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ADJUSTABLE GOVERNOR FOR FUEL FEED

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2 Sheets-Sheet 2

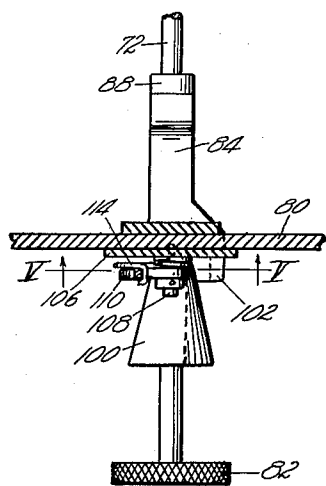


Fig. 4

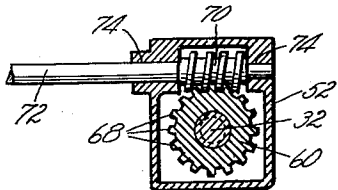


Fig. 7

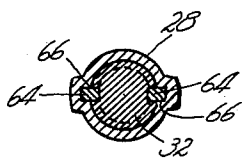


Fig. 8

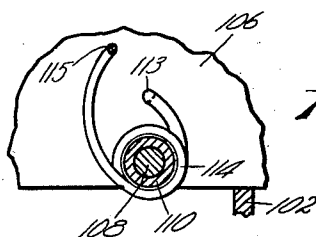


Fig. 5

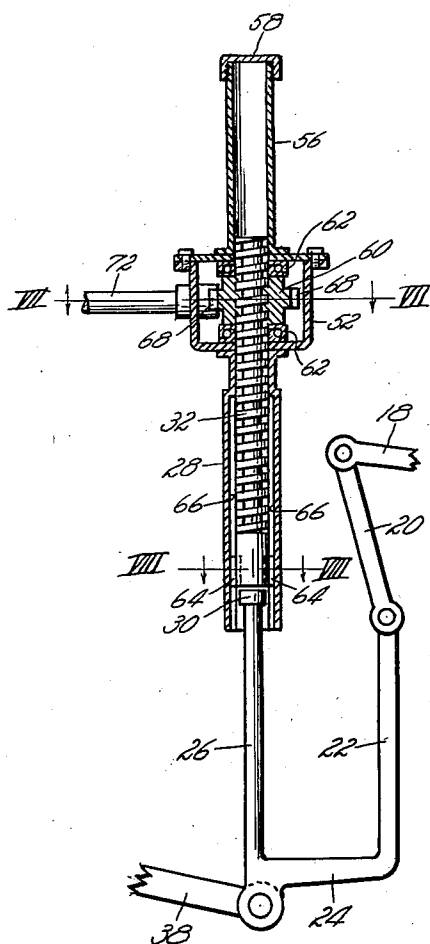


Fig. 6

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ADJUSTABLE GOVERNOR FOR FUEL FEED

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5 Claims. (Cl. 74—526)

1

This invention relates to new and useful improvements in an adjustable governor for fuel feed to an internal combustion engine, and has particular reference to a means for limiting the speed of an automotive vehicle.

The principal object of the present invention is the provision of an adjustable stop whereby the movement of the links and levers for operating the usual throttle valve of a carburetor is limited, thereby limiting the fuel supplied to, and the speed of, the engine.

Another object is the provision of a convenient means for adjusting said stop, said means comprising a rotatable knob mounted at the instrument panel of the automobile or in some other position convenient to the driver, said knob being equipped with a pointer for indicating the set speed on a suitable dial.

Still another object is the provision of a means for locking said adjusting means when desired to prevent unauthorized tampering with the adjustment thereof.

Other objects are simplicity and economy of construction, ease, rapidity, and accuracy of adjustment, and adaptability for installation in many existing vehicles with a minimum of alteration and expense.

With these objects in view, as well as other objects which will become apparent during the course of the specification, reference will be had to the drawings, wherein:

Figure 1 is a fragmentary side elevation, partly in section, of one form of the present invention mounted in an automobile.

Fig. 2 is an enlarged fragmentary vertical section taken on line II—II of Figure 1.

Fig. 3 is a fragmentary vertical section taken on line III—III of Figure 2.

Fig. 4 is a vertical section taken on line IV—IV of Figure 2.

Fig. 5 is an enlarged fragmentary vertical section taken on line V—V of Figure 4.

Fig. 6 is an enlarged side elevation, in section, of the adjustable stop mechanism mounted on the engine block.

Fig. 7 is a horizontal section taken on line VII—VII of Figure 6.

Fig. 8 is a horizontal section taken on line VIII—VIII of Figure 6.

