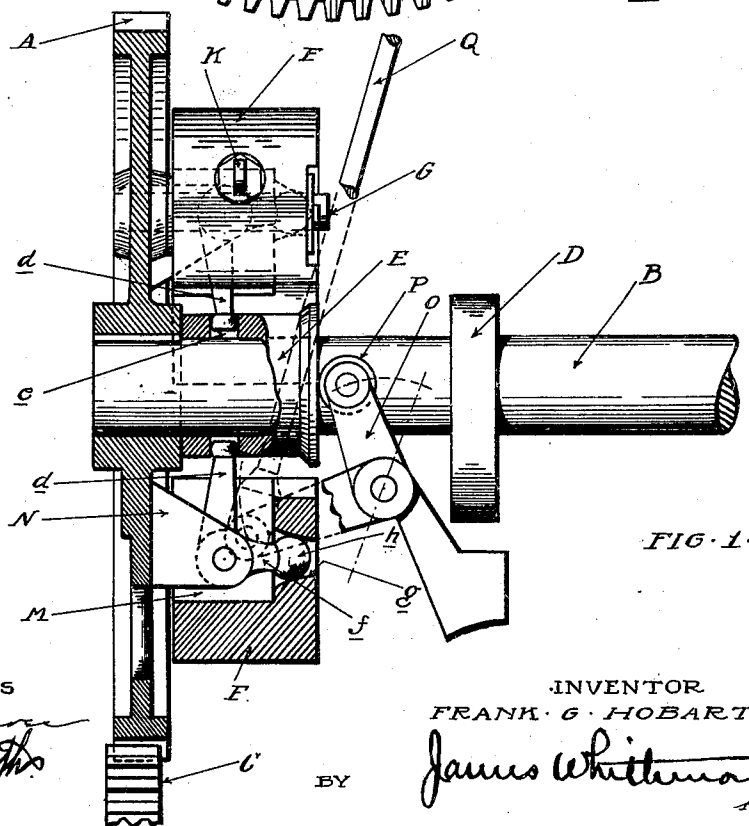
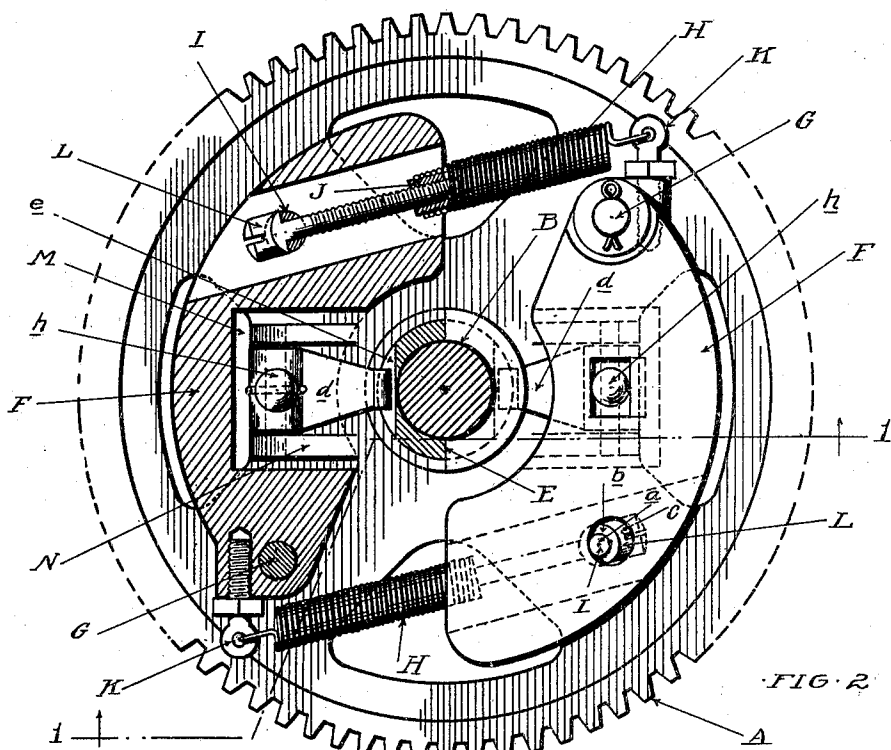


No. 794,178.

PATENTED JULY 11, 1905.

F. G. HOBART.
GOVERNOR.

APPLICATION FILED SEPT. 23, 1904.



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GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 794,178, dated July 11, 1905.

Application filed September 23, 1904. Serial No. 225,693.

To all whom it may concern:

Be it known that I, FRANK G. HOBART, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Governors, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to speed-controlling governors more particularly designed for use in governing a throttle in explosion-engines.

It is the object of the invention to obtain compactness in the arrangement of parts, also increased strength of parts and delicacy and certainty of action; and to this end the invention consists in the construction as hereinafter set forth.

In the drawings, Figure 1 is a longitudinal section through the vertical plane of the axis of the governor. Fig. 2 is a transverse section through the governor.

My governor is of that type in which weighted arms are pivotally attached to the rotating member and are provided with actuating connections and a sleeve longitudinally slidable upon the shaft, the varying speeds affecting the longitudinal adjustment of said sleeve, which in turn controls the adjustment of the throttle. To secure compactness in arrangement, the weights are preferably attached directly to a gear-wheel A, which is mounted upon a shaft B and receives its motion through an intermeshing gear-wheel C on the crank-shaft of the engine. The shaft B is employed for operating other parts of the engine—as, for instance, the exhaust-cam D—and it is desirable to confine the governor in as small a space as possible between the cam D and the gear-wheel A. To this end a slidable sleeve E is arranged upon the shaft B so as to be adjacent to the hub of the gear-wheel A when the engine is stationary and is moved from this position by the action of the governor toward the cam D.

