

(No Model.)

C. S. DUTTON.
STEAM ENGINE GOVERNOR.

No. 426,585.

Patented Apr. 29, 1890.

FIG. 2.

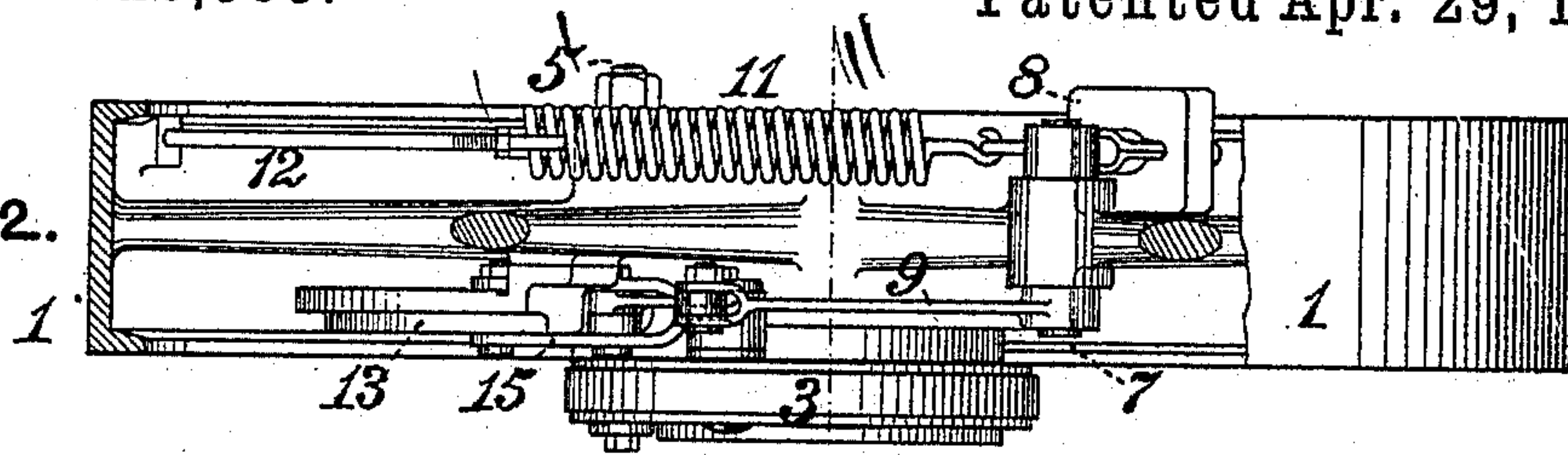


FIG. 1.

