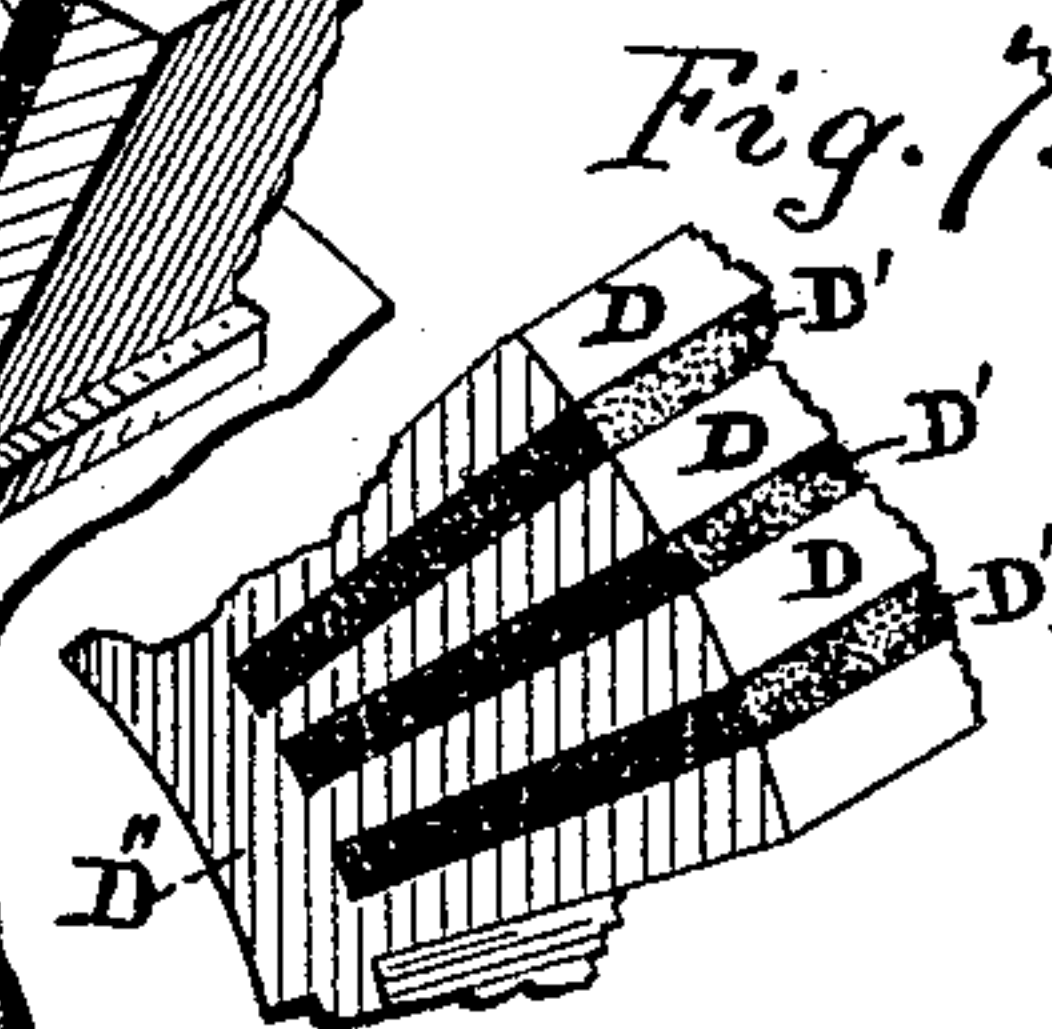
