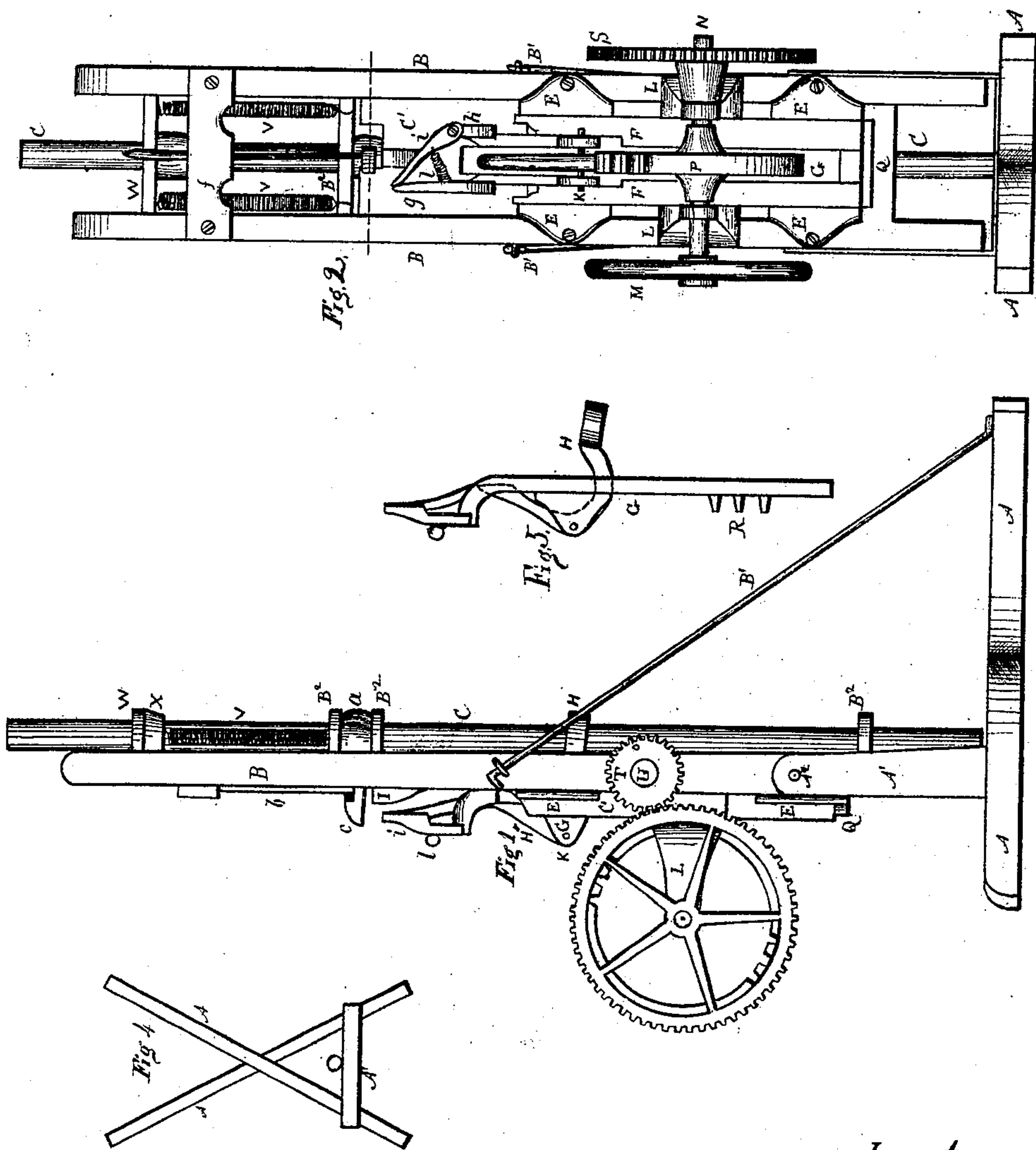
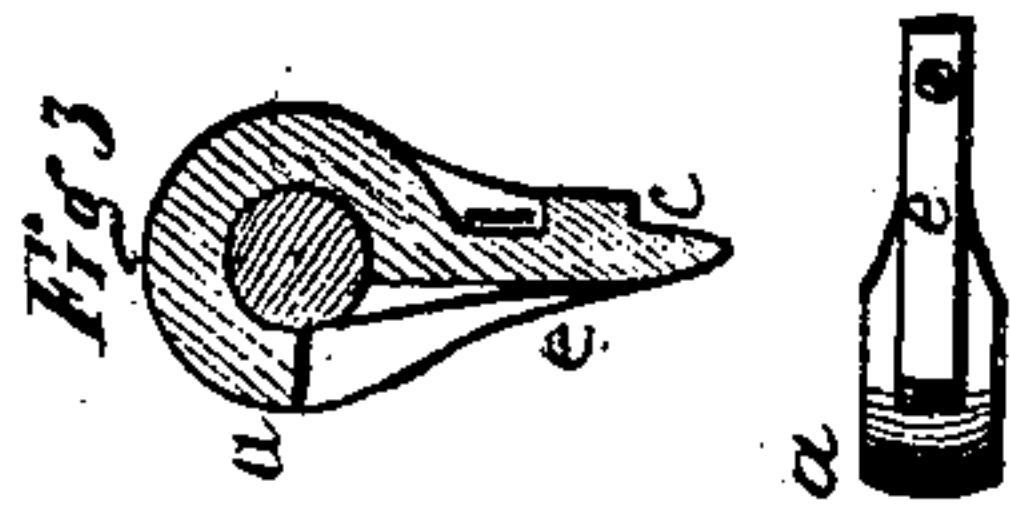


*G. B. Phillips.*

*Rock Drill.*

No. 96612.

