

## Title (en)

Apparatus and method for fracturing a hard material

## Title (de)

Vorrichtung und Verfahren zum Zerbrechen eines harten Materials

## Title (fr)

Dispositif et procédé pour fracturer un matériau dur

## Publication

**EP 1338758 A1 20030827 (EN)**

## Application

**EP 03251038 A 20030220**

## Priority

US 35925102 P 20020220

## Abstract (en)

Apparatus 10 for fracturing a hard material 24 includes a loading head 12 provided with a guide tube 14 for receiving a cartridge 16 containing a charge of energetic material. A flexible elongated conduit 26 is advanced and retracted through the tube 14 via a reel 88. The conduit 26 is also in communication with a stemming loader 30 which holds a supply of particulate stemming material. Tube 14 is supported by a carriage 70 which is able to slide along a member 52 by operation of a rod 76 and cylinder 78. A motor 60 is also coupled to the member 52 to effect rotation of the member 52 and thus tube 14 about an axis A which is parallel to a hole 18 drilled in the material 24. By appropriate operation of the motor 60 and rod 76, the tube 14 can be moved into and out of alignment with the hole 18. When the tube 14 is moved into alignment with the hole 18, cartridge 16 is loaded into the tube 14 and pushed through the tube 14 into the hole 18 by advancing the conduit 26. Particulate stemming material from the loader 30 is then injected through the conduit 26 into the hole 18. Tube 14 and conduit 26 are then retracted from the hole 18 and subsequently moved out of alignment therewith. The cartridge 16 may then be initiated to cause fracturing of the material 24. <IMAGE>

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## IPC 8 full level

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## Citation (applicant)

- US 5765923 A 19980616 - WATSON JOHN DAVID [US], et al
- US 5308149 A 19940503 - WATSON JOHN D [US], et al
- US 5098163 A 19920324 - YOUNG CHAPMAN III [US]
- AU 9800903 A

## Citation (search report)

- [Y] US 4522125 A 19850611 - MARZ HORST F [CA]
- [Y] DE 952781 C 19561122 - MUELLER & BIERMANN APPBAU BLEC
- [Y] US 6347837 B1 20020219 - WATSON JOHN D [US], et al
- [A] US 2703528 A 19550308 - LEE HUGH B, et al

## Cited by

CN104132597A; EP2227617A4; AU2017367754B2; EA016602B1; US7942481B2; US11773719B2; US8015921B2; US8342261B2; US9010246B2; WO2006099637A3; WO2009082767A3; WO2011127492A1

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