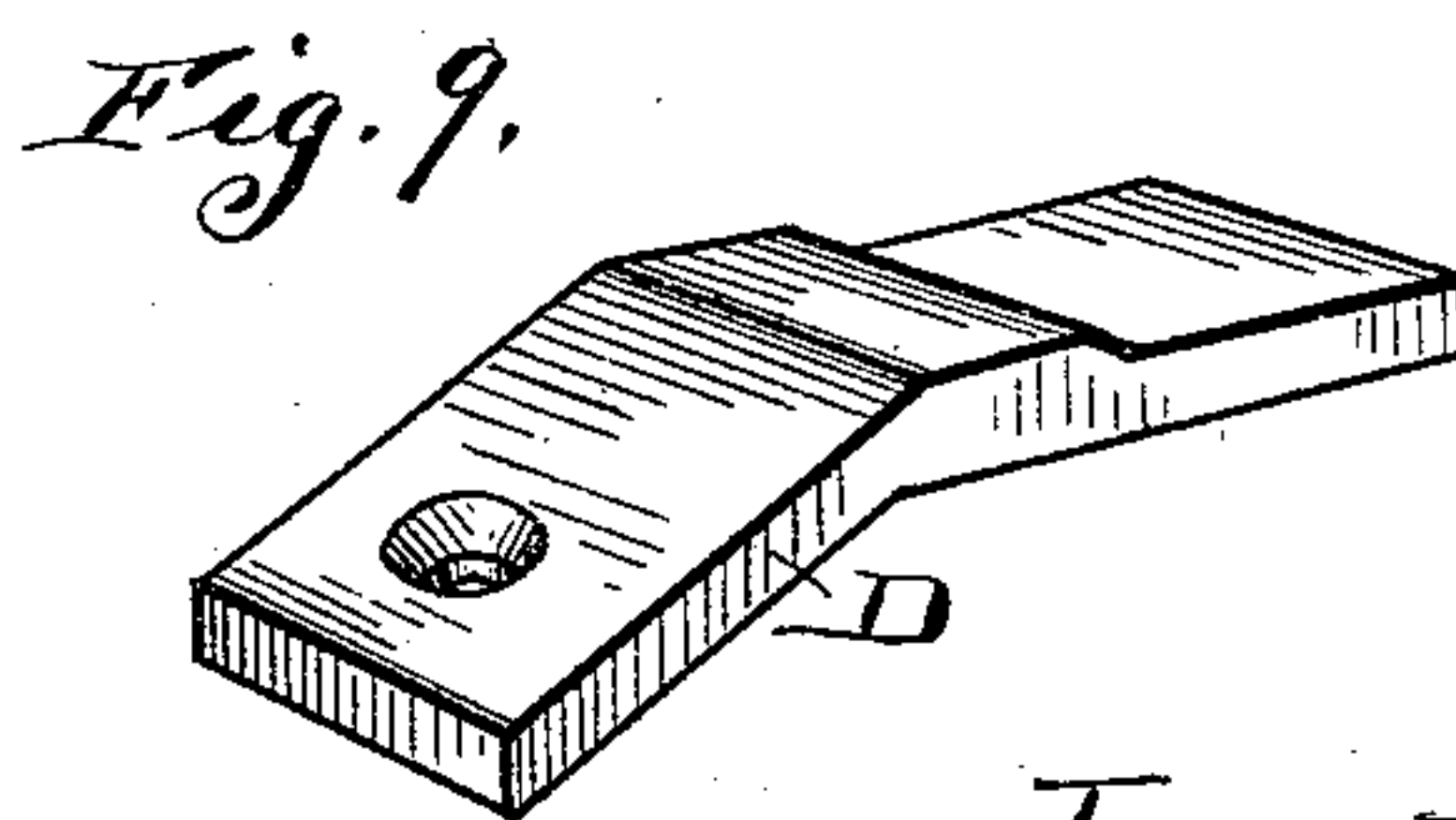
