Jan. 1, 1935. O. J. SCHORER 1,986,289

HOLE SPOTTER FOR COLLARING DRILL HOLES

Filed June 29. 1933 2 Sheets-Sheet 1

Fig. 1.

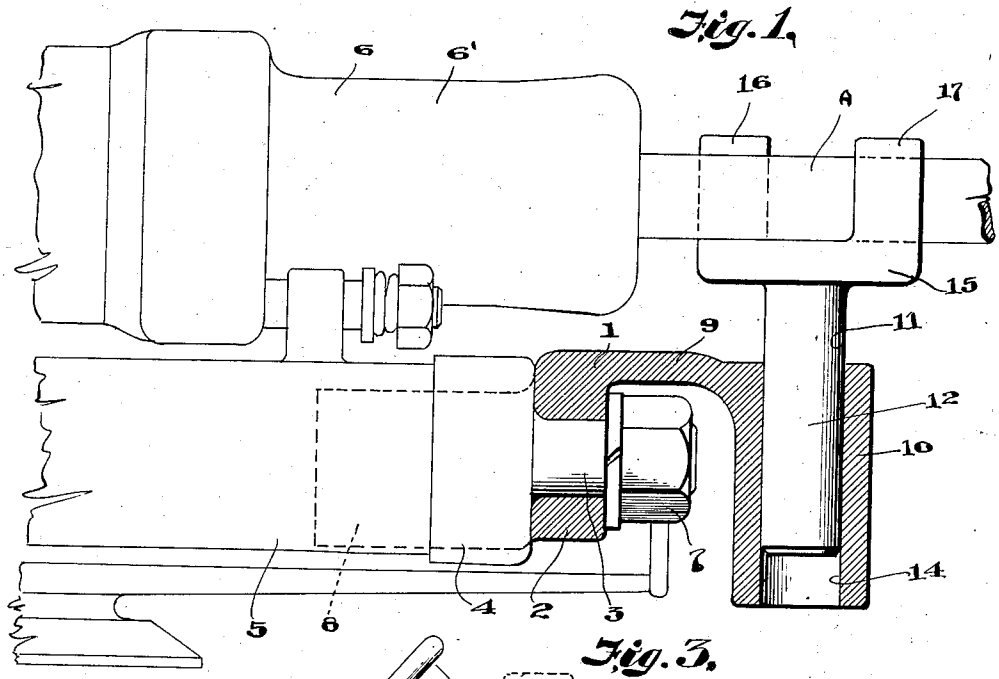


Fig. 3.

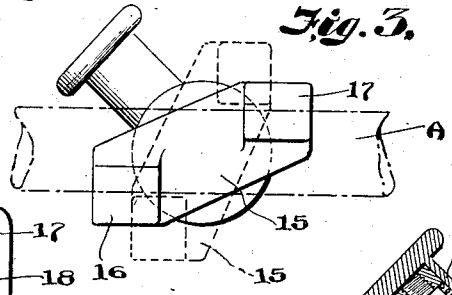


Fig. 2.

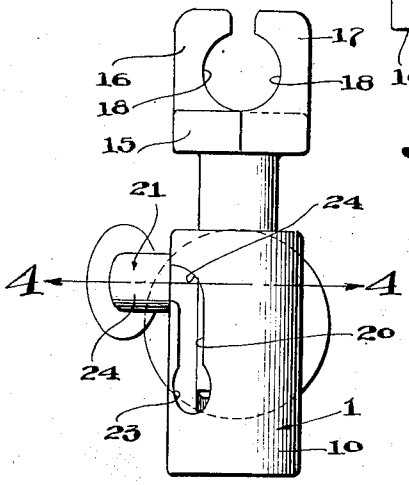


Fig. 5.

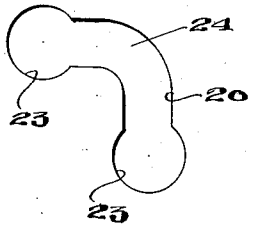
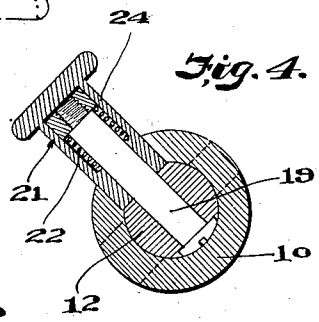


Fig. 4.



