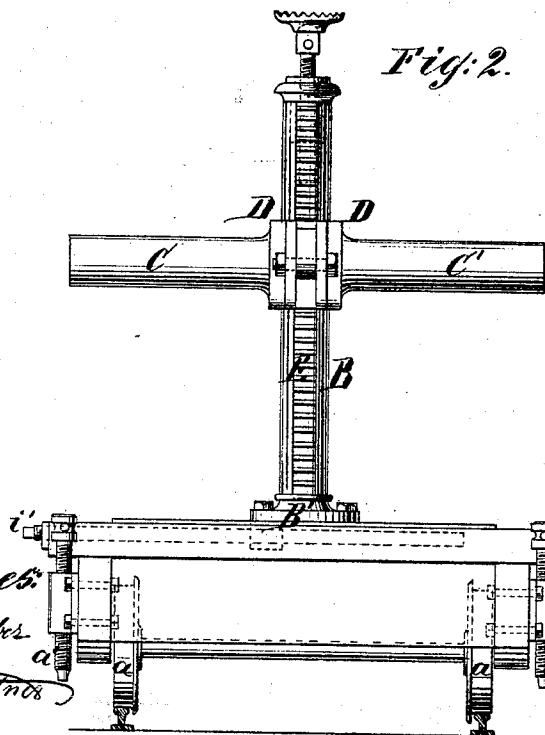
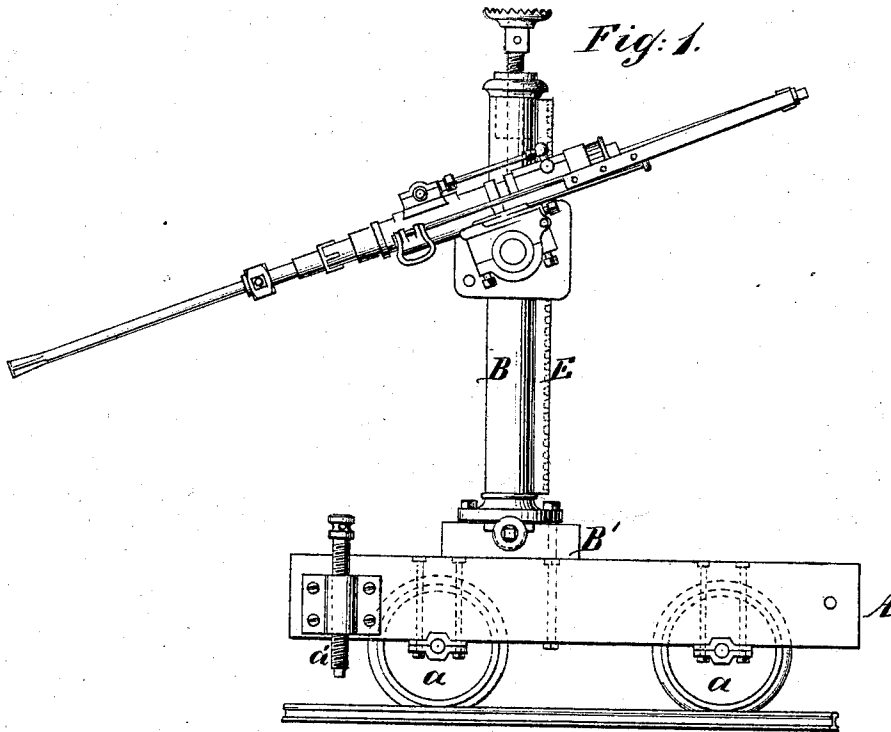


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Rock Drilling-Machines.

No. 150,886.

Patented May 12, 1874.



