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(54) **Insulated container**

(57) The present invention relates to an insulated container (100) comprising side walls (110, 120), a bottom wall (130), a top wall (140), a rear wall (150) and a front wall (160), wherein the walls comprising an inner face and an outer face and an insulating layer of insulating material, the insulated container further comprising an inlet (101) for getting temperature control fluid into the insulated container (100) and an outlet (102) for getting temperature control fluid out of the insulated container, wherein the insulated container (100) further comprises temperature control fluid distribution means (103) for distributing temperature control fluid in the insulated container (100).

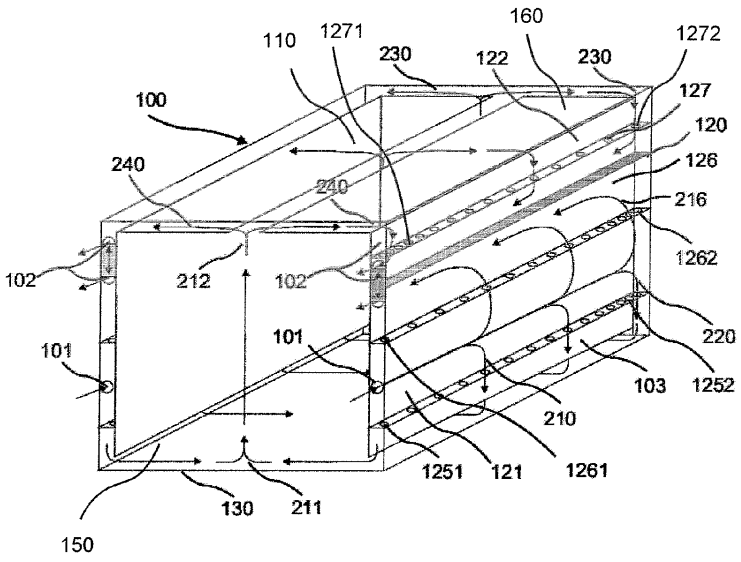

Fig. 1

EP 2 535 296 A1

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to an insulated container in accordance with the preamble of claim 1.

[0002] Such insulated containers are known to the skilled person as integral reefer container or thermal container according to ISO 1496-2. These insulated containers comprise an ISO freight container according to ISO 668 and an appropriate thermal insulation. If the insulated container also comprises an integral refrigeration unit for controlling the temperature inside the container, the insulated container is also known as integral reefer container. If the refrigeration unit is not included, these insulated containers are known as porthole containers. The porthole containers can have a larger internal volume and payload compared to the integral reefer containers. Cooling air is provided from outside and guided through the container.

[0003] The temperature control of the goods to be transported with the insulated container is made by an air flow through the inner volume of the insulated container. The air flows through the volume of the container from the bottom to the top. Therefore, air is cooled in the refrigeration unit, blown into the bottom wall of the insulated container being provided with T-gradings. The air is thrown off the inside of the insulated container such that the air must pass the goods contained in the container in re-circulated to the refrigeration unit.

[0004] Integral reefer containers have the refrigeration unit arranged at the rear wall of the insulated container. The known insulated containers have the disadvantage that due to the open structure of the T-gradings the cooling of the goods contained in the region opposite to the side the refrigeration unit is located or the cooled air is introduced requires high energy input. Accordingly, there is a need to provide an insulated container having a better cooling performance, especially in portions remote from the refrigeration unit and/or remote from the cooling medium input.

[0005] The object of the invention is achieved by an insulated container according to claim 1 or claim 3. Preferred embodiments of the invention are disclosed in the dependent claims.

SUMMARY OF THE INVENTION

[0006] The present invention is limited only by the scope of the claims as ultimately allowed in this application, and in no way limited by the prior versions of the claims.

[0007] In accordance with the invention an insulated container comprising side walls, a bottom wall, a top wall, a rear wall and a front wall is provided, wherein the walls comprising an inner face and an outer face and an insulating layer of insulating material, the insulated container further comprising an inlet for getting temperature control fluid into the insulated container and an outlet for getting temperature control fluid out of the insulated container, wherein the insulated container further comprises temperature control fluid distribution means for distributing temperature control fluid in the insulated container.

[0008] This embodiment of the invention has the advantage that the temperature control fluid distribution means can be arranged and designed such that a homogenous distribution of temperature control fluid can be achieved. Thereby energy and costs may be saved because excessive cooling close to rear wall of the insulated container where the inlet and/or cooling unit is located may be avoided.

[0009] In accordance with the invention the temperature control fluid distribution means can comprise at least one temperature control fluid flow distribution passage for distributing temperature control fluid from the inlet into various portions of the insulated container having a different distance to the inlet and/or at least one temperature control fluid flow collection passage for collecting temperature control fluid from portions of the insulated container having a different distance to the outlet and for guiding the collected temperature control fluid to the outlet. These passages can be provided in one or both side walls and/or in the bottom wall and/or the top wall of the container and/or in a platform to be used for supporting the goods contained in the container. According to the invention there may be provided one or more passages in each wall and/or platform.

[0010] In accordance with the invention the insulated container can further comprise a removable support platform for supporting and/or cooling the goods to be transported in the insulated container.

[0011] In accordance with the invention an insulated container comprising side walls, a bottom wall, a top wall, a rear wall and a front wall is provided, wherein the walls comprising an inner face and an outer face and an insulating layer of insulating material, the insulated container further comprising an inlet for getting temperature control fluid into the insulated container and an outlet for getting temperature control fluid out of the insulated container, wherein the insulated container further comprises a removable support platform for supporting and/or cooling the goods to be transported in the insulated container.

