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MOUNTING FOR DRILLING TOOLS

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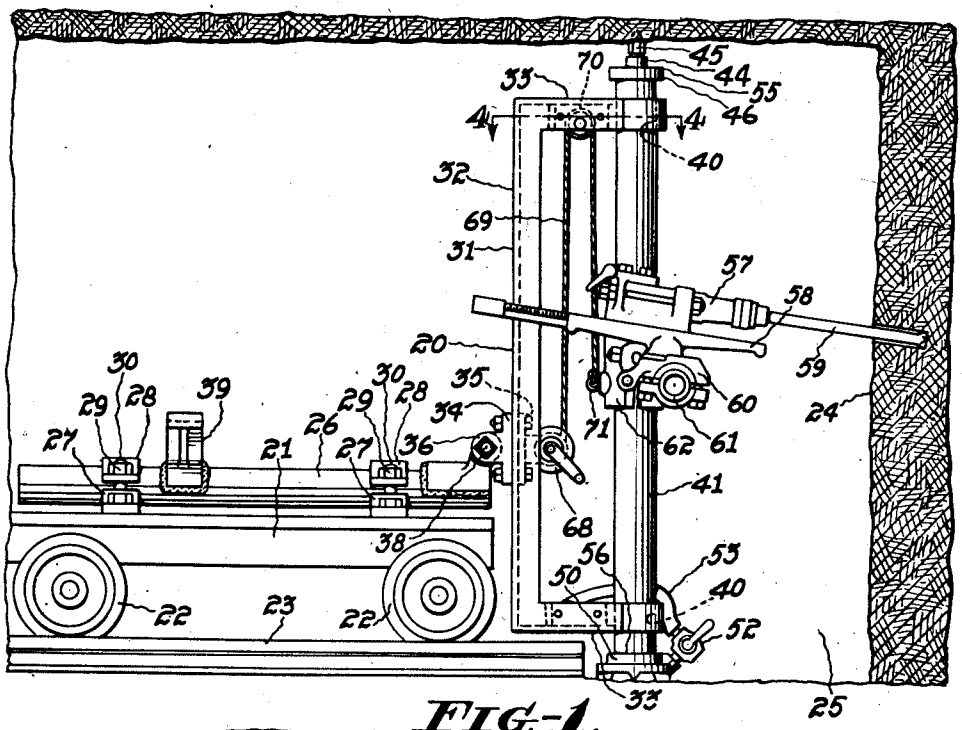


FIG.-1.

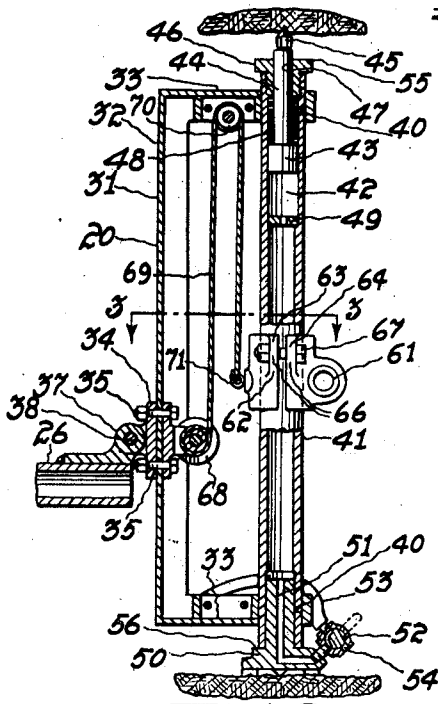


FIG.-2.

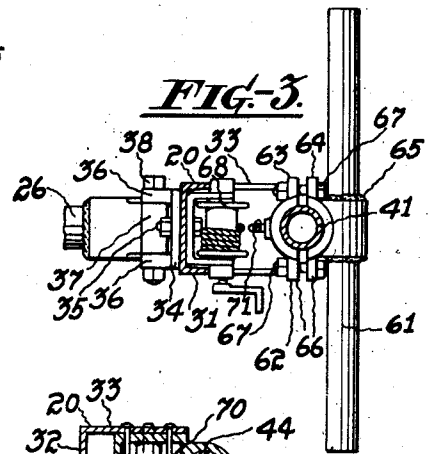


FIG.-3.

