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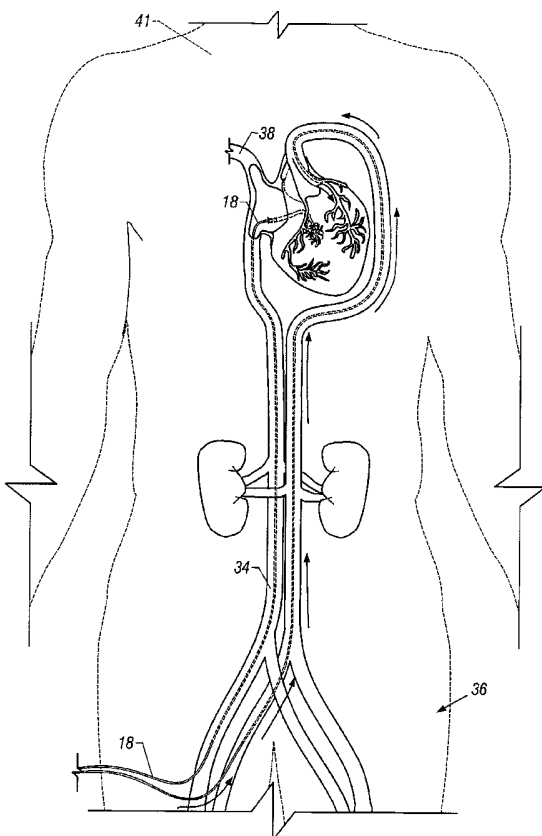
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- (71) Applicant (for all designated States except US): **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA** [US/US]; 1111 Franklin Street, 12th Floor, Oakland, CA 94607-5200 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **MOVAHED, M., Reza**
- (74) Agent: **ALLRED, David, E.**; Myers, Dawes & Andras LLP, 19900 MacArthur Blvd, Ste 1150, Irvine, CA 92612 (US).
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[Continued on next page]

(54) Title: METHOD AND APPARATUS TO REMOVE SUBSTANCES FROM VESSELS OF THE HEART AND OTHER PARTS OF THE BODY TO MINIMIZE OR AVOID RENAL OR OTHER HARM OR DYSFUNCTION



(57) Abstract: To accomplish isolation and removal of a substance from a vasculature, a catheter is employed to occlude a vessel of the vasculature. The substance is thus isolated in the vasculature and can be removed. In this way, the substance is removed before entering other parts of the circulatory system. This method is applicable to removal of contrast from the coronary sinus shortly after injection of the coronary arteries with the contrast. The method substantially minimizes or avoids renal dysfunction caused by angiographic procedures in which contrast must be injected. Such angiographic procedures are often performed during intervention procedures. This method substantially prevents circulation of the contrast to the kidneys where it could otherwise cause renal dysfunction or failure. The apparatus for implementation of the method is also disclosed.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A61M31/00

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 7 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)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 916 193 A (EVARD PHILIP C ET AL) 29 June 1999 (1999-06-29) abstract; figures 1,4,16,25-26A,31,32,35A ---	1,3-16, 44,46-50
A	WO 96 32887 A (INVASATEC INC) 24 October 1996 (1996-10-24) claims 1,12,13,28; figures 1-3 ---	1,3-16, 44,46-50
A	US 5 653 690 A (BOOTH WILLIAM M ET AL) 5 August 1997 (1997-08-05) abstract; figures ---	1
A	US 6 021 340 A (DICKENS DUANE ET AL) 1 February 2000 (2000-02-01) cited in the application claims 1-3; figures ----- -/--	1,3,44, 46

Further documents are listed in the continuation of box C.

Patent family members are listed in 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 document but published on or after the international filing date
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- \*Z\* document member of the same patent family

Date of the actual completion of the international search

30 December 2002

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13/01/2003

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

Amghar, N

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Inter Application No  
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99 33407 A (HEARTPORT INC) 8 July 1999 (1999-07-08) abstract; figures -----	
A	WO 95 08364 A (STANFORD SURGICAL TECHNOLOGIES) 30 March 1995 (1995-03-30) abstract; figures -----	
A	US 5 814 016 A (ROTH ALEX T ET AL) 29 September 1998 (1998-09-29) abstract; figures -----	

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 02/02031

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: 2, 17-43, 45, 51-54  
because they relate to subject matter not required to be searched by this Authority, namely:  
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

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