

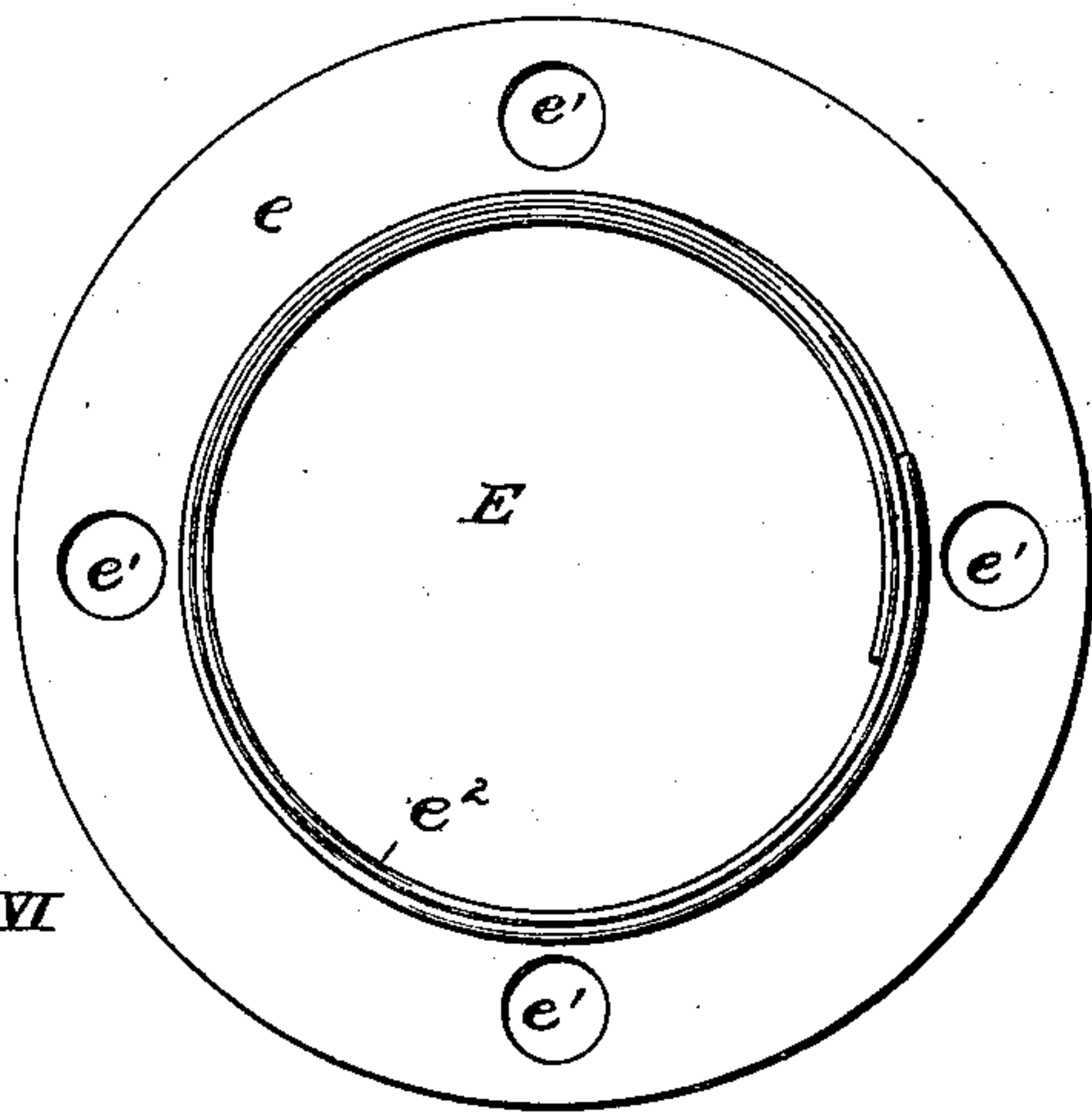
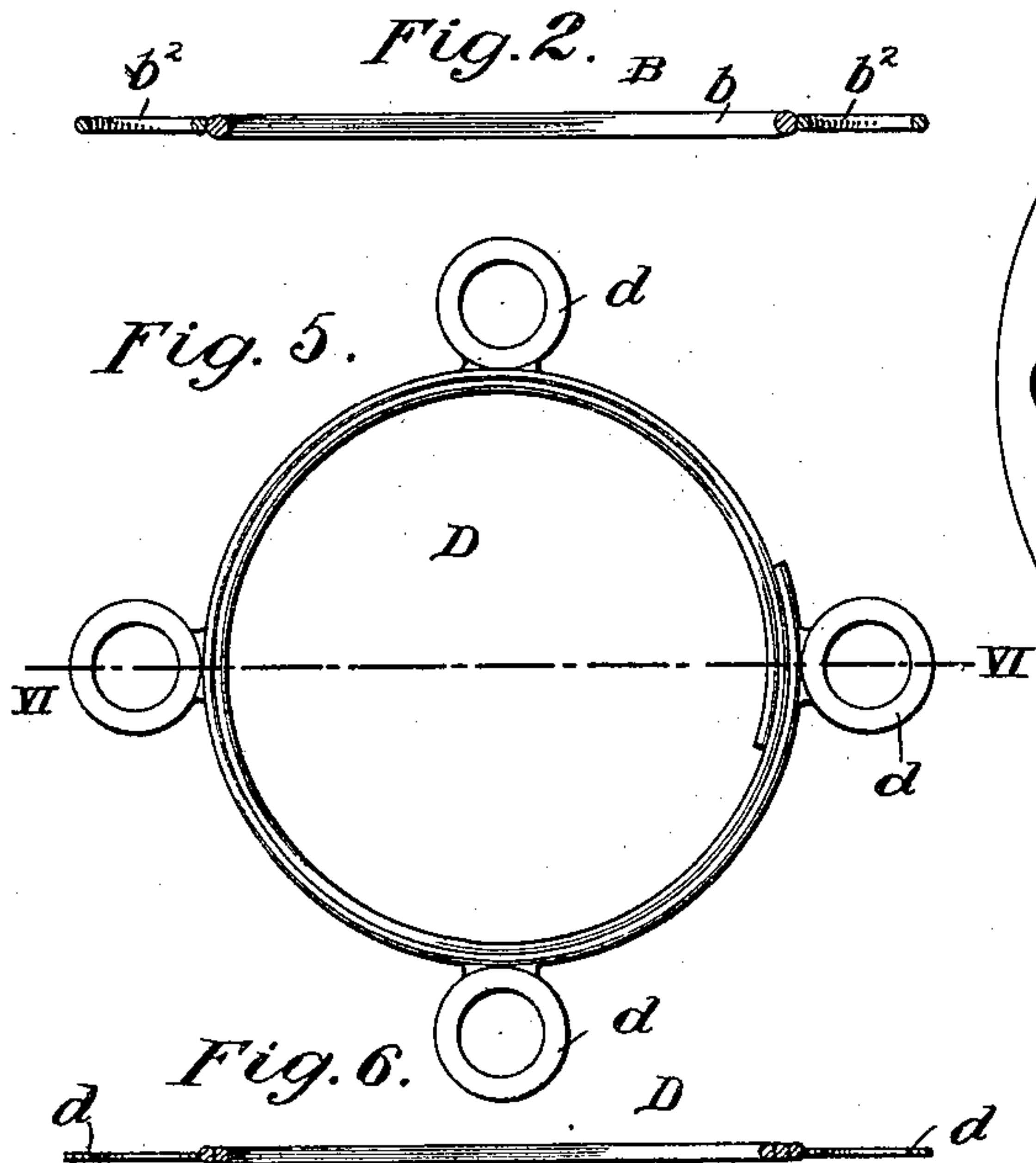
