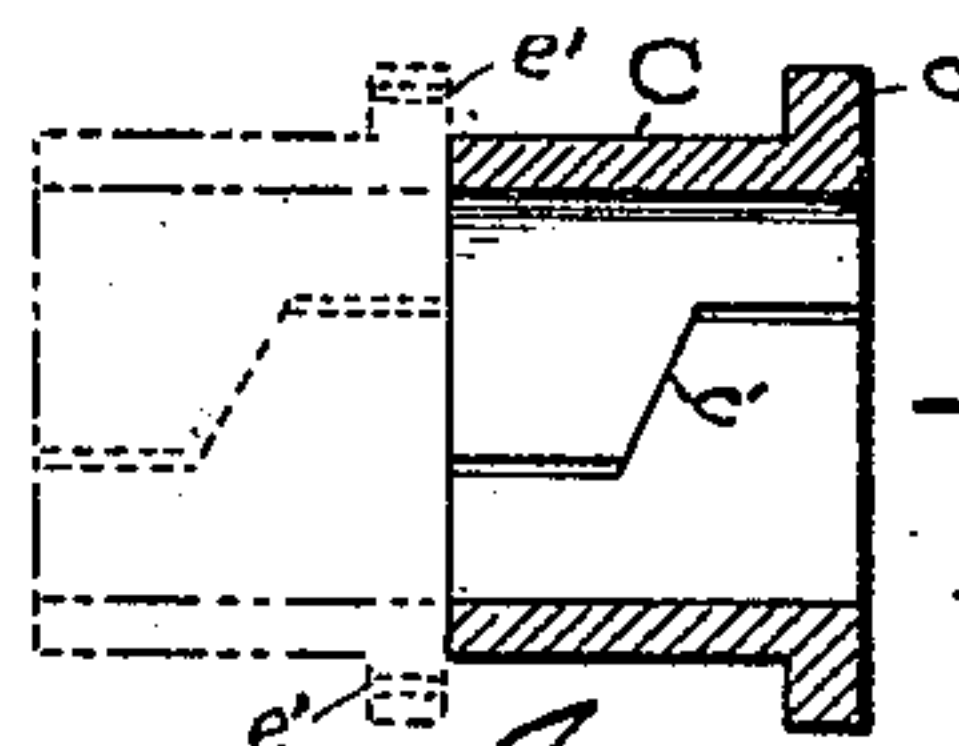
