

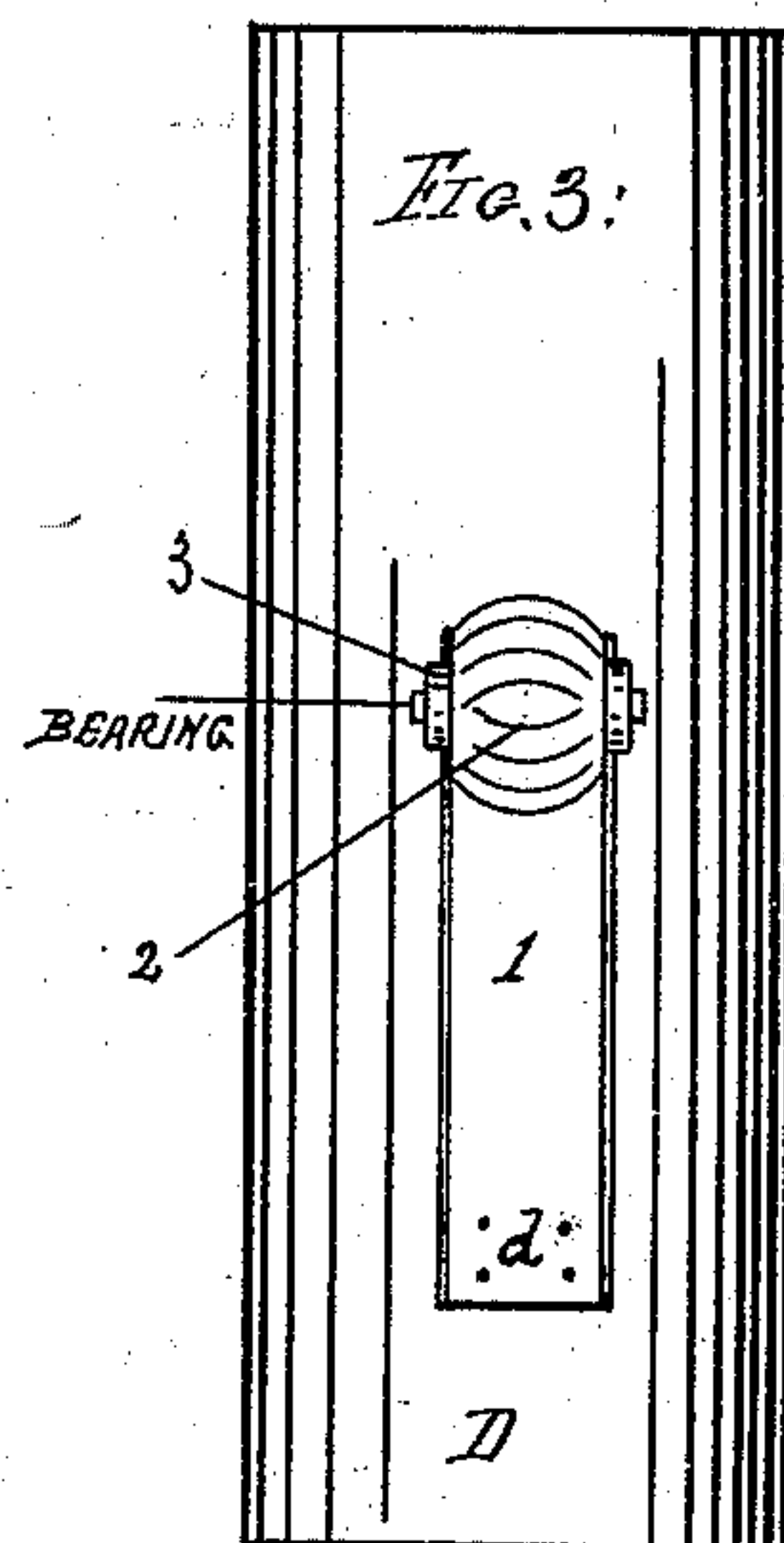
