DESCRIPTION

Title of Invention: INTERNAL AIR ADJUSTMENT DEVICE

Technical Field

[0001]

The present disclosure relates to an internal air adjustment device.

Background Art

[0002]

Hitherto, by controlling an internal environment (specifically, for example, the temperature of internal air or the composition of internal air) of a storage, the freshness of perishable products stored in the storage has been preserved. For example, a refrigeration apparatus disclosed in Patent Literature 1 is used for a container that is used for, for example, transportation by sea, and controls the temperature and the composition (specifically, the concentration of oxygen and the concentration of carbon dioxide) of internal air in the container.

Citation List

Patent Literature

[0003]

PTL 1: Japanese Unexamined Patent Application Publication No. 2017-190935

Summary of Invention

Technical Problem

the control unit (110) sets the first primary switching valve (56) and the first secondary switching valve (58) to the respective first states (the states shown by the solid lines in Fig. 3), and sets the second primary switching valve (76) and the second secondary switching valve (78) to the respective first states (the states shown by the broken lines in Fig. 3). The control unit (110) operates the first pump (35) and the second pump (37) and sets the ventilation discharge valve (101) in an open state.

[0104]

When the first pump (35) operates, external air existing outside the transport container (1) passes through the air filter (47) and the external-side suction pipe (55), and flows into the first air treatment unit (151). In the first air treatment unit (151), the photocatalyst of the photocatalyst filter (156) is subjected to ultraviolet rays produced by the ultraviolet lamp (158), and is activated. The external air that has flowed into the first air treatment unit (151) passes through the photocatalyst filter (156), and, in the process thereof, decomposes microbes in external air.

[0105]

The external air that has flowed out the first air treatment unit (151) is sucked into the first pump (35). The first pump (35) compresses and discharges the external air

(75), and flows into the second air treatment unit (152). In the second air treatment unit (152), the photocatalyst of the photocatalyst filter (156) is subjected to ultraviolet rays produced by the ultraviolet lamp (158), and is activated. Internal air that has flowed into the second air treatment unit (152) passes through the photocatalyst filter (156), and, in the process thereof, decomposes ethylene and microbes in the internal air.

[0108]

The internal air that has flowed out the second air treatment unit (152) is sucked into the second pump (37). The second pump (37) compresses and discharges the internal air that has been sucked in. The internal air discharged from the second pump (37) flows in the second introduction pipe (72) and flows into the second introduction port (62) of the second separation module (61) as untreated internal air.

[0109]

The untreated internal air that has flowed into the second separation module (61) is separated into first internal air that did not pass through the gas separation membranes (85) and second internal air that has passed through the gas separation membranes (85). The concentration of oxygen of the first internal air is lower than the concentration of oxygen of the untreated internal air, and

atmosphere, very low. Consequently, the first composition adjuster (40) supplies the first external air having a low concentration of carbon dioxide to the load room (5).

[0123]

In the second separation module (61) of the second composition adjuster (60), untreated internal air is separated into first internal air and second internal air. The concentration of carbon dioxide of the first internal air is lower than the concentration of carbon dioxide of the untreated internal air. The concentration of carbon dioxide of the second internal air is higher than the concentration of carbon dioxide of the untreated internal air. Therefore, the second composition adjuster (60) supplies the first internal air having a low concentration of carbon dioxide to the load room (5), and discharges the second internal air having a high concentration of carbon dioxide to the outside of the transport container (1).

[0124]

- Characteristic (1) of Embodiment -

The internal air adjustment device (30) of the present embodiment adjusts the composition of internal air in the transport container (1). The internal air adjustment device (30) includes the internal-side passage (70) and the first air treatment unit (151). The internal-side passage (70) has the second separation module (61). The second separation