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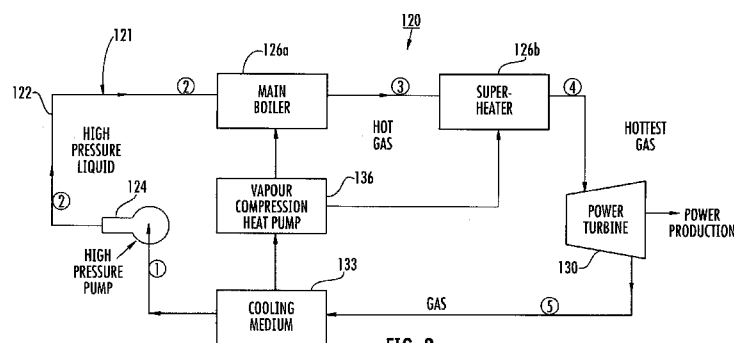


FIG. 3

(57) Abstract: A thermodynamic system and method of producing useful work includes providing a working fluid and a fluid pump for pumping the working fluid in a cycle. A thermal input is provided for supplying heat to the working fluid. An expansion device downstream of the thermal input converts motion of the working fluid to useful work. A heat pump is provided. The heat pump pumps heat from one portion of the working fluid to another portion of the working fluid. For some applications, a regenerator, or recuperator, may be used to transfer heat from a high temperature portion of the working fluid to a lower temperature portion.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/061210**A. CLASSIFICATION OF SUBJECT MATTER****F01K 23/08(2006.01)i, F01K 25/00(2006.01)i, F25B 30/00(2006.01)i, F02G 1/043(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)

F01K 23/08; F01K 23/06; F01K 25/00; F03G 6/00; F24J 2/42; F25B 1/00; S25B 1/06

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

(Chinese Patents and application for patent)

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

eKOMPASS(KIPO internal) & Keywords:Rankine, working fluid, pump, boiler, expansion, heat pump, condenser, evaporator, cycle

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008-0006040 A1 (RICHARD PETERSON et al.) 10 January 2008 See abstract and fig.1	1-49
A	JP 2005-337065 A (TOYOTA INDUSTRIES CORP) 08 December 2005 See paragraphs [0014]-[0018] and fig.1	1-49
A	US 6041604 A (NICODEMUS; MARK) 28 March 2000 See abstract and fig.1	1-49
A	JP 2005-077050 A (SANDEN CORP) 24 March 2005 See paragraphs [0014]-[0016] and fig.1	1-49
A	US 4905481 A (SCARINGE; ROBERT P. et al.) 06 March 1990 See abstract and fig.1	1-49

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

* Special categories of cited documents:

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"&" document member of the same patent family

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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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