Oct. 18, 1927. 1,646,091

C. C. HANSEN

STEEL RETAINER

Filed Oct. 21, 1926

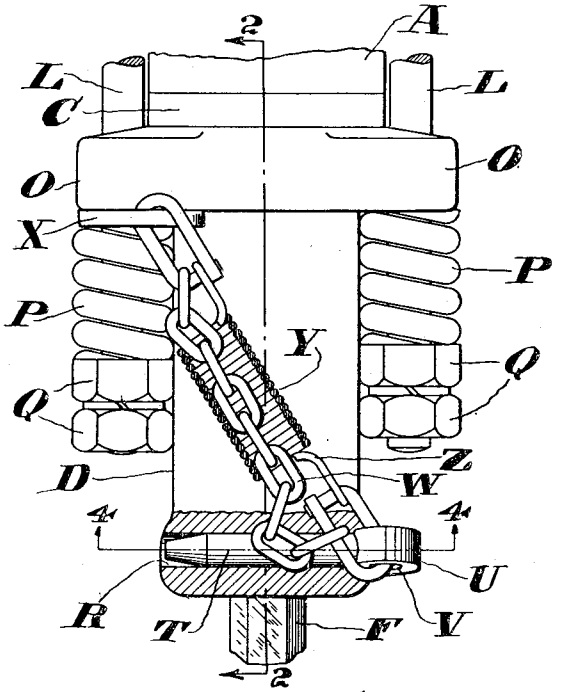


FIG.-1.

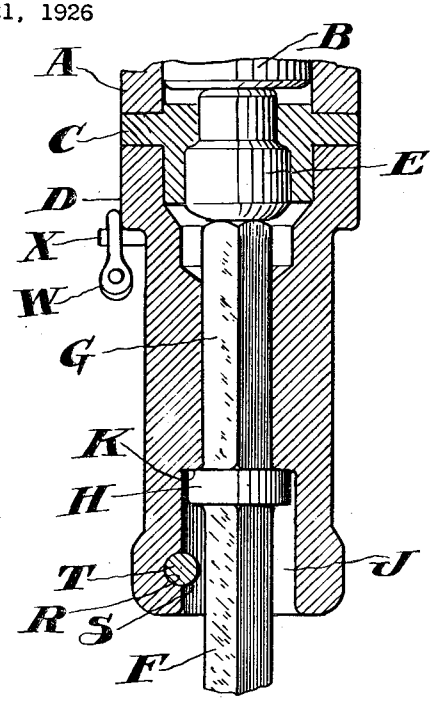


FIG.-2.

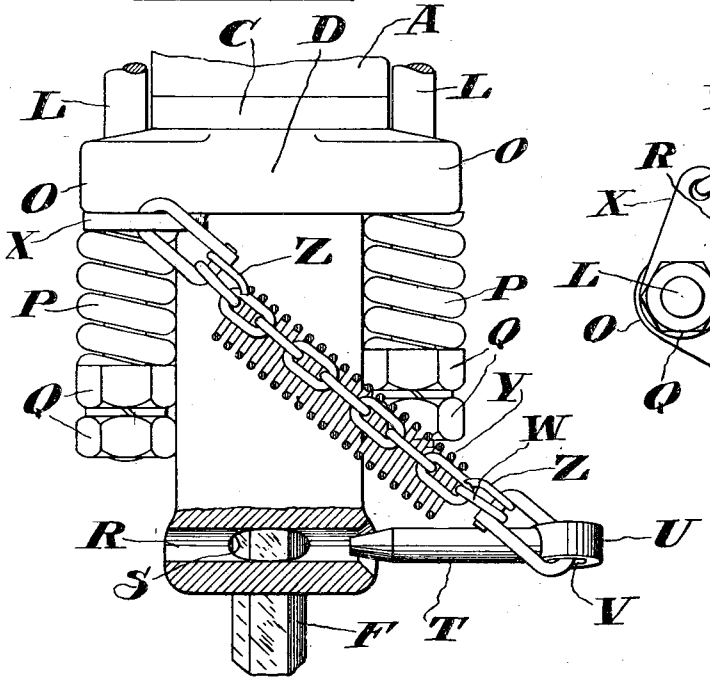


FIG.-3.

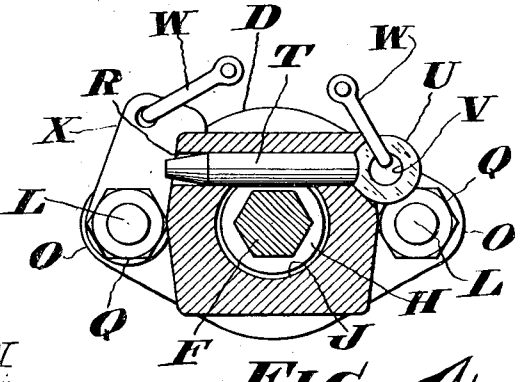


FIG.-4.

