

No. 634,650.

Patented Oct. 10, 1899.

C. D. PALMITER.
GOVERNOR FOR ENGINES.

(Application filed Apr. 25, 1899.)

(No Model.)

Fig. 1.

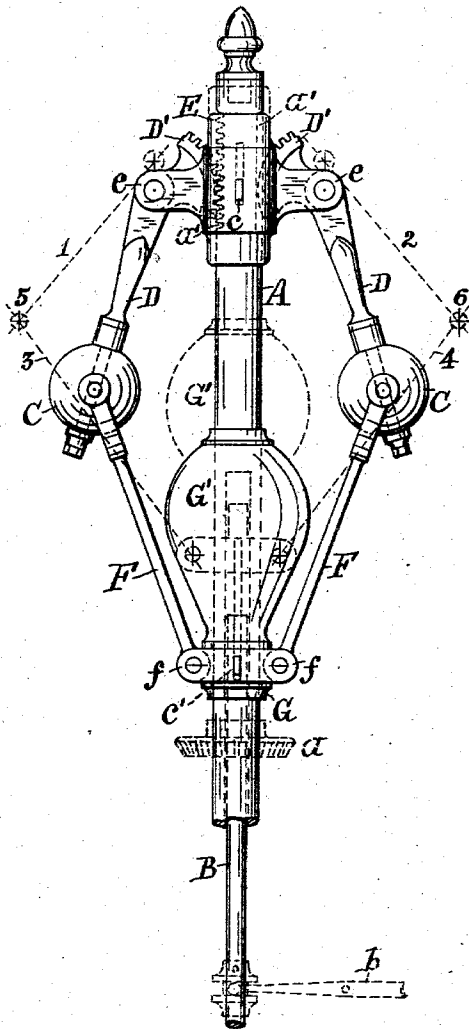
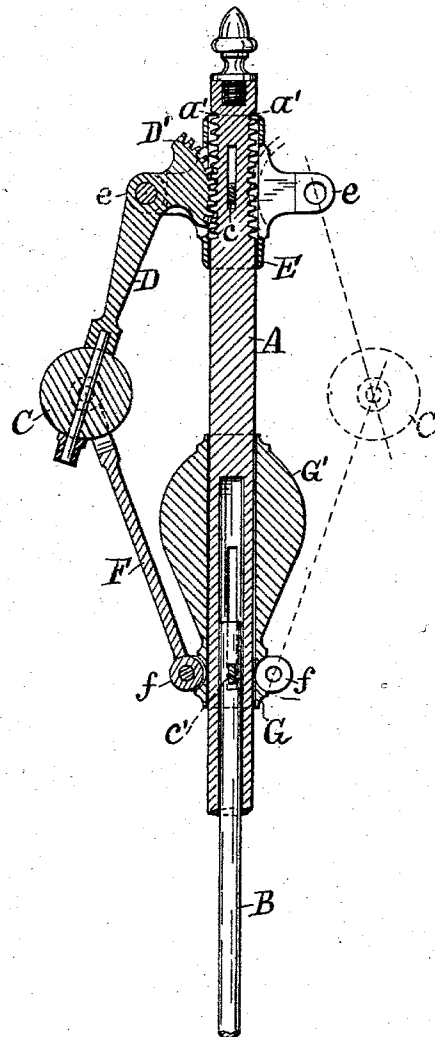


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

CLEBRON D. PALMITER, OF WATERTOWN, NEW YORK, ASSIGNOR OF ONE-HALF TO S. F. BAGG, OF SAME PLACE.

GOVERNOR FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 634,650, dated October 10, 1899.

Application filed April 25, 1899. Serial No. 714,361. (No model.)

To all whom it may concern:

Be it known that I, CLEBRON D. PALMITER, of Watertown, in the county of Jefferson, in the State of New York, have invented new and useful Improvements in Governors for Engines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to speed-governors for engines, particularly steam-engines; and the object is to provide a governor whereby a comparatively small centrifugal motion will effect a greater vertical movement of the central stem.

Heretofore governors of the fly-ball type have been provided with arms extending upward from the balls to a part which rotated with the spindle, but was incapable of vertical movement when the lower ends of the arms extending downward from the balls were adapted to move vertically—in other words, the upper points of suspension were fixed so far as vertical movement was concerned. In my improved governor not only are the lower ends of the lower arms capable of vertical movement, but also the upper ends of the upper arms, which, as stated before, increases the vertical movement of the central stem connected to the lower arms.

To this end my invention consists in the combination, in a governor, with the rotary vertical spindle, the vertical movable stem, the balls, arms extending downward from the balls and connected to the said stem, of arms extending upward from the balls and provided with toothed segments in engagement with racks on the said spindle, and a sleeve on the upper end of the spindle adapted to slide vertically thereon and having extensions to which the upper arms are pivoted; and my invention consists in certain other combinations of parts hereinafter described, and specifically set forth in the claims.

In the drawings hereto annexed and forming a part of this specification, Figure 1 is a side elevation of my improved governor, and Fig. 2 is a vertical central sectional view of a portion thereof.

