

(No Model.)

2 Sheets—Sheet 1.

J. BEGTRUP.
STEAM ENGINE GOVERNOR.

No. 326,092

Patented Sept. 15, 1885.

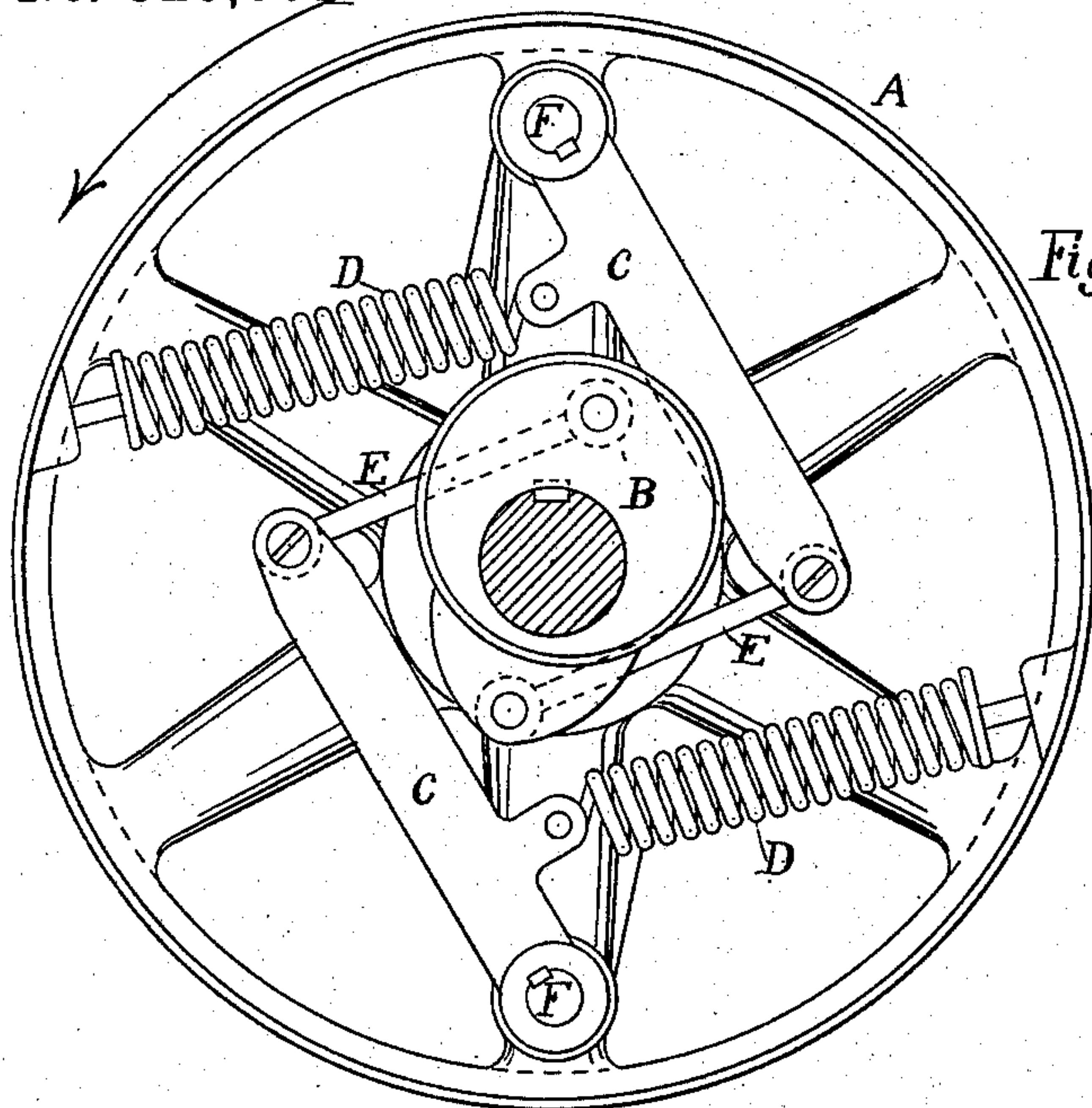


Fig. 1.

