

(No Model.)

J. A. BECHER.  
DRILL CHUCK.

No. 445,533.

Patented Feb. 3, 1891.

Fig. 1.

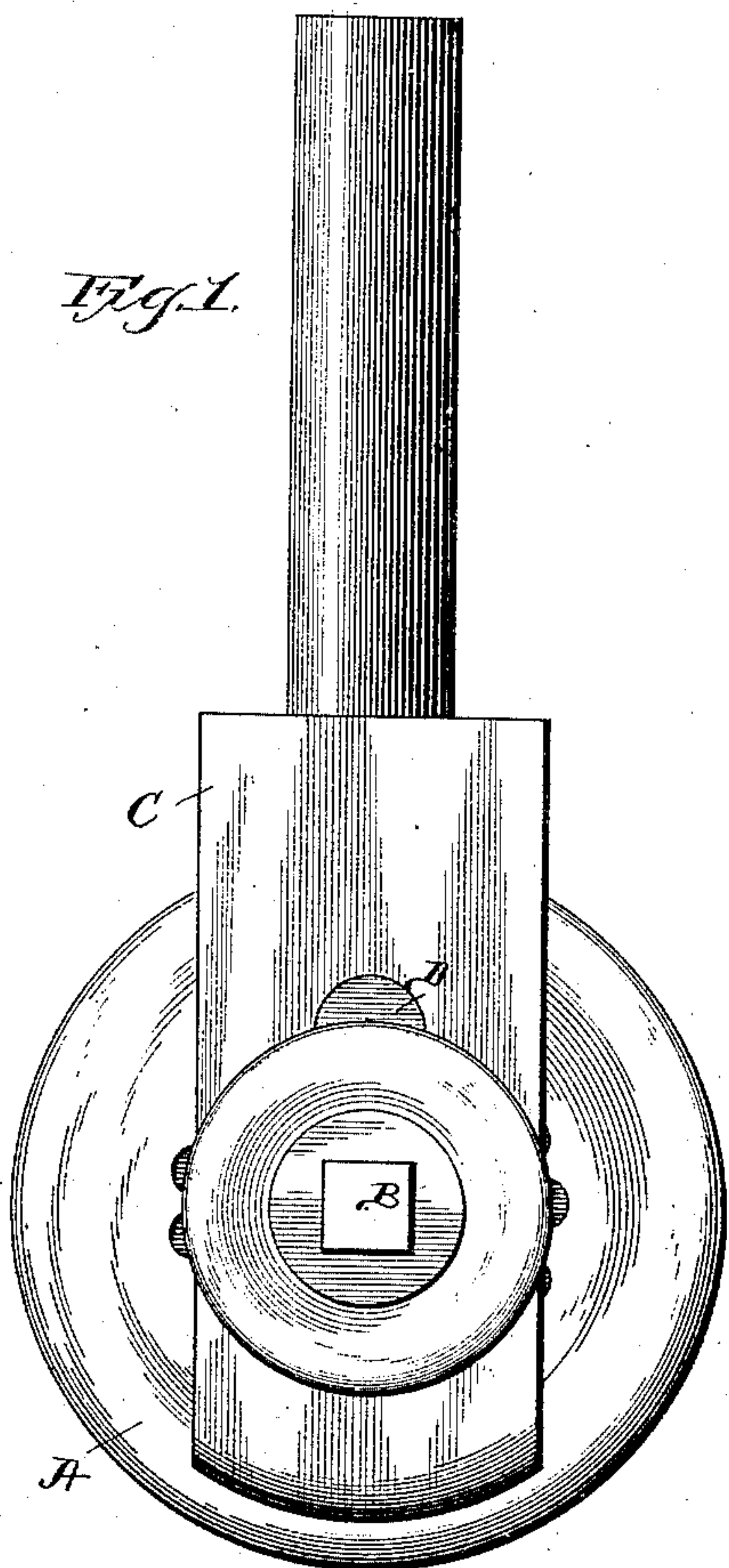


Fig. 2.

