

Search history

Search [SP]: The present invention concerns a rock bolt (1) to be embedded in a borehole (2), comprising an extended energy-absorbing part (4), the first end (11) of the energy-absorbing part (4) comprising an anchor (12) and the second end (15) of the energy-absorbing part (4) comprising a screw joint (16) for prestressing of the rock bolt (1). The rock bolt (1) comprises an extended tubular part (3) with a jacket (7) and a first end section (5) and a second end section (6), with an internal dimension that is larger than the external dimension of the energy-absorbing part (4) and arranged in such a manner that it surrounds the energy-absorbing part (4). The invention concerns also a method for the manufacture of such a rock bolt. (Results 544)

Search IC=(E21D) (Results 121727)

2:

Search 1 and 2 (Results 31)

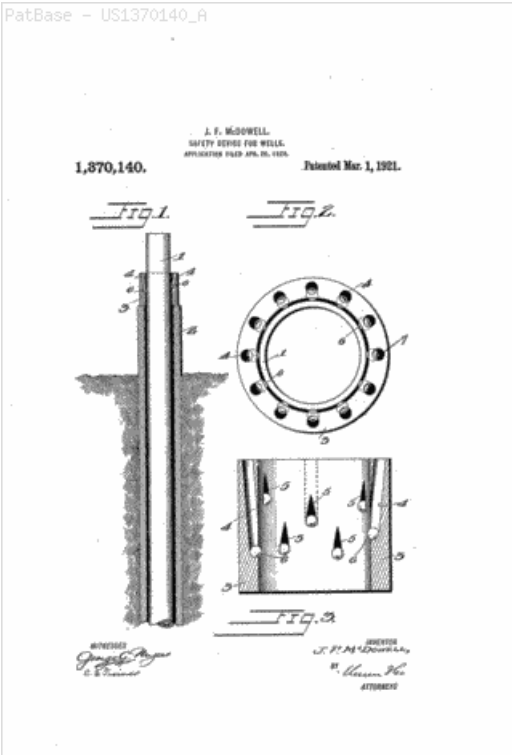
3:

1) Family number: 18255740 (US1370140A)

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Title: Safety device for wells

Classifications:
International (IPC 8-9): E21B19/10 E21D15/34 (Advanced/Invention);
E21B19/00 E21D15/00 (Core/Invention)
CPC: E21B19/10 E21D15/34
European: E21B19/10 E21D15/34
US: 188/67



Family:

Publication number	Publication date	Application number	Application date
US1370140 A	19210301	US19200376698	19200426

Priority:

US19200376698 19200426

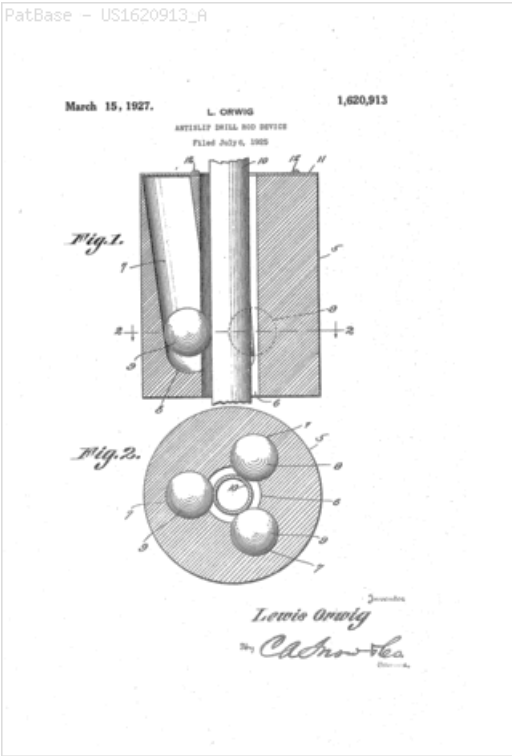
Probable Assignee: FRANK MCDOWELL JOHN
Assignee(s): (std) FRANK MCDOWELL JOHN
Inventor(s): (std) FRANK MCDOWELL JOHN
Inventor(s): MCDOWELL JOHN FRANK

2) Family number: 20100311 (US1620913A)

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Title: ANTISLIP DRILL-ROD DEVICE

Classifications:
International (IPC 8-9): E21B19/10 E21D15/34 (Advanced/Invention); E21B19/00 E21D15/00 (Core/Invention)
International (IPC 1-7): E21B19/10
CPC: Y10S137/904 E21D15/34 E21B19/10
European: E21B19/10 E21D15/34
US: 137/904 188/67 248/412



Family:

Publication number	Publication date	Application number	Application date
US1620913 A	19270315	US19250041693	19250706

Priority:

US19250041693 19250706

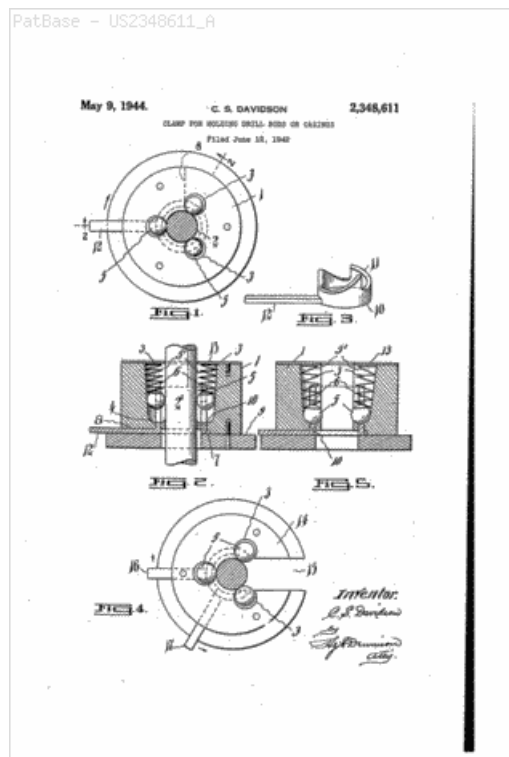
Probable Assignee:	LEWIS ORWIG
Assignee(s): (std):	LEWIS ORWIG
Inventor(s): (std):	LEWIS ORWIG
Inventor(s):	ORWIG LEWIS

3) Family number: 22214889 (US2348611A) © PatBase

Title: CLAMP FOR HOLDING DRILL RODS OR CASINGS

Abstract: 1. In a clamp for holding drill rods or the like, in which a block provided with a central orifice has a plurality of inwardly inclined guideways extending longitudinally thereof, the lower portions of said guideways entering said central orifice, said block having a circular slot concentric with the central orifice extending upwardly from the bottom and intersecting the lower ends of said guideways, balls arranged in said guideways, a cam ring rotatably housed in said slot and having upwardly extending portions adapted to engage and lift said balls clear of gripping contact with the rod, and means [or securing said cam ring in said slot.

Classifications:
International (IPC 8-9): E21D15/34 (Advanced/Invention); E21D15/00 (Core/Invention)
International (IPC 1-7): E21B19/10
CPC: E21D15/34 Y10T24/3993 Y10T74/18182 Y10T74/2066 Y10T74/20852 Y10T279/17145 Y10T403/59
European: E21D15/34
US: 188/67 192/43.1 211/70.4 24/115L 279/22 403/321 74/41 74/531 74/555

**Family:**

Publication number	Publication date	Application number	Application date
■ US2348611 A	19440509	US19420446744	19420612

Priority:

US19420446744 19420612

Probable Assignee:

STANLEY DAVIDSON CECIL

Assignee(s): (std):

STANLEY DAVIDSON CECIL

Inventor(s): (std):

STANLEY DAVIDSON CECIL

Inventor(s):

DAVIDSON CECIL STANLEY

4) Family number: 19455258 (GB651556A)

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Title: IMPROVED DEVICE FOR GRIPPING A ROD

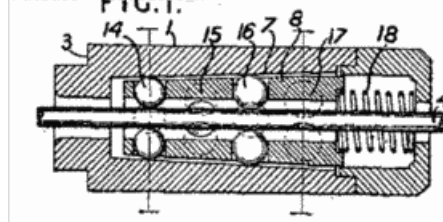
Abstract: 651,556. Rod and wire couplings etc.; pipes and tubes, joints and c. for. ATLAS STONE CO., Ltd., and WELLS, J. W. H. June 29, 1948, No. 17471. [Class 99(i)] [Also in Groups XXV and XXX] A device for gripping and pulling a rod, cable or wire comprises a casing 1 with a forwardly tapered bore 7 in which is a frusto-conical cage 8 bored radially to receive four sets of balls 14, 17 and urged forwardly by a spring 18. The balls are of increasing size from front to rear of the cage. A rod 4 can be inserted from the front of the casing but cannot be withdrawn forwardly. In a modification, the cage has a threaded tail which protrudes from the rear of the casing and is fitted with a nut whereby the cage may be pulled rearwardly against the spring to release the grip on the rod. In both forms, the casing has an external shoulder 3 to which a pulling device may be applied.

Classifications:**International (IPC 8-9):** E04C5/12 E21D15/34 (Advanced/Invention);

E04C5/12 E21D15/00 (Core/Invention)

International (IPC 1-7): F16B2/16**CPC:** E04C5/12 E21D15/34**European:** E04C5/12 E21D15/34

PatBase - GB651556_A :

**Family:**

Publication number	Publication date	Application number	Application date
■ GB651556 A	19510404	GB19480017471	19480629

Priority:

GB19480017471 19480629

Probable Assignee: ATLAS STONE CO LTD**Assignee(s):** (std): ATLAS STONE CO LTD ; ATLAS STONE COMPANY LTD ; JACK WILLIAM HARRY WELLS**Assignee(s):** THE ATLAS STONE COMPANY LIMITED

5) Family number: 20622460 (FR1131083A)

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Title: Dispositif formant frein de securite pour appareils comportant une tige mobile lisse, notamment les appareils de levage, et supprimant toute manoeuvre lors du mouvement de montee Forming device for the safety brake apparatus having a movable rod smooth, including lifting equipment, and removing any move by the movement of ascent (Machine translation)

Classifications:

International (IPC 8-9): B66F3/30 E21D15/34

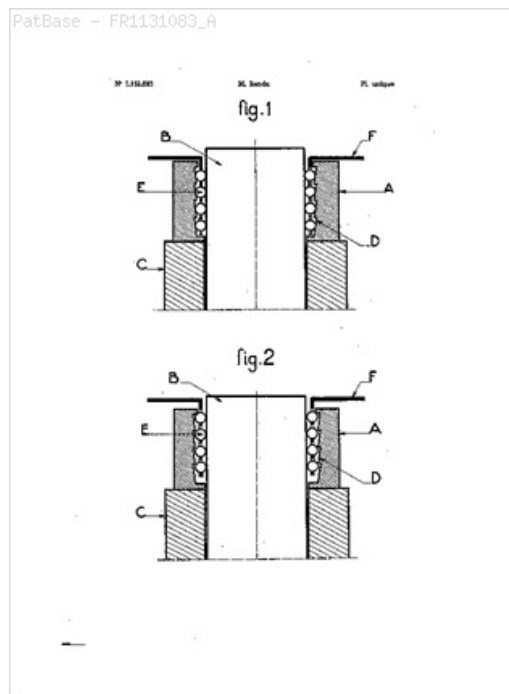
F16D41/06 (Advanced/Invention);

B66F3/24 E21D15/00 F16D41/00 (Core/Invention)

International (IPC 1-7): B66F3/30

CPC: B66F3/30 E21D15/34 F16D41/06

European: B66F3/30 E21D15/34 F16D41/06



Family:

Publication number	Publication date	Application number	Application date
FR1131083 A	19570215		19550218

Priority:

19550218

Inventor(s): (std):

RENDU ROGER

6) Family number: 21521814 (FR1199030A)

© PatBase

Title: Boulon d'ancrage Rockbolt (Machine translation)

Classifications:

International (IPC 8-9): E21D15/30 E21D21/00

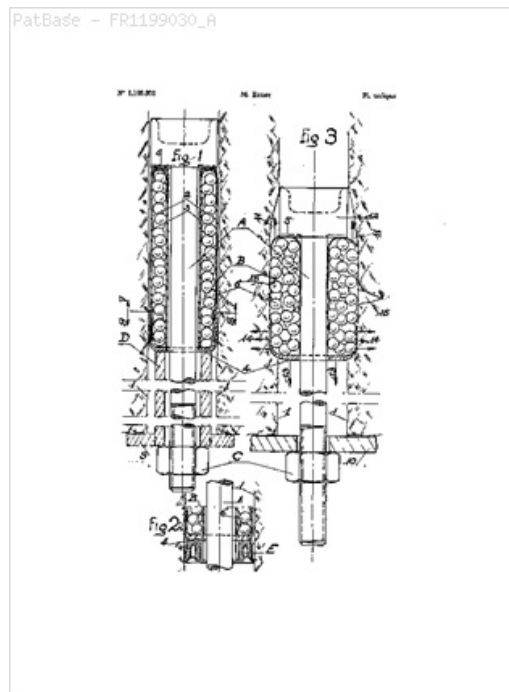
F16B13/08 (Advanced/Invention);

E21D15/00 E21D21/00 F16B13/04 (Core/Invention)

International (IPC 1-7): E21D21/00

CPC: E21D15/303 E21D21/008 F16B13/0841

European: E21D15/30B E21D21/00N F16B13/08G



Family:

Publication number	Publication date	Application number	Application date
FR1199030 A	19591210		19580424

Priority:

19580424

Inventor(s): (std):

ECUER RAYMOND

7) Family number: 1038252 (US3892101A)

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Title: Method of anchoring an anchoring bolt in a bore hole

Abstract: A method of anchoring an anchor bolt in a bore hole in which a fast-setting agent and cement mortar are introduced into the bore hole, which comprises the steps of filling the bore hole completely with cement mortar and introducing simultaneously with the cement mortar a container of a fast-setting agent in the end of said bore hole, and crushing the vessel by the insertion of an anchor bolt.

