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[Continued on next page]

(54) Title: FLOW CONTROL DEVICE AND METHOD

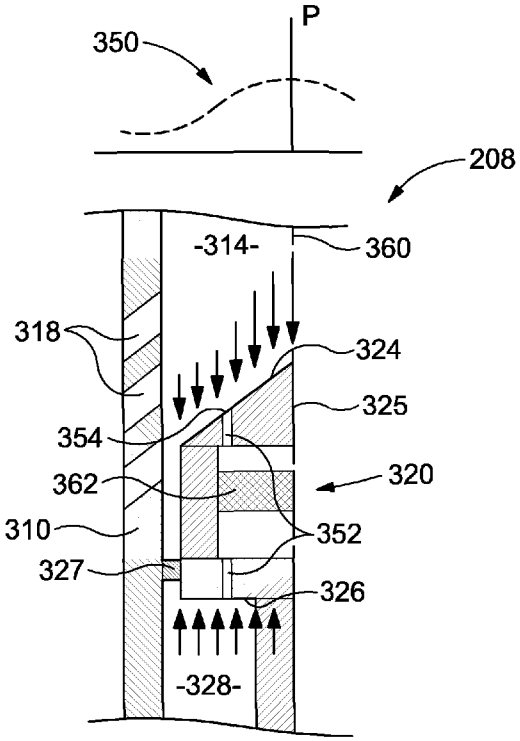


Figure 5

(57) Abstract: A flow control device is disclosed which comprises a flow path, a compensation chamber and a regulator assembiy which defines a first surface which is expcsed to the flow path and an opposing second surface which is exposed to the compensation chamber, wherein a drive arrangement Is provided for moving the regulator assembly to vary the flow path. in some embodiments fluid flowing through the flow path establishes a pressure which varies across the first surface of the regulator assembly, and the compensation chamber is in pressure communication with a localised region of the first surface which is selected to establish a compensation chamber pressure which acts against the second surface of the regulator assembly to bias the reguiator assembly in a desired direction. in some embodiments the first surface of the regulator assembly defines a profiie which is configured to minimise the variation in pressure applied over said first surface by action of fluid flowing through the flow path.

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MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. E21B43/12 G01V11/00
ADD.

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)
E21B G01V

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)
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	GB 2 443 415 A (SONDEX PLC [GB]) 7 May 2008 (2008-05-07) abstract figures 1-3 page 3, paragraph 4 page 5, paragraphs 2,3 -----	1-39
A	WO 2006/041308 A2 (WELL TECHNOLOGY AS [NO]; GODAGER OEYVIND [NO]) 20 April 2006 (2006-04-20) cited in the application abstract paragraphs [0061] - [0062]; figure 7 paragraphs [0090] - [0093] -----	1-39

☐ 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 application or patent 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	Date of mailing of the international search report
6 May 2014	12/05/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Wehland, Florian

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2013/050402

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.:

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: 1-39

   Flow control device.

1.1. claims: 1-32

   Flow control device defined by a pressure communication between the two surface of a piston in order to bias the regulatory assembly in a desired direction.

1.2. claims: 33-39

   Flow control device defined by the shape of the first surface of a piston in order to change the pressure distribution on the surface.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2013/050402

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2443415 A	07-05-2008	AT 546614 T	15-03-2012
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