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⑤④ **A holder for a pick, and the combination of a pick and holder.**

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Description

This invention relates to pick holders and the combination thereof with picks and is particularly concerned with the art of mineral mining picks (which term, as is generally acknowledged in the art, includes picks for rock mining and road planning). In this art the pick holder is likely to be in the form of a socketed block or box on or in a driven component of a mining machine but may be the component itself.

The invention is concerned with picks and pick holders of the type in which, during their use, a fluid (usually water and conveniently referred to as such hereafter) is directed into the cutting region of the picks for the primary purposes of dust suppression, flushing and cooling (which latter term includes cooling incandescence sparking). Examples of picks and pick holders of this general type are disclosed in our Specification GB—A—2,088,441 which is concerned with the way in which the flow of water under pressure can be achieved through the pick (for the aforementioned purposes) in an efficient manner. The advantages of providing a relatively simple and efficient means of achieving flow of water under pressure through a pick and the appropriate application of the resultant water spray or jet for the aforementioned purposes are discussed in our Specifications GB—A—2,088,441 and GB—A—82 03 638. It is most desirable that the water spray or jets emanating from the pick and pick holders are utilised efficiently and controlled to alleviate the presence of excessive water at the mineral mining site. With this in mind it has hitherto been proposed to incorporate in the mineral mining machinery valve means by which water supply for dust suppression, flushing or cooling is provided only when required for those purposes. In a conventional coal shearer drum the picks are secured by retaining means in holding blocks which are helically spaced around the peripheral edge of a helical web or flange on the drum. During rotation of the drum for cutting, the picks are only in engagement with the mineral face for a minor arcuate portion of the drums rotation and in a prior proposal the valve means is incorporated in the drum to restrict the supply of water so that the spray or jets are provided only for those picks which at a given instant are passing through the aforementioned minor cutting arc. It has also been proposed to provide water sprays or jets from nozzles on picks and pick holders and to have valve means in the holder or carried by the pick which is responsive to pressure of cutting on the pick so that a water supply is available for the spray or jet on that pick or holder only for the period during which the pick is in cutting engagement with the mineral face; examples of these proposals are to be found in EP—A—0 099 350, EP—A—0 010 534 and EP—A—0 060 827 and in GB—A—2,077,813.

The valve means in the prior proposals of the European Specifications are relatively complicated in operation and design, expensive to

manufacture and assemble and because of their complicated structure (which calls for precision made valve components) will require frequent servicing and replacement. Where it is proposed that the valve means is carried by the pick (as in EP—A—0 060 827) it will be realised, because of the limited useful working life expected for mineral mining picks, the aforementioned considerations of cost and complexity of design are likely to render the proposal particularly unattractive and unacceptable commercially.

The proposal in the aforementioned GB—A—2,077,813A is for a relatively simple form of valve means comprising a resilient sleeve on the pick shank which sleeve is deformed in response to cutting pressure on the pick to admit water to the nozzle. A necessary feature of this proposal is that the socket in the pick box which receives the pick shank is enlarged to permit the required deformation of the sleeve; this calls for expensive machining of the box and has the further disadvantage that the cavity within which the sleeve is received can collect coal (or like) dust which will impair the resilient deformation of the sleeve. There are the further disadvantages that the sleeve will likely have a very short useful life, will exhibit poor sealing characteristics, and may easily be damaged during handling of the pick and its insertion into the pick box by virtue of its exposed position on the pick shank.

In addition it is generally recognised that the retaining means by which the pick is secured in its holder is a relatively expensive and often a complicated (in the sense of manufacture, operation or servicing) part of a pick and holder assembly.

It is an object of the present invention to provide a holder for a pick and the combination of a pick and holder which provides for water supply through the pick for dust suppression, flushing or cooling purposes during cutting and which has a relatively simple, inexpensive and efficient means of controlling that water supply and for retaining the pick in the holder in a manner which alleviates the disadvantages of the aforementioned prior proposals.

According to the present invention there is provided a holder for a mineral mining pick comprising a longitudinally extending shank socket within which a shank of a mineral mining pick is to be longitudinally received: a tubular spigot located within and extending longitudinally of said shank socket, said tubular spigot being carried at the inner end of the shank socket in fluid flow communication with a fluid supply passage and being intended for mating in fluid sealing engagement with a fluid coupling socket in the pick shank of the pick which is received in the shank socket for the supply of fluid to passage means in the pick: means for retaining a pick in the holder, and valve means which is responsive to longitudinally directed forces applied thereto during use of the holder when holding a pick to open fluid flow from said fluid supply passage to the passage means in the pick when said forces exceed a predetermined value characterised in

that the means for retaining a pick in the holder comprises an enlarged head part on the tubular spigot remote from the inner end of the shank socket for engaging with the fluid coupling socket of a pick shank when received in the shank socket and the valve means comprises a longitudinally displaceable rod-like component carried within the bore of the tubular spigot and a valve member responsive to displacement of said rod-like component, said rod-like component being displaced when subjected to longitudinally directed forces during use of the holder with a pick therein and adjusting the valve member to open fluid flow from the supply passage through the bore of the tubular spigot for supply to the passage means in the pick.

Further according to the present invention there is provided the assembly of a mineral mining pick and a pick holder; the pick comprising a longitudinally extending shank, a fluid coupling socket extending longitudinally of the shank and passage means communicating with the coupling socket for the flow of fluid under pressure to an outlet port by which fluid is directed for dust suppression, cooling or flushing purposes; the pick holder comprising a shank socket within which the shank is longitudinally received, and a tubular spigot which extends longitudinally of the shank socket, the bore of said tubular spigot being in fluid flow communication with a fluid supply passage; said fluid coupling socket longitudinally receiving the tubular spigot during insertion of the shank into the shank socket to provide fluid flow communication between the fluid supply passage and the passage means; retaining means for releasably retaining the shank in the shank socket and permitting restricted longitudinally displacement of the pick relative to the pick holder, and valve means for controlling fluid flow from the supply passage to the outlet port which valve means is responsive to said longitudinal displacement applied to the pick during use of the combination in mineral cutting to open fluid communication therethrough to the outlet port characterised in that the valve means comprises a rod-like component carried within the bore of the tubular spigot to be longitudinally displaced in response to longitudinal displacement of the pick upon and during cutting engagement of the pick with the mineral face, said displacement of the rod-like component adjusting a valve member to open the valve means, and the retaining means comprises a shoulder on the tubular spigot and a resilient retainer carried by the coupling socket said retainer engaging over the shoulder of the spigot during insertion of the shank into the shank socket to retain the shank in its socket.

