Sept. 11, 1928. 1,683,720

D. L. A. LARSONNEUR

GOVERNOR FOR INTERNAL COMBUSTION ENGINES

Filed Dec. 24, 1925 2 Sheets-Sheet 1

Fig. 1.

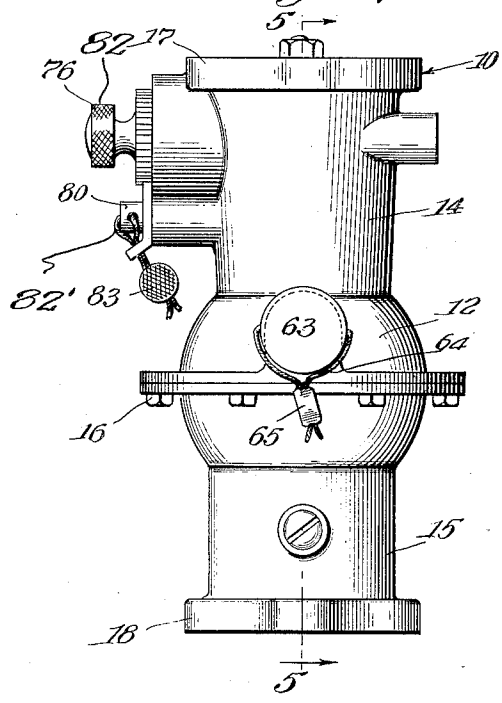


Fig. 3.

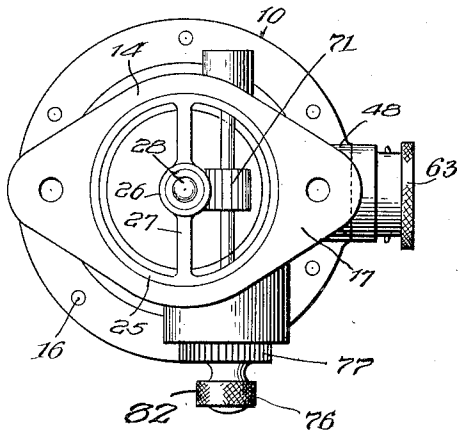
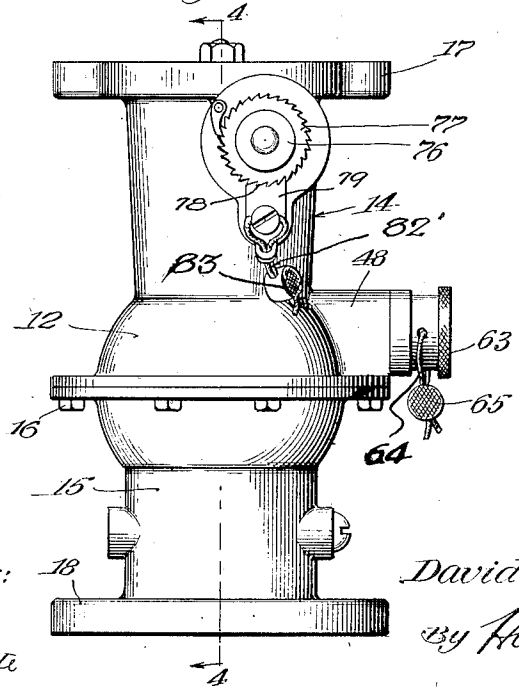


Fig. 2.



Witnesses:
William P. Kilroy
Harry R. L. White

Inventor:
David L. A. Larsonneur.
By Hill & Hill
Attys:

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D. L. A. LARSONNEUR

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Fig. 4.

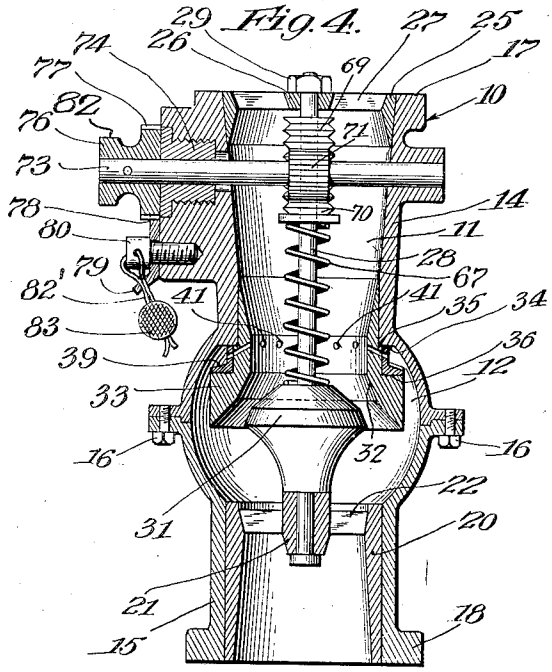


Fig. 6.

