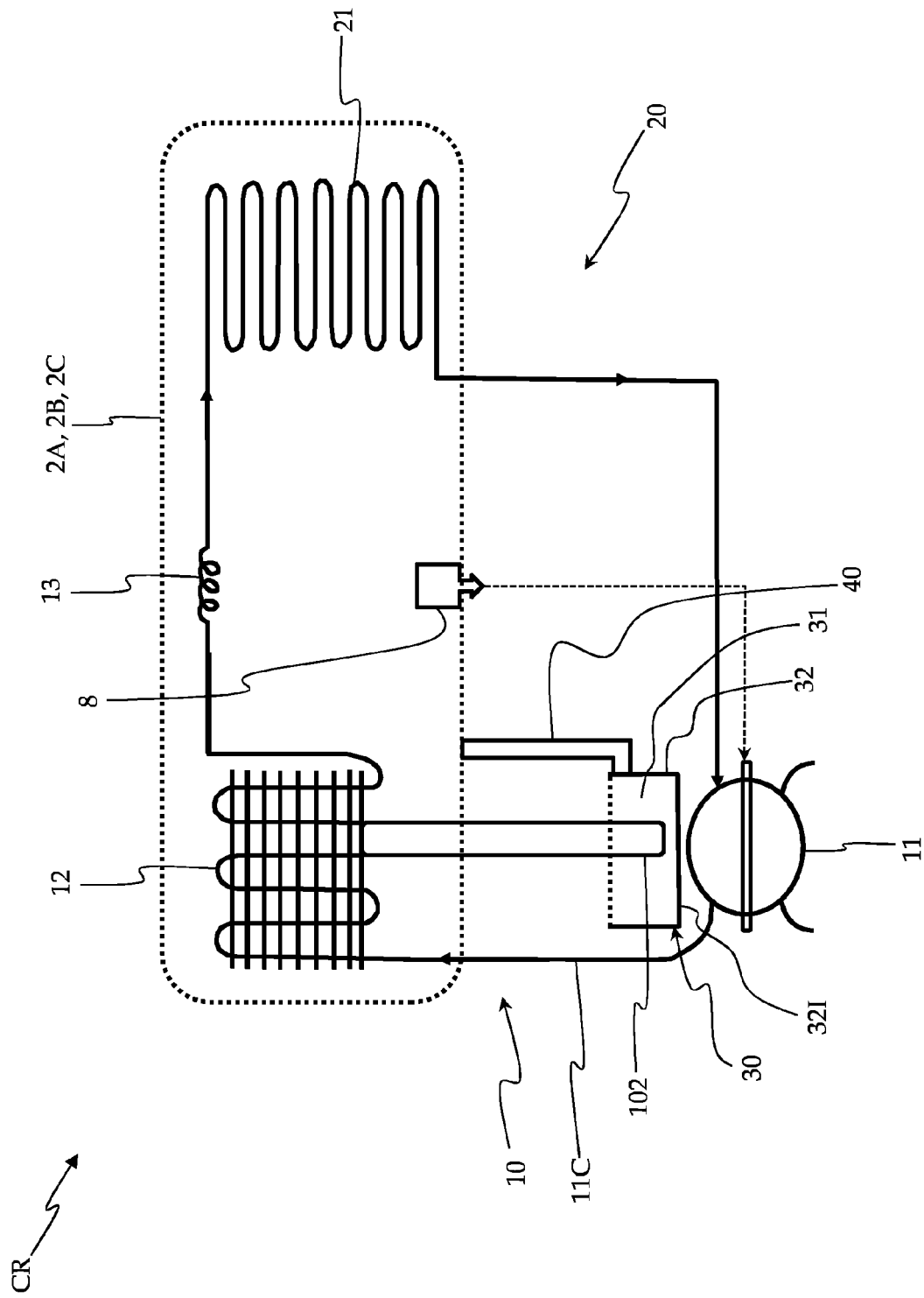


Fig. 3

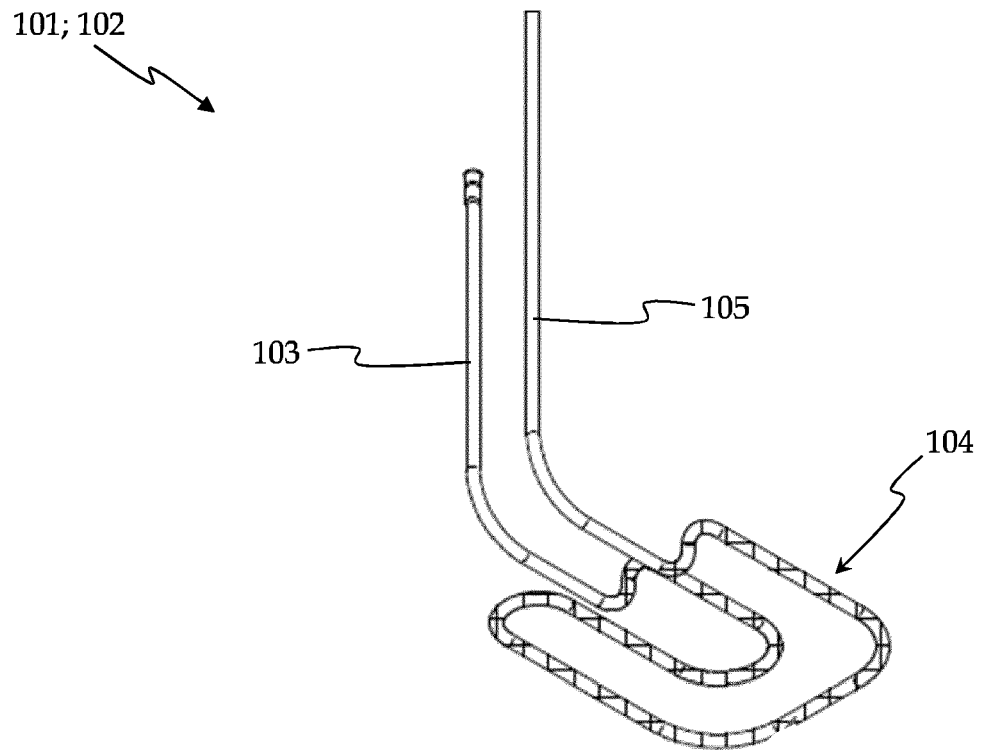


Fig. 4



## EUROPEAN SEARCH REPORT

Application Number  
EP 15 19 9237

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