The present invention was primarily developed as an improvement to the invention which is the subject of our specification GB—A—2,088,441 which is concerned with achieving a simple and efficient water coupling between a pick and its holder so that a water spray or jet can be effected through an outlet port in the pick body. By the

present invention the tubular spigot/coupling socket water coupling of our earlier proposal has associated therewith a relatively simple and efficient valve arrangement by which it is intended that water supply to the outlet port in the pick body should be effected substantially for the period during which the pick is in cutting engagement with the mineral face and should automatically be cut off as the pick moves out of cutting engagement with the mineral face. From the foregoing it will be apparent that the rod-like component for controlling the valve means is intended to be responsive to the increased force to which the pick is subjected as it moves into engagement with the mineral face and cuts through that face so that the water supply is available at the jet or spray and upon removal or reduction of the aforementioned force (as the pick moves out of cutting engagement with the mineral) the rod-like component responds in the opposite sense so that the valve shuts off water flow to the jet or spray. The rod-like component is longitudinally displaceable in response to the aforementioned forces which are applied to the pick (and therethrough to the holder) during cutting and upon the reduction of those forces as the pick moves out of cutting engagement with the mineral face.

To apply the longitudinally displacement to the rod-like component during a mineral cutting and non-cutting sequence, the pick when received in the pick holder is retained to be capable of restricted longitudinal displacement relative to the holder so that relative longitudinal displacement between the pick and the pick holder causes a force differential to be applied to the rod to longitudinally displace that rod and control the opening and closing of the valve means. Therefore the means for retaining pick shank in the shank socket of the pick holder permits the required relative longitudinal displacement between the pick and the holder for operation of the valve means; this retaining means is preferably constructed so that a shoulder on the spigot engages with a resilient retaining component in the coupling socket to restrain withdrawal of the pick shank from the shank socket. Bearing in mind the requirement for the pick to be longitudinally displaceable relative to the pick holder within predetermined limits as a determined by the retaining means, biasing means should be provided which urges the pick outwardly from the socket in the pick holder to the extent permitted by the retaining means. By this latter proposal, when the pick engages the mineral face for cutting it is displaced into the shank socket of the holder under the cutting force (against the biasing means) and this displacement results in the valve means being adjusted to open communication for water flow through to the outlet port in the pick. The biasing means which urges the pick outwardly preferably comprises fluid pressure to which the pick is subjected from the holder. If required however the aforementioned biasing means can be provided by a spring component or

other resilient means reacting between the pick and the pick holder.

In a preferred arrangement the rod-like component of the valve is carried within the bore of the tubular spigot to extend therethrough so that one end of the rod is subjected to the longitudinally directed forces applied between the pick and the pick holder upon and during cutting engagement of the pick with the mineral face and the subsequent clearance of the pick from the mineral face while the other end of the rod adjusts a valve member which is displaceable in sympathy with the rod to open or close the valve means between the outlet port and the water source depending upon the forces which are applied to the pick.

Where the pick and pick holder are capable of restricted longitudinal displacement relative to each other, it is likely that a longitudinally varying clearance will be provided between the opposing faces of the pick holder and the head of the pick and within which clearance detritus can collect (which would eventually prevent the aforementioned relative displacement). To alleviate this problem it is preferred that the pick head and pick holder are bridged by a seal such as a sleeve, "O" ring or similar component which effectively closes the aforementioned clearance to entry by detritus.

One embodiment of a mineral mining pick and a pick holder combination constructed in accordance with the present invention will now be described, by way of example only, with reference to the accompanying illustrative drawings, in which:

Figure 1 is a side elevation of the combination in part section where a tubular spigot is carried by the pick holder and the valve means is carried by said tubular spigot;

Figure 2 is a side elevation in part section of the tubular spigot incorporated in the combination of Figure 1;

Figure 3 is a side elevation of a rod part of the actuator for the valve means incorporated in the combination of Figure 1;

Figure 4 is a side elevation of a flow distributor head for attachment to the rod part of Figure 3;

Figure 5 is an end elevation of the distributor head shown in Figure 4, and

Figures 6 and 7 diagrammatically show the combination in conditions, respectively, in which fluid flow through the pick is closed by the valve means and is opened by the valve means.

The combination shown in Figures 1, 6 and 7 is primarily intended for heavy duty coal cutting and comprises a point attack pick 1 mounted in a pick holder 2. The pick 1 is generally of conventional shape comprising a one piece steel body having a head 3 and shank 4 which extends longitudinally from the head 3. The shank 4 may be of any lateral cross section but will usually be polygonal, rectangular or, as considered in the present embodiment, circular. Mounted in the head 3 is a tungsten carbide insert 5 which forms a cutting part or tip to the pick. Provided in the holder 2 is a

cylindrical shank socket 6 which receives the cylindrical shank 4 in substantially complementary manner, the shank being inserted longitudinally into the socket 6 through the mouth thereof.

The pick holder 2 will usually be in the form of a block or box as shown which is secured for movement as part of a coal cutting machine to displace the cutting tip 5 as appropriate for coal cutting. Usually the holder 2 will be secured to a coal shearer drum 2a which is rotatable about its longitudinal axis to effect cutting with the pick 1 retained in the holder to project outwardly of the drum at a calculated angle of attack to the coal face. If required, the holder 2 can be an integral part of the drum 2a.

Formed within the body of the pick 1 is a passage 11 which extends longitudinally through the shank 4 and into the head 3 where it communicates with outlet ports 12 formed between recesses in the side face of the insert 5 and an opposing face of a bore within the head 3 within which bore the insert 5 is mounted (preferably in accordance with the invention which is the subject of our Specification GB—A—2,087,949). The passage 11 is intended for the flow therethrough of water which is primarily intended for the purposes of dust suppression, flushing and cooling during coal cutting. Generally the water will emanate from a source within the coal shearer drum 2a and consequently provision is made within the pick holder 2 for coupling the water supply to the passage 11. This coupling includes a tubular spigot 13 upstanding from the bottom wall 14 of the socket 6 and concentric with that socket. The spigot 13 is received within a water coupling socket 15 which is formed in the free end of, and concentric with, the pick shank 4 and which is an extension of the passage 11. The bore 16 of the tubular spigot communicates with the passage 11 and comprises part of a water supply passage 16a from the source of water under pressure within the drum 2a. Located within an annular recess 17 in the socket 15 of the pick shank is an annular pressure seal/retainer component 18 of resilient material. The recess 17 provides a convenient means for retaining the component 18 longitudinally in the socket 15 for carriage with the pick but it will be appreciated that alternative means of such retention can be provided. The component 18 forms a water seal between the tubular spigot 13 and the pick shank 4 and also serves as part of retaining means by which the pick shank 4 is retained in its socket 6. It will be realised from the drawing that the tubular spigot 13 will automatically mate with the fluid coupling socket 15 and pass through the sealing component 18 to effect the water seal as the shank 4 is inserted longitudinally into the shank socket 6.

