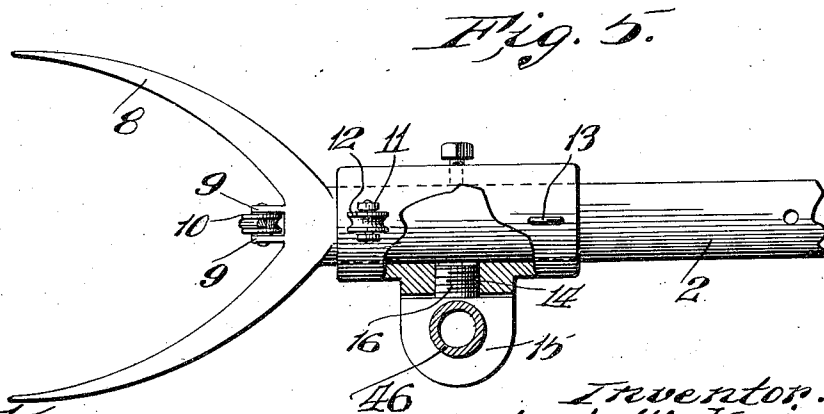
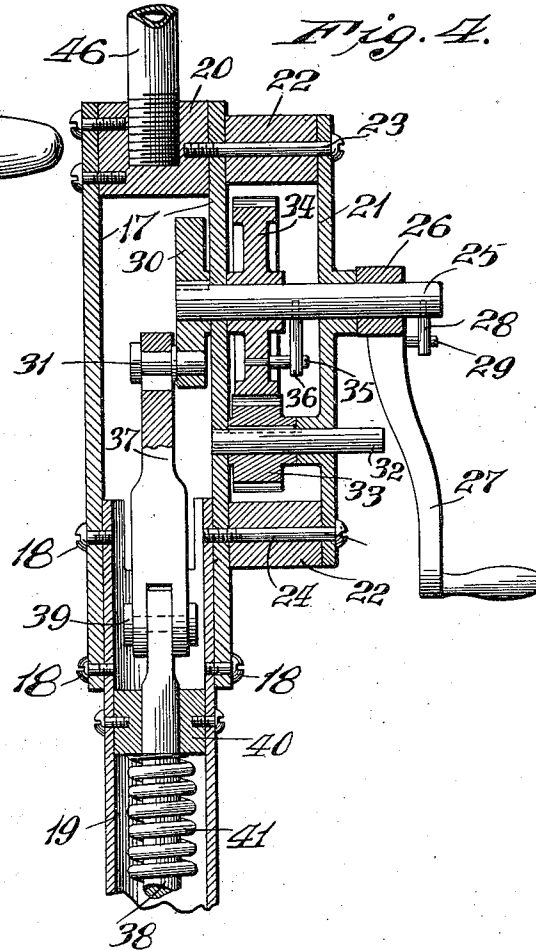
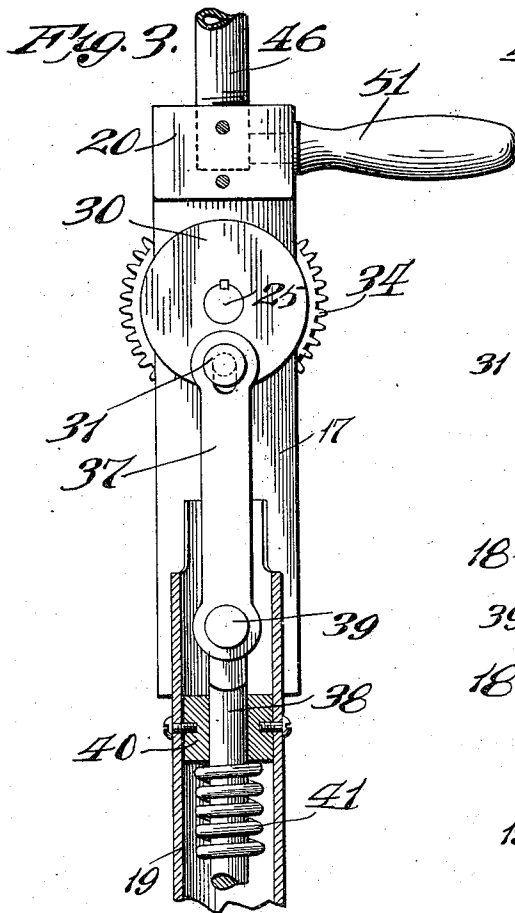


R. W. KREIS.
 ROCK DRILL.
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1,012,656.

Patented Dec. 26, 1911.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ROBERT W. KREIS, OF JENNINGS, MISSOURI.

ROCK-DRILL.

1,012,656.

Specification of Letters Patent.

Patented Dec. 26, 1911.

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To all whom it may concern:

Be it known that I, ROBERT W. KREIS, a citizen of the United States, and resident of Jennings, St. Louis county, Missouri, have
5 invented certain new and useful Improvements in Rock-Drills, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a
10 part hereof.

My invention relates to improvements in rock drills, the object of my invention being to construct a drill-actuating mechanism in which a spring-actuated trip hammer is em-
15 ployed to strike the drill point.

A further object of my invention is to construct an improved means in a rock drill for actuating a trip hammer, and a still further object of my invention is to construct
20 an improved extensible support for a rock drill, having an auxiliary weight arranged to act on the drill frame to assist the feed of the drill.