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Jan. 1, 1935. O. J. SCHORER 1,986,289

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Filed June 29, 1933 2 Sheets-Sheet 2

Fig. 6.

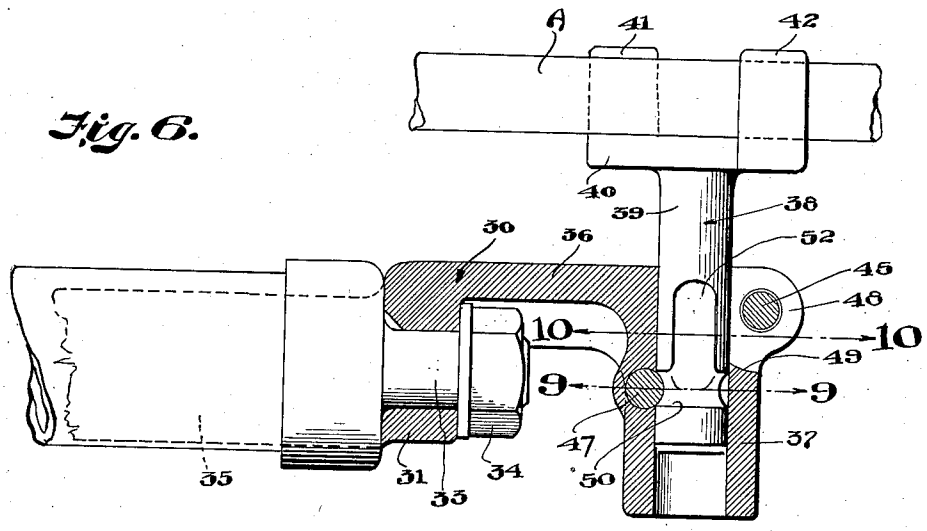


Fig. 7.

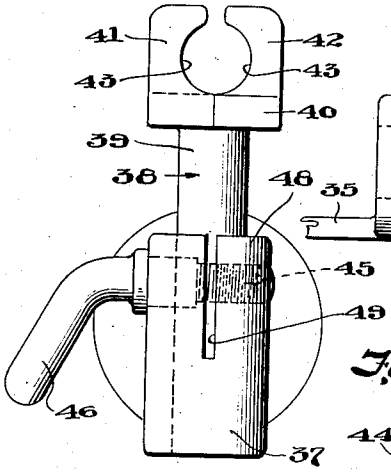


Fig. 8.

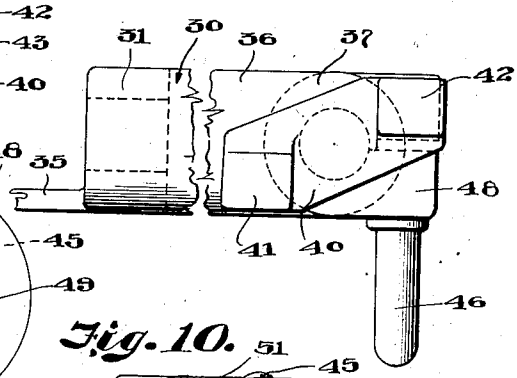


Fig. 10.

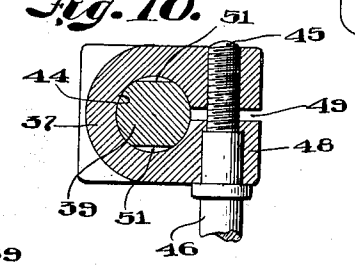
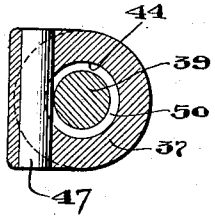


Fig. 9.



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UNITED STATES PATENT OFFICE

1,986,289

HOLE SPOTTER FOR COLLARING DRILL HOLES

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Application June 29, 1933, Serial No. 678,150

6 Claims. (Cl. 255—45)

This invention relates to rock drilling and more particularly to a hole spotter for collaring drill holes.

