

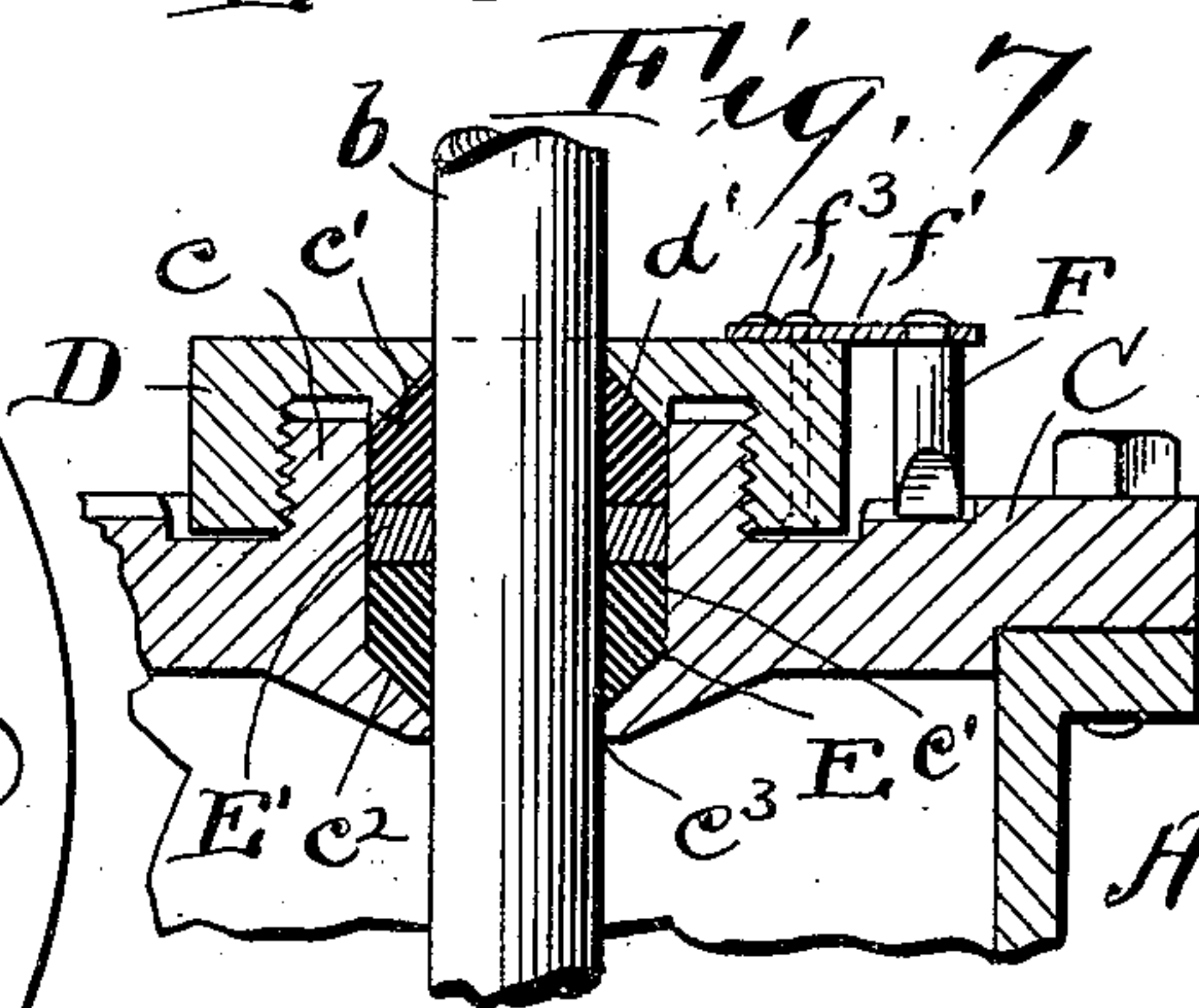
