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(54) Title: SYSTEM AND METHOD OF CARBON CAPTURE AND SEQUESTRATION

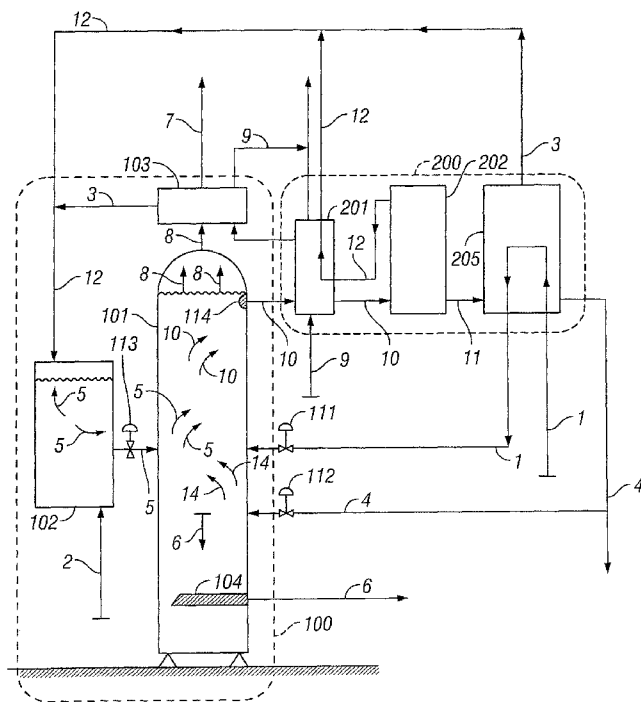


FIG. 1

(57) Abstract: Systems and methods of capturing and sequestering carbon dioxide, comprising mixing a substantially non-aqueous solvent and an alkali such that the solvent and alkali form a solvent suspension, mixing water and a flue gas containing carbon dioxide with the solvent suspension such that a reaction occurs, the reaction resulting in the formation of a carbonate, water and heat.



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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)

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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: carbon dioxide, alkali, methanol, water

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| Y | JP 2002-273163 A (OTSUKI SUSUMU et al.) 24 September 2002 See abstract, figure 1, paragraphs [0006] to [0008], claim 1. | 1,3-7 |
| Y | US 6436174 B1 (GROSSMANN et al.) 20 August 2002 See abstract, figure 1, column 1, lines 40-46, column 2, line 66 to column 3, line 9 and column 7, lines 18-33. | 1,3-7 |
| A | US 4112050 A (SARTORI et al.) 05 September 1978 See abstract, figure 1, column 1, line 56 to column 2, line 6, column 9, lines 10-25, column 22, line 48 to column 23, line 40, column 25, lines 21-34, claim 1. | 1-28 |
| A | US 5100635 A (KRISHNAMURTHY et al.) 31 March 1992 See abstract, figure 1, column 2, lines 57-68, column 3, line 60 to column 4, line 4, column 7, line 3 to column 8, line 10, claims 1 and 10. | 1-28 |
| A | US 4313916 A (JONES et al.) 02 February 1982 See abstract, figures 1, 2 and 5, column 6, lines 8-34, column 7, lines 54-60, column 8, lines 11-13, column 10, lines 17-26, column 12, lines 15-21, column 14, line 37 to column 15, line 9. | 1-28 |

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

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|--|------------------|---|--|
| JP 2002-273163 A | 24.09.2002 | None | |
| US 6436174 B1 | 20.08.2002 | AT 245469 T AU 1999-47764 A1 AU 1999-47764 B2 BR 9911708 A CA 2336043 C CA 2336043-A1 CN 1136031 C0 CN 1307498 A0 DE 19828977 A1 EG 22272 A EP 1091796 A1 EP 1091796 B1 ID 29380 A JP 2002-519171 A JP 2002-519171 T KR 10-0572286 B1 RU 2227060 C2 WO 00/00271 A1 | 15.08.2003 17.01.2000 23.01.2003 20.03.2001 05.05.2009 06.01.2000 28.01.2004 08.08.2001 30.12.1999 31.12.2002 18.04.2001 23.07.2003 30.08.2001 02.07.2002 02.07.2002 19.04.2006 20.04.2004 06.01.2000 |
| US 4112050 A | 05.09.1978 | JP 01-007812 B JP 01-034092 B JP 04-008089 B JP 1159021 A JP 1536105 C JP 1550122 C JP 1732806 C JP 52-005679 A JP 61-071819 A US 4112051 A1 US 4112052 A1 US 4217237 A1 | 10.02.1989 18.07.1989 14.02.1992 22.06.1989 21.12.1989 23.03.1990 17.02.1993 17.01.1977 12.04.1986 05.09.1978 05.09.1978 12.08.1980 |
| US 5100635 A | 31.03.1992 | CA 2046772 C CN 1059294 A0 EP 0469781 A2 EP 0469781 A3 EP 0469781 B1 JP 04-227017 A KR 10-1993-0012039 B1 US 5185139 A1 | 10.09.2002 11.03.1992 05.02.1992 04.11.1992 11.10.1995 17.08.1992 23.12.1993 09.02.1993 |
| US 4313916 A | 02.02.1982 | EP 0020051 A1 EP 0020051 B1 EP 0020051 B1 JP 56-015217 A US 4406867 A1 | 10.12.1980 29.12.1999 07.12.1983 14.02.1981 27.09.1983 |