

S. LEWIS.
ROCK DRILL.

No. 101,746.

Patented Apr. 12, 1870.

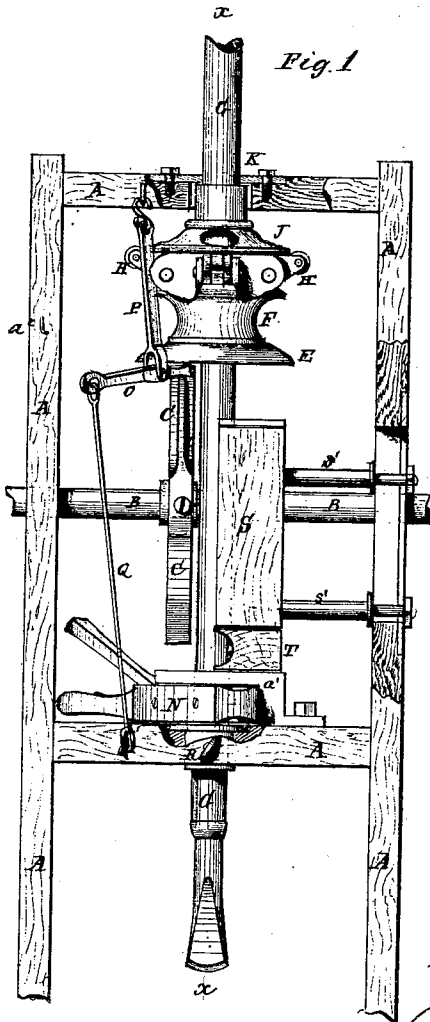


Fig. 1

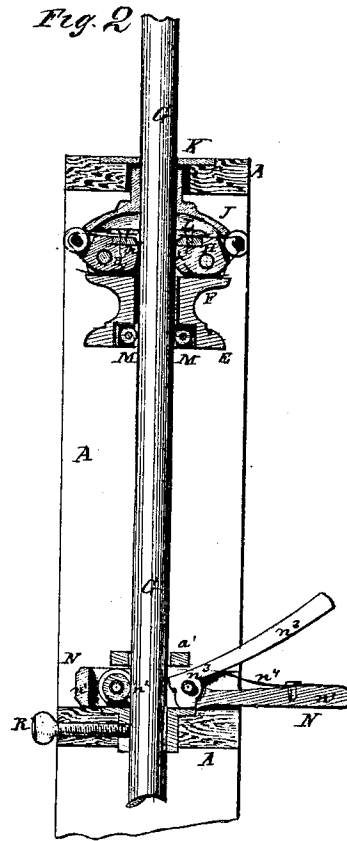


Fig. 2

Fig. 3

Fig. 4

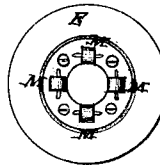
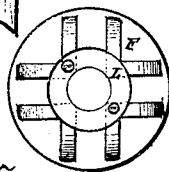
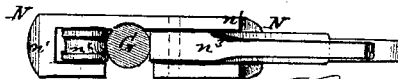
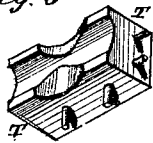


Fig. 5

Fig. 6



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SAMUEL LEWIS. OF WILLIAMSBURG, NEW YORK.

Letters Patent No. 101,746, dated April 12, 1870.

IMPROVED ROCK-DRILL.

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, SAMUEL LEWIS, of Williamsburg, in the county of Kings and State of New York, have invented a new and useful Improvement in Rock-Drill; 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 make and use the same, reference being had to the accompanying drawings forming part of this specification.

Figure 1 is a front view of my improved drill, parts being broken away to show the construction.

Figure 2 is a detail sectional view of the same, taken through the line *x x*, fig. 1.

Figure 3 is an under-side view of the lifting and rotating collar.

Figure 4 is a top view of the same, the eccentrics being removed.

Figure 5 is a top view of the device for raising the drill.

Figure 6 is a perspective view of the adjustable detachable block for regulating the length of the strokes.

Similar letters of reference indicate corresponding parts.

My invention has for its object to improve the construction of my improved drill patented June 15, 1869, and numbered 91,352, so as to make it more convenient in use, and more effective in operation, enabling the length of stroke to be regulated at will, and any one of the drills to be raised and detached without disturbing the operation of the other drills; and

It consists in the construction and combination of various parts of the machine, as hereinafter more fully described.

A represents the frame of the machine, which serves as guides to the drill, and to which are attached the bearings for the shaft B, that carries the cam C, by means of which the drills are raised and rotated.

E is the collar upon which the cams C act.

F is the tube through which the drill G passes, and

H are the eccentrics by means of which the drill G is grasped, raised, and rotated.

J is the disk by which the eccentrics H are operated to release the drill G to make the stroke.

The parts E F H J are all found in patent No. 91,352, but in the present case they are differently arranged, being made more compact, so as to take up less space, and allow the frame-work to be made simpler and lower, diminishing the height of the said frame-work nearly one-half.

