

Title (en)

Process and installation for the transfer of a liquid

Title (de)

Verfahren und Apparat zum Überführen einer Flüssigkeit

Title (fr)

Procédé et installation de transfert de liquide

Publication

**EP 0567360 B2 20020612 (FR)**

Application

**EP 93400745 A 19930323**

Priority

FR 9203500 A 19920324

Abstract (en)

[origin: EP0567360A1] A small delivery of a volume reduction (lightening) gas is injected into a liquid riser pipe (6, 9, 11, 12), downstream of the pressure reduction valve (7, 10, 13) fitted to this pipe. Application to double air distillation columns of the type with packing. <IMAGE>

IPC 1-7

**F25J 3/04**; **F17C 6/00**

IPC 8 full level

**F17C 6/00** (2006.01); **F17C 9/00** (2006.01); **F25J 3/04** (2006.01)

CPC (source: EP US)

**F17C 6/00** (2013.01 - EP US); **F17C 9/00** (2013.01 - EP US); **F25J 3/0423** (2013.01 - EP US); **F25J 3/04412** (2013.01 - EP US); **F25J 3/04678** (2013.01 - EP US); **F25J 3/04793** (2013.01 - EP US); **F17C 2270/0509** (2013.01 - EP US); **F25J 2235/06** (2013.01 - EP US); **F25J 2245/40** (2013.01 - EP US); **F25J 2245/42** (2013.01 - EP US); **Y10S 62/913** (2013.01 - EP US)

Citation (opposition)

Opponent :

- DE 2633272 A1 19780126 - LINDE AG
- EP 0410832 A1 19910130 - AIR LIQUIDE [FR]
- GB 1593253 A 19810715 - BOC LTD
- EP 0321163 A2 19890621 - AIR PROD & CHEM [US]
- Hausen, H. et al., Tieftemperaturtechnik, Erzeugung sehr tiefer Temperaturen, Gasverflüssigung und Zerlegung von Gasgemischen, Springer-Verlag 1985, pp. 317-334
- Chambers Science and Technology Dictionary, Chambers-Cambridge, 1988, p. 380
- Din, F. et al., Low-Temperature Techniques, Georges Newnes Ltd, London, 1960, pp. 16-18 et 158-161
- Ullmanns Encyclopädie der technischen Chemie, vol. 3, Verfahrenstechnik II und Reaktionsapparate, 4e édition, Verlag Chemie, Weinheim (sans date), pp. 172-173
- Perry's Chemical Engineers' Handbook, McGraw-Hill Book Company, 1984, pp. 5-42 et 5-43
- v.d.Ster, J., The Production of Liquid Nitrogen from Atmospheric Air Using a Gas Refrigerating Machine, Thesis, Technische Hogeschool Delft, 1960, pp. 1-3, 29, 33-35 et 60-70

Cited by

EP1052465A1; FR2853405A1; FR2853406A1

Designated contracting state (EPC)

DE ES FR GB IT NL SE

DOCDB simple family (publication)

**FR 2689223 A1 19931001**; **FR 2689223 B1 19940506**; CA 2092139 A1 19930925; CA 2092139 C 20040504; CN 1076775 A 19930929; CN 1078946 C 20020206; DE 69302619 D1 19960620; DE 69302619 T2 19960926; EP 0567360 A1 19931027; EP 0567360 B1 19960515; EP 0567360 B2 20020612; ES 2086895 T3 19960701; ES 2086895 T5 20021216; JP H0618162 A 19940125; US 5337569 A 19940816

DOCDB simple family (application)

**FR 9203500 A 19920324**; CA 2092139 A 19930322; CN 93103344 A 19930323; DE 69302619 T 19930323; EP 93400745 A 19930323; ES 93400745 T 19930323; JP 5548893 A 19930316; US 3149093 A 19930315