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(54) Title: CORE BARREL RESTRAINT

(57) Abstract: A core barrel restraint adapted to prevent inadvertent dropping of a core barrel assembly during retrieval of a core sample can include a cup adapted to fit over an overshot and a brace adapted to be coupled to a core barrel assembly. A cable can connect the cup and brace and prevent the core barrel from falling if the overshot latch mechanism holding the core barrel assembly and overshot together fails.

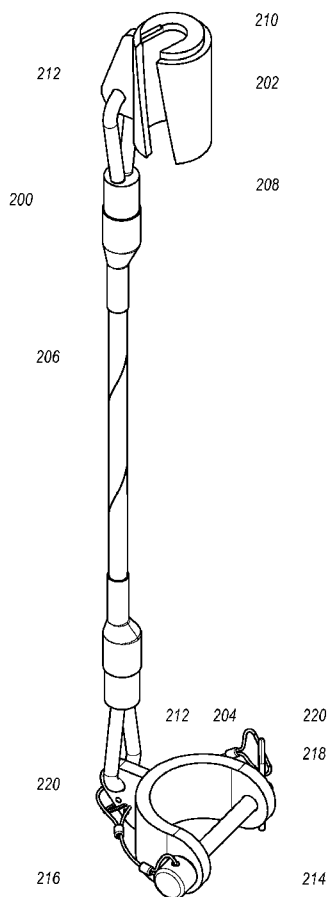


Fig. 3





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, RO, RS, RU, 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.

- (84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, 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).

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

**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))

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

19 April 2012

**A. CLASSIFICATION OF SUBJECT MATTER*****E21B 25/02(2006.01)i***

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 25/02; E21B 49/02; E21B 25/10; E21B 25/00; E21B 9/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords:core barrel, core sample, overshot, latch, core receiver, cable, wire, string, fall, drop, fail, prevent, anti, restrain, control, hole, retract

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                           | Relevant to claim No. |
|-----------|--------------------------------------------------------------------------------------------------------------|-----------------------|
| A         | US 03977482 A (REED; EDWARD W. et al.) 31 August 1976<br>See abstract, columns 3,6, claim 1 and figures 1,4. | 1-16                  |
| A         | US 06006844A A (VAN PUymbROECK; LUC et al.) 28 December 1999<br>See abstract, column 9 and figure 6a.        | 1-16                  |
| A         | US 04588036 A (DESROCHERS; GERARD et al.) 13 May 1986<br>See abstract, column 5, claims 12-14 and figure 1.  | 17-20                 |
| A         | US 2006-0169493 A1 (YUKIO KADOMOTO et al.) 03 August 2006<br>See abstract and claim 1.                       | 1-20                  |



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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/038572**

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                                                                 | Publication<br>date                                                |
|-------------------------------------------|---------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| US 03977482A A                            | 31.08.1976          | None                                                                                       |                                                                    |
| US 06006844A A                            | 28.12.1999          | CA 2158903 C<br>GB 2293395 A<br>GB 2318372 A<br>US 05568838A A                             | 26.07.2005<br>27.03.1996<br>22.04.1998<br>29.10.1996               |
| US 04588036A A                            | 13.05.1986          | None                                                                                       |                                                                    |
| US 2006-0169493 A1                        | 03.08.2006          | JP 03-803338 B2<br>JP 2005-083001 A<br>JP 3803338 B2<br>US 7743827 B2<br>WO 2005-024174 A1 | 12.05.2006<br>31.03.2005<br>02.08.2006<br>29.06.2010<br>17.03.2005 |