

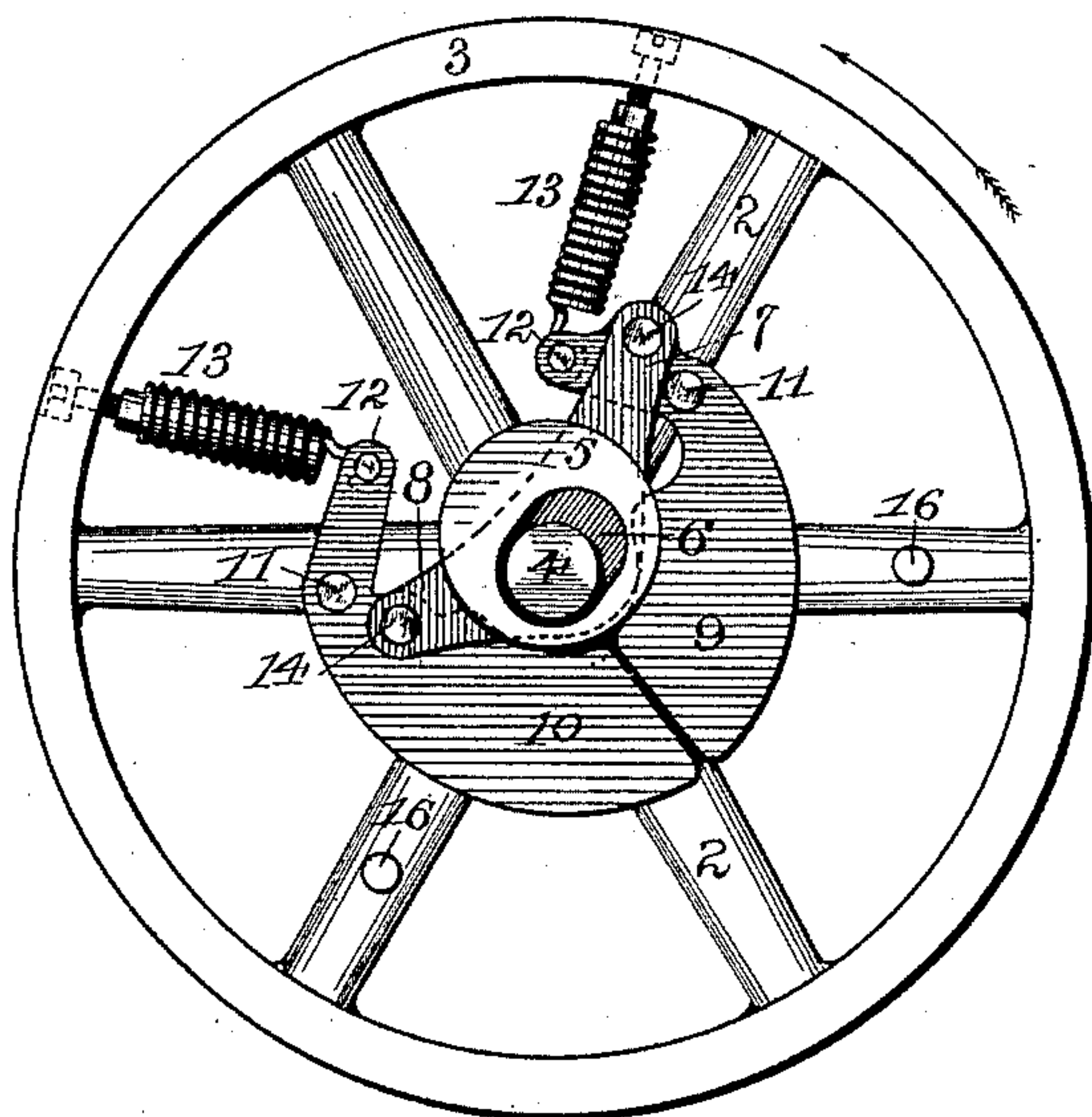
(No Model.)

S. T. WILLIAMS.
GOVERNOR FOR STEAM ENGINES.

No. 432,781.

Patented July 22, 1890.