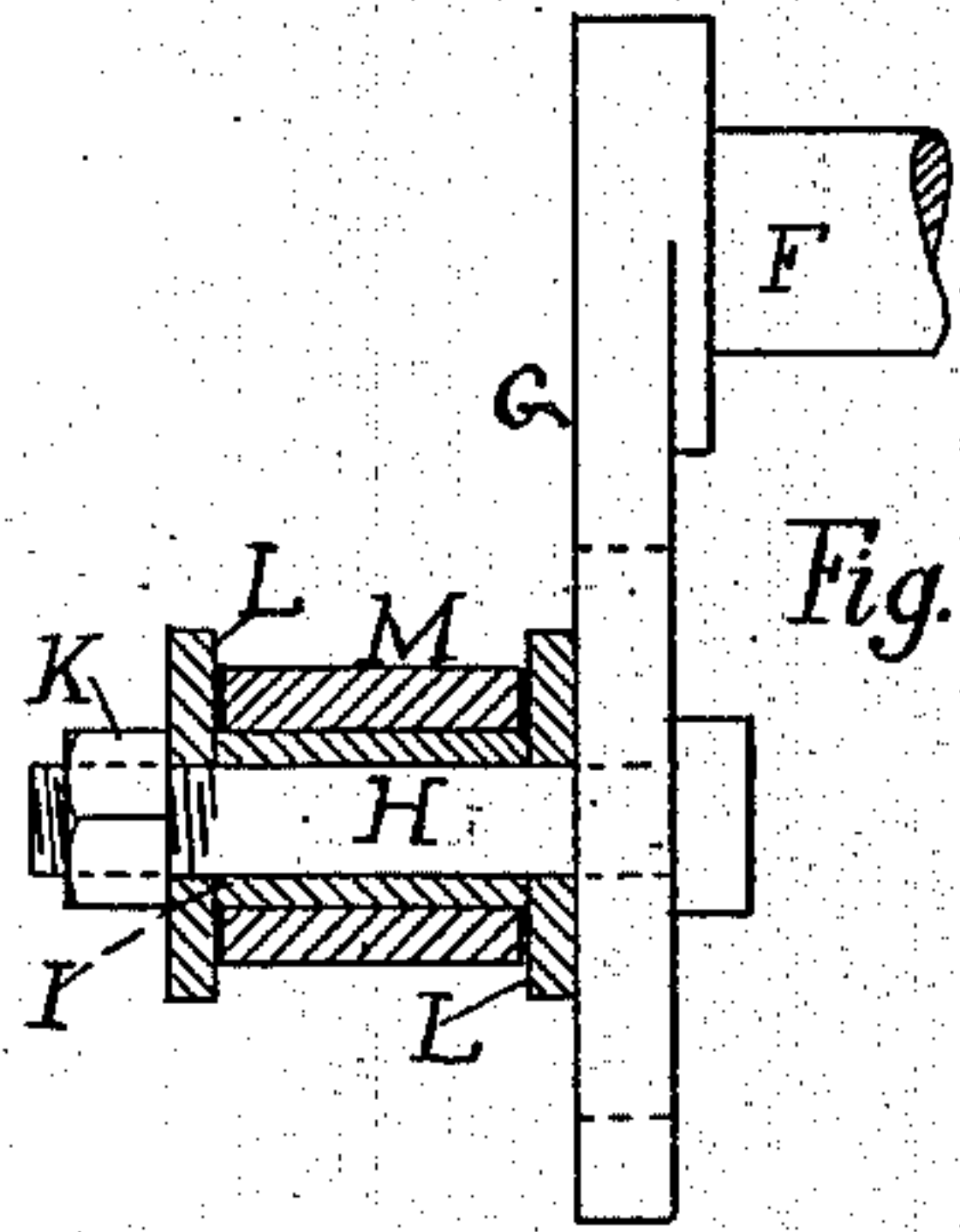


Fig. 2.

