

Title (en)

Heat exchange tube structured on both sides and process for making same

Title (de)

Beidseitig strukturiertes Wärmeaustauscherrrohr und Verfahren zu dessen Herstellung

Title (fr)

Tube d'échangeur de chaleur structuré des deux côtés et son procédé de fabrication

Publication

EP 1312885 B1 20051019 (DE)

Application

EP 02024655 A 20021105

Priority

DE 10156374 A 20011116

Abstract (en)

[origin: DE10156374C1] The heat exchange tube (1) has outer fins (3) and inner fins (20) crossed by secondary grooves (22) Two rolling tools (11, 12) form the outer fins, and the inner fins are formed by two differently shaped rolling mandrels (15, 16), one forming the inner fins themselves, the other forming the secondary grooves in them.

IPC 1-7

F28F 1/42; **B21C 37/20**

IPC 8 full level

F28F 1/36 (2006.01); **B21C 37/20** (2006.01); **B21H 3/04** (2006.01); **B21H 3/10** (2006.01); **F28F 1/42** (2006.01); **F28F 13/04** (2006.01)

CPC (source: EP US)

B21C 37/207 (2013.01 - EP US); **F28F 1/42** (2013.01 - EP US); **F28F 1/422** (2013.01 - EP US); **Y10T 29/4935** (2015.01 - EP US); **Y10T 29/49377** (2015.01 - EP US); **Y10T 29/49378** (2015.01 - EP US); **Y10T 29/49382** (2015.01 - EP US); **Y10T 29/49385** (2015.01 - EP US); **Y10T 29/49391** (2015.01 - EP US)

Cited by

DE102009060395A1; CN104259282A; CN104117834A; CN102102958A; EP2339283A3; EP4390292A1; WO2024132414A1; EP2339283A2; US9234709B2; US10024607B2

Designated contracting state (EPC)

DE FR GB IT PT

DOCDB simple family (publication)

DE 10156374 C1 20030227; CN 1258668 C 20060607; CN 1428211 A 20030709; DE 50204587 D1 20060302; EP 1312885 A2 20030521; EP 1312885 A3 20040818; EP 1312885 B1 20051019; JP 2003185386 A 20030703; JP 4077296 B2 20080416; US 2003094272 A1 20030522; US 2005241150 A1 20051103; US 7451542 B2 20081118

DOCDB simple family (application)

DE 10156374 A 20011116; CN 02150466 A 20021114; DE 50204587 T 20021105; EP 02024655 A 20021105; JP 2002309498 A 20021024; US 10944705 A 20050419; US 29581302 A 20021115