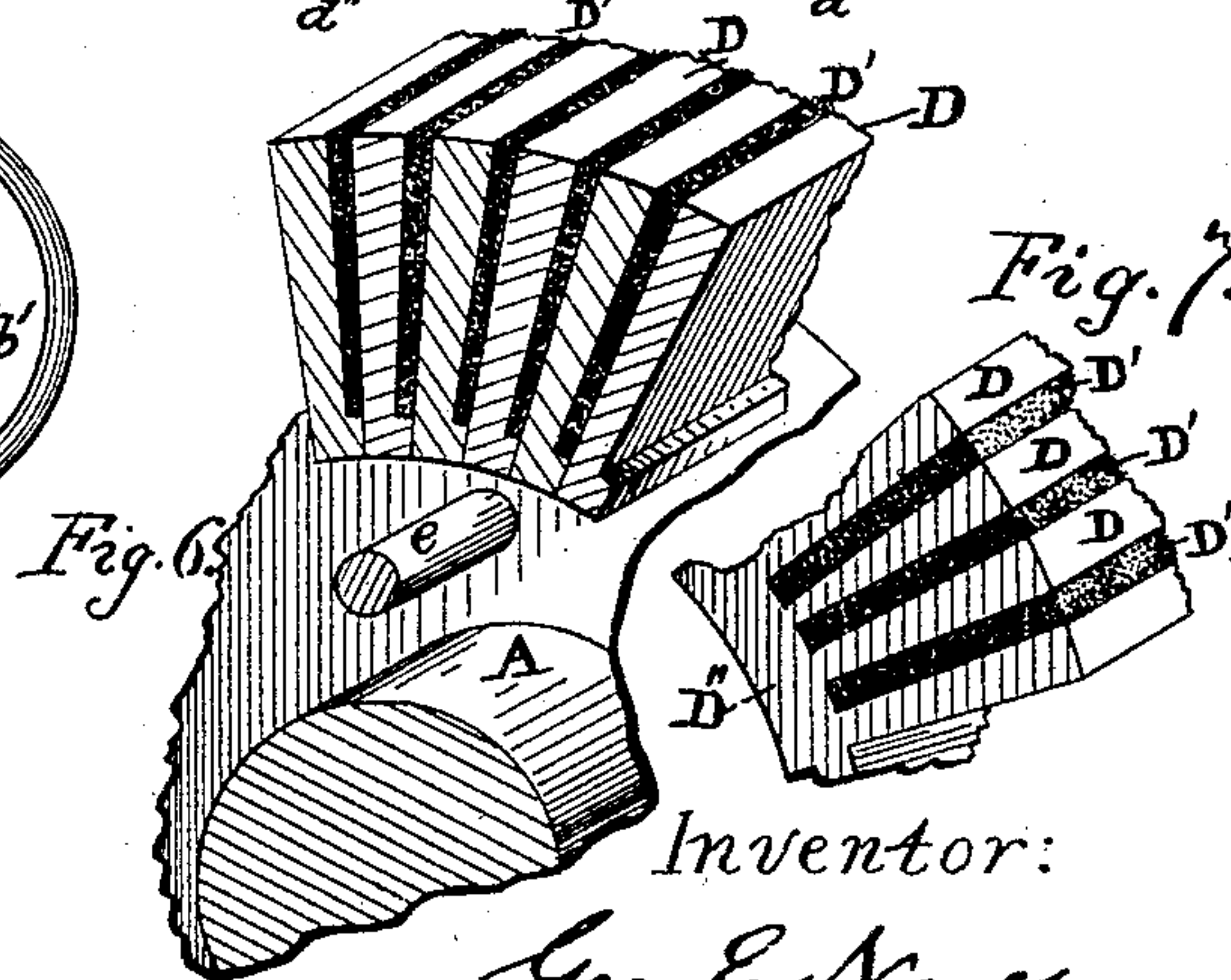
