

(No Model.)

A. D. QUINT.
STEAM ENGINE GOVERNOR.

No. 358,296.

Patented Feb. 22, 1887.

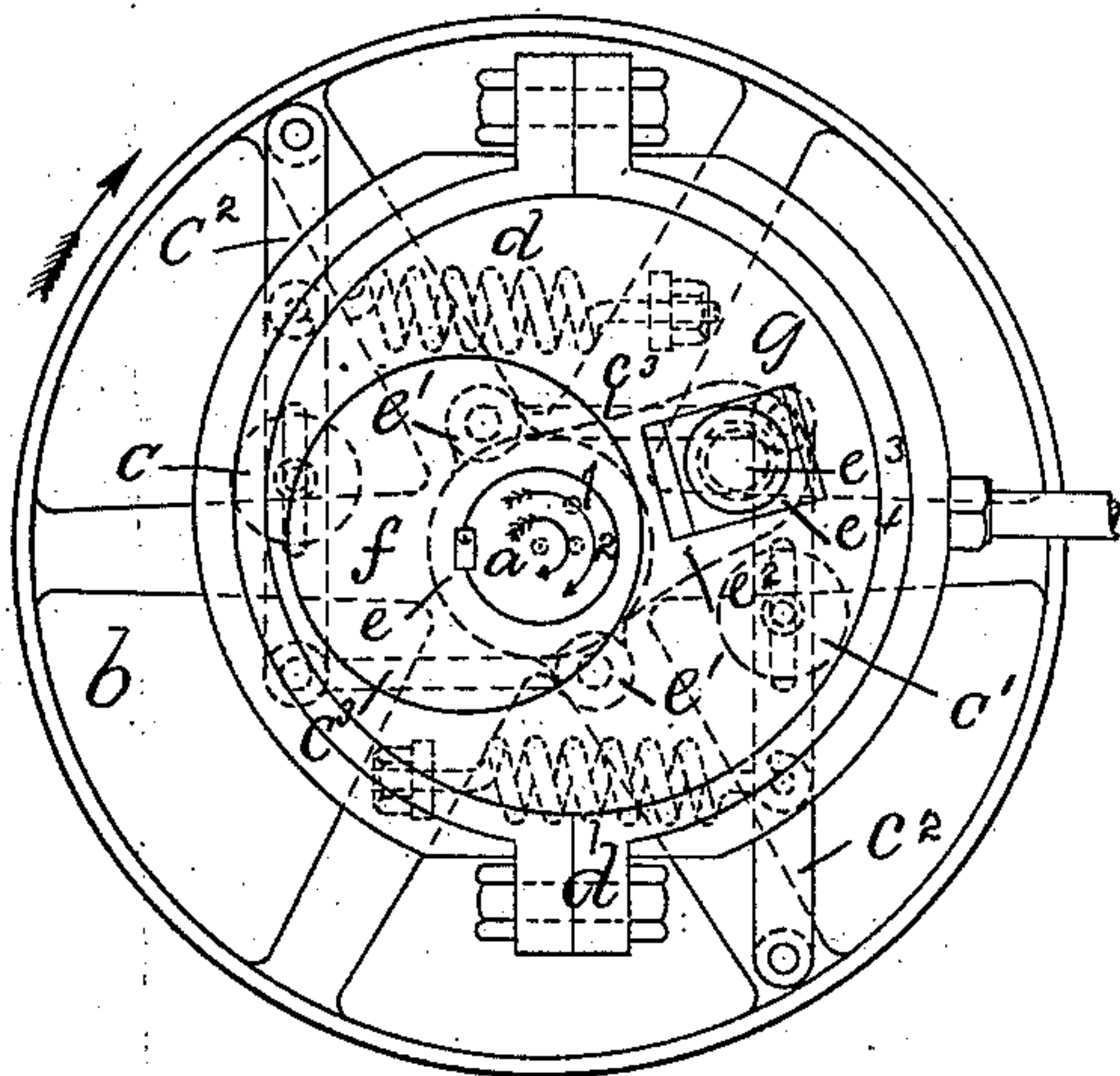


FIG. 1.

