

No. 679,055.

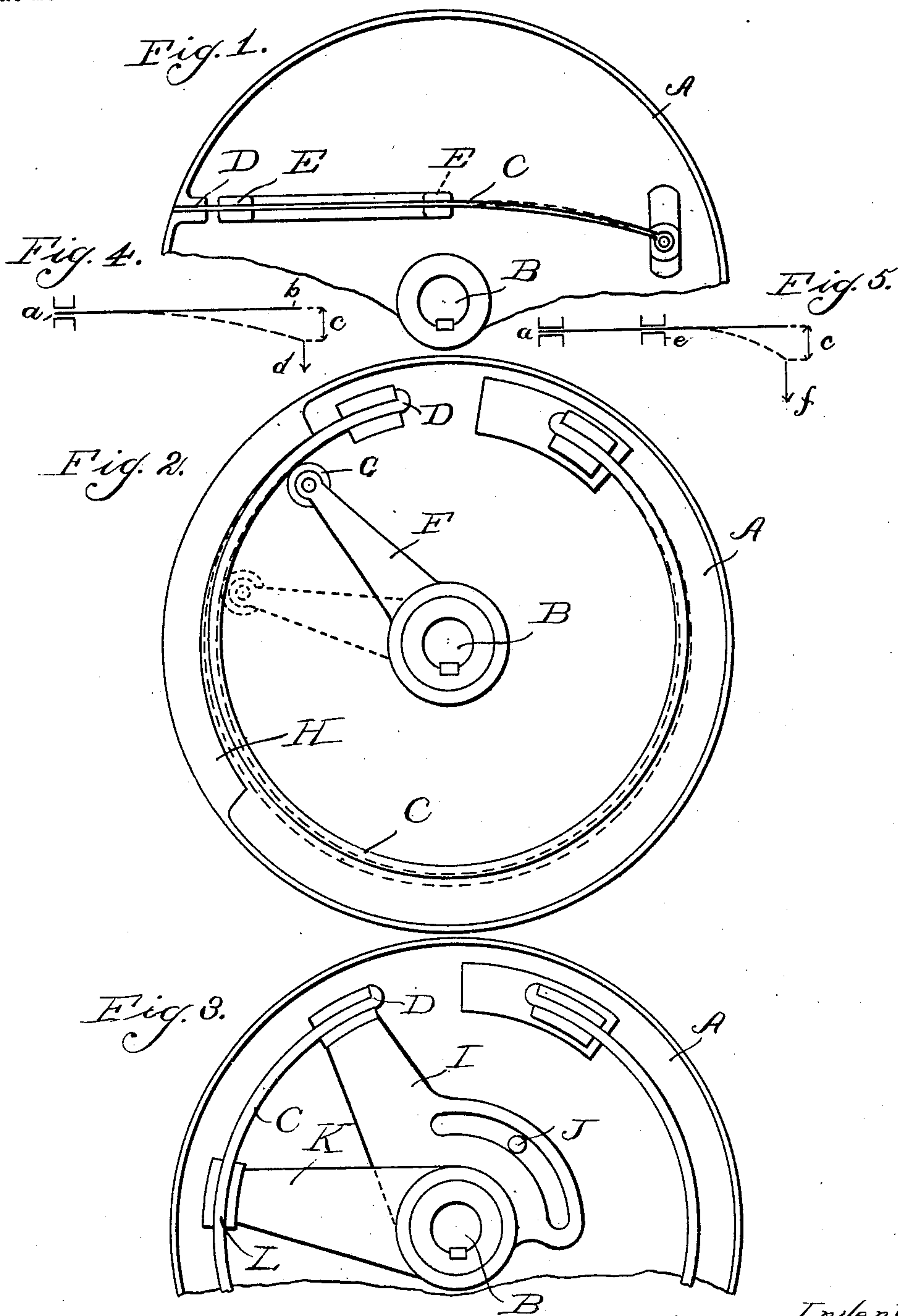
Patented July 23. 1901.

H. LENTZ.
CENTRIFUGAL ENGINE GOVERNOR.

(Application filed Oct. 18, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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Fig. 6.

