B. T. McCANNA & E. R. KLEMM.

GAS ENGINE GOVERNOR AND AUXILIARY AIR INLET

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1,298,068.

Patented Mar. 25, 1919.

Fig. 1

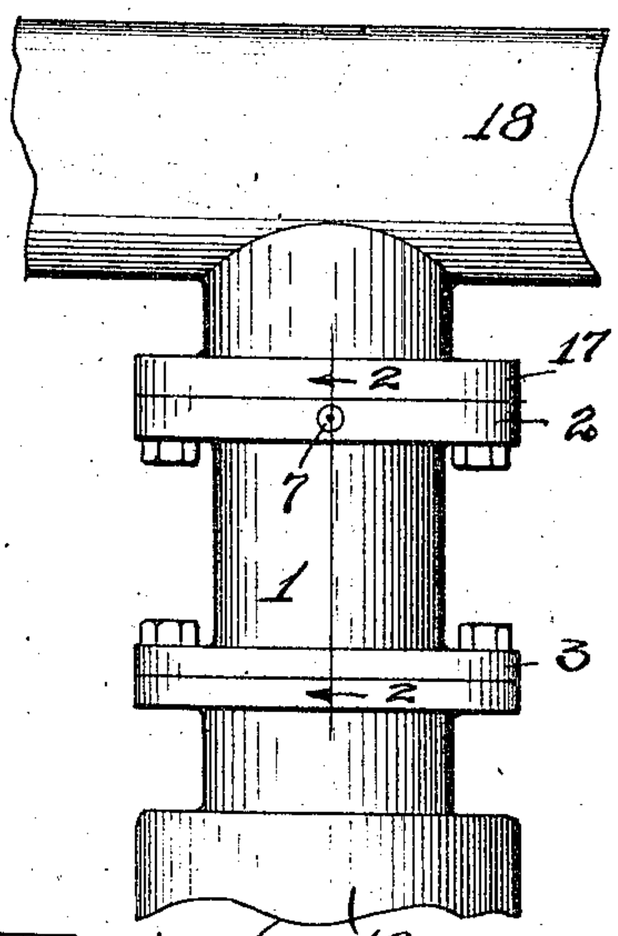


Fig. 2

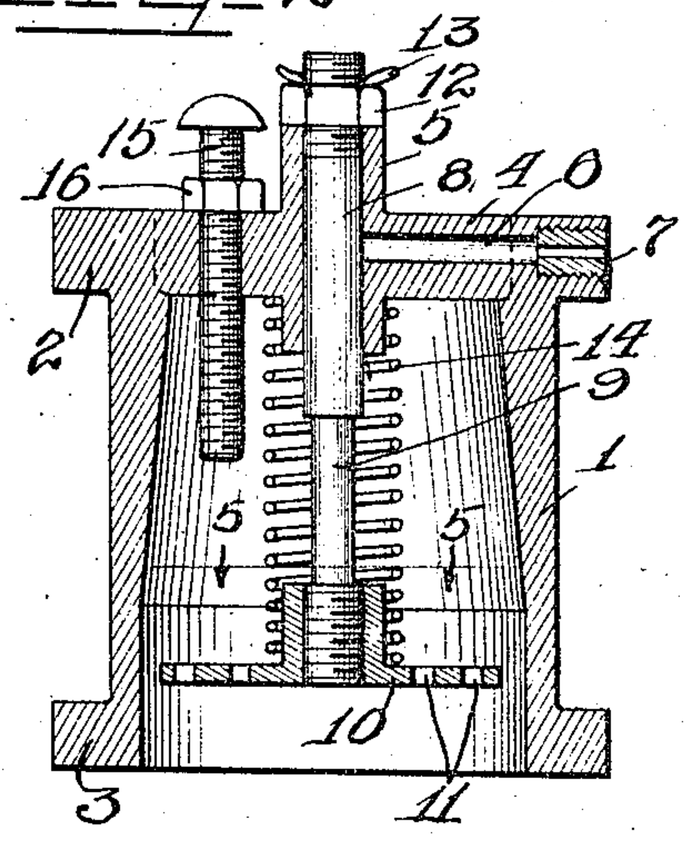


Fig. 4

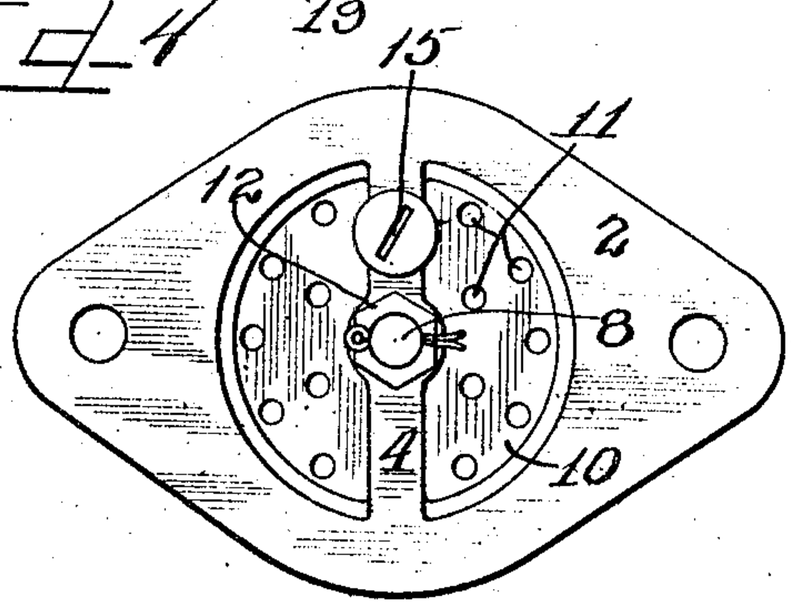


Fig. 3

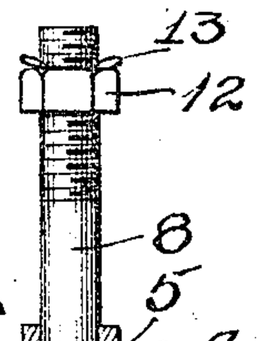


Fig. 5

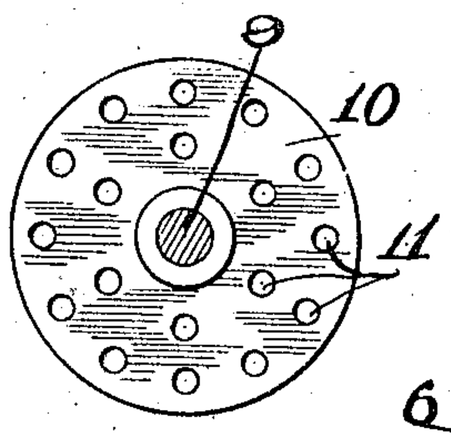
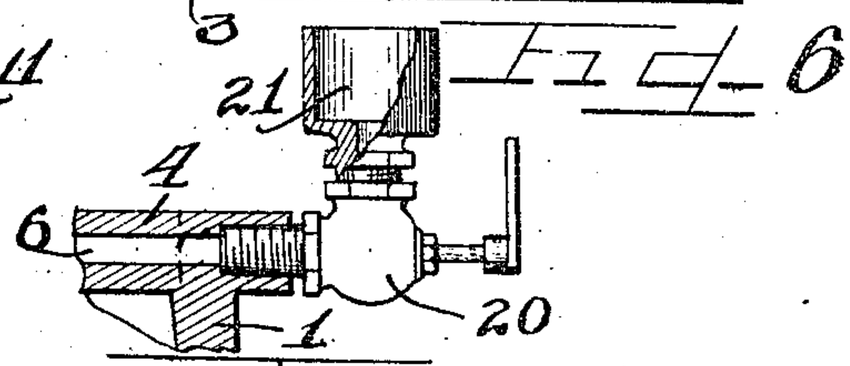


Fig. 6



Witnesses

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UNITED STATES PATENT OFFICE.

BENJAMIN T. McCANNA AND EMIL R. KLEMM, OF CHICAGO, ILLINOIS.

GAS-ENGINE GOVERNOR AND AUXILIARY AIR-INLET.

1,298,068. Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed September 11, 1916. Serial No. 119,556.

To all whom it may concern:

Be it known that we, BENJAMIN T. McCANNA and EMIL R. KLEMM, citizens of the United States, and residents of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas-Engine Governors and Auxiliary Air-Inlets; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to a gas engine governor mechanism adapted to utilize the dynamic effect of flow of the inlet fuel mixture to the engine, to move a flow impedance disk toward a restricted portion of its casing which is connected to form a part of the intake manifold of the engine, to limit the flow of fuel mixture to the engine according to a predetermined amount, thereby effecting a limitation upon the maximum possible output delivered by the engine.