F represents the weight-arms, which are pivotally attached to stud-pins G, projecting laterally from the gear-wheel A. These arms are of segmental form and are arranged

to lie in the plane of the sleeve E in its initial position, so that the longitudinal space of the shaft B, which is necessarily occupied by the weights F, is also used for the location of the sleeve E. The free ends of the weight-arms are normally drawn inward by the tension of springs H, each of which springs is at one end adjustably connected to a pin I, extending transversely through the weight-arms. The weight-arms are recessed at J to receive the end of the spring and to provide sufficient clearance during the swinging movement of the arms, the opposite end of the spring being connected with the lug K on the opposite weight-arm near its pivotal point.

The tension of the spring may be adjusted by means of a screw L, which passes through an aperture in the pin I and has a threaded engagement with the nut secured to the spring H. This screw may be readily adjusted without detaching any of the parts. The pin I has reduced end portions *a* and shoulders *b*, which latter abut against opposite sides of the recess J and prevent disengagement of the pin, while the reduced end portions *a* bear against the side of the aperture *c* through which the pin is entered.

The translation of the swinging movement of the weights to the longitudinal movement of the sleeve is effected by a bell-crank M. These levers are fulcrumed in ears or brackets N, preferably formed integral with the gear-wheel A, and are arranged to swing in an axial plane intersecting each weight-arm between its fulcrum and free end. Each of the bell-cranks has an inwardly-extending arm *d*, which engages a slotted bearing *e* in the sleeve E. The bell-cranks are also provided with outwardly-extending arms *f*, engaging with slotted bearings *g* in the weight-arms, the ends of the arms *f* being preferably spherical, as at *h*, so as to permit both the swinging of the bell-crank and the swinging of the weight-arm in transverse planes.

It will be noted that in this governor the governor-weights swing on pins whose axes are parallel with the axis of the governor, while the movement of the sleeve on the governor-shaft is in a direction parallel to said

axis. It is therefore possible with this construction to use very heavy weights and still have them arranged compactly and to hang them in a substantial manner on pins in the gear or other rotating parts. It will be further observed that the bell-cranks which are employed for transmitting movement of the weights to the sleeve are located within the space necessarily occupied by the swinging weights. Moreover, these bell-cranks are exceptionally small and make a direct connection between the weights and the sleeve. It is not, however, essential that the bell-cranks translating motion from the swinging weights to the sliding sleeve be arranged within the circle of the weights. It is well known that governor-weights hung in this manner respond more quickly to changes in speed, because the inertia of the weights themselves tends to change their position on any change of speed. The force of the inertia actuates with the centrifugal and centripetal forces, making the action of the governor quicker. Thus my construction is simply compact and effective in operation.

The movement of the sleeve E may be transmitted to the throttle by any suitable mechanism, such as by the bell-crank O, having antifriction-rolls P for bearing against the end of the sleeves connected to the rod Q, leading to the throttle. (Not shown.)

What I claim as my invention is—

1. In a governor, the combination with a revoluble member, of a segmental weight-arm pivotally secured to said member to swing thereon in the plane of rotation, a sleeve on said rotating member arranged substantially within the space encircled by said weight-arm, and means for translating the swinging movement of said weight-arm into the longitudinal movement of said sleeve, said sleeve and said means being arranged substantially within the space encircled by the weight-arm.

2. In a governor, the combination with a rotary member, of a weight-arm movably attached thereto and adapted to swing in the plane of rotation toward or from the axis thereof and provided on its rear face with a recessed portion, a sleeve longitudinally slidable on said rotating member, and means se-

cured to the rotary member and arranged within the recessed portion of the weight-arm for translating the swinging movement of the weight-arm into the longitudinal movement of the sleeve.

3. In a governor, the combination with a rotating member, of a weight-arm pivotally secured thereto and adapted to swing on its pivot in the plane of rotation toward or from the axis of said rotary member, a sleeve on said rotary member and a bell-crank lever fulcrumed on said rotary member and adapted to translate the swinging movement of the weight into the longitudinal movement of the sleeve said sleeve and bell-crank lever being arranged substantially within the space encircled by said weight-arm.

4. In a governor, the combination with a rotary member, of a weight-arm pivotally attached thereto and adapted to swing in the plane of rotation toward or from the axis thereof, and provided on its rear face with a recessed portion a sleeve longitudinally slidable on said rotating member and arranged within the space encircled by said weight-arm, a bell-crank lever fulcrumed upon said rotating member, and arranged within the recessed portion in said weight-arm, one arm of said bell-crank extending toward the axis of said rotating member into engagement with said sleeve and the opposite arm extending into engagement with a slotted bearing in said weight-arm.

5. In a governor, the combination with a rotary member, of a weight-arm pivotally attached thereto to swing in the plane of rotation, a spring secured at one end to said rotary member and entering with its opposite end into a recess in the free end of said weight-arm and pin extending transversely through said weight-arm, and a recess and a screw for adjustably connecting said pin with said spring to place a varying inward tension on said weight-arm.

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

FRANK G. HOBART.

Witnesses:

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GEO. B. INGERSOLL.