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[Continued on next page]

(54) Title: FLUID FLOW OCCLUDER AND METHODS OF USE FOR MEDICAL TREATMENT SYSTEMS

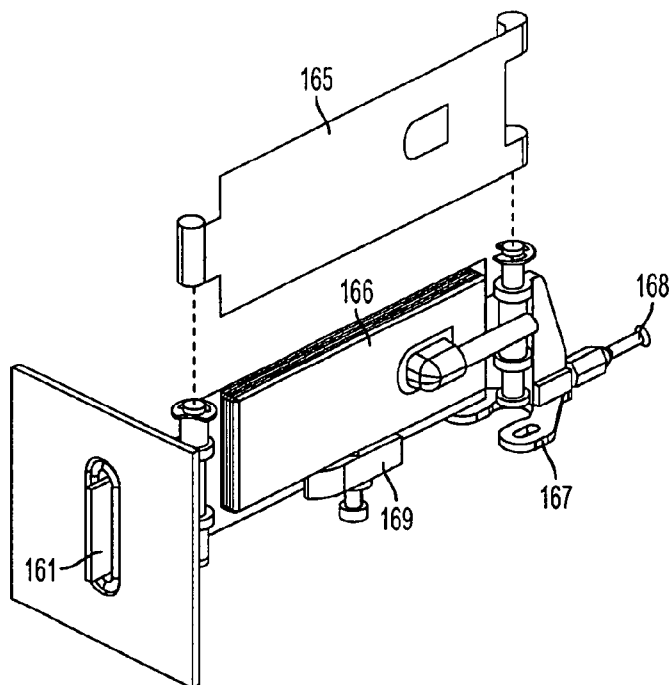


FIG. 39

(57) Abstract: An occluder (147), and methods for occlusion, that employs first and second opposed occluding members (165) associated with each other, a tube contacting member (161) connected to, or comprising at least a portion of, at least one of the first and second occluding members, and a force actuator (166) constructed and positioned to apply a force to at least one of the first and second occluding members. Application of the force by the force actuator may cause the tube contacting member to move between a tube occluding and an open position. A release member (169) may be configured and positioned to enable an operator to manually move the tube contacting member from the tube occluding position to the open position even with no force applied to the occluding member by the force actuator. In one embodiment, the force actuator may apply a force sufficient to bend both the first and second occluding members, so that upon application of the force by the force actuator (such as an air bladder), the first and second occluding members (e.g., spring plates pivotally connected at opposite ends) bend and the tube contacting member may move between a tube occluding and an open position.

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ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,  
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OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,  
MR, NE, SN, TD, TG).

— before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
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12 November 2009

# INTERNATIONAL SEARCH REPORT

International application No  
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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. A61M1/28      A61M5/145		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) <b>A61M</b>		
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) <b>EPO-Internal, WPI Data</b>		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 815 882 A (DEKA PRODUCTS LP [US]) 7 January 1998 (1998-01-07) column 15, line 41 - column 16, line 53; figures 1,6,12B,16A,16B	1-8, 12-15, 17
Y	US 2008/015493 A1 (CHILDERS ROBERT W [US] ET AL) 17 January 2008 (2008-01-17) paragraphs [0102], [0142], [0143]; figure 12	1-8, 12-15, 17
A	US 2005/069425 A1 (GRAY LARRY B [US] ET AL) 31 March 2005 (2005-03-31) paragraphs [0198] - [0203]; figures 12e,12f	9-11
<input type="checkbox"/> Further documents are listed in the continuation of Box C.		
<input checked="" type="checkbox"/> 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 document but 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  <p style="text-align: center; font-weight: bold;">14 May 2009</p>	Date of mailing of the international search report  <p style="text-align: center; font-weight: bold;">25/09/2009</p>	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  <p style="text-align: center; font-weight: bold;">Böttcher, Stephanie</p>	

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2009/000433

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
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 No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
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.:

see additional sheet(s)

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No-protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-17

An automated peritoneal dialysis system comprising a reusable cycler, a disposable fluid handling cassette in fluid communication with a first and a second tube and an occluder to selectively occlude the first tube while not occluding the second tube.

Problem to be solved: Facilitating selective occlusion of different tubes.

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2. claims: 18-35

An occluder for occluding a flexible tube comprising a resilient occluding member, a tube contacting member and a force actuator.

Problem to be solved: Moving the tube contacting member between a tube occluding and an open position.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No <b>PCT/US2009/000433</b>
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Patent document cited in search report	A	Publication date	B	Patent family member(s)	Publication date
EP 0815882	A	07-01-1998	EP	0815883 A2	07-01-1998
			GR	3031342 T3	31-12-1999
			GR	3031343 T3	31-12-1999
US 2008015493	A1	17-01-2008	WO	2009005900 A1	08-01-2009
US 2005069425	A1	31-03-2005	US	6877713 B1	12-04-2005
			US	2009202367 A1	13-08-2009