

(No Model.)

S. D. SHEPPERD.
GOVERNOR FOR GAS OR GASOLINE ENGINES.

No. 556,907.

Patented Mar. 24, 1896.

Fig. 1.

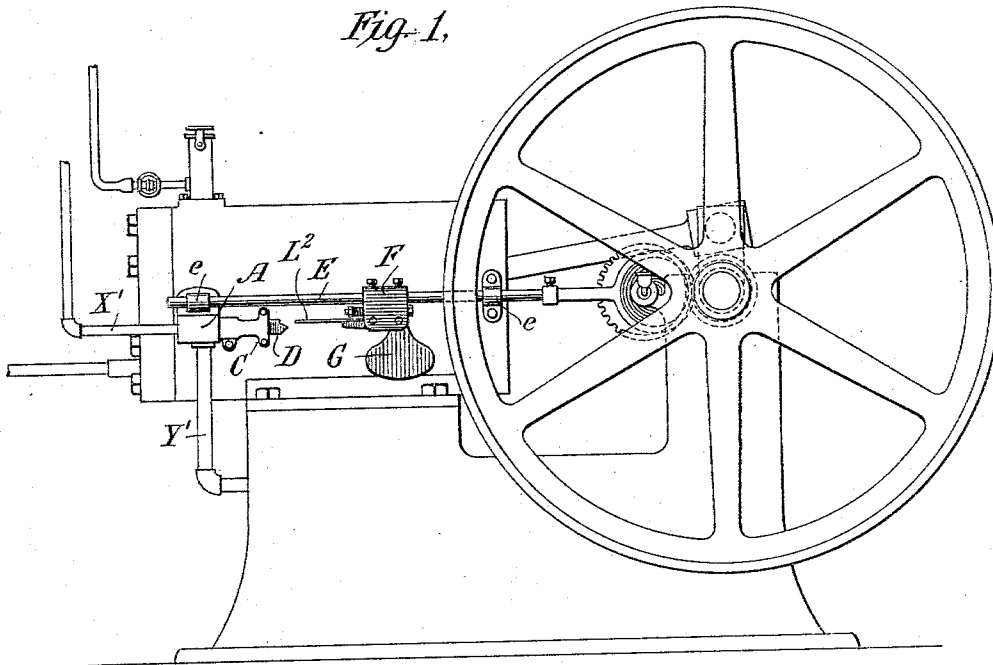
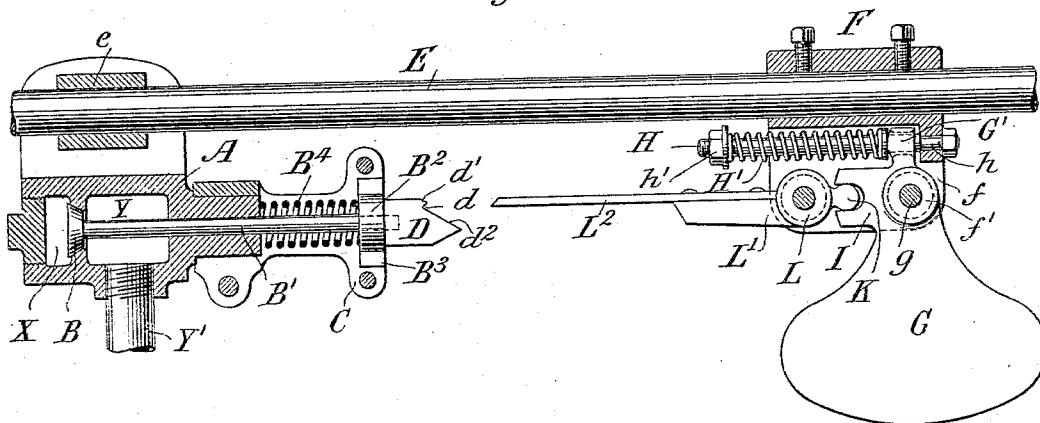


Fig. 2.



WITNESSES:

C. E. Ashley
H. W. Lloyd

INVENTOR:

Sydney D. Shepherd
By his Attorneys
Baldwin, Deardorff & Wright

UNITED STATES PATENT OFFICE.

SYLVANUS D. SHEPPERD, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE
BACKUS WATER MOTOR COMPANY, OF SAME PLACE.

GOVERNOR FOR GAS OR GASOLINE ENGINES.

SPECIFICATION forming part of Letters Patent No. 556,907, dated March 24, 1896.

Application filed August 13, 1895. Serial No. 559,180. (No model.)

To all whom it may concern:

Be it known that I, SYLVANUS D. SHEPPERD, a citizen of the United States, residing at Newark, in the county of Essex, State of New Jersey, have invented certain new and useful Improvements in Governors for Gas or Gasoline Engines, of which the following is a specification.

My invention relates to that class of devices known as "pendulum" or "inertia" governors, and embodies certain improvements in construction hereinafter set forth in detail.

In the accompanying drawings, Figure 1 is a side elevation of so much of a gas-engine as is desirable to illustrate the construction and the application of my improved governor thereto; and Fig. 2 is a longitudinal sectional view, on an enlarged scale, illustrating the governor and the gas-valve case and valve.

