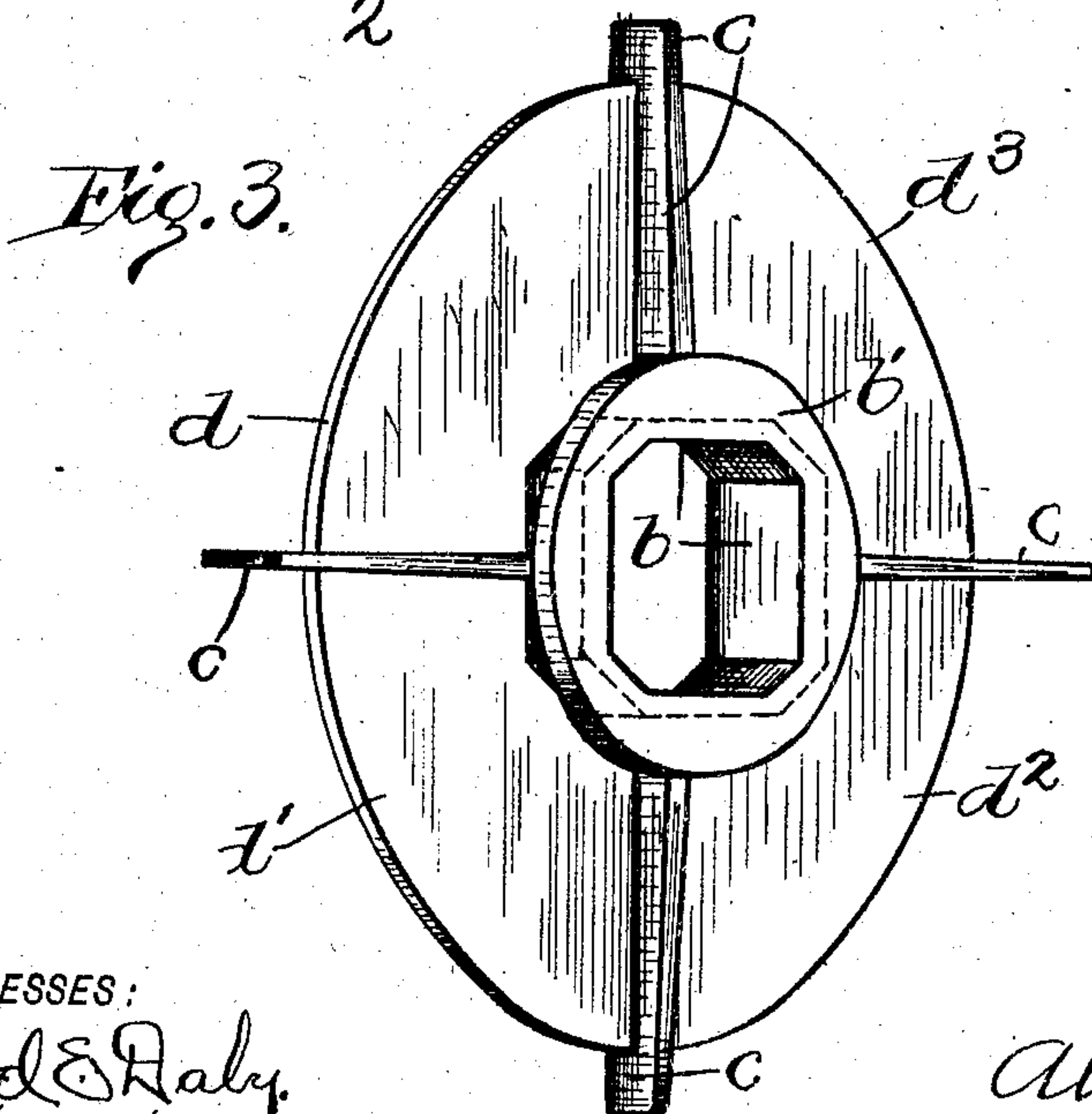
