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J. W. ANDERSON

GOVERNOR

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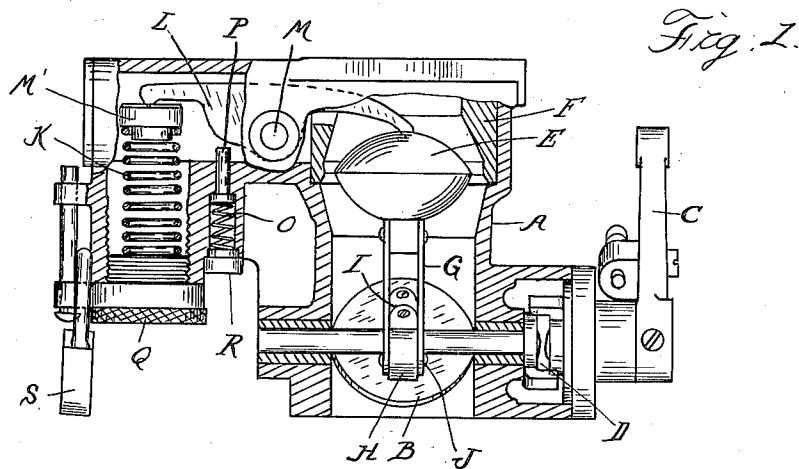
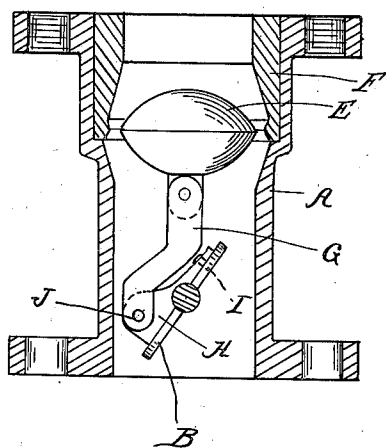


Fig. 2.



Inventor
James W. Anderson

By *Whitmore Hubert Whitmore & Belknap*
Attorneys

UNITED STATES PATENT OFFICE.

JAMES W. ANDERSON, OF DETROIT, MICHIGAN, ASSIGNOR TO MONARCH GOVERNOR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

GOVERNOR.

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To all whom it may concern:

Be it known that I, JAMES W. ANDERSON, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, 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 governors for throttle controlled internal combustion engines and it is the object of the invention to obtain an exceedingly simple construction which will effectively hold the maximum speed within close limits. To this end the invention consists in the construction as hereinafter set forth.

In the drawings:

Figure 1 is a central longitudinal section through the governor;

Figure 2 is a cross-section thereof.

My improved construction is of that type in which a member lying in the path of the incoming gases and in a tapering portion of the passage-way is connected to the throttle to exert a closing pressure thereon, while a counter-acting spring is used for opening the throttle. The great difficulty with constructions of such a type is to properly proportion the spring to the forces exerted on the actuating member in different positions of adjustment thereof. Thus, where any simple spring is used, there is a tendency for the throttle, when nearly closed, to be held in this position even after conditions have so changed as to demand an opening of the throttle for maintaining the desired speed. If the spring tension is adjusted to correct the defect just described, the governor will not properly function to close the throttle when the desired speed limit is exceeded. By substituting a compound spring for a simple spring, the defects just described can be overcome, but this complicates the construction and increases the difficulties and costs of manufacture.

With the present construction I employ a simple spring for counteracting the pull of the gas-actuated member and supplement this spring by a resilient bumper coming into action as the throttle approaches closed position and serving to initiate the opening

movement thereof. I have also devised other specific features of improvement as will be described in detail.

As shown, A is the casing which includes a portion of the engine intake having the butterfly throttle B therein manually operable towards closed position by the control lever C, but having a lost-motion connection at D for permitting independent closing. E is a stream-lined member arranged within the casing A, and F is a tapering bushing within the portion of the casing occupied by the member E for coaxing therewith. The member E is directly connected to the butterfly throttle B by a link G which, as shown, is bifurcated to embrace a lug H connected to the throttle by the screws I. A pivot pin J couples the bifurcated link with the lug H, permitting the member E to be automatically centered by the gas stream. K is the counteracting spring which is preferably placed in a chamber in the casing arranged parallel to the portion for the intake gases. L is a walking beam lever pivoted at M and having one end projecting into the intake to bear centrally upon the end of the member E, while the opposite end of said lever bears against the abutment member M' at the end of the spring K. By suitably adjusting the tension of the spring K, it will properly function to react against the pull of the member E. However, when the throttle is nearly closed, the force exerted on the member E is disproportioned to the reaction of the spring K so that the construction as thus far described would be inoperative. To remedy this defect I arrange an auxiliary spring O in a position intermediate that of the spring K and the pivot M and yieldably support by this auxiliary spring the bumper member P. The latter extends into the path of the lever L and contacts with said lever as the throttle approaches closed position. Therefore the reaction of the spring K is reinforced by that of the spring O which is sufficient to initiate the opening movement of the throttle from closed, or nearly closed position, when the speed of the engine begins to slow. The springs K and O are placed in suitable recesses in the housing which are closed by cap members

Q and R and a lock S is arranged to prevent removal of the cap Q and the tampering with the spring K.

The construction just described will operate under practical conditions to govern within as close limits as is required. Also, there is nothing to get out of order and the construction is so simple that manufacturing costs are greatly reduced.

What I claim as my invention is:

1. A governor for internal combustion engines comprising a casing having formed therein a passage constituting a portion of the engine intake, a throttle in said passage, a gas actuated member for closing said throttle also in said passage, a walking beam lever in said casing having a portion projecting into the intake and bearing centrally against said gas actuated member, a counteracting spring bearing against the opposite end of said walking beam member, and a resilient bumper in the path of said lever as the throttle approaches closed position.

2. A governor for internal combustion engines comprising a throttle, a stream-lined member in the path of the intake gases connected to said throttle to actuate the same towards closed position, a counteracting spring for opening said throttle, and a resilient bumper arranged to react on said throttle as it approaches closed position to initiate opening movement.

3. A governor for internal combustion engines comprising a casing forming a portion of the engine intake, a butterfly throttle valve in said casing, a stream-lined member also in said casing, a link connection between said stream-lined member and throttle for actuating the latter towards closed position by the force of the intake gases, a counteracting spring, a lever actuated by said spring bearing against said stream-lined member to impart thereto a force counter to

that of the gases and a resilient bumper arranged to react on said lever at a different point than said first mentioned spring when said throttle approaches closed position.

4. A governor for internal combustion engines comprising a casing having formed therein a passage constituting a portion of the engine intake, a butterfly throttle in said passage, a stream-lined member also in said passage and centered by the gaseous stream, a link connection between said stream-lined member and throttle to impart a closing movement to the latter from the former, a walking beam lever in said casing having a portion projecting into the intake and bearing centrally against said stream-lined member, a counteracting spring bearing against the opposite end of said walking beam lever, and a resilient bumper in the path of said lever as the throttle approaches closed position.

5. A governor for internal combustion engines comprising a casing having formed therein a passage constituting a portion of the engine intake, a butterfly throttle in said passage, a stream-lined member also in said passage, a link connecting said stream-lined member to said throttle, a tapering bushing in said passage for coacting with said stream-lined member, a walking beam lever pivoted in said casing having one end projecting into the intake and bearing centrally against said stream-lined member, a spring in a recess in said casing bearing on the opposite end of said walking beam lever, an auxiliary spring, and a bumper actuated by said auxiliary spring projecting into the path of said lever as the throttle approaches its closed position.

In testimony whereof I affix my signature.

JAMES W. ANDERSON.