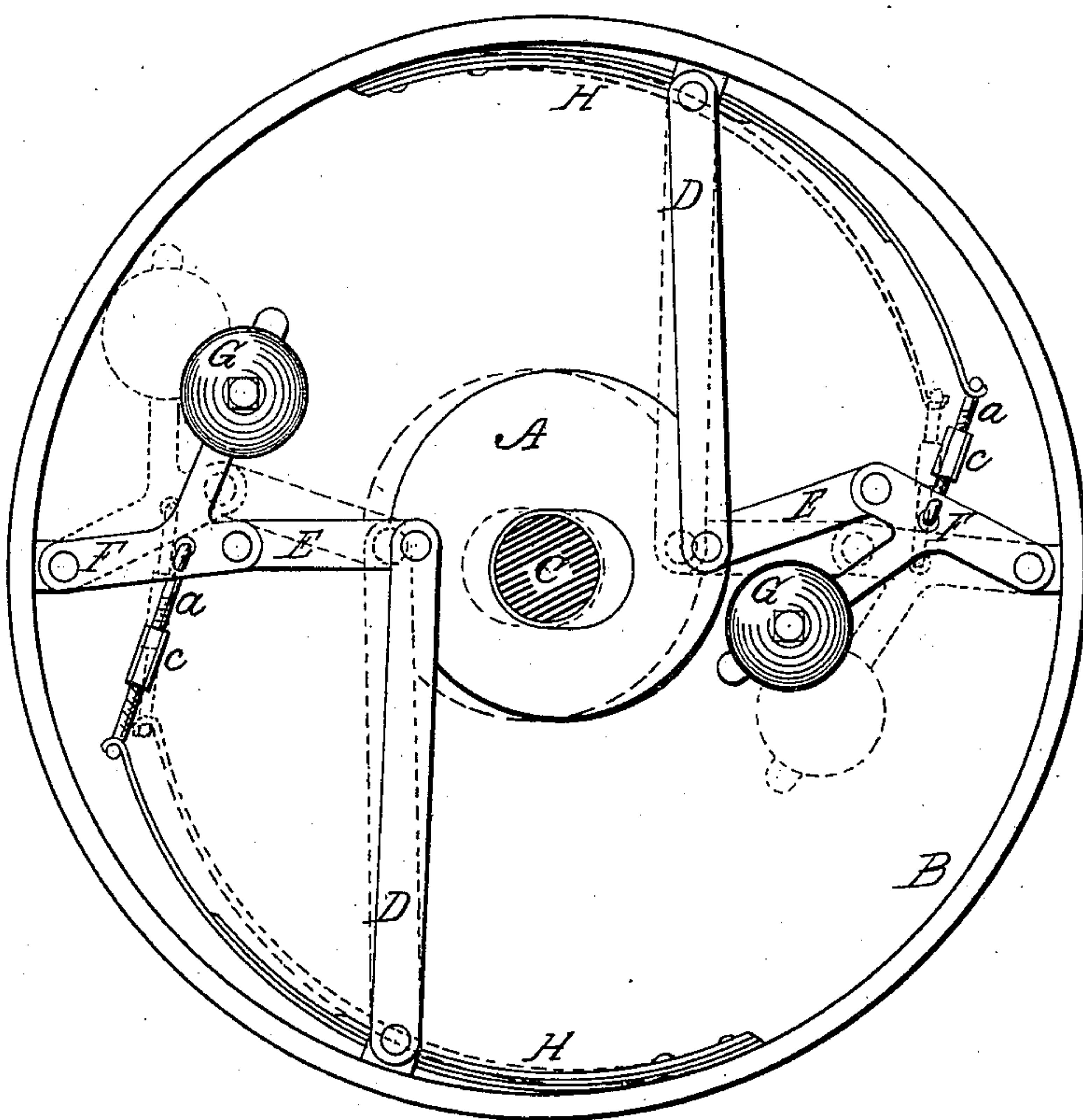


(No Model.)

H. WHITING.
GOVERNOR FOR STEAM ENGINES.

No. 308,392.

