Jan. 16, 1940. J. S. JENNINGS, JR 2,187,652

CONTROL MECHANISM FOR GOVERNORS

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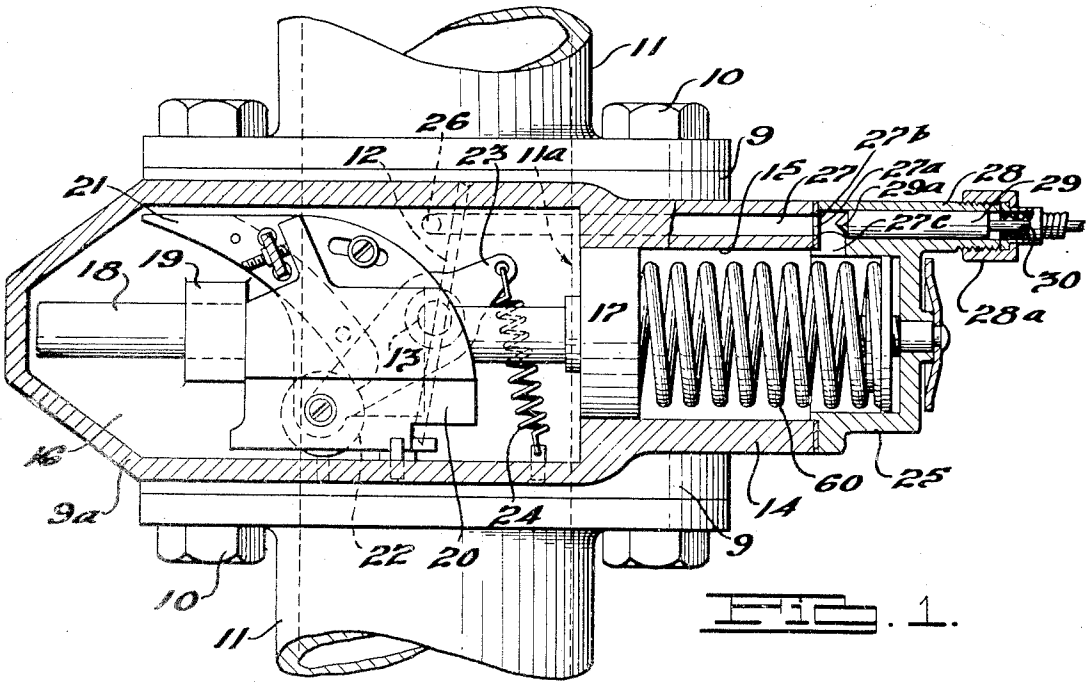


Fig. 1.

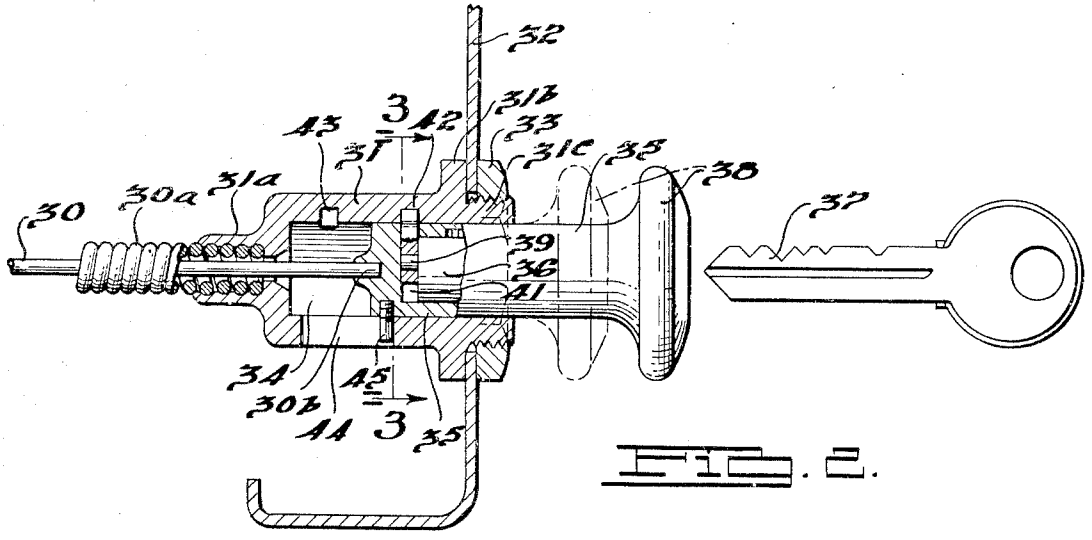


Fig. 2.