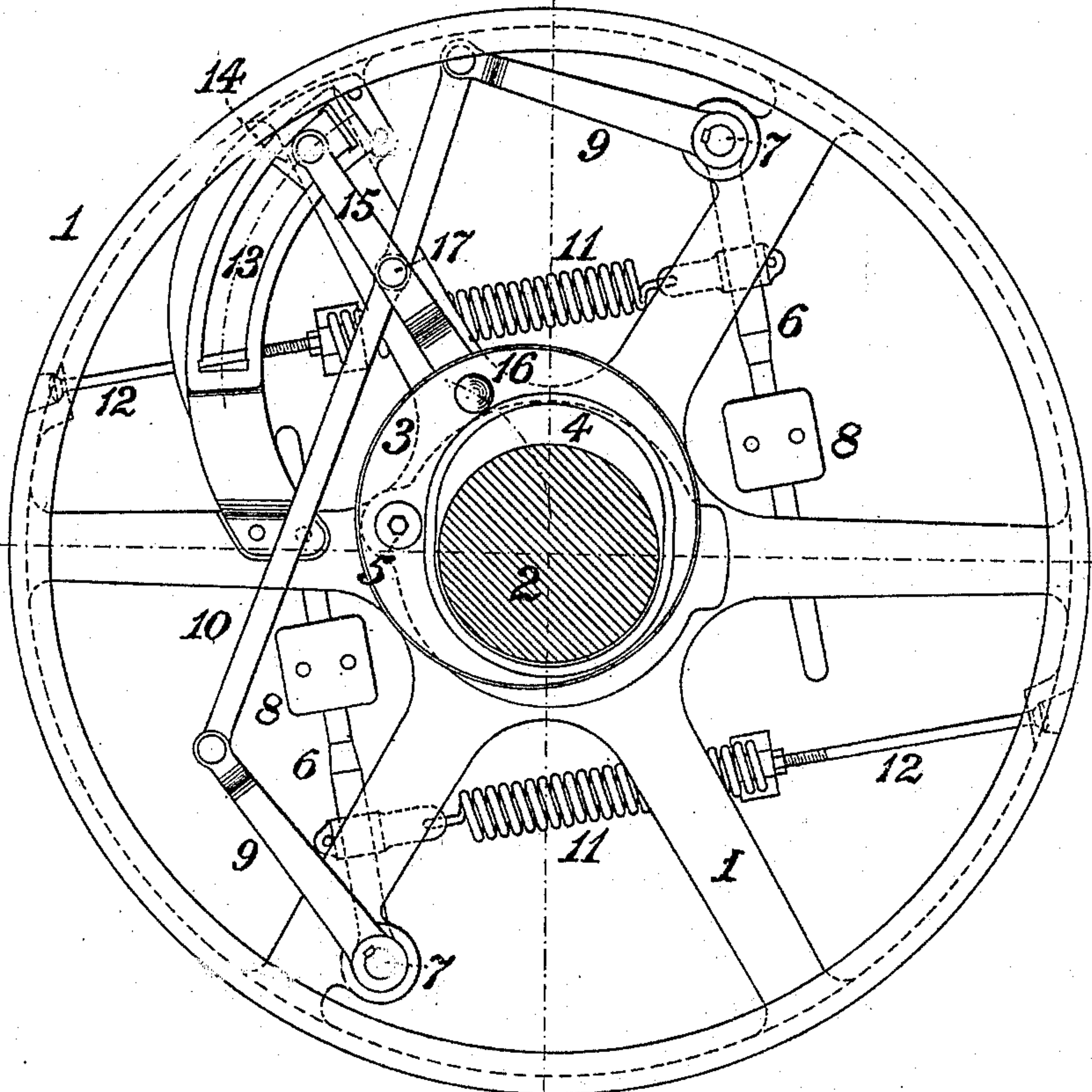
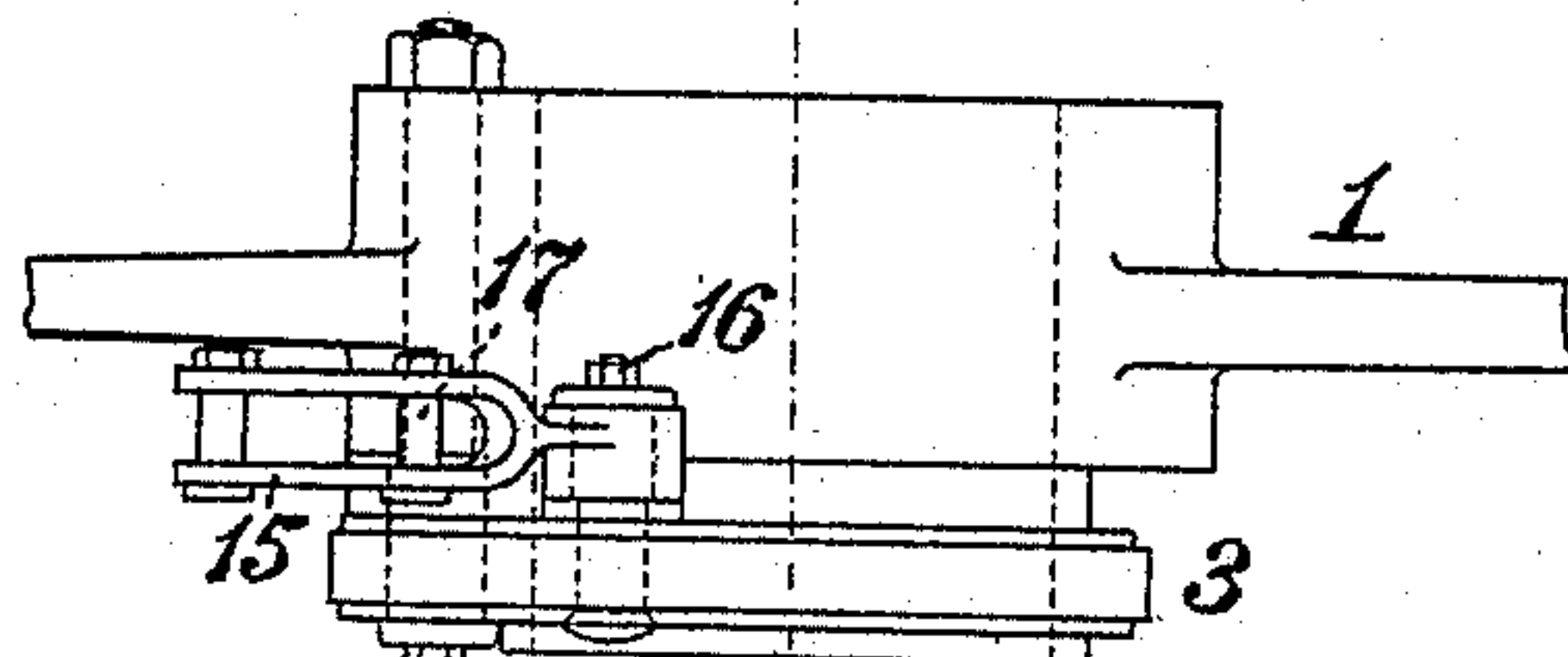


