

Title (en)  
Improvements in vacuum pumps

Title (de)  
Vakuumpumpen

Title (fr)  
Pompes à vide

Publication  
**EP 0793019 A2 19970903 (EN)**

Application  
**EP 97301303 A 19970227**

Priority  
GB 9604645 A 19960301

Abstract (en)  
A vacuum pump which comprises a multi-stage reciprocating piston mode of operation in which piston reciprocation is effected by electromagnetic drive means and a counter-acting spring means and in which the pump stages are connected in series between a pump inlet and a pump outlet such that, in use, gas being transferred through the pump passes through the stages in turn. <IMAGE>

IPC 1-7  
**F04B 25/02**; **F04B 35/04**

IPC 8 full level  
**F04B 25/02** (2006.01); **F04B 35/04** (2006.01); **F04B 37/14** (2006.01)

CPC (source: EP)  
**F04B 25/02** (2013.01); **F04B 35/045** (2013.01); **F04B 37/14** (2013.01)

Cited by  
US10143783B2; EP1143146A3; EP1840375A1; US11938231B2; US10537657B2; US11730876B2; US10299964B2; US10702418B2; US9801761B2; US11638666B2; US11253639B2; US11648342B2; US11931226B2; US9901664B2; US10881764B2; US11730877B2; US10307517B2; US11027051B2; US11534540B2; US11623039B2; US9642955B2; US10130526B2; US10682446B2; US10737002B2; US10780202B2; US10973965B2; US11141325B2; US11654228B2; EP1143146A2; US6857857B2; US9844473B2; US9956121B2; US10016309B2; US10231875B2; US10278869B2; US10555839B2; US10744041B2; US10842678B2; US11129751B2; US11179276B2; US11351064B2; US11364151B2

Designated contracting state (EPC)  
CH DE FR GB LI

DOCDB simple family (publication)  
**EP 0793019 A2 19970903**; **EP 0793019 A3 19990602**; GB 9604645 D0 19960501; JP H102281 A 19980106

DOCDB simple family (application)  
**EP 97301303 A 19970227**; GB 9604645 A 19960301; JP 4759497 A 19970303