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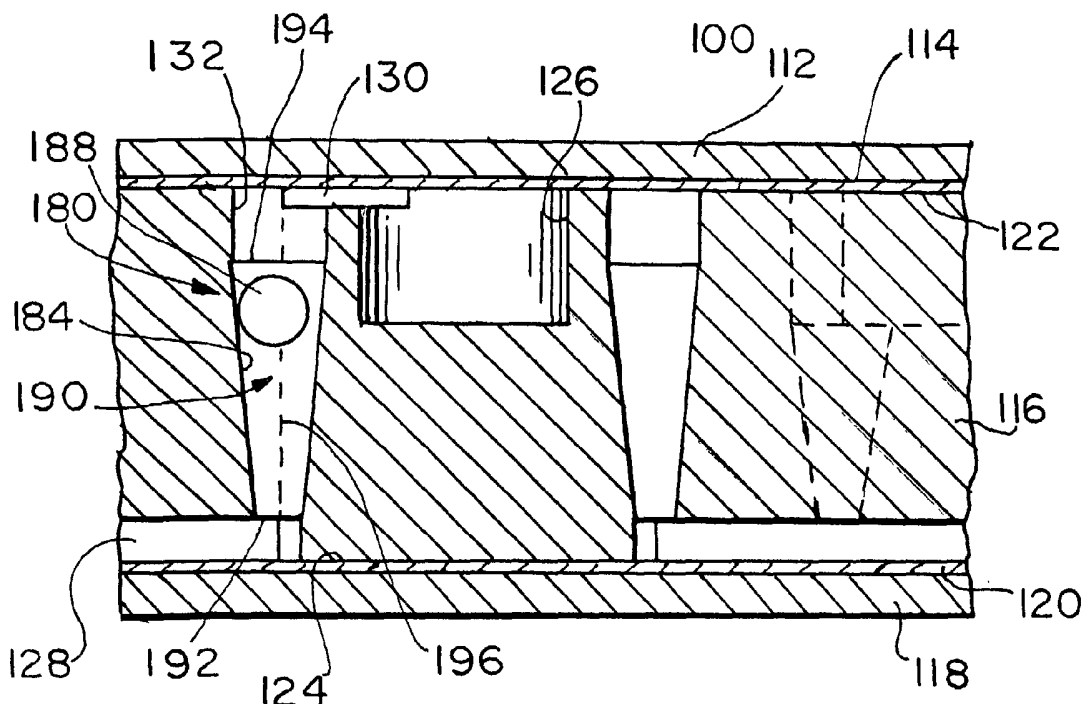
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- (71) Applicant: **APPLERA CORPORATION** [US/US]; 850 Lincoln Centre Drive, Foster City, CA 94404 (US). (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,

[Continued on next page]

(54) Title: ONE-DIRECTIONAL MICROBALL VALVE FOR A MICROFLUIDIC DEVICE



(57) Abstract: A microfluidic device that includes a micro ball valve is provided. The microball valve is capable of preventing or interrupting fluid flow through the microfluidic device. The microfluidic device can include a substrate layer, and a microfluidic pathway that includes the microball valve. Methods are provided for manipulating fluids using the microfluidic device.



SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/22470

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : F16K 31/00

US CL : 251/11

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)

U.S. : 251/11; 137/829, 825, 511, 843, 528, 533.11, 533

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 practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 4,911,616 (LAUMANN, JR.) 7 MARCH 1990; ENTIRE DOCUMENT	1-11, 13, 15 -17, 21, 22 ----- 14
X, E --- Y, E	US 2003/0152463 A1 (SHULER ET AL.) 14 AUGUST 2003; ENTIRE DOCUMENT	1-13, 15-17, 21, 22 ----- 14
Y, E	US 6,595,950 B1 (MILES ET AL.) 22 JULY 2003; ENTIRE DOCUMENT	14

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

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"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

17 July 2004 (17.07.2004)

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Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

PCT/US03/22470

Continuation of B. FIELDS SEARCHED Item 3:

USPAT; EPO; JPO; DERWENT; IBM_TDB

search terms: polycarbonate, ball, substrate, micro, valve, reaction, polymerase, element, reagents, harrold-michael, mead-dennis