[0012] Preferably the removable support platform has dimensions corresponding to the inner dimensions of the insulated container. This embodiment has the advantage that the goods can be pre-packed and loaded into the insulated container in one step and without the need of storing more platforms into the container.

[0013] In accordance with the invention the at least one temperature control fluid flow distribution passage can be provided in a side wall and/or the removable support platform. This embodiment has the advantage that the side wall and/or the removable platform can have a double function and that no special means comprising the passages are to be provided, whereby parts and room can be saved.

[0014] In accordance with the invention at least one temperature control fluid flow collection passage can be provided in a side wall. Thereby similar advantages may be achieved.

[0015] In accordance with the invention both side walls can each comprise at least one temperature control fluid flow distribution passage and/or both side walls can each comprise at least one temperature control fluid flow collection passage.

[0016] In accordance with the invention the at least one temperature control fluid flow distribution passage can comprise distribution openings into the inside of the insulated container.

[0017] In accordance with the invention the removable support platform can comprise at its side inlet openings corresponding to the distribution openings of the temperature control fluid flow distribution passage/s. The temperature control fluid may be directed into the removable support platform. Since a homogenous distribution along the extension of the side walls may be achieved by the temperature control fluid distribution means, the cross section area and/or the number of openings in the temperature control fluid flow distribution passage/s provided in the removable support platform may be constant and/or such that the removable support platform is symmetrical. These embodiments have the advantage that the removable support platform can be inserted into the insulated container in both directions for more flexibility and easiness by loading the goods which have been prepacked on the removable support platform into the insulated container.

[0018] In accordance with the invention the temperature control fluid flow distribution passage/s can be arranged and designed such that a pressure drop of the temperature control fluid in the temperature control fluid flow distribution passage/s is at least partially compensated by a variation of the respective cross section area and/or the number per area of the distribution openings in a relation to the distance of the distribution openings from the rear wall.

[0019] In accordance with the invention the temperature control fluid flow distribution passage/s can comprise inlet openings to temperature control fluid pathways being provided in the side walls for temperature controlling the face of the side wall facing the inside of the insulated container. Radiation cooling may be sufficient for cooling goods which do not need to be vented. The embodiments of the invention providing radiation cooling may safe much energy and costs.

[0020] In accordance with the invention the temperature control fluid flow distribution passage/s can be are arranged and designed such that the temperature control fluid flow is divided into a temperature control fluid flow through the openings into the inside of the insulated container and a temperature control fluid flow through the inlet openings into the side walls of the insulated container. These embodiments of the invention provide a combination of radiation cooling and contact cooling by making contact with the temperature control fluid being directed around and/or through the goods in the insulated container.

[0021] In accordance with the invention the temperature control fluid flow collection passage/s can be arranged and designed for collecting temperature control fluid from the inside of the insulated container preferably through collection openings and/or from the temperature control fluid pathways being provided in the side walls of the insulated container preferably through outlet openings, wherein the cross section area and/or the number per area of the collection openings preferably corresponds to the cross section area and/or the number per area of the distribution openings. These embodiments are advantageous if the temperature control fluid is sucked out of the side walls and/or the inside of the insulated container because similar to a pressure drop of the incoming temperature control fluid with increasing distance from the inlet, there will be a suction loss with increasing distance from the outlet. This suction loss may be compensated by the variation of the cross section area of the openings and/or the number of openings per area.

[0022] In accordance with the invention the removable support platform can extend from the rear wall to the front wall of the insulated container and/or from the left side wall to the right side wall of the insulated container.

[0023] In accordance with the invention removable support platform can comprises rolls. This will provide the advantage that the removable platform may be handled without the need of fork lifters.

[0024] In accordance with the invention a removable support platform having any combination of the above mentioned features is provided to be used with an insulated container, especially for pre-packing goods to be transported in the insulated container.

[0025] According to the invention, the temperature control fluid may be cooled or cold air and/or gaseous medium.

[0026] In accordance with some embodiments of the invention temperature control fluid is guided through at least one side wall of the insulated container. Thereby radiation cooling is provided. Especially for goods which do not need to be vented, i.e. pre-cooled goods, radiation cooling is preferred because the temperature control fluid does not need to be guided through the inside of the insulated container. Instead the temperature control fluid can be used to cool the inner surfaces of the side walls (and/or the bottom wall and/or the top wall and/or the front and rear wall) of the insulated container such that the temperature in the insulated container can be maintained without the need of guiding temperature control fluid through the inside or inner volume of the insulated container. Thereby the risk of a malfunction due to icing of the ducts in the insulated container may be avoided.

[0027] In accordance with the invention radiation cooling may be provided in addition to the convection and/or contact cooling.

[0028] In accordance with embodiments of the invention comprising the removable support platform, an improved guiding of the temperature control fluid may be provided, because the cross sections area of the openings in the temperature control fluid passages can be optimized such that there is a larger cross section area in portions regions having lower temperature control fluid pressure due to a larger distance to the inlet for the temperature control fluid.

[0029] The embodiments of the inventions with the removable support platform have the advantage that the goods to be transported in the insulated container may be stored on the removable support platform outside the insulated container. Therefore, the time needed for packing the insulated container may be reduced due to pre-packing the goods onto the removable support platform. If pre-packing of the removable support platform takes place in a temperature controlled environment outside the insulated container, there is no need of cooling down the goods to be transported in the insulated container when loaded into the insulated container. At least the time for cooling down the goods to be transported in the insulated container may be reduced. In some embodiments of the inventions the side walls of the insulated container may be corrugated in order to enhance the venting of the goods to be transported in the insulated container.