Referring specifically to the drawings, A is the rotary vertical stem, having a cylindrical lower end to contain and permit vertical move-

ment of the central vertical stem B. I have shown in Fig. 1 of the drawings, in broken lines, a beveled gear *a* on the lower end of the stem for rotating the same, and have also shown in broken lines a pivoted lever *b*, connected to and operated by the vertically-movable stem; but it will be obvious that any other suitable and well-known means may be employed in place of those indicated for imparting rotary movement to the spindle and for receiving vertical movement from the central stem without departing from my invention, the form of such means depending upon the type of engine with which the governor is used.

The lower portion of the governor is substantially the same in form of construction as certain other speed-governors of this type, and therefore need not be described in detail.

C C are the balls on opposite sides of the stem, with arms D D rigidly connected to them and extending upward to bifurcated projections *e e*, extending from diametrically opposite sides of the sliding sleeve E on the stem A.

F F are the lower arms, provided with forked upper ends pivoted to the balls and having their lower ends pivoted to projections on a sliding sleeve G, which is integral with the bulb-shaped weight G above and also vertically movable on the stem.

The projections *e e* extend outward sufficiently to allow the integral toothed segments D' D' on the upper ends of the arms to operate between the pivots at the ends of the projections and the spindle A. The racks *a' a'* on the spindle in engagement with the segments are within the sleeve E. A key *c* extends through the upper sleeve and a slot in the spindle, and a key *c'* extends through the lower sleeve, the central stem, and a slot in the opposite sides of the cylindrical portion of the spindle.

The operation is as follows: When the governor is revolved on its vertical axis, the balls fly farther from the center, thereby raising more or less the lower sleeve G and weight G' on the spindle, which latter is not movable vertically. This raises, by means of the key *c'*, the central stem B, which in turn is connected with the means for controlling the

speed of the engine. The balls also, by means of the upper arms D D and the segments and racks on the spindle, raise the sleeve E and its projections *e e*, whereon the arms D D are pivoted, and this movement increases the vertical movement of the lower sleeve and central stem B. The broken lines 1, 2, 3, and 4 indicate the position the arms assume when the balls have been thrown out to points 5 and 6.

It will be obvious from the above description that a comparatively small centrifugal force will raise the central stem of my governor a greater distance than are the stems of other governors, wherein the upper points of suspension are fixed or incapable of vertical movement. The stem may be dispensed with in some cases and the operated part, as *b*, operated directly by the lower sleeve G.

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

1. The combination in a governor, having a rotary spindle, balls connected to the spindle and adapted to move toward and from the center and a vertically-movable part on the spindle below the balls and connected to the latter, of arms extending upward from the balls and provided with segments at their upper ends connected to the spindle, and a vertically-movable part on the spindle upon which the upper arms are pivoted, which part is raised when the balls are moved outward, as set forth.

2. The combination in a governor, with the rotary vertical spindle having racks at its upper end, the vertically-movable stem, the balls, arms extending downward from the balls and connected to the said stem, of arms extending upward from the balls and provided with toothed segments in engagement with the racks on the said spindle, and a sleeve on the upper end of the spindle adapted to slide vertically thereon and having extensions to which the upper arms are pivoted, as set forth.

3. The combination in a governor, with the rotary vertical spindle having racks at its upper end and having a cylindrical lower end, the vertically-movable stem within the cylindrical portion of the spindle, the balls, arms extending downward from the balls and con-

nected to the said stem, of arms extending upward from the balls and provided with toothed segments in engagement with the racks on the said spindle, and a sleeve on the upper end of the spindle adapted to slide vertically thereon and having extensions to which the upper arms are pivoted, as set forth.

4. The combination in a governor, with the rotary vertical spindle having racks at its upper end, the balls, arms extending downward from the balls, a sleeve on the spindle connected to the lower ends of the said arms, of arms extending upward from the balls and provided with toothed segments in engagement with the racks on the said spindle, and a sleeve on the upper end of the spindle adapted to slide vertically thereon and having extensions to which the upper arms are pivoted, as set forth.

5. The combination in a governor, with the rotary vertical spindle having racks at its upper end, the balls, arms extending downward from the balls, a sleeve on the spindle connected to the lower ends of the said arms, a vertically-movable weight on the spindle integral with the said sleeve, of arms extending upward from the balls and provided with toothed segments in engagement with the racks on the said spindle, and a sleeve on the upper end of the spindle adapted to slide vertically thereon and having extensions to which the upper arms are pivoted, as set forth.

6. In a speed-governor for engines, of the fly-ball type, the revoluble spindle, a pair of parts, one above the other, movable vertically on said spindle, arms extending upward from the balls to the upper movable part, arms extending downward from the balls to the lower movable part, and means connected with the said spindle, whereby the part from which the upper arms are suspended will travel upward simultaneously with the lower movable part when the balls are thrown outward from the spindle, as set forth.

In testimony whereof I have hereunto signed my name.

CLEBRON D. PALMITER. [L. S.]

Witnesses:

A. P. WARDWELL,
EARL B. REED.