A further part of the aforementioned retaining means is provided by a frusto conical head 7 of the tubular spigot 13, the taper of which provides a lead-in surface during mating of the spigot with the socket 15 and the movement of the head of

the spigot through the sealing/retaining component 18. The head 7 has an annular shoulder 8 which, when the spigot 13 is fully inserted into the coupling socket 15 lies adjacent to the component 18 (as shown in Figure 1) so that abutment of this component against the shoulder 8 restrains the pick 1 from being withdrawn from the pick holder 2. When the pick 1 is inserted to its maximum extent in the holder 2 a longitudinal clearance is provided between the shoulder 8 and the resilient component 18 so that this clearance can be taken up to permit relative longitudinal displacement between the pick and its holder (which longitudinal displacement will be slightly increased by a small amount of deformation of the resilient component 18 during its abutment by the shoulder 8) so that a gap or clearance A will open and close between the end face of the pick holder 2 and an annular face which opposes it on the pick head 3 which is formed between the pick head and the shank 4 (see Figures 6 and 7). The retaining means provided by the shoulder 8 on the tubular spigot 13 and the resilient sealing/retaining component 18 permits the pick 1 to be removed from the holder 2 by the application of an excessive longitudinally directed force to the pick which is sufficient to move the shank 4 off the spigot 13 by resilient deformation of the component 18 (and possibly removing that component from the socket 15).

The tubular spigot 13 is integral with a tubular mounting 19 by which it is carried in the holder 2. The mounting 19 has a male thread which engages with a female threaded bore 20 in the holder, the bore 20 being an extension of the water supply passage 16a. An annular seal 21 is provided between a shoulder of the mounting 19 and the bottom wall 14 of the shank socket.

The spigot 13/mounting 19 component carries a valve which controls the supply of water from the passage 16a to the passage 11 and thereby to the outlet ports 12; this valve comprises a longitudinally extending actuator in the form of a rod 22 mounted within the bore 16 of the spigot. Sufficient clearance is provided to ensure that the rod 22 and spigot are displaceable longitudinally relative to each other and that an adequate flow of water is permitted between the bore 16 and the opposing surface of the rod 22. The rod 22 emerges from the tubular spigot 13 into an enlarged bore part 23 of the tubular mounting 19 and carries a valve head 24 and sealing washer 25 within this bore part 23. By longitudinal displacement of the valve head 24 with the rod 22 so that the washer 25 is urged into abutment with a bottom shoulder 23a in the tubular mounting 19, a water seal is provided between the bore part 23 and the bore 16 of the tubular spigot (thereby closing water communication between the passages 16a and 11). The rod 22 extends from the bore of the spigot 13 into the coupling socket 15 and has fitted thereto a retaining head 26 provided with longitudinally extending external splines 27. The head 26 is intended to abut an annular shoulder 28 at the bottom of the socket 15

to ensure displacement of the rod 22 in a sense (downwardly as shown in Figure 7) which lifts the valve head 24 off the shoulder in the mounting 19 to open water communication between the passages 16a and 11. During abutment between the rod retaining head 26 and the shoulder 28 in the pick shank, the splines 27 ensure that water flow communication is maintained between the socket 15 and the passage 11. The head 26 conveniently has a bore 33 by which it is fitted and secured to a complementary end 29 of the rod 22 following insertion of the rod through the tubular spigot.

If required, the mouth of the bore 23 to the tubular mounting 19 can be provided with a water filter 30.

In use of the combination shown in Figure 1 a supply of water under pressure is provided to the supply passage 16a and the water pressure provides a biasing force on the valve head 24 and on the pick 1. More particularly (see Figure 6) the water pressure urges the valve head 24 into sealing engagement with the shoulder 23a in the mounting 19 while the rod 22 is urged longitudinally so that its head 26 abuts the shoulder 28 in the coupling socket of the pick shank. This latter abutment applies a biasing force to the pick to urge it longitudinally in a direction outwardly of the shank socket 6. In addition, the rotation of the coal shearer drum can provide a centrifugal biasing force which also urges the pick to be displaced in a direction outwardly of the shank socket 6. Because of the aforementioned biasing forces will be appreciated that when the pick 1 is out of cutting engagement with a mineral face, the pick will be displaced outwardly from its holder 2 to provide a maximum clearance A and to an extent permitted by the abutment of the shoulder 8 on the tubular spigot against the resilient sealing/retaining component 18 as shown in Figure 6. In this latter condition the valve head 24 will be fully seated and sealed in the tubular mounting 19 to close water flow communication between the bore part 23 and the spigot bore 16 so no water jets or spray emanate from the outlet ports 12. As the pick 1 moves into cutting engagement with the mineral face, the forces to which it is subjected during such cutting will cause the pick to be displaced longitudinally into its holder 2 to take up the clearance A as shown in Figure 7. During this latter displacement the abutment of the shoulder 28 on the retainer head 26 causes the rod 22 to be displaced longitudinally in sympathy with the pick 1 thereby lifting the valve head 24 from its seating in the mounting 19; the valve is consequently opened and immediately permits the flow of water from the supply passage 16a, through the spigot bore 16 and passage 11 to provide water jets or sprays 12a at the outlet ports 12 for flushing, cooling or dust suppression purposes. Although during the opening of the valve to permit water flow the valve head 24, and immediately the valve head 24 has lifted from its seating, the pick 1 will be subjected to a biasing effect provided by the water pressure in the

passage 11 and on face 28, the cutting force applied to the pick during its engagement with the mineral face will be considerably greater than this biasing force so that the valve will open immediately as effective mineral cutting commences. Following a cutting stroke of the pick, and as the pick moves out of cutting engagement with the mineral face, the removal of the cutting forces will again permit the pick to be displaced outwardly from its holder 2 by the previously discussed biasing forces and to the condition shown in Figure 6 so that the valve head 24 can again seat against the shoulder 23a of the mounting 19 to close the valve and cut-off the water supply to the outlets 12.