[0030] The embodiment of the invention comprises at least one or more of the following advantages over the insulated containers known to the skilled person:

- A T-grading at the bottom wall of the insulated container may be avoided because of the possibility of cooling the goods in the insulated container by means of the radiation cooling of the side walls and/or the convection cooling provided by the temperature control fluid distribution passages of the removable support platform. Accordingly, the bottom wall of the insulated container may be better cleaned due to the smooth surface of the bottom wall of the insulated container.

- The flow of temperature control fluid in the insulated container may be homogenized especially by taking into account the pressure top of the temperature control fluid flowing through the inner compartment of the insulated container.

- By means of the removable support platform it may be possible to homogenize flow of temperature control fluid such that all goods are provided with the essentially same amount of temperature control fluid passing the goods to be transported in the insulated container.

- Due to the synergy of using radiation cooling and convection cooling the energy consumption can dramatically be reduced.

- Temperature fluctuations by loading the goods into the insulated container may be reduced due to packing the goods outside the insulated container onto the removable support platform. Also the time needed for packing the insulated container may be minimized.

- Mechanical damages inside the insulated container may be avoided due to the package of the goods to be transported outside the insulated container. Also materials of less weight and less strength may be used for the insulated container due to the reduced risk of damage to the insulated container.

- The goods to be transported may simply be transferred or moved from one insulated container to another insulated container. This may be advantageous by changing from one carrier type to another carrier type, i.e. from a ship to a truck.

- Since the goods to be transported in the insulated container may be pre-packed onto the removable support platform, the packing heights may be optimized, because the goods do not need to be packed within the insulated container.

- If the removable support platform is provided with rolls, the packed removable support platform may be handled with low energy, i.e. without auxiliary devices and with minimal power to be provided.

Brief description of the drawings

[0031] The following is a detailed exemplary description of embodiments of the invention, in a number of its various aspects. Those skilled in the art will understand that the specificity provided herein is intended for illustrative purposes with respect to an exemplary embodiment, only, and is not to be interpreted as limiting the scope of the invention or claims.

[0032] Preferred embodiments of the invention are shown in the attached drawings:

Fig. 1 is a perspective view of an insulated container in accordance with an embodiment of the invention.

Fig. 2 is a schematic partial cross-section of a side wall of the insulated container of Figure 1.

Fig. 3 is a schematic partial cross-section of the perspective view of an insulated container in accordance with another embodiment of the invention.

Fig. 4 is a perspective view of an insulated container in accordance with another embodiment of the invention.

Fig. 5 is a schematic view of a side wall of the insulated container of Figure 1 or Figure 4.

Fig. 6 is a schematic view showing a transfer of the content of an insulated container in accordance with the invention from a truck to a ship.

Detailed description

[0033] The invention will be explained in further detail with reference to the drawings, wherein the following reference numbers are used:

1 truck

2 ship

10 tray

20 goods

100 insulated container

101 inlet

102 outlet

103 temperature control fluid distribution means

110 right side wall

1101 outer surface

1102 insulating material

1103 intermediate layer

1104 inner surface

1105 recess/corrugation

111 temperature control fluid distribution passage

112 temperature control fluid collection passage

113 distribution opening

114 collection opening

116 temperature control fluid pathway

120 left side wall

121 temperature control fluid distribution passage

122 temperature control fluid collection passage

125 inlet opening

1251 inlet openings (close to rear wall 150)

1252 inlet openings (close to front wall 160)

126 temperature control fluid pathway

1261 overflow opening (close to rear wall 150)

1262 overflow opening (close to front wall 160)

127 outlet opening

1271 outlet openings (close to rear wall 150)

1272 outlet openings (close to front wall 160)

130 bottom wall

140 top wall

150 rear wall

160 front wall

161 slidable door

1610 direction

170 removable support platform

1700 direction

171 temperature control fluid distribution passage

173 distribution opening

1731 distribution opening (close to rear wall 150)

1732 distribution opening (close to front wall 150)

174 side opening

175 front opening

210 incoming flow (close to rear wall 150)

211 flow into inside of container

212 flow out of inside of container

216 overflow

220 incoming flow (close to front wall 160)

230 outgoing flow (close to front wall 160)

240 outgoing flow (close to rear wall 150)

[0034] An insulated container 100 according to an embodiment of the invention is shown in Figures 1 and 2.

[0035] The insulated container 100 comprises a right side wall 110, a left side wall 120, a bottom wall 130, a top wall 140, a rear wall 150 and a front wall 160.

[0036] If the insulated container 100 is embodied as integral reefer container, at least one refrigerating unit (not shown) is provided at the outside of rear wall 150. If the insulated container 100 is embodied as porthole container, cooling medium, e.g. cooled air, is provided by an external cooling unit (not shown).

[0037] The integral refrigerating unit and/or an external cooling unit is blowing cooled air into inlet 101 of the insulated container 100 and "warm" air is drawn off through outlet 102 in order to keep the content and the inside of the container at a desired temperature level.

[0038] According to the embodiment as shown in Figures 1 and 2, the side walls 110, 120 comprise flow passages for cooling the inner surface 1104 of side wall 110 and the inner surface of side wall 120.

[0039] Temperature control fluid distribution passages 111, 121 are provided at the respective bottom end of the side walls 110 and 120. These passages are arranged and designed for controlling the distribution of cooling air (temperature control fluid) flowing or forced through inlet 101 into the temperature control fluid distribution passages 111, 121 along the length or extension of the respective side walls 110, 120.

[0040] The insulated container 100 shown in Figures 1 and 2 has a radiation cooling and a convection or contact cooling.