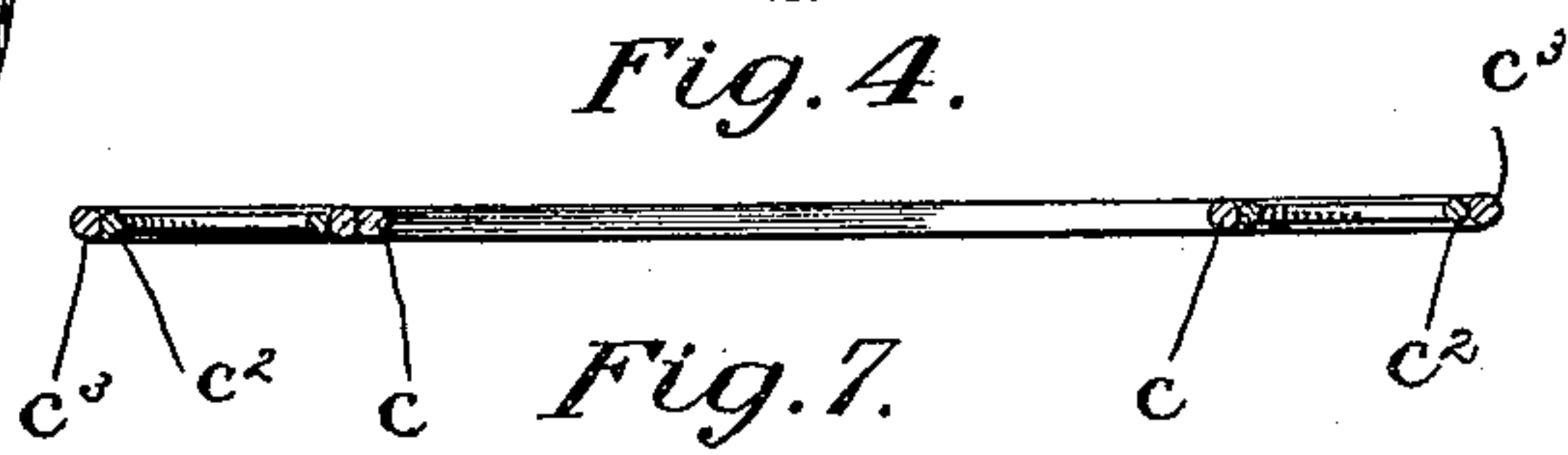
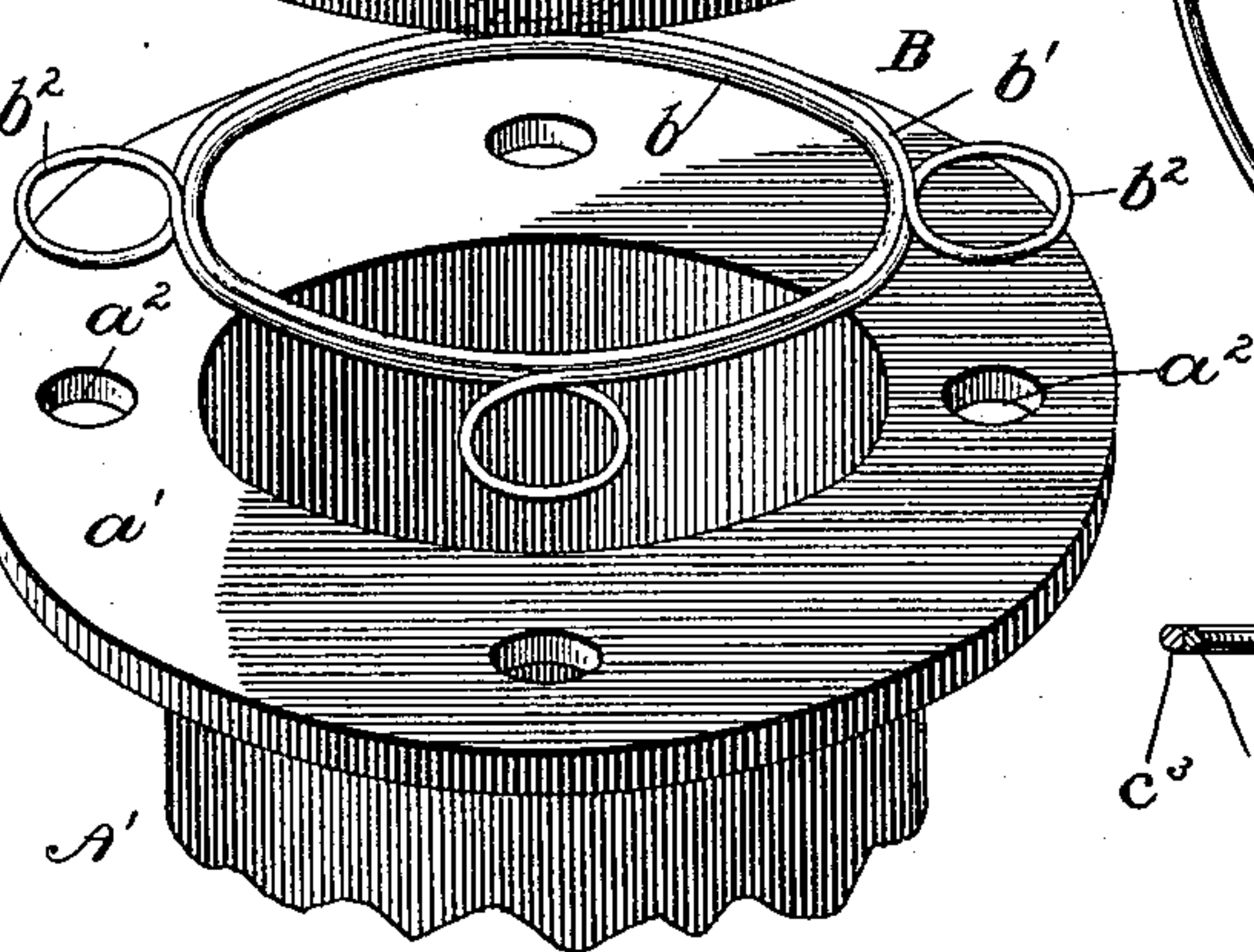
