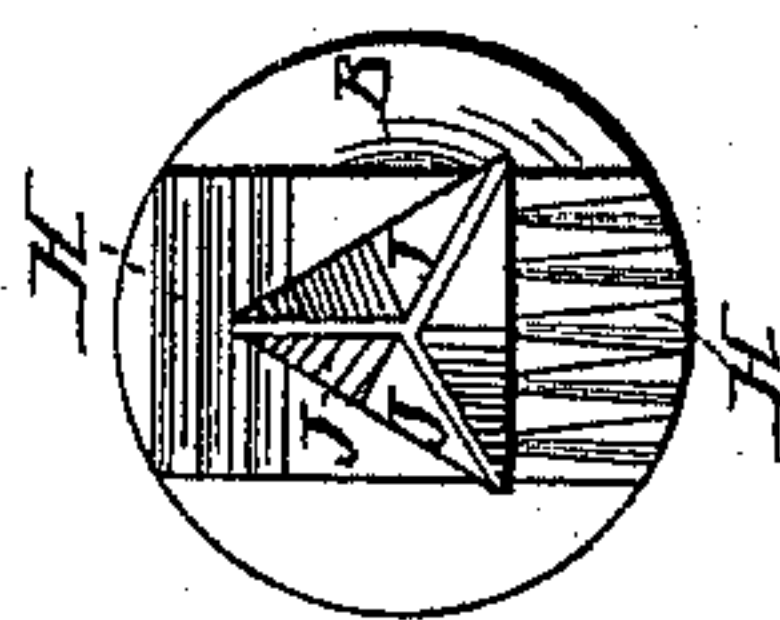
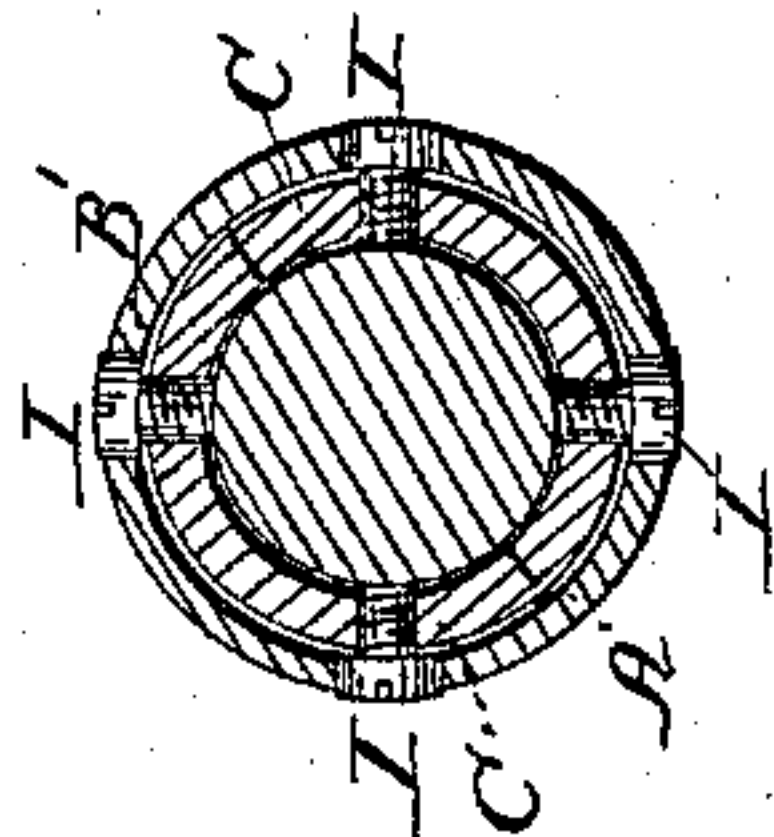
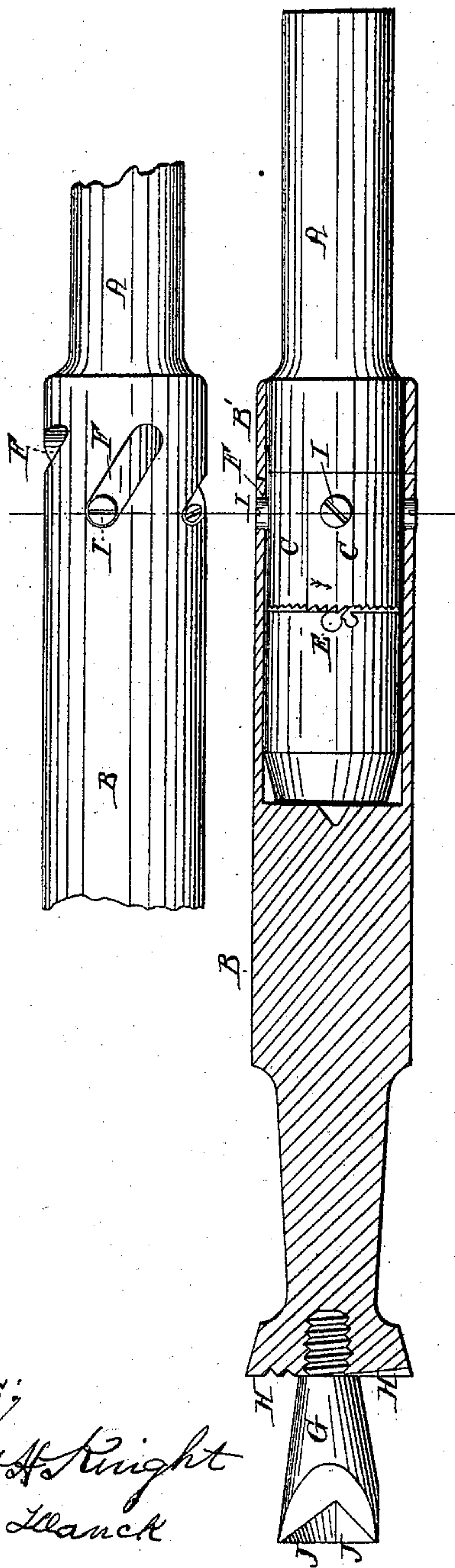