For the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed
25 out in the claim, and illustrated in the accompanying drawings, in which:

30 Figure 1 is an elevation of the complete drill in position for operation, having parts broken away to more clearly illustrate the construction of the various parts; Fig. 2 is an elevation of the drill taken at a right
35 angle to Fig. 1, with a part of the extensible support in section; Fig. 3 is an enlarged detailed elevation, partly in section, of the body portion of the drill frame, showing the relative positions of the hammer-operating parts; Fig. 4 is a vertical sectional elevation taken at a right angle to Fig. 3; and
40 Fig. 5 is an enlarged detail plan of a portion of the extensible support for the drill.

Referring by numerals to the accompanying drawings: 1 designates the head of the
45 extensible support, 2 the tubular perforated extension, 3 a bar seated in the tubular extension, 4 a pin arranged to be inserted through an opening formed in the bar and
50 through a pair of the perforations in the tubular extension 2. The outer end of the bar 3 is provided with an internally threaded screw-seat 5, and the threaded end of a pointed bar 6 is seated in said seat 5, and a
55 ball-ended lever 7 is carried by the bar 6.

Arranged on the opposite side of the head

1 is a bifurcated projection 8, and arranged at the apex of the projection 8 is a pair of perforated integral ears 9, and mounted in the ears 9 is a pulley 10. On the upper face
60 of the head 1 adjacent the pulley 10 is a bearing 11, and mounted in said bearing is a pulley 12; on the upper face of the head opposite the pulley 12 is an eye 13, and the functions of said pulleys and eye will be
65 made clear hereinafter. An internally threaded opening 14 is formed in the side face of the head 1, and a bearing 15 having an integral threaded shank 16 is secured to the head by threading the shank 16 to the
70 head 1.

The frame of the drill proper comprises a pair of plates 17, connected at their bottom ends by means of the screws 18 and a tube 19, and connected at their upper ends
75 by a block 20, and a third plate, 21, of lesser length than the plate 17, said plate 21 being spaced apart from the plate 17 by blocks 22, and secured to the plate 17 and tube 19 by the screws 23 and 24. A shaft 25 is extended
80 through the plates 17 and 21 and embracing said shaft is a collar 26, and formed integral with said collar is a crank handle 27. A pin 28 is carried by the shaft 25 adjacent and outside the collar 26, and projects at
85 right angles to the shaft 25. A similar pin 29 is carried by the handle 27 and arranged to engage the pin 28 at times. A disk 30 is fixed to the shaft 25 between the plates 17 and a wrist pin 31 is carried by said disk.
90

The lever 27, pins 28 and 29 provide a means for operating the drill by hand, and to provide a means to operate the drill by power, I have provided a shaft 32, mounted in the plate 21 and one of the plates 17 below the shaft 25, which shaft projects beyond the outer face of the plate 21 a sufficient distance to receive a pulley (not shown) driven by any suitable motor. Carried by the shaft 32 is a gear wheel 33,
95 which meshes with a gear wheel 34 carried by the shaft 25, and carried by the wheel 34 is a pin 35 similar to the pin 29 carried by the crank handle 27, which co-acts with a pin 36 similar to the pin 38 carried by
105 the shaft 25. A pitman 37 is pivotally carried by the wrist pin 31, the lower end of the pitman being bifurcated to receive the reduced end of the plunger 38, the plunger and pitman being pivotally connected by
110 the pin 39. A collar 40 is secured within the tube 19 and acts as a guide to direct the

plunger 38, and also acts as a stop for the extensile coil spring 41. A hammer 42 is carried by the plunger 38 and the spring impinges between said hammer and the collar 40.

A collar 43 is secured within the tube 19 adjacent its lower end, and is provided with an octagonal or angular opening through which the drill point 44 is inserted, said drill point being limited in its movement by the annular shoulder 45. A tubular member 46 is fixed to the head block 20 and is inserted through the opening formed in the bearing 15 carried by the head 1 to provide a means for supporting the drill in a vertical position, and it is obvious in this connection that the bearing is capable of moving in the opening 14 so that the drill may be held in positions at angles relative to the vertical. The upper end of the tubular member 46 is provided with a bearing 47 and a pulley 48 is carried by said bearing. A rope or cable 49 is fixed to the eye 13 on the head 1, and is arranged to embrace the pulley 48, pulleys 12 and 10, and a weight 50 is suspended from said rope or cable, and by reason of the weight and cable acting on the tubular member, together with the weight of the drill, the feed of the drill point is constant and automatic. To provide for turning the drill when in operation, I have provided the handle 51 which is secured to the block 20.

In the practical operation of the drill, the disk 30 is rotated either by hand or power through either set of pins 28 and 29, or 35 and 36, thus elevating the pitman 37 and plunger 38. This operation compresses the spring 41 between the hammer 42 carried by the plunger and the collar 40, and when

said wrist pin reaches a point beyond its vertical "center" the pins 28 and 36 are free to move from the pins 29 and 35, thus the spring 41 is released and the hammer impacted against the drill point, and by reason of the slot in the upper end of the pitman, the rebound is not imparted to the wrist pin, thus protecting the drill from the jar of the impact of the hammer against the drill point. In this manner, the operation of drilling may be continuous, and after each impact the drill and point may be turned by the handle which is carried by the block 20.

It is obvious by reason of the sliding connection between the head 1 and tubular support 2 the drill may be positioned at various points transversely of the shaft, between the walls of which the support is positioned.

I claim:

In a rock drill, a frame, a spring actuated trip hammer carried by said frame, a shaft mounted in said frame, a pin carried by said shaft, a lever embracing said shaft, a pin carried by said lever for engaging with said first mentioned pin, a gear wheel carried by said shaft, a second shaft, a gear wheel carried by said second shaft, a second pin carried by the first mentioned shaft, a pin carried by the first mentioned gear wheel and a connection between said shaft and said hammer.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

ROBERT W. KREIS.

Witnesses:

JOHN M. LAMDOLT,
M. OEPTS.