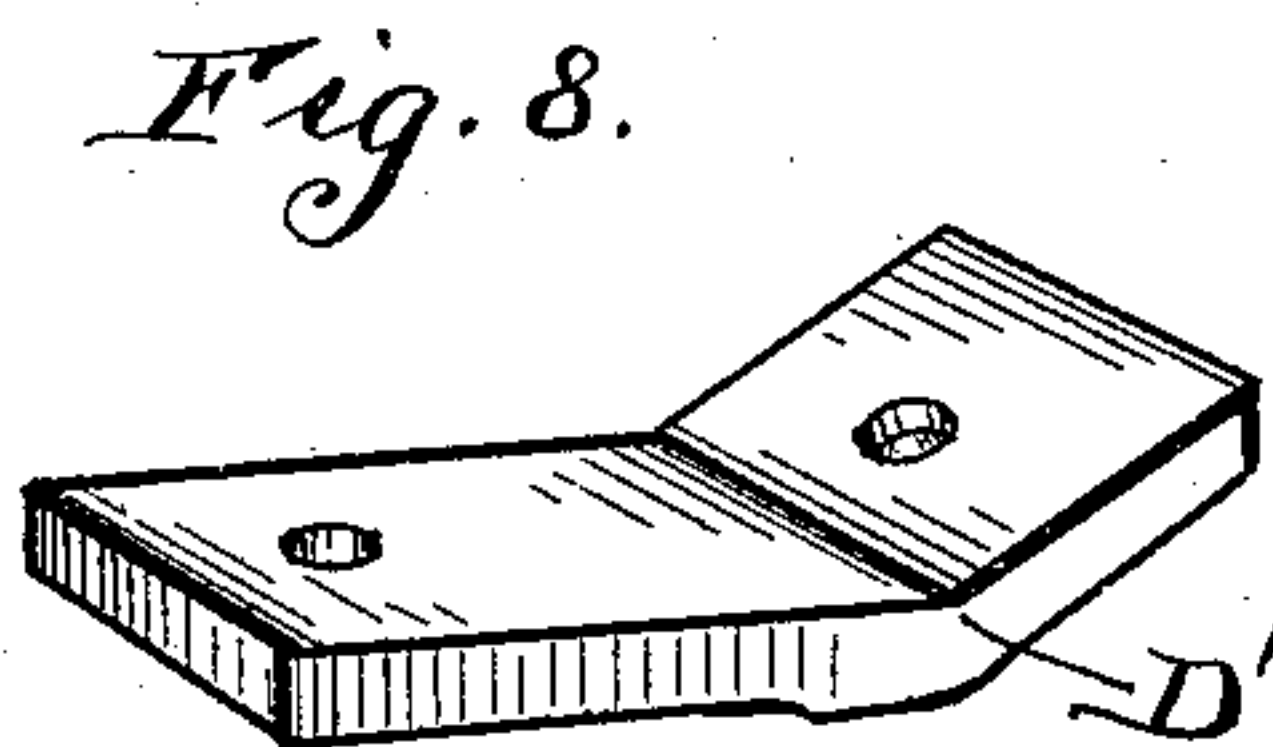
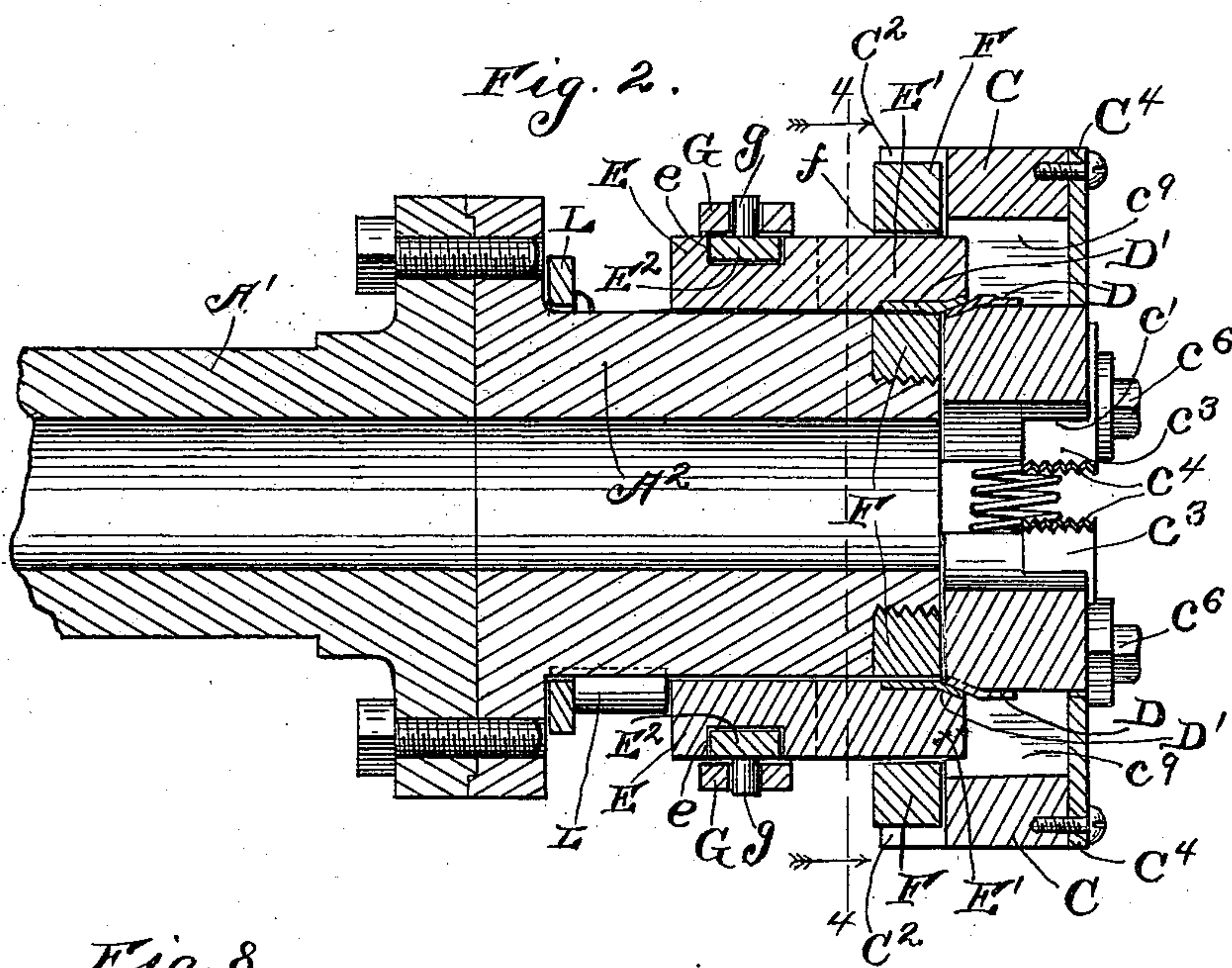