Fig. 1



Div. 2

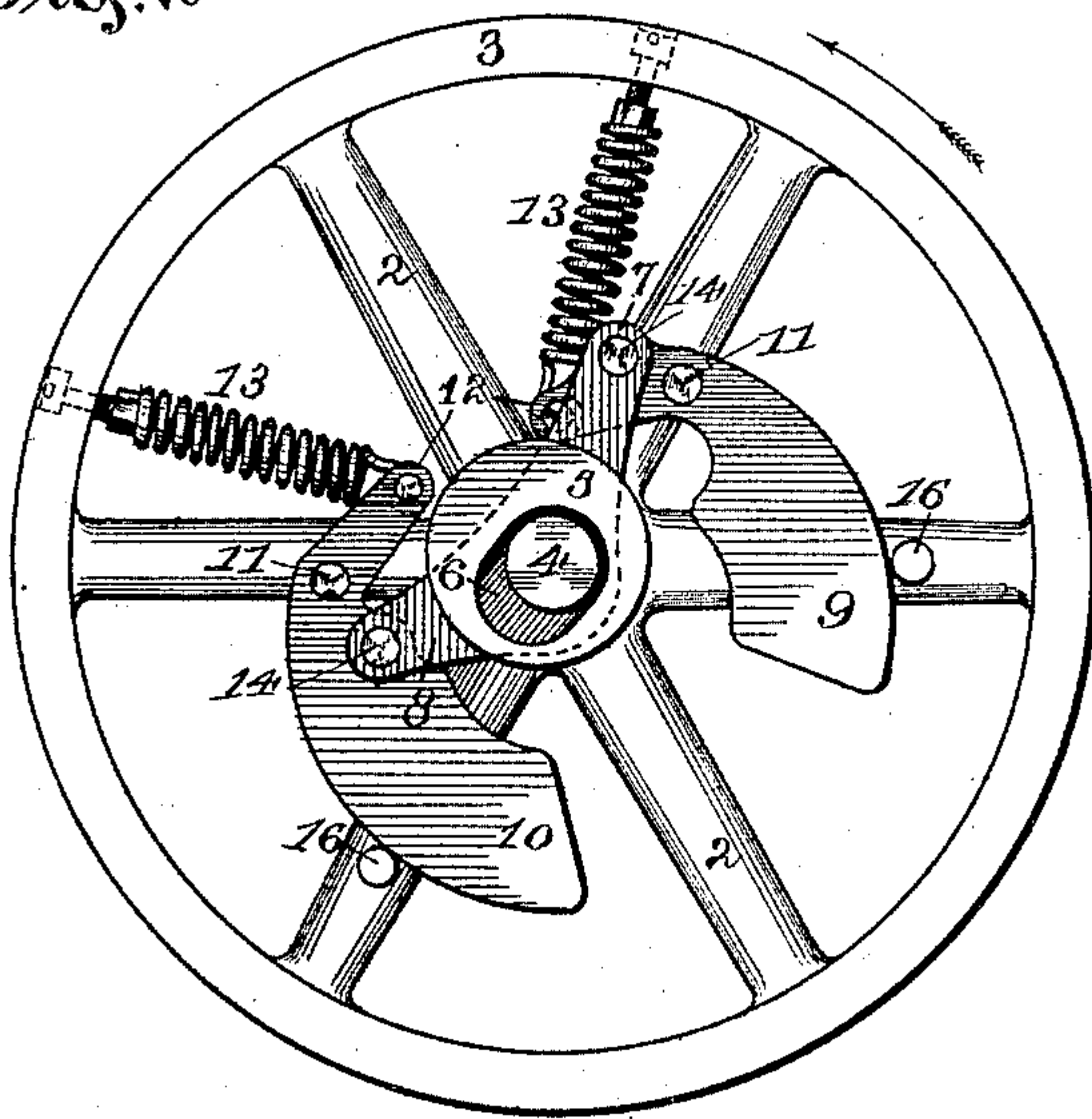
