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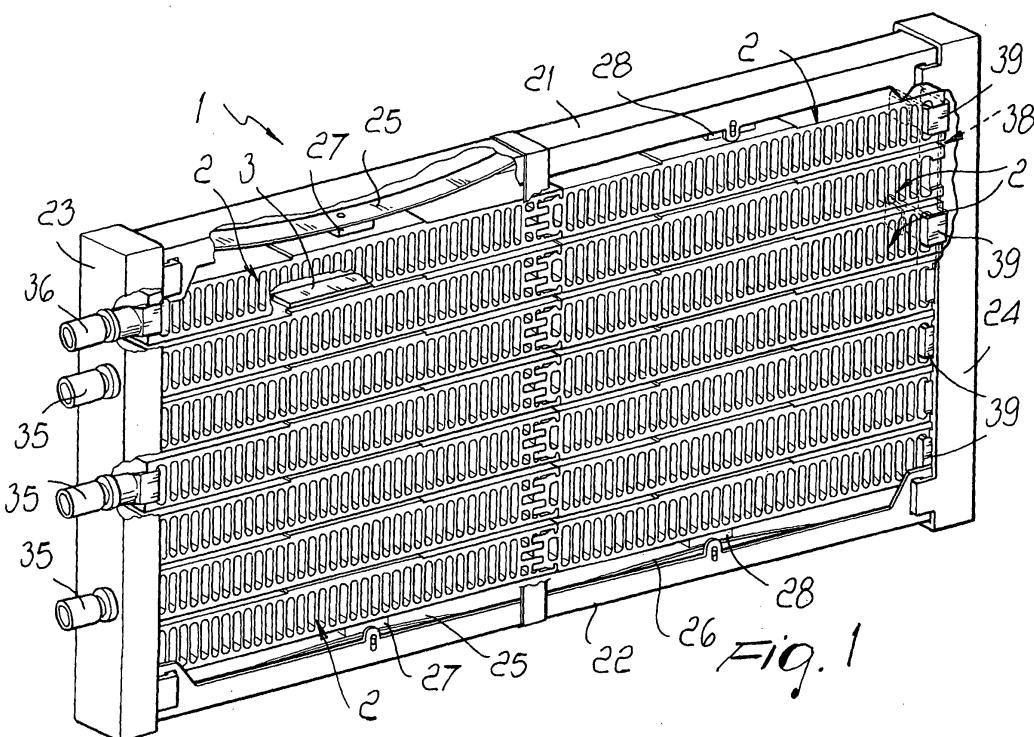
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(54) Electric heater with ptc elements, particularly for motor vehicle cabin ventilation systems

(57) An electric heater with PTC elements, particularly for motor vehicle cabin ventilation systems, comprising at least one radiating element (2) and at least one PTC element (3) that can be supplied with electric power and is adapted to transmit heat to the radiating

element (2), the radiating element comprising an extruded body that has a plurality of fins (4) in order to increase its heat exchange surface, the provision of the radiating element (2) as an extruded body producing greater compactness, better efficiency in transmission of the generated heat, and simpler assembly of the heater.





DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)						
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim							
X	DE 92 18 708 U (TUERK & HILLINGER GMBH) 16 February 1995 (1995-02-16) * page 2 - page 3; figure 1 * -----	1,2,4,9, 10,14,15	H05B3/14 H05B3/50 F24H3/04 F24H9/18 B60H1/22						
X	EP 0 464 955 A (TEXAS INSTRUMENTS INC ; TEXAS INSTRUMENTS HOLLAND (NL)) 8 January 1992 (1992-01-08) * column 3, line 44 - column 4, line 31; claim 1; figures 1,2,4,5 * -----	1-12,14, 15							
X	US 4 414 052 A (HABATA ETSUROH ET AL) 8 November 1983 (1983-11-08) * column 5, line 9 - line 20; figures 5-8 * -----	1,2,4,10							
X	EP 0 368 206 A (NICHISERA KK ; MITSUBISHI ALUMINIUM (JP)) 16 May 1990 (1990-05-16) * column 1, line 29 - line 34; figure 18 * * column 6, line 10 - line 42; figure 5c * -----	1,2							
X	US 4 352 008 A (HOEFER EDWIN ET AL) 28 September 1982 (1982-09-28) * column 3, line 56 - column 4, line 3; figure 3 * -----	1,2	TECHNICAL FIELDS SEARCHED (Int.Cl.7)						
X	PATENT ABSTRACTS OF JAPAN vol. 018, no. 195 (E-1533), 5 April 1994 (1994-04-05) -& JP 06 005353 A (MATSUSHITA ELECTRIC IND CO LTD), 14 January 1994 (1994-01-14) * abstract; figure 3 * -----	1,2	H05B F24H B60H						
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>Munich</td> <td>13 October 2004</td> <td>Gea Haupt, M</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	Munich	13 October 2004	Gea Haupt, M
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Munich	13 October 2004	Gea Haupt, M							
CATEGORY OF CITED DOCUMENTS		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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ON EUROPEAN PATENT APPLICATION NO.

EP 03 01 1155

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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-10-2004

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
DE 9218708	U	16-02-1995	DE	4215498 A1	25-11-1993
			DE	9218708 U1	16-02-1995
EP 0464955	A	08-01-1992	NL	9001518 A	03-02-1992
			AT	98362 T	15-12-1993
			DE	69100740 D1	20-01-1994
			DE	69100740 T2	24-03-1994
			EP	0464955 A1	08-01-1992
US 4414052	A	08-11-1983	JP	1028468 B	02-06-1989
			JP	1546576 C	28-02-1990
			JP	57109283 A	07-07-1982
			JP	1497975 C	29-05-1989
			JP	57109286 A	07-07-1982
			JP	63046547 B	16-09-1988
			DE	3151109 A1	08-07-1982
			GB	2090710 A ,B	14-07-1982
			US	4482801 A	13-11-1984
EP 0368206	A	16-05-1990	JP	2116077 C	06-12-1996
			JP	2191303 A	27-07-1990
			JP	8010643 B	31-01-1996
			JP	2116076 C	06-12-1996
			JP	2126602 A	15-05-1990
			JP	8010642 B	31-01-1996
			JP	2153868 A	13-06-1990
			CA	2002319 A1	07-05-1990
			DE	68917259 D1	08-09-1994
			DE	68917259 T2	05-01-1995
			EP	0368206 A2	16-05-1990
			US	5077889 A	07-01-1992
US 4352008	A	28-09-1982	DE	2902909 A1	31-07-1980
			FR	2447625 A1	22-08-1980
			GB	2042856 A ,B	24-09-1980
			NL	8000458 A ,B,	29-07-1980
JP 06005353	A	14-01-1994	JP	3063395 B2	12-07-2000