July 20, 1926. 1,592,851

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STEEL RETAINER FOR ROCK DRILLS

Filed April 22, 1926

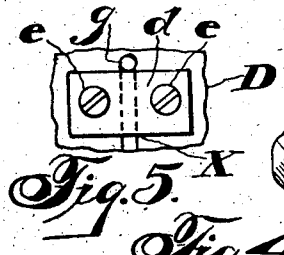


Fig. 5.

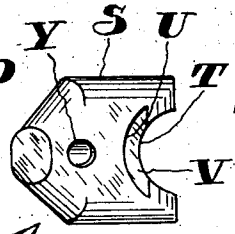


Fig. 4.

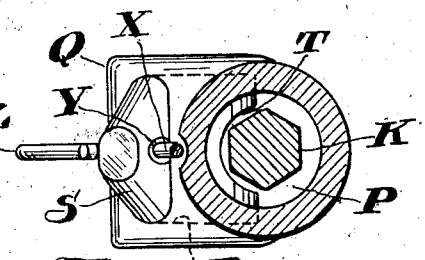


Fig. 3.

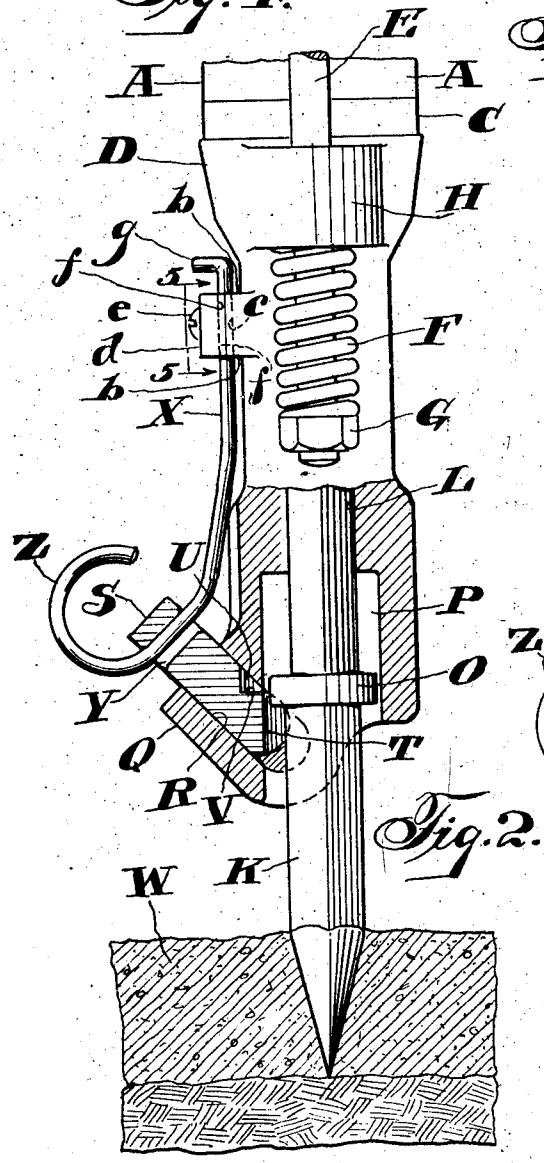


Fig. 2.