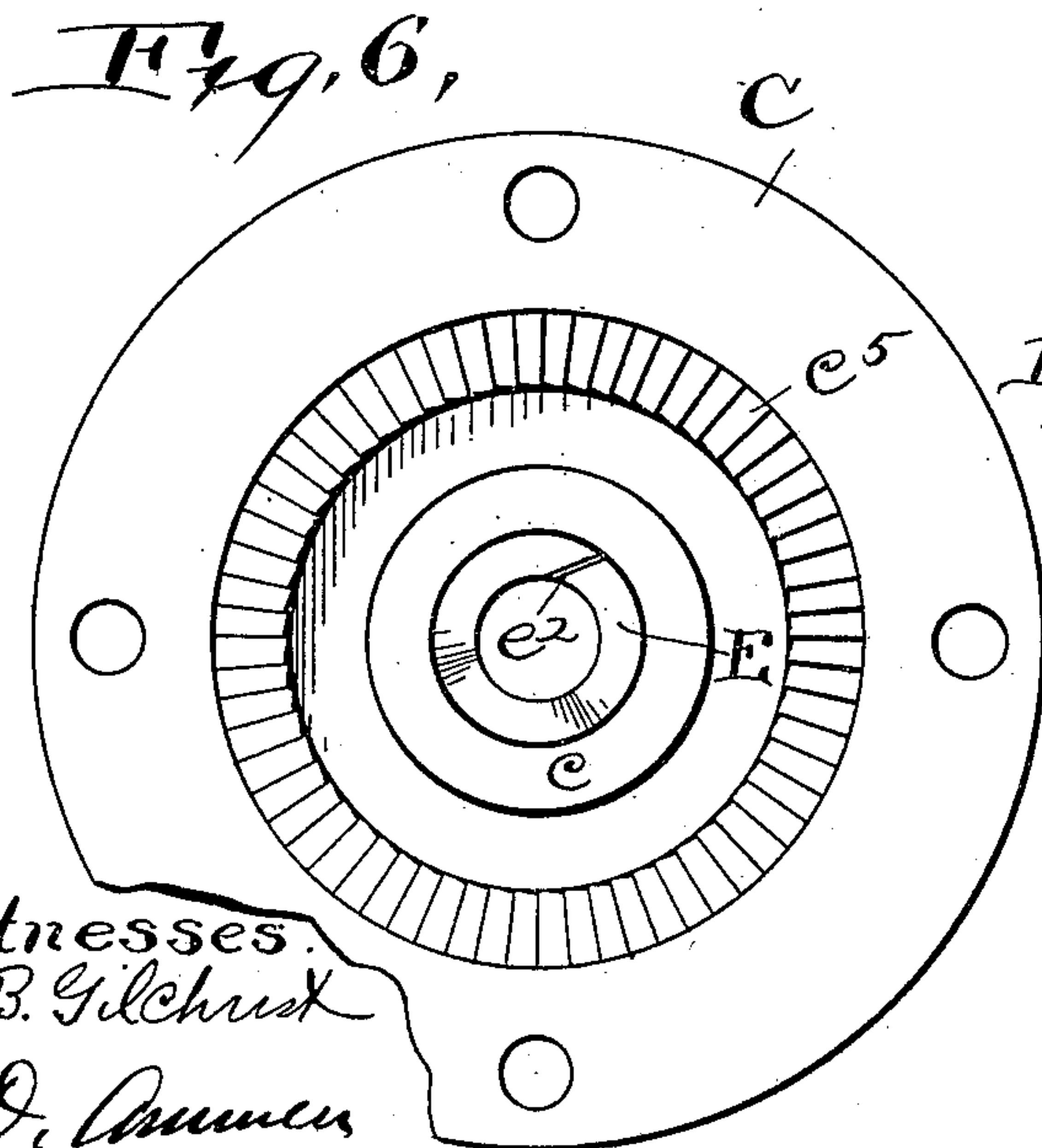
