June 17, 1930. C. C. HANSEN 1,763,701

FEEDING DEVICE FOR ROCK DRILLS

Filed Feb. 27, 1929

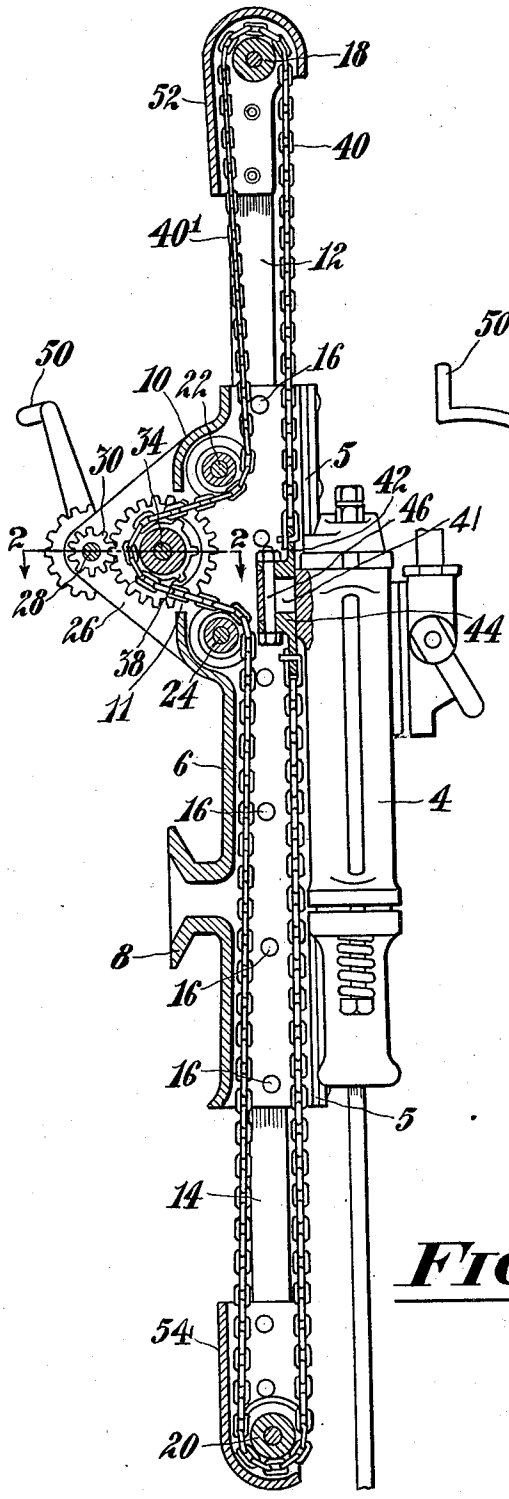


FIG. 1.

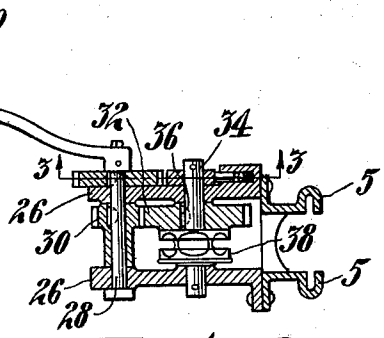


FIG. 2.

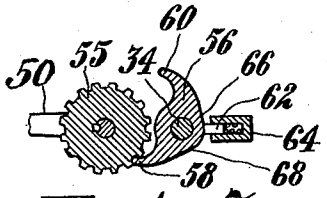


FIG. 3.

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UNITED STATES PATENT OFFICE

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FEEDING DEVICE FOR ROCK DRILLS

Application filed February 27, 1929. Serial No. 342,998.

This invention relates to rock drills, but more particularly to feeding devices for rock drills.

It is an object of this invention to provide a cheap, rugged feeding device for rock drills. Another object is to provide a device which permits the drill to feed itself in drilling down holes without placing excessive load upon the rotation mechanism of the drill.

Other objects will be in part obvious and in part pointed out hereinafter, and these objects are attained by the mechanism shown in the accompanying drawings, in which

Figure 1 is a longitudinal view of the rock drill and the feeding device shown partly in section,

Figure 2 is a sectional view of the crank operated mechanism taken on the line 2—2 looking in the direction indicated by the arrows, and

Figure 3 is a sectional view of Figure 2 taken on the line 3—3 looking in the direction indicated by the arrows.

