Jan. 1, 1935. W. A. SMITH, JR., ET AL 1,986,298

DRILL STEEL RETAINER

Filed March 16, 1934

Fig. 1.

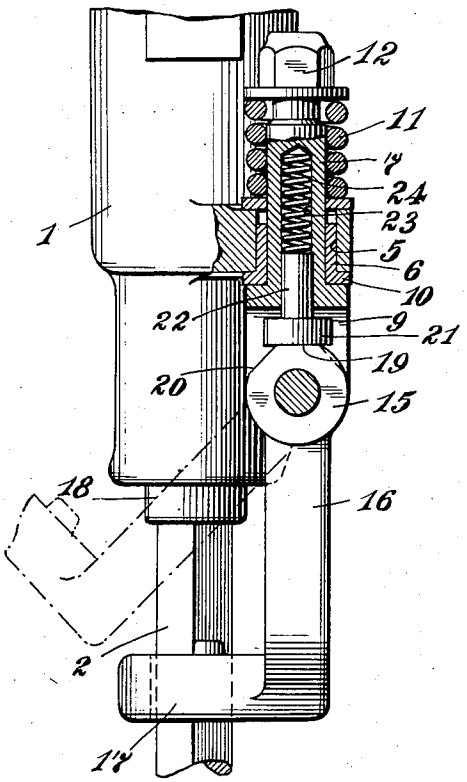
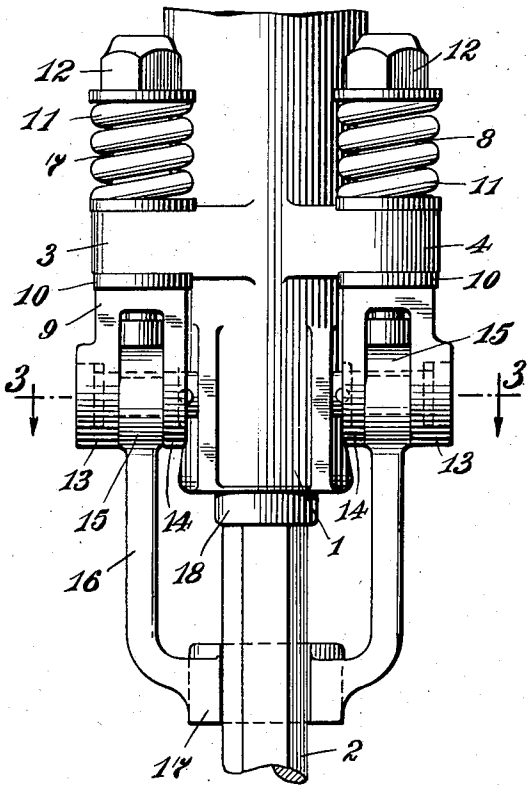


Fig. 2.



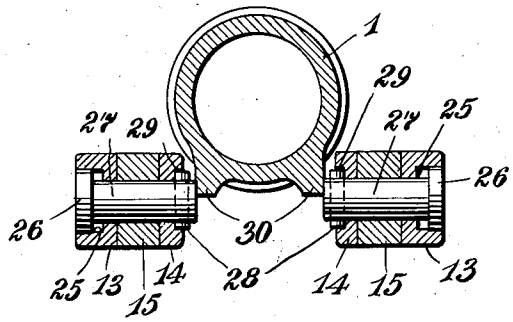


Fig. 3.

Wm. A. Smith Jr. and
H. J. Schorle
INVENTORS

BY Robert Meyer
ATTORNEY

Patented Jan. 1, 1935 1,986,298

UNITED STATES PATENT OFFICE

1,986,298

DRILL STEEL RETAINER

William A. Smith, Jr., North Arlington, N. J., and Herman J. Schorle, Astoria, Long Island, N. Y., assignors to Worthington Pump and Machinery Corporation, New York, N. Y., a corporation of Virginia

Application March 16, 1934, Serial No. 715,882

7 Claims. (Cl. 121—32)

This invention relates to rock drills or analogous percussive tools and more particularly to drill steel retainers therefor.

An object of the present invention is to provide a drill steel retainer of the swinging yoke type which will prevent ejection of the drill steel from the front end of the drill during operation and also to provide a practical simple mechanism for locking or holding the swinging retaining yoke in or out of drill steel retaining position.

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 drawing, showing drill steel retainers of the preferred form, and the features forming the invention will be specifically pointed out in the claims.

In the drawing:

Fig. 1 is a view partly in side elevation and partly in section of the improved drill steel retainer.

Fig. 2 is an elevation of the retainer.

Fig. 3 is a cross section through the retainer taken on the line 3—3 of Fig. 2.

Referring more particularly to the drawing, the front head 1 of any approved type of rock drill or percussive tool which receives the collared shank 2 of the drill steel has a pair of laterally extending arms 3 and 4 formed thereon which project in opposite directions from the axis of the front head 1 as clearly shown in Fig. 2 of the drawing. The arms 3 and 4 are each provided with bores 5 in which removable bushings 6 are mounted. The bushings 6 receive therethrough the retainer bolts 7 and 8 each of which has a head 9 formed on its outer or lower end. The heads 9 abut the flanges 10 formed on the bushings 6 and are held in yieldable engagement thereagainst by the springs 11. The springs 11 are coiled about the retainer bolts 7 and are tensioned by the nuts 12.

