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(71) Applicant: **The Babcock & Wilcox Company**
Barberton, OH 44203-0351 (US)

(72) Inventor: **Harth, George H., III**
Wadsworth
OH 44281 (US)

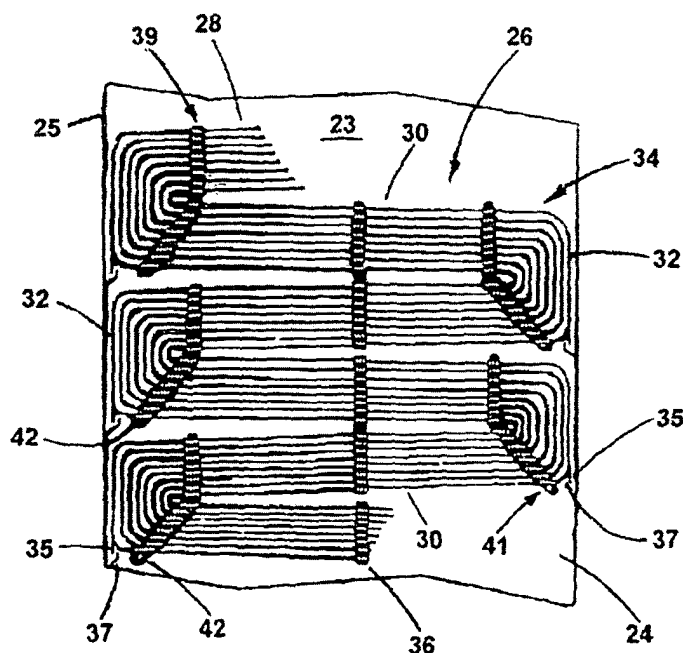
(74) Representative: **Meldrum, David James et al**
D Young & Co
120 Holborn
London EC1N 2DY (GB)

(54) **Heat exchanger framework**

(57) A structural framework (39) for supporting the heat exchanger (26) of a steam generator (10), the former being comprised of serpentine tubes (28) having sloped segments (30) to facilitate the drainage of water from the heat exchanger (26) when the steam generator (10) is shutdown. The structural framework (39) includes paired groups of vertically and diagonally extending first support members (35) contiguously straddling the sloped-tube segments (30). The paired first support members (35)

are rigidly connected by second support members (38) which extend between adjacent sloped-tube segments (30). The structural framework (39) preserves the spacing between the sloped-tube segments (30) and prevents direct contact between adjoining tube surfaces, but is not attached to the straddled tube segments and, thus, provides a tube supporting fit that is loose enough to permit the tubes (28) to move freely due to expansion and contraction at different rates from that of the structural framework (39).

FIG. 2





EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 1 496 443 A (BABCOCK & WILCOX CO) 30 December 1977 (1977-12-30)	1-4,7-12	INV. F22B37/20 F28F9/013 F22G7/14 F28D7/08
Y	* figures 1-5 * * page 1, line 91 - page 3, line 5 * -----	5,6,13, 14	
X	US 6 244 330 B1 (EISINGER FRANTISEK L [US] ET AL) 12 June 2001 (2001-06-12) * figures 1,2,3a-c * * column 2, line 45 - column 3, line 62 * -----	1-4,7-12	
Y	GB 2 180 046 A (WESTINGHOUSE ELECTRIC CORP) 18 March 1987 (1987-03-18) * figures 3d,5 * -----	5,6,13, 14	
A	US 6 158 221 A (FANCHER DAVID H [US] ET AL) 12 December 2000 (2000-12-12) * figures 1,5 * * column 7, line 40 - line 47 * -----	1,7	
A	JP 62 248996 A (BABCOCK HITACHI KK) 29 October 1987 (1987-10-29) * the whole document * -----		TECHNICAL FIELDS SEARCHED (IPC) F22B F28F F22G F28D
A	US 4 480 594 A (SULLIVAN ROBERT P [US] ET AL) 6 November 1984 (1984-11-06) * the whole document * -----		
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 1 July 2009	Examiner Lepers, Joachim
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 25 2836

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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01-07-2009

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
GB 1496443	A	30-12-1977	AU	7934575 A	23-09-1976
			BE	826937 A1	22-09-1975
			CA	997232 A1	21-09-1976
			DK	116075 A	21-09-1975
			FI	750833 A	21-09-1975
			IN	144993 A1	12-08-1978
			IT	1032383 B	30-05-1979
			JP	1304602 C	28-02-1986
			JP	50125102 A	01-10-1975
			JP	60020644 B	23-05-1985
			NL	7503332 A	23-09-1975
			US	3929189 A	30-12-1975
			ZA	7501771 A	31-03-1976

US 6244330	B1	12-06-2001	NONE		

GB 2180046	A	18-03-1987	IT	1197135 B	25-11-1988
			JP	62056791 A	12-03-1987
			US	4665866 A	19-05-1987

US 6158221	A	12-12-2000	NONE		

JP 62248996	A	29-10-1987	NONE		

US 4480594	A	06-11-1984	CA	1234024 A1	15-03-1988
			IN	161607 A1	02-01-1988
			JP	1730224 C	29-01-1993
			JP	4018205 B	27-03-1992
			JP	60188704 A	26-09-1985
