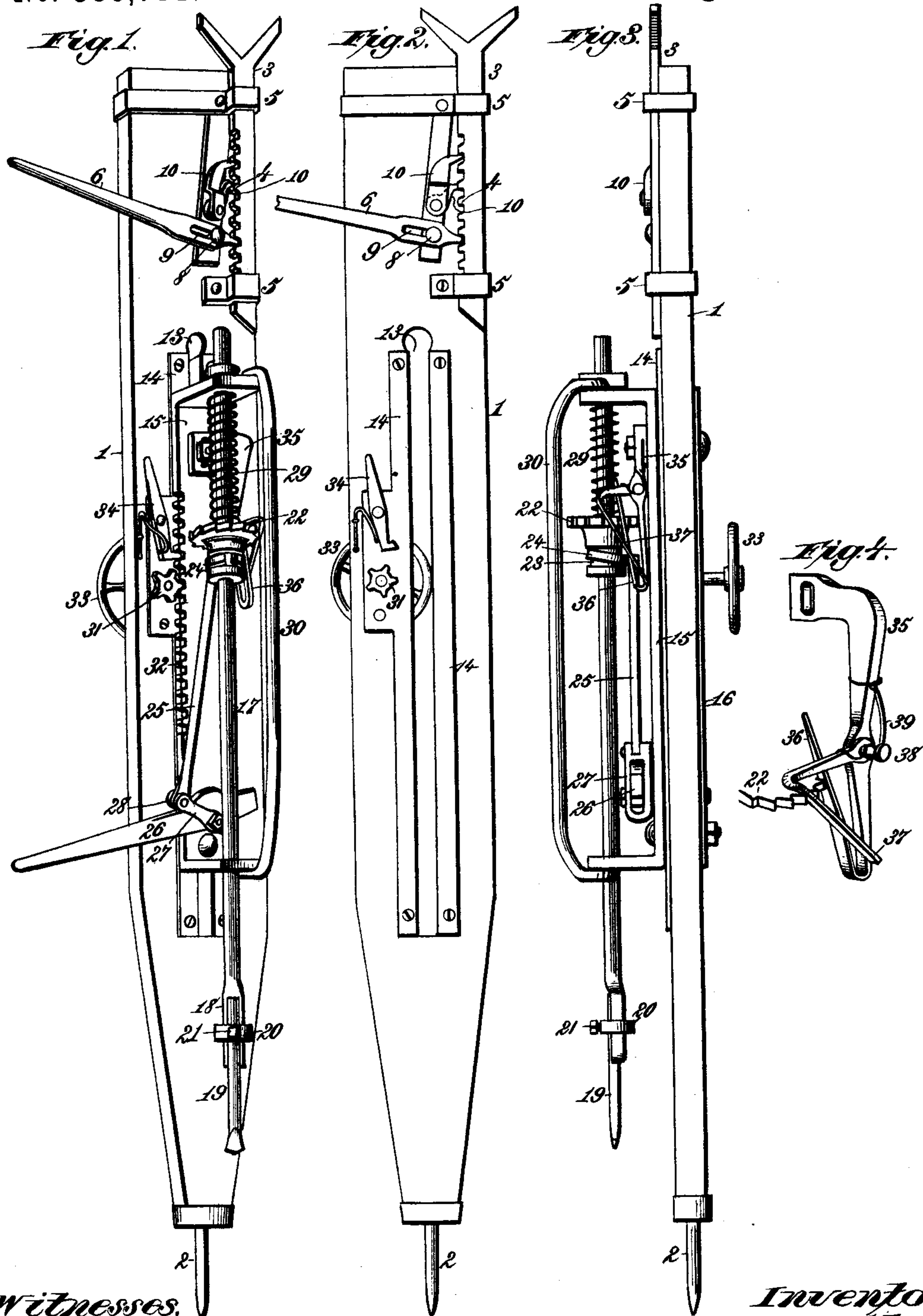


(No Model.)

J. A. PASHLEY.
ROCK DRILLING MACHINE.

No. 388,711.

Patented Aug. 28, 1888.



Witnesses,
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UNITED STATES PATENT OFFICE.

JOHN A. PASHLEY, OF RADERSBURG, MONTANA TERRITORY.

ROCK-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 388,711, dated August 28, 1888.

Application filed April 12, 1888. Serial No. 270,471. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. PASHLEY, a citizen of the United States, residing at Radersburg, in the county of Jefferson and Territory of Montana, have invented new and useful Improvements in Rock-Drilling Machines, of which the following is a specification.

My invention relates to machines for drilling holes for blasting rock, for use in mines for sinking shafts or running drifts, and for drilling rock in stopes and other purposes.

The purpose of my invention is to provide a simple hand-machine which can be operated by one or, at most, two men, which shall be capable of use in any position, and in which the power effecting each stroke of the drill is wholly contained within the machine itself.

It is my further purpose to combine with said mechanism simple and effective means for fastening the machine in any desired position in the mine for feeding the drill downward and for imparting thereto at each stroke the necessary step-by-step rotation.

The invention consists in the several novel features of construction and new combinations of parts hereinafter fully described, and then definitely pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view showing my invention. Fig. 2 is a front elevation of the drill-post with its top and bottom attachments, the drilling mechanism being removed. Fig. 3 is a side elevation of the drilling mechanism. Fig. 4 is a detail perspective of the devices revolving the drill.