[0041] For the radiation cooling the temperature control fluid is directed through overflow openings 1261, 1262 provided at the top of the respective temperature control fluid passages 111, 121 into temperature control fluid pathways 116, 126 provided in the respective side walls 110, 120. As shown in Fig. 2, these temperature control fluid pathways are provided in the side walls 110, 120 between an intermediate layer 1103 and the inner surface 1104 of the side wall 110. The insulating material 1102 is provided at the other side of the intermediate layer 1103, i.e. between the outer surface 1101 and the intermediate layer 1103. Accordingly the temperature control fluid may cool down the inner surface 1104 of the side wall 110 such that radiation cooling can take place. The temperature control fluid is further sucked through outlet openings 102.

[0042] The number of inlet openings 125 and outlet openings 127 varies with the distance from the inlet 101 and outlet 102, i.e. the number of inlet openings 1251 close to the inlet 101 is less than the number of inlet openings 1252 remote from the inlet 101. Alternatively or in addition the cross section area of the inlet openings may vary similarly to increase the effective cross section area of the inlet openings 125 with increasing distance from inlet 101. Similarly the cross section and/or the number of outlet openings 127, 1271, 1272 may vary in order to compensate lower suction at greater distances to the outlet 102.

[0043] For the convection cooling, a portion of the temperature control fluid is directed from the temperature control passage 111, 121 into the inside of the insulated container through distribution openings 113. The number thereof and/or the cross section area thereof may vary accordingly in order to compensate a pressure drop with increasing distance from the inlet 101. Similarly the temperature control fluid is sucked from the inside of the insulated container through collection openings 114 into the respective temperature control fluid collection passages 112, 122. The number and/or the cross section area of the collection openings may vary in order to compensate for less suction at greater distances to the outlet 102.

[0044] The inner surface 1104 of right side wall 110 comprises recesses 1105 and/or is corrugated for ensuring an flow of temperature control fluid (for instance cooled air) even if the goods in the insulated container are abutting the inner surface 112 of the right side wall 110 of the insulated container 100.

[0045] The side walls 110, 120, the bottom wall 130, the top wall 140, the front wall 150 and the rear wall 160 each comprise respective insulating material. If temperature control fluid pathways are provided in the wall, an intermediate layer 1103 is provided as shown in Fig. 2 exemplary for right side wall 110. If no temperature control fluid pathways and no temperature control fluid passages are provided in the wall, the intermediate layer may be omitted. For instance the bottom wall 130, the top wall 140, the rear wall 150 and the front wall 160 may be designed accordingly.

[0046] Fig. 2 is an exemplary cross section of right side wall 110. The left side wall 120 may have the corresponding construction and/or structure as the right side wall 110.

[0047] As shown in Fig. 2 side wall 110 comprises an outer surface 1101 and an intermediate layer 1103. Between the outer surface 1101 and the intermediate layer 1103 insulating material 1102 is provided. Side wall 110 further comprises an inner surface 1104. Temperature control fluid pathways 116 are provided in the space between intermediate layer 1103 and inner surface 112.

[0048] A flow 211 of temperature control fluid (for instance cooled or cold air) is pressed through inlet 101 into temperature control fluid passage 111 provided at the bottom part of side wall 120. A portion of the temperature control fluid is used for radiation cooling, thereby flowing through overflow openings 126 into temperature control fluid pathways 216 provided in the side wall 120 extending from the bottom end to the top end of the side wall 120 into the temperature control fluid collection passage 112 provided in a top portion of the side wall 120. Another portion of the temperature control fluid is used for convection cooling. The flow 211 of temperature control fluid used for inside cooling is drawn out from side wall 120 and recirculated to the integral refrigerating unit and/or an external cooling unit. Due to the greater dis-

tance from the inlet the flow 220 of temperature control fluid has less pressure and less speed than the flow 210 close to the inlet 101. To compensate the lower speed and less pressure of the temperature control unit the effective cross section area of the inlet openings 125 and outlet openings 127 is increasing with the distance from the inlet 101 and outlet 102, respectively. For instance, as shown in Figure 1 the number of inlet openings 1252 and outlet openings 1272 close to the front wall 160 is greater than the number of inlet openings 1251 and outlet openings 1271 close to the rear wall 150.

[0049] As shown in Fig. 2 a portion 211 of the temperature control fluid is passed through distribution opening 113 into the inside of the insulated container 100. In order to provide a homogenous flow of temperature control fluid along the extension of side walls 110, 120 the number of distribution openings 113, 123 may increase with the distance from the inlet 101. Alternatively and/or in addition the cross section area of the distribution openings 113, 123 may increase with the distance from the inlet 101. Similarly collection openings 127 are provided in the upper portion of the side wall 110 for drawing used temperature control fluid out off the inside of the insulated container such that the temperature control fluid may be drawn out of the insulated container and recirculated to the integral refrigerating unit and/or external cooling unit.

[0050] The embodiment shown in Fig. 3 mainly corresponds to the embodiment as shown in Figs. 1 and 2. Same or similar parts have been indicated with the same reference numerals. Accordingly reference is made to the description of the embodiment of Figs. 1 and 2. In the following the differences between the embodiment of Fig. 3 and the embodiment of Figs. 1 and 2 is described only.

[0051] The inlet 101 and the outlet 102 are provided close to the middle of right side wall 110 of the insulated container 100, i.e. in the middle in vertical direction, but close to the rear wall (not shown) of the insulated container. Accordingly the flow of temperature control fluid is first directed from the inlet 101 to the bottom end of side wall 110 into the temperature control fluid distribution passage 111. Similarly the flow from temperature control collection passage 112 is finally directed from the top end of side wall 110 to outlet 102.

