

Title (en)  
Flexible element for a micro-pump

Title (de)  
Flexibles Element für Mikropumpe

Title (fr)  
Élément flexible pour micro-pompe

Publication  
**EP 2333340 A1 20110615 (FR)**

Application  
**EP 09178168 A 20091207**

Priority  
EP 09178168 A 20091207

Abstract (en)  
The micro-pump has a pumping chamber (4) communicating with exterior via a flexible diaphragm (2). The diaphragm is secured to an actuator (5) e.g. piezoelectric bi-morph or multi-morph actuator or shape memory alloy actuator, arranged at the exterior of the micro-pump. The diaphragm is secured to the actuator by an element that is in the form of a strip (6), which is rigid along its main axis and flexible in the direction perpendicular to the main axis, where the strip is made of stainless steel. The actuator has a fixed end (8) fixed on a rigid support plate (11) that is made of ceramic.

Abstract (fr)  
Micro-pompe se présentant sous forme d'un empilement comprenant successivement, une membrane flexible (2), une chambre de pompage (4) et une plaque de fermeture (3), ladite chambre de pompage (4) communiquant avec l'extérieur, p.ex. au travers de la membrane flexible (2) ; ladite membrane (2) étant par ailleurs rendue solidaire d'un actuateur (5) disposé à l'extérieur de la micro-pompe caractérisé par le fait que ladite membrane (2) est rendue solidaire de l'actuateur (5) par l'intermédiaire d'au moins un élément se présentant sous la forme d'une bande (6), rigide selon son axe principal et flexible selon la direction perpendiculaire à son axe principal.

IPC 8 full level  
**F04B 43/04** (2006.01)

CPC (source: EP US)  
**F04B 19/006** (2013.01 - US); **F04B 43/046** (2013.01 - EP US)

Citation (search report)

- [A] US 5759014 A 19980602 - VAN LINTEL HARALD [CH]
- [A] US 6309189 B1 20011030 - REY-MERMET GILLES [CH], et al
- [AD] WO 2006056967 A1 20060601 - DEBIOTECH SA [CH], et al
- [A] US 5759015 A 19980602 - VAN LINTEL HARALD [CH], et al
- [A] WILLIAM L BENARD ET AL: "Thin-Film Shape-Memory Alloy Actuated Micropumps", JOURNAL OF MICROELECTROMECHANICAL SYSTEMS, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 7, no. 2, 1 June 1998 (1998-06-01), XP011034789, ISSN: 1057-7157
- [A] ZENGERLE R ET AL: "The VAMP - A new device for handling liquids or gases", SENSORS AND ACTUATORS A, ELSEVIER SEQUOIA S.A., LAUSANNE, CH LNKD- DOI:10.1016/S0924-4247(97)80106-9, vol. 57, no. 2, 1 November 1996 (1996-11-01), pages 153 - 157, XP004073452, ISSN: 0924-4247
- [A] SCHUBERT S ET AL: "Hybrid-assembled micro dosing system using silicon-based micropump/ valve and mass flow sensor", SENSORS AND ACTUATORS A, ELSEVIER SEQUOIA S.A., LAUSANNE, CH LNKD- DOI:10.1016/S0924-4247(98)00039-9, vol. 69, no. 1, 30 June 1998 (1998-06-30), pages 85 - 91, XP004134645, ISSN: 0924-4247

Cited by  
CN113302399A; WO2013068726A3; WO2012085814A2

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DOCDB simple family (application)  
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