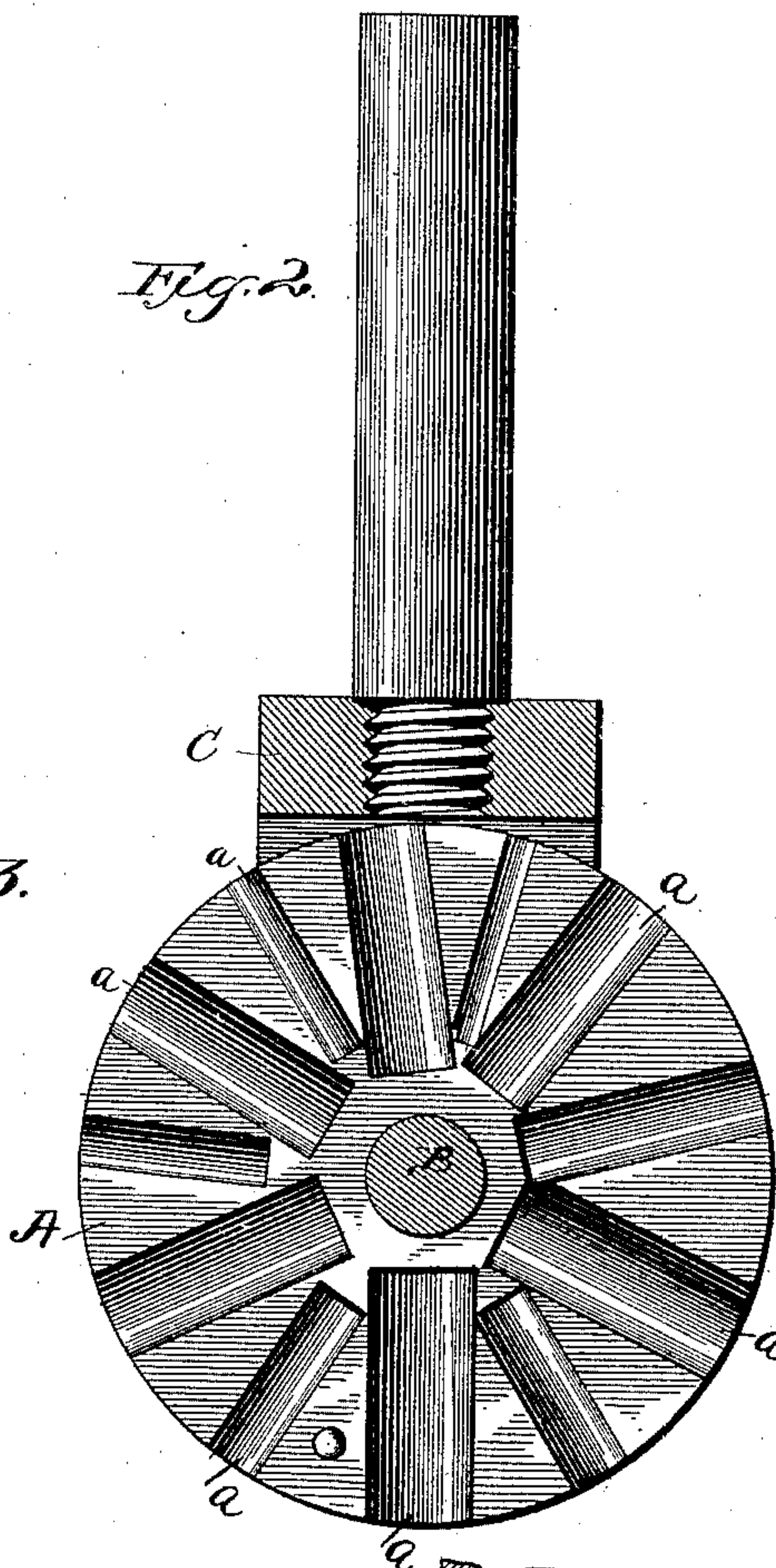


Fig. 3.

