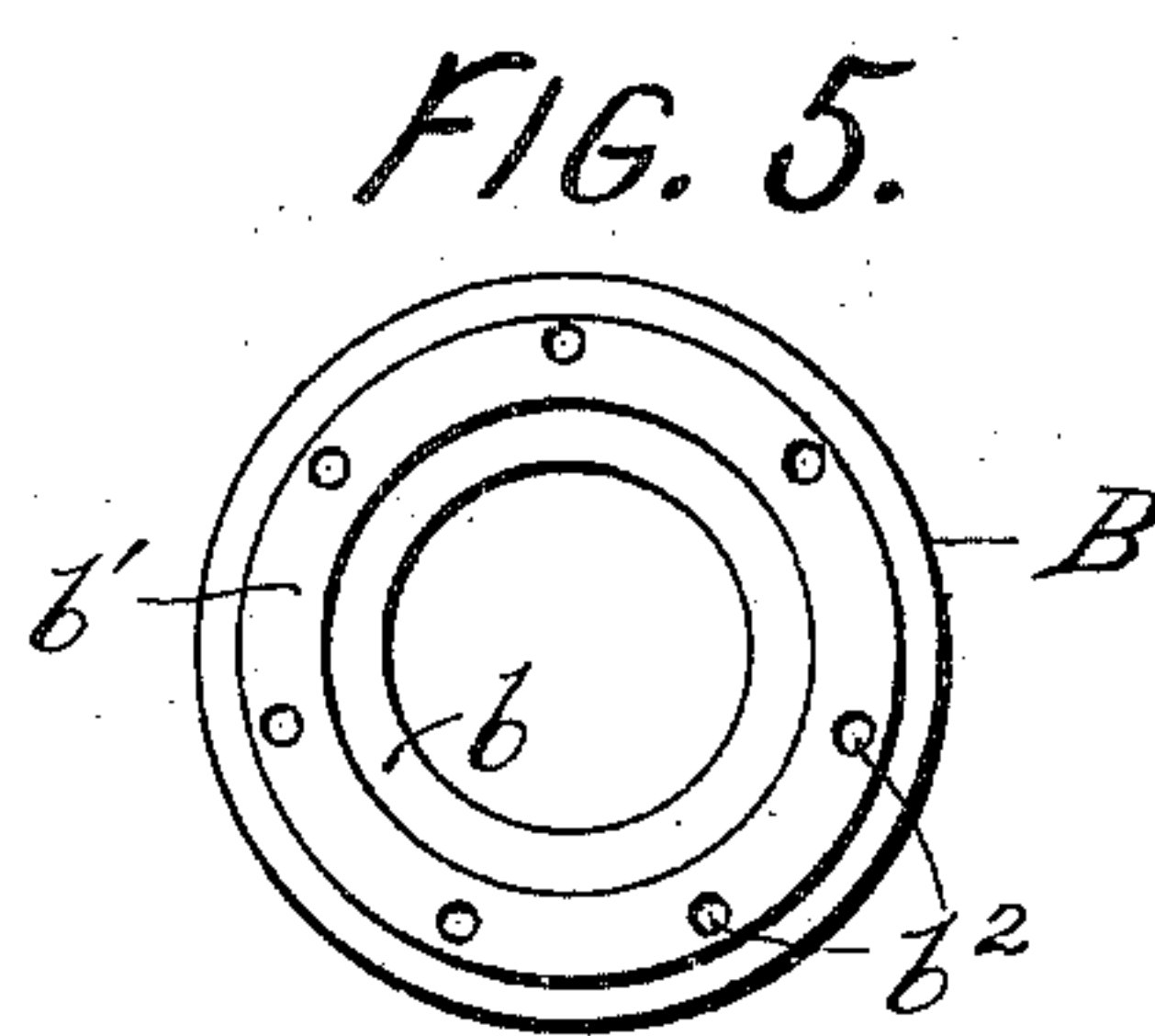
