

Title (en)  
THERMAL EXCHANGE ENGINE

Title (de)  
WÄRMEAUSTAUSCHMOTOR

Title (fr)  
MOTEUR THERMIQUE

Publication  
**EP 3221565 A4 20171206 (EN)**

Application  
**EP 14906401 A 20141118**

Priority  
CA 2014051101 W 20141118

Abstract (en)  
[origin: WO2016077909A1] The orbiting scroll thermal exchange engine, expanding screw thermal exchange engine, and the sliding vane thermal exchange engine are three similar utility designs producing work with the expansion and contraction of a gas, leveraged by the phase change of a liquid contained in chambers that change in volume. Multiple working chambers are formed inside a vessel, carrying a quantity of liquid and gas, prescribed for the temperature range anticipated. Adjacent to each chamber the conduction of thermal energy into the vessel is changing the internal pressure and moving each chamber as it is changing in volume. The thermal expansion or contraction is leveraged with the phase change of the liquid, producing torque for the duration of the volume change within each chamber.

IPC 8 full level  
**F01K 7/00** (2006.01); **F01C 1/00** (2006.01); **F01K 21/00** (2006.01)

CPC (source: EP US)  
**F01C 1/0207** (2013.01 - US); **F01C 1/16** (2013.01 - EP US); **F01C 1/344** (2013.01 - US); **F01C 21/06** (2013.01 - EP US);  
**F01K 25/00** (2013.01 - US); **F01C 1/02** (2013.01 - EP US); **F01C 1/34** (2013.01 - EP US)

Citation (search report)

- [X] US 2011116958 A1 20110519 - PEKRUL MERTON W [US]
- [X] US 2012288391 A1 20121115 - DAVIS BRIAN [US]
- [X] US 8668479 B2 20140311 - SHAFFER ROBERT W [US]
- [X] US 2013119671 A1 20130516 - TANG YAN [CN]
- See references of WO 2016077909A1

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

DOCDB simple family (publication)  
**WO 2016077909 A1 20160526**; CA 2966933 A1 20160526; CN 106922158 A 20170704; EP 3221565 A1 20170927; EP 3221565 A4 20171206;  
US 2017314396 A1 20171102

DOCDB simple family (application)  
**CA 2014051101 W 20141118**; CA 2966933 A 20141118; CN 201480083527 A 20141118; EP 14906401 A 20141118;  
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