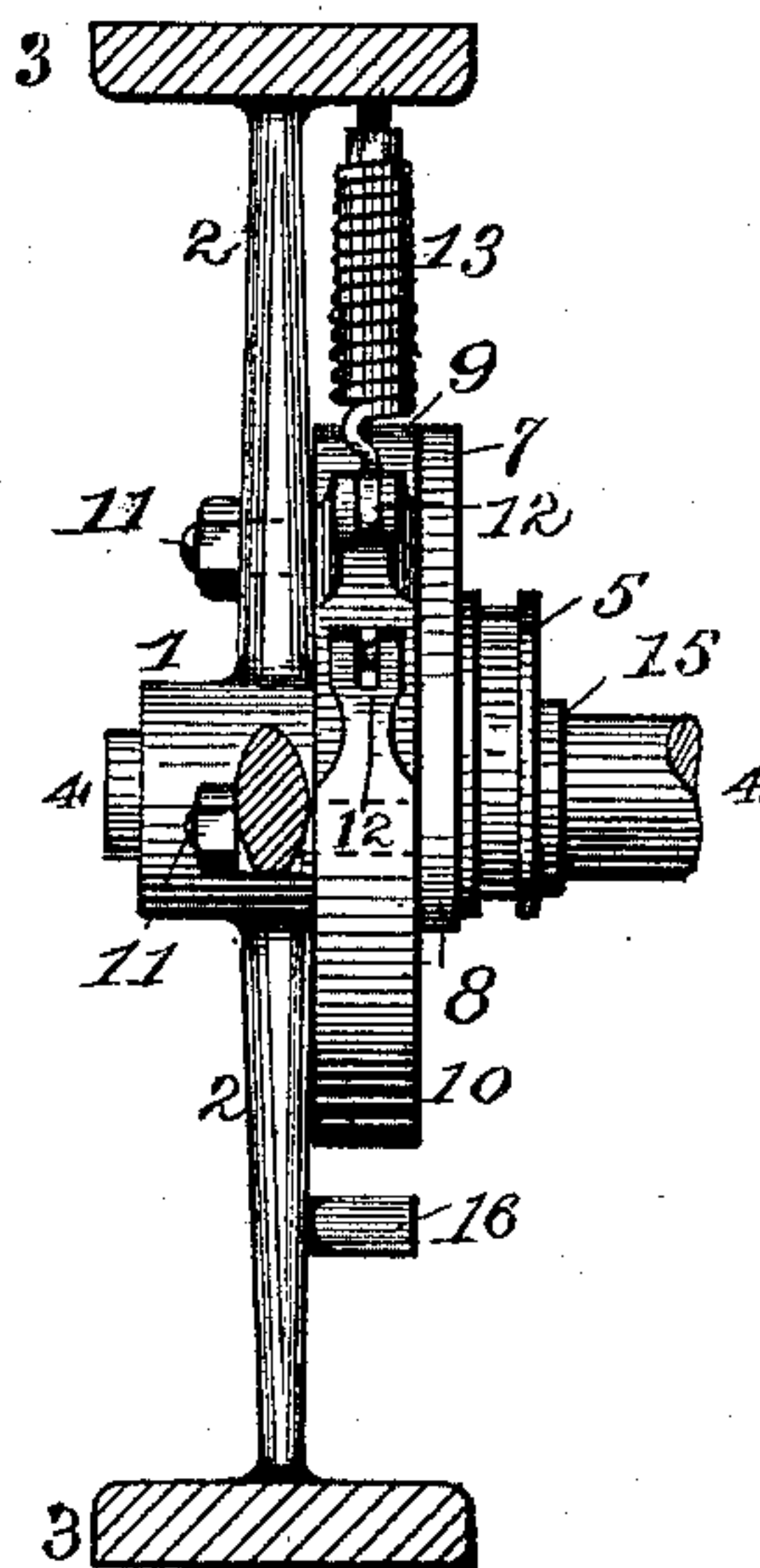


