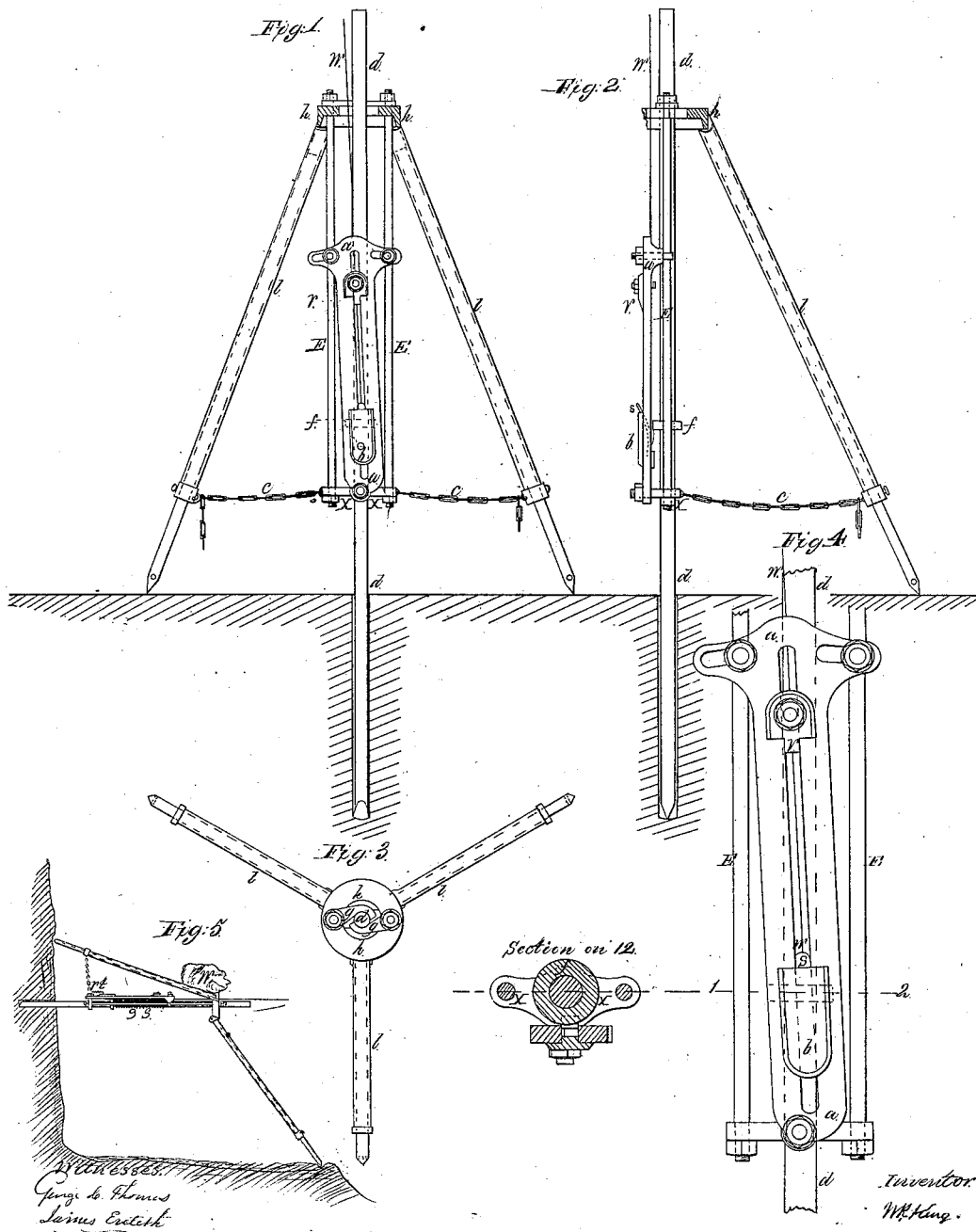


W. R. King, Stone Drill.

N^o 53,305.

Patented Mar. 20, 1866.



UNITED STATES PATENT OFFICE.

W. R. KING, OF UNITED STATES ARMY.

IMPROVED ROCK-DRILL.

Specification forming part of Letters Patent No. 53,305, dated March 20, 1866.