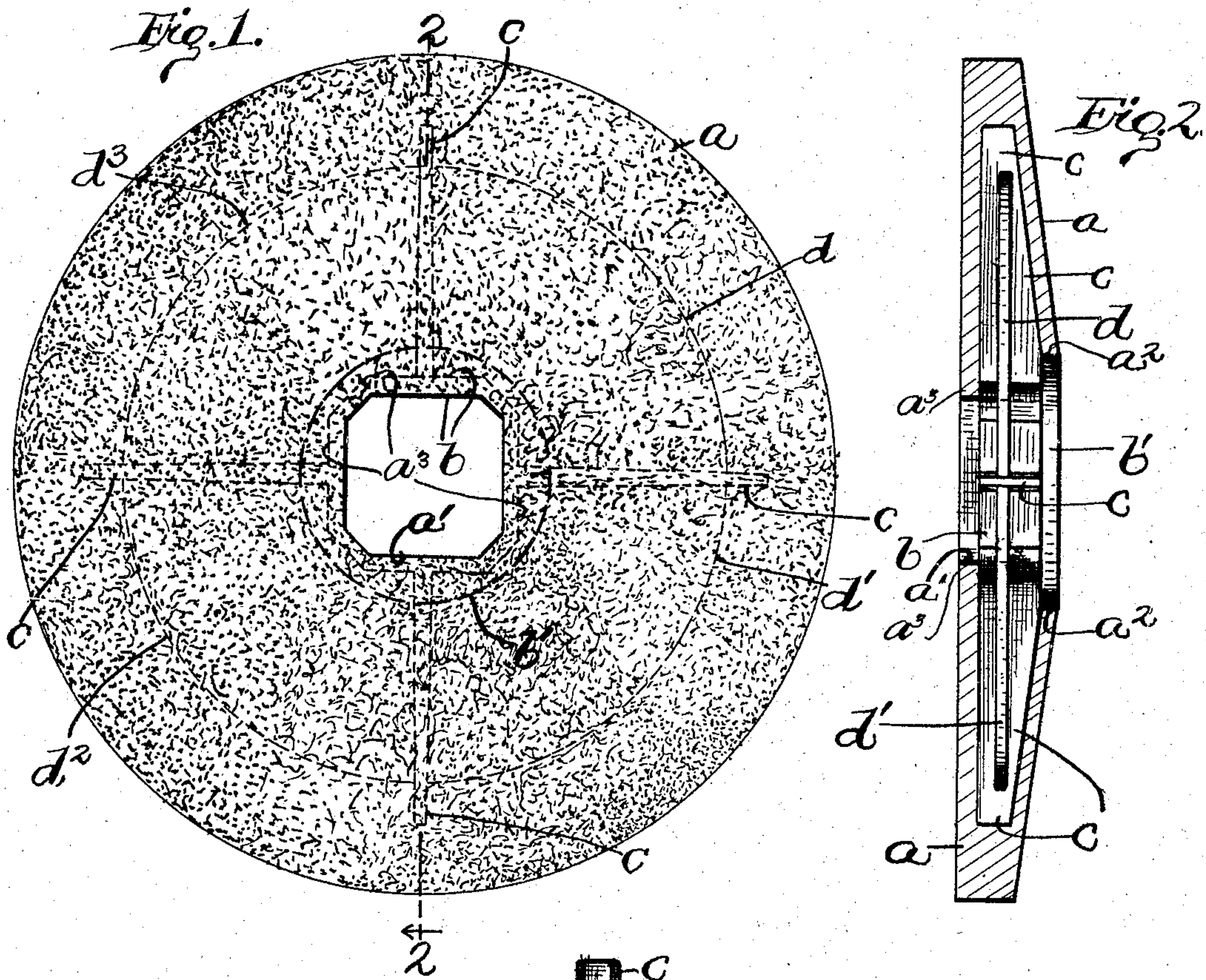