In the drawings, the reference-numeral 1 designates the drill-post, which is a beam or heavy slab of wood of suitable length furnished with a spike, 2, at one end. Upon the other end is mounted a slide-bar, 3, having a rack, 4, and moving in guides 5. This bar is forced upward by a lever, 6, engaging with a rack, 4. The lever is mounted on a fulcrum, 8, by means of a slotted bearing, 9, to permit it to move back and forth as the lever is operated, and holding-pawls 10 check the downward or retrograde movement of the slide-bar. A fork, 12, is formed at the end of the latter to afford a bearing and prevent the post from turning.

Within the body of the drill-post I form a longitudinal slot or channel, 13, within which,

in order to avoid wear, I arrange angle-plates 14, overlapping the front surface of the post upon each side of the slot. Upon the post and resting against the angle-plates is mounted the drill-frame consisting of a flat plate of iron, 15, having bolts, which pass through the slot in the post and connect with a side plate, 16, upon the rear side.

The extremities of the drill-plate 15 are bent at right angles to the body, and in suitable openings formed therein the drill-stock 17 is mounted, having at its end a half-socket, 18, to receive the drill 19, which is fastened by a loop, 20, surrounding both the drill and the socketed head and provided with a set-bolt, 21, tapped through the loop and bearing upon the drill-shank.

Upon the drill-stock 17, between the ends of the drill-frame 15, is rigidly mounted a ratchet, 22, having a hub provided with a circumferential slot or channel, 23. Clasp the hub within this channel is a collar, 24, formed upon the end of a connecting-bar, 25. Upon the lower portion of the drill-plate 15 is fulcrumed a lever, 26, carrying upon the fulcrum-bolt a clevis or fork, 27, which straddles the lever and has upon its back lugs 28, to which the end of the connecting-bar 25 is pivotally attached. The back of the lever beneath the clevis is curved or arched to correspond with the arc through which the clevis rocks. A powerful spring, 29, is coiled upon the drill-stock, between the ratchet and the upper end of the frame or plate 15. As the lever 26 is oscillated, the clevis is lifted, swinging the connecting-bar and lifting the drill-stock until the point of connection passes the vertical line drawn through the fulcrum, whereupon the drill-stock is thrown down with a force proportioned to the power of the spring 29. A guard-rod, 30, extends from top to bottom of the frame in front of the mechanism. As the drill operates, the entire drill-frame is lowered a step at a time by a pinion, 31, meshing with a rack, 32, formed in the edge of the plate 15, said pinion being actuated by a hand-wheel, 33, on the back of the post 1. A holding pawl or dog, 34, locks the plate at whatever point it may be adjusted to.

Bolted upon the drill-frame is a bracket-arm, 35, having an upwardly-turned elastic

end, 36, which lies in the path of the teeth of the ratchet 22 during a portion or it may be the whole of the stroke. Upon the bracket-arm is mounted a trigger, 37, inclined relatively to the line of movement of the drill-stock, and so arranged that during the latter portion of the upward movement of the drill the ratchet comes into engagement with and slides upon said inclined portion, thereby advancing the ratchet one or more teeth. At the same time, the ratchet having made engagement with the detent end 36, the latter snaps behind the teeth as the ratchet turns and holds the latter against backlash or return movement. The trigger 37 is pivotally mounted upon a stud, 38, having a spring, 39, which permits the trigger to yield to the passage of the ratchet and restores it to its normal position. It will be seen that the drill will make a stroke at every oscillation of the lever.

By the invention described drilling may be accomplished in places where it is impossible to use a hammer and where steam or compressed air is not accessible. Moreover, the mechanism is simple, easily operated, and comparatively inexpensive, is rapid in operation, and does not get out of order or wear out rapidly.

What I claim is—

1. In a hand drilling-machine, the combination, with a drill-frame vertically adjustable upon a supporting-post, of a spring-actuated drill-stock mounted in said frame, a clevis fulcrumed on the frame and connected to the drill-stock, and a lever straddled by the clevis and having its fulcrum upon the pivotal point of the latter, substantially as described.

2. In a hand drilling-machine, the combination of a supporting-post, a drill-frame adjustable along the post, a spring-impelled drill-stock, a clevis pivoted to the drill-frame, a rod pivoted to the clevis and connected with the drill-stock, a hand-lever straddled by the clevis and fulcrumed upon the pivot of the latter, a ratchet-wheel on the drill-stock, a bracket-arm

secured to the drill-frame and having an elastic arm arranged in the path of the ratchet-wheel, and an inclined spring-impelled trigger pivoted on said bracket-arm, substantially as described.

3. The combination, with the supporting-post having the drill-frame adjustable thereupon, of guides on the end portion of the post, a rack-bar sliding on the post in said guides and having a bifurcated outer end, a pivot or fulcrum on the post, a swinging and lengthwise-movable hand-lever provided with a longitudinal slot engaging the pivot or fulcrum, and pawls on the post engaging the sliding rack-bar, substantially as described.

4. In a hand drilling-machine, the combination, with a supporting-post having a longitudinal slot, of a drill-frame having its supporting-bolts adapted to slide in said slot, a pinion meshing with a rack on the drill-frame, a spring actuated drill-stock, a lever fulcrumed on the drill-frame, and a clevis straddling said lever and connected to the drill-stock by a connecting-rod, substantially as described.

5. In a hand drilling-machine, the combination, with a supporting-post, of a longitudinally-adjustable drill-frame, a spring-actuated drill-stock moving therein and having a ratchet, a clevis pivotally mounted on said frame and connected to the drill stock by a pivoted connecting-rod, a lever straddled by the clevis and having the pivot of the clevis, an elastic detent engaging with the ratchet, and a spring actuated trigger pivotally mounted on the bracket-arm carrying the detent, said trigger being inclined relatively to and lying in the path of the ratchet during part of its upward stroke, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. PASHLEY.

Witnesses:

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