Classifications:**International (IPC 8-9):** C04B40/06 E02D5/80 E04B1/41 E21D20/00

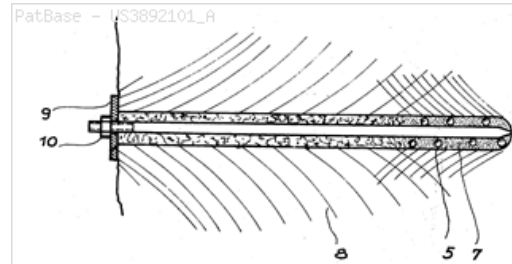
E21D20/02 E21D21/00 F16B13/14 (Advanced/Invention);

C04B40/00 E02D5/80 E04B1/41 E21D20/00 E21D21/00

F16B13/00 (Core/Invention)

International (IPC 1-7): E02D5/74 E02D5/80 E04C5/12 E21B E21B23/00

E21D13/04 E21D20/00 E21D20/02 E21D21/00

CPC: C04B40/0666 E21D20/021 F16B13/144 F16B13/145**European:** C04B40/06L E21D20/02B F16B13/14C2B F16B13/14C2C**US:** 405/259.6**Family:**

Publication number	Publication date	Application number	Application date
AT315108 B	19740510	AT19720005473	19720626
BR7304665 A0	19740815	BR19730004665	19730625
CA1009433 A1	19770503	CA19730174942	19730626
CH564144 A	19750715	CH19730008797	19730618
DE2330801 A1	19740110	DE19732330801	19730616
FR2191018 A1	19740201	FR19730023238	19730626
FR2191018 B1	19770218	FR19730023238	19730626
IT989425 A	19750520	IT19730025779	19730625
JP49057619 A2	19740604	JP19730070886	19730625
JP54023497 B4	19790814	JP19730070886	19730625
JP986731 C3	19800221	JP19730070886	19730625
SE395504 B	19770815	SE19730008742	19730620
SE395504 C	19771124	SE19730008742	19730620
US3892101 A	19750701	US19730373189	19730625
YU172373 A	19810228	YU19730001723	19730626
YU36060 B	19811113	YU19730001723	19730626
ZA7304311 A	19740925	ZA19730004311	19730626

Priority:

AT19720005473 19720626

Probable Assignee: GD ANKER GMBH AND CO KG**Assignee(s):** (std): ANKER GMBH U CO KG ; GB ANKER GEBIRGS DUBEL ANKIR G ; GEBIRGS DUEBEL ANKER GMBH AND CO ; GD ANKER GMBH AND CO KG ; GRUBER R**Assignee(s):** GRUBER RUDOLF ; GD ANKER GEBIRGS DUEBEL ANKER GMBH AND CO KG ; GD ANKER GEBIRGS DUBEL ANKER ; GD ANKER GEBIRGS DUBEL ANKER G M B H AND CO KG ; GD ANKER GEBIRGS DUBEL ANKER GMBH AND CO KG ; GD ANKER GEBIRGS DUEBEL ANKER GMBH ; G D ANKER GEBIRGS DUEBEL ANKER GESELLSCHAFT M B H ; G D ANKER GEBIRGS DUEBEL ANKER GESELLSCHAFT M B H AND CO K G ; G D ANKER GEBIRGS DUEBEL ANKER GMBH AND CO KG MILLSTATT KAERNTEN SCHWEIZ ; GD ANKER GEBIRGS DUBEL ANKER OE ; GB ANKER GEBIRGS DUBEL ANKIR GMBH AND CO KG**Inventor(s):** (std): GRUBER R ; GRUBER RUDOLF ; RUDOLF GRUBER**Inventor(s):** GRUBER RUDOLF MILLSTATT KAERNTEN OESTERREICH ; R GRUBER**8) Family number: 3993424** (GB1470511A)

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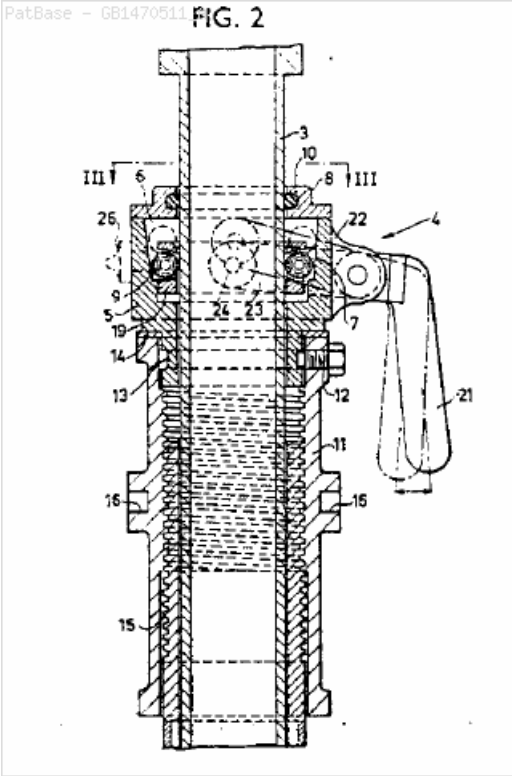
Title: SELF-LOCKING DEVICE FOR TELESCOPIC PROPS

Abstract: 1470511 Clamps; props A T JOHN and J H MOXHAM 2 April 1974 [2 Jan 1973 26 Feb 1973] 243/73 and 9266/73 Headings E1E and E2B A self-locking device for attachment to the top of the lower outer section of a telescopic prop to retain the upper inner section in any extended position includes an annular housing 5 with a tapered counter bore 7 accommodating a cage 19 supporting locking balls 9 which allow free upward movement of the inner section 3 (suitably a length of scaffolding tube) but which become jammed between the surface of the counterbore and the inner section 3 to prevent downward movement of the latter. The cage is connected to a pivoted lever 21 which can be depressed to lift the cage and permit lowering of the inner section 3. The housing is supported for rotation about its axis by a sleeve 11 which threadingly engages an adapter 15 secured in the top

of the outer section and permits fine adjustment of the prop and release thereof from engagement with a load. The outer section of the prop is preferably of square cross-section and has sockets for receiving the ends of struts used to interconnect adjacent props. The inner section 3 may also carry an axially adjustable head member including a screw extending into the inner section and engaging the top of the latter via a nut. In an alternative embodiment, the cage is integral with cover 8 which is slidable upwards to release the balls.

Classifications:

International (IPC 8-9): E04G25/04 E21D15/24 E21D15/34 F16B7/14 (Advanced/Invention); E04G25/00 E21D15/00 F16B7/00 (Core/Invention)
International (IPC 1-7): E04G25/04 E21D15/24 E21D15/34 F16B2/16
CPC: E04G25/065 E21D15/34 E04G25/04 E21D15/24 F16B7/1454
European: E04G25/04 E21D15/24 E21D15/34 F16B7/14H



Family:

Publication number	Publication date	Application number	Application date
GB1470511 A	19770414	GB19730000243	19740402

Priority:

GB19730000243 19740402

Probable Assignee:

JOHN A

Assignee(s): (std):

JOHN A ; MOXHAM J

9) Family number: 1457775 (US4056036A)

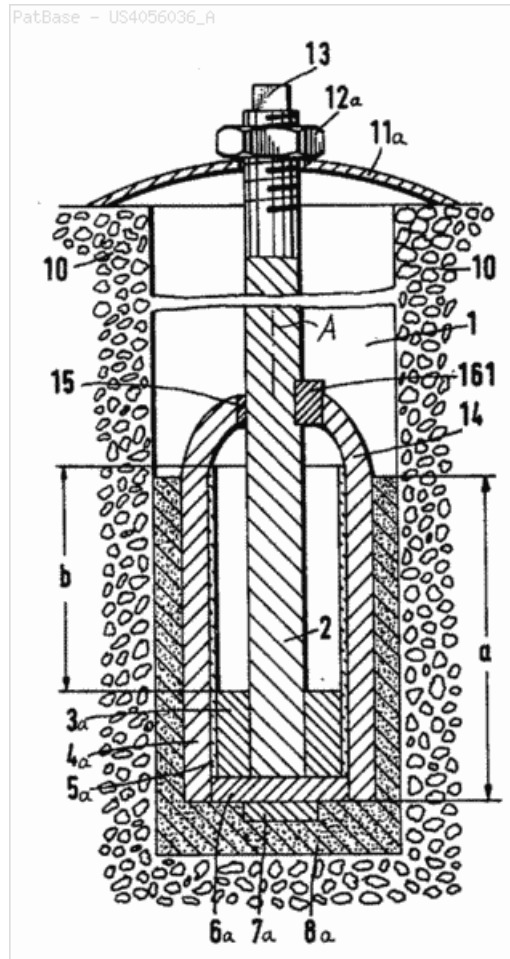
© PatBase

Title: Borehole anchor

Abstract: An anchor assembly or rockbolt for mounting in a borehole in a rock comprises an outer element which is secured proximal to the mouth of the borehole and an inner element which is secured well inside the borehole. The inner and outer elements are connected together in such a manner as to allow mutual limited shifting thereof without disconnection only on stressing of one of the elements relative to the other beyond a predetermined limit. To this end the outer element may be provided with a piston-like inner end that is slidable against a friction coating within a tubular inner element. It is also possible to form the inner and outer elements as separable tube sections interconnected by means of a central rod having a pair of pistons each received in a respective one of the sections and slidable therein on a tight friction lining thereof.

Classifications:

International (IPC 8-9): E02D5/80 E21D20/02 E21D21/00 (Advanced/Invention); E02D5/80 E21D20/00 E21D21/00 (Core/Invention)
International (IPC 1-7): F16B13/04 F16B31/02
CPC: E02D5/80 E21D20/021 E21D21/0033
European: E02D5/80 E21D20/02B E21D21/00M2
US: 405/259.5 411/15 411/8 52/698 85/63

**Family:**

Publication number	Publication date	Application number	Application date
US4056036 A	19771101	US19760666633	19760317

Priority:

US19760666633 19760317

Probable Assignee: BERGWERKSVERBAND GMBH**Assignee(s):** (std): BERGWERKSVERBAND GMBH**Inventor(s):** (std): GOTZE WILHELM ; KAMANN GUNTHER ; KRAHE JURGEN ; ZISCHINSKY ULF**10) Family number: 1256196** (DE2751020A1)

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Title: MINE GALLERY ROCK ANCHOR - IS LOCKED IN HOLE BY COLLAR WITH TAPERED CHAMBER HOUSING BALLS COMPRESSED BY END PLUG

Abstract: The rock anchor is a mine gallery cladding anchorage rod (4) which can be ridged helically and is held in place against a pressure plate (5) in contact with the rock (6) passing through a hole in its middle and into a hole in the rock. A steel holding sleeve (1) has a clearance hole at the front, and a large dia. tapped hole (7) at the rear. The part between them slopes outwards to form a chamber (8), which is filled with steel balls (2). These are retained by an externally threaded plug (3), which is screwed inwards to compress the balls and lock the sleeve in position. An alternative design has a sleeve which is closed at the front and rear, except for a clearance hole, and fitted with a locking screw at the side.

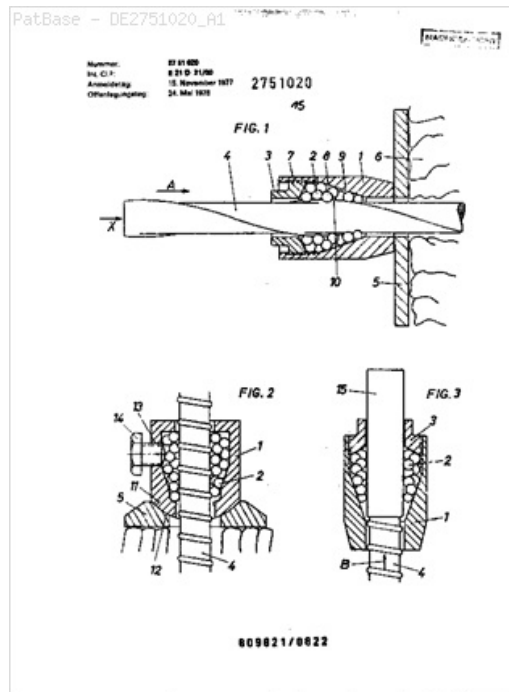
Classifications:

International (IPC 8-9): E21D21/00 F16B2/16 (Advanced/Invention);
E21D21/00 F16B2/02 (Core/Invention)

International (IPC 1-7): E02D5/80 E21D21/00

CPC: E21D21/0093 F16B2/16

European: E21D21/00S F16B2/16



Family:

Publication number	Publication date	Application number	Application date
AT366150 B	19820310	AT19760008486	19761115
AT848676 A	19810715	AT19760008486	19761115
DE2751020 A1	19780524	DE19772751020	19771115
DE2751020 C2	19820805	DE19772751020	19771115

Priority:

AT19760008486 19761115

Probable Assignee: POWONDRA DIPL ING FRANZ

Assignee(s): (std): POWONDRA DIPL ING FRANZ ; POWONDRA FRANZ DIPL ING DR MON

Assignee(s): POWONDRA FRANZ DIPL ING DR MONT 1090 WIEN AT ; POWONDRA FRANZ DIPL ING

Inventor(s): (std): POWONDRA FRANZ DIPL ING ; POWONDRA FRANZ DIPL ING DR MON

Inventor(s): POWONDRA FRANZ DIPL ING DR MONT 1090 WIEN AT

11) Family number: 1258846 (US4242826A)

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Title: Firearm

Abstract: This invention is directed to a firearm comprising a barrel, a receiver, and a stock wherein the stock is comprised of a main stock and a forestock and the forestock is movable in a plane parallel to the axis of the barrel or is pivotable about the barrel, or both, and is fixable in each of its possible positions relative to the barrel.

