

(Model.)

J. GREEK & F. M. SELLMAN.

EXPANDING ROCK DRILL.

No. 245,160.

Patented Aug. 2, 1881.

Fig. 3

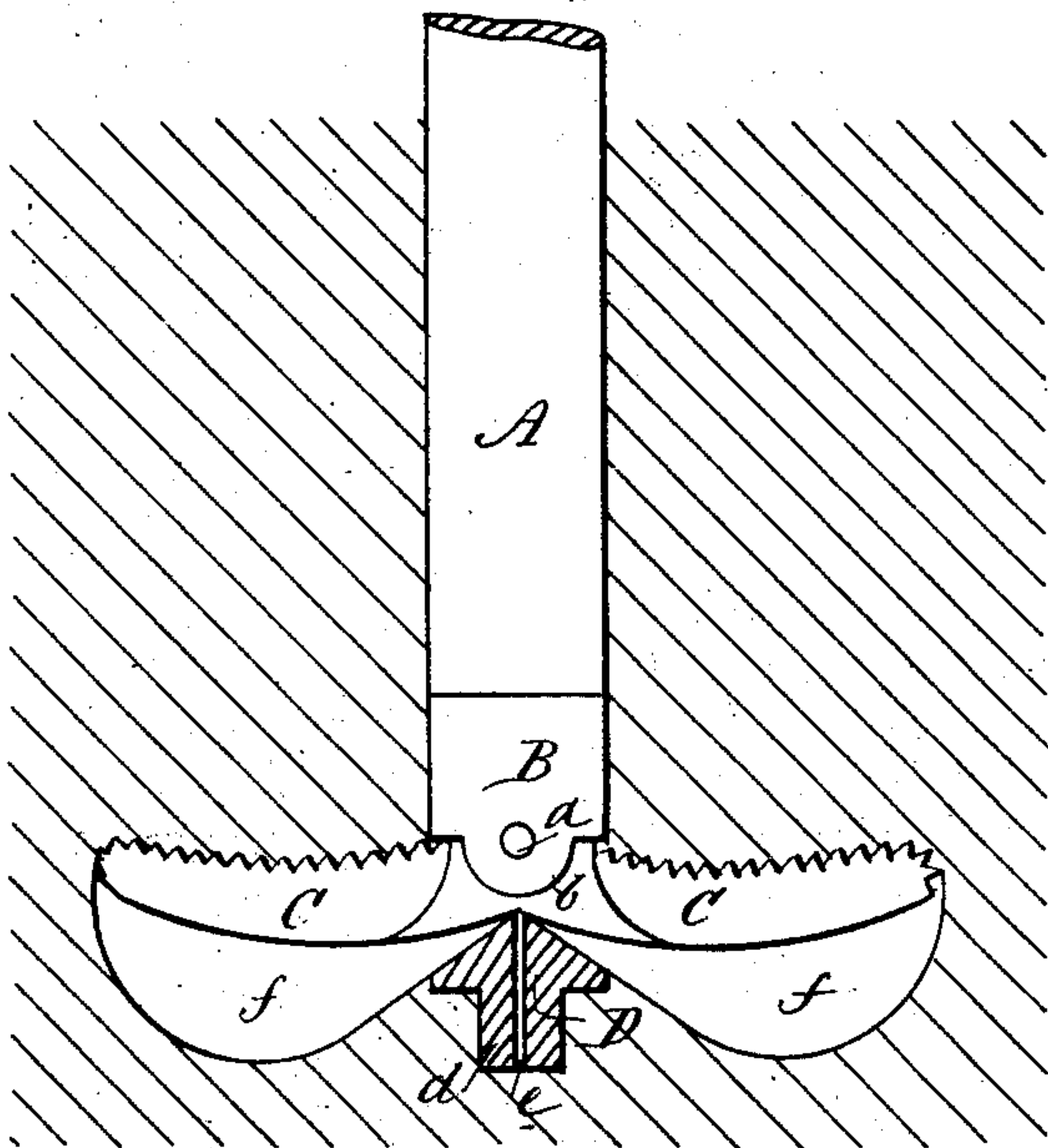