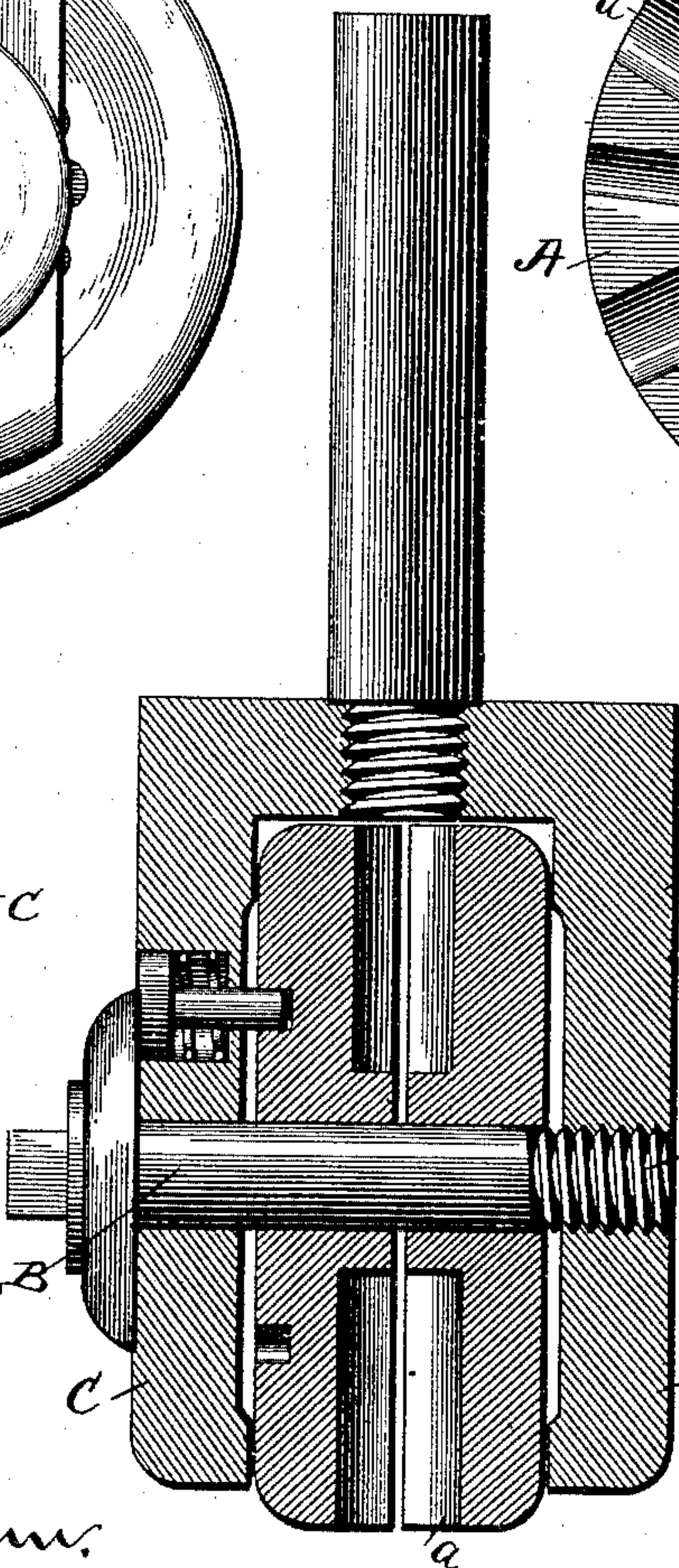


Fig. 4.

