ADJUSTABLE SPEED CONTROL DEVICE

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This invention relates to devices for actuating conventional speed control mechanisms and more particularly to adjustable devices by which to vary the degree of actuation of the control mechanism.

It is well known that motor vehicles are not operated as economically nor as conveniently as may be possible by improving the speed control mechanism. It is common knowledge that the conventional accelerator of a motor vehicle cannot, without a special foot rest or special effort on the part of the operator, be held to produce uniform speed. This is due partly to the inability of the vehicle manufacturer to produce a foot rest adaptable for all kinds of operators and also to poor road conditions. The present invention has been developed for the purpose of providing means by which to maintain a substantially uniform speed in a motor vehicle.

The invention takes the form of a device which is operable to open a carburetor throttle valve to a predetermined degree. The device is adjustable to vary the degree of opening of the carburetor throttle valve and thereby increase or decrease the set speed of the motor vehicle according to the desire of the operator and for this reason is unlike the conventional motor governor. Connection with the carburetor control is had through linkage so arranged that the motor vehicle operator may shift his foot from the constant speed devices control to the conventional accelerator pedal and, although the device may be set for a moderate constant speed, increase the speed of the vehicle any desired extent beyond the device setting. Furthermore, should it be found desirable to decrease the speed from the setting of the device, removal of the operator's foot from the devices control to the accelerator will automatically disengage the device and allow conventional use of the accelerator.

The present invention is therefore directed to and has for its objects the provision of means for actuating the speed control mechanism of a motor vehicle; adjustable means for varying the degree of actuation of the speed control mechanism; means permitting use of the speed control mechanism independently of the actuating device; and, means for setting the device to any desired acceleration limit.

Other and further objects and advantages of the invention will be more fully understood from a consideration of the following specification taken in conjunction with the accompanying drawing in which,

Figure 1 is a side elevation of the invention installed for use in a motor vehicle;
Figure 2 is an enlarged view partly in section of the actuator and connection with a carburetor control;
Figure 3 is an enlarged sectional view of the operator for actuating a conventional speed control;
Figure 4 is an enlarged sectional view of the adjusting device by which to vary the acceleration limit;
Figure 5 is a front view partly in section of the connecting elements or links between motor carburetor control and the actuator;
Figure 6 is a perspective view of the adjustable stop for the actuator; and
Figure 7 is a further fragmentary perspective view showing the connecting means which makes possible actuation of the carburetor control independently of the actuator.

Referring to the drawing, the invention is shown applied to a motor vehicle generally indicated by the reference numeral 10. The showing of the vehicle includes a motor 11, carburetor 12, floor board 13, and instrument panel 14. An accelerator pedal or button 16 projects through the floor board 13 and connects through linkage 17 and rod 18 with the carburetor 12.

Mounted on the motor 11 in any suitable manner as by a bracket 20 is an arm 21. One end of this arm is supported for pivotal movement on the bracket by means of a pin 22. The other end of the arm 21 is formed with a slot 24 through which a pivot pin 25 projects. The head 26 of the pin may be slightly recessed to receive the rod 18. A clamping bracket supports the pin 22 and takes the form of plates 28 and 29. The plate 28 has a central recess 30 in which the head 26 of the pin 25 is located and the plate 29 is formed with a slight depression which partially receives the rod 18. The plates 28 and 29 are drawn together to frictionally engage the rod 18 between the head 26 and plate 29 by means of bolts 32. A further arm 33 is pivotally mounted at one end on the pin 22. The pivoted end of this arm lies immediately adjacent the arm 21 and is formed with a flange 34 which overlies one edge of arm 21. From the structure thus far described, it will be evident that forward movement of the free end of the arm 33 about the pivot pin 22 or as shown in the drawing, movement to the right, will cause arm 21 to move to the left by reason of the contact of flange 34 with said arm. In other words these elements function as one about a common pivot 22 in this direction. It will also be noted, however, that arm 33 may be moved toward the left of the drawing without causing arm 21 to be actuated and that arm 21 may be actuated beyond the actuation caused by arm 33 independently of said arm.

Secured in any suitable manner to the motor 11, as by a stud 36, is a bracket 37. This bracket includes a flanged portion 38 which provides a horizontal guideway 39. A plate 40 projects through the guideway 39. One end of the plate is formed with a spaced return bent flange 42.
to which an angle plate 43 is joined by means of a pivot pin 44. One flange of the angle plate 43 projects laterally beyond the flange 42. The other flange of the plate 43 is so joined to flange 42 that said plate can not swing downwardly about the pin 44 beyond the position shown in Figure 4 of the drawing. The upper edge of this flange of the plate 43, however, is curved at 45 to permit upward swinging of the plate. The free end of arm 33 terminates in a return bent flange 47 which is spaced to provide a recess 48. Through this recess projects the flattened end 49 of a rod 50. Connection is had between arm 33 and rod 50 by a pivot pin 51. The outwardly projecting flange of the plate 43 is directly in the path of the arm 33 and serves as a stop to limit movement of said arm when actuated by the rod 50.