Referring more particularly to the drawings, the rock drill 4, which need not be described in detail since it forms no part of this invention, is mounted on the guides 5 of a shell 6 in the usual manner. A conical projection 8 on the body of the shell 6 is the usual means of mounting a rock drill on a fixed support such as a quarry bar (not shown). At the opposite end of the shell an enlargement 10 is provided having a central opening 11. Arms 12 and 14 are secured to the shell by means of bolts or rivets 16. Sprockets 18 and 20 are mounted at the extremities of the arms 12 and 14 respectively. In the enlargement 10 of the shell 6 guiding sheaves 22 and 24 are rotatably mounted.

Triangular plates 26 extend from the shell 6 at opposite sides of the opening 11. These plates may be cast integrally with the shell. A shaft 28 extends through the outermost portion of the plates 26. Mounted on the shaft 28 between the plates 26 is a gear 30 which meshes with a gear 32 mounted on a shaft 34 which is shown journalled in the plates in alignment with the opening 11. Relative movement between the shaft 34 and the gear 32 is prevented by means of a key 36. A sprocket 38 is also secured to the shaft 34 between the plates 26.

A chain 40 is attached to the usual feed nut 41 of the rock drill 4 extending into the shell 6 by means of clamps 42 and 44 which are secured together by a bolt 46. The chain 40 passes from the clamp 42 over the sprocket 18 to the guiding pulley 22 thence over the sprocket 38, over the guiding pulley 24 then to the sprocket 20 and from the sprocket 20 to the clamp 44. A crank 50 attached to the shaft 28 beyond one of the plates 26 provides means for rotating the gears 30 and 32.

The operation of the feeding device is as follows: When the shell 6 is mounted on the quarry bar (not shown) in a position to drill down holes as is shown in Figure 1, the weight of the rock drill 4 is sufficient to feed the drill downwardly while the hole is being drilled. When it becomes necessary to retract the drill in order to change the drill steel or for any other purpose, the operator grasps the crank handle 50 and turns it in a clockwise direction as viewed in Figure 1. The sprocket 38 meshing with the chain 40 tensions that part of the chain designated by 40′ and the rock drill is lifted up away from the rock surface.

It will be noted that there is practically no limit to the length of feed obtainable by this device. Also that feeds of greater or less length may be obtained by the simple procedure of unbolting the arms 12 and 14 and replacing them by longer or shorter arms and a chain of corresponding length.

Guards 52 and 54 prevent the chain from jumping off of the sprockets 18 and 20 and also protect the operator from possible injuries from this source.

If it is desired to lock the drill against relative movement with respect to the shell 6, this is accomplished by means of a ratchet 55 attached to the shaft 28 which cooperates with the double ended pawl 56 rotatably mounted on the shaft 34. When it is desired to prevent further downward movement of the rock drill the end 58 of the pawl is brought into operation with the ratchet 55. In other positions of the drill and the shell it may be desirous to prevent motion in the other direction and in that case the end 60 of the pawl

56 is brought into mesh with the ratchet 55 The plunger 62 actuated by the spring 64 acts on the cam face 66 or 68 to hold the pawl 56 in either position.

By means of the apparatus described above, the objects hereinbefore mentioned are attained.

I claim.

1. In a rock drill feeding device, the combination of a rock drill shell having an opening in the bottom wall thereof, a rock drill slidably mounted on said shell, arms extending longitudinally from said shell, sprockets mounted on the extremities of the arms, a pair of plates secured to the shell adjacent said opening in the shell, a sprocket mounted between said plates in alignment with said opening, a crank mounted laterally on said plates, a gear train supported by said plates and operatively connecting the crank and the sprocket between the plates, a chain attached to the rock drill, said chain extending through the shell and being trained over the sprockets at the ends of the arms and over the sprocket between the plates, said chain being adapted to transmit movement from the crank to the rock drill, and a ratchet mounted on the crank and adapted to cooperate with a pawl to maintain the rock drill in a fixed position with respect to the shell.

2. In a rock drill feeding device, the combination of a rock drill shell having guideways in its upper wall and an opening in the bottom wall, a rock drill slidably mounted on the guideways, a pair of arms extending longitudinally from the shell, a sprocket mounted at the free end of each arm, guiding means in the shell adjacent said opening in the shell, a pair of plates secured to opposite sides of the shell and adjacent said opening, a shaft journalled in the plates in alignment with said opening and carrying a sprocket, a crank mounted laterally on the plates, intermeshing gears carried by said shaft and said crank, a chain attached to the rock drill, said chain extending through the shell and being trained over the sprockets and over the guiding means in the shell, said chain being adapted to transmit motion from said crank to said rock drill, a double ended pawl rotatably mounted on one of said plates, and a ratchet carried by the crank and adapted to cooperate with said pawl to maintain said rock drill in fixed position relatively to the shell.

In testimony whereof I have signed this specification.

CHARLES C. HANSEN.