

(No Model.)

S. G. McKIERNAN.

ROCK DRILL.

No. 488,269.

Patented Dec. 20, 1892.

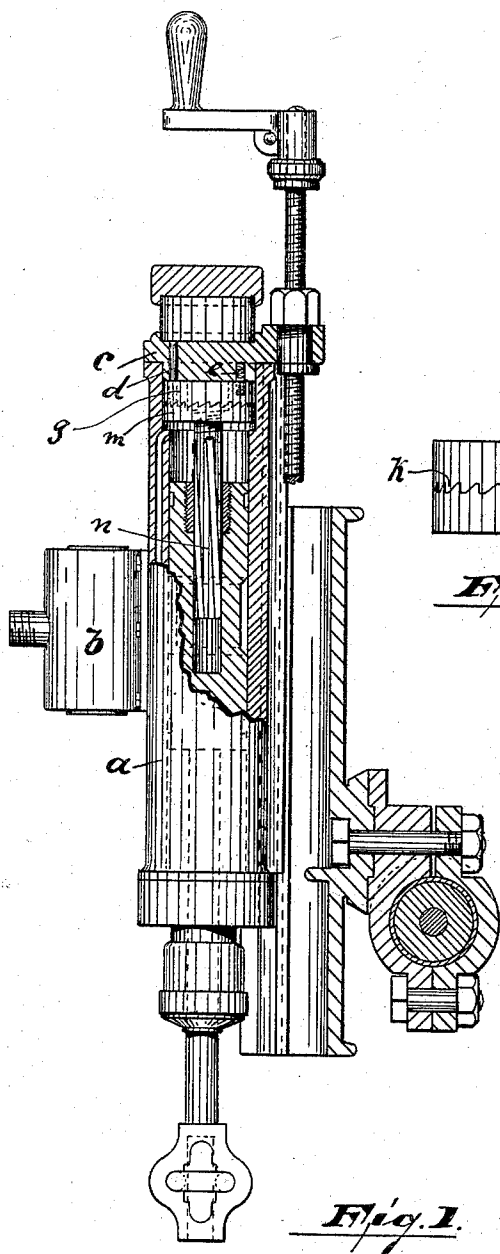


Fig. 1.

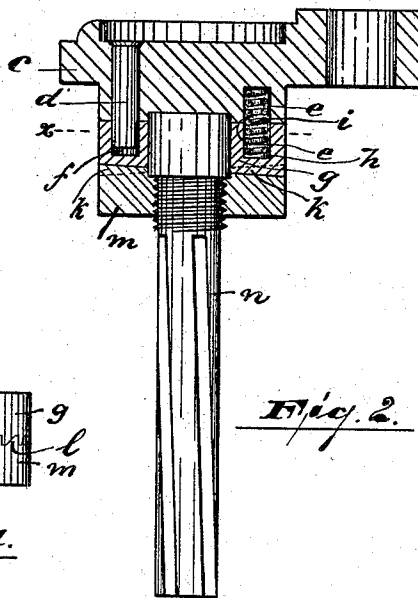


Fig. 2.



Fig. 4.

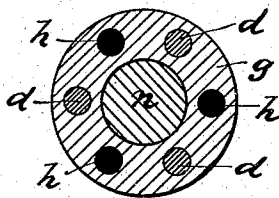


Fig. 3.

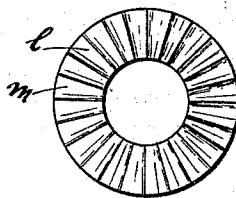


Fig. 5.

WITNESSES:

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SAMUEL G. MCKIERNAN, OF PATERSON, NEW JERSEY.

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 488,269, dated December 20, 1892.

Application filed June 2, 1892. Serial No. 435,235. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL G. MCKIERNAN, a citizen of the United States, residing in Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Rock-Drills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a reliable means for controlling the movement of the rotating bar in a steam or air rock drill; simple and durable in construction and not liable to get out of order.

The invention consists in the improved rotating bar controlling device and the combination and arrangements of the various parts thereof, substantially as will be hereinafter more fully described and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures: Figure 1. is a view of a rock drill, embodying my improved rotating bar controlling device; Fig. 2. is an enlarged view of the latter, Fig. 3, is a sectional view on line *x* Fig. 2, and Figs. 4, and 5 are enlarged views of the wheels controlling the movement of the rotating bar.

In said drawings *a* represents the cylinder, with valve chamber *b*, and cylinder head *c*. In said head are arranged alternately, a series of pins *d* and sockets *e*, as shown in Figs. 2 and 3. The extending ends of said pins are adapted to fit loosely in cylindrical holes *f* of disk *g*, which latter is also provided with a series of sockets *h*, which, in connection with the sockets *e* form chambers for the spiral springs *i*. The lower surface of said disk is provided with a series of teeth, *k* meshing into teeth *l* of disk *m*. Said teeth are so cut, that the lower disk can turn in one direction only. To said disk *m* is secured, by threads or in any desired manner, the drill rotating bar *n*, adapted to operate the drill carrying piston in the usual manner.

In operation, when steam is applied, the

teeth on the surfaces of the disks *g* and *m* interlock, and the pressure of the steam (entering the upper chamber of the cylinder) forces the drill carrying piston downward. As the rotating bar is thus prevented from turning, the drill carrying piston is caused to rotate on the rotating bar, as will be manifest. During the upward movement of the piston, the teeth on the surface of the lower disk will slide over the teeth of the upper one; and as the rotating bar is secured to said lower disk, it can turn in one direction only. As the steam pressure in the cylinder is liable to vary, according to the length of the stroke of the piston, the teeth of the lower disk are apt to get out of contact with the teeth of the upper disk; but this is avoided by the arrangement of the alternate pins *d* and springs *i*, which cause the upper disk to follow the lower one and keep both in continuous contact with each other. If preferred the teeth on the disks *g* and *m* can be so arranged, as to lock the rotating bar, during the upward movement of the piston, and allow it to rotate, during the downward movement (of the piston).

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

In a rock drill rotating device, the combination of a cylinder, its piston and cylinder head, with the rotating bar and clutch-wheels *g*, *m*, said cylinder head furnishing a bearing for said rotating bar and carrying a series of pins arranged radially about the bearing point of said rotating bar and adapted to engage in a corresponding series of sockets in the upper clutch wheel *g*, said cylinder head and upper clutch wheel being provided also with a series of registering sockets arranged radially about the bearing point of said rotating bar and with a series of spiral springs placed in said sockets and adapted to depress evenly said upper clutch wheel, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of May, 1892.

SAMUEL G. MCKIERNAN.

Witnesses:

ALFRED GARTNER,

ALFRED A. VAN HOVENBERG.