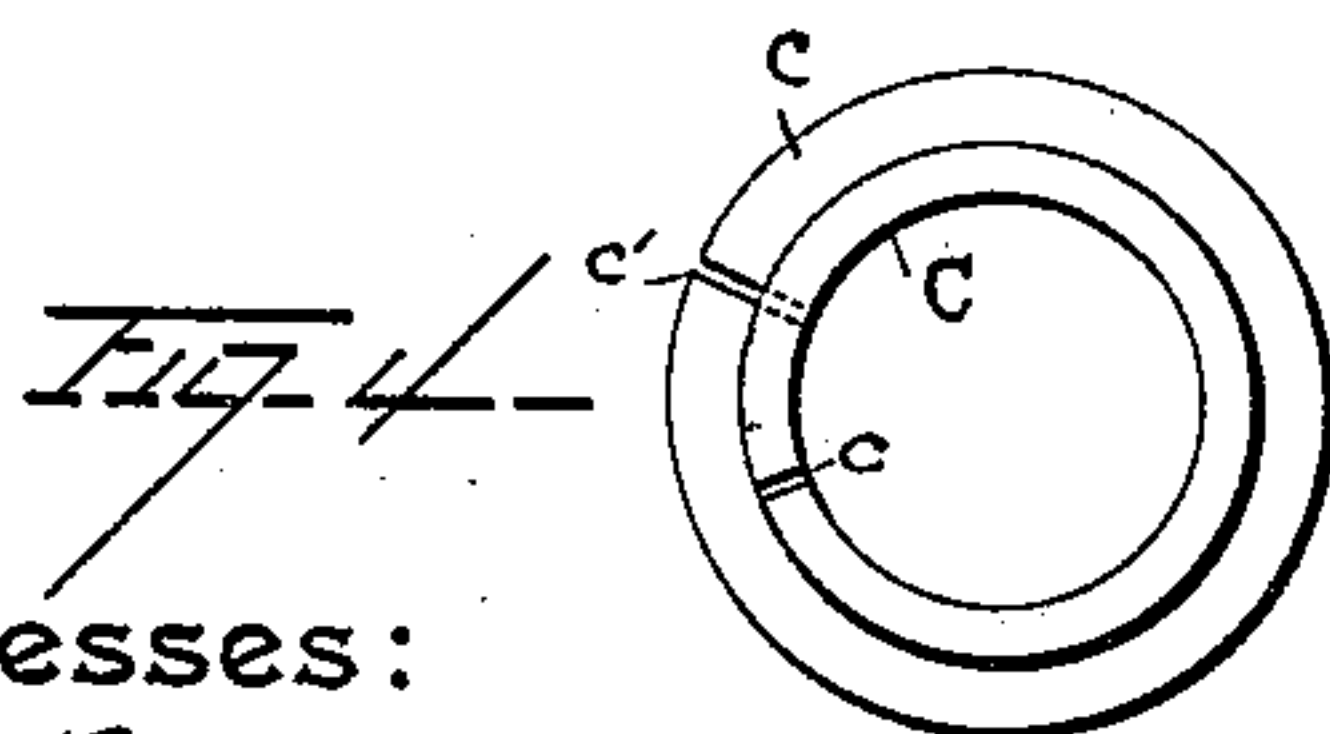
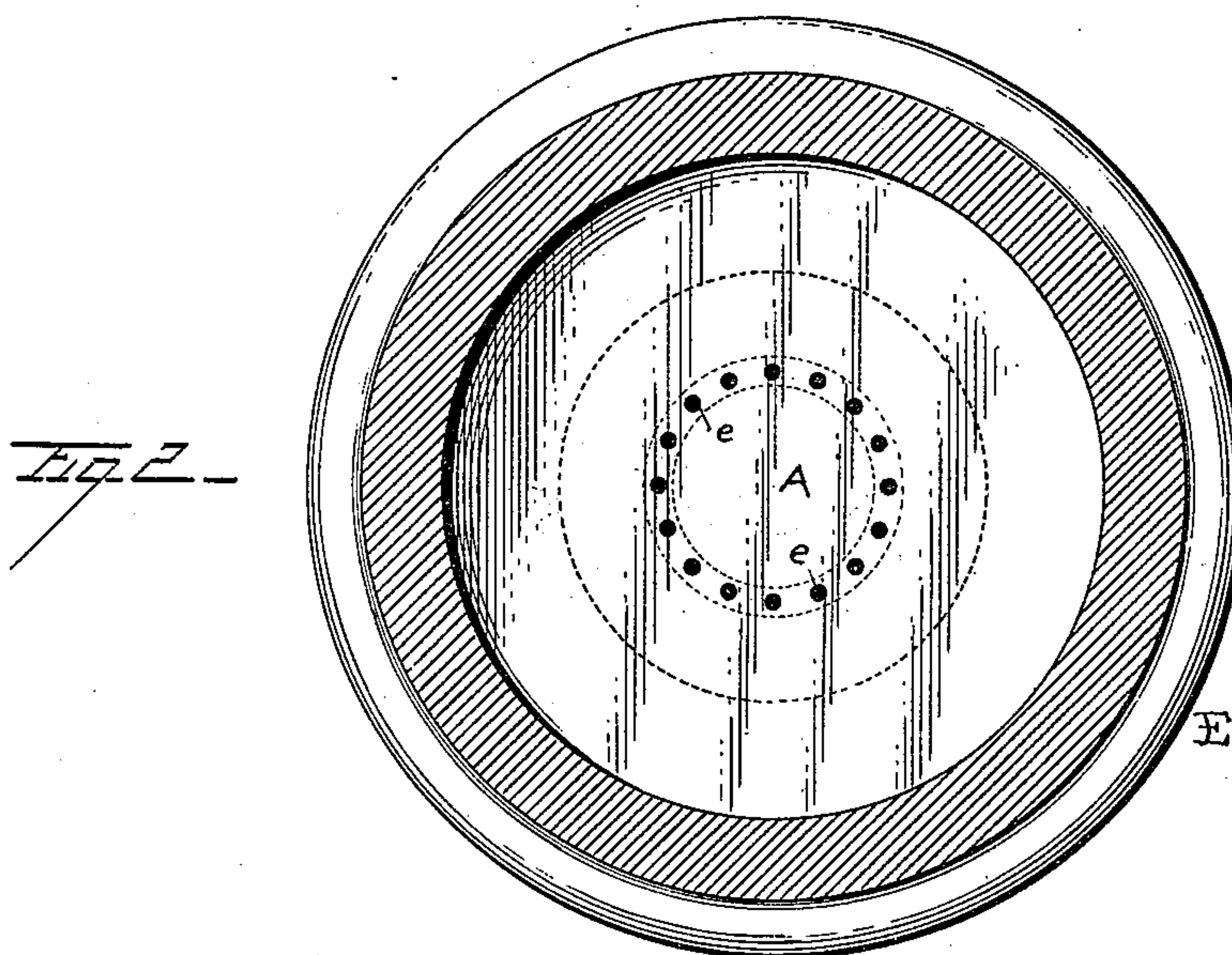
