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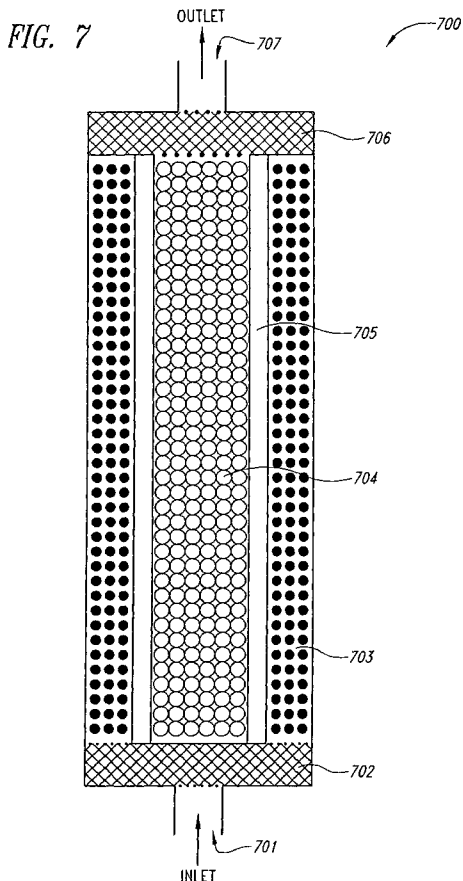
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(54) Title: COMPOSITIONS AND METHODS FOR FLUID PURIFICATION



(57) Abstract: A multi-barrier filter comprising a halogenated resin capa-
ble of removing contaminants from a fluid, and at least one contaminant
sorbent medium downstream of the halogenated resin capable of adsorbing
or absorbing contaminants. The at least one contaminant sorbent medium
is preferably "halogen-neutral" to maximize the antimicrobial effectiveness
of the halogen in the fluid. The filter may comprise at least one "halogen-
scavenger" barrier downstream of the halogen-neutral barrier. Because of
the efficiency of the filter, a low-residual halogenated resin, such as, for ex-
ample, low residual iodinated resin, may be used.

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B. FIELDS SEARCHED				
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
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C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 5 468 373 A1 (CHOU WU-CHANG [TW]) 21 November 1995 (1995-11-21) abstract; figures page 2, line 3 - line 10 page 2, line 19 - line 20 page 2, line 24 - line 33 -----	1-20		
X	US 5 635 063 A1 (RAJAN RAJAN G [US] ET AL) 3 June 1997 (1997-06-03) abstract; figures page 5, line 50 - line 51 page 5, line 64 page 6, line 10 page 6, line 66 - page 7, line 2 ----- -/--	1-20		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.</td> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> See patent family annex.</td> </tr> </table>			<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.
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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. *8* document member of the same patent family			
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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	<p>US 5 562 824 A1 (MAGNUSSON JAN H [US]) 8 October 1996 (1996-10-08) abstract; figures column 1, line 51 - line 59 column 2, line 7 - line 11 column 2, line 24 - line 30 column 2, line 35 - line 39 column 2, line 46 - line 51 column 2, line 55 - line 59 column 3, line 17 - line 29 column 4, lines 3,4 column 5, line 61 - line 67 column 6, line 26 - line 63 column 7, line 15 - line 30</p>	1-20
A	<p>US 5 061 367 A1 (HATCH GARY L [US] ET AL) 29 October 1991 (1991-10-29) abstract; claims; figures column 5, line 36 - line 53 column 6, line 1 - line 29</p>	1-20
A	<p>US 2002/117436 A1 (RAJAN RAJAN G [US] ET AL) 29 August 2002 (2002-08-29) abstract; claims; figures paragraph [0019] - paragraph [0021] paragraph [0041] paragraph [0045]</p>	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5468373	A1	NONE	
US 5635063	A1	NONE	
US 5562824	A1	NONE	
US 5061367	A1	NONE	
US 2002117436	A1	29-08-2002 US 2008302714 A1	11-12-2008