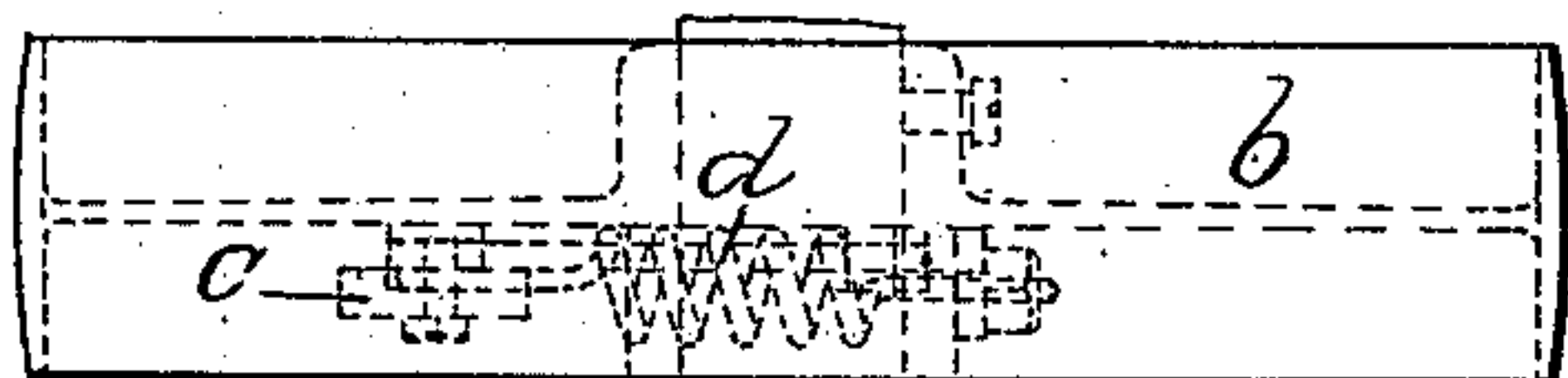
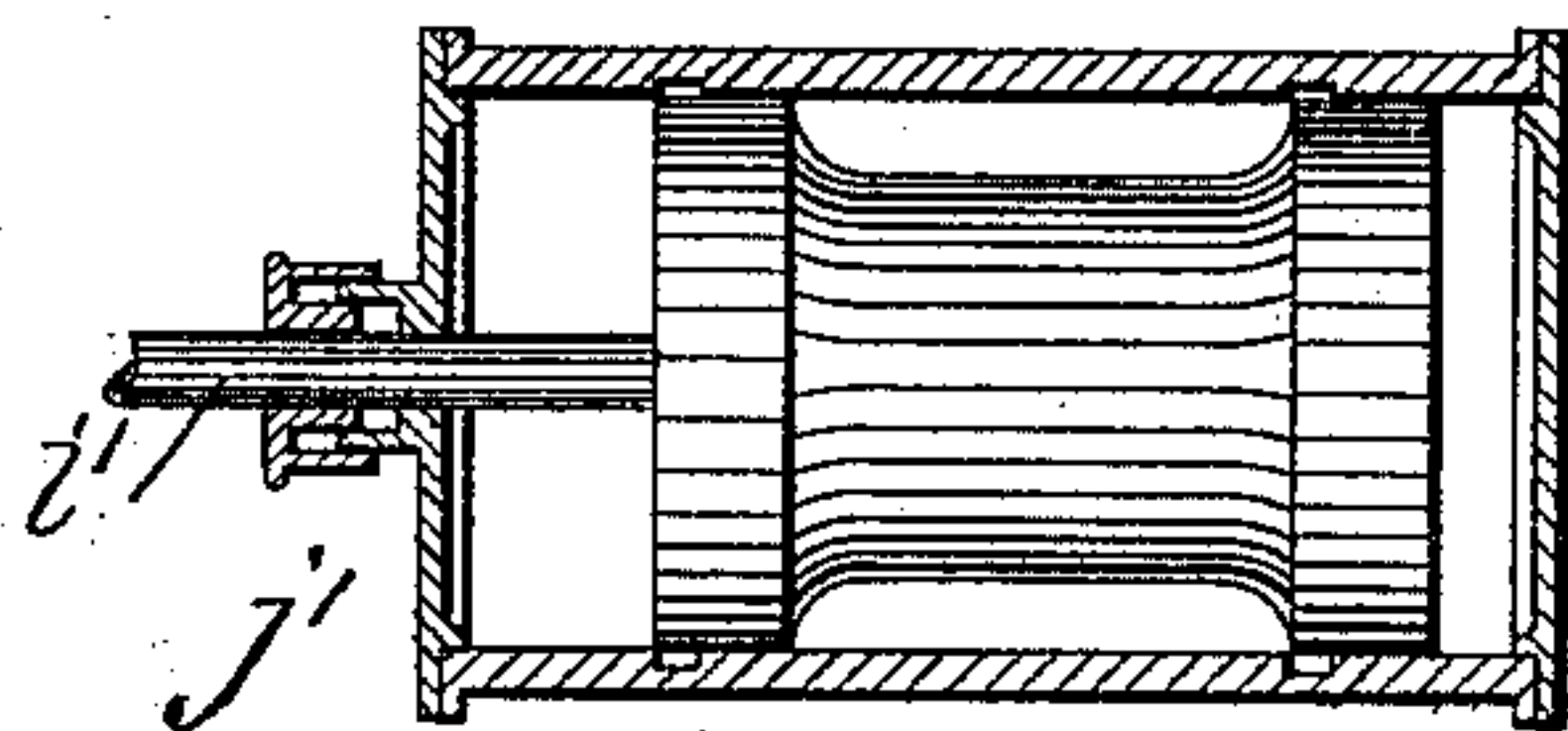