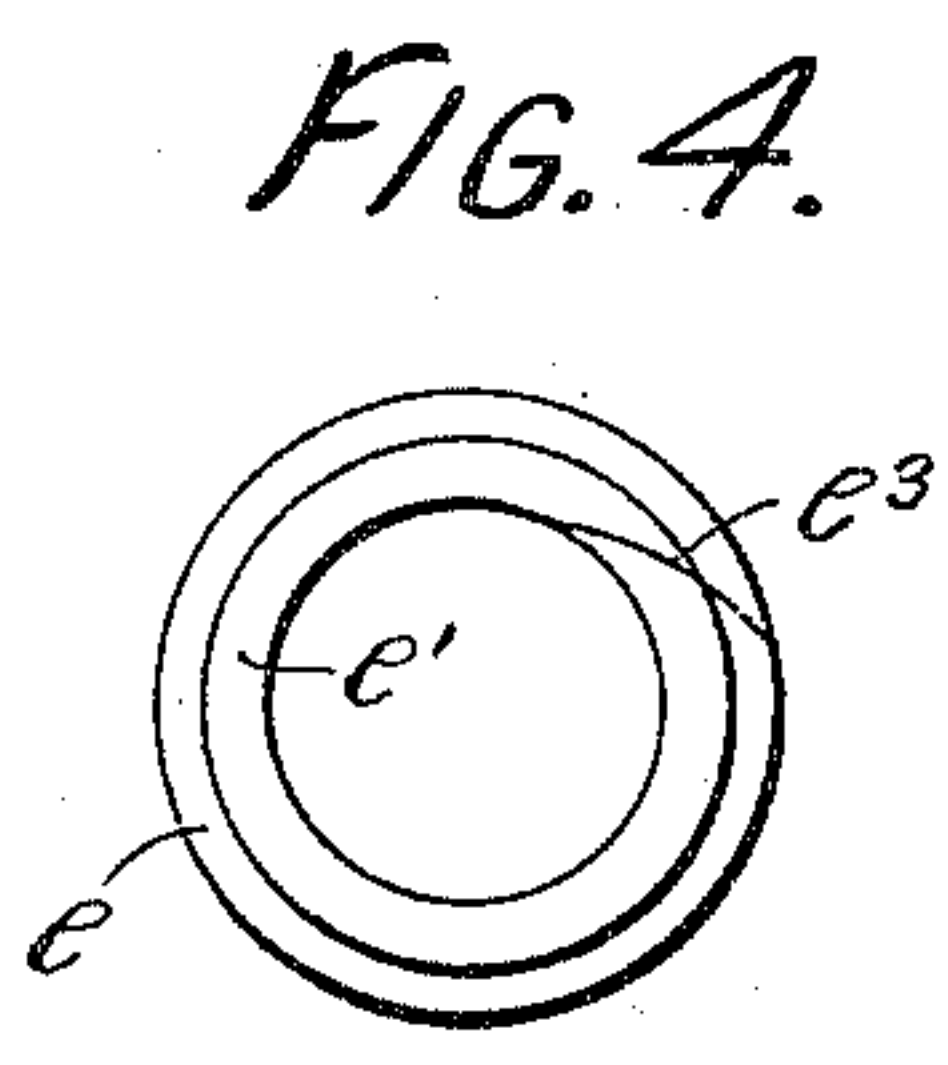
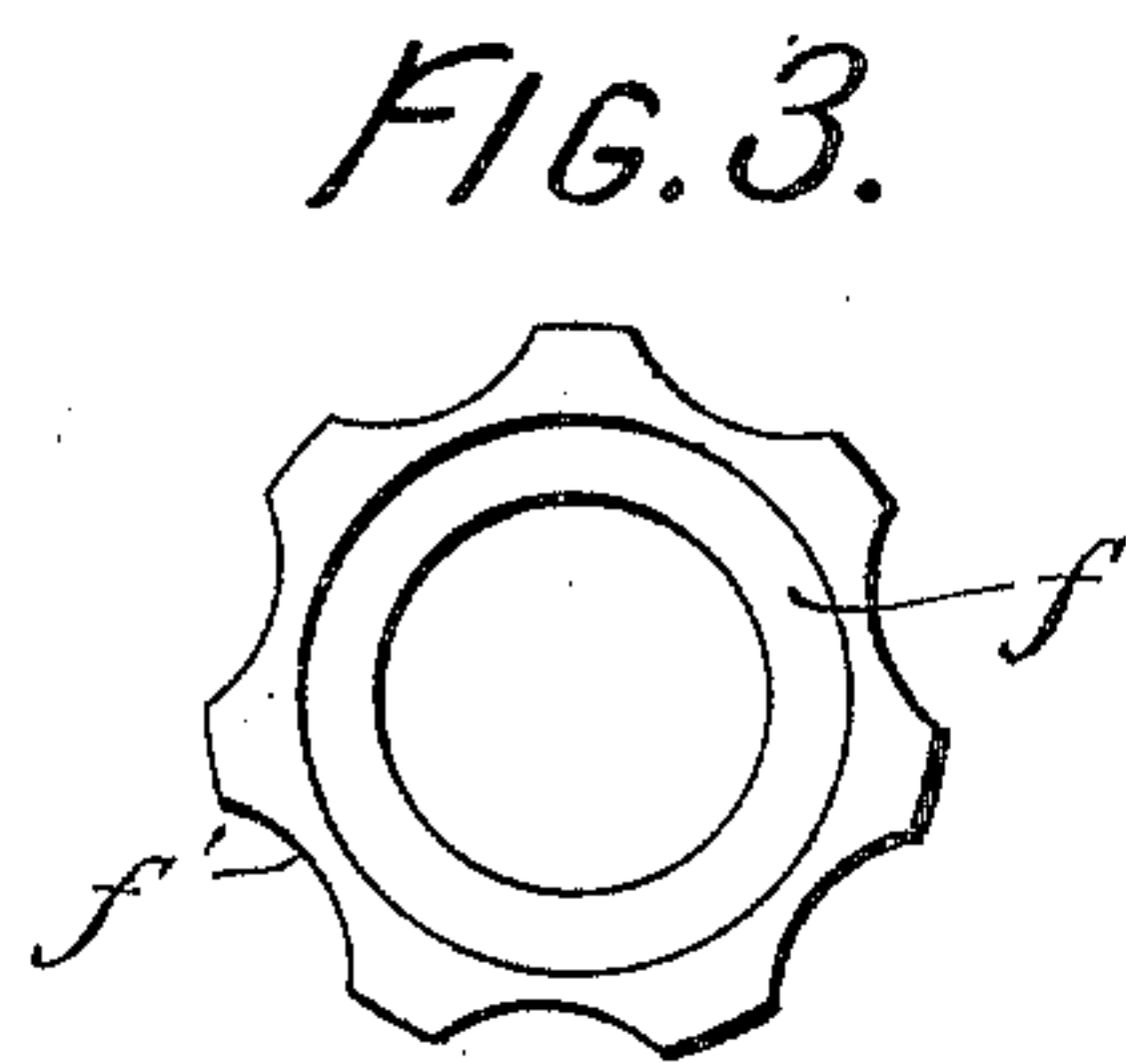