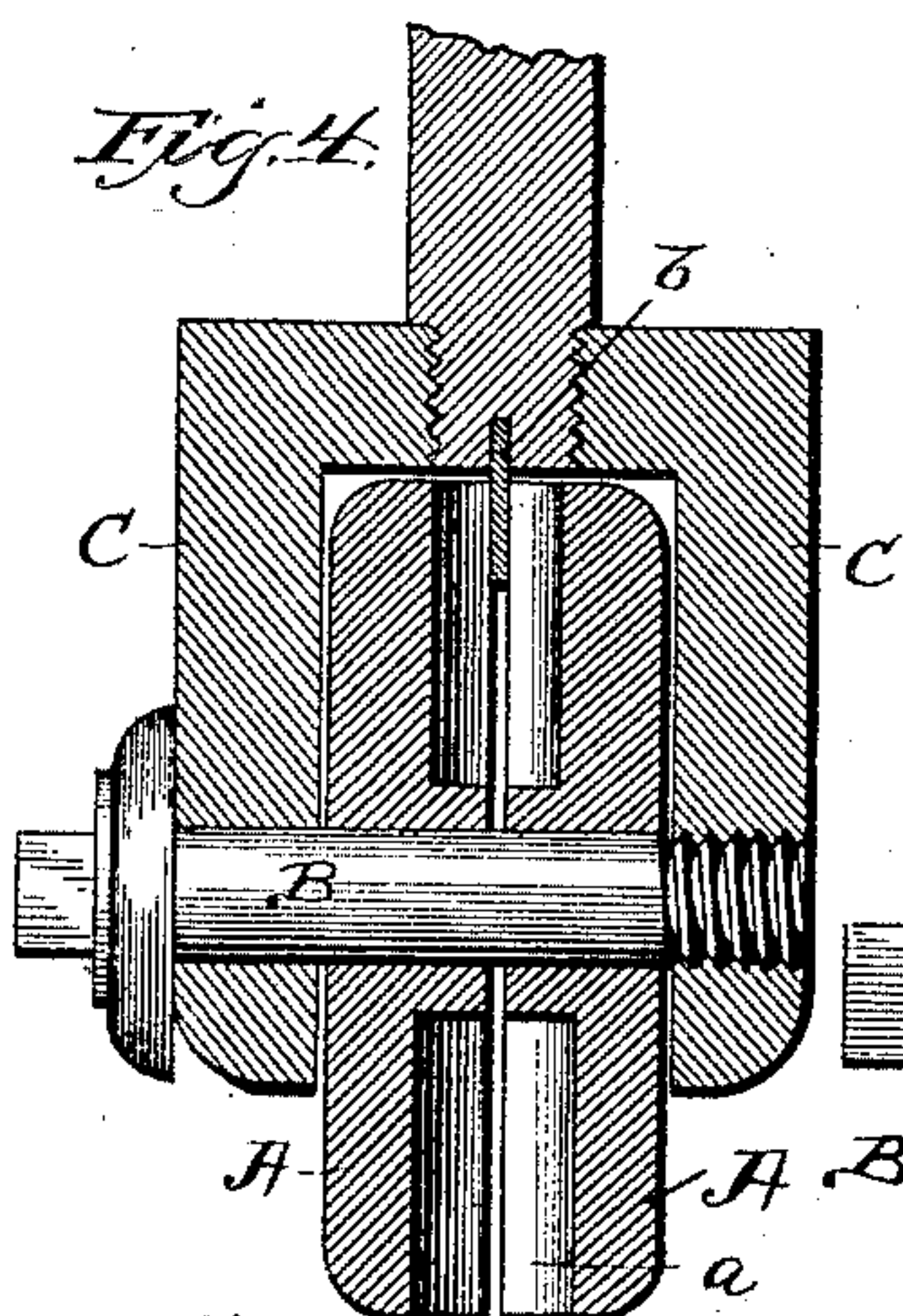
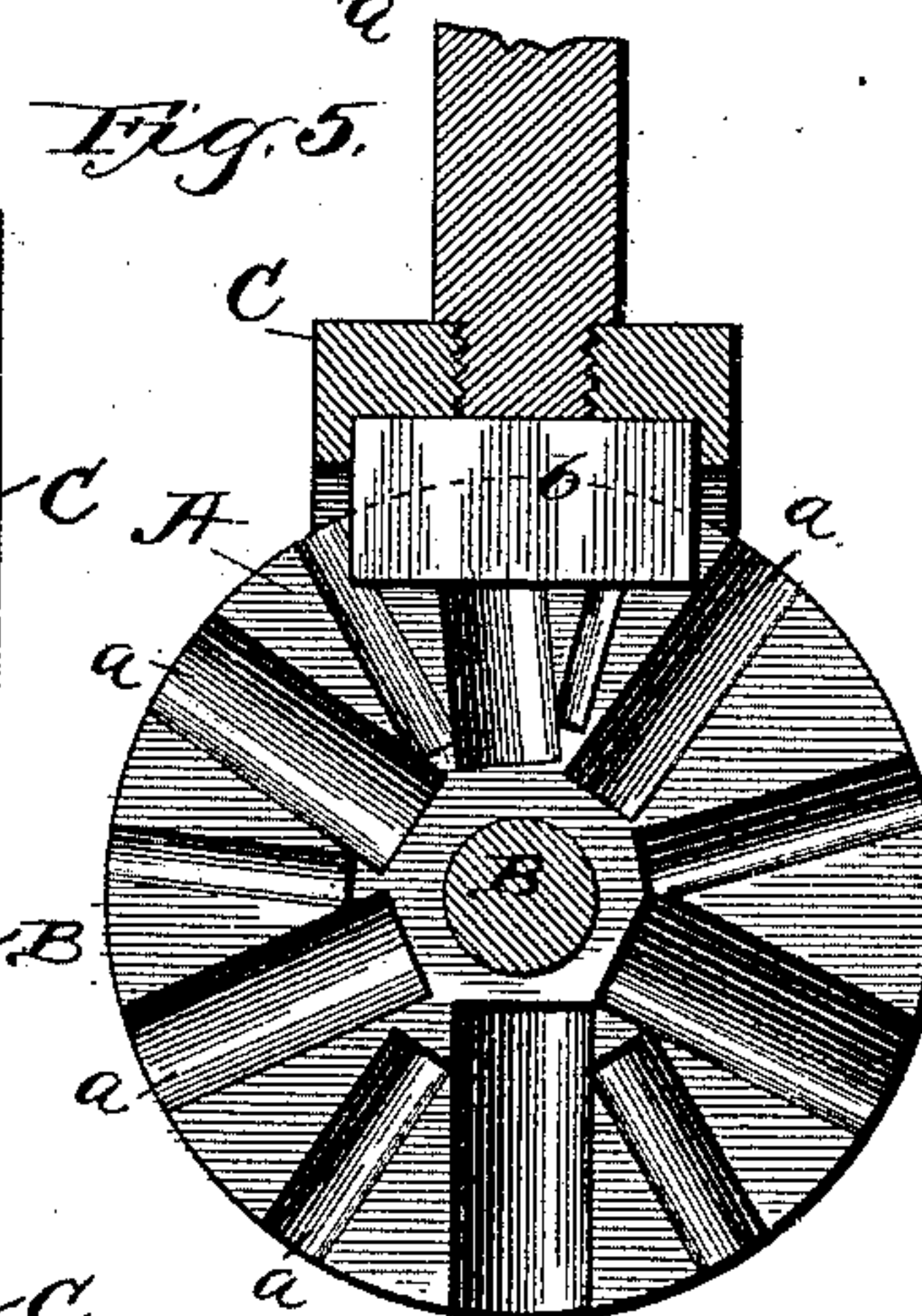


