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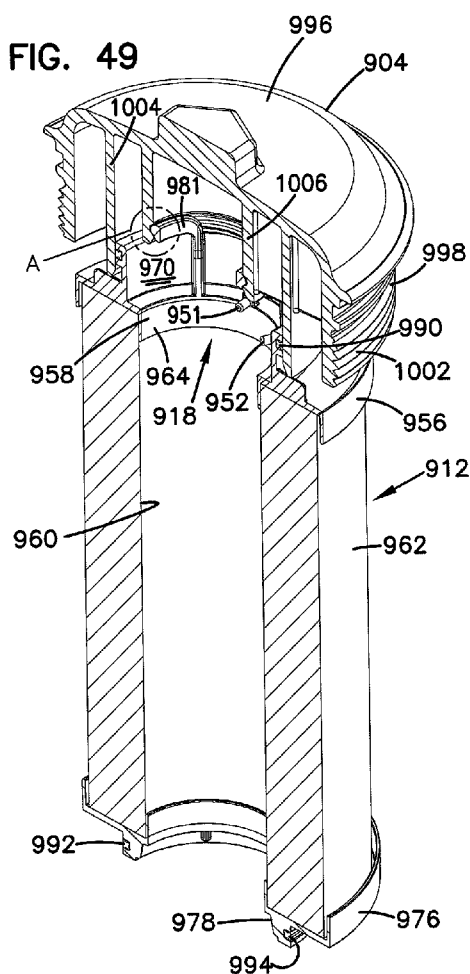
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| B01D 29/23 (2006.01) | B01D 35/153 (2006.01) | | ALDSON COMPANY, INC. [US/US]; 1400 West 94th Street P.O. Box 1299, Minneapolis, MN 55440-1299 (US). |
| (21) International Application Number: | | | (72) Inventors; and |
| PCT/US2009/041692 | | | (75) Inventors/Applicants <i>(for US only):</i> HONERMANN, |
| (22) International Filing Date: | | | Bradley, S. [US/US]; 17281 Marshfield Ln., Prior Lake, MN 55372 (US). HACKER, John, R. [US/US]; 5617 Harriet Avenue South, Minneapolis, MN 55419 (US). LEGAULT, Kathryn, A. [US/US]; 9825 Oakland Avenue South, Bloomington, MN 55420 (US). EMERY, Mark, S. [US/US]; 3215 Girard Avenue South, Minneapolis, MN 55408 (US). JOSCHER, Kurt [US/US]; 11532 23rd Avenue, Burnsville, MN 55337 (US). JOHN- |
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[Continued on next page]

(54) Title: TOP LOAD LIQUID FILTER ASSEMBLY, SYSTEM, AND METHODS

(57) Abstract: A top load liquid filter assembly includes a filter lockout mechanism to ensure that the filter base and cover are not connectable unless there is a proper filter cartridge installed therein. The filter system can also include an automatic drain mechanism and a cartridge retention mechanism. One example embodiment further includes an air bleed vent. A filter cartridge usable in the topload liquid filter assembly includes first and second protrusions and cover-gripper members. Methods of use, installing, servicing, and retaining can be practiced.





SON, Jason [US/US]; 1400 West 94th Street, Minneapolis, MN 55440 (US).

(74) **Agent:** BRUESS, Steven, C.; Merchant & Gould P.C., P.O. Box 2903, Minneapolis, MN 55402-0903 (US).

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/041692

A. CLASSIFICATION OF SUBJECT MATTER
INV. B01D29/23 - B01D35/153

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)
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.
Y	US 2005/035053 A1 (ENGELHARD ROLF [US] ET AL) 17 February 2005 (2005-02-17) abstract; figure 9	1-5, 11-13
Y	EP 1 008 375 A (BALDWIN FILTERS INC [US]) 14 June 2000 (2000-06-14) paragraph [0033]; figures 12-15	1-5, 11
Y	US 6 235 194 B1 (JOUSSET TODD A [US]) 22 May 2001 (2001-05-22) abstract; figures 1-7	1, 12-13
A	US 6 217 763 B1 (LAWRENCE DIANNA L [US] ET AL) 17 April 2001 (2001-04-17) abstract; figure 2 column 3, line 35 - line 58	1
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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

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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

Sembritzki, Thorsten

INTERNATIONAL SEARCH REPORT

International 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	JP 2003 320206 A (TOYO ROKI MFG CO LTD) 11 November 2003 (2003-11-11) abstract; figures 1,2 -----	14-24
A	EP 1 110 590 A2 (MANN & HUMMEL FILTER [DE] MANN & HUMMEL GMBH [DE]) 27 June 2001 (2001-06-27) abstract; figures 1-5 -----	14-24

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/041692

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 all searchable 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.:

1-24
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: 1-13

Claims 1-13 are directed to a filter cartridge characterized by the presence of two different vertically and circumferentially spaced protrusions and cover-gripping members.

2. claims: 14-24

Claims 14-24 refer to a filter assembly characterized by the use of a rotatable basket which is in relationship with a single protrusion.

3. claim: 25

Claim 25 is directed to a method of installing a filter cartridge in a filter assembly. This claim neither mentions the presence of protrusions nor a connection between the filter element and a cover.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/041692

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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