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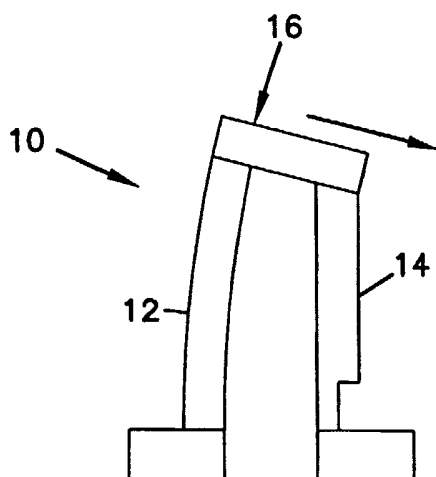
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(54) Title: THERMAL MICRO-ACTUATOR BASED ON SELECTIVE ELECTRICAL EXCITATION



(57) Abstract: A thermal microactuator is provided that can be deflected in multiple positions. The actuator has a hot arm and a cold arm coupled together at their distal ends suspended above a reference plane of a substrate. A potential difference is applied across the hot arm so that a current circulates through the hot arm but not the cold arm.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B81B3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01H B81B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>HOFFMANN M ET AL: "Bistable micromechanical fiber-optic switches on silicon with thermal actuators" SENSORS AND ACTUATORS A, ELSEVIER SEQUOIA S.A., LAUSANNE, CH, vol. 78, no. 1, January 1999 (1999-01), pages 28-35, XP004244577 ISSN: 0924-4247 figures 4-6</p> <p style="text-align: center;">---</p>	1-21
A	<p>MATOBA H ET AL: "A bistable snapping microactuator", MICRO ELECTRO MECHANICAL SYSTEMS, 1994, MEMS '94, PROCEEDINGS, IEEE WORKSHOP ON OISO, JAPAN 25-28 JAN. 1994, NEW YORK, NY, USA, IEEE, PAGE(S) 45-50 XP010207742 ISBN: 0-7803-1833-1 the whole document</p> <p style="text-align: center;">---</p> <p style="text-align: center;">-/--</p>	1-21



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Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KOLESAR E S ET AL: "In-plane tip deflection and force achieved with asymmetrical polysilicon electrothermal microactuators" THIN SOLID FILMS, ELSEVIER-SEQUOIA S.A. LAUSANNE, CH, vol. 377-378, 1 December 2000 (2000-12-01), pages 719-726, XP004226779 ISSN: 0040-6090 the whole document ---	1-21
A	US 6 275 325 B1 (SINCLAIR MICHAEL J) 14 August 2001 (2001-08-14) figures 16,20 ---	1-21
A	US 2001/010488 A1 (MINNERS R SJHON) 2 August 2001 (2001-08-02) figures 1-8 ---	1-21
A	WO 02 23574 A (3M INNOVATIVE PROPERTIES CO) 21 March 2002 (2002-03-21) figures 1-18 -----	1-21

INTERNATIONAL SEARCH REPORT

Information on patent family members

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