

J. BROWN.
Rock-Drills.

No. 223,474.

Patented Jan. 13, 1880.

Fig: 1.

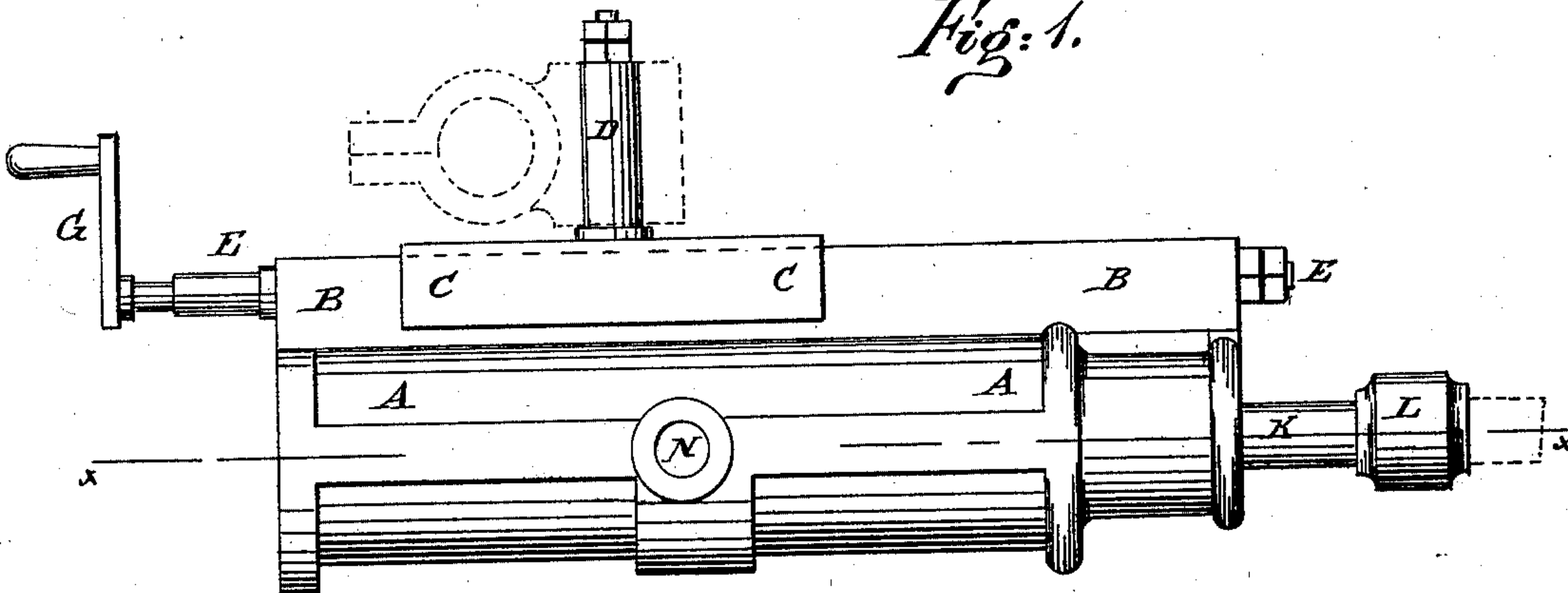


Fig: 2.