A. HURFORD.
GRINDING WHEEL.
APPLICATION FILED MAY 3, 1904.

2 SHEETS—SHEET 1.



WITNESSES:
Daniel E. Daly.
G. M. Hayes

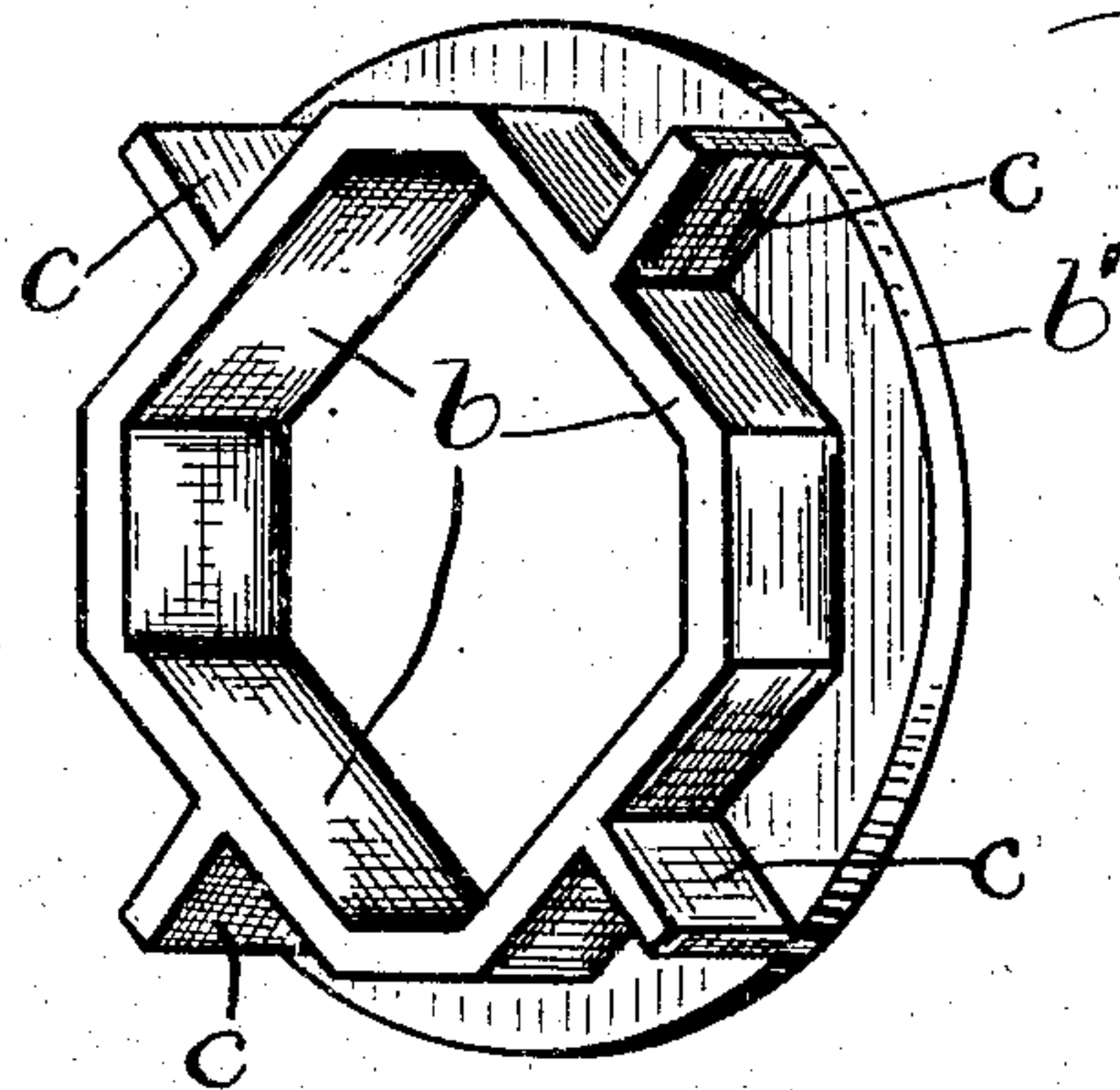
