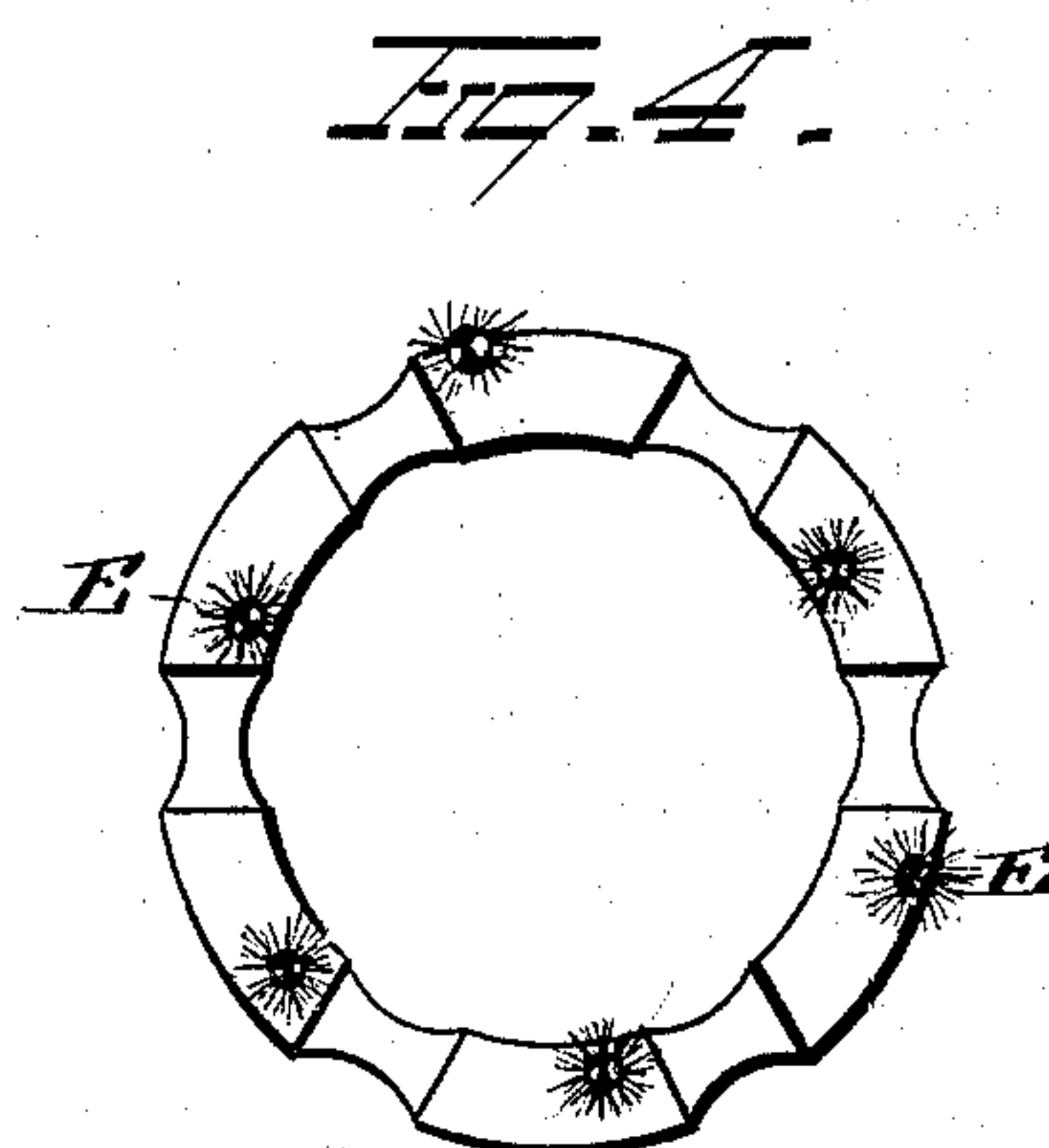
