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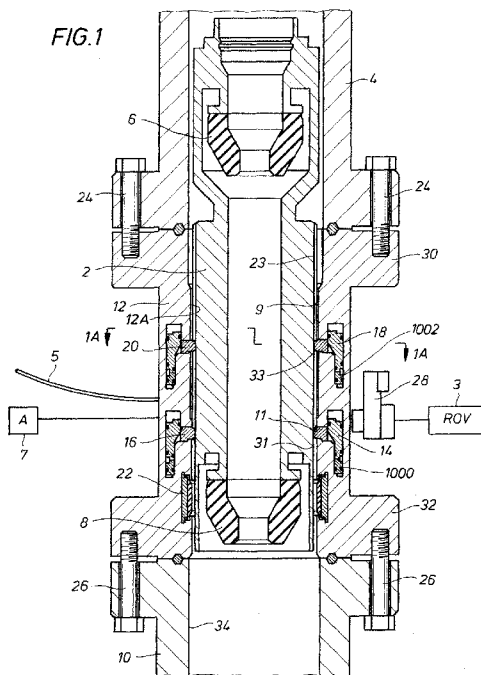
AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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[Continued on nextpage]

(54) Title: LATCHING APPARATUS AND METHOD



(57) Abstract: An acoustic control system wirelessly operates a subsea latching assembly (14, 18) or other subsea device, such as an active seal (22). The acoustic control system may control a subsea first accumulator to release its stored hydraulic fluid to operate the latch assembly or other subsea device, such as an active seal. An RCD or other oilfield device may be unlatched or latched with the latching assembly. The acoustic control system may have a surface control unit, a subsea control unit, and two or more acoustic signal devices. A valve may allow switching from an umbilical line system to the acoustic control system accumulator.



Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.1 7(H))*

— *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:

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

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

27 June 2013

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2011/068111

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3 405 387 A (KOO MEY PAUL C ET AL) 8 October 1968 (1968-10-08) cited in the application column 1, lines 22-23, 27-31, 44-58; figures 1, 3 column 2, lines 8-13, 32, 43-56 column 3, lines 12-14, 18-19, 26-28, 37-38 column 4, lines 1-4 -----	7,8,19
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A	EP 0 896 125 A2 (HALLIBURTON ENERGY SERV INC [US]) 10 February 1999 (1999-02-10) paragraphs [0066], [0093], [0096]; figure 3 -----	1
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP20 11/068 111

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: 1-23

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1.1. claims: 1-6, 9, 11, 13-18, 20, 23

A system (claim 1) for operating a latching assembly used with an oilfield device, comprising: the latching assembly disposed in a housing configured to be positioned below a water surface; a first signal device configured to be disposed below the water surface; and a second signal device coupled with said housing wherein the latching assembly is configured to operate in response to a first signal transmitted from said first signal device to said second signal device, wherein (potential special feature of claim 5) said housing configured to be disposed with a marine riser.

Technical problem: reducing number of trips for installing a marine system.

1.2. claims: 7, 8, 19

System of claim 1, wherein (potential special feature of claim 6 respectively 7) said first signal device is a transmitter, and said second signal device is a receiver, respectively, said first signal device and said second signal device are transceivers.

Technical problem: to provide communication between elements of the system.

1.3. claims: 10, 21

System of claim 1, wherein (potential special feature of claim 10) further comprising: an umbilical line configured to communicate a hydraulic fluid to operate the latching assembly; and a first valve in fluid communication with the latching assembly having a first position allowing flow of said umbilical line hydraulic fluid to the latching assembly, and a second position allowing flow of said first accumulator hydraulic fluid to the latching assembly.

Technical problem: providing hydraulic backup to the latching assembly.

1.4. claims: 12, 22

System of claim 1, wherein (potential special feature of claim 10) further comprising: a secondary piston in the latching assembly in communication with said first accumulator for communicating said first accumulator hydraulic fluid.

Technical problem: to provide a surface independent latching operation.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

2. claims : 24-29

A system for operating a latching assembly used with an oilfield device, comprising: a housing; a valve coupled with said housing and in fluid communication with the latching assembly; an umbilical line configured to communicate a fluid and in fluid communication with said valve; and a first accumulator configured to contain a fluid and in fluid communication with said valve, wherein said valve moveable between a first position to allow a flow of said umbilical line hydraulic fluid to operate the latching assembly and a second position to allow a flow of said first accumulator hydraulic fluid to operate the latching assembly.

3. claims : 30-39

Apparatus for latching an oilfield device, comprising: a housing having a latching assembly; a valve coupled with said housing; a first accumulator coupled with said housing and configured for communicating a fluid from said first accumulator to said latching assembly; and a signal device coupled with said housing and configured for receiving a signal to move said valve from a blocking position to an open position to allow flow of said first accumulator hydraulic fluid to said latching assembly.

4. claims : 40-45

Apparatus for use with an oilfield device, comprising: an active seal; a housing for receiving said active seal; a valve coupled with said housing; a first accumulator coupled with said housing and configured for communicating a fluid from said first accumulator to said active seal; and a signal device coupled with said housing and configured for receiving a signal to move said valve from a blocking position to an open position to allow flow of said first accumulator hydraulic fluid to said active seal.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2011/068111
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