FIG. 2.

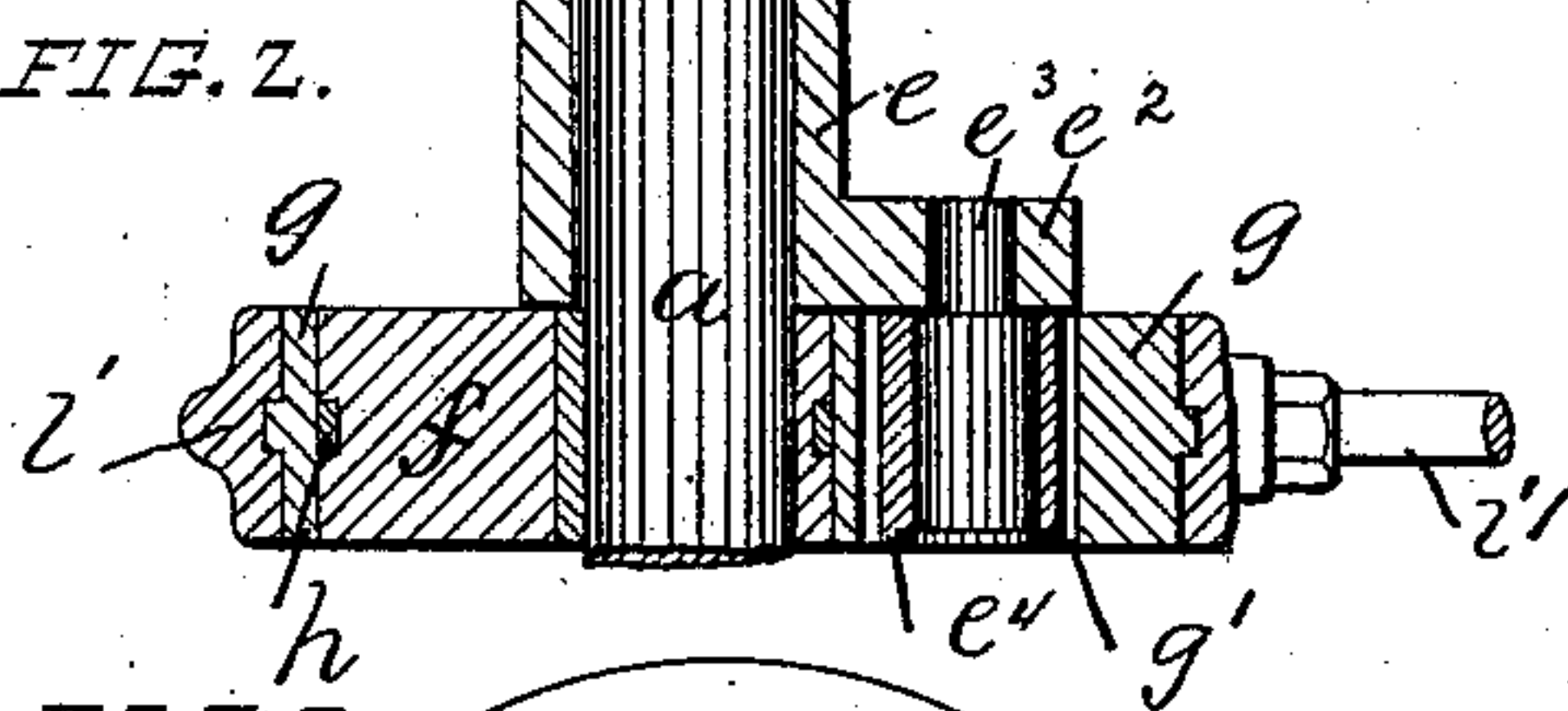


FIG. 3.