Like reference numerals apply to similar parts throughout the several views. As shown diagrammatically in Figure 1, the engine compartment 10 of an automobile has mounted therein an engine 12 having a carburetor 14. The carburetor is provided with a throttle valve 16 hav-

2

ing an operating crank 18 pivotally connected at its outer end with link 20. The opposite end of said link is pivotally connected to an upwardly extending leg 22 of U-shaped member 24. The other leg 26 of said U-shaper member extends upwardly into vertically disposed tubular housing 28, and terminates therein in an enlarged foot 30 adapted to contact the lower end of adjustable stop screw 32 as hereinafter described.

An angled crank 34 is pivotally connected at the intersection of its arms to engine 12 by means of bracket 36. Arm 38 of said crank is pivotally connected with U-shaped member 24 in vertical alignment with leg 26 thereof. Arm 40 of said crank is pivotally connected with rigid link 42, said link extending through hole 44 provided in floor board 46, and being pivotally connected at its rearward end with the lower surface of accelerator pedal 48. Disregarding for the moment the action of adjustable stop screw 32, it will be seen that whenever accelerator pedal 48 is depressed by the driver, throttle valve 16 will be opened through the action of link 42, crank 34, U-shaped member 24, link 20, and operating crank 18. Pedal 48 is elevated and throttle valve 16 is closed whenever the driver removes his foot from pedal 48, by means of a leaf spring 50 secured to floor board 46 beneath said pedal, and bearing resiliently against the lower side of said pedal.

Housing 52 is rigidly mounted on engine block 12 by means of mounting bracket 54, and is provided with a downwardly extending tubular extension 28 and an upwardly extending tubular extension 56, said tubular extensions being in axial alignment, and upper extension 56 being closed at its upper end by cap 58 to prevent dirt or other foreign matter from entering the housing.

Stop screw 32 is carried in housing 52, extending into extensions 28 and 56, and is retained therein by engagement in nut 60, said nut being rotatably retained in said housing, and prevented from any longitudinal movement relative to said screw, by ball bearings 62. The lower end portion of screw 32 is unthreaded, and is provided with keys 64 adapted for sliding movement in grooves 66 formed longitudinally in lower housing extension 28, thereby preventing any rotation of screw 32.

Nut 60 is externally toothed to provide gear teeth 68 adapted to mesh with the teeth of worm gear 70 rigidly mounted on shaft 72 disposed substantially at right angles to screw 32. Said shaft is rotatably carried at its forward end in

3

bearings 74 formed integrally with housing 52, and extends rearwardly through hole 76 provided therefor in fire wall 78 and thence rearwardly to a point beyond the face of instrument panel 80, being equipped at its rearward end with a knurled knob 82 by means of which said shaft may be manually rotated.

Shaft 72 is rotatably supported at a point intermediate fire wall 78 and instrument panel 80 by means of a bearing bracket 84 fixed to the forward surface of said instrument panel. Longitudinal movement of said shaft through said bearing is prevented by stop collars 86 and 88 rigidly fixed to shaft 72 at either side of bearing 84. An arm 90 extending radially from said bearing, and an arm 92 extending radially from stop collars 88 are each provided with a hole 94 there-through, said holes being adapted to register at one point during each rotation of shaft 72. The hasp 96 of padlock 98 may be inserted through said holes to lock said shaft against rotation.

A portion of shaft 72 between bearing bracket 84 and knob 82 is threaded, and carries axially thereon a substantially conical cam 100. Rotation of said cam on said shaft is prevented by a finger 102 rigidly attached to bearing bracket 84, and which engages a groove 104 formed longitudinally in the edge of cam 100.

A dial plate 106 having suitable indicia thereon for indicating the governed speed is fixed on the face of instrument panel 80 immediately above shaft 72, said plate having a stub shaft 108 projecting outwardly therefrom on which is pivotally mounted a pointer 110 adapted for movement relative to said indicia. A curved arm 112 fixed relatively to said pointer and pivotally therewith, extends downwardly from stub shaft 108 and contacts at its lower end the sloping surface of cam 100. A helical spring 114 carried on shaft 108, having one of its extended ends fixed in dial plate 106 at 113 and the other of its extended ends engaging pointer 110 at 115, urges said pointer in a counterclockwise direction as viewed in Figure 2, and urges arm 112 into contact with cam 100.