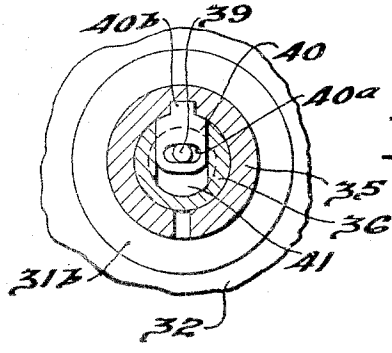


Fig. 3.

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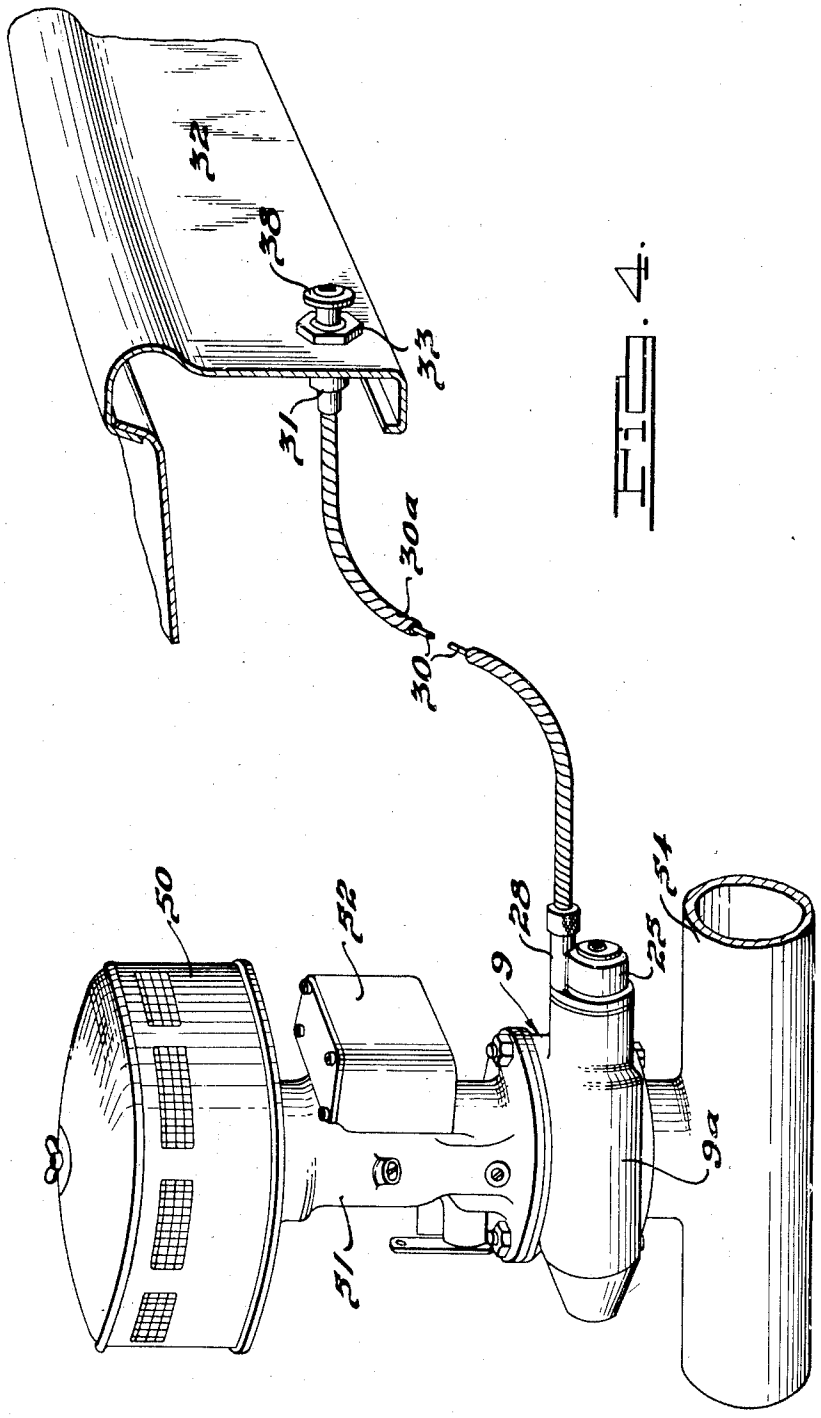


Fig. 4.