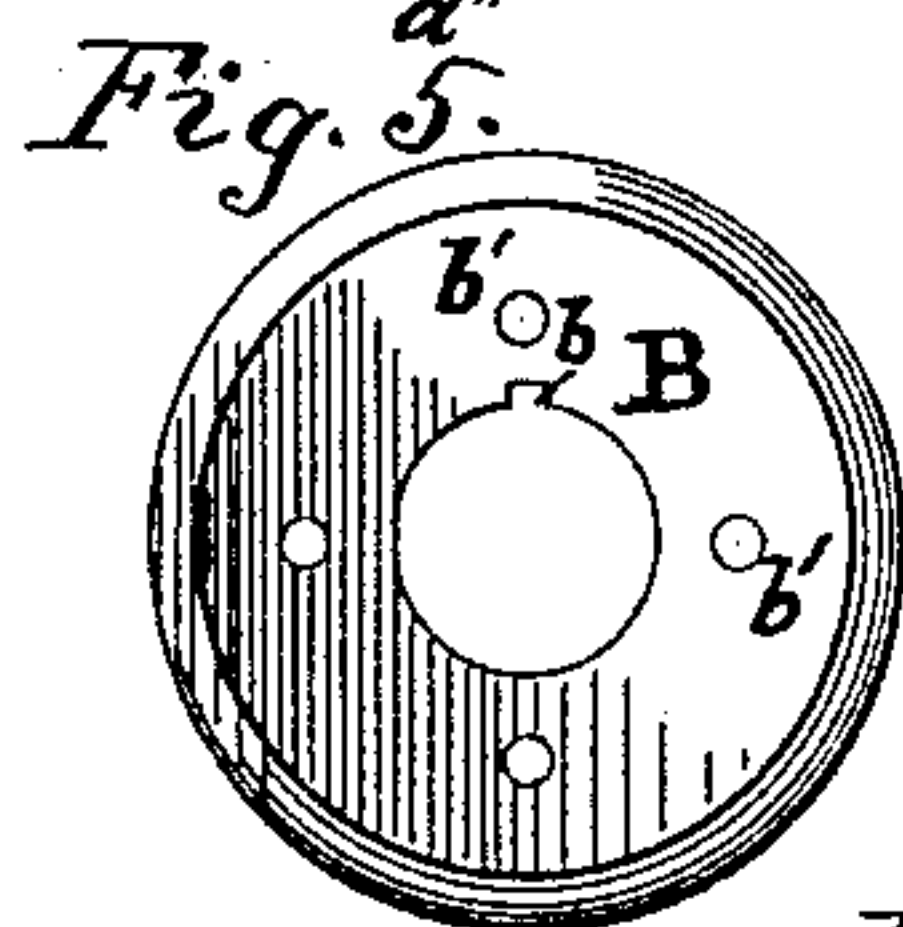
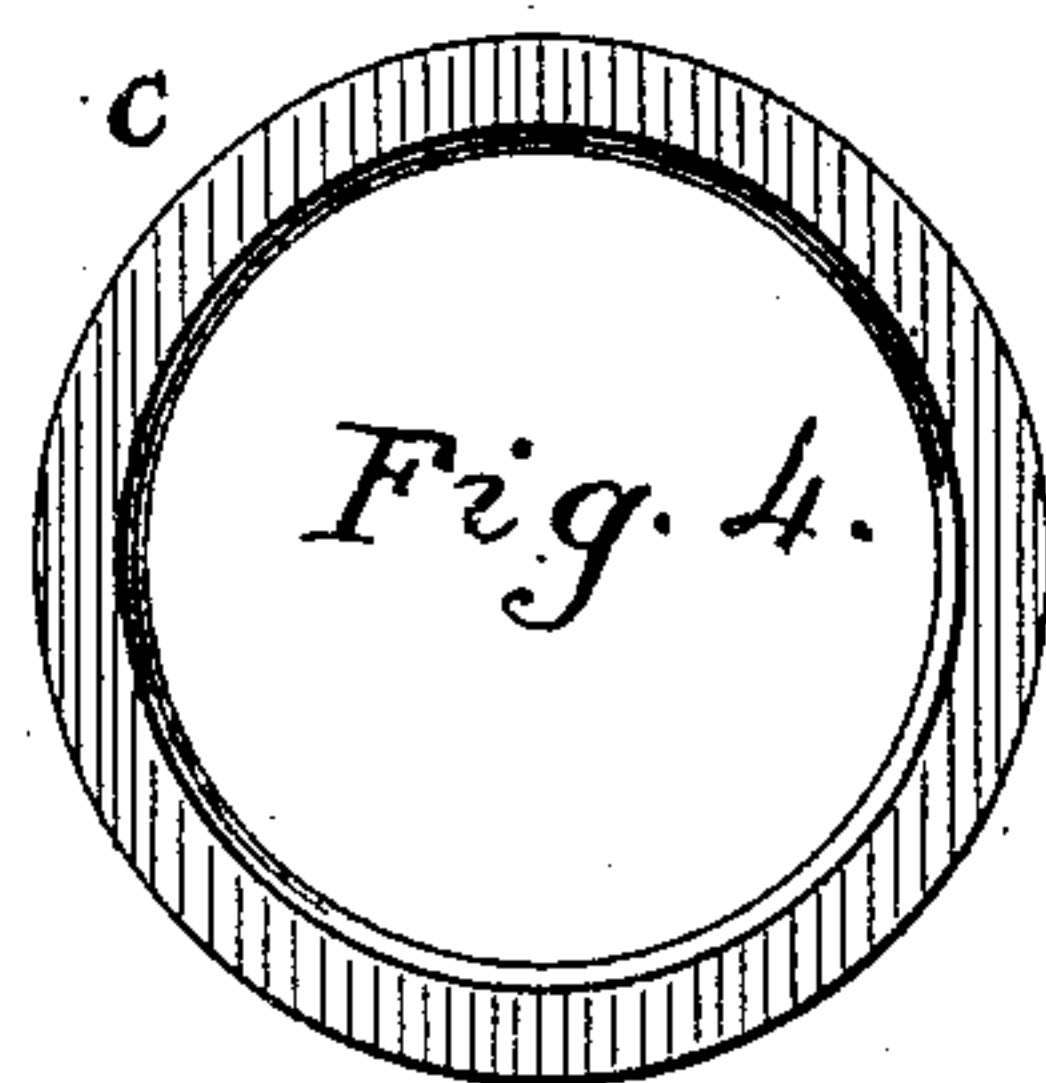
