

Title (en)  
APPARATUS AND METHOD FOR MAKING PARTICLE-CONTAINING FOAMS

Publication  
**EP 0247754 B1 19901024 (EN)**

Application  
**EP 87304214 A 19870512**

Priority  
• US 86462186 A 19860516  
• US 86469686 A 19860519

Abstract (en)  
[origin: EP0247754A1] A particle-containing foam, suitable for use as a proppant-loaded fracturing fluid, is made by (a) introducing a first stream of gas and particulate material into a vessel; (b) introducing a second stream of liquid into the vessel; and then (c) mixing the second stream with said first stream and thereby forming a foam containing the particulate material. Thus, the particulate material, eg. sand, is introduced into the vessel in the dry state. An apparatus (12) suitable for carrying out this method comprises a body (14); a main flow passage (16) disposed through said body and having an inlet (18) and an outlet (20); an annular plenum (44) disposed in said body and surrounding said main flow passage; a second flow passage (46) disposed in said body and having a first inlet end (48) and a second end (50) communicated with said annular plenum; and adjustable annular nozzle means (22), disposed in said body between said annular plenum and said main flow passage, for providing an annular flow path (34) of adjustable width communicating said annular plenum with said main flow passage.

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**B01F 3/04**

IPC 8 full level  
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**B01F 23/235** (2022.01 - EP); **B01F 25/311** (2022.01 - EP); **E21B 21/062** (2013.01 - EP US); **E21B 43/2607** (2020.05 - EP US)

Cited by  
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