

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
2 May 2008 (02.05.2008)

PCT

(10) International Publication Number
WO 2008/051871 A3

- (51) **International Patent Classification:**
F16K 31/12 (2006.01) F16K 1/00 (2006.01)
F1 6K 31/00 (2006.01)
- (21) **International Application Number:**
PCT/US2007/082006
- (22) **International Filing Date:** 19 October 2007 (19.10.2007)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
60/862,305 20 October 2006 (20.10.2006) US
60/887,040 29 January 2007 (29.01.2007) US
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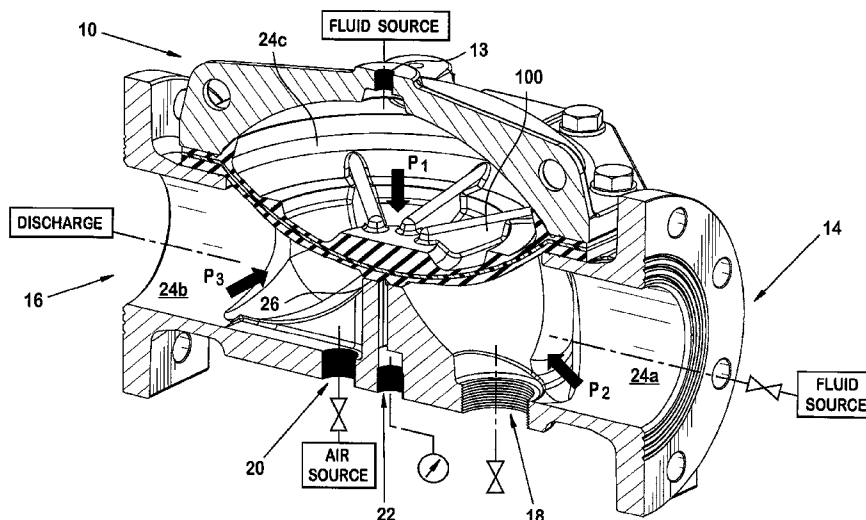
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, 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, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, 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

[Continued on next page]

(54) **Title:** FLUID CONTROL VALVE SYSTEM AN METHODS



(57) **Abstract:** A diaphragm-type control valve having a diaphragm and a valve body is provided preferably for use in the separation of and fluid control between a fluid source and a pressurized gas volume. The diaphragm element and a port in the body together form an intermediate chamber that eliminates the need for a check-valve downstream of the valve. In one preferred embodiment, an inner surface of the valve body defines a chamber having an inlet and an outlet in communication with the chamber, and an elongated seat member defining a groove in communication with the port. A diaphragm member having upper and lower surfaces is disposed within the chamber. The lower surface preferably includes a pair of spaced apart elongated members defining a channel therebetween. The diaphragm member engages the seat member placing the channel in communication with the groove to define an air seat in communication with the port.

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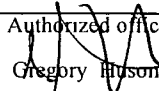
(88) Date of publication of the international search report:

16 October 2008

INTERNATIONAL SEARCH REPORT

International application No

PCT/US07/82006

A CLASSIFICATION OF SUBJECT MATTER IPC F16K 31/12(2006 01),31/00(2006 0 1),1/00(2006 0 1) USPC 137/489,25 1/6 1 1,33 1 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) U S 137/488,25 1/61 1,33 1 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 practicable, search terms used) EAST		
C DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X --- Y	US 5,706,859 A (BACKLUND) 13 January 1998 (13 0 1 1998), column 2, line 13 to column 5, line 20	19-21 ----- 1-8, 10-1 2, 14, 18, 22, 23
X --- Y	US 3,802,462 A (TROSCH) 09 April 1974 (09 04 1974), column 1, line 65 to column 4, line 32	25 ----- 1-8, 10-1 2, 14, 18
X	US 5,464,064 A (WEINGARTEN) 07 November 1995 (07 11 1995), column 1, line 59 to column 2, line 66)	28, 30
X --- Y	GB 2,040,407 A (SAUNDERS VALVE COMPANY) 28 August 1980 (28 08 1980), page 1, line 5 to page 2, line 70	42-47, 49 ----- 48
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input 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 application or patent 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 21 June 2008 (21 06 2008)		Date of mailing of the international search report 06 AUG 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn ISA/US Commissioner for Patents P O Box 1450 Alexandria, Virginia 223 13- 1450 Facsimile No (57 1) 273-3201		Authorized officer  Gregory Huson Telephone No 57 1-272-3750

INTERNATIONAL SEARCH REPORT

International application No

PCT/US07/82006

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 29 and 31-41
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
Claims 29 and 31-41 are dependent claims referring to claim 27. However, another claim set (claim 28) is presented between claims 29 and 31-41 and claim 27. Therefore, claims 29 and 31-41 do not comply with PCT Rule 6.4(c)

- 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

- 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 additional fees, this Authority did not invite payment of any additional fees
- 3 **D** 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

INTERNATIONAL SEARCH REPORTInternational application No
PCT/US07/82006**C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
Y	GB 2,231,126 A (CARRARO S R L) 07 november 1990 (07 11 1990), page 1 to page 5	10-12
A	US 5,476,118 A (YOKOYAMA) 19 December 1995 (19 12 1995), see entire document	1-49
Y	US 4,901,751 A (STORY et al) 20 February 1990 (20 02 1990), column 2, line 66 to column 5, line 36	48