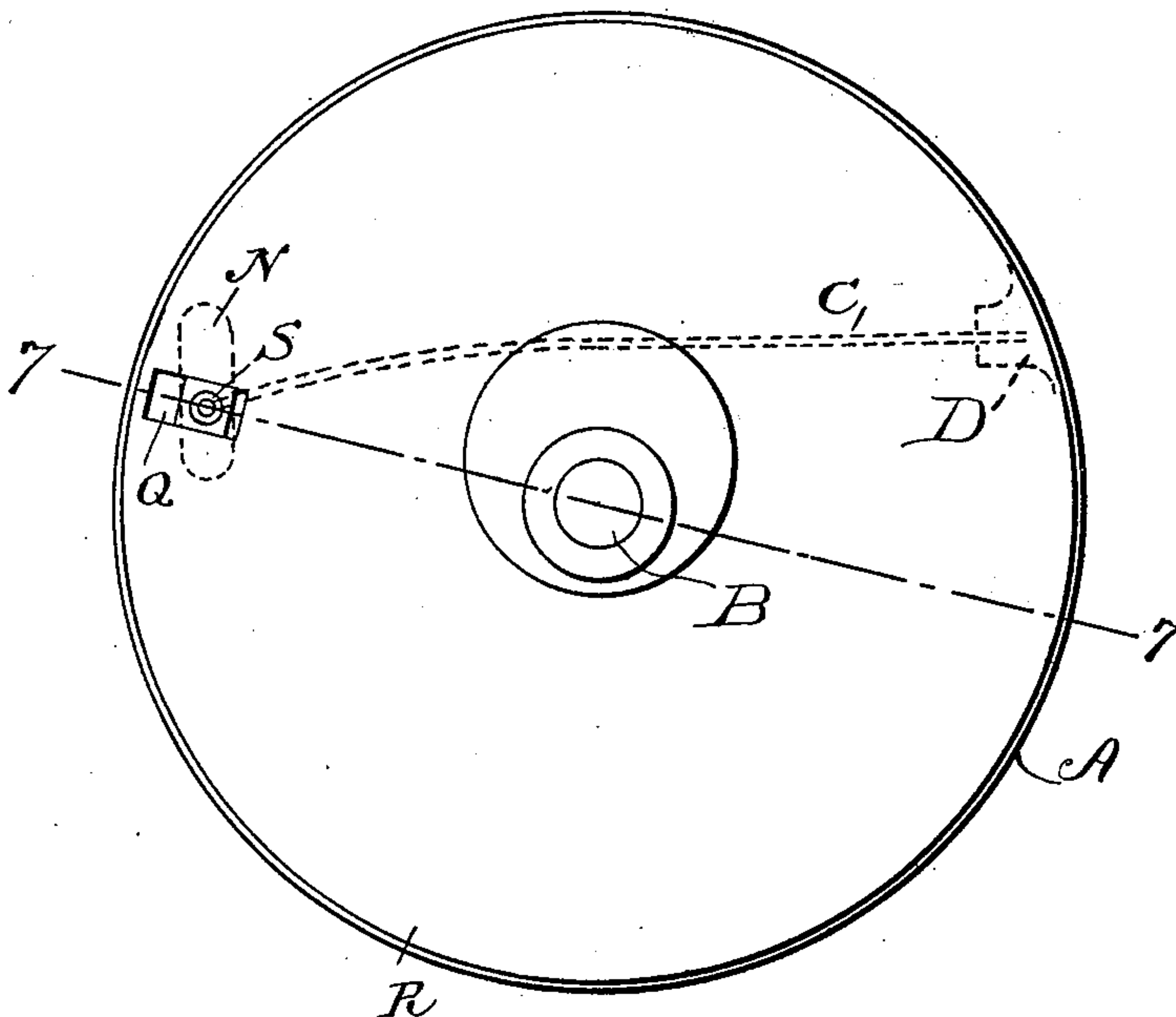
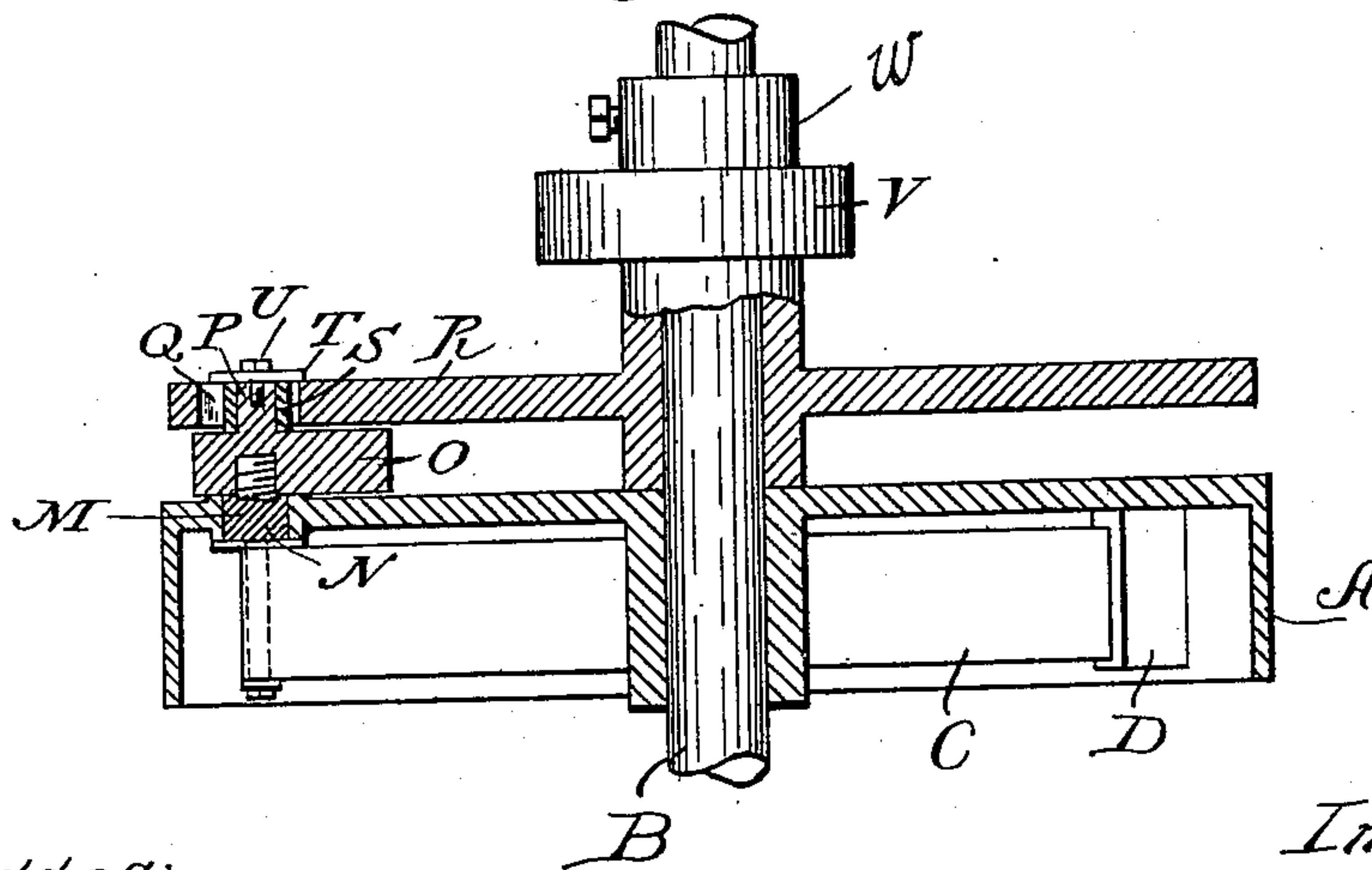


