

No. 692,755.

Patented Feb. 4, 1902.

H. AYLMEYER.  
INTERCHANGEABLE BIT ROCK DRILL.

(Application filed Feb. 18, 1901.)

(No Model.)

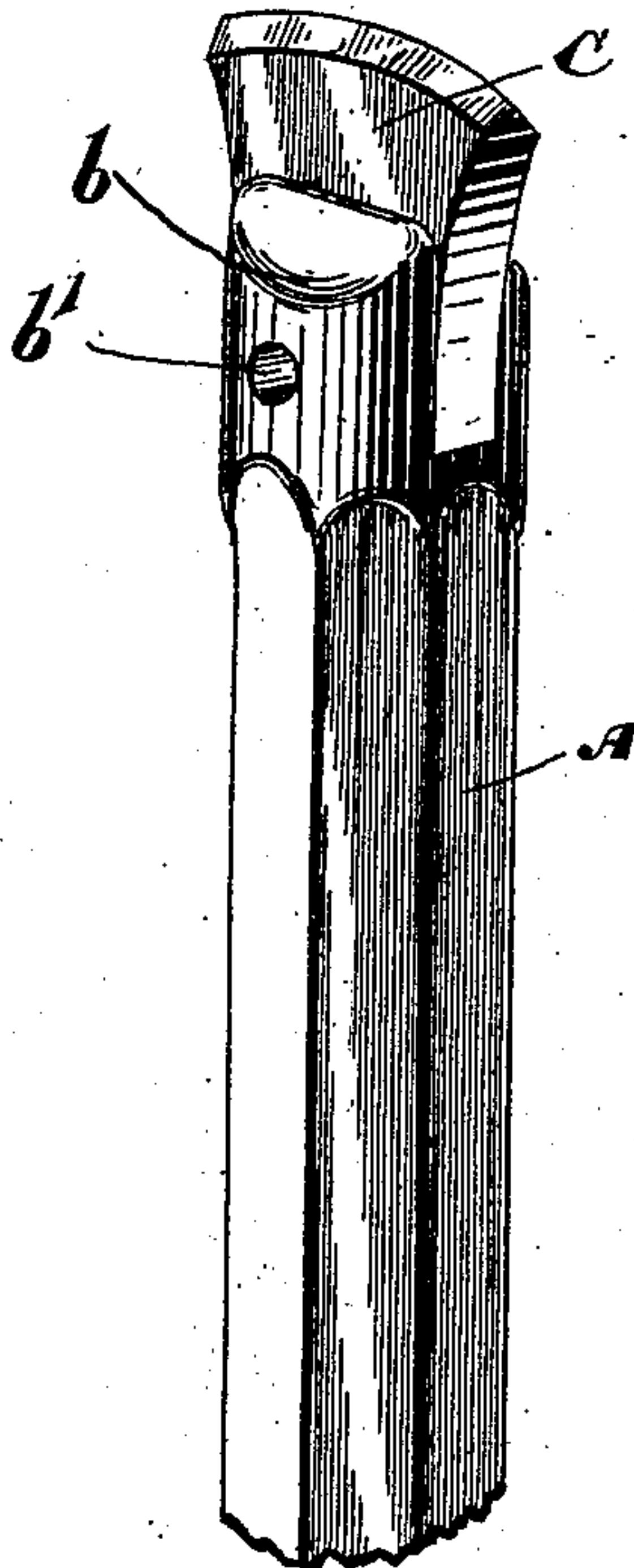


Fig. 1.