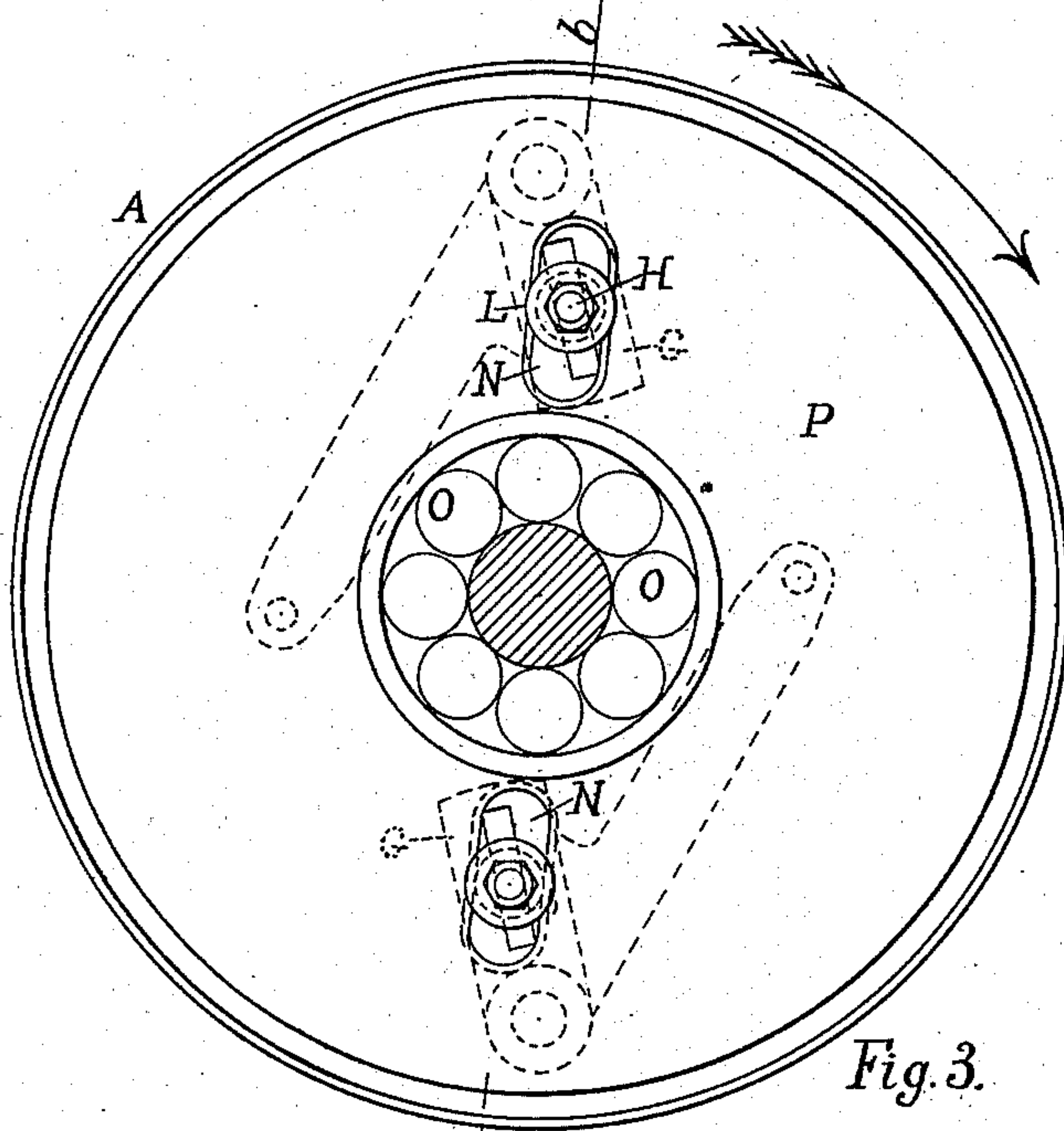


Fig. 3.

