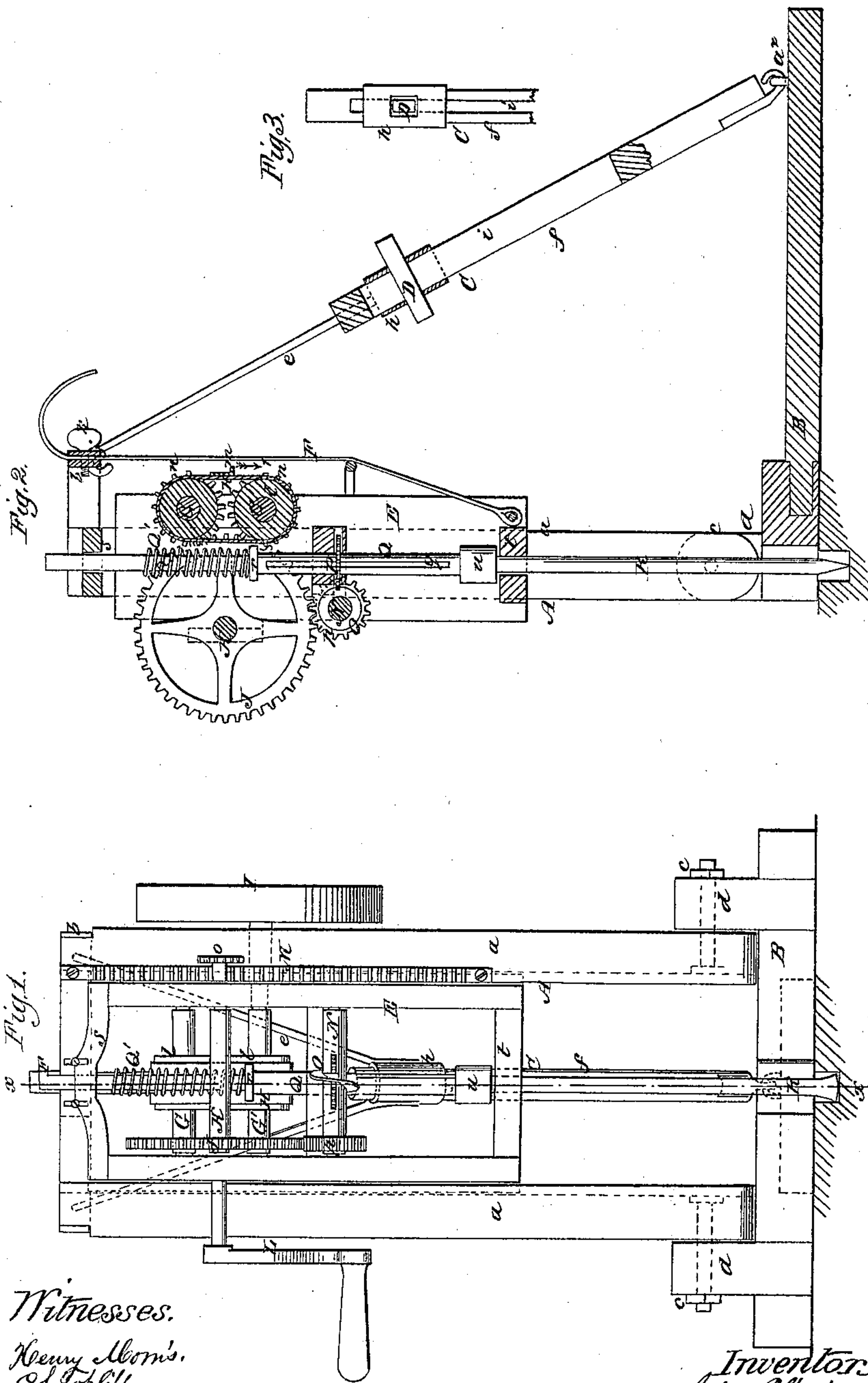


Phillips & Tschon,

Stone Drill.

N^o 43,523.

Patented July 12, 1864.



Witnesses.
Henry Horn's.
C. L. Tschon.

Inventors.
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UNITED STATES PATENT OFFICE.

JOHN PHILLIPS AND ALBERT TSCHOP, OF SIDDONSBURG, PENNSYLVANIA.

IMPROVEMENT IN ROCK-DRILLS.

Specification forming part of Letters Patent No. 43,523, dated July 12, 1864.

To all whom it may concern:

Be it known that we, JOHN PHILLIPS and ALBERT TSCHOP, of Siddonsburg, in the county of York and State of Pennsylvania, have invented a new and Improved Rock-Drill; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of our invention; Fig. 2, a side sectional view of the same, taken in the line *xx*, Fig. 1; Fig. 3, a detached view of a portion of the prop or support of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of an adjustable frame and an adjustable prop, in connection with a sliding frame, in which the drill-operating mechanism is placed, the drill-operating mechanism being arranged in a novel way, as hereinafter fully shown and described, whereby the desired work may be performed with facility and the implement adjusted to drill holes in a vertical direction, or at different degrees of inclination, as may be desired.

To enable those skilled in the art to fully understand and construct our invention, we will proceed to describe it.

A represents a frame, which is composed of two parallel bars, *a a*, connected at their upper ends by a cross-bar, *b*. The lower ends of the bars *a a* are connected by joints *c c* with small uprights *d d* on the base B. The frame A is retained in proper position by a prop or support, C, which is composed of two parts, *e f*. The part *e* of the prop or support is formed of two rods, the upper ends of which terminate in hooks fitted loosely in the cross-bar *b* of the frame A. The lower ends of these bars are attached to a band or socket, *h*, which is fitted loosely on the part *f* of the prop or support, so that it may slide freely thereon. The part *f* of the prop or support is simply a cylindrical rod having a slot, *i*, made longitudinally through it to admit of a key, D, passing through it, said key also passing through the socket *h*. By means of this key passing through the slot *i* and socket *h* the prop or support may be extended or shortened at will and the frame A adjusted either in a

vertical or in a more or less inclined position. The lower end of the part *f* of the prop or support is attached to the base B by means of a universal joint, *a**.

Within the frame A there is fitted a sliding frame, E, which is provided with a strap, F, the latter being attached to the lower end of the frame E, as shown clearly in Fig. 2. This strap F passes through a clamp, *j*, on the cross-bar *b* at the upper end of the frame A, said clamp being simply a plate or bar attached to *b* by set-screws *k k*, by adjusting which the pressure on the strap may be regulated as desired.

In the frame E there are placed two parallel shafts, G G', on which there are pulleys *l l*, having an endless belt, H, fitted on them. To the belt H there is attached a projection, *m*. (Shown clearly in Fig. 2.) The lower shaft, G', extends beyond one side of the frame E, and has a driving-wheel, I, upon it, and each shaft G G' is provided with a pinion, *n*, which gears into a wheel, J, on a shaft, K, also fitted in the frame E, the shaft K extending beyond the frame E, and having a crank, L, upon it. The opposite end of shaft K has a sliding or movable pinion, *o*, upon it, which, when necessary, may be thrown in gear with a rack, M, on the front side of the frame E. (See Fig. 1.)

N is a shaft placed in the frame E, and having a pinion, *p*, upon it, which gears into the wheel J. This shaft N has a screw, O, upon it, which gears into a worm-wheel, P, on a shaft, Q, which is fitted in the frame E parallel with its side pieces, and has a drill, R, attached to its lower end. The shaft Q is allowed to slide or work longitudinally in the frame E, and said shaft passes loosely through the worm-wheel P, the latter having a projection at its center, which fits in a groove, *q*, in the shaft Q, so as to admit of the shaft rising and falling independently of the worm-wheel, and still admitting of the former being turned by the latter. On the shaft Q there is placed a spiral spring, Q', the lower end of which bears upon a collar, *r*, on the shaft, and the upper end against the upper cross-piece, *s*, of frame E. On the lower end of shaft Q, above the lower cross-piece, *t*, of the frame E, there is also placed a collar, *u*.

The operation is as follows: The shaft G' is rotated by any convenient power, and the endless belt H is moved in the direction indi-

cated by the arrow 1. The projection *m* strikes the collar *r* and raises the drill shaft *Q* and when said projection passes the collar *r* the spring *Q'* forces down the shaft *Q* and causes the drill *R* to impinge against the rock. The drill is gradually turned by the screw *O* and worm-wheel *P*, and the hole may be drilled vertically into the rock, or more or less obliquely, by adjusting the prop or support *C*, (extending or shortening it,) so as to give the frame *A* and shaft *Q* a vertical or more or less inclined position. At the commencement of the operation the frame *E* is set by adjusting the strap *F* so that the collar *u* may be a trifle above the lower cross-piece, *t*, of the frame *E* when the drill *R* rests upon the rock, and after the first blow of the drill the frame *E* is forced down in consequence of the collar *u* striking the lower cross-piece, *t*. The frame *E*, therefore, is fed down automatically by the action of the drill-shaft *Q*, the strap *F* being allowed to slip in the clamp *j*. After the hole is bored to the required depth the frame *E* is run up by shoving the pinion *o* in gear with the rack *M* and then turning the crank *L*. Drills *R* of different lengths may be used, according to the depth of hole required.

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

1. The adjustable frame *A*, in combination with the adjustable prop or support *C*, constructed and arranged as shown and described, for the purpose of regulating the position of the frame *A* and drill *R* to bore or drill in a vertical or in a more or less inclined position, as set forth.

2. The combination of the endless belt *H*, provided with the projection *m*, the collar *r* on the drill-shaft *Q*, the screw *O* on shaft *N*, and the worm-wheel *P* on shaft *Q*, all arranged in the sliding frame *E*, to operate as and for the purpose herein set forth.

3. The strap *F*, attached to the sliding frame *E* and fitted in a clamp, *j*, on the frame *A*, in combination with the collar *u* on the shaft *Q*, arranged in relation with the lower cross-piece, *t*, of the frame *E*, to operate as and for the purpose herein set forth.

4. The rack *M* on the frame *E*, in combination with the adjustable or sliding pinion *o* on the shaft *K*, for the purpose of elevating the frame *E*, as set forth.

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Witnesses:

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