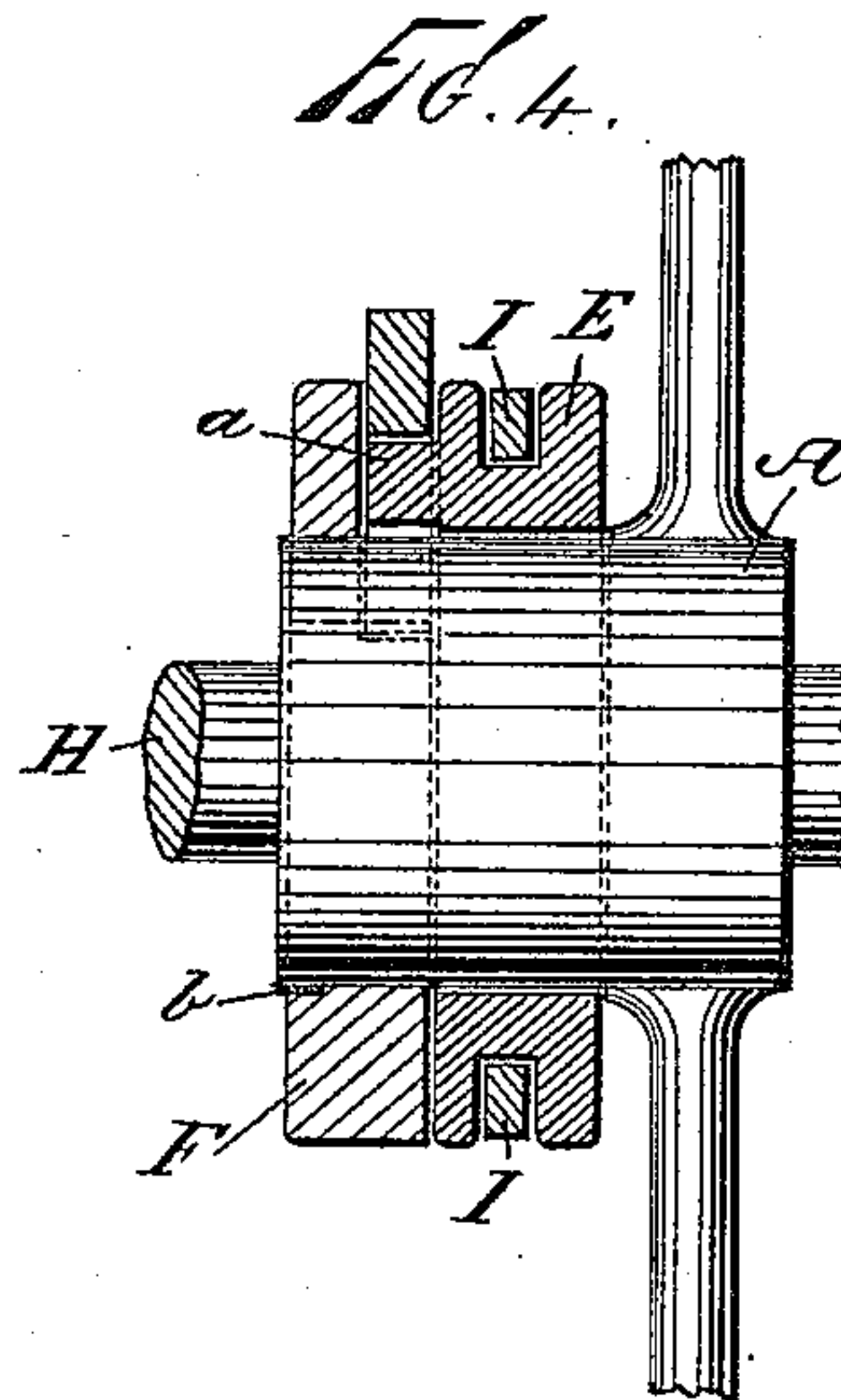