[0052] The goods 20 to be transported in the insulated container 100 are packed onto trays 10, i.e. this embodiment comprises a removable support platform 170 as also shown with the embodiment of Fig. 4. However the skilled person will readily know that the removable support platform may be omitted in accordance with some embodiments of the invention, for instance with embodiments wherein radiation cooling of the side walls is provided.

[0053] The embodiment as shown in Fig. 4 mainly corresponds to the embodiments as shown in Figs. 1 to 2 and 3, respectively. Same or similar parts have been indicated with the same reference numerals. Accordingly reference is made to the description of the embodiments of Figs. 1 to 2 and 3, respectively. In the following the differences between the embodiment of Fig. 4 and the embodiment of Figs. 1 to 2 and 3, respectively, is described only.

[0054] The embodiment of Fig. 4 comprises a sliding door 161 for opening and closing the front wall 160. The direction of movement of sliding door 161 is indicated with reference numeral 1610.

[0055] The embodiment of Fig. 4 comprises a removable support platform 170 having a width corresponding to the distance between side walls 110, 120 and a length corresponding to the distance between rear wall 150 and front wall 160. Accordingly removable support platform 170 fits essentially to the inner dimensions of the insulated container 100.

[0056] The removable support platform 170 comprises rolls (not shown) at its bottom side.

[0057] The removable support platform 170 is movable into and out of the insulated container along the direction 1700.

[0058] The removable support platform 170 comprises temperature control fluid distribution passages 171 having distribution openings 173 being evenly distributed along the extension thereof, i.e. the number of distribution openings 1731 close to rear wall 150 is the same as the number of distribution openings 1732 close to front wall 150. The removable support platform comprises side openings 174 preferably corresponding to the distribution openings 113, 123 of the temperature control fluid passage 111, 121. Accordingly a homogenous distribution of temperature control fluid may be achieved by the number and/or cross section area of the distribution openings 113, 123. Therefore there is no need for a variation of the number and/or cross section area of the distribution openings provided in the removable support platform. However a variation thereof may be provided, if necessary or desired without deviating from the invention.

[0059] Furthermore the removable support platform is provided with front openings 175 permitting temperature control fluid not having passed a distribution opening 173 to exit the temperature control fluid distribution passage 173.

[0060] Fig. 5 shows a side view of a side wall 110 of an insulated container 100 in accordance with one of the previsous embodiments.

[0061] Fig. 6 shows a schematic view of transferring the content of an insulated container 100 from a truck 1 to a ship 2. The removable support platform 170 can be removed with all goods from the container 100 and loaded into the ship 2. In the ship 2 the removable support platform 170 may be inserted into a similar or identical insulated container.

[0062] The invention has been described in the form of functional elements. Those elements are known to those skilled in the art and may be realized in different embodiments. These elements can be combined with one another in different ways. In some embodiments,

parts of the proposed control device may also be integrated, for example in a single component, a single subassembly or a program for a data processing device. The invention does not rely on the strict realization of a certain embodiment.

[0063] While the invention has been described in terms of several embodiments, those skilled in the art will recognize that the invention is not limited to the embodiments described, but can be practiced with modification and alteration within the spirit and scope of the appended claims. The description is thus to be regarded as illustrative instead of limiting. Therefore, it is intended that this invention be limited only by the claims and the equivalents thereof.

Claims

1. Insulated container (100) comprising side walls (110, 120), a bottom wall (130), a top wall (140), a rear wall (150) and a front wall (160), wherein the walls comprising an inner face and an outer face and an insulating layer of insulating material, the insulated container further comprising an inlet (101) for getting temperature control fluid into the insulated container (100) and an outlet (102) for getting temperature control fluid out of the insulated container,
characterized in that the insulated container (100) further comprises temperature control fluid distribution means (103) for distributing temperature control fluid in the insulated container (100).

2. Insulated container according to claim 1, **characterized in that** temperature control fluid distribution means (103) comprises at least one temperature control fluid flow distribution passage (111; 121; 171) for distributing temperature control fluid from the inlet (101) into various portions of the insulated container having a different distance to the inlet (101) and/or at least one temperature control fluid flow collection passage (112; 122; 172) for collecting temperature control fluid from portions of the insulated container having a different distance to the outlet (101) and for guiding the collected temperature control fluid to the outlet (102).

3. Insulated container (100) according to any of the preceding claims or the preamble of claim 1, **characterized in that** the insulated container (100) further comprises a removable support platform (170) for supporting and/or cooling the goods to be transported in the insulated container (100).

4. Insulated container according to any of the preceding claims, **characterized in that** the at least one temperature control fluid flow distribution passage (111; 121; 171) is provided in a side wall (110, 120) and/or the removable support platform (170).

5. Insulated container according to any of the preceding claims, **characterized in that** the at least one temperature control fluid flow collection passage (112; 122) is provided in a side wall (110, 120).

6. Insulated container according to any of the preceding claims, **characterized in that** both side walls (110, 120) each comprising at least one temperature control fluid flow distribution passage (111; 121) and/or both side walls (110, 120) each comprising at least one temperature control fluid flow collection passage (111; 121).

7. Insulated container according to any of the preceding claims, **characterized in that** the at least one temperature control fluid flow distribution passage (111; 121; 171) comprises distribution openings (113; 123; 173) into the inside of the insulated container (100).

8. Insulated container according to the preceding claim, **characterized in that** the removable support platform (170) comprises at its side inlet openings (174) corresponding to the distribution openings (113; 123) of the temperature control fluid flow distribution passage/s (111; 121).

