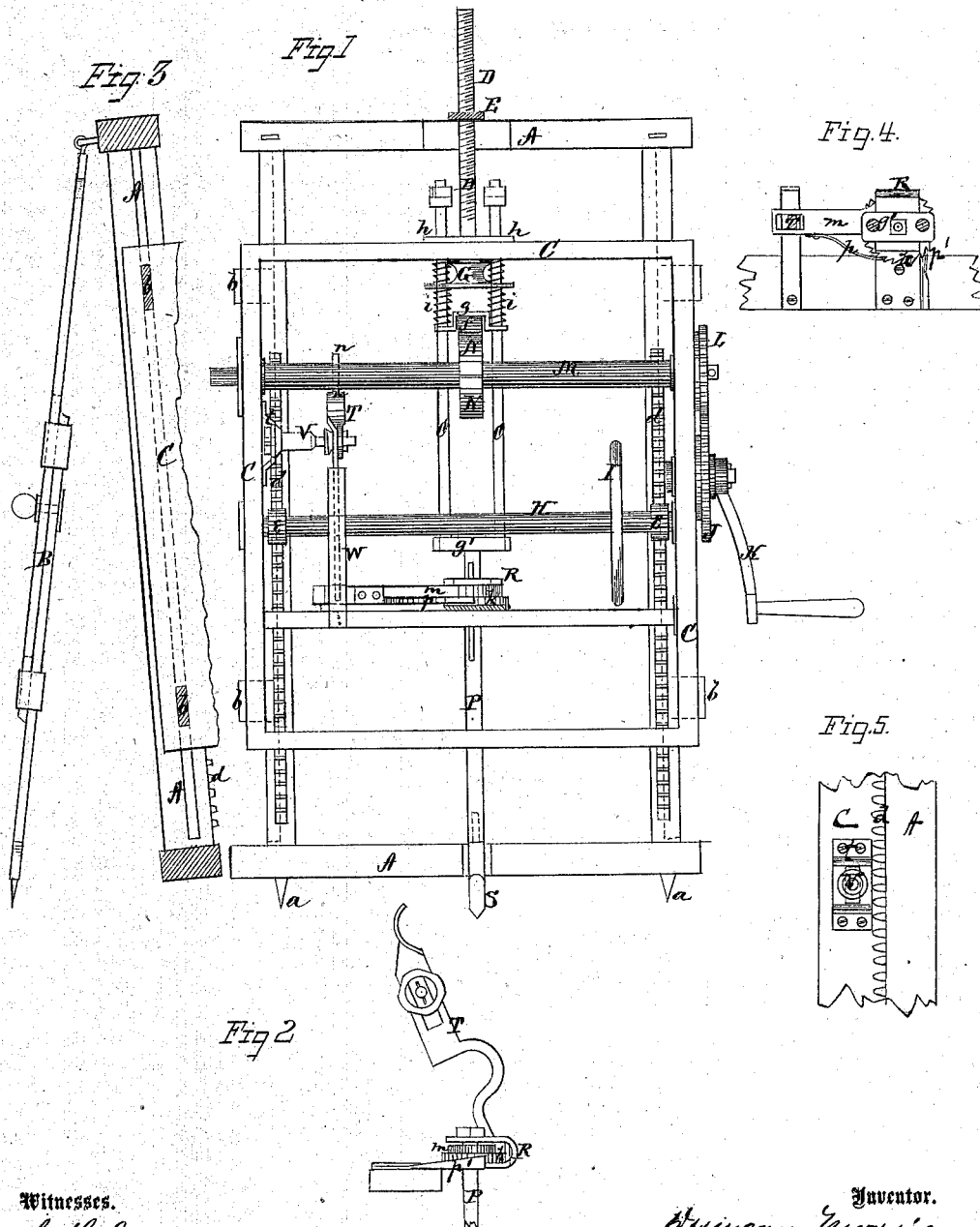


D. MORRISON.
Improvement in Rock-Drills.

No. 115,503.

Patented May 30, 1871.



Witnesses.

C. L. Ewert.
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Inventor.

William Morrison
per

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Atty.

UNITED STATES PATENT OFFICE.

DUNCAN MORRISON, OF PORTLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO SAMUEL CALDERWOOD, OF SAME PLACE, AND F. F. HALL, OF FALMOUTH, MAINE.

IMPROVEMENT IN ROCK-DRILLS.

Specification forming part of Letters Patent No. 115,503, dated May 30, 1871.