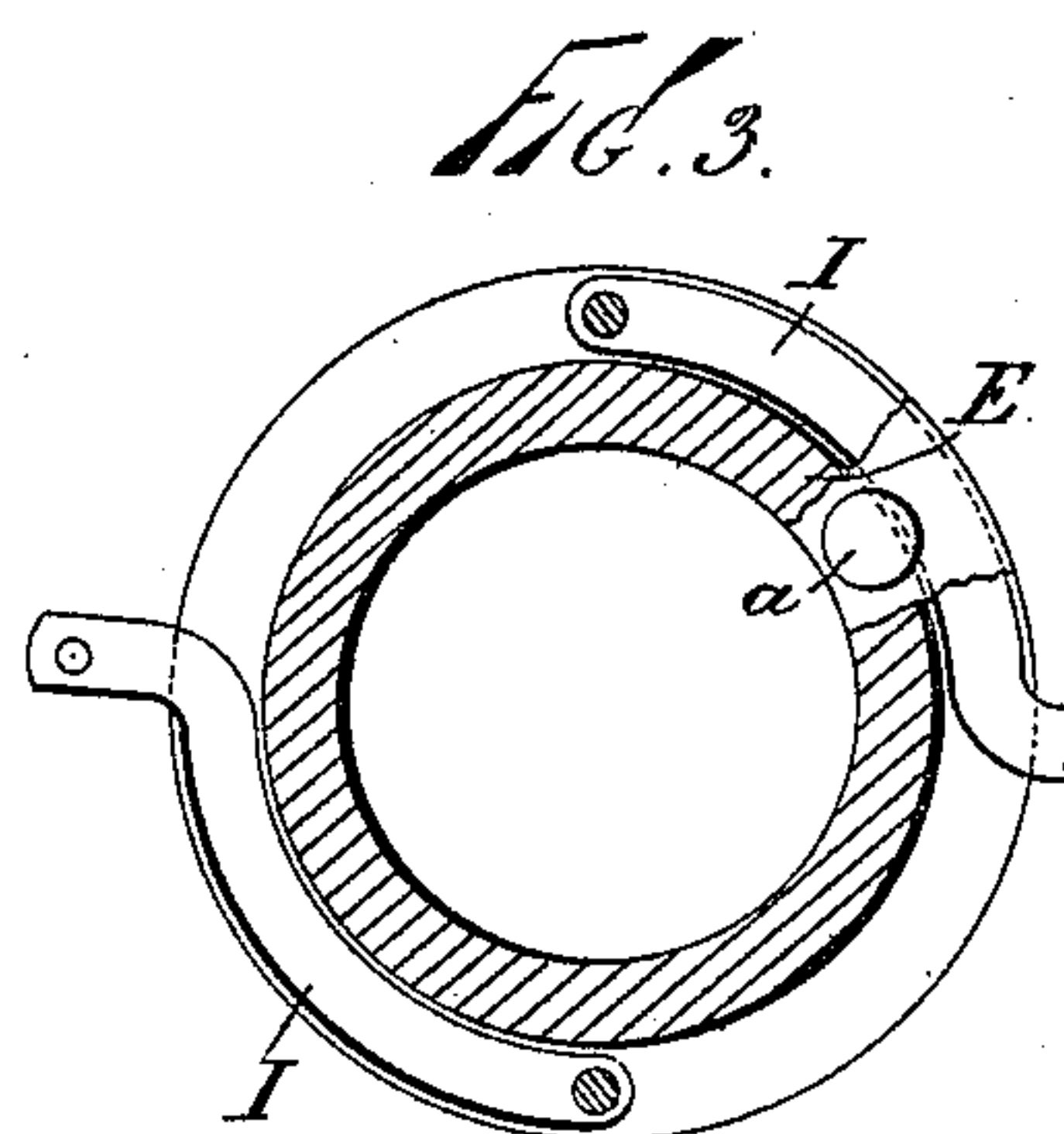
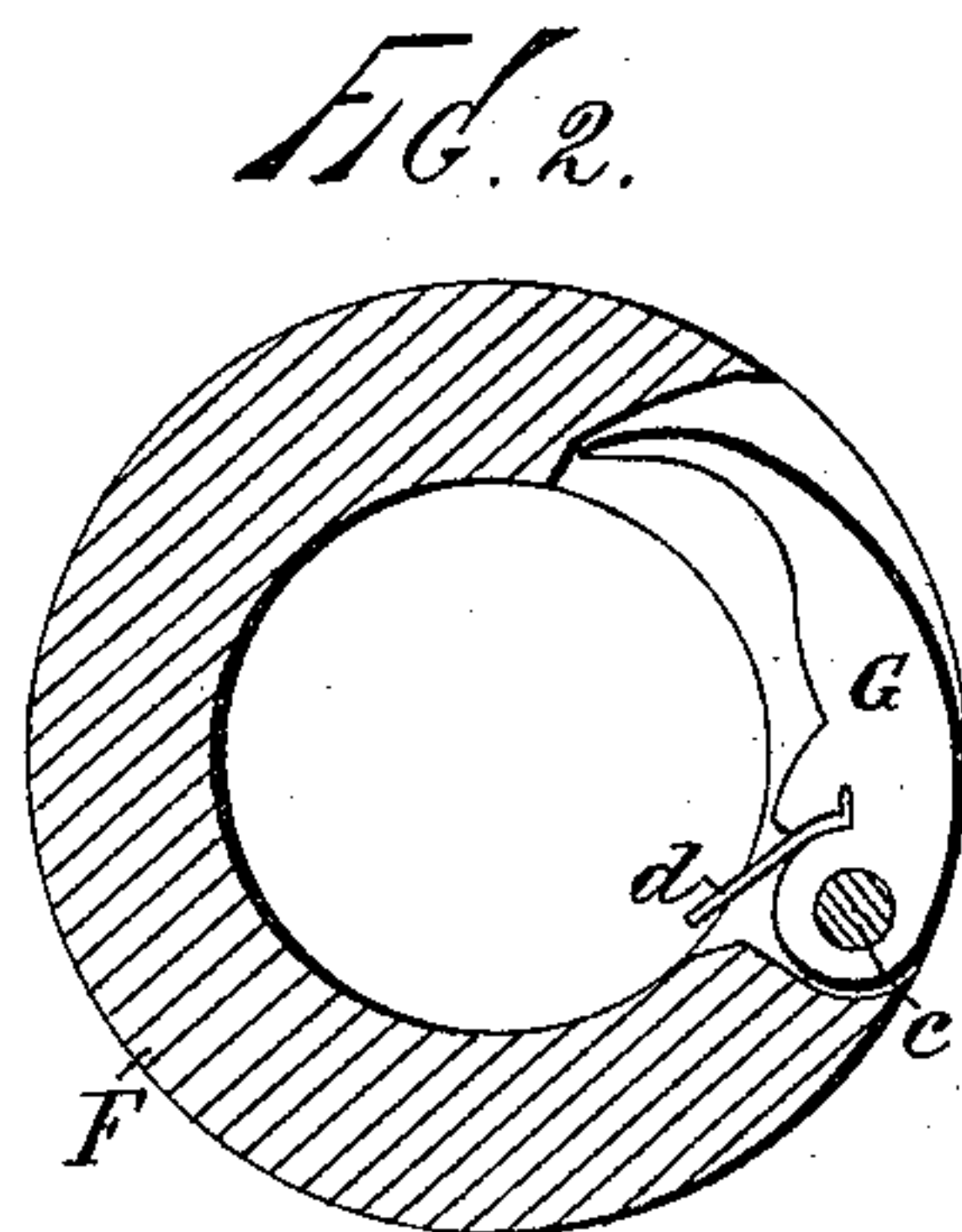