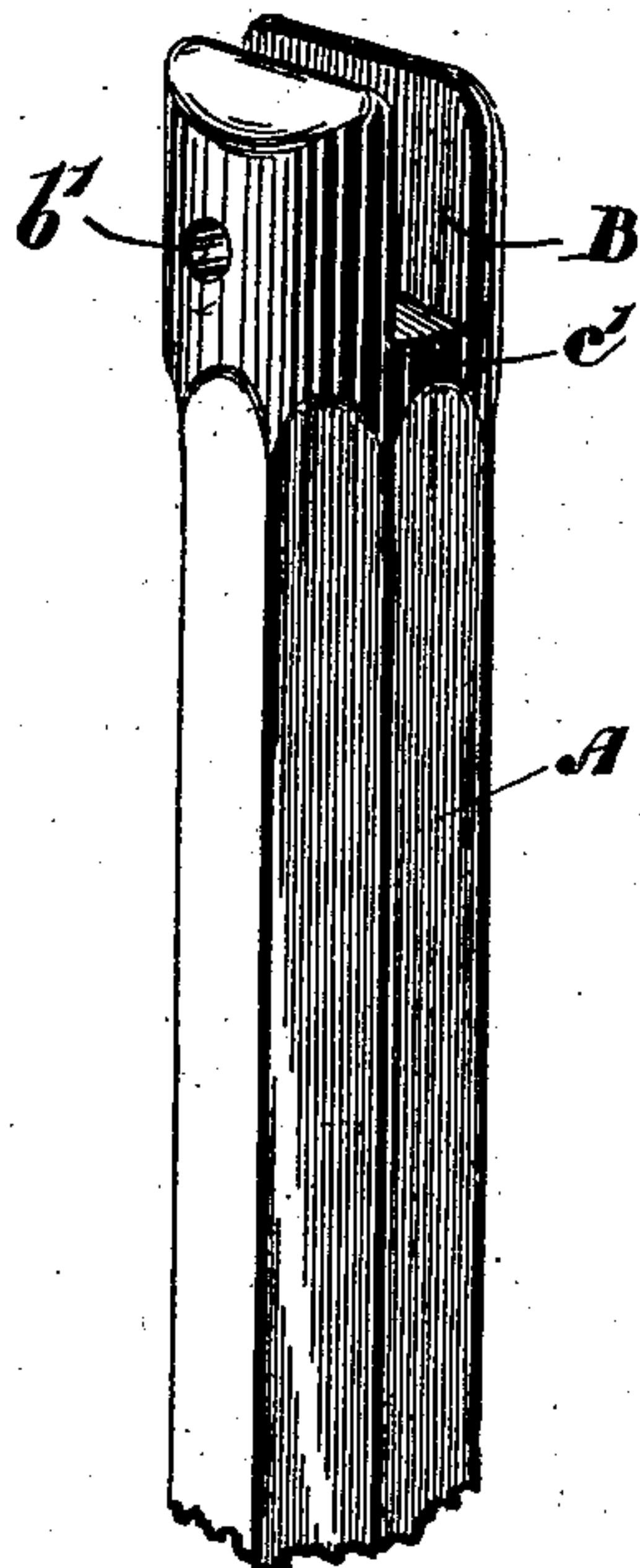


Fig. 2.