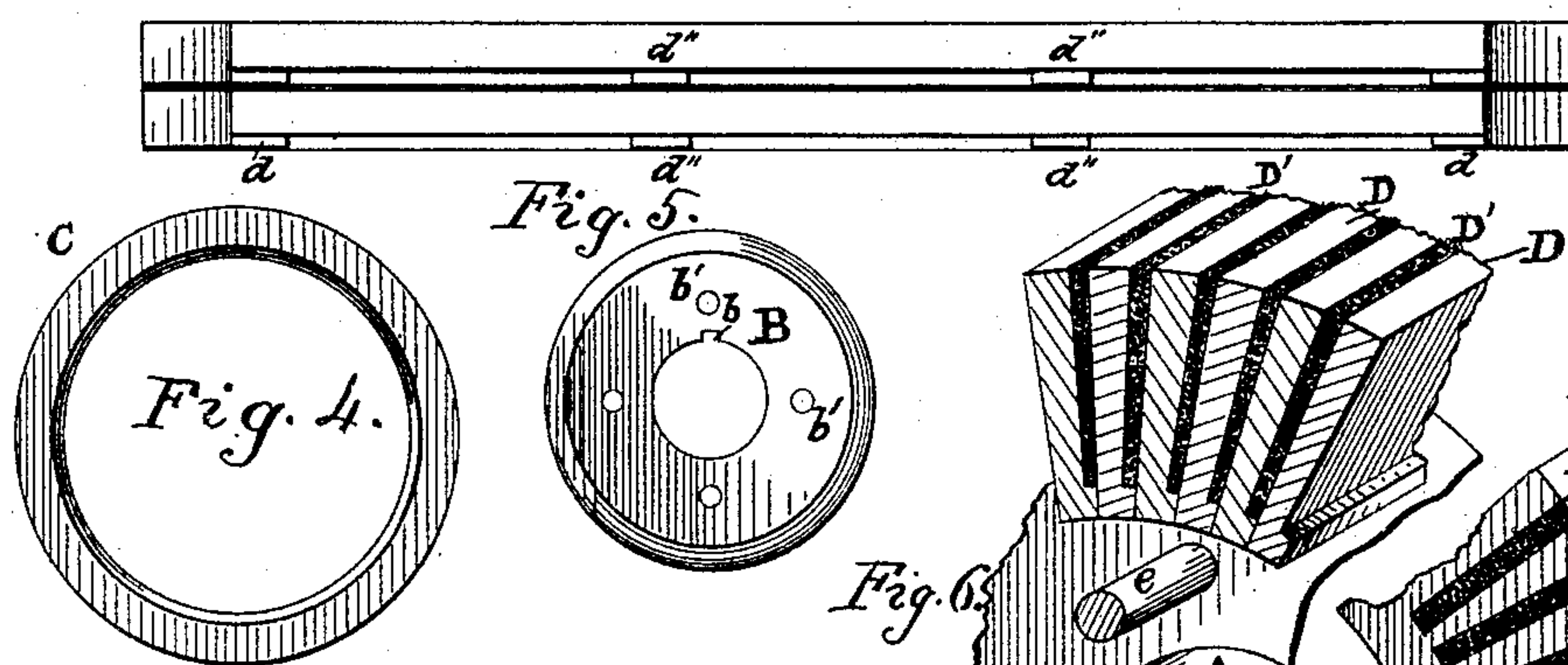