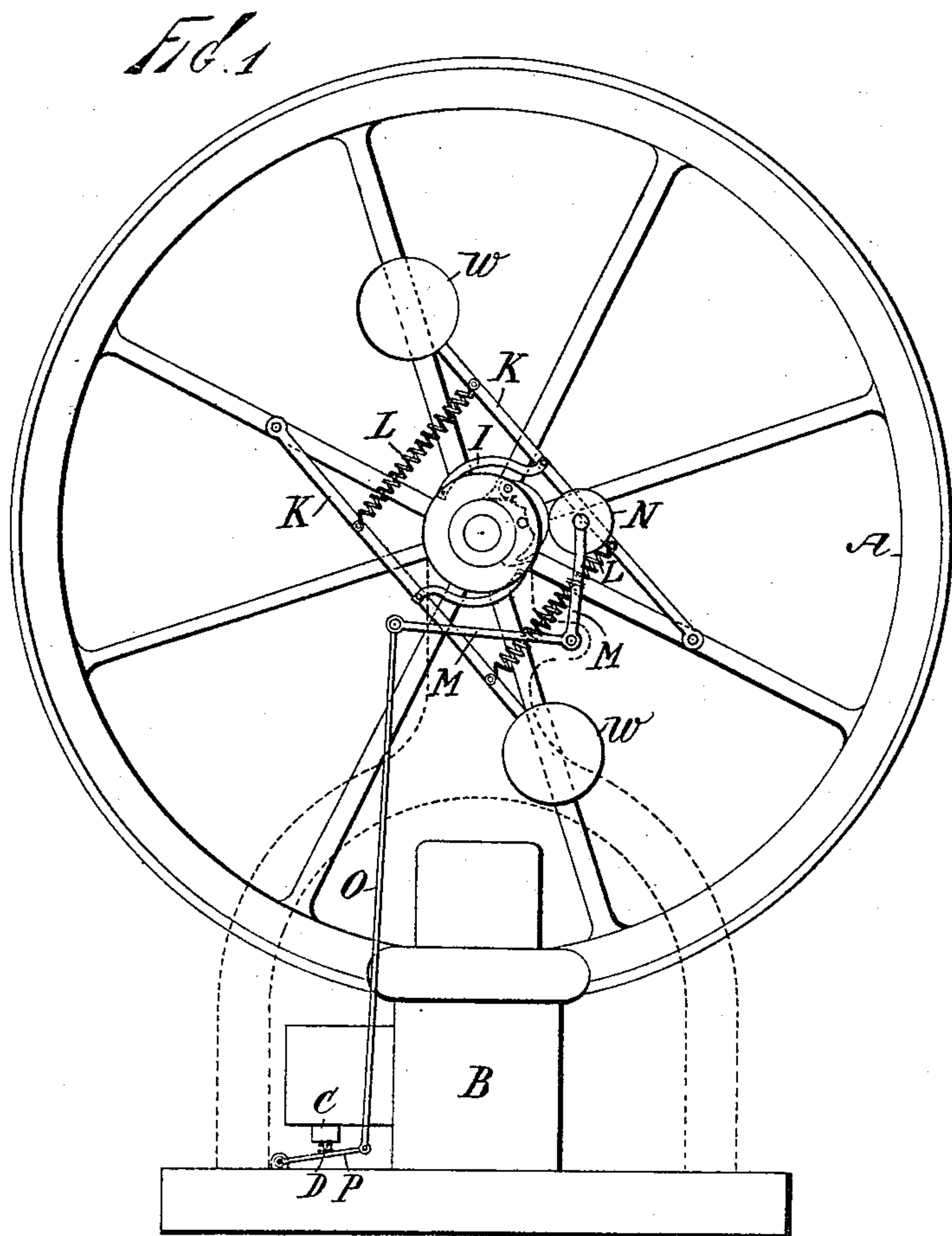


