(No Model.)

H. C. SERGEANT.

ROTATING DEVICE FOR ROCK DRILLS.

No. 559,619. Patented May 5, 1896.

Fig. 1.

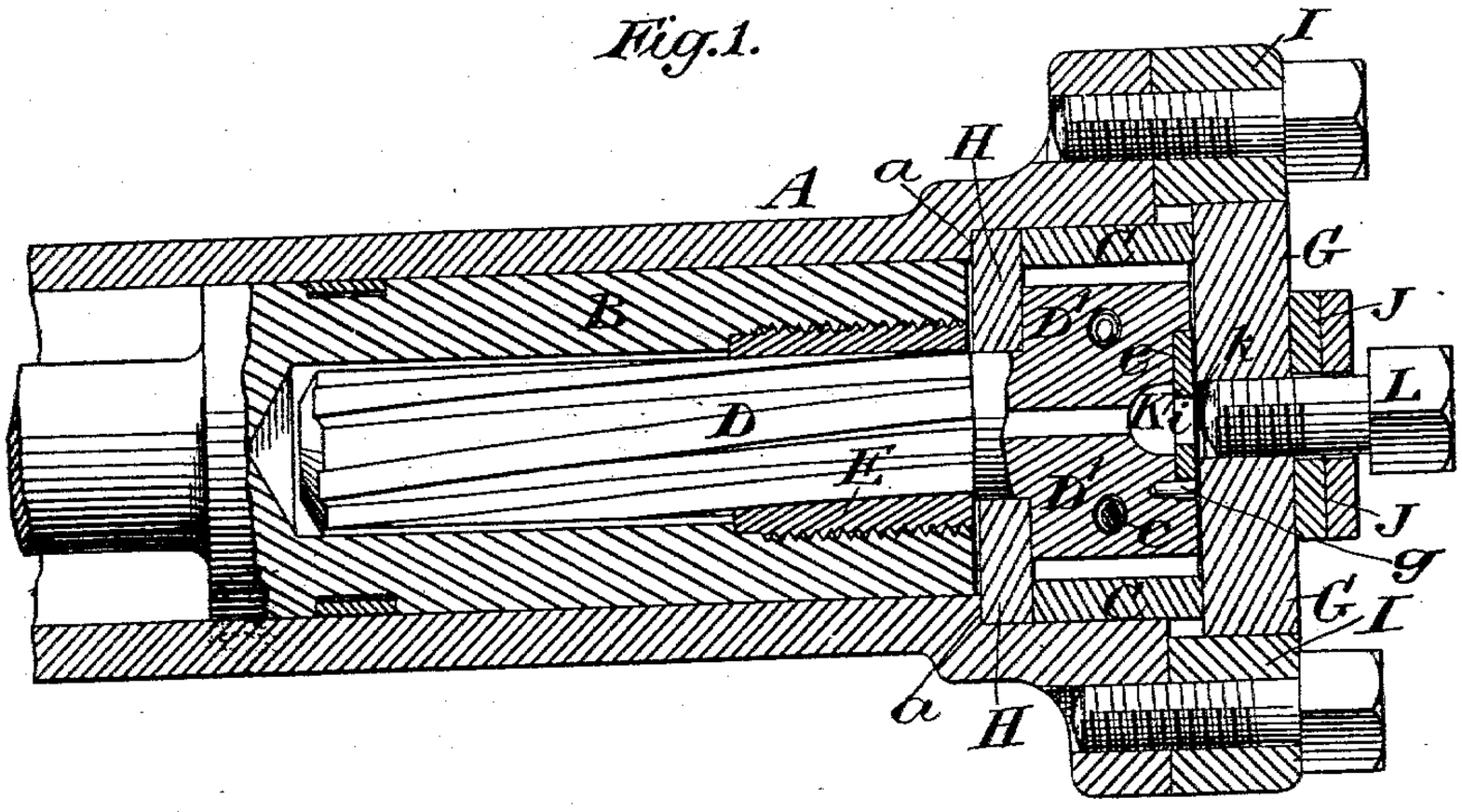
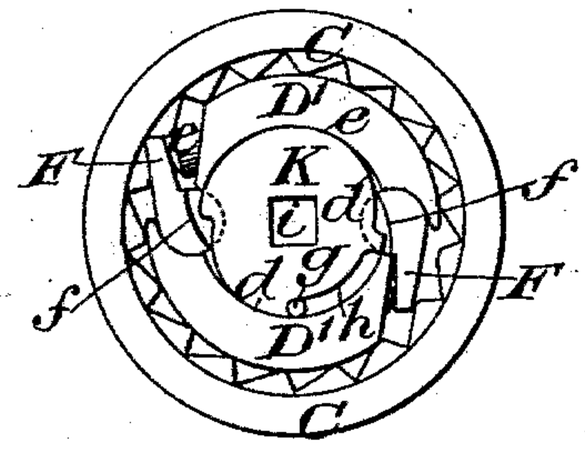


Fig. 5.