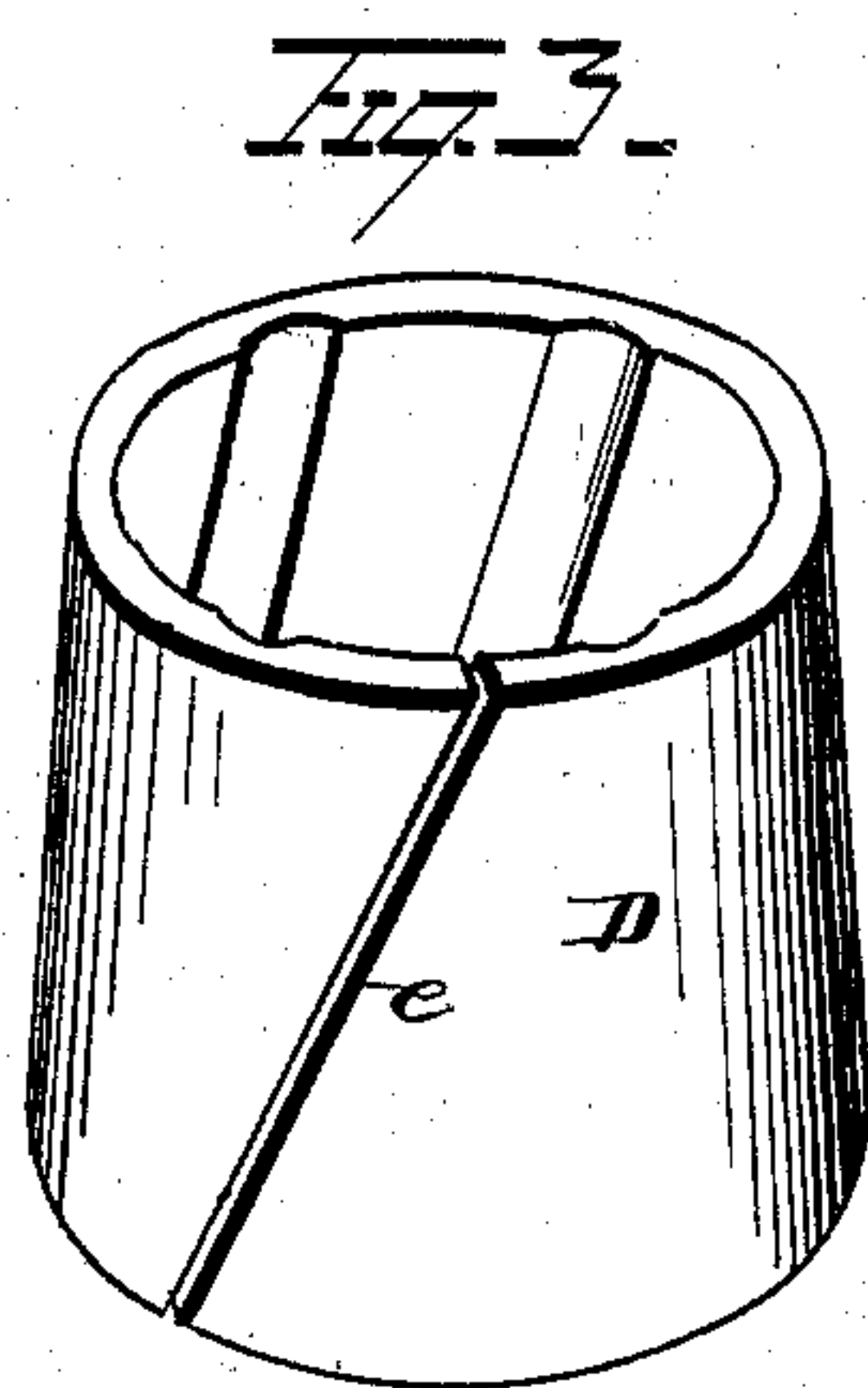