9. Insulated container according to any of the preceding claims, **characterized in that** the temperature control fluid flow distribution passage/s (111; 121; 171) is/are arranged and designed such that a pressure drop of the temperature control fluid in the temperature control fluid flow distribution passage/s is at least partially compensated by a variation of the respective cross section area and/or the number per area of the distribution openings (113; 123; 173) in a relation to the distance of the distribution openings (113; 123; 173) from the rear wall (150).

10. Insulated container according to any of the preceding claims, **characterized in that** the temperature control fluid flow distribution passage/s (111; 121) comprises inlet openings (125) to temperature control fluid pathways (116; 126) being provided in the side walls (110; 120) for temperature controlling the face of the side wall (110; 120) facing the inside of the insulated container (100).

11. Insulated container according to any of the preceding claims, **characterized in that** the temperature control fluid flow distribution passage/s (111; 121) are arranged and designed such that the temperature control fluid flow is divided into a temperature control fluid flow through the openings (113; 114) into the inside of the insulated container (100) and a temperature control fluid flow through the inlet openings into the side walls (110; 120) of the insulated container (100).

12. Insulated container according to any of the preceding claims, **characterized in that** the temperature control fluid flow collection passage/s (112; 122; 172) is/are arranged and designed for collecting temperature control fluid from the inside of the insulated container preferably through collection openings (114; 124) and/or from the temperature control fluid pathways (116; 126) being provided in the side walls (110; 120) of the insulated container (100) preferably through outlet openings, wherein the cross section area and/or the number per area of the collection openings (114; 124) preferably corresponds to the cross section area and/or the number per area of the distribution openings (112; 124) .

13. Insulated container according to any of the preceding claims, **characterized in that** the removable support platform (170) extends from the rear wall (150) to the front wall (160) of the insulated container (100) and/or from the left side wall (110) to the right side wall (120) of the insulated container.

14. Insulated container according to any of the preceding claims, **characterized in that** the removable support platform (170) comprises rolls (179).

15. Removable support platform (170) for an insulated container according to any of the preceding claims.

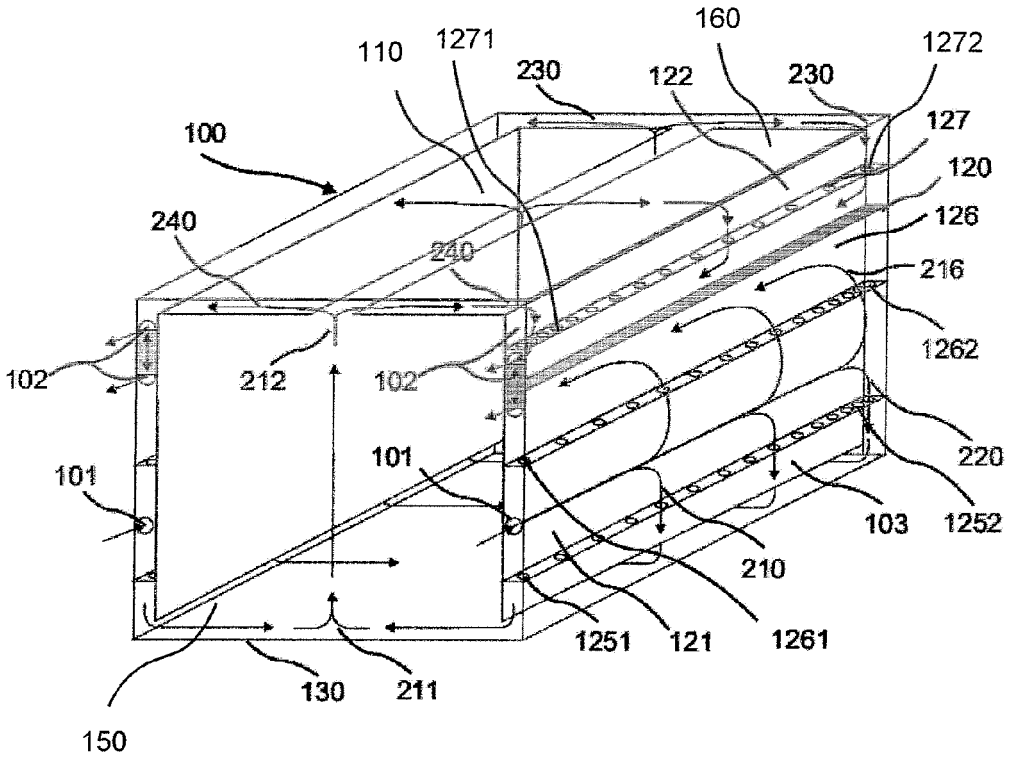
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Fig. 1

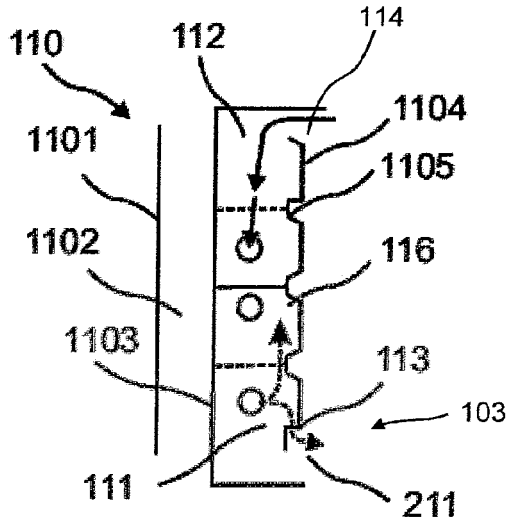
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Fig. 2