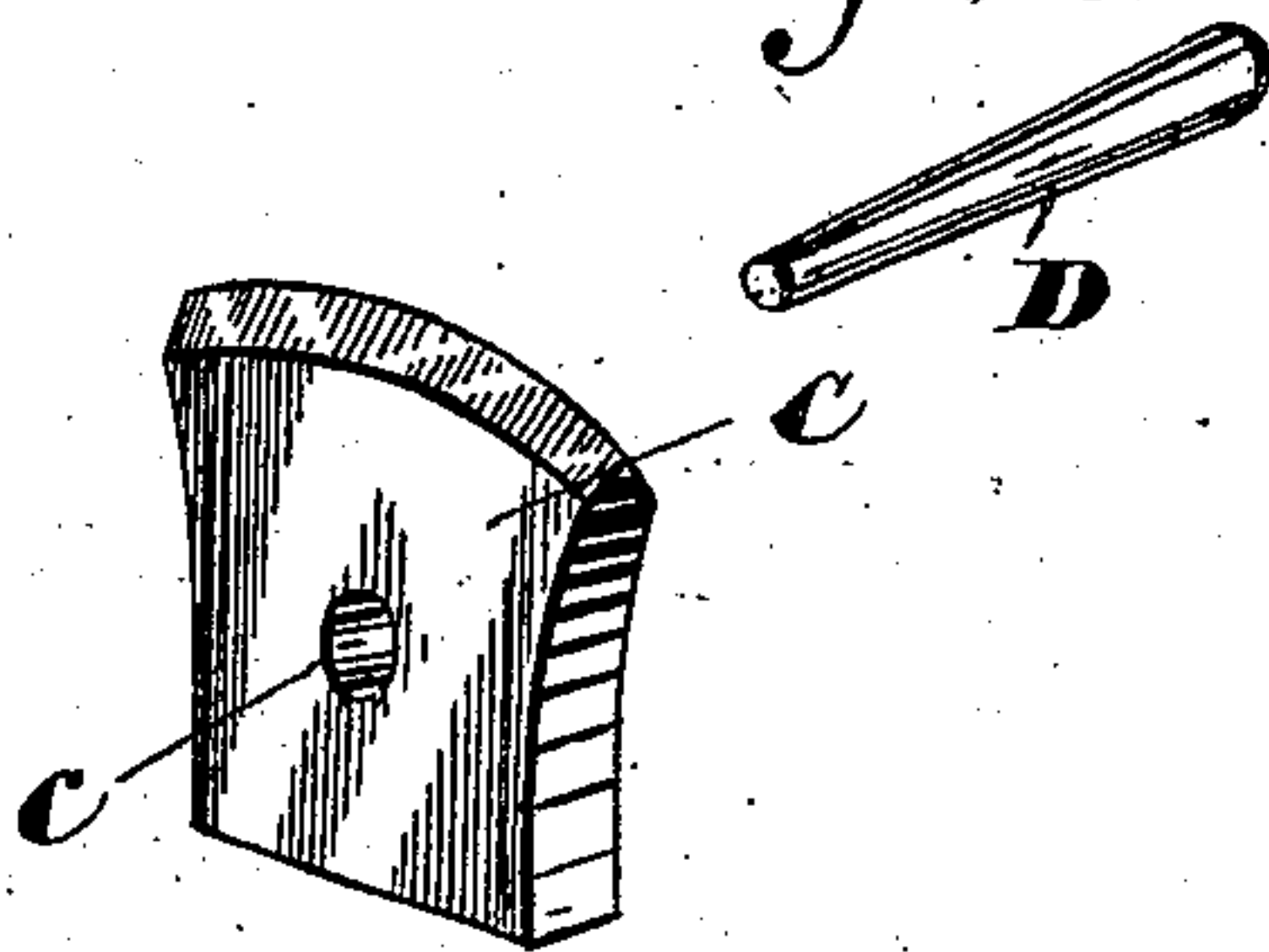


Fig. 3.