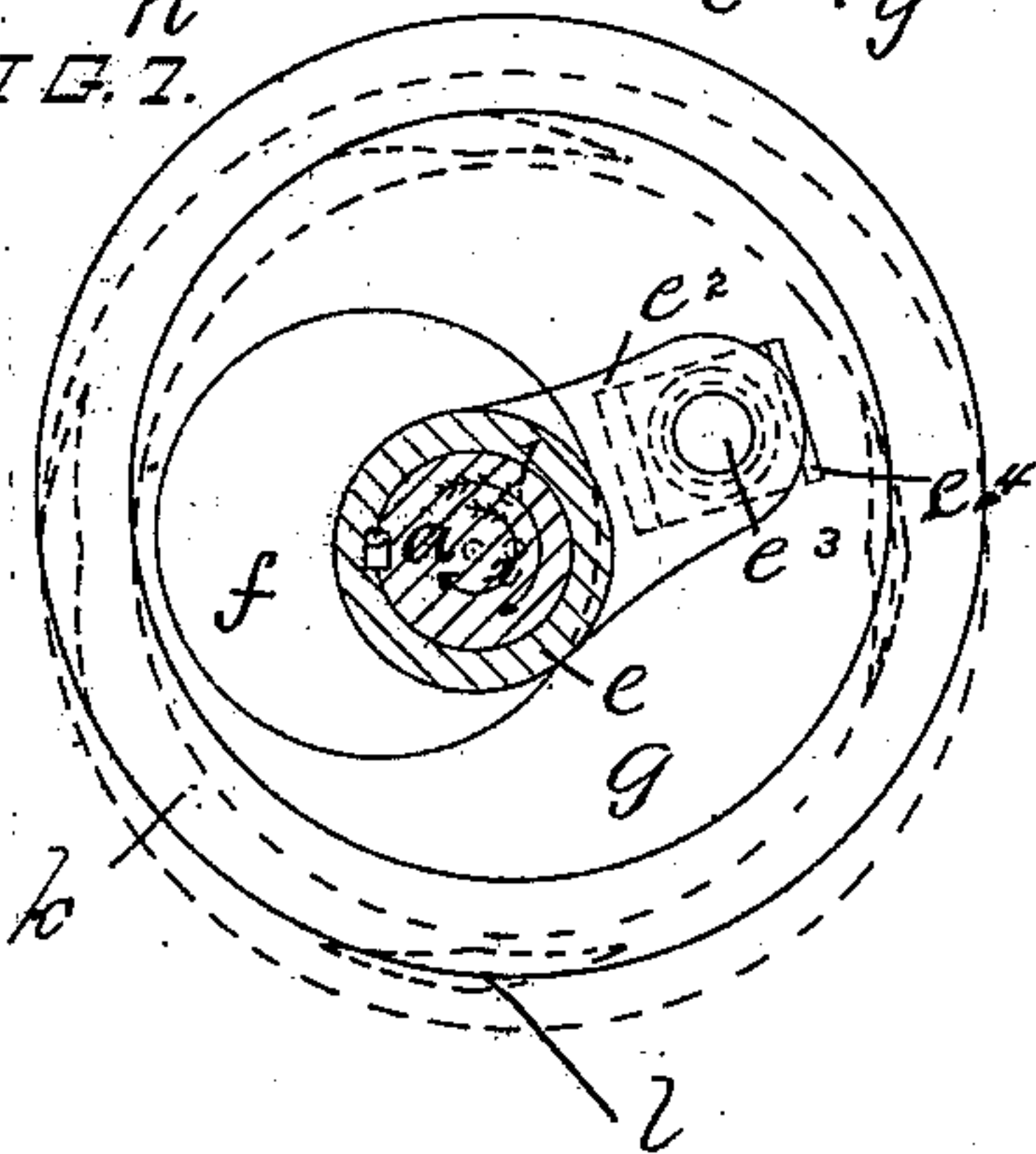


FIG. 4.

