

Title (en)  
REFRIGERATOR

Title (de)  
KÜHLSCHRANK

Title (fr)  
RÉFRIGÉRATEUR

Publication  
**EP 3317600 A1 20180509 (EN)**

Application  
**EP 16853883 A 20161005**

Priority

- JP 2015197377 A 20151005
- JP 2015202100 A 20151013
- JP 2015209684 A 20151026
- JP 2015230997 A 20151126
- JP 2016034241 A 20160225
- JP 2016063403 A 20160328
- JP 2016077275 A 20160407
- KR 20160118112 A 20160913
- KR 2016011138 W 20161005

Abstract (en)  
[origin: EP3889526A1] Provided herein is a door opening and closing apparatus capable of reducing torque of a motor required for removing an adhesive force between a door and a housing. The door opening and closing apparatus includes a motor (M) configured to output power for opening and closing a door (D), a power transmission apparatus (40) configured to transmit the power of the motor to a hinge (Z) by rotation of a plurality of driving gears, and an auxiliary apparatus (30) configured to generate an auxiliary force for moving the door at a closing position toward an opening position, where the auxiliary force is generated at the auxiliary apparatus by the power of the motor before the power of the motor is transmitted to the hinge through the power transmission apparatus.

IPC 8 full level  
**E05F 1/00** (2006.01); **E05F 15/614** (2015.01); **F25D 23/02** (2006.01); **F25D 29/00** (2006.01)

CPC (source: EP US)  
**E05F 15/614** (2015.01 - EP US); **E06B 3/367** (2013.01 - US); **F25D 23/028** (2013.01 - EP US); **E05Y 2201/426** (2013.01 - EP); **E05Y 2201/434** (2013.01 - US); **E05Y 2201/71** (2013.01 - EP US); **E05Y 2400/31** (2013.01 - EP); **E05Y 2400/32** (2013.01 - US); **E05Y 2900/31** (2013.01 - EP US); **F25D 2323/024** (2013.01 - EP)

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)  
**EP 3889526 A1 20211006**; EP 3317600 A1 20180509; EP 3317600 A4 20180801; EP 3317600 B1 20210630; JP 2017181010 A 20171005; JP 6774206 B2 20201021

DOCDB simple family (application)  
**EP 21173817 A 20161005**; EP 16853883 A 20161005; JP 2016077275 A 20160407