refrigerating part is located halfway the length of the galley container, the passage of trays from front to back or vice versa is blocked.

Additionally, the above described passive refrigerator unit, but also any active cooling element, will take up valuable space within the galley container, leaving less space for food products or any other contents of the galley container. A refrigerator unit that combines a relatively small volume with passive cooling of the interior of the galley container would be desired. Still further, because of its position within the interior of the galley container, the refrigerator unit must be inserted into the container before the container is sealed, which may occur long before the container is loaded onto the airplane.

It would therefore be desirable to provide an alternative way to passively control cooling of food product and/or the interior of a galley container that alleviates at least some of the perceived inconveniences of the prior art.

Summary of the invention

According to a first aspect of the invention, there is provided a galley container for an aircraft, comprising a first shell having a peripheral rim defining an opening for access to an interior of the galley container; a second shell within the first shell, having a further peripheral rim, the second shell being formed of a material of high thermal conductivity, wherein the second shell encloses the interior of the galley container; wherein each shell comprises a roof element, a floor element and at least two sidewalls, the galley container further comprising: a thermally insulating layer, thermally insulating the second shell from an

exterior of the galley container; a receiving portion located above the roof element of the second shell for receiving a cooling element or a coolant, which receiving portion is provided within the first shell and is thermally insulated from the exterior of the galley container and partially thermally insulated from the second shell, wherein the second shell and the receiving portion are provided with a thermally conductive connection such that heat is transferrable between the receiving portion and the interior of the galley container through the thermal conductive connection and via the second shell; and at least one door provided at the opening to close the galley container in a closed position of the door. The thermally conductive connection comprises in one embodiment a direct metal-to-metal connection. Heat can also be transferred by means of one or several heat pipes specifically provided for this purpose.

The first shell is an outer shell, but not necessarily an outermost shell. The second shell is an inner shell, but not necessarily an innermost shell. The thermally insulating layer can be provided between the first and second shell. Alternatively, the first shell

According to an embodiment, a sealing element is provided between the side walls of the first shell and the roof element and the floor element, respectively, to prevent outside air entering the interior of the galley container. Additionally, leakages can occur within the connections between the side walls, the roof element and the floor element of the galley container. Exterior air may then enter the interior of the galley container and influence the cooling properties of the galley container, and the food quality. Preferably, the insulating and sealing functions are combined in one element. It will nevertheless be understood that for use on board airplanes, the galley container must not be completely sealed in order to compensate for pressure changes during the flight.

The second shell can be made of any material having a high thermal conductivity. Preferably, the material has a thermal conductivity comparable to aluminium, more preferably combined with a good strength to weight ratio like aluminium.

According to another embodiment, an inside of the second shell is provided with a further thermally insulating layer. In order to control the heat transfer from a cooling element or coolant receivable within the receiving portion, a further thermally insulating layer may be provided within the inside of the second shell, at least partly covering an inside surface of the second shell. Nevertheless, for airplane usage and in order to comply with aviation regulations an aluminium inside surface of the second shell is preferred.

According to a second part of the present invention, there is provided to a cooling element for a galley container as described herein, the cooling element comprising a housing and a container for containing a coolant, the container being a drawer slideably receivable within the housing, wherein the housing (34) comprises a heat transfer element to transfer heat between the container and an outside of the cooling element along at least part of the container and the outside of the cooling element, wherein the heat transfer element comprises a corrugated plate forming part of a peripheral wall of the cooling element, wherein corrugations are alternately tangential to at least part of an outside of the container along respective tangential regions, thereby establishing a thermal bridge between the container and the outside of the cooling element, and wherein a thermally insulating material is provided between the corrugations and the second shell. The coolant may be dry ice, i.e. solid carbon dioxide, having a temperature of about -80°C. However, other coolants with comparable properties as dry

ice may be used as well. The heat transfer element can comprise a heat transfer layer, thereby forming a contact surface with the container and the outside of the cooling element along at least part of an outside surface of the cooling element and/or an outside of the container.

According to an embodiment, the cooling element comprises a thermally insulating layer to thermally insulate the container from an exterior of the cooling element. By thermally insulating the container from an exterior of the cooling element,

The advantage of such an assembly is that the temperature of the interior of the galley container can be kept constant over a longer period of time, such as the time needed for long-haul flight of an airplane.

With passive control of the temperature in the interior of the galley container according to the invention, the amounts of heat transferred is kept equal for at least part of a long-haul flight, such that until the end of the flight, the temperature within the galley container can be kept below 8°C. The galley container according to the invention may thus operate without active cooling or without any form of electrical cooling power. The skilled person will be well aware of the calculations and design criteria required to ensure that the thermally conductive connection is arranged to transfer an amount of heat at least equal to the heat transferred from the exterior of the galley container to the interior of the galley container through the first and second shells throughout the required operating range of the galley container.

The thermally conductive connection between the heat transfer element and the second shell can be an indirect connection, i.e. one or more elements can be placed in between, while still establishing a thermal connection between the cooling element and the second shell, or it can be a direct connection, i.e. the heat transfer element and the second shell are at least partly adjacent to each other. The direct connection then forms the thermally conductive connection between the cooling element and the second shell.

