

Title (en)

Gas ballast device for a multistage positive displacement pump

Title (de)

Gasballasteinrichtung für eine mehrstufige Verdrängerpumpe

Title (fr)

Dispositif de ballast de gaz pour une pompe volumétrique à plusieurs étages

Publication

EP 0972938 A3 20000628 (DE)

Application

EP 99112217 A 19990625

Priority

DE 19831123 A 19980711

Abstract (en)

[origin: US6071085A] A gas ballast system for a multi-stage positive displacement pump in which a first stage includes at least one positive displacement pump stage, is equipped with an inlet valve and an outlet valve, and is connected with the following stage by an intermediate vacuum chamber, with the gas ballast system including a first conduit for supplying gas into the intermediate vacuum chamber, and a second conduit for supplying gas from the intermediate vacuum chamber into a pump chamber of the first stage or to a suction region of the first stage.

IPC 1-7

F04B 45/033; **F04B 37/14**; **F04B 25/00**; **F04B 37/20**

IPC 8 full level

F04D 19/04 (2006.01); **F04B 25/00** (2006.01); **F04B 37/14** (2006.01); **F04B 37/16** (2006.01); **F04B 37/20** (2006.01); **F04B 45/00** (2006.01); **F04B 45/033** (2006.01)

CPC (source: EP US)

F04B 25/005 (2013.01 - EP US); **F04B 37/14** (2013.01 - EP US); **F04B 37/20** (2013.01 - EP US); **F04B 2205/061** (2013.01 - EP US); **F04C 2220/50** (2013.01 - EP US)

Citation (search report)

- [A] DE 3710782 A1 19881020 - VACUUBRAND GMBH & CO [DE]
- [A] GB 1253590 A 19711117 - BALZERS PATENT BETEILIG AG [LI]
- [A] DE 2927797 A1 19810205 - LEYBOLD HERAEUS GMBH & CO KG
- [A] FR 2423656 A1 19791116 - HUNSINGER EMILE [FR]
- [A] DE 19634519 A1 19980305 - LEYBOLD VAKUUM GMBH [DE]
- [A] EP 0541989 A1 19930519 - PFEIFFER VAKUUMTECHNIK [DE]

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

US 6071085 A 20000606; AT E261063 T1 20040315; DE 19831123 A1 20000113; DE 59908691 D1 20040408; EP 0972938 A2 20000119; EP 0972938 A3 20000628; EP 0972938 B1 20040303; JP 2000038986 A 20000208; JP 4159183 B2 20081001

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US 35173599 A 19990712; AT 99112217 T 19990625; DE 19831123 A 19980711; DE 59908691 T 19990625; EP 99112217 A 19990625; JP 17117299 A 19990617