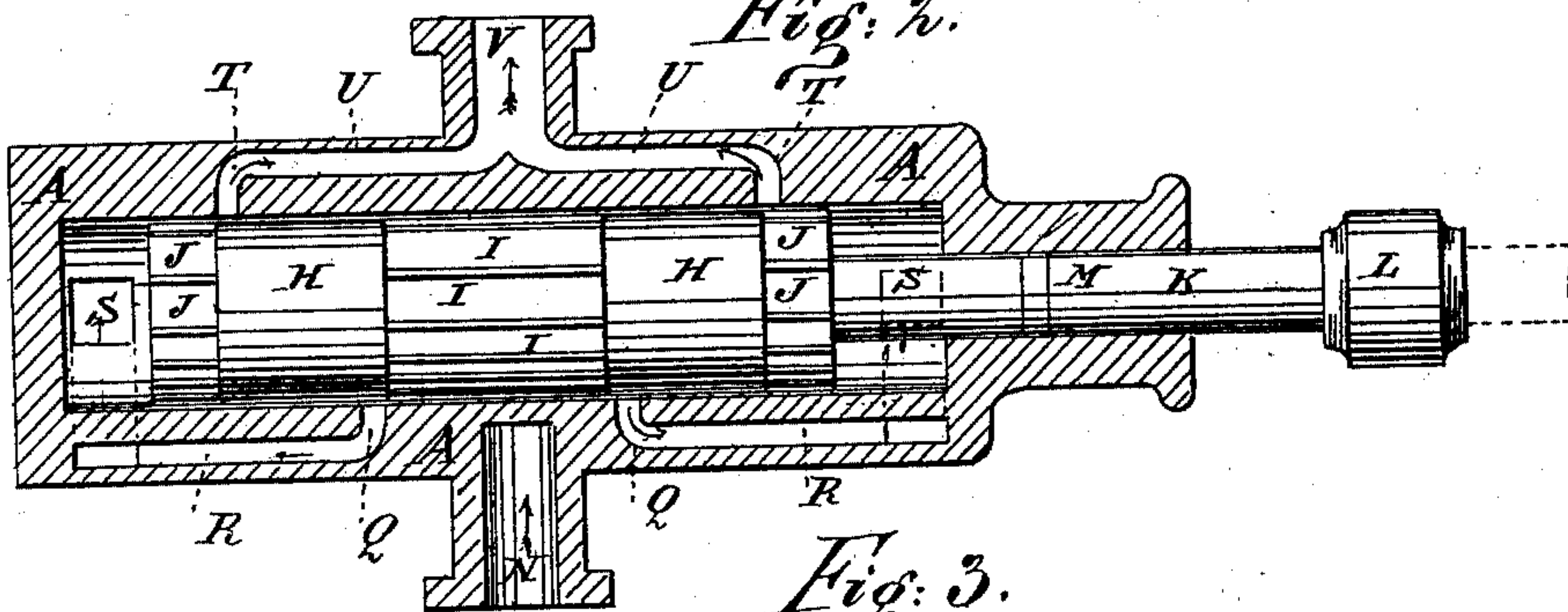


Fig: 3.