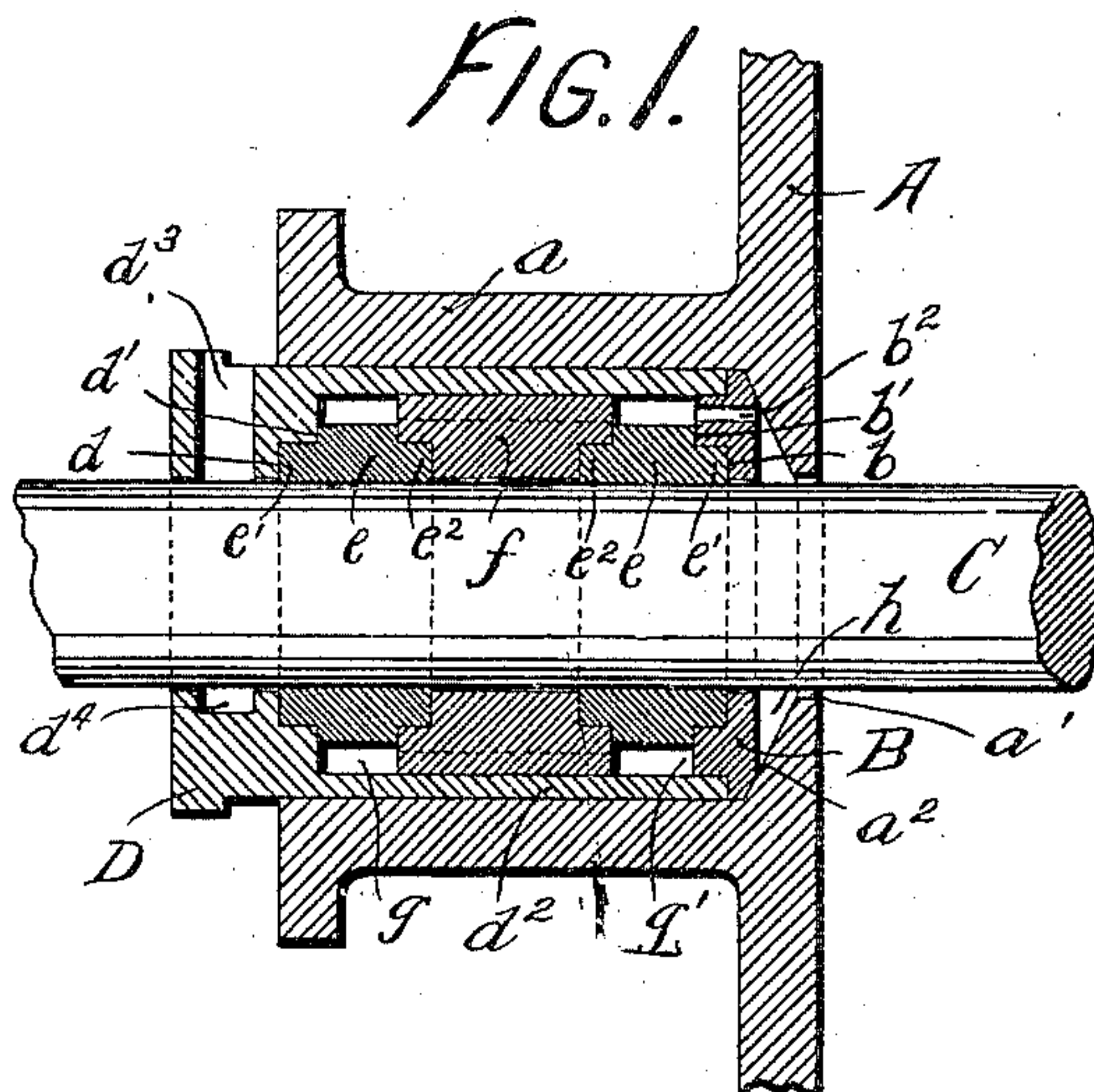