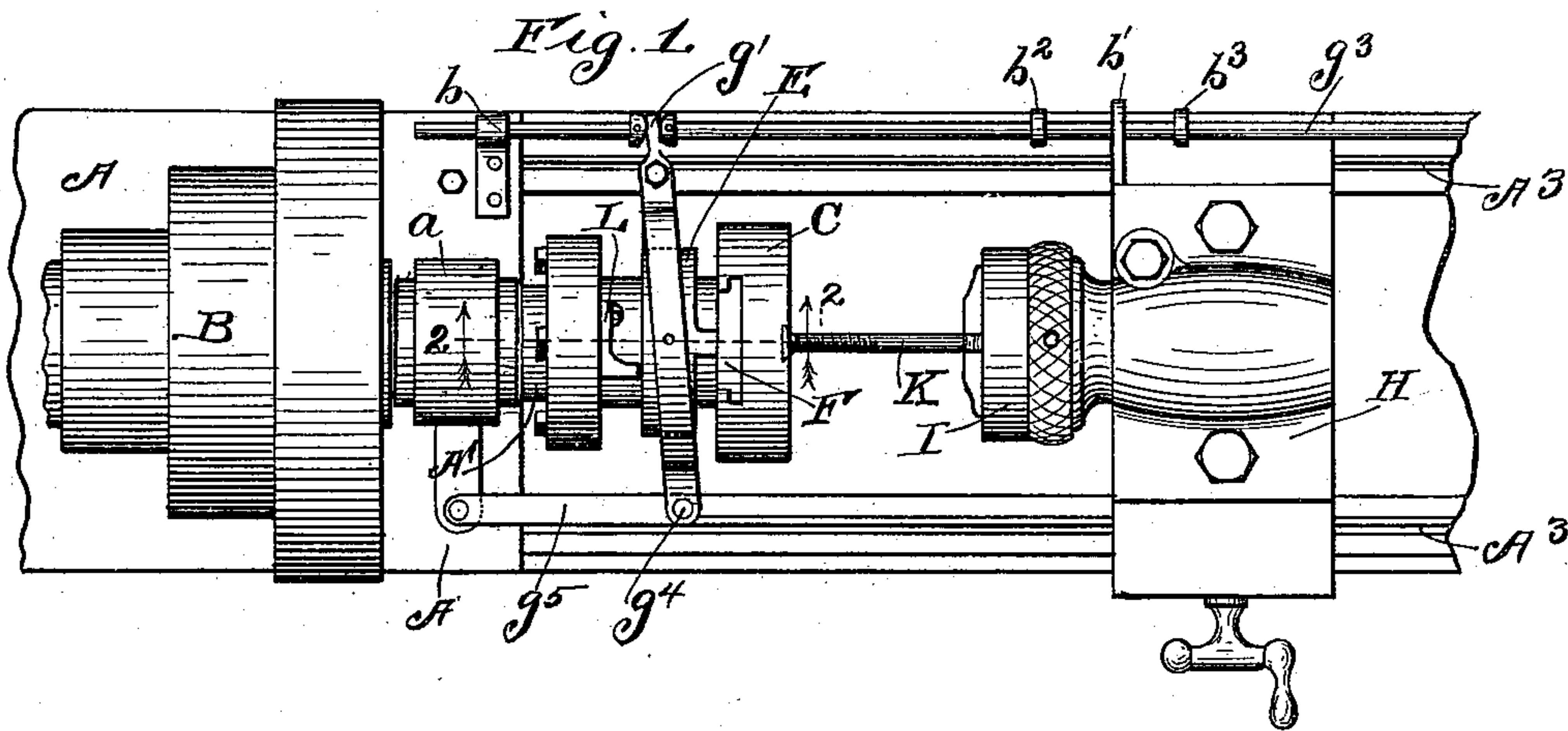


