

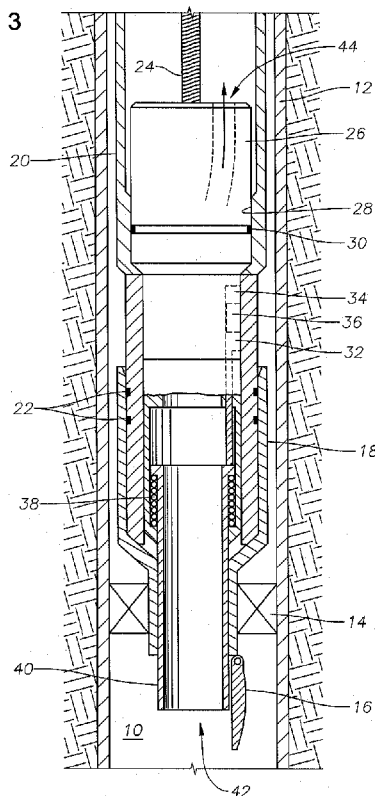


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[Continued on next page]

(54) Title: PARTIALLY RETRIEVABLE SAFETY VALVE

Fig. 3



(57) Abstract: A method, system and apparatus is provided for a partially retrievable safety valve to control a well. The method includes securing a normally closed valve in the well. The valve may be a self-equalizing flapper valve. Following this, an actuator system operable to open the valve is run into the well. The actuator system is removable from the well while the valve remains closed and secured in the well. A submersible pump and motor may be secured to the actuator system before the actuator system is run into the well. The submersible pump and motor are also removable from the well while the valve remains closed and secured in the well. Therefore the actuator system, submersible pump and motor can be replaced or redressed, while the valve remains closed, keeping the well under control at all times.



SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *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))*

Published:

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/023941

A. CLASSIFICATION OF SUBJECT MATTER
INV. E21B41/00 E21B43/12
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

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	US 5 881 814 A (MILLS ROBERT A R [CA]) 16 March 1999 (1999-03-16) column 6, lines 8-15, 21-26; figure 2 -----	1,2,10, 12
X	US 6 234 247 B1 (HEAD PHILIP [GB]) 22 May 2001 (2001-05-22) column 3, line 18 - column 4, line 35 column 4, line 66 - column 5, line 3; figures 6-11 -----	1-23
X	US 4 625 798 A (BAYH III RUSSELL I [US]) 2 December 1986 (1986-12-02) column 3, lines 10-67 column 9, lines 21-27,54-58 -----	1-23
X	US 6 328 111 B1 (BEARDEN JOHN L [US] ET AL) 11 December 2001 (2001-12-11) column 8, line 64 - column 9, line 56; figures 10-12 -----	1-23



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

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"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

11 December 2012

Date of mailing of the international search report

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/023941

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

International application No.
PCT/US2012/023941

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.:

1-23

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: 1-23

System for providing control of a subterranean well comprising a normally closed valve, a submersible pump and a motor.

2. claims: 24-31

System for providing control of a subterranean well comprising a normally closed valve and a normally unlocked locking system
