

Title (en)  
PROCESS FOR PROTECTING A LIQUID-METAL JET AGAINST OXIDATION AND/OR NITRIDING, EQUIPMENT THEREFOR AND ITS USE

Publication  
**EP 0213042 A3 19881207 (FR)**

Application  
**EP 86401792 A 19860811**

Priority  
FR 8512378 A 19850814

Abstract (en)  
[origin: ES2001086A6] Process for protecting against oxidation and/or nitridation of a liquid metal stream flowing from the outlet orifice of a ladle or a distribution vessel, comprising surrounding the pouring stream with a tube substantially throughout the height of the stream and injecting a protective gas at least around the pouring stream so as to minimize the contact of the molten metal with the ambient air and avoid the dilution of the protective gas and the aspiration of ambient air. A device for carrying out the process includes two complementary semi-shells for surrounding the pouring stream and a hinge articulating the semi-shells for opening and closing the latter.

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**B22D 11/10**

IPC 8 full level  
**B22D 23/00** (2006.01); **B22D 7/12** (2006.01); **B22D 11/10** (2006.01); **B22D 11/106** (2006.01)

CPC (source: EP KR US)  
**B22D 11/106** (2013.01 - EP US); **B22D 37/00** (2013.01 - KR)

Citation (search report)  
• [X] DE 2517834 A1 19761104 - LINDE AG  
• [Y] EP 0089282 A1 19830921 - AIR LIQUIDE [FR]  
• [X] US 3439735 A 19690422 - HOLMES RONALD L W  
• [Y] DE 2738587 A1 19780302 - GEORGETOWN STEEL CORP  
• [Y] FR 2331402 A1 19770610 - LINDE AG [DE]

Cited by  
FR2642678A1

Designated contracting state (EPC)  
AT BE CH DE FR GB IT LI LU NL SE

DOCDB simple family (publication)  
**EP 0213042 A2 19870304; EP 0213042 A3 19881207; EP 0213042 B1 19900919**; AT E56642 T1 19901015; AU 594354 B2 19900308; AU 6118286 A 19870219; BR 8603875 A 19870324; CA 1299837 C 19920505; DE 3674293 D1 19901025; ES 2001086 A6 19880416; FR 2586210 A1 19870220; FR 2586210 B1 19880513; JP S6297759 A 19870507; KR 870001888 A 19870328; PT 83195 A 19860901; PT 83195 B 19921030; US 4805688 A 19890221; ZA 866054 B 19870325

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**EP 86401792 A 19860811**; AT 86401792 T 19860811; AU 6118286 A 19860814; BR 8603875 A 19860814; CA 515960 A 19860814; DE 3674293 T 19860811; ES 8601054 A 19860813; FR 8512378 A 19850814; JP 18973486 A 19860814; KR 860006692 A 19860814; PT 8319586 A 19860813; US 89612486 A 19860812; ZA 866054 A 19860812