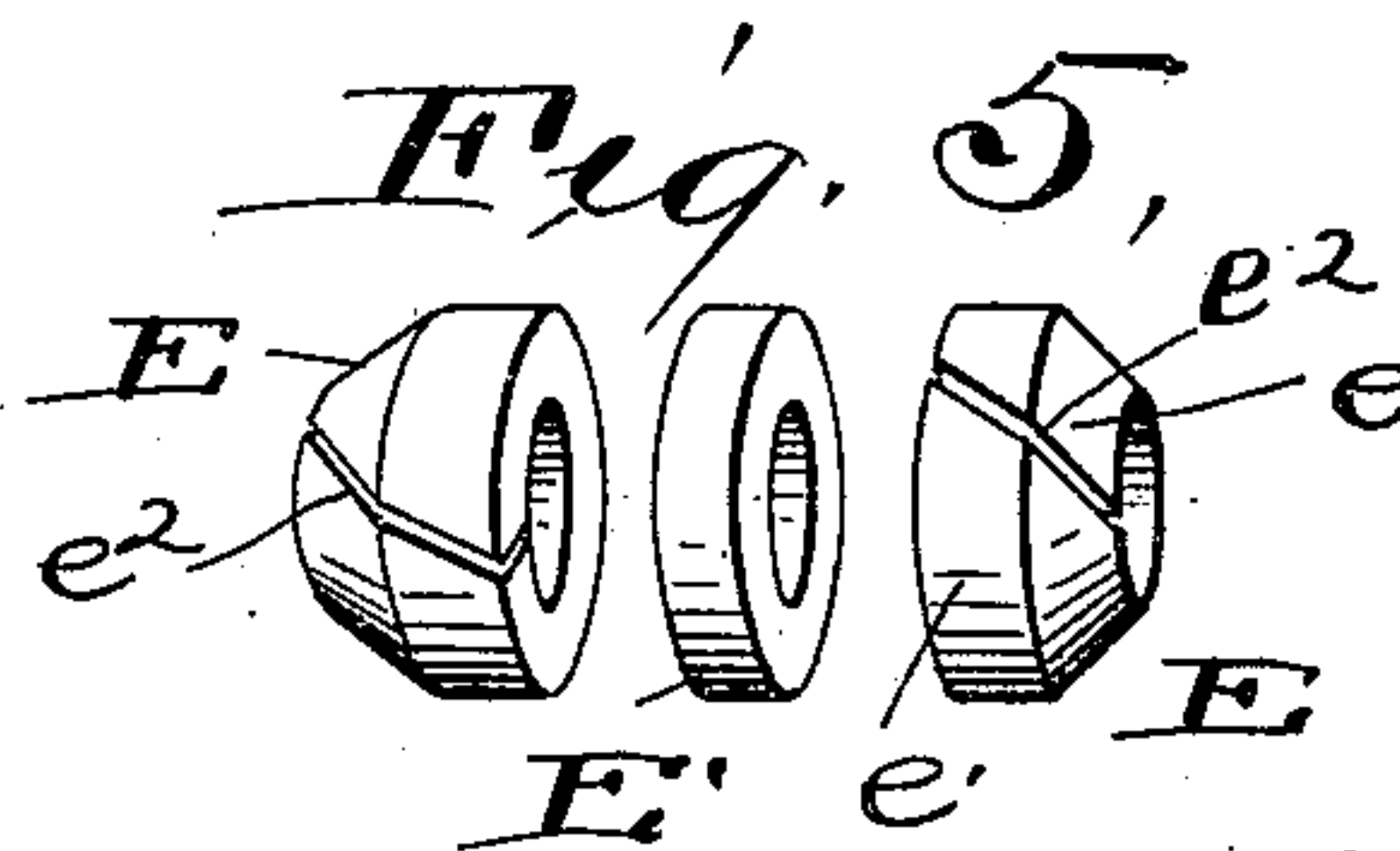
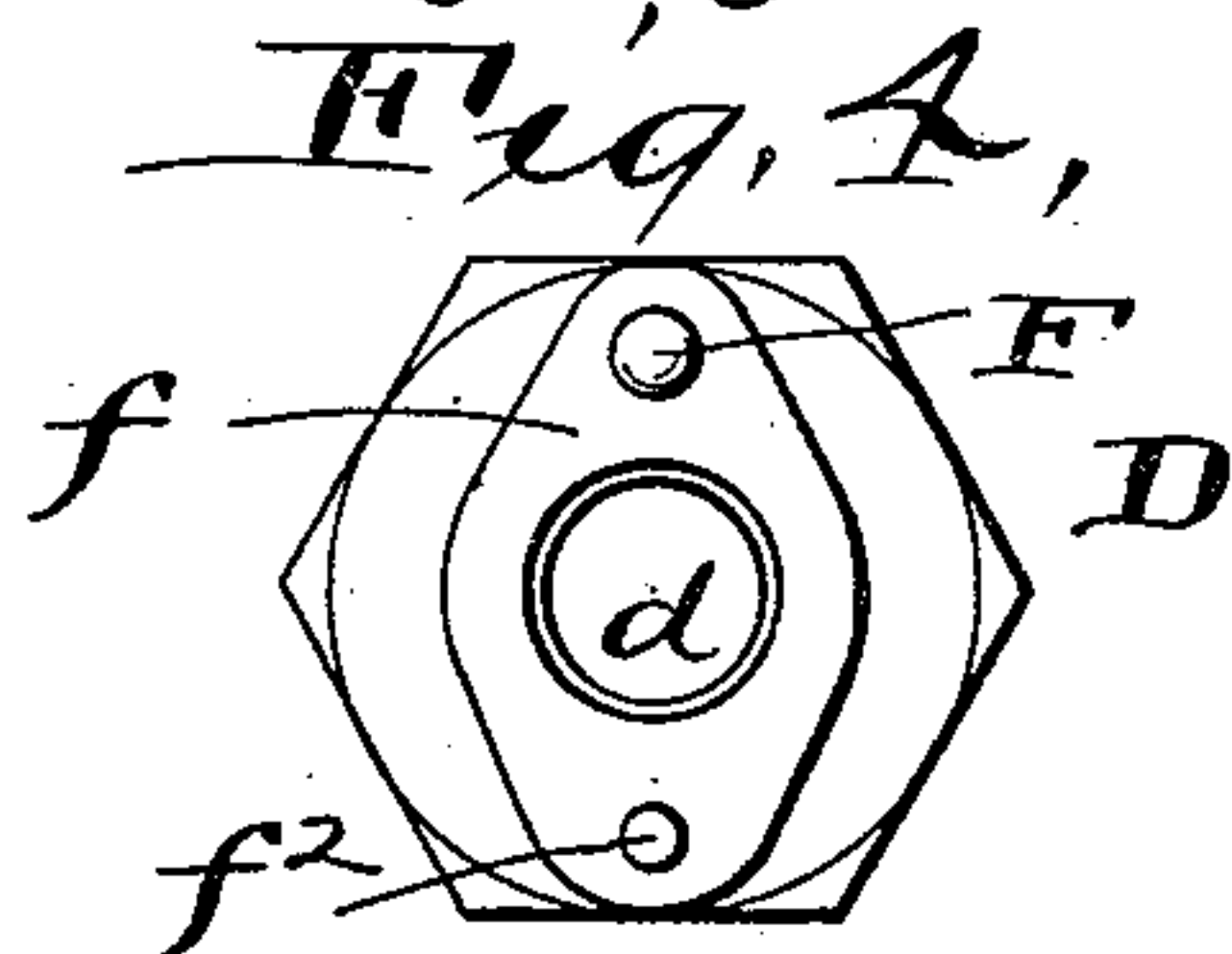