During the opening and closing of the clearance A it is possible that detritus may enter this clearance and eventually prevent the pick from exhibiting the longitudinal displacement relative to the pick holder which is required to open and close the valve. To alleviate this possibility a cylindrical sleeve 31 can be provided to bridge the pick head 3 and the pick holder and to cover the clearance A.

During use the shank socket 6 can be subjected to considerable wear so if required the socket 6 may be provided with a replacement lining such as a sleeve 32 (conveniently formed as a moulding in plastics material). The sleeve 32 is a substantially complementary fit within the shank socket 6 to be readily removable therefrom and receives the shank 4 in substantially complementary manner. Naturally the sleeve 32 will be subjected to wear during use of the pick 1 and when necessary it can be replaced at relatively little expense. As shown in Figure 1 the bridging sleeve 31 is conveniently clamped between the replaceable sleeve 32 and the body of the pick holder but if required the sleeves 31 and 32 can be integral. It will be realised that the sleeves 31 and 32 are optional and accordingly have been omitted from Figures 6 and 7. It will also be realised that one or more outlet ports which communicate with the passage 11 can be positioned where required on the pick head and other than as indicated by the ports 12.

Claims

1. A holder (2) for a mineral mining pick (1) comprising a longitudinally extending shank socket (6) within which a shank (4) of a mineral mining pick is to be longitudinally received; a tubular spigot (13) located within and extending longitudinally of said shank socket (4), said tubular spigot (13) being carried at the inner end of the shank socket (6) in fluid flow communication with a fluid supply passage (16a) and being intended for mating in fluid sealing engagement with a fluid coupling socket (15) in the pick shank (4) of a pick which is received in the shank socket (6) for the supply of fluid to passage means (11) in the pick for dust suppression, cooling or flushing purposes; means (7) for retaining a pick in the holder, and valve means (24) which is responsive to longitudinally directed forces applied thereto

during use of the holder when holding a pick to open fluid flow from said fluid supply passage (16a) to the passage means in the pick when said forces exceed a predetermined value, characterised in that the means for retaining a pick in the holder comprises an enlarged head part (7) on the tubular spigot (13) remote from the inner end of the shank socket (6) for engaging with the fluid coupling socket (15) of a pick shank (4) when received in the shank socket (6) and the valve means comprises a longitudinally displaceable rod-like component (22) carried within the bore (16) of the tubular spigot (13) and a valve member (24) responsive to displacement of said rod-like component (22), said rod-like component (22) being displaced when subjected to longitudinally directed forces during use of the holder with a pick therein and adjusting the valve member (24) to open fluid flow from the supply passage (16a) through the bore (16) of the tubular spigot for supply to the passage means (11) in the pick.

2. A holder as claimed in claim 1 in which the tubular spigot (13) is removable from the shank socket through the mouth thereof and during such removal the spigot carries with it said valve means (22, 24) and said retaining means (7).

3. A holder as claimed in either claim 1 or claim 2 in which the valve member (24) is carried by the rod-like component (22).

4. The assembly of a mineral mining pick (1) and a pick holder (2); the pick (1) comprising a body having a head (3) with a cutting part, a longitudinally extending shank (4), a fluid coupling socket (15) extending longitudinally of the shank (4) and passage means (11) communicating with the coupling socket (15) for the flow of fluid under pressure to an outlet port (12) by which fluid is directed for dust suppression, cooling or flushing purposes; the pick holder (2) comprising a shank socket (6) within which the shank (4) is longitudinally received, and a tubular spigot (13) which extends longitudinally of the shank socket (6), the bore (16) of said tubular spigot (13) being in fluid flow communication with a fluid supply passage (16a); said fluid coupling socket (15) longitudinally receiving the tubular spigot (13) during insertion of the shank (4) into the shank socket (6) to provide fluid flow communication between the fluid supply passage and the passage means; retaining means (7, 18) for releasably retaining the shank (4) in the shank socket (6) and permitting restricted longitudinal displacement of the pick relative to the pick holder, and valve means (24) for controlling fluid flow from the supply passage (16a) to the outlet port (12) which valve means is responsive to said longitudinal displacement applied to the pick during use of the combination in mineral cutting to open fluid communication therethrough to the outlet port (12), characterised in that the valve means comprises a rod-like component (22) carried within the bore (16) of the tubular spigot (13) to be longitudinally displaced in response to longitudinal displacement of the pick (1) upon and during cutting engagement of the pick with the

mineral face, said displacement of the rod-like component (22) adjusting a valve member (24) to open the valve means, and the retaining means comprise a shoulder (8) on the tubular spigot (13) and a resilient retainer (18) carried by the coupling socket (15) said retainer (18) engaging over the shoulder (8) of the spigot (13) during insertion of the shank (4) into the shank socket (6) to retain the shank in its socket.

5 The assembly as claimed in claim 4 in which the valve member (24) is carried by the rod-like component (22).

6 The assembly as claimed in either claim 4 or claim 5 in which the shoulder (8) is formed by a head part (7) of the spigot (13), said head part (7) being tapered to provide a lead-in surface for mating the spigot with the pick shank.

7 The assembly as claimed in claim 6 in which the head part (7) is frusto conical and carries an annular shoulder (8) against which the resilient retainer (18) is to engage in abutment.

8 The assembly as claimed in any one of claims 4 to 7 in which the resilient retainer (18) comprises a ring member and means (17) is provided for retaining the ring member longitudinally within the coupling socket (15).

9 The assembly as claimed in any one of claims 4 to 8 in which the resilient retainer comprises a fluid seal (18) between the tubular spigot (13) and its coupling socket (15).

10 The assembly as claimed in any one of claims 4 to 9 in which the tubular spigot (13) is screw threadedly mounted in the holder (2) to be removable therefrom through the mouth of the shank socket (6) and the valve means (22, 24) and the shoulder (8) are carried by the spigot (13) to be removable therewith from the pick holder.

11 The assembly as claimed in any one of claims 4 to 10 in which a shoulder is formed between the pick shank (4) and a pick head (3) and a seal (31) is provided between the pick holder (2) and the pick head (3), said seal (31) bridging a clearance (A) which opens and closes between said shoulder and the pick holder (2) during longitudinal displacement of the pick (1) relative to its holder (2) to alleviate the entry of detritus into said clearance (A).

12 The assembly as claimed in claim 11 in which the seal (31) between the pick holder (2) and the pick head (3) is an extension of a replaceable lining (32) provided in the shank socket and within which lining (32) the pick shank (4) is received.