Classifications:

International (IPC 8-9): E01F15/14 E01F7/04 E02D5/80 E04C5/12

E21D15/34 E21D21/00 F16B13/00 F16B7/14 F16F7/08 F16F7/12

F41C23/16 (Advanced/Invention);

E01F15/00 E01F7/00 E02D5/80 E04C5/12 E21D15/00 E21D21/00

F16B7/00 F16F7/00 F16F7/12 F41C23/00 (Core/Invention)

International (IPC 1-7): B65D83/00 E21D11/05 E21D11/22 E21D15/16

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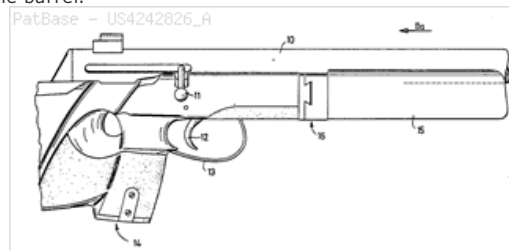
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CPC: F41C23/16 F16B13/00 F16F7/12 Y10S403/08 F16F7/125 E01F7/04

E02D5/80 E04C5/12 E21D15/34 E21D21/008 F16B7/1409

European: F41C23/16

US: 403/DIG.8 405/259 405/259.1 405/259.2 411/411 42/73



Family:

Publication number	Publication date	Application number	Application date
AT355456 B	19800310	AT19780003667	19780519
AT366778 A	19790715	AT19780003667	19780519
AT366778 B	19820510	AT19800003970	19800731
AT397080 A	19810915	AT19800003970	19800731
AU198172857 A1	19820204	AU19810072857	19810714
AU542884 B2	19850321	AU19810072857	19810714
BR8104921 A	19820413	BR19810004921	19810730
CA1173674 A1	19840904	CA19810382838	19810730
DE2723110 A1	19781207	DE19772723110	19770523

DE3128419 A1	19820422	DE19813128419	19810717
DE3128419 C2	19891012	DE19813128419	19810717
FI63487 B	19830228	FI19780001608	19780522
FI63487 C	19830610	FI19780001608	19780522
FI781608 A	19781124	FI19780001608	19780522
FR2392353 A1	19781222	FR19780015984	19780523
FR2392353 B1	19810724	FR19780015984	19780523
FR2487938 A1	19820205	FR19810014408	19810724
FR2487938 B1	19841109	FR19810014408	19810724
GB2082725 A1	19820310	GB19810022789	19810723
GB2082725 B2	19841219	GB19810022789	19810723
JP57054748 A2	19820401	JP19810121311	19810731
US4242826 A	19810106	US19780906750	19780517
US4431348 A	19840214	US19810288515	19810730
ZA8105236 A	19820929	ZA19810005236	19810730

Priority:

DE19772723110 19770523 AT19800003970 19800731 CA19810382838 19810730

Probable Assignee: POWONDRA DIPL ING FRANZ

Assignee(s): (std): ANSCHUETZ ELFI ; FURANTSU POBONDORA ; POWONDRA FRANZ DIPL ING DR MON ; POWONDRA F DR ; POWONDRA DIPL ING FRANZ ; POWONDRA FRANZ ; POWONDRA F ; POWONDRA FRANZ DR

Assignee(s): POWONDRA FRANZ MONT DR DIPL ING ; POWONDRA FRANZ DIPL ING ; POWONDRA FRANZ DIPL ING DR MONT WIEN AT ; POWONDRA FRANZ DIPLING ; POWONDRA FRANZ DIPL ING DR MONT ; POWONDRA DIPL ING DR MONT FRANZ ; ANSCHUTZ ELFI ; DIPLING DR MONT FRANZ POWONDRA

Inventor(s): (std): POWONDRA F ; POWONDRA FRANZ DIPL ING DR MON ; POWONDRA FRANZ ; POWONDRA F DR ; ING POWONDRA FRANZ MONT DR DIP ; FURANTSU POBONDORA ; FURANTSU HOBONDORA ; POWONDRA FRANZ MONT DR DIPL IN ; ANSCHUETZ ELFI

Inventor(s): DR F POWONDRA ; POWONDRA FRANZ DIPL ING DR MONT ; POWONDRA FRANZ DIPL ING ; FRANZ POWONDRA ; POWONDRA FRANZ DIPLING ; POWONDRA FRANZ MONT DR DIPL ING

Agent(s): GRIFFITH HACK; MACRAE AND CO

12) Family number: 1875986 (DE3145923A1)

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Title: Anchoring system for an anchor tension member, in particular for a rock anchor

Abstract: In mining, the rock pressures are only held temporarily, e.g. for the support of roadways, in the course of which the rock continues to deform. On the one hand, these deformations must be permitted so that a new state of equilibrium can set in; on the other hand, the extent of the deformations exceeds the extensibility of the steel anchor bars. According to the invention, the anchoring element (5) for a steel bar (1) provided with force-transmission ribs is elastically deformable in at least one radial direction. It undergoes an expansion as a result of the ring tensile force occurring when a certain longitudinal tensile force, caused by the sloping flanks of the force-transmission ribs (2), is exceeded. The force-transmission ribs (2) are thereby disengaged from the recesses of the anchoring element (5), which is displaced by a certain distance along the steel bar in a sliding manner via the force-transmission ribs. As a result of accompanying reduction in the longitudinal force, the force-transmission ribs come into engagement again at another point with the recesses of the anchoring element. With regard to a larger rock pressure area, a uniformly continuous relief of the surface under the rock pressure is thereby obtained when there are several anchors of this type.

Classifications:

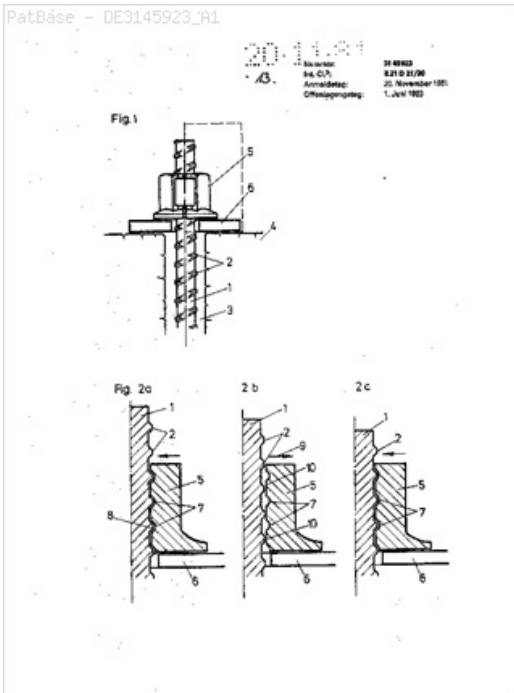
International (IPC 8-9): E21D21/00 F16B31/02 F16B37/08 (Advanced/Invention);

E21D21/00 F16B31/00 F16B37/08 (Core/Invention)

International (IPC 1-7): E02D5/80 E21D21/00

CPC: F16B31/02 E21D21/008 E21D21/0093 F16B37/0857

European: E21D21/00N E21D21/00S F16B31/02 F16B37/08A14



Family:

Publication number	Publication date	Application number	Application date
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AT376008 B	19841010	AT19820004217	19821118
AT421782 A	19840215	AT19820004217	19821118
CH658100 A	19861015	CH19820006265	19821027
DE3145923 A1	19830601	DE19813145923	19811120
DE3145923 C2	19831117	DE19813145923	19811120

Priority:

DE19813145923 19811120

Probable Assignee: DYCKERHOFF AND WIDMANN AG

Assignee(s): (std): DYCKERHOFF AND WIDMANN AG

Assignee(s): DYCKERHOFF AND WIDMANN AG 8000 MUENCHEN DE ; DYCKERHOFF AND WIDMANN AKTIENGESELLSCHAFT

Inventor(s): (std): ERFINDER HAT AUF NENNUNG VERZI

Inventor(s): ERFINDER HAT AUF NENNUNG VERZICHTET ; VERZICHT DES ERFINDERS AUF NENNUNG

13) Family number: 1876029 (US4560305A)

© PatBase

Title: YIELDABLE CONNECTION

Abstract: The invention provides a yieldable connection between a metallic rod-shaped body and a holding means through which it passes and is intended particularly for yieldable rock bolts (roof bolts) anchor bolts and yieldable props, e.g. for mining and tunnelling. For that purpose shear bodies, e.g. spheres or inclined cylindrical pins are provided between the holding means and the slidable rod-shaped body and project some distance into the cross-section of the rod-shaped body. On sliding of the latter, in the holding means, these shear bodies form grooves in the rod, whereby energy is absorbed.

Classifications:

International (IPC 8-9): E21D15/22 E21D20/00 E21D21/00 F16B31/02 F16F7/12 (Advanced/Invention);

F16F7/12 (Advanced/Non-invention);

E21D15/00 E21D21/00 F16B31/00 F16F7/12 (Core/Invention)

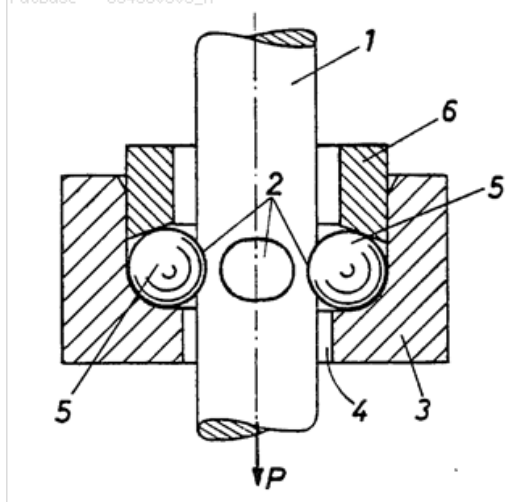
International (IPC 1-7): E21D15/22 E21D15/28 E21D15/42 E21D20/00 E21D21/00 E21F F16B2/06 F16B21/20 F16B9/00 F16F7/12 F16L

CPC: Y10S403/08 F16F7/126 E21D15/22 E21D21/008 F16B31/02 Y10T403/7041

European: E21D15/22 E21D21/00N F16B31/02 F16F7/12F2

US: 403/362 403/DIG.8 405/259 405/259.1 405/259.5 405/260 411/411

PatBase - US4560305_A



Family:

Publication number	Publication date	Application number	Application date
AT376009 B	19841010	AT19820004523	19821213
AT452382 A	19840215	AT19820004523	19821213
AU198321982 A1	19840621	AU19830021982	19831205
AU561853 B2	19870521	AU19830021982	19831205
CA1197387 A1	19851203	CA19830442251	19831130
DE3342746 A1	19840614	DE19833342746	19831125
DE3342746 C2	19880505	DE19833342746	19831125
FR2537669 A1	19840615	FR19830019845	19831212
FR2537669 B1	19880318	FR19830019845	19831212
GB2131468 A1	19840620	GB19830033075	19831212
GB2131468 B2	19870708	GB19830033075	19831212
GB8333075 A0	19840118	GB19830033075	19831212
US4560305 A	19851224	US19830560552	19831212
ZA8309213 A	19840829	ZA19830009213	19831212

Priority:

AT19820004523 19821213 CA19830442251 19831130

Probable Assignee: POWONDRA FRANZ DIPL ING DR

Assignee(s): (std): POWONDRA DIPL ING FRANZ ; POWONDRA DR MONT FRANZ ; POWONDRA F ; POWONDRA FRANZ DIPL ING DR ; POWONDRA FRANZ DR ; POWONDRA FRANZ DIPL ING DR MON

Assignee(s): POWONDRA FRANZ DIPL ING DR MONT ; POWONDRA FRANZ DIPL ING DR MONT WIEN AT ; POWONDRA FRANZ DIPLING ; POWONDRA FRANZ DIPLING DR ; POWONDRA FRANZ ; FRANZ POWONDRA

Inventor(s): (std): POWONDRA FRANZ DIPL ING DR MON ; POWONDRA FRANZ

Inventor(s): POWONDRA FRANZ DIPL ING ; FRANZ POWONDRA ; POWONDRA FRANZ DIPL ING DR MONT ; POWONDRA FRANZ DIPL ING DR MONT WIEN AT ; POWONDRA FRANZ DIPLING

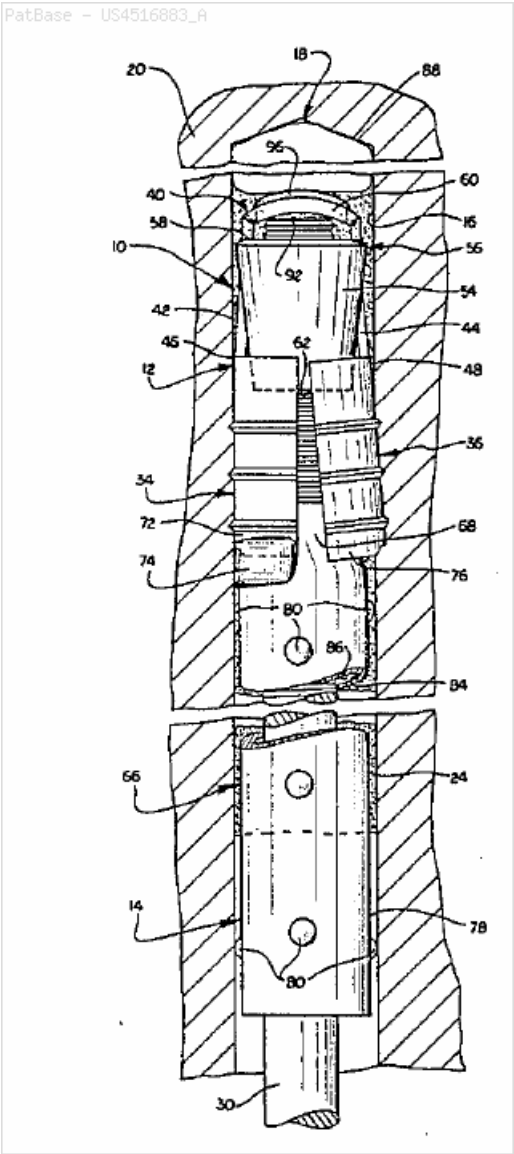
Agent(s): GRIFFITH HACK; MACRAE AND CO

Title: Mine roof bolt mounting assembly

Abstract: A mounting assembly for holding a bolt in a hole or opening drilled in a mine roof includes an expansion anchor assembly which mechanically grips the side surface of the hole and an adhesive anchor section which is bonded to the side surface of the hole by a body of adhesive material. When the mounting assembly is to be installed in a hole drilled in a mine roof, a cartridge of adhesive is inserted into the hole and the mounting assembly is forced upwardly in the hole until the cartridge ruptures. Immediately after the cartridge ruptures, a bolt is tightened to press retainer elements in the expansion anchor assembly against the side surface of the hole. Shortly thereafter, the adhesive sets up around the expansion anchor assembly and the tubular adhesive anchor section. Therefore, the expansion anchor assembly provides a mechanical gripping action with the stratum of rock in which the hole is drilled and adhesive bond is obtained between the tubular adhesive anchor section and the stratum of rock.