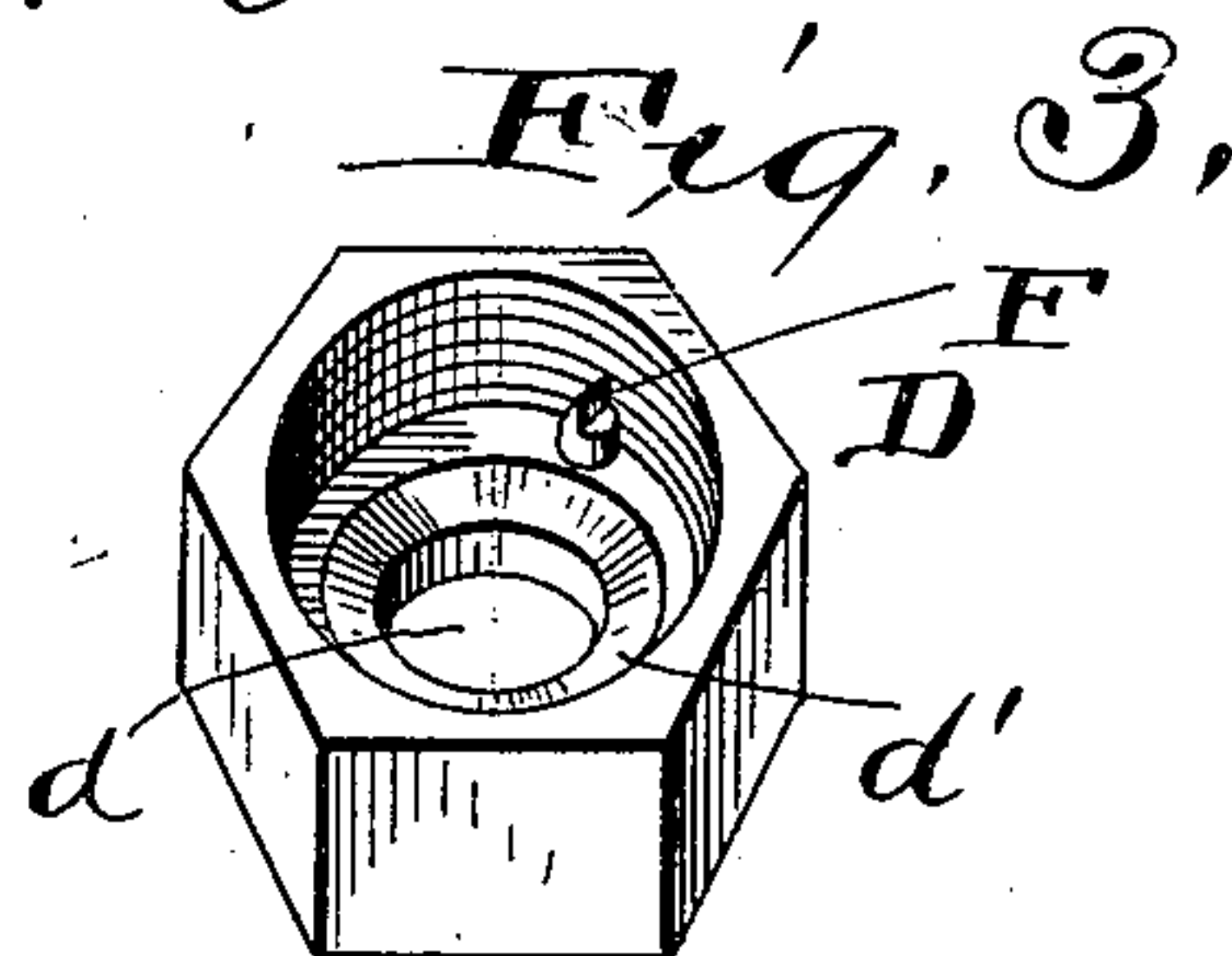
