Feb. 27, 1934. M. C. HUFFMAN 1,949,075

ROCK DRILL

Filed Dec. 15, 1930

Fig. 1.

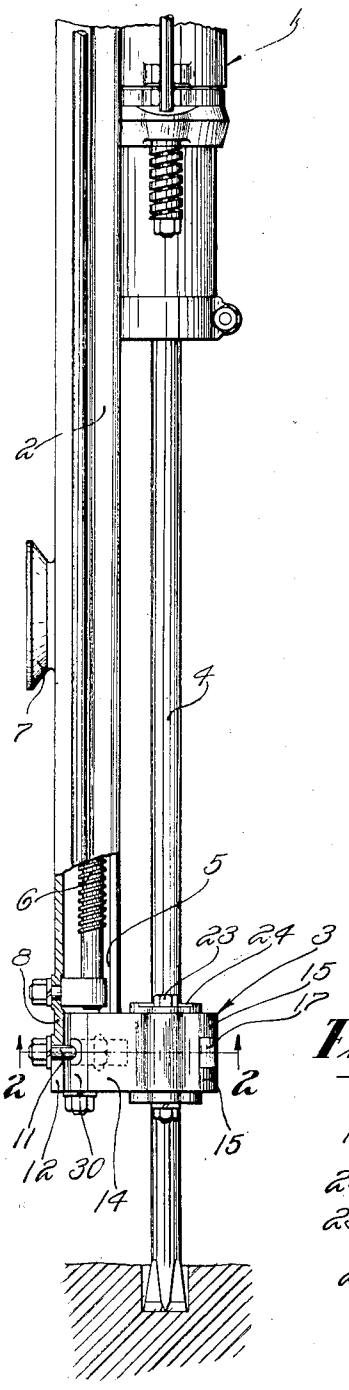


Fig. 2.

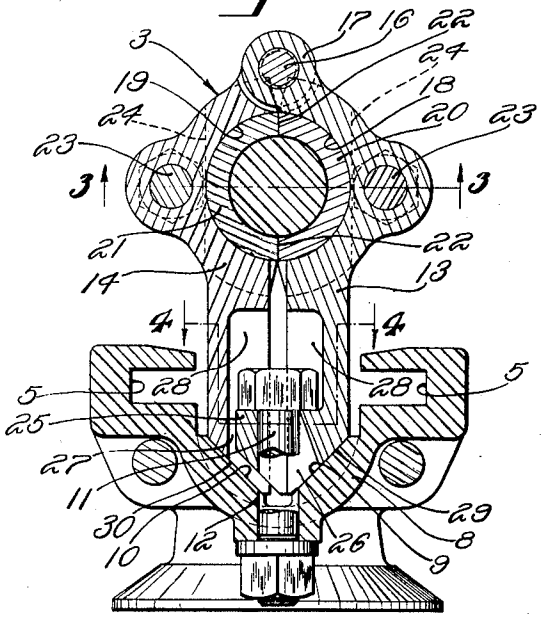


Fig. 3.

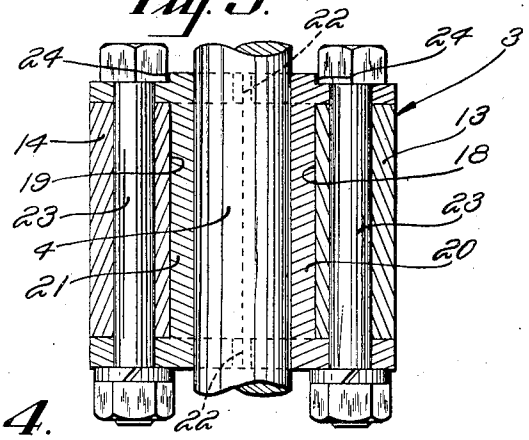
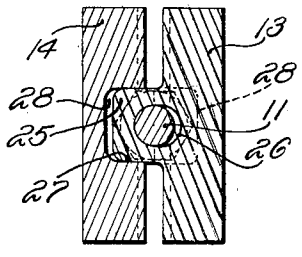


Fig. 4.



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ROCK DRILL

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Application December 15, 1930
Serial No. 502,440

8 Claims. (Cl. 255—45)

This invention relates to rock drills and more particularly to a guide for the working implement of a rock drill.