Classifications:

International (IPC 8-9): E21D20/02 E21D21/00 F16B13/06
F16B13/14 (Advanced/Invention);
E21D20/00 E21D21/00 F16B13/00 F16B13/06 (Core/Invention)
International (IPC 1-7): E21D20/02
CPC: F16B13/066 E21D20/02 E21D21/0033 E21D21/0046 E21D21/008
F16B13/143
European: E21D20/02 E21D21/00M2 E21D21/00M6 E21D21/00N
F16B13/06D4 F16B13/14C2
US: 405/259 405/259.3 405/259.5 405/260 411/57 411/60.3



Family:

Publication number	Publication date	Application number	Application date
US4516883 A	19850514	US19830481400	19830401

Priority:

US19830481400 19830401

Probable Assignee:

DIE MATIC CORP

Assignee(s): (std):

DIE MATIC CORP

Inventor(s): (std):

ZEITLER LOUIE

Title: Rock-bolt stabilizer device for mining and tunneling applications

Abstract: A rock bolt stabilizer device which can be arranged in boreholes for stabilizing rock and similar host environments in mining and tunneling. The device is adapted to perform the function of a rigid profile anchor under predetermined stress conditions, and is also adapted to perform the function of an expansion anchor under given stress conditions. The device generally comprises an anchor member with mix end which can be secured near the base of the respective borehole by means of a cementitious composition. For tensioning, the other end of the anchor member can carry a bearing plate, a spacer, and a fastener for tensioning. The device also includes a sleeve which performs the function of a rigid anchor, and the sleeve substantially surrounds the anchor member. An increased armoring and anchoring efficiency is achieved with the device.

Classifications:

International (IPC 8-9): E21D21/00 (Advanced/Invention);

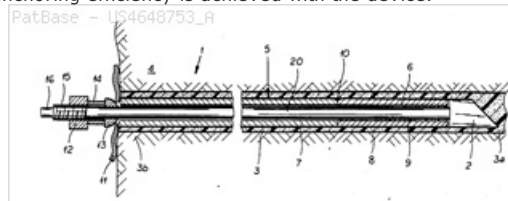
E21D21/00 (Core/Invention)

International (IPC 1-7): E21D21/00 E21D21/02

CPC: E21D21/0033

European: E21D21/00M2

US: 405/259.5 405/259.6 405/260 405/261 411/8



Family:

Publication number	Publication date	Application number	Application date
AU198542012 A1	19851114	AU19850042012	19850506
AU574462 B2	19880707	AU19850042012	19850506
DE3417252 C1	19860417	DE19843417252	19840510
FR2564137 A1	19851115	FR19850006317	19850425
FR2564137 B1	19880122	FR19850006317	19850425
GB2158538 A1	19851113	GB19850011395	19850503
GB2158538 B2	19871104	GB19850011395	19850503
GB8511395 A0	19850612	GB19850011395	19850503
US4648753 A	19870310	US19850727026	19850425
ZA8503501 A	19860129	ZA19850003501	19850509

Priority:

DE19843417252 19840510

Probable Assignee: BERGWERKSVERBAND GMBH

Assignee(s): (std): BERGWERKSVERBAND GMBH

Assignee(s): BERGWERKSVERBAND GMBH 4300 ESSEN DE ; BERGWERKSVERBAND GMBH ; BERGWERKSVERBAND G M B H

Inventor(s): (std): STEPHAN PETER ; STEPHAN PETER DIPL ING ; STEPHEN PETER

Inventor(s): STEPHAN PETER DIPL ING 4300 ESSEN DE ; PETER STEPHAN ; PETER STEPHEN

16) Family number: 17912662 (US4630971A)

© PatBase

Title: Apparatus for anchoring rock and the like

Abstract: An anchoring apparatus for insertion into a borehole in a rock stratum for supporting the rock surface or wall, such as in a rock tunnel or rock excavation, includes a tension member in the form of an axially elongated steel rod with force transmission ribs on its outer surface and an anchoring element, such as an anchoring nut, engageable with the rod. The anchoring element has an inside surface with inwardly extending projections and the adjacent flanks on the projections form grooves within which the force transmission ribs engage. The anchoring element is formed of a higher strength material than the rod. When a predetermined axially extending tension force acting on the rod is exceeded, relative movement takes place between the anchoring element and the rod. The flanks on the projections on the anchoring element in contact with the ribs on the rod shear off a portion of the ribs contacted. Accordingly, while the predetermined force is exceeded, the shearing action proceeds and affords a sliding anchoring effect between the rod and the anchoring element.

Classifications:

International (IPC 8-9): E21D20/00 E21D21/00 F16B13/00

F16B31/02 (Advanced/Invention);

E21D20/00 (Advanced/Non-invention);

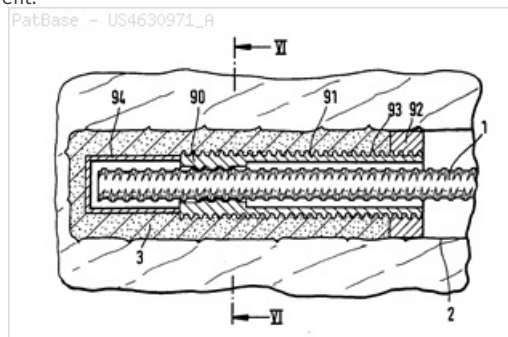
E21D20/00 E21D21/00 F16B13/00 F16B31/00 (Core/Invention)

International (IPC 1-7): E04C5/12 E21D20/00 E21D21/00

CPC: E21D21/008 F16B13/00 F16B31/02

European: E21D21/00N F16B13/00 F16B31/02

US: 405/259 405/259.1 405/259.5 405/260 411/69



Family:

Publication number	Publication date	Application number	Application date
AT33875 E	19880515	AT19850116557T	19851224
AU198652753 A1	19860807	AU19860052753	19860128
AU574633 B2	19880707	AU19860052753	19860128
BRPI8600356 A	19861014	BR1986PI00356	19860129
CA1270670 A1	19900626	CA19860500339	19860124
DE3503012 A1	19860731	DE19853503012	19850130
DE3503012 C2	19870611	DE19853503012	19850130
DE3562403 D1	19880601	DE19853562403	19851224

EP0190460 A1	19860813	EP19850116557	19851224
EP0190460 B1	19880427	EP19850116557	19851224
ES296497 U	19881216	ES19860296497U	19860129
ES296497 Y	19890701	ES19860296497U	19860129
ES296497 Y1	19890801	ES19860296497U	19860129
JP61217000 A2	19860926	JP19860016975	19860130
NO860316 A	19860731	NO19860000316	19860129
US4630971 A	19861223	US19860823055	19860127
ZA8600483 A	19860924	ZA19860000483	19860122

Priority:

DE19853503012 19850130 EP19850116557 19851224 DE19853562403 19851224
CA19860500339 19860124

Probable Assignee: DYCKERHOFF AND WIDMANN AG 8000 MUENCHEN DE

Assignee(s): (std): DYCKERHOFF AND WIDMANN A G ; DYCKERHOFF AND WIDMANN AG

Assignee(s): DYCKERHOFF AND WIDMANN AG 8000 MUENCHEN DE ; DYCKERHOFF AND WIDMANN AKTIENGESELLSCHAFT ; HERBST THOMAS ; SCHNITZLER LORENZ

Inventor(s): (std): DYCKERHOFF WIDMANN AKTIENGESEL ; HERBST THOMAS ; LORENZ SCHNITZLER ; ROORENTSU SHIYUNITSUTSURERU ; SCHITZLER LORENZ ; SCHNITZLER LORENZ ; THOMAS HERBST ; TOOMASU HERUPUSUTO

Inventor(s): VERZICHT DES ERFINDERS AUF NENNUNG ; DYCKERHOFF AND WIDMANN AG ; DYCKERHOFF AND WIDMANN AKTIENGESELLSCHAFT

Agent(s): PHILLIPS ORMONDE FITZPATRICK; FETHERSTONHAUGH AND CO

Designated states: AT BE CH DE FR GB IT LI SE

17) Family number: 6492861 (DE3631653C1)

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Title: Anchorage for a rock bolt

Abstract: Rock bolts are known, the tie rod (1) of which is mounted inside a borehole in a fixed position relative to the borehole wall and in a slidable manner in the area of a borehole mouth, with a bolting plate arranged in between, and of a supporting sleeve having a tapered bore. Displacement between the tie rod and the supporting sleeve can be effected merely by overcoming a deformation force exerted on the tie rod, filling bodies being arranged in the tapered bore which act as force-transmitting elements. To make assembly easier and avoid the risk of injury from the parts of the tie rod (1) which project from the borehole mouth in these known anchorages, an anchorage according to the invention is characterised in that the fixed support of the rock bolt or the tie rod (1) is effected via a bolting plate in the area of the borehole mouth and the slidable support is effected via a supporting sleeve (4) which has a tapered bore (5), is arranged near the bottom of the borehole and is fastened relative to the borehole wall.

Classifications:

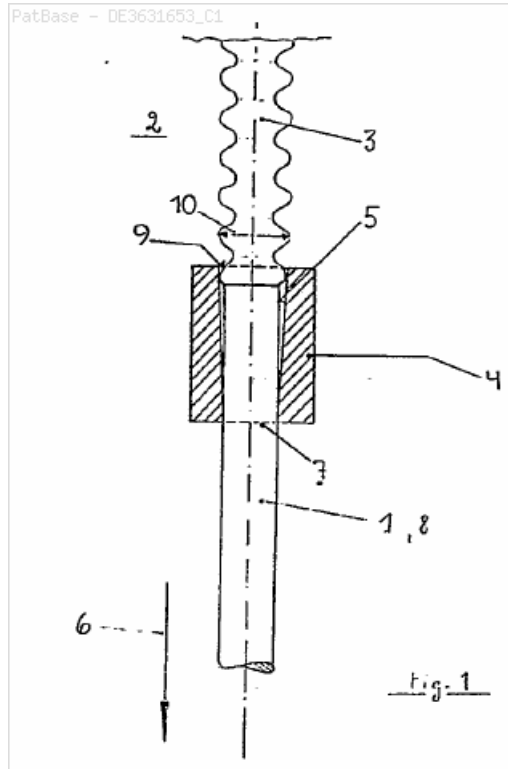
International (IPC 8-9): E21D21/00 (Advanced/Invention);

E21D21/00 (Core/Invention)

International (IPC 1-7): E21D21/00

CPC: E21D21/008

European: E21D21/00N



Family:

Publication number	Publication date	Application number	Application date
DE3631653 C1	19880428	DE19863631653	19860917

Priority:

DE19863631653 19860917

Probable Assignee: GD ANKER GMBH AND CO KG
Assignee(s): (std): GD ANKER GMBH AND CO KG
Assignee(s): GD ANKER GMBH 3370 SEESEN DE
Inventor(s): (std): GRUBER HEINZ
Inventor(s): GRUBER HEINZ 3370 SEESEN DE

18) Family number: 4873764 (US5073064A)

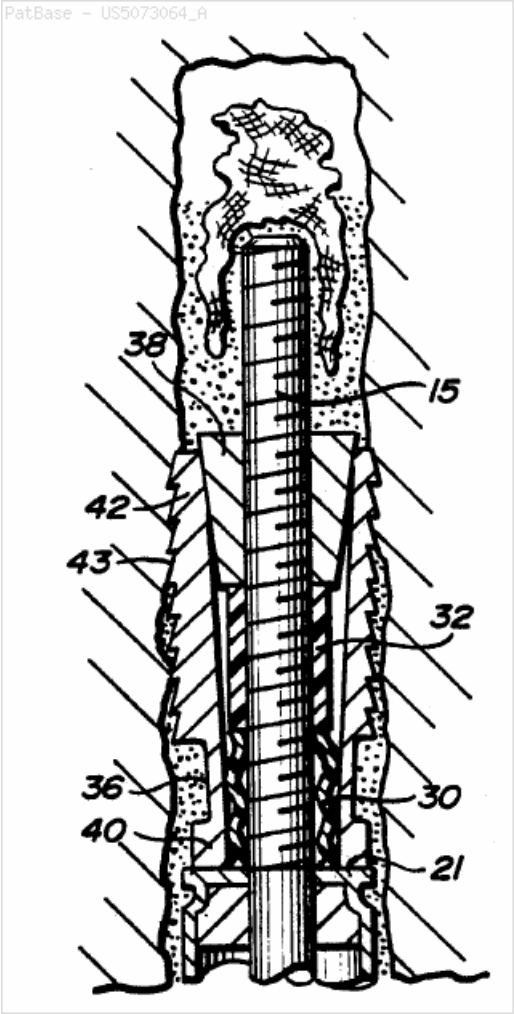
© PatBase

Title: Method and apparatus for retorquing an installed mine roof bolt

Abstract: An anchor assembly for installing a threaded roof bolt under tension in a bore hole formed in underground passageways, mines, and the like. The anchor assembly includes a conventional two compartment resin cartridge and a mechanical expansion unit. A support collar is threaded on the bolt to restrict axial movement of the mechanical expansion unit. The mechanical expansion unit includes a camming plug and an expandable shell. A pair of hollow tubular sleeves are positioned intermediate the camming plug and the support collar to prevent the resin from embedding in the grooves of the threads of the bolt. Accordingly, the bolt is free to rotate relative to the substrate.

