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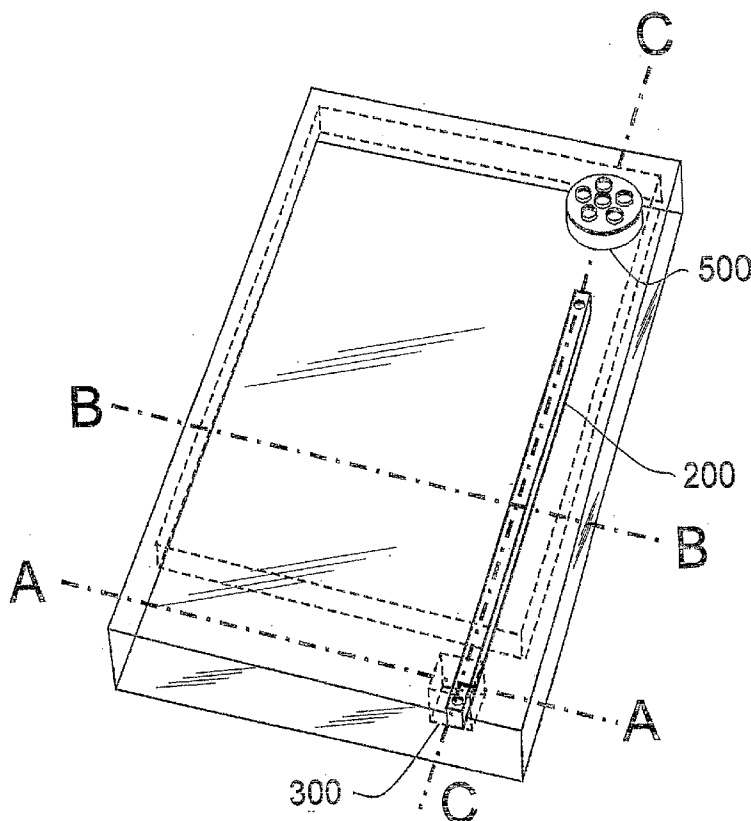
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Declarations under Rule 4.17:

- *as to the identity of the inventor (Rule 4.17(i))*
- *as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the
earlier application (Rule 4.17(iii))*

[Continued on next page]

(54) Title: BIOREACTOR FOR SELECTIVELY CONTROLLING THE MOLECULAR DIFFUSION BETWEEN FLUIDS



(57) Abstract: A diffusion controlling bioreactor (50) that selectively controls the molecular diffusion between fluids through a microchannel (200) in fluid communication with a reaction reservoir (300). A length (230) and a cross-sectional area (250) are selected to obtain a predetermined rate of molecular diffusion between fluids. When the fluids are liquids, flow through the microchannel (200) is laminar and the capillary action of the microchannel (200) and fluid is such that the fluid does not flow into the reaction reservoir (300) unless the pressure of the fluid is increased by an external source, thereby minimizing contamination of the bioreactor (50). The instant invention may also utilize at least one microchannel and reagent reservoir to regulate, rather than prevent, the passage of various molecules into the bioreactor (50). A pressure equalizing vent (400) operating on similar principles to the microchannel (200) may have a structure configured to minimize the chances of fluid leakage from the bioreactor (50), even if the bioreactor (50) is turned in various directions.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC: C12M 3/06(2006.01)

USPC: 435/297.1

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. : 435/288.5, 293.1, 294.1, 297.1, 297.2, 297.5

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,811,968 B2 (KIRK et al.) 02 November 2004 (02.11.2004), see entire document.	1, 3, 6-8, 29, 34-37
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Y		2, 4, 30
A	US 5,972,369 A (ROORDA et al.) 26 October 1999 (26.10.1999), see entire document.	1-37
A	EP 0 878 539 A2 (MONRO et al.) 18 November 1998 (18.11.1998), see entire document.	1-37

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

☐ See patent family annex.

* Special categories of cited documents:

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"&" document member of the same patent family

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