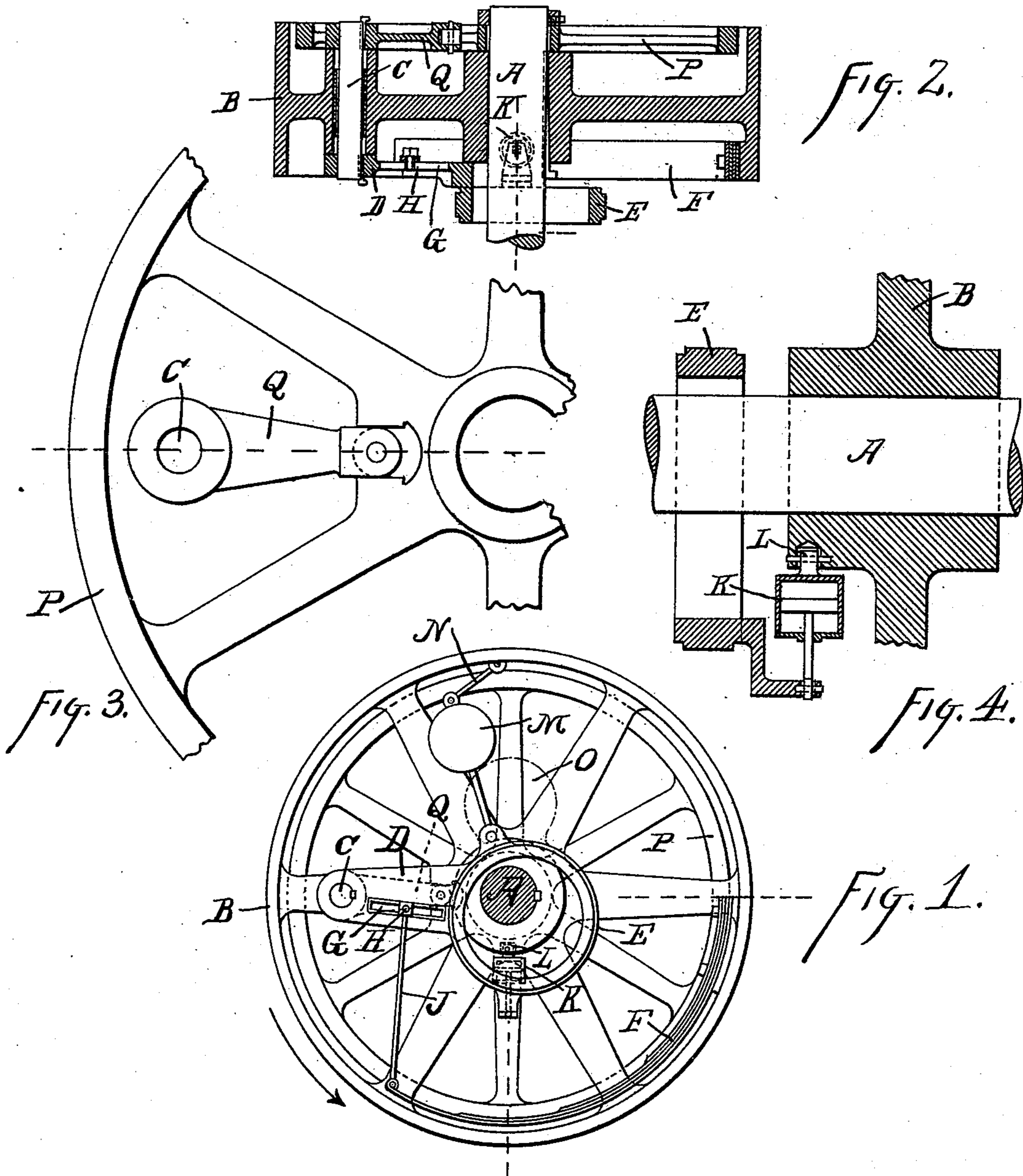


(No Model.)

J. BEGTRUP.  
ENGINE GOVERNOR.

No. 510,312.

Patented Dec. 5, 1893.



Julius Begtrup

Witnesses:  
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# UNITED STATES PATENT OFFICE.

JULIUS BEGTRUP, OF RIDGWAY, PENNSYLVANIA, ASSIGNOR TO JAMES H. McEWEN, OF SAME PLACE.

## ENGINE-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 510,312, dated December 5, 1893.

Application filed January 4, 1893. Serial No. 457,247. (No model.)

*To all whom it may concern:*

Be it known that I, JULIUS BEGTRUP, of Ridgway, Elk county, Pennsylvania, have invented certain new and useful Improvements in Engine-Governors, (Case B,) of which the following is a specification.

This invention pertains to improvements in that class of governors generally known as "shaft-governors" by reason of the fact that they are carried directly by the engine shaft.

