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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

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(54) Title: REMOVING CARBON DIOXIDE FROM WASTE GAS STREAMS THROUGH CO-GENERATION OF CARBONATE AND/OR BICARBONATE MINERALS

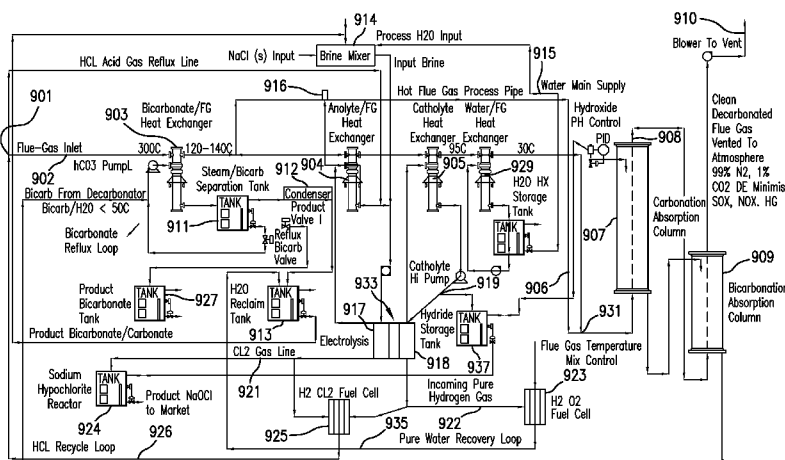


FIG. 1

(57) Abstract: Apparatuses and methods for removing carbon dioxide and other pollutants from a gas stream are provided. The methods include obtaining hydroxide in an aqueous mixture, and mixing the hydroxide with the gas stream to produce carbonate and/or bicarbonate. Some of the apparatuses of the present invention comprise an electrolysis chamber for providing hydroxide and mixing equipment for mixing the hydroxide with a gas stream including carbon dioxide to form an admixture including carbonate and/or bicarbonate.

WO 2009/039445 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/077122

A. CLASSIFICATION OF SUBJECT MATTER
INV. B01D53/62

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)
B01D

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/034339 A (JONES JOE DAVID [US]) 30 March 2006 (2006-03-30)	5, 10, 11
A	page 12, line 20 - line 14; figure 1	1, 9

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 document but published on or after the international filing date
- *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)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *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.
- *Z* document member of the same patent family

Date of the actual completion of the international search

21 October 2009

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30/10/2009

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/077122

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.:
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:

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:

see additional sheet

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.:

1-33

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

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11

A method and an apparatus for removing carbon dioxide from a gas stream

2. claims: 12-20

A method of separating heavy metals from water in a flue gas condensate

3. claims: 21-26

A method of recycling chlorine gas from a process in which carbon dioxide is removed from a gas stream at a power plant

4. claims: 27-33

A method of producing hydrochloric acid from a process in which carbon dioxide is removed from a gas stream of a power plant

5. claims: 34-42

A method of removing carbon dioxide from a gas stream of a power plant

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2008/077122

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006034339 A	30-03-2006	AU 2005286729 A1	30-03-2006
		BR PI0515909 A	12-08-2008
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		EP 1830945 A1	12-09-2007
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