

Title (en)

Cutter bit having hard tip with middle section defined by concave surface of revolution.

Title (de)

Schneidwerkzeug mit harter Spitze mit einem Mittelstück, dessen Oberfläche als Umdrehungskörper mit konkaver Erzeugender ausgebildet ist.

Title (fr)

Outil coupant ayant une pointe pénétrante à section centrale définie comme une surface concave de révolution.

Publication

EP 0259620 A1 19880316 (EN)

Application

EP 87111459 A 19870807

Priority

US 90573086 A 19860909

Abstract (en)

A cutter bit hard tip (62) has an outer tip section (76), an inner flange section (78) , and a middle section (80) disposed between and merging at its opposite ends with the tip and flange sections and being defined by a continuous concave surface of revolution (82). The tip, flange and middle sections lie along a common longitudinal central axis (84). The tip section has a rounded-off end, and a frusto-conical surface of revolution (88) merging from the end. The flange section has a right cylindrical surface whose diameter is greater than the maximum diameter of the tip section. The middle section has a maximum diameter less than or equal to the diameter of the flange section and a minimum diameter substantially equal to the maximum diameter of the tip section. The concave surface of revolution of the middle section in profile has an outwardly and downwardly sloping configuration generally similar to that of the sides of a bell-shaped curve.

IPC 1-7

E02F 3/24

IPC 8 full level

E21C 35/18 (2006.01); **E02F 9/28** (2006.01)

CPC (source: EP)

E02F 9/2858 (2013.01); **E02F 9/2866** (2013.01)

Citation (search report)

- US 4497520 A 19850205 - OJANEN RANDALL W [US]
- FR 2542369 A1 19840914 - SANTRADE LTD [CH]
- GB 2166178 A 19860430 - PEAKS JAMES FREDERICK
- GB 1218308 A 19710106 - KENNAMETAL INC [US]
- EP 0188188 A1 19860723 - VOEST ALPINE AG [AT]
- EP 0121020 A1 19841010 - PADLEY & VENABLES LTD [GB]
- GB 2087949 A 19820603 - PADLEY & VENABLES LTD
- US 3519309 A 19700707 - ENGLE EDGAR W, et al
- US 4316636 A 19820223 - TAYLOR JACK A, et al

Cited by

EA016278B1; EP0771911A1; EP0737415A3; US4893875A; WO2009003233A1

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