

Title (en)  
REFRIGERATION DEVICE

Title (de)  
KÜHLVORRICHTUNG

Title (fr)  
DISPOSITIF FRIGORIFIQUE

Publication  
**EP 2295898 A1 20110316 (EN)**

Application  
**EP 09733696 A 20090420**

Priority  
• JP 2009057836 W 20090420  
• JP 2008111544 A 20080422

Abstract (en)  
An air-conditioning apparatus (1) uses carbon dioxide as a refrigerant, and has a two-stage compression-type compression mechanism (2), a heat source-side heat exchanger (4), an expansion mechanism (5), a usage-side heat exchanger (6), a switching mechanism (3), and a first second-stage injection tube (18c). In the air-conditioning apparatus (1), refrigerant is prevented from returning to a second-stage compression element (2d) through the first second-stage injection tube (18c), at least during the beginning of a reverse cycle defrosting operation for defrosting the heat source-side heat exchanger (4) by switching the switching mechanism (3) to a cooling operation state.

IPC 8 full level  
**F25B 47/02** (2006.01); **F25B 1/00** (2006.01); **F25B 1/10** (2006.01)

CPC (source: EP US)  
**F25B 9/008** (2013.01 - EP US); **F25B 13/00** (2013.01 - EP US); **F25B 47/025** (2013.01 - EP US); **F25B 1/10** (2013.01 - EP US); **F25B 2309/061** (2013.01 - EP US); **F25B 2313/0272** (2013.01 - EP US); **F25B 2313/02741** (2013.01 - EP US); **F25B 2400/13** (2013.01 - EP US); **F25B 2400/23** (2013.01 - EP US)

Citation (search report)  
See references of WO 2009131088A1

Cited by  
US11504718B2

Designated contracting state (EPC)  
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 SE SI SK TR

Designated extension state (EPC)  
AL BA RS

DOCDB simple family (publication)  
**US 2011030407 A1 20110210**; AU 2009239043 A1 20091029; CN 102016457 A 20110413; EP 2295898 A1 20110316; JP 2009264606 A 20091112; KR 20100135923 A 20101227; WO 2009131088 A1 20091029

DOCDB simple family (application)  
**US 98855409 A 20090420**; AU 2009239043 A 20090420; CN 200980114732 A 20090420; EP 09733696 A 20090420; JP 2008111544 A 20080422; JP 2009057836 W 20090420; KR 20107026009 A 20090420