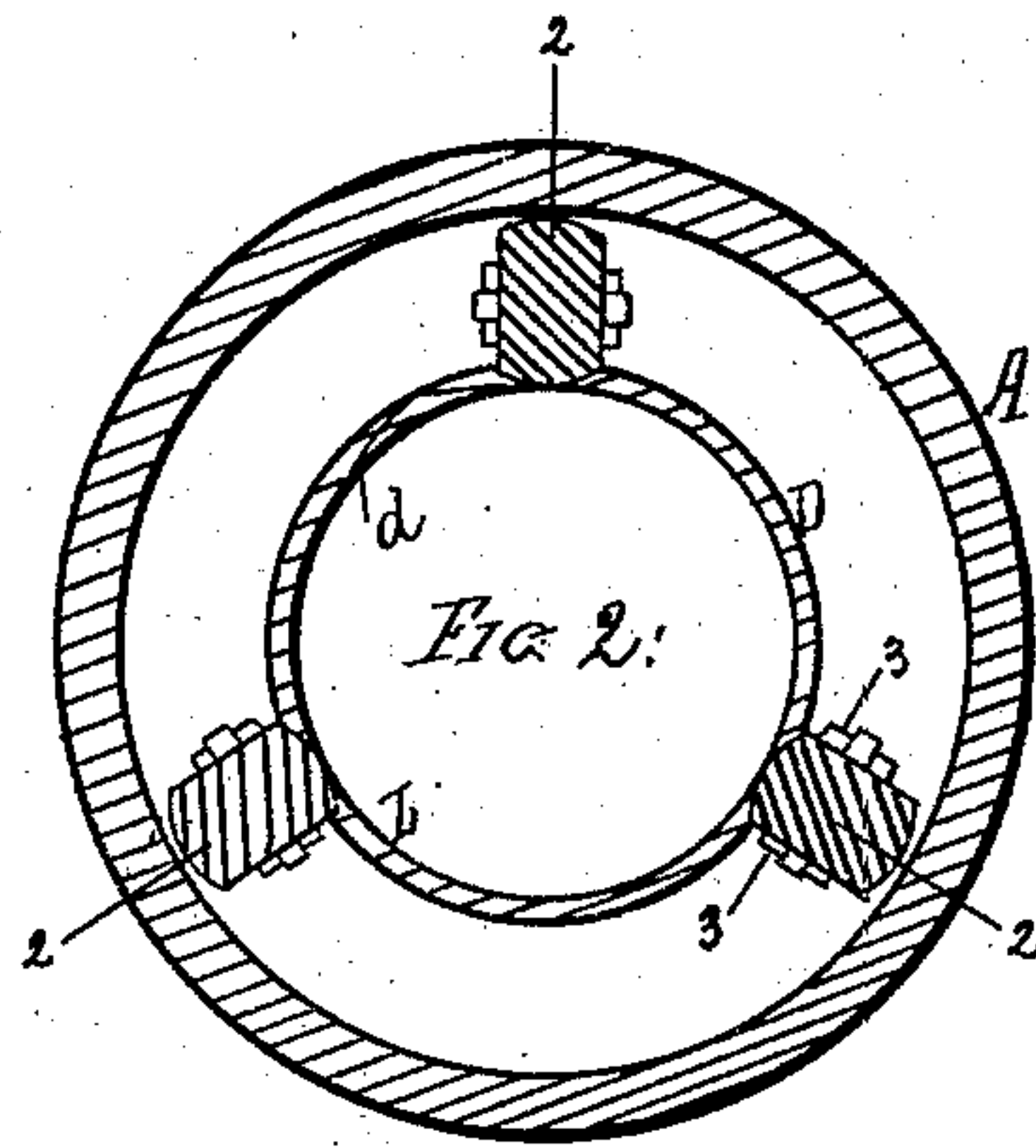
