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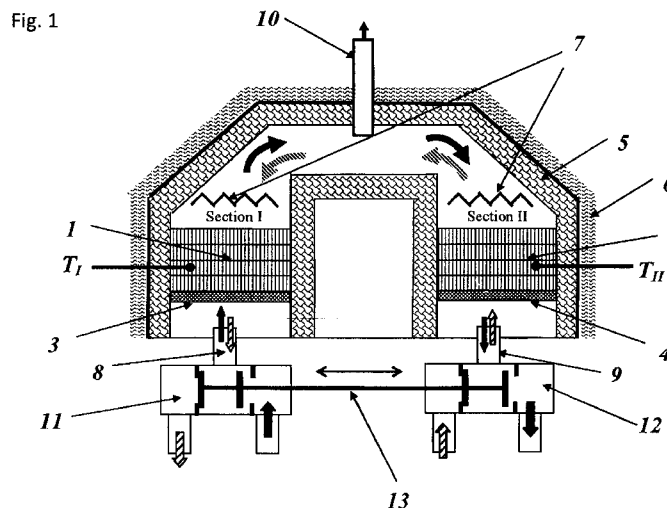
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[Continued on next page]

(54) Title: METHOD FOR UTILIZATION OF LOW-CONCENTRATION GAS MIXTURES OF COMBUSTIBLE GAS AND AIR WITH STABLE HEAT ENERGY RECOVERY AND FLOW REVERSAL DEVICE FOR IMPLEMENTATION OF THE METHOD



(57) Abstract: The invention refers to the method for the utilization of low-concentration mixtures of a combustible gas and air with the stable recovery of heat and the flow-reversal device for the embodiment of the method. The method consists in the combustion, with heat recovery, of the mixtures in the flow-reversal device having at least a single pair of combustion sections, each of which has the structural packing of monolith blocks with small channels characterized by low pressure drop, provided with an internal heating device, temperature and composition sensors and the elements of the automatic control system, supplied with the low-concentration mixture with the combustible component and connected with the heat recovery apparatus through the pipeline, wherein the quantity of energy transferred in the heat recovery apparatus (22) is stabilized by supplying additional fuel to the flow-reversal device, selecting the flow reversal moment, and selecting the flow rate for hot gas supplied by the pipeline to the heat recovery apparatus (22). Additional fuel in the form of highly concentrated fuel mixture is introduced as an admixture to the stream of low concentrated mixture containing the combustible component, supplied to the flow-reversal device or to the internal heating device (7). The device according to the

[Continued on next page]





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invention, in its combustion sections (I, II) is provided with symmetrical temperature sensors (T_i , T_{ii}) and an additional supply of highly concentrated combustible mixture (17) connected to the supply system for low-concentration mixture (15) with the combustible component or to the internal heating device (7). The combustion sections (I, II) are packed with heat-accumulating material (1, 2) of small porosity of the specific surface area below $30 \text{ m}^2/\text{g}$, and advantageously below $1 \text{ m}^2/\text{g}$.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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ADD.
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)
F23G

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 practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Date of the actual completion of the international search 3 January 2013	Date of mailing of the international search report 10/01/2013
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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 Coli, Enrico
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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