

Title (en)  
HEAT TRANSFER APPARATUS

Title (de)  
WÄRMEÜBERTRAGUNGSVORRICHTUNG

Title (fr)  
APPAREIL DE TRANSFERT DE CHALEUR

Publication  
**EP 3644005 A1 20200429 (EN)**

Application  
**EP 18820718 A 20180607**

Priority  
• DE 102017113870 A 20170622  
• DE 102018111580 A 20180515  
• KR 2018006435 W 20180607

Abstract (en)  
The present disclosure relates to a heat transfer system 1 for transferring heat between a first fluid and a second fluid. The system 1 has an arrangement 2 composed of pipe elements 3, 3a, 3b, 3c for passing through the first fluid, one or more pipe bottoms 5 having a through opening 6, and one or more sealing elements 7 having a through opening 8. The pipe elements 3, 3a, 3b, 3c are formed of a flat pipe having a first region 10 having a first height X and a width W and one or more second regions 11 having a support surface 13 arranged on one end portion of the pipe elements 3, 3a, 3b, 3c and having a second height Y, respectively. The sealing element 7 is arranged between the edge of the through-hole 6 of the pipe bottom 5 and the support surface 13, respectively, and has a specific wall thickness G. The pipe elements 3, 3a, 3b, 3c having a wide side are arranged in a state aligned parallel to each other and at an interval F with respect to each other in the first region 10. A web 5-1 having a height H is provided between the through openings 6 arranged adjacent to each other of the pipe bottom 5. The deformation degree of the end portion of the pipe elements 3, 3a, 3b, 3c in the height direction c, which is placed in a range from the maximum value  $CM_{\max}$  to the minimum value  $CM_{\min}$ , is previously set with reference to the dimension relationship.

IPC 8 full level  
**F28F 9/02** (2006.01); **F28D 1/053** (2006.01); **F28D 21/00** (2006.01); **F28F 1/02** (2006.01); **F28F 13/06** (2006.01); **F28F 21/08** (2006.01)

CPC (source: EP KR US)  
**F28D 1/0535** (2013.01 - EP US); **F28D 1/05366** (2013.01 - EP US); **F28D 1/05383** (2013.01 - EP KR); **F28F 1/02** (2013.01 - KR); **F28F 1/025** (2013.01 - EP US); **F28F 1/126** (2013.01 - US); **F28F 9/02** (2013.01 - US); **F28F 9/04** (2013.01 - KR); **F28F 9/165** (2013.01 - EP US); **F28F 21/084** (2013.01 - KR US); **F28D 2021/008** (2013.01 - EP US); **F28D 2021/0094** (2013.01 - KR); **F28F 1/126** (2013.01 - EP); **F28F 9/0226** (2013.01 - EP); **F28F 21/084** (2013.01 - EP); **F28F 2275/122** (2013.01 - EP)

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 102018111580 A1 20181227**; CN 110770527 A 20200207; CN 110770527 B 20211210; EP 3644005 A1 20200429; EP 3644005 A4 20210217; EP 3644005 B1 20240529; JP 2020521109 A 20200716; JP 6948461 B2 20211013; KR 102080801 B1 20200224; KR 20190000288 A 20190102; US 2021095926 A1 20210401; WO 2018236076 A1 20181227

DOCDB simple family (application)  
**DE 102018111580 A 20180515**; CN 201880033864 A 20180607; EP 18820718 A 20180607; JP 2020514484 A 20180607; KR 20180062630 A 20180531; KR 2018006435 W 20180607; US 201816608671 A 20180607