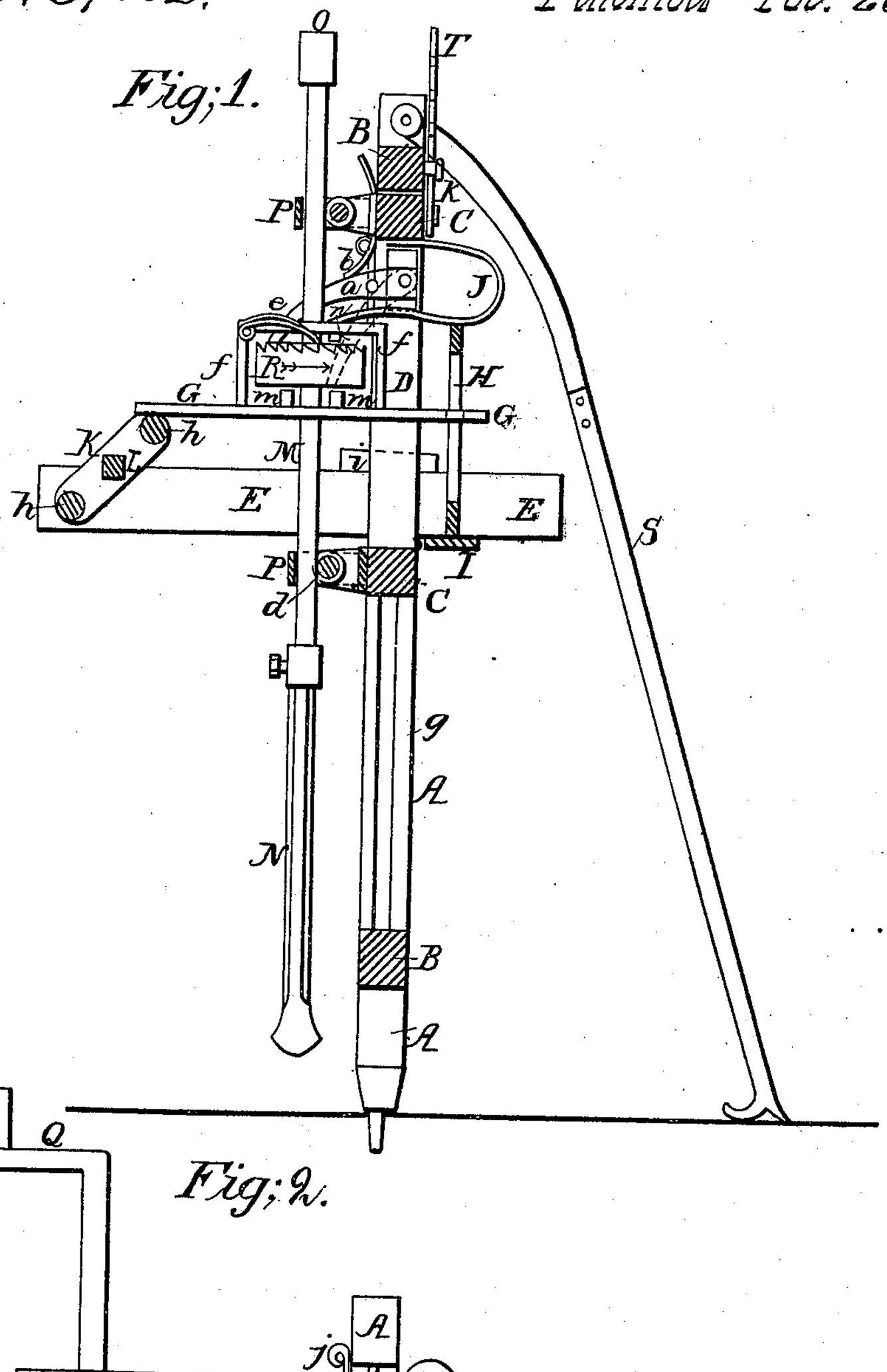
S. Gable,

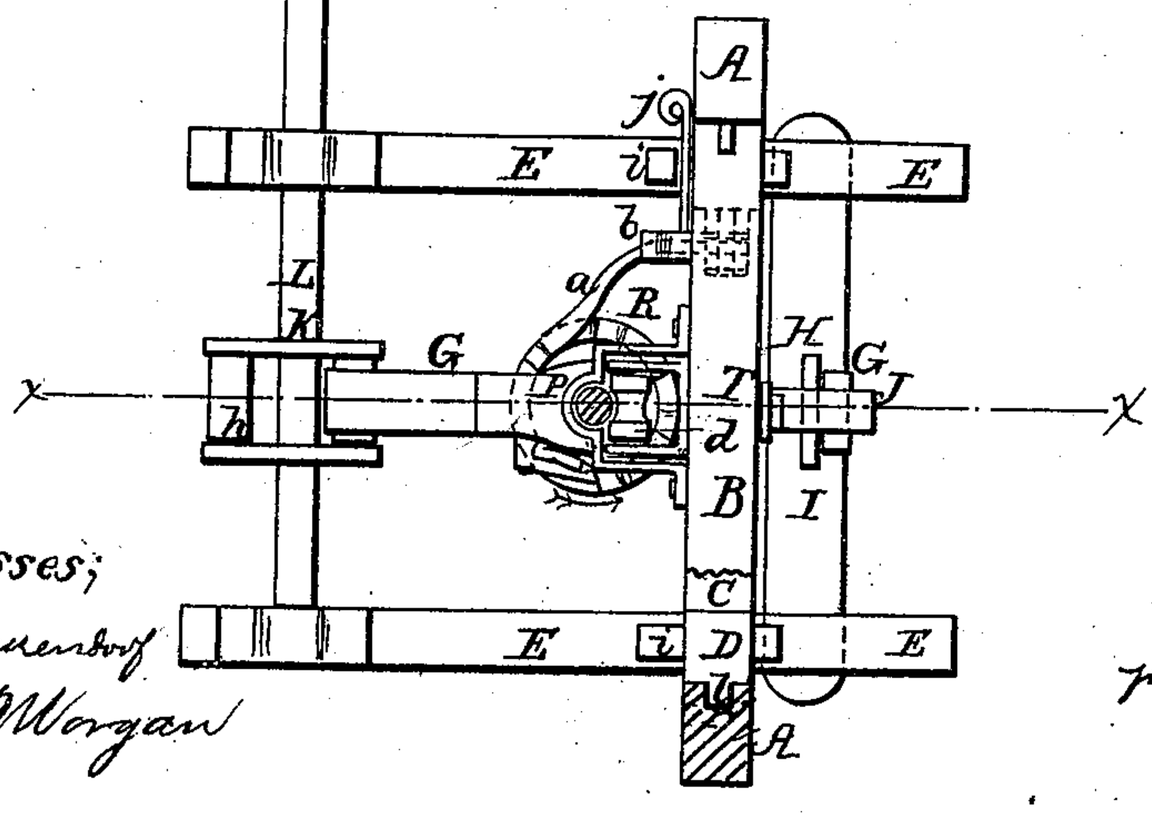
Rock Drill.

No. 87,162. Patented Feb. 23, 1869.

Fig; 1.



Fig; 2.



Witnesses;
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Amited States Patent Office.

SAMUEL GABLE, OF MILLERSTOWN, PENNSYLVANIA.

Letters Patent No. 87,162, *dated February* 23, 1869.

IMPROVED ROCK-DRILLING MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it maij concern:

Be it known that I, SAMUEL GABLE, of Millerstown, in the county of Perry, and State of Pennsylvania, have invented new and useful Improvements in Rock-Drilling Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional elevation of my invention, the section being taken through the line *x x*, fig. 2.

Figure 2 is a top view of the same, with a portion broken away, to show the sliding frame.

Similar letters of reference indicate corresponding parts.