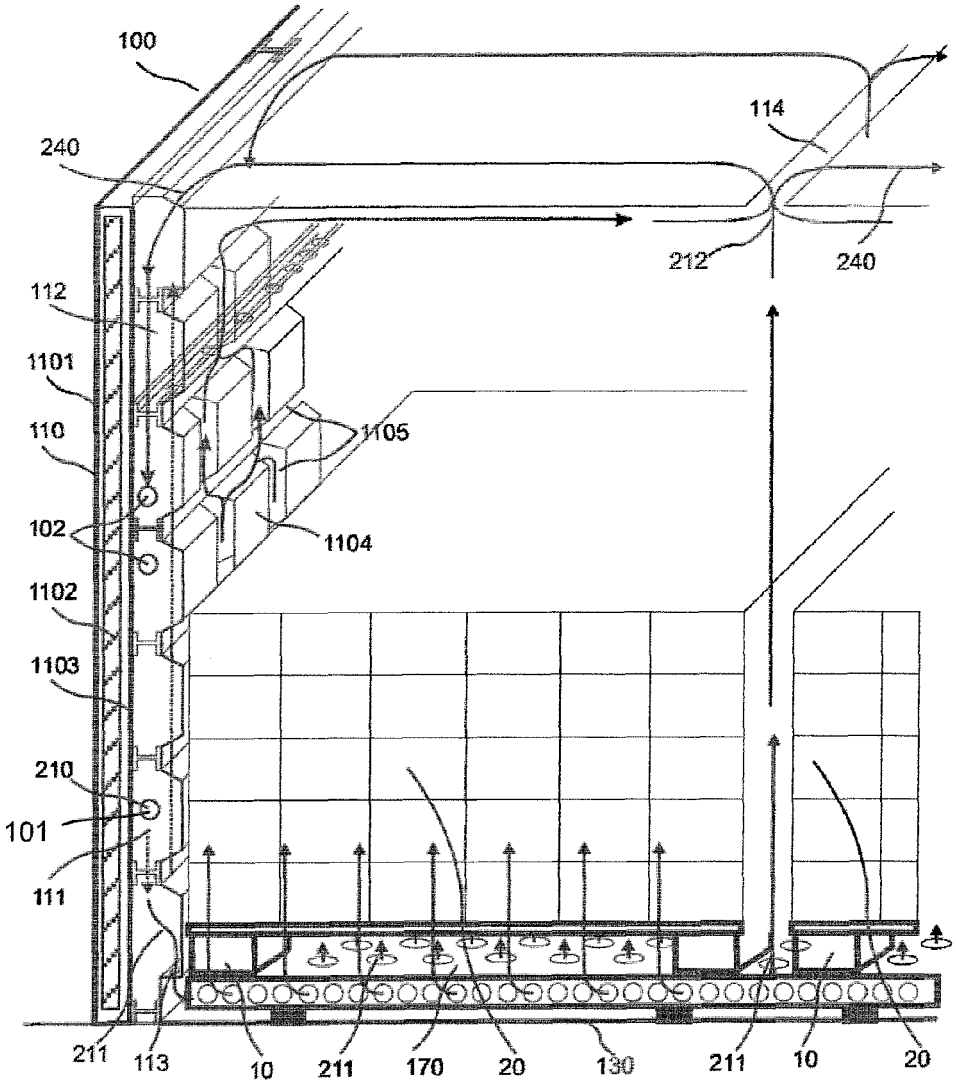
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Fig. 3

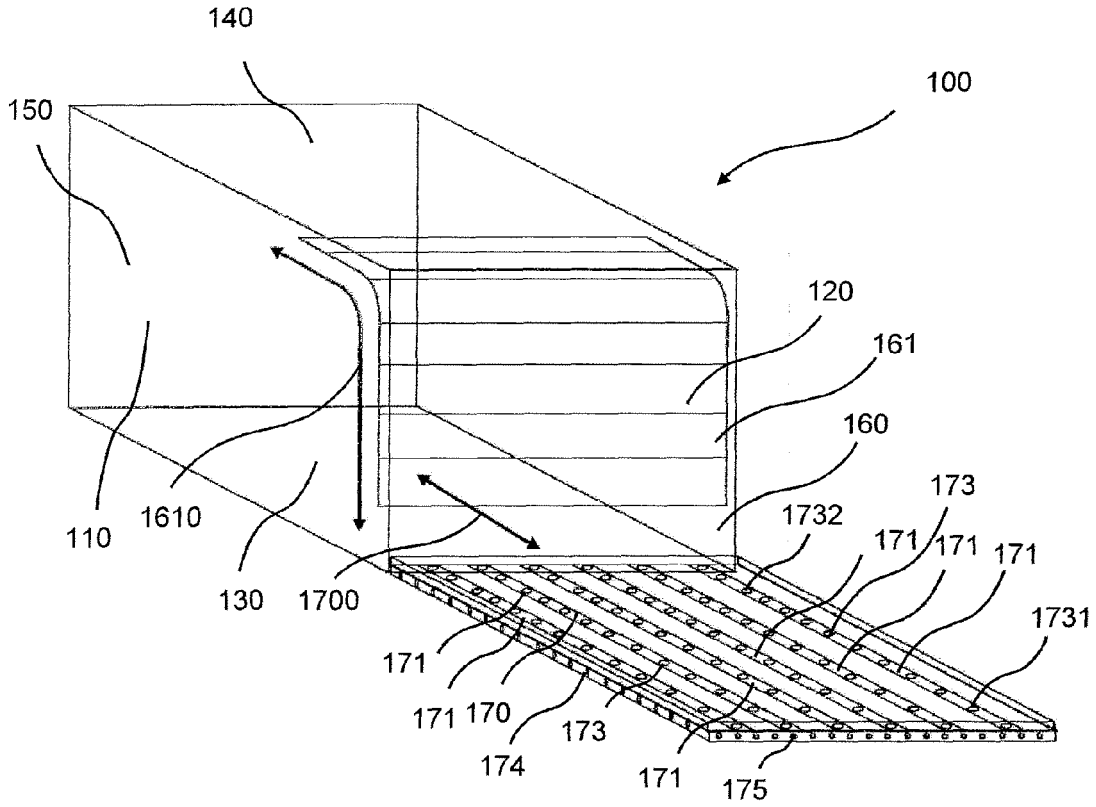
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Fig. 4