Patentansprüche

1. Schneidpickenhalter (2) für eine Schneidpicke (1) mit einem sich längserstreckenden Schaftsockel (6), innerhalb dem der Schaft (4) der Schneidpicke (1) in Längsrichtung aufgenommen ist, mit einem sich längserstreckenden rohrförmigen Zapfenlager (13) in dem Schaftsockel (6), wobei das Zapfenlager (13) am inneren Ende des Schaftsockels (6) in Fluid-Verbindung mit einer Fluid-Versorgungs-Öffnung (16a) gehalten und

zur formschlüssigen fluiddichten Verbindung mit einem Fluid-Kupplungssockel (15) innerhalb des Schaftes (4) der Schneidpicke (1) ausgebildet ist, die von dem Schaftsockel (6) für den Zufluß eines Fluids zu einem Durchflußkanal (11) in der Schneidpicke zur Staubunterdrückung, zur Kühlung oder für Spülzwecke aufgenommen ist, mit Mitteln (7) für das Festlegen der Schneidpicke in dem Schneidpickenhalter und mit Ventiligliedern (24), die auf in Längsrichtung wirkende Kräfte während des Einsatzes des Schneidpickenhalters ansprechen zwecks Öffnens eines Fluid-Durchflusses von der Fluid-Versorgungs-Öffnung (16a) zum Durchflußkanal (11) in der Schneidpicke, sobald diese Kräfte ein vorbestimmtes Maß überschreiten, dadurch gekennzeichnet, daß die Mittel zum Festlegen der Schneidpicke (1) im Schneidpickenhalter (2) ein dem inneren Ende des Schaftsockels (6) abgewandtes erweitertes Kopfteil (7) an dem rohrförmigen Zapfen (13) umfassen für das Lneingriffbringen mit dem Fluid-Kupplungs-Sockel (15) des Schaftsockels (6), sobald der Schaft (4) des Schneidpickels in den Schaftsockel (6) eingesetzt ist, und daß die Ventiliglieder eine in der Bohrung (16) des rohrförmigen Zapfenlagers (13) angeordnete längsbewegliche, stabförmige Komponente (22) sowie ein Ventilelement (24) aufweisen, das der Bewegung der stabförmigen Komponente folgt, wobei die stabförmige Komponente (22) beim Auftreten von längsgerichteten Kräften während des Einsatzes des Schneidpickenhalters mit einer eingesetzten Schneidpicke aus ihrer Lage bewegt wird zwecks Betätigung des ventilelementes (24) zur Öffnung eines Fluid-Stromes von der Fluid-Versorgungs-Öffnung (16a) durch die Bohrung (16) des rohrförmigen Zapfenlagers (13) zum Durchflußkanal (11) in der Schneidpicke.

2. Schneidpickenhalter nach Anspruch 1, dadurch gekennzeichnet, daß das rohrförmige Zapfenlager (13) von dem Schaftsockel (6) durch dessen Mundöffnung entfernbar ist, und daß während des Entfernens das Zapfenlager die Ventiliglieder (22, 24) sowie das Festlegemittel (7) mit sich trägt.

3. Schneidpickenhalter nach den Ansprüchen 1 oder 2, dadurch gekennzeichnet, daß das Ventilelement (24) auf der stabförmigen Komponente (22) sitzt.

4. Anordnung aus Schneidpicke (1) und Schneidpickenhalter (2), wobei die Schneidpicke (1) einen Kopf (3) mit einem Schneidteil und einem sich längserstreckenden Schaft (4) umfaßt, sowie ein sich längs durch den Schaft (4) erstreckender Durchflußkanal (11) vorgesehen ist, der mit dem Fluid-Kupplungs-Sockel (15) für den unter Druck erfolgenden Fluid-Durchfluß zu einer Auslaßöffnung (12) für den gerichteten Austritt des Fluids zur Staubunterdrückung, zu Kühlung oder für Spülzwecke kommuniziert, wobei der Schneidpickenhalter (2) einen der längsgerichteten Aufnahme des Schaftes (4) dienenden Schaftsockel (6) und ein rohrförmiges, sich längs durch den Schaftsockel (6) erstreckendes Zapfenlager (13) aufweist, dessen Bohrung (16) in Fluid-

Verbindung mit einer Fluid-Versorgungs-Öffnung (16a) ist, während der Fluid-Kupplungs-Sockel (15) in Längsrichtung das Zapfenlager (13) beim Einsetzen des Schaftes (4) in den Schaftsockel (6) aufnimmt zwecks Bildung einer Fluid-Verbindung zwischen der Fluid-Versorgungs-Öffnung und dem Durchflußkanal, wobei Mittel (7, 18) zum lösbaren Festlegen des Schaftes (4) im Schaftsockel (6) vorgesehen sind, die eine begrenzte Verschiebung der Schneidpicke relativ zum Schneidpickenhalter erlauben, und wobei Ventilglieder (24) zwecks Steuerung des Fluid-Stromes von der Fluid-Versorgungs-Öffnung (16a) zur Auslaßöffnung (12) vorgesehen sind, die auf die Längsbewegung ansprechen, welche der Schneidpickel während des Einsatzes in Verbindung mit einem Gesteinsabbau erfährt, zwecks Öffnung der Fluid-Verbindung zu der Auslaßöffnung (12), dadurch, gekennzeichnet, daß die Ventilglieder innerhalb der Bohrung (16) des Zapfenlagers (13) eine stabförmige Komponente (22) umfassen, die im Ausmaß der Längsbewegung der Schneidpicke (1) aufgrund und während eines Schneideingriffes in eine mineralische Ortsbrust längsbeweglich ist zwecks Einstellung eines Ventilelementes (24) zur Öffnung der Ventilglieder, und daß die Mittel zum Festlegen eine Schulter (8) am rohrförmigen Zapfenlager (13) sowie ein elastisches Halteglied (18) aufweisen, das von dem Fluid-Kupplungs-Sockel (15) getragen ist, wobei dieses Halteglied (18) über die Schulter (8) des Zapfenlagers (13) während des Einsetzens des Schaftes (4) in den Schaftsockel (6) greift zwecks Festlegung des Schaftes in seinem Sockel.

5. Anordnung nach Anspruch 4, dadurch gekennzeichnet, daß das Ventilelement (24) von der stabförmigen Komponente (22) getragen ist.