2 Sheets—Sheet 1

Patented Mar. 10, 1896.



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2 Sheets—Sheet 2.

No. 556,190.

Patented Mar. 10, 1896.

Fig. 3.

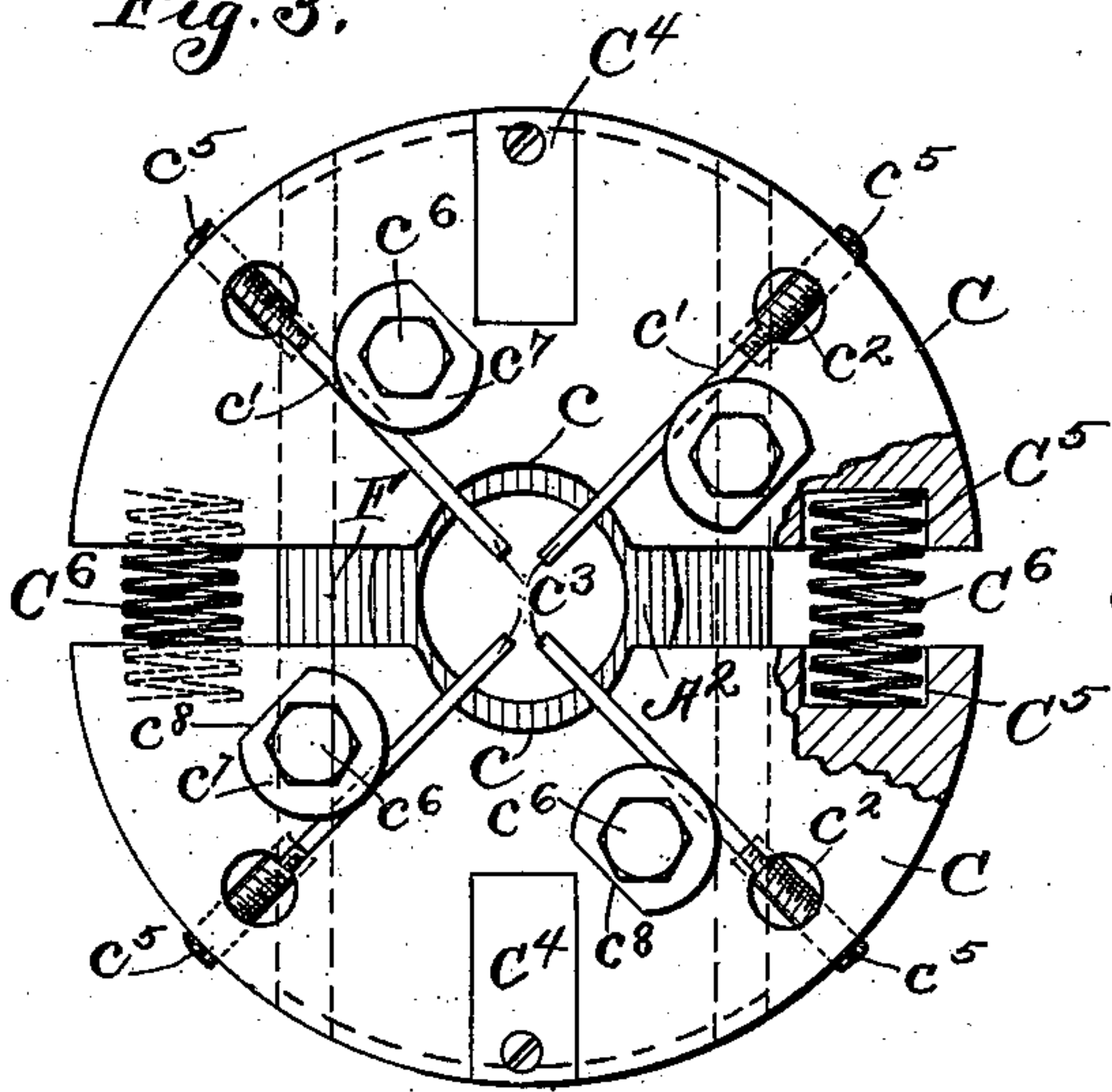


Fig. 4.