The operation of the adjustable fuel feed governor is substantially as follows. First, padlock 98 is removed from holes 94 in arms 90 and 92 to permit rotation of shaft 72, which may then be turned by manipulation of knurled knob 82. Cam 100, being prevented from rotating with said shaft by finger 102, will thereby be advanced along said shaft, and a different elevation of said cam will be presented to arm 112, causing said arm and pointer 110 to pivot about stub shaft 108. When said pointer indicates the desired speed on dial 106, padlock 98 may be inserted in arms 90 and 92 to prevent any further rotation of shaft 72.

Rotation of shaft 72 rotates worm gear 70 within housing 52, said worm gear meshing with and turning externally toothed nut 60. The rotation of said nut advances stop screw 32 upwardly or downwardly. As described above, whenever the driver depresses accelerator pedal 48 to open throttle valve 16, U-shaped member 24 is elevated by link 42 and crank 34, one of the legs 22 of said U-shaped member being connected to throttle valve operating arm 18 by means of link 20, and the other leg 26 of said U-shaped member extending upwardly into the open lower end of lower extension 28 of housing 52 and movable therein to abut against the lower end of screw 32. Leg 26 fits loosely in housing extension 28 to allow for the slight lateral movement of said leg as it is raised and lowered.

Thus, it will be seen that the upward move-

4

ment of member 24, and consequently the opening of the throttle valve 16, is limited by the position of screw 32. When said screw is raised by turning knob 82, the throttle valve may be opened more widely. When the screw is lowered, the throttle valve may be opened less widely.

A feature of the invention is the accuracy of adjustment made possible. A complete revolution of nut 60 is required to advance screw 32 a distance equal to the lead of said screw. The fineness of control is thus limited only by the fineness of the threads on the screw.

Another feature is the ease and rapidity with which the driver may adjust the governor in conformance with the speed laws of the locality through which he is driving. The adjustment may be made without leaving the seat of the car, and without stopping the car.

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

1. In an automotive vehicle having a throttle valve for controlling the fuel feed to the engine thereof and a linkage connecting a foot pedal with said throttle valve, the combination with a portion of said linkage having a substantially straight line movement, of a governor for fuel feed comprising a stop for engaging said portion and limiting the movement thereof during the opening of said valve, means operable from the driving compartment of said vehicle for adjusting said stop, a cam carried by said actuating means and movable thereby, and an indicator disposed in said driving compartment and operable by said cam to indicate the adjustment of said stop.

2. In an automotive vehicle having a throttle valve for controlling the fuel feed to the engine thereof and a linkage for operating said valve, the combination with a member of said linkage having a substantially straight line movement of a governor for fuel feed comprising a housing fixed to a rigid part of the vehicle, a screw carried for longitudinal movement in said housing, said screw being adapted to abut at one end against said linkage member and to limit the movement thereof during the opening of said valve, means for adjusting the position of said screw in said housing, and means for maintaining said screw and said linkage member in alignment.

3. In an automotive vehicle having a throttle valve for controlling the fuel feed to the engine thereof and a linkage for operating said valve, the combination with a member of said linkage having a substantially straight line movement of a governor for fuel feed comprising a housing fixed to a rigid portion of the vehicle, a screw carried for longitudinal movement in said housing, said screw being adapted to abut at one end against said linkage member and to limit the movement thereof during the opening of said valve, means securing said screw against rotation, an internally threaded nut engaging said screw and carried for rotation in said housing, and means for rotating said nut, said linkage member projecting at all times into said housing, whereby it is maintained in alignment with said screw.

4. In an automotive vehicle having a throttle valve for controlling the fuel feed to the engine thereof and a linkage for operating said valve, the combination with a member of said linkage having a substantially straight line movement of a governor for fuel feed comprising a housing fixed to a rigid portion of the vehicle, a screw carried for longitudinal movement in said hous-

5

ing, said screw being adapted to abut at one end against said linkage member and to limit the movement thereof during the opening of said valve, means securing said screw against rotation, an internally threaded nut engaging said screw and carried for rotation in said housing, said nut having external gear teeth formed thereon, a worm gear carried in said housing and meshing with said gear teeth, and means for rotating said worm gear.

5. In an automotive vehicle having a throttle valve for controlling the fuel feed to the engine thereof and linkage for controlling said valve, a stop for limiting the movement of one of the members of said linkage during the opening of said valve, and means for adjusting said stop, said adjusting means being operable by the rotation of a shaft extending into the driving compartment of said vehicle, manual means for rotating said shaft, and means for indicating the adjustment of said stop within the driving compart-

6

ment, said means comprising a pointer pivotally mounted on a suitable dial fixed to the instrument panel of the vehicle, a cam follower arm fixed to said pointer, a substantially conical cam axially threaded on said shaft and engaging said follower arm, and means for preventing the rotation of said cam on said shaft.

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