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MOUNTING FOR ROCK DRILLS

Filed Sept. 2, 1939

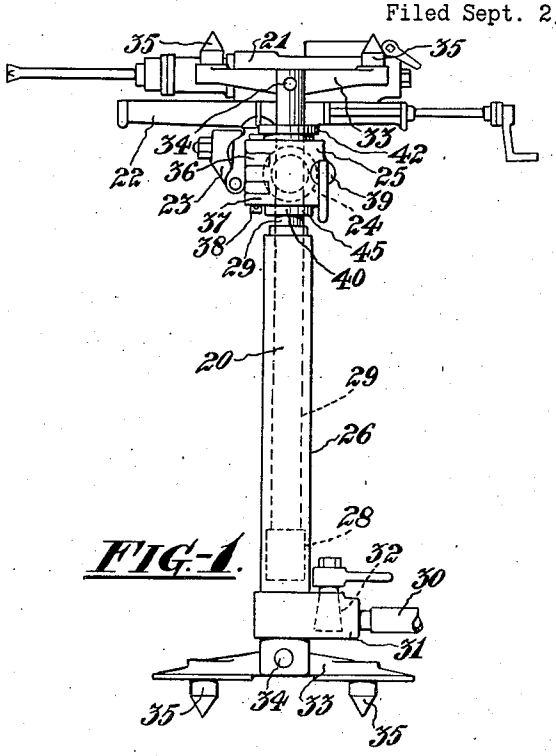


FIG.-1.

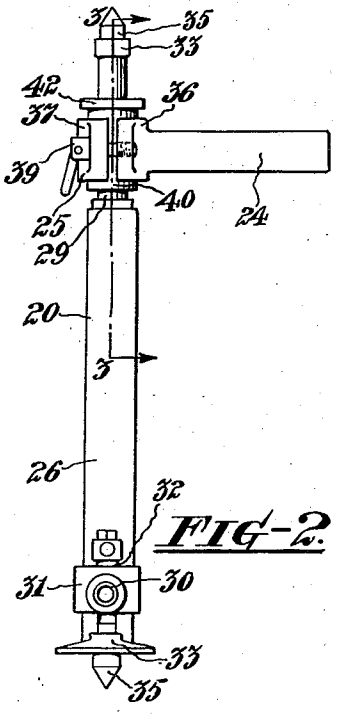


FIG.-2.

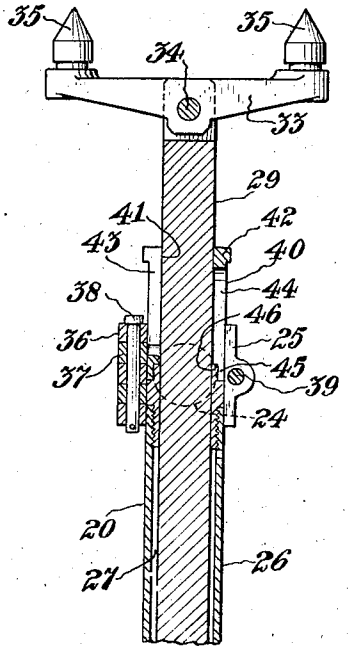


FIG.-3.

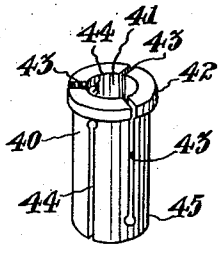


FIG.-4.

INVENTOR
Fred M Slater.
BY
HIS ATTORNEY.

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MOUNTING FOR ROCK DRILLS

Fred M. Slater, Phillipsburg, N. J., assignor to Ingersoll-Rand Company, Jersey City, N. J., a corporation of New Jersey

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5 Claims. (Cl. 255—53)

This invention relates to rock drills, and more particularly to a mounting for machines of this character.

More particularly the invention relates to an extensible mounting comprising a tubular body and a rod extended thereinto to span the distance between the supporting surfaces, as for example the floor and roof, or the side walls, of a mine tunnel.

In structures of this nature the tubular body usually serves as the support for the drilling mechanism which is secured to the body by a suitable clamping device carried either directly by the rock drill or, as an alternative arrangement, by an arm forming a lateral extension of the column to support the rock drill.

In operations in which the height of the tunnel approximates the length of the tubular body the rock drill may be positioned conveniently for drilling holes closely adjacent the roof of the tunnel. However, in tunnels requiring a considerable extension of the mounting it is impossible to position the rock drill for drilling holes near the top of the drift because the clamp is designed only to conform with the contour of the tubular body and is, therefore, unsuited for engagement with the rod which, being encased by the column, is consequently of smaller diameter.

It is accordingly an object of the present invention to enable the rock drill to be secured to either the body or the rod of an extensible mounting for rock drills without necessitating the substitution of clamps.

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 an elevation of a mounting constructed in accordance with the practice of the invention and showing a rock drilling mechanism supported thereby.

Figure 2 is a side elevation of the mounting showing the manner in which a column arm may be clamped to the column rod,

Figure 3 is an elevation, partly in section, illustrating the manner in which a clamp may be transferred from the body to the rod of the mounting, and

Figure 4 is a perspective view of a detail.