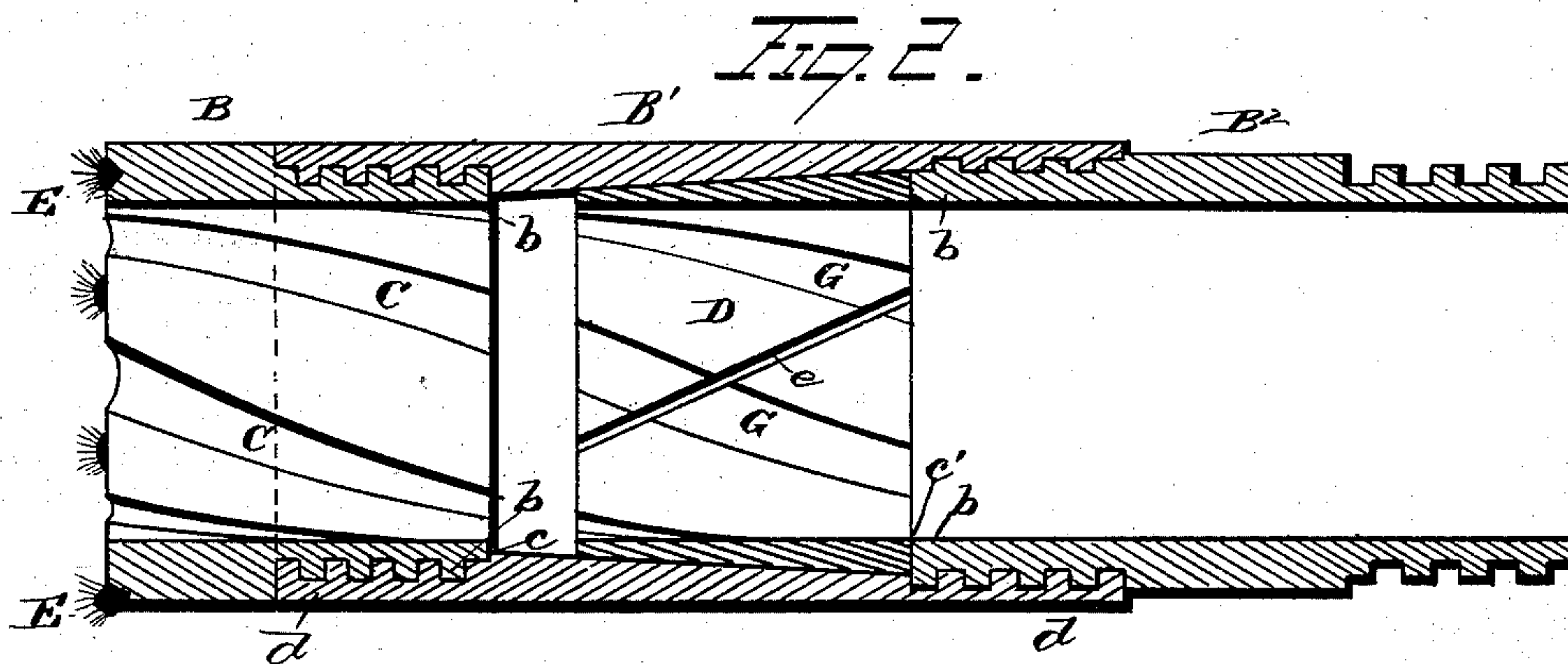
