

Title (en)  
MULTI-STAGE COMPRESSION REFRIGERATION DEVICE

Title (de)  
MEHRSTUFIGE KOMPRESSIIONSKÄLTEVORRICHTUNG

Title (fr)  
DISPOSITIF DE RÉFRIGÉRATION À COMPRESSION À ÉTAGES MULTIPLES

Publication  
**EP 4350256 A1 20240410 (EN)**

Application  
**EP 22810850 A 20220208**

Priority  
• JP 2021089018 A 20210527  
• JP 2022004824 W 20220208

Abstract (en)  
Provided is a refrigeration device that is able to improve the efficiency of a refrigeration cycle by increasing the number of compression stages, while operating stably over a wide range of operating conditions. This refrigeration device is provided with: a compression unit containing a plurality of stages of compression mechanisms, the number of stages N being at least 3; a first heat exchange for releasing, to the outside air, heat from a refrigerant discharged from the compression unit; a decompression unit containing a plurality of decompression mechanisms provided to each of the plurality of stages; a second heat exchanger for causing the refrigerant that has passed through the decompression unit to absorb heat from a thermal load; a plurality of gas-liquid separators provided between the decompression mechanisms; a plurality of intermediate pressure injection flow passages corresponding respectively to the plurality of gas-liquid separators and supplying gas-phase refrigerant from the corresponding gas-liquid separator to between the compression mechanisms; and a valve provided to at least one of the plurality of intermediate pressure injection flow passages. When the valve is operated the number of effective stages circulating the refrigerant changes.

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