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CONTROL MECHANISM FOR GOVERNORS

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Application February 10, 1936, Serial No. 63,162

1 Claim. (Cl. 137—153)

This invention relates to governor mechanism for internal combustion engines and particularly to mechanism of this type adapted to be mounted in an automotive vehicle.

An object of the invention is to provide a governor especially of the vacuum operated type having a governing valve responsive to the engine suction and wherein remote control mechanism is provided for rendering the governor or governing valve operative or inoperative at predetermined times.

A further object of the invention is to provide a vacuum operative governor with remote control mechanism adapted to be mounted, for example, on the dash or instrument panel of the vehicle and adjustable to render the governor operative or inoperative as desired, the construction preferably embodying key operated locking mechanism for locking the remote control mechanism in different adjusted positions.

A further object is to provide a relatively simple remote control mechanism for rendering the governor operative or inoperative and characterized by the provision of push and pull mechanism remotely controlled and adapted to be locked, as by a key operated mechanism, in "off" and "on" positions of the governor.

Other objects of this invention will appear in the following description and appended claim, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

Fig. 1 is in part a longitudinal sectional elevation of a governor adapted to be controlled in accordance with the present invention.

Fig. 2 is a side elevation, partly in section, illustrating the control mechanism adapted to be mounted on the instrument panel.

Fig. 3 is a detail section taken through line 3—3 of Fig. 2 in the direction of the arrows.

Fig. 4 is a perspective view, partly in section, illustrating the assembly of the governor and control mechanism in connection with a downdraft carburetor.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation, and it is not intended to limit the invention claimed herein beyond the requirements of the prior art.

In the drawings there is illustrated, by way of example, a suitable governor of the vacuum operated type adapted to be controlled in accordance with the present invention. The said governor comprises a valve casing or body 9 adapted to be interposed in the intake pipe 11, the parts being flanged to receive the retaining bolts 10. The governor body 9 is provided with a passage 11*a* therethrough, which forms a part of the intake passage. Disposed within the passage 11*a* is a governing butterfly valve 12 secured to a rock shaft 13 journalled in suitable bearings in the opposite walls of the casing. Secured to the body portion 9 and disposed at one side of the intake passage is an elongated casing 9*a* which is formed at its forward end with a portion 14 provided with a cylinder or piston chamber 15, the latter opening rearwardly into an enlarged chamber 16 within which is housed certain of the operating mechanism. A piston 17 is mounted for reciprocation within the cylinder 15, and bolted to the piston is a rearwardly extending piston rod 18 having a sliding bearing at its free end in a boss 19. Fastened to the piston rod 18 is a cam carrier 20 upon which is adjustably mounted a cam 21, the face of which is engaged by a cam roller 22 rotatably mounted at one end of a swinging lever 23 fixed to the valve shaft 13. To the opposite end of the lever 23 is connected a light spring 24 which is anchored to the bottom of the casing 9*a*. The forward end of the piston chamber 15 is closed by means of a cap 25 suitably secured thereto.

The governor illustrated in Fig. 1 is of the updraft type, the governing valve 12 being interposed between the carburetor and the intake manifold. At the upper or down-stream side of the governing valve 12 is located a hole 26 opening into the intake passage at the manifold side of the governing valve. This hole communicates with a drilled passage 27 extending through the walls of the body 9 and casing 9*a*. This passage terminates in an orifice 27*a* which communicates directly with an elongated passage 27*b* drilled through an enlargement or boss 28 on the cap 25 and also communicates at right angles with a port 27*c* leading into the piston chamber 15 at the forward side of the piston. Thus, during governing operation the piston 17 is subject at one side thereof to the partial vacuum or static pressure existing in the intake passage 11 at the point 26 and at the manifold side of the governing valve. The opposite side of the

piston, i. e., within the chamber 16, is subject substantially to atmospheric pressure. Interposed between the piston 17 and the inner end of the cap 25 is a main spring 60 which functions to resist movement of the piston in the chamber 15 consequent to differences in pressures acting on opposite sides of the piston.