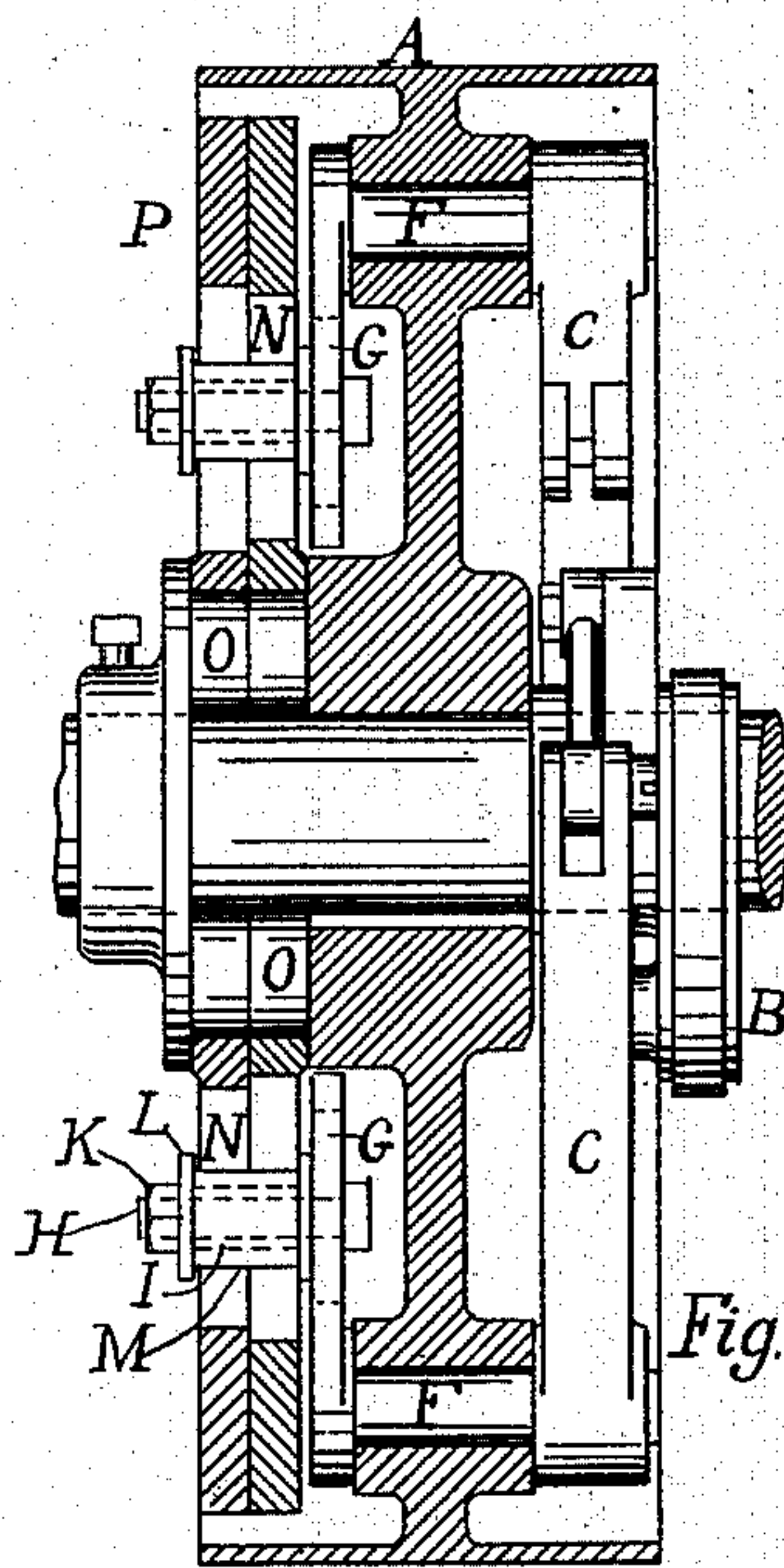


Fig. 4.

WITNESSES:

H. J. Stratmeyer Jr.
James C. Best.

INVENTOR

Julius Begtrup

(No Model.)

2 Sheets—Sheet 2.

J. BEGTRUP.
STEAM ENGINE GOVERNOR.

No. 326,092.

Patented Sept. 15, 1885.