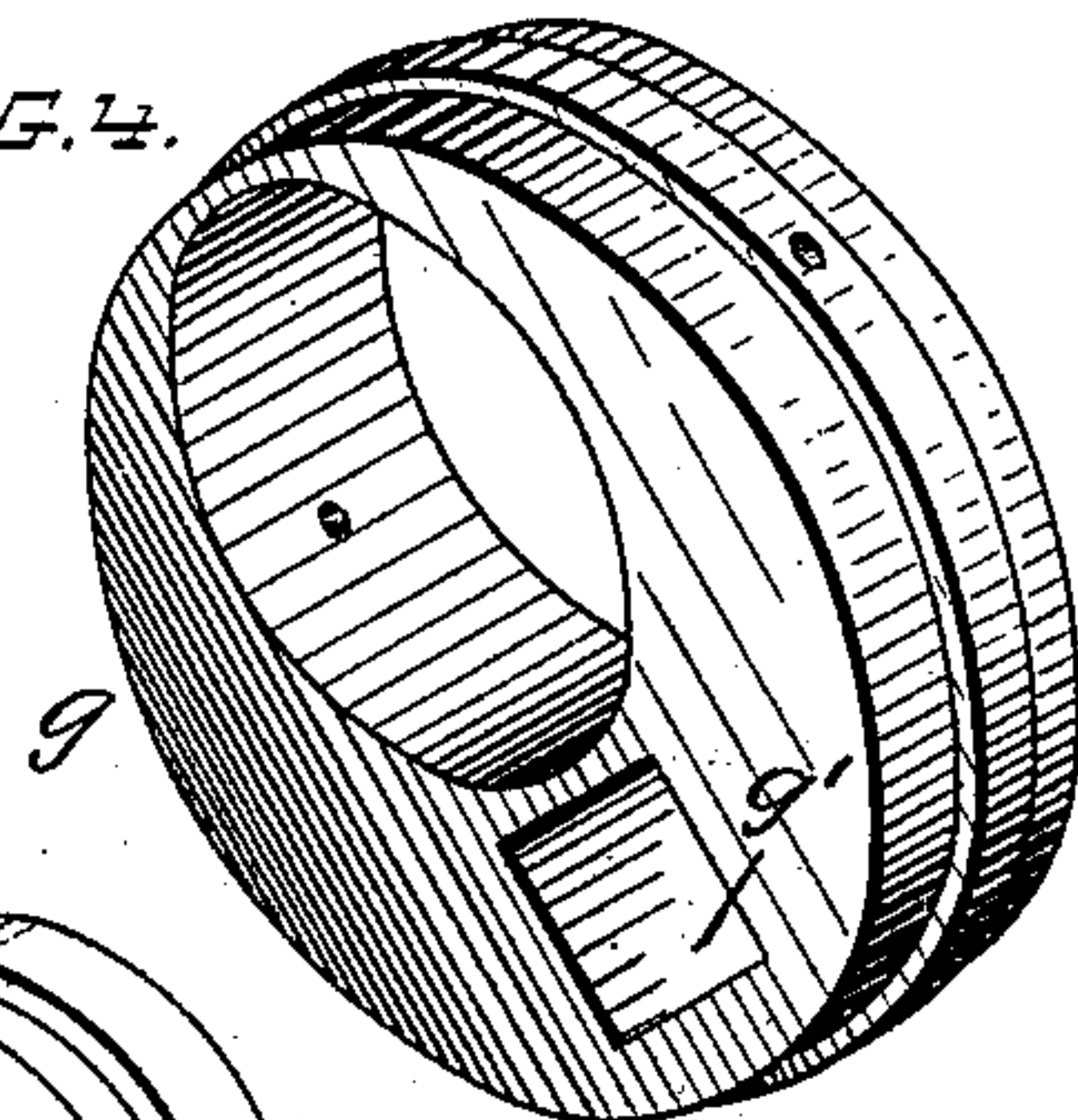


FIG. 5.