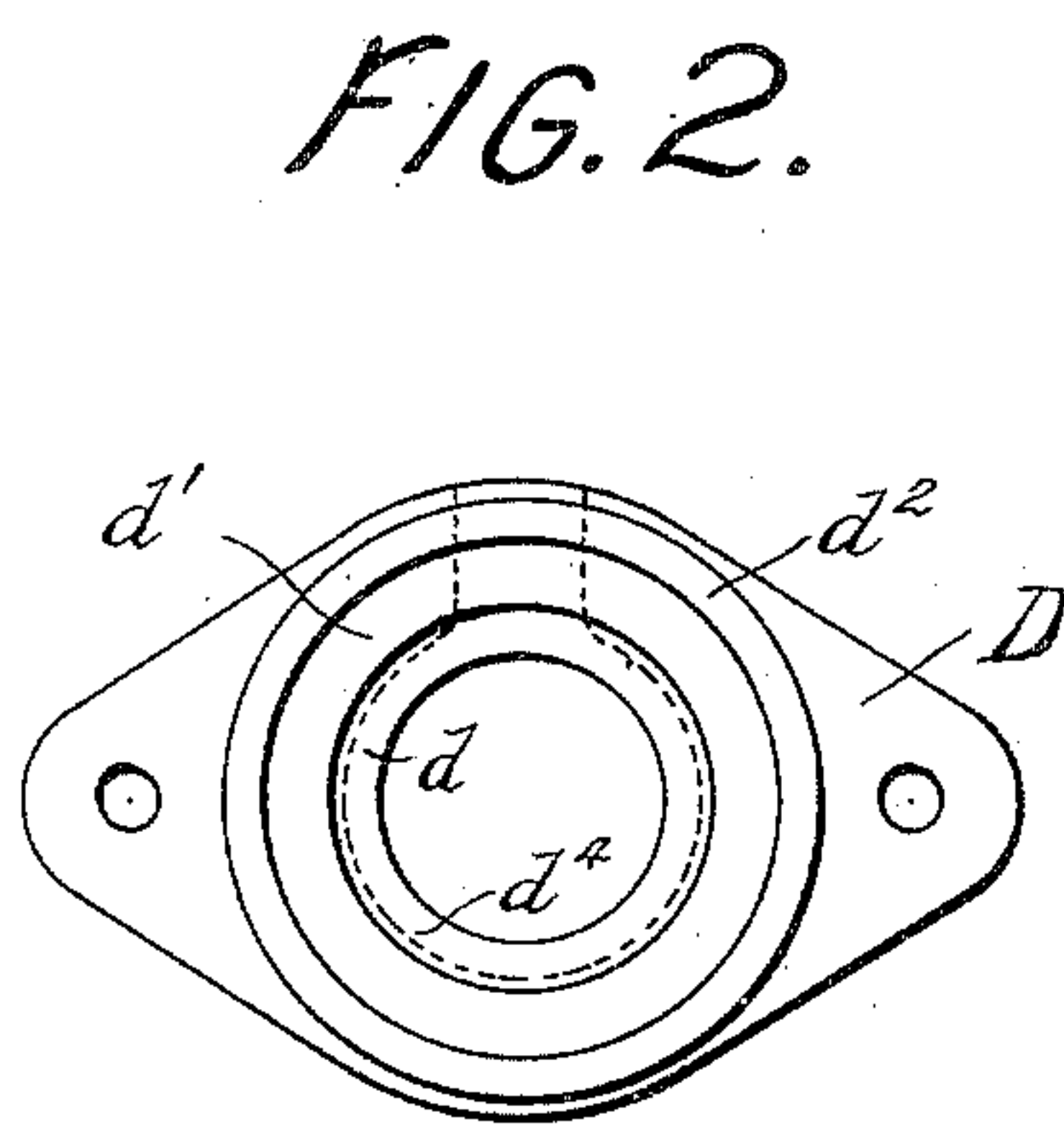