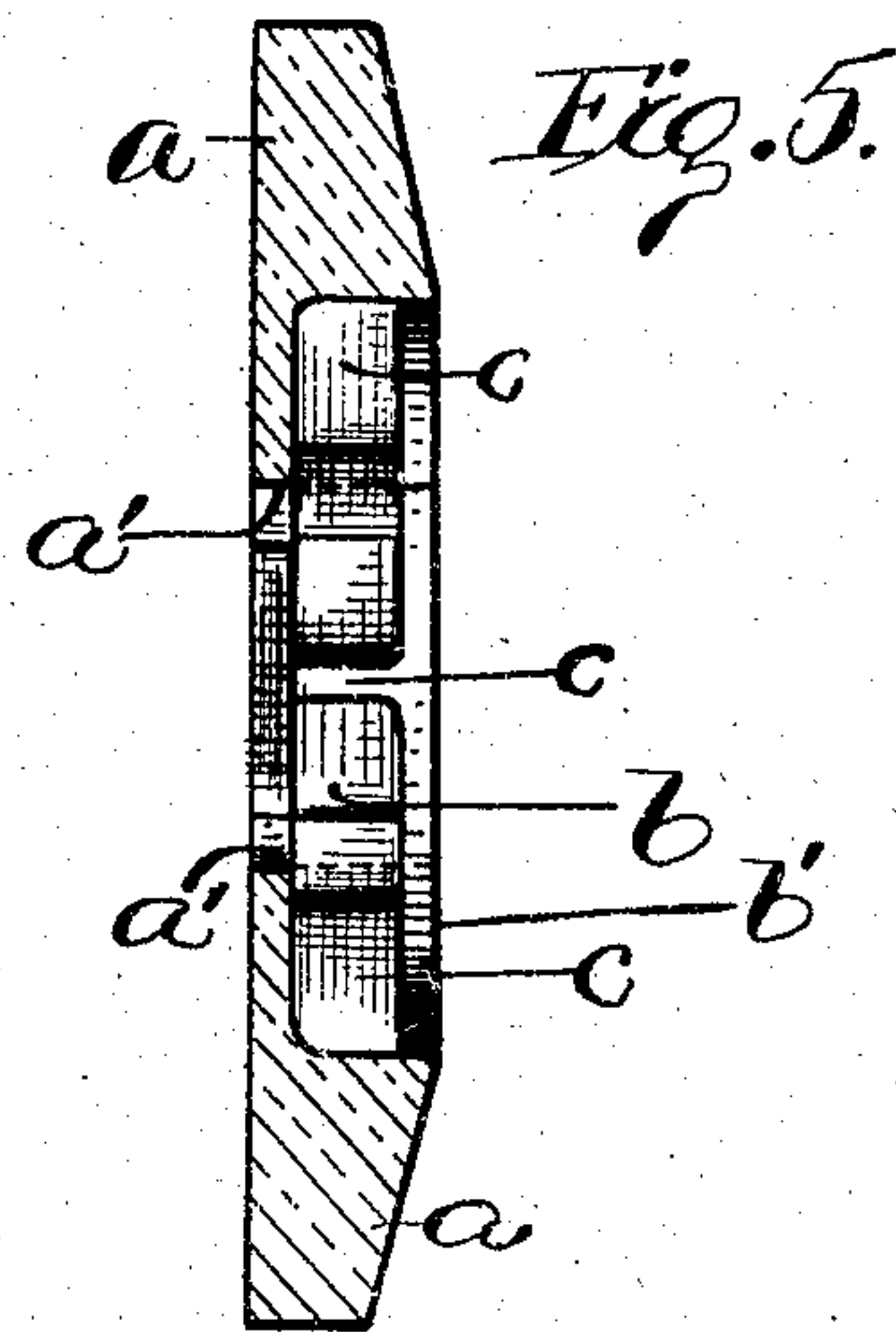
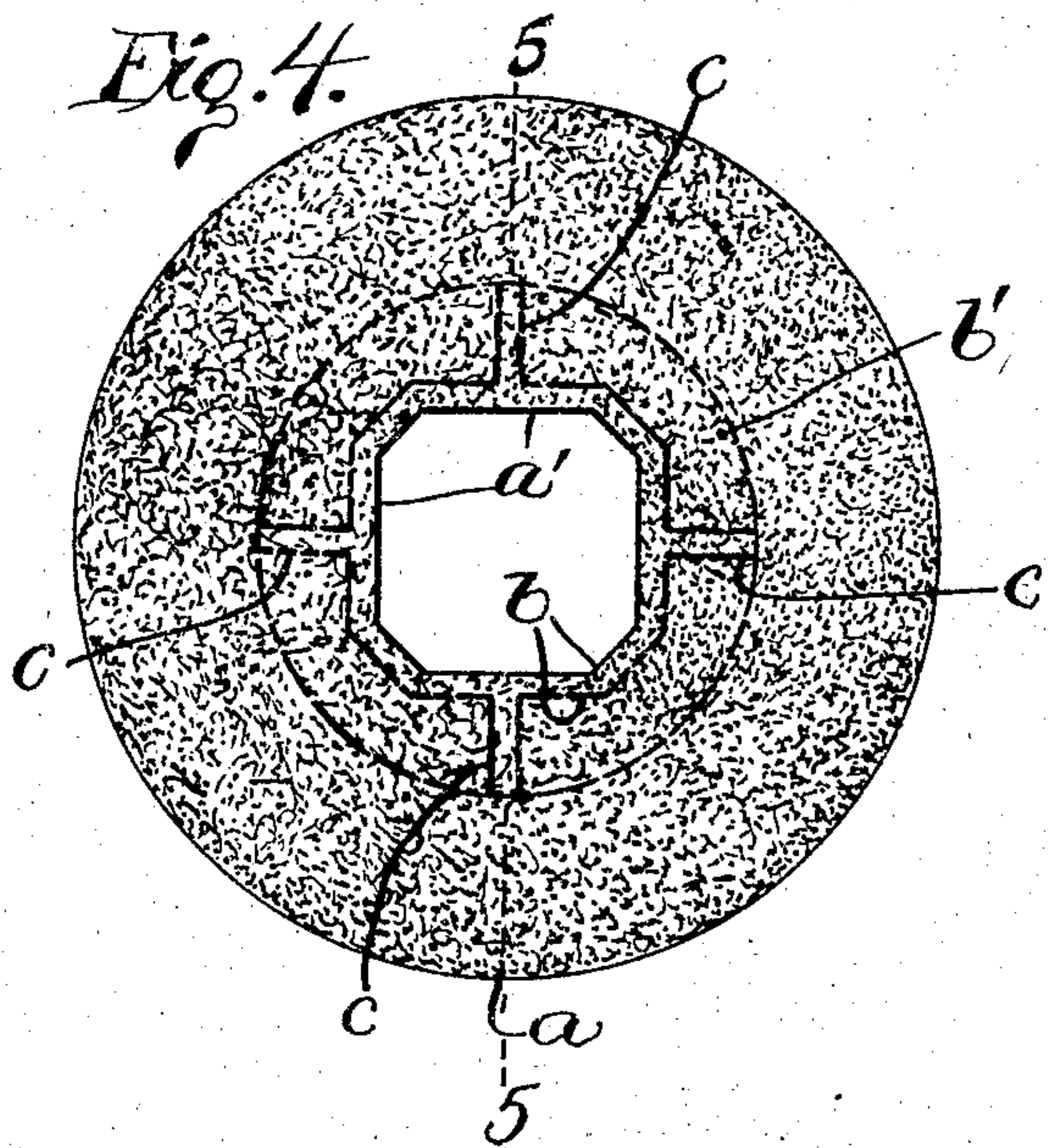
INVENTOR
Alvin Hurford
BY
Lynch & Dorer
ATTORNEYS.