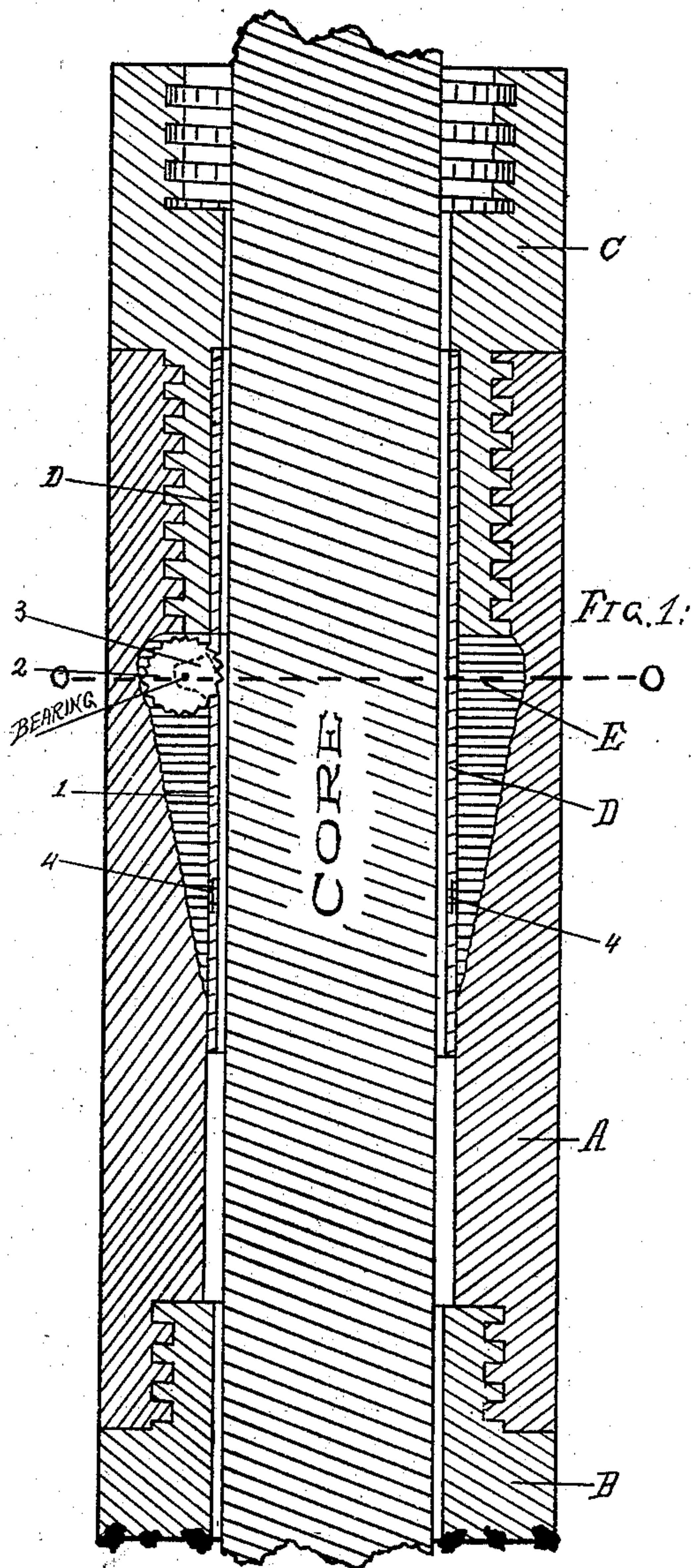
(No Model.)

