J. C. HOADLEY.

Governors for Steam-Engines.

No. 144,098. Patented Oct. 28, 1873.

Fig. 2.

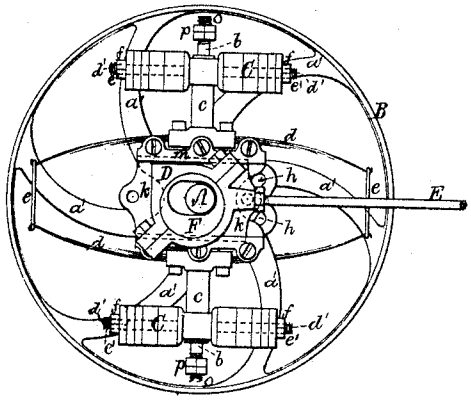


Fig. 1.

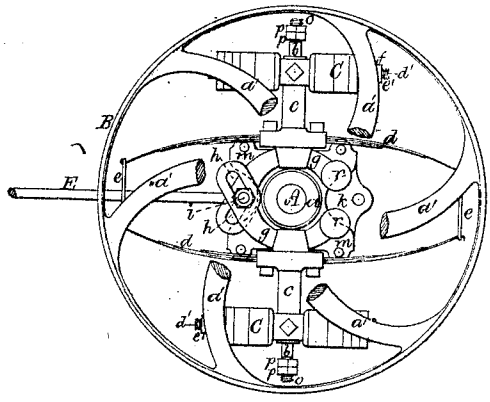
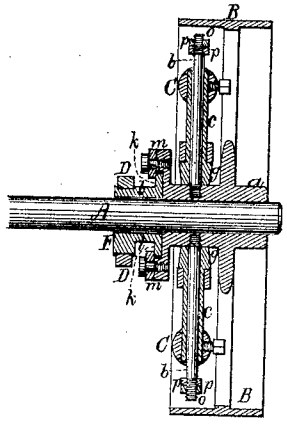


Fig. 3.



Witnesses.
S. N. Pipes
J. R. Snow

John C. Hoadley,
by his attorney,
R. H. Eddy

UNITED STATES PATENT OFFICE.

JOHN C. HOADLEY, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN GOVERNORS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **144,098**, dated October 28, 1873; application filed August 1, 1873.

To all whom it may concern:

Be it known that I, JOHN C. HOADLEY, of Lawrence, of the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Governors for Steam-Engines; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a front elevation, Fig. 2 a rear view, and Fig. 3 a transverse section, of a band-pulley or fly-wheel, its shaft, valve-operative eccentric and collar, and connecting-rod, provided with my improved governor, which revolves with the shaft and pulley or fly-wheel, and, through centrifugal force, operates to vary, in a rectilinear direction, the position of the eccentric, more or less, with reference to the axis of the driving-shaft.

My invention relates, principally, to mechanism for supporting and moving the eccentric.

In the drawings, A denotes the driving-shaft, and B the band-pulley or fly-wheel, which is fastened upon such shaft, so as to be revolved by it while the latter is being revolved by the steam-engine. From the hub *a* of the wheel B, besides its regular series of arms *a'*, two other arms, *b b*, project in opposite radial directions, and in line with each other. These arms extend through two slides or sleeves, *c c*, which are fixed to two bow-springs, *d d*, arranged as shown, and connected at their opposite ends by links *e e*. Furthermore, there is applied to each of the sleeves *c* a weight or a series, C, of weights, arranged on arms *d' d'*, projecting in opposite directions from the sleeve, the weights being held in place by screws *e'* and nuts *f*. Furthermore, to each sleeve, at its inner end, there is fixed one of two arms, *g g*, each being provided with a straight slot, *h*. The arms lap on one another, so as to cause one slot to cross the other. The slots at their crossing receive a stud or pin, *i*, projecting from a slide, *k*, affixed to one end of a short tubular shaft, *l*, carrying the eccentric F, such eccentric being provided with the collar D, fixed to the connection or valve rod E, all arranged as shown. The slide *k* is supported by, and so as to be capable of sliding rectilinearly in, a head, *m*, which is fixed to, and projects in opposite directions from, the inner end of the hub of the band-pulley or fly-wheel.

While the said wheel or band-pulley may be in revolution, the centrifugal force exerted on the two series C of weights will cause the sleeves to move in directions away from one another, the bow-springs, when the speed may slacken, producing counter-movements of the sleeves. These movements of the sleeves cause the curved or slotted arms *g g* to so act on the stud *i* as to move it, and cause it to move its slide *k*, more or less, rectilinearly, thereby moving the eccentric F, or changing its eccentricity relatively to the driving-shaft, and, as a consequence, varying the motion of the valve for the supply of steam to the cylinder of the engine.

In order that the extent of outward radial movement of the weighted sleeves may be limited, the supporting-rods of the sleeves are provided, near their outer ends, with screws *o o* and a pair of check-nuts, *p p*, to each. The positions of the nuts on the screws determine the extent of outward movement of the sleeves. Each of the slotted arms *g g* is provided with a counterbalancing weight or projection, *r*, arranged with respect to it in manner as shown, such weights or projections being to counterbalance the centrifugal action of the arms upon the fly-wheel or its driving-shaft.

By having the two series of weights applied to the sleeves in manner as represented, I can, by removing two or more of the weights of each series, vary the extent of centrifugal force on the sleeve, as will be readily perceived.

What I claim as my invention is—

1. The slotted arms *g g*, the stud *i*, and slide *k*, arranged and combined together and applied to the eccentric F, the fly-wheel or pulley B, and the sleeves *c c*, provided with the connected springs *d d* and the weights C, all essentially as specified.

2. In the governor, the two series C C of weights, and supporting-arms *d' d' d' d'*, constructed and arranged with the two sleeves, as explained.

3. In combination with the slotted arms *g g*, applied to the sleeves *c c* and slide-stud *i*, as set forth, the counterbalance weights or projections *r r*, such being for the purpose specified.

Witnesses: JOHN C. HOADLEY.

R. H. EDDY,

S. N. PIPER.