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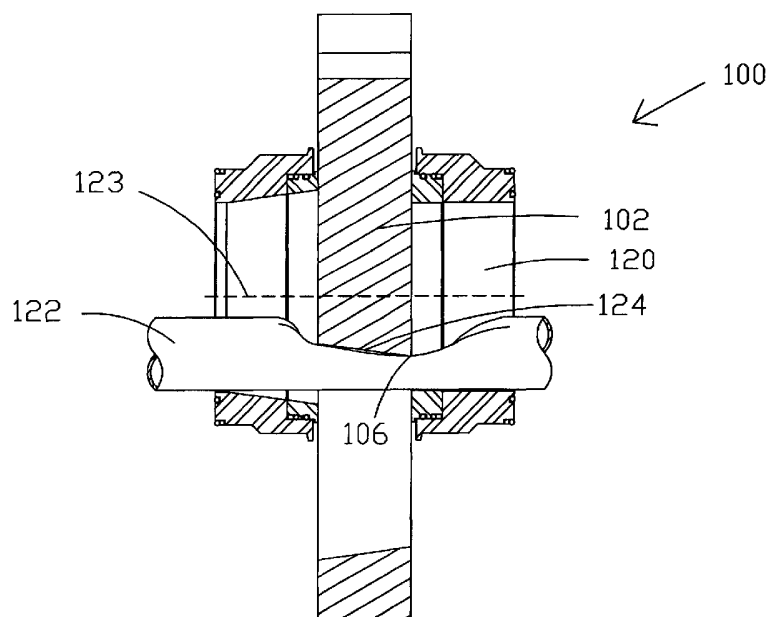
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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR REPLACING BOP WITH GATE VALVE



(57) Abstract: The present invention discloses apparatus and methods for replacing a BOP with a gate valve (10) to thereby save space, initial costs, and maintenance costs that 5 is especially beneficial for use in offshore subsea riser packages. The method provides a gate valve (100) capable of reliably cutting tubing (122) utilizing a cutting edge (106) with an inclined surface (124) that wedges the cut portion of the tubing out of the gate valve body (36). A method and apparatus (150) is provided for determining the actuator force needed to cut the particular size tubing (122).

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :E21B 29/00

US CL :166/361

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. : 166/361,373,376,383,55,55.1,55.2,91.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
none

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

EAST

search terms (pipe or tubing or casing) adj3 (cutter or cutting) gate adj3 valve

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 4,215,749 A (DARE ET AL) 5 August 1980 (05/08/80), see entire document.	1-5,9-16 ----- 6-8
Y	US 5,894,771 A (BRAUN ET AL) 20 April 1999 (20/04/99), see entire document.	6-8

Further documents are listed in the continuation of Box C.

See patent family annex.

<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"G" document member of the same patent family</p>
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