INVENTOR.
Charles C. Hansen.
BY Herbert G. Ogden
HIS ATTORNEY.

Patented Oct. 18, 1927. 1,646,091

UNITED STATES PATENT OFFICE.

CHARLES C. HANSEN, OF EASTON, PENNSYLVANIA, ASSIGNOR TO INGERSOLL-RAND COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

STEEL RETAINER.

Application filed October 21, 1926. Serial No. 143,237.

This invention relates to rock drills, but more particularly to a steel retainer for fluid actuated rock drills of the hammer type in which the working implement is provided with a collar or other equivalent means for limiting the distance the drill steel may extend into the rock drill.

The objects of the invention are to prevent ejection of the drill steel from the front head of the drill and to prevent excessive wear of the retaining member due to vibration and shock incident to drilling.

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

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

Figure 1 is an elevation partly broken away of the front end of a rock drill having the invention applied thereto,

Figure 2 is a sectional elevation taken through Figure 1 on the line 2—2 looking in the direction of the arrows,

Figure 3 is a view similar to Figure 1 showing the retainer in releasing position, and

Figure 4 is a transverse view taken through Figure 1 on the line 4—4 looking in the direction of the arrows.

Referring to the drawings, A designates a cylinder in which is disposed a reciprocatory hammer piston B. A front cylinder washer C forms a closure for the front end of the cylinder A and in this instance extends into a front head D and into the cylinder A for centralizing the front head and the cylinder with respect to each other.

Disposed slidably within the front cylinder washer C is an anvil block E, the rearward end of which extends into the cylinder A to receive the blows of the hammer piston B and transmit such blows to a drill steel F supported by the front head D.

At the juncture of the drill steel F and its shank G is formed a collar H which extends into a recess J in the front end of the front head and abuts the end wall K of said recess for limiting the distance which the shank G may extend into the front head.

The casing parts such as the front head D, the front cylinder washer C and the cylinder A are in this instance held in assembled position by side bolts L which extend through lugs O of the front head. In the present instance the side bolts L are cushioned by springs P disposed on the front end by the side bolts to act with one end against the forward face of the lugs O and with their other ends against nuts Q screwed on the front ends of the side bolts.

In accordance with the invention means are provided for retaining the drill steel F in the front head D as well as to provide an abutment for the drill steel to limit its forward travel in the front head D. To this end a bore R is formed transversely through the front end of the front head and is so positioned with respect to the recess J that an aperture S will be formed between the said recess J and the bore R. In the bore R is disposed a stop T consisting in this instance of a pin having an enlarged portion U at one end in which is formed an aperture V.

In order to secure the stop T to the drill and thus insure against loss of the stop, a chain W is secured a one end to the enlarged portion U and with its other end to a plate X preferably mounted pivotally on one of the side bolts L and clamped between a spring P and a lug O.

To the end that the stop T may at all times be held firmly in retaining position, a coil spring Y encircles the chain W and is provided with end hooks Z which engage end links of the chain W.

Preferably, the plate X is mounted to that side bolt located on the side opposite the end of the bore R into which the stop T is intended to be inserted. By this arrangement the spring Y will normally be at an angle acute to the stop to exert a pull thereon to hold said stop firmly against the effects of vibration set up in the rock drill during its operation.

During the operation of the drill, whenever it is desired to remove the drill steel from the front head, the stop T may be removed from the bore R, thus leaving a free passage through the recess J for the collar H of the drill steel. After another drill steel has been inserted in the front head, the stop T may be inserted in the bore R and the stop will then be held firmly in retaining position by the spring Y.

I claim:

1. In a rock drill, the combination of a

front head, a collared drill steel in the front head, a stop slidable through the front head in advance of the collar of the drill steel and off-set from the longitudinal axis of the drill, a plate on one of the side bolts of the drill, a chain connecting the stop to the plate, and a spring connected to the chain exerting a pull on the stop to hold said stop in the front head.

2. In a rock drill, the combination of a cylinder and front head, said front head having a longitudinal bore and a transverse opening into the longitudinal bore, a collared drill steel in the longitudinal bore, a stop in the transverse bore cooperating with the collar of the drill steel for preventing ejection of the drill steel from the front head, side bolts securing the front head to the cylinder, a plate on the side bolt located opposite that end of the transverse bore into which the stop is intended to be inserted, a chain connecting the stop to the plate, and a spring encircling the chain and connected to the ends thereof for holding the stop normally in the transverse bore, said chain lying at an angle acute to the stop.

In testimony whereof I have signed this specification.

CHARLES C. HANSEN.