

(No Model.)

J. F. ALLEN.

ROCK DRILL.

No. 266,668.

Patented Oct. 31, 1882.

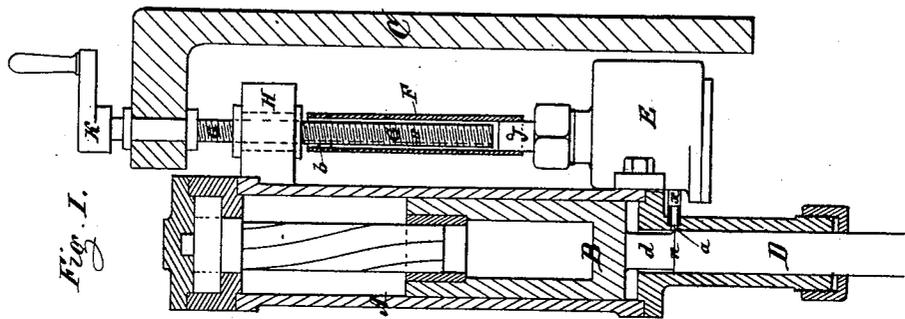


Fig. I.

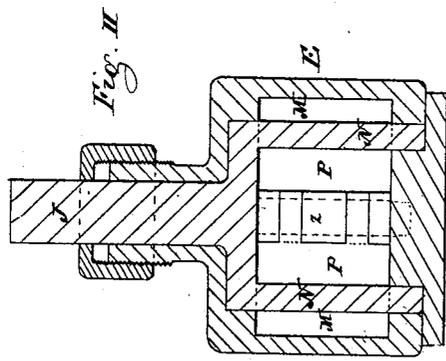


Fig. II.

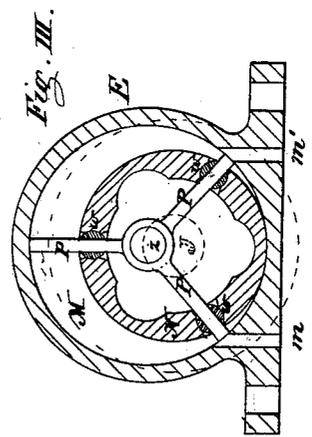


Fig. III.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN F. ALLEN, OF BROOKLYN, NEW YORK.

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 266,668, dated October 31, 1882.

Application filed February 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. ALLEN, a citizen of the United States, residing at Brooklyn, Kings county, and State of New York, have invented a new and useful Improvement in Rock-Drills, of which the following is a specification.

The nature of my invention consists in the combination of a rotary engine direct with the feeding-screw of the rock-drill, operated at the required time by the pressure acting upon the piston, for the purpose of turning said feeding-screw when required to move the rock-drill downward.

In the accompanying drawings, Figure I represents a rock-drill with my improvement attached. Fig. II is a vertical section, and Fig. III a horizontal section, of a rotary engine adapted for that purpose.

Similar letters represent similar parts in all the figures.

A represents a rock-drill; C, the frame, on which the rock-drill is made to move upward or downward; and G, the feeding-screw for moving the rock-drill attached to the frame C, and working in a suitable nut attached to the lug H and the cylinder, arranged and constructed in the usual manner.

E is a rotary engine, attached to the lower end of the rock-drill cylinder A. To the shaft or spindle J of the rotary engine a tube, F, is attached, inclosing the feeding-screw G, and provided with a key or feather, *b*, at its upper end, working in a corresponding groove or key-way, *v*, made the whole length in the feeding-screw G. By this connection any motion of the rotary engine will act upon the feeding-screw G direct without any intermediate gearing to turn the same, and thus move the rock-drill in the usual manner. By means of the usual handle, K, the same can be turned by hand in the usual manner. In the lower part of the rock-drill cylinder an opening, *a*, is provided, connected, through pipe *x*, with the rotary engine, to admit the pressure from the rock-drill cylinder into the rotary engine to operate the same when required. The upper part of the piston-rod D of the rock-drill is recessed at *d*, of such proportion and length in relation to the opening *a*, above mentioned,

that the lower edge, *n*, of said recess *d* will uncover this opening *a* to admit the pressure from the rock-drill cylinder A into the rotary engine E only after the drilling-tool has penetrated the drill-hole the desired depth, and the rock-drill requires to be moved farther downward, while before the drilling-tool has penetrated to that depth the surface of the piston-rod D will cover the opening *a*, and thus prevent the admission of the pressure into the rotary engine.

It will readily be understood that the rotary engine may be connected with the feeding-screw G by any other mechanical device arranged to turn said screw, and likewise that the rotary engine may be attached to the upper end of the frame C and attached to the upper end of the feeding-screw G. The passage for the admission of the pressure must in that case be connected with the passage *a* by means of a flexible or expanding pipe, *x*; but I prefer the arrangement above described.

The rotary engine which I have arranged and intend to apply to the feeding-screw, although I do not claim this construction, as any similar and other rotary engine will answer the purpose, is represented in Figs. II and III, where E is the case of the engine, into which a hollow cylinder, N, is fixed eccentric to form the crescent-shaped chamber M. To the center of the cylinder N the shaft or spindle J is fastened, passing through one end of the case E, and is connected to the feeding-screw G to operate the same, for the purpose described. On a stationary pin, *z*, concentric with the center of the case E, three disks, P P P, are hinged, fitting tight all around in the cavity M of the case, and passing through the walls of the hollow cylinder N, through circular packing-pieces *w*. *m* is the inlet for the pressure, connected through pipe *x* with the passage *a* in the rock-drill cylinder A, as above described, and *m'* is the outlet or escape passage. This outlet-passage *m'* may be connected with the pipe conducting the pressure to the drilling-cylinder by the arrangement of suitable valves or cocks, and the passage *m* arranged to be changed in that case for the escape of the pressure, whereby the action of rotary engine will be reversed, and the feeding-screw G op-

erated to move the rock-drill upward by means of this rotary engine, instead of by the hand-wheel K.

5 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a rock-drill, the combination of a rotary engine with the feeding-screw, connected without intermediate gearing, substantially in the manner and for the purpose specified.

2. In combination with the feeding-screw G of a rock-drill, a rotary engine, E, in combination with the passage *a* and recess *d*, arranged to operate substantially as described.

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Witnesses:

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