No. 791,791.

PATENTED JUNE 6, 1905.

A. HURFORD.
GRINDING WHEEL.
APPLICATION FILED MAY 3, 1904.

2 SHEETS—SHEET 2.



WITNESSES:

David E. Haly.
G. M. Hayes

INVENTOR

Alvin Hurford
BY
Lynch & Cores
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALVIN HURFORD, OF CLEVELAND, OHIO.

GRINDING-WHEEL.

SPECIFICATION forming part of Letters Patent No. 791,791, dated June 6, 1905.

Application filed May 3, 1904. Serial No. 206,102.

To all whom it may concern:

Be it known that I, ALVIN HURFORD, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Grinding-Wheels; and I 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 the same.

This invention relates to improvements in grinding-wheels, and more particularly to providing a new and improved core or bushing for an emery-wheel which has to sustain considerable pressure against its respective faces either while being adjusted in its operative position or during the grinding operation.

The object of this invention is to provide a device which will serve both as a bushing for mounting an emery-wheel and also as a means for protecting and strengthening the emery-wheel, so that it will not be crushed or broken by a strain or pressure acting against the face of the wheel.

My invention therefore consists of certain features of construction and combinations of parts, as will hereinafter be described in the specification, pointed out in the claims, and illustrated in the drawings.

In the accompanying drawings, Figure 1 is a view of my improved bushing mounted in an emery-wheel. Fig. 2 is a central vertical section on line 2 2, Fig. 1. Fig. 3 is a rear view in perspective of my improved bushing detached from the emery-wheel. Fig. 4 shows a modified form of my device mounted in an emery-wheel. Fig. 5 is a central vertical section on line 5 5, Fig. 4. Fig. 6 is a front view in perspective of a modified form of my bushing detached from the emery-wheel.