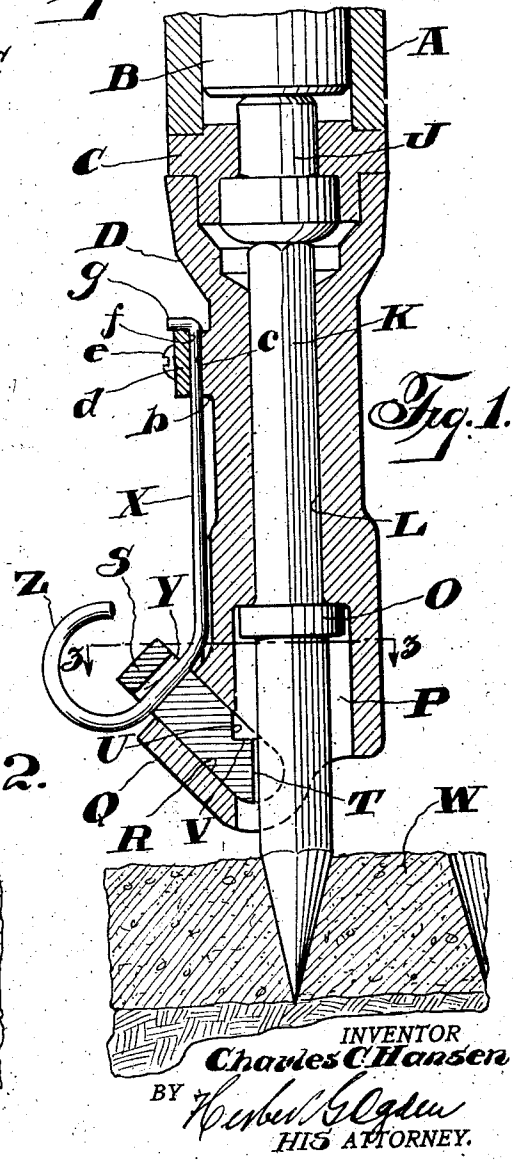


Fig. 1.

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Patented July 20, 1926. 1,592,851

UNITED STATES PATENT OFFICE.

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STEEL RETAINER FOR ROCK DRILLS.

Application filed April 22, 1926. Serial No. 103,903.

This invention relates to rock drills, but more particularly to a steel retainer for rock drills of the hand held type.

The objects of the invention are to prevent accidental ejection of the drill steel from the front head and to construct a rugged and efficient steel retainer capable of withstanding the severe usage to which devices of this character are constantly subjected.

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

The invention consists of the combination of elements and arrangement of parts substantially as hereinafter described and more particularly pointed out in the appended claims and illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of the front end of a rock drill equipped with a steel retainer constructed in accordance with the practice of the invention and showing the retaining block in retaining position,

Figure 2 is an elevation of the front end of a rock drill, partly broken away, showing the retaining block removed from the path of the drill steel,

Figure 3 is a transverse view taken through Figure 1 on the line 3—3 looking in the direction of the arrows,

Figure 4 is a perspective view of the retaining block, and

Figure 5 is an elevation taken on the line 5—5 on Figure 1 looking in the direction of the arrows.

Referring to the drawings, the invention is shown embodied in a rock drill, only the front end of which is shown, and having a cylinder A in which is arranged a reciprocatory piston B. A front cylinder washer C forms a closure for the front end of the cylinder A and also serves to centralize a front head D with respect to the cylinder. The cylinder A, the front head D and the front cylinder washer C, which comprise the casing of the rock drill, may be held or secured to each other in any suitable manner. In the present instance, side bolts E are employed for this purpose and are cushioned by springs F seating at one end on nuts G and at their other ends against lugs H formed on the front head D.

An additional function of the front cylinder washer C is to also serve as a guide for an anvil block J adapted to transmit the blows of the hammer piston B to a drill steel K inserted in the front head D. The drill steel K in this instance is of hexagonal form and the front head D is accordingly provided with a hexagonal bore L to slidably receive the drill steel and to prevent relative rotation between the drill steel and the front head. A collar O carried by the drill steel K is reciprocable in a bore P formed in the front end of the front head D coaxial with the bore L.

In accordance with the present invention, an enlargement Q is formed at the front end of the front head D and on one side thereof. A guideway R is formed in the enlargement Q for the reception of a retaining block S. The retaining block S is preferably provided with a recess T to partly encircle the drill steel K and has a notch U on its rearward face to form a shoulder V against which the collar O of the drill steel K may rest when the drill steel is being removed from the work, such as the rock W.

