

Title (en)  
Heating device

Title (de)  
Heizvorrichtung

Title (fr)  
Dispositif de chauffage

Publication  
**EP 2533604 A1 20121212 (DE)**

Application  
**EP 12165179 A 20120423**

Priority  
DE 202011101651 U 20110610

Abstract (en)  
The device (1) has heating elements (3) with heating layers (4) arranged on a planar substrate, where the layers are heated by supplying electricity. Gas or air stream is passed through a jacket pipe (2), where the substrate and the pipe are made of poor heat conducting particle foam e.g. polystyrene and/or polypropylene particle foam. Plates are arranged within the pipe such that a plate plane is arranged parallel to a flow direction. The heating layers are made of plastic filled with carbon nanotubes, rubber, tetrahydrofuran, graphite and/or polyurethane.

Abstract (de)  
Die vorliegende Erfindung betrifft eine Heizvorrichtung mit einem Heizelement (3) mit flächigem Substrat und darauf angeordneter, durch elektrische Bestromung erhitzbarer Heizschicht (4), wobei das Substrat aus einem schlecht wärmeleitenden Partikelschaumstoff besteht.

IPC 8 full level  
**H05B 3/34** (2006.01)

CPC (source: EP)  
**H05B 3/34** (2013.01); **H05B 2203/013** (2013.01); **H05B 2203/022** (2013.01); **H05B 2214/04** (2013.01)

Citation (applicant)  
EP 1348316 B1 20100310 - BRAINCOM AG [DE]

Citation (search report)  
• [X] US 4060710 A 19771129 - REUTER FRANZ GOTTFRIED, et al  
• [X] US 2005244587 A1 20051103 - SHIRLIN JACK W [US], et al  
• [X] CA 2500588 A1 20060921 - ZHANG YONGGANG Y Z [CA], et al  
• [X] DE 19823506 A1 19991209 - LATEC AG ZOLLIKON [CH]  
• [A] DE 8502450 U1 19850515  
• [A] DE 4213510 C1 19930819

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**DE 202011101651 U1 20111111**; EP 2533604 A1 20121212; EP 2533604 B1 20170614; PL 2533604 T3 20171130

DOCDB simple family (application)  
**DE 202011101651 U 20110610**; EP 12165179 A 20120423; PL 12165179 T 20120423