

Title (en)

Valve spring assembly, valve spring retainer and method of building a valve spring assembly

Title (de)

Ventilfederzusammenbau, Ventilderteller und Verfahren zur Montage eines Ventildfederzusammenbaus

Title (fr)

Ensemble de ressort de soupape, coupelle de ressort de soupape et méthode d'assemblage d'ensemble de ressort de soupape

Publication

EP 1288447 B1 20060426 (DE)

Application

EP 02017051 A 20020727

Priority

DE 10141782 A 20010825

Abstract (en)

[origin: EP1288447A2] A locking element (22) is retained by an elastic lock (24) in the interior of a valve spring plate (20), and interacts with the plate to limit axial movement of the plate on the valve stem in one direction. An Independent claim is also included for a method in installing the valve spring assembly to a valve stem.

IPC 8 full level

F01L 1/46 (2006.01); **F01L 3/10** (2006.01); **F01L 3/24** (2006.01)

CPC (source: EP US)

F01L 1/462 (2013.01 - EP US); **F01L 3/10** (2013.01 - EP US); **F01L 2301/00** (2020.05 - EP US)

Cited by

US11193403B2; WO2011028714A1

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)

EP 1288447 A2 20030305; **EP 1288447 A3 20030827**; **EP 1288447 B1 20060426**; AT E324515 T1 20060515; BR 0203851 A 20030520; CN 1407212 A 20030402; DE 10141782 A1 20030306; DE 50206535 D1 20060601; JP 2003074316 A 20030312; MX PA02008202 A 20050908; US 2003038269 A1 20030227; US 6811143 B2 20041102

DOCDB simple family (application)

EP 02017051 A 20020727; AT 02017051 T 20020727; BR 0203851 A 20020823; CN 02142578 A 20020825; DE 10141782 A 20010825; DE 50206535 T 20020727; JP 2002243534 A 20020823; MX PA02008202 A 20020822; US 21784502 A 20020813