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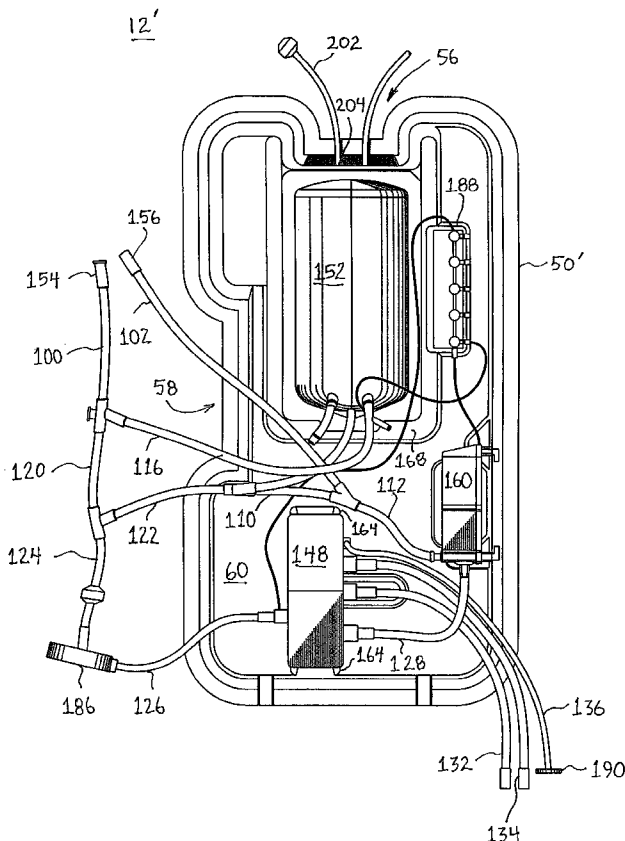
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(54) Title: HEART BYPASS SYSTEM INCORPORATING MINIMIZED EXTRACORPOREAL BLOOD CIRCULATION SYSTEM AND RELATED METHOD OF USE



(57) Abstract: The invention is a coronary bypass system (10') incorporating a minimized extracorporeal blood circulation module (12'). In one embodiment, the extracorporeal blood circulation module comprises a rigid support plane (50) for carrying the blood-handling components of the system, including a blood pump, (186) an oxygenator (148), a filter (160), a venous blood reservoir (152), and a sampling manifold. The extracorporeal blood circulation module is pre-configured to interconnect all blood-handling modules, such that tubing length is minimized and interfacing with a heart-lung bypass console can be accomplished with maximum efficiency. In one embodiment, the venous reservoir is a soft-shell variety mounted over a raised platform, defining an indentation on the front surface of the support plane. A vacuum port (200) extending into the vacuum chamber (180/184) is adapted to be coupled to a vacuum source, thereby allowing regulated negative pressure be applied to the flexible reservoir membrane for vacuum-assisted venous drainage.

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

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*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.*

**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/27782

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : A61M 1/14, 1/34, 37/00, 1/00; B64D 47/00; A61B 19/00  
 US CL : 422/44, 45; 604/6.14, 6.15, 408, 327

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. : Please See Continuation Sheet

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	US 5,304,164 A (LINDSAY) 19 April 1994, entire document.	9-12
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Y		
Y, E	US 6,632,189 B1 (FALLEN et al.) 14 October 2003, entire document.	1-32
Y	US 6,337,049 B1 (TAMARI) 08 January 2002, entire document.	1-32
X	US 6,306,346 B1 (LINDSAY) 23 October 2001, entire document.	1-3, 9-12, 14-17, 19, 23, 24, 27-29
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Y		4-8, 13, 18, 20-22, 25, 26, 30-32

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance  
 "E" earlier application or patent published on or after the international filing date  
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
 "O" document referring to an oral disclosure, use, exhibition or other means  
 "P" document published prior to the international filing date but later than the priority date claimed

"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  
 "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  
 "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

19 September 2004 (19.09.2004)

Date of mailing of the international search report

25 OCT 2004

Name and mailing address of the ISA/US

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**INTERNATIONAL SEARCH REPORT**

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**Continuation of B. FIELDS SEARCHED Item 1:**

422/44, 45; 604/6.14, 6.15, 408, 327; 422/46-48; 604/4.01, 5.01, 6.01-6.07, 6.1, 6.11-6.13, 7, 403, 411, 415; 210/645, 646, 650, 651, 660, 767, 781, 782, 252-262, 282, 321.6, 321.71, 321.72, 321.73-321.83, 348; 128/DIG 24

**Continuation of B. FIELDS SEARCHED Item 3:**

EAST: (compartment cut-out chassis module tray circuit) and (hollow concave parallelepiped indent\$ recess depression domed-out) and extracorporeal blood circulation