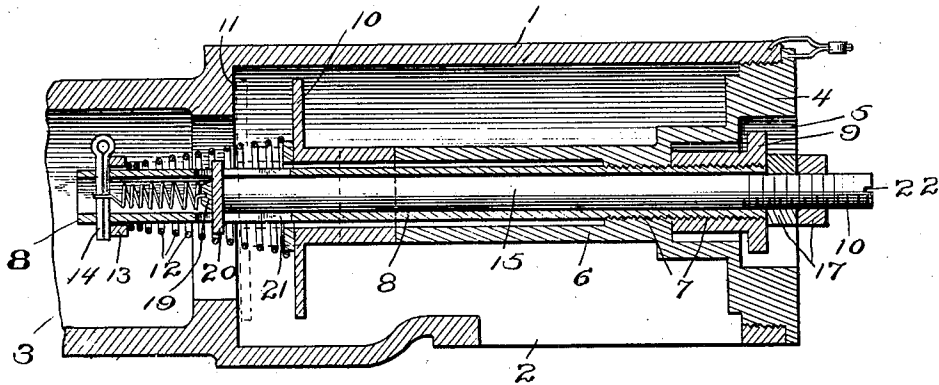


F. W. RUGGLES.
GOVERNOR FOR GAS ENGINES.
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1,102,085.

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UNITED STATES PATENT OFFICE.

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GOVERNOR FOR GAS-ENGINES.

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To all whom it may concern:

Be it known that I, FRANK W. RUGGLES, a citizen of the United States, residing at Alma, in the county of Gratiot and State of Michigan, have invented certain new and useful Improvements in Governors for Gas-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to speed regulators for gas engines and has as an object to produce a simple and effective regulator located within the manifold of a gas engine for determining the flow of charge to the engine.

Another object of the invention is to provide a charge regulating governor which can be operated from without the manifold, thereby making it possible to adjust the regulator without removing any of the parts from the engine, with which the governor is connected.

A further object of the invention is to provide a spring controlled governor such that the spring is adjustable, such adjustment being accompanied by an operation of the device which further limits the speed of the engine.

With these and other objects in view the invention comprises certain novel constructions, combinations, and arrangements of parts as will be hereinafter more fully described and claimed.

The drawing is a central section through my regulator as associated with the manifold of the gas engine.

Generally this invention provides a throttling valve adapted to be seated within the manifold chamber of a gas engine, the motion of the throttling valve due to the sucking of the charge being opposed by an adjustable spring, suitable means being provided without the manifold for holding the spring in any adjusted position. Means operated from without the manifold is also provided for positively limiting the movement of the throttling valve under action of the charge, these means being provided

for making the engine run at any predetermined number of revolutions per minute.

Referring to the drawing it will be seen that my governor or speed regulator is located within the manifold of a gas engine or any other convenient part of the engine through which the charge passes from the carbureter to the engine cylinder, the manifold being designated at 1. As indicated in the drawing, the manifold is provided with an opening 2 connected with the carbureter, and a second opening 3 which leads to the cylinder of the engine. There is threadedly secured to the outer end of the manifold a member 4 having formed therein a recess 5 and having extending therefrom inwardly a hollow cylinder 6. Extending from the member 4 is a threaded portion 7 which is designed to engage the threaded end of a hollow spindle 8, the outer end of the spindle carrying a suitable lock nut 9 for holding the spindle in any predetermined position. Slidably mounted upon the spindle 8 is a throttle valve 10 which is adapted to be seated upon a valve seat 11 extending from and formed integral with the manifold. This valve 10 is made of suitable diameter and slides freely upon the spindle 8, the valve being normally held against the hollow cylinder 6 by means of a helical spring 12. One end of the helical spring 12 engages a collar 13 slidably mounted upon the spindle 8 and held thereto by means of a pin 14, while the other end of the spring 12 loosely engages the face of the valve 10.

A rod 15, slidably mounted within spindle 8, has one end thereof threaded as at 16, suitable locking nuts 17 being provided for holding the rod in any position. The locking nuts 17 are held against the face of the lock nut 9 by means of a spring 18, one end of which engages the pin 14, and the other end of which passes through the inner end 19 of the rod 15. Passing through this inner end 19 of the rod is a pin 20 which may be made removable from or rigid with rod 15, the ends of the pin 20 extending through slots 21 formed in the spindle 8. The slots 21 are made of substantially a width equal to the diameter of the pin 20 so that both sides

of the pin engage a slot. By means of a kerf 22 milled in the outer end of rod 15, the said rod may be rotated as desired. It will be noted that when the rod 15 is rotated as just explained the pin 20 will engage the sides of slot 21 and thereby turn the spindle 8, the threaded portion 7 which engages the outer end of the spindle 8 serving to force the spindle either in or out according to the direction of rotation of the rod. Insomuch as the hollow cylinder 6 is fixed with respect to the manifold 1, it will be seen that this rotation of the rod 15 will be accompanied by a variation of the tension of the spring 12.