The part E F H, through which the drill passes, is kept in proper position upon the drill G by the ring L, attached to the upper end of the said part, as shown in fig. 2, and by the three or more friction rollers M, connected with the lower end of the said parts, the ring L and the friction rollers M being the only parts

of the parts E F H that come in contact with the drill G, thus greatly diminishing the friction in operating the said drill. In this case, also, the disk J, instead of being connected with the frame A, rides up and down upon the parts E F H, and strikes against and turns upon the bearing K, attached to the frame A, and through which the drill G passes when the parts E, F, H, J, and G are raised by the cams C.

H' are adjustable jaws or gripes set in rabbets upon the upper sides of the eccentrics H, and secured in place by screws or bolts, so that they may be moved forward, or adjusted to compensate for the wear of said eccentrics.

The drills are designed to be operated in a series of gangs by series of cams attached to the same driving-shafts; and when it is desired to raise any particular drill, to enable its point to be detached and replaced by a new one, the device N is used, which is placed upon a cross-bar of the frame A, and is kept from being raised by and with the drill G by a stop, *a*, attached to said cross-bar, or by another cross-bar of said frame.

The device N consists of a frame, *n'*, open at one side, as shown in fig. 4, to enable it to be conveniently slipped upon the drill G.

In the forward part of the frame *n'* is pivoted a concave friction roller, *n²*, which serves also as a guide to keep the drill G and device N in proper relative positions.

In the rear part of the frame *n'* is pivoted a double cam-lever, *n³*, as shown in figs. 1, 2, and 4.

The lever *n³* is held up in proper position by a spring, *n⁴*, attached to the handle of the frame *n'*, and pressing against the handle or lever of the cam *n³*.

The cams *n³* are so formed that, when the drill G is raised by the action of the cams C, and is released by the eccentrics H, the said cam *n³* of the device N will take hold of the drill G, and prevent it from dropping to make another stroke, so that it will be raised higher and higher by each succeeding action of the cams C.

When the drill G has been raised to the desired height, the collar E is held away from the cams C by the lever O, which is pivoted to the lower end of the bar or chain P, the upper end of which is attached to a cross-bar of the frame A.

To the outer end of the lever O is attached a bar or chain, Q, which extends down into such a position that it may be conveniently reached and operated by the attendant.

In the lower end of the bar or chain Q is formed a hole or eye, which may be hooked upon a hook or pin attached to the frame A, to hold the said part E F H away from the cams C.

R is a set-screw passing in through the cross-bar of

the frame A, so that its forward end may press against the drill G, to keep the said drill from dropping down.

When not desired for use, the lever O may be hung over a hook, a^2 , attached to the frame A, so as to be out of the way.

In drilling softer rock, or when the drill is long, and, consequently, heavy, a less length of stroke will be required than when the rock is harder, or a shorter drill is being used.

S is a long block, one side of which is concaved, to enable it to sit close to the drill, and the upper end of which may be padded, to receive the piece E F H when it drops.

To the block S are attached two arms, S', which pass through a slot in the frame A, and which are secured in place, when adjusted, by means of nuts and washers, as shown in fig. 1.

The lower end of the block S rests upon the detachable block T, or upon the stop a' , or a cross-bar of the frame A, as may be desired. The block T is concaved upon one side, longitudinally and transversely, as shown in figs. 1 and 3, and is provided with dowel-pins upon one end and side, to enter holes in the lower end of the block S, so that the said block T may be placed endwise or sidewise beneath said block S, to regulate the length of stroke as desired. By removing the block T entirely, a still longer stroke may be obtained.

The adjustable stops may be arranged in many different ways with equal facility; as, for instance, they may be suspended from the upper cross-bar of the frame A, or may be a bar running longitudinally through said frame, and adjustably secured to it, so that it may be raised and lowered, as desired, to regulate the length of stroke.

These latter constructions prevent the necessity of having a vertical bar of the frame near each drill for

the attachment of the stops, thereby simplifying the construction of the frame-work of the machine.

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

1. The arrangement of the parts E F H, with reference to each other, to the cams C, and drill G, substantially as herein shown and described, and for the purpose set forth.

2. The ring bearing L and friction rollers M, either or both, in combination with the parts E F H, substantially as herein shown and described, and for the purpose set forth.

3. The device N, constructed and operating substantially as herein shown and described, and for the purpose set forth.

4. The device O P Q, in combination with the parts E F H, substantially as herein shown and described, and for the purpose set forth.

5. The adjustable stop-blocks S T, either or both, in combination with the parts E F H, substantially as herein shown and described, and for the purpose set forth.

6. An arrangement of mechanism by means of which the drop of the part E F H, and the consequent length of the stroke of the drill G, may be regulated at will, substantially as herein shown and described, and for the purpose set forth.

7. The adjustable jaws k' , attached to the eccentrics H, substantially as herein shown and described, and for the purpose set forth.

The above specification of my invention signed by me this 24th day of August, 1869.

SAMUEL LEWIS.

Witnesses:

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