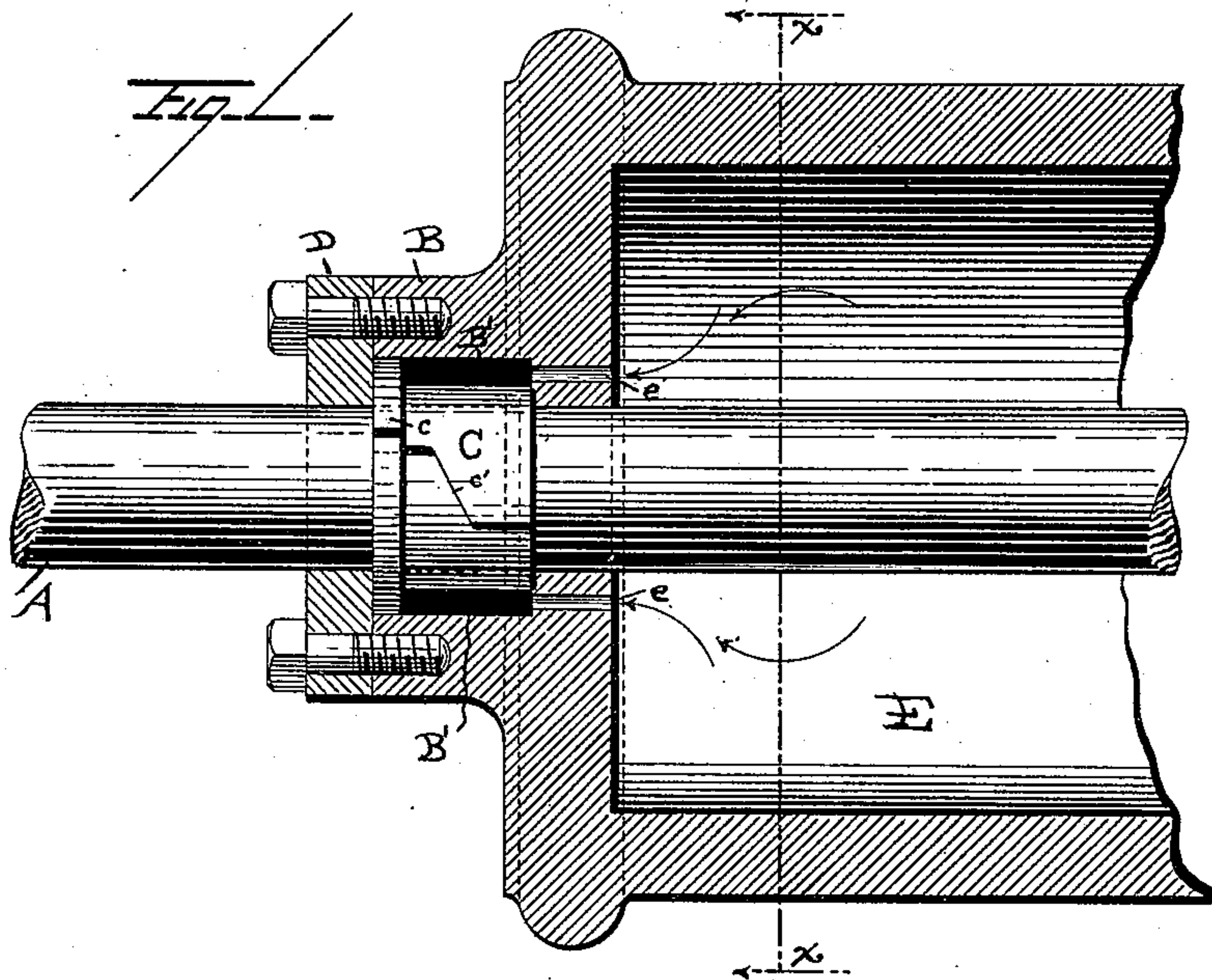