Fig. 4

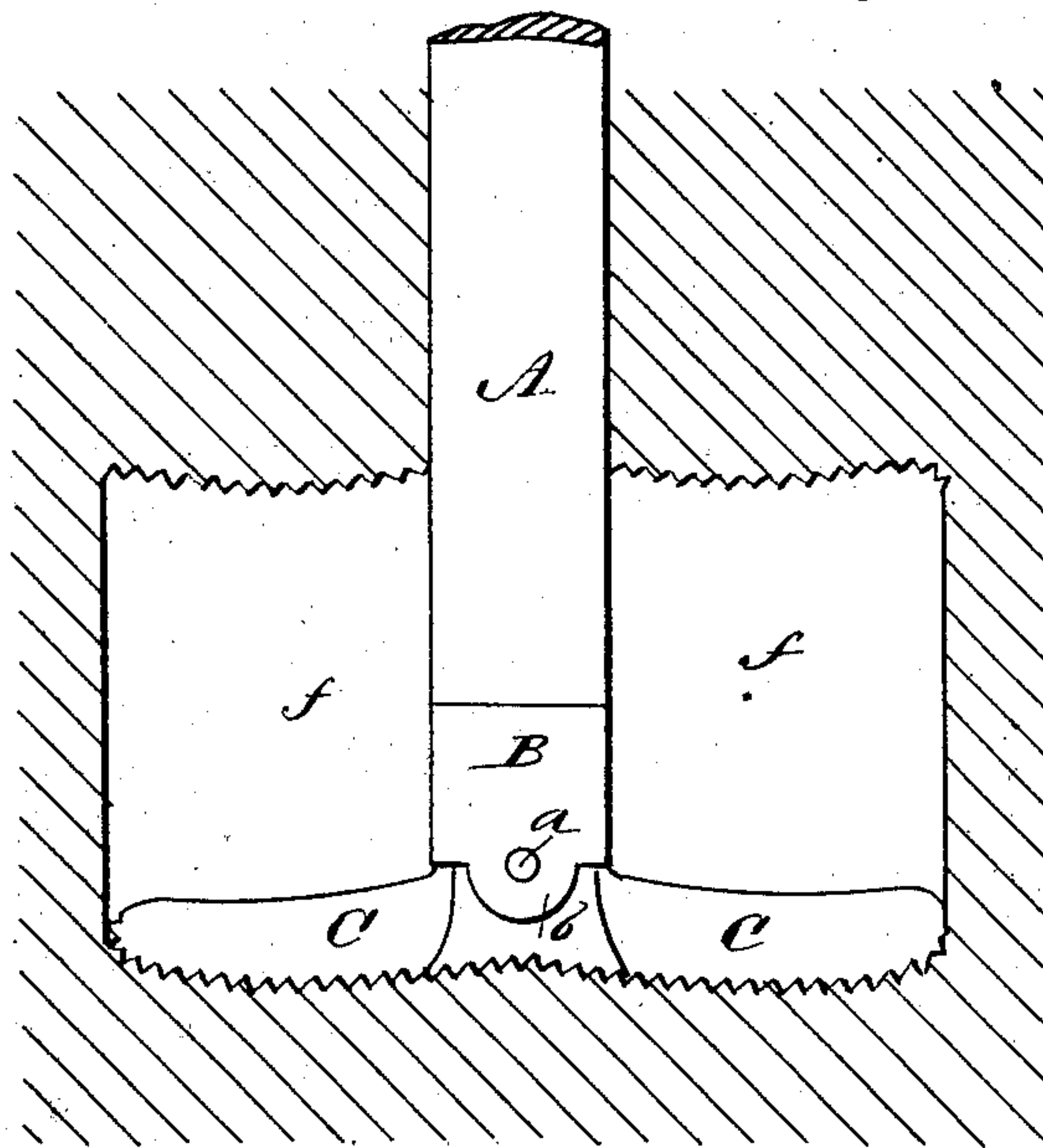


Fig. 1

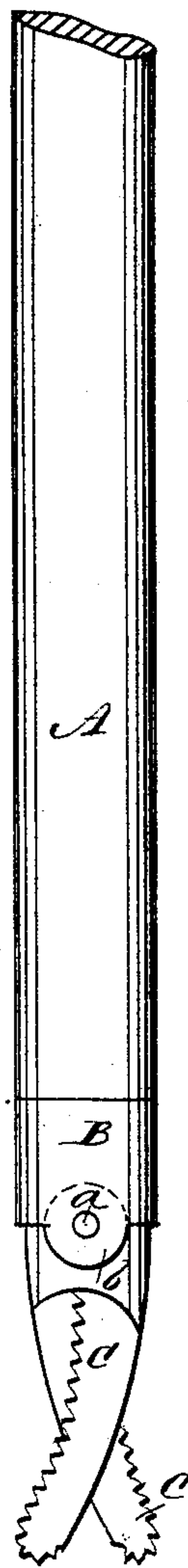
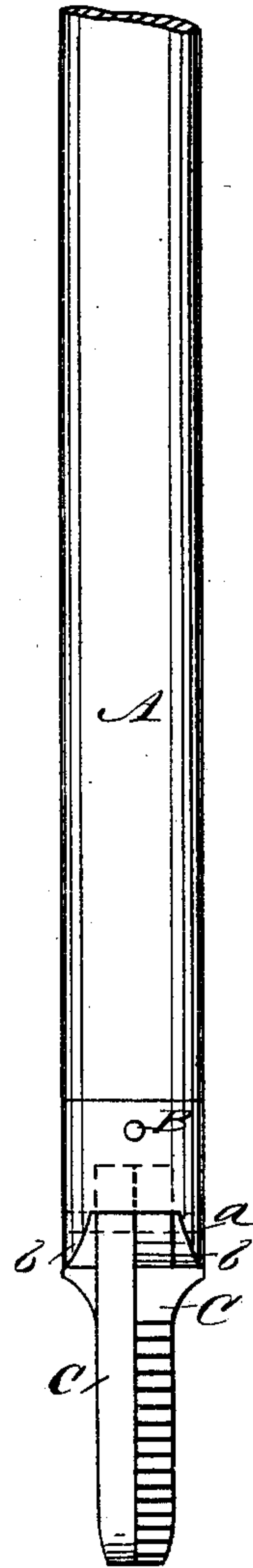


