

Title (en)

Automated cooking appliance and a method of automated control of the cooking process

Title (de)

Automatisches Kochgerät und Verfahren zur automatischen Steuerung des Kochvorgangs

Title (fr)

Appareil de cuisson automatique et procédé de régulation automatique du processus de cuisson

Publication

EP 2908601 B1 20161130 (EN)

Application

EP 14460004 A 20140217

Priority

EP 14460004 A 20140217

Abstract (en)

[origin: EP2908601A1] An automated cooking appliance comprises at least one sensor (1) of mechanical or acoustic vibrations, which is a 3D accelerometer (1A), operating in three dimensions and converting them into electric signals. The cooking appliance can comprise a cooking plate (2) and/or an oven (4). At least one heating device (3) is mounted beneath the cooking plate and/or in the oven. One or more vibration sensors (1, 1A) are mounted on the corners of the bottom side of the cooking plate, in physical contact with the plate. Two sensors (1, 1A) are mounted diagonally on two opposite corners, while three or four sensors (1, 1A) are mounted on three or four corners of the cooking plate, respectively. Preferably all sensors (1) are the 3D accelerometers (1A). Optionally at least one sensor (1) is a microphone (1M), capable to detect audible sounds and/or ultrasounds and to convert them into electric signals. This microphone (1M) can be placed on the side wall, ceiling, bottom or door of the oven, or under the plate. It can be connected acoustically with the interior of the oven by an acoustic channel (5). All vibration/acoustic sensors (1, 1A, 1M) are connected through the analogue or digital filter (6) to the processing unit (7) provided with the memory (8). The output of the processing unit is connected to the control unit (9) controlling the cooking appliance. The filtered signals are compared with the waveforms stored in the memory (8). A method of automated control of the cooking process is proposed, where the identification of the controlled heater mounted beneath the cooking plate when more than one heating device is switched-on is based on selective switching-off and switching-on of the heating devices for short periods of time that do not disturb the food processing, with simultaneous analysis of registered vibration/acoustic signals. The phase of the cooking process is determined from temporal evolution of the 3D vector of vibration/acoustic signal and/or from the temporal evolution of the waveforms extracted from the 3D vector analysed in the time domain.

IPC 8 full level

F24C 7/08 (2006.01); **F24C 3/12** (2006.01); **F24C 15/10** (2006.01); **H05B 1/02** (2006.01); **H05B 6/06** (2006.01)

CPC (source: EP)

F24C 7/082 (2013.01); **H05B 1/0263** (2013.01); **H05B 1/0266** (2013.01); **H05B 6/062** (2013.01)

Citation (examination)

WO 2007132674 A1 20071122 - MATSUSHITA ELECTRIC IND CO LTD [JP], et al

Cited by

CN111853869A; CN111480034A; AU2020409316B2; CN113133636A; US10520199B2; US11674691B2

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

DOCDB simple family (publication)

EP 2908601 A1 20150819; **EP 2908601 B1 20161130**; DK 2908601 T3 20170213; PL 2908601 T3 20170428

DOCDB simple family (application)

EP 14460004 A 20140217; DK 14460004 T 20140217; PL 14460004 T 20140217