An object of the present invention is to provide a hole spotter for collaring drill holes embodying a drill bar engaging member, for steadying the drill bar during the spotting or starting of a drill hole, which hole spotter embodies means for ready and secure attachment to a percussive rock drill, and is so constructed that after a hole has been spotted, it may be moved out of the way of the drill during the finishing of the drill hole.

With these and other objects in view as may appear from the accompanying specification, the invention consists of various features of construction and combination of parts, which will be first described in connection with the accompanying drawings showing a hole spotter of the preferred form embodying the invention, and features forming the invention will be specifically pointed out in the claims.

In the drawings—

Figure 1 is a view partly in side elevation and partly in section showing the improved hole spotter attached to a percussive drill.

Figure 2 is a front end elevation of the improved hole spotter.

Figure 3 is a top plan of the improved hole spotter showing it in drill bar engaging position in solid line and out of drill bar engaging position in dotted lines.

Figure 4 is a cross section on the line 4—4 of Figure 2.

Figure 5 is a detailed diagrammatic view showing the guiding slot which guides the movement of the drill bar engaging member.

Figure 6 is a view partly in side elevation and partly in section of a modified form of the hole spotter.

Figure 7 is a front end view of the modified form of the hole spotter.

Figure 8 is a top plan of the modified form of the hole spotter.

Figure 9 is a detail cross section taken on the line 9—9 of Figure 6.

Figure 10 is a detail cross section taken on the line 10—10 of Figure 6.

Referring more particularly to the drawings, the improved type of hole spotter for collaring drill holes shown in Figures 1 to 5 inclusive, comprises an attaching and supporting member 1, which includes a collar 2. The collar 2 is mounted upon a stud 3, which is formed upon the cap 4 of the cylinder 5 of the feeding mechanism of a rock drill of any approved type as indicated at 6.

While the stud 3 is shown as formed upon the cap 4, of a cylinder 5, it is to be understood, that the hole spotter may be used with any approved type of rock drill or percussive drill without departing from the spirit of this invention and that a stud similar to the stud 3 may be provided on the respective type of the feeding mechanism of the drill.

The collar 2 is adapted to be clamped upon the stud 3 in any suitable manner such as by the nut 7, for securely connecting the supporting and attaching body or member 1 to the rock drill. A suitable plate 8 is formed upon or attached to the collar 2, and engages the feeding mechanism 5 of the drill 6 for holding the collar 2 against rotary movement.

An arm 9 serves as a connection between the collar 2 and the drill bar engaging member carrying collar 10. The collar 10 has its axis disposed coplanar with and at right angles to the axis of the drill bar A as clearly shown in Figures 1, 2 and 3 of the drawings.

The drill bar engaging member 11 comprises a stem 12 which is slidably engaged axially in the bore 14 of the collar 10. A head 15 is formed upon the upper end of the stem 12 and it has a pair of upright drill bar engaging lugs 16 and 17 formed thereon at diagonally opposed corners. The inner faces of the lugs 16 and 17 are cut out as shown at 18 to provide drill bar engaging recesses having arcuate surfaces for snug fitting against the drill bar indicated at A.

Means for guiding and limiting the movement of the drill bar engaging member 11, are provided, and this means comprises a stem 19 which is carried by the stem 12, and extends transversely therethrough, projecting through a right angle slot 20, which is formed in the collar 10. A locking moving handle 21 is slidably mounted upon the stem 19, and is urged inwardly toward the axis of the stem 12 by means of the spring 22. The slot 20 has its ends enlarged as shown at 23, the diameter of which enlarged end corresponds to the diameter of the sleeve 24 of the locking and operating handle 21. As clearly shown in Figures 2 and 5 of the drawings, the substantially right angle slot 20 has one arm extending vertically within the collar 10, while the second arm of the slot extends transversely therein. The vertical and transverse portions of the slot 20 are connected by a rounded or arcuate portion indicated at

24, so as to permit the stem 19 to move smoothly through the slot.