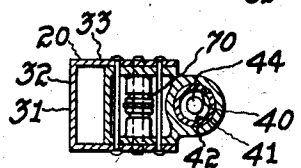


FIG.-4.

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MOUNTING FOR DRILLING TOOLS

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3 Claims. (Cl. 255—51)

This invention relates to drilling mechanism, and more particularly to a mounting for drilling tools of the drifter type commonly used for drilling the vertical walls of tunnels, quarries and the like.

One object of the invention is to enable the mounting to be quickly placed in and removed from the operative position with a minimum of effort.

Other objects will be in part obvious and in part pointed out hereinafter.

In the drawing accompanying this specification and in which similar reference numerals refer to similar parts,

Figure 1 is a side elevation of a mounting for drilling tools constructed in accordance with the practice of the invention,

Figure 2 is an elevation, partly in section, of the mounting,

Figure 3 is a transverse view taken through Figure 2 on the line 3—3, and

Figure 4 is a transverse view taken through Figure 1 on the line 4—4.

Referring more particularly to the drawing, 20 designates, in general, a mounting that is arranged upon a truck 21 the wheels 22 of which bear upon a track 23 leading to a working surface such as the vertical end wall 24 of a tunnel 25.

The truck 21 carries a horizontal bar 26 that rests in bearings 27 and is secured thereto by caps 28 and nuts 29 threadedly connected to bolts 30 extending through the caps and the bearings.

In the form of the invention shown, the mounting comprises a bracket 31 having a body 32 and laterally extending arms 33 at the extremities of the body. On the side of the body 32 confronting the bar 26 is a bearing block 34 that is secured to the body 32 by bolts 35. The block 34 has a pair of lugs 36 that are spaced to receive therebetween a lug 37 on the end of the bar 26, and a pivot in the form of a bolt 38 extends through the lugs 36 and 37 to provide a hinge for the mounting 20 so that it may be conveniently tilted to a horizontal position to overlie the truck for transportation to and from the work. A saddle 39 on the bar 26 acts as a support for the mounting in such reclining position.

The arms 33 are arranged in parallelism with respect to each other and have bores 40 in their free ends to receive a column 41. The column is freely slidable within the bores 40 and is extensible so that it may be lengthened or shortened to adjust itself to different distances between the floor and the ceiling of a tunnel. The upper portion of the interior of the column accordingly constitutes a chamber 42 and contains a piston 43 having a rod 44 the end 45 of which is in the form of a pointer to engage the overlying rock surface.

The outer end of the chamber 42 is closed by a head 46 threadedly connected to the column and having a bore 47 to guide the rod 44, and on the rod 44 is a compression spring 48 that acts against the piston 43 and the head 46 to retract the piston for moving the pointer 45 out of engagement with the rock surface. The distance that the piston 43 may move in this direction is limited by a perforated plate 49 arranged within the column to form a closure for the inner end of the chamber 42.

At the lowermost end of the column 41 is a foot piece 50 having a passage 51 that opens into the column for supplying pressure fluid through the plate 49 into the cylinder 42 to actuate the piston 43 outwardly. A throttle valve assembly 52 is attached to the foot piece for controlling communication between a pressure fluid supply conduit 53 and the passage 51 and for controlling communication between the passage 51 and an atmospheric exhaust port 54 in the casing of the valve assembly 52.

The column 41 is somewhat longer than the bracket 31 so that it may be lowered or elevated relatively to the bracket to compensate for inequalities in the rock surfaces supporting the column. The distance that the column may thus move relatively to the bracket is limited in a downwardly direction by a flange 55 on the head 46 that engages the upper arm 33 of the bracket, and a shoulder 56 on the foot piece 50 cooperates with the lower arm 33 in a like manner to limit movement of the column in an upwardly direction.