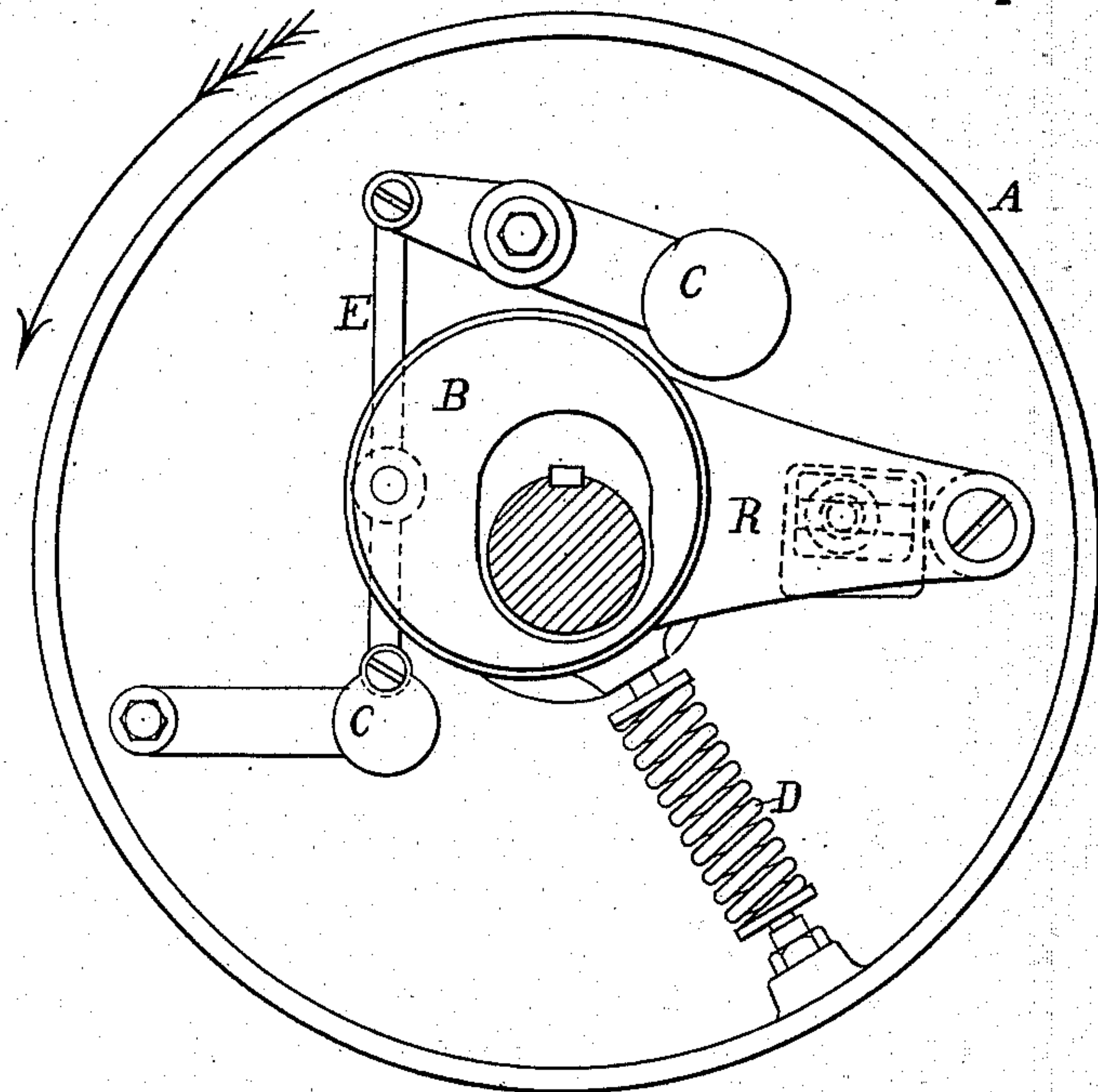


Fig. 5.