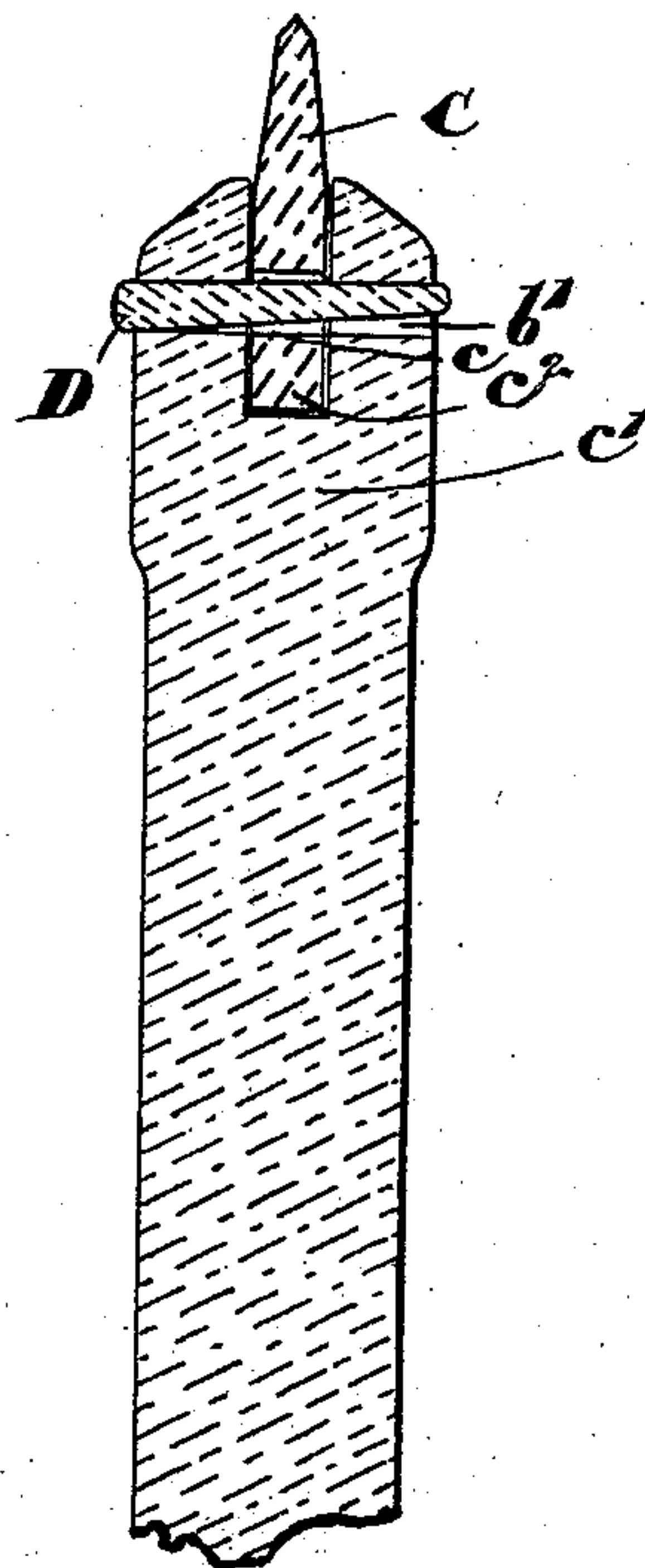


Fig. 4.

Witnesses

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Inventor:

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# UNITED STATES PATENT OFFICE.

HENRY AYLMEER, OF SHERBROOKE, CANADA, ASSIGNOR TO AYLMEER DRILL MANUFACTURING COMPANY, OF MONTREAL, CANADA.

## INTERCHANGEABLE-BIT ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 692,755, dated February 4, 1902.

Application filed February 16, 1901. Serial No. 47,692. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY AYLMEER, a subject of the Queen of Great Britain, residing at Sherbrooke, in the county of Sherbrooke, in the Province of Quebec, Canada, have invented a new and useful Improvement in Interchangeable-Bit Rock-Drills, of which the following is a specification.

My invention relates to improvements in interchangeable-bit rock-drills; and the object of the invention is to design a simple drill-stock cheap to manufacture and a drill-bit to be inserted in the same to fit loosely when inserted, so as to be readily placed in position on the removal of another bit in mines and other places where mechanical appliances are not convenient; and it consists, essentially, of an ordinary bar of steel slotted at one end and a small point or bit intended to fit loosely in the said slot when first inserted and to be keyed and firmly wedged down on the base of the slot by a tapered pin inserted through orifices in the stock and the bit, the base of the bit being adapted to spread after short usage sufficiently to snugly fit the receiving-socket in the stock, the various parts being constructed in detail as hereinafter more particularly described.

Figure 1 is a perspective view of my drill with the point or bit inserted in the stock. Fig. 2 is a perspective view of the stock without the bit. Fig. 3 is a perspective view of the bit and pin. Fig. 4 is a sectional view showing the loose fit of the bit.

