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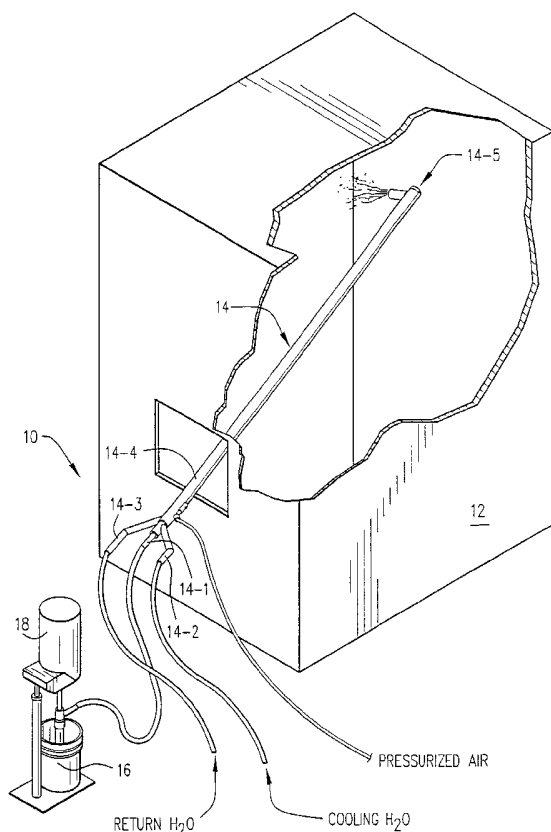
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[Continued on next page]

(54) Title: SYSTEMS AND METHODS FOR THE HIGH TEMPERATURE APPLICATION OF PUMPABLE FIBROUS REFRACTORY MATERIAL



(57) Abstract: Systems (10) and methods are provided whereby pumpable viscous fibrous material may be applied onto surfaces of high temperature process vessels (12) while hot (i.e., while at or near such vessels' high operational temperatures of several hundreds up to several thousands of degrees Fahrenheit). More specifically, there are preferably provided a lance (14,30) having a nozzle structure (14-5) at a distal end thereof, and a pump system (18) for pumping a pumpable fibrous refractory material to the nozzle (14-5). The lance (14) has a length sufficient to allow it to be inserted into the high temperature process vessel (12) so that the nozzle structure (14-5) is adjacent an area in need of repair while an operator holds a proximal end thereof outside the vessel (12). In use, the lance (14,30) is inserted into the process vessel (12) while the process vessel (12) is at or near its high operational temperature so that the nozzle structure (14-5) is positioned adjacent to an area of the process vessel wall in need of repair, and so that the lance (14,30) may be manipulated from outside the process vessel (12) during repair of the wall thereof. Manipulating the lance (14,30) from outside the process vessel will thereby cause the atomized spray of the fibrous material to contact the wall of the process vessel (12) thereby repairing the same.



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B. FIELDS SEARCHED

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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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3 957 203 A (HARAN W BULLARD)	1,6,10,
A	18 May 1976 (1976-05-18)	11,13,17
	claims; figure 2	7,14
Y	US 3 413 385 A (T.KOMAC)	1,6,10,
A	26 November 1968 (1968-11-26)	11,13,17
	claims; figure 1	2,8
A	US 5 976 632 A (J.GERBER)	
	2 November 1999 (1999-11-02)	

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

☒ Patent family members are listed in annex.

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8 document member of the same patent family

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3957203	A	18-05-1976	JP 51040631 A AU 8287875 A BE 831445 A1 CA 1049776 A1 CS 185237 B2 DE 2531986 A1 ES 439623 A1 FR 2279532 A1 GB 1519335 A IT 1041316 B PL 120664 B1 SU 727164 A3	05-04-1976 13-01-1977 16-01-1976 06-03-1979 15-09-1978 05-02-1976 01-06-1977 20-02-1976 26-07-1978 10-01-1980 31-03-1982 05-04-1980
US 3413385	A	26-11-1968	NONE	
US 5976632	A	02-11-1999	AU 725575 B2 AU 6551598 A CA 2204330 A1 EP 0971797 A1 WO 9840168 A1	12-10-2000 29-09-1998 13-09-1998 19-01-2000 17-09-1998