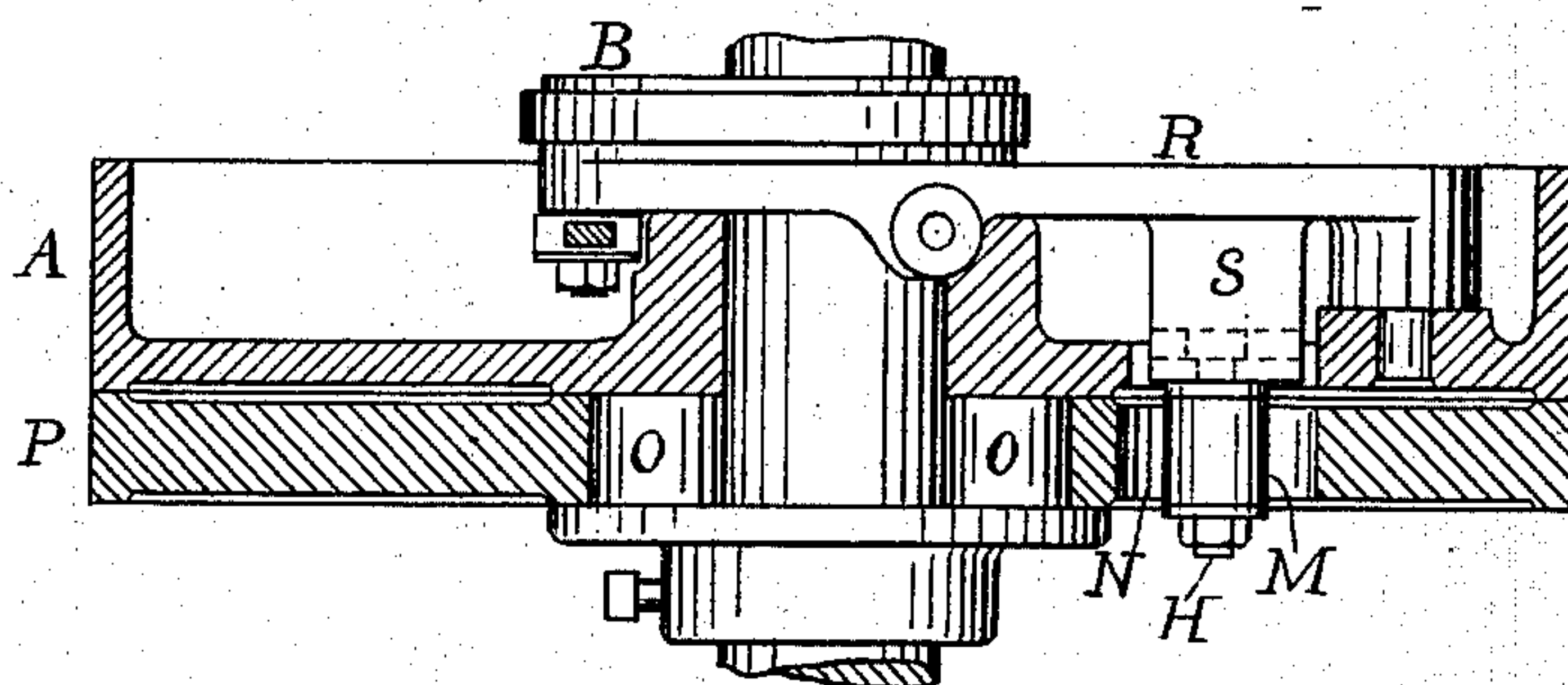


Fig. 6.

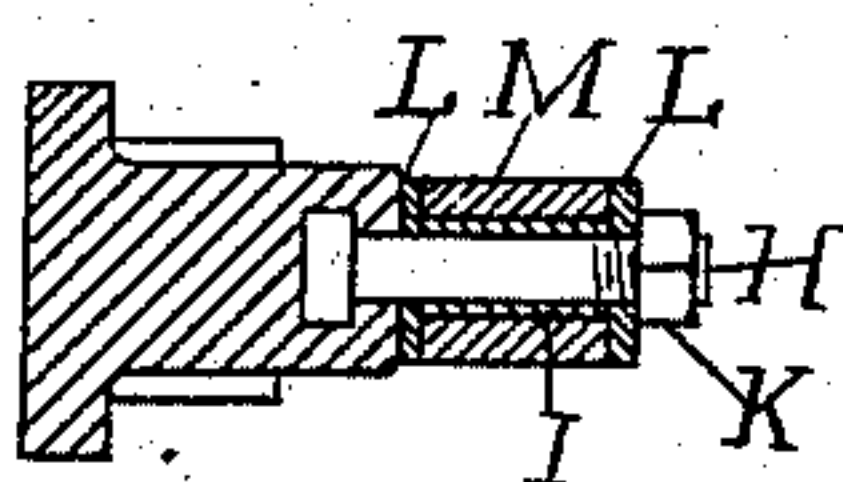


Fig. 8.

