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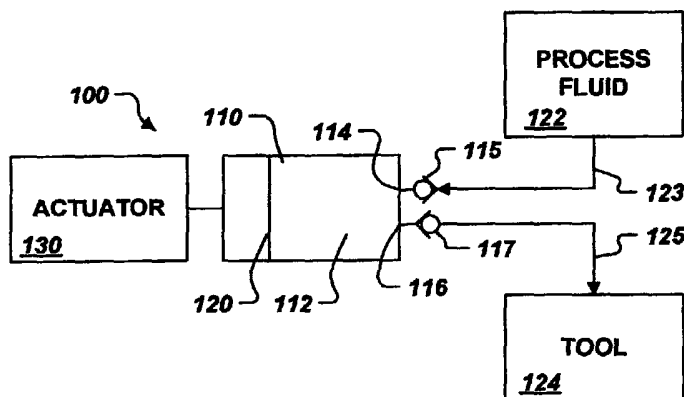
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30 September 2004

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.

(54) Title: FLOW CONTROL SYSTEM



(57) Abstract: A flow control system (100) includes a substantially rigid vessel (110) with a process fluid reservoir (112) situated in the rigid vessel (110) is in fluid communication with an outlet (116). A movable member (120) and/or a working fluid is situated in the rigid vessel (110) so as to selectively expel process fluid (122) from the outlet (116). Where a movable member (120) is employed, movement of the movable member (120) in a first direction causes process fluid (122) to be drawn into an inlet (114) and movement of the movable member (120) in a second direction causes process fluid (122) to be expelled from the outlet (116). In other implementations, the working fluid is metered into a working fluid reservoir (340) to compress a flexible process fluid reservoir (112)

and expel process fluid (122) therefrom.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/28397

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B24B37/04 B24B57/02 G05D7/06 G01F11/02

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)

IPC 7 G05D G01F

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, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 756 456 A (GEORGI D) 4 September 1973 (1973-09-04) column 2, line 5 - line 32; figure 1 -----	1,2,20
X	FR 945 469 A (PASSCH & LARSEN PETERSEN) 5 May 1949 (1949-05-05) page 3, line 14 - line 32; figure 1 -----	1,20
X	WO 98/23932 A (BEEK DANIEL VAN ; FAASSE MARINUS ABRAHAM (NL)) 4 June 1998 (1998-06-04) page 1, line 13 - line 36 page 3, line 14 - line 33; figure 1 page 5, line 5 - line 25 ----- -/--	1,2,7,20

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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

25 February 2004

Date of mailing of the international search report

03. 08. 2004

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/28397

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 056 036 A (VAN BORK ERIK C) 8 October 1991 (1991-10-08) column 2, line 45 - line 58; figure 1a	1-3,7, 10,11
Y	column 4, line 16 - line 33; figure 5 -----	4,5
Y	US 5 443 180 A (DUSSAU CHRISTIAN) 22 August 1995 (1995-08-22) column 5, line 47 - line 56; figure 1 -----	4,5
X	US 4 863 066 A (UFFENHEIMER KENNETH F ET AL) 5 September 1989 (1989-09-05) column 5, line 9 - line 34; figure 1 -----	1,3,10, 11,13

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/28397

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.:

1-13, 20

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ 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, 20

Displacement pump

1.1. claim: 1+2+4

Piston pump

1.2. claims: 1+3, 1+10+11

Diaphragm pump

2. claims: 14-19

Pump with working fluid reservoir enclosing the process fluid

3. claims: 21-27

CMP method

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/28397

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