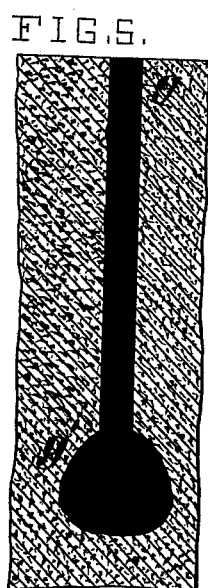
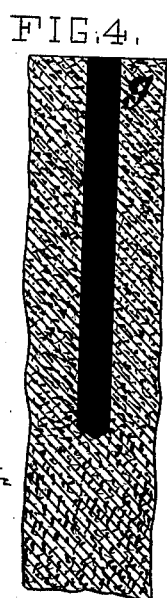
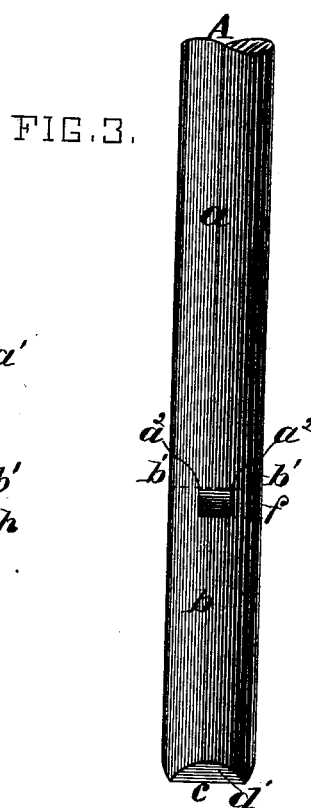
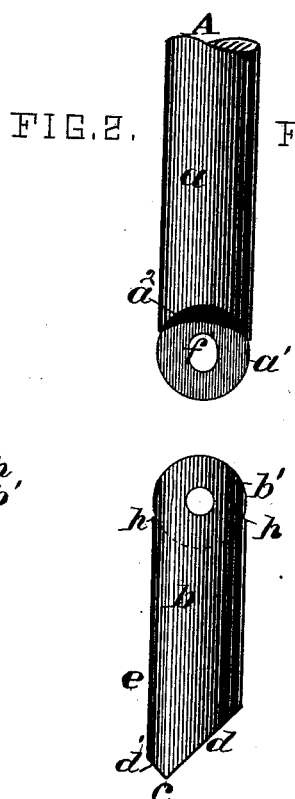
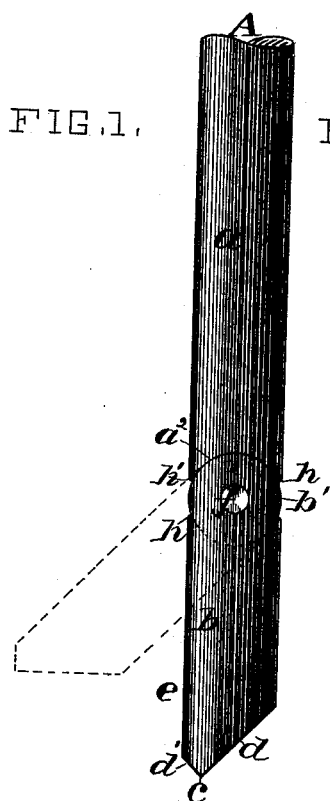


E. J. WILLIAMS.
Rock-Drill.

No. 221,646.

Patented Nov. 11, 1879.



Attest.

Henry Smith
Charles Pickles

Inventor.

Edward J. Williams
by Chas. D. Moody
att.

UNITED STATES PATENT OFFICE.

EDWARD J. WILLIAMS, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF
HIS RIGHT TO LEVERETT A. PRATT, OF SAME PLACE.

IMPROVEMENT IN ROCK-DRILLS.

Specification forming part of Letters Patent No. **221,646**, dated November 11, 1879; application filed
August 20, 1879.

To all whom it may concern:

Be it known that I, EDWARD J. WILLIAMS, of St. Louis, Missouri, have made a new and useful Improvement in Rock-Drills, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation of a portion of a drill having the improvement; Fig. 2, a similar view, the parts being detached; Fig. 3, a side elevation, taken at right angles to that of Fig. 1; and Figs. 4 and 5, views illustrating the working of the drill, being vertical sections taken through rock, the former showing the drill-hole incomplete, and the latter showing the hole as finished with the improved drill.

Similar letters denote the same parts.

The aim of this invention is to provide an improved means for enlarging the diameter of a drill-hole at the bottom thereof; and it consists in making the drill in two parts, which are jointed together, the lower part being that portion of the drill immediately connected with and supporting the cutting-edge of the drill, and having the cutting-edge at one side of or eccentric to the longitudinal axis of the drill.

The shape and mode of joining the parts, being essential features of the invention, are more particularly described as follows:

Referring to the drawings, A represents a rock-drill, which, saving as modified by the present improvement, may be of the usual description. Instead of being in one piece the drill is made in two parts, *a* and *b*. The part *b* constitutes the lower end of the drill, having the cutting-edge *c* thereon. The latter is at the side of the center of the drill, and is formed by means of the two bevels *d d'*, as shown, and at a point about midway between the center and the side *e* of the part *b*.

The parts *a* and *b* are jointed together, one of the parts, say *a*, being provided with a tenon, *a'*, which engages with a knuckle, *b' b'*, upon the part *b*. The lower end of the tenon is rounded as well as the upper end of the knuckle *b' b'*, and the parts are so shaped as to cause the tenon, when the drill is in use, to

bear against and turn upon the bottom of the recess between the two parts of the knuckle, and the knuckle to bear against and turn upon the shoulders *a² a²* on either side of the tenon, the recess and also the shoulder being rounded to fit the tenon and knuckle, respectively, for, although a pintle, *f*, is used to connect the parts *a* and *b* and to prevent the latter from dropping off the former, no strain in using the drill is allowed to come upon it, and the pintle-hole *f'* is elongated to provide for this. This construction enables the parts *a* and *b* to turn upon each other, and the parts are arranged for the plane of the turning to be at right angles to the cutting-edge *c*, and as indicated by the dotted lines in Fig. 1.

In practice a hole, *g*, Figs. 4, 5, is drilled in the ordinary way and to the desired depth. The improved drill A is then inserted and the drilling continued. Owing to the position of the cutting-edge *c* upon the part *b* the latter turns upon the former, as indicated in Fig. 1, causing the hole *g* to be chambered, as shown at *g'*, Fig. 5. The drill is turned around as in ordinary drilling.

The movement of the part *b* upon the part *a* is limited by the shoulder *h* coming against the part *a* at *h'*, or in other suitable manner.

I am aware that drills have been divided and that the cutting portion of the drill has been jointed to the drill-head. I therefore do not claim such broadly, as my improvement relates to the particular form of cutter and mode of jointing it to the drill-head shown and described; and

I claim—

The combination of the part *a*, having the rounded shoulders *a² a²*, and the rounded tenon *a'*, having the elongated perforation *f'*, the part *b*, having the rounded knuckle *b' b'*, and the edge *c*, arranged, as described, at the side of the center of the drill and at right angles to the plane in which the part *b* turns, and the pin *f*, substantially as and for the purposes set forth.

EDWARD J. WILLIAMS.

Witnesses:

CHAS. D. MOODY,
CHARLES PICKLES.