Fig. 5.



Witnesses:

Wm. M. Rheem.  
E. J. Hurdman.

Inventor:

James A. Becher.

By

Butterworth, Stall, Brown & Smith  
attys



# UNITED STATES PATENT OFFICE.

JAMES A. BECHER, OF MISHAWAKA, INDIANA.

## DRILL-CHUCK.

SPECIFICATION forming part of Letters Patent No. 445,533, dated February 3, 1891.

Application filed June 21, 1890. Serial No. 356,246. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES A. BECHER, a citizen of the United States, residing at Mishawaka, in the county of St. Joseph and State of Indiana, have invented a new and useful Improvement in Drill-Chucks, of which the following is a specification.

This invention relates to drill-chucks, and it is designed as an improvement on the form of drill-chucks shown and described in my application filed May 12, 1890, Serial No. 351,403.

The invention consists in the construction shown in the drawings and described in the following specification, and then pointed out in the claims.

In the drawings like letters refer to the same parts in the several figures, in which—

Figure 1 represents a side elevation of my device. Fig. 2 represents a longitudinal vertical section of the drill-chuck and supporting-yoke with its vertical shaft in elevation. Fig. 3 represents a vertical cross-section of the drill-chuck and supporting-frame with the vertical shaft in elevation. Figs. 4 and 5 represent vertical cross and longitudinal sections, respectively, of slight modifications of the construction shown in the other figures.

In the construction described in my former application above referred to the drill-chuck consisted of a solid disk provided with holes of different sizes for correspondingly-sized tools and set-screws passing through the outer walls of the holes for securing such tools in position therein.