To all whom it may concern:

Be it known that I, DUNCAN MORRISON, of Portland, in the county of Cumberland and in the State of Maine, have invented certain new and useful Improvements in Stone-Drilling Machine; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of a stone-drilling machine, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a front elevation of my machine; Fig. 2 is a side view of the mechanism for rotating the drill; Fig. 3 is a side view of the frame of my machine; Fig. 4 is a plan view of the ratchet mechanism which rotates the drill; and Fig. 5 is a side view, showing the adjustable post upon which the adjustable lever is placed to operate the ratchet mechanism for rotating the drill.

A represents the main frame of my machine, provided with pointed pins *a a* at its lower end. On the rear side of the frame A, near the upper end, is pivoted or hinged an extension brace, B, by means of which the frame can be adjusted in any position or at any angle that may be desired. The side pieces of the frame A are grooved longitudinally on the outside, as shown in Fig. 3, and in these grooves are inserted flanges or feathers *b b*, on the inner sides of the side pieces of another frame, C, in which the entire drill mechanism is placed; said frame C thus being capable of an up-and-down movement on the frame A, while it is at the same time prevented from coming out from the same. The sliding frame C may be adjusted by means of a screw, D, passing through its upper end and through a bar, E, on top of the main frame, the screw

being provided with a hand-wheel, G, at its lower end; or it may be done by racks *d d* secured to the frame A, and pinions *e e* mounted upon a shaft, H, in the frame C, said shaft being provided with a wheel, I, for turning. The screw I consider, however, best for adjusting the sliding frame, especially in a machine for plug-drilling, where it would require to rise or fall only three or four inches, as the screw would of itself hold the frame at any desired point; while the racks and pinions would require something more, or the frame would drop to the bottom. In lieu of the wheel G on the lower end of the screw D a crank on the upper end thereof may be substituted. On one side of the sliding frame is mounted a cog-wheel, J, with crank K, for turning. This cog-wheel gears with another cog-wheel or pinion, L, on the end of a horizontal shaft, M, which has its bearings in the sides of the frame C. On the shaft M are placed two cams, N N, projecting in opposite directions, and which, as the shaft revolves, strike a friction-roller, *f*, mounted in a head, *g*, which is attached to two parallel rods, O O. The upper ends of these rods pass through plates *h h* or guide-bars on top of the sliding frame C, while the lower ends are connected by another head, *g'*. Between the upper head *g* and the guide-bars *h h*, surrounding each of the rods O, is a spiral spring, *i*, as shown in Fig. 1. In the center of the lower head *g'* is inserted the mandrel P in such a manner that it can rotate in the head, and said mandrel passes down through a guide, R, attached to one of the cross-bars of the frame C. It will then be seen that, as the cams N N in succession come in contact with the rollers *f*, the rods O O, with the mandrel P and the drill S attached at its lower end, are raised, at the same time compressing the springs *i i*, and as soon as each cam passes from under the roller the springs *i i* forcibly and suddenly throw the drill downward. The guide R is bent over double, as shown in Fig. 2, with a space between the two parts, and the mandrel passes through both of said parts. Between these two parts of the guide R, and loosely on the mandrel P, are placed a ratchet-

wheel, *k*, and lever *m*, the wheel being provided with a feather which passes into a groove in the mandrel, and the lever being provided with a spring-pawl, *p*, that engages with the ratchet-wheel. On the side of the guide *R* is another spring-pawl, *p'*, which also engages with the ratchet-wheel *k*. The outer end of the lever *m* is slotted, and in this slot works the lower end of a lever, *T*, which is pivoted upon a post, *V*, in the side of the frame *C*. The upper end of the lever *T* is operated upon by two pins, *n n*, on the shaft *M*. When either of these pins strike the upper end of the lever *T* the lower end of the same will operate upon the lever *m*, so as to turn the mandrel by means of the pawl *p* and ratchet-wheel *k*. As soon as the pin passes off the lever *T* a spring, *W*, throws the lever back again ready to be acted on by the next pin. The throw of the levers may be made longer or shorter, as may be desired, so as to turn the mandrel more or less at each revolution of the shaft *M*, by merely raising or lowering the post *V*, so as to bring the pivot-point of the lever *T* higher or lower. This is accomplished by making a

slot and box in the lever for the post to pass through, and attaching the inner end of said post to a slotted bar, *t*, and, by this means, the post can easily be adjusted.

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

1. The combination of the pins *n n*, adjustable lever *T* with spring *W*, and adjustable post *V*, all constructed and arranged as described, for operating the immediate mechanism that rotates the drill, substantially as herein set forth.

2. In combination with the pins *n n*, upon the same shaft which carries the cams *N N* for raising the drill and the lever *T*, the slotted lever *m*, pawl *p*, and ratchet-wheel *k*, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of February, 1871.

DUNCAN MORRISON.

Witnesses:

JOHN W. MUNGER,
CHARLES D. MUNGER.