If it be desired to tighten the spring, then it will be necessary to move the rod 15 in such a direction as to bring the collar 13 toward the hollow cylinder 6, and vice versa if it is desired to diminish the tension of the spring 12. Any adjusted position of the spring 12 can be maintained by means of the lock nut 9. If it be desired to restrict the movement of the valve 10 it will merely be necessary to move one of the nuts 17 so that the pin will approach the valve 10, and then lock the pin in this position by means of one of the locking nuts 17, the spring 18 in this case serving to hold the lock nuts 17 against lock nut 9.

It is well known that when a driver of an automobile or other gas engine desires to increase the speed of the same, he operates such mechanism as will cause an increased quantity of mixture of gasoline and air to pass through the manifold. This increase of charge is made use of by making the same suck the valve 10 with it and thereby draw the valve toward the valve seat 11. If this increase of charge be sufficient, the valve 10 will be moved to the dotted position shown in the drawing. Just as soon as the valve 10 is seated, the flow of gas will be checked and in this way the amount of charge which reaches the cylinder is limited. If it is desired to allow more charge to pass before the valve becomes seated, it will merely be necessary to tighten the lock nuts controlling the spring 12 so that the charge will have to move through the manifold more rapidly in order to seat the valve. The pin 20 can be used to prevent the valve 10 from becoming seated upon the valve seat 11. By means of the lock nut 17, the position of the pin 20 may be varied to limit the movement of the valve as desired. It will be noted that by varying the position of pin 20 the area of the passage between the valve and the valve seat may be varied, this variation serving to permit of a wide range of regulation in the speed of the engine.

It will be further noted that both means of adjusting the position of the valve 10

can be operated from a point without the manifold, and that by having this adjustment parallel to the flow of the charge all sliding joints are done away with and the end of the manifold is effectively closed to the admittance of air.

I claim:—

1. A valve of the character described, comprising a casing, a spindle, a throttle valve slidably mounted on the spindle, and movable in the direction of the flow of fluid, a spring supported on one end of the spindle, the spring engaging the valve and resisting the motion of the valve, means without the casing for moving the spindle, and means for locking the spindle, said latter means preventing ingress of air into the casing.

2. A valve of the character described, comprising a casing, a spindle, a throttle valve slidably mounted on the spindle, means supported by the spindle and engaging the valve for varying the pressure upon the valve, an interiorly threaded closure for the casing, one end of the spindle being threaded and passing through the threaded closure, and means engaging the threaded end of the spindle and casing closure for locking the spindle and preventing leakage of air through the threaded closure.

3. A valve of the character described, comprising a casing, a spindle, a throttle valve slidably mounted thereon, and movable in the direction of flow of fluid, and adjustable means projecting from the spindle and adapted to engage the valve in a predetermined position.

4. A valve of the character described, comprising a casing, a spindle, a throttle valve slidably mounted thereon, and movable in the direction of flow of fluid, a rod passing through the spindle and adjustable from without the casing and a pin carried by the rod and passing through slots formed in the spindle, the pin serving to limit the motion of the valve.

5. A valve of the character described, comprising a casing, a spindle, a throttle valve slidably mounted thereon, a rod slidably mounted within the spindle and adjustable from without the casing, a pin carried by the rod and passing through slots formed in the spindle, and resilient means for holding the pin and rod in a predetermined position.

6. A valve of the character described, comprising a casing, a spindle one end of which is threaded and engages threads in one wall of the casing, a throttle valve slidably mounted thereon in the direction of flow of fluid, a spring supported by the spindle and engaging the valve, a rod slidably mounted within the spindle, means secured to the rod and passing through and

engaging the spindle and adapted to engage the valve, and means for turning the rod and spindle to vary the tension of the spring.

- 5 7. A valve of the character described; a casing, a spindle rotatably mounted in the casing, a rod within the spindle, a pin extending from the rod and passing through the spindle, a valve slidably mounted on the
10 spindle, resilient means carried by the spin-

dle and engaging the valve, the tension of the resilient means being varied by the turning of the spindle.

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

FRANK W. RUGGLES.

Witnesses:

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HOWARD C. RICHARDSON.