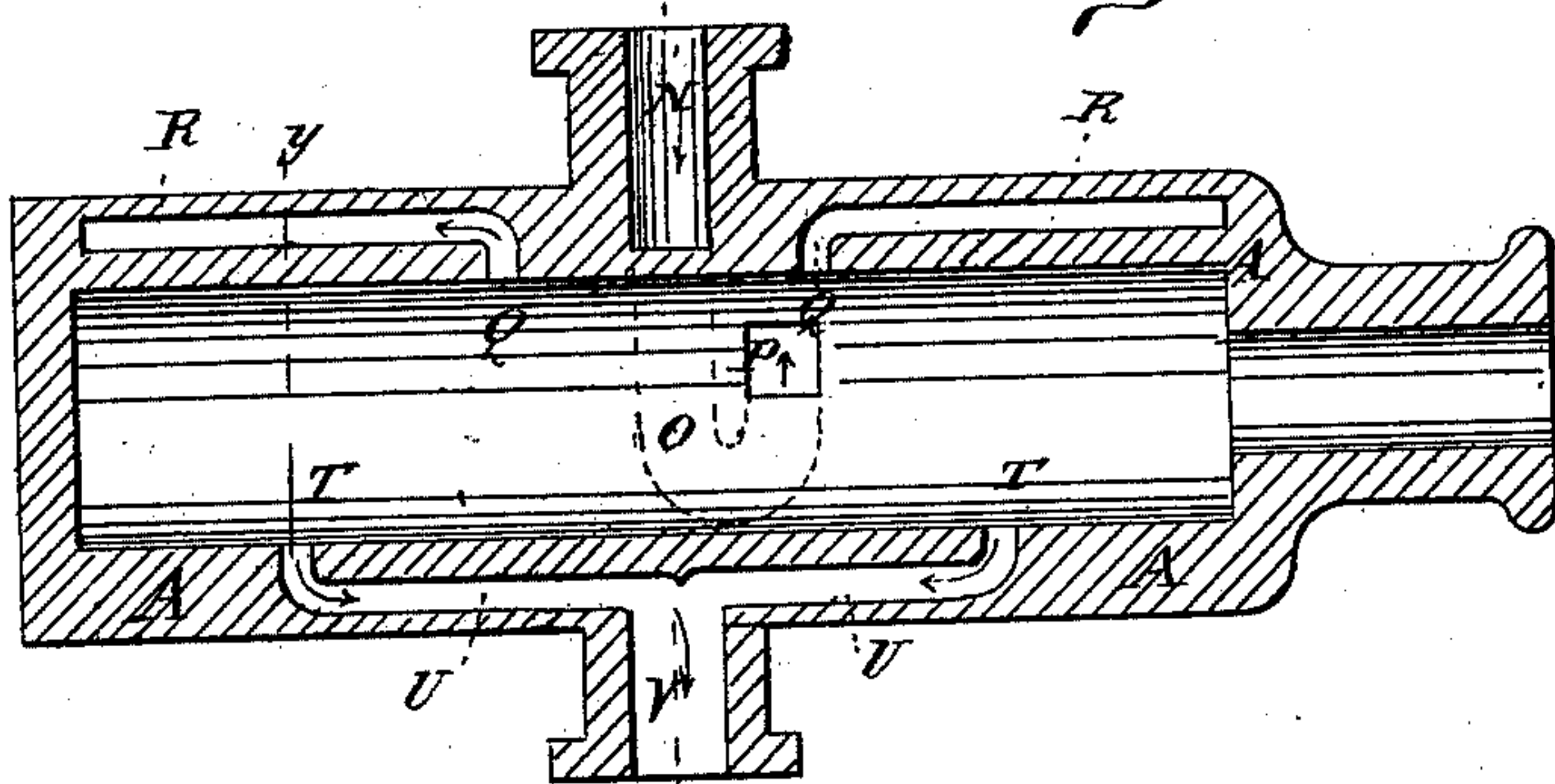
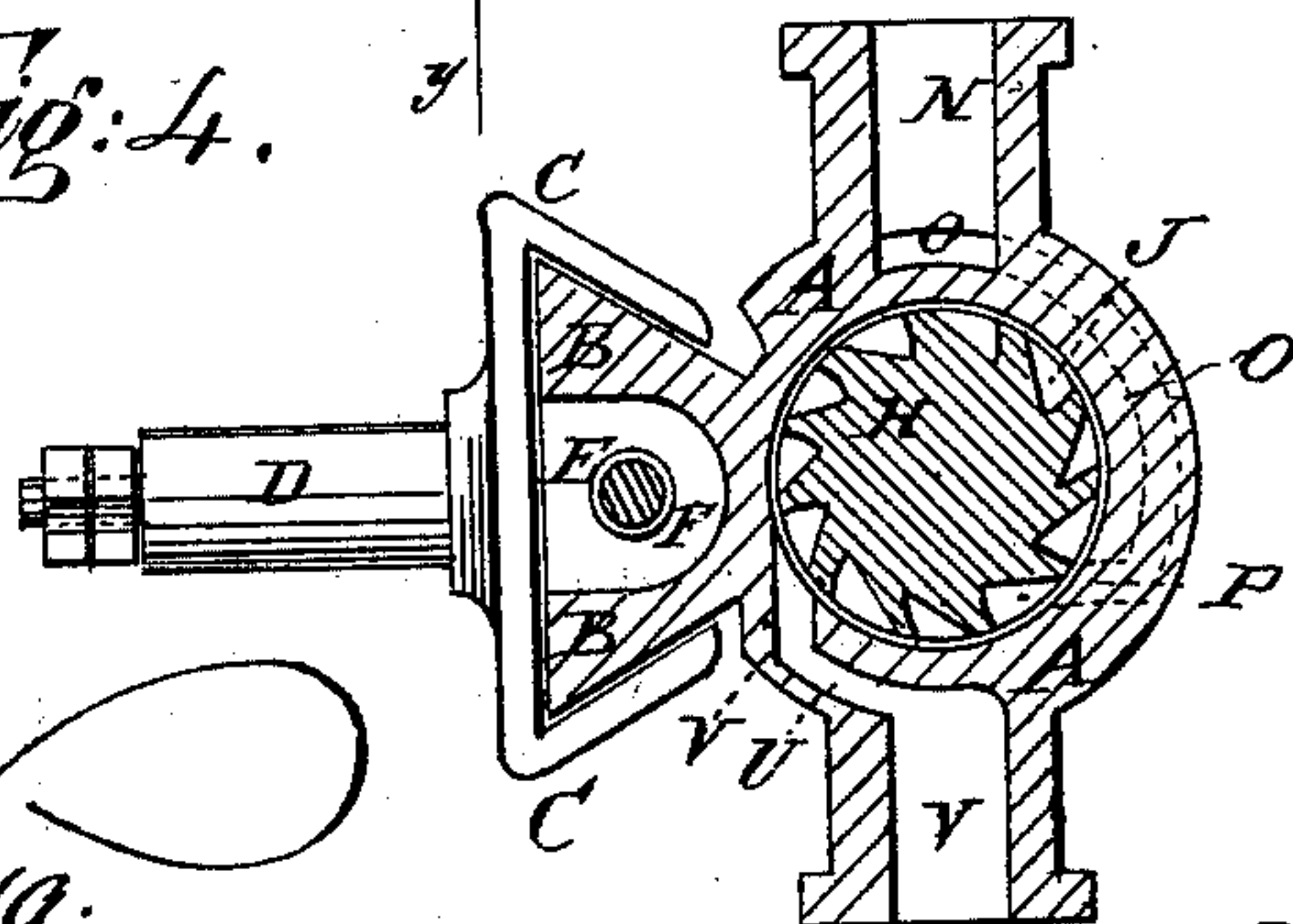