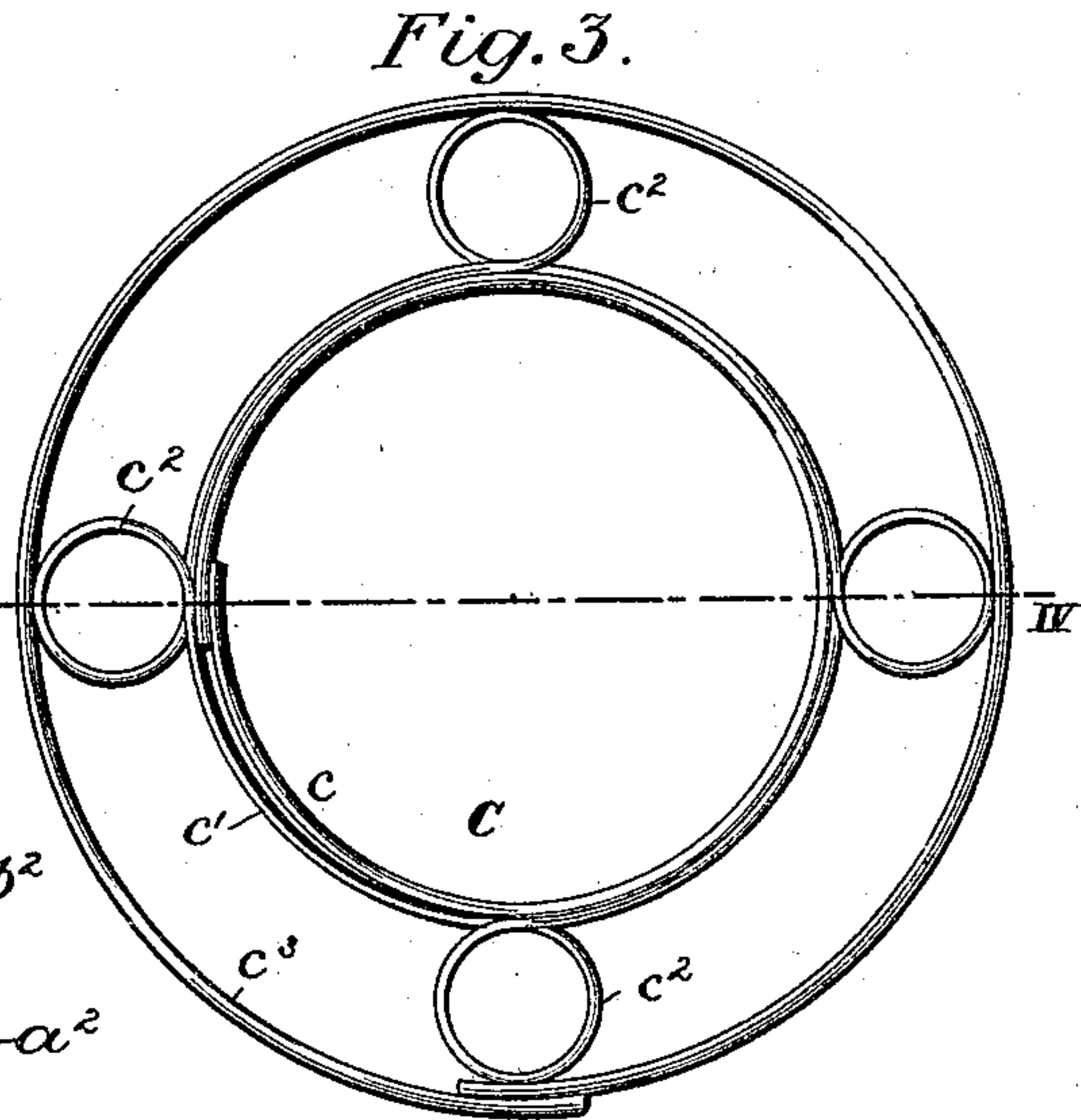
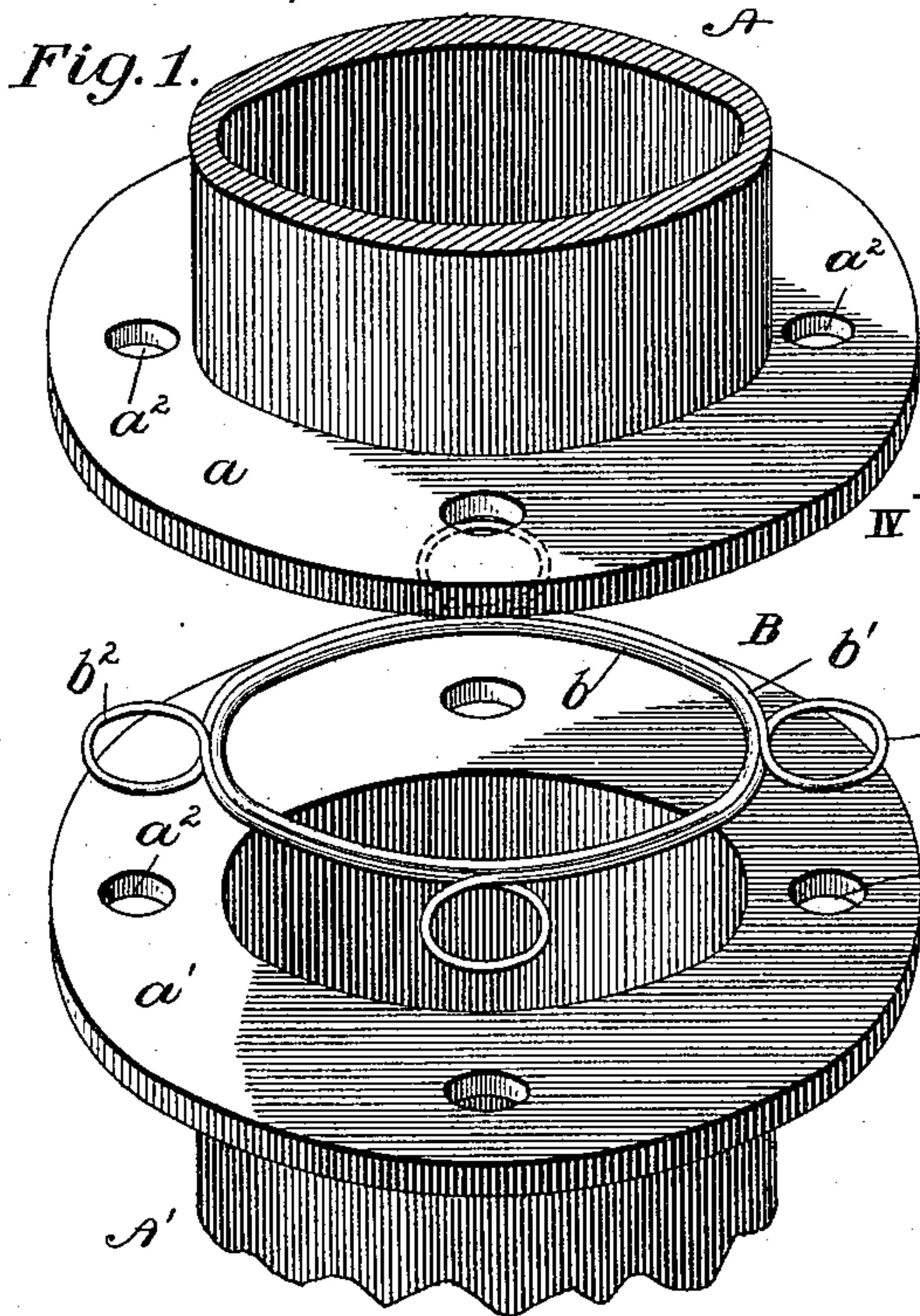
(No Model.)

