

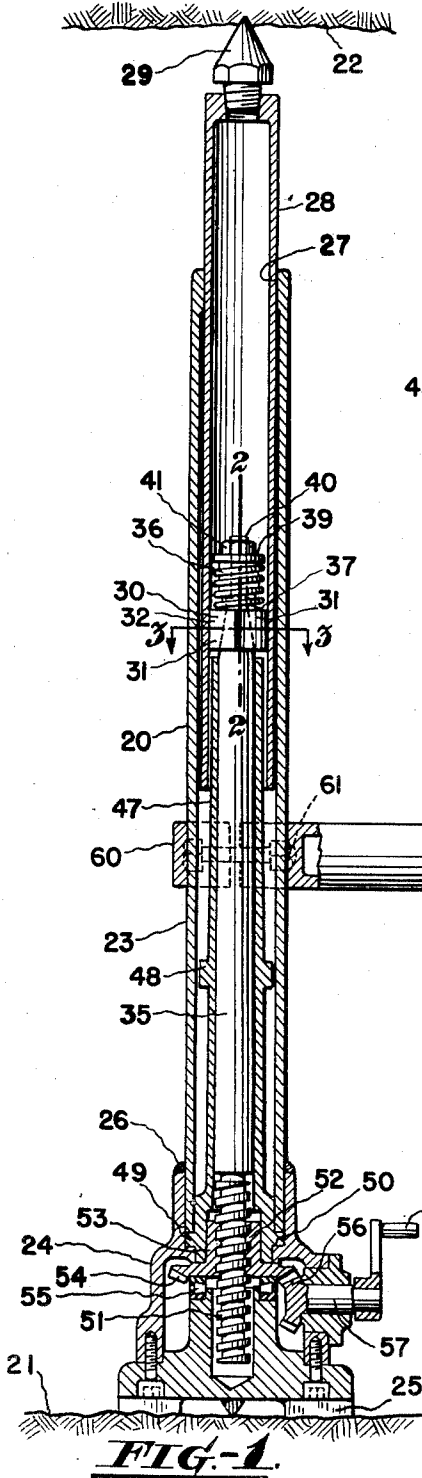
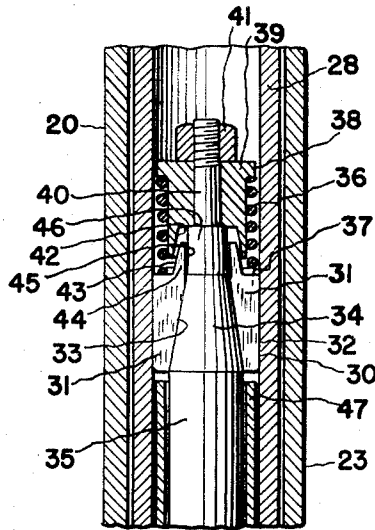
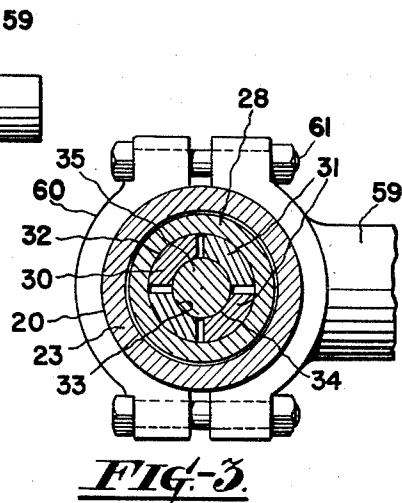
June 5, 1951

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2,555,515

EXTENSIBLE SUPPORT FOR ROCK DRILLS

Filed Oct. 8, 1947



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UNITED STATES PATENT OFFICE

2,555,515

EXTENSIBLE SUPPORT FOR ROCK DRILLS

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Application October 8, 1947, Serial No. 778,668

1 Claim. (Cl. 255—53)

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This invention relates to rock drilling mechanism, and more particularly to an extensible support for rock drills of the drifter type.

One object of the invention is to enable the support to be quickly extended for engagement with the surfaces supporting it.

Another object is to permit of the application of a powerful force for extending the support and to press its terminal portions into firm engagement with the surfaces supporting it.

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

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

Figure 1 is an elevation, partly broken away, of an extensible support constructed in accordance with the practice of the invention,

Figure 2 is a similar view of a detail, and

Figure 3 is a transverse view taken through Figure 1 on the line 3—3.

Referring more particularly to the drawings, 20 designates, in general, the extensible support and 21 and 22 the surfaces supporting it, as for example the floor and the roof of a tunnel.

The support 20 comprises a tubular body 23 which extends at its lower end into a base 24 having calks 25 for engagement with the surface 21. The tubular body 23 is secured to the base 24, as by welding material 26, and in the free end of said body is a bearing surface 27 for a hollow rod 28 carrying a pointer 29 at its outer end for engagement with the surface 22.