The gas-valve case A is shown as mounted on the side of the cylinder and contains the gas-chamber X, to which the gas-inlet pipe X' connects, and the air and gas chamber Y, to which the air-pipe Y' connects and which has a suitable connection with the cylinder, all as usual and well known.

B is the gas-inlet valve. Its stem B' works in a bearing in the valve-case and has a cylindrical head B² that works in a bearing B³, formed in opposite sides or jaws of a frame or extension C, mounted on or forming part of the valve-case. Between the end of the valve-case and the cylindrical head B² a coiled spring B⁴ is placed that normally holds the valve closed. The end of the valve-stem or the cylindrical head B² is formed or provided with an extension D having its end face formed with a notch *d*, an inclined face *d'* above the notch and an inclined face *d''* below the notch, such construction operating in connection with the thrust blade or bar of the governor to effect the opening of the gas-valve to admit gas to the chamber Y at each alternate stroke when the speed is normal, but to leave the valve closed when such speed is exceeded.

The reciprocating sliding rod E of the governor is suitably actuated from the main shaft or some moving part of the engine, as is well understood, and slides in bearings *e e*. Adjustably bolted to this rod is a block F that

is milled out longitudinally below the slide-rod, thus forming opposite vertical jaws or plates *f*. The interior faces of these jaws are formed with opposite short hubs *f'*, (indicated by dotted lines,) whose faces are turned and polished, and the inertia pendulous weight G is pivoted between them on a pin *g*. A projection G' from the weight above its pivot is bored and reamed out for the reception of rod H, which is bolted to the block at *h* and has a nut *h'* on its end and a coiled spring H' surrounding the rod and bearing against the nut or its washer and the projection G' from the weight. By the adjustment of the nut the action of the weight may be controlled to effect the regular opening of the gas-valve at different normal speeds. The weight has a horizontal recessed or grooved projection I, extending forward from its pivot and in this recess works a cylindrical or spherical tooth or head K, projecting from a piece L pivoted between the jaws and having a horizontal forward projection L' to which the governor thrust blade or rod L² is attached. The construction is such that there is no lost motion between the tooth K and part I of the weight, and consequently the blade L² moves evenly with the weight and the jerky quick motion that would result from impact between the weight and part carrying the thrust-blade is avoided.

The end of the blade L² is formed with a chisel-edge to engage the notch *d* and inclined faces *d'* and *d''* of the piece D on the end of the gas-valve spindle. When running at or below the normal speed, the edge of L² strikes in the notch *d* or on the incline *d''* and is led up to the notch, and the endwise thrust thus given to the spindle opens the gas-valve. If the speed of the engine exceeds the normal rate the edge of L² strikes above the notch *d*, and if it strikes the incline *d'* is deflected upwardly and the gas-valve is not opened.

The construction of the governor, as regards the mounting of the weight in the block F and the engagement between the weight and the piece carrying the blade L², is such as to reduce friction and avoid lost motion and produce a smooth regular action of the apparatus.

A governor of this construction is very sensitive, since a slight extent of movement at

I K produces a relatively great extent of deflection of the end of the thrust-blade L². Furthermore, the governor is quite noiseless, since there is no impact of surfaces between I and K, and when the blade, having pushed the head D in, commences its return movement the head, under the influence of the spring, follows with it until the valve B is seated, and there is little concussion of the valve against the seat.

I claim as my invention—

1. In an inertia-governor, the combination of the gas-valve whose spindle is formed with a notched and inclined end face, the reciprocating rod, the block F rigidly secured on the rod, the pendent weight pivoted in the block and capable of oscillation about its pivot, the thrust-blade also independently pivoted in the block, and the loose continuous connection between the pivoted weight and pivoted blade.

2. In an inertia-governor, the combination of the gas-valve whose spindle is formed with a notched and inclined end face, the reciprocating rod, the block F rigidly secured on the rod, the pendent weight pivoted in the block and capable of oscillation about its pivot, the thrust-blade also independently pivoted in the block, the loose continuous connection between the pivoted block and pivoted blade and an adjustable spring for controlling the action or oscillation of the weight.

3. The combination of the slide-rod, the block F having the two vertical jaws *ff*, the inertia-weight pivoted between the jaws, the

bolt extending through an aperture in an extension of the weight, the regulating-spring, the piece L also pivoted between the jaws and having a tooth engaging a recess in the weight, whereby a loose but continuous connection between the two is obtained, the thrust-blade carried by the piece L, the gas-valve and its spindle having a face engaged by the end of the blade to open the valve, as set forth.

4. The combination of a reciprocating part, as E, the pivoted pendent weight capable of oscillation about its pivot and the independently-pivoted thrust-blade both carried by said part, a loose connection between the weight and blade between their pivots, the gas-valve and its spindle, substantially as set forth.

5. The combination of a reciprocating part, as E, the pivoted pendent weight capable of oscillation about its pivot and the independently-pivoted thrust-blade both carried thereby, a connection between the weight and blade between their pivots and consisting of a tooth or projection on one part working in a seat or recess in the other, the gas-valve and its spindle and an adjustable spring controlling the oscillation of the weight, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

SYLVANUS D. SHEPPERD.

Witnesses:

FRANK S. OBER,
EDWARD C. DAVIDSON.