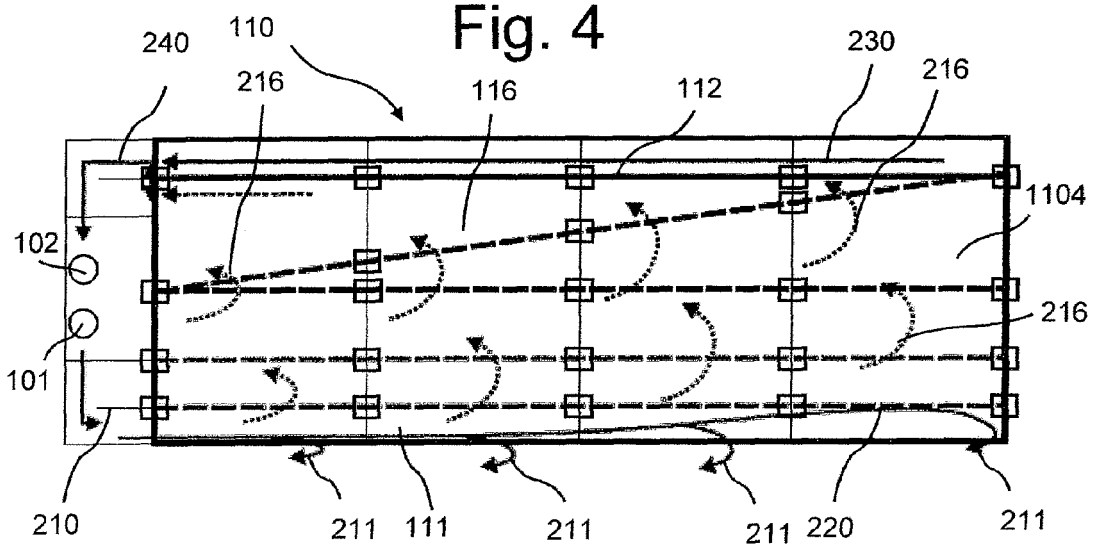
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Fig. 5

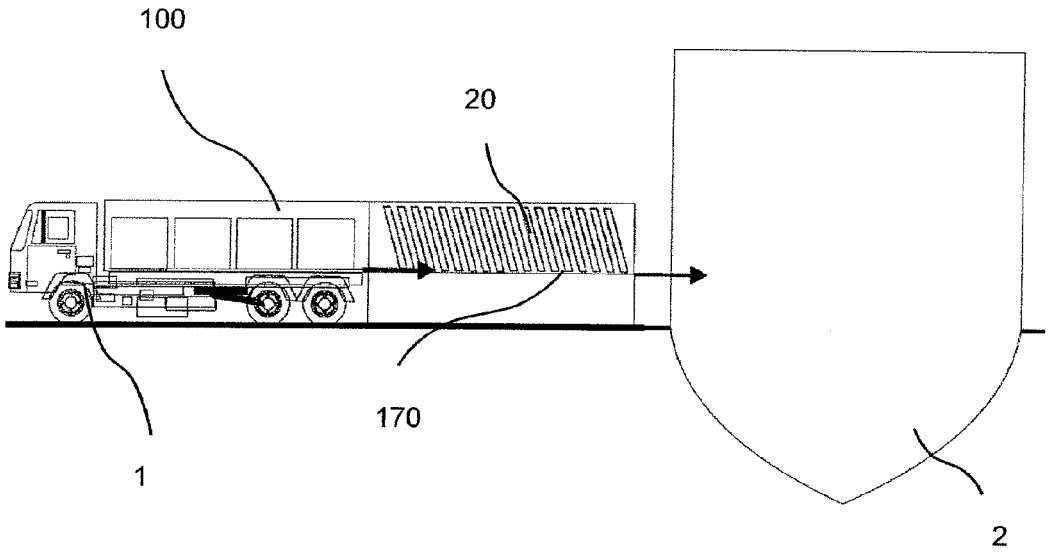

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 11 16 9859

DOCUMENTS CONSIDERED TO BE RELEVANT

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A	* abstract; figures 2, 3 *	3,8,13	

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 December 2011	Piolat, Olivier

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
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4

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EUROPEAN SEARCH REPORT

Application Number
EP 11 16 9859

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	* figure 1 *	13,14	

TECHNICAL FIELDS SEARCHED (IPC)

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 December 2011	Piolat, Olivier

CATEGORY OF CITED DOCUMENTS

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4

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Application Number
EP 11 16 9859

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 11 16 9859

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-12

   Insulated container with temperature control fluid flow distribution/collection passages

   ---

2. claims: 13-15

   Insulated container with a removable support platform

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 16 9859

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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09-12-2011

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