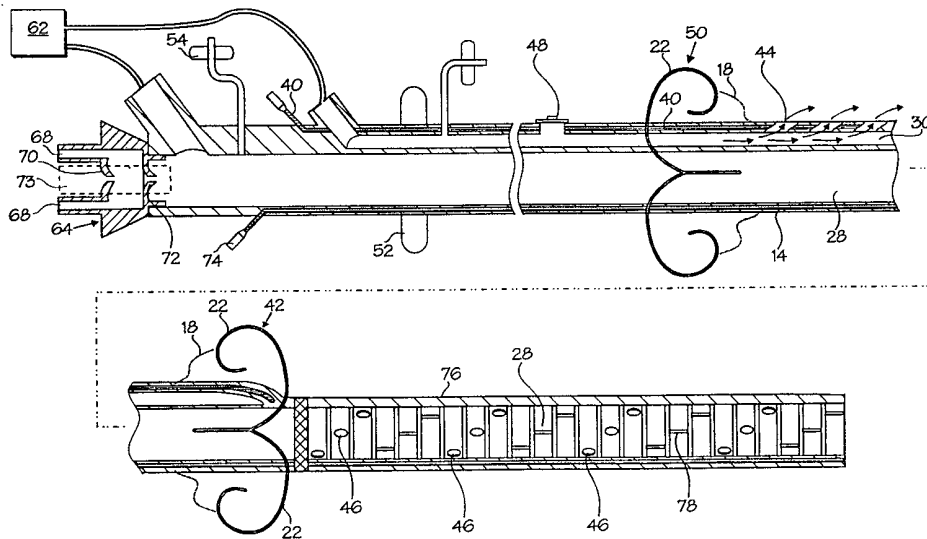




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/US97/10581 (22) International Filing Date: 17 June 1997 (17.06.97) (30) Priority Data: 08/664,360 17 June 1996 (17.06.96) US 08/664,361 17 June 1996 (17.06.96) US 08/665,635 18 June 1996 (18.06.96) US (71) Applicant: CARDEON CORPORATION [US/US]; 19639 Farwell Avenue, Saratoga, CA 95070 (US). (72) Inventor: MACOVIAK, John, A.; 1167 Avenida Amantea, La Jolla, CA 92037 (US). (74) Agent: LEARY, James, J.; Suite 330, 505 W. Olive Avenue, Sunnyvale, CA 94086 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 7 May 1998 (07.05.98)</p>	

(54) Title: EXTERNALLY VALVED CATHETER FOR CONTROLLED ANTEGRADE AND RETROGRADE FLUID FLOW



(57) Abstract

A catheter device regulates fluid flow within a circulatory vessel. Included is an elongated catheter body configured to access one of a circulatory vessel or a heart chamber. The catheter body includes a proximal end, a distal end, and a first lumen including an open proximal end and a distal end with a port formed at a distal portion of the distal end. Optionally, a second and a third lumen are also included in the catheter body. The second and third lumens each have an open proximal end. An antegrade valve is coupled to an exterior of the catheter body and configured to provide a controllable antegrade flow and a controllable retrograde flow along the exterior of the catheter body. The antegrade flow is greater than the retrograde flow. A retrograde valve may be included which provides a controllable retrograde and antegrade flow along the exterior of the catheter body. When a retrograde valve is used, the retrograde flow is greater than the antegrade flow.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/10581

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61B17/22 A61M25/00

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 6 A61B A61M

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 practical, 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 4 407 271 A (SCHIFF PETER) 4 October 1983 see column 7, line 4 - line 64; figures ---	1-58
X	US 3 592 184 A (WATKINS DAVID H ET AL) 13 July 1971 see the whole document ---	1-58
X	DE 36 07 295 A (MEYER HERBERT HERMANN DR MED) 10 September 1987 see column 4, line 32 - column 5, line 28; figures ---	1-58
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Date of the actual completion of the international search 19 February 1998	Date of mailing of the international search report 02/03/1998
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Clarkson, P

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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