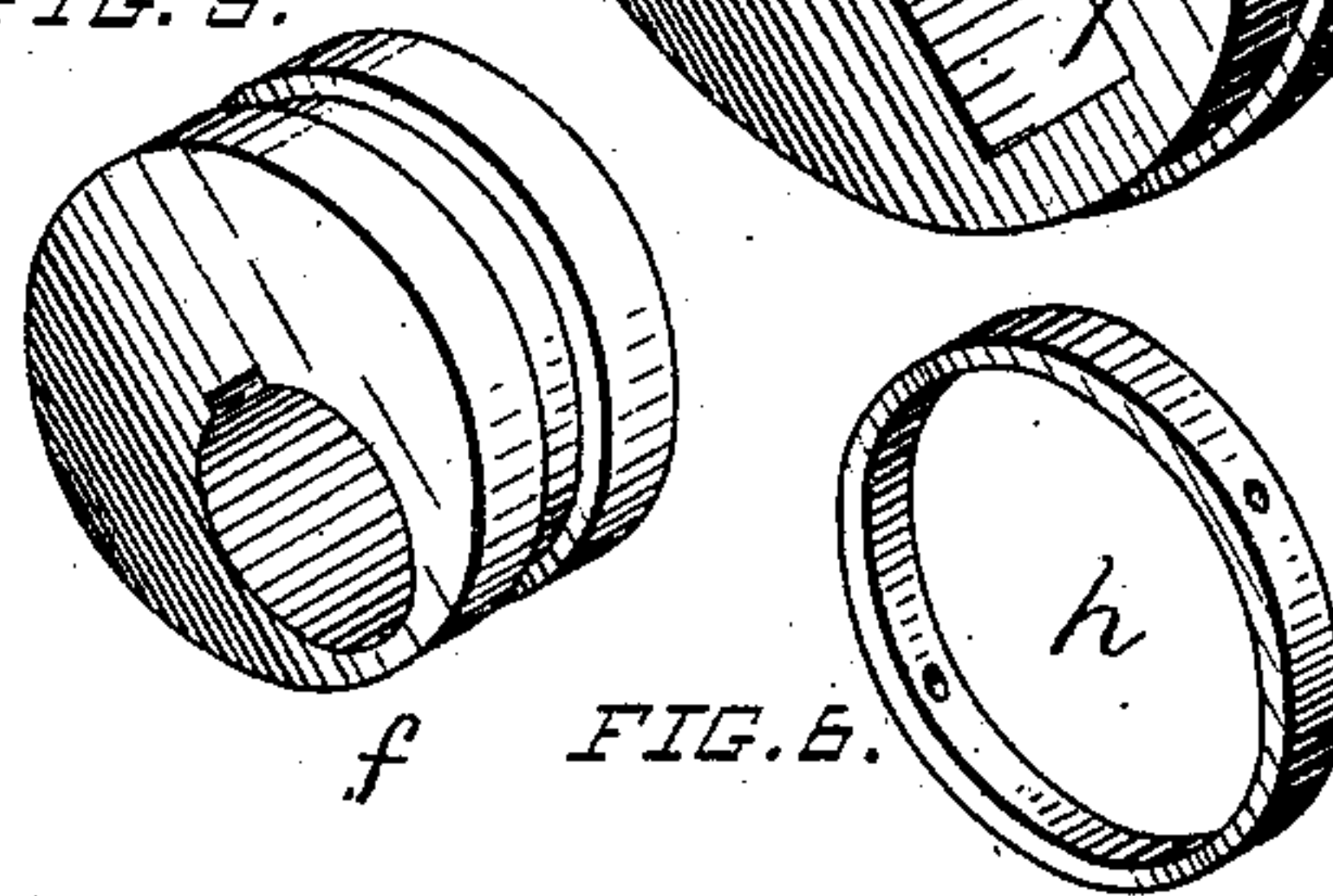


FIG. 6.

WITNESSES:

H. R. Williams
W. M. Yorkman

INVENTOR

Clarence S. Quint,
by Simonds & Burdett

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALANSON D. QUINT, OF HARTFORD, CONNECTICUT.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 358,296, dated February 22, 1887.

Application filed August 2, 1886. Serial No. 209,729. (No model.)

To all whom it may concern:

Be it known that I, ALANSON D. QUINT, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Steam-Engine Governors, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

My invention relates to the particular class of steam-engine governors in which the eccentric, by means of which the throw of the valve is controlled, is moved on or with relation to the shaft by means of centrifugally-acting weights; and the object of my improvement is to provide a governor of this class that is positive in its action and applicable to slide-valves or rotary valves with but slight modifications.

My improvement consists in the combination, with a main or counter shaft, of an eccentric so fixed to the shaft as to prevent its turning thereon, and an outer eccentric mounted to rotate on and eccentric to the smaller one, and with centrifugally operating weights, whereby the relative position of the eccentrics to each other and the axis of the shaft is determined, and in details of the combination and arrangement of the several eccentrics and connected parts, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 shows in diagram view one form of my eccentric and a view in