(No Model.)

J. L. HALYBURTON.  
METALLIC PISTON ROD PACKING.

No. 430,074.

Patented June 10, 1890.



Witnesses:

*Wm. H. Bush*  
*W. Allen Robinson*

Inventor

*John L. Halyburton*  
*Prop. His Attorney*  
*John J. Kelley Jr.*



# UNITED STATES PATENT OFFICE.

JOHN L. HALYBURTON, OF PHILADELPHIA, ASSIGNOR OF ONE-HALF TO  
CHARLES M. RHODES, OF WAYNE, PENNSYLVANIA.

## METALLIC PISTON-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 430,074, dated June 10, 1890.

Application filed March 3, 1890. Serial No. 342,457. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN L. HALYBURTON, a citizen of the United States, residing in the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Self-Adjusting Metallic Piston-Rod and Valve-Stem Packing for Steam-Engines, Pumps, &c., of which the following is a specification, reference being had to the accompanying drawings, forming part thereof, and in which—

Figure 1 is a sectional view of so much of a steam-engine as is necessary to illustrate my invention and represents a packing-ring constructed in accordance with my invention—that is to say, it being a broad ring-body having a shoulder at one end and provided with a split, mounted on a piston-rod or shaft and inclosed within a fixed box or bearing having a cylindrical annular chamber, and a steam-cylinder provided with steam passage-ways in communication with the interior of the box or bearing, for a purpose hereinafter fully set forth. Fig. 2 is an end view of the steam-cylinder, showing the series of steam passage-ways, whereby pressure is applied to the packing-ring, as hereinafter more fully described. Fig. 3 is a sectional side elevational view of my self-adjusting packing-ring removed from the piston, and showing also in dotted lines a method of coupling two or more of said rings, in which event the additional ring or rings are provided with steam passage-ways through the respective shoulders thereon, as shown; and Fig. 4 is an end view of my packing-ring, as shown in full lines in Fig. 3.

It is the object of my invention to provide a metallic piston-rod and valve-stem packing for steam-engines, pumps, valves, and for other similar purposes that will be self-adjusting, effective, and durable in operation and cheap and simple in construction, and to this end I have devised the packing-ring which I now describe and claim.

Referring to the drawings, A is a piston-rod or shaft, and B the fixed box or bearing therefor. This box is preferably constructed with a cylindrical annular chamber B'. D is the gland or follower of said box.

C is my metallic packing-ring, and is con-

structed of a suitable anti-friction metal, and consists of a broad ring-body having a shoulder *c* at one end and provided with a zigzag split *c'* throughout its length.

E is a steam-cylinder, and *e* is a series of steam passage-ways or exit-ports from the cylinder, which communicate with the box B.

In combining the parts, the gland or follower D being removed, the packing-ring C is mounted on the piston-rod A with its shoulder away from the steam-cylinder and the gland replaced, the shoulder of the packing-ring then abutting against it.

In the construction and arrangement of parts shown the packing-ring is of length sufficient to snugly fit to the interior of the box B. The series of steam passage-ways *e* leads from the steam-cylinder E and communicate with the interior of the box B.

In operation steam fed from the cylinder E passes through the passage-ways *e* into the steam-area of the box B, and by its pressure acting upon the periphery of the split packing-ring and the back of the shoulder thereon causes the adjustment of said ring on the shaft. As will be apparent, the ring will bite the piston-rod or shaft in proportion as the pressure of steam increases or decreases, the split *c'* serving to that end. When desired, additional similar ring or rings may be coupled or mounted on the same shaft, as shown in dotted lines, Fig. 3, and when more than one ring is employed the shoulder on each ring is provided with steam passage-ways *e'*, whereby steam may be admitted to the outer periphery and to the back of the shoulder of its preceding neighboring ring, to the end that a simultaneous action of as many packing-rings as are employed is obtained.

I do not wish to confine myself to the exact form of split given the ring as shown and described, as it is obvious that other forms of split may be given to the same end. Neither do I wish to confine myself to the exact method shown of feeding steam from the cylinder to the periphery of the packing-rings, as means other than shown may be adopted without departing from the spirit of my invention strictly as such, which resides in the employment of a split metallic packing-ring mounted on a shaft or piston-rod, and its exterior surface acted



upon by steam-pressure to cause the ring to bite the shaft in proportion as the pressure of steam increases or decreases.

Having thus described my invention, I claim—

1. The combination, with a sliding or rotating shaft or piston-rod and its fixed box or bearing, of the herein-described self-adjusting metallic packing-ring, mounted on said shaft and consisting of a broad ring-body having an annular shoulder at one end and provided with a split, and a steam-cylinder having a series of steam passage-ways in communication with the steam-area about the outer periphery of the packing-ring, whereby the pressure of steam admitted to said area acts upon the outer periphery of the packing-ring and the back of the annular shoulder thereof to cause the ring to bite the shaft or rod accordingly as the steam-pressure varies, and at the same time to force the ring against the outer end of the stuffing-box, as set forth.

2. The combination, with a sliding or rotating shaft or piston-rod and its fixed box or

bearing, of the herein-described self-adjusting metallic packing-ring, mounted on said shaft and consisting of a broad ring-body with an annular shoulder at one end and provided with a split, one or more additional similar packing ring or rings, also mounted on said shaft end to end, said additional packing ring or rings as to their respective shoulders provided with steam passage-ways in communication with the steam-area about the periphery of its preceding neighboring ring, and connected means for applying pressure to the outer periphery of said packing-rings and the back of their respective shoulders, whereby said rings are caused to bite the shaft or rod accordingly as the steam-pressure varies, and force them toward the outer end of the stuffing-box, as set forth.

In testimony whereof I have hereunto signed my name this 25th day of November, A. D. 1889.

JOHN L. HALYBURTON.

In presence of—

CHAS. M. RHODES,  
JOHN JOLLY, Jr.