FIG. 3.



Witnesses:
E. Newell.
F. E. Gaither

Inventor.
C. Seymour Dutton,
by J. H. Bowden Bell
att'y.

UNITED STATES PATENT OFFICE.

CHARLES SEYMOUR DUTTON, OF YOUNGSTOWN, OHIO.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 426,585, dated April 29, 1890.

Application filed January 15, 1890. Serial No. 336,983. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SEYMOUR DUTTON, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented or discovered a certain new and useful Improvement in Steam-Engine Governors, of which improvement the following is a specification.

My invention relates to centrifugal governors of the class or type ordinarily known as "shaft-governors," in which the desired regulation of speed is effected by variations of operative position of an adjustable valve-actuating eccentric, in accordance with variations of pressure or load, or both, such variations being produced by a governing mechanism in which the centrifugal action of weighted arms and the centripetal effect of springs are exerted upon the adjustable eccentric, which is suitably connected thereto.

The object of my invention is to provide simple and effective means for maintaining the adjustable eccentric in any of the several positions into which it may be brought by the governing mechanism as against the tendency to displacement therefrom induced by the resistance of the valve which is connected with and operated by the eccentric.

To this end my invention, generally stated, consists in the combination of a supporting wheel or case, an adjustable eccentric, and a centrifugal governing mechanism, each coupled thereto, a link or guide fixed to the supporting-wheel, and a block fitted to traverse on said guide and coupled to the eccentric and governing mechanism.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a front view of a governor embodying my invention; Fig. 2, a side view, partly in section, of the same; and Fig. 3, a plan view showing the hub of the supporting-wheel, the eccentric, and the guide-block-coupling bar.

My invention is herein illustrated as applied in a shaft-governor for automatic cut-off engines, the general elements of which accord substantially with those of the present standard constructions and are not herein claimed as of my present invention. The operative mechanism is supported upon and ro-

tates with a wheel or case 1, having a central hub which is secured upon the main or crank shaft 2 of the engine on which the governor is applied, or upon a counter-shaft rotated therefrom. An adjustable valve-actuating eccentric 3, which is fitted freely around the shaft and adapted to receive a limited range of movement in a direction substantially transverse to the crank-line by being provided with an elongated opening 4, through which the shaft passes, is journaled upon a pin or bolt 5, fixed in the hub of the supporting-wheel 1. Movement of the eccentric about the axis of its pivot 5 will under such construction vary its radius of eccentricity to the shaft 2 and correspondingly vary the degree of traverse which it imparts to the valve to which it is connected.

