June 23, 1936. G. H. FUEHRER 2,045,296

STEEL RETAINER

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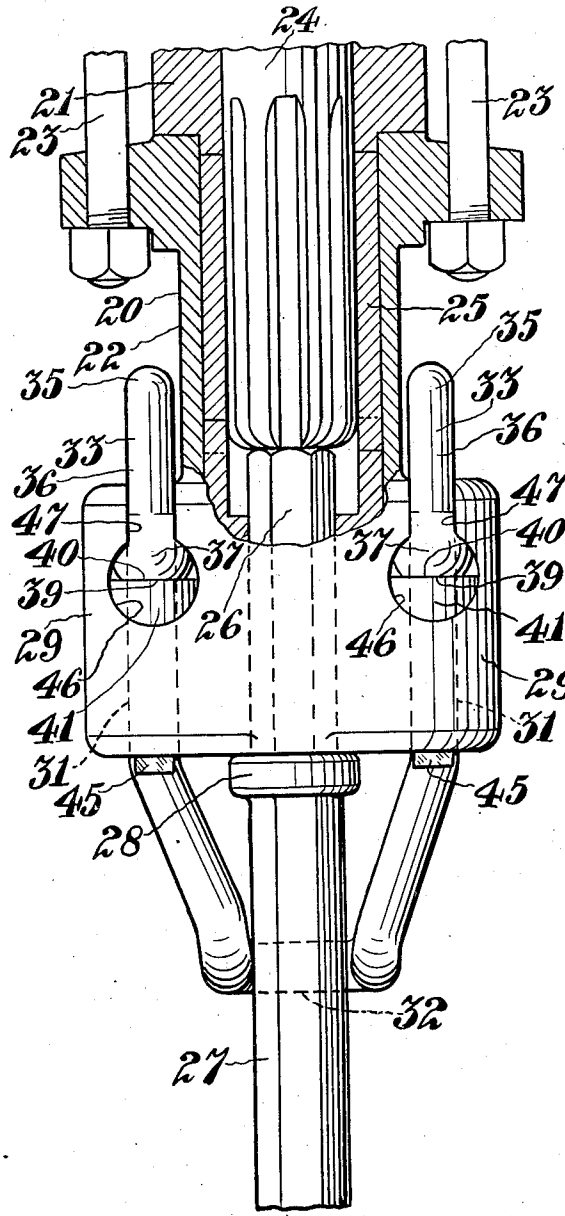


FIG.-1.

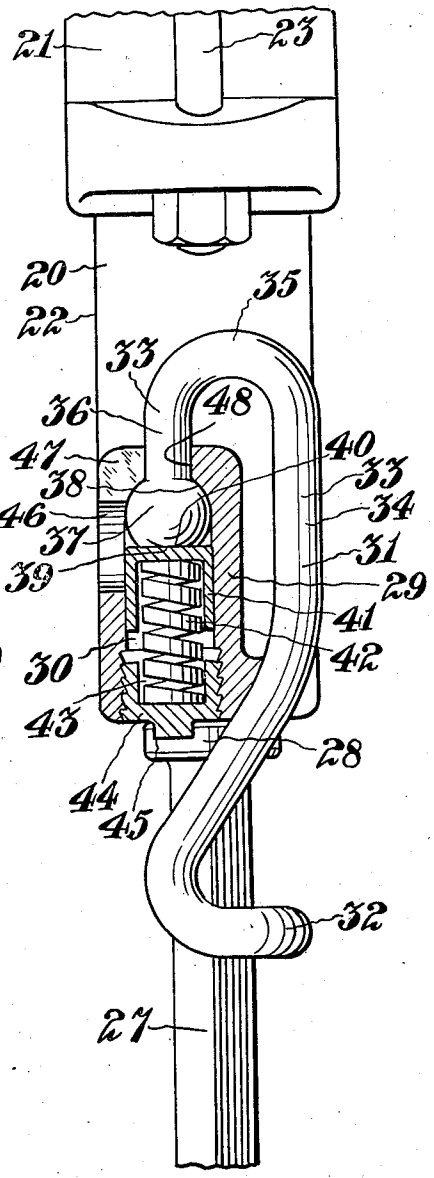


FIG.-2.

INVENTOR.
George H. Fuehrer
BY
HIS ATTORNEY

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STEEL RETAINER

George H. Fuehrer, Phillipsburg, N. J., assignor to Ingersoll-Rand Company, Jersey City, N. J., a corporation of New Jersey

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3 Claims. (Cl. 121—32)

This invention relates to rock drills, and more particularly to implement retainers for rock drills of the hammer type in which the working implement is capable of free reciprocation with respect to the piston whereby it is actuated.

The objects of the invention are to prevent ejection of the working implement from the rock drill, to form a yieldable abutment for the working implement, to enable the retainer to be readily mounted on or removed from the rock drill, and to assure uniform tension of the springs whereby the retainer is cushioned.

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

In the drawing accompanying this specification and in which similar reference numerals refer to similar parts,

Figure 1 is an elevation, partly in section, of a rock drill equipped with a steel retainer constructed in accordance with the practice of the invention, and

Figure 2 is a side elevation of the rock drill and the retainer, partly broken away.