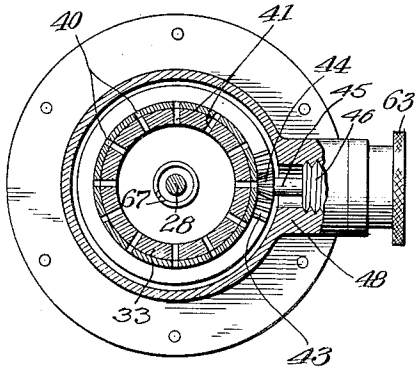


Fig. 5.

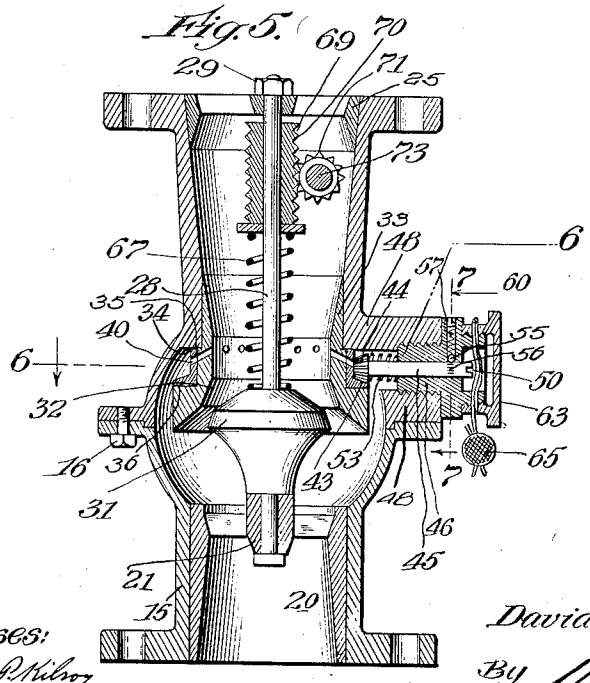
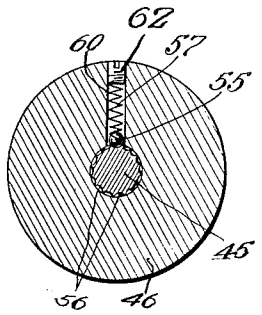


Fig. 7.



Witnesses:
William R. Kilroy
Harry R. Lubcke

Inventor:
David L. A. Larsonneur.
By Hill & Hill
Attys:

Patented Sept. 11, 1928. 1,683,720

UNITED STATES PATENT OFFICE.

DAVID L. A. LARSONNEUR, OF CHICAGO, ILLINOIS.

GOVERNOR FOR INTERNAL-COMBUSTION ENGINES.

Application filed December 24, 1925. Serial No. 77,655.

My invention relates to governors for internal combustion engines of the type shown and described in U. S. Letters Patent No. 1,451,365, and has among its other objects the production of governors of the kind described, which are convenient and efficient and which may be quickly and easily adjusted to control internal combustion engines so that they will operate in a predetermined manner.

One form of the invention is embodied in a governor adapted to be inserted between the intake port of an internal combustion engine and the carburetor thereof, the governor preferably comprising a casing having a passage therethrough which is controlled by a valve adapted to close the passage when the engine runs at a predetermined number of revolutions per minute. To prevent the engine from being "killed" when the valve closes the passage, a plurality of apertures are provided within the casing so that a certain amount of fuel may pass to the intake port, the effective cross-sectional area of the apertures being controlled by means which may be accurately adjusted to have the engine operate smoothly and efficiently.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a side elevation of a governor embodying the invention;

Fig. 2 is a front elevation of the improved governor;

Fig. 3 is a plan view of the improved governor;

Fig. 4 is a section taken on line 4—4 of Fig. 2 with parts in elevation;

Fig. 5 is a section taken on line 5—5 of Fig. 1;

Fig. 6 is a section taken on line 6—6 of Fig. 5; and

Fig. 7 is an enlarged section taken on line 7—7 of Fig. 5.

In the drawings, I have shown a preferred form of the invention embodied in a governor adapted to be positioned intermediate the intake port or intake manifold of an internal combustion engine and the carburetor which is commonly associated with the intake port or intake manifold. The governor preferably comprises a casing 10 having a passage 11 extending therethrough, the passage being enlarged intermediate its ends, as indicated at 12, for a purpose which will presently appear. The casing 10 comprises separable members 14 and 15 which are secured to each other by bolts 16, or the equivalents for the purpose, the members 14 and 15 being provided with flanges 17 and 18, respectively, so that the governor may be conveniently secured between the carburetor and the intake port or intake manifold.

Fixed in the lower end of the member 15 is a venturi 20 which is provided with a central boss 21 supported by arms 22 formed integral with the boss and the venturi, the arms being so shaped that they do not materially impede the flow of the mixture passing through the casing. A ring 25 seated in the upper end of the member 14 is also provided with a central boss 26 which is supported on the ring 25 by integral arms 27 of substantially the same shape as the arms 22. Mounted in the bosses 21 and 26 is a rod or stem 28 which is secured thereto by a nut 29 screw-threaded upon one end of the stem.

