

Title (en)

Heater with PTC and fixed resistance elements

Title (de)

Heizelement versehen mit PTC und feststehenden Widerstandelemente

Title (fr)

Élément de chauffage constitué d'éléments PTC et résistifs fixés

Publication

EP 1001655 A2 20000517 (EN)

Application

EP 99308933 A 19991109

Priority

US 18938298 A 19981109

Abstract (en)

A heater (10) includes a relatively fixed resistance heating element (14) for providing a greater heating rate at lower ambient temperatures and/or high heat transfer environments. The heater further includes a relatively variable resistance heating PTC (positive temperature coefficient) element (23, 25) which has a resistance which increases in response to increased temperature, thereby providing self-regulation by way of reduced heat at increased temperatures. The relatively fixed (14) and variable resistance heating elements (23, 25) are typically provided on opposite sides of a heating pad (12), but may be separated by a dielectric layer (26) and both formed on a single side of the heating pad (12). <IMAGE>

IPC 1-7

H05B 3/34

IPC 8 full level

H01C 7/02 (2006.01); **H05B 3/00** (2006.01); **H05B 3/14** (2006.01); **H05B 3/34** (2006.01); **H05B 3/84** (2006.01)

CPC (source: EP KR)

H05B 3/00 (2013.01 - KR); **H05B 3/14** (2013.01 - EP); **H05B 3/146** (2013.01 - EP); **H05B 3/34** (2013.01 - EP); **H05B 3/845** (2013.01 - EP); **H05B 2203/003** (2013.01 - EP); **H05B 2203/006** (2013.01 - EP); **H05B 2203/011** (2013.01 - EP); **H05B 2203/013** (2013.01 - EP); **H05B 2203/02** (2013.01 - EP)

Cited by

CN112555975A; EP3532762A4; US7205510B2; WO02060309A1; US7306283B2; WO2004047493A1

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

EP 1001655 A2 20000517; AU 5832199 A 20000525; BR 9907538 A 20000822; CA 2289142 A1 20000509; JP 2000150114 A 20000530; KR 20000035181 A 20000626

DOCDB simple family (application)

EP 99308933 A 19991109; AU 5832199 A 19991105; BR 9907538 A 19991109; CA 2289142 A 19991108; JP 31657699 A 19991108; KR 19990048284 A 19991103