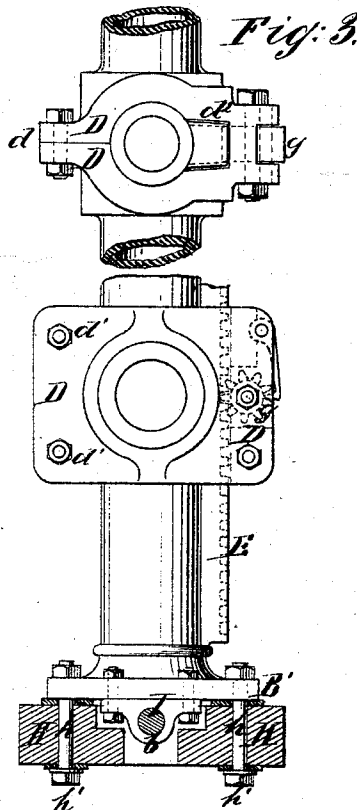
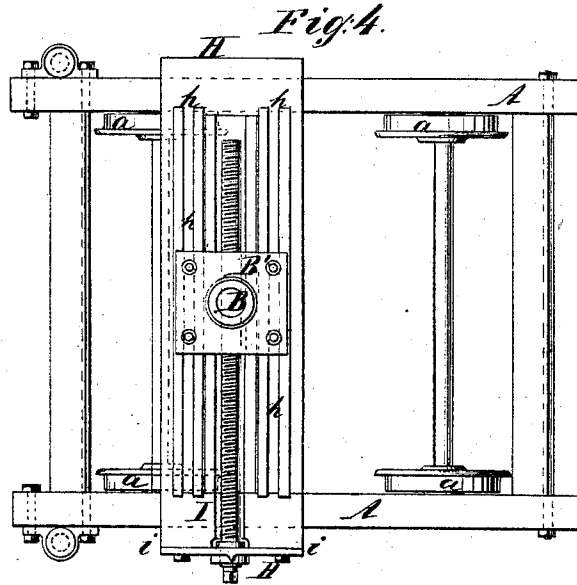
*Witnesses:*  
*Ernst Belknap*  
*Henry J. Smith*

*Inventor:*  
*Charles S. Pattison*  
*Van Santvoord & Knapp*  
*Attys*

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*Witnesses:*  
*Eugene Bilhuber*  
*Henry J. J. J.*

*Inventor:*  
*Charles S. Pattison*  
*Van Santvoord & Mauff*  
*Att'ys*

# UNITED STATES PATENT OFFICE.

CHARLES S. PATTISON, OF ASTORIA, NEW YORK.

## IMPROVEMENT IN ROCK-DRILLING MACHINES.

Specification forming part of Letters Patent No. **150,886**, dated May 12, 1874; application filed April 20, 1872.

*To all whom it may concern:*

Be it known that I, CHARLES S. PATTISON, of Astoria, in the county of Queens, State of New York, have invented new and useful Improvements in a Column Machine for Working the Burleigh Rock-Drill, and other rock-drilling engines, of which the following is a specification:

In operating the Burleigh rock-drill engine and other rock-drilling machinery of like nature, in drilling shafts, tunnels, chambers, &c., it is important to be able to work the drill at different heights, and also on different lines or points, horizontally in direction at right angles, or partially so, to each other, and these heights and lines vary constantly as the work proceeds.

My invention consists in a peculiar construction and combination of parts hereinafter described, whereby the required movements and variations in the direction of the drilling mechanism can be accomplished with ease and facility.

In the accompanying drawing, Figure 1 is a side elevation of the carriage, platform, column, and drilling mechanism attached thereto. Fig. 2 is an end elevation of the same. Fig. 3 is an elevation and plan of the column and sleeve of the cross-arm which carries the drilling mechanism. Fig. 4 is a plan view of the truck and cross-platform on which the column slides, and of a screw operating the lateral movement of the column.

In all the figures similar letters represent similar parts of the machine.

A is the carriage or platform truck, which carries the machinery, running on four wheels, *a*, and provided with the usual vertical jack-screws *a'*, for firmly holding the carriage in a fixed position, while the drill is operating upon one drill-hole. B is the iron vertical column, which must be of sufficient strength to sustain the machinery attached to it. C is a cross-arm, hollow, extending on either side of the column, and its two parts are connected in one so as to form the arm, by the clamp D, to the opposite sides of which the two parts of the arm are immovably fixed. The inner face of the clamp is circular, so as to exactly fit and form a sleeve, and slide smoothly upon the column. One side of the clamp or sleeve D

