Title (en)
Pump comprising a partially hollow piston.

Title (de)
Pumpe mit zum Teil hohlem Kolben.

Title (fr)
Pompe comprenant un piston partiellement creux.

Publication
EP 0580196 A1 19940126 (EN)

Application
EP 93201766 A 19930618

Priority
FR 9209022 A 19920720

Abstract (en)
The pump according to the present invention consists of a piston (16) of which the end (17) is hollowed out and forms a chamber (19) having an opening (18) and an inlet valve (15). The alternative displacement of the piston draws and pushs the fluid back through the chamber (19). The system is totally "in line" and is suitable even for very abrasive fluids such as cement slurry. <IMAGE>

IPC 1-7
F04B 21/04

IPC 8 full level
F04B 15/02 (2006.01); **F04B 19/22** (2006.01); **F04B 39/10** (2006.01); **F04B 53/10** (2006.01); **F04B 53/12** (2006.01)

CPC (source: EP)
F04B 53/125 (2013.01)

Citation (search report)
- [X] CH 257522 A 19481015 - MESSIER SOCIETE ANONYME [FR]
- [X] GB 672173 A 19520514 - SIAM
- [X] FR 599965 A 19260127 - C I INGG AUDOLI BERTOLA AB

Cited by
CN104696185A; CN103161725A; US11261863B2; US11965503B2; US11002120B1; WO2012150436A3; WO2018183154A1; US11105327B2; US10941766B2; US9784262B2; US9989044B2; US11560888B2; US10808851B1; US11441687B2; US10947967B1; US11739748B2; US6568925B2; US10989188B2; US11073144B1; US11530750B2; US9945362B2; US10330097B2; US11280326B2; US11401930B2; US11885316B2; US8590614B2; US10677380B1; US10808846B1; US11231111B2; US11952986B2

Designated contracting state (EPC)
DE DK GB IT NL

DOCDB simple family (publication)
EP 0580196 A1 19940126; **EP 0580196 B1 19960814**; CA 2100837 A1 19940121; DE 69304002 D1 19960919; DE 69304002 T2 19970313; FR 2693771 A1 19940121; FR 2693771 B1 19940923; JP H06167277 A 19940614; NO 306223 B1 19991004; NO 932609 D0 19930719; NO 932609 L 19940121

DOCDB simple family (application)
EP 93201766 A 19930618; CA 2100837 A 19930719; DE 69304002 T 19930618; FR 9209022 A 19920720; JP 17829993 A 19930719; NO 932609 A 19930719