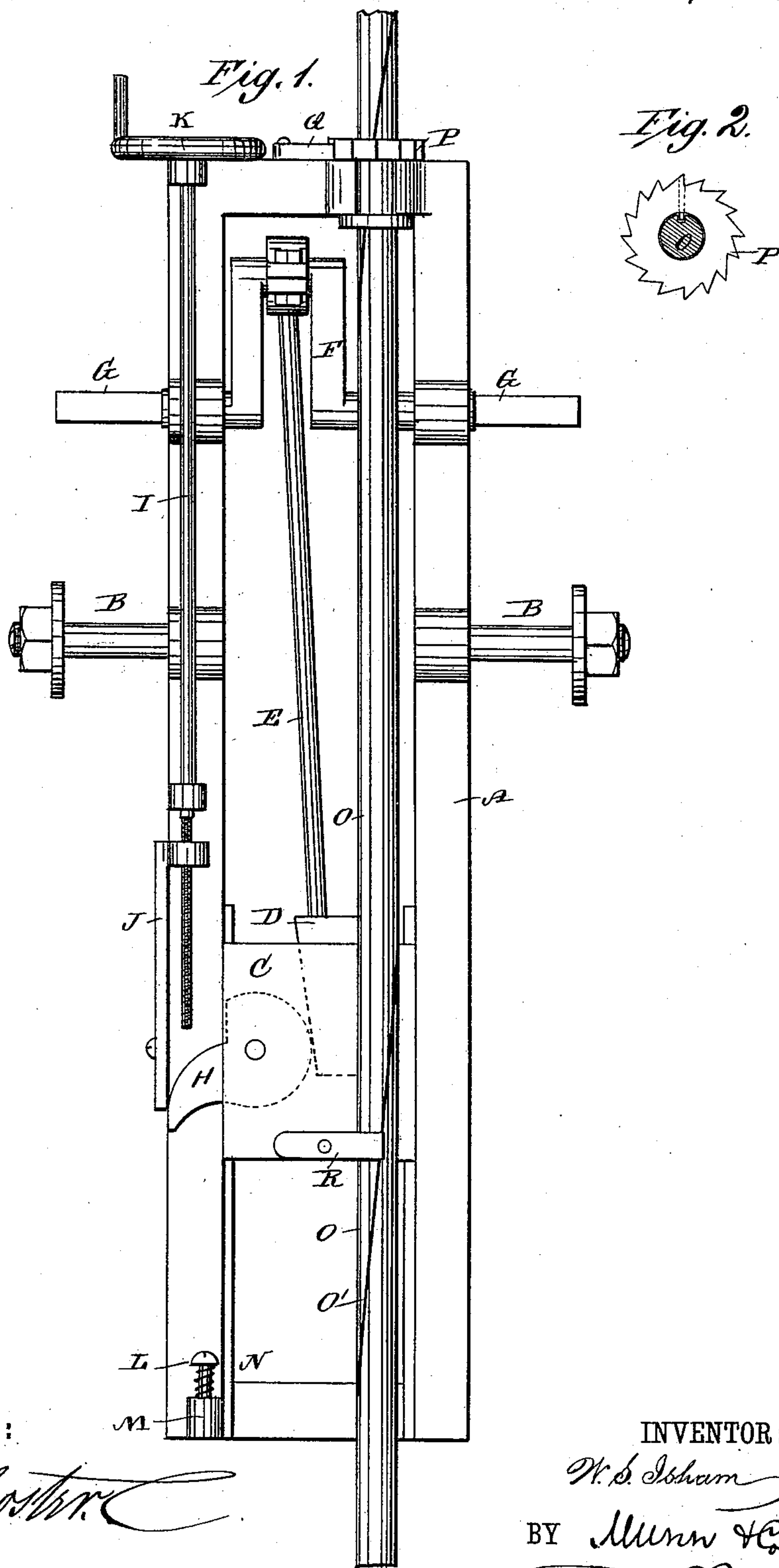


(No Model.)

W. S. ISHAM.
ROCK DRILLING MACHINE.

No. 335,358.

Patented Feb. 2, 1886.



WITNESSES:

Theo. G. Foster
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UNITED STATES PATENT OFFICE.

WILLARD S. ISHAM, OF BURLINGTON, VERMONT.

ROCK-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 335,358, dated February 2, 1886.

Application filed May 18, 1885. Serial No. 165,936. (No model.)

To all whom it may concern:

Be it known that I, WILLARD S. ISHAM, of Burlington, Chittenden county, Vermont, have invented a new and Improved Rock-Drill, of which the following is a full, clear, and exact description.

This invention relates to certain new and useful improvements in that class of drills known as "percussion" drills.

