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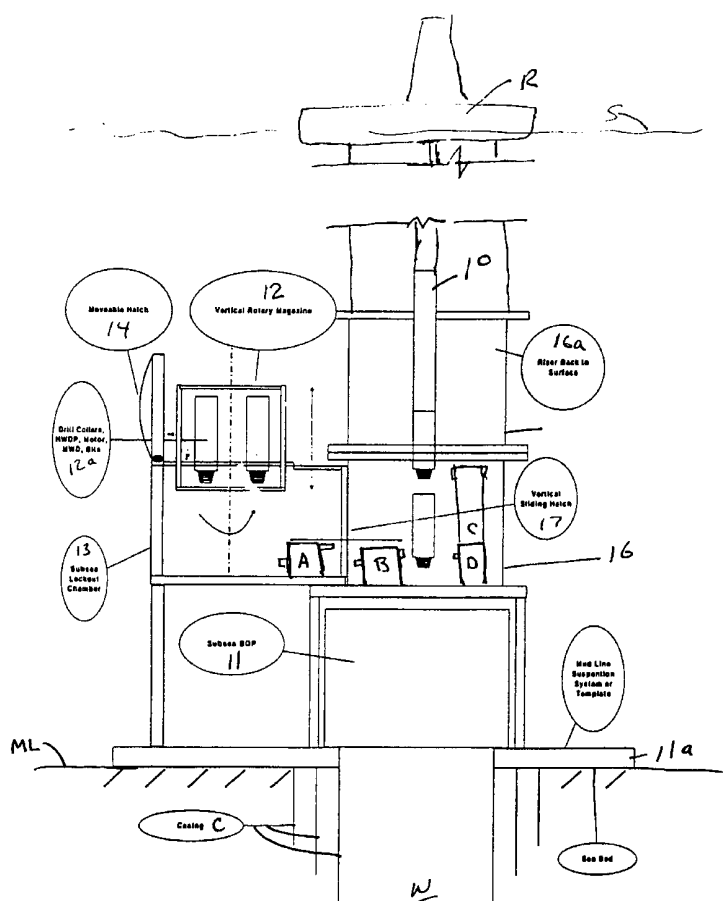
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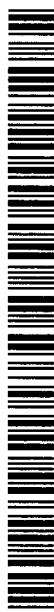
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[Continued on next page]

(54) Title: SUB SEA BOTTOM HOLE ASSEMBLY CHANGE OUT SYSTEM AND METHOD



(57) Abstract: The components required for changing out a bottom hole assembly are stored within a submerged storage chamber (13) adjacent the lower end of a riser (16) extending up from the bottom of a body of water. A vertical, revolving magazine (12) holds the bottom hole assembly components within the storage chamber (13). A pressure lock between the storage chamber (13) and the interior of the riser (16) is opened to permit the bottom hole assembly components in the chamber (13) to be exchanged with those forming the drilling string assembly (10) within the riser (16). The storage chamber (13) may be selectively sealed from the body of water and the internal riser area (16) as the bottom hole assembly components are moved into and out of the chamber (13). A remotely operated mechanism (A, B, C, D) assembles and disassembles the bottom hole assembly components of the drilling string assembly (10).



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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/41890

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : E21B 7/12

US CL : 166/338,356,360,367

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)

U.S. : 166/338-340,356,360,367

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)

EAST: blowout, riser, (chamber or stor\$3), (subsea or submerge\$1 or underwater), magazine\$1

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,201,074 A (COX) 06 May 1980 (06.05.1980), see especially figures 1 and 2 and columns 3-6.	1,7,8,13,14
A	US 4,617,998 A (LANGNER) 21 October 1986 (21.10.1986), see especially figure 1 and columns 5 and 6.	1,7,13
A	US 4,762,185 A (SIMPSON) 09 August 1988 (09.08.1988), see entire document.	1-25

☐ 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 published on or after the international filing date

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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

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document member of the same patent family

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