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(54) Title: PROCESS AND DEVICE FOR PRODUCING LNG

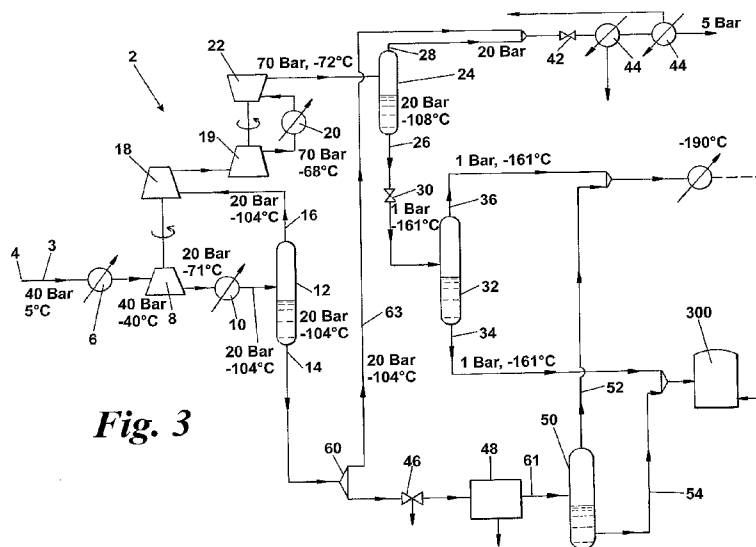


Fig. 3

(57) Abstract: A method for producing Liquefied Natural Gas (LNG) at a Pressure Reduction Station (PRS) comprising the steps of : a) expanding (8) an input stream of natural gas (3) from a gas transmission system; b) separating (12) the input stream of gas into a first liquid stream (14) containing heavy hydrocarbons, and a first gas stream (16) that is rich in methane; c) expanding (22) the first gas stream; d) separating (24) the first gas stream into a spent gas stream (28) and a second liquid steam (26),- e) expanding (30) the second liquid stream; f) separating (32) the second liquid stream (36) into second gas stream and a first LNG product stream (34).

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# INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2007/002358

**A. CLASSIFICATION OF SUBJECT MATTER**  
 INV. F25J1/00 F25J1/02 F17D1/02

*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)  
 F25J F17D

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 practical, search terms used)  
 EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 209 350 B1 (KIMBLE III E LAWRENCE [US]) 3 April 2001 (2001-04-03)	1-10, 15-26, 31-33
Y	figure 1; table 1	11-14, 27-30
X	US 2005/217314 A1 (BAUDAT NED P [US]) 6 October 2005 (2005-10-06)	1-7,9, 10, 15-20, 23-33
Y	figure	11-14,27
X	US 6 125 653 A (SHU STEVEN W [US] ET AL) 3 October 2000 (2000-10-03)	1-10, 15-26, 28,32,33
Y	figure	11,12,27

Further documents are listed in the continuation of Box C.       See patent family annex.

\* Special categories of cited documents :

<p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but 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>*&amp;* document member of the same patent family</p>
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Date of the actual completion of the international search  <b>11 March 2009</b>	Date of mailing of the international search report  <b>08/04/2009</b>
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  <b>Göritz, Dirk</b>
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## INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2007/002358

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	HOLMES ET AL: "Ryan/Holmes cryogenic acid gas/hydrocarbon separations provide economic benefits for LNG production" LNG 7 CONFERENCE, SESSION II, PAPER 10, 1983, pages 1-15, XP009095759 figure 1 -----	11-14, 27-30
Y	US 5 956 971 A (COLE ERIC T [US] ET AL) 28 September 1999 (1999-09-28) figure 3 -----	11,12,27
A	SHEN D M ET AL: "USING GAS PIPELINE PRESSURE TO LIQUEFY NATURAL GAS OR GENERATE ELECTRICITY" HYDROCARBON PROCESSING, GULF PUBLISHING CO. HOUSTON, US, 1 January 2006 (2006-01-01), pages 47-50, XP009064430 ISSN: 0018-8190 the whole document -----	1-33

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB2007/002358

## 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.: 34, 35  
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:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
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:

1.  As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable 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

Continuation of Box II.2

Claims Nos.: 34,35

Rule 6.1(a) PCT and Art. 17(2)(a)(ii)PCT

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2)PCT declaration be overcome.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2007/002358

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6209350	B1	03-04-2001	NONE
US 2005217314	A1	06-10-2005	NONE
US 6125653	A	03-10-2000	NONE
US 5956971	A	28-09-1999	NONE