DESCRIPTION

TITLE

IN COMPARTMENT AIR-CONDITIONING APPARATUS, REFRIGERATION APPARATUS, AND TRANSPORT CONTAINER

TECHNICAL FIELD

[0001]

The present disclosure relates to an inside air control apparatus, a refrigeration apparatus, and a transport container.

BACKGROUND ART

[0002]

Patent Document 1 discloses an inside air control apparatus that adjusts the composition of inside air in a storage. This inside air control apparatus adjusts the oxygen concentration and the like of the inside air to maintain the freshness of perishable items stored in the storage.

[0003]

The inside air control apparatus of Patent Document 1 includes a first composition adjuster and a second composition adjuster. The first composition adjuster supplies, to the storage, supply air generated by adjusting the composition of outside air. The second composition adjuster supplies, to the storage, supply air generated by adjusting the composition of the inside air.

CITATION LIST

(131) communicates with an inside of the storage (2) and the second outflow path (132) communicates with an outside of the storage (2) and a state where the second outflow path (132) communicates with the inside of the storage (2) and the first outflow path (131) communicates with the outside of the storage (2).

[0008]

In the first aspect, both the outside air flowing in the first inflow path (111) and the inside air flowing in the second inflow path (112) can flow into the composition adjuster (200). In the composition adjuster (200), the first air and the second air having different compositions are generated. The outlet switching mechanism (135) changes the destinations of the first air and the second air. In this aspect, the composition adjuster (200) can treat both the inside air and the outside air, and thus the configuration of the inside air control apparatus (100) is simplified.

[0009]

A second aspect of the present disclosure is an embodiment of the first aspect. In the second aspect, the inside air control apparatus (100) includes an air supply (110) configured to send, to the composition adjuster (200), air sucked in from the first inflow path (111) and the second inflow path (112).

[0010]

In the second aspect, both the outside air flowing in the first inflow path (111) and the inside air flowing in the second inflow path (112) are sent to the composition adjuster (200) by the single air supply (110).

[0011]

A third aspect of the present disclosure is an embodiment of the first or second aspect. In the third aspect, the inside air control apparatus (100) includes a first valve (116) provided on the first inflow path (111); and a second valve (117) provided on the second inflow path

the air to be treated is supplied to the internal flow path (20) through the first outflow pipe (131) and the first supply pipe (141) in this order. The second air having an oxygen concentration higher than that of the air to be treated is discharged to the external space through the second outflow pipe (132), the second discharge pipe (147), and the discharge trunk pipe (148) in this order.

[0116]

<Third Operation>

The third operation is an operation of supplying the first air to the inside of the container and discharging the second air to the outside of the container, where the inside air is taken as the air to be treated. This third operation is performed to reduce the carbon dioxide concentration of the air in the storage space (5).

[0117]

As illustrated in FIG. 8, in the third operation, the controller (180) sets the first valve (116) to the closed state; sets the second valve (117) to the open state; sets the bypass switching valve (123) to the first state; sets the first switching valve (136) to the first state; and sets the second switching valve (137) to the second state.

[0118]

The inside air flowing in the second inflow pipe (112) is sucked into the air pump (110) as the air to be treated and is compressed therein. Then, the compressed air flows into the separation module (200). In the separation module (200), the air to be treated is separated into the first air and the second air. The first air having a carbon dioxide concentration lower than that of the air to be treated is supplied to the internal flow path (20) through the first outflow pipe (131) and the first supply pipe (141) in this order. The second air having a carbon dioxide concentration higher than that of the air to be treated is discharged to the external space through the second outflow pipe (132), the second discharge pipe (147), and the discharge trunk pipe

is executed, the air in the storage space (5) is gradually replaced with the air blown out from the first supply pipe (141).

[0135]

–First Feature of First Embodiment–

In the inside air control apparatus (100) of this embodiment, both the outside air flowing in the first inflow path (111) and the inside air flowing in the second inflow path (112) can flow into the separation module (200). In the separation module (200), the first air and the second air having different compositions are generated. In the inside air control apparatus (100) of this embodiment, the separation module (200) can treat both the inside air and the outside air, and thus the configuration of the inside air control apparatus (100) is simplified.

[0136]

–Second Feature of First Embodiment–

In the inside air control apparatus (100) of this embodiment, the outlet switching mechanism (135) changes the destinations of the first air and the second air. Thus, the inside air control apparatus (100) of this embodiment can switch between an operation of supplying the first air to the inside of the container and discharging the second air to the outside of the container and an operation of discharging the first air to the outside of the container and supplying the second air to the inside of the container.

[0137]

–Third Feature of First Embodiment–

In the inside air control apparatus (100) of this embodiment, both the outside air flowing in the first inflow path (111) and the inside air flowing in the second inflow path (112) are sent to the separation module (200) by the single air pump (110). Thus, the configuration of the inside air control apparatus (100) is more simplified than when the first inflow pipe (111) and the second inflow pipe (112) are each provided with an air pump.