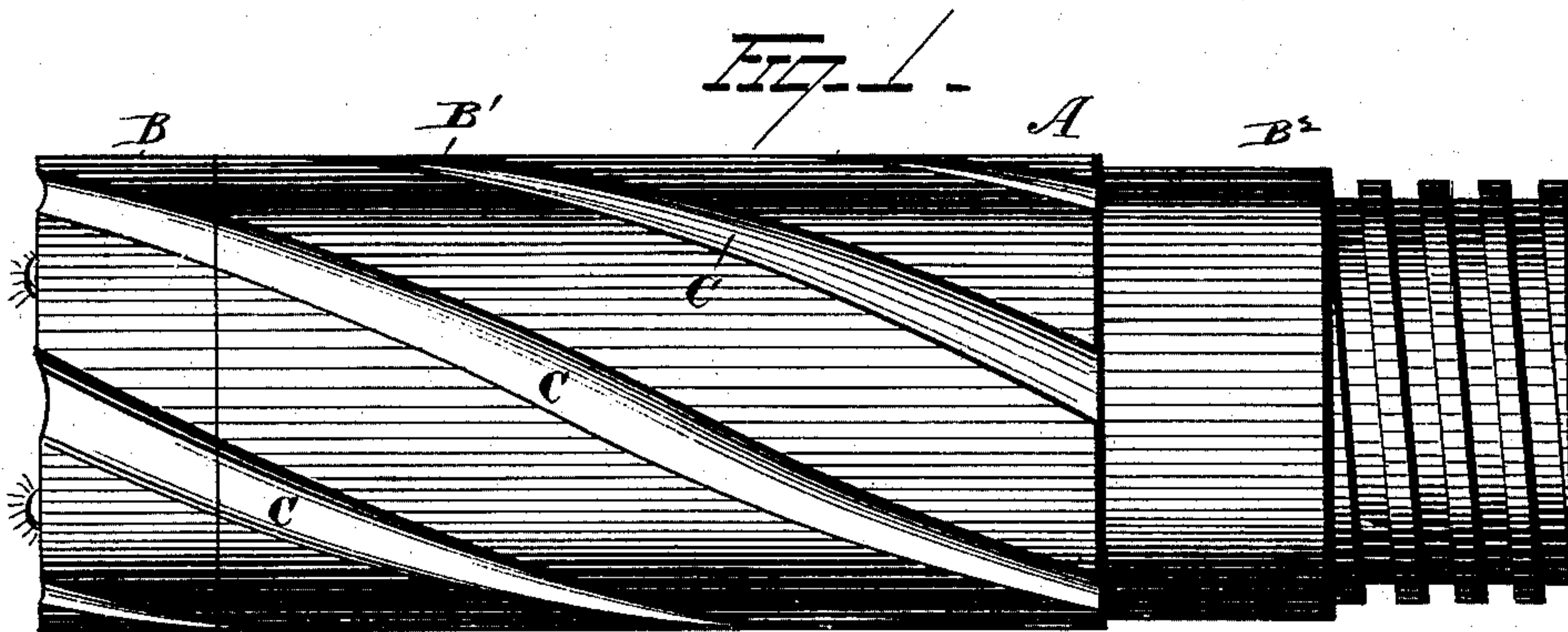


