

Title (en)  
ELECTROMAGNETIC REGULATING DEVICE

Title (de)  
ELEKTROMAGNETISCHE STELLVORRICHTUNG

Title (fr)  
DISPOSITIF DE REGLAGE ELECTROMAGNETIQUE

Publication  
**EP 1421591 A1 20040526 (DE)**

Application  
**EP 02781178 A 20020830**

Priority  
• DE 20114466 U 20010901  
• EP 0209677 W 20020830

Abstract (en)  
[origin: US2004201441A1] An electromagnetic regulating device with a movable actuator (42), especially a piston, having an engagement region (44) on an end thereof, and a coil device (34, 36), which is stationary relative to the actuator and which is designed to exert a force on the actuator. The electromagnetic regulating device is provided with permanent magnet means, through which the actuator (42) is held to the coil device (34, 36) in the inactive state of the coil device (34, 36) and wherein when current is applied to the coil device (34, 36), the actuator (42) is released from the coil device (34, 36), overcoming a retaining force of the permanent magnet means.

IPC 1-7  
**H01F 7/16**; F01L 1/34

IPC 8 full level  
**F01L 1/34** (2006.01); **F01L 9/04** (2006.01); **H01F 7/16** (2006.01); **H01F 7/122** (2006.01)

CPC (source: EP US)  
**F01L 13/0036** (2013.01 - EP US); **H01F 7/1615** (2013.01 - EP US); **F01L 2009/2109** (2021.01 - EP US); **F01L 2013/0052** (2013.01 - EP US); **F01L 2820/031** (2013.01 - EP US); **H01F 7/122** (2013.01 - EP US)

Citation (search report)  
See references of WO 03021612A1

Cited by  
DE102014109124A1; DE102009015833A1; EP2452857A1; DE102014109124B4; DE102009015833B4; DE102010045601B4;  
DE102014204570B3; DE102014206478B3; DE102016116777A1; DE102013204774A1; DE102009016902A1; DE102014211192A1;  
US10290410B2; WO2010112111A1; DE102015213662A1; WO2017012779A1; US8528688B2; DE102017115973A1; DE102013201827A1;  
WO2014121771A1; US9765659B2; DE102010045601A1; DE102013204764A1; US11220935B2

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR

DOCDB simple family (publication)  
**US 2004201441 A1 20041014**; **US 6967550 B2 20051122**; AT E374997 T1 20071015; DE 10240774 A1 20030410; DE 10240774 B4 20110505;  
DE 10262354 B4 20160310; DE 20114466 U1 20020103; DE 50211017 D1 20071115; EP 1421591 A1 20040526; EP 1421591 B1 20071003;  
ES 2292826 T3 20080316; WO 03021612 A1 20030313

DOCDB simple family (application)  
**US 79051104 A 20040301**; AT 02781178 T 20020830; DE 10240774 A 20020830; DE 10262354 A 20020830; DE 20114466 U 20010901;  
DE 50211017 T 20020830; EP 0209677 W 20020830; EP 02781178 A 20020830; ES 02781178 T 20020830