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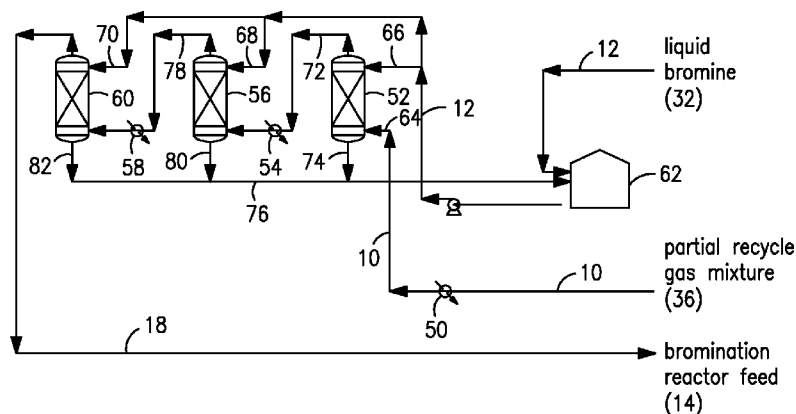
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[Continued on next page]

(54) Title: VAPORIZATION OF LIQUID HALOGEN BY CONTACT WITH A PREHEATED GAS

**FIG. 3**

(57) Abstract: A method is provided for vaporizing a liquid elemental halogen. A heating gas is preheated in the absence of halogen to a preheat temperature which results in a preheated heating gas. The preheated heating gas is directly contacted with a feed of a liquid elemental halogen and heats the feed to a vaporizing temperature sufficient to vaporize at least a portion of the feed to a quantity of an elemental halogen vapor. A gas mixture results which includes the heating gas and the quantity of the elemental halogen vapor.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - C01B 7/09, C07C 1/30, C07C 2/00, C07C 17/00 (2013.01)

USPC - 423/500; 570/101

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)

USPC -- 423/500; 570/101

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC -- 423/500; 570/101, 570/253, 570/254, 570/255; 585/641

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

PatBASE; Google

Search Terms: vaporizing liquid bromine, methane, heating gas, preheated, pre-heater, zone, stage, fractionation, bromination, olefin, liquid hydrocarbon, higher molecular weight hydrocarbons, water

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/0247796 A1 (Waycuilis et al.) 01 Oct 2009 (01.10.2009), entire document especially Abstract, para [0134]-[0136], [0047], [0126], [0045], [0121], [0117], [0134], [0135], [0144], [0054], [0176] and [0070]	1-29
A	US 2007/0238909 A1 (Gadewar et al.) 11 Oct 2007 (11.10.2007), entire document	1-29
A	US 2011/218372 A1 (Waycuilis et al.) 08 Sep 2011 (08.09.2011), entire document	1-29
A	US 7,348,464 B2 (Waycuilis et al.) 25 Mar 2008 (25.03.2008), entire document	1-29
A	US 4,626,607 A (Jacquinot et al.) 02 Dec 1986 (02.12.1986), entire document	1-29

☐ Further documents are listed in the continuation of Box C.


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