It is an object of the invention to provide an improved guide for the working implement of a tool and more particularly an improved guide for the drill steel of a hammer rock drill. A further object is to provide an improved supporting structure for such a guide. Still another object is to provide an improved guide to maintain the working implement in axial alinement with the drilling tool to avoid displacement of the working implement when starting a drill hole. Still a further object is to provide an improved guide for the working implement of a mounted hammer drill that may be easily and readily attached to the guiding shell of such tools. And still a further object is to provide an improved guide that is released from its guiding position when the drilling tool has traveled a predetermined distance on its guiding support. These and other objects and advantages of the invention will, however, hereinafter more fully appear.

In the accompanying drawing there is shown for purposes of illustration one form which the invention may assume in practice.

In the drawing,—

Fig. 1 is a fragmentary view of a rock drill mounted in a shell and which has incorporated therewith my improved guiding device, parts being broken away;

Fig. 2 is a transverse vertical sectional view through the improved guiding means taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a longitudinal section through the improved guide taken substantially on line 3—3 of Fig. 2; and,

Fig. 4 is a detail sectional view through the means for clamping the improved guide to the rock drill shell, the section being taken substantially on line 4—4 of Fig. 2.

In the drawing (Fig. 1) there is shown a rock drill of the hammer type, generally designated 1, and of which only the forward end is shown. The rock drill is mounted in a shell 2 which guides the drill during the drilling operation and has on its forward end the improved guiding or centralizing device 3 for the working implement or drill steel 4 of the rock drill. It will herein be noted that the shell 2 has guideways 5 and cooperating therewith are suitable projections formed on the drill 1, and the drill is slidable in the shell by the manipulation of a usual feed screw 6. The shell also has formed thereon a conical surface 7 which fits a clamping device, or other suitable support for holding the shell in a fixed position relative to its mounting. An elongated portion 8 at the forward end of the shell has relatively angularly disposed surfaces 9 and 10 for a purpose hereinafter set forth. The shell is herein shown as having the improved guiding means 3 clamped thereto by a bolt 11 which is inserted in a slot 12 in the forward end of the shell 2. It will be noted that the guide 3 comprises guide support members 13 and 14 respectively. The outer part of the support member 14 has formed thereon ear portions 15, each having a drilled hole extending therethrough to receive a pivot pin 16. Between the ear portions 15 is an opening or recess to receive an ear portion 17 formed on the outer part of the guide support member 13 which also has a drilled hole but of a larger diameter than the holes in the ear portions 15 permitting the members 13 and 14 to be readily swung about the pivot pin 16 relative to each other. The supporting members 13 and 14 have arcuate recesses 18 and 19 respectively receiving semi-circular bushings 20 and 21 which are made of a relatively hard material and are provided with semi-circular recesses which cooperate to form a substantially continuous guiding surface for the working implement or drill steel 4 which they encircle. It will herein be noted that the bushings 20 and 21 also have contacting faces 22 which come together when in place to guide the steel 4, and these faces may be refaced to bring them closer together to compensate for any wear that may occur. The bushings 20 and 21 are held in their respective supporting members by bolts 23 extending longitudinally through the guide support members 13 and 14 and engaging ears on the bushings 20 and 21, and each of these bushings has a flattened portion 24 which receives the heads of the bolts 23 to keep the bolts from rotating and to maintain the bushings in the recesses 18 and 19. The lower end of the support 13 has a central boss 25 which has an opening 26 with one side of the opening tapered to provide for the easy insertion of the bolt 11 into the opening 26 when assembling, and this bolt is relatively long to enable it to be inserted in the slot 12 for clamping the guide 3 to the shell. The supporting member 14 has an opening or recess 27 which receives the boss 25 when the support members 13 and 14 are swung together and eliminates any movement of the support members relative to each other longitudinally of the shell. The supporting members also have openings or grooves 28 of a width slightly greater than the flat portions of the head on the

bolt 11 to keep the bolt from rotating relative to the support member 13. The lower ends of the support members 13 and 14 have inclined surfaces 29 and 30 respecively, cooperating with the inclined surfaces 9 and 10 on the rock drill shell.

In the use of my improved guiding or centralizing device, it will herein be noted that the parts are easily and readily assembled. The guiding device 3 is swung open and placed around the steel or working implement 4. The guiding device is then moved to locate the bolt 11 in the slot 12 in the shell and this bolt is then tightened slightly to maintain the guide in the shell under normal conditions. As the bolt is tightened it draws the guide support members more closely together due to the surfaces 29 and 30 cooperating with the surfaces 9 and 10 on the rock drill shell. The drilling tool is then fed and guided into the working surface by the manual feed screw and guideways on the shell and it will be seen that the working implement is guided by the bushings 20 and 21 to maintain the implement in axial alinement with the rock drill during the starting of a drill hole. As the forward end of the rock drill comes into contact with the guide device 3, it bodily pushes the guide from the shell 2 as the bolt 11, in the slot 12, is only tightened enough to maintain the guide on the shell under normal conditions or until the tool comes in contact with the guide. After the guide has dropped away from the drill steel 4, the operator merely pushes it to one side out of the way of the drilling tool and the drilling is continued into the work until the projections on the drill have traveled the maximum distance in the guideways on the shell, after which the drilling implement is withdrawn from the drill hole and the guide device again connected to the shell and around the steel for the starting of another hole.