2 Sheets—Sheet 1.

H. C. REICHARDT.  
CORE BREAKER AND LIFTER.

No. 257,896.

Patented May 16, 1882.



Attest:  
A. B. McGoof  
Wm A. Womer

Inventor:  
Henry C. Reichardt  
By Grace B. McGoof  
Attorney



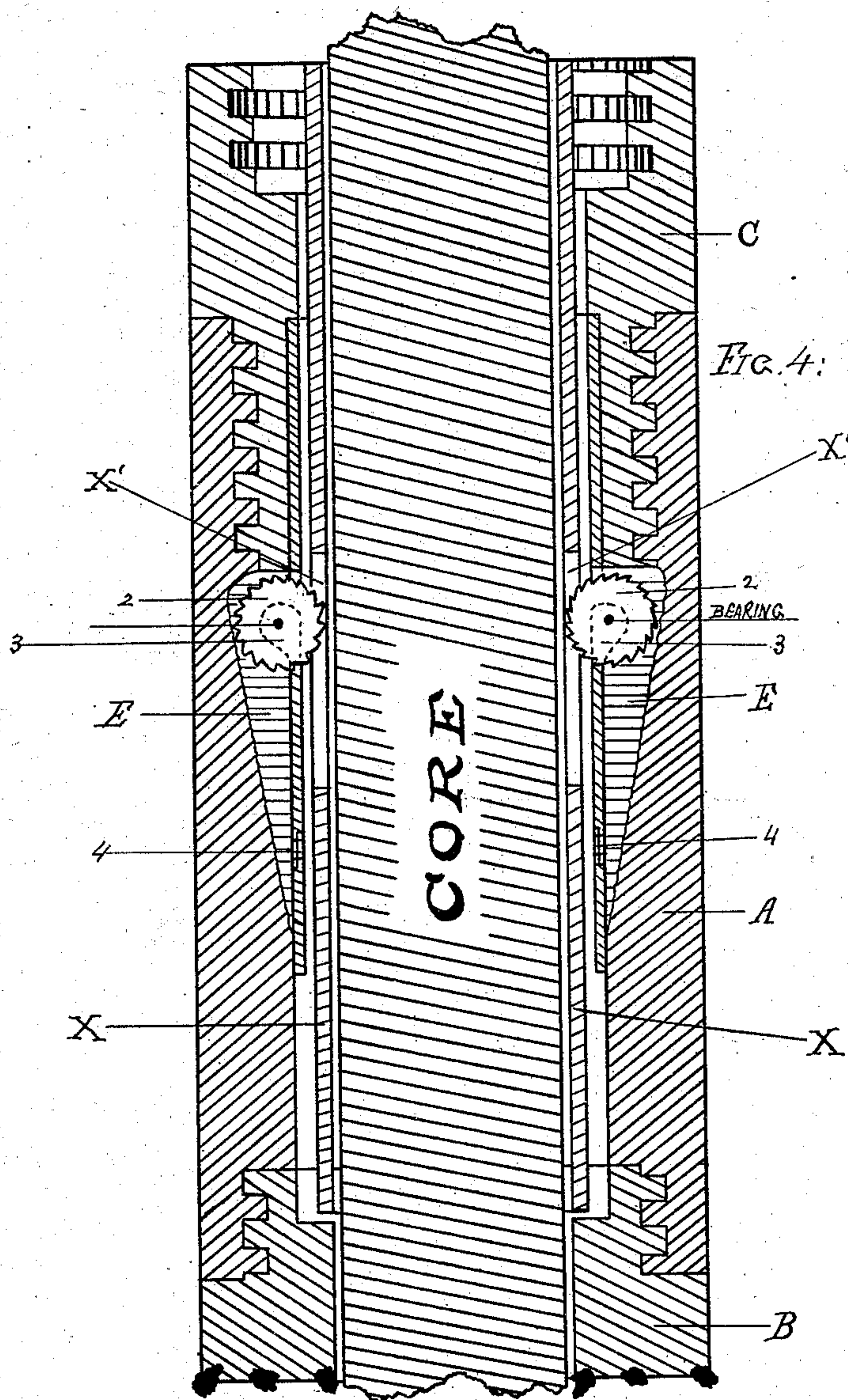
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*A. B. McGee*

*Wm. A. Warner*

Inventor:

*Henry C. Reichardt*

*By Grace B. McGee*

*Attorney*



# UNITED STATES PATENT OFFICE.

HENRY C. REICHARDT, OF POTTSVILLE, PENNSYLVANIA.

## CORE BREAKER AND LIFTER.

SPECIFICATION forming part of Letters Patent No. 257,896, dated May 16, 1882.

