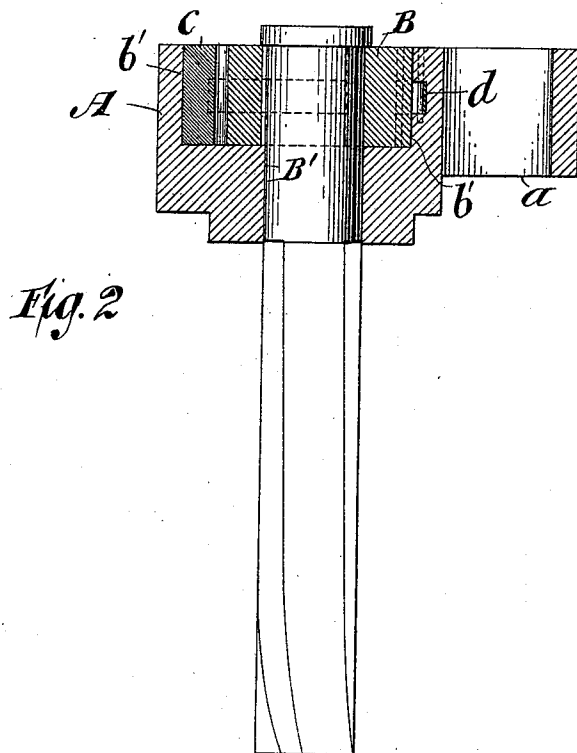
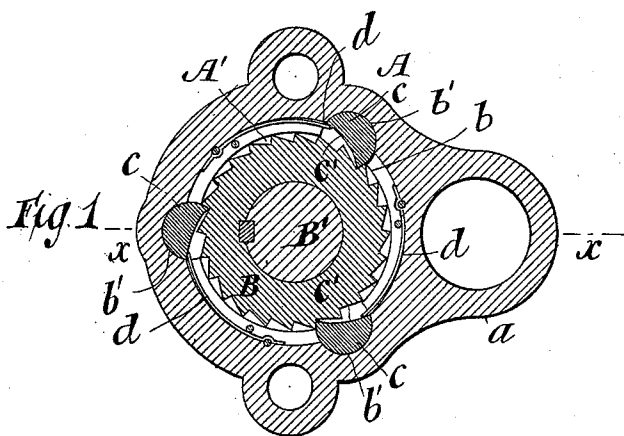


(No Model.)

H. KOCH.
ROTARY FEED FOR ROCK DRILLS.

No. 539,062.

Patented May 14, 1895.



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY KOCH, OF TARRYTOWN, NEW YORK.

ROTARY FEED FOR ROCK-DRILLS.

SPECIFICATION forming part of Letters Patent No. 539,062, dated May 14, 1895.

Application filed November 15, 1894. Serial No. 528,863. (No model.)

To all whom it may concern:

Be it known that I, HENRY KOCH, of Tarrytown, New York, have invented a certain Improvement in Rotatory Feeds for Rock-Drills, of which the following is a specification.

This invention relates to the class of rotatory feed mechanisms in which a spiral blade loosely engaging a nut reciprocating in a rectilinear path is rotated in one direction during one excursion of the nut, and is then held stationary by means of checking pawls, and hence made to compel a rotatory movement of the nut during the excursion of the nut in the opposite direction.

The invention is particularly useful in cases wherever economy of space and durability of construction are of special importance.

The accompanying drawings, affording an example of the invention as applied to a rock drill, are as follows:

Figure 1 is a transverse section of the head of a rock-drill, showing the ratchet-wheel affixed to the spiral feed-bar, the ratchet-wheel chamber, and the spring check-pawls seated in the wall of the ratchet-chamber. Fig. 2 is a longitudinal section of the rock-drill head, taken through the plane indicated by the dotted line *x x* on Fig. 1 and showing the spiral feed-bar in elevation.

As the construction of rock drills, and analogous engines in which an intermittent rotatory feed is imparted to the piston and hence to the tool attached thereto by means of a spiral bar rotatable only in one direction and loosely engaging a nut in the piston, is well understood it is not deemed necessary to herein describe the construction of the rock drill in detail, and therefore the accompanying drawings simply represent views of so much of the cylinder head of a rock drill as is necessary for illustrating the application thereto of the present improvement.

The drawings show a head, A, of a rock drill cylinder provided with the usual laterally projecting ears, one of which, *a*, is perforated to admit the screw by which the longitudinal feed is given to the cylinder, and the other two of which are perforated to admit the bolts by means of which the heads are fastened to the body of the cylinder. The cylinder head is provided with the chamber, A', for containing the ratchet wheel, B, affixed to the spiral

feed bar B'. The concave wall, *b*, of the ratchet chamber is provided with a multiplicity of transverse seats, *b'*, each of which has a concentrically rounded bottom and serves to contain a rocking pawl, *c*, which is in the form of a segment of a cylinder, fitting the seat, *b'*, and presenting toward the ratchet wheel a concave face, *c'*, of substantially the same radius as that of the wall of the ratchet chamber.

On the one side of each of the seats, *b'*, is a flat spring, *d*, secured in a recess in the wall of the ratchet chamber, and having its free end seated in a notch, *d'*, formed in the adjacent edge of the adjacent semi-cylindrical pawl. Under the influence of its spring, *d*, the edge of the pawl opposite that upon which the spring bears is constantly pressed inward toward the ratchet wheel and by engaging the teeth thereof the pawls prevent the ratchet wheel from turning except in one direction.

It will be obvious that in the described construction strength, durability and compactness of arrangement are all promoted by making the edge of the pawl which engages the teeth of the ratchet wheel substantially of the same radius as that of the semi-circular seat in which the pawl rocks.

In the drawings three transverse seats are shown for containing three check pawls. It will of course be understood that a larger number of seats may be provided and a larger number of check pawls may be used, if desired.

In operation, when the reciprocating nut makes its excursion in the proper direction, the spiral bar, unchecked by the pawls, is free to turn upon its longitudinal axis, and hence does not influence the nut. During the excursion of the nut in the opposite direction, the teeth of the ratchet wheel are engaged by the check pawls, and the spiral bar being thus held stationary compels the nut to turn during its said excursion.

What is claimed as the invention is—

1. A ratchet and check pawl device composed of a ratchet wheel, a cylindrical chamber for containing said ratchet wheel, a prescribed number of transverse semi-cylindrical seats in the wall of said chamber, the geometrical axes of which seats are parallel with the geometrical axis of said ratchet wheel, a cor-

responding number of pawls having the shape of segments of cylinders adapted to fit and rock in said seats, and springs for appropriately rocking said pawls in their seats, as and
5 for the purposes set forth.

2. The combination as herein set forth of the ratchet wheel, B, affixed to the spiral feed bar, B', the ratchet chamber, A', the trans-

verse seats, *b'*, in the wall of said chamber, the semi-cylindrical pawls, *c*, and the springs, *d*, for acting upon said pawls, as and for the purposes described.

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