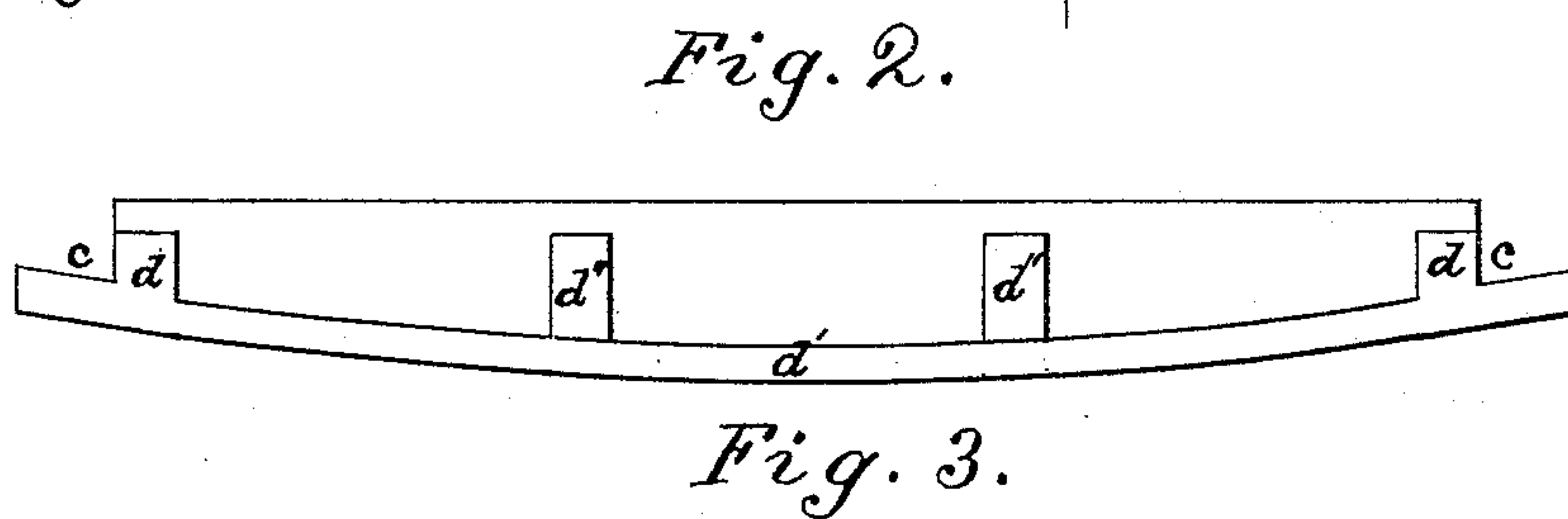