According to another embodiment of the invention, there is provided a galley container for an aircraft, comprising an inner shell formed of thermally conducting material defining an interior of the galley container; a thermally insulating layer, thermally insulating the second shell from an exterior of the galley container; a receiving portion for receiving a cooling element; the receiving portion being insulated from the exterior of the galley container; a separating wall, thermally insulating the inner shell from the receiving portion; and a thermally conducting connection between the inner shell and the receiving portion. The thermally conducting connection is preferably an indirect connection that extends from the receiving portion to a part of the inner shell that is not adjacent to the receiving portion, such as the sidewalls, whereby the heat may be more effectively collected from the interior of the galley container. The galley container may include one or more of the features defined in the appended dependent claims.

Brief description of the drawings

CLAIMS

1. Galley container (2) for an aircraft, comprising

- a first shell (20) having a peripheral rim (48) defining an opening for access to an interior (11) of the galley container;

- a second shell (21) within the first shell, having a further peripheral rim (45), the second shell being formed of a material of high thermal conductivity, wherein the second shell encloses the interior of the galley container;

wherein each shell comprises a roof element (8, 22), a floor element (10, 24) and at least two sidewalls (9, 23), the galley container further comprising:

- a thermally insulating layer (26), thermally insulating the second shell from an exterior of the galley container;

- a receiving portion (29) located above the roof element (22) of the second shell for receiving a cooling element (6) or a coolant (32), which receiving portion is provided within the first shell and is thermally insulated from the exterior of the galley container and partially thermally insulated from the second shell, wherein the second shell and the receiving portion are provided with a thermally conductive connection such that heat is transferrable between the receiving portion and the interior of the galley container (11) through the thermal conductive connection and via the second shell; and

- at least one door (12) provided at the opening to close the galley container in a closed position of the door.

2. Galley container according to claim 1, wherein the thermally conductive connection is between the receiving portion and the sidewalls of the second shell.

3. Galley container according to claim 1 or 2, wherein the thermally conductive connection comprises a heat transfer device that extends from the roof element of the second shell towards the floor element of the second shell.

4. Galley container according to claim 3, wherein the heat transfer device is provided between the thermally insulating layer and the second shell, wherein the heat transfer device is adjacent to the second shell.

5. Galley container according to any of the preceding claims, wherein the receiving portion is provided between the first shell and the second shell.

6. Galley container according to claim 5, wherein the receiving portion is provided between a roof element (8) of the first shell and a roof element (22) of the second shell.

7. Galley container according to any of the preceding claims, wherein the at least one door (12, 12') comprises

- a first panel (15) facing outwards;
- a second panel (16) facing the interior of the galley container; and
- a thermally insulating layer (17) between the first panel and the second panel to thermally separating the first and second panel and limit heat transfer between the interior of the galley container and the exterior of the galley container when the door is in the closed position.

8. Galley container according to claim 7, wherein the second panel comprises a thermally insulating element (19) along at least a peripheral rim (44) of the second panel to prevent thermal bridges between the interior of the galley container and the exterior of the galley container through abutment of the second panel with the peripheral rim of the second shell when the door is in the closed position.

9. Galley container according to claim 7 or 8, wherein a further thermally insulating element (43) is provided between the peripheral rim of the second panel and a further peripheral rim (46) of the first panel to prevent thermal bridges between the first and second panels.

10. Galley container according to any of claims 7 to 9, wherein at least the second panel of the door is provided with a sealant (18) along the peripheral rim to prevent outside air entering the interior of the galley container when the door is in the closed position.

11. Galley container according to any of the preceding claims, wherein the receiving portion is accessible from an exterior of the galley container.

12. Galley container according to any of the preceding claims, wherein the first shell is provided with an access opening (28) to access the receiving portion, wherein the cooling element or coolant is receivable in the receiving portion through the access opening.

13. Galley container according to claim 12, wherein the access opening is provided with a closing lid to close the access opening.

14. Galley container according to claim 12 or 13, wherein the access opening is provided in the roof element of the first shell.

15. Galley container according to claim 12 or 14, wherein the access opening is provided in at least one of a front side and a rear side of the galley container.

16. Galley container according to any of claims 12-15, wherein between a peripheral rim (47) of the access opening and the cooling element a sealing element (49) is provided to prevent leakage to the exterior of the first shell after insertion of the cooling element.

17. Galley container according to any of the preceding claims, wherein an inside of the second shell is provided with a further thermally insulating layer.

18. Cooling element (6) for a galley container (2) according to any of the preceding claims, the cooling element comprising:

- a housing (34) and a container (31) for containing a coolant (32), the container being a drawer slideably receivable within the housing,

wherein the housing (34) comprises

- a heat transfer element (35) to transfer heat between the container and an outside of the cooling element along at least part of the container and the outside of the cooling element, wherein the heat transfer element comprises a corrugated plate forming part of a peripheral wall of the cooling element, wherein corrugations (38) are alternately tangential to at least part of an outside of the container along respective

tangential regions, thereby establishing a thermal bridge between the container and the outside of the cooling element and

wherein a thermally insulating material is provided between the corrugations (38) and the second shell (21).

19. Assembly (1) of a galley container (2) according to any of the claims 1-17 and a cooling element (6) according to claim 18, wherein the cooling element is receivable within the receiving portion (29) of the galley container, such that the heat transfer element (35) of the cooling element and the second shell (21) are connected to each other, thereby establishing a thermal connection between the cooling element and the second shell, such that heat is transferrable between the cooling element and an interior of the galley container (11) via the second shell.

.