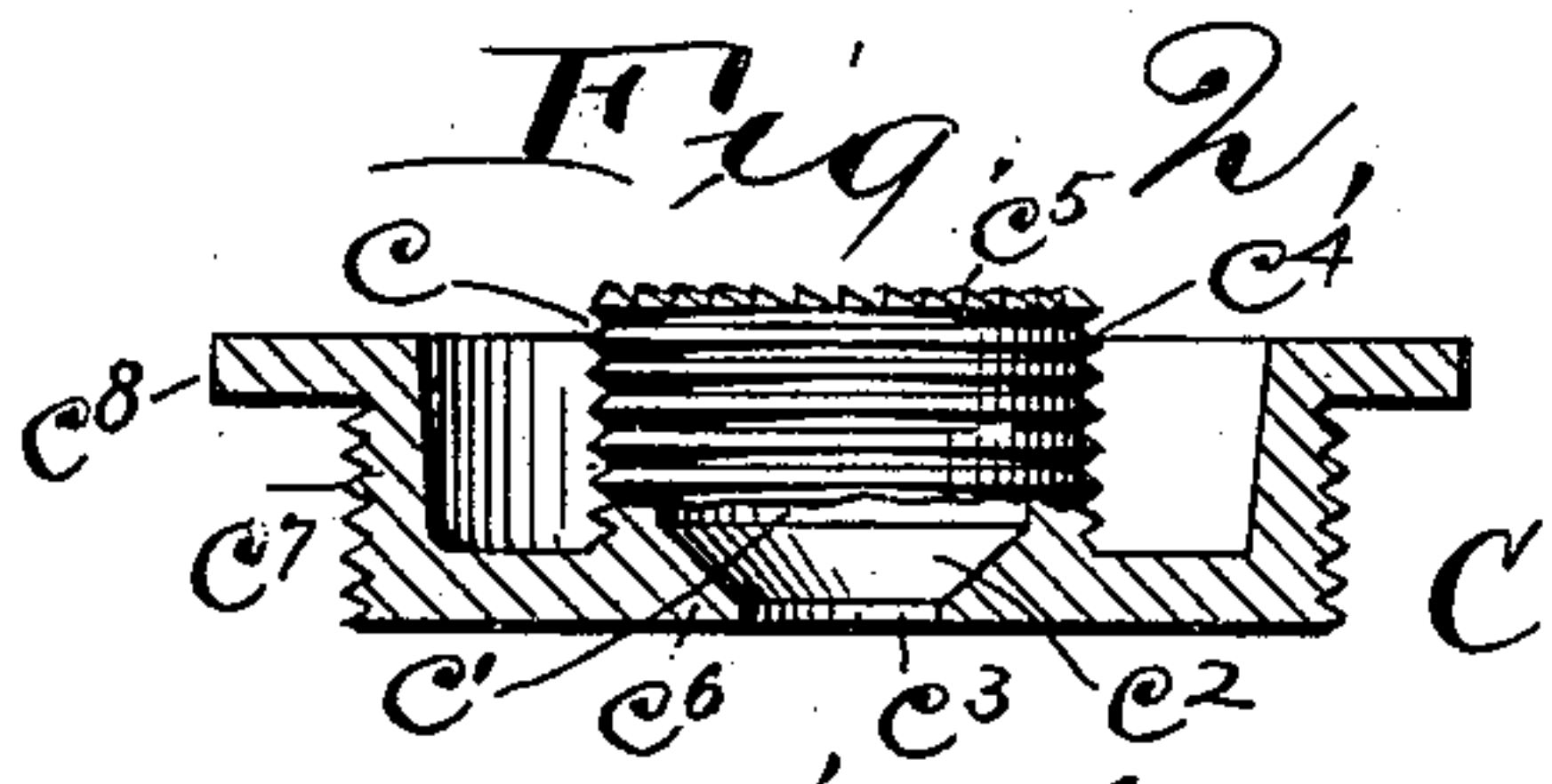