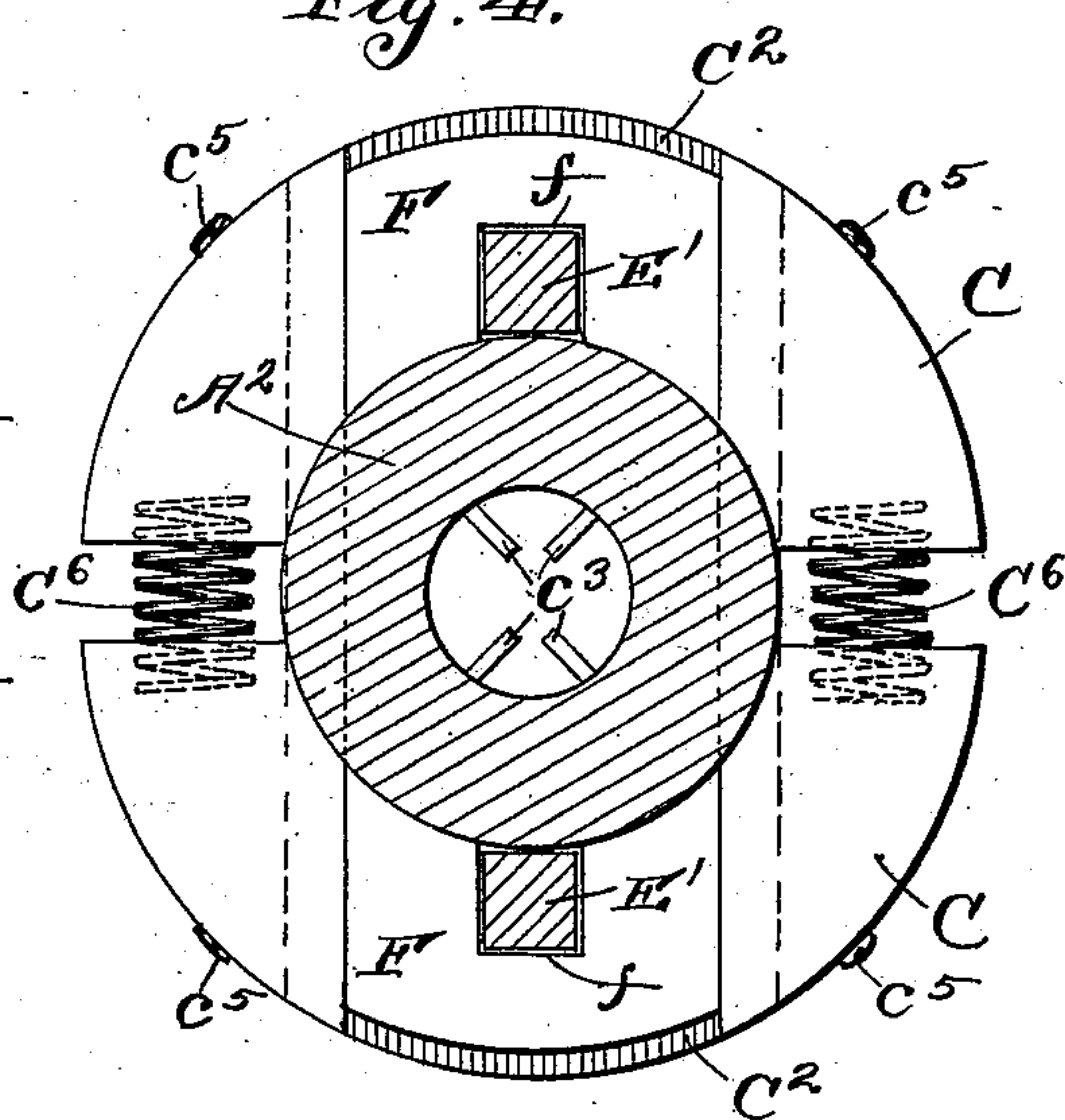
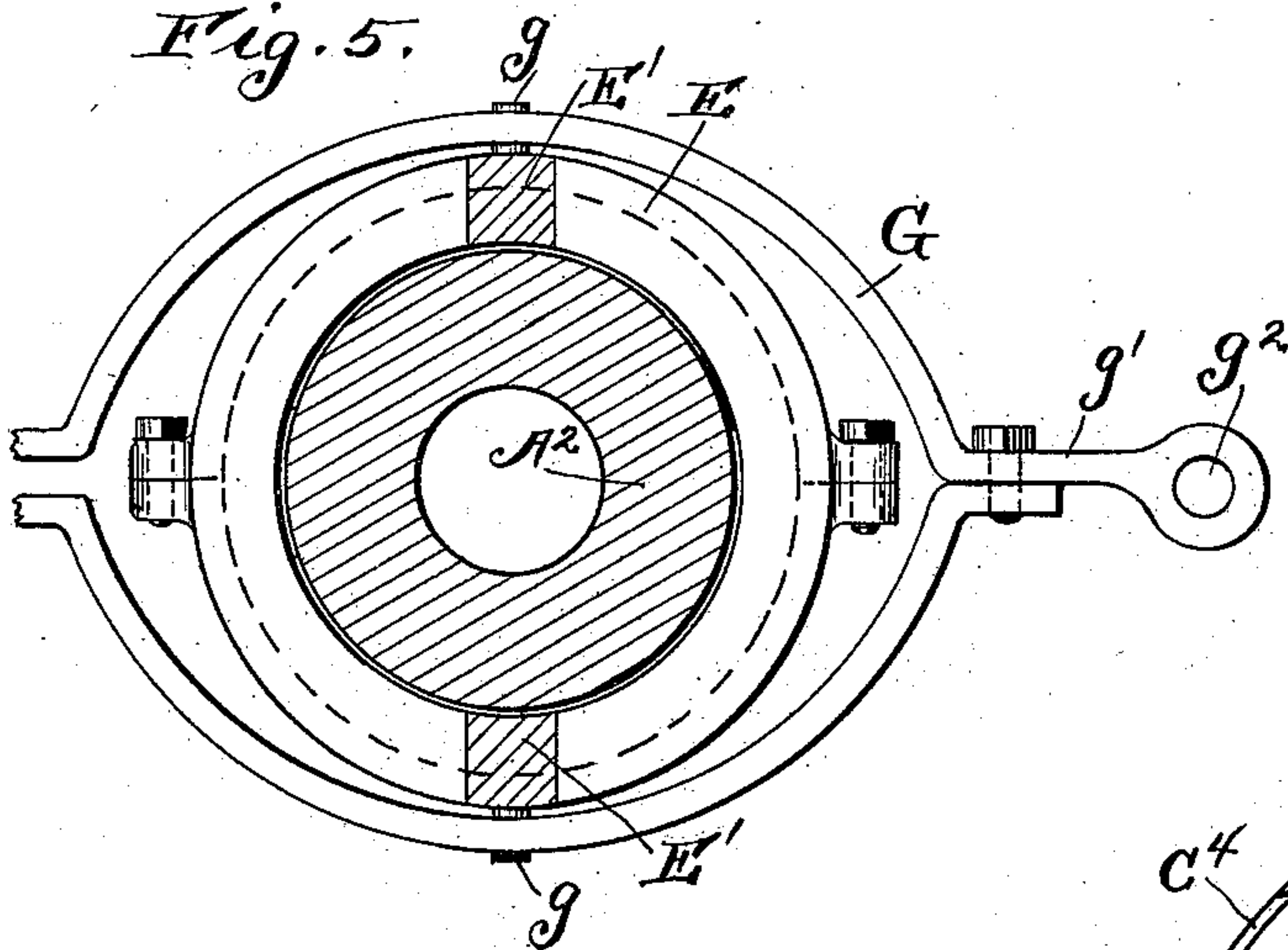


Fig. 5.