Attached to the motor 11, preferably toward the rear, is a cylinder 53 (see Figures 1 and 2). This cylinder is preferably rounded at its closed end 54 and forms a centered threaded opening 55. Engaged with the walls of the opening is a pipe connection 56. The open end of the cylinder terminates in an outwardly directed flange 58 against which a cover plate 59 is mounted. The cover plate is secured to flanges 58 by screws 60. Secured to or formed integral with the outer face of the plate 59 is a collar 62 which includes two different diameter openings. The rod 50 projects through the collar 62 and a corresponding opening 63 in the cover plate 59 into the cylinder 53. In the larger of the two openings of the collar a suitable packing 64 may be located. The end of the rod 50 lying within the cylinder 53 is fitted with a piston 66 which may include a pair of metal discs 67 spaced apart by a leather or other flexible disc 68. The entire set of discs being mounted on the end of the rod and secured by a nut 69. A flapper valve 70 is provided in the cover plate 59 for the purpose of maintaining atmospheric pressure within the cylinder when the piston 66 moves from right to left. Mounted on the floor board 13, or at any other conveniently accessible place within the vehicle, is an operator generally indicated by the numeral 71. This operator comprises a housing 72 in which a cylindrical opening 73 is made. A plate 74, having a centered opening 75 of a diameter less than that of the opening 73, is mounted on one end of the housing 72 and for convenience may be held in place by screws 77 which also secure the housing to the floor board 13. The lower end of the opening 73 may be closed by a screw plug 78. Diametrically opposite threaded openings 79 are made in the housing 72. One of these openings receives a nipple 81 with which is connected a pipe 83 that in turn is joined to the connection 56 of the cylinder 53. The other opening in the housing 72 is fitted with a nipple 84 with which a pipe 85 is connected. The pipe 85 terminates in the intake manifold 86 of the motor 11. Mounted in the opening 73 is a valve 87. Adjacent the lower end of the valve, an annular recess is provided. Above the walls of the recess access the valve is formed with a flattened portion 88. A reduced diameter stem 91 projects through the opening 75 of the plate 74 and is fitted with a button 92. Between the underside of the button and the plate 74 is located a compression spring 93. It is to be noted that when the button 92 is depressed against tension of the spring 93 and the valve 87 is in the position shown in the drawing, direct connection between the cylinder 53 and the intake manifold is had through pipes 86 and 87. The vacuum in the intake manifold exerts a pull on the piston 66 moving it to the position shown in the drawing against tension of a spring 95 which is connected with the flattened portion 49 on the rod 50. When the motor 11 is in operation, the vacuum in pipe 87 is substantially uniform and will hold the piston and rod 50 as shown in the drawing. Since arm 33 is pivotally joined to rod 50, it will assume an inoperative position when the rod 50 and arm 33 are in the position shown in the drawing. Thus rod 18, connecting the carburetor control through linkage 17 with the accelerator 16 may be freely manipulated and arm 21 may pivot about the pin 22 independently of arm 33.

Attached to the instrument panel 14, or any other suitable place as by screws 96, is a box 98. This box houses the adjusting mechanism which comprises a shaft 101, the ends of which are supported in the vertical walls of the box. The forward end of the shaft 101 projects through suitable openings in the box 98 and panel 14 and has attached thereto a lever 102. If the box 98 is mounted at the rear of the panel, said panel may be provided with suitable indicia 103 located adjacent a finger 104 of the lever 102. Adjacent the rear of the box and keyed on the shaft 101 is a gear 105. A smaller gear 107 is also mounted in the box, being supported by one wall of the box and a partition 108. The gear 107 has an opening therethrough which is spirally threaded to receive and mesh with a rod 110. The outer end of the rod 110 is coupled with a flexible shaft 111 by means of a coupling which in the present showing includes a bracket 112 secured to the rod in any suitable manner as by a screw 113. The side walls of the housing 114 are tapered and the end wall slotted to receive the head 115 of the rod 110. The outer end of the bar is recessed and threaded to receive the threaded end of the flexible shaft 111. A suitable lock nut 117 prevents accidental disengagement of the shaft from the bar. Any suitable housing 118 may enclose the shaft 111, the other end of which is connected with one end of the plate 40.

