

Title (en)

Drag bit with nozzles for drilling plastic formations.

Title (de)

Fräsmeissel mit Düsen für das Bohren von plastischen Formationen.

Title (fr)

Trépan racleur avec buses pour le forage de formations plastiques.

Publication

EP 0322347 A1 19890628 (EN)

Application

EP 88710035 A 19881012

Priority

US 10679387 A 19871013

Abstract (en)

A bit and method for cutting plastic and sticky rock formations, which tend to cause bit balling, is provided by a drag bit (10) having a cutting face formed of a plurality of generally radially extending open arched blades (20). Each arched blade (20) is provided with a cutting face and defines a cavity (24) beneath the arch to the bit body. In a preferred embodiment, the cutting elements on the arched blade are a plurality of synthetic polycrystalline diamonds (22) which are cut, sized and shaped to conformally fit with each other so as to present a substantially diamond-only surface as a cutting surface of the bit. Hydraulic nozzles (38) are defined in the bit body beneath and azimuthally behind the arches formed by each blade. The nozzles direct hydraulic flow across the cavity under the arch and across each portion of the cutting face on the arch. As a result, when cutting, substantially only a diamond surface is provided for shearing the rock formation or contacting with velocity any portion of the plastic rock formation. Once the rock chip is exuded upwardly across the diamond face of the cutter, it is subjected to a directed hydraulic flow which peels the chip from the diamond face and transports it into the open cavity defined underneath the arched blade. The cavities under the arched blade form an open toroidal space around the bit and freely communicate with a plurality of large open waterways and junk slots. Large plastic fragments may then be cut, peeled from the face of the diamond cutters, and flushed through the waterways up the junk slots.

IPC 1-7

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IPC 8 full level

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CPC (source: EP US)

E21B 10/5671 (2020.05 - EP); **E21B 10/5673** (2013.01 - EP US); **E21B 10/602** (2013.01 - EP US)

Citation (search report)

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