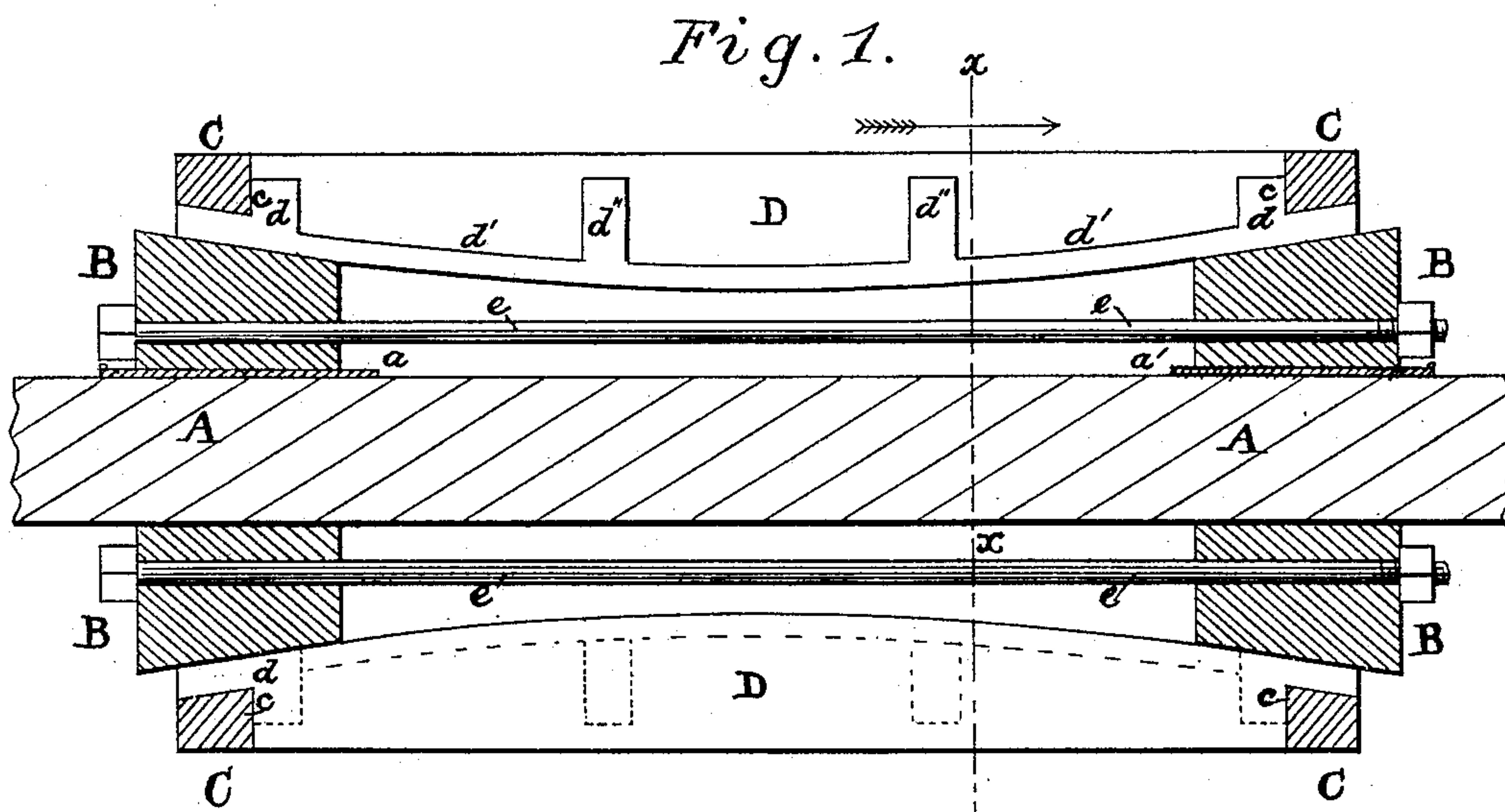