section of a slide-valve for use in connection with which this valve is adapted. Fig. 2 is a view in central section of the eccentric and connected parts, and in plan view of the pulley. Fig. 3 is a detail view of the sleeve and crank forming parts of my improvement. Fig. 4 is a detail perspective view on enlarged scale of one of the eccentrics. Fig. 5 is a like view of the smaller eccentric. Fig. 6 is a detail view of the packing-ring. Fig. 7 is a diagram view showing a modified form of my device as applied to a rotary valve of a kind having a constant lead.

In the accompanying drawings, the letter *a* denotes the main shaft; *b*, a wheel or pulley secured to the shaft so as to rotate with it; *c c'*, the centrifugal weights arranged on opposite sides of the shaft, and borne on levers *c''*,

that are pivotally connected to the pulley, so as to swing out and in in the plane of the latter, and held at the inward limit of their play by springs *d*, attached to the lever at one end and to an arm of the pulley at the other, the springs holding the weights normally at the inner limit of their play in the usual manner. The sleeve *e* is so mounted on the shaft as to be free to turn on it while held against endwise play, and is preferably placed between the pulley and the fixed or inner eccentric, *f*.

On the inner end of the sleeve *e* are formed the lugs *e'*, diametrically opposite each other, and serving as the points of attachment for the links *c''*, that connect this sleeve with the outer ends of the respective levers *c''*, as shown in Fig. 1 of the drawings.