Fig: 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN BROWN, OF ISHPEMING, MICHIGAN.

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 223,474, dated January 13, 1880.

Application filed October 2, 1879.

To all whom it may concern :

Be it known that I, JOHN BROWN, of Ishpeming, in the county of Marquette and State of Michigan, have invented a new Improvement in Rock-Drills, of which the following is a specification.

Figure 1 is a side elevation of my improved rock-drill. Fig. 2 is a longitudinal sectional elevation taken through the line *x x*, Fig. 1. Fig. 3 is a longitudinal sectional elevation taken through the line *x x*, Fig. 1, showing the reversed side of the cylinder. Fig. 4 is an end sectional elevation taken through the line *y y*, Fig. 3.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish rock-drills so constructed that the piston and tool may be rotated by the entering air or steam, and that the entrance and exit of the air or steam will be controlled by the movements of the piston.

A is the cylinder, upon one side of which is formed, or to it is attached, a dovetailed box, B. Upon the box B is fitted a dovetailed slide, C, upon which is formed a stud, D, to receive the socket of the clamp attached to the carrying-bar.

E is a screw, which is swiveled to the ends of the box B, and passes through a nut, F, rigidly connected with the slide C, so that the drill may be fed forward to its work by turning the screw E. The screw E is turned by a crank, G, or other suitable means, attached to one end.

H is the piston, which is formed of cast-steel, and is fitted into the cavity of the cylinder A.

Around the middle part of the piston H, and around its ends, are formed buckets I J, for the compressed air or steam, when entering the cylinder A, to strike against and rotate the piston H, and with it the tool.

K is the piston-rod, which is formed solid with the piston H, and passes through the end of the cylinder A, and has a socket, L, upon its end to receive the tool.

M is a spring-ring placed upon the part of the piston-rod K that passes through the end of the cylinder A, to prevent the compressed air or steam from escaping and avoid the necessity of a stuffing-box. The piston H may also be made to move air-tight by having

spring-rings placed upon it upon the opposite sides of its grooved middle part.

Upon one side of the cylinder A is formed an inlet, N, for the compressed air or steam, from which inlet N a passage, O, leads to a port, P, in the interior of the cylinder A, and a little forward of its center. The port opens into the cylinder A at such an angle that the air or steam will strike against the sides of the buckets I in the middle part of the piston H and turn the said piston H, and with it the tool.

In the middle part of the cylinder A, upon the opposite sides of its center, are formed ports Q, from which passages R lead to ports S in the cylinder A, at its ends. The ports S open into the interior of the cylinder A at such angles that the air or steam will strike against the sides of the buckets J and again turn the piston H, and with it the tool.

In the cylinder A, about midway between the ports Q and S, are formed outlet-ports T, from which passages U lead to the outlet or exhaust V in the side of the cylinder A.

In the drawings the piston H is represented as being in the center of its stroke.

As the piston H moves in either direction it closes one of the outlet-ports T and uncovers one of the ports Q, allowing the air or steam to pass through the passage R and enter the cylinder A through the port S at the end of the piston H, to drive the piston in the opposite direction. As the piston H moves from either end of the cylinder A it closes the inlet-port Q and opens the outlet-port T next that end.

It will be observed that each outlet-port T is closed just before its corresponding inlet-port Q is opened, so that there will be no waste of the air or steam.

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

In a rock-drill, a piston, H, having end buckets, J J, and middle buckets, I, in combination with the cylinder A, having the ports P Q S T and the passages O R U, as and for the purpose specified.

JOHN BROWN.

Witnesses:

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BENJAMIN GRAY.