The column 41 serves its usual function as a support for a rock drilling tool, or tools, 57 shown as being of the drifter type and having a cradle 58 wherein it is slidable to follow the progress of the working implement 59 toward the work. The cradle 58 is held in fixed position by a clamping device 60 of well known type that grips a wing of a bar 61 having a clamping means 62 to engage the column 41. The clamping means 62 comprises a pair of bearing members 63 and 64, the latter being fixedly connected to the bar 61 as by welding 65. The members 63 and 64 have flanges 66 and bolts 67 extending therethrough for securing them to the column.

In order to facilitate the raising and lowering

of the devices mounted upon the column 41 or, if desired, to shift them and the column as a unit relatively to the bracket, the mounting is provided with a winch 68 that is secured to the body 32 by the bolts 35. The winch 68 may, as indicated, be of the hand-operated type, and a cable 69 wound on its drum is trained over a sheave 70 in the upper arm 33 and is attached to a ring 71 carried by the bearing portion 63.

In the operation of the device, the entire mounting is moved to a point near the working surface 24. The bracket, together with the column, is then moved from the reclining position on the saddle where it rests during transportation to the vertical position shown in Figures 1 and 2. With the bearing portions 63 and 64 securely clamped to the column the column and the elements mounted thereon may be lowered gradually by means of the winch to place the foot piece 50 upon the floor of the drift, or upon wooden blocking (not shown) when found necessary to provide a suitable supporting surface for the column. Thereafter pressure fluid is valved into the column by the valve 52 and such pressure fluid entering the cylinder 42 will drive the piston 43 outwardly and the pointer 45 into engagement with the ceiling of the drift to hold the column firmly in operative position.

After the column 41 has been thus placed the clamping pressure on the bearing portions 63 and 64 may be relieved and the winch 68 may then be operated to move the rock drill along the column to the elevation at which it may be intended to drill a hole in the surface 24. In each drilling position of the rock drill 57 the bearing portions 63 and 64 are, of course, securely clamped to the column so that, during drilling, the winch will be relieved of the weight of the rock drill and the elements directly supporting it.

Whenever a round of drilling in the rock surface 24 has been completed and it is intended to remove the drilling mechanism from the working surface the valve 52 is turned to cut-off the flow of pressure fluid into the column and to communicate the interior of the column with the exhaust port 54. The pressure fluid then exhausts from the column and the spring 48 will retract the piston 43 to move the pointer 45 out of engagement with the rock. The bracket 31 and the parts supported thereby are then again tilted about the pivot 38 to place the body 32 upon the saddle 39 and the entire mounting will then be in readiness for convenient transportation to another drilling site.

I claim:

1. A mounting for drilling tools, comprising a wheeled frame, a bracket pivotally mounted on the frame, bearings at the opposed ends of the bracket, a tool column slidable endwise in the bearings, means on the tool column and the bracket to cooperate with each other for limiting sliding movement of the tool column with respect to the bracket, and rock-engaging members at the ends of the column.

2. A mounting for drilling tools, comprising a frame, a bracket on the frame, bearings at the opposed ends of the bracket, a tool column supported by the bracket and freely slidable in an endwise direction in the bearings, support means for a drilling tool slidable on the column, means for selectively clamping the support means to the column, means for selectively moving the support means along the column and for moving the column relatively to the bracket, and rock-engaging members at the ends of the column.

3. A mounting for drilling tools, comprising a wheeled frame, a bracket pivotally mounted on the frame, bearings at the opposed ends of the bracket, a tool column supported by and freely slidable in the bearings, a bar to support a drilling tool and having a bearing portion slidable on the column, clamping means for selectively securing the bearing portion to and releasing it from the column, means connected to the bearing portion for moving said bearing portion relatively to the column and to move the bearing portion and the column as a unit relatively to the bracket, and rock-engaging members at the ends of the column.

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