(No Model.)

G. E. NOYES.
CRUSHING MILL ROLLER.

No. 384,172.

Patented June 5, 1888.



Witnesses:
Thos. Houghton.
John Lockie.

Inventor:
Geo. E. Noyes.
By his Attorney
Wm. R. Singleton.

UNITED STATES PATENT OFFICE.

GEORGE E. NOYES, OF WASHINGTON, DISTRICT OF COLUMBIA.

CRUSHING-MILL ROLLER.

SPECIFICATION forming part of Letters Patent No. 384,172, dated June 5, 1888.

Application filed January 9, 1888. Serial No. 260,153. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. NOYES, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Crushing-Mill Rollers; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in crushing-mill rollers, which will be hereinafter more particularly described, and pointed out in the claim.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal diametrical section of a roller. Fig. 2 is a side view of one of the longitudinal bars. Fig. 3 is an edge view of two bars side by side. Fig. 4 is a front view of a binding-ring. Fig. 5 is an end view of one of the centers, which are shown in section in Fig. 1. Fig. 6 is an enlarged fractional perspective of a section of the roller on line *x x* of Fig. 1, looking in the direction of the arrow. Fig. 7 is a modification of the bars, as seen in Fig. 6.

A is the shaft, on which the roller is properly secured by keys or splines *a a* in the end center pieces, B B. These center pieces are frusta of cones having central holes for the shaft A, and grooves *b* for the splines or keys *a a*, by which the centers are to be secured to the shaft A.

C C are two steel rings which confine the ends of the bars D and are dovetailed in cross-section, as shown in Fig. 1. These bars D D are made as shown in elevation, Fig. 2, and edge view, Fig. 3. The ends have notches *c c*, and on one side a projection, *d*, of about a quarter of an inch, and a flange, *d'*, along the bottom edge of the same side, and between the ends there are as many similar projections, *d''*, as may be necessary to stiffen the bars. In the drawing, there are two only. They may be one inch in width. All these projections are of the same depth, so that the flat side of the adjacent bar will form tight compartments between the two bars. In the centers B B there are four holes, *b'*, through which pass the screw-bolts *e*, which have at one end a head, and a nut and washer at the other, whereby the two centers can be drawn

together and tighten the bars D within the rings C.

The roller is formed by placing within the rings C C as many bars as will make up the roller. The centers B B are placed on the shaft A and entered within the bars at each end. The bolts *e* are put in place. Then by screwing up the nuts on the bolts the centers are drawn together and the bars are properly tightened against the rings and to one another. The splines are then put in and the centers are fastened to the shaft. The chambers formed between the bars are designed to receive the pulverized material, D', being ground, and when they become properly filled and packed, as they will soon be, a regular exterior surface will be formed on the roller of hard and soft material alternately, by which a better grinding and crushing action will ensue.

It is proposed to run one roller much faster than its fellow; hence there will be a dragging force as well as a crushing, and the alternate hard and soft surfaces will conduce greatly to that result.

Rollers made in this way I have applied for some time to the grinding of clay for making bricks, and it is found to be superior to other rollers in the manner in which the clay becomes entirely disintegrated; and bricks made from the clay worked by these rollers have been proved to be superior in quality.

In Fig. 7 a modification is shown. The separate bars D, by which the roller is made up, as above described, can be substituted by one casting, having the bars D connected interiorly by the annulus D'', so that it resembles an elongated spur gear-wheel. The centers B are made to fit inside of the annulus D'' and are to be secured as above described, or the annulus may be secured to the shaft in any other manner.

I claim—

A crushing-mill roller having a series of bars strengthened by transverse projections, and a bottom flange or annulus, the bars being longitudinally arranged with alternate spaces which will become filled with the material being ground, as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE E. NOYES.

Witnesses:

W. R. SINGLETON,
JOHN LOCKIE.