Classifications:

International (IPC 8-9): E21D20/02 E21D21/00 F16B13/06
F16B13/14 (Advanced/Invention);
F16B13/04 (Advanced/Non-invention);
E21D20/00 E21D21/00 F16B13/00 F16B13/06 (Core/Invention);
F16B13/04 (Core/Non-invention)
International (IPC 1-7): E21D20/02
CPC: E21D20/02 E21D21/0093 F16B13/045 F16B13/066 F16B13/143
European: E21D20/02 E21D21/00S F16B13/06D4 F16B13/14C2
R16B13/04A
US: 405/259.1 405/259.6



Family:

Publication number	Publication date	Application number	Application date
US5073064 A	19911217	US19900515838	19900427

Priority:

US19900515838 19900427

Probable Assignee: EXCEL MINING SYSTEMS INC

Assignee(s): (std): BIRMINGHAM BOLT CO

Assignee(s): BIRMINGHAM BOLT CO INC ; BIRMINGHAM BOLT COMPANY ; BIRMINGHAM STEEL CORP ; STAR BANK NATIONAL ASSOCIATION ; EXCEL MINING SYSTEMS INC ; ANI METAL PRODUCTS INC

Inventor(s): (std): SCHAFFER CHARLES W ; LEONARD HENRY A

19) Family number: 9027433 (US5400994A)

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Title: Yieldable roof support system

Abstract: A support includes a base member having an open end and a hollow interior, a forcing member having an end extending through the open end of the base member into the hollow interior thereof and having threads thereon and a mandrel or sliding nut capable of engaging the threads of the forcing member at an adjustable position and providing an interfering relationship between the base and forcing members as a compressive load is applied thereto. The support is particularly adapted for use in supporting the roof of a mine.

Classifications:

International (IPC 8-9): E04G25/06 E21D15/22 E21D15/24

E21D23/00 (Advanced/Invention);

E04G25/00 E21D15/00 E21D23/00 (Core/Invention)

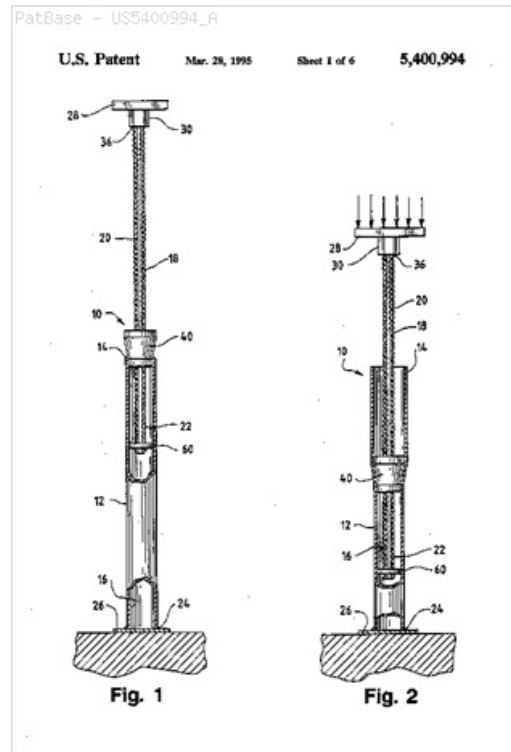
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E21D15/24 E21D15/26 E21D15/502 E21D21/00 E21D23/00

CPC: E21D15/22

European: E21D15/22

US: 248/354.3 248/548 405/290



Family:

Publication number	Publication date	Application number	Application date
AU1008392 A1	19920730	AU19920010083D	19920107
AU199210083 A1	19920730	AU19920010083	19920107
AU651653 B2	19940728	AU19920010083	19920107
CA2059575 AA	19920723	CA19922059575	19920116
CA2070567 AA	19931011	CA19922070567	19920605
FR2671829 A1	19920724	FR19920000573	19920121
GB2252114 A1	19920729	GB19920000725	19920114
GB9200725 A0	19920311	GB19920000725	19920114
PL293251 A1	19921005	PL19920293251	19920122
US5400994 A	19950328	US19920867150	19920410
ZA9200159 A	19921028	ZA19920000159	19920109

Priority:

US19910645000 19910122 CA19922059575 19920116 US19920867150 19920410
CA19922070567 19920605

Probable Assignee: DYCKERHOFF AND WIDMANN AG OF MUN

Assignee(s): (std): DYCKERHOFF AND WIDMANN AG ; DYCKERHOFF AND WIDMANN AG OF MUN ; DYCKERHOFF AND WIDMANN OF MUN AG

Assignee(s): DYCKERHOFF WIDMANN AG ; DYCKERHOFF AND WIDMANN AG OF MUNICH ; DYCKERHOFF AND WIDMANN AKTIENGESSELLSCHAFT ; DYCKERHOFF AND WIDMANN OF MUNICH A GERMAN CORP AG ; HERBST THOMAS ; SHAWWAF KHALED ; WLODKOWSKI JOHANN ; BRANDON RAY

Inventor(s): (std): BRANDON RAY ; HERBST THOMAS ; SHAWWAF KHALED ; WLODKOWSKI JOHANN ; WLODKOWSKI JOHANN ; RAY BRANDON ; KHALED SHAWWAF ; JOHANN WLODKOWSKI ; SYRIENNE NATIONALITE ; AUTRICHIENNE NATIONALITE ; AMERICAINE NATIONALITE ; ALLEMANDE NATIONALITE ; THOMAS HERBST

Inventor(s): SHAWWAF KHALED NATIONALITE SYRIENNE ; HERBST THOMAS NATIONALITE ALLEMANDE ; BRANDON RAY NATIONALITE AMERICAINE ; WLODKOWSKI JOHANN NATIONALITE AUTRICHIENNE

Agent(s): PHILLIPS ORMONDE FITZPATRICK; FINLAYSON AND SINGLEHURST

20) Family number: 10011783 (EP0620357A2)

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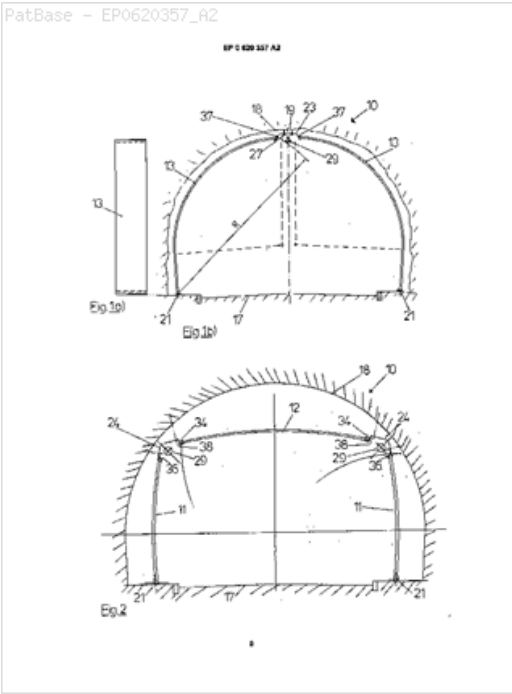
Title: LINING FOR A TUNNEL AND METHOD FOR ITS ATTACHMENT.

Abstract: A lining for a tunnel (10) consists of a multiplicity of individual segments (13). In an advantageous embodiment, the segments (13) extend from the floor (17) almost up to the tunnel roof (19). The segments (13) have a curvature adapted to the tunnel radius. The segments (13) rest on the floor side on supports (21) and are fastened on the roof side to the girders (23) by means of the profiled rails (37). The segments (13) are in releasable engagement with the supports in such a way that they can be pivoted about the support (21) upon assembly or dismantling. The segments (13) are connected in a yielding manner to the supports (21) and girders (23). The temperature-induced expansion or contraction of the segments (13) can thereby be absorbed.

The joints between the segments (13) are sealed off watertight by a sealing profile. Lighting (29) can be provided on the girders (23).

Classifications:

International (IPC 8-9): E21D11/00 E21D11/18
E21D11/38 (Advanced/Invention);
E21D11/00 E21D11/14 E21D11/38 (Core/Invention)
International (IPC 1-7): E21D11/00 E21D11/15 E21D11/22
CPC: E21D11/003 E21D11/18 E21D11/38
European: E21D11/00B E21D11/18 E21D11/38



Family:

Publication number	Publication date	Application number	Application date
AT211799 E	20020115	AT19940810210T	19940413
DE59410024 D1	20020214	DE19945010024	19940413
EP0620357 A2	19941019	EP19940810210	19940413
EP0620357 A3	19950531	EP19940810210	19940413
EP0620357 B1	20020109	EP19940810210	19940413

Priority:

CH19930001122 19930414

Probable Assignee: JEHL XAVER
Assignee(s): (std): JEHL XAVER
Inventor(s): (std): JEHL XAVER
Designated states: AT CH DE FR IT LI

21) Family number: 20690247 (WO0151769A1)

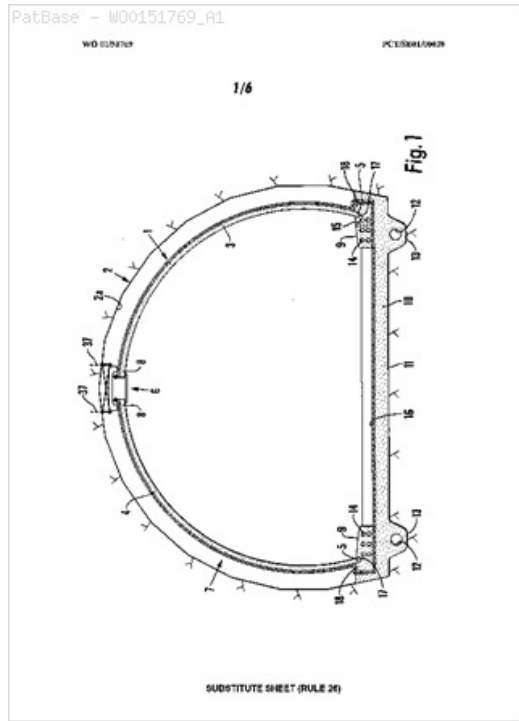
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Title: ARC CONSTRUCTION

Abstract: Arch vault (1) for lining of or for vaulting inside spaces (2) as tunnels, rock chambers or similar, which arch vault (1) comprises at least one elongated mid-section (6) and one side element (3, 4), which side element (3, 4) consists of a prefabricated reinforced concrete element and which side element (3, 4) is raised along a lower edge (5) and arranged against the mid-section (6) to form an arch section (7) through interaction at its upper end part or edge (8). According to the invention, only said mid-section (6) is intrinsically anchored in the limiting surface (2a) of the space (2), that the side element (3, 4) is arranged aloof from and entirely freestanding from said limiting surface (2a) between its lower and its upper end part or edge (5, 8), which upper end part or edge (8) is releasably connected with said mid-section (6) via a joint (25) and that said mid-section (6) constitutes a support for the side element (3, 4).

Classifications:

International (IPC 8-9): E21D11/08 E21D11/38 (Advanced/Invention);
E21D11/08 E21D11/38 (Core/Invention);
E21D (Subclass/Invention)
International (IPC 1-7): E21D E21D11/38
CPC: E21D11/08 E21D11/083 E21D11/38
European: E21D11/08 E21D11/08C E21D11/38



Family:

Publication number	Publication date	Application number	Application date
AU2001227223 AA	20010724	AU20010227223	20010111
NO20023164 A	20020911	NO20020003164	20020628
NO20023164 A0	20020628	NO20020003164	20020628
SE200000067 A	20010712	SE20000000067D	20000111
SE200000067 A0	20000111	SE20000000067	20000111
SE200000067 L	20010712	SE20000000067	20000111
SE200002273 A	20011217	SE20000002273D	20000616
SE200002273 A0	20000616	SE20000002273	20000616
SE200002273 L	20011217	SE20000002273	20000616
SE521950 C2	20031223	SE20000000067	20000111
SE525449 C2	20050222	SE20000002273	20000616
WO0151769 A1	20010719	WO2001SE00038	20010111

Priority:

SE20000000067 20000111 SE20000002273 20000616 WO2001SE00038 20010111

Probable Assignee: NORDMARKENS BETONGPRODUKTER AB

Assignee(s): (std): ANDERSSON TOMMY ; LARSSON STEFAN ; NORDMARKENS BETONGPRODUKTER AB ; NORDMARKENS BETONGPRODUKTER AK ; STEFAN LARSSON ; NORDMARKENS BETONGPRODUKTER C O SWEROCK AB

Assignee(s): NORDMARKENS BETONGPRODUKTER AKTIEBOLAG ; NORDMARKENS BETONGPRODUKTER AB C O SWEROCK AB

Inventor(s): (std): ANDERSSON TOMMY ; LARSSON STEFAN ; STEFAN LARSSON ; TOMMY ANDERSSON

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CR CU CY CZ DE DK DM DZ EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

22) Family number: 32171169 (US2005191138A)

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Title: METHOD AND DEVICE FOR STABILIZING A CAVITY EXCAVATED IN UNDERGROUND CONSTRUCTION

Abstract: A compression body (7) is inserted into the contraction joint (6) between two tunnel lining elements (2, 3), which body deforms in response to a compressive load caused by the tunnel lining elements' (2, 3) moving towards each other. The compression body (7) is composed of a material containing voids, and has a compressive strength of at least 1 MPa and a void fraction of between 10 percent and 90 percent of its total volume. The compression body (7) may be composed, for example, of steel foam, or of a mixture which contains cement and blown-glass particles or plastic particles. When a predetermined compressive load is exceeded, the voids within the compression body (7) collapse in a stepwise manner, or are compressed in a stepwise manner.