When it is desired to spot a drill hole, or in other words, upon the beginning of the drilling of a hole in rock or analogous substance, the handle 21 is gripped and moved upwardly. The upward movement of the handle 21 moves the stem 19 upwardly and laterally in the slot 20 and at the same time moves the drill bar engaging and guiding member 11 upwardly, rotating it a quarter turn which brings it into the position shown in Figure 1 of the drawings and in solid lines in Figures 3 of the drawings, after which the drill bar A is passed between the lugs 16 and 17, and into the chuck of the drill 6. The drill is then started, and after the drill hole has been drilled to a sufficient depth to steady the drill bar, without the requirement of other aid or guide for the drill bar, the handle 24 is pulled outwardly against the tension of the spring 22 and moved along the slot 20. When the sleeve 24 of the handle 21 aligns with the lower enlarged end 23 of the slot 20, the spring 21 will snap or move the sleeve 24 into the enlarged end 23 and lock the drill bar engaging and guiding member 11 in its lowered non-guiding position with the head 15 disposed substantially at right angles to the position in which it serves as a guide for the drill bar A. Such non-guiding position is shown in dotted lines in Figure 3 of the drawings.

From the foregoing description taken in connection with the accompanying drawings, it will be apparent that a simple, easily operated hole spotter for collaring drill holes has been provided, which may be manufactured at a relatively low cost, and one which may be permanently attached to a percussive drill assembly and moved into and out of drill bar engaging and guiding position with a minimum effort and with the requirement of a minimum amount of time.

In Figures 6 to 10 inclusive of the drawings, a slight modification of the improved type of hole spotter shown in Figures 1 to 5 inclusive, is illustrated.

In this modified form of the hole spotter, a supporting structure 30 is provided which is quite similar to the supporting structure 1, in that it comprises the attaching collar 31, which is mounted upon the stud 33. The stud 33 is attached in any suitable manner to the percussive drill assembly. The collar 31 is clamped upon the stud 33 by means of the nut 34, and it is held against rotary movement by means of the plate 35 which is formed on the collar 31 and engages the percussive tool rig drill assembly. The collar 31 is connected by a connecting web 36 with the collar 37. The collar 37 has its axis disposed at right angles to the axis of the collar 31 and it forms a support and guide for the drill bar engaging member 38.

The drill bar engaging member 38 comprises a stem 39 which has a head 40 formed upon its upper end. The head 40 has drill bar guiding and engaging lugs 41 and 42 formed upon its upper surfaces and projecting upwardly therefrom. The lugs 41 and 42 are disposed at diametrically opposed corners of the head 41 and they have their inner surfaces cut arcuately as shown at 43 for engaging and guiding a drill bar such as is indicated at A in Figure 6 of the drawings.

The lugs 41 and 42 are placed a sufficient distance apart, as are also the lugs 16 and 17 in the preferred form of the invention heretofore described, to permit the drill bar engaging and guiding member 38 to drop downwardly clear of the drill bar A, when the drill bar engaging member 38 is moved or rotated a quarter turn upon its axis, so as to permit the head 40 and lugs 41 and 42 to drop down out of the way of the bar A during the continuing of the drilling of a drill hole, after the hole has been started and drilled to a sufficient depth, to cause the hole to serve as a guide for the continuous drilling movement of the drill bar.