It is an object therefore of this invention to construct a governor mechanism embracing a casing or pipe section element adapted to be connected to the manifold of an engine, and provided with an impedance disk movably mounted therein subject to the dynamic as well as suction effect of flow of fuel mixture from the carbureter into the intake manifold, and movable automatically to different adjusted positions according to conditions of suction and flow, to impede the flow and thereby afford a limitation upon the maximum output from the engine both in power and speed by regulating the flow of fuel mixture thereto.

It is also an object of this invention to construct a governor mechanism embodying a cylindrical section or casing adapted to be connected between the carbureter and intake manifold of the engine, and provided with an impedance disk movable against spring stress toward and within a restricted portion of said casing according to the conditions of suction and flow induced by the engine, and with means limiting the movement of said impedance disk to a certain predetermined adjusted position whereby the extent of interference of flow of fuel mixture therepast is predetermined, thereby governing the output to the engine by controlling the flow of fuel mixture thereto.

It is also an object of this invention to construct a governor mechanism wherein an impedance disk is mounted between the outlet from the carbureter and the inlet of the fuel manifold of an engine, subject to the flow therethrough of fuel mixture from the carbureter, and operating to impede the flow certain predetermined amounts to govern the possible output of the engine, and operating when moved into an extreme position, to admit an additional supply of air into the fuel mixture as it flows into the manifold.

It is finally an object of this invention to construct a fuel governor and auxiliary air supply for a hydro-carbon motor operated automatically according to conditions of flow of fuel mixture to the engine, serving to impede the flow according to certain conditions of operation to govern the output of the engine, and serving further to permit an additional supply of air into the mixture dependent upon the adjustment of the device.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a fragmentary elevational view illustrating a device embodying the principles of our invention, connected between the carbureter and manifold of a gasolene engine.

Fig. 2 is a fragmentary detail section taken on line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 2, showing the parts in another position of adjustment.

Fig. 4 is a top plan view of the device detached.

Fig. 5 is a sectional detail view taken on line 5—5 of Fig. 2, with parts omitted.

Fig. 6 is a fragmentary view partly broken away and shown in section of an auxiliary attachment for the governor device.

As shown in the drawings:

The reference numeral 1, indicates a pipe section member or casing provided with an attaching flange 2, at the upper end thereof, and another flange 3, at the lower end thereof, and with the inner wall of the casing restricted or convergent upwardly from a point near the lower end of the device toward the upper end thereof. An integral

diametrically disposed cross-piece or member 4, is formed across the upper end of the device, and is provided with a boss 5, through which an axially disposed aperture or passage is provided, and communicating laterally into said passage is another passage 6, drilled through from one end of said cross-piece 4. A threaded plug 7, having a small passage therethrough, is threaded into the outer enlarged end of the passage 6, flush with the end surface of the flange 2. Slidable through the tubular boss 5, is a stem 8, having a reduced portion 9, near its lower end, and at its extreme lower end threaded and having secured thereon an impedance disk 10, with a plurality of apertures 11, therethrough, the diameter of said disk being less than the greatest diameter of the interior of the casing 1, and slightly greater than the smallest diameter of the restricted portion of said casing. A nut 12, is threaded upon the upper end of the stem 8, and is retained from disengagement therewith by a cotter-pin 13, thus serving to limit the downward movement of said stem 8, as clearly shown in Fig. 2. A coiled compression spring 14, is seated upon the upper surface of the impedance disk 10, and bears at its upper end beneath said cross-piece 4, serving normally to hold the impedance disk downwardly in the lower enlarged end of the casing 1. Threaded through said cross-piece 4, is a long bolt or screw 15, provided with a lock nut 16, the lower end of said bolt forming a stop for the impedance disk 10, in its upward movement as shown in Fig. 3, so that by adjustment of said bolt into different positions, the limiting position of said impedance disk 10, in its upward movement may be determined. The upper flange 2, of the device is bolted through an attaching flange 17, formed on an intake manifold pipe 18, shown fragmentarily in Fig. 1, and secured to the lower flange 3, of the device, is the attaching flange of a carbureter 19, also shown only fragmentarily in Fig. 1.

As shown in Fig. 6, the small aperture inlet air plug 7, may be replaced by a pet-cock 20, having a priming cup 21, so that by adjustment of the valve of the pet-cock, the inflow of air can be regulated and furthermore, the pet-cock may be used to introduce fuel or other fluids for priming or other purposes.