6. Anordnung nach den Ansprüchen 4 oder 5, dadurch gekennzeichnet, daß die Schulter (8) von einem Kopfteil (7) des Zapfenlagers (13) gebildet ist, wobei das Kopfteil (7) kegelig geformt ist zwecks Bildung einer Durchführungsfläche für den Eingriff des Zapfenlagers in den Schaft des Schneidpickels.

7. Anordnung nach Anspruch 6, dadurch gekennzeichnet, daß das Kopfteil (7) kegelförmig ausgebildet ist und eine ringförmige Schulter (8) aufweist, gegen die das elastische Halteglied (18) als Widerlager greift.

8. Anordnung nach einem der Ansprüche 4 bis 7, dadurch gekennzeichnet, daß das elastische Halteglied (18) ein Ringglied sowie Mittel (17) für das Festlegen des Ringgliedes in Längsrichtung innerhalb des Fluid-Kupplungs-Sockels (15) aufweist.

9. Anordnung nach einem der Ansprüche 4 bis 8, dadurch gekennzeichnet, daß das elastische Halteglied eine Fluid-Dichtung (18) zwischen dem rohrförmigen Zapfenlager (13) und dem Fluid-Kupplungs-Sockel (15) bildet.

10. Anordnung nach einem der Ansprüche 4 bis 9, dadurch gekennzeichnet, daß das rohrförmige Zapfenlager (13) mittels eines Schraubgewindes in dem Schneidpickenhalter (2) lösbar und durch die Mundöffnung des Schaftsockels (6) entfernbar angeordnet ist, und daß die Ventilglieder (22, 24)

und die Schulter (8) von dem Zapfenlager (13) getragen und mit diesem von dem Schneidpickenhalter entfernbar sind.

11. Anordnung nach einem der Ansprüche 4 bis 10, dadurch gekennzeichnet, daß zwischen Schaft (4) und Schneidpickenkopf (3) eine Schulter angeformt und zwischen Schneidpickenhalter (2) und dem Schneidpickenkopf (3) eine Dichtung (31) vorgesehen ist, wobei die Dichtung (31) einen Freiraum (A) überbrückt, der während der Längsbewegungen der Schneidpicke (1) relativ zum Schneidpickenhalter (2) zwischen der Schulter und dem Schneidpickenhalter geöffnet und geschlossen wird, um das Eindringen von Gesteinssplittern in den Freiraum zu verhindern.

12. Anordnung nach Anspruch 11, dadurch gekennzeichnet, daß die Dichtung (31) zwischen dem Schneidpickenhalter (2) und dem Schneidpickenkopf (3) eine Verlängerung eines auswechselbaren Belages (32) am Schaftsockel ist, und daß der Schaft (4) der Schneidpicke innerhalb des Belages (32) aufgenommen ist.

Revendications

1. Support d'outil (2) pour un outil d'abattage de minerai (1) comprenant une douille (6) s'étendant longitudinalement, à l'intérieur de laquelle peut être reçu longitudinalement un manche (4) de l'outil d'abattage de minerai; un téton tubulaire (13) situé à l'intérieur de ladite douille (6) et s'étendant longitudinalement à celle-ci, ledit téton tubulaire (13) étant porté à l'extrémité interne de la douille (6) en communication de fluide avec un passage d'alimentation de fluide (16a) et étant destiné à s'engager de façon étanche au fluide avec une douille de connexion de fluide (15) dans le manche (4) de l'outil, qui est reçu dans la douille (6), pour l'amenée du fluide vers des moyens de passage (11), dans des buts d'élimination de la poussière, de refroidissement ou de nettoyage, dans l'outil, des moyens (7) pour retenir l'outil dans le support, et des moyens (24) formant soupape sensibles à des forces dirigées longitudinalement, qui y sont appliquées pendant l'utilisation du support quand il maintient l'outil, pour permettre l'écoulement de fluide à partir dudit passage d'alimentation de fluide (16a) vers les moyens de passage dans l'outil quand lesdites forces dépassent une valeur prédéterminée, caractérisé en ce que les moyens pour retenir l'outil dans le support comprennent une partie de tête élargie (7) sur le téton tubulaire (13), éloignée de l'extrémité intérieure de la douille (6) pour s'engager avec la douille de connexion de fluide (15) du manche (4) quand il est reçu dans la douille (6), et en ce que les moyens formant soupape comprennent un composant en forme de tige (22), déplaçable longitudinalement, porté à l'intérieur de l'alésage (16) du téton tubulaire (13) et un organe de soupape (24) sensible au déplacement dudit composant en forme de tige (22), ledit composant en forme de tige (22) étant déplacé quand il est soumis à des forces dirigées longitudinalement pendant l'utilisation du sup-

port dans lequel est disposé l'outil et réglant l'organe de soupape (24) pour permettre le passage de fluide à partir du passage d'alimentation (16a) à travers l'alésage (16) du téton tubulaire pour l'alimentation des moyens de passage (11) dans l'outil.

2. Support selon la revendication 1, dans lequel le téton tubulaire (13) peut être retiré de la douille par son embouchure et, pendant un tel retrait, le téton entraîne lesdits moyens formant soupape (22, 24) et lesdits moyens de retenue (7).

3. Support selon la revendication 1 ou la revendication 2, dans lequel l'organe de soupape (24) est porté par le composant en forme de tige (22).

4. Ensemble d'un outil d'abattage de minerai (1) et d'un support d'outil (2), l'outil (1) comprenant un corps ayant une tête (3) avec une partie coupante, un manche (4) s'étendant longitudinalement, une douille de connexion de fluide (15) s'étendant longitudinalement au manche (4) et des moyens de passage (11) communiquant avec la douille de connexion (15) pour l'écoulement du fluide sous pression vers un orifice de sortie (12) vers lequel le fluide est dirigé dans des buts d'élimination de la poussière, de refroidissement ou de nettoyage; le support d'outil (2) comprenant une douille (6) à l'intérieur de laquelle est reçu longitudinalement le manche (4), et un téton tubulaire (13) qui s'étend longitudinalement à la douille (6), l'alésage (16) dudit téton tubulaire (13) étant en communication de fluide avec un passage d'alimentation de fluide (16a), ladite douille de connexion de fluide (15) recevant longitudinalement le téton tubulaire (13) pendant l'insertion du manche (4) dans la douille (6) pour fournir une communication de fluide entre le passage d'alimentation de fluide et les moyens de passage; des moyens de retenue (7, 18) pour retenir, de façon détachable, le manche (4) dans la douille (6) et permettre un déplacement longitudinalement restreint de l'outil par rapport à son support, et des moyens formant soupape (24) pour commander l'écoulement de fluide à partir du passage d'alimentation (16a) vers l'orifice de sortie (12), moyens formant soupape qui sont sensibles audit déplacement longitudinal appliqué à l'outil pendant l'utilisation dudit ensemble pour l'abattage de minerai, pour permettre la communication de fluide vers l'orifice de sortie (12), caractérisé en ce que les moyens formant soupape comprennent un composant en forme de tige (22) porté dans l'alésage (16) du téton tubulaire (13) de façon à être déplacé longitudinalement en réponse au déplacement longitudinal de l'outil (1) pendant l'engagement de coupe de l'outil avec le front de taille, ledit déplacement du composant en forme de tige (22) réglant un organe de soupape (24)

