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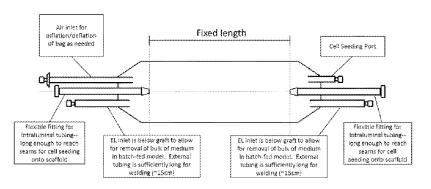
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(54) Title: APPARATUSES FOR TISSUE AND ORGAN PRODUCTION AND STORAGE

## FIGURE 1



(57) Abstract: The present invention is directed culture bags comprising a biocompatible material which is suitable to contain and support the long-term culture of cells, tissues, or organs; tolerates sterilization by standard means, and permits the supply of oxygen from outside said culture bag to the cells, tissues or organs within said culture bag and removal of carbon dioxide from within said culture bag.





## INTERNATIONAL SEARCH REPORT

International application No. PCT/US2012/041649

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - C12M 3/00 (2012.01) USPC - 435/289.1 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) IPC(8) - B01D 63/00; C12M 1/04, 3/00; C12N 5/00 (2012.01) USPC - 435/284.1, 289.1, 293.1; 623/915			
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) PatBase, Google Patents, Google, ProQuest			
C. DOCUMENTS CONSIDERED TO BE RELEVANT			
Category*	Citation of document, with indication, where ap	opropriate, of the relevant passages	Relevant to claim No.
X	WO 2010/115185 A1 (GUERTIN et al) 07 October 201	0 (07.10.2010) entire document	1-4, 6, 8, 9, 20, 22, 23, 26-33, 36-42, 44-49, 51, 52
Y	·		5, 7, 10-19, 21, 24, 25, 34, 35, 43, 50
Υ	US 5,801,054 A (KIEL et al) 01 September 1998 (01.0	9.1998) entire document	5
Υ	WO 2011/003615 A2 (GOLETZ et al) 13 January 2011	(13.01.2011) entire document	7, 10, 24, 25
Υ	US 7,390,653 B2 (AKERS et al) 24 June 2008 (24.06.2	2008) entire document	11, 12, 19
Υ	US 2004/0219659 A1 (ALTMAN et al) 04 November 20	004 (04.11.2004) entire document	13-19, 21
Y	US 7,122,371 B1 (MA) 17 October 2006 (17.10.2006)	entire document	34, 35
Y	FERRECHIO, L. et al. Bioreactor Design for Vascular Project Report. April 30, 2009. Worchester Polytechnic		43, 50
A US 7,384,783 B2 (KUNAS et al) 10 June 2008 (10.06.		2008) entire document	1-52
Α	US 2010/0261226 A1 (NIAZI) 14 October 2010 (14.10.	.2010) entire document	1-52
Further documents are listed in the continuation of Box C.			
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