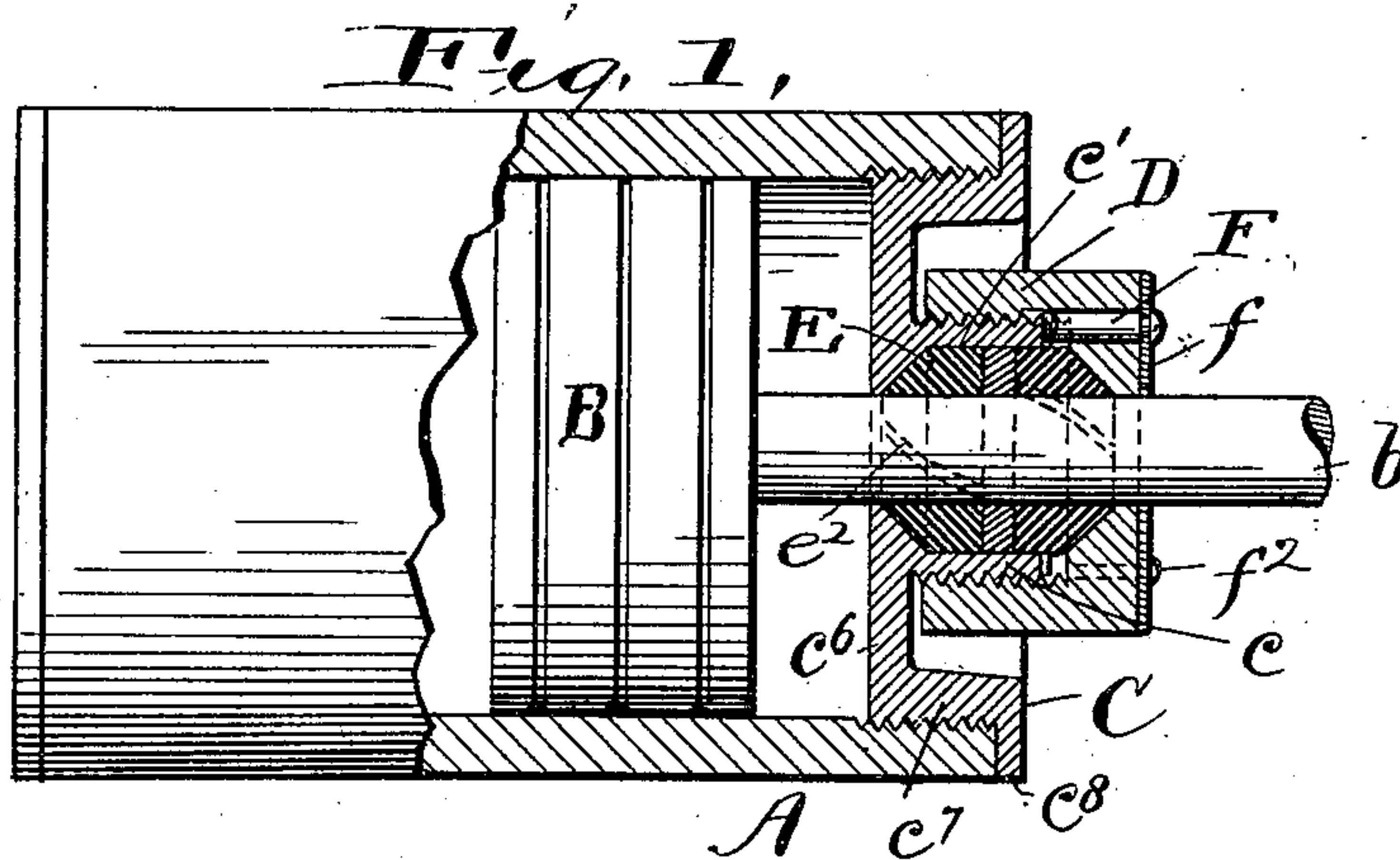
No. 673,572.