(No Model.)

A. H. TWINING.  
ROD PACKING.

No. 446,699.

Patented Feb. 17, 1891.



Witnesses  
*E. A. Kelly*  
*David Levan*

*Allen H. Twining* Inventor

By *his* Attorney *J. H. Twining*



# UNITED STATES PATENT OFFICE.

ALLEN H. TWINING, OF READING, PENNSYLVANIA.

## ROD-PACKING.

SPECIFICATION forming part of Letters Patent No. 446,699, dated February 17, 1891.

Application filed August 26, 1890. Serial No. 363,084. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN H. TWINING, a citizen of the United States, residing at Reading, in the county of Berks, State of Pennsylvania, have invented certain Improvements in Rod-Packing, of which the following is a specification.

This invention relates to metallic packings for the piston-rods of steam-engines, and more especially to that class in which the packing is made to form a steam-tight bearing for the reciprocating rod by means of steam admitted to the stuffing-box so as to compress the packing upon the surface of the rod. A variety of packings of this class have been devised; but so far as I am aware they have been more or less unsatisfactory, either on account of imperfect working or complicated and expensive construction.

The object of my invention is to provide an improved packing which may be readily applied to the ordinary stuffing-boxes, and which is of simple and yet effective construction.

The invention is fully described in connection with the accompanying drawings, and is specifically pointed out in the claims.

Figure 1 is a longitudinal section of a stuffing-box having my packing applied thereto. Figs. 2, 3, 4, and 5 are all detail views of the several parts.

The stuffing-box *a*, projecting from the cylinder-head *A*, is represented as of the construction ordinarily used.