The operation is as follows:

When the engine is in operation, a flow of fuel mixture from the carbureter 19, takes place to the intake manifold 18, of the engine, through the casing member 1, of the device embodying the principles of my invention, and the suction effect as well as the dynamic effect of the flow into the manifold 18, is exerted upon the impedance disk 10, and, as the suction or rate of flow increases, the impedance disk 10, is caused to move upwardly against the compression of its spring 14. Such movement of the disk 14, causes the same to move into the restricted portion of the casing 1, thus limiting the flow of fuel mixture around the periphery of said impedance disk, although, of course, a certain flow may take place through the apertures 11, therein, and this limiting effect or control of fuel serves to govern the maximum possible output of the engine, and therefore the speed in its relation to power output.

When the impedance disk 10, moves upwardly a certain amount, the reduced portion 9, of the stem 8, moves upwardly such that the inner end of the passage 6, cored through the cross-piece 4, is opened and an inlet supply of air is thus provided, which is drawn downwardly through the tubular boss 5, and deflected by the disk 10, radially outwardly to insure a thorough intermixture thereof with the fuel mixture from the carbureter. Adjustment of the nut 12, serves to vary the initial stress upon the spring 14, which resists movement of the impedance disk and adjustment of the screw or bolt 15, serves to change the limiting position of movement of the disk.

We are aware that various details of construction may be varied through a wide range without departing from the principles of this invention, and we therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

We claim as our invention:

1. In a governor device of the class described, a casing member interiorly tapered, an impedance disk movable therewithin to vary the area of passage between the periphery of said disk and the walls of the casing member, means resisting movement of said disk, adjustable mechanisms for limiting the extreme movements of said disk and means adapted by movement of the disk to admit air into the fuel mixture to vary the quality of the fuel mixture.

2. In a governor device of the class described, an interiorly tapered casing member, an impedance disk movable therein to vary the area of passage through said member, means resisting movement of said disk, mechanism adjustable in said casing member to limit the movement of said disk by contact therewith and means adapted to admit air into the mixture as the impedance disk restricts the passage through the member.

3. In a governor device of the class described, a casing member having a restricted passage therethrough, an impedance disk of less diameter than the greatest interior diameter of said casing member, a stem on which said disk is mounted having a reduced portion, means associated with said stem to limit the extent of movement of said disk and stem in one direction, means adjustable in the casing member to limit the extent of

movement of said stem and disk in the other direction and a passage adapted to communicate with the reduced portion of the stem to admit air around the stem into the casing when said stem and disk are moved in one direction.

4. In a device of the class described the combination of a tubular casing, having attaching means at each end and a tapered passageway therethrough, a valve resiliently mounted in the passageway and operable by suction to restrict the passageway, said valve being provided with a plurality of perforations affording a constant area of communication through the casing and adapted to separate the fuel mixture in its passage through the casing, into a plurality of streams.

5. In a governor device of the class described, a casing member, an impedance disk movable therewithin to vary the area of passage through said casing member, means resisting movement of said disk, and mechanism operating to admit an additional supply of air into the mixture flowing through said device as the area of passage through said casing member is reduced.

6. In a governor device of the class described, an interiorly tapered casing member, an impedance disk movable against spring stress within said member to reduce the area of passage therethrough, mechanism operating to admit an additional supply of air into the fluid mixture flowing through said casing member as the area of passage through said casing member is varied, and means limiting the extent of movement of said disk.

7. In a device of the class described the combination with a carbureter and engine intake pipe of an attachment adapted to be interposed therebetween and comprising a tubular casing having attaching means at each end and a tapered passageway therethrough, a valve resiliently mounted in the passageway and operable by suction in the intake pipe to restrict said passageway, and means for delivering the fuel mixture from the carbureter side of the valve to the intake pipe side of the valve in a plurality of intermixing streams.

8. In an automatic regulating device of the class described the combination with an integral tubular casing formed with a tapered tubular passageway therethrough, attaching means at each end and a support for holding a stem axially in the passageway, of a stem mounted in the support, a spring controlled valve on the stem movable axially in the passageway and operated by suction to restrict said passageway, and adjustable means for limiting the movement of the valve by suction.

In testimony whereof we have hereunto subscribed our names in the presence of two subscribing witnesses.

BENJAMIN T. McCANNA.
EMIL R. KLEMM.

Witnesses:
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