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- (81) **Designated States (unless otherwise indicated, for every  
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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,  
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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,  
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LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,  
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**Published:**

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- (88) **Date of publication of the international search report:**  
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(54) **Title:** CHRISTMAS TREE INSTALLATION USING COILED TUBING INJECTOR

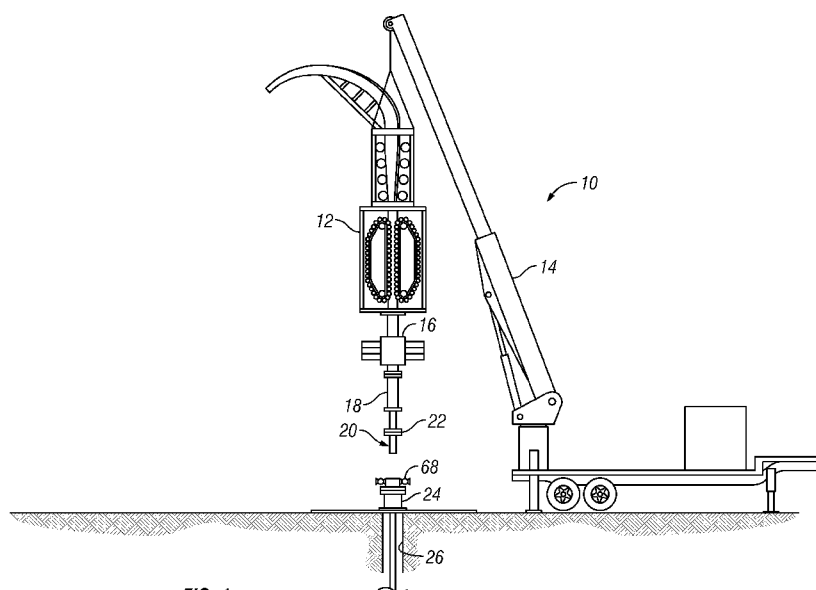


FIG. 1

(57) **Abstract:** A method and system for installing a Christmas tree in place of a blowout preventer on a wellhead. The donut in the wellhead BOP is landed using a coiled tubing injector. Then the wellhead BOP then is removed and the Christmas tree is installed also using the same crane that supported the coiled tubing injector. This employs the coiled tubing rig already in use at the well site for a previous operation, such as plug drilling or perforating and fracturing. Notably, the system provides a second seal, such as a ceramic disk, below the donut, for added safety while the Christmas tree is installed. The tool string used to install the donut includes a safety union so that the tool string can be disconnected after the donut is landed and locked into place.



## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2011/063916****A. CLASSIFICATION OF SUBJECT MATTER****E21B 33/06(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 33/06; E21B 23/14; E21B 33/04; E21B 33/043; E21B 19/10; E21B 19/22; E21B 23/00

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: coiled tubing, tree, blowout preventer

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 1724434 A1 (AZURA ENERGY SYSTEMS, INC.) 22 November 2006 See the abstract, paragraphs [0036]-[0038], and figures 4,5.	1,9,10,15-17 2-8,11-14,18-20
A	US 2009-0277647 A1 (DALLAS L. MURRAY) 12 November 2009 See the abstract, paragraphs [0007]-[0009],[0032],[0039]-[0043], and figures 2,6,7,10.	1-20
A	US 2005-0247456 A1 (LESLIE WISE et al.) 10 November 2005 See the abstract, paragraphs [0002],[0027],[0046],[0062], and figures 2A-3B.	1-20
A	US 05727631 A (BAKER; DWIGHT et al.) 17 March 1998 See the abstract, column 12 lines 20-49, and figures 13-15.	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

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

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"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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Date of mailing of the international search report

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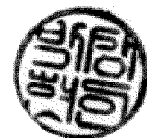
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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

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