Apr. 24, 1923. 1,452,581

C. R. WELCH

ROCK DRILL

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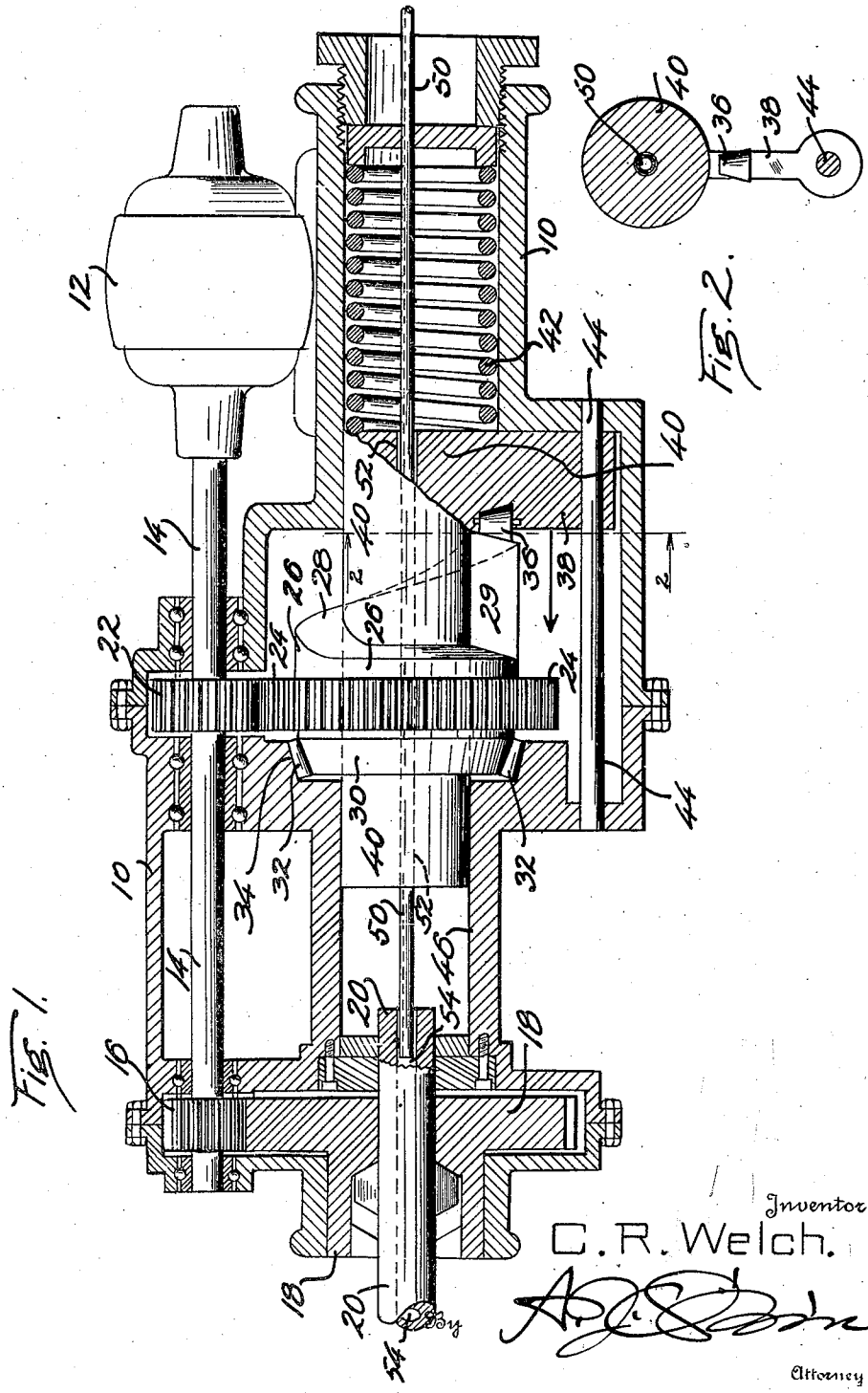


Fig. 1.

Fig. 2.

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CLARENCE R. WELCH, OF DENVER, COLORADO.

ROCK DRILL.

Application filed January 17, 1920. Serial No. 352,116.

To all whom it may concern:

Be it known that I, CLARENCE R. WELCH, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Rock Drills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide simple and efficient means in a rock drill for retracting and releasing the hammer.

Briefly, this comprises a cam member rotatable adjacent the hammer, the cam thereon engaging an offset portion of the hammer and retracting the same against the tension of a heavy spring. When the hammer has been retracted a sufficient distance, the extension thereon is disengaged from the cam, permitting the spring to forcibly propel the hammer against the drill steel.

In the drawings:

Fig. 1 is a longitudinal section through a drill equipped with my invention; and

Fig. 2 is a view indicated by the line 2—2 of Fig. 1, showing the hammer construction.

The usual drill casing 10 is provided and thereupon there is mounted, a motor 12, whose drive shaft 14 carries a pinion 16 to rotate the chuck 18, which holds the drill steel 20. The shaft 14 also carries a pinion 22, which meshes with a gear 24, carried by the cam member 26. This member 26 is provided with a cam face 28, the releasing end of which terminates in an axially positioned wall 29. On the opposite side of the member 26 a bearing 30 is provided, which travels upon rollers 32, engaging a run 34, formed in the casing; this structure takes care of the end thrust on the cam member 26. The cam face 28 engages a roller 36, provided upon an extension 38 of the hammer 40, the body of which is cylindrical and projects through the cam member 26, said cam member being journalled on said cylindrical body. The hammer 40 is engaged by a heavy spring 42, which tends to propel it forward and the lower end of the extension 38 slides upon and is guided by a rod 44, fixed in the casing. The forward end of the hammer 40 reciprocates in a cylinder 46 in the casing and is disposed for contact with the inner end of the drill steel 20.

In order to supply water to the steel, a pipe 50 is passed through a passage 52 in the hammer, and into a passage 54 in the steel 20. This provides a very simple means for supplying water.

In operation of the device, the pinion 22 and gear 24 rotate the cam member 26 so that the roller 36 travels up on the cam face 28, retracting the hammer against the tension of the spring 42, until the roller 36 and extension 38 reach the end of the cam face 28 and fall alongside the wall 29, whereupon the hammer 40 strikes the steel 20.

I claim:

In a rock drill, a casing, a drill chuck rotatably mounted in one end thereof, a hammer slidably mounted in said casing, a cam member rotatably mounted on a cylindrical portion of said hammer, a lateral extension on said hammer adapted to be engaged by the cam, means cooperating with said extension to prevent rotation thereof, a gear on said cam, means for simultaneously rotating said gear and said chuck, and a spring within the casing and cooperating with said hammer, whereby said hammer will move quickly when released by said cam.

In testimony whereof I affix my signature.

CLARENCE R. WELCH.