This invention relates to an improvement in machines for drilling rocks; and

It consists in the combination of a slotted guide-plate with the plate by which the drill is lifted and guided, and the sliding frame, carrying the drill and its operating-mechanism, whereby the drill is prevented from turning, and the front end of the guide-plate kept in the proper position with reference to the cam-rollers by which the drill is lifted.

In the drawings—

A A are two uprights, connected by cross-braces B B, and

C C are the cross-pieces, and

D, the uprights of a rectangular frame, sliding within the general frame A B, as shown.

The uprights D are formed with tongues, *l*, which slide freely in grooves, *g*, in the proximate faces of the uprights A, as shown, thus affording the means of guiding the frame C D.

The drill-stock M slides freely in the irons P, which latter contain friction-rollers, *d*, and are affixed to the cross-pieces C of the sliding frame.

N is the drill, and is affixed, by means of a socket and set-screw, to the drill-stock.

The drill passes through a horizontal plate of metal, G; and the ratchet-disk R, on the drill-stock, is within the bent plate *f*, which latter passes over the said disk, each end being affixed to the plate G.

The drill-stock passes through this bent plate also.

A curved spring, J, exerts its tension on the top of the plate *f*, and serves to actuate the drill downward with force at each stroke.

This spring is affixed, as shown, to the upper cross-piece of the sliding frame, and its free end impinges on the plate *f*, just over the stud *n*, projecting downward from the said plate *f*, as shown.

a is a pawl, pivoted to the sliding frame, and actuated by a spring, *b*, to bear its free end down upon the ratchet-toothed face of the disk R, so that, at each upward movement of the drill-stock, the disk will be carried around one or more teeth, thus causing the edge of the drill to be presented at a different angle from the preceding stroke.

The spring *b* also prevents the drill from rebounding, thus obtaining a more effective stroke, or dead-stroke.

e is a pawl and its spring, which serves to prevent the disk from rotating backward.

The weight of the drill-stock and drill is sustained on two or more studs, *m m*, projecting upward from the plate G, in contact with the lower face of the disk, as shown.

n is the upper stud, or "hardy," so called, which transmits the force of the spring J to the drill-stock, through the disk R.

The drill is lifted by means of a double cam, consisting of two rollers, *h h*, the reduced ends of which are afforded bearings in the arm-plates K, mounted on the crank-shaft L, one end of which latter terminates in a hand-crank, Q.

This shaft L is afforded bearings in the arms E, which pass through mortises in the uprights D of the sliding frame, and are held firmly in said mortises by means of keys or wedges *i*.

The rear projections of these arms E afford attachment for the cross-plate I, from which rises the slotted guide-plate H, for steadying plate G, the rear end of this latter plate being recessed, to fit in the slot, and be guided by the same.

The sliding frame is adjustable up or down, according to the depth of the hole made by the drill, and is held at any one of several positions by means of a notched plate, T, pivoted to the upper cross-piece C, whereby any one of the notches of the said plate may be caught on the stud *k*, projecting from the upper cross-brace B.

j is a stop, to hold up the pawl *a* when it is desired that the drill shall not rotate.

When the crank Q is turned, the rollers *d* successively encounter the projecting end of the plate G, thus raising the drill-stock in its guides, and allowing the same to fall as the rollers pass from contact with it.

The lower ends of the uprights A are provided with iron points, in order to give the machine a suitable foothold on the rock or ground; and

S is a long iron brace or shore, pivoted to the upper part of the frame A B, which acts in conjunction with the said iron points, in holding the frame A B in the proper upright position.

The free end of this shore S rests on the ground.

The above is a general description of a rock-drilling machine embracing my invention, which consists in combining the slotted guide-plate H with the plate G and sliding frame C D, for the purpose of providing a simple means for holding the plate G from turning during the operation of the drill, and, at the same time, keeping its front end in the proper relation to the cam-rollers *h h*.

I claim as new, and desire to secure by Letters Patent—

The slotted guide-plate H, in combination with the plate G and sliding frame C D of a rock-drilling machine, substantially as and for the purpose herein shown and described.

SAMUEL GABLE.

Witnesses:

WILLIAM STAHL,
HENRY SOWERS.