2 Sheets—Sheet 1.

C. H. MERWARTH.
STEAM PACKING.

No. 605,891.

Patented June 21, 1898.



Witnesses.
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Chas. E. Riordan

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By John C. Nowell
His Attorney.

(No Model.)

C. H. MERWARTH.
STEAM PACKING.

2 Sheets—Sheet 2.

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Fig. 8.

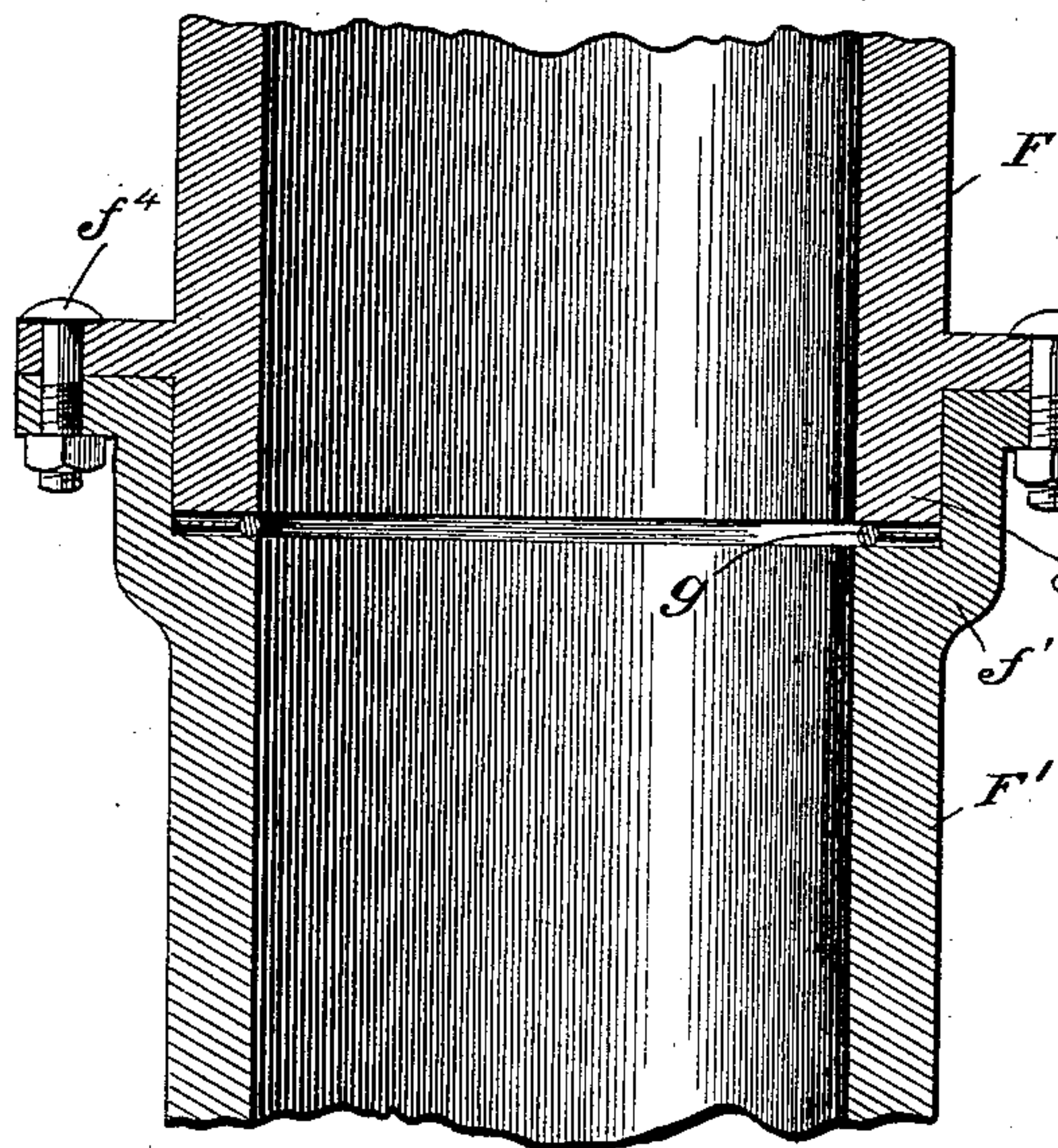


Fig. 9.

