SUMMARY

In accordance with one embodiment, a cooling system for use with a galley monument of an aircraft having at least one galley compartment is provided. The cooling system includes a heat exchanger mounted in proximity to the galley monument of the aircraft and configured to supply cooled air to the at least one galley compartment for cooling galley carts having items for passengers of the aircraft; an airflow supply and return system having a supply duct passing through the galley monument, the supply duct coupling the heat exchanger in flow communication with the at least one galley compartment to supply cooled air to the galley carts in the galley compartment of the aircraft; and a diverter mechanism positioned at least partially within the supply duct for controlling flow of the cooled air through the airflow supply and return system, the diverter mechanism movable between a first position in which the cooled air flows from the heat exchanger through the supply duct to the at least one galley compartment and a second position in which at least a portion of the cooled air from the heat exchanger is discharged from the supply duct to a passenger compartment of the aircraft.

In accordance with another embodiment, a method of manufacturing a galley monument cooling system for an aircraft is provided. The method includes coupling a heat exchanger to a galley monument of the aircraft; coupling a supply duct to the galley monument of the aircraft in flow communication with the heat exchanger, the supply duct being in flow communication with at least one galley compartment of the galley monument that receives a galley cart having items for passengers of the aircraft; positioning a diverter mechanism in the supply duct to divert at least a portion of the airflow from the supply duct to a passenger compartment of the aircraft at an exterior of the galley monument.

The features and functions that have been discussed can be achieved independently in various embodiments or may be combined in yet other embodiments, further details of which can be seen with reference to the following description and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic illustration of an exemplary cooling system for a galley monument of an aircraft.

Figure 2 is a front view of the galley monument and cooling system in accordance with an exemplary embodiment.

Figure 3 is a top view of the galley monument and cooling system in accordance with an exemplary embodiment.

Figure 4 is a side view of the galley monument and cooling system in accordance with an exemplary embodiment.

Figure 5 is a back view of the galley monument and cooling system in accordance with an exemplary embodiment.

Figure 6 is a front view of the galley monument and cooling system in accordance with an exemplary embodiment.

Figure 7 is a top view of the galley monument and cooling system in accordance with an exemplary embodiment.

CLAIMS

1. A cooling system for use with a galley monument of an aircraft having at least one galley compartment, the cooling system comprising:

a heat exchanger mounted in proximity to the galley monument of the aircraft and configured to supply cooled air to the at least one galley compartment for cooling galley carts having items for passengers of the aircraft;

an airflow supply and return system having a supply duct passing through the galley monument, the supply duct coupling the heat exchanger in flow communication with the at least one galley compartment to supply cooled air to the galley carts in the galley compartment of the aircraft; and

a diverter mechanism positioned at least partially within the supply duct for controlling flow of the cooled air through the airflow supply and return system, the diverter mechanism movable between a first position in which the cooled air flows from the heat exchanger through the supply duct to the at least one galley compartment and a second position in which at least a portion of the cooled air from the heat exchanger is discharged from the supply duct to a passenger compartment of the aircraft.

2. The cooling system of Claim 1, further comprising a vent in flow communication with the supply duct, the cooled air being discharged from the supply duct to the passenger compartment through the vent.

3. The cooling system of Claim 2, further comprising a shutter configured to control an amount of cooled airflow through the vent.

4. The cooling system of Claim 3, wherein the shutter is manually actuated between an open position and a closed position.

5. The cooling system of Claim 3, wherein the shutter is electrically actuated between an open position and a closed position.

6. The cooling system of Claim 3, wherein the shutter is mechanically linked with

the diverter mechanism and actuated between a closed position and an open position as the diverter mechanism is moved between the first and second positions.

7. The cooling system of Claim 1, wherein the diverter mechanism is manually actuated between the first and second positions.

8. The cooling system of Claim 1, wherein the diverter mechanism is electrically actuated between the first and second positions.

9. The cooling system of Claim 8, further comprising a controller operably coupled to an actuator for actuating the diverter mechanism, and further comprising a temperature sensor in at least one of the passenger compartment or the at least one galley compartment, the temperature sensor sending inputs to the controller and the controller actuating the actuator based on inputs from the temperature sensor.

10. The cooling system of Claim 1, wherein the diverter mechanism is movable to a third position between the first and second positions in which a portion of the cooled air is able to flow from the heat exchanger to the at least one galley compartment and a portion of the cooled air is able to be discharged to the passenger compartment of the aircraft.

11. The cooling system of Claim 1, wherein the galley monument includes a galley monument housing having a top, a front, a back, and a side, the at least one galley compartment configured to receive a galley cart through the front, the heat exchanger being positioned at the top, and the airflow supply and return system discharging the cooled air into the passenger compartment near the top.

12. The cooling system of Claim 11, wherein the cooled air is discharged from the galley monument housing into the passenger compartment through the back.

13. The cooling system of Claim 11, wherein the cooled air is discharged from the galley monument housing into the passenger compartment through the side.

14. The cooling system of Claim 11, wherein the supply duct extends generally vertically along the back, the airflow supply and return system having a secondary duct extending to the front and being in flow communication with the supply duct upstream of a

diverter valve, when the diverter valve is in the second position, the cooled air is forced from the supply duct, through the secondary duct, and is discharged from the galley monument housing into the passenger compartment through the front.

15. The cooling system of Claim 1, wherein the diverter mechanism comprises a flap sized to at least partially restrict airflow through the supply duct and an actuator operably coupled to the flap, the actuator moving the flap between a first position in which the flap allows cooled air to flow through the supply duct to the at least one galley compartment of the galley monument and a second position in which at least a portion of the cooled air is diverted from the supply duct and discharged out of the galley monument into the passenger compartment.

16. The cooling system of Claim 15, wherein the flap entirely closes the supply duct to divert substantially all of the cooled air from the supply duct to the passenger compartment.

17. The cooling system of Claim 15, wherein the actuator is electrically actuated.

18. The cooling system of Claim 15, wherein the actuator is manually actuated by a lever at an exterior of the galley monument.

19. A method of manufacturing a galley monument cooling system for an aircraft, the method comprising:

coupling a heat exchanger to a galley monument of the aircraft;

coupling a supply duct to the galley monument of the aircraft in flow communication with the heat exchanger, the supply duct being in flow communication with at least one galley compartment of the galley monument that receives a galley cart having items for passengers of the aircraft;

positioning a diverter mechanism in the supply duct to divert at least a portion of the airflow from the supply duct to a passenger compartment of the aircraft at an exterior of the galley monument.

20. The method of claim 19, wherein said positioning a diverter mechanism comprises positioning the diverter mechanism within the supply duct such that the diverter

mechanism is movable between an open position in which the cooled air is allowed to flow from the heat exchanger through the supply duct to the at least one galley compartment and a closed position in which at least a portion of the cooled air from the heat exchanger is allowed to be discharged from the supply duct to an exterior of the galley monument.

21. The method of claim 19, further comprising coupling a vent in a galley monument housing, the vent being in flow communication with the supply duct, wherein the diverter mechanism is positioned in flow communication with the vent and allows airflow to the vent from the heat exchanger, the vent allowing the airflow to be discharged to an exterior of the galley monument housing.