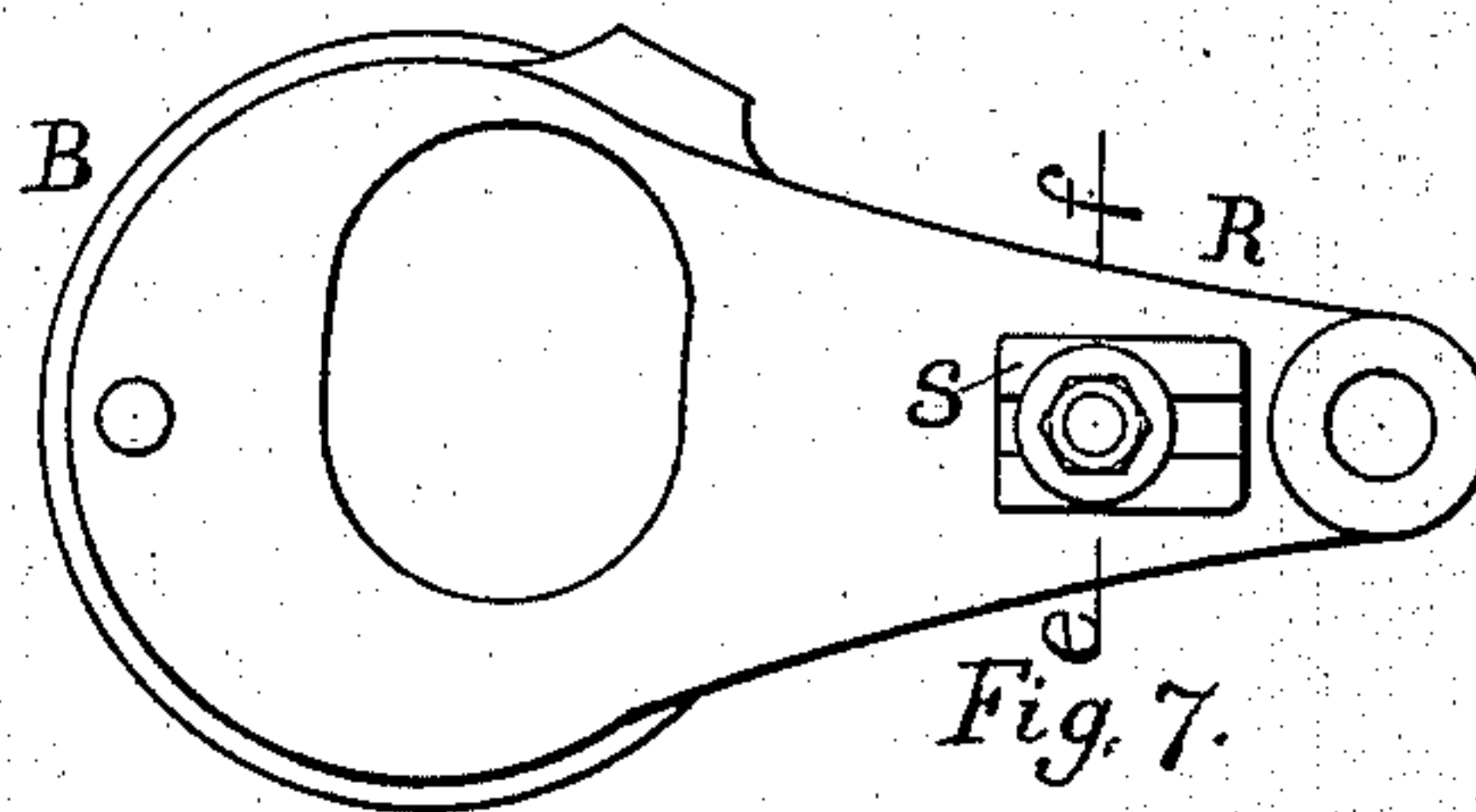


Fig. 7.

WITNESSES:

H. J. Stratemeyer
James C. Best.

INVENTOR

Julius Begtrup

UNITED STATES PATENT OFFICE.

JULIUS BEGTRUP, OF ELIZABETH, NEW JERSEY.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 326,092, dated September 15, 1885.

Application filed June 16, 1885. (No model.)

To all whom it may concern:

Be it known that I, JULIUS BEGTRUP, a subject of the King of Denmark, residing at Elizabeth, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Steam-Engine Governors, of which the following is a specification.

My invention relates to an improved governor for steam-engines, of the class of governors that turn with the crank-shaft and regulate the steam-supply and speed of the engine by changing the position of the eccentric which operates the steam-induction valve; and the object of my improvement is to provide a governor which is quick and certain in its action, and will keep the engine on a uniform speed, whatever the load or steam-pressure may be. These objects I attain by the mechanism illustrated in the accompanying drawings.