*C* represents the piston-rod. The collar *B*, which fits directly in the stuffing-box, is pressed by the gland *D* against the inner shoulder *a*<sup>2</sup> and forms a steam-chamber *h*, which communicates through the opening *a*<sup>1</sup> around the piston-rod with the interior of the steam-cylinder. The sleeve or shell *d*<sup>2</sup> of the gland *D* also fits the stuffing-box and abuts on its inner face against the collar *B*. The gland and collar both have corresponding annular seats *d*<sup>1</sup> *d*<sup>2</sup> and *b* *b*<sup>1</sup>, respectively, annular recesses being thus formed in them which receive the reduced end portions *e*<sup>1</sup> of packing-rings *e e* of suitable metal. These rings are split, as at *e*<sup>3</sup>, so as to be readily compressible, and are separated by a partition-ring *f*, the periphery of which fits within the shell *d*<sup>2</sup> of the gland and is provided with

longitudinal grooves *f*<sup>1</sup>, which form communicating passages between annular chambers *g* and *g*<sup>1</sup> outside of the packing-rings *e e*. The reduced ends *e*<sup>2</sup> *e*<sup>2</sup> of these packing-rings enter corresponding annular recesses in the partition-ring *f*, and the packing-rings are thus held endwise by the seats *b* *b*<sup>1</sup> and *d* *d*<sup>1</sup> and the corresponding seats on the partition-ring *f*. These seats, when thus formed in steps, provide ample bearing to prevent rapid end movement and wear and at the same time break the joints so as to prevent escape of steam from the annular chambers *g* and *g*<sup>1</sup> to and around the piston-rod.

The operation will be readily understood, being in principle the same as in all metallic packings which are set up by steam-pressure. The steam enters the chamber *h* of the stuffing-box through the opening *a*<sup>1</sup> around the piston-rod and passes through openings *b*<sup>2</sup> in the collar *B* into the chamber *g*<sup>1</sup>, and thence through the grooves *f*<sup>1</sup> into the chamber *g*. The pressure of the steam upon the back of the split packing-rings *e e* closes them against the surface of the rod *C*, the pressure thereon being determined by the amount of surface exposed to the steam, which amount may be so proportioned as to avoid more than a necessary pressure and wear upon the rod.

As already explained, there is not likely soon to be objectionable end wear or escape of steam, and at the same time the simplicity and inexpensiveness of the construction and its application are decided advantages. Whatever end wear there is on the rings *e*, produced by their friction upon the piston-rod, which is constantly reversing its movement and tends to push them first forward and then backward, can be taken up by either reducing the collar *B* or the inner face of the gland-sleeve *d*<sup>2</sup>, no matter how many rings may be used, so that it is not necessary to put in new rings to remedy such longitudinal looseness and the wear and leakage resulting therefrom. The collar *f* has no end bearings except against the packing-rings, and forms a separating-piece which has a free longitudinal movement in the gland when end wear on the rings is taken up, yet by means of its annular steam-tight seats for the latter leakage of steam is prevented between them.



In order to furnish uniform lubrication, I provide an oil-cup  $d^3$  in the gland D, communicating with an annular groove  $d^4$ , within which may be placed lamp-wick or similar material to convey and apply the lubricant.

What I claim is—

1. In a stuffing-box packing, the combination of a gland D, a collar B, compressible packing-rings  $e e$ , and a partition-collar  $f$ , all arranged to form annular steam-chambers  $g$  and  $g'$  outside the packing-rings and communicating with each other and with the steam-cylinder, each of said packing-rings having annular bearings at both ends against seats, as  $d d'$ , formed in steps in said gland and in said collars B and  $f$ , and the collar  $f$  being free to move endwise with said rings, substantially as and for the purpose set forth.

2. The combination, with a cylinder-head stuffing-box, of a collar B, formed with annular seats  $b$  and  $b'$  and steam-inlets  $b^2$ , a gland D, having its inner face abutting against said collar and formed with annular seats  $d$  and  $d'$ , compressible packing-rings  $e$

$e$ , having end bearings on said annular seats, and a partition-ring  $f$  within said gland located between said rings and forming corresponding annular seats therefor, said partition-ring having grooves  $f'$ , connecting the annular steam-chambers surrounding said rings and being free to move longitudinally in said gland, all substantially as and for the purpose set forth.

3. The combination, with an engine stuffing-box, of a gland D and collar B, fitted therein, and compressible packing-rings  $e e$  and partition-collar  $f$ , inclosed by said gland, said collar  $f$  being free to move endwise with said rings and all arranged to form annular steam-chambers outside the packing-rings and communicating with each other and with the steam-cylinder, substantially as set forth.

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

ALLEN H. TWINING.

Witnesses:

ED. A. KELLY,

WALTER B. CRAIG.