The governor proper, as herein illustrated and described, is substantially the same and functions in substantially the same manner as the governor shown and described in my copending application Serial No. 520,060, filed March 4, 1931. It will be understood, of course, that the illustrated governor is shown by way of example as one suitable for use in connection with the present invention.

Mounted within the elongated passage 27*b* in the enlarged portion 28 of the cap 25 is a valve or plunger 29 having a tapered or conical terminal end 29*a* in line with the orifice 27*a* and adapted to be moved into position to seat therein and close off the orifice. Secured to the opposite end of the plunger 29 is a Bowden wire 30 which projects through a hole in a cap 28*a* screw-threaded onto the end of the portion 28 and within which the casing 30*a* of the wire or cable is fastened. The cable or wire leads from the governor to a suitable remote point, such as the instrument panel of an automotive vehicle, within convenient reach of the operator of the vehicle.

The control mechanism for the governor is mounted within a housing or body 31 having a flanged end 31*b* abutting against the rear face of the instrument panel 32, the body 31 having a threaded extension 31*c* extending through an aperture in the panel. The body is clamped onto the panel by means of a nut 33. The body or housing 31 is provided with a cylindrical bore 34 within which is slidingly mounted a cylindrical plunger 35. The rear end of the wire or cable 30 is fastened at 30*b* to the forward end of the plunger 35. This plunger is provided with a central bore to receive a suitable lock mechanism having, for example, a conventional lock cylinder 36, this mechanism being controlled by means of a key 37 insertable through a key hole in the forward end of a terminal knob 38 on the plunger 35. By turning the key 37 and the lock cylinder 36, an eccentric pin 39 projecting therefrom is oscillated to actuate a latch 40. The eccentric pin 39 extends into an elongated transverse slot 40*a* in the latch 40, the latter being slidable within a vertical slot 41 in the plunger 35 and having a latch projection 40*b*. Movement or oscillation of the eccentric pin 39 in one direction will retract the latch projection 40*b* and movement in the opposite direction will extend the latch projection into either a notch 42 or a notch 43 formed within the barrel 31.

The assembly of the governor and control mechanism in connection with the instrument panel 32 of an automotive vehicle is illustrated in Fig. 4. In this instance, however, the governor 9, 9*a* is reversed and utilized with an installation having a down-draft carburetor. As shown in this view the air cleaner, illustrated at 50, is connected to the upper end of the intake pipe 51. A suitable carburetor is indicated at 52 and the governor 9, 9*a* is interposed in the intake passage between the carburetor and the intake manifold 54.

Thus, it will be seen from the foregoing that I have provided a simple and efficient means for remotely controlling a vacuum operated governor. The improved mechanism preferably includes a push and pull device such as the manually shiftable plunger 35 and the valve or plunger 29, the latter adapted to be shifted into and out of position to shut off the vacuum connection 27 to the suction responsive piston 17. The device 35 preferably includes a key operated locking mechanism by which it may be locked either in a position to render the governing device non-responsive to the engine suction or vacuum or in a position, such as illustrated in Fig. 2, by which the governor may be rendered operative. Although in the present preferred form the governor valve 12 is movable toward closed position as a result of differences in pressures acting thereon, yet it will be understood that a governing valve of the unbalanced butterfly type may be utilized wherein the valve is directly movable as a result of differences in pressures acting thereon.

I claim:

In a governor for an internal combustion engine, a body having an intake passage, a valve operatively mounted in said passage and adapted to open and to close the same, a cylinder with a piston adapted to actuate said valve, one side of said piston being exposed to substantially atmospheric pressure, a conduit leading from the downstream portion of said passage to said cylinder to expose the opposite side of said piston to the action of partial vacuum existing therein, said piston adapted to actuate the valve in the closing direction when the vacuum in said portion reaches a predetermined degree, means including a longitudinally slidable plunger valve selectively movable into a position for opening and closing said conduit, flexible cable means manually controlled from a remote point for selectively moving said plunger valve, and key operated locking means for locking said cable in the open position of said plunger valve.

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