It will herein be noted that an improved guide and centralizing means has been provided that is of a simplified construction and readily placed on the shell of a rock drill, and in position to guide and keep the drill steel in axial alinement during the starting operation of a drill hole. It will further be noted that the bushings surrounding the drill steel may be readily changed or the contacting faces refaced to present a new guiding surface for the working implement. The tightening of the guide in position cannot bind the steel in its guide proper. From the foregoing it will be noted that an improved guide has been provided for a rock drill to keep the drill steel in axial alinement during the starting operation of a drill hole which is automatically released from its supporting member and the drill steel when the drill has traveled a fixed distance, without interrupting the drilling operation.

While there is in this application specifically described one form which this invention may assume in practice, it will be understood that this form of the same is shown for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. The combination with an impact tool having a working implement and a support for guiding said tool, of a guide for maintaining said working implement in axial alinement with said tool during the starting of a drill hole, said guide comprising a plurality of guiding members, and a releasable device engaging one of said guiding members and said tool support for connecting both of said guide members to said support.

2. The combination with an impact tool having a working implement and a support for guiding said tool, of a guide for maintaining said working implement in axial alinement with said tool during the starting of a drill hole, said guide comprising a plurality of guiding members pivoted for swinging movement relative to each other, and a releasable device engaging one of said guiding members and said tool support for connecting both of said guiding members to said support.

3. The combination with an impact tool having a working implement and a support for guiding said tool, of a guide for maintaining said working implement in axial alinement with said tool during the starting of a drill hole, said guide comprising a plurality of guiding members pivoted for swinging movement relative to each other, and means comprising a releasable device for engaging one of said guiding members and said tool support for connecting both of said guiding members to said support, said guiding members having sloping surfaces and said support having cooperating similar surfaces, said surfaces acting to press said members toward each other upon suitable manipulation of said releasable device.

4. The combination with an impact tool having a working implement and a support for guiding said tool, of a guide for maintaining said working implement in axial alinement with said tool during starting of a drill hole, said guide comprising a plurality of pivotally connected guiding members each having an arcuate recess, an arcuate bushing in each of said recesses, and means carried by one of said guiding members and engaging the tool support for swinging the guiding members toward one another thereby to cause the faces of said bushings to contact under pressure.

5. The combination with a drifter type rock drill having a drill steel and a guide shell on which the drill is guided, of a drill steel centralizer including cooperating relatively pivoted members embracing the drill steel, said centralizer having a wedge shaped inner portion, said guide shell having a V-shaped recess on which said inner portion is seated, and a securing element passing through an opening in the shell and engaging the inner portion of said centralizer for securing the centralizer on said shell with a wedging action.

6. The combination with a drifter type rock drill having a drill steel and a guide shell having guideways with which the guides on the drill cooperate, of a drill steel centralizer comprising relatively pivoted members embracing the drill steel, said shell having an integral ledge portion in advance of the guideways, and means for securing the centralizer to said ledge portion, said ledge portion having a recess having inclined side walls and said centralizer having inclined surfaces engaging said inclined side walls so that when the securing means is tightened, the centralizer is held in position with a wedging action.

7. The combination with a rock drill having a drill steel and a guide shell on which the drill is guided, of a drill steel centralizer comprising a pair of cooperating pivoted members embracing the drill steel, each of said members having an inclined side portion and said portions cooperating to form a wedge, said shell having a recess having inclined side walls with which the inclined side portions of the central-

izer engage, and a securing element for holding said centralizer in seated position in the shell recess, said securing element engaging one of said members and said shell for holding both of said members in their centralizing position.

8. The combination with a rock drill having a drill steel and a guide shell on which the drill is guided, of a drill steel centralizer comprising a pair of cooperating pivoted members embracing the drill steel, each of said members having an inclined side portion and said portions cooperating to form a wedge and one of said members having a projection fitting a recess in the other member to interlock said members together when in their centralizing position, said shell having a recess having inclined side walls with which the inclined side portions of the centralizer engage, and a securing element for holding said centralizer in seated position in the shell recess.

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