On the outer end of the sleeve is formed a crank-arm, *e''*, bearing a crank-pin, *e'''*, on which is a rotary block, *e''''*, with opposite parallel faces adapted to fit into a slot, *g'*, in the outer eccentric, *g*. This outer eccentric, *g*, is mounted upon the inner, a sectional ring, *h*, that fits into grooves in the adjacent surfaces of the fixed eccentric, and the outer eccentric serving as a locking device to prevent the two eccentrics sliding sidewise upon each other, and yet allowing the outer to turn freely upon or about the inner. An eccentric strap, *i*, serves to connect the governor with the valve-piston *j'* by means of the ordinary connecting-rod *i''*.

With the several parts of the governor assembled as shown in Figs. 1 and 2 of the drawings, the operation of the device under the rotation of the shaft in the direction indicated by the overlying arrow in Fig. 1 is as follows: The valve is in the position when the eccentric is at its greatest throw, the crank being on the center line of the engine and the valve just about to open. Now, if the shaft is turned so slowly as not to throw the governing-weights outward, the part opening will be at the maximum as the valve is opened and closed by the rotation of the shaft, the point 1, that indicates the center of the outer eccentric, moving in the direction of the curved arrow about the center of the shaft. When the speed of the engine is such as to cause the weights to move outward, the outer eccentric is so rotated on the inner by means of the intermediate mechanism that the relation be-

tween the center of the outer eccentric and the center of the shaft is changed, the former moving toward the latter until, when the weights are at their greatest outward play, the center of the outer eccentric will move in a circle about the center of the shaft, passing through the point 2, and also indicated by an arrow. The difference between the radii of the two circles (shown by the two arrows and indicating the circular paths of the center of the outer eccentric at its maximum and minimum eccentricity) is equal to the port-opening.

My device is especially applicable to a rotary valve by mounting the ring *k* on the outer eccentric in place of the eccentric-strap, the said ring serving as a valve and lying closely against and sliding upon the valve-seat *k'*. This ring *k* revolves about the shaft and slides across the valve-ports, of which there may be any desirable number, the outer edge of the ring uncovering the port *l* for the admission of steam and the inner edge of the ring uncovering the ports for the exhaust of the steam from the cylinder. In this form of the device the sleeve passes through a stuffing-box in the wall of the steam-chest, the pulley and governing-weights lying on the outside of the chest and the eccentric and valves lying within the chest.

The movement of the outer eccentric upon the inner and the operation of the parts of the device in changing the port-openings to regulate the admission of steam are precisely the same when the device is applied to a rotary valve as in the case already described, when the parts are applied to a slide-valve. The particular advantage of the device as applied to a rotary valve is that I am enabled to construct a governor that will maintain a constant lead opening.

I am aware that it is not new to use a plural number of eccentrics to control by their com-

bination and action with the governing-weights or by their relative position on the shaft the degree of valve-opening as the speed of the piston travel varies, and such I do not broadly claim.

In its adaptability to varied work, compactness of construction, and lightness of parts, owing to the method of and means for varying the relation between the fixed and loose eccentrics, my within device presents features of improvement over such prior governors of this class as have the inner eccentric loose on the shaft.

I claim as my invention—

1. In a centrifugal governor, in combination, a shaft, an eccentric fixed against rotation on said shaft, a larger eccentric mounted loosely upon the smaller, the centrifugally-operating weights, the links connecting the said weights to the sleeve, and the sleeve bearing the crank-pin or like device for imparting a rotary movement to the outer eccentric, all substantially as described.

2. In combination with the centrifugally-operating weights, an inner eccentric fixed against rotation on the shaft, and a larger eccentric mounted loosely upon and adapted to rotate on the smaller and pivotally connected to the governing-weights, all substantially as described.

3. In combination with the shaft, the inner eccentric fixed to the shaft, the outer eccentric adapted to rotate upon the inner, the sleeve adapted to rotate upon the shaft and bearing a crank-pin taking into a slot in the outer eccentric, the connecting-links, and the centrifugally-operating weights, all substantially as described.

ALANSON D. QUINT.

Witnesses:

CHAS. L. BURDETT,
H. R. WILLIAMS.