Referring more particularly to the drawing, the steel retainer is shown applied to a rock drill 20 of which only the front end is shown to illustrate a practical application of the invention.

The portion of the rock drill shown comprises a cylinder 21 and a front head 22 which may be secured to the cylinder by side rods 23. Within the cylinder is a reciprocatory hammer piston only the front extension 24 of which is shown extending into chuck mechanism 25 in the front head 22. The chuck mechanism 25 is illustrated as being of the rotary type and the front end thereof is a bore to interlockingly engage the shank 26 of a working implement 27 having a collar 28 to seat against the front end of the chuck mechanism for determining the distance which the working implement may extend into the chuck.

In accordance with the practice of the invention, means are provided for retaining the working implement 27 in the rock drill. The front head 22 is accordingly provided with a pair of lugs 29 arranged on opposite sides of the front head and having longitudinally extending bores 30 opening from the front end of the lugs.

The bores 30 serve as guides for the steel retainer, designated 31, and which comprises the usual yoke 32 arranged about the working implement 27, forwardly of the collar 28, and side arms 33 which are integral portions of the yoke 32. The side arms 33 consist, in part, of straight portions 34 which lie rearwardly of the lugs 29. At the rear ends of the straight portions are curved portions 35 which merge into straight portions 36 substantially paralleling the portions 34. The portions 36 terminate in spherical portions 37 which lie in the bores 30 and seat against spherical seating surfaces 38 in the rear ends of the bores 30.

On the front or free ends of the spherical portions 37 are flat surfaces 39 to seat against similar surfaces 40 of plungers 41 slidable in the bores 30. The plungers 41 are preferably of cup-shape to receive the rear ends of springs 42 whereby the spherical portions 37 are normally pressed against the seating surfaces 38. The front ends of the springs 42 extend into recesses 43 of plugs 44 forming closures for the bores 30. The plugs 44 are threaded into the front ends of the bores 30 and are provided with polygonal projections 45 at their front ends to accommodate a wrench whereby the plugs may be manipulated to control the tension of the springs 42.

In the sides of the lugs 29 are apertures 46 through which the spherical portions 37 may be inserted into the bores 30, and slots 47 connect the apertures 46 with bores 48 in the rear ends of the lugs 29 and wherein the portions 36 of the side arms normally lie. The bores 48 are of smaller diameter than the bores 30 and open through the spherical seating surfaces into the bores 30. The slots 47 are of suitable width to permit the portions 36 to pass readily therethrough.

In assembling the steel retainer on the front head the spherical portions 37 are first passed through the apertures 46 into the bores 30. The springs 42 and the plungers 41 are then inserted in the bores and the plugs 44 are threaded into position to place the springs under sufficient tension to cause them to maintain the spherical portions seated firmly against the seating surfaces 38 and also to exert sufficient pressure to prevent unauthorized rocking of the retainer 31.

If, during the operation of the rock drill, it should be desired to change working implements the retainer may be rocked out of the retaining position by pulling the yoke portion 32 away from the working implement 27. When the yoke is being thus rocked out of the retaining position the portions 36 of the side arms pass into the slots 47 and the retainer will be held in the releasing position by the spring-pressed plungers 41 which will then seat against the spherical surfaces of the portions 37. After another working implement has been inserted in the front head

the retainer is again rocked to its retaining position where it will be held by the springs **42**.

In the event that the working implement **27** is thrust forwardly unduly, as when there is insufficient resistance to maintain it in its correct position in the front head, the yoke **32** will engage the collar **28** and the thrust of the working implement will be absorbed by the springs **42**, thereby protecting the front head against sharp shock.

I claim:

1. In a steel retainer, comprising in combination with a front head and a collared working implement, lugs on the front head having bores therein comprising enlarged and reduced portions, there being seating surfaces at the junctures of the enlarged and reduced portions of the bores, a yoke to retain the working implement in the front head, side arms on the yoke having forwardly projecting portions extending through the reduced portions of the bores and having enlarged portions on their ends, and means in the bores to press the enlarged portions against the seating surfaces.

2. In a steel retainer, comprising in combination with a front head and a collared working implement, lugs on the front head having bores therein comprising forward enlarged portions and rearward reduced portions, there being spherical seating surfaces at the junctures of the enlarged and reduced portions of the bores, a yoke to retain the working implement in the front head, side arms on the yoke having forwardly projecting portions extending into the bores, spherical portions on the side arms, and springs for pressing the spherical portions against the spherical seating surfaces.

3. In a steel retainer, comprising in combination with a front head and a working implement, lugs on the front head having bores extending longitudinally of the front head and comprising forward enlarged portions and rearward reduced portions, there being spherical surfaces at the junctures of the enlarged and reduced portions of the bores, a yoke to retain the working implement in the front head, side arms on the yoke having forwardly projecting portions extending into the rear ends of the bores, spherical portions on the side arms, springs in the bores for pressing the spherical portions against the spherical seating portions, and adjustable seats threaded into the bores for the springs, said lugs having slots opening into the reduced portions of the bores to accommodate the forwardly projecting portions in the releasing position of the yoke.

GEORGE H. FUEHRER.