Slidably mounted upon the rod or stem 28 is a valve 31 adapted to seat upon a valve seat 32 which is formed in a sleeve 33 secured in the lower end of the member 14, the sleeve being provided with an annular shoulder 35 adapted to seat upon an annular shoulder 34 formed on the member 14 so that an annular shoulder 36 formed on the sleeve will be spaced a predetermined distance from the shoulder 34. Rotatably journaled upon the sleeve 33 intermediate the shoulders 35 and 36 is an annulus 39 having a plurality of apertures 40 adapted to register with a plurality of apertures 41 provided in the sleeve. It is readily understood that atomized fuel may pass through the passage 11 by way of the apertures 40 and 41 when the valve 31 is seated upon the valve seat 32. As best shown in Figs. 5 and 6, the annulus 39 is provided with gear teeth 43 which mesh with a bevel gear 44 secured upon one end of a pin 45 rotatably journaled in a bushing 46, the bushing 46 being screw-threaded into a boss 48 formed integral with the member 14. The outer end of the pin 45

is slotted as at 50 so that it may be engaged by a screw-driver, or any other suitable tool, and rotated to cause the bevel gear 44 to rotate the annulus 39. A compression spring 53 positioned around the pin 45 and interposed between the bevel gear 44 and the bushing 46 holds the bevel gear in mesh with the teeth 43 and tends to prevent accidental rotation of the pin 45. Another means for preventing accidental rotation of the pin 45 is a ball 55 engageable with grooves 56 cut in the pin, the ball 55 being yieldably urged toward the pin by a compression spring 57 which is positioned in a bore 60 formed in the bushing 46 to accommodate the ball. This construction enables one to adjust the apparatus accurately as the click of the ball in the grooves signals the angular distance through which the pin 45 is turned. The compression spring 57 may be adjusted by a set screw 62 screw-threaded into the outer end of the bore 60.

To prevent unauthorized persons from tampering with the pin 45 after it has been adjusted, I prefer to provide a cap 63 which may be screw-threaded upon the outer end of the bushing 46 and secured thereto by a wire 64 and a seal 65.

The valve 31 is normally maintained in its open position by a compression spring 67 disposed around the stem 28 and interposed between the valve and a member 69, the member 69 being slidably journaled upon the stem and being urged upwardly by the spring 67. In this embodiment of the invention, the member 69 is provided with a plurality of annular gear teeth 70 which mesh with a pinion 71 fixed to a shaft 73. One end of the shaft 73 is rotatably journaled in the member 14 and the other end thereof is rotatably journaled in a bushing 74 screw-threaded into the member 14. Pinned to the latter end of the shaft 73 is a knob 76 provided with teeth 77 which are engageable by teeth 78 formed upon a plate 79 secured to the member 14 by a bolt 80 or the equivalent. The knob 76 is preferably knurled, as at 82, so that it may be readily rotated when the teeth 78 are disengaged from the teeth 77, the plate 79 being removable from the member 14 if the bolt 80 is first removed. The plate 79 may be employed to lock the shaft 73 in any adjusted position, and, if it is desired to prevent unauthorized manipulation of the knob 76, the bolt 80 and the plate 79 may be secured to each other by a wire 82′ and a seal 83.

The operation of the above described apparatus is substantially as follows: Assuming that the spring 67 has been properly adjusted, the valve 31 will be moved by the current of the passing fluid to engage the valve seat 32 when the engine runs at a predetermined number of revolutions per minute. The valve then closes the passage 11 in such manner that the engine must draw its fuel through the apertures 40 and 41. The apertures 40 are so adjusted relative to the apertures 41 that the engine will not be "killed" when the valve engages its valve seat, but the amount of fuel which the engine may draw through the apertures 40 and 41 is insufficient to permit the engine to run at the predetermined speed but nearly so. As the speed of the engine decreases, the valve 31 is unseated by the spring 26. This tends to keep the speed of the engine substantially constant if so much fuel is being supplied to the engine that it tends to run at more than the predetermined speed.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. A governor of the kind described comprising a casing having a passage therethrough, a valve seat formed in said casing, a valve engageable with said seat to close said passage, said casing having an annular passage therein extending from a point anterior of the valve seat to a point posterior thereof, an annulus rotatably mounted on the casing for controlling the passage of fluid through said annular passage, and means for actuating said annulus.

2. In a device of the character described and in combination, a casing having apertures therethrough, a shoulder adjacent the apertures, an annulus rotatably mounted upon the shoulder and having apertures to register with the apertures in the casing, gear teeth forming on the annulus and manually operated gear engaging said teeth for controlling the movement of the annulus.

3. In a device of the character described and in combination, a casing having apertures therethrough, a rotatable collar having apertures to register with the first apertures, gear teeth on the collar, a rotatable gear cooperating with the teeth on the collar for imparting movement to said collar and means whereby to manually operate said gear.

4. In a device of the character described and in combination, a casing having apertures therethrough, a rotatable collar having apertures to register with the first apertures, gear teeth on the collar, a rotatable gear cooperating with the teeth on the collar for imparting movement to said collar, means whereby to manually operate said gear and means for locking said last means.

In testimony whereof, I have hereunto signed my name.

DAVID L. A. LARSONNEUR.