(No Model.)

H. J. HARTIG.  
GOVERNOR FOR ENGINES.

No. 451,047.

Patented Apr. 28, 1891.



Witnesses:  
John Buckler,  
L. H. Osgood.

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By Worth Osgood  
Attorney.



# UNITED STATES PATENT OFFICE.

HENRY J. HARTIG, OF BROOKLYN, NEW YORK.

## GOVERNOR FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 451,047, dated April 28, 1891.

Application filed August 13, 1890. Serial No. 361,901. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY J. HARTIG, of Brooklyn, county of Kings, and State of New York, have invented certain new and useful  
5 Improvements in Governors for Gas-Engines, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention relates to governors, and particularly to such as are designed for use upon gas-engines, though my improved form might be used on other varieties of engines or motors.

The object of my invention is to provide or  
15 produce a governor which shall be compact of arrangement, which shall operate quickly, easily, and accurately, which may be easily mounted in place, and which may be cheaply made. To accomplish all of this and to se-  
20 cure other and further advantages in the matters of construction, operation, and use, my improvements involve certain new and useful arrangements or combinations of parts and peculiarities of construction, as will be herein  
25 first fully described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a view  
30 in elevation, showing the fly-wheel of a gas-engine with my improved form of governor mounted thereon, and showing also a cylinder, valve-chest, and connections between the governor and valve-stem, the parts being in position to open the valve. Fig. 2 is a view,  
35 partly in section and partly in elevation, upon a plane through the movable collar, showing the cam-latch closed down into the recess provided for it. Fig. 3 is a similar view from a direction opposite that of Fig. 2, showing the  
40 hinged arms by which the collar is moved, and also the pin which raises the cam-latch. Fig. 4 is a partial section and elevation showing the hub of the fly-wheel with the collar thereon, the cam-latch protruding as in Fig. 1.