Again referring to the drawings, a represents a grinding-disk, preferably formed from artificial stone, emery, or similar material while in a plastic condition.

b represents a metallic thimble which forms the bushing proper or bearing for the grinding-disk a . This thimble b is adapted to fit snugly in a bore a' , formed in the center of the grinding-disk a , and at the end of said bore at the working face of the disk is formed an

annular seat-forming flange a^3 of the same material as the disk. As shown in the drawings, the thimble is octagonal in cross-section; but this, of course, is not essential, as it may be any shape desired. One end of the thimble b is arranged to abut against the flange a^3 , and on the other end of said thimble is formed an exterior annular flange b' . This flange b' is arranged in a seat a^2 , formed in the face of the grinding-disk a , and constitutes a shield which protects the rear face of grinding-disk in the vicinity of the bore. From points equally spaced around the thimble b arms c extend out radially. These arms are, preferably, four in number, and in the form best adapted for large or thin grinding-disk the arms are made long enough to extend to within a short distance of the periphery of the disk. Thin sector-shaped plates d , d' , d^2 , and d^3 extend between and connect each pair of arms. These arms c and the intervening plates or webs d , d' , d^2 , and d^3 together constitute a skeleton or frame on which the emery or other material is molded in forming the grinding-disk.

My modified form, as shown in Figs. 4, 5, and 6, is in all respects similar to the device shown in Figs. 1, 2, and 3, except that the four arms c are made as wide as the thimble b and extend out only to the periphery of the flange b' , and the webs d , d' , d^2 , and d^3 are omitted.

It will be observed that the arms c not only serve to strengthen the grinding-disk, but also provide very efficient means for locking the bushing in the body of the grinding-disk and preventing the turning of the bushing in the bore or socket of the grinding-disk.

In manufacturing my improved wheel the emery is of course molded on the bushing and frame and the emery is arranged so as to completely inclose the bushing with the exception of the flange b' , which, as I have said, serves as a shield for protecting the rear face of the grinding-disk around or in the vicinity of the bore a' .

While my improved emery-wheel can be used wherever it may be advisable to use the face of the emery-wheel for grinding, it is especially adapted for use in sharpening the cutting blades or knives used in the common

form of meat-cutting or sausage machines. My invention may therefore be styled as an improvement on the device shown in Patent No. 616,013, granted to R. V. Jones October 30, 1900. When used for the purpose of sharpening the knives in a sausage-machine, the grinding-wheel is slidably mounted on a spindle and is caused to advance toward the knives by turning a nut which engages a screw-thread formed on the spindle. The nut comes in contact with the flange *b*, and the grinding-disk is thereby protected from the crushing strain of the nut and the arms *c* reinforce the grinding-disk, so that it will not crack or break if accidentally it is pressed too close against the knives while being adjusted.

What I claim is—

1. In a grinding-wheel, a grinding-disk having a central bore, a thimble adapted to fit in said bore and provided at one end with an exterior annular flange formed integral with said thimble and arranged to lie close against the back of said disk, and reinforcing-arms formed integral with said thimble and said flange, said arms being arranged entirely within the material of said disk, substantially as described and for the purpose set forth.

2. In a grinding-wheel, a grinding-disk pro-

vided with a central bore and having an annular seat-forming flange formed of the material of the disk arranged at the end of said bore at the working face of said disk, a thimble having one end abutting against said seat-forming flange and provided at its other end with an exterior annular flange arranged to lie against the back of the disk and form a shield around said bore, substantially as described and for the purpose set forth.

3. In a grinding-wheel, a disk provided with a central bore and having an annular seat-forming flange formed of the material of said disk arranged at the end of said bore at the working face of said disk, and a seat formed in the material of said disk at the opposite end of said bore, and a thimble arranged in said bore and provided with an exterior annular flange arranged to fit into the seat in said disk, substantially as described and for the purpose set forth.

In testimony whereof I sign the foregoing specification, in the presence of two witnesses, this 8th day of October, 1902, at Cleveland, Ohio.

ALVIN HURFORD.

Witnesses:

VICTOR C. LYNCH,
G. M. HAYES.