Fig. 2



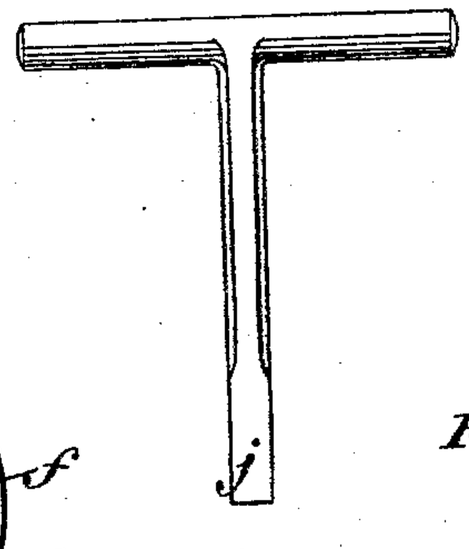
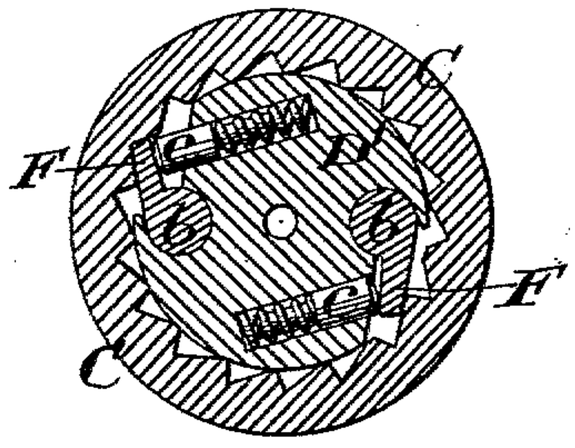
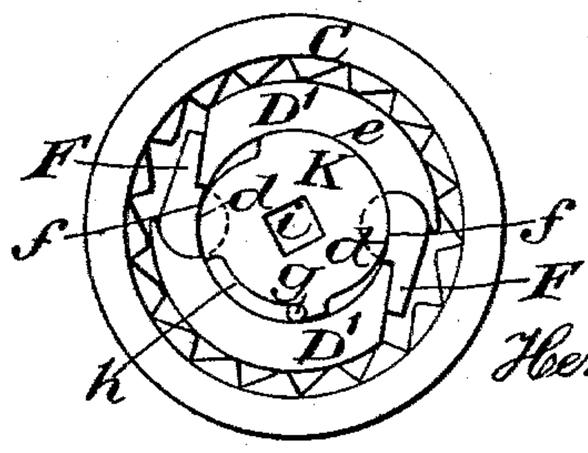


Fig. 3.

Fig. 4.





Witnesses:-

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UNITED STATES PATENT OFFICE.

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ROTATING DEVICE FOR ROCK-DRILLS.

SPECIFICATION forming part of Letters Patent No. 559,619, dated May 5, 1896.

Application filed August 15, 1895. Serial No. 559,339. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SERGEANT, of Westfield, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Rotating Devices for Rock-Drills, of which the following is a specification.

This invention relates to devices which are employed, as may be desired, for rotating the piston and the bit of a rock-drill.

The object of the improvement is to provide in a simple manner for either producing the rotation of the bit or for preventing its rotation, as may be desired, according as the machine may be used for drilling a round hole or for channeling.

The invention consists in certain combinations of parts, which are hereinafter described, and the novelty of which is pointed out in the claims.

In the accompanying drawings, Figure 1 represents a longitudinal section of portions of a drill which are necessary to illustrate my invention. Fig. 2 is an end view of the device for rotating the piston and bit-stock with the pawls in operative relation with the circular ratchet for turning the piston. Fig. 3 is a view similar to Fig. 2, but showing the pawls locked in inoperative positions. Fig. 4 represents a transverse section of the circular ratchet and the head of the rifle-bar corresponding with Fig. 2. Fig. 5 represents a key which is employed to set the pawls into or out of operative relation to the ratchet.

Similar letters of reference designate corresponding parts in all the figures.

A is the cylinder of the rock-drill, and B the piston fitted to work therein.