The governing mechanism by which the movement and adjustment of the eccentric is effected is, as in prior constructions, composed of a pair of arms 6, which are fixed on pins 7, journaled in bearings in the supporting-wheel 1 at diametrically-opposite points and carrying near their outer ends centrifugally-acting weights 8. An arm 9 is secured to the pivot-pin 7 of each of the weight-arms 6, and the arms 9 are coupled one to the other by a connecting-bar 10, so that the weight-arms are caused to move in unison and the gravity of the weights is neutralized, one balancing the other. Helical springs 11 are coupled at one end to the weight-arms 6 and at their opposite ends, through adjusting-screws 12, to the periphery of the supporting-wheel 1. This system of centrifugally-acting weights and centrifugally-acting springs, which constitutes the governing mechanism proper, is connected to the adjustable eccentric, as presently to be described, and effects the movement of the latter into the different positions requisite for regulation in the manner which is common to all governors of this type.

The resistance of the steam-distribution valve, which is actuated by the eccentric 3 through its strap and rod and suitable connections, tends in operation to move the eccentric out of adjusted position, and thereby to correspondingly impair the sensitiveness and normal regulating functions of the gov-

erning mechanism. In order to obviate such objectionable disturbing tendency, I provide a locking device by which the eccentric is firmly held as against displacement by valve-
 5 resistance from any position into which it may be brought by the governing mechanism, while being freely subject to movement by the action of the latter, as the conditions of regulation may require. To this end a
 10 curved or inclined guide 13, which is preferably, as shown, in the form of a slotted link, is fixed upon the supporting-wheel 1 adjacent to its periphery, and a die or block 14 is fitted to traverse longitudinally on said guide, and
 15 is coupled by a link 15 to a pin 16 on the eccentric 3. The link 15 is in turn coupled by a pin 17 to the connecting-bar 10 of the weight-arms, and thereby serves to transmit to the eccentric the movement of said arms. The
 20 guide 13 is so located that its normal line or the chord of the arc of traverse of the block 14 shall be at an angle with the line of the link 15, which is substantially in line with the chord of the arc of traverse of the eccen-
 25 tric about the axis of its pivot 5. It will thus be seen that pressure acting upon the eccentric from the valve and tending to move the eccentric out of adjusted position is effectually resisted by the bearing of the block
 30 against the guide, thereby preventing the displacement of the eccentric, while on the other hand the block, being free to move longitudinally on the guide, opposes no resistance to the movement of the link 15 and connected
 35 eccentric 3 in either direction by the movement of the weight-arms as transmitted through the connecting-bar 10.

While I have illustrated the guide as con-

structed in the form of a segmental slotted link, it will be obvious that, if preferred, it 40 may be a solid bar, the block being slotted or recessed to fit over it, and also in lieu of being longitudinally curved it may be straight, having its center line inclined relatively to the center line of the bar 15 at such angle as 45 will admit of the free movement of the block.

I claim as my invention and desire to secure by Letters Patent—

1. In a centrifugal governor, the combination of a supporting wheel or case, an adjust- 50 able eccentric, and a centrifugal governing mechanism each coupled thereto, a guide fixed to the supporting-wheel, with its center line or chord inclined relatively to the line of traverse of the eccentric, and a block fitted 55 to traverse longitudinally on said guide and coupled to the eccentric and governing mechanism, substantially as set forth.

2. In a centrifugal governor, the combination of a supporting wheel or case, an adjust- 60 able eccentric connected thereto, a guide fixed to the supporting-wheel, with its center line or chord inclined relatively to the line of traverse of the eccentric, a block fitted to traverse longitudinally on the guide, a link 65 coupling said block with the eccentric, and a centrifugal governing mechanism mounted on the supporting-wheel and coupled to the eccentric, substantially as set forth.

In testimony whereof I have hereunto set 70 my hand.

C. SEYMOUR DUTTON.

Witnesses:

W. A. BEECHER,

JOHN STAMBAUGH, Jr.