

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
4 September 2008 (04.09.2008)

PCT

(10) International Publication Number  
**WO 2008/106375 A3**

- (51) **International Patent Classification:**  
*BOID 46/52 (2006.01)*
- (21) **International Application Number:**  
PCT/US2008/054725
- (22) **International Filing Date:**  
22 February 2008 (22.02.2008)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
60/903,387 26 February 2007 (26.02.2007) US
- (71) **Applicant (for all designated States except US):** DON-ALDSON COMPANY, INC. [US/US]; 1400 West 94th Street, P.O. Box 1299, Minneapolis, MN 55440-1299 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** NELSON, David, W. [US/US]; 210 110th Avenue N.W., Coon Rapids, MN 55446 (US). NELSON, Benny, Keivn [US/US]; 3100 Baillif Place, Bloomington, MN 55431 (US).
- (74) **Agent:** BRUESS, Steven, C ; Merchant & Gould PC, P.O. Box 2903, Minneapolis, MN 55402-0903 (US).

- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FT, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- Published:**
  - with international search report
  - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) **Date of publication of the international search report:**  
20 November 2008

(54) **Title:** AIR FILTER ARRANGEMENT; AIR CLEANER ASSEMBLY; AND, METHODS

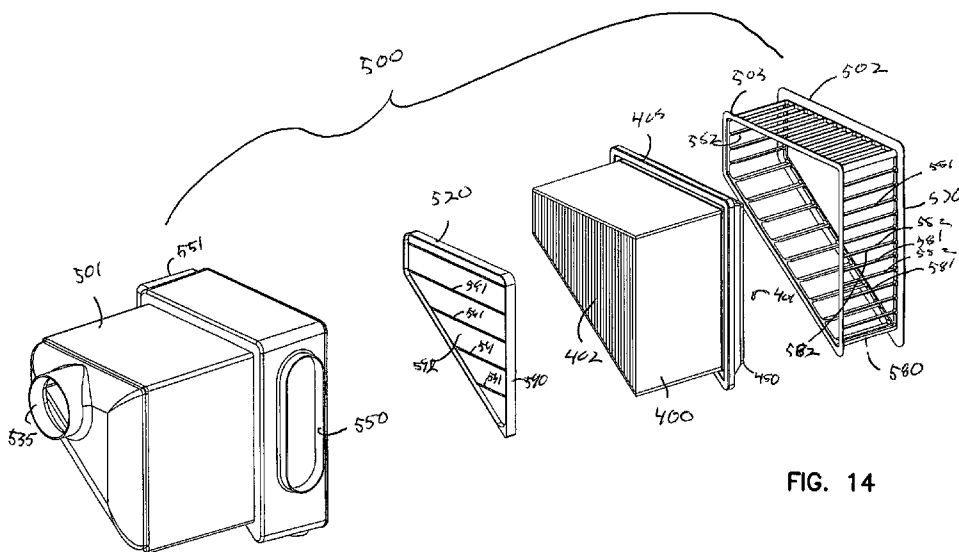


FIG. 14

(57) **Abstract:** A media pack for including in a filter cartridge of an air filter arrangement, is provided. The media is a non-rectangular perimeter configuration, an example shown being trapezoidal. Filter cartridges including such media packs, air cleaner assemblies and equipment systems are described. Also methods of use assembly are described.

WO 2008/106375 A3

# INTERNATIONAL SEARCH REPORT

International application No  
**PCT/US2008/054725**

**A. CLASSIFICATION OF SUBJECT MATTER**  
**INV. B01D46/52**

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)  
**BOID**

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**

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<b>X</b>	DE 10 2004 058590 AI (SWARS HELMUT [DE]) 17 August 2006 (2006-08-17) paragraphs [0050] , [0054] , [0092] , [0098] , [0120] , [0122] , [0133] , [0135].; figures 3,7,17,23b,24d -----	<b>1-20, 31-36</b>
<b>X</b>	US 2004/035096 AI (HAM SANGSUN [KR]) 26 February 2004 (2004-02-26) paragraphs [0003] , [0005] , [0015] - [0019] ; figures 1-4 -----	<b>1-20, 31-36</b>
<b>X</b>	DE 43 28 846 AI (MANN & HUMMEL FILTER [DE]) 2 March 1995 (1995-03-02) col umn 1, l ines 7-19; figures 1a-2b col umn 2, l ines 30-68 ----- -/-	<b>1-20, 31-36</b>

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  
**26 June 2008**

Date of mailing of the international search report  
**30 OCT 2008**

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  
**Wolf , Gundula**

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2008/054725

(^Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 589 983 A (WYDEVAN ROBERT M [US]) 20 May 1986 (1986-05-20) column 2, lines 10-37; figures 5-8,19 column 6, lines 23-39 column 9, lines 6-10,45-54 -----	1-20, 31-36

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2008/054725

## 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 allsearchablß 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 annex**

### 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 : 1-20,31-36

Air filter cartridge with trapezoidal perimeter shape, solving the problem of adapting the filter shape to the geometric requirements of the filter location  
---

2. claims : claims 21-24

Air cleaner assembly with housing comprising base with inlet and outlet openings, an access cover, and a filter cartridge with fluted filter media and a seal arrangement, solving the problem of providing an alternative configuration of a filter cartridge with a housing allowing easy accessibility  
---

3. claims : claims 25-30

Method of manufacturing an air filter cartridge with fluted filter media strips using molded-in-place side panels to embed a cut side of the filter media, solving the problem of ensuring sealing at edges of the media strips  
---

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2008/054725

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102004058590 A1	17-08-2006	NONE	
US 2004035096 A1	26-02-2004	NONE	
DE 4328846 A1	02-03-1995	BR 9402777 A	04-04-1995
		CN 1107749 A	06-09-1995
		CZ 9402071 A3	18-10-1995
		EP 0645170 A1	29-03-1995
		ES 2132288 T3	16-08-1999
		FI 943938 A	28-02-1995
		IL 110722 A	20-06-1999
		SI 9400318 A	30-04-1995
		TR 27909 A	11-10-1995
		US 5622583 A	22-04-1997
		ZA 9406140 A	13-06-1995
US 4589983 A	20-05-1986	NONE	