Figure 1 is a front elevation of a governor of a well-known type, on the back side of which the mechanism comprising my invention is attached, and which is clearly shown in Fig. 3, being a back view, and in Fig. 4, which is a section on the line *a b*, Fig. 3.

Similar letters refer to similar parts throughout the several views.

A is a pulley keyed to the engine-shaft, on which the governor is mounted. B is the eccentric; C, the governor-weights, sometimes called "balls;" D, the springs which resist the centrifugal force of the weights, and E the connecting-links between weights and eccentric. F are shafts to which the weights are keyed. These shafts extend through the arms of the pulley A, and have levers G on their other ends. These levers are slotted to receive the bolts H, which are held in position by sleeves I, washers L, and nuts K, as clearly shown in the enlarged sectional view, Fig. 2. On the sleeves I are mounted rollers M, extending through slots N in the two concentric circular disks P. By this arrangement the position of the rollers M on the levers G can be adjusted to suit circumstances. Each of the two disks is in contact with one roller only. The slots, being of different sizes, leave only one disk in contact with the roller on each side of the shaft. The disks P are mounted on roller-bearings O on the engine-

shaft, and thus free to move in conjunction with the levers G and weights C.

The operation of my improved governor will be as follows, to wit: When the engine is not running, and immediately after it has been started, the weights C will take the position shown in the drawings; but when the speed of the engine has reached a certain limit the weights fly out, turning the eccentric part of a revolution and causing an earlier cut-off of the steam-supply to the cylinder, thus preventing the speed from increasing further. The speed thus attained is the normal speed of the engine, and when running at that speed the centrifugal force of the weight C is exactly counterbalanced by the spring-tension; but when the load on the engine or the steam-pressure is changed a slight momentary change in speed occurs, and some of the centrifugal force or spring-tension is during that period left unbalanced, causing the weights C to move toward the shaft or away from it, as the case may be. Besides this unbalanced centrifugal force or spring-tension, the force of inertia of the disks P will, in my improved governor, act upon the weights C. When a momentary change of speed occurs, the disks P will, on account of their inertia, have a tendency to retain the normal speed, and consequently exert a pressure on the rollers M, and this pressure is transmitted through the levers G and shafts F to the weights C, thus causing a quicker shifting of the eccentric than would be the case when the centrifugal force or spring-tension alone had to do it. Besides, the disks P will, on account of the inertia of their mass, prevent undue oscillating movements of the weights.

Although I, for the class of governors illustrated in Figs. 1, 2, 3, and 4, preferably will employ two disks, P, in order to equalize the strains on the levers, my invention will cover the application of one disk, P, in connection with one of the levers G in the class of governors here illustrated, and the application of one disk, P, to a class of governors of a somewhat different but well-known design, an example of which is illustrated in Figs. 5, 6, 7, and 8. Fig. 5 is a front view, and Fig. 6 a horizontal section through center of pulley. My invention is here shown as applied to a

governor of the class where the eccentric is shifted across the engine-shaft. This shifting of the eccentric is in this improved governor effected by the centrifugal force of the balls C in conjunction with the inertial force of the disk P, substantially in the same manner as by the class of governors first mentioned, with this exception, that I in this case preferably will make the arm R with a projection, S, cast in one piece with said arm, and having a radial slot to receive the head of the bolt H, as clearly shown in Fig. 6, and in Fig. 7, which is a back view of the eccentric and arm, and Fig. 8, which is a section through *ef*, Fig. 7. The bolt H carries the sleeve I, washers L, and roller M, extending through the slot N in the circular disk P, substantially in the same manner and for the same purpose as by the governor first mentioned, and illustrated in Figs. 1, 2, 3, and 4.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an automatic governor, the combination of disks or disk P, mounted on roller-bearings on the engine-shaft, said disks or disk having slots N, containing the rollers M, mounted on sleeves I on bolts H, these bolts being adjustable on the levers G, and retained in position by nuts K with the shafts F, having slotted levers G to receive the bolts H, substantially in the manner and for the purpose set forth.

2. In an automatic governor having a loosely-journaled disk, P, a slotted projection, S, on the arm R, to receive the head of an adjustable bolt, H, in combination with sleeve I and roller M, substantially in the manner and for the purpose set forth.

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

JULIUS BEGTRUP.

Witnesses:

JAMES E. BEST,
CHARLES F. AYERS.