

Title (en)

Vacuum furnace for the thermal treatment of metallic workpieces.

Title (de)

Vakuuofen zur Wärmebehandlung metallischer Werkstücke.

Title (fr)

Four à vide pour le traitement thermique de pièces métalliques.

Publication

EP 0483596 B1 19940914 (DE)

Application

EP 91117616 A 19911016

Priority

DE 4034085 A 19901026

Abstract (en)

[origin: EP0483596A1] The vacuum furnace (1) contains a thermally insulated treatment chamber (5), in which the workpieces are arranged on a charge support (30) inside the useful space (27). Outside the treatment chamber, there is a blower (19) for gas circulation and a heat exchanger (26) for gas cooling. The workpieces are heated by heating pipes (31) which are arranged around the useful space inside the treatment chamber. The heating pipes serve simultaneously as gas supply pipes in the convective heating of the workpieces and the subsequent gas chilling. To this end, the gas supply pipes are provided in the region of the useful space with radial openings (32). The furnace guarantees a particularly homogeneous chilling of the workpieces in the entire useful space by an intermediate bottom (10) with a central gas passage opening (11) for optimising the flow conditions and by the possibility of blowing onto the workpieces simultaneously radially and axially, it being possible periodically to change the direction of the axial blowing. To this end, the gas supply pipes are equipped with additional gas outlet openings (34, 35) and closure elements (36, 37) and the walls of the treatment chamber are provided with closable gas outlet openings (13, 15). <IMAGE>

IPC 1-7

F27B 15/06; C21D 1/773

IPC 8 full level

C21D 1/767 (2006.01); **C21D 1/773** (2006.01); **F27B 5/04** (2006.01); **F27B 5/05** (2006.01); **F27B 5/16** (2006.01); **F27B 15/06** (2006.01); **F27D 7/04** (2006.01); **F27B 5/06** (2006.01); **F27B 5/14** (2006.01)

CPC (source: EP)

C21D 1/767 (2013.01); **C21D 1/773** (2013.01); **F27B 5/04** (2013.01); **F27B 5/16** (2013.01); **F27B 2005/062** (2013.01); **F27B 2005/146** (2013.01); **F27B 2005/165** (2013.01); **F27B 2005/167** (2013.01)

Cited by

FR2695716A1; ES2065840A2; FR3102547A1; CN114599803A; US11598580B2; WO2021078520A1; WO2019138134A1

Designated contracting state (EPC)

AT BE CH DE DK ES FR GB GR IT LI LU NL SE

DOCDB simple family (publication)

EP 0483596 A1 19920506; EP 0483596 B1 19940914; AT E111589 T1 19940915; CS 324991 A3 19920513; CZ 282179 B6 19970514; DE 4034085 C1 19911114; DE 59102927 D1 19941020; YU 169091 A 19941115

DOCDB simple family (application)

EP 91117616 A 19911016; AT 91117616 T 19911016; CS 324991 A 19911025; DE 4034085 A 19901026; DE 59102927 T 19911016; YU 169091 A 19911023