Each of the heads 9 has a pair of outwardly extending or depending ears 13 and 14 formed thereon between which the pivot heads 15 of the swinging yoke 16 engage. The swinging yoke 16 has a retaining head 17 formed thereon which engages the shank 2 of the drill steel and is adapted to be engaged by the collar 18 on the shank 2 to prevent ejection of the drill steel from the front end 1. The heads 15 of the swinging yoke retainer 16 have flat locking surfaces 19 and 20 formed thereon which are engaged by the head 21 of the locking plunger 22. The locking plunger 22 extends slidably into the bore 23 formed in the retainer bolts 7. Springs 24 are mounted in the bores 23 and engage the locking plungers 22 for urging the heads 21 thereof into engagement with the flat surfaces 19 or 20 for holding the swinging yoke 16 in or out of steel retaining position.

The ears 13 are counter-sunk as shown at 25 to receive the heads 26 of the pins 27 by means of which the yoke 16 is connected to the ears. The pins 27 are held against accidental removal by cotter pins or radial keys 28 which engage in recesses 29 formed in the inner sides of the ears 14.

If it is so desired, projections as indicated at 30 may be formed on the front head 1 to form stops for limiting the inward movement of the pins 27.

The bushings 6 are provided so that in case of wear occasioned by the rearward movement of the retainer bolts the bushings may be renewed without requiring renewal of the bolts or the entire retainer.

It is to be understood that the invention is not to be limited to the specific construction or arrangement of parts shown but that they may be widely modified within the invention defined by the claims.

What is claimed is:

1. In a percussive tool, a drill steel retainer comprising a front head adapted to receive the shank of a drill steel, a collar on said drill steel, a pair of laterally extending arms on said front head, said arms provided with bores therethrough, bushings in said bores, retainer bolts extending through said bushings, yieldable means normally urging the heads of said bolts against said bushings, ears formed on said heads and a drill steel retaining yoke swingably connected to said ears and engaging said collar when said drill steel is in the forward position.

2. In a drill steel retainer for a percussive tool, the combination with a front head adapted to receive the shank of a drill steel, a collar on said drill steel and having a pair of laterally extending arms thereon, said arms provided with bores therethrough, bushings in said bores, retainer bolts extending through said bushings, yieldable means normally urging the heads of said bolts against said bushings, ears formed on said heads and a drill steel retaining yoke adapted to engage said collar swingably connected to said ears, locking plungers carried by said retainer bolts, said swinging yoke having flats thereon, resilient means independent of said yieldable means urging said plungers

against said flats to hold the yoke in or out of steel retaining position.

3. In a drill steel retainer for percussive tools, the combination of a front head, mounting lugs on said front head, retainer bolts, yieldable means for normally holding the heads of said bolts against the forward edge of said lugs, a yoke swingably carried by the heads of said bolts, said bolts being provided with a bore, a locking plunger slidably mounted in said bore, and resilient means operable independent of said yieldable means and urging said plunger against said yoke.

4. In a drill steel retainer for percussive tools, the combination of a front head, a drill steel received by said front head, a collar on said drill steel, arms on said front head, retainer bolts extending through said arms, heads on said bolts, resilient means adjacent to said bolts normally holding said bolt heads securely against said arms, an adjustment mechanism for adjustably regulating the tension of said resilient means, a yoke swingably mounted on said heads, flattened portions on said yoke, said bolts being provided with a bore, a plunger in said bore, compressible means in said bore, said compressible means urging said plunger against said flattened portions.

5. In a drill steel retainer for percussive tools, the combination of a front head, a drill steel received by said front head, a collar on said drill steel, arms on said front head, retainer bolts extending through said arms, bifurcated heads on said bolts, yieldable means adjacent to said bolts and normally holding said front head securely against said arms, adjustment mechanism for adjustably regulating the tension of said yieldable means, a yoke swingably secured to said bifurcated heads, flattened portions on said yoke, said bolts being provided with a bore communicating with the bifurcated portion of the head, a plunger in said bore, resilient means in said bore urging said plunger against said flattened portions, said plunger extending outwardly into the bifurcated portion of said bolts.

6. In a drill steel retainer for percussive tools, the combination of a front head, a drill steel received by said front head, a collar on said drill steel, arms on said front head, retainer bolts extending through said arms, heads on said bolts, relatively strong resilient means adjacent to said bolts normally holding said bolt heads against said arms, an adjustment mechanism for adjustably regulating the tension of said relatively strong resilient means, a yoke swingably mounted on said heads, flattened portions on said yoke, said bolts being provided with a bore, a plunger in said bore, compressible means in said bore mounted independent of said relatively strong resilient means, said compressible means being relatively weak and urging said plunger against said flattened portions.

7. In a drill steel retainer for percussive tools, the combination of a front head, a drill steel received by said front head, a collar on said drill steel, arms on said front head, retainer bolts extending through said arms, heads on said bolts, relatively strong resilient means adjacent to said bolts normally holding said bolt heads securely against said arms, a yoke swingably mounted on said heads, flattened portions on said yoke, relatively weak compressible means engaging said flattened portions, an adjustment mechanism for adjustably regulating the tension of said relatively strong resilient means without affecting the resiliency of said compressible means.

WILLIAM A. SMITH, JR.
HERMAN J. SCHORLE.