Classifications:

International (IPC 8-9): E21D11/00 E21D11/04 E21D11/05 E21D11/08 E21D21/00 (Advanced/Invention);

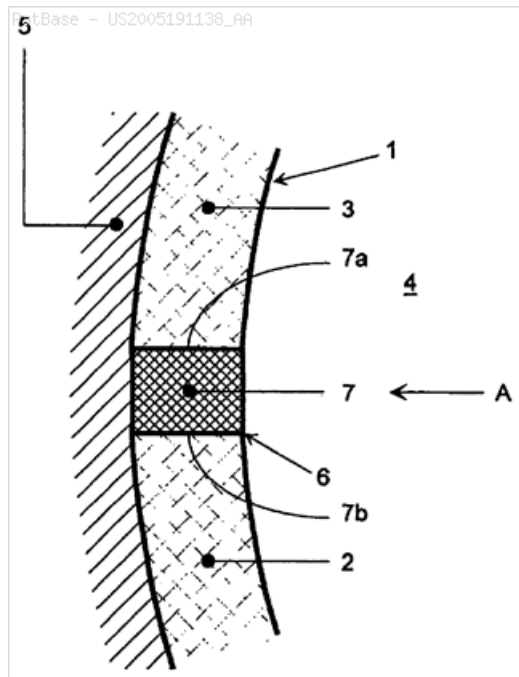
E21D11/00 E21D11/04 E21D11/08 E21D21/00 (Core/Invention)

International (IPC 1-7): E02D3/02 E21D11/00 E21D11/04 E21D11/05 E21D11/08 E21D21/00

CPC: E21D11/05 E21D11/083 E21D21/0086

European: E21D11/05 E21D11/08C E21D21/00P

US: 405/135 405/153 405/263 405/272 405/282



Family:

Publication number	Publication date	Application number	Application date
AT380925 E	20071215	AT20040405086T	20040216
DE502004005697 D1	20080124	DE200450005697T	20040216
EP1564369 A1	20050817	EP20040405086	20040216
EP1564369 B1	20071212	EP20040405086	20040216
ES2297363 T3	20080501	ES20040405086T	20040216
JP2005232958 A2	20050902	JP20050037880	20050215
JP3977843 B2	20070919	JP20050037880	20050215
US2005191138 AA	20050901	US20050052221	20050208
US7404694 BB	20080729	US20050052221	20050208

Priority:

EP20040405086 20040216

Probable Assignee: KOVARI KALMAN

Assignee(s): (std): KOVARI KALMAN ; KOVARI KALMAN PROF DR

Inventor(s): (std): KOVARI KALMAN ; KOVARI KALMAN PROF DR

Agent(s): OLIFF AND BERRIDGE PLC

Designated states: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

23) Family number: 32759958 (US2006067795A)

© PatBase

Title: ELONGATE ELEMENT TENSIONING MEMBER

Abstract: An adjustable yield rock bolt that comprises an elongated tensile support member that interacts with at least one gouging member and a receiving member capable of receiving the elongated tensile support member and hold the gouging member segment there between, wherein the elongated tensile support member extends beyond the receiving member a length that corresponds to a predetermined amount of yield before ultimate failure. The bolt has adjustability by allowing for controlled yield by gouging of the elongated tensile support member for any length of displacement.

Classifications:

International (IPC 8-9): E21B21/00 E21D20/00 E21D21/00 E21D21/02

F16B13/00 F16B13/04 F16B35/00 (Advanced/Invention);

E21D20/00 E21D21/02 (Advanced/Non-invention);

E21D20/00 E21D21/00 F16B13/04 F16B35/00 (Core/Invention);

E21D (Subclass/Invention)

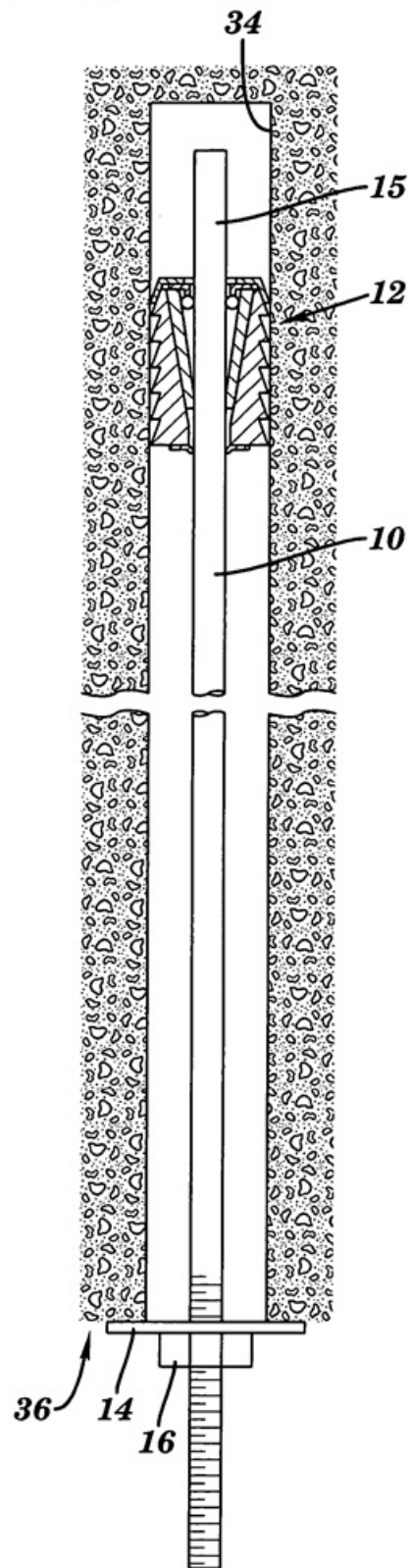
International (IPC 1-7): E21D20/00

CPC: E21D21/0073 E21D21/008 E21D11/006 E21D21/02

European: E21D11/00D E21D21/00N E21D21/02 P21D21/00M14

US: 405/259.1 405/259.100P 405/259.100S 405/259.4 405/259.400P

405/259.5 405/302.1 411/60.1



Family:

Publication number	Publication date	Application number	Application date
AP200703930 A0	20070228	AP20070003930	20050920
AP2308 A	20111031	AP20070003930	20050920
AU2005286869 AA	20060330	AU20050286869	20050920
AU2005286869 BB	20080417	AU20050286869	20050920
BRPI0516959 A	20080930	BR2005PI16959	20050920
CA2575710 AA	20070131	CA20052575710	20050920
CA2575710 C	20091124	CA20052575710	20050920

CA2677759 AA	20060330	CA20052677759	20050920
CA2677759 C	20121127	CA20052677759	20050920
CA2677760 AA	20060330	CA20052677760	20050920
CA2677760 C	20121120	CA20052677760	20050920
CL2005002420 A1	20070504	CL20050002420	20050920
CL49930 B	20070504	CL20050002420	20050920
CN101048573 A	20071003	CN200580031585	20050920
CN101048573 B	20101013	CN200580031585	20050920
EP1819903 A1	20070822	EP20050794962	20050920
EP1819903 A4	20101229	EP20050794962	20050920
HK1107385 A1	20110202	HK20070112947	20071127
HK1107385 A3	20080403	HK20070112947	20071127
IL181943 A0	20070704	IL20070181943	20070315
IL181943 A1	20101130	IL20050181943	20050920
IN00135MN2007 A	20070713	IN2007MN00135	20070129
IN240370 B	20100514	IN2007MN00135	20070129
JP2008513643 T2	20080501	JP20070532594T	20050920
JP4606463 B2	20110105	JP20070532594T	20050920
KR100929879 B1	20091204	KR20077007314	20050920
KR20070054711 A	20070529	KR20077007314	20050920
MX2007003274 A1	20071023	MX20070003274	20050920
NO20072045 A	20070620	NO20070002045	20070420
PE06652006 A1	20060719	PE20050001084	20050920
RS20070098 A	20080605	RS20070000098	20050920
RS52395 B	20130228	YU20070000098	20050920
RU2007114905 A	20081027	RU20070114905	20050920
RU2364723 C2	20090820	RU20070114905	20050920
US2006067795 AA	20060330	US20050231128	20050920
US2006072972 AA	20060406	US20050231184	20050920
US7147404 BB	20061212	US20050231184	20050920
US7927042 BB	20110419	US20050231128	20050920
WO06034208 A1	20060330	WO2005US33505	20050920
ZA200701066 A	20081029	ZA20070001066	20070130

Priority:

ZA20040007521 20040920 ZA20050002542 20050329 CA20052575710 20050920
CA20052677759 20050920 WO2005US33505 20050920 CA20052677760 20050920
ZA20070001066 20070130 WO2005US33505 20070330

Probable Assignee: ATLAS COPCO AB

Assignee(s): (std): ATLAS COPCO AB ; ATLAS COPCO MAI GMBH ; ATLAS KOPKO MAJ GMBKH ; JINGLE JOSEPH J JR ; JINGLE JOSEPH JOHN JR ; SPEARING ANTHONY J S ; SPEARING ANTHONY JOHN SPENCER

Inventor(s): (std): DZHINGL DZHOZEF DZHON ML ; JINGLE JOSEPH J JR ; JINGLE JOSEPH JOHN JR ; JINGLE JR JOSEPH JOHN ; JOHN JINGLE JOSEPH JR ; SPEARING ANTHONY J S ; SPEARING ANTHONY JOHN SPENCER ; SPENCER SPEARING ANTHONY JOHN ; SPIRING EHNTONI DZHON SPENSER

Inventor(s): SPEARING ANTHONY JOHN SPENCER JINGLE JOSEPH ; SPEARING ANTHONY JOHN SPENCER JINGLE JOSEPH JOHN JR ; SPEARING ANTHONY JS ; SPENCER ; JOSEPH JOHN JINGLE JR ; JOSEPH JOHN JR JINGLE ; JR JOSEPH JOHN ; JR JOSEPH JOHN JINGLE ; SPEARING ; SPEARING ANTHONY ; JINGLE JOSEPH JJR ; JINGLE JOSEPH JOHN ; ANTHONY JOHN ; ANTHONY JOHN SPENCER SPEARING ; JINGLE ; JINGLE JOSEPH

Agent(s): CULLENS PATENT AND TRADE MARK ATTORNEYS; CULLENS PTY LTD; SPRUSON AND FERGUSON; SHAPIRO COHEN; SARGENT; WOLFF BREGMAN AND GOLLER; ARLEN L OLSEN SCHMEISER OLSEN AND WATTS; SCHMEISER OLSEN AND WATTS; SCHMEISER OLSEN AND WATTS LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

24) Family number: 41803505 (US2009269159A)

PatBase

Title: IMPROVED SLIDING ANCHOR

Abstract: The invention relates to a sliding anchor bolt (10) for introduction into a bore. The sliding anchor bolt (10) has a anchor bolt rod (12), disposed on which is a sliding control element (14) having a through-opening (18), through which the anchor bolt rod (12) extends. The sliding control element (14) comprises a sliding body cage (16) having at least one recess (20) for receiving a sliding body (22) that is in contact with the lateral surface of the anchor bolt rod (12). For precise and repeatable setting of a predefined breakaway force, each recess (22) for receiving a sliding body (22) is disposed in the sliding body cage (22) tangentially relative to the lateral surface of the anchor bolt rod (12). Furthermore, the lateral enveloping surface of each recess (20) projects by a predefined dimension into the free cross section of the through-opening (18), and each sliding body (22) fills the cross section of the recess (20) associated with it.