pour ouvrir les moyens formant soupape, et les moyens de retenue comprennent un épaulement (8) sur le téton tubulaire (13) et un moyen de retenue élastique (18) porté par la douille de connexion (15), ledit moyen de retenue (18) étant engagé par l'épaulement (8) du téton (13) pendant l'insertion du manche (4) dans la douille (6) pour retenir le manche dans sa douille.

5. Ensemble selon la revendication 4, dans lequel l'organe de soupape (24) est porté par le composant en forme de tige (22).

6. Ensemble selon la revendication 4 ou la revendication 5, dans lequel l'épaulement (8) est formé par une partie de tête (7) du téton (13), ladite partie de tête (7) étant effilée pour fournir une surface de guidage pour adapter le téton au manche de l'outil.

7. Ensemble selon la revendication 6, dans lequel la partie de tête (7) est tronconique et porte un épaulement annulaire (8) contre lequel le moyen de retenue élastique (18) doit être engagé en aboutement.

8. Ensemble selon l'une quelconque des revendications 4 à 7, dans lequel le moyen de retenue élastique (18) comprend un organe annulaire et des moyens (17) sont prévus pour retenir l'organe annulaire longitudinalement à l'intérieur de la douille de connexion (15).

9. Ensemble selon l'une quelconque des revendications 4 à 8, dans lequel le moyen de retenue élastique comprend un joint étanche au fluide (18) entre le téton tubulaire (13) et sa douille de connexion (15).

10. Ensemble selon l'une quelconque des revendications 4 à 9, dans lequel le téton tubulaire (13) est vissé dans le support (2) pour pouvoir être retiré par l'embouchure de la douille (6), et les moyens formant soupape (22, 24) et l'épaulement (8) sont portés par le téton (13) en pouvant être retirés du support d'outil avec celui-ci.

11. Ensemble selon l'une quelconque des revendications 4 à 10, dans lequel un épaulement est formé entre le manche (4) et la tête d'outil (3), et un joint étanche (31) est prévu entre le support d'outil (2) et la tête d'outil (3), ledit joint étanche (31) "pendant" un espace (A) qui s'ouvre et se ferme entre ledit épaulement et le support d'outil (2) pendant le déplacement longitudinal de l'outil (1) par rapport à son support (2) pour éviter l'entrée de débris dans ledit espace (A).

12. Ensemble selon la revendication 11, dans lequel le joint étanche (31) entre le support d'outil (2) et la tête d'outil (3) est un prolongement d'un revêtement remplaçable (32) prévu dans la douille du manche, le manche d'outil (4) étant reçu à l'intérieur dudit revêtement (32).

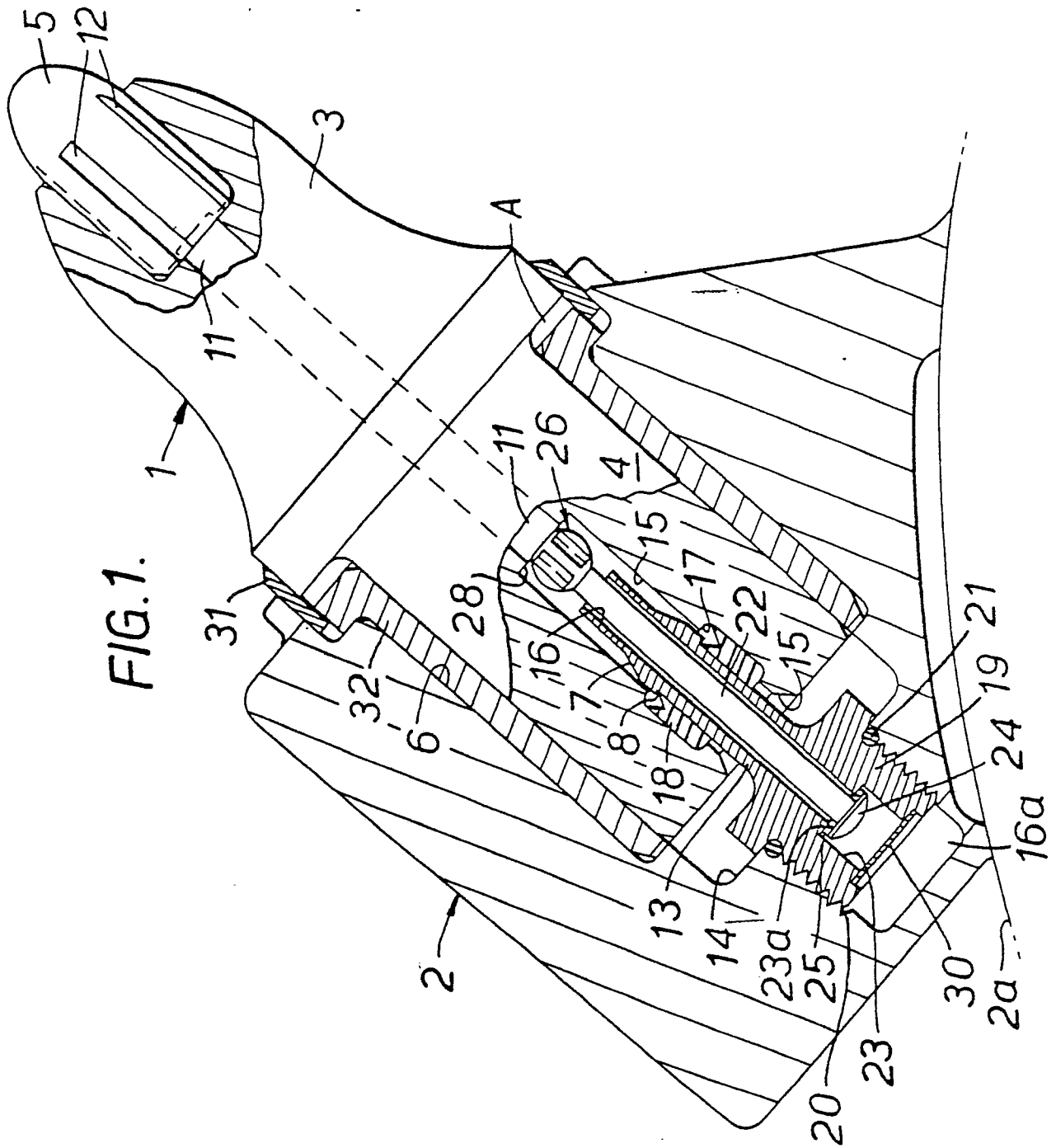


FIG. 2.