J. Moulton,
Drill Jar,
No. 47,850, Patented May 23, 1865.



Witnesses;
Edward H. Knight
Alex. A. C. Llanck

Inventor,
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UNITED STATES PATENT OFFICE.

JOEL MOULTON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROCK-DRILLS.

Specification forming part of Letters Patent No. 47,850, dated May 23, 1865.

To all whom it may concern:

Be it known that I, JOEL MOULTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Rock-Drills; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, which make part of this specification, and in which—

Figure 1 represents the drill, partially in elevation and partially in section. Fig. 2 is an elevation of a portion of the same. Fig. 3 is an end view, looking at the face of the drill. Fig. 4 is a transverse section in line *x x*, Figs. 1 and 2.

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

The object of my improvement is to construct a drill which, as the shaft is lifted for another stroke, shall be turned so as to cause the cutting-face to descend in a new place—in fact, to cause the drill to revolve without the revolution of the shaft. This is accomplished by suspending the drill-stock from the shaft by means of pins or projections attached to a sleeve which has a free motion in one direction around the shaft, and which projections traverse oblique slots in the hollow upper portion of the stock, so that as the shaft is lifted by the motor above and the stock descends by its weight the pins traverse slots, causing the stock to revolve, and as the drill descends the pins again traverse the same slots; but as the drill is in contact with the bottom of the well or sunken shaft it cannot revolve, which causes the sleeve to revolve on the shaft of the drill.

The improvement also consists in the method of attaching the drill and in the form of its face.

To enable others skilled in the art to which my invention relates to fully understand and use the same, I will proceed to describe its construction and operation.

A is the shaft, which is operated by the motor from above, and B is the stock, whose upper end is hollow, so as to receive the lower end of the shaft A as in a sleeve. In a recessed portion of the shaft is a collar, C C, consisting of two semi-cylindrical portions, which, united, form a cylinder, whose lower

edge (*in situ*) is serrated with ratchet-teeth D, which are engaged by pawls E, journaled in the portion A' of the shaft. Under each of these pawls is a spring, which causes it to engage the teeth of the ratchet. In these semi-cylindrical sleeve-pieces are pins or projections, I, (shown as screw-heads,) which project into the oblique slots F F, which are made in the upper or sleeve-like portion, B', of the stock B.

The drill proper, G, is made of a detachable piece screwed into the main portion of the stock B, which latter is furnished with a reamer, H H, whose respective faces are channeled or grooved in lines, those on one side at right angles to those on the other, as shown distinctly in Fig. 3. The face of the drill is made of a star shape, having three converging edges, J, on the same plane, meeting at the center or lower end of the axial line of the drill, the edges being at an angle with each other of one hundred and twenty degrees.

The operation is as follows: On the lifting of the shaft A the portion B, which is suspended therefrom, naturally falls by its own inertia and weight, and the screws I cause it to rotate partially as it falls, as they traverse the oblique slots F F. As the drill descends, the edges J fall in a new spot, and the drill being, by their contact with the rock, restrained from rotating, and the pins being compelled to traverse the slots, the sleeve or collar C C, to which they are attached, moves in the direction of the arrow around the shaft. Any other motion of the sleeve C C is prevented by the spring-pawls E, which engage the ratchet on the sleeve.

As the drill is suspended, and the lower portion or stock, B, is much lighter than the shaft A, the former turns on the latter when the upward motion takes place. The two faces of the reamer, being notched or grooved in the reverse directions, follow in the track of each other as the drill revolves, and trim down the edges of the well. The shape of the drill-face prevents its falling into and becoming jammed in fissures or crevices, as its points touch the circumscribing circle in three places.

Having thus fully, clearly, and exactly described the nature, construction, and opera-

tion of my improvement in rock-drills, what I claim therein as new, and desire to secure by Letters Patent, is—

1. Causing the drill to revolve by means of the collar C, carrying projections, which traverse oblique grooves in the portion to be rotated, in combination with the ratchet-teeth D and pawls E, as described.

2. The described dress to the face of the reamer, consisting of serrations or teeth, which run in the reverse directions on the different sides.

JOEL MOULTON.

Witnesses:

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