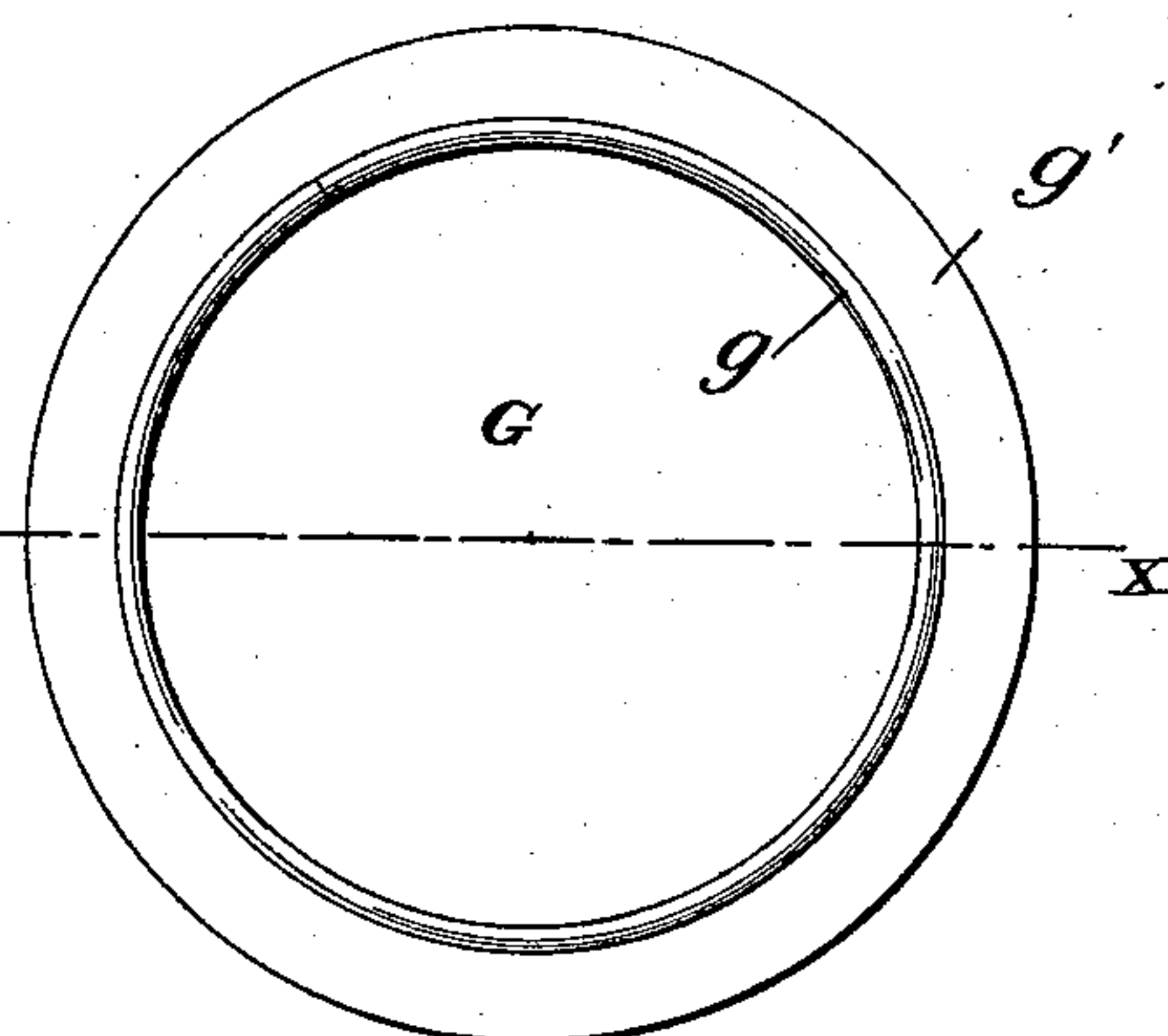


Fig. 10.

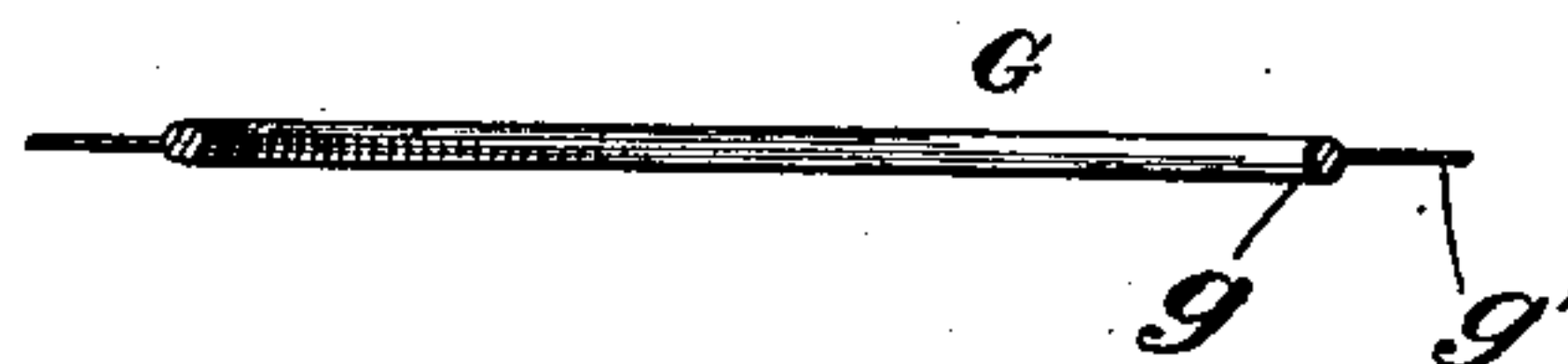


Fig. 13.

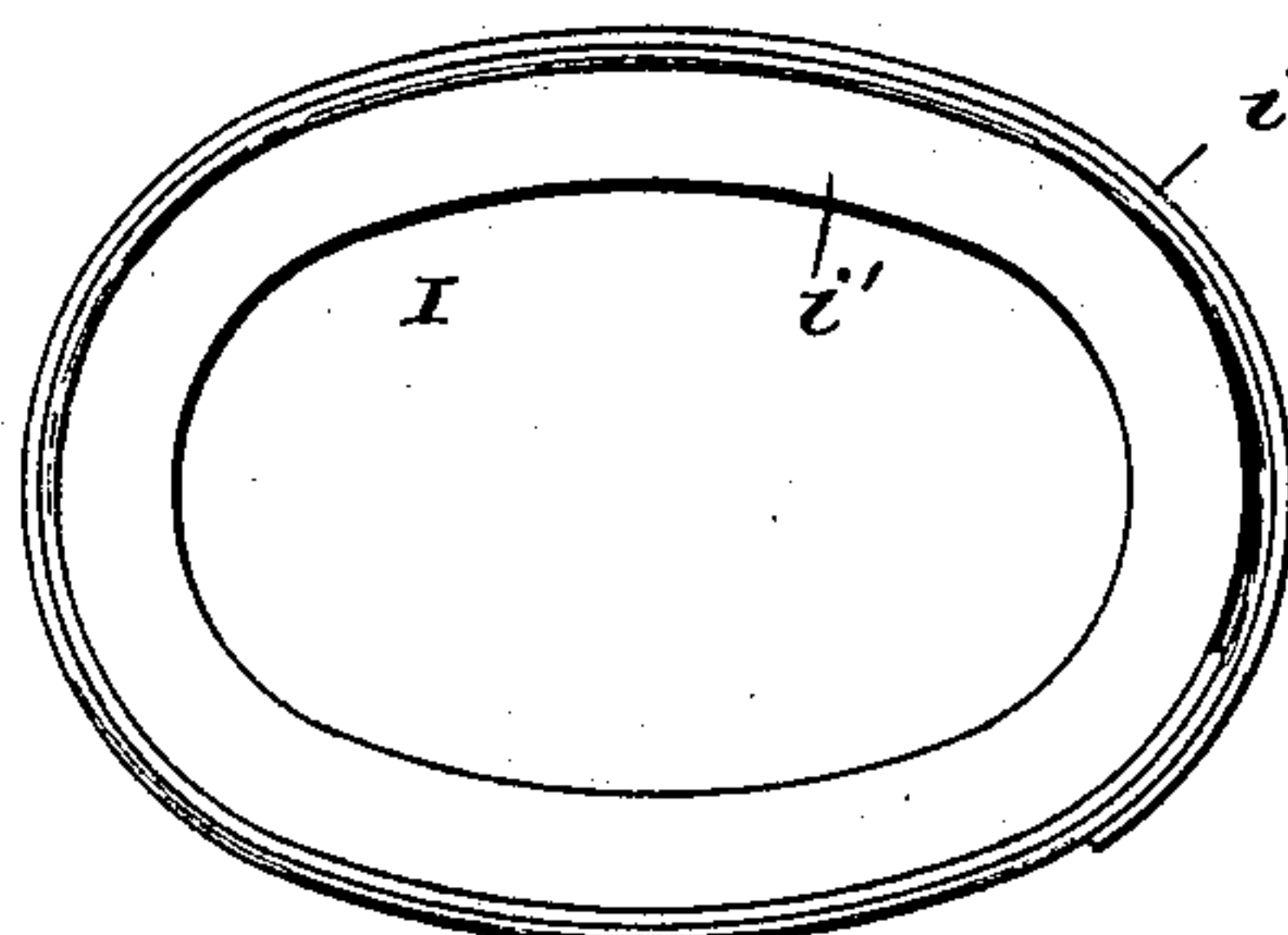


Fig. 14.

