Title (en)
SELF-PENETRATING DRILLING METHOD AND THRUST-GENERATING TOOL FOR IMPLEMENTING SAME

Title (de)
VERFAHREN ZUM SELBSTANGETRIEBENEN BOHREN UND SCHUBERZEUGUNGSWERKZEUG ZUR DURCHFÜHRUNG DIESES VERFAHRENS

Title (fr)
PROCEDE DE FORAGE AUTO-PENETRANT ET OUTIL GENERATEUR DE POUSSEE PERMETTANT DE METTRE EN OEUVRE LE PROCEDE

Publication
EP 1259698 A1 20021127 (FR)

Application
EP 01907766 A 20010212

Priority
- FR 0100401 W 20010212
- FR 0002620 A 20000301

Abstract (en)
[origin: FR2805845A1] Self-penetrating drilling for cutting a shaft in rock comprises generating a force parallel to the axis (4) of the shaft using a drill bit driven in rotation about that axis. An Independent claim is also included for a tool for carrying out the above process. The multi-edge, multi-bladed drill bit has geometry designed to cut in a specific way to ensure the force along the axis is generated during rotation Preferred Tool: The tool has N blades (2a, 2b, 2c, 2d) numbered from 1 to N in the opposite direction to the rotation (5). Each blade is wound in a spiral around the axis of the tool and inclined relative to it; the part of the blade nearest the nose (1a) of the tool is also the nearest to the axis. Each blade has K edges (3a, 3b, 3c, 3d) with the first edge being the edge nearest to the axis and the nose of the tool. Each edge is described by two indices: the first index n, varying from 1 to N, gives the number of the blade carrying the edge, the second index k, varying from 1 to K, gives the position of the edge on the blade. Thus, the k'th edge of the n'th blade is called T(n,k). Each edge has an attack face (3b1) pressing on the rock. In order to generate a force in the forward direction, the geometries, positions and orientations of all or some of the edges are calculated using the following rules: - at the (q-1)th turn R(q-1) of the tool, the k'th edge of the last blade, T(N,k), cuts a groove in the rock downstream of that made by the (k+1)th edge of the first blade, T(1,k+1), on the q'th turn Rq of the tool - at the q'th turn Rq of the tool, the k'th edge of the n'th blade, T(n,k), cuts a groove in the rock downstream of that made by the k'th edge of the (n+1)th blade, T(n+1,k), on the q'th turn Rq of the tool. The normal to the attack face of the edge has a component pointing upstream along the axis of rotation

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