Application filed February 13, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY C. REICHARDT, a citizen of the United States, residing at Pottsville, in the county of Schuylkill and State of Pennsylvania, have invented a new and useful Improvement in Core Breakers and Lifters, of which the following is a specification.

My invention relates to improvements in core breakers and lifters for use in diamond drilling machines, and its objects are to break off the core at a certain and definite point, and then seize it and hold it firmly while it is being lifted from the drill-hole, the whole device working automatically in a certain and effective manner. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of a diamond-drill bit with core-barrel shell having my core breaker and lifter attached. Fig. 2 is a horizontal section through the line O O in Fig. 1. Fig. 3 is a full front view of an expansion steel cylinder, (marked D in Fig. 1;) and Fig. 4 is a vertical section of a diamond-drill bit with core-barrel shell and inside core-barrel having my device attached, this view showing what is commonly known as the "diamond drill" with double core-barrel.

Throughout all the views similar letters of reference indicate like parts.

In Fig. 1 the diamond-drill bit or head is represented at B, while C is the core-barrel shell. A is my device for breaking and lifting the core, and it is secured to B and C by means of screw-threads, as shown. The section A is turned or chambered out, as shown at E, forming an inclined surface, which is grooved or roughened. D is an expansion steel cylinder, having a lap or slide joint, *d*, as shown in Fig. 2. In this cylinder I form three slots or openings, in which I neatly fit three steel springs, 1 1 1, which are riveted or otherwise secured to the cylinder at 4. To each of these springs I attach a toothed wheel, 2, the bearings of which run in the arms or lugs 3 3. Now, it will be seen that the opening through which the core is to pass from the drill-bit up through the core-barrel shell is clear and unobstructed. There are no openings or obstructions to fill up or prevent

the free passage of the core—an advantage which is self-apparent to any skilled driller.

When it is desired to lift the core from the drill-hole the whole device is raised, when the wheels, pressing lightly against the core by means of the springs 1 1 1, will cause the cylinder to remain stationary for a moment, while the shells A and C and the bit B are rising. The wheel 2 engages in the roughened or grooved surface of the inclined chamber E, and moving down the inclined surface is forced into the core, taking a firm hold, which enables the core to be lifted out of the drill-hole along with the whole device.

When the core is unbroken, and it is desired to break it, one of the toothed steel wheels 2 is removed, and then by operating the device merely as a lifter with the other two wheels the core will be forced to one side and broken off, and may then be lifted out without further trouble or manipulation.

I prefer to form my springs 1 1 1 of separate pieces of steel, although they may be made a part of the cylinder by cutting out around the outline of the spring, except at 4, where the cylinder is left intact. I also prefer my toothed wheels with rounded faces.

When drilling through soft or brittle substances, what is called a "double core-barrel" is often used. This is represented in Fig. 4, and my invention is applied to that manner of drilling by simply increasing the size of the wheels 2 2 2 and forming an opening or slot in the inner core-barrel, X, as shown at X'. The operation is similar to that heretofore described.

In most cases my device as shown, having three springs and three wheels, answers every purpose necessary; but I do not confine myself to the use of any particular number, as the device is effective if made with two springs and wheels, as shown in Fig. 4, or with any other number.

What I claim is—

1. In a core breaker and lifter for diamond drills, the cylinder D, having an unobstructed internal surface for the passage of cores, and having the springs 1 1 1 attached thereto, each spring carrying a toothed wheel, 2, for the purpose of engaging the core and breaking or lifting it, in combination with the shell

A, having the chambered recess E, with inclined surface roughened or grooved, with which the wheels 2 2 2 engage, and are forced downward and outward against the core, as  
5 shown and set forth.

2. The herein-described core breaker and lifter, consisting of the shell A, the cylinder

D, the springs 1 1 1, the toothed wheels 2 2 2, in combination with the inner core-barrel, X, having slots X' X' X', as shown and set forth. 10  
HENRY C. REICHARDT.

Witnesses:

WM. A. WOMER,  
A. B. M'COOL.