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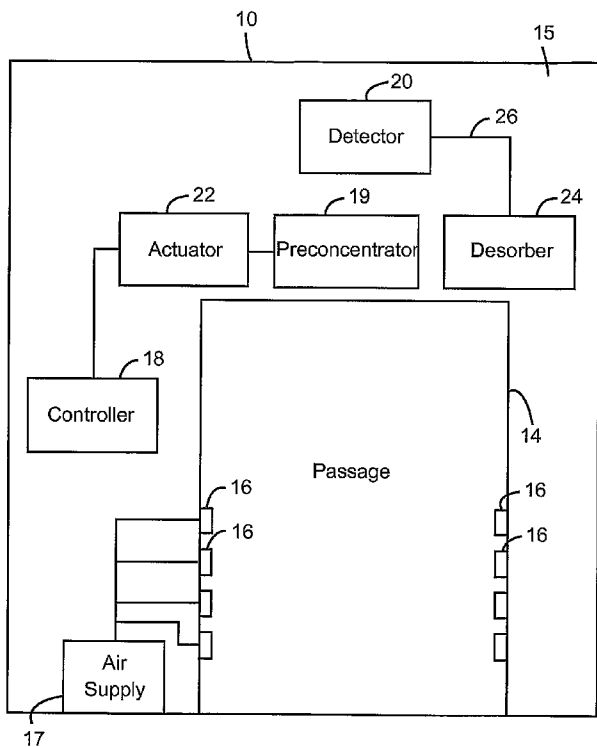
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- (74) Agents: **CONKLIN, Mark, A.** et al.; General Electric Company, Global Patent Operation, 187 Danbury Road, Suite 204, Wilton, CT 06897 (US).
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[Continued on next page]

(54) Title: A CONTRABAND SAMPLING SYSTEM WITH A PRECONCENTRATOR FILTER HAVING A THERMALLY CONDUCTIVE FRAME



(57) Abstract: A method of detecting particles during inspection is provided. The method includes establishing a security checkpoint including a detection system, wherein the detection system includes a chamber defining a passage and includes a plurality of jets. The method also includes passing an individual through the passage, enhancing a convection plume including particles from the individual by blowing air through at least one of the plurality of jets, and absorbing the particles in a preconcentrator including a filter encased in a frame having a high thermal conductivity. Moreover, the method includes evaporating the particles absorbed in the preconcentrator and using a detector to determine whether the particles are from at least one of an explosive material and a narcotic substance.

WO 2007/109311 A3



PT, RO, SE, SI, SK, TR), 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 amendments

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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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.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/007004

A. CLASSIFICATION OF SUBJECT MATTER
 INV. G01N1/22 G01N15/06 B01D46/10 B01D46/00

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)

G01N B01D

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 503 758 B1 (ALLEN GEORGE A [US] ET AL) 7 January 2003 (2003-01-07) figure 1 column 5, line 20 - line 55	14, 17
Y	GB 2 393 403 A (GEN ELECTRIC [US]) 31 March 2004 (2004-03-31) the whole document	1-6, 10-20
Y	US 2006/049346 A1 (MCGANN WILLIAM J [US] ET AL) 9 March 2006 (2006-03-09) figure 1 paragraph [0016] paragraph [0023] - paragraph [0028] paragraphs [0035], [0036]	1-6, 10-20
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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 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

28 November 2007

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07/12/2007

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/007004

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/085348 A1 (MEGERLE CLIFFORD [US]) 8 May 2003 (2003-05-08) the whole document -----	1-6, 10-20
A	EP 0 955 536 A2 (PENN STATE RES FOUND [US]) 10 November 1999 (1999-11-10) the whole document -----	1-6, 10-20
A	US 2002/078767 A1 (JENKINS ANTHONY [US] ET AL) 27 June 2002 (2002-06-27) the whole document -----	1-6, 10-20
X	US 3 292 349 A (CUTA ROBERT J) 20 December 1966 (1966-12-20) figures 1-4 column 1, line 14 - line 40 column 2, line 40 - column 3, line 21 -----	7-9
A	US 4 086 071 A (CHAMPLIN CHARLES L) 25 April 1978 (1978-04-25) the whole document -----	7-9
A	US 5 836 861 A (DIAZ JOSE A [US]) 17 November 1998 (1998-11-17) the whole document -----	7-9
A	GB 1 236 093 A (GEN MOTORS LTD [GB]) 16 June 1971 (1971-06-16) the whole document -----	7-9
A	GB 2 265 556 A (GIBBS ROBERT WILLIAM [CA]) 6 October 1993 (1993-10-06) figure 1 -----	7-9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/007004

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.:

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: 1-6,10-20

A system and method for sampling and detecting particles.

2. claims: 7-9

A method of manufacturing a filter element.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/007004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 6503758	B1	07-01-2003	US 2003138965 A1 US 2003040120 A1	24-07-2003 27-02-2003
GB 2393403	A	31-03-2004	CA 2437393 A1 DE 10338039 A1	19-02-2004 27-05-2004
US 2006049346	A1	09-03-2006	CA 2579836 A1 EP 1792161 A2 WO 2007008230 A2	18-01-2007 06-06-2007 18-01-2007
US 2003085348	A1	08-05-2003	NONE	
EP 0955536	A2	10-11-1999	DE 69933407 T2 ES 2274602 T3 JP 11352032 A	23-08-2007 16-05-2007 24-12-1999
US 2002078767	A1	27-06-2002	US 6840122 B1	11-01-2005
US 3292349	A	20-12-1966	NONE	
US 4086071	A	25-04-1978	NONE	
US 5836861	A	17-11-1998	NONE	
GB 1236093	A	16-06-1971	NONE	
GB 2265556	A	06-10-1993	NONE	