10 The invention consists in the combination, with a frame, of a reciprocating block, a rod to which the bit is fastened, a wedge in the block, and a cam for pressing the wedge against the rod.

15 Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in both figures.

20 Figure 1 is a face or front view of the working parts of my improved drill, and Fig. 2 is a detail view.

The longitudinal frame A is provided with the trunnions B, for supporting it on the tripod. A sliding grooved block, C, is arranged between and guided by the side pieces of the frame, 25 and contains a wedge, D, which is movable in the said block. The block C is connected by a rod, E, with a crank, F, on a shaft, G, in the frame, which crank-shaft can be revolved by hand or power. A cam, H, pivoted in the 30 block C, rests against the wedge D and projects over one side bar, on which bar a tripping-piece, J, is held adjustably, the said tripping piece being held on the lower end of a screw-rod journaled in the frame, and having a hand-wheel, K, on its upper end. A pin, L, is held in an apertured lug, M, on the 35 frame A, and is pressed upward by a spring, N, surrounding it. The bit is held on the lower end of a shaft or rod, O, passed freely through the top of the frame and through a ratchet-wheel, P, on the cross-piece of the frame, which ratchet-wheel is made in two parts and has a pin or key, which works in a 40 spiral groove, O', in the rod O. A dog, Q, engages with the ratchet-wheel. A latch, R, is pivoted on the block C, and serves to hold the rod in the groove of the block.

50 The operation is as follows: The shaft G is revolved and the block C is moved downward, and when it arrives at the bottom of the frame the cam H strikes the pin L, and the cam is

caused to revolve, and, being in contact with the wedge D, forces the same downward and forward, whereby the wedge is locked on the 55 rod O, and thereby the rod O is raised by the upward movement of the block C. When the block C has been raised as high as possible, or as high as desired, the cam H strikes the tripping-piece J, whereby the cam is revolved and 60 the wedge is moved from the rod O, to release the same, and thus the said rod O is permitted to drop under the action of the weight on the same. The tripping-piece J can be adjusted higher or lower by means of the rod J, to 65 cause the cam to release the rod O sooner or later, and thus the stroke can be adjusted. When the rod O moves upward, the ratchet-wheel P is turned with it, but when the rod O descends the dog Q locks it, and the rod O is revolved by the action of the pin on the ratchet-wheel, working in the groove in the rod O.

Having thus described my invention, I claim as new and desire to secure by Letters Patent— 75

1. In a drill, which is to be used for drilling rocks or any other material that can be drilled, the combination, with a frame, A, to which the parts hereinafter to be mentioned are held, of the block C, which is mounted to 80 slide in the above-mentioned frame A, the shaft O, mounted to slide in the direction of its length and to turn on its longitudinal axis in the above-mentioned frame A, the wedge D in the block C, the cam H, 85 which is pivoted in the above-mentioned block C, and of projections on the frame A, on which projections the cam can strike, substantially as herein shown and described.

2. In a drill for drilling rock or other material that can be drilled, the combination, 90 with the frame A, of a block, C, mounted to slide in said frame, the rod O, mounted in said frame to slide in the direction of its length and to turn on its longitudinal axis, the wedge D in the above-mentioned sliding block C, the rod E, connected with said wedge D, the crank-shaft G, journaled in the frame A and connected with that end of the rod E opposite the one that is connected to the wedge D, the cam 100 H, pivoted on the sliding block, the pin L, held on the frame A in such a manner that it can be struck by the cam, and of the tripping-piece J, held adjustably on the above-men-

tioned frame A, substantially as herein shown and described.

3. In a drill for drilling rock or other material that can be drilled, the combination, 5 with the frame A, of the block C, mounted to slide in said frame A, the rod O, mounted in the frame A, to slide in the direction of its length and turn on its longitudinal axis, the wedge D in the block C, the rod E, connected 10 with the wedge D, the crank-shaft G, journaled in the above-mentioned frame A and connected with that end of the rod E opposite the one with which the wedge D is connected, the cam H, pivoted on the sliding block, the pin L, held 15 on the frame A in such a manner that it can be struck by the wedge, the tripping-piece J on the frame A, the screw-rod I, mounted to turn on its longitudinal axis on the frame A,

and the hand-wheel K, which is held on one end of the screw-rod I, and is used for turning 20 the same, substantially as herein shown and described.

4. The combination, with the frame A, of the grooved block C, mounted to reciprocate in the same, the rod O, mounted in the frame 25 A, to slide in the direction of its length and to revolve on its central longitudinal axis, and the latch R, secured to the block C and projecting over the rod O, to hold it in the groove of the said block, substantially as herein 30 shown and described.

WILLARD S. ISHAM.

Witnesses:

GEO. B. ISHAM,
F. W. WRIGHT.