

Title (en)
IMPROVEMENTS RELATING TO ELECTRIC HEATING ELEMENTS

Title (de)
VERBESSERUNGEN AN ELEKTRISCHEN HEIZELEMENTEN

Title (fr)
AMELIORATION D'ELEMENTS DE CHAUFFAGE ELECTRIQUES

Publication
EP 1145598 B1 20030716 (EN)

Application
EP 99939537 A 19990812

Priority
• GB 9902664 W 19990812
• GB 9817594 A 19980812

Abstract (en)
[origin: WO0010364A2] Thick film heating elements can cause problems if associated water heating vessels are used on a sloping surface so that if the vessel boils dry an elevated part of the heating element is first exposed to overheating and self-destructs. To protect against this the invention proposes to divide the heating element track into parallel-connected main heater and sensor portions, the sensor portion surrounding the main heater portion and comprising a plurality of parallel-connected track portions having NTCR (negative temperature coefficient of resistance) characteristics and connected in series therewith a track portion having a PTCR (positive temperature coefficient resistance) characteristic. By virtue of this arrangement, if one of the NTCR track portions begins to boil dry, so its temperature will increase and its resistance reduce so that more current flow through the PTCR track portion and its temperature rises. With a bimetallic thermally-responsive control arranged to sense the temperature of the PTCR track portion and to switch off at least the main heater portion if it overheats, effective control of the heater operation can be achieved by use of a bimetallic control.

IPC 1-7
H05B 3/14; H05B 3/26; H05B 3/28

IPC 8 full level
H05B 1/02 (2006.01)

CPC (source: EP)
H05B 1/0213 (2013.01); **H05B 1/0269** (2013.01); **H05B 2203/013** (2013.01); **H05B 2203/017** (2013.01); **H05B 2203/019** (2013.01); **H05B 2203/02** (2013.01)

Designated contracting state (EPC)
AT BE CH CY DE DK ES FI FR GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)
WO 0010364 A2 20000224; **WO 0010364 A3 20011108**; AT E245335 T1 20030815; AU 5380699 A 20000306; CN 1143596 C 20040324; CN 1344482 A 20020410; DE 69909654 D1 20030821; DE 69909654 T2 20040415; EP 1145598 A2 20011017; EP 1145598 A3 20020911; EP 1145598 B1 20030716; GB 2340713 A 20000223; GB 2340713 B 20030312; GB 9817594 D0 19981007

DOCDB simple family (application)
GB 9902664 W 19990812; AT 99939537 T 19990812; AU 5380699 A 19990812; CN 99812063 A 19990812; DE 69909654 T 19990812; EP 99939537 A 19990812; GB 9817594 A 19980812