Fig. 2



WITNESSES:

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JOHN GREEK AND FRANCIS M. SELLMAN, OF EVANSVILLE, INDIANA.

EXPANDING ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 245,160, dated August 2, 1881.

Application filed March 31, 1881. (Model.)

To all whom it may concern:

Be it known that we, JOHN GREEK and FRANCIS M. SELLMAN, of Evansville, in the county of Vanderburg and State of Indiana, have invented a new and useful Improvement in Expanding Rock-Drills, of which the following is a specification.

This invention relates to a means for cutting a recess or cavity at the bottom of a drilled hole in a rock, or a coal or other mine, for the purpose of receiving the charge of powder or other explosive substance used in blasting.

The invention consists in a novel construction and combination, with a drill rod or holder, of a pair of bits or drills, and the combination therewith of a cone of peculiar construction for expanding said bits or drills, as hereinafter more particularly described.

In the accompanying drawings, Figures 1 and 2 are side views at right angles to each other, showing the tool in position to be inserted in the drilled hole. Figs. 3 and 4 show the positions of the bits at two different stages of the work, as hereinafter described.

Similar letters of reference indicate corresponding parts.

A represents the drill rod or holder, which carries at its lower end a ferrule, B, within which is a socket for the upper ends of the bits to work in.

C represents the bit or drill, which consists of a bar of metal slightly curved and having its ends rounded. When used for coal or soft rock the bits may be of steel or case-hardened iron, and when used for hard rock they may be provided with carbon or black-diamond points. Two of these bits or drills are carried by the drill-stock, so as to swing outward in opposite directions by means of a pivot, *a*, passing through lugs *b* at the bottom of the ferrule B and through holes in the upper or inner ends of the bits.

As shown in Figs. 1, 2, and 3, the bits are serrated on their ends and on their upper or concave edges, and, as shown in Fig. 4, they are serrated on their lower or convex edges. If desired, they may be serrated on both their upper and lower edges; but in some cases it is preferable to have two pairs of bits, one

pair serrated on the upper and the other on the lower edges.

D represents a cone, made of iron or steel, and having its base about equal to the diameter of the drilled hole in which it is to be used, and below said base a shank or stem, *d*, of less diameter. In using this tool, when the drilled hole has reached the desired depth, a smaller hole is drilled in the center of the bottom thereof of sufficient size to receive the shank or stem *d*. The cone D is then placed in the bottom of the drilled hole by means of a wire inserted in a hole, *e*, in the center of the cone, which wire is then withdrawn. The tool is then lowered into the drilled hole, with the bits in the position shown in Figs. 1 and 2, until said bits reach the top of the cone D, which expands them and causes them to cut and drill a recess or cavity, *f*, of the form shown in Fig. 3.

If it is desired to increase the depth of the cavity *f*, the drill rod or holder is withdrawn and a pair of bits serrated on their convex edges are substituted for the first pair, as shown in Fig. 4.

We are aware that it is not broadly new to employ a cone or wedge to cause lateral divergence of the bits or arms of a boring implement; but in previous inventions in which such elements are combined the cone has formed an attachment of the boring implement, and the arms have not been constructed and arranged to co-operate with the cone, as in our invention.

By making the cone separate from the boring implement and locating it in the drill-hole, as specified, we attain important advantages in respect to strength, simplicity, and economy of construction of the implement, and also in the facility with which the cavity may be formed in the earth.

Having thus fully described our invention, we claim as new, and desire to secure by Letters Patent—

1. The combination, as hereinbefore described, of the detached cone D, adapted to be placed and held in a socket formed at the bottom of a drill-hole, and the bits or arms C C, pivoted to a drill-stock and curved in opposite directions, so that when hanging free their

points diverge laterally, as shown, for the purpose specified.

2. The mode of cutting a cavity at the bottom of a hole drilled in the earth, the same consisting in forming a socket for the cone D, then placing the latter therein, next inserting in the drill-hole a boring implement having pivoted arms C C, whose lower ends diverge

laterally, as shown, then simultaneously pressing downward on the implement and rotating to the same, as shown and described.

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Witnesses:

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