The rod 28 is freely slidable on the bearing surface 27 so that it may be conveniently moved by hand and, in accordance with the practice of the invention, means are provided for locking the rod 28 securely in fixed position with respect to the base 24 and to move it endwise for lengthening or shortening the support. To this end the support is provided with holding means shown as a push-out chuck 30 which comprises a series of jaws 31 the exterior surfaces 32 of which are contoured to conform with the curvature of the inner surface of the rod 28.

The inner surfaces 33 of the chuck jaws 31 are shaped for engagement with a coniform surface 34 on a plunger 35 extending axially of the tubular member 23 for pressing the jaws 31 against the rod 28. The jaws 31 are normally urged in the direction of the end of the larger diameter of the coniform portion 34, and thus into engagement with the rod, by a spring 36 that seats at one end against shoulders 37 on the jaws 31 and at its other end against a flange 38 on a block 39

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slidable upon a stem 40 at the upper end of the plunger 35. The free end of the stem 40 is threaded and a nut 41 thereon serves as an adjustable abutment for the block 39 to vary the tension of the spring 36.

In the end of the block 39 confronting the jaws 31 is a coniform recess 42 to engage similarly shaped surfaces 43 of projections 44 on the jaws 31 for guiding the jaws 31 out of engagement with the rod 28 whenever the pressure of the plunger 35 is removed from the jaws. The inner surfaces 45 of the projections 44 are contoured for engagement with a cylindrical surface 46, between the coniform surface 34 and the stem 40, serving to maintain the jaws 31 in coaxial relationship with the rod 28 in order that all the jaws will move into and out of engagement with the rod in unison.

The means serving to release the chuck jaws from the rod 28 preferably consists of a sleeve 47 that encircles the plunger 35 below the jaws 31 so that when the rod 28 is drawn downwardly the jaws 31 will abut the end of the sleeve 47 and will remain stationary while the coniform surface 34 is drawn out of engagement with the jaws to release the pressure thereagainst. The sleeve 47 has an external flange 48 to support the rod 28 when the support 20 is fully contracted, and at the lower end of the sleeve 47 is a flange 49 that overlies the end of the tubular body 23 and seats upon a shoulder 50 in the base 24 for maintaining the sleeve 47 in the correct assembled position.

In order to actuate the plunger 35 endwise its lower end is provided with threads 51 for co-operation with the threads 52 of a nut 53 rotatable within the sleeve 47 and having a bevelled gear 54 at its lower end that seats upon an anti-friction bearing 55 supported by the base 24. The gear 54 meshes with a pinion 56 of a shaft 57 rotatable in the base and having a crank 58 for manually rotating the nut 53 to impart endwise movement to the plunger 35.

An arm 59 is shown arranged on the tubular body 23 to serve as a support for the rock drill (not shown) and is secured to the body 23 by a clamp 60 and bolts 61.

In the operation of the device, whenever it is intended to extend the support 20 the nut 53 is rotated a partial revolution, by operation of the crank 58, to move the plunger 35 and the rod 28 downwardly until the chuck jaws 31 are brought into engagement with the end of the sleeve 47. Continued movement of the plunger in the same direction will then remove the pressure of the

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coniform surface 34 against the chuck jaws and thereby release the rod 28. The rod may then be freely moved by hand to bring the pointer 29 into engagement with the surface 22. If the nut 53 is then rotated in the opposite direction the coniform surface 34 will first drive the chuck jaws outwardly into engagement with the rod 28 and the rod will thereafter move with the plunger to force the pointer 29 and the calks 25 into the supporting surfaces.

As will be apparent to those skilled in the art, by enabling the rod 28 to be released from the elements whereby the terminal portions of the support are driven against the surfaces 21 and 22 the support may be quickly extended and shortened, as required, and the pointer 29 may be brought into engagement with the surface 22 in considerably less time than would be possible if it could move only at the rate of movement of the plunger, as imparted thereto by the nut 53. At the same time the pointer 29 may be driven into the surface 22 with the same force that it would be were the plunger threadedly connected to the rod 28.

I claim:

An extensible support for rock drills, comprising a tubular body, a base therefor, a rod freely slideable endwise of said body for varying the length of the support, chuck jaws for gripping the rod, a plunger having a tapered portion engag-

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ing the jaws for pressing said jaws against the rod, a spring for normally holding the jaws in engagement with the rod, an abutment within the tubular body for moving the jaws out of engagement with the tubular body upon movement of the plunger in one direction, and a rotary member in the base in threaded engagement with the plunger to impart endwise movement to the plunger for forcing the jaws into engagement with and releasing them from the tubular body.

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