

Title (en)  
ENGINE BRAKING DEVICES AND METHODS

Title (de)  
MOTORBREMSVORRICHTUNGEN UND -VERFAHREN

Title (fr)  
DISPOSITIFS ET PROCÉDÉS DE FREINAGE MOTEUR

Publication  
**EP 2384396 A2 20111109 (EN)**

Application  
**EP 09837091 A 20091228**

Priority

- US 2009069622 W 20091228
- US 34832009 A 20090105
- US 34831709 A 20090105
- CN 200920142242 U 20090407
- CN 200910056670 A 20090819
- CN 200910056200 A 20090810
- CN 200910194868 A 20090831
- CN 200910194870 A 20090831
- CN 200910194858 A 20090831
- CN 200910194859 A 20090831
- CN 200910194871 A 20090831
- CN 200910194869 A 20090831
- CN 200910194857 A 20090831
- CN 200910195285 A 20090907

Abstract (en)  
[origin: EP2439381A1] Apparatus and method for converting an internal combustion engine from a normal engine operation (20) to an engine braking operation (10). The engine includes exhaust valve train components comprising at least one exhaust valve (300) and at least one cam (230). The apparatus comprises actuation means (100) having at least one component integrated into at least one of the exhaust valve train components, such as a rocker arm (210) or a valve bridge (400). The actuation means (100) has an inoperative position and an operative position. In the inoperative position, the actuation means (100) is retracted and the small braking cam lobes (232 & 233) are skipped to generate a main valve lift profile (220m) for the normal engine operation (20). In the operative position, the actuation means (100) is extended so that the motion from all the cam lobes (220, 232 & 233) is transmitted to the at least one exhaust valve (300) for the engine braking operation (10).

IPC 8 full level

**F01L 1/26** (2006.01); **F01L 1/053** (2006.01); **F01L 1/18** (2006.01); **F01L 1/20** (2006.01); **F01L 13/06** (2006.01); **F02D 13/04** (2006.01)

CPC (source: EP KR)

**F01L 1/08** (2013.01 - KR); **F01L 1/18** (2013.01 - KR); **F01L 1/181** (2013.01 - EP); **F01L 1/267** (2013.01 - EP); **F01L 13/06** (2013.01 - EP KR);  
**F01L 13/065** (2013.01 - EP); **F02D 13/04** (2013.01 - EP KR); **F01L 1/20** (2013.01 - EP); **F01L 2001/0537** (2013.01 - EP);  
**F01L 2305/00** (2020.05 - EP); **F01L 2800/00** (2013.01 - EP); **F01L 2820/031** (2013.01 - EP); **F01L 2820/033** (2013.01 - EP)

Cited by

WO2021032136A1; US11739667B2

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 SM TR

DOCDB simple family (publication)

**EP 2439381 A1 20120411**; **EP 2439381 B1 20140910**; BR PI0922516 B1 20201006; EP 2384396 A2 20111109; EP 2384396 A4 20121128;  
EP 2384396 B1 20140625; EP 2444602 A1 20120425; EP 2444602 B1 20150624; KR 101290440 B1 20130726; KR 20110112390 A 20111012;  
RU 2011132887 A 20130210; RU 2479735 C1 20130420

DOCDB simple family (application)

**EP 11006452 A 20091228**; BR PI0922516 A 20091228; EP 09837091 A 20091228; EP 11006451 A 20091228; KR 20117018023 A 20091228;  
RU 2011132887 A 20091228