Fig. 3



Witnesses:

Harry R. Williams.

Richard H. Mather.

Inventor,

Samuel J. Williams,

By Willard Eddy,
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UNITED STATES PATENT OFFICE.

SAMUEL T. WILLIAMS, OF BALTIMORE, MARYLAND.

GOVERNOR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 432,781, dated July 22, 1890.

Application filed September 20, 1889. Serial No. 324,558. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL T. WILLIAMS, of the city of Baltimore, in the State of Maryland, have invented certain new and useful
5 Improvements in Governors for Steam-Engines, which improvements are described in the following specification and are illustrated by the accompanying drawings.

My invention relates to the class of those
10 centrifugal governors which are commonly designated as "shifting eccentric governors."

It is the object of my invention to simplify the construction of such governors and to promote their sensitiveness and efficiency in
15 operation. To accomplish this object I use weights which are fulcrumed to a wheel, in combination with a slotted eccentric, whereby said weights are linked together.

The best mode in which I have contemplated applying the principle of my invention is shown in said drawings, in which—

Figure 1 is a side elevation of my improved governor, showing the weights in their positions of nearest approach to the shaft. Fig.
20 2 is a side elevation of the same, showing the weights in positions of greatest departure from said shaft. Fig. 3 is an edge view of Fig. 1.

In the views, the numerals 1, 2, and 3 denote, respectively, the central hub, the radial arms, and the peripheral rim of a wheel or pulley which is secured to a crank-shaft 4. On shaft 4 and contiguous to hub 1 is an eccentric 5, which is held in position between hub 1 and
35 collar 15, and has an opening or slot 6, through which shaft 4 is inserted. An eccentric-strap, which is not shown in the drawings, is applied to eccentric 5, and is connected with a valve-rod in the usual manner.
40 Weights 9 and 10, whose form may be observed from the drawings, are pivoted by steel pins 11 to arms 2 at points which are equally distant from the center of said wheel. Said pivots are preferably separated from
45 each other by an angle of one hundred and thirty-four degrees, more or less, formed from the center of said wheel. Weights 9 and 10 have terminal lever-arms 12, which approach each other beyond the pin 11, and are
50 connected with rim 3 by coiled springs 13. By preference these springs occupy nearly radial positions in the wheel. They are ad-

justed at such tension as to produce nearly isochronous regulation. Eccentric 5 is provided with radial or spreading arms or lateral extensions 7 and 8, which are cast integrally therewith. These arms are respectively pivoted to weights 9 and 10 by pins 14, one of which is located on that side of fulcrum 11 which is toward the attached spring 13, and
60 the other of which is located on the opposite side of fulcrum 11 and on the body of weight 10. Two stop-pins 16 are set in arms 2 to limit the separation of the weights.

Such being the construction of my invention, its mode of operation is for the most part similar to the operation of other governors of the class aforesaid. It is to be noted, however, that eccentric 5, with its arms 7 and 8, constitutes a link between weights 9 and 10,
70 and that the position of the eccentric upon shaft 4 is shifted in a line which is nearly identical with the longer diameter of slot 6 by the mere movement of that link whenever those weights either separate toward the position which they occupy in Fig. 2 or approach the positions which they occupy in Fig. 1. The pivots 11 and 14, however, are laid out in such relative positions, as shown in the drawings, that as eccentric 5 is thrown across shaft
80 4 the position of the valve is undisturbed and its lead remains constant.

Such being the construction and operation of my said improvements in governors for steam-engines, I claim as my invention—

1. In a steam-engine governor, a governor-wheel and two centrifugal weights, which are fulcrumed to said wheel in such a manner that one weight leads while the other weight follows its fulcrum, in combination with a
90 slotted eccentric having two arms, one of which is pivoted to one of said weights at a point lying between the body of that weight and the fulcrum of the same, while the other of said arms is pivoted to the other of said
95 weights at a point lying at that side the fulcrum thereof which is remote from the main body of said other weight, substantially as and for the purpose specified.

2. In a steam-engine governor, a governor-wheel and two centrifugal weights, which are fulcrumed to said wheel in such a manner that one of said weights leads its fulcrum while the other of said weights follows its ful-

crum, in combination with a spring acting upon each of said weights centripetally, and a slotted eccentric having two arms and attached thereby to said weights by pivots, 5 which are severally situated in advance of the fulcrum of their respective weights, or in the rear of the same, substantially as and for the purpose specified.

3. A wheel which is mounted upon the shaft 10 of an engine, two centrifugal weights which are provided with lever-arms and are fulcrumed to said wheel, one weight leading and the other following its fulcrum, and two springs attached to said lever-arms and acting centripetally upon said weights, in combination with a slotted eccentric which is provided with two arms, is mounted upon said shaft and constitutes a link, whereby one of 15 said weights is fastened to the arm of the

other of said weights, substantially as and 20 for the purpose specified.

4. A governor - wheel, two centrifugal weights, which are provided with lever-arms and are fulcrumed to said wheel in such a manner as respectively to lead and to follow 25 their respective fulcrums, and a spring acting centripetally upon each of said weights, in combination with a slotted eccentric having two arms which are pivoted immediately to one of said weights and to the lever-arm of 30 the other of said weights, respectively, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my name in the presence of two witnesses.

SAMUEL T. WILLIAMS.

Witnesses:

S. W. BRADFORD,
THOS. KELL BRADFORD.