45 In all the figures like letters of reference, wherever they occur, indicate corresponding parts.

A is the fly-wheel of a gas-engine or other  
50 motor; B, the power-cylinder; C, the valve-chest, and D the stem of the valve which controls the supply of motive fluid. These parts may be variously arranged. In the form

shown the valve-stem is intended to be raised in order to open the valve; but it may be depressed or otherwise moved by simple adapta- 55 tions of the connecting-rods, as will be readily understood. Upon the hub of wheel A (or upon the shaft, if necessary) I mount a loose collar E, upon which is a projecting stud or pin *a*. This collar is held in place by the cam 60 containing collar F, the latter being keyed (or otherwise secured) as by a key *b*, so as to turn with and as the fly-wheel turns. In the collar F is a recess in which is located a cam latch or block G, the same being hinged at 65 one end, as at *c*, and so fashioned or shaped on its exterior as to lie wholly within the exterior surface of collar F when retracted, and on its interior so that the movement of the pin *a* in either direction beyond a certain 70 point will force it to swing outward upon its hinge-pin or axis. A spring *d*, bearing or riding on shaft H, tends always to retract the hinged cam. Connected with the block E are hinged arms I I, leading from the weighted 75 arms or rods K K, to which they are also hinged, which rods in turn are hinged upon the fly-wheel, as upon the spokes thereof. Springs, as L, prevent the rods K K from moving too far, and tend always to draw them to- 80 ward the shaft, each spring being connected to one rod near its free end and to the other near its hinged end.

The parts being thus arranged and the pin *a* riding against the inner curved face of cam 85 G and, say, against the widest part thereof, when the fly-wheel turns rapidly enough, the weights W W overcome the tension of springs L L and move from the shaft, or toward the circumference of the wheel, carrying the 90 hinged arms I I, and through them causing the collar E and the attached pin *a* to move (circumferentially) upon the hub. The pin *a* is thus brought to a deeper portion of the hinged cam, and the latter thus left free to be 95 correspondingly retracted by its retracting-spring. In this manner the cam G is made to project more or less beyond the surface of collar F, according to the speed of the fly-wheel and in proper proportion therewith. 100

Upon some convenient portion of the frame of the engine I pivot a bell-crank lever M, upon one end of which is a roller-disk N, calculated to normally bear against or remain in



close proximity to the collar F, and upon the other end of which is hinged a rod O, connected in turn with a hinged bar P, which bears against the valve-stem D. The cam  
5 being projected to its greatest extent, the valve is, through the connections described, opened to its greatest extent. If the speed of the engine be increased beyond the normal, the valve is opened to a less extent, and thus  
10 the movement of the engine controlled. When the cam is retracted so much as not to touch the roller-disk N, (as sometimes occurs in gas-engines using gas explosively,) then the wheel will make a revolution without permitting the  
15 valve to be opened, and even more than one revolution until the speed is reduced enough.

Of course the means of reaching the valve from the cam may be modified according to the arrangement or pattern of the engine.

20 The governor described is of few and simple parts, occupies but little room upon the engine, is always reliable and accurate, and is found to admirably answer the purposes or objects above alluded to.

25 Having now fully described my invention, what I claim as new herein, and desire to secure by Letters Patent, is—

1. In a governor of the character herein set forth, a recessed collar mounted and arranged  
30 to turn with the engine-shaft, a cam-block hinged in the recess of the collar and provided

with a retracting-spring, and a pin bearing against the inner face of the hinged cam to move the same, the parts being arranged and combined substantially as set forth. 35

2. In a governor of the character herein set forth, the combination, with a spring-actuated cam-block hinged in a recess of a collar secured so as to turn with the engine-shaft, of a pin bearing against the inner face of said  
40 cam-block and mounted upon a circumferentially-movable collar, and hinged arms connecting the movable collar with the hinged and weighted arms of the governor, substantially as shown and described. 45

3. In a governor of the character herein set forth, the combination, with the hinged cam-block mounted in a recess in a collar turning with the engine-shaft, of a bell-crank lever carrying a roller-disk at one end, arranged to  
50 be moved by the cam-block, and at the other a rod for compelling the movement of the valve, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I  
55 have hereunto set my hand in the presence of two witnesses.

HENRY J. HARTIG.

Witnesses:

W. J. MORGAN,  
WORTH OSGOOD.