

Title (en)  
BINARY REFRIGERATION DEVICE

Title (de)  
BINÄRE KÜHLVORRICHTUNG

Title (fr)  
DISPOSITIF FRIGORIFIQUE BINAIRE

Publication  
**EP 3617612 B1 20210901 (EN)**

Application  
**EP 17907290 A 20170425**

Priority  
JP 2017016407 W 20170425

Abstract (en)  
[origin: EP3617612A1] A cascade refrigeration system includes a higher-stage refrigeration cycle, a lower-stage refrigeration cycle, and a cascade condenser. In the higher-stage refrigeration cycle, a higher-stage compressor, a higher-stage condenser, a higher-stage expansion valve, and a higher-stage evaporator are sequentially connected by pipes, and a higher-stage refrigerant is circulated. In the lower-stage refrigeration cycle, a lower-stage compressor, a first lower-stage condenser, a second lower-stage condenser, a lower-stage liquid receiver, a first lower-stage expansion valve, and a lower-stage evaporator are sequentially connected by pipes, and a lower-stage refrigerant is circulated. The cascade condenser includes the higher-stage evaporator and the second lower-stage condenser to exchange heat between the higher-stage refrigerant flowing in the higher-stage evaporator and the lower-stage refrigerant flowing in the second lower-stage condenser. The lower-stage refrigeration cycle is provided with a natural circulation circuit having a vapor refrigerant pipe that connects the lower-stage liquid receiver and a position between the first lower-stage condenser and the second lower-stage condenser and that has a check valve provided at a position on the vapor refrigerant pipe.

IPC 8 full level  
**F25B 41/37** (2021.01); **F25B 6/04** (2006.01); **F25B 7/00** (2006.01); **F25B 40/02** (2006.01)

CPC (source: EP US)  
**F25B 6/04** (2013.01 - EP US); **F25B 7/00** (2013.01 - EP); **F25B 40/02** (2013.01 - EP); **F25B 41/37** (2021.01 - EP US);  
**F25B 2400/16** (2013.01 - EP)

Cited by  
EP4328522A4

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