Patented Nov. 25, 1884.



Witnesses

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HENRY WHITING, OF CEDAR RAPIDS, IOWA.

GOVERNOR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 308,392, dated November 25, 1884.

Application filed January 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY WHITING, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented certain new and useful Improvements in Governors for Steam-Engines, of which the following is a specification.

This invention relates to that class of governors for steam-engines in which the mechanism which regulates the flow of steam is placed upon the main shaft and connected directly with the cut-off valve controlling the flow of steam by the revolutions of the governor; and my object is to construct a governor having but few parts, and these exceedingly simple, and so arranged that the governor shall be very sensitive to variations in the speed, shall operate with a minimum of friction or lost motion, and shall be capable of reversing the motion of the engine by means of a slight readjustment effected in a few moments.

The invention consists in a slotted eccentric pivoted upon two arms, which are also pivoted to a wheel secured to the main shaft, and which eccentric is moved across the main shaft by means of toggle-joints actuated by the centrifugal force exerted by balls or weights mounted thereon, and controlled by springs, all of which will more clearly appear by reference to the drawing and the more particular description following.

The accompanying drawing represents a side elevation of my invention, and fully illustrates the principles of its construction and operation.

Upon the main shaft C is loosely mounted an eccentric, A, having an elongated hole near the center to admit of horizontal movement across the shaft. This eccentric is suspended from the spokes or rim of a wheel, B, secured to the main shaft by arms D D. These arms are pivoted both to the wheel and to the eccentric, allowing a free movement of the latter in a slightly-serpentine course across the main shaft at right angles to these arms and in a horizontal line, as represented in the drawing. By making the joints of these arms sufficiently close no other means will be required to prevent lateral movement of the eccentric upon the shaft.

To secure the variations in the eccentricity

of the eccentrics by which the relative stroke of the valve-rod is measured, the wheel and eccentric are supplied with a toggle-joint, E F, by the change in the angle of which the movement is effected. The outer arm of the toggle F is supplied with an auxiliary arm at an angle thereto, and upon the latter is secured a ball, G, or other suitable weight. The action of the parts will now be readily seen by reference to the drawing. As the wheel revolves the centrifugal force of the weights tends to throw them into the position indicated by the dotted lines, making a corresponding change in the position of the eccentric. A spring, H, on the opposite side of the toggle counteracts to a certain extent the centrifugal action of the weights. The pressure of this spring is regulated by adjustable connecting-rods, a c. It will be evident that the governor will operate with but one toggle, weight, and spring; but to secure better results, as well as the better to balance the governor, I prefer to make them double. As will be observed, the two sides are exactly alike, excepting the connecting-rods a c, one of which is longer than the other, and consequently the ordinary positions of the toggles are dissimilar. By disconnecting the eccentric from its supporting-arms, turning it half a revolution, and reconnecting the parts, the eccentric is in position to reverse the motion of the engine on lengthening the connections between the toggles and springs, when the relative positions of the former are reversed, the one nearly straight in the drawing forming an angle, and vice versa.

The device, as will be seen, is extremely simple and inexpensive, and, being altogether suspended upon pivots, the movements are made with very little friction. It will also be noticed that the distance through which the weights travel between extreme points is comparatively short, and the governor will therefore be sensitive to the slightest variations in the speed with which it revolves.

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

1. In an automatic governor for steam-engines, an eccentric having an elongated hole for the main shaft, and suspended from a wheel secured thereto, in combination with one or

more toggle-joints connecting the eccentric with the corresponding side or sides of the wheel, one arm of each toggle having a lateral extension between its pivotal points provided with a weight, all substantially as shown and described.

2. In an automatic governor for steam-engines, the slotted eccentric A, suspended by arms D D from wheel B, the toggles E F, provided with weights G G, connecting-rods a c, 10 and springs H H, all constructed, arranged, and operating substantially as specified.

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

HENRY WHITING.

Witnesses:

J. M. ST. JOHN,
G. H. FUNCK.