Classifications:

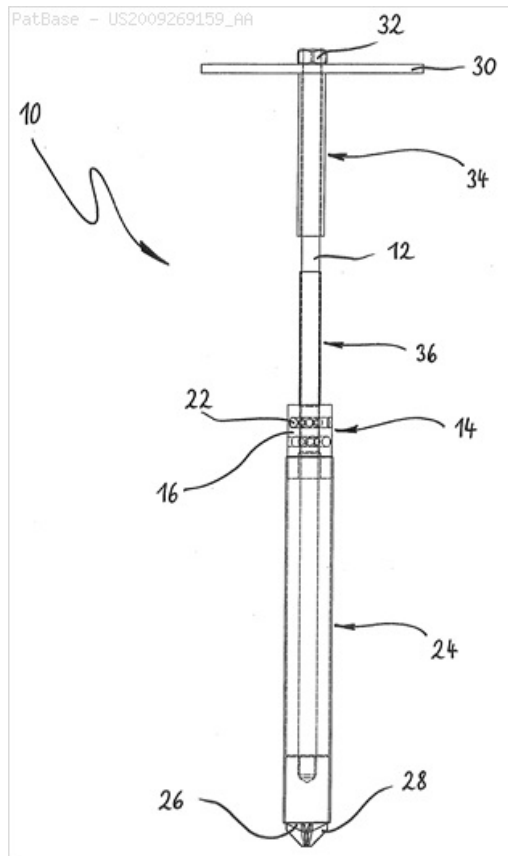
International (IPC 8-9): E02D5/80 E04B1/41 E04C5/01 E21D20/00
E21D21/00 F16B13/06 F16B31/00 (Advanced/Invention);
E21D21/00 (Advanced/Non-invention);
E04B1/41 E04C5/01 E21D21/00 F16B13/06 (Core/Invention);
E21D (Subclass/Invention)

International (IPC 1-7): E21D21/00

CPC: E21D21/0033 E21D21/008 E21D21/0

European: E21D21/00M2 E21D21/00N

US: 405/259.1 411/5 411/56 411/56P 411/8

**Family:**

Publication number	Publication date	Application number	Application date
AT455235 E	20100115	AT20070819726T	20071109
AU2007316905 AA	20080515	AU20070316905	20071109
AU2007316905 BB	20110120	AU20070316905	20071109
BRPI0716667 A2	20131210	BR2007PI16667	20071109
CA2660496 AA	20090210	CA20072660496	20071109
CA2660496 C	20110802	CA20072660496	20071109
CL2007003140 A1	20080404	CL20070003140	20071030
CN101506468 A	20090812	CN200780030628	20071109
CN101506468 B	20110615	CN200780030628	20071109
DE102006053141 B3	20080619	DE200610053141	20061110
DE502007002647 D1	20100304	DE200750002647T	20071109
DK2087203 T3	20100503	DK20070819726T	20071109
EP2087203 A1	20090812	EP20070819726	20071109
EP2087203 B1	20100113	EP20070819726	20071109
ES2328663 T1	20091117	ES20070819726T	20071109
ES2328663 T3	20100422	ES20070819726T	20071109
HK1131649 A1	20111223	HK20090111694	20091211
HR20100084 T1	20100430	HR20100000084	20100218
IL197263 A0	20091224	IL20090197263	20090225
IL197263 A1	20120131	IL20070197263	20071109
IN01671KN2009 A	20090612	IN2009KN01671	20090505
JP2010507032 T2	20100304	JP20090532739T	20071109
JP4741703 B2	20110810	JP20090532739	20071109
KR101088500 B1	20111201	KR20097003454	20090219
KR20090051052 A	20090520	KR20097003454	20071109
ME6409 A	20111220	ME20090000064	20071109
MX2009004927 A1	20090519	MX20090004927	20071109
NO20091918 A	20090518	NO20090001918	20090518
PE11432008 A1	20080918	PE20070001480	20071030
PT2087203 T	20100128	PT20070819726T	20071109
RS51267 B	20101231	RS20100000056	20071109
RU2410541 C2	20110127	RU20090113231	20071109
SI2087203 T1	20100531	SI20070030209T	20071109
US2009269159 AA	20091029	US20070438562	20071109
US7955034 BB	20110607	US20070438562	20071109
WO08055696 A1	20080515	WO2007EP09733	20071109
ZA200900972 A	20100127	ZA20090000972	20090211

Priority:

DE200610053141 20061110 EP20070819726 20071109 WO2007EP09733 20071109

Probable Assignee: ATLAS COPCO AB

Assignee(s): (std): ATLAS COPCO AB ; ATLAS COPCO MAI GMBH ; ATLAS KOPKO MAJ GMBKH ; MEIDL MICHAEL ; MICHAEL MEIDL

Inventor(s): (std): MEIDL MICHAEL ; MICHAEL MEIDL ; MEJDL MIKHAEHL

Inventor(s): MEJDL' MIKHAEHL'

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; OYEN WIGGS GREEN AND MUTALA LLP; BEYER ANDREAS; GE EHRLICH 1995 LTD; SCHMEISER OLSEN AND WATTS; SCHMEISER OLSEN AND WATTS LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

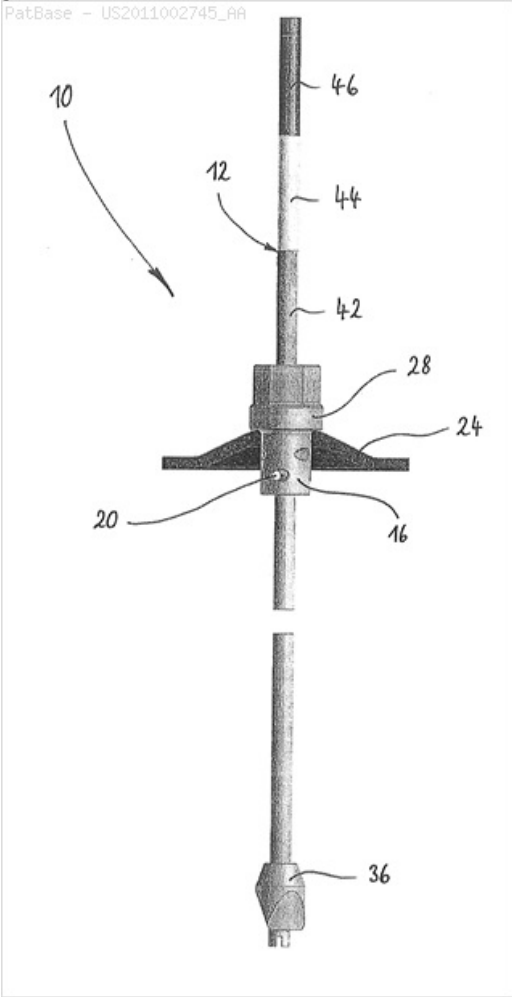
25) Family number: 43687032 (US2011002745A)

© PatBase

Title: SLIDING ANCHOR

Abstract: The invention relates to a sliding bolt (10) for introducing into a bore, having an anchor rod (12), on which is disposed a sliding control element (14) with a through-opening (18), through which the anchor rod (12) extends, wherein the sliding control element (14) comprises a sliding body cage (16) having at least one recess (20) for receiving a sliding body (22) that is in contact with the lateral surface of the anchor rod (12), and having an anchor plate (24), which is intended to lie against a region surrounding the mouth of the bore once the sliding bolt (10) has been introduced into the bore. In contrast to conventional sliding bolts, the anchor plate (24) is in load-transferring connection with the sliding body cage (16), with the result that it is easily possible to provide a device that indicates a sliding path of the sliding bolt that is still available.

Classifications:
International (IPC 8-9): E21D E21D20/00 E21D21/00
F16B31/02 (Advanced/Invention);
E21D20/00 E21D21/00 (Advanced/Non-invention);
E21D20/00 E21D21/00 (Core/Invention);
E21D (Subclass/Invention)
CPC: E21D21/0033 E21D21/008
European: E21D21/00M2 E21D21/00N
US: 405/259.1 405/259.100P 411/5 411/8



Family:

Publication number	Publication date	Application number	Application date
AT522699 E	20110915	AT20080716147T	20080229
AU2008351618 AA	20090903	AU20080351618	20080229
AU2008351618 BB	20111027	AU20080351618	20080229
BRPI0822279 A2	20150630	BR2008PI22279	20080229
CA2715794 AA	20100817	CA20082715794	20080229
CA2715794 C	20130813	CA20082715794	20080229
CN101970798 A	20110209	CN200880127605	20080229
CN101970798 B	20130403	CN200880127605	20080229

DE502008004676 D1	20111027	DE200850004676T	20080229
DK2247827 T3	20111219	DK20080716147T	20080229
EP2247827 A1	20101110	EP20080716147	20080229
EP2247827 B1	20110831	EP20080716147	20080229
ES2371019 T3	20111226	ES20080716147T	20080229
HK1149784 A1	20131129	HK20110103546	20110407
HR20110662 T1	20111130	HR20110000662	20110914
IL207806 A0	20101230	IL20080207806	20080229
IN03121KN2010 A	20111125	IN2010KN03121	20100823
JP2011513606 T2	20110428	JP20100547958T	20080229
JP4980469 B2	20120718	JP20100547958	20080229
KR20100134626 A	20101223	KR20107021809	20080229
MX2010009475 A1	20100928	MX20100009475	20080229
PE01332010 A1	20100303	PE20090000123	20090129
PL2247827 T3	20120131	PL20080716147T	20080229
PT2247827 T	20110930	PT20080716147T	20080229
RU2448253 C1	20120420	RU20100139319	20080229
SI2247827 T1	20120131	SI20080030450T	20080229
US2011002745 AA	20110106	US20080918821	20080229
US8465238 BB	20130618	US20080918821	20080229
WO09106099 A1	20090903	WO2008EP01625	20080229
ZA201005977 A	20110428	ZA20100005977	20100823

Priority:

EP20080716147 20080229 RU20100139319 20080229 WO2008EP01625 20080229
ZA20100005977 20100823

Probable Assignee: ATLAS COPCO AB

Assignee(s): (std): CHARETTE FRANCOIS ; FRANCOIS CHARETTE ; MEIDL MICHAEL ; MICHAEL MEIDL ; ATLAS COPCO MAI GMBH

Assignee(s): ATLAS COPCO SECOROC AB ; ATLAS COPCO AB

Inventor(s): (std): CHARETTE FRANA OIS ; CHARETTE FRANCOIS ; FRANCOIS CHARETTE ; MEIDL MICHAEL ; MEJDL MIKHAEHL ; MICHAEL MEIDL ; SHARETT FRANSUA

Inventor(s): MEJDL' MIKHAEHL'

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; OYEN WIGGS GREEN AND MUTALA LLP; WUESTHOFF AND WUESTHOFF PATENT U RECHTSANWAELTE; BEYER ANDREAS; SCHMEISER OLSEN AND WATTS; SCHMEISER OLSEN AND WATTS LLP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

26) Family number: 49591620 (CN202039873U)

© PatBase

Title: Fast wave absorption and energy dissipation buffering device for mines

Abstract: The utility model belongs to mine safety supporting equipment, and particularly relates to a fast wave absorption and energy dissipation buffering device for mines. The buffering device comprises an upper rigid sleeve (1) and a lower rigid sleeve (2); an external bottom cover (6) is in threaded connection and fixation with the bottom of the lower rigid sleeve (2); the lower rigid sleeve (2) on the upper surface of the external bottom cover (6) is filled with a cylindrical compressible energy-absorbing material (5); an internal rigid bottom cover (4) is arranged on the energy-absorbing material (5); the upper rigid sleeve (1) is in threaded connection with the upper surface of the internal rigid bottom cover (4); four pin clips (3) with the same shape are clamped on the lower rigid sleeve (2); and trapezoidal bosses (3-3) are formed on the inner side surfaces of circular rings, and are embedded in trapezoidal grooves (1-1) on the outer wall of the upper rigid sleeve (1). The buffering device has the advantages that the damage of mechanical production equipment and casualty accidents of staff are avoided to the highest degree.

Classifications:

International (IPC 8-9): E21D15/51 (Advanced/Invention)

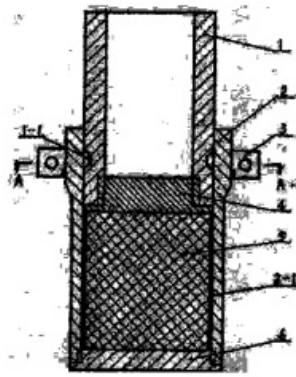


图 1

5

Family:

Publication number	Publication date	Application number	Application date
■ CN102182478 A	20110914	CN201110124952	20110516
■ CN102182478 B	20130313	CN201110124952	20110516
■ CN202039873 U	20111116	CN201120154111U	20110516

Priority:

CN201110124952 20110516 CN201120154111U 20110516

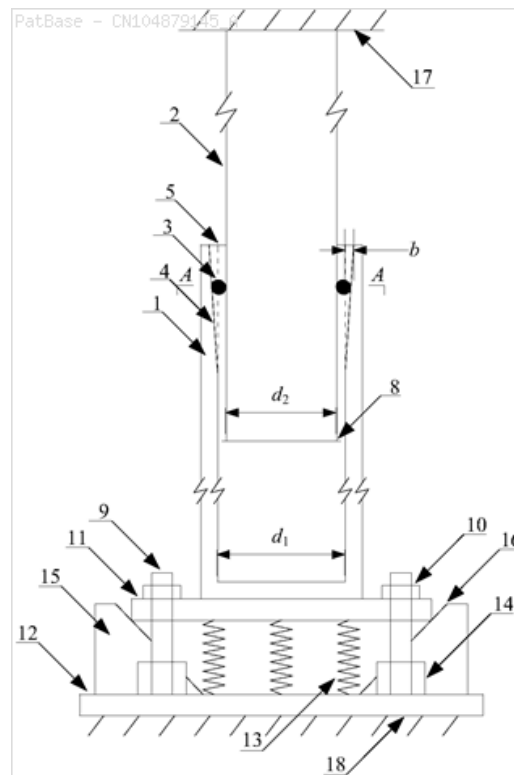
Probable Assignee: UNIV LIAONING TECHNICAL**Assignee(s):** (std): LIAONING TECHNICAL UNIV ; UNIV LIAONING TECHNICAL**Assignee(s):** LIAONING TECHNICAL UNIVERSITY**Inventor(s):** (std): AIWEN WANG ; GUOZHEN LI ; LI GUOZHEN ; LI ZHONGHUA ; LV XIANGFENG ; PAN YISHAN ; WANG AIWEN ; XIANGFENG LV ; XIAO YONGHUI ; YISHAN PAN ; YONGHUI XIAO ; ZHONGHUA LI**27) Family number: 60246367 (CN104879145A)**

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Title: MECHANICALLY-EXTENDABLE CONSTANT-RESISTANCE SHRINKABLE HIGH-STRENGTH SINGLE PROP

Abstract: Disclosed is a mechanically-extendable constant-resistance shrinkable high-strength single prop. A constant-resistance shrinkable device utilizing an elastic deformation characteristic of a solid material and a support mechanism capable of applying prestress and performing depressurizing unloading are adopted. The mechanically-extendable constant-resistance shrinkable high-strength single prop comprises a cylinder barrel, a movable prop body and elastic balls, the upper portion of the inner wall of the cylinder barrel is a circular conical surface, the lower portion of the inner wall of the cylinder barrel is a flat and straight surface, the elastic balls are serially connected by a series string, the positions of the elastic balls are fixed by fixing knots, a cylinder barrel pressing bar is arranged at the top of the cylinder barrel, and a prop pressing bar is arranged at the bottom of the movable prop body. When the movable prop body affected by roof sinking trends to move downwardly, the elastic balls are blocked on a sliding surface between the movable prop body and the cylinder barrel, so that the single prop cannot shrink; when force applied to the movable prop body by roof sinking is large enough, the elastic balls deform, the movable prop keeps sliding down at constant resistance, so that combination of rigid support and flexible support is achieved, and large surrounding rock deformation adapting ability of a support system is improved substantially. The mechanically-extendable constant-resistance shrinkable high-strength single prop is simple in structure and convenient to operate.

