

Title (en)

A two-stage rock bolt and method of use

Title (de)

Zweistufiger Felsanker und Verwendungsverfahren dafür

Title (fr)

Boulon d'ancrage à deux étages et son procédé d'utilisation

Publication

EP 1870559 A3 20080102 (EN)

Application

EP 07011898 A 20070618

Priority

AU 2006903352 A 20060621

Abstract (en)

[origin: EP1870559A2] A rock bolt (15, 115, 215) able to withstand two levels of tension within its tendon (16) is disclosed. The rock bolt is used in a tunnel (1) where the rock is subject to squeezing. After an initial installation with initial tension, plates (4) carried by the rock bolts are permitted to be squeezed together. Then a higher tension is created in the tendons (16) and the plates used to construct a concrete lining (9). The rock bolt preferably has first and second anchors. The first anchor can be chemical (grout) or mechanical (50). The second anchor (30, 40) is able to be triggered (36) by a pull chord (23) after the initial squeezing has taken place. An electric circuit (92, 93) is located in a breather tube (91) to signal that no more grout should be inserted via a grout tube (21).

IPC 8 full level

E21D 11/00 (2006.01)

CPC (source: EP)

E21D 21/0046 (2013.01); **E21D 21/0066** (2016.01)

Citation (search report)

- [A] DE 3008727 A1 19810910 - BERGWERKSVERBAND GMBH [DE]
- [A] DE 3820700 A1 19891221 - RUHRKOHLE AG [DE]
- [A] DE 2644329 A1 19780406 - RUHRKOHLE AG
- [A] DE 3236569 A1 19840405 - RUHRKOHLE AG [DE]

Cited by

CN109667598A; CN105134269A; CN111577320A; CN109281694A; CN117988908A; WO2015176081A3

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR MK YU

DOCDB simple family (publication)

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EP 07011898 A 20070618; AT 07011898 T 20070618; DE 602007003263 T 20070618; EP 09010175 A 20070618; ES 07011898 T 20070618; PL 07011898 T 20070618; PT 07011898 T 20070618