In my present invention I construct the drill-chuck of two pieces A A, each of which is provided with a series of semi-cylindrical grooves *a a*, which are preferably of different diameters, so as to adapt them for different sizes of tools and radiate from the center of the pieces. These pieces are mounted upon an axial bolt B, which passes freely through an aperture in one arm of a yoke C and into a screw-threaded socket formed in the other arm of such yoke. It is manifest that by this construction set-screws for securing the tools can be dispensed with, because by merely tightening the bolt the arms of the yoke will bear upon the sides of two pieces composing the drill-chuck and cause

the latter to clamp the tools inserted within the radiating holes therein.

I prefer to relieve or countersink the inner surface of the arms or jaws of the yoke for a greater portion of their length and to extend such arms or jaws nearly to the peripheral edges of the circular pieces composing the chuck, as is shown in Fig. 3 of the drawings, because I have found that this construction gives a stronger grip upon the tool with a given expenditure of power; but the arms or jaws of the yoke may be shortened and the inner surface of the same made true or level, as is shown in Fig. 4 of the drawings, and the device will still work well. I have also devised a different manner of operating the locking device for the chuck from that set forth in my former application, and I will now describe the same.

The side face of the chuck may be provided with suitable indentations, as before, and one arm or jaw of the yoke may have a pocket for a spring and an aperture in the bottom of the same through which may pass the shank of a dog or catch D, which may engage the indented face of the chuck; but in the present construction I arrange the spring so as to normally tend to force the dog out of engagement and release the chuck and place an enlarged head or a washer upon the handle end of the axial bolt, which overlaps the outer end of the dog or catch and prevents the latter from being actually forced by its spring out of engagement with the indented face of the chuck until the bolt is partially unscrewed and relieves the chuck from the clamping action of the arms or jaws of the yoke. By this construction the tool is released from the grasp of the chuck and the latter simultaneously unlocked, so as to permit it to be turned for the insertion of another tool, and both operations follow the turning of the axial bolt.

When it is desired to prevent the inner faces of the chuck from coming together, a plate *b* may be secured to the yoke and be arranged to remain between such faces.

It is manifest that while the several features of the invention above described co-operate to make a drill-chuck both simple and efficient, yet these features may be individually employed with other forms of drill-chucks. For instance, the present form of locking de-



vice is applicable to a chuck which is not divided into two pieces, and the divided chuck shown and described herein will operate with a different form of locking device.

5 Variations in the details of the features and their arrangement will also suggest themselves to the skilled mechanic, and I therefore do not wish to be understood as limiting myself to the exact construction shown and described.  
10

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a yoke with a bolt passing therethrough and serving to draw  
15 the arms or jaws thereof together and a drill-chuck composed of sections each of which is provided with a portion of a pocket or hole for a tool, substantially as shown and described.

20 2. The combination of a drill-chuck having an indented or equivalent face, a dog or catch for engaging the same, but normally forced away therefrom, and a bolt forming the axial support of the drill-chuck and bearing at one  
25 end against the dog or catch, whereby the latter is forced into engagement with the drill-chuck when the bolt is screwed up, substantially as shown and described.

30 3. The combination of a yoke, a bolt with an enlarged head or washer having a bearing

and socket in the arms of the same, a dog or catch forced outward by a spring and having its outer end engaged by the enlarged head or washer of the bolt, and a sectional drill-chuck having an indented face inclosed by  
35 the arms or jaws of the yoke and mounted axially upon the bolt, substantially as shown and described.

4. The combination of a yoke, a bolt mounted therein, a sectional drill-chuck having sockets of different sizes formed therein, and a dog or catch operated by the bolt to lock and unlock the drill-chuck, substantially as shown and described.

5. The combination of a yoke having a bearing and socket in its arms, a bolt having an enlarged head or washer, a dog arranged in a recess in the yoke and under the head of the bolt, a spring normally forcing the dog outward, and a sectional drill-chuck having an  
45 indented outer face, and the inner surface of each section provided with portions of sockets of different sizes for the reception of different-sized tools, substantially as shown and described.  
50

JAMES A. BECHER.

Witnesses:

J. E. ROPER,

JOHN J. SCHINDLER.