(No Model.) 2 Sheets—Sheet 1.

T. B. WITHERS & M. EDGAR, Jr.

ROCK DRILLING MACHINE.

No. 417,618. Patented Dec. 17, 1889.

Fig. 1.

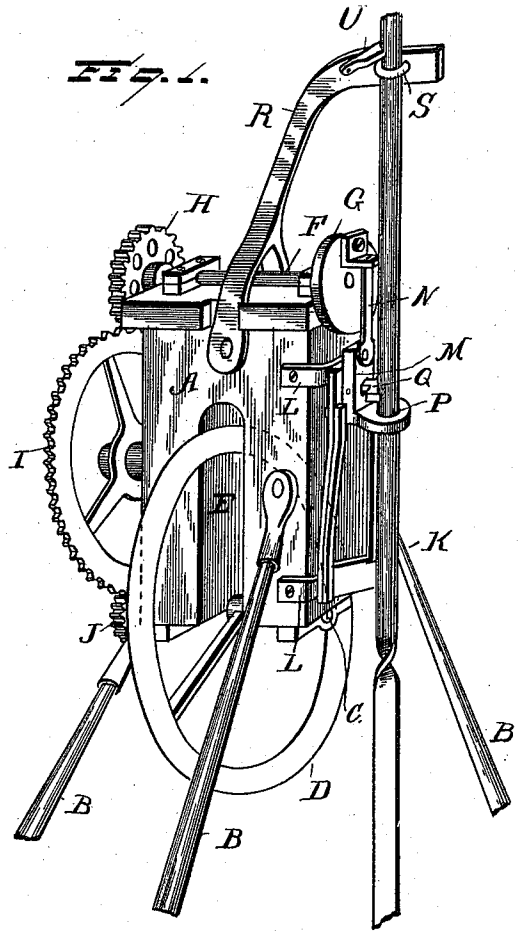


Fig. 2.

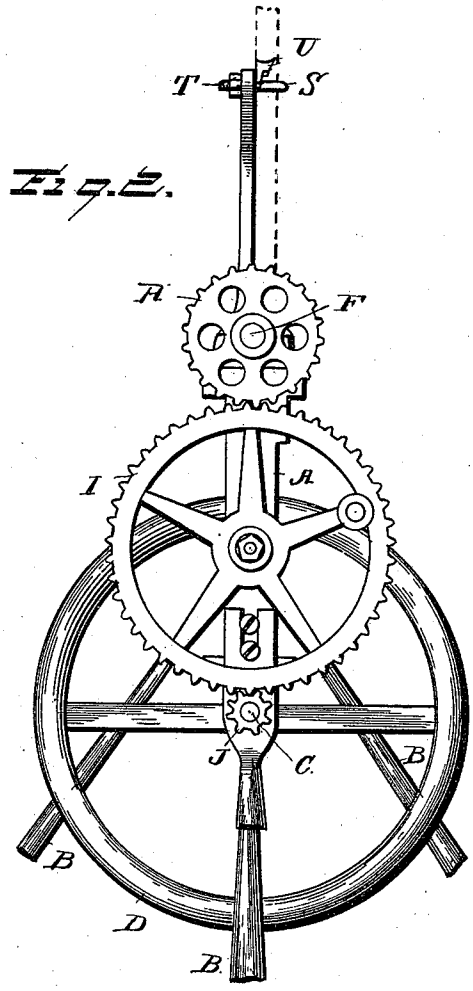
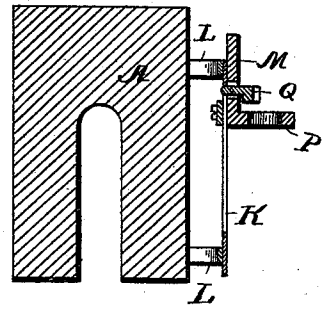


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

T. B. WITHERS & M. EDGAR, Jr.

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Fig. 5

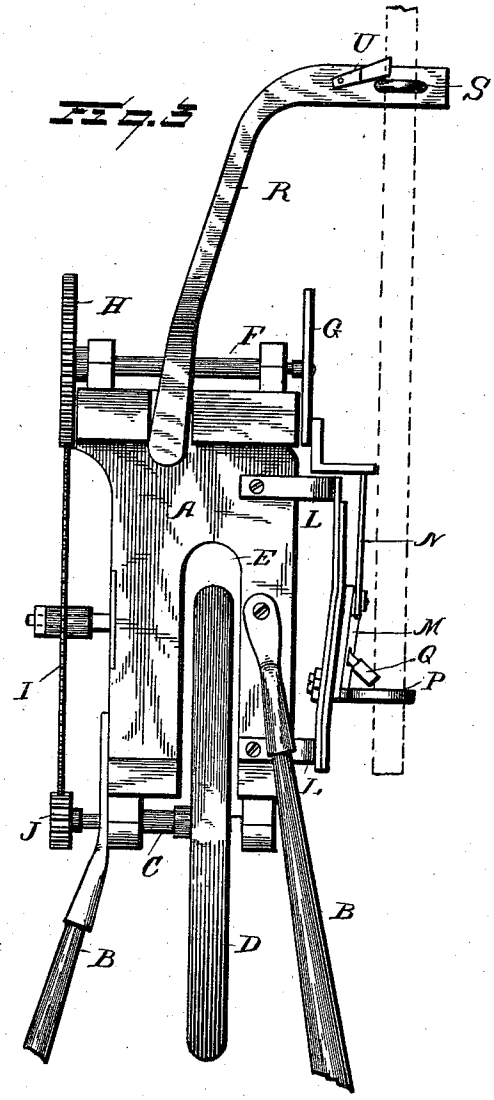
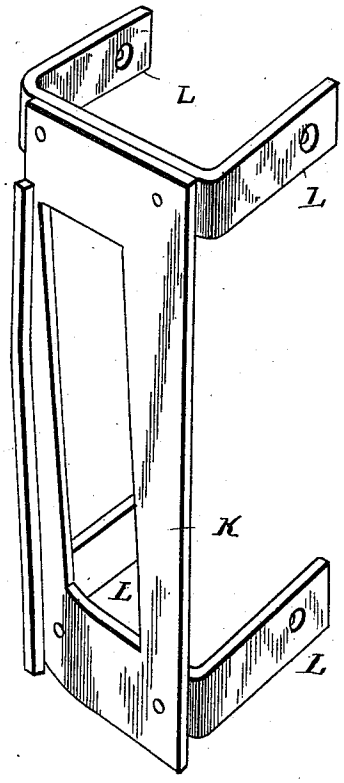


Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS B. WITHERS AND MATTHEW EDGAR, JR., OF MONTICELLO, WISCONSIN.

ROCK-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 417,618, dated December 17, 1889.

Application filed April 29, 1889. Serial No. 308,999. (No model.)

To all whom it may concern:

Be it known that we, THOMAS B. WITHERS and MATTHEW EDGAR, Jr., citizens of the United States, residing at Monticello, in the county of Green and State of Wisconsin, have invented a new and useful Rock-Drilling Machine, of which the following is a specification.

Our invention relates to improvements in rock-drilling machines; and it consists in certain novel features hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of our improved rock-drilling machine. Fig. 2 is a rear elevation. Fig. 3 is an enlarged side view showing the manner of operation of the device, and Fig. 4 is a detail perspective view of the guide for the plunger or lifting-clamp. Fig. 5 is a detail sectional view to show the plunger or lifting-clamp.

In carrying out our invention we provide the body or block A, which is supported on suitable legs B, and has a transverse shaft C mounted at its lower end, on which a balance-wheel D is secured, the said balance-wheel moving through a vertical longitudinal slot E in the body. On the upper end of the body we secure suitable journal-boxes, in which the driving-shaft F is mounted, the said driving-shaft having a crank-disk G on its front end and a gear-wheel H on its rear end. This gear-wheel H meshes with the driving-wheel I, mounted on a suitable stub-shaft on the rear side of the body, and the said driving-wheel also meshes with a pinion J on the rear end of the shaft C, so that the balance-wheel and the driving-shaft will be simultaneously rotated and an even steady motion imparted to the machine.

On the front side of the body, below the crank-disk G, we secure the guide K, which consists of a longitudinally-slotted plate, slightly twisted in the direction of its length and provided with the rearwardly-projecting arms L at its ends, by means of which it is secured to the body. The plunger or lifting-clamp M is mounted in this guide and is connected with the crank-disk by a pitman N, as shown. The said plunger or lifting-clamp consists of a substantially L-shaped bracket, provided on its rear side with a T-head engaging the rear side of the guide and passing through the slot in the same, so as to hold the plunger to the said guide, as will be readily understood. The horizontal shorter arm of the bracket is provided with a central opening P, through which the drill-rod passes, and on the longer arm of the bracket we pivotally mount a dog Q, having a concave outer end which is adapted to engage the drill-rod.

To the upper end of the body we secure the guide-arm R, which projects upward and forward from the body, and is provided at its end with a transverse perforation in which a staple or hook S is mounted, the said staple or hook being provided with a screw-threaded extremity, on which nuts T are mounted and adapted to be turned up against the said arm R, so as to clamp the staple or hook around the drill-rod. A dog U is pivoted on the arm R, and is adapted to engage the rod, as clearly shown.

In practice the drill-rod is passed vertically through the staple S and the perforation P in the lifting-clamp, and the driving-wheel is then rotated so as to impart a reciprocating motion to the lifting-clamp through the driving-shaft, the crank-disk, and the pitman, as will be readily understood. On the upward movement of the lifting-clamp the dog pivoted thereto will incline downward and bind around the drill-rod, so as to raise the same. When the said clamps starts on its downward stroke, the dog will be thrown out of engagement with the drill-rod, and the said rod will then fall onto the rock, as will be readily understood. The twisted formation of the guide for the lifting-clamp causes the drill-rod to make a partial turn each time it is raised, so as to cut a regular hole in the rock and prevent uneven wear on the drill-blade. When it is desired to lift the drill-rod from the ground, the dog U is thrown forward, so that when the drill-rod attempts to fall this dog will bind around the said rod and hold it in its raised position. After the rod has been raised to the desired height the nuts P are turned home, so as to clamp the staple S around the drill-rod, and thereby secure the same.

It will be seen from the foregoing description that we have provided a very efficient rock-drilling machine which can be easily

operated, and which is composed of few parts, so that it can be manufactured cheaply and readily.

The advantages of our device are thought to be obvious from the foregoing description, when taken in connection with the accompanying drawings, and detailed reference thereto is deemed unnecessary.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination, with the body, of the arm R, secured to the upper end thereof and projecting upward and forward therefrom, the staple mounted in the end of said arm and adapted to pass around the drill-rod, and the nuts mounted on the end of said staple, as set forth.

2. The combination of the body, the twisted and slotted guide secured on the front side of the body, the plunger having a T-head engaging the slotted guide, the crank-disk at the upper end of the body, the pitman having its upper end pivoted to the crank-disk and its lower end pivoted to the plunger, the drill-rod passing through the plunger, the dog pivoted on the plunger and binding against the drill-rod, and mechanism for rotating the crank-disk, as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

THOMAS B. WITHERS.
MATTHEW EDGAR, JR.

Witnesses:
E. F. WRIGHT,
EMILY F. WRIGHT.