Patented May 7, 1901.

T. BARROW.
STUFFING BOX.

(Application filed Oct. 29, 1900.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS BARROW, OF CLEVELAND, OHIO, ASSIGNOR TO THE CHISHOLM & MOORE MANUFACTURING COMPANY, OF SAME PLACE.

STUFFING-BOX.

SPECIFICATION forming part of Letters Patent No. 673,572, dated May 7, 1901.

Application filed October 29, 1900. Serial No. 34,729. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BARROW, a subject of the Queen of Great Britain and Ireland, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Stuffing-Boxes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

10 The primary object of my invention is to provide a very simple and efficient stuffing-box which will hold the packing with the required tightness and may be easily adjusted to further tighten it as the wear requires and
15 will not work loose in use.

A further object is to combine a cylinder-head and stuffing-box in a way which shall be at once efficient and economize space.

20 The invention may be summarized as consisting of the arrangement and combination of parts to the above ends, as hereinafter explained, and definitely set out in the claims.

My stuffing-box is adapted for packing various sorts of movable rods. In the drawings
25 it is shown as applied to packing a reciprocating piston-rod, which may be taken as an illustration of any relatively movable rod, though this particular adaptation is also my invention.

30 Figure 1 is a sectional side elevation of a cylinder having my box; and Fig. 2 is a central section of the head of such cylinder, which constitutes one member of the stuffing-box. Fig. 3 is a perspective view showing the inner side of the other member of the stuffing-
35 box. Fig. 4 is an outside view of the member shown in Fig. 3. Fig. 5 is a perspective view of the packing detached. Fig. 6 is a face view of the cylinder-head constituting one
40 member of the stuffing-box and being adapted for larger-sized engines, the packing being in place. Fig. 7 is a central section through the head shown in Fig. 6 with the stuffing-box complete.

45 Referring to the drawings by letters, A represents a cylinder of any construction, B a piston therein, and *b* a piston-rod.

C represents the piston-head, which may be secured to the cylinder in any desired manner. In the form shown in Figs. 1 and 2 it is

screw-threaded thereinto, while in Figs. 6 and 7 it is shown as bolted thereto.

Axial of the cylinder-head, on its outer side, is formed the annular flange *c*, and within this flange and extending also into the main body
55 of the head is the annular recess *c'*. This recess has its lower or inner end tapering inward or conical, as at *c²*, to the hole *c³*, through which the rod *b* passes. The outer periphery of the wall *c* has screw-threads *c⁴* cut in it, 60
and onto these threads screws the nut D, which constitutes the other member of the stuffing-box. This nut has a hole *d*, through which the rod passes, and adjacent thereto it has the conical recess *d'*. 65

Within the annular space between the rod and the wall *c* and between the female cones *c²* and *d'* is contained a packing material. This consists of a pair of cones E E, formed, preferably, as shown, with a conical part *e* 70
and a cylindrical part *e'* and split on a diagonal plane, as at *e²*, and between these two cones is an unsplit washer E'. These three members are made, preferably, of Babbitt or similar soft material and are placed within the
75 stuffing-box, as shown in Figs. 1 and 7, and when the nut is screwed up they are compressed with the required tightness against the rod.

The cylinder-head carries the annular rack 80
c⁵ of ratchet-teeth. This rack may be formed on the edge of the wall *c*, as shown in Fig. 2, or on the face of the cylinder-head outside the wall, as in Fig. 6. In either case the nut D carries a ratchet-pawl F, spring-pressed to-
85 ward the rack. In Figs. 1, 3, and 4 this pawl occupies a longitudinal recess within the nut D and is secured at its outer end to the spring *f*, which is a plate yoking around the piston-rod and riveted on the opposite side thereof 90
at *f²* to the nut. In the form shown in Fig. 7 the pawl is outside of the nut and is carried by a similar spring-plate *f'*, which, however, does not yoke around the rod, but is riveted to the nut on the same side with the
95 pawl, as at *f³* *f³*. The ratchet-teeth *c⁵* are formed in the direction to allow the pawl F to spring over when the nut is screwed on, but to retain it against movement in the opposite direction. 100