is slotted vertically, as shown at *d*, Fig. 3, so as to leave an open space, and by this space and the two adjusting-screws *d'*, Fig. 3, the sleeve or clamp may be made to close more or less upon the column, as desired. On the opposite side of the sleeve is cut a square slot, *d<sup>2</sup>*, vertically in its inner face. This slot is for the purpose of receiving and holding the toothed rack E, which extends the whole length of the column, and is kept in place by the sleeve and slot *d<sup>2</sup>*. Within a chamber in this part of the clamp is placed the pinion G, the teeth of which mesh into the rack E, so that this pinion being turned in one direction or the opposite by means of its projecting arbor, and a crank or bar attached thereto, the sleeve, with the cross-arm, and all the drilling mechanism attached will be moved vertically up or down, as desired. Upon the end of the platform of the truck or carriage A I construct across its longitudinal beams the cross-platform H, Figs. 3, 4, extending on either side beyond the sides of the truck sufficiently to allow all the lateral movement desired for the column and its attachments. Two parallel slots, *h h*, Fig. 4, are made vertically in this cross-platform H. The pedestal B' of the column B is square, and sufficiently large to extend over the two parallel slots *h h*, and the pedestal and column are held to the platform H by screw-bolts *h'* *h'* passing through the pedestal, and through the slots, their heads being large enough to extend across the slot, and the upper end of the screw-bolts provided with nuts, so as to be easily adjustable. Upon the under side of the pedestal B' is a projecting piece nut or bracket, *b*, Fig. 3, provided with a suitable female screw-thread. Between the two parallel slots *h h* the cross-frame or platform H is grooved, so as to admit the operating-screw I, which, as well as the screw, extends along the whole length of the platform H as far as lateral motion is to be given to the column. This screw I passes through the female screw in the bracket *b* at its inner end, and its outer end turns in and is supported by a bearing-plate, *i*, Fig. 4, firmly fixed in the end of the cross-platform H. Where the screw-rod passes through the bearing *i* it is provided with a shoulder on each side of the neck in the rod, so that the screw cannot move in a lateral direc-

tion, but only in a rotary one, and the screw is operated by a crank upon its head *i* or a lever-bar. By the pinion *G* in the clamp acting upon the rack *E* being turned, the clamp or sleeve, with all its attachments and drilling machinery, is elevated or lowered, and by the construction and arrangement of the clamp *D* and the rack loosely arranged on the column parallel therewith the clamp and rack can be revolved for adjusting the drilling mechanism around to any side of the column; and by the cross-platform *H*, and screw *I* and its attendants, the lateral movement back or forth is obtained, and a forward or backward movement of the truck or carriage *A* is by the usual means of the wheels upon the truck.

The operating mechanism, cylinder, valve, gearing, piston, &c., for operating the drill, are attached upon the cross-arms, so that the drills may stand at any point of the circle by rotating the same on the cross-arm, shown in Fig. 1. This cross-arm need not necessarily extend on both sides of the column; but it is so shown as it will thus permit two drilling-machines to be worked on the same column.

By these severally-described movements the drills may be directed in almost every direction and at any required elevation, and at any required angle which may be necessary in rock-drilling.

No claim being made by me to the operating mechanism for working the drilling-tools, I do not think it necessary to describe the same; but my invention is particularly intended

for the patent drilling mechanism generally known as the "Burleigh drill."

Having thus described my improvements, and the manner of constructing the same, what I claim therein as my invention, and which I desire to secure by Letters Patent, is—

1. In combination with the cylindrical column *B* having the rack *E* loosely arranged thereon, and parallel therewith, the vertically-moving clamp or sleeve *D*, having a slot, *d*<sup>2</sup>, for confining the rack in position, and provided with a lateral arm or arms for supporting the drilling mechanism, said clamp and rack being capable of revolving for adjusting the drilling mechanism to any side of the column, substantially as described.

2. The column *B* having a base, *B'*, provided with a screw-threaded nut or bracket, *b*, in combination with the transverse frame *H*, having parallel slots *h*, the bolts *h'* adapted to said slots, and the screw-rod *I* working in the bracket or nut for moving the column in a lateral direction on the frame, substantially as described.

3. In combination with the column *B* and rack *E* loosely arranged thereon and parallel therewith, the clamp or sleeve *D*, having the pinion *g* for moving the clamp vertically, and said clamp and rack being capable of revolving for adjusting the drilling mechanism to any side of the column, substantially as described.

CHAS. S. PATTISON.

Witnesses:

J. B. STAPLES,

GEO. W. FOX.