Suitable means are provided for normally holding the retaining block S in the retaining position illustrated in Figure 1. To that end a resilient member X which may be a round wire, as illustrated, or of any other suitable cross sectional form, is extended through an aperture Y formed near the rearward end of the retaining member S and is provided at its forward end with a loop Z which may be grasped by the attendant for removing the retaining block from the path of the collar O.

To the end that the resilient member X may be suitably secured to the front head D, a lug *b* is formed on one side of the front head and is provided with a slot *c* for the reception of the said resilient member. A plate *d* in this instance is secured to the lug *b* by means of suitable screws *e* and has a similar slot *f* which registers with the slot *c* to form a guide guideway for the resilient member X. The guideway thus formed is preferably of slightly larger diameter than the resilient member X to permit the said member X to slide freely in the slots. In order to prevent the resilient member X from being drawn out of the slot *c* and *f*, a hook *g* may be formed on the rearward end of the resilient member to engage the plate *d* when the retaining block S is in retaining position.

The foregoing described retainer may be

readily assembled and mounted on the rock drill. In assembling same, the loop Z may be passed through the aperture Y, which aperture, it will be noted, is of considerably larger diameter than the resilient member X. After the resilient member X has been inserted in the aperture Y, the block S may be placed in the guideway R and the hooked end of the member X may then be inserted in the slot *c* and the plate *d* placed on the lug *b* and fastened thereto by means of the screws *e*.

In the operation of the device, whenever it is desired to change drill steels or to remove the drill steel K from the front head for any well known reason, the attendant may grasp the loop Z and draw the retaining block S rearwardly through the guideway to the position of the retaining block shown in Figure 2. In this position the shoulder V will be removed from the path of the collar O and the drill steel may be freely withdrawn from the front head. After the drill steel has again been inserted in the front head, the loop Z may be released and, owing to the resiliency of the member X, said member will again actuate the retaining block S to the retaining position illustrated in Figure 1.

With the retaining block S in the retaining position, the shoulder V will serve as a stop against which the collar O may strike in case the rock drill be accidentally set in operation while the drill steel is being removed from the work. It will also be noted that when the retaining block S is withdrawn a sufficient distance to permit withdrawal of the drill steel from the front head, the resilient member X will be caused to slide rearwardly through the guideway formed by the slots *c* and *f* thus readily adjusting its position with respect to the retaining block.

The present invention has been found to function in an efficient manner and comprises only a few parts which are simple and inexpensive to manufacture and may be readily replaced in case of breakage or excessive wear.

I claim:

1. In a steel retainer for rock drills, the combination of a front head and a drill steel in the front head, an enlargement on the front head having a guideway, a retaining block slidable in the guideway for retaining the steel in the front head, a lug on the front head, and means slidable through the lug and the block for holding said block in retaining position.

2. In a steel retainer for rock drills, the combination of a front head and a drill steel in the front head, an enlargement on the front head having a guideway, a retaining block slidable in the guideway for retaining the steel in the front head, a lug on the front head, and resilient means slidable through the lug and the block for holding said block in retaining position.

3. In a steel retainer for rock drills, the combination of a front head and a drill steel in the front head, an enlargement on the front head having an inclined guideway, a retaining block slidable in the guideway and recessed at one end to partly encircle the drill steel for retaining said steel in the front head, a lug on the front head having a slot, a plate secured to the lug having a slot to register with the slot in the lug, and a resilient member slidable in the slots and through the block for actuating said block into retaining position.

4. In a steel retainer for rock drills, the combination of a front head and a drill steel in the front head, a collar on the drill steel, an enlargement at the front end of the front head having a rearwardly inclined slot, a retaining block slidable in the guideway and recessed at its inner end to partly encircle the drill steel, said block having a notch forming a shoulder to extend into the path of the collar of the steel for preventing ejection of the steel from the front head, a lug on the front head having a slot, a plate fastened to the lug having a slot to register with the slot in the lug, a resilient member slidable through the slots and the block for holding said block in retaining position, and a loop on said member for moving the block out of retaining position.

In testimony whereof I have signed this specification.

CHARLES C. HANSEN.