Fig. 7.



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UNITED STATES PATENT OFFICE.

HUGO LENTZ, OF BRÜNN, AUSTRIA-HUNGARY.

CENTRIFUGAL ENGINE-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 679,055, dated July 23, 1901.

Application filed October 18, 1900. Serial No. 33,532. (No model.)

To all whom it may concern:

Be it known that I, HUGO LENTZ, a citizen of Germany, residing at Brünn, Moravia, Austria-Hungary, have invented certain new and useful Improvements in Apparatus for Varying the Number of Revolutions of Centrifugal Engine-Governors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art in which it appertains to make and use the same.

My invention relates to an improvement in centrifugal governors for engines, the object being to produce a governor in which the normal revolutions may readily be varied; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a partial plan view of a governor made in accordance with my invention. Fig. 2 is a plan view of a modified form. Fig. 3 is a partial plan view of a second modification. Figs. 4 and 5 are diagrammatic figures illustrating the action of a spring under different conditions. Fig. 6 is a rear plan view of the governor-disk, showing the eccentric. Fig. 7 is a section on line 7 7, Fig. 6.

In Figs. 4 and 5 I have illustrated diagrammatically the principle which I employ in my device. If a bending spring be fixed at one end *a*, it will be deflected at its free end *b* to an extent *c* determined by a weight *d*, Fig. 4. By moving the clamp toward the free end or inserting a stationary clamp *e* between the fixed and free ends the portion of said spring between the fixed end and the clamp *e* will be rendered inoperative. Now to cause the shortened free end of the spring to be deflected to the same extent as before it will be necessary that the spring be acted upon by an increased weight *f*.

In said drawings, A represents a disk-like member of a governor, which is rigidly secured to an engine or governor shaft B. A spring C is rigidly secured at one end D to said member A, adjacent its outer edge, the free end of said spring being connected by suitable means to the governor-weight and valve mechanism of the engine. A clamp E is adjustably mounted on said member A and is adapted to hold said spring rigid with said member A at va-

rious points more or less distant from said fixed end D. Said clamp E is so mounted on said member A that as it is moved away from said fixed end D of said spring C and clamped rigidly in place and engages said spring it will shorten the free end portion of same and decrease its flexibility, thereby increasing its resistance. The curvature of the spring is also changed by lessening the radius, thereby further increasing its tension.