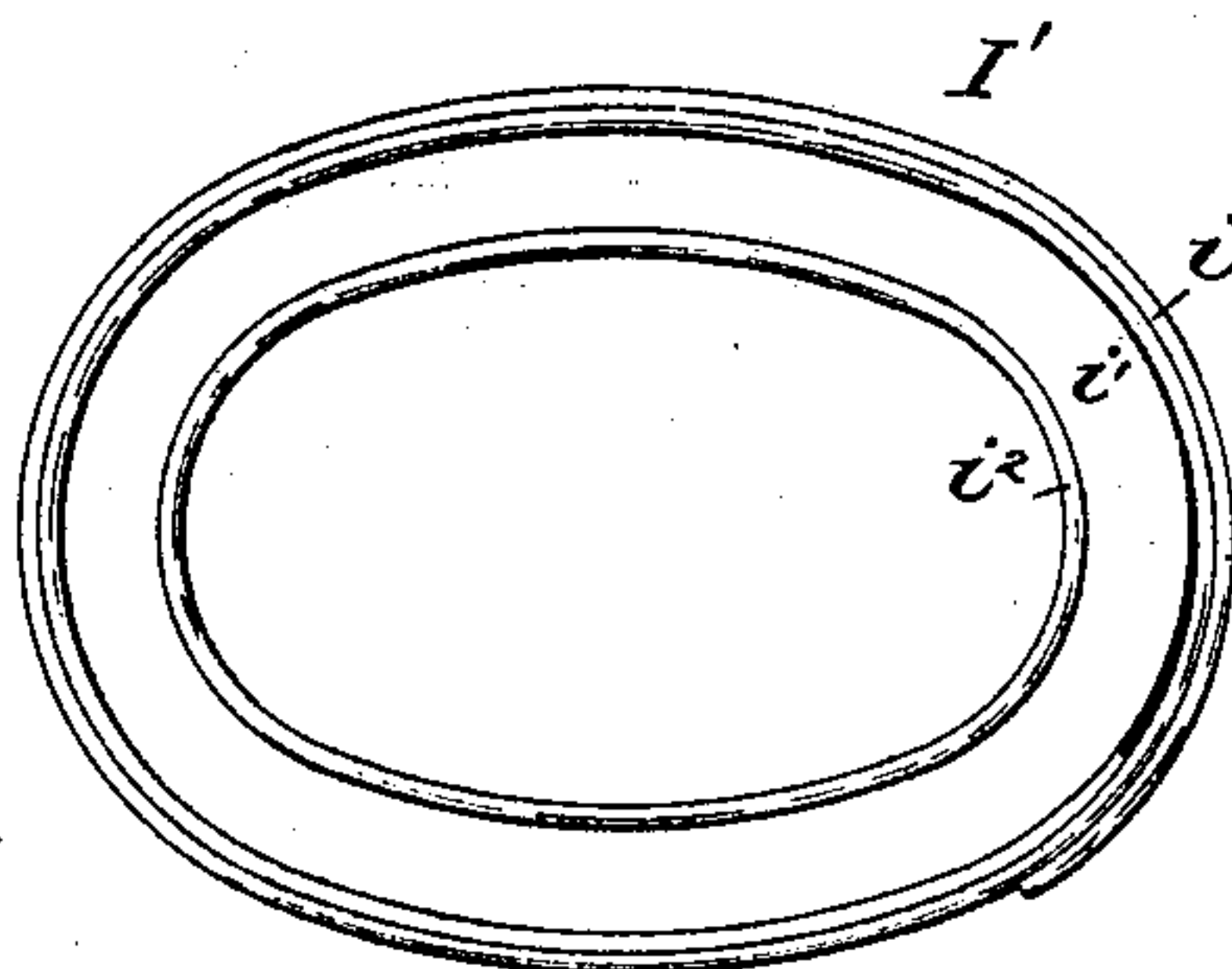


Fig. 11.