Classifications:**International (IPC 8-9):** E21D15/34 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
CN104879145 A	20150902	CN201510305951	20150605
CN104879145 B	20170620	CN201510305951	20150605

Priority:

CN201510305951 20150605

Probable Assignee: JIANGSU GMLX ENERGY TECHNOLOGY CO LTD

Assignee(s): (std): JIANGSU GMLX ENERGY TECHNOLOGY CO LTD

Assignee(s): JIANGSU MINE LIXING ENERGY TECHNOLOGY CO LTD ; JIANGSU GMLX ENERGY TECHNOLOGY CO

Inventor(s): (std): CUI CAN ; LIU HUAPING

28) Family number: 62118382 (US2017298732A)

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Title: ROCK BOLT

Abstract: A rock bolt to be embedded in a borehole and a method of manufacturing a rock bolt, the rock bolt including an extended energy-absorbing part, the first end of the energy-absorbing part including an anchor and the second end of the energy-absorbing part including a screw joint for prestressing the rock bolt. The rock bolt includes an extended tubular part with a jacket and a first end section and a second end section, with an internal dimension that is larger than the external dimension of the energy-absorbing part and arranged in such a manner that it surrounds the energy-absorbing part.

Classifications:

International (IPC 8-9): C01B11/02 E21D21/00 (Advanced/Invention)

International (IPC 1-7): E21D21/00

CPC: E21D21/0033 E21D21/00 E21D21/004 E21D21/008 E21D21/02



Family:

Publication number	Publication date	Application number	Application date
AP201709847 A0	20170331	AP20170009847	20150922
AU2015328736 AA	20160414	AU20150328736	20150922
BR112017005961 A2	20171219	BR20171105961	20150922
CA2960672 AA	20170308	CA20152960672	20150922
CL2017000688 A1	20171030	CL20170000688	20170322
CN106715831 A	20170524	CN201580051426	20150922
CO20170003951 A2	20170711	CO20170003951	20170424
EA201790702 A1	20170731	EA20170090702	20150922
EP3198118 A1	20170802	EP20150848259	20150922
EP3198118 A4	20180516	EP20150848259	20150922
ID201802837 A	20180323	ID2017P0002491	20150922
IN201717012322 A	20170707	IN201717012322	20170405

MX2017003885 A1	20171215	MX20170003885	20150922
PE06182017 A1	20170517	PE20170000560	20150922
SE201451130 A1	20160326	SE20140051130	20140925
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US2017298732 AA	20171019	US20150514426	20150922
WO16056973 A1	20160414	WO2015SE50985	20150922

Priority:

SE20140051130 20140925 WO2015SE50985 20150922

Probable Assignee: NORTHERN MINING PRODUCTS AB

Assignee(s): (std): NORTHERN MINING PRODUCTS AB

Assignee(s): ERIKSSON LEIF ; KREKULA HAKAN

Inventor(s): (std): ERIKSSON LEIF ; HAKAN KREKULA ; KREKULA HAKAN ; LEIF ERIKSSON ; KREKULA HAEKAN

Agent(s): DAVIES COLLISON CAVE PTY LTD; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; ESTUDIO CAREY LTDA; JOSE ANDRES RINCON USCATEGUI; ZACCO SWEDEN AB; HERU LUKITO SH LLM

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

29) Family number: 63943681 (US2016326873A)

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Title: LOCALLY ANCHORED SELF-DRILLING HOLLOW ROCK BOLT

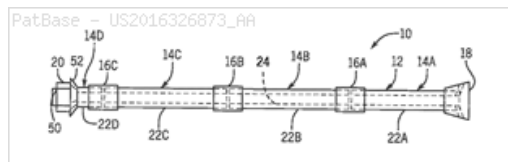
Abstract: A locally-anchored, self-drilling, deformable, hollow rock bolt has one or more intermediate local anchors each of which is flanked by two relatively elongateable shank segments. After grout is supplied through the hollow interior of the rock bolt while the rock bolt is in the drilled borehole, each anchor fixes the bolt to the rock mass, whereas the adjacent smooth shank segments can deform and even yield to accommodate rock fracture. The local anchors may be of relatively short extent when compared to the shank segments. One or more of the intermediate anchors could be formed by a coupler connecting adjacent bolt sections together and/or by shaping the bolt and/or by providing an external anchor. The innermost end of the rock bolt may be formed from or bear a drill bit. The drill bit can have dual functions of drilling the borehole and serving as the innermost anchor of the bolt.

Classifications:

International (IPC 8-9): E21D20/02 E21D21/00 (Advanced/Invention)

CPC: E21D21/008 E21D20/02 E21D21/0053

US: 405/259.5



Family:

Publication number	Publication date	Application number	Application date
AU2016259862 AA	20161117	AU20160259862	20160506
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CL2017002808 A1	20180706	CL20170002808	20171107
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EA201792483 A1	20180330	EA20170092483	20160506
EP3294991 A1	20180321	EP20160729366	20160506
ID201805639 A	20180525	ID2017AID07637	20160506
US2016326873 AA	20161110	US20160148329	20160506
US9845678 BB	20171219	US20160148329	20160506
WO16181219 A1	20161117	WO2016IB00712	20160506

Priority:

US20150158656P 20150508 US20160148329 20160506 WO2016IB00712 20160506

Probable Assignee: NORMET INT LTD

Assignee(s): (std): NORMET INT LTD

Assignee(s): SVANBERG MARCUS ; SKOGSETH TROND ; CHARETTE FRANCOIS

Inventor(s): (std): CHARETTE FRANCOIS ; SKOGSETH TROND ; SVANBERG MARCUS

Agent(s): FPA PATENT ATTORNEYS PTY LTD; RIDOUT AND MAYBEE LLP; LINEROS AND CIA; GRUENECKER PATENT U RECHTSANWAELTE PARTG MBB; MAULITTA PRAMULASARI; BOYLE FREDRICKSON SC; NEWHOLM TIMOTHY E

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

30) Family number: 64607223 (CN206280087U)

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Title: NOVEL COMPRESSIBLE MONOMER PILLAR OF ADJUSTABLE CONSTANT -RESISTANCE OF MECHANICAL TYPE

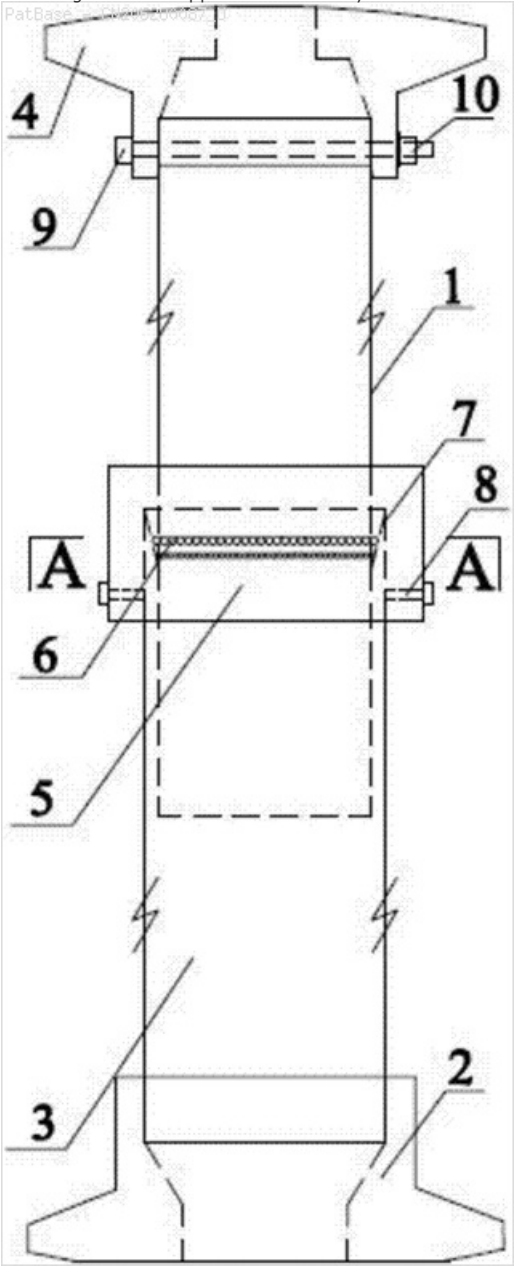
Abstract: The utility model discloses a novel compressible monomer pillar of adjustable constant -resistance of mechanical type,

including the pillar body of rod, pillar cylinder body, support pillar base, pillar top cap and steel ball ring, the pillar cylinder body is hollow cylinder, pillar cylinder body inner wall top is provided with the cylinder body conical surface, pillar body of rod bottom cover is equipped with the steel ball ring is provided with the steel ball ring the bottom of the pillar body of rod is stretched into the pillar cylinder body is inside to be made the steel ball ring is located the cylinder body conical surface with between the pillar body of rod, cylinder body conical surface outside is provided with and prevents the steel ball follow the rigidity spacer sleeve that the pillar cylinder body spills over, pillar body of rod top is provided with the pillar top cap, pillar cylinder body bottom set up in in support pillar base's the recess, the utility model provides a compressible monomer pillar of the adjustable constant -resistance of mechanical type has that the installation rate is fast, characteristics such as supporting intensity is big, material economy, stability are good, reliability height, has extensive on -the -spot practicality in the pit among the roof support in the colliery.

Classifications:

International (IPC 8-9): E21D15/28 (Advanced/Invention)

CPC: E21D15/28



Family:

Publication number	Publication date	Application number	Application date
■ CN106285737 A	20170104	CN201610952821	20161103
■ CN206280087 U	20170627	CN201621177652U	20161103

Priority:

CN201610952821 20161103 CN201621177652U 20161103

Probable Assignee: JIANGSU CMLX ENERGY TECH CO LTD

Assignee(s): (std): CHINA UNIV OF MINING AND TECHNOLOGY ; JIANGSU CMLX ENERGY TECH CO LTD ; UNIV CHINA MINING AND TECH

Assignee(s): JIANGSU CMLX ENERGY TECHNOLOGY CO ; JIANGSU MINE LIXING ENERGY TECHNOLOGY CO LTD

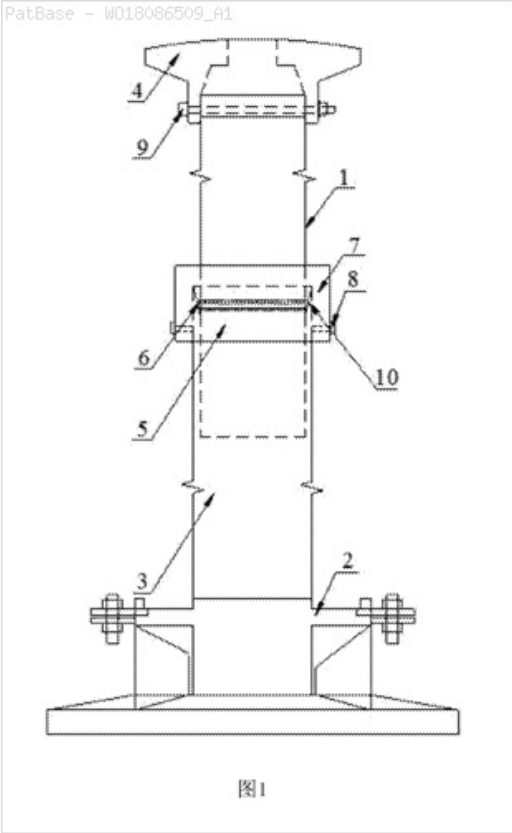
Inventor(s): (std): CUI CAN ; LI MENG ; LIU HUAPING ; MIAO YALIANG ; YAN HONG ; ZHANG QIANG ; ZHOU NAN

Abstract: A method for mounting a mechanical constant-resistance single prop, comprising: (1) fitting a rod body (5) within a cylinder body (3) and adjusting the fitting length according to an actual section height of a cut hole or a roadway in a mine; (2) nesting a steel ball sleeve (6) between the rod body (5) and the cylinder body (3), so that the rod body (5) presses the steel ball sleeve (6) to form self-locking; (3) fixedly connecting a limiting cover to the fitting portion of the rod body (5) and the cylinder body (3); (4) mounting and locking a top tray (4) to the upper end of the rod body (5); and (5) vertically erecting the parts of a mechanical constant-resistance single prop that are assembled in the step (4) and mounting the parts on a base. The present invention implements easy, quick and efficient mounting, and saves labor and material resources.

Classifications:

International (IPC 8-9): E21D15/00 E21D15/582 (Advanced/Invention)

CPC: E21D15/58



Family:

Publication number	Publication date	Application number	Application date
■ CN106499420 A	20170315	CN201610979890	20161108
■ WO18086509 A1	20180517	WO2017CN109693	20171107

Priority:

CN201610952804 20161103 CN201610979890 20161108

Probable Assignee: JIANGSU CMLX ENERGY TECH CO LTD

Assignee(s): (std): CHINA UNIV OF MINING AND TECHNOLOGY ; JIANGSU CMLX ENERGY TECH CO LTD ; UNIV CHINA MINING AND TECH

Assignee(s): JIANGSU CMLX ENERGY TECHNOLOGY CO

Inventor(s): (std): CHEN YANLONG ; CUI CAN ; DENG XUEJIE ; LIU HUAPING ; MIAO XIEXING ; QIAO MING ; WU YU ; ZHANG JIXIONG ; ZHANG QIANG

Agent(s): NANJING JINGWEI PATENT AND TRADEMARK AGENCY CO LTD

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW