

Title (en)  
DOWN-THE-HOLE-DRILL

Publication  
**EP 0233038 A3 19881123 (EN)**

Application  
**EP 87300928 A 19870203**

Priority  
ZA 86768 A 19860203

Abstract (en)  
[origin: EP0233038A2] A down-the-hole drill is hydraulically powered with air flushing. The rotation motor (16) is on the drill string (10) and rotates a percussion hammer (20) to which the drill bit is chucked. Hydraulic fluid flows in umbilicals (11) clipped into grooves on the sides of the drill rods. The shuttle valve (26) for the hammer is in line with the piston (25).

IPC 1-7  
**E21B 4/16**; **E21B 21/12**; **E21B 21/14**; **E21B 17/18**; **E21B 17/10**; **E21B 4/14**; **E21B 21/08**; **E21B 44/00**

IPC 8 full level  
**E21B 4/14** (2006.01); **E21B 4/16** (2006.01); **E21B 17/10** (2006.01); **E21B 17/18** (2006.01); **E21B 21/08** (2006.01); **E21B 21/12** (2006.01); **E21B 21/14** (2006.01); **E21B 44/00** (2006.01)

CPC (source: EP)  
**E21B 4/14** (2013.01); **E21B 4/16** (2013.01); **E21B 17/1035** (2013.01); **E21B 17/18** (2013.01); **E21B 21/12** (2013.01); **E21B 21/14** (2013.01); **E21B 44/005** (2013.01)

Citation (search report)

- [X] DE 3416513 A1 19851107 - FRUEHLING OTTO
- [X] DE 3011263 A1 19801009 - HANSSON GOETE INGEMAR
- [X] DE 3416514 A1 19851107 - FRUEHLING OTTO
- [X] US 3978931 A 19760907 - SUDNISHNIKOV BORIS VASILIEVICH, et al
- [A] GB 2142364 A 19850116 - CHEVRON RES
- [A] DE 2733199 A1 19790201 - ROTTER ADOLF
- [A] DE 2430519 A1 19750123 - JOY MFG CANADA
- [A] DE 3143943 A1 19830511 - STROBEL CHRISTIAN

Cited by  
EP0350581A3; US5092411A; CN105625937A; US6308779B1; FR2663978A1; US5217071A; GB2520301A; CN102216552A; EP2337919A4; US8893827B2; US10544625B2; CN106062299A; EP3242990A4; RU2698341C2; WO2020039393A1; WO2016109868A1; WO8908769A1; WO2010033041A1; US8887835B2; WO9200437A1; WO2015071381A3

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**EP 0233038 A2 19870819**; **EP 0233038 A3 19881123**; AU 581800 B2 19890302; AU 6807387 A 19870806; FI 870444 A0 19870202; FI 870444 A 19870804; NO 870405 D0 19870202; NO 870405 L 19870804

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