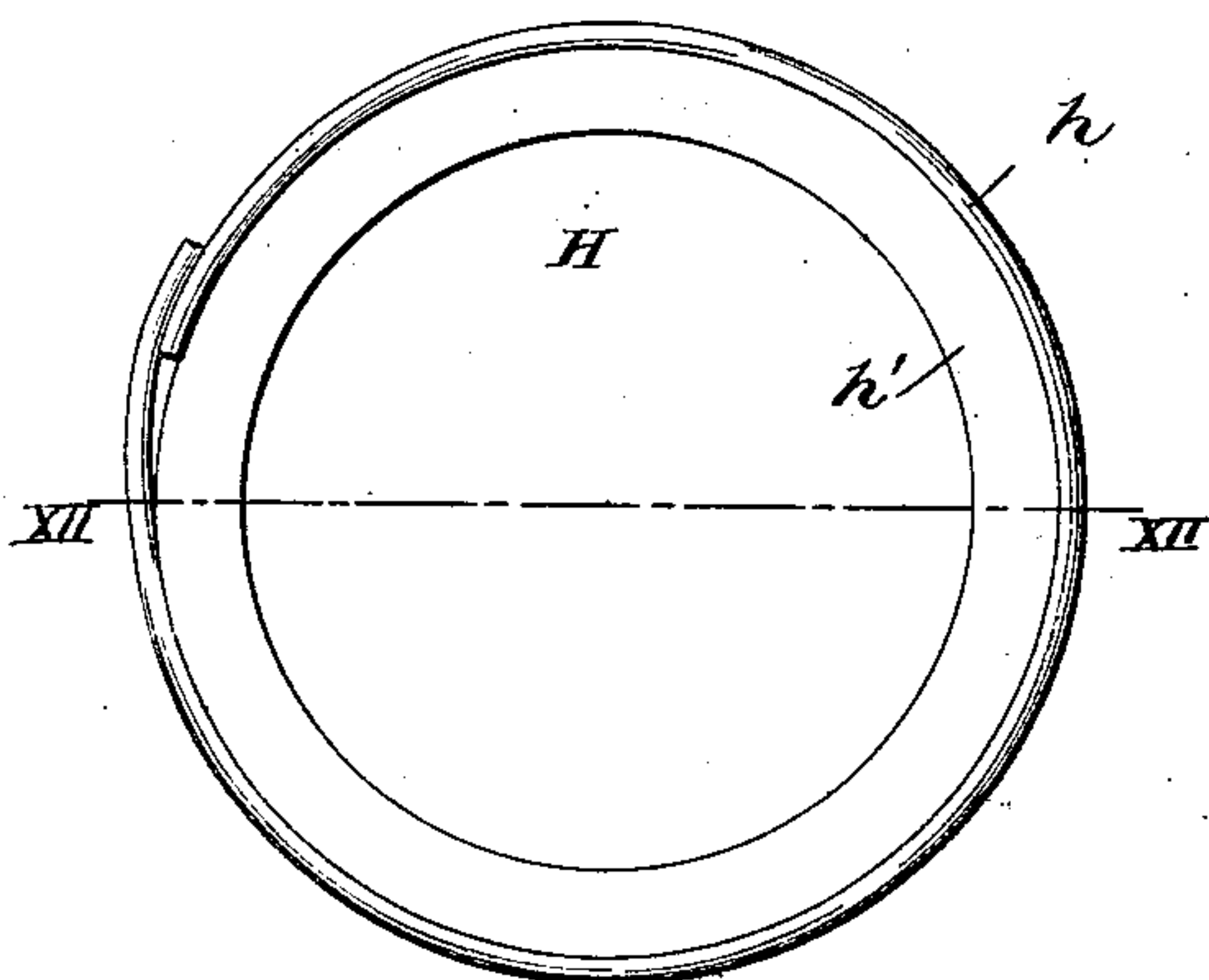
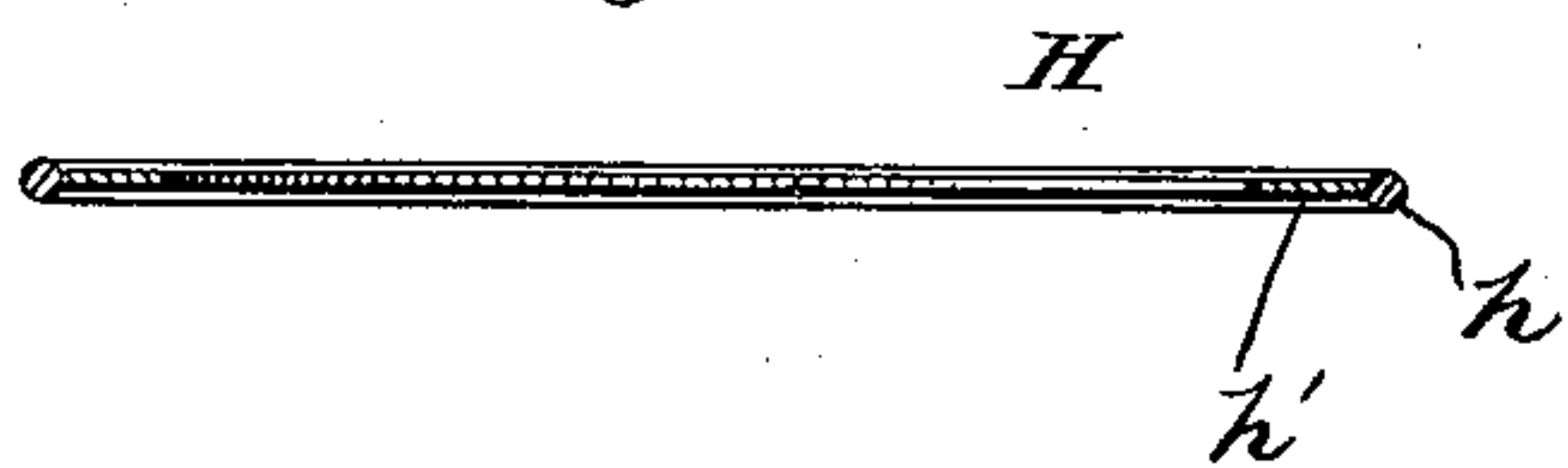


Fig. 12.



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UNITED STATES PATENT OFFICE.

CHARLES H. MERWARTH, OF SOUTH BETHLEHEM, PENNSYLVANIA.

STEAM-PACKING.

SPECIFICATION forming part of Letters Patent No. 605,891, dated June 21, 1898.

Application filed January 4, 1898. Serial No. 665,555. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. MERWARTH, a citizen of the United States, residing at South Bethlehem, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Packing; 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 appertains to make and use the same.

This invention relates to packing for steam and hydraulic joints, and more particularly to compressible soft-metal packings for such joints.

It has heretofore been proposed to provide packing-rings or gaskets of rubber or other elastic material and also of soft metal in the form of rings or coils which have been arranged between the adjacent ends of the pipe-sections to be united, so as to be compressed between the same and seal the joint; but in the practical application of such devices in sealing the joints between two pipe-sections it has been difficult to retain the packing concentric with the interior of the cylinder or pipe, and as a result when compressed a portion may project beyond the inner surface of the pipe, thus forming an obstruction permitting the lodgment and accumulation of dirt or objectionable matter and rendering the joint more or less defective by breaking or imperfectly forming the seal at one or more points.

The primary object of my invention is to provide a soft-metal packing or gasket with means associated therewith for centering the same within the pipe-sections, so that no part thereof shall project within the cylinder or pipe; but a concentric arrangement shall be insured and the ring compressed between the opposing faces or ends of the pipe in such manner as to form a perfect seal which will prevent the escape of steam or fluid at every point.

The invention will first be described with reference to the accompanying drawings, which are to be taken as a part of this specification, and then pointed out in the claims at the end of the description.

In the drawings, Figure 1 represents a perspective view of the end portions of two

flanged pipe-sections to be united and an intervening packing-ring or gasket and centering means embodying my invention, the several parts being arranged in proper relation to illustrate the application of the invention in sealing or packing a pipe-joint. Fig. 2 is a cross-section of the packing device shown in Fig. 1. Fig. 3 is a plan view illustrating a modification of the packing device shown in Fig. 1. Fig. 4 is a cross-section of the device shown in Fig. 3, the section being taken on the line IV IV of Fig. 3. Fig. 5 is a plan view of another modification, and Fig. 6 a cross-section taken on the line VI VI of Fig. 5. Fig. 7 is a plan view of another modification of the packing device and its centering means. Fig. 8 is a vertical sectional elevation of the end portions of two pipe-sections, illustrating the application of the modified form of packing shown in Fig. 9 adapted for sealing a male and female joint, the packing being shown in section between the opposed end portions of the pipe-sections. Fig. 9 is a plan view, and Fig. 10 a cross-section, of a modified form of packing adapted for an interlapping or male and female joint. Fig. 11 is a plan view, and Fig. 12 a cross-section on the line XII XII of Fig. 11, illustrating a further modification of the packing used for an interlapping joint. Fig. 13 illustrates a plan view of a packing adapted for an interlapping pipe-joint of oval form in cross-section, and Fig. 14 a plan of a further modification of the latter form of packing.

Referring to the drawings, in which the same letters of reference are used to denote corresponding parts in different views, A A' denote the end portions of two pipe-sections to be joined together having flanges a a' , respectively, thereon, each provided with a series of openings or apertures a^2 for uniting said sections by means of suitable bolts and nuts in a manner well known in the art.