*Patented Nov. 9. 1869.*



Witnesses:  
 Wm. Dennis  
 Wm. H. Dennis.

Inventor  
Geo. B. Phillips  
By his Attorney,  
J. Dennis Jr.



# United States Patent Office.

GEORGE B. PHILLIPS, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR TO A.  
M. CORNELL & CO., OF SAME PLACE.

Letters Patent No. 96,612, dated November 9, 1869.

## IMPROVED ROCK-DRILLING MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, GEORGE B. PHILLIPS, of Poughkeepsie, Dutchess county, in the State of New York, have invented certain new and useful Improvements in Rock-Drilling Machines; and I hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, forming part of this specification.

The nature or essence of my invention consists in the peculiar combination and arrangement of devices described and claimed in the following specification, and represented in the drawings accompanying it.

In the accompanying drawings—

Figure 1 is an elevation of one side of a machine, with my improvements.

Figure 2 is a front elevation of the same.

Figure 3, section and elevation of the collar that turns the drill.

Figure 4, plan of the oblique cross and stand.

Figure 5, side elevation of the carriage and lifter.

In these drawings—

A A is an oblique cross, made of two sticks of timber fastened together, and it may be provided with adjusting-screws, to level it on the rock to be drilled when necessary.

Upon this cross the stand A<sup>1</sup> is fastened, to support the pivots A<sup>2</sup> of the frame B, which may be vibrated in the stand, to adjust it as desired, and fastened by the brace-rods B<sup>1</sup>, which connect it to the rear ends of the cross A, as shown in the drawing.

The frame B consists of two side-bars B-B, connected together by the horizontal cross-bars B<sup>2</sup> B<sup>2</sup> B<sup>2</sup>, which are fastened to the side bars, and perforated for the drill-bar or shaft c to traverse in when it is worked to drill a rock.

The bed or plate C' may be made in the form shown in the drawing, or in such other form as will answer the purpose, and provided with flanges E E, to fasten it to the bars B B higher or lower, or in such position as may be desired.

On the plate C' there are some grooved ways F F, for the carriage G, which is fitted to the ways, to traverse in them, and carry the dog or lifter, which has a horizontal arm, H, which is perforated for the drill-bar c to pass through it, and a vertical arm, H', which, when it is raised, runs on to the wedge I, which raises the arm H, and releases the drill-bar, and lets it fall to strike the rock being drilled.

The lifter H is hung on the carriage G, so as to vibrate freely on the pin K, and the hole in the arm H is so much larger than the drill-bar, that when it is horizontal, the bar will slip freely through it, but when the arm H is inclined a little, it binds on the bar, and lifts it until the wedge I presses off the arm H', when the drill falls, and afterward the carriage G.

The arm H traverses in a slot in the plate C'.

To raise the carriage and drill, I fasten two stands L L to the bars B B or plate C', or both, which stands are perforated for the shaft N to turn in them, which

shaft has the segment-gear P fastened to it. The teeth of this gear take or catch the rack-teeth R on the carriage G, and raise the carriage until the gear passes away from the rack, when the carriage runs down, and is stopped by the flange Q, on the plate C', in the right position for the segment-gear to take into the rack, and raise it again.

The gear S is fastened to the shaft N to turn it, and is acted on by the pinion T, turning on the stud U in the bar B, and this pinion may have a pulley fastened to it, for a band, from some moving power, to operate the machine.

The shaft N has the fly-wheel M fastened on it, to equalize the motion of the machine.

The upper bar B<sup>2</sup> has the spiral springs V V fastened to it and to the yoke W on the drill-bar, which yoke rests on the collar X on the drill-bar, so that when the bar is raised, the springs are extended to force it down, and make it strike a heavy blow when it is released.

To turn the drill, and make it strike in a different position when it falls, I make a collar, a, to turn freely on the drill-bar between the two upper bars B<sup>2</sup>, which collar a has a hole in the side, as shown in fig. 3, for the end of the spring e, fastened to the arm c of the collar, to act against the bar C like a pawl, and turn it when the arm is moved to the left by the spring b in the bar f, fastened to the bars B.

To turn the arm c against the action of the spring b, I fasten the arm g and stand h to the carriage G, and pivot the latch i on the stand, so that it will swing against the stand h when drawn by the spring l.

Its operation is as follows:

When the carriage is pushed up, the catch i, being inclined, presses the arm c around to the right against the spring b until it slips down by the latch, so that when the drill-bar is released by the lifter, the spring b, acting on the arm c, turns the drill-bar until the arm is stopped by the plate C', and as the carriage descends, the end of the arm forces the latch open against the action of the spring l, which closes again before the carriage ascends to repeat the action.

Having described my improvements,

I claim—

The combination and arrangement of the segment-gear P, rack R, carriage G, lifter H, and wedge I, for raising and dropping the drill, substantially as described.

Also, in combination with the devices above claimed, the springs V V and yoke W, for forcing down the drill-bar, substantially as described.

Also, the combination and arrangement of the collar a, with its spring e and arm c, latch i, and spring b, arranged to operate substantially as described, for the purpose set forth.

GEORGE B. PHILLIPS.

Witnesses:

EDGAR THORN,

O. E. BROWN.