The structure of the device having been described, the operation thereof is as follows. It may be assumed for purposes of explanation that the adjusting lever on the instrument panel 14 has been rotated to limit the speed of the motor vehicle to forty miles an hour. When the lever 102 is rotated for this purpose, gears 106 and 107 are likewise rotated and rod 110 and flexible shaft 111 moved either inwardly or outwardly to adjust the plate 40 to the position shown in Figure 2 of the drawing. The motor 11 may or may not have been running during this adjusting. When the motor was shut off, the piston 66, mounted on rod 50, would be at the extreme right of the cylinder 53, being so moved by spring 95. Upon starting the motor, a vacuum is built up in pipes 86, 87 and 82. This vacuum is insufficient to draw the piston 66 to the extreme left of the cylinder 53 against tension of the spring 95. The accelerator pedal 16 may be depressed to move the linkage 17 and rod 18 for the purpose of opening the 65 throttle valve of carburetor 12. This action causes arm 21, secured to rod 18, to pivot about the pin 22 independently of arm 33. When the motor vehicle has nearly attained the desired maximum speed namely, forty miles an hour, or 70 at any time prior thereto, the operator of the vehicle may shift his foot from the accelerator pedal 16 to the operator button 92. When he depresses the button 92, valve 87 closes the passegeway between pipes 86 and 82 thus cutting 75
off the vacuum in cylinder 53 which is holding piston 66 in the position shown in the drawing against tension of the spring 55. To facilitate breaking the vacuum in the cylinder 53 the portion 59 of rod 50 now connected with the exterior of the operator. The piston 66 and rod 50 now move to the right to a point where the arm 33 abuts plate 43 on plate 40. Movement of arm 33 about the pivot pin in this direction causes the flange 34 on said arm to engage arm 21 moving in the opposite direction. This movement of arm 21 moves rod 18 to the left and opens the carburetor so that the vehicle will travel approximately forty miles an hour. It is evident that the operator 41 may assume only two operative positions with the valve 87 either opened or closed. Thus when the vehicle has attained the desired speed, no further opening of the carburetor 12 is possible through this mechanism. If it is desired to increase the speed to fifty miles an hour, the lever 102 is rotated to the fifty marker, such rotation advancing the flexible shaft 101 and moving plate 48 further to permit arm 33, under tension of spring 55, to move farther to the right and simultaneously moves arm 21 to advance rod 18 and further open the carburetor. It may be found desirable if the adjusting mechanism is set for a limit of thirty miles an hour i.e. momentarily inoperative, the operator merely removes his foot from the button 92 and places it upon the accelerator pedal 16. Removal of pressure on the button 92 permits spring 53 to withdraw the valve 87 opening the connection passageway between pipes 52 and 85 and allows the intake vacuum of the motor to move the piston 66 to the position shown in Figure 2, thus breaking the unified action of arms 33 and 21 and rendering the tachometer ineffective.

Although application has shown only one modification of the invention including linkage, actuator, operator, and control, it is obvious that other modifications or adaptations of the invention may be made without departing from the spirit and scope of the invention as defined in the appended claims.

Having thus set forth my invention what I claim as new and for which I desire protection by Letters Patent is:

1. A device for actuating a speed control comprising linkage connected with and adapted to advance said control, means acting to move said linkage, further means for varying the extent of action of said means on said linkage, and a vacuum motor connected with and adapted to render said linkage ineffective to actuate said control.

2. A device for actuating a speed control comprising a pair of pivotally connected arms, said arms being movable as one to advance the control, one of said arms being connected with said control, means connected with one of said arms and actuable to move both of said arms about their common pivot, means varying the position of said control, and further means for controlling the actuation of said means, said further means being operable by a manual operator.

3. A device for actuating a speed control for motor vehicles comprising a pair of arms having a common pivot, means connecting said arms to rotate as one arm about said pivot to advance said control in one direction, said arms being operable separately of each other in the opposite direction, a vacuum motor connected with and adapted to move one of said arms in one direction, spring means normally tending to move said one arm in a direction contrary to the direction of movement of said arm when actuated by said vacuum motor, and valve means for shutting off said motor whereby to permit said spring means to actuate one of said arms in a direction to connect and rotate both arms and advance said speed control.

4. A device for actuating a speed control for motor vehicles including a vacuum motor, means operable to render said motor inoperative, linkage connecting a reciprocating part of said motor with said control, a spring connected with said reciprocating part and functioning to actuate said linkage to advance said control when said motor is rendered inoperative.

5. A device for actuating a speed control for motor vehicles including a vacuum motor, a reciprocable rod projecting from said motor, means operable to render said motor inoperative, linkage connecting said rod with said control, a spring connected with and normally actuating said linkage to advance said control when said motor is inoperative, and means for limiting the extent of advancement of said control through said linkage.

6. In a device for actuating a motor vehicle speed control, a vacuum motor, a reciprocable element on said vacuum motor, means connecting said element with said control, said motor functioning, when the motor of said vehicle is in operation, to move said means to a position, said means comprising a pair of arms mounted for movement about a common pivot, one of said arms being joined to said control for rendering the other of said arms ineffective to move said first arm and actuate said control, a spring connected with said other arm having a force contrary to that of said motor, said spring, when said motor is inoperative, serving to move both of said arms about the common pivot to advance said control and increase the speed of said vehicle.

7. In a device for actuating a motor vehicle speed control, a vacuum motor operable during operation of the motor of said vehicle, means connecting said control with a reciprocable element of said vacuum motor, means comprising linkage, said vacuum motor functioning, when the motor of said vehicle is in operation, to move said means to a position, a spring for moving said means to advance said control when said vacuum motor is inoperative, a stop to limit the extent of advancement of said control through said means, and remote control means for adjusting said stop to vary the limit of advancement of said control through said means by said spring.

8. In a device for actuating a speed control, a motor having a reciprocable element, means connecting said element with said control, means being rotatable in one direction to advance said control and in the opposite direction to make said means inoperative with respect to said control, said motor being operable to render said means inoperative, and further means for rotating said means to advance said control, said other means being operable when said motor is not in effect.

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