B denotes a soft-metal annular packing and associated centering means, comprising a soft-metal ring b , the diameter of which should slightly exceed the interior diameter of the pipe-sections to be joined and which is secured within a second ring b' of any suitable metal, the latter being formed or provided at intervals with integral eyes or loops b^2 , adapted to register with the openings a^2 in the

flanges of the pipe-sections when the parts are arranged in position to compress the packing-ring between the opposing surfaces or end flanges of the pipe-sections. The packing-ring proper, b , is preferably composed of copper or other soft metal and is preferably enough larger than the inclosing ring b' to prevent contact of the latter with the opposed surfaces or flanges of the pipe-sections when the soft metal is compressed, thus forming a perfect seal or steam-tight joint between the adjacent edges or ends of the pipe-sections. By this means I provide an efficient and perfectly steam-tight joint entirely encircling the inner adjacent edges of the pipe-sections and insure its retention concentric with or at equal distances from the inner portions thereof, without any projection on the interior at any point, and I thus avoid the defects in the joints which result from not properly centering the packing before compressing the same in devices of a similar character heretofore employed.

In Figs. 3 and 4 the packing device (marked C) consists of an inner soft-metal ring c^1 and an inclosing holder or retaining-ring c' , having integral eyes or loops c^2 , constructed substantially as described with reference to Figs. 1 and 2, but having in addition an outer soft-metal ring c^3 , connected thereto, the latter ring encircling said loops or eyes c^2 and soldered or otherwise secured thereto. This construction provides an efficient seal at or near both the outer and inner edges of the adjacent pipe-sections. The soft-metal rings c^1 c^3 are preferably larger than the intermediate retaining-ring and eyes c^2 , which are quite thin, so that the latter will not be compressed, but will serve merely to center and retain the packing-rings concentric with the pipe ends in proper position to form a perfect seal when the end portions of the two pipe-sections are brought together and said packing-rings compressed between the same. It may be desirable, however, in some cases to form the loops or eyes c^2 of a soft-metal rod or wire of the same size as the soft-metal rings c^1 c^3 , in order to form a seal around the bolt holes or perforations through the flanges in the ends of the pipe-sections.

In Figs. 5 and 6 I have illustrated a further modification D, in which two (more or less) soft-metal rings are provided at intervals with peripheral rings or eyes d , the latter being soldered or otherwise secured to the packing-rings and formed of thin metal, so as to adapt them to receive the bolts by which the ends of the pipe-sections are secured together and to center the packing ring or rings in proper position for compression without themselves being compressed when said ends are brought together and the packing-rings are under compression.

In Fig. 7 I have shown a modification consisting of a thin flat outer ring e , having a series of perforations or openings e' therein and an inner thicker soft-metal packing ring or

rings e^2 , this packing device being especially designed for sealing the joints between two interlapping pipe-sections or a male and female joint, as illustrated in Fig. 8.

In the last-mentioned figure, F F' denote two pipe ends having interlapping male and female portions f f' , respectively, which are provided with flanges f^2 f^3 , respectively, secured together by suitable bolts f^4 and having between the interlapped end portions a soft-metal packing-ring g , with retaining and centering means, as illustrated in Figs. 9 and 10, wherein the device as an entirety is denoted by the reference-letter G, and consists of an inner soft-metal ring g and an outer non-perforated thin flat ring g' , the diameter of which should correspond with the interior diameter of the female portion of the pipe-sections to be joined, while the diameter of the packing-ring g should be only slightly larger than the interior diameter of said pipe.

In Figs. 11 and 12 I have shown a further modification in which a thin flat metal ring and a soft-metal packing-ring are shown in a reversed position from that illustrated in Figs. 9 and 10, the packing-ring h in this case being encircled by and soldered or otherwise secured to the centering or retaining ring h' .

In Fig. 13 is shown a further modification, (marked I,) in which the packing device is of oval form, and consists of two (more or less) outer soft-metal rings i , soldered or otherwise secured to an inner thin flat non-perforated centering or retaining ring i' .

In Fig. 14 is shown a modification (marked I') of the form shown in Fig. 13, which is like the latter, except that an inner flat metal ring i^2 is provided for the purpose of forming a double and more perfect seal by providing a compressible packing-ring adjacent to both the outer and the inner circumference of the cylinders or pipe-sections to be joined.

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

1. A packing for steam and hydraulic joints comprising an annular compressible metal portion of less diameter than the exterior diameter of the pipe ends to be joined, and a thin comparatively wide retaining and centering portion of less thickness than said compressible portion united thereto as a separate piece and adapted to hold the latter in proper position for compression concentric with the interior diameter of the pipe ends without itself being compressed, substantially as described.

2. A packing for steam and hydraulic joints comprising an annular compressible soft-metal portion of less diameter than the exterior diameter of the pipe ends to be joined, and a series of eyes or loops to receive the fastening-bolts by which the pipe ends are joined together and adapted to retain the annular packing concentric with the interior diameter of the pipe ends, substantially as described.

3. A packing for steam and hydraulic joints comprising an annular compressible soft-metal portion of less diameter than the exterior diameter of the pipe ends to be joined, 5 and an annular portion of thin metal having a series of correspondingly thin eyes or loops arranged exteriorly of the soft-metal packing to receive the fastening-bolts by which the pipe ends are joined together, and adapted 10 to retain the annular packing concentric with the interior diameter of the pipe ends without itself being compressed, substantially as described.

4. A packing for steam and hydraulic joints 15 comprising an annular soft-metal portion of less diameter than the exterior diameter of the pipe ends to be joined, and a thin metal ring inclosing and joined to said packing-ring and having thin exterior eyes or loops for receiving bolts by which the packing may be 20 retained concentric with the interior of the pipe, substantially as described.

5. A packing for steam and hydraulic joints

comprising an annular copper ring comparatively large in cross-section but of less diameter than the exterior diameter of the pipe 25 ends to be joined, and a thin metal ring inclosing and joined to said packing-ring and having thin exterior eyes or loops integral therewith for receiving bolts by which the 30 packing may be retained concentric with the interior of the pipe, substantially as described.

6. A packing for steam and hydraulic joints comprising a soft-metal ring arranged within 35 a larger soft-metal ring, and an intermediate ring of thin metal encircling and secured to the inner ring and provided with integral eyes or loops spanning the space between the two packing-rings and secured to the outer ring, 40 substantially as described.

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

CHARLES H. MERWARTH.

Witnesses:

A. B. LYNN,
M. S. GRIMS.

It is hereby certified that in Letters Patent No. 605,891, granted June 21, 1898, upon the application of Charles H. Merwarth, of South Bethlehem, Pennsylvania, for an improvement in "Steam-Packing," errors appear in the printed specification requiring correction as follows: In line 25, page 2, the reference letter "c" should read c, and line 37, same page, the reference letter "c" should read c'; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 28th day of June, A. D., 1898.

[SEAL.]

WEBSTER DAVIS,
Assistant Secretary of the Interior.

Countersigned:

C. H. DUELL,
Commissioner of Patents.