C is the circular ratchet, D the rifle-bar fitted to a spirally-grooved nut E in the rear end of the piston and having outside of the piston a head D′, which carries the pawls F F, which operate in connection with the ratchet. The ratchet C may be like such ratchets as are commonly employed in rock-drills and may be held within the drill-cylinder in any suitable manner, but is represented as consisting of a ring held by friction between the cylinder-head G and another ring H, which is located against a shoulder *a* in the cylinder, the said cylinder-head G being fitted to a ring I, which is bolted to the outer end of the cylinder and being pressed up against the ratchet-ring to produce the necessary friction thereon by means of springs J. This method of applying the ratchet-ring constitutes no part of the present invention, being part of the subject-matter of my Letters Patent No. 326,682.

The pawls may be fitted to the rifle-bar head in any suitable manner; but they are represented as made with pivotal stocks *b*, fitted into corresponding seats in the rifle-bar head, as described in my Letters Patent No. 522,623, and are pressed outward toward the ratchet-ring by means of spring-pressed plungers *c c*, as described in the last-mentioned Letters Patent.

Fitted to a circular recess *e*, located concentrically within the outer face of the rifle-bar head, there is a cam K, the purpose of which is to throw the pawls inward from the ratchet, and when so thrown in to lock them, as shown in Fig. 3, to positions in which they are inoperative upon the ratchet. This cam is represented as lying loosely within the recess *e*, being confined therein by the cylinder-head G, against which the said head abuts. The said cam has two leaves *d*, one for each pawl, the said leaves being eccentric to the cam and acting against shoulders *f f* on the pivotal stocks of the pawls. For the purpose of restricting the movement of the said cam there is provided in the rifle-bar head a stop-pin *g*, which enters a notch *h* in the periphery of the cam, the length of the said notch only permitting the cam to move far enough in the one direction (indicated by the arrow shown in Fig. 2) to leave the pawls free to engage with the ratchet-ring and far enough in the other direction (indicated by the arrow in Fig. 3) for its leaves *e* to act upon the shoulders *f* of the pawls to throw and lock them to the position indicated in the latter figure, in which they are inoperative on the ratchet-ring. When the cam is in the position shown in Fig. 2, leaving the pawls free to engage with the ratchet-ring, the operation of the rifle-bar on the piston and bit-stock is the same as in an ordinary rock-drill—that is to say, as the piston runs backward the nut E

tends to turn the rifle-bar, but its turning is prevented by the engagement of the pawls with the teeth of the ratchet-ring, and consequently the piston turns upon the rifle-bar. Then as the piston moves forward it does so without itself turning, but turns the rifle-bar, the pawls of which then pass over the teeth of the ratchet-ring. When the cam is in the position shown in Fig. 3 and the pawls are locked out of engagement with the ratchet-ring, the piston does not turn during its movement in either direction, but in running along the rifle-bar it simply turns the latter back and forth.

For the purpose of operating the cam K as hereinabove described it is provided in the center with a square hole *i* for the reception of the square end of a key *j*—such, for example, as that shown in Fig. 5. The hole *i* is reached through the oil-hole *k* in the cylinder-head. This oil-hole is represented in Fig. 1 as closed by a screw-plug L, on the removal of which the oil may be introduced to oil all the parts of the rotating device, including the cam, or the key may be introduced to turn the cam for setting the pawls into and out of operative relation to the ratchet-ring.

What I claim is—

1. In a rotating device for rock-drills, the combination with a circular ratchet, a rifle-bar and pawls attached to said bar for engaging with said ratchet to prevent the turning of the said bar, of a cam applied to said bar for placing the pawls in inoperative relation to the ratchet and permitting the turning of the rifle-bar, substantially as herein described.

2. In a rotating device for a rock-drill, the combination with a circular ratchet, a rifle-bar and pawls attached to said bar for engaging with said ratchet, of a cam applied to said bar for placing the pawls in inoperative relation to the said ratchet and a stop to restrict the turning of the cam in one direction and the other between positions in which it is respectively operative or inoperative on said pawls, substantially as herein described.

3. The combination of the circular ratchet, the rifle-bar, the swinging pawls for engaging with the said ratchet to prevent the turning of the rifle-bar, the said pawls having pivotal stocks fitted to seats in the rifle-bar head and having shoulders on said stocks, and a cam within the rifle-bar for engaging with said shoulders to produce the disengagement of said pawls from the ratchet, substantially as set forth.

4. The combination with the drill-cylinder, the circular ratchet, the rifle-bar and pawls therein for engaging with said ratchet, of a cam arranged within a recess in the rifle-bar and provided with a keyhole for the reception of a turning key inserted through an opening in the cylinder-head, substantially as herein described.

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