Referring more particularly to the drawing, 20 designates the mounting in its entirety and 21 a rock drill supported by the mounting and having a shell 22 whereby said rock drill is guided with respect to the work. The rock drill may be suitably secured, as by means of a clamp 23, to an arm 24 which carries a clamp 25 for securing the arm to the mounting.

The mounting 20 illustrated, is in the form of a pneumatically actuated drill column comprising a hollow body 26 of which the interior serves as a piston chamber 27 for a piston 28 having a rod 29 which projects from the upper end of the body 26.

The pressure fluid employed for actuating the piston 28, to extend the mounting, is conveyed thereto by conduit 30 attached to a head 31 at the base of the body 26, and in the head 31 is a suitable valve 32 for controlling the flow of pressure fluid to and from the piston chamber 27.

In order to effect the firm engagement of the mounting 20 with the surfaces between which it is extended the rod 29 and the body 26 are provided, respectively, at their upper and lower ends with foot pieces 33 which are secured to these elements by pivots 34. In the outer surfaces of the foot pieces are pointers 35 for engagement with the rock surfaces to hold the mounting securely in operative position.

The clamp 25, which is the structure shown comprises a jaw 36 integral with the arm 24 and a complementary jaw 37 pivotally secured to the jaw 36 as by a pin 38 and has a latch bolt 39 for locking the jaws together, is bored, as is customary, to conform with the contour of the body 26 and is, therefore, incapable of being directly clamped to the rod 29 which is of smaller diameter than the body. It will thus be seen that under these circumstances the clamp 25 may normally not be raised to a higher elevation than the upper end of the body.

In order, therefore, to render the drilling mechanism suitable for drilling holes at any desired point along the rock face the mounting is provided with means adapted to permit the securing of the clamp 25 to the rod 29. The means illustrated for this purpose consists of a bushing 40 having a bore 41 of slightly larger diameter than the rod 29 to permit free sliding movement of the bushing on the rod.

The external diameter of the bushing is preferably of the same diameter or slightly smaller than the body so that the clamp 25 may be readily shifted from the body to the bushing without undue frictional engagement between the clamp and the bushing. At the upper end of the bushing is a flange 42 to abut the upper end of the clamp 25 so that the two may be moved upwardly along the rod 29 in unison when the clamp reaches a position for full engagement with the bushing.

The bushing 40 is of the contractible type having slots 43 and 44 arranged in alternate fashion and opening from opposite ends of the bushing so that when pressure is applied by the clamp 25 the bushing will be contracted into intimate engagement with the rod 29.

To the end that the bushing 40 may be readily centralized with respect to the body 26, preparatory to the shifting of the clamp 25 from the body to the bushing, the bushing and the body are provided, respectively, with cylindrical flanges 45 and 46 at their opposed ends to engage each other in telescopic fashion and thereby assure alignment of the peripheral surfaces of the body and the bushing.

In the operation of the device, whenever it is intended to transfer the clamp 25 from the body to the rod the bushing 40 is positioned to effect engagement between the flanges 45 and 46. The clamp 25 is then released from the body 26 and elevated until the upper end of the clamp engages the shoulder 42. Continued upward movement of the drilling mechanism and the clamp will then carry the bushing 40 upwardly along the rod 29 and when these elements have been raised to the desired elevation the latch bolt 39 is again manipulated to close the clamp 25 and thereby secure the clamp firmly to the bushing and contract the bushing 40 into firm frictional engagement with the rod 29.

I claim:

1. A mounting for rock drills, comprising a tubular body, a rod projecting from the end of said body, a clamp adapted to engage the periphery of the body, and means on the rod to form a seat for the clamp and being adapted to seat against the end of the body to enable the clamp to be moved slidably from the body to said means.

2. A mounting for rock drills, comprising a tubular body, a rod movable endwise in the body and projecting from the end of said body, a clamp adapted to engage the periphery of said body, and a contractible member on the rod to form a seat for the clamp and serve as an extension of the body to enable the clamp to be moved slidably from the body to the contractible member.

3. A mounting for rock drills, comprising a tubular body, a rod movable endwise in the body and projecting from the end of said body, a clamp adapted to engage the periphery of said body, and a split bushing slidable on the rod to form a seat for the clamp and serve as an extension of the body to enable the clamp to be moved slidably from the body to the split bushing.

4. A mounting for rock drills, comprising a tubular body, a rod projecting from the end of said body, a clamp adapted to engage the periphery of the body, a contractible bushing slidable on the rod to form a seat for the clamp, and means on the body and the bushing telescopically engaging each other to centralize the bushing with respect to the body.

5. A mounting for rock drills, comprising a tubular body, a rod projecting from the end of said body, a clamp adapted to engage the periphery of the body, a contractible bushing of substantially the same diameter as the body slidable on the rod to form a seat for the clamp, and flanges on the body and the bushing slidably engaging each other to centralize the bushing with respect to the body.

FRED M. SLATER.