

Title (en)  
REFRIGERATION CYCLE DEVICE

Title (de)  
KÄLTEKREISLAUFVORRICHTUNG

Title (fr)  
DISPOSITIF À CYCLE DE RÉFRIGÉRATION

Publication  
**EP 4134601 A4 20230524 (EN)**

Application  
**EP 20930077 A 20200407**

Priority  
JP 2020015651 W 20200407

Abstract (en)  
[origin: EP4134601A1] A refrigeration cycle apparatus (100) includes: a compressor; a four-way valve; a first heat exchanger (3) having a first flow inlet/outlet portion (3A) and a second flow inlet/outlet portion (3B) through which a non-azeotropic refrigerant mixture flows in and out, and a first tube portion (31A) and a second tube portion (32A) that are connected in series to each other between the first flow inlet/outlet portion and the second flow inlet/outlet portion, the non-azeotropic refrigerant mixture flowing through the first tube portion (31A) and the second tube portion (32A); a decompressing device; and a second heat exchanger (6). The non-azeotropic refrigerant mixture contains refrigerant having a characteristic causing a disproportionation reaction and refrigerant not having the characteristic causing a disproportionation reaction. The four-way valve performs switching between: a first state in which the non-azeotropic refrigerant mixture flows in order of the compressor, the first heat exchanger, the decompressing device, and the second heat exchanger; and a second state in which the non-azeotropic refrigerant mixture flows in a direction opposite to a direction in which the non-azeotropic refrigerant mixture flows in the first state. In the first state, the non-azeotropic refrigerant mixture flows through the first heat exchanger in order of the first flow inlet/outlet portion, the first tube portion, the second tube portion, and the second flow inlet/outlet portion. In the second state, the non-azeotropic refrigerant mixture flows through the first heat exchanger in order of the second flow inlet/outlet portion, the second tube portion, the first tube portion, and the first flow inlet/outlet portion. A first inner circumferential surface of the first tube portion is higher in area expansion ratio than a second inner circumferential surface of the second tube portion.

IPC 8 full level  
**F25B 1/00** (2006.01); **F25B 13/00** (2006.01); **F25B 40/00** (2006.01); **F25B 41/39** (2021.01); **F25B 49/02** (2006.01)

CPC (source: EP)  
**F25B 13/00** (2013.01); **F25B 40/00** (2013.01); **F25B 41/39** (2021.01); **F25B 49/02** (2013.01); **F25B 2313/003** (2013.01); **F25B 2313/0233** (2013.01); **F25B 2313/0292** (2013.01); **F25B 2313/0293** (2013.01); **F25B 2313/0294** (2013.01); **F25B 2339/00** (2013.01); **F25B 2400/12** (2013.01); **F25B 2400/16** (2013.01); **F25B 2600/0253** (2013.01); **F25B 2600/111** (2013.01); **F25B 2600/112** (2013.01); **F25B 2600/2507** (2013.01); **F25B 2600/2513** (2013.01)

Citation (search report)

- [X] JP H06281293 A 19941007 - TOSHIBA CORP
- [A] EP 3115730 A1 20170111 - MITSUBISHI ELECTRIC CORP [JP]
- [A] US 2016341453 A1 20161124 - YAMASHITA KOJI [JP]
- See also references of WO 2021205536A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

Designated validation state (EPC)  
KH MA MD TN

DOCDB simple family (publication)  
**EP 4134601 A1 20230215**; **EP 4134601 A4 20230524**; JP 7341326 B2 20230908; JP WO2021205536 A1 20211014; WO 2021205536 A1 20211014

DOCDB simple family (application)  
**EP 20930077 A 20200407**; JP 2020015651 W 20200407; JP 2022513738 A 20200407