Like letters of reference indicate corresponding parts in each figure.

A is the stock, which has at one end thereof a slot B, which has parallel sides. The base of the slot B may be suitably shaped, as desired or convenient in the manufacture. The jaws or lugs *b* of the slot B have lateral orifices *b'*.

The stock A is made of ordinary drill-steel, preferably octagon; but from below the base of the slot B to the extreme end of the jaws *b* I temper the steel to a sufficient hardness to prevent the said jaws *b* from spreading and yet not hard enough to make them brittle. The bit C is preferably made of a more superior grade of steel than the stock A and is made to fit loosely in the slot B—that is, it

must fit the said slot B before being used so easily as to fall out when it is not keyed into place. The loose fit of this bit is an essentially important feature in my invention, as the bit when first inserted in the socket is required to be tempered quite hard as a rock-cutting tool where it projects from the stock at its upper end *c'*; but the lower portion *c*<sup>2</sup> must be as near as possible the same temper as around the jaws of the slot, thus practically making the lower portions of the bit and the stock integral after the base of the bit has spread. The necessity of having the lower portion of the bit of softer metal than the cutting edge is very apparent when explained to those accustomed to work in steel. For instance, the orifice *c* renders it imperative to have the steel roundabout fairly soft to prevent the bit smashing from the hole to the corners. Another great feature in making this portion of the bit soft is to prevent burring up to the stock at the base of the slot B. It has been proved impossible in practice to use a bit which has a harder temper at its base than the portion of the stock in which it is inserted.

The easy-fitting nature of the bit must be again emphasized, as the necessity for allowing for expansion of the lower portion of the bit C in the slot B has been found essential to this invention; otherwise the jaws *b* of the slot B must break unless the bit will break first. The bit C, being loose in the slot B, is keyed into position by a tapered pin D. The pin D is inserted in one of the orifices *b'* and thence through the orifice *c* in the bit C. The lower edge of the orifice *c* being slightly out of alinement and above the lower edge of the orifice *b'*, the tapered pin D, being thus inserted through one of the orifices *b'* and the orifice *c*, meets the upper portion of the second orifice *b'*, the under portion of the pin D being jammed hard against the lower portion of the orifice *c*, thus wedging firmly the bit C down on its base. It will now be seen that the bit C being in position in the stock A the drill is ready for use and is practically similar to any ordinary drill now in use, with the exception that it has a very keen cutting edge of a much superior grade of steel, which it is impossible to obtain in the long bar, and it



will be found that after hitting the drill a few blows, and, in fact, as the hammering on the drill during its use continues, the bit portion and the slot become more and more as  
5 one, although on the dulling of the bit it will be found that after the used bit is knocked out a fresh one may be inserted with no trouble to the miner, as the loose fit overcomes this difficulty and work may be continued  
10 just as before, the same result always being obtained—namely, that after half a dozen blows of the hammer the bit becomes all the more secure in its position in the stock, practically and to all intents and purposes integral with the stock.  
15

What I claim as my invention is—

A rock-boring drill comprising a bar of steel designed to have power applied directly on a line with the axis and provided with a straight  
20 longitudinal slot cut at one end thereof and

holes cut transversely in the lugs forming each side of the slot, a flat steel bit designed to fit loosely in the slot at the end of the bar and protrude from the end thereof and having an orifice slightly out of alinement with  
25 the holes in the lugs and a tapered pin having the outer side parallel and designed to lie snugly against the outer side of the holes in the lugs and the inner side inclined, so that it contacts and wedges against the inner side  
30 of the hole in the bit and thereby when driven home forces the bit firmly on its base, as and for the purpose specified.

Signed at Sherbrooke this 19th day of November, 1900.

HENRY AYLMER.

Witnesses:

EDWARD B. WORTHINGTON,  
CHAS. D. WHITE.