My present improvements will be readily understood from the following description taken in connection with the accompanying drawings, in which—

Figure 1, is a face view or elevation of a governor exemplifying my present improvement; Fig. 2, a horizontal diametrical section of the same; Fig. 3, a view of the inside face of arm Q and a portion of the inertia-weight; and Fig. 4, a vertical diametrical section of portions of the apparatus.

In the drawings:—A, indicates the engine shaft; B, a wheel fixed thereon, which wheel, so far as the governor is concerned, is a mere carrier for the governor; C, a pivot-shaft mounted in a bearing in the wheel eccentric to and parallel with shaft A; D, an inwardly reaching arm fast upon one end of this pivot-shaft; E, the eccentric to be controlled, formed with or rigidly united to the inner end of this arm; F, a spring secured to the wheel; G, a slot formed lengthwise in arm D; H, a pivot secured in adjusted position along this slot; J, a link connecting pivot H with spring F, the tendency of the spring being therefore to hold the eccentric to position of greatest throw; K, a dash-pot cylinder radially disposed at the hub of the wheel and having its piston-rod pivoted to the structure of the eccentric; L, a projection from the dash-pot cylinder inwardly into pivotal engagement with the hub of the wheel, the arrangement being obviously such that as the eccentric moves through its arc the dash-pot structure may take compensating movements upon the pivots uniting it to the eccentric and to the wheel; M, a centrifugal weight having a tail pivoted to the eccentric-structure, this weight being upon one side of a line cutting the axes of pivot C and shaft A while the center of the eccentric is upon the opposite side of that line; N, a

link attached to the weight M and to the wheel and compelling the weight to travel angularly as the wheel rotates but permitting the weight to move outward and inward as the eccentric structure rocks upon its pivot; O, a dotted line indicating a modification of the weight arrangement, the weight in such case being rigidly attached to the eccentric-structure instead of being pivoted to it, in which case the link N is not needed; P, an inertia-weight mounted for partial rotation upon an axis coincident with the axis of shaft A, the exemplification showing this weight as being mounted upon the shaft, this weight consisting essentially of a mere mass balanced upon its axis of rotation, its form being preferably that of a wheel, as shown in the exemplification; and Q, an arm rigidly attached to pivot-shaft C and extending inwardly and engaging a notch in the inertia-weight, as clearly shown in Fig. 3, the arrangement being obviously such that slight rotation of the inertia-weight, with reference to the wheel, will tend to rock arm Q and, consequently, shift the eccentric.

Assume the governor to be running in the direction indicated by the arrow of Fig. 1 and at such speed that the centrifugal effect of weight M is balanced by the contrary effect of spring F. An increase in rotative speed will cause the centrifugal force to preponderate, and the eccentric would obviously become shifted to a position corresponding with shorter throw, thereby modifying valve action appropriately for a reduction of speed. Wheel-speed having been thus properly restored to normal, the centrifugal effect of weight M will no longer be preponderating, and the uncorrected tendency would be for the eccentric to return to its normal position, thus restoring the eccentric to that position which previous action had clearly indicated was the improper position under the conditions. Inertia-weight P, rotating with the wheel, is adverse to sudden changes in its rate of motion. If the wheel quickens its speed the inertia-weight will, by its inertia, temporarily lag, the wheel thus running a trifle ahead of the inertia-weight. The effect of this change of relationship between the wheel and inertia-weight is that arm Q is

rocked and the same adjusting effect produced upon the eccentric as was produced by the centrifugal-weight M; but the inertia-weight, having thus fallen a trifle behind the wheel in its motion, and having taken up a new position with reference to the wheel, and corresponding to the changed position of the eccentric, is adverse to returning to its former relationship with the wheel. The inertia-weight therefore, has no tendency to undo the good that has been done in effecting the adjustment of the eccentric.

I claim as my invention—

1. In an engine governor, the combination, substantially as set forth, of a carrier provided with a central hub, a shifting eccentric pivoted to said carrier and provided with an arm projecting over said hub, and a dash-pot cylinder and piston disposed between said hub and arm and pivoted to them.

2. In an engine governor, the combination, substantially as set forth, of a rotary carrier,

a pivot-shaft journaled therein eccentric to the center of rotation of the carrier; an eccentric rigidly secured to one end of said pivot-shaft, an arm fixed to the other end of said pivot-shaft, and an inertia-weight mounted for rotation on an axis coincident with the axis of rotation of the carrier and engaging said arm.

3. In an engine governor, the combination, substantially as set forth, of a rotary carrier, an inertia-weight having its axis of rotation coincident with the axis of rotation of said carrier, a pivot carried by said carrier eccentric to its center of rotation, a centrifugal-weight, and an eccentric mounted for shifting motion on said pivot and connected with said inertia-weight and centrifugal-weight.

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Witnesses:

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