The stem 39 of the drill bar engaging and guiding member 38 is slidably seated in the bore 44 of the collar 37, and it is held tightly, in adjusted position therein by means of the locking or tightening screw 45. The locking or tightening screw 45 has an operating handle 46 formed thereon, and one end, namely the threaded end of the screw 45, is threaded into one of the lugs 48 which are formed one upon each side of the split 49. The split 49 extends longitudinally of the collar 37 along a portion of the length of the collar 37, and by adjusting the clamping screw 45, the split portion of the collar 37 may be sprung together to securely clamp the stem 39 in its adjusted position, while by loosening of the clamping strain on the split portion of the collar, the clamping strain on the stem 39 may be relieved to permit the stem to move downwarly in the bore 44. However, the stem 39 is prevented from moving downwardly in the bore 44 by means of a pin 47 which is carried by the collar 37 and extends transversely therethrough, having a small portion of its periphery projecting into the bore 44 of the collar 37. When the drill bar guiding member 38 is in its upper drill bar engaging position, the portion of the pin 47, which projects into the bore 44, engages in an annular recess 50 formed in the stem 38 at the proper position to hold the head 40 and lugs 41 and 42 in the proper position for supporting and guiding the movement of the drill bar A. To permit lowered movement of the member 38, it is necessary to rotate the member 38 a quarter turn, so as to bring the flattened or cut-away portion 51 of the stem 39 facing the pin 47. The flattened portions 51 are of sufficient depth to clear the projecting portion of the pin 47 and allow the member 38 to move downwardly in the collar 37. However, the upper ends of the cut-away portions 51 terminate in arcuate surfaces indicated at 52 which are curved, so as to substantially fit the portion of the periphery of the pin 47, which projects into the bore 44 and thus, the lowered movement of the member 38 may be limited by the slots 51 if it is so desired, or, of course, the lowered movement may be limited by engagement of the under surface of the head 40 with the upper end of the collar 37.

In the modified form of hole spotter shown in Figures 6 to 10 inclusive of the drawings, like in the preferred form of the hole spotter shown in Figures 1 to 5 inclusive, the drill bar engaging member is moved into and out of the drill bar engaging and guiding position, by a substantial quarter turn of the member, and in both forms, suitable means are provided, which are simple in construction, easy to operate and cheap to manufacture, for holding the drill bar engaging member either in operative drill bar engaging position or in non-drill bar engaging position and out of the way of the drill bar.

It will be understood that the invention is not

to be limited to the specific construction or arrangement of parts shown, but that it may be widely modified within the invention as defined by the claims.

What is claimed is:

1. In a hole spotter for collaring drill holes, an attaching and supporting member, a drill bar guide adjustably carried by said member and including a stem, a head on said stem, and a plurality of drill bar engaging lugs rigidly carried by said head, a guide pin carried by said stem, said attaching and supporting member provided with a guide way receiving said guide pin for guiding the movement of said drill bar guiding member.

2. In a hole spotter for collaring drill holes, an attaching and supporting member, a drill bar guide adjustably carried by said member and including a stem, a head on said stem, a plurality of drill bar engaging lugs rigidly carried by said head, a guide pin carried by said stem, said attaching and supporting member provided with a guide way receiving said guide pin for guiding the movement of said drill bar guiding member, and a locking member carried by said guide pin, said guide way provided with enlarged portions for receiving said locking member for locking said drill bar guide in adjusted position.

3. In a hole spotter for collaring a drill bar, an attaching and supporting member provided with a slot, a drill bar guide slidable in said member and being adapted to axially slide adjacent to and free from the drill bar, a guide pin carried by said guide and projecting through said slot to inhibit rotary motion of said guide in said member, when said guide is free from said drill bar.

4. In a hole spotter for collaring a drill bar, an attaching and supporting member provided with a right angled slot, a drill bar guide slidable in said member and being adapted to axially slide adjacent to and free from the drill bar, a guide pin carried by said guide and projecting through said slot to inhibit rotary motion of said guide in said member, when said guide is free from said drill bar, and to permit rotary motion when said guide is adjacent to said drill bar, to allow said guide to engage said drill bar.

5. In a hole spotter for collaring a drill bar, an attaching and supporting member provided with a slot, a drill bar guide slidable in said member and being adapted to axially slide adjacent to and free from the drill bar, and to rotate from the adjacent position to allow said guide to engage said drill bar, and a guide pin carried by said drill bar, and projecting through said slot to inhibit axial movement of said guide when said guide engages said drill bar.

6. In a hole spotter for collaring a drill bar, an attaching and supporting member provided with a right angled slot, a drill bar guide slidable in said member and being adapted to axially slide adjacent to and free from the drill bar, a guide pin carried by said guide and projecting through said slot to inhibit rotary motion of said guide in said member, when said guide is free from said drill bar, and to permit rotary motion when said guide is adjacent to said drill bar, to allow said guide to engage said drill bar, and means at either end of said slot to engage said guide pin, to lock said guide respectively in the engaged and the free position.

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