From the foregoing description it will be seen that when the packing is in place and the nut D screwed up with the required tightness the latter will retain its position and cannot work loose. As the packing wears the nut may be easily turned to retighten it. The nut does not have to fit its thread with such tightness as would be required if it did not have a lock preventing its unscrewing. Moreover, should the operator be ignorant of the direction in which threads usually turn (which sometimes happens) there is no danger in this case of his loosening the stuffing-box when he intends to tighten it, for the nut can only be turned (without releasing the pawl) in the tightening direction. When it is desired to replace the packing, the nut can be easily removed by forcing back the spring-plate f or f' by a screw-driver or other pry slipped under it, as desired. As soon as the nut has been turned back a short distance with the pawl held out of engagement the pawl can be let alone, as it will then clear the threads.

Though, as heretofore stated, the stuffing-box is applicable to other uses than packing an engine piston-rod, and though when so used it is immaterial, broadly, how the cylinder-head is formed and secured, still the particular form of cylinder-head shown in Figs. 1 and 2 is especially useful in connection with my kind of stuffing-box where economy of space is required. Referring to those figures, the cylinder-head C is formed of a plate c^6 , having at its outer edge a cylindrical flange c^7 , screwing into the cylinder end. Thus the requisite number of threads may be obtained to hold the head in place and at the same time the plate c^6 is set into the cylinder far enough so that approximately half of the stuffing-box is contained within the space the cylinder necessarily occupies, whereby the amount of its projection is reduced. The annular flange c^8 at the end of the screw-threads abutting against the end of the cylinder limits the inward movement of the head and obviates the necessity of locking devices and also forms a packed joint with the head, red lead or other packing material being used between them.

Having described my invention, I claim—

1. In a stuffing-box, in combination, a member having an opening adapted to surround a rod, an annular wall of larger internal diameter carried by said member, screw-threads on the outer side of said wall, a nut having internal threads screwing onto said wall and adapted to compress a packing within the annular wall, a rack carried by the member which carries the wall, and a pawl occupying a recess in said nut, and a spring-plate on the outer side of said nut and adapted to loosely surround the packed rod and secured on one side thereof to the pawl and the other side thereof to the nut, substantially as described.

2. In a stuffing-box, in combination, a member having an opening adapted to surround

a rod, an annular wall of larger internal diameter carried by said member, screw-threads on the outer side of said wall, a nut having internal threads screwing onto said wall, a rack formed on the edge of said annular wall, a pawl movably carried in a recess in said nut and adapted to engage said rack, and a spring for forcing said pawl toward said rack, substantially as described.

3. In a stuffing-box, in combination, a member having an opening adapted to surround a rod, an annular wall of larger internal diameter carried by said member, screw-threads on the outer side of said wall, a nut having internal threads screwing onto said wall, a rack formed on the face of said annular wall, a pawl slidably journaled in a recess in the nut and adapted to move substantially parallel with the axis of the packed rod, a spring on the outer side of the nut having an opening whereby it surrounds the rod, said spring being secured to the nut on one side of said opening and to the pawl on the other, substantially as described.

4. A cylinder-head consisting of a plate having a cylindrical flange at its outer edge, there being screw-threads on the outer surface of said flange whereby it may be screwed into the end of the cylinder, the plate thus standing within the end of the cylinder, an annular concentric wall formed on the outer side of said plate of less diameter than the flange but of larger diameter than the central opening for the piston-rod, external threads on said annular wall, a nut adapted to surround the piston-rod and screwing onto said wall and adapted to compress packing within the recess between the annular wall and the rod, the stuffing-box being thus partially contained in the space necessarily occupied by the cylinder, whereby the amount of projection of the stuffing-box is reduced, substantially as described.

5. A cylinder-head consisting of a plate having a cylindrical flange at its outer edge with an annular flange formed at the outer end of said cylindrical flange and adapted to abut against the end of the cylinder whereby the plate stands within the cylinder, a central opening through said cylinder-head, a projecting wall rigid with the cylinder-head on its outer side concentric with such opening, external screw-threads on said wall, and a nut having an opening adapted to surround the piston-rod, and screwing onto said wall and adapted to compress packing within it, said nut extending within the plane defining the outer edge of the cylinder whereby the effective projection of the stuffing-box is reduced, substantially as described.

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

THOMAS BARROW.

Witnesses:

ALBERT H. BATES,
H. M. WISE.