

Title (en)
Heat exchanger

Title (de)
Wärmetauscher

Title (fr)
Echangeur de chaleur

Publication
EP 0780656 A3 19981118 (DE)

Application
EP 96119514 A 19961205

Priority
DE 19548688 A 19951223

Abstract (en)
[origin: EP0780656A2] The heat exchanger has heat exchange tubes (3) of ferritic material with their ends in borings in at least one tube plate (4). The tubes and plates are inside a heat exchanger casing. At least in the high temperature region of the heat exchange tubes, a protective tube (6) of material not liable to embrittlement is fitted. This tube is fixed in the region of the tube plates by hydraulic expansion. The heat exchange tubes may be fitted in the tube plates by the same hydraulic expansion method.

IPC 1-7
F28F 19/00

IPC 8 full level
F28F 19/06 (2006.01); **B21D 39/08** (2006.01); **B21D 53/06** (2006.01); **F28F 19/00** (2006.01); **F28F 21/08** (2006.01)

CPC (source: EP)
F28D 7/06 (2013.01); **F28F 9/0229** (2013.01); **F28F 9/185** (2013.01); **F28F 19/002** (2013.01); **F28F 21/083** (2013.01)

Citation (search report)
• [XY] EP 0042028 A1 19811223 - UHDE GMBH [DE]
• [Y] DE 1958566 A1 19700611 - LUMMUS CO
• [X] GB 1323885 A 19730718 - CLONSAST LTD
• [A] US 4505017 A 19850319 - SCHUKEI GLEN E [US]
• [A] GB 1141239 A 19690129 - CHARLES B MARETZO
• [A] US 4368571 A 19830118 - COOPER JR FRANK W

Cited by
US11454461B2; US8349267B2; WO2007075634A3; US8201619B2; US8469081B2; US8037928B2; US8211548B2; US8286695B2; US8465599B2; US8470097B2

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