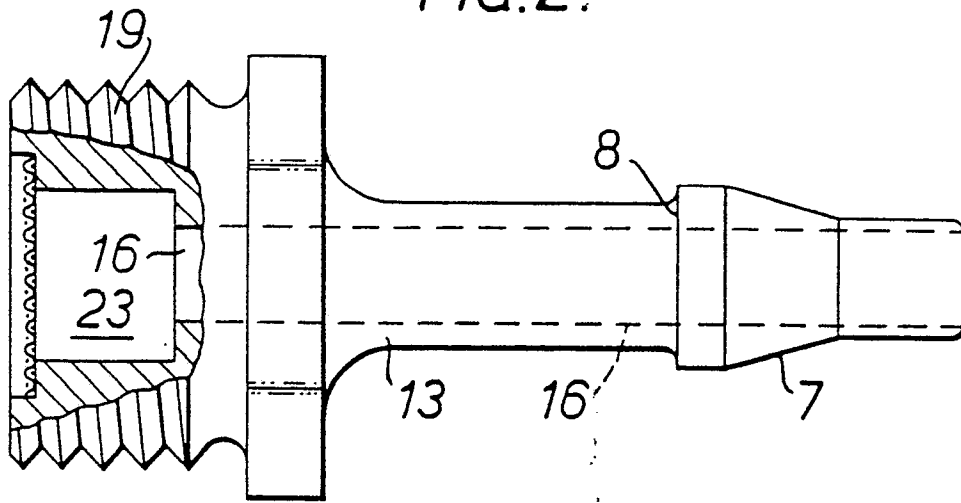


FIG. 3.

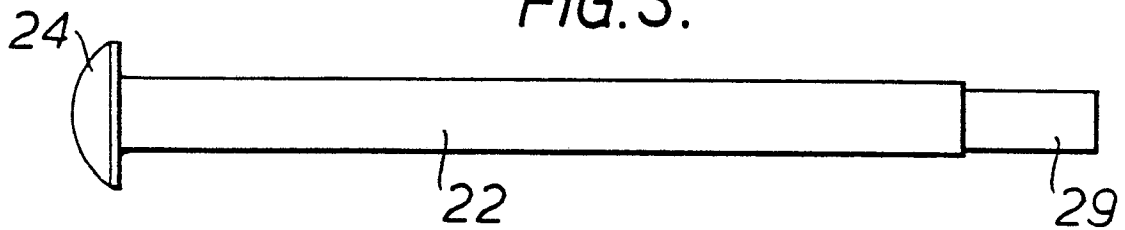


FIG. 4.

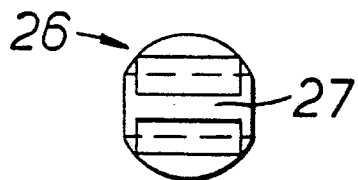


FIG. 5.

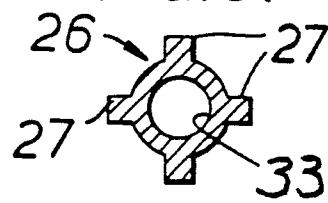


FIG.6.

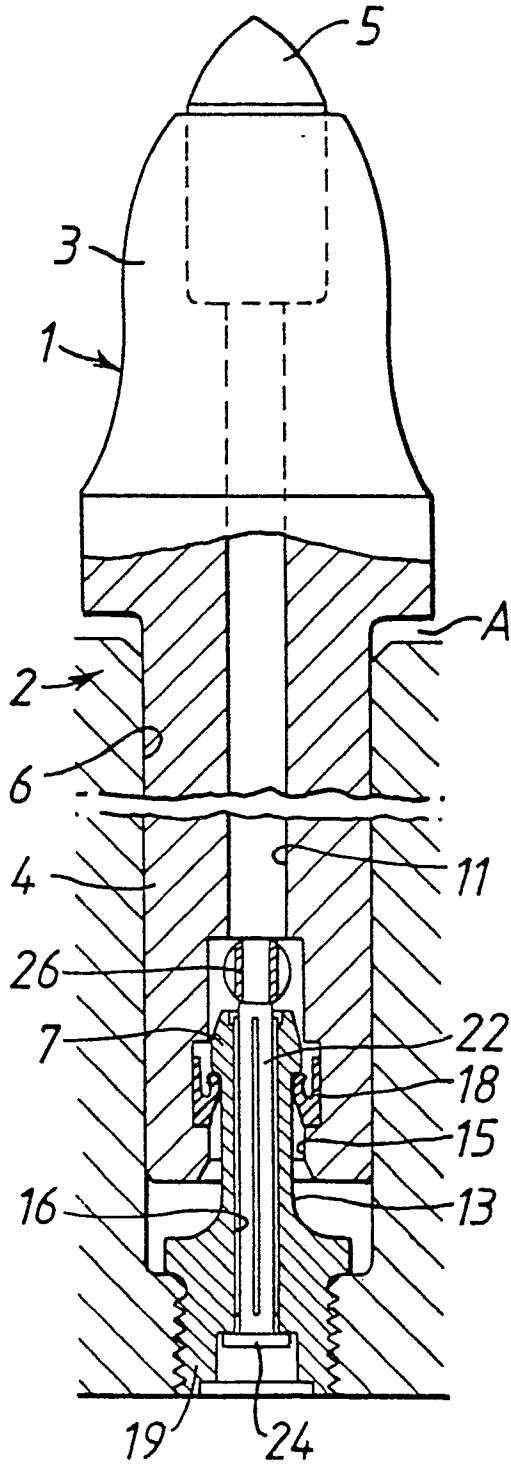


FIG.7.

