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McClintock et al.

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[54] ELECTRIC SEAT HEATER

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5,414,245	5/1995	Hackleman .	
5,432,322	7/1995	Ingram et al. .	
5,565,124	10/1996	Balzano .	
5,582,754	12/1996	Smith et al. .	
5,652,019	7/1997	Moran .	
5,763,053	6/1998	Isen et al.	428/208
5,763,058	6/1998	Isen et al.	428/208

FOREIGN PATENT DOCUMENTS

2640482 6/1990 France .

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[51] **Int. Cl.**⁷ **H05B 1/00**

[52] **U.S. Cl.** **219/217; 219/452; 219/549; 219/543; 219/202; 165/41; 297/180; 428/208**

[58] **Field of Search** 165/41, 42; 219/217, 219/202, 494, 528, 549, 543, 553; 338/308, 314; 297/452.55, 468, 218.1, 180; 428/209, 901

[57] ABSTRACT

A heated vehicle seat is brought forth which includes a first bus bar of conductive ink applied to either the vehicle seat cushion or to its cover. The conductive ink can be applied directly to the seat cushion or cover, or the conductive ink can be applied to a noncellulosic fabric substrate which is then connected with the seat cushion or cover. A second bus bar of conductive ink is also applied. Between and connecting the two bus bars is a resistive pattern of a conductive ink. The heated vehicle seat has a high thermal reaction time and generates heat at a position closer to the vehicle seat occupant.

[56] References Cited

U.S. PATENT DOCUMENTS

3,136,577	6/1964	Richard	297/180
4,640,340	2/1987	Noda et al.	165/41
4,697,064	9/1987	Altmann et al.	219/217
4,711,496	12/1987	Lathers et al.	297/452
4,827,103	5/1989	Asp	219/217
4,912,306	3/1990	Grise et al.	219/549
5,229,582	7/1993	Graham .	

31 Claims, 4 Drawing Sheets

