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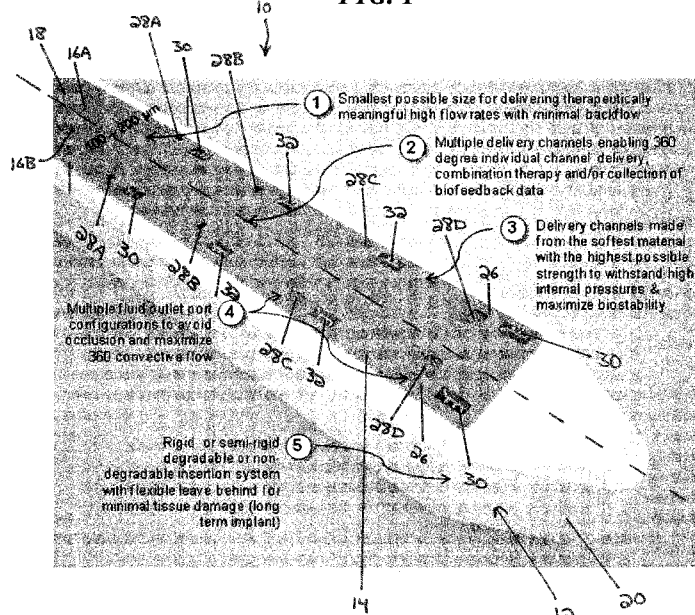
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[Continued on next page]

(54) Title: MICROFLUIDIC DRUG DELIVERY DEVICES

FIG. 1



(57) Abstract: The methods, systems, and devices disclosed herein generally involve convection-enhanced delivery of drugs to a target region within a patient. Microfluidic catheter devices are disclosed that are particularly suitable for targeted delivery of drugs via convection, including devices capable of multi-directional drug delivery, devices that control fluid pressure and velocity using the venturi effect, and devices that include conformable balloons. Methods of treating various diseases using such devices are also disclosed, including methods of treating cerebral and spinal cavernous malformations, cavernomas, and hemangiomas, methods of treating neurological diseases, methods of treatment using multiple microfluidic delivery devices, methods of treating hearing disorders, methods of spinal drug delivery using microfluidic devices, and methods of delivering stem cells and therapeutics during fetal surgery. Methods of manufacturing such devices are also disclosed.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/049100**A. CLASSIFICATION OF SUBJECT MATTER***A61M 37/00(2006.01)i, A61M 25/01(2006.01)i, A61M 25/06(2006.01)i, A61M 31/00(2006.01)i*

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)

A61M 37/00; A61K 9/14; A61M 5/142; A61M 5/00; B02D 11/00; C12N 9/96; A61M 25/00; A61M 25/06

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: microfluidic, CED, insertion support scaffold, fluid delivery conduit, direction, delivery, channel, micro-capillary tube, oxide mask, silicon wafer, patterning, polyimide layer, parylene layer, aluminum mask, etching

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2010-0098767 A1 (WILLIAM L. OLBRICHT et al.) 22 April 2010. See abstract, claims 1-40, and figures 1-12.	1-61
A	WO 2010-081072 A2 (BECTON, DICKINSON AND COMPANY et al.) 15 July 2010. See abstract and claim 1.	1-61
A	US 2009-0124976 A1 (STEPHAN MITTERMEYER) 14 May 2009. See abstract and claim 1.	1-61
A	US 2011-0137289 A1 (MECHTHILD KUNST) 09 June 2011. See abstract.	1-61
A	US 6454945 B1 (BERNHARD H. WEIGL et al.) 24 September 2002. See abstract and claims 1-23.	1-61



Further documents are listed in the continuation of Box C.



See patent family annex.

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Information on patent family members

International application No.

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