To all whom it may concern:

Be it known that I, W. R. KING, first lieutenant, United States Engineers, brevet major, United States Army, have invented a new and useful Machine for Drilling Rocks; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The machine consists of a light portable tripod, of wood or iron, or a combination of both, similar to those used by land-surveyors, furnished with devices for guiding, lifting, turning, and dropping an ordinary rock-drill, the power being transmitted to this machine from any suitable motor, situated at a convenient distance, by means of a wire, wire rope, or its equivalent, and conducted in such a manner as not to obstruct the intervening space.

Figures I and II of the drawings represent sections and elevations of the drill and tripod taken through the axis of the drill and perpendicular to each other. Fig. III shows a plan of the drill and tripod, and Fig. IV represents an enlarged elevation of the apparatus for guiding, lifting, turning, and dropping the drill.

The tripod-head *h h h* is made of cast-iron or other suitable material, and has on its upper surface two small hooks or guides, *g g g*, to steady the upper end of the drill *d d d*. A second support or guide for the lower end of the drill is formed by the cross-piece *x x x*, which is supported by the rods *e e e* and steadied by the chains *c c c*.

The legs of the tripod *l l l*, or at least two of them, have sliding joints, which admit of their being lengthened or shortened, as circumstances may require, and a hole near the bottom to receive a small iron pin, upon which weights of stone may be placed, when required, to give steadiness to the machine.

A collar, *f f f*, is fastened to the drill by a key or set-screw, its lower surface being rough to prevent slipping on the catch or spring *s s s* when the latter is lifted by the wire *w w w*. The spring *s s s* is attached to the slide *b b b*, and the latter guided in an oblique direction by the plate *a a a* as it is raised by the wire *w w w*. When the slide *b b b* has reached such a height that the spring comes in contact with the inclined surface *v v v* it is turned from its course in such a way as to slide from

under the collar *f f f* when the drill falls in a vertical direction. The drill is thus turned a certain distance each time it is lifted, and the rapidity of its rotation can be increased or diminished at pleasure by changing the inclination of the plate *a a a*, as can easily be done by loosening the nuts at the upper end of the plate and sliding the latter sidewise. The length of stroke is regulated in a similar manner by setting the slide *v v v* at any desired point by means of the nut on its front side.

In order to use this machine in vertical drilling, the tripod is placed over the point where the hole is to be drilled, and, if necessary, stones are placed on the pins at the bottom of the legs to give it stability. The chains are then mutually regulated so as to give the drill the desired direction, and the collar *f f f* is firmly secured to the drill just above the lowest point to which the slide *b b b* can come. The wire *w w w* is then conducted, on pulleys or otherwise, in a manner similar to that in which an ordinary bell-wire is led about a house, to the motor, and so attached to the latter as to be pulled and slackened alternately, the former motion having the effect of raising the drill until released, as before mentioned, and the latter allowing the slide to return and catch the collar for another blow.

When it is desired to drill in a horizontal direction, or nearly so, the tripod is placed as shown in Fig. V, a weight, *W*, being laid on to give stability, a spiral spring, *s' s'*, added to deliver the blow, and a second spring, *t t*, added to bring back the slide after the drill has been released.

This machine was originally designed for use in excavating tunnels and deep rock-cuttings, where it is inconvenient and sometimes impracticable to place the motor near the drill, though I believe it to be adapted to the ordinary purposes of mining and quarrying.

For the above and other purposes the following advantages are claimed for this machine:

First, simplicity of construction and cheapness. Since there is but little planing, turning, or fitting up required, an ordinary mechanic can construct, repair, and work one of these machines, while for the same reason the cost will be very little.

Second, any motor may be used, and the same placed at any convenient distance.

Third, portability. They may easily be placed in position, and removed when blasting is to take place.

Fourth, the use of the drill does not interfere with the labor of removing debris.

Fifth, the application of the power is such that but little work is lost in overcoming friction, and a maximum quantity of useful work is performed.

I am aware that tripods of various kinds have been used in connection with rock-drills, and that chains, &c., have been used in transmitting the power when the motor was near at hand; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the guide-hooks *g*, rods *e*, cross-bar *x*, and chains *c*, for grinding and centering the drill, as described.

2. The combination of the adjustable guide-plate *a*, slides *b* and *v*, and spring *s*, for the purpose set forth.

3. The combination of the collar *f* with the guide-plate *a*, slides *b* and *v*, and spring *s*, for the purposes set forth.

4. The combination of the springs *s'* and *t*, Fig. V, with the guide-plate *a*, slides *b* and *v*, and spring *s*, substantially as described.

W. R. KING.

In presence of—

GEORGE C. THOMAS,
JAMES EVELETH.