In Fig. 1 the spring shown is a flat spring nearly straight.

In Fig. 2 I have illustrated a flat spring bent into a nearly-circular form and a modified form of the adjustable clamp. In this case I provide an arm F, adjustably mounted concentric with said shaft B, having a roller G in its outer end adapted to force said spring C against a concentric shoulder or projection H, forming part of said member A. When said roller G is adjacent the rigid end D of said spring, the spring is of such a form that it will occupy the position shown in full lines in Fig. 2, and as said roller is moved along said spring away from said end D the spring will be changed in curvature, as indicated in dotted lines in Fig. 2. The effective length of said spring will be shortened and will consequently be made more rigid.

In Fig. 3 I have illustrated a second modification of my device. In this case the end D of the spring C is rigidly secured to the outer end of an arm I, which is adjustably mounted on said member A, concentric with said shaft B, and is adapted to be held in any desired position by means of the clamping-bolt J. The arm K is also adjustably mounted on said member A, concentric with said shaft B, and is provided with the slot L in its outer end, through which the spring is adapted to pass. In this case the tension of the spring C may be varied by adjusting the position of the arm I, whereby said spring will be given a greater or less curvature, and also by adjusting the arm K, whereby more or less of the spring will be held rigid, thus, in effect, shortening said spring. The free end of said spring C is connected with a block M, which is slidingly mounted in a slot N in said member A and projects therethrough. A governor-weight O is mounted rigid with said sliding block M and carries a pipe P,

which is adapted to project into a radial slot Q in the disk R, which is revolubly mounted on said shaft B. A sliding block S is mounted in said radial slot Q on said pin P and is held
 5 in place endwise by means of the washer T and screw U. The eccentric V is rigid with said disk R, and as said disk is revolved back or forth about said shaft on account of the various positions which the free end of said
 10 spring C may take said eccentric V is advanced or retarded in relation to said shaft B, and thus varies the point of cut-off in the valve-gear of the engine, to which it may be attached. The governor will thus regulate
 15 the number of revolutions which said engine will turn per minute. Said disk R, which carries said eccentric V, is mounted on said shaft B between the hub of said governor-disk A and a set-collar W.

20 I claim as my invention—

1. In a centrifugal engine-governor, the combination with a shaft, devices loosely mounted thereon for actuating a valve, a disk on said shaft, a slot therein, and a weight
 25 movable in said slot and connected with said valve-actuating devices for altering the position thereof, of a spring secured at one end to said disk and at its free end engaging said weight, and devices movably mounted on
 30 said disk and engaging said spring between its ends for regulating the effective length thereof.

2. In a centrifugal engine-governor, the combination with a shaft, a movable valve-
 35 actuating member thereon, a rigid member thereon, and devices connected with said valve-actuating member for controlling the position of same on said shaft, of a spring secured at one end to said rigid member, and
 40 at its free end engaging said devices connected with said valve-actuating member, and devices interposed between the ends of said spring and adapted to be clamped rigid with said rigid member for regulating the tension
 45 of said spring.

3. In a centrifugal engine-governor, the combination with a shaft, a movable valve-actuating member thereon, a rigid member thereon, and devices connected with said

valve-actuating member for controlling the
 50 position of same on said shaft, of a flat spring secured at one end to said rigid member, and at its free end engaging said devices connect-
 55 ed with said valve-actuating member, and devices interposed between the ends of said spring and adapted to be clamped rigid with said rigid member for regulating the tension of said spring.

4. A centrifugal engine-governor, comprising a member rigidly mounted on a revoluble
 60 shaft, a shifting eccentric mounted on said shaft adjacent said member, means for shifting said eccentric comprising a spring having one end clamped rigidly to said member, its
 65 free end connected with a block slidingly mounted on said member, said block being also connected in any suitable manner with said eccentric, a weight attached to said block and means for adjusting the tension of said
 70 spring comprising devices movable relatively to said spring and on said member to which said spring is clamped and engaging said spring between its ends to change the effective length thereof, substantially as described.

5. A centrifugal engine-governor, comprising
 75 a member rigidly mounted on a revoluble shaft, an eccentric adjustably mounted on said shaft adjacent said member, a second member connected with said eccentric and movable relatively to said first-mentioned
 80 member, a weight attached to said movable member, a spring carried by said first-mentioned member and adapted to hold said eccentric in its normal position and having its
 85 free end connected with said movable member, and means for varying the normal revolutions of said governor comprising devices mounted on said first-mentioned member and engaging said spring between its ends to hold
 90 same rigid in connection with said member to change the effective length thereof.

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

HUGO LENTZ.

Witnesses:

FRANZ TASCHNER,
 W. DRAHOKOUPIL.