(No Model.)

H. W. FLEMING.
TUBULAR ROCK DRILL.

No. 261,841.

Patented Aug. 1, 1882.



WITNESSES

E. J. Worthington
Wm. W. Moran

INVENTOR

H. W. Fleming
By H. A. Symmon
ATTORNEY

UNITED STATES PATENT OFFICE.

HENRY W. FLEMING, OF DENVER, COLORADO.

TUBULAR ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 261,841, dated August 1, 1882.

Application filed October 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. FLEMING, of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Tubular Rock-Drills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in tubular rock-drills, the object of the same being to make the drill in sections, so that when a portion of the same has been broken or damaged it can be replaced without affecting the remaining portions.

A further object of my invention is to provide automatic means for detaching and raising the solid cylindrical core of rock formed by the tubular drill by simply raising or elevating the drill; and with these ends in view my invention consists in certain details in construction and arrangement of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of my improvement. Fig. 2 is a central longitudinal section. Fig. 3 is a perspective view, and Fig. 4 is a detached view of the core-extractor.

A represents the tubular drill-head, composed of the sections B B' B², the parts B and B² being provided with the spiral grooves C on the outside and boring end and inside, while the part B' has grooves only on the outside, the construction of the said grooves being similar to those shown and described in Patent No. 231,785, granted to me August 31, 1880, the length of the spirals in this present case, however, being greater on the outside than on the inside. The spiral grooves C on the inside of the drill allow the water to flow down between the core and drill and keep the diamonds E on the boring end of the drill cool, and also force the detritus up the spirals C on the outside of the drill. The sections B and B² are provided with screw-threaded ends b, and are connected together through the intervention of the section B', which latter is

provided with female screw-threads d, which, when secured in position, cover the ends b and protect the parts from wear. This section B' is provided with an inclined inner surface, the bore of the said section B' being greater than those of the adjoining sections, which construction forms a seat or rest for the core-extractor.

The core-extractor D is a metallic collar, having a roughened, grooved, or corrugated inner surface, G, and a conical or inclined outer surface, which corresponds to the inclined inner surface of the section B', against which it rests. This core-extractor or collar is also provided with one or more longitudinal slits, running throughout the entire length of the said core-extractor, the said slits being either inclined or straight, as desired. As before stated, the position of this core-extractor is inside the section B' and between the opposing ends of the sections B and B², which form the shoulders c and c' at these points. The core-extractor is by preference made of spring metal, and the longitudinal slit or slits e allow the same to constantly hug the inner surface of the section B', so that when the end of the core-extractor D is abutting against the shoulder c' the opening or bore of the same is exactly the same size as the bores of the sections B and B², and as the same is forced down toward the shoulder c the opposing ends of the extractor, on opposite sides of the slit, are brought nearer together, which constricts the bore of the extractor and causes it to grasp the core and hold it firmly until released by allowing the drill to descend, which forces the core-extractor up against the shoulder c'. When the drill is in operation the core-extractor will be held up against the shoulder c' by the friction between the outer surface of the core and inner surface of the extractor, and when the boring-head is withdrawn the same friction, together with the weight of water above the extractor, slides the said core-extractor or collar toward the shoulder c, which constricts the bore of the drill at this point, and firmly clamps the core within the extractor, and as the withdrawal of the boring head continues the core is detached from the solid rock and extracted.

The shank-section B² is screw-threaded on

its outer end, by which the drill-head is secured to the drill-tube.

If desired, I can make the core-extractor in two parts by dividing it longitudinally, and thus avoid the necessity of making same of spring metal; but the construction shown and described answers all the necessary purposes.

By constructing the drill in sections a great saving is accomplished by utilizing the undamaged sections or parts over again in connection with new sections substituted for the damaged parts, and the improved core-extractor, among other things, enables me to obtain a perfect core, showing the quality and kind of material, as well as the distances between certain veins.

I am aware that it is old to construct a core-lifter with a tapering recess having shoulders and formed within a section of the tubing; but such construction is difficult and expensive to make, as the tapering portions, with end shoulders, must be then formed wholly within the tubing. I am also aware that in such tapering recesses cut steel rings have been used as core-lifters, said rings having thickened portions armed with carbon or diamonds; but such rings were expensive to make and liable to soon get out of order. Hence I make no claim to the construction of parts last referred to.

It is evident that slight changes in the construction of my improved drill might be re-

sorted to without departing from the spirit of my invention, and hence I would have it understood that I do not limit myself to the exact construction of parts shown and described.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a drill-head and coupling forming upper and lower shoulders, of the intermediate recessed tubing, substantially as set forth.

2. The combination, with a tubular rock-drill head composed of several sections, the bore of one of said sections being made conical or tapering and the bores of the adjacent sections made smaller, so that their ends shall constitute annular seats, of a conical core-lifter located within the conical or tapering bore of the middle section, substantially as set forth.

3. The combination, with a tubular rock-drill head, of a core-extractor provided with spiral grooves on its inner surface, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of August, 1881.

HENRY W. FLEMING.

Witnesses:

JEFF. FLEMING,
WM. SHEPHERD.