R. ALLISON.

ROCK-DRILL.

No. 190,699. Patented May 15, 1877.

Fig. 1.

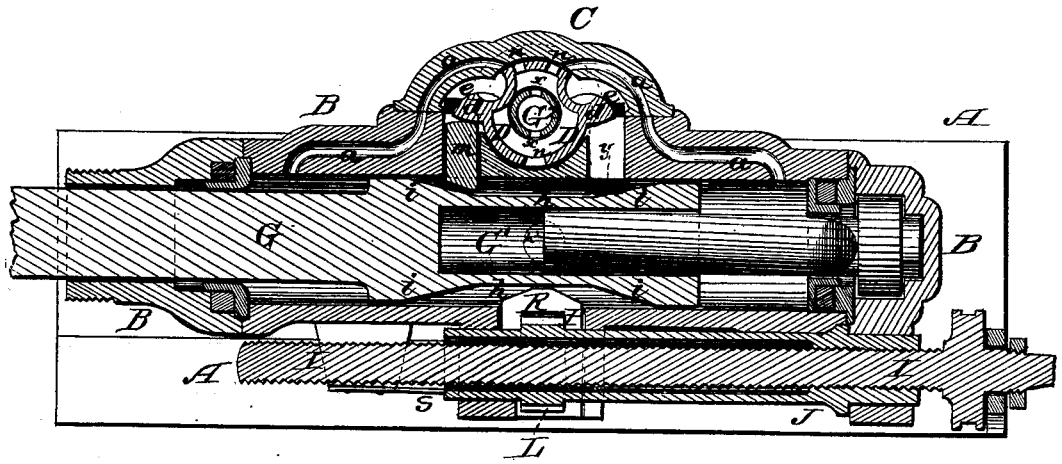
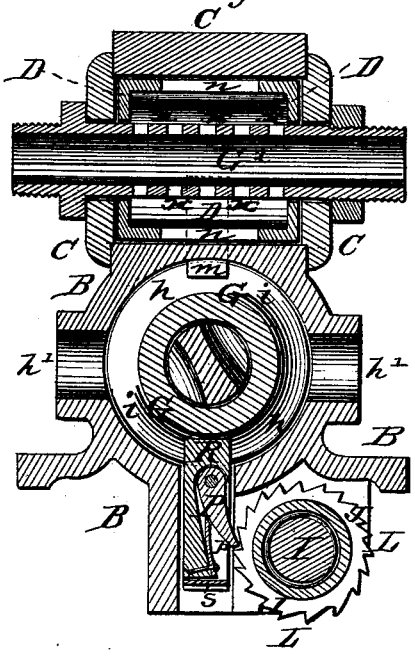


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

ROBERT ALLISON, OF PORT CARBON, PENNSYLVANIA.

IMPROVEMENT IN ROCK-DRILLS.

Specification forming part of Letters Patent No. **190,699**, dated May 15, 1877; application filed April 19, 1877.

To all whom it may concern:

Be it known that I, ROBERT ALLISON, of Port Carbon, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Rock-Drilling Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to engines for rock-drilling; and it consists in the construction and means of operating the valve, and in the feeding mechanism, as will be hereinafter more fully set forth.

In the annexed drawing, which fully illustrates my invention, Figure 1 is a central vertical section, and Fig. 2 is a transverse section, of my invention.

A represents the bed, on which the cylinder B is made to move by the feeding mechanism herein described.

C is the steam-chest, communicating with the ends of the cylinder B through the passages *a a*.

D represents the valve in the steam-chest C, which valve is hollow, and turns in its seat, with a hollow bolt, G^2, passing through its center. Cast on the periphery of the valve D are projections *d d*.

G G represent the two connected pistons, made in one piece, with the hollow stem G^1 connecting the same. In and around this stem is a recess, *h*, with inclined ends *i i*, which inclines alternately operate two plugs, *m m*, having inclined ends, as shown. These plugs pass into the steam-chest C, and abut against the projections *d* on the valve, thereby imparting a rocking or oscillating movement to the valve.

Steam is admitted to the interior of the valve through the hollow bolt G^1 and one or more openings, *x*, in the same, and thence through suitable openings *n n* alternately to the passages *a a* and to each end of the cylinder; and the steam is exhausted into the exhaust-cavities *e* of the valve and seat, and thence through suitable openings *y* into the cavity formed by the recess *h* between the pistons, and out through the ports *h'* at the sides of the cylinder.

I represents the feed-screw, surrounded for a part of its length with a nut and sleeve, J. On this sleeve-nut is a ratchet-wheel, L, operated by a pawl, P. The sleeve with ratchet-wheel and screw are mounted in suitable bearings, one on the bed A and the other attached to the bottom of the cylinder B.

This feed is operated by the same inclines *i i* on the stem or piston-rod G^1, and a suitable opening is cut through the bottom of the cylinder B, with a sliding block, R, fitted therein. This sliding block is fitted with the pawl P and a spring, *p*, and it is held against the piston-rod G^1 by a flat or other suitable spring, *s*. This pawl operates the ratchet-wheel L on the sleeved feed-nut J. As the piston nears the lower end of the stroke the incline pushes out the sliding block, thereby operating the feed-nut, the screw I being held from turning by a suitable catch-trigger on the collar, and the cylinder is caused to feed forward just as the rock is cut away by the bit.

Should the rock be very hard the piston may make a number of strokes without feeding; but as soon as the bit cuts deep enough to let the piston push out the feed-block R the distance of one tooth on the ratchet-wheel, the bit is caused to advance, and continues to advance just in proportion as it penetrates the rock.

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

1. The oscillating or rocking valve D, provided with ports *n n*, exhaust-cavities *e e*, and lugs *d d*, as described, and turning on the hollow bolt G^1, having openings *x*, substantially as and for the purposes herein set forth.

2. The oscillating valve D, constructed as described, in combination with sliding blocks *m* and inclined piston-heads *i i*, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ROBERT ALLISON.

Witnesses:

WM. MCQUAEN,

W. W. TURNER.