

UNITED STATES PATENT OFFICE.

JOSEPH S. FOSTER, OF VIRGINIA, NEVADA.

ROCK-DRILLING MACHINE.

Specification forming part of Letters Patent No. **41,913**, dated March 15, 1864.

To all whom it may concern:

Be it known that I, JOSEPH S. FOSTER, of Virginia, in the county of Storey and Territory of Nevada, have invented a new and Improved Rock-Drilling Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a horizontal section of my invention taken in the line *x x*, Fig. 2; Fig. 2, a vertical section of the same taken in the line *y y*, Fig. 1; Fig. 3, a detached face view of a wheel and spring pertaining to the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improved device for holding the drill and rotating the same, and also for adjusting the drill in a more or less inclined position, as may be required.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents what may be termed the "bed" of the machine, of triangular form, and having three set-screws, B B B, passing through it, one near each angle, as shown in Fig. 1. At each angle of the bed A there is a socket or mortise, *a*, to receive the lower ends of bars C. These bars C may be of square or quadrilateral form in their transverse section, and they have an inclined position, as shown in Fig. 2. Each bar, C, has a slide, D, fitted upon it, and through each slide D a screw-rod, E, passes, said screw-rods being parallel with the bars C and working in bearings *b* at the upper ends of the bars C. The slides D may be raised and lowered on the bars C by turning the screw-rods E.

In the upper surface of the bed A there is made a recess to receive a plate, F, said plate being secured in the recess by buttons *b*. The plate F has two curved standards, *c c*, attached to it, the upper ends of which are connected by a cross-plate, G, in which the upper end of a tube, H, is fitted and allowed to turn freely. The lower end of the tube H is fitted in the plate F, and the interior of said tube is of square form, to admit of a square drill-rod, I, being fitted in it, said drill-rod passing through a hole, *d*, in the bed A, and having

the drill J secured in its lower end by a screw, *e*. (See Fig. 2.)

K is a shaft, which is fitted in bearings *f*, attached to the outer side of the tube H. The shaft K is at right angles with the tube H, and said shaft has a pinion, L, upon it, which works in a mortise in the tube H and gears into a rack, M, at one side of the drill-rod I. N is a pawl, which is attached to the tube H and engages with the pinion L, said pawl admitting of but a slight upward movement of the drill-rod I, but admitting of any length of downward movement of the same.

On the outer end of the shaft K there is placed loosely a bevel-toothed wheel, O, which gears into a bevel-wheel, P, on the plate E, the wheel P being concentric with the tube H. To the outer end of the shaft K there is attached a spring, Q, the end of which is fitted between projections *g g*, attached to the outer side of the wheel O.

The operation is as follows: The drill J is placed over the spot where the hole is to be bored, and the machine is retained or held in proper position by adjusting the slides D to the proper height on the bars C, said slides D bearing against the sides of the tunnel or opening of the excavation, and when adjusted secured in position in the bars C by set-screws *h*. The drill may be made to work in a vertical or more or less inclined position by adjusting the set-screws B. The top of the drill-rod I is then struck and driven down the drill J, operating upon the rock. As the rod I is driven down the shaft K is turned, through the medium of the rack M and pinion L, the wheel remaining stationary, or turning but little, and the spring Q is bent or curved in consequence of the turning of the shaft K. As soon as the drill-rod I has recovered from the blow, the spring Q raises the drill-rod I as far as the pawl N will admit, and this upward movement of the drill-rod carries the drill J above or free from the rock, and the spring Q is then allowed to turn the wheel O, which, in consequence of gearing into the wheel P, turns the tube H, and consequently the drill-rod I and drill J. It will be seen from the above description that the wheel O is not turned materially when the drill-rod I is driven downward in consequence of the drill coming quickly in

contact with the rock. When it is necessary to spoon out the hole made by the drill the plate E, with all the parts attached, are removed by turning the buttons *b*, the bed A not being disturbed.

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

1. The tube H with the drill-rod I fitted within it, in combination with the rack M, pinion L, pawl N, wheels O P, and spring Q, all ar-

ranged to operate in the manner substantially as and for the purpose set forth.

2. The combination of the bed A, plate F, set-screws B, slides D, tube H, drill-rod I, wheels O P, pawl N, shaft K, and spring Q, all arranged to form a new and improved device, for the purpose specified.

JOSEPH S. FOSTER.

Witnesses:

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