

Title (en)  
Electromagnetic confinement of molten metal with conduction current assistance

Title (de)  
Elektromagnetisches Zurückhalten von Schmelze mittels Stromerregung

Title (fr)  
Confinement électromagnétique des métaux liquides par conduction de courant

Publication  
**EP 0737531 A1 19961016 (EN)**

Application  
**EP 95105646 A 19950413**

Priority  
EP 95105646 A 19950413

Abstract (en)  
An electromagnetic confining apparatus (30) prevents the escape of molten metal (38) through the open end (36) of a vertically extending gap (35) between two horizontally extending members (31,32), such as two counter-rotating rolls of a continuous strip caster. The molten metal (38) is located between the two members. The apparatus includes a vertically disposed coil (40) through which flows a time-varying electric current to generate a first horizontal magnetic field adjacent the open end of the gap. A time-varying conduction current is directed through the pool of molten metal adjacent the open end of the gap (35), in a vertical direction opposite that of the current flow in the adjacent portion of the coil. The flow of conduction current through the molten metal pool generates a second horizontal magnetic field adjacent the open end of the gap (35) and which augments the first horizontal magnetic field to provide a repulsive body pressure which urges the pool of molten metal inwardly away from the open end of the gap (35). <IMAGE>

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IPC 8 full level  
**B22D 11/06** (2006.01); **B22D 11/115** (2006.01); **B22D 27/02** (2006.01)

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• [DA] US 5197534 A 19930330 - GERBER HOWARD L [US], et al  
• [DA] US 5279350 A 19940118 - GERBER HOWARD L [US]

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