*Fig. 6.*

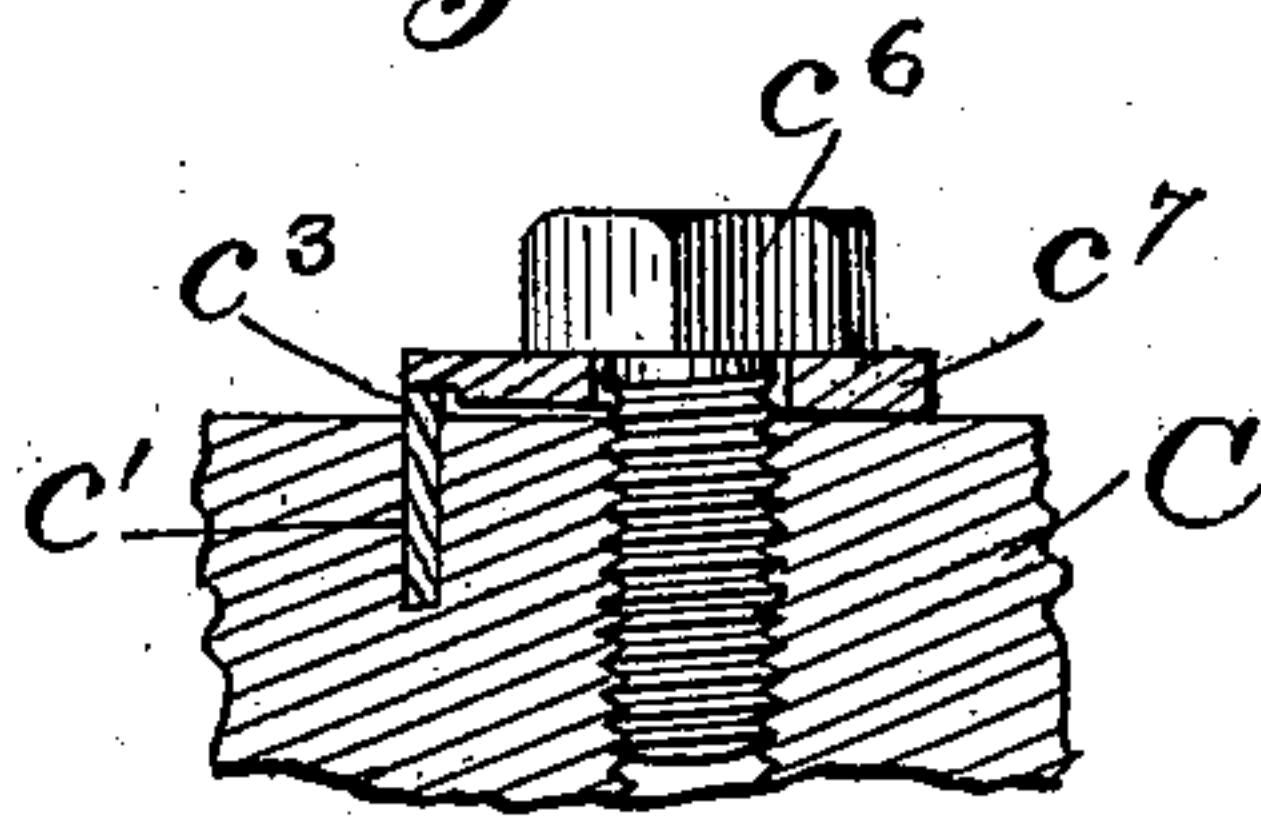
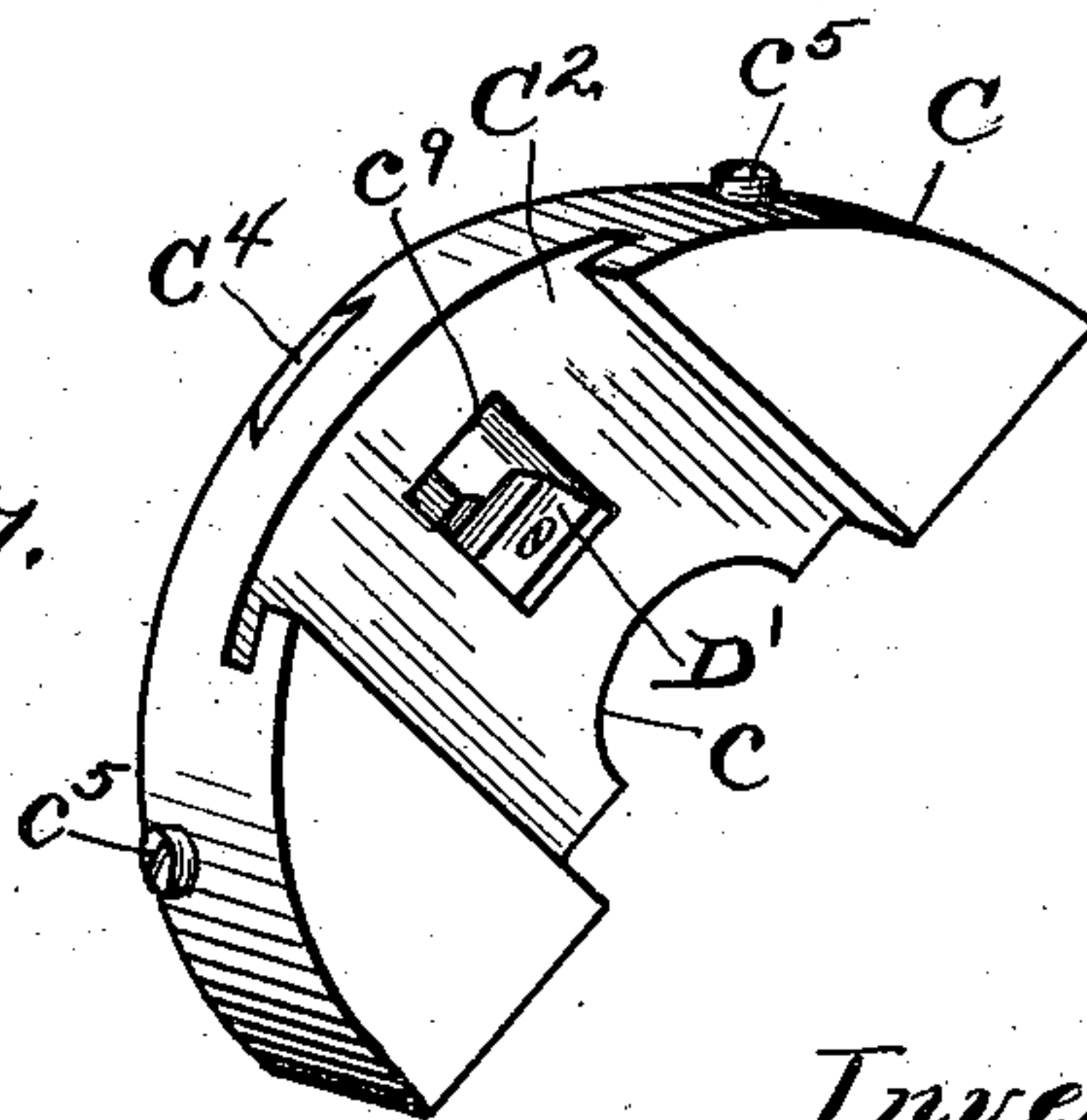


Fig. 7.



