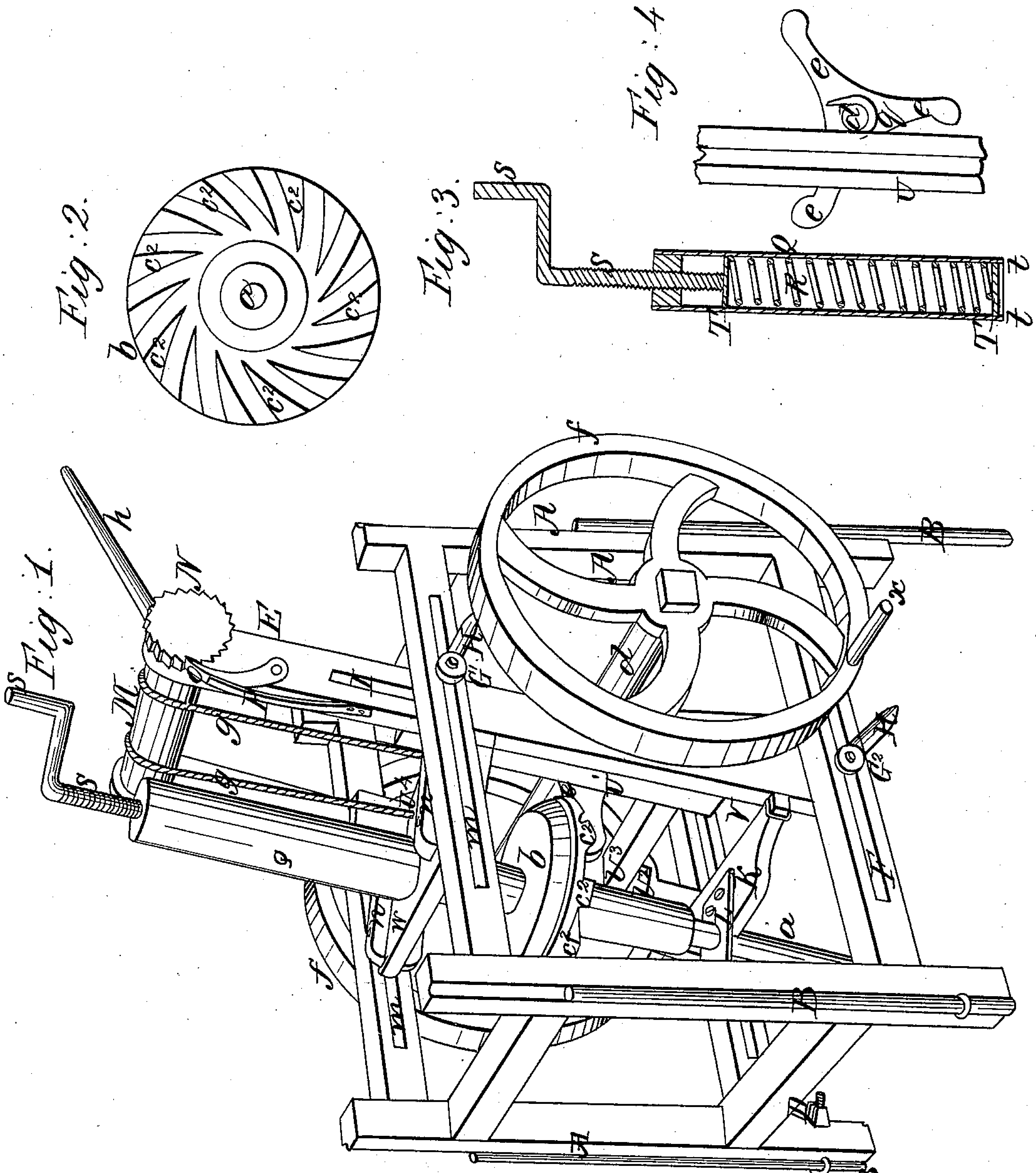
S. Pettes,

Stone Drill.

No. 1,672. Patented July 3, 1840.



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UNITED STATES PATENT OFFICE.

SIMON PETTES, OF SCHENECTADY, NEW YORK.

MACHINE FOR DRILLING OR BORING ROCK AND OTHER SUBSTANCES.

Specification of Letters Patent No. 1,672, dated July 3, 1840.

To all whom it may concern:

Be it known that I, SIMON PETTES, of Schenectady, in the county of Schenectady and State of New York, have invented a new and useful Machine for Drilling Rocks and other Substances, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the machine. Fig. 2 is a view of the under side of the head of the drill. Fig. 3 is a section of the cylinder containing the spiral spring. Fig. 4 represents one of the two hooks or eyes in the sliding cylinder frame *v* through which the shaft *d* passes and also the groove in one of the side pieces of said frame which admits the rib *v*, and likewise represents the tappets *e* on the shaft *d*.

Similar letters refer to similar parts in the figures.

This machine consists of a rectangular main frame A adjustable at pleasure to the unequality of the place where the boring is to be effected, by means of four adjustable sliding rods B placed in cavities in the outside corners of the four posts of the frame and secured in any position desired by eye screw-bolts C and nuts D, said rods passing through the eyes in said screw.

The drawing represents the frame placed on an inclined surface with two of its posts resting on the rock and two of the rods B extended downward and secured by the nuts and screws in order to bring the main frame A into an upright position. An inclined adjustable frame E containing the guides for the drill is placed inside the main frame A made adjustable at pleasure to bring it into any inclination required according to the angle that the hole is to be drilled by having parallel slots F F in *m* made in the parallel side pieces of the main frame A for screw bolts G to move in, projecting from the sides of the inclined frame and which are secured at any position desired by hand nuts H screwed on the ends thereof and; also grooves I in the side pieces of the inclined frame for the upper screw bolts to move in. The slots F *m* are for the screw bolts G^1 G^2 to move in while adjusting the frame E the screw bolts G^1 having a simultaneous movement in both slots I and *m*, in changing the inclination of the frame E the slots I and *m* allow the upper end of the frame E to describe a segment of a circle of a radius equal to the distance from the screw G^2 which will be the center of said circle and may remain fixed in changing the angle of the frame E.

The lower guide K for the drill is a cross-piece secured near the lower ends of the sides of the inclined adjustable frame E and has a metallic plate L secured on the upper side thereof perforated with a round aperture the diameter of the drill for it to pass freely through in rising and falling. At the head of this frame is a windlass M for raising the cylinder frame V (hereafter described) on the end of which is a ratchet wheel N into which drops a pawl O attached to the side of the inclined frame and pressed into gear by a spring P.

The cylinder frame V is so called because it carries the cylinder Q containing the spiral spring R screw S and buttons T T. It consists of two parallel side pieces V^1 V^2 united by two cross pieces V^3 V^4 the side pieces V^1 V^2 being grooved to allow them to slide over two ribs V V fastened to the inside of the inclined frame E which serve as guides or ways: the cylinder is supported by a piece of timber W let into two arms or supports *n*, *n* mortised and tenoned into the sides of the inclined cylinder frame V at right angles thereto.

The spiral spring R inside the cylinder is placed between two buttons T T of the diameter of the bore of the cylinder in which they move—the upper one being pressed down by a screw S with a crank handle said screw passing through the head of the cylinder. The lower button (when the drill is down) rests upon a projecting circular ledge *t* inside the cylinder near the lower end thereof which is open. The screw is for contracting the spring and giving it more force in driving down the drill.

The drill *a* is made in sections with sockets and shanks secured by screws so that it can be lengthened as the work progresses. The upper section has a large round flat cast iron head *b* having triangular or curved cams c^1 c^2 on the under side for the tappets *e* on the horizontal shaft *d* (hereafter described) to strike against which causes the drill to turn around at the same time that it is lifted by said tappets. The upper end of the drill is made smaller than the inside of the cylinder so that it shall pass easily into it without touching the before mentioned circular ledge *t*. The cams c^2 are made

pointed of a wedge form with the three sides of each curved as represented in Fig. 2.

The propelling shaft *d* extends horizontally through the frame A and turns in hooks *q* or boxes fastened to the sliding cylinder frame by a crank by hands or other power. These hooks are not seen in Fig. 1—one of them is represented in Fig. 4. The tappets *e* for raising the drill are fastened to and radiate from this shaft, and in this arrangement are three in number but they may be increased or diminished in size and number at pleasure and of any convenient shape, either straight or curved. The shaft is also provided with fly wheels *f f* to equalize the motion.

The chains or cords *g g* for raising the cylinder frame are attached to the head thereof and are wound around the windlass which is turned by hand-spikes *h* or other means—and when it is required to remove the drill the windlass is turned which raises the cylinder from over the drill. The spiral spring may be coiled around the drill below the cylinder which will answer the same purpose as placing it inside the cylinder.

The machine being properly adjusted over the place where it is required to drill a hole by means of the rods B and screws and nuts C, D and the inclined and sliding frames E and V being also properly adjusted the drilling is commenced by turning the crank *x* on the shaft *d* this causes the tappets *e* on said shaft to turn vertically and in turning to strike against the under side of the head *b* of the drill *a* and lift it and in rising its upper end enters the cylinder presses against the lower button T contracts the spiral spring and at the same time receives a rotary movement by the tappets *e* striking against the cams c^2 and as soon as the tappets leave the head *b* of the drill its gravity and the force of the contracted spiral spring in extending itself causes the drill to strike the rock with great force and this operation being repeated soon cuts a hole in the rock and as the work progresses the cylinder and spring are lowered to the drill by lifting the pawl, reversing the movement of the windlass and unwinding the cords *g* and when the drill is required to be lengthened by the insertion of a shank and socket the windlass is turned to the right which winds up the cords and raises the cylinder frame with the cylinder from the head of the drill which thus allows the operator an opportunity to adjust the length of the drill for a continuation of the work or for any other object that may be required.

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

The combination of the inclined adjustable and sliding frames E, V with the drill *a* as constructed, in the manner described and also the method of raising and turning the drill by means of the cogs or cams C^2 on the plate *b* and the tappets *e* on the shaft *d* as herein described.

SIMON PETTES.

Witnesses:
JOHN HOWES,
B. BELLOWS.