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# UNITED STATES PATENT OFFICE.

OSCAR JOHNSON AND OLOF HOYER, OF CHICAGO, ILLINOIS.

## SCREW-THREAD CUTTER.

SPECIFICATION forming part of Letters Patent No. 556,190, dated March 10, 1896.

Application filed October 10, 1895. Serial No. 565,245. (No model.)

*To all whom it may concern:*

Be it known that we, OSCAR JOHNSON and OLOF HOYER, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Screw-Thread Cutters, of which the following is a specification.

This invention relates to improvements in cutters to be used for forming screw-threads on rods or bolts; and it consists in certain peculiarities of the construction, novel arrangement and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The objects of our invention are, first, to provide a screw-thread cutter, which shall be simple and inexpensive in construction, strong and durable, and effective in operation; second, such a cutter in which the dies may be easily inserted or removed from the adjustable jaws and readily adjusted therein; third, a cutter in which the dies may be sharpened without removal from the jaws, and, fourth, a cutter in which the operation of forming the threads on the bolt or rod is quickly and uniformly done, and in such a manner that the cutting-dies will be automatically thrown out of engagement or contact with the bolt when the required amount of threads have been formed.

In order to enable others skilled in the art to which our invention pertains to make and use the same, we will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a plan view of our cutter, showing it mounted on a frame and in the act of forming threads on a bolt which is carried in a clutch on a tail-block. Fig. 2 is a longitudinal sectional view of the cutter, taken on line 2 2 of Fig. 1, looking in the direction of the arrow. Fig. 3 is a face view of the die-carrying and spring-actuated jaws of the cutter. Fig. 4 is a cross-sectional view taken on line 4 4 of Fig. 2, looking in the direction indicated by the arrows. Fig. 5 is a cross-sectional view taken on line 4 4 of Fig. 2, looking in the opposite direction indicated by the arrows. Fig. 6 is a sectional view of a portion of one of the jaws, showing the means for securing the cutting-dies in posi-

tion. Fig. 7 is a rear perspective view of one of the jaws, showing it detached. Fig. 8 is a perspective view of one of the wearing-plates employed in the sliding collar, and Fig. 9 is a similar view of one of the wearing-plates of one of the jaws.

Similar letters refer to like parts throughout the different views of the drawings.

A represents the main frame or support of our cutter, upon which is mounted in suitable bearings a barrel-shaft A', on which may be fixed a cone-pulley B, to which is applied the power for operating the cutter. To the front end of the shaft A' is secured, by screw-bolts or otherwise, a hollow cylindrical piece A<sup>2</sup>, the front end of which is reduced and has secured thereon guide-pieces F, located diametrically opposite each other and for the reception and retention of the removable die-carrying jaws C, which jaws are semi-circular in form and counterparts of one another. The central portion of each of the jaws C is formed with a circular cut-out or recess c of any suitable dimensions to admit of the passage of the rod or bolt to be threaded. In the face or front portion of each of the jaws are formed or provided radial slots c', which extend from the recess or cut-out part c radially toward the periphery of the jaws and terminate in enlarged openings c<sup>2</sup>, which are, for the reception of the cutting-dies c<sup>3</sup>, made of suitable material and provided on their inner ends with teeth c<sup>4</sup> for producing the threads in the bolt. In the periphery of each of the jaws C, in alignment with the slots c', are formed openings for the reception and retention of set-screws c, which extend into the enlargements c<sup>2</sup> and are for the purpose of adjusting the cutting-dies c<sup>3</sup>, as is obvious by reference to Fig. 3 of the drawings.

As shown in Figs. 2 and 3 of the drawings, the slots c' for the cutting-dies extend only partially through the thickness of the jaws, but almost entirely radially therethrough. Near each of said slots and on the face of the jaws are located set-screws c<sup>5</sup>, which are preferably formed with hexagonal heads, in order that they may be readily loosened or tightened by means of a wrench, and between the heads of said screws and the faces of the jaws are placed cam-shaped washers c<sup>7</sup> for securing the cutting-dies in position. The wash-



ers  $c^7$  are formed cam-shaped or with a straight edge  $c^8$ , so that the dies  $c^3$  may be removed without removing the screws  $c^6$ , for it is apparent that by loosening the screws  $c^6$  and by turning the washers until the straight edges are parallel with the dies the latter may be removed without difficulty; yet when the circular portions of the washers are placed in the position shown in Fig. 3 of the drawings they will prevent the outward displacement of the dies. When it is desired to adjust the dies to rods or bolts of different diameters, the same may be performed by tightening or loosening the set-screws  $c^5$ , as the case may require. Near their outer portions and at about their circumferential middle each of the jaws  $c$  is provided with an opening  $c^9$ , on the rear internal portion of which is secured a wearing-plate  $D$ , which is inwardly inclined or beveled, as is clearly shown in Figs. 2 and 9 of the drawings, and is adapted to contact with a similarly-constructed plate  $D'$ , secured within the hollow of the sliding collar  $E$ , which collar is provided on its front surface with projections  $E'$ , to which the wearing-plates  $D'$  are secured, and are adapted to operate in the openings  $c^9$  of the jaws  $C$  and through the openings  $f$  of the guide-pieces  $F$ , which, as before stated, are secured on the reduced portion of the cylindrical piece  $A^2$  and diametrically opposite each other.

The guide-pieces  $F$  are substantially dovetail-shaped in cross-section, as shown in Fig. 1 of the drawings, and are adapted to fit in similarly-formed grooves or channels  $C^2$  in the rear surface of each of the jaws  $C$  of the cutter, which grooves extend radially there-through, as shown in Fig. 7 of the drawings. The sliding collar  $E$  is formed near its rear portion with an annular groove  $e$ , in which is fitted a band or ring  $E^2$ , which permits said collar to revolve therein. To the outer surface of the band or ring  $E^2$  is pivotally secured, as at  $g$ , a circular or ring-like lever  $G$ , which is provided at its portion to one side of the cutter with an arm  $g'$ , having therein an opening  $g^2$  for the reception of the movable rod  $g^3$ , which is secured on the main frame and bracket of the tail-block, as will be presently explained.

Diametrically opposite the arm  $g'$  the ring-lever  $G$  is pivotally secured, as at  $g^4$ , to a lever or bar  $g^5$ , suitably fastened at its other end to the main or supporting frame. The bar or rod  $g^3$  is secured on the main frame  $A$  and track  $A^3$  for the tail-block by means of suitable brackets  $b$ , which permit of the longitudinal movement of said rod. As before stated, the arm  $g'$  of the ring-lever is fixed on said rod, so that any longitudinal movement thereof will cause the sliding collar  $E$  to be correspondingly moved through the medium of said lever. The front or face portion directly opposite each of the jaws  $C$  are provided with sliding doors or plates  $C^4$ , which close the openings  $c^9$  and permit of the replacement or repairing of the wearing-plates

$D'$ , should the same become worn, and said plates or doors also permit of the cleaning out of said openings and prevent the accumulation of obstructing particles therein.

As shown in Figs. 3 and 4, the adjacent or straight surfaces of each of the jaws  $C$  are provided with recesses  $C^5$ , in which are nested springs  $C^6$  to normally hold said jaws a slight distance apart. On the track  $A^3$  is mounted a tail-block  $H$ , of the ordinary or any preferred construction, which carries a clutch  $I$ , which may also be of any desired or preferred construction, yet is used for holding the bolt  $K$  in a fixed position while the threads are being formed thereon.

Near the end of the cylinder  $A^2$ , which is secured to the driving-shaft  $A'$ , are pivotally secured a number of catches  $L$ , which prevent the sliding collar  $E$  being retracted to such an extent as to withdraw the arms  $E'$  thereof from the openings  $f$  in the guide-piece. These catches are formed with an elbow, as shown in Fig. 1, which may be raised to allow the sliding collar and its arms to be disengaged from the guide-piece, when desired.

From the foregoing and by reference to the drawings it will be seen and readily understood that as the bolt  $K$  is drawn into the recess  $c$  of the jaws by reason of the angularly-set teeth  $c^4$  on the cutting-dies the arm  $b'$  on the tail-block will travel with the rod or bolt  $K$  until said arm strikes the projection  $b^2$  on the movable rod, which operation will force the arm  $g'$  of the ring-lever to the position indicated in Fig. 1 of the drawings, which operation will retract the sliding collar  $E$  and will throw out of engagement the wearing-plates  $D'$  thereon with similar plates  $D$  within the openings of the jaws, thus allowing the springs  $C^6$  to automatically separate the jaws and release the bolt  $K$ , so that the tail-block and its clutch may be drawn back on the track, when the threaded bolt may be removed and an unthreaded one inserted in the clutch. The rod  $g^3$  is provided with collars or projections  $b^2$  and  $b^3$ , which may be so fixed on the rod as to regulate the length of the threads to be cut on the bolt, for it is obvious that if the arm  $b'$  of the tail-block rests against the projection or collar  $b^3$  when the end of the bolt  $K$  is inserted in the cutter and strikes the collar or projection  $b^2$ , when the cutting of the thread ceases, the threaded portion of the bolt  $K$  will be of the same length as the distance between the collars  $b^2$  and  $b^3$  on the movable rod or bar  $g^3$  of the main or supporting frame.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of a hollow cylindrical piece secured to a driving-shaft, with a radial guide-piece secured thereto and having openings near its ends, a sliding collar surrounding said cylindrical piece and having forwardly-projecting arms in said openings, and an annular groove on its exterior, a ring or band in said groove, a lever pivotally secured



to the ring or band and likewise secured at one side of the ring to a suitable support and at the other side fixed to a movable rod on the main frame, a pair of spring-actuated die-carrying jaws having grooves to receive the radial guide-piece, and openings adapted to receive the arms on the sliding collar, and a movable rod to actuate the lever on the ring or band, substantially as described.

2. The combination of the hollow cylindrical piece A<sup>2</sup>, secured to a driving-shaft, with the radial guide-piece F, thereon, having the openings *f*, near its ends, the sliding collar E, having the arms or projections E', provided with the plates D', and the annular groove *e*, the

ring E<sup>2</sup>, in said groove, the lever G, pivotally secured at one side of and to said ring, and at the other side thereof fixed to the movable rod *g*<sup>3</sup>, the spring-actuated and die-carrying jaws C